Newberg Transportation System Plan

Technical Appendix

Newberg, Oregon

June 2005

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Prepared for:
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Project No. 5193

June 2005

Table of Contents

Appendix A

TAC Members and Meeting Minutes

Newberg Transportation System Plan Update
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NEWBERG TRANSPORTATION SYSTEM PLAN UPDATE
TECHNICAL ADVISORY COMMITTEE (TAC) MEETING #2
Newberg City Hall
February 18, 2003

Meeting Summary

Attending

Committee Members: Barton Brierley, City of Newberg; Dan Fricke, ODOT Region 2; Bill Gille, Yamhill County Public Works

Staff and Consultants: Elizabeth Ledet, Transportation and Growth Management Program; Dan Seeman and Anthony Yi, Kittelson and Associates; Suzanne Roberts, Cogan Owens Cogan

Guests: Alan Fox, ODOT Region 2

Barton Brierley opened the meeting. Committee members and guests introduced themselves.

Dan Seeman said that his firm is leading the TSP Refinement Study and Elaine Cogan, Cogan Owens Cogan, will facilitate future meetings. Referring to the project work scope that was distributed to the TAC, he said the purpose of today's meeting is to reach agreement on what the City's TSP should cover.

Dan added that a key focus of this project is the potential Newberg-Dundee bypass and how Newberg can incorporate it into its own transportation system and downtown and land use plans. The project also is meant to make sure the TSP is consistent with state transportation standards. The Newberg-Dundee Transportation Improvement Project (NDTIP) requires jurisdictions to amend their local plans to incorporate the bypass and its related measures.

He then reviewed the overall project schedule and key events. The first three occurred before the consulting team joined the project. The first public event, occurred early in the process and was an opportunity for staff to describe the project scope and the public to ask questions. Another presentation was made to the City Council and Planning Commission. Several people have asked to stay informed as the process continues.

The goal of today's meeting is to discuss existing conditions. This will inform the process of developing alternatives that will take place before the next TAC meeting. A City Council briefing is scheduled for mid-March. All alternatives will be modeled by ODOT, tentatively by first week in March.

From that point, the schedule is aggressive. In its May meeting, the TAC will discuss future conditions, an evaluation of the forecast year no-build (including no bypass) alternative that will serve as the base case. After analyzing all alternatives, the Committee will develop a preferred alternative. The TSP update process is expected to be completed by the end of the biennium.

The consultant team is concerned about the small amount of public involvement in this project to date and would like the TAC's input about this as we proceed.

NDTIP Recommended Alternative

Alan Fox, ODOT Region 2, project leader for the NDTIP, described the alternative that was recommended by the Project Oversight Steering Team (POST). It is Southern Alternative 3J, modified to move the western interchange from McDougal Corner to the junction of Oregon 18 and Oregon 99W near Dayton. The bypass would begin with an interchange at Oregon 99W near Rex Hill. It would have interchanges at Oregon 219 and between Newberg and Dundee.

Last week, the Oregon Transportation Commission (OTC), whose role is to approve spending on transportation projects, approved the recommended alternative while expressing a number of concerns, the prospect of inducing growth at the interchanges. Staff will respond to those concerns and inform the TAC.

One way to respond to these concerns is to develop Intergovernmental Agreements (IGA's) with the involved cities and counties. These will focus on land use issues, such as how to protect the interchanges and address issues of induced growth. These decisions will likely have an affect on this NTSP Refinement process. The NTDIP project team wants to work with this TAC on Newberg's IGA interchange issues.

The NDTIP is a two-tier process. We have completed the corridor selection. After the TSP and land use adoptions, a final EIS will be written. Assuming its approval, the resulting Record of Decision (ROD), we will move into the design selection process.

NEPA requires us to continue to study a no-build alternative until the ROD, which will be considered along with Alternative 3J. ODOT is meeting tomorrow to decide on the Recommended Alternative.

Comments from Committee members and guests are in italics. Responses from staff and the consultants follow in regular print.

When is the ROD expected?

It is coordinated with the NTSP process. However, we cannot write it until the TSP is adopted. The ROD is the completion document so it must study the no-build alternative.

Four alternatives will be studied in the NTSP Refinement, including a no bypass scenario if there are no funds to build the bypass. It is not included in current federal transportation funding; the next round is in 2009.

I am concerned that if one of the alternatives modeled is the no-build, the modeling results of all alternatives will be impacted.

Let's talk about which alternatives should go forward. The alternate modes and land use packages will study all alternate modes of transportation as part of the final LEIS. This is a simultaneous process.

We (ODOT) are working with DLCD to decide whether specific ideas are drawn on a map or whether we keep it at a general policy level conceptually, showing the kinds of protections that are planned.

We need to be aware of people's concerns about their property and be able to show them as much accurate detail as we can.

If a business decides to locate in the corridor today, what should we say to them?

In many cases, we don't know where the bypass will be. We do know the Oregon 219 interchange will be entirely within the UGB so no goal exception is needed. We will try to do the same with the Dundee interchange.

Are any concept designs available now that we can use as basis for understanding the issues?

I will check with the project team about the types of maps we are able to produce.

Has the NDTIP team identified a target for transit ridership?

The team identified a 10% peak-hour share. That target was based on conservative modeling to demonstrate the need for a bypass and won't directly translate into the TSP. The alternate modes process should help improve ridership. It will look at various elements, including market demand and financing mechanisms.

Perhaps we also could look at park-and-ride facilities near interchanges.

The objectives for this TSP Refinement are clearly laid out. Six of the eight objectives focus on incorporating the NDTIP preferred alternative and associated measures. ODOT recently produced a video describing main street treatments that could provide ideas for Oregon 99W as the bypass is expected to take 16% of traffic off Oregon 99W through Newberg.

Existing Conditions Discussion

Anthony Yi, Kittelson & Associates, reviewed the Existing Conditions and Deficiencies Assessment, focusing on changes since the 1994 Newberg TSP. He also noted where maps and figures were still in draft form and needed more work. As he reviewed each section, committee members commented.

Pedestrian and Bicycle Facilities

Figure 2 shows where sidewalks currently exist but does not appear to show all existing facilities.

New developments are required to include sidewalks. The City is still working to refine facilities throughout town but we have a good amount on Oregon 99W.

In this project, we feel it is important to provide facilities to community and child-oriented locations such as recreation centers, the post office and schools.

Agreed. The City has expressed that one of its concerns is improving pedestrian access to schools and the community center and has even begun planning for it.

Transit Service

The existing transit services within Newberg and those that link the City to other areas have been around for quite a while.

The Yamhill County Transportation Committee has said there could be service from Sherwood to Newberg if people want to use it.

It is identified as a part of the LINKS service that connects to the Tri-Met system.

People in South Newberg are very interested in that.

We will clarify that particular connection in the document.

Ridership information also would be helpful.

We will include the information that is available.

I have heard about a carpool system based in Salem that is trying to work with McMinnville. I don't know if he has similar plans about working with Newberg.

That is the Mid-Valley Rideshare. It covers all three counties. For more information, contact Bob Ransom, City of Salem Public Works Department.

It is a ride-matching system that formerly covered only Salem but is trying to expand its outreach. It tends to market to large businesses.

Does the Community Action Agency of Yamhill (WYCAP) provide transit service?

The agency does not provide general transit service—only on-demand service to residents who are elderly or have disabilities.

Pipeline and Transmission System

Other than some updates, this section will be the same as before. The City will be adding a 24-inch pipeline to the mill for cogeneration purposes. We also are planning for a gas transmission line from Newberg to the town of Mist, which is halfway between here and Sherwood, north of Oregon 26.

Rail

We updated this section to include passenger rail services, otherwise the services are the same as before.

ODOT is still considering commuter rail. We should look at demand again. I think that Union Pacific owns the trackage of the line roughly parallel to Oregon 99W, between Portland and Willamette Valley. ODOT's Rail Section should know.

Air

This section is basically the same as the 1994 TSP.

The Sportsman Airpark does transport freight and should be described in the same level of detail as the Hillsboro Airport in terms of operations and facilities. It is owned by the City.

Marine

Other than Rogers Landing County Park, are there any new access points to the Willamette River?

No.

Is the City going to consider marine control?

Our police and fire departments are trying to do rescue, but nothing beyond that.

Yamhill County has marine patrol that operates in this area. The system is not very large. It has a couple of boats and operates primarily on weekends.

Roadways

We hope to update Figure 5 (Roadway Ownership) in the next two weeks.

We should not use the word "force" in this document. We are not forcing anyone to do anything. "Negotiate" may be a better word.

Most roadways are not privately owned. There are more County roads in the study area than shown. I will give you more data for your update.

The document says that there are six general classifications in Newberg's transportation system. Is this still consistent?

Yes, and I understand that the bypass would be classified as a principle artery.

It will be classified as a statewide expressway, according to Oregon Highway Plan (OHP) standards.

Regarding traffic operations, our analysis says that a level of service (LOS) of D or better is considered acceptable. A total of 25 intersections were identified for further analysis, to be conducted according to the 2000 Highway Capacity Manual.

The OHP is ambiguous about what happens to a highway that is being bypassed. It is not a forgone conclusion that jurisdiction of Oregon 99W will be transferred. This is something we *will need to address. ODOT hopes to make a determination about the function of Oregon 99W eventually--maybe during the next year.*

If it remains under ODOT's jurisdiction, will the classification change?

It could change, but that would be addressed in the IGA.

When we consider main street treatments, we will look at standard development today. What would we do if there are different standards?

Until the bypass is built, Oregon 99W would probably be a district highway.

Could it be designated as an urban business area?

Dundee is assuming there will be a district highway but there is confusion about Special Transportation Areas (STAs).

We will probably retain it as a statewide highway.

An STA may be a reasonable treatment for the no-build alternative to dilute the standard and make it more achievable.

There are various factors, such as age and character, that make a difference.

We shouldn't get involved in specific designations at this point because there is much confusion about STA's and their intent.

We should assume that Newberg will be consistent with Dundee and designate the highway as a district highway. That would be the cleanest way to address the situation.

People forget that STA's are strict and non-negotiable. For the purpose of the TSP, they are not worth getting involved with. If the City wants to pursue an STA or LUBA later, we can work with them.

In the case of Newberg, there is nothing in an STA that we cannot achieve otherwise, regardless of whether there is a bypass. An STA has been beneficial when it appears we are going to add a lane.

I have heard different messages from other ODOT departments. At what point is an STA really useful; or if it is not beneficial, why go through it?

It is important to have a specific objective.

On a state highway, are all intersections operated by ODOT?

Yes.

The Mountain View/Oregon 219 intersection is operated by the City.

It is not in the study area. All intersections in the study area on Oregon 99W are operated by ODOT.

ODOT recently made many improvements to Oregon 99W. It is operating very well, but is still under capacity and not meeting statewide highway standards. Volumes are analyzed by traffic counts through intersections. All stop-controlled intersections are below standards, particularly at the Wilsonville and Springbrook intersections. The "T" intersection at Wilsonville Road has free movement only to the north and east. That has been identified for an interchange.

We need to have conceptual knowledge of those streets that will be affected by the NDTIP.

The Haworth/Springbrook interchange, with much traffic entering and exiting the shopping center, operates at an LOS F, is over capacity and has a high accident rate. It is the most critical intersection of the 25 we analyzed. Through-movement here is at about one thousand cars per hour, which, along with side street volumes need to cross—safety and capacity issues warrant a need for a signal at some point.

Could we put a signal there?

We should not assume that anything on Oregon 99W is a given just because it is warranted.

Connectivity improvements could solve the problems there.

If any signals are proposed for Oregon 99W you would need to consult ODOT's traffic engineers.

The intersection of Mountain View Drive and Aspen Way is bad and there is uncontrolled movement at various points along Mountain View. Maybe we could realign it into an "S" curve with "T" intersections.

The City has planned for a north arterial there, with an "S" curve in the next six years.

We still need to provide traffic volumes for the intersections of Oregon 99W with 2nd and 3rd.

What if 2nd is moved so 3rd becomes a four-way intersection, and a signal is added? Maybe we could model this.

Yes, and as volumes decrease with the bypass, there will be new opportunities. It may still be at an LOS F. From a policy standpoint, people on 3rd can't get on Oregon 99W, although they have options to get around to it. It is a question of whether to benefit the through-traffic using the highway, or the local traffic using the local streets.

Perhaps we could prohibit left turns during peak hours. Can this be done on a state highway?

Yes, but it tends not to be enforced.

It would seem effective from my observation.

Safety Evaluation

The Haworth//Springbrook intersection has a high rate of collisions. Through the Hancock/First couplet, we could not differentiate collisions between the two sides of the couplet, but we are working on updating this analysis. There also is a high collision rate at the Oregon 99W/Villa Road intersection. The geography at the Oregon 99W/Villa intersection has changed in the last year.

Truck Freight Transportation

All information in this section is from the original TSP.

Did you analyze the percentage of freight traffic from counts?

There was detailed analysis. It may be 18% on Oregon 99W.

We should make sure they are included and that freight is considered equally. We want to make sure the City remains open for business.

Should we consider a truck detour off Oregon 99W? Where would it go?

We will work with the City on that.

It should be addressed in the no-build alternative. In the NDTIP, the OTC has raised the issue of what the Oregon 219 interchange does to reduce truck traffic. If there is no bypass, how would we relieve that congestion? The elimination of congestion through downtown would impact the Downtown Plan.

But Oregon 99W is a statewide highway.

But does it belong in the downtown? Is there a better connection, such as McKay Road? We have limited options because of the floodplain. If we cannot do it, we should say so.

Maybe we could build an arterial where the bypass has been identified.

Alternatives

Next, Dan reviewed a draft list of alternatives, designed for the forecast year 2025, to be considered for the TSP and asked members for their comments.

According to your contract, we are supposed to look at a no-build alternative, without a bypass, plus four alternatives, one of which does not include a bypass. There may be some inconsistency in the work scope. We will have to discuss this further after the meeting.

Dan reviewed the draft list:

1) No-build with no bypass.
2) No-build (except for improvements included in the Newberg Capital Improvement Plan) with bypass.

3) Connectivity with bypass to make the City's transportation system as connected as possible.
4) Alternate modes with bypass--how to solve problems in other ways. It considers TSP estimates and looks at transit, Transportation Management Program elements such as bicycle and pedestrian facilities and employer incentive programs.

Another option is to package all these into a fifth alternative that best addresses deficiencies in the entire system.

Does this seem like a reasonable approach? The next step will be to come back with an analysis of the alternatives for discussion at our May TAC meeting.

We should hold another public event when the alternatives are more complete.

Our contract does not call for another public event until the TSP is completed. We had one at the beginning of the project. Maybe we could add another one to the schedule.

Could the City Council meeting be advertised to the public and structured as a public event to discuss the alternatives?

The purpose of the second Council meeting is to look at code amendments, but perhaps there could be an opening to take testimony about the alternatives.

We need to involve the public when we develop the alternatives. These are hot-button issues, particularly the northern arterial. We should not subject the Council to all the public comments.

ODOT expects its modeling to be complete by the first week in March. We will have three weeks to analyze the results, and then start to assess what the alternatives will be.

Maybe we could present the ideas of the alternatives to the public.

It is up to the City. The alternatives are expected to be ready for review in early April.

My concern is that all transit and Transportation Management processes seem like throw-away items. People say they never work.

I agree.

Maybe we can work this out with the City. Perhaps we can make other improvements with transit as an additional improvement.

A transit element is needed with any alternative, but cannot be a stand-alone alternative.

We will evaluate each separately and take best of the best into the preferred alternative.

This is not a NEPA process so why are you studying a no-build alternative?

So we will have a forecast year, a worse case scenario for comparison purposes.

It is confusing to have a no-build with bypass alternative because the bypass will affect other streets.

We will follow whatever the recommended NDTIP alternative says we need to do.

It does not provide that type of direction.

At our next TAC meeting we will present results of the alternatives analysis, future conditions and code analysis (policy review information). This may happen right after a public meeting in early April.

If we include the next TAC meeting with a public event, we will not have a TAC meeting to choose an alternative.

We are looking at more TAC meetings than are scheduled—one for analysis of alternatives and another for selection. After reviewing the work scope with our TGM project manager, we will let you know what options are available.

Meeting adjourned. **The next TAC meeting is scheduled for April 1 and the next Public Event is scheduled for April 23.**

NEWBERG TRANSPORTATION SYSTEM PLAN UPDATE
TECHNICAL ADVISORY COMMITTEE (TAC) MEETING #3
Newberg City Hall
April 1, 2003

Meeting Summary

Attending

Committee Members: Barton Brierley and Paul Chiu, City of Newberg; Dan Fricke, ODOT Region 2; Bill Gille, Yamhill County Public Works

Staff and Consultants: Elizabeth Ledet, Transportation and Growth Management Program (by phone); DJ Heffernan and Katelin Brewer Colie, Angelo Eaton; Dan Seeman, Kittelson and Associates; Suzanne Roberts, Cogan Owens Cogan

Barton Brierley opened the meeting. DJ Heffernan reviewed the meeting agenda. He and Katelin Brewer Colie will review amendments to the City's development code and comprehensive plan that are proposed to bring the City into compliance with state law and ensure that issues relating to the Newberg-Dundee Bypass are addressed. He said that after the revisions are completed, the City Council will need to review the changes in a work session.

Draft Recommended Comprehensive Plan Policies

DJ reviewed proposed revisions to transportation policies in the City of Newberg Comprehensive Land Use Plan according to changes to the Transportation Planning Rule (TPR).

Comments from Committee members and guests are in italics. Responses from staff and the consultants follow in regular print. All Committee suggestions were generally agreed upon unless otherwise noted.

Under Goal 1, he added language about environmental policy. Throughout the document, he changed the reference from "light rail" to "rail".

The original wording was "light transit." This should be changed to "transit."

Is there a definition of "transit" in the Comprehensive Plan?

No, it seems self-explanatory. It can mean buses, light rail, commuter rail, or other forms of transit.

Goal 2 would be a logical place to add policies or language related to the bypass.

We are trying to develop a policy framework on what City has today that will protect the bypass interchanges. State and County documents will go along with City measures.

This document should form basis for these agreements.

The City will work cooperatively with ODOT, the County, and others to build the bypass.

Instead of saying "the City <u>*will*</u> *maintain" we should say "the City* <u>*shall*</u> *maintain."*

Will ODOT have a maintenance agreement so not that the City is not doing all the work?

Yes.

Maybe we should say "in conjunction with ODOT" so that it is more clear.

Under Goal 3, most revisions relate to the TPR requirements for permitting a multi-modal transportation system, specifically to reduce dependence on the auto.

For items #6-8, leaving the language as "The City <u>*will*</u>*…" may be more appropriate.*

We looked at this with Barton and determined it is difficult to coerce others to assist with transit projects. "Will" is appropriate in this case.

Under Goal 4, Policies d and f relate to cooperating with ODOT on state facilities. We replaced Policy d with new language because there are no longer efforts to realign Oregon 219. Is this correct?

Yes.

Policies b and c relate to the bypass. Most other changes relate to TPR compliance. Could the renumbered Policy g be any better defined?

We could say "north side road" instead of "northern part or the urban area", but what you have is fine.

We shouldn't make it sound like we want to reduce traffic impacts just on the northern arterial. Instead, we should word this as a more general and sweeping statement.

Maybe this policy would be more appropriate under Goal 9. we would like the City to provide us with the appropriate language for Policy g, regarding support for development of arterials to provide for local system connectivity.

Under Goals 5 and 6 we added policies that relate to the TPR. Under Goal 6, Policy d, related to a commuter rail service may be more appropriate under Goal 1.

Members agreed.

Goal 7, Policies c, d and e relate to compliance to the Oregon Land Use Goal 5.

How do capital improvement plan (CIP) updates relate to TSP updates?

We use the TSP as a basis to identify potential CIP's, which depend on funding. If issues become more acute, they will move up on the list of priorities.

There are three levels to the CIP. Two and three-year projects are updated every year. Then we have a big TSP list of everything planned for the next 20 years—this is our wish list. Then there is the development charge or impact fee. Take out the time reference and leave the rest. We will prioritize projects.

A TSP must have a 1 to 5-year and six to twenty-year program. You need to make sure you have a priority CIP list that includes one to five-year priorities.

That list gets done.

Are you comfortable with our revision to Policy f? The standards are higher than what is required by law.

Yes, this seems consistent with our current policy. The Future Street Plan is required of development whereas a Special Area Plan is prepared by the City.

Changes to Goals 8 and 9 relate to TPR requirements. Goal 9 is where we get at issues raised earlier in this meeting about connections.

The statement in the new Policy d, under Goal 8. "<u>will encourage</u> development that protects…" is not worded strongly and seems inconsistent with "<u>shall</u>" that is used further down in the policy. I wonder if this is less of an issue than it was ten years ago.

It depends on how strongly the City feels about keeping up on something that ODOT looks at so closely.

The language is fine. A sound wall is needed in some places but not appropriate in others. I like the soft language.

Regarding Goal 9, Policy b, at our last TAC meeting we decided to use the word "expressway" rather than "principle arterial". The bypass will be the only road with this classification.

I thought that would mean there would be no private access to the bypass. We should modify the language and say there will be no private development access.

The bypass is all grade-separated so we don't need to say "intersections will be grade separated whenever possible."

Per our earlier discussion, we should say "shall" instead of "will" throughout the document.

Interstate standards call for three miles between interchanges. The City does not have that amount of spacing so we don't want that language in the document. We will check with Alan Fox, ODOT, about reference in the Oregon Highway Plan.

I think at least two miles are required in rural areas and one in urban.

Shouldn't we be consistent with state highway guidelines?

I think the bypass is not consistent with the guidelines but it reflects what is recognized in the Location Draft Environmental Impact Statement.

Should we remove the sentence altogether?

<u>Draft Recommended Development Code Revisions</u>

Next, Katelin Brewer Colie reviewed amendments to the City's development code.

There are types of projects, other than what is listed, we can include as "permitted outright".

What is an example of something that would be considered conditional use?

Any road or improvement that is not part of the TSP (listed under Conditional Use Criteria in the document).

For example, would a turn lane for a school need a permit?

If it were for a new school or another entrance into the parking lot of the school.

That would not be appropriate for us because conditional uses require Planning Commission hearings and are very costly.

Do you want any transportation improvements allowed outright?

Yes, except for bus terminals and airports.

We can add that language and those improvements will be subject to the criteria listed in this document.

What about design review?

The public, particularly property owners, should have the opportunity to comment on proposals.

Usually, we only build roads when we receive state funding. Then, we have neighborhood meetings.

Maybe the design review process needs a formal status in this section so it doesn't use the same verbiage that is tied to land use.

This section still needs much work.

Under the section <u>Referral of Development Permit Applications</u>, is "significant impact" defined? Do we need traffic study every time we do anything? This would impede progress.

"Significant" is usually defined as creating a difference of 40 or more trips. *Work on City roads should not have to go through the development permit process. We should be more clear about the when the process is required.*

Do you also want “or as required by city engineer”?

The more discretion we have the better.

I don’t think that ODOT should be listed as the only agency to receive notice. Other agencies could be involved.

We can revise the sentence to include “other affected agencies.”

Try to make it as general as possible, for example, “provide for notification process”.

We could remove the language altogether.

I agree. There is enough language about notification.

To the section on <u>Vehicular Access and Circulation</u>, we added language regarding access spacing standards.

We want a simple statement that access to state highways are subject to approval by ODOT.

Isn’t there a minimum of 10 feet for street width?

They can be as narrow as you would want them to be.

Are there provisions for emergency vehicle access?

Yes.

It would be good to have standards to ensure streets are wide enough for them.

Items C and beyond relate to connectivity, pedestrian connections and safety. We are not suggesting any changes to these.

The standard for block length is too short.

Be aware that there are TPR interpretations against long blocks unless you have a good case for making them longer. Often increasing the length is not looked upon favorably.

There have been instances in which we could have make a good case for developing a 2400 foot block (block perimeter).

You would not want that to be a standard.

DLCD typically wants about 1600 feet. This may be an area where the City disagrees.

A standard of 1600 feet is unreasonable, although I agree with the premise.

Maybe we can use more discretionary language.

If you agree with premise but have a case where you are constrained by topography or another reason, you can develop in a way that is still highly connected. You should be able to describe your reasons in cases where you need to deviate from the standard.

We want language that allows for exceptions to the standard.

We will develop new standards and work with Barton and Elizabeth for review.

The section Parking Area and Service Drive Design deals with surfacing options, allowing non-paved materials. We made some additions to this section at the request of the City.

Gravel is not desirable. I don't want it allowed.

For the Traffic Impact Study (TIS), the process described is too rigorous. I want it simplified. I want this document to clearly describe the process—so it will be easy for us to know when a TIS is required.

It is usually required when there will be an increase in daily vehicle trips.

In the current code it is more than 40 trips per day.

Do you have a lot of outright uses permitted?

Yes.

May want to establish trip cap. For example, in Salem, there are thresholds on trips a facility may generate.

Do you want to raise the threshold?

Yes, or make conditions for when no TIS is required. Usually the only issue that comes up is a need to add sidewalks or curbs. What do other jurisdictions do?

We will look at Washington County standards as a guide.

We have found in Bend for example, that when a TIS is required, and the results trigger the need for an –improvement,—the developer often moves to another location with more capacity. This promotes sprawl.

Under the section Pedestrian and Bicycle Access and Circulation, I don't want lighted pathways to be a general requirement. Instead, I'd like to say "when required by the City."

I think there is a length standards that triggers this to be a requirement.

Sometimes lighting actually causes problems.

Often forested areas are not lighted.

But safety issues are important.

I would fault on the side of requiring them, then do an exception if you want to vary.

[Agreed].

I want standards for facilities such as multi-use pathways and bike facilities to be flexible.

ODOT's preference is to have them on the roadway. We could say "shall be designed by City engineers" to provide you with discretion.

Remember that in many of these cases, the City will eventually inherit these facilities, so you want to avoid making them sub-standard.

That has not been an issue. For example, anything that provides public access has to be designed according to standards for disabilities.

Under the section Transportation Improvements and Street Design Standards, the table of local street widths was revised and can be incorporated into the table of street design standards or can stand alone.

Some of this data can be incorporated into the design standards table, then we would not need the street width table.

Do we have expressway standards?

No. We will change the table as appropriate.

I assume we will get updated cross sections. Do you want a standard for optional planting strips?

Yes.

The document does not say much about width of bike lanes.

If striped, they are six feet wide.

The City has decided to keep the standard at five feet.

Sidewalk width should not include the curb. I want that to be clear.

Isn't there a state standard?

There are separate standards for downtowns?

The City has no particular standards.

Would be good for them to be wider downtown. We should make a note that they will be wider in some places.

We will circulate a memo about bypass protection strategies. It will include how to construct them. We will ask you for comments via e-mail. We also need County involvement because half of the overlay district in the County and half is in the City.

The County doesn't always go along with City planning.

We need to make sure standards apply to whole area.

I don't think we need a Council briefing now. Let us know when it will be appropriate. I can see holding it off until the next fiscal year.

We have been working to improve street standards.

Make sure to pay attention to pathways in the absence of roads.

Meeting adjourned. The next meeting will be July 22.

NEWBERG TRANSPORTATION SYSTEM PLAN UPDATE
TECHNICAL ADVISORY COMMITTEE (TAC) MEETING #4
Newberg City Hall
July 29, 2003

Meeting Summary

Attending

Committee Members: Barton Brierley and Dan Danicic, City of Newberg; Martin Chroust-Masin, Yamhill County Planning; Dan Fricke, ODOT Region 2; Bill Gille, Yamhill County Public Works; Dorothy Upton, ODOT Transportation Planning Analysis Unit

Staff and Consultants: Dan Seeman, Anthony Yi and Mark O'Brien, Kittelson and Associates; Suzanne Roberts, Cogan Owens Cogan

Dan Seeman opened the meeting and referred members to the two technical memos they had received by mail. He said that the consulting team, along with City staff, prepared four alternatives, one of which is a no-build alternative, and another is the consultant-preferred alternative, which he hopes the TAC will adopt during this meeting and the City will endorse.

Comments and questions from Committee members are summarized in italics. Responses from County staff and the consultants follow, summarized in regular print.

Technical Memo #2: Future Transportation Needs

Dan reviewed Technical Memo #2, which is an analysis of 2025 conditions if no new facilities are built.

Would sidewalks be built on at least one side of arterials and collectors?

They would be built on at least one side, but ideally, on both.

I am comfortable with the City's sidewalk policy but think that schools and other public facilities should be included, to help ensure that it receives funding.

Technical Memo #3: Alternatives Analysis

Four alternatives are analyzed, one of which is the no-build alternative. First, Dan reviewed Alternative #2.

The figures should show the proposed bypass route in the legend.

Parks and the future public golf course should be shown. These are uses that will influence traffic.

The Alternative Description should include information about what else will be needed to make the proposed improvements work.

The TSP should recommend that all jurisdictions work together to develop an intercity transit system.

The need for signals at certain intersections, such as Springbrook with the North Arterial should be stated.

The team should be aware of a possible safety project ODOT is working on at the connection of Wilsonville Road and Oregon 219. This should be incorporated into one of the City's plans.

Next, Dan reviewed Alternative #3. There were no comments or questions. He then reviewed Alternative #4. The Committee discussed the importance of a connection across to agricultural land.

Area Specific Comparisons

Dan described recommended treatments of specific areas in the transportation system, based on recommendations made by members in past TAC meetings. Discussion followed.

If the Northern Arterial is going to be signalized at major intersections, this should be stated.

We should indicate where lights will be needed due to added traffic in various locations.

That is a good point.

Should we assume that Corral Creek Road will be cut off at Oregon 99W?

That is something we do not know yet. We recommend that intersection be closed, but do not yet know how that would be implemented.

I would discourage against making Vittoria Way a right-in/right-out intersection, therefore providing no connection to the Northern Arterial and prohibiting movements out Springbrook. The public would not support this.

The Committee discussed how this access could be maintained and suggested that signage is used to encourage desired flow of traffic. Members decided upon no connection, but a provision to retain right-of-way to retain the option for the future.

Members continued discussion area specific improvmenets, using maps of the transportation system. Key points of discussion are listed below. Their suggestions will be incorporated into the next draft of the TSP.

- Options for crossing Corral Creek in a manner that is most cost-effective and provides the greatest connectivity.
- Whether Wynooksi Street should go above or below the bypass.
- Preservation of the riverfront for future park land.
- Preserving space for future development at the airport.

- Alternatives to a downtown couplet and whether Oregon 99W will remain a state highway--a question that will remain unresolved in the near future of the bypass study.

- The intersection of Main and Illinois. The TSP will present a series of alternatives, any of which should be considered if the need is triggered.

- The intersection of Oregon 219 and 2nd Street and the routing of more traffic onto Elliot.

The Committee agreed to take variations of the preferred alternative, as well as bicycle and pedestrian improvement options, to the August 26 public event and incorporate comments into the alternative to be recommended in the TSP.

Meeting adjourned.

Appendix B

Public Events
Meeting Minutes

Newberg Transportation System Plan Update
Public Event
April 23, 2003

Summary
Written by Cogan Owens Cogan, LLC
June 26,2003

The second public event of the Newberg Transportation System Plan (TSP) update was held on April 23, 2003, from 7 to 9 pm, at the Newberg Public Safety Building. It was advertised by flyers inserted in utility bills the City mailed to every resident.

Approximately 30 attendees viewed and commented upon display boards summarizing the project schedule, current and possible future transportation conditions, alternatives to incorporate the proposed Newberg-Dundee bypass of Oregon 99W into the existing network of local roads, and proposed revisions to the City's land use planning documents. The project team, lead by Newberg City Planner Barton Brierley and Dan Seeman of Kittelson & Associates also presented an overview. Also attending to answer attendees' questions were Dan Danicic, City of Newberg; Anthony Yi, Kittelson & Associates; and Elaine Cogan and Suzanne Roberts, Cogan Owens Cogan.

In general, participants favor the proposed extensions to improve connectivity around the City. They also want improved pedestrian facilities and transit service.

Below are comments and questions raised by participants during the presentation as well as those posted on the display boards.

Presentation

Questions and comments raised by attendees are shown below in italics, followed by responses in regular print.

Illinois, Main and Yamhill Highway are one of the biggest problem areas in town.

Traffic has almost tripled in the past four years and people are already bypassing town.

The new Mountainview Road extension will change patterns on Crestview.

We are considering which locations for connections, routes and park and rides would provide the best service.

You should consider moving Oregon 219 traffic out of downtown.

College Street, north of Hancock, is very narrow, especially for trucks.

Consider how the improvements may affect community livability.

I have heard that even with the bypass, traffic congestion will be the same as it is now.

It will not be at as high a level as it is now, but will approach it.

What is Newberg's projected population for 2025?

It is expected to be 35,000 to 38,000. Truck traffic between Portland and the beach, as well as between Portland and McMinnville, also is growing.

What type of bus service is planned?

A new bus service, Trunckline Bus Service, is expected on Oregon 99W. This will be a separate planning process. We are looking at variety of options to connect to other transit systems. All transit service is expected to expand in the corridor.

Could the existing railroad tracks be used for commuter rail?

A passenger rail study was conducted before the bypass study and concluded that the cost would be too high to support the level of ridership expected. It was determined that buses are better because they provide more connections to more areas.

The cost-feasibility could change over time.

The bypass could affect pedestrian access to the riverfront.

The crossings will be grade-separated so pedestrians will not have to cross the bypass.

Display Board Comments

Following are comments that were posted on display boards and maps during the public event. Some participants used green dots to indicate agreement and red dots to indicate disagreement, with proposed improvements or other comments.

General Comments

- Traffic on 11th Street is too fast.
- Work for better pedestrian system. Extend sidewalks.
- Separate sidewalks from streets with planting strips or trees.
- Continuous sidewalks from northern neighborhoods (Crater, Oak Knoll) to downtown are needed on Main (especially at Columbia) and College. I cannot believe Jaquith Park does not have sidewalks along Main. This park is a major gathering place for the community.

- Need to promote non-vehicle travel by urban design (limit three-car garages, etc.).

Existing Traffic Conditions

- Add extension of Main north of Oregon 240 and include sidewalks. Also add extension of Columbia, west of College Street. (indicated in a drawing)
- Need northern arterial between Oregon 99W and Villa Road.
- Connect Brutscher and Fernwood Streets. (drawing)
- A short-term solution (light) at intersection of Wilsonville Road and St. Paul Highway is needed.

Existing Pedestrian Facilities

- Put sidewalks on Main.
- Yes, so my child can walk to Jaquith Park. Columbia and Main is a bottleneck and dangerous to pedestrians. Please widen and add sidewalks.
- There is no sidewalk on the north side of West 2nd from Grant west to Harrison.
- Elliot Road needs sidewalks.
- Consider the older areas when widening roads. The complexion of the neighborhood changes dramatically.

Possible Street Connections

- I think College should be considered a boulevard until the bend in the foothill, with a planted (green and trees) strip down the center and a residential speed limit. (1 green dot)
- Improve local system to bypass CBD to north.
- Main and Illinois is a crazy intersection. If you are new in town you don't know which way to look for cars coming. I walk this intersection often and it is dangerous for pedestrians.
- Intersection of Main and Illinois should be fixed.
- Please make sure there are nice bike paths connecting the areas.
- Please add sidewalks along College and Main so they are continuous from Crater/Oak Knoll to downtown.
- Oregon 219 and 2nd needs to be improved.
- Discourage Morton as a cut-through street.
- Three red dots for closing Washington Railroad crossing plus one comment: "The only pedestrian-friendly crossing".
- Two red dots for relocating eastbound couplet and regaining Main Street.
- Two green dots at the proposed extensions of College and River south of the bypass.

- [Regarding proposed connector between 3rd and Wynooski] Seems this road would be more useful if it intersected Wynooski further north.
- Three green dots for proposed connector between 3rd and Wynooski plus comment: A really good idea."
- Two green dots for Aspen Way to Springbrook connection.
- Build northern arterial [at Mountianview Drive between Villa Road and Zimri Drive].
- Two green dots for northern arterial between Zimri Drive and Springbrook Road.
- One green dot favoring connecting Putnam and Springbrook Roads.
- One green dot where northern arterial connects with Oregon 99W.
- Close Vittoria Way. Access for neighborhood should go north to north side road and west to Springbrook.
- Elliot could be improved to north of the high school.
- Extend Oregon 219 traffic north on Springbrook to Mountainview and College.
- Third Street to Wynooski is a really good idea.
- Hayes should not cross W. Branch Springbrook Creek. The cost would be too high. (mentioned twice)
- One green dot for proposed extension of Hayes Street; three red east of where it would connect with the northern arterial.

Proposed Policy Additions to City of Newberg Comprehensive Plan

- I agree.
- [Encourage mixed-use development in the downtown and neighborhood centers to reduce auto-dependency for residents living close to commercial services] I agree, managing road capacities will never provide long-term benefits unless you get people out of their cars.

Proposed Revisions/Additions to City of Newberg Development Code

- [Requirements for complying with the state Transportation Planning Rule for zone changes and amendments to land use regulations]. This already exists.

Special Land Use Controls for the Bypass

- [Land Use Restrictions: Apply an overlay zone within a fixed radius of expressway interchanges that prohibits highway-oriented retail development and direct access to intersecting roadways.
    - Is this a taking?
    - Necessary to prohibit commercial development next to bypass access. It has been on Yamhill County Comprehensive Plan from the beginning.

- [Should Newberg have a Park and Ride lot serving increased trunk line bus service in the Oregon 99W corridor?]
  - We would use a park and ride and bus, or a train, to and from Portland. Some students at our school (Veritas) from Sherwood. Lafayette, McMinnville and Tualatin would use the bus.
  - Absolutely. Providing the access would not get people on the bus. Driving will still be faster. You need to provide incentives for public transit and disincentives for driving.
- A bus to Portland would be nice.
- At least to Sherwood.
- How about rail?
- Favor frequent (at least every 15 minutes) bus service to Sherwood.
- Will a commuter rail be more feasible once Tigard, Beaverton and Wilsonville establish their rail line (more connectivity options)? Disincentives for driving need to be implemented so that more people will take commuter rail (making it feasible). Otherwise, Newberg will be planning bypasses forever and will be an island of development in a sea of asphalt.
- A trunkline transit is a good idea if there are adjoining systems to filter and service traffic to their final destinations. For example, if we have a bus service to McMinnville, where would the people who get dropped off in Newberg go?

City of Newberg

Newberg Transportation System Plan Update
Public Event
August 26, 2003

Summary
Written by Cogan Owens Cogan, LLC
September 10, 2003

The third public event of the Newberg Transportation System Plan (TSP) update was held on August 26, 2003, from 7 to 9 pm, at the Newberg Public Safety Building.

Approximately 14 attendees viewed and commented upon display boards summarizing improvements. The project team, lead by Newberg City Planner Barton Brierley and Dan Seeman of Kittelson & Associates also presented an overview of the project schedule as well as the improvements shown on the display boards. Also attending to answer attendees' questions were Dan Danicic, City of Newberg; Anthony Yi, Kittelson & Associates; and Suzanne Roberts, Cogan Owens Cogan.

Display Board Comments

Following are comments that were posted on display boards and maps during the public event.

Existing Sidewalk Network

- 1000' buffer is needed on Jaquith Park

Preferred Pedestrian Network

- I prefer the moderate option with the addition of major parks. I think Jaquith Park should be treated like a school—there should be sidewalks on both sides--about 1000'--of the park. New development will not put sidewalks on Main Street (areas are already developed), so the minimal option does not take care of most places without sidewalks. The city needs to go out there and develop them.
- Putting sidewalks [at intersection of Main Street and Columbia Drive] is all you need to get kids safely from North Main to Jaquith. This intersection is dangerous.
- Pedestrian-controlled lights are needed on crosswalks downtown and across College.
- No paths through Hess Creek Canyon. There is an existing "greenway" ordinance that prevents thoroughfares.

- Prices of street improvements? Pedestrian improvements are negligible compared to roadways.

Preferred Bicycle Network

- "Maximum facility development" is a must. Signage does not work. I am a cyclist, but when I am driving, I hardly notice bike route signs. They don't add much safety for bicyclists.
- No paths through historic Hess creek Canyon. Note city greenway ordinance [on map—near river, at UGB, west of where Wynooski would go].

Preferred Roadway Network Improvements

- Limit length and weight of trucks entering Villa Road extension.
- Regarding Option B, part of Fernwood line extends east beyond URA.
- Regarding Option C, I like the idea of getting Oregon 219 traffic out of downtown. This is highly needed. I also like the route on Springbrook/Mountainview.
- More and more traffic from McMinnville is using Oregon 219 to and from McKay in Marion County to reach I-5. Oregon 219/NE Villa is important to keep.

Oregon 240/Main Street/Illinois Street Intersection Improvement Options for Further Study

- Option 6 [Separated T-Intersections] is preferable (mentioned twice)
- I prefer Option 4 [Roundabout]. It would handle the traffic well at this point without needing an additional light.
- Keep in mind, the most dangerous part of this intersection is for cars at A [cars turning north from 240 onto Main]. Cars here that are going north must stop and yield to other cars that have very low visibility. Option 6 does not take care of the problem.

Springbrook Street/Haworth Avenue Intersection Improvement

- Signalized Haworth and Springbrook (mentioned twice).
- I would prefer a listh to a roundabout. The roundabout is a nice aide but I would rather not have one if Springbrook is going to become even busier.

Appendix C

Planning Commission Public Workshops
Meeting Minutes

PLANNING COMMISSION MINUTES
THURSDAY, NOVEMBER 6, 2003 AT 7 P.M.

SPECIAL TSP WORKSHOP SESSION #1

Newberg Public Safety Building - 7 P.M.
401 E. Third Street
Neewberg, Oregon 97132

Subject to Approval at the December 11, 2003 Planning Commission Meeting

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I. PLANNING COMMISSION ROLL CALL

Planning Commission Members Present:

Dwayne Brittell	Matson Haug	Louis Larson	Dennis Schmitz
Philip Smith	Nick Tri, Chair	Richard Van Noord	

Staff Present:

Barton Brierley, City Planner
Dan Danicic, Engineering Department
Peggy Hall, Recording Secretary

II. OPEN MEETING

Chair Tri opened the meeting at 7:00 p.m. He announced the procedure of testimony. Citizens must fill out a public comment registration form to speak at the meeting.

III. DISCUSSION

1. Transportation System Plan Workshop Series 1 of 3

Workshop #1:	**November 6, 2003**	**Newberg Public Safety Building**
Workshop #2:	November 20, 2003	Public Library - lower level
Workshop #3:	December 4, 2003	Newberg Public Safety Building

Mr. Barton Brierley reviewed the history of the transportation system plan over the 20 year period. They involved Kittleson & Associates to prepare a model which would reflect the impacts to the area. They were able to test a few things and when the results were received, they were able to view the scenarios. They held prior workshops and staff received comments which guided the proposed plan. They created a steering committee and some of the information and decisions of the group to view the results of the model. The technical advisory committee has a preferred alternative. The next step is to prepare a draft plan that they can take to use for the Planning Commission to view for adoption and recommendation to the City Council. Staff said that after prior public input and expert view, he said they wanted the Planning Commission's recommendation to rely heavily on what the public had to say and give further comments and recommendations. The purpose of the meeting is to not make a decision, but to give guidance for drafting of an acceptable plan for consideration. Mr. Brierley said it can be an open discussion with the public and the Planning Commission members can have an open discussion, written comments are also allowed. If anyone wanted to speak with the staff, he or Mr. Danicic, they can do so after the meeting. It is not a meeting to make decisions -no decisions have been made. There are three meetings to discuss. The next meeting is November 20th to be held at the Newberg Public Library. Tonight they are going to cover the south side of town and the November 20th meeting will cover the north and east of town. December 4th will be at the Public Safety Building and discuss other items not necessarily concerning streets. One of our main focuses since the last TSP is because of the bypass. The State's Project Oversight Steering Committee has a proposed plan route for the bypass. They have gone through many public hearings. This meeting is not a meeting to discuss where or should the bypass go. Once you look at the bypass planned route - it has an impact on the city's plans.

Mr. Dennis Schmitz appeared at the meeting at 7:10 p.m.

Mr. Dan Seeman, Kittleson & Associates, traffic engineering firm. He provided some presentation graphics and recommendations being forwarded to the Planning Commission for the series of these meetings. There are 3 over-all workshops in a few areas of the town. He will be addressing the south area of Newberg. The graphics show an overall picture of the transportation system. They have gone through a series of technical studies that are inter-related. They identified the deficiencies in the system and the future (with/without a bypass and a series of options). They also reviewed and evaluated alternatives to fix the problems in various areas of the town. The culmination is the recommended transportation system and the hierarchy of streets in addition to arterials (minor and major, collectors and streets.

1. Should the Highway 219 intersections with Wynooski Street, Wilsonville Road and 9th Street be relocated when a bypass is constructed?

Mr. Seeman reviewed the impact of the environmental study (swath that the bypass is in and the interchange locations). There is an area that is larger around the Hwy 219 which is in the affected area of the interchange. With that, ODOT has access casing requirements (protect the operations of their interchanges - an intersection must be spaced a 1/4 mile away from ramps of interchange far enough to protect the operations of the ramps). Some of the arterials in the influenced area must be relocated. In terms of Wynooski Street, it will extend under the bypass to the south and it is current alighment is to intersection with Hwy. 219 in the affected area. In the future, it will need to be signalized. Also, it needs to be moved again the 1/4 mile distance from the intersection. It is recommended to be relocated to the south. Discussion was held concerning the importance of the environmental impacts regarding the location of Wynooski Street - possibly to the north. It would be realigned close to the south edge of the airport. It would wind northward along Hwy 219. Some considerations given are that by staying to the north, that the conflict with the airport is great and topography issues are great and Wynooski will serve a developing industrial area to the south in a greater way if extended to the south.

In terms of Wilsonville Road, it connecs with Hwy 219 at a poorly configured intersection. It is not signalized and in the long term future, it will be signalized and an aggrevation for future spacing. It would have to be realiged to approximately 8th and 9th street. To take Wilsonville Road and wind it northward and intersection with Springbrook with a convergiance at a northern part to allow for adequate spacing. It is the most logical and achievable solution. In terms of Ninth Street and tying into Hwy 219 to the west, they are suggesting the new connection tied in with Wilsonville and Springbrook would be extended westward as well adjacent to Sportsman Airpark. Ninth Street is too close to the interchange and needs to be relocated. It would open up the area to new industrial development. There is quite a bit of an area to discuss the bypass.

Commissioner Schmitz asked for clarification of preferred and over-all system. Discussion was held concerning Wilsonville Road to Springbrook Road. It would have it's own under/over-crossing which is yet to be determined.

Commissioner Haug said it is the Planning Commission's request and recommendation to the Council was to have the bypass to be lowered below the street level with the same level they are now. Discussion was held concerning a detailed study to make the determination about the bypass and the input from the City is important for that.

Commissioner Smith said the new proposed curved Wilsonville Road is similar to Ninth Street and some portions of Hwy 219 and the Springbook Road would be closed at some points.

2. Should 2nd Street/Highway 219 intersection be reconfigured to improve safety?

Mr. Seeman asked about the Second Street and Hwy 219 intersection (located at the end of the airstrip. Being on the curve, there is a diffucult issue with site distance because of elevation of Hwy 219 and the close spacing of the Eliott intersection. They considered a number of regional transportation options. Mr. Seeman said there are some issues that came out of the public event were that there was real issue as to why the statewide traffic had to come into the downtown area. College Street and character being narrow in prelined residential and that it may not be appropriate to route statewide traffic through there - along with the traffic on Second Street. They looked at the 1994 transportation plan for Hwy 219 north into from St. Paul is to use Springbrook, head north to First Street, parallel Second Street and hwy 219 est of Villa and use the same route to head north which addressed the conflict area with the airpark. It was a clumsy alternative. Another option considered was using Springbrook and re-routing Hwy 219 to Springbrook and using northern aterial to College to head north (addresses issues with airpart, College Street and the traffic downtown). The downside it has direct impacts on Springbrook and uses along Springbrook and greater traffic to the norther aterial. Another alternative was routing Hwy 219 to Elliott Street and taking it/diverting on Elliott and coming down Hwy 99W onto College as it does today. It would simply the intersections and simply the conflicts and probles mitigated with the airpark. The final alternative is to address the issues at the airpark and the Second Street/Hwy 219 intersection, as traffic volumes grow, there would be a need for a traffic signal which would have a direct involvement with the traffic flow. They are suggesting a center median with right in and right out only and local streets to provide for movement on Hwy. 219.

3.

Mr. Haug said there was another altnerative and when the bypass at the southern side, follow up to Hwy. 99W and Hwy 219 becomes a northern aterial and eliminate it from being a state highway. Come up to Hwy. 219 and get on to the bypass to Hwy 99W (intersecton) and make the connection to the northern aterial which is part of the master transportation plan - solve the northern aterial problems as well.

Mr. Seeman said it was the first time he heard of that proposal. One is the operations i resonable to get on north to the interchange. However, the northern arterial does not connect direclty to the northern bypass. One would have to get off an interchange and because of ramp expenditures for movement from eastbound of bypass to west bound of Hwy. 99W. Discussion was held concerning the northern aterial coming into the bypass. At the hospital, there will be an intersection. It seems that long term, which may be more cost effective, with a northern aterial with possible additional funding from the State. Mr. Seeman said it would involve connecting the northern arterial connecting to the bypass interchange. Mr. Seeman said it worth consideration.

Mr. Schmitz asked where the anticipated interchanges and intersections are to be located. An interchange configuration is yet to be finalized. It will have ramps that will tie in with Hwy 219 likely coming from the west due to topographical/UGB issues (something like a couple of loop ramps and the associate diamond ramps and direct connection from Hwy 219 in all directions to and from the bypass. You would have an interchange at Hwy 99W that would provide all movements except those prior movements mentioned (to/from bypass back into Newberg) because there is an existing connection. Mr. Haug addressed forcing traffic into a busy location. A weakness of the bypass is the hospital site and hoped that the state would get involved with the economic analysis. Mr. Seeman said the input would be provided to the ODOT representatives. In terms of intersections, at the two ramps off Hwy 219 and traffc signal at Hwy. 99W and the northern aterial.

Tape 1 - Side 2: 7:45 p.m.

Discussion was held concerning location of signals at Hwy 219 and new intersection of Springbrook and Wilsonville Road, and the long term future have a signal at Wynooski Street as well.

Commissioner Smith said that the interchange at Hwy 99W and the traffic coming from the south and

Hwy 219 and are there any exits coming out of town and going toward Sherwood. Discussion was held concerning access to any side streets. Mr. Seeman reviewed the proposal and the first access would be Corral Creek Road (merging Hwy 99W traffic with bypass traffic). Corral Creek is intended to be right in/right out intersection. Beyond that, the streets would be pretty much the same as they are now. Mr. Seeman said it is a real problem area and somewhat of a design nightmare. The ability to turn back and the cost benefit to do more is not there.

Commissioner Haug addressed the Corral Creek Road area. The interchange at Hwy 99W and would not need the Corral Creek exist because they could get off at the northern arterial.

Discussion was held the bypass being a high speed highway whcih would require a deceleration and acceleration lanes. Mr. Danicic said Corral Creek would be right in/right out only. Mr. Seeman said the County is also considered with these areas (outside the UGB) of Newberg.

Mr. Seeman addressed the local street area access to Hwy. 219 and related compromises.

4. What Street connections should be made across a southern bypass to the Newberg Willamette Riverfront area?

(A) Blaine Street - grade separated construction to provide access to rail traffic
(B) College Street
(C) Hwy 219
(D) Wilsonville Road
(E) Fernwood/Second Street
(F) Future connection near the hospital

Discussion was held concerning below-grade construction. Mr. Seeman said his job is to provide the important connections (with missing design graphics - cost, physical and environmental standpoint). Mr. Seeman said there are clearance issues with the planes and they need to keep the bypass low at that point. He knows that Wynooski comes through a canyon. The bypass has to stay low because of the airpark anyway. Given tehre is River and College Streets and a bluff that hte bypass is likely to stay on the high side of (yet to be determined) - it seems the bypass may go up and over those streets to clear the local streets and decending possibly to the canyon and airpark. Discussion was held concerning the complications in those areas.

Mr. Brierley said the City went through the planning for the riverfront area to be able to tell ODOT what their feelings are. They are continuing those street connecting ideas. There are a series of recommendations and they would anticipate with those recommendations in the plan and what it should be like.

5. Should traffic changes be planned in downtown Newberg?

Mr. Seeman reviewed the potential changes. In 1986, the City considred the benefits converting the downtown street network. Mr. Seeman provided the plan from that review. It shows and what is considered as part of the plan is a two-way on first street and Second Street going north and Hancock as it is today - west going toward McMinnville. The study shows the redevelopability of many of the properties along the section of First Street, shorting out the movements - potentially new traffic signals. Review and forward on the analysis of the costs $2-4 million dollar range. It has some benefits and dis-benefits. It is a land use choice rather than a transportation choice.

Commissioner Smith said on the downtown plan, the 1986 noted that many people were unhappy on the eastern end of Hancock and it has now been improved. Discussion was held concerning easing in additional costs which ultimately double the expected costs. Mr. Seeman said it is a significant impact of the 1986 costs (which would probably double those costs in today's money). The cost is the development of the land rather than on the construction of the road. Discussion was held concerning the loss of the state highway through Newberg to be worked out with ODOT and whether the City would take authority over the existing road (City/County street) rather than a state-wide route and freight route. The function of the street, it will be a district level highway which allows as part of the standards, they allow slower speeds and greater congestion than a state wide route.

Commissoner Brittell asked if there were plans for a bypass? Mr. Brierely said yes. Since 1956.

Discussion was held cocnernign the number of automobile reduction for the areas. Mr. Seeman said the traffic volumes on the aterials, collectors and state highway system - the drawings show the thickness and using the existing Hwy 99W in the future by and large. More than 50% curreintly on Hwy 99W will convert to the bypass - very signifcant.

Commissioner Schmitz said that on Wynooski Street and the loops on west side of Hwy 219. West side is more populated and the eastern area is not so. Mr. Seeman said that the UGB essentially runs through and to construct ramps/loops or diamond ramps east to the bypass would encroach areas outside the UGB which would require a goal exception - major ordeal. That decision is subject to the whole design process.

Commissioner Haug addressed the blue line on Wilsonville Road, that road is under consideration of inclusion into the city (annexation). Mr. Brierley said that there is a proposal on the table to bring property that is owed by CPRD into the UGB to construct a golf course and there is not proposdal to bring in other land into the UGB at this time. Discussion was held concernign the URA areas along the corridor that could some day be within the UGB. Discussion was held concerning the CPRD proposed golf course which is under consideration.

Commissioner Larson said the plan takes into consideration the anticipated growth - how many years. Mr. Seeman said it is 2025 and projected growth is 30-40% over that time. Commissioner Larson said the Wilsonville Road and Hwy 219 connection - will it be a viable intersection to get through given the current congestion. Mr. Seeman said it is already a bad situation already. Discussion was held concerning the acceptable level of service with the modifications. Commissioner Larson said Wilsonville Road is heavily traveled. Given the fact that driving Hwy 99W to Portland/Sherwood, is becoming more of a nightmare and given the fact that Wilsonville will be more heavily used because of the Portland metro area and given the population growth, he is questioning the period of time going to be able to handle the area other than the current situation. Mr. Seeman said that signalization will be provided later. The level of traffic projected in the 25 year future of Wilsonville (600-700 cars per hour during peak hours). That can be well accommodated by the proposed traffic system. The growth in traffic statewide and movements from Hwy 219 and from the metro area.

Mr. Leonard Rydell, said he is concerned about the traffic patterns and we are trying to adopt the mismanage traffic patterns to make things work. The over/under pass issues are a problem. Discussion was held concerning funding availablility with ODOT. He said the City should reconsider the concept the travel and have more accesses, more roundabouts. Mr. Seeman said the bypass would carry around 35,000 cars aday. Roundabouts can handle about 1,000 cars a day. They should ahve a smaller scale road with 45mph limitations and more connectivity. We can conserve the community values. We need to go back and forget the bypass. It is more pleasing and cheaper altnernatives. Discussion was held concerning slower and 45mph speed alternatives. **Mr. Brierley** said that different options have been considered. It is not something that is not decided upon through transportation system process.

Susan Walsh said that car traffic is already a problem and the projections are generally way off the mark. She said she would like to see it presented as a complete plan.

Mr. Seeman said the third meeting will address transit issues (parking lots/ transit lines, including the bypass.

Mr. Donnald Aexander said the proposal was done by 1000 Friends of Oregon a nd not Friends of Yamhill County.

Mr. Seeman said the option said the alternatives was not enough traffic diversion as effective as it would need to be as a slower speed facility.

William Holms, small road connection Hwy 219 and Wilsonville Road (Sandoz Road) and it shows that it will be closed and will not be able to address the transit for the homes. Mr. Seeman said that further consideration will be done at the design level - know where the bypass is located before we can deermine the impact on those streets. Those connections will be provided and make them a better connection along the way.

Elija Dickson, regarding the Blaine and College intersection of the bypass. Will there be access in and off the streets (through without off and on) Mr. Seeman said those streets will not connect to the bypass. Hwy 219 and Hwy 99W will connect. Those type of streets will be grade crossed streets.

Grace Areola asked about 11th street and the bypass location. Mr. Seeman said that 11th street will be narrowed (mill on the south side and neighborhood on the north side). Discussion was held concerning moving toward the houses or the mill. Mr. Seeman said that is a design level question that is being addressed at the transportation level. She can talk with a person from ODOT concerning her specific area.

Ron Carstenson said he livees on Wynooski and Mill Place.

Discussion was held concerning costs and meeting the projected budget. Mr. Seeman said it was a tough question and they are noit at a point to cost out the improvements but are now narrowing the target and idenitfyint the revenue stream and funding sources over the 20-25 future to fund the whole thing. Which mayinvolve increase or SDC or some other kind of fee or tax to augment funding sources.

Julian Labadie, addrssed moving Wynooski into the canyon and stream corridor. Discussion was held concerning Wynooski dropping southward and the whole issue is in the design - we have to do something.

Tape 2 - Side 1:

Commissioner Haug addressed the process and the recommendation of the technical committee will probably carry the most weight - where are the other recommendations and suggesetions to be processed. Recommending the cheapest altenrative and he has other major alternatives. He has no idea how thoroughly analyzed the altenrative will be considered or wil it be dropped - how do we know that you just won’t continue with what you have. Mr. Brierely said we want to hear what people have said. Ulitmately, the next step is a staff recommendation with a draft transportation system plan. The Planning Commission will consider and review the recommendation. The reason for having this is to do more research and come back with more recommendations.

Dick Meyer addressed mass transit because it does not go where it should go. He siad that his son lived in Portland and took buses. It is not always the answer - it should be considered for the convenience.

Commissioner Haug said he would like to see a continuance of the mass transit system, including information on rail which will be discussed later in the series of meetings. Discussion was held concerning alternatives and commuter rail along the Hwy 99W rail. Mr. Seeman said the peak hour trips was 160 in relation to 55,000 trips on the corridor. At the relatively high cost of providing the service, it was dismissed as a likely and approved alternative. Mr. Seeman said that the bus routes and mass transit were considered - but it was the commuter rail that was dropped. Discussion was held concerning future expansion of light rail. Mr. Seeman said extended bus-routes and trunk service was also considered.

Buses can run through Hwy 99w and serve the core and to Sherwood or all the way into downtown Portland.

Elijah Dixon sauid that it would probably have an intergovernmental agreement with metro. Mr. Brierely said the City could provide its own form of mass transit and have connection to its system and manage their bus system.

Commissioner Haug reviewed the new streets which would have to be built and the costs associated with the work but it is yet to be determined. Mr. Brierley said in looking at the new streets to be built, quite a few of them have to be built because of the bypass anyway and moving and re-routing other streets. The other major part seen are roads that are going through developable property when constructed and when the property adjacent is developed.

Mr. Michael Sherwood addressed First Street. Mr. Seeman said it is 35,000 cars per day about the bypass - in the 20-25 yeare future. With the bypass, we would be able to take away 60% off the load of Hwy 99W. Mr. Sherwood said the re-routing of downtown street packaged with the re-routing streets for the bypass. Mr. Seeman said that the city can do it if they want and spend the money, it is not required and it is more of a city enhancement and not necessary associated with the bypass and ODOT would probably not participate in the funding - pretty much a wait and see approach. Mr. Seeman said it is realy a steet

Dick Meyer said that if we go outr 2025 and even with the bypass we would still have the same amount of the traffic because of the increase in traffic. Mr. Seeman said that ODOT has a volume to capacity and levels of service ratios which are taken into consideration. In the long term future, the system will comply with those standards.

Commissioner Haug said there is the same amount of cars may be about the same, but the truck traffic will be lessened. The purpose of the bypass is to carry the heavy truck traffic and have more of a community.

Mr. Brierley remined that the second workshop is on November 20th at the Newberg Public Library. They will focus that workshop on the improvements on the east and north side of town. He would be available for further questions along with Dan Danicic, Jim Bennett, Mike Soderquist the community development Director. Mayor Stewart was also in attendnace.

Commissioner Haug said he did not believe there has been enough community input with traffic issues. Discussion was held concernign wrapping up a TSP wich incorproates all the altenratives to be prepared within a month - Mr. Seeman said it would be the second week in January or so will have a draft TSP for staff review and the technical advisory committee. He said about March, 2004. Commissioner Haug said the Planning Commission will consider the draft propsoal.

Mr. Seeman asked about the 1986 study for each of the study before the next meeting and a more substantitve discussion at that time It does not juset have a transportation, but a marketing and economic issues. Commissioner Haug said that the next meeting will probably entail Oxberg residents. Discussion was held concerning a workshop in the affected areas. Discussion was held concerning re-routing of certain areas and opportunities to revisit it - including the downtown association. Discussion was held cocnerning extending out the draft proposal time line to allow for more full disclosure.

IV. ITEMS FROM STAFF

1. Update on Council items
2. Other reports, letters, or correspondence
3. Next Planning Commission Meeting: February 14, 2003

Mr. Brierley said the closing of the planning Commission vacancie applciations close tomorrow.

V. ITEMS FROM COMMISSIONERS

VI. ADJOURNMENT

The meeting was adjourned at approximately 9:00 p.m.

Passed by the Planning Commission of the City of Newberg this _____ day of __________, 2003.

AYES:	NO:	ABSTAIN: (list names)	ABSENT:

ATTEST:

____ ____

Planning Commission Recording Secretary Signature   Print Name   Date

INFORMATION RECEIVED INTO THE RECORD AT THE , 2003 PLANNING COMMISSION MEETING.

THIS INFORMATION IS ON FILE AT THE COMMUNITY DEVELOPMENT OFFICE ATTACHED TO THE MINUTES OF THE MEETING AND IN THE PROJECT FILE IT PERTAINS TO.

PROJECT FILE #

LABELS FROM THE //03 PLANNING
COMMISSION MEETING FROM
THOSE WHO GAVE PUBLIC
TESTIMONY/ REGISTRATION CARD

Be sure to add file number by name
on each label

TSP Workshop 11-6-03
William Holmes
1500 S. Sandoz Road, #34
Newberg, Oregon 97132

TSP Workshop 11-6-03
Julian Labadie
PO Box 114
Neweberg, Oregon 97132

TSP Workshop 11-6-03
Daniel A. Seeman - Kittleson &Assoc
610 SW Alder, Suite 700
Portland, Oregon 97205

TSP Workshop 11-6-03
Donnald Alexander
1112 N. Klimek Lane
Newberg, Oregon 97132
TSP Workshop 11-6-03

TSP Workshop 11-6-03

PLANNING COMMISSION MINUTES
THURSDAY, NOVEMBER 20, 2003 AT 7 P.M.

SPECIAL TSP WORKSHOP SESSION #2

Newberg Public Library - 7 P.M.
503 E. Hancock

Subject to Approval at the December 11, 2003 Planning Commission Meeting

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I. PLANNING COMMISSION ROLL CALL

Planning Commission Members Present:

Dwayne Brittell
Matson Haug
Louis Larson
Dennis Schmitz
Philip Smith
Nick Tri, Chair
Richard Van Noord

Staff Present:

Barton Brierley, City Planner
Barbara Mingay, Planning Technician
David Beam, Economic Development Coordinator/Planner
Peggy Hall, Recording Secretary

II. OPEN MEETING

Chair Tri opened the meeting at 7:00 p.m. He announced the procedure of testimony. Citizens must fill out a public comment registration form to speak at the meeting.

III. DISCUSSION

1. Transportation System Plan Workshop Series 1 of 3 - File GR-25-01

Workshop #1:	November 6, 2003	Newberg Public Safety Building
Workshop #2:	**November 20, 2003**	**Public Library - lower level**
Workshop #3:	December 4, 2003	Newberg Public Safety Building

Planning Commision specialworkshop
Noember 20, 2003

Schmitz absent -

Discusson was held concernign the 4th workshop not previously scheduled. the pc wants to have a workshop on downtown developments - tba. Next meeting t the Public safety buildlig (3rd and Howard) - On December 4, 2003.

Dan Danicic- City engineer - Dan Seaman from Kittleson & Associates - traffic engineering. Mr. Brerely said that this is a workshop. Over the past year, the City has been working on a revision One of th changes is the information on th bypas and ODOT's recommended route which invlves thelocal street system with the construction of the bbypass.

Mr. Seaman said three ae 4 meetings and workshops to discuss the features of the plan. Consider that these recomendaions are simply that. They hve been working with a technicl advisory committee. Th PC is very interested in the inut of the public and ODOT. The subjetct area for this meeting:

1. How should the Hwy 99 interseciton with Vittoria Bejaman and KlimekLane shold be conructed ?

Tdhere is a project oversite steering team - location has been decided and the recommendation is being formalized. The east end divurts to the and cross highway 219 at an intersection. A connection to the bypass would be at the Hwy 219 and another connection just north of Dundee and contnue to McMinnville. 4 lane road and there is a single connection - Hwy. 99W at east of Newberg - two connections to the bypass. Much of the planning they are doing is in response to the affect that the Bypas will have on the road system. It is an update from a 1994 plan. The anticipated growth and th efet of th bypass on the system. Within Newbeg, the alignment, those crossins of the bypass is actualy a connetion through an interchange.

2. What affect with the bypass have on those connections Vitoria ay, Benjamin Road and Klimek Lane?

It shows the influene area of the interchange of the bypass with Hwy 99W. There is a minimum spacing of highway 99W - nearest the interchnge - close access to maintain the integrity of the ramp system and the bypass. Vittoria Way is a minor collector street in the plan to be reconfigured to allow right in/right out acces because of its proximity to the new signal at the northern arterial and cros Hwy 99W. Klimek lane to no longer have avcess due to influece area. Klimek would have access to a new road to be consructed and exended southward as a major colletor and no longer a minor arterial. A spur would be provided eastward to the facility to provide access to thos propetis that wouldnot have access to Klimek Lane and likely undercross the bypass. It is not shown where the other developing property and fernwood. The connection goes across the bypass and intersects with fernwood to provide access to Hwy 99W and Springbrook. the properties eaast of the bypass wold have two connections: 1) one north immediatley south of Hwy 99 and then (2) Fernwood.

Recommendation for those streets
Vittoria way - right in/right out

Benjamin road- wil not have direct access to Hwy 99W any longer. They are recommedning a local steet connection be provided parallel to Hwy 99W to tie back into th northern arterial. Actual alighnement ad intersetion configuration (to be connected fromm northern arerialto benjamin). As development continues - the alighnemnt of the road would occur We know that it is constructed on the north end of crestview and connect the dots - similar to the south and the spur to go eastward to the other side of the bypass. They are recommending treatment to the facilities.

Commissioner Haug asked who the people are on the advisory committee. Mr. Brierely said there are representatitive, County Public Works Dirctor (Gilley), City staff - dan and barton, Paul, Odot, DLCD . Commissioner Haug said it is in our best interests if tey are available to make recommendations. Contat informaton would be important and who is in the audience from that group.

Alan Fox - ODOT projet Manager, ______________________ Manager of (female).

Commissioner Smith addressed street changes and some may be immediate. Some streets may not be so imemdiately - what is the time frame Mr. Seaman said it varies. Properties will be provided immdiate access. When Benjamine Road is not provided access to wHwy 99W, ODOT will make very effot to make access available.

3. How should the city plan access in developing areas in the east side of Newberg naer Hwy 99W?

From a capaity standpoint alone - there is enough access (standard and general) - from a srict capacity standpoint - Fernwood Road has sufficient capacity. For properties in east Neewberg, this is tyhe kind of access with specific crossings.

Commissioner Haug said whre the northerna arterial cross Hwy 99W to the south, (Crestview/Mountainview extesion) that wil be a fully signalized and access - all 12 movements available at the intersection.

Commissioner Smith addrssd the spine road and for future access. The shaded areas n the map are designated URA and the UGB is also defined. All that property is outside and they ae confining the TSP wihin the URA and UGB.

Sia Micash(?) asked where the golf course will be located. Mr Briereley reviewed the location.

Commissioner Haug asked about the golf course and the roads iterseftio fernwood (southern extension to allow crossing to Wilsonville Road. Consideration for outside of the City's jurisdicton? Mr. Seaman said that thre is narrow response and it is outside the jurisidccito. The City wold need to facilitate changs trough the TSP that says the city recommend the County seriously consider certain things. In the eventuality of the property, the proeprty is brought into the UGB, good north/south access would be made availalbe to Fernwood Road.

Beth Kaiser - what is the significance that this property is going through the UGB. Mr Seaman said that OREGON hs properties defined in the UGB - every jurisidcvtcion/city is requird to develop this boundary that they cannot provide urban services. The idea being that those lands NOT inside the UGB ar not available for urban services: streets, water, sewr. there is a process to bring land into th UGB and the city wold hae to justifiy the need for expansion. Discissuion was held concerning costs.

Joe Sheevy - in regard to Corral Creek - is it impacted by this? Mr. Seaman said it is related - the interesction with Hwy 99W - it is outside the City UGB and intersects with Hwy 99W on Rex

Hill. As he undersands it, the current plan there are a lot of issues to work out. In anay case, Corral Creek would be designated as right-in/right out acces wth accelleration and deceleration lanes. - limited access to Corral Creek. Corral Creek indircty connects to Fernwood ad provides access to Portland.

Alan from ODOT said tey wold be studying the bypas interchange.

Karen ______, when making the decision for planning, what is the time frame for modiications to th other strets. Alan ___ said tey wold be designing the bypass in the next few years. It will be a few years out They will make the design propoals. the bypass itself will accessed to other strets - 2 to 4 years well in avance of bypass constrcution; Vittoria Way and bejamn.

Roy Gather- asked abut the grade of itersetions and crossings? Same level or are thre going to be different levels -thre is other traffi than automobile traffic which could affect bicycle and other pedestrian (non motorrized vehicle and pedesrian implications wth this). Mr Seaman said the next emeting will discuss the other modes - December 4th. The discussio tonight wil be decided by automobil traffic. We should not exclude the other modes , but there will have other provisios for other modes of transpotation The roads that willl have access to Hwy 99W - will they have access for non-motorized traffic. Mr. Seaman said there is no reaso for pedestrian traffic to Hwy 99W. Certainly, where there can be pedestrian ad bicycle access - there shold be. Disussion was held concerning the various grades. There is not a necessity to limit the access for pedestrians or bicucles. If the street is steep eough and not handiciap accessible - is the imrovement going to be made as part of this project? Mr.Seaman said that it is not determined. Alan said there will be some certainty about te various grades and the TSP will decide whih streets will cros the bypass. Mr. Seaman said the red lines on the map (crossing over or aunder), the sreets will cross the bypass. There are grade separated crossings nd wil have bicycce crossings where appropraite.

Commisioner Smith discussed grade sepration and how the pedestrian walkway appears to be caged. Alan ODOT said he is not sure and it wil be dealt with at the desin phase. They are committeed to "contact sensitive design"

Commissioner Brittell asked if the crossngs (Montainview - South bypass and Hwy 99W.) Havethey been fully discussed thoroughly as they are 6 blocks away from each other. Why not have on busy intersecton instead of two. as they are 6 blocks away. there is a projet oversight steering team (SOTT) and thye have considered the movement to satisfy the purpose and need for the bypass with Dundee, County,City, the state reps. Th road s designed to be a bypass thorugh Newberg and Dundee, anumber of alaterntives wre cnsidred for flow of traffic through the cities. The ultimate alighnment wold be aroad to divurt at Hwy 99W and go around the 2 towns and then tie back into atMcDougal corner.

Tpae 1 - Side 2:

Discussion was held concerning flow of traffic and the movement back. There was a lot of discussion over the 4 year period.

Commissioner Haug said at th lat meeting he recommended studying the Hwy 99W intersect. the Hwy 219 wold bisect the hwy to the north and the existing tate highway would not be the same They ahve discussed thigns with ODOT. Mr. Seaman said that where Hwy 219 comes from St. Paul and uses Hwy 99W and north on collegeout of town - Hwy 219 ties in and someoe uses th bypass to come up nd connectup witthe the northerna aterial and eliminate al triffic through town The northern arteiral wold be wraped into the major intesction/interchange - reconfiguratio of the design. Tey wold like to give i credence and the analysis describd. the purpoe is a bypass o Hwy 99Wand essentialy not Hwy 219. That does not fit th purpose and need of the proejct. Mr Haug said it woud impct long term plannikng.

Commkssione Brittell said the decision was to have 2 access points and it apars tat ODOT has made the recomendtio. There were quite a few public meetigs and the alignment that wil be taking place. If going on bypass and ant to go to Neewerg, and you miss the interchange, thre is not ability to make the movement back. Mr. Brittell said that he would note that it would make better sense to have one big intersectio versus two or other movements. Discussion was held concerning the Hwy 219 access ponts.

Alan (ODOT) said tat this alternative wasnot one of the alternatives as part. He notd that the Commissons suggested would be treated and screened and it is really a new concept or a design area They will suggest whether or not it gets forwarded on.

Commissioner Hau asked ofor purpose of bpass. If consier te bypass to allgiate and facilitie traffic arod NewbergDundee - tre i anothernaterial route. The purpose is to imrpove the flow of traffic in Newberg. Th current adopted purpose and not in tyhe terms of the state's plans. Alan said that access to the bypass to the local roads is not part of the project. Thy are very focusd on the bpass being a true bypass btween NewbbergandDundee - He said he would like to meet with Matson Haug. Discussion was heldconcerning feedback and he did not want to get into the idea at this meeting and would behapy to meet with Commissioner Haug at a later time. hey wil respond in th way outlined.

3. What street sysstem shold be plnned in the URA in the Nwerg City limits? He said the URA's are int eh shaded areas.

- Bell Road shown as a city street and a major collector to North Valley road impoved to a major collector standard. Projcts are putfoward to irove the orad
- Foothills extension to th east.
- Villa Road extensions
- east/west extnesion to Vila oad to Emerfy.

All streets are major colletors.
Bell roadproperties

While in area - te nothern arterial which is Mountainvew and crestview and the current tsp would be a mmore direct connectio (not having two right hand turns to provide for btetter movement.

Some of the ocal streets wold be closed and reallighed (Zmri drive). The putnam road extension wold connect to springbrook as properties devlop in the area

Cost of hte overal plan - mmost osts wold be borne as development happens.

Commisioner Haug adrssedensity and acces to Hwy 99W to th Coast. discussion was eld concernign consideratio of the flow of traffic. He sees the growth, but feels there is a major problem with th intesetion at Hwy 99W and the bypass. Discussion was held concerning the extension to the existing bypass to the ocean

Markaret McMaster said she lives in the north end - and travel to the beach , she may just usethe existing streets rather than the bypass due to the congestion.

______ he wasnot sure about projectig the amount. He addrssd the work force plan and affordable housing. We have to assume that not everyone would be using the bypass. People will be channeled onto Hwy 99W and the interection to Hwy 219. The question of timing and modificyng to help the reduction of the traffic. Mr. Seamsan said i order to analyaize, te4y developed the traffic forasting model - related to the densit of traffic on the street. They developed temodel basd on the popultion of the commjnities that contribute to the traffic vouesm it the area. They ahve calibratd that model and they have a good idea to provide for the acceptable level of service. The recommendd plan is to meet the standards. They will continue to operate the connction

Discussion was held cocnerning transportation and housing and how it relates to housing patterns chaning and more like Lake Oswego with wok force not workig in Lak Oswgo but they live there. Affordable housing goig away.

Alan - ODOTO - they are not going to replceany housing due to the bypass. They are going to continue to talk about affordable housing. The purpose of the bypass is an assumtion that it will induce commuter trips The modeling does not indicate that, especially in Newberg. They are hoping that th bypass will enourage economic develpment and solving th congetion propblem. The jobs, housing balance that is not as clear but - not sure of the inbalance of h ratio. M. _____ said thre appears to be a mis-match ad the housing availability - thos ehomes are going to be purchased by others. Alan said tey are working with th housing and community services department, Newerg will be stepping up and taking a role.

Commissioenr Larson said at the intersection of Villa and Mountainview consideration to make mor user friendly. When going north on Villa - and stop, you are faced with division obstacle due to vision. there is a right feeder and beyond on-going traffic. the vision will be impaired due to backup and the design. Discussion was held concernng reconfiguration of certain intersections. Mr Breielsy said there wold be traffic signals placed accordigly. Mointainview Drive would probaby be improved at the same width and it would solve problems in making the streets moreaccessible. The GFU sport complex will make half street imrovemens on Villa Road. Mr. Seaman said they are developing new street standards (local, collector or arterial), they will make the frontage imrovemnts to improve th street. The extesion of vlla will be constructed to Villa. the standard will be applied. Discussion was held conerningprioritization.

Michael Sherwood lkve onparrettmtn road and old parretn mtn road is a safty isue now. The only breather they get is the top lights at Fred Meyer. There has been about 15-20 accidens ove ra 12 year period. He woukd like addressed in future planning dicusisos. Haugen Road is beyond the Parett Mtn Road.

Russ Brandt - in rgard to mountaivieew extension, if look atMontaiview and beond wHwy 219, are tey going to plan Mountainviwe onto Hwy 19 a diferent time Mr. Seaman said they will extnd from Chehalem Drive and not to Hwy 240. Mr. Seaman said they did some modeling to find out th traffic. In absene of the appropraite system, discussion was held concerning traffic coming dow through to Hwy 240. Discusson was held concernign a conneton at Hwy 240 to accommodate trucks to go around and also from St. Paul. They wold come around Mountainview and around the northern arterial directly Mr. Seaman adressed out of directio traffic and a higher speed which may be a different altearnative. Since they opened up te Montainview intersection comng dwn Main stret and going out Hwy 240. The volume of traffic that is making thatmaeuver is not high enough and the difficulty in what we are gettin a goal exception to build a road outside th UGB and URA andthey hae to justify the change. It is a difficult case to make. Discussion was held conerning Villa road chanes. Mr. Seaman said to provide the connefton back to Hwy 249 is long range piture. that area needs to be fonsidered for annexation into the UGB - not right now designated as URA. - provide urban services.

Dorothy ______, aske dif thr was consideration by limiting access to right hand north, wold it not impct Old Parrett Mtn. Road and (Schaad Road). Corral Creek is a major access to Hwy 99W. Not sur about the speeds, but the number of gaps in th intersections. It is mor elimited visibility. To coordnate this plan with the county roads. It is important to coordinat with th County.

Commissoner Haug said thre ar eserious intersection problems. If coming up bypas and no ights, it wil be more difficulty on th stretch and wil be ipossible for crossing Hwy 99W.

4. What changes shold be planned for the illionois nd Hwy 240 intersection? They asked people to identify things and problems that they have. Mr. Seaman reviewed the intersection and the unimpeded access onto Illinois. It is poorly aligned and thre is a problem. There is not a high incident of accients, but there is not a high level of problems. As headed east bound on Hwy 240, you can turn left (pockt) to turnon Illionois or N. Main- wth a double stop. the alternatives:

1. realign the whol thing to asignalized situation- wich makes the major movement from downtown a leftturn and can have certain land purchase.
2. Lower cost - looking at priority streets anmakig Ilinois and culde-saccing it and allow other streets to operate in a more traditional way.
3. A roundabout - it would require a lft hand turn for movement out of town .
4. Disconnect Mai street from ntesection same as iLLINOIS and makig it a culdesac. In thecase

of Main street - three is a reasoable alternative to make their way around
5. Furher separateing th two intrestions longer by impacting theproperties in the ne corner and curving main to illinois nd making a bigger spur. they did not get a strong prefrence in any direction.

Margaret ___ - sid she would throw out #5 closing Main Street - it gives altearnaive for going north and south into th housing area. The rondabouts and hopes someone tell th person that is restorign th lot to not - Closing Illinois apears to be the best and least expsive except for the traffic - north of th railroad tracks.

Commissioner Smith said washington streetnext to FMC is a good street- but north needs to be iproved. He prefers tis. The most of the people that use it is th employees

If routed through orth and washington and neighboroods omes and impact th guy that is retoring th hous and can big trucks handle the cornrs well. It needs to accmmodate them - 130 feet diamter of the roundabout. What would be the impact of the neighborhood - taking out 1-2 houses on the corner and expanding the situation like you've got.

Commissioner Brittell said he would be against th North street situation. He said he has 7 grandchildena nd he lives i the area. He does not like the one putting more traffic on North Stret. Mr. Seaman said he personally likes the roundabout which will take out the historic house. He doe snont like to see land use issues He would recommend other altarntives. Why dos Hwy 240 need to be a 45 dgree angle -and improve the highway. discussion was held concerning providing another altenraties and the changes to the state highway.

Commissioner Haug said taht we can elimiante Hwy 240 and taking ountainviw road extending to Hwy 240 - call it Hwy 240 and they wouldnot have traffic on Hwy 219 and Hwy 240 going through town. Eiminate state highways and truck traffic through town. Montainview wasnot made to stay state stnaards They are going through resiential areas.

Mr.Seaman said that anotyher element is that all traffiec on Hwy 240 is coming into town. Very little is headed on Hwy 219 or hwy 240 - most of it is going to Hwy 99W. Most o the traffic is by inner-city traffic. Discussionn was hel conernign a natural extension of Hwy 20 and a significant economic develoment potntial for the city. there is no route around the town. An adequate transportion sysem is good for jobs and housing. What about putting signal at Hwy 240 and Illinois. Mr. Seaman said no and what about the cues (50 foot long approach) and threare vehicles cuedinto the stop signs and the exiting vehicles would requir two signals closing calculated. There is a greater of loss time and they are now operating at an A or B level of service. What about th person comingon Hwy 40 that wants to turn onto Main or Illinois. Once exceedig the left turn capacity, three are issues.

Comissioner Smith addrsed culdesacing Main Street - there is land already in the UGB and URA. - Main could be culdesac'd but wold be trapped. Mr. Seaman sad there are land use impacts and taking houses and waterways. There may be a need for a special study with more input and analysiss.

Kathy stufer - clarify the spine road (focused on the cetner of the developable road -ke that runs from Fernwood from Hwy 99W - east road of Springbrook Creek. Impact estmated at Fernwood road that is diferent from th sitution. There is soewere in the range of 300-500 homes that could be develped in that area accesing Fernwood Road - 9.5 trips per day - that traffic would be 3-5,000 trips a day onn Fernwood beyond the bypass - It would be traffic on county roads which wold need to be coordinated. The YC public works director is o committee and he is a ware of the situation. the County wold further consider the issues. The mechaism for formal action with the City/Cunty action- technical advisory committee. the County can comment and give impact that tey think that fernwood roadneeds to be bigger.

Bll McMaster taking traffic onto Chehalem Drive onto Hwy 240 - that is a dangerous corner coming over the hill - without a light there would be a major problem. Mr. Seaman said the Conty coordinaton and they can talk with County Commissioners. the red lnes on the map are major collector facilitis are bike lanes - those streets wikll be equipped wth bike lanes.

________ - whre th traffic goes south, how do they get out off Fernwood. Mr. Seaman said the land uses that comproie the trffic model icluees propeties in the UGB and the traffic wshown on the model doe snot iclude th properties outside th UGB. there are not well refleted on the map for Fernwood Road - however, the kidn of quetion is the methology for th traffic. Discussion was held cocnerning the use of Renne Road. He sid there was accidents and some roll-overs on an area that is a county issue that can be partially mitigated bby a city project. Fernwood is a major colletor wth a 36 foot width. Zthe City is obligatd to provide the demand for th city. ___ said there has been an inrease in the traffic. His main concern is the noise and safety. the minutes will be forwarded to the County commisioers.

Roy Gatherpole - accessibility and City requirmnts that deal with more than 50 emloyees. There needs to be an evaluation of the acccessibility an dimpracts n the tranporation in Newerg to be doneby Janyary 25, 2003and there is no plan on doing that. That is in th form o self examtion - efton 504 of the Rehablitation Act. and there are problems in getting in and aroundNwberg. Mr Gatherpole addrssed th requirements for providig acces. If one travels from eanywhre east of Newberg to the highschool (btween Villa dn Springbrook) - thre is a light for access - Thre is no continuation sidewalk between the high school and other loatios of th city . Disusion establish sidewalk in certain areas of the City. "undue financial burden". Any deficiiencies must be addrssed. Curb-cuts are missing. During the old fashioned festival, he had to park 5-6 bloks away. He sid thre were no curb cuts for a lot o the rout and he had to go inthe flow of traffic. He wanted to make sure that no one inolved int hsi process we did not kow that we had to do something about these isues. ADA i regard to cities - there is not executive enforement. Specifically, they count on these being addresse by courts. He addresssed those persons in wheelchairs at the fesival and the difficulty in a flow of contnuity. It aperas that moey has been spent in transporaton projects tat has resulted in taking illegal action in not performing ugrades prescibed by law.

Mr. Seaman said the next meeting wil cover, pedestrian, transit and bicycle system. Tey idenitfieid steeets and some needing sidewalks, etc. It is also a cost issue as well as a lgal issue. they are develping policies in the code ad they need to ddres the constituency of the citizens of Newberg

Mr. Gatherpole said that up to 20% of the value of the improvement - he will be watching the total costs o this projeft an figurig the 20% to be able to answer the ost of the ada compliance.

Chair ri thanked the udience - next meting at public safety builing o ecember 4th.

Tape 2 - Side2:

IV. ITEMS FROM STAFF

1. Update on Council items
2. Other reports, letters, or correspondence
3. Next Regularly Scheduled Planning Commission Meeting: December 11, 2003

V. ITEMS FROM COMMISSIONERS

VI. ADJOURNMENT

The meeting was adjourned at approximately p.m.

Passed by the Planning Commission of the City of Newberg this _____ day of __________, 2003.

AYES:	NO:	ABSTAIN: (list names)	ABSENT:

ATTEST:

____ _____________________________________

Planning Commission Recording Secretary Signature Print Name Date

INFORMATION RECEIVED INTO THE RECORD
AT THE , 2003 PLANNING COMMISSION MEETING.

THIS INFORMATION IS ON FILE AT THE COMMUNITY DEVELOPMENT OFFICE ATTACHED TO THE MINUTES OF THE MEETING AND IN THE PROJECT FILE IT PERTAINS TO.

PROJECT FILE #

LABELS FROM THE //03 PLANNING COMMISSION MEETING FROM THOSE WHO GAVE PUBLIC TESTIMONY/ REGISTRATION CARD

Be sure to add file number by name on each label

PLANNING COMMISSION MINUTES
THURSDAY, DECEMBER 4, 2003 AT 7 P.M.

SPECIAL TSP WORKSHOP SESSION #3
Newberg Public Safety - 7 P.M.
401 E. Third

Subject to Approval at the December 11, 2003 Planning Commission Meeting

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I. PLANNING COMMISSION ROLL CALL

Planning Commission Members Present:

Dwayne Brittell	Matson Haug	Louis Larson	Dennis Schmitz
Philip Smith	Nick Tri, Chair	Richard Van Noord	

Staff Present:

Barton Brierley, City Planner
Barbara Mingay, Planning Technician
David Beam, Economic Development Coordinator/Planner
Peggy Hall, Recording Secretary

II. OPEN MEETING

Chair Tri opened the meeting at 7:00 p.m. He announced the procedure of testimony. Citizens must fill out a public comment registration form to speak at the meeting.

III. DISCUSSION

1. Transportation System Plan Workshop Series 1 of 3 - File GR-25-01

Workshop #1:	November 6, 2003	Newberg Public Safety Building
Workshop #2:	November 20, 2003	Public Library - lower level
Workshop #3:	**December 4, 2003**	**Newberg Public Safety Building**

IV. ITEMS FROM STAFF

1. Update on Council items
2. Other reports, letters, or correspondence
3. Next Planning Commission Meeting: December 11, 2003, Dinner location TBA

V. ITEMS FROM COMMISSIONERS

VI. ADJOURNMENT

The meeting was adjourned at approximately p.m.

Passed by the Planning Commission of the City of Newberg this _____ day of __________, 2003.

AYES:	NO:	ABSTAIN: (list names)	ABSENT:

ATTEST:

____ ____

Planning Commission Recording Secretary Signature Print Name Date

INFORMATION RECEIVED INTO THE RECORD AT THE , 2003 PLANNING COMMISSION MEETING.

THIS INFORMATION IS ON FILE AT THE COMMUNITY DEVELOPMENT OFFICE ATTACHED TO THE MINUTES OF THE MEETING AND IN THE PROJECT FILE IT PERTAINS TO.

PROJECT FILE #

LABELS FROM THE //03 PLANNING COMMISSION MEETING FROM THOSE WHO GAVE PUBLIC TESTIMONY/ REGISTRATION CARD

Be sure to add file number by name on each label

PLANNING COMMISSION MINUTES
January 22, 2004
7 p.m. Special Workshop Meeting
Newberg Public Safety Building
401 E. Third Street

APPROVED AT THE MARCH 11, 2004 PLANNING COMMISSION MEETING

I. PLANNING COMMISSION ROLL CALL

Planning Commission Members Present:

Dwayne Brittell	Matson Haug	Louis Larson
Philip Smith	Nick Tri, Chair	Richard Van Noord

Absent: Dennis Schmitz

Staff Present:
Barton Brierley, City Planner
David Beam, Economic Development Coordinator/Planner
Dan Danicic, Engineering
Peggy Hall, Recording Secretary

II. OPEN MEETING

Chair Tri opened the meeting at 7:00 p.m. and announced the procedure for testifying. Citizens must fill out a Public Comment Registration form to be able to speak at the meeting.

III. ELECTION OF OFFICERS

MOTION: Larson/Haug to appoint Richard Van Noord as Chair. (6 Yes/1 Absent [Schmitz]). Motion carried.

Discussion was held concerning Commission members rotating the position of Chair. and Dennis Schmitz being Chair. for the next rotation.

MOTION: Haug/Smith to appoint Dennis Schmitz as Vice Chair - (5 No/1 Yes Smith)

Discussion was held concerning Mr. Schmitz' attendance at meetings.

MOTION: Haug/Larson to appoint Philip Smith as Vice Chair. (6 yes/1 Absent [Schmitz]). Motion carried.

IV. CONSENT CALENDAR (items are considered routine and are not discussed unless requested by the commissioners)

1. Approval of November 13, 2003 Planning Commission Meeting Minutes

Chair Van Noord entertained a motion for approval of the Minutes

MOTION: Haug/Tri to approve the November 13, 2003 minutes. (6 Yes/1 Absent [Schmitz]). Motion carried.

V. COMMUNICATIONS FROM THE FLOOR (5 minute maximum per person)

1. For items not listed on the agenda

VI. SPECIAL WORKSHOP
Downtown Transportation Planning

Mr. Barton Brierley reviewed the staff report providing a history of the Plan and stating that tonight is a workshop soliciting more input. They are not reviewing specific proposals at this time. Prior workshops discussed bicycle and pedestrian traffic. They are very important things, but will not be discussed tonight. They are not creating a detailed Downtown Plan. A plan that would look specifically into how to change street patterns, not details like street trees. They will discuss big issues but not specific detail. In 1986 the City created a Downtown Development Plan that addresses what the streets, benches, and street trees should look like. The plan has many ideas, some are applicable and some are outdated. There are a few recommendations to follow to complete the Plan for 2006. Planning takes money and commitment. Another effort was the declared future for downtown for 2020 - vision. In there, it has visions of the transportation system. These will be considered tonight.

1. Definite need and effort to revitalize downtown

2. Bypass is projected 8-10 years away- there are a lot of opportunities when the bypass is built - truck traffic will take a lot of that away.

3. Money - we need to see where the money comes from to do it.

4. PROBLEMS:
    - A. Traffic volumes
    - B. Traffic speeds
    - C. Truck traffic
    - D. Pedestrian conflicts
    - E. One-way only access

5. Strategies:
    - A. Street system alternatives - Main Street Handbook (11/99) with case studies - one of which is Newberg.
    - B. Lane configurations alternatives
    - C. Parking Configurations
    - D. Other elements; curb extensions, crosswalks and medians, etc.

6. Two-way streets
    - A. Pros
        1. Business visibility both ways
        2. Easier access
        3. Slower speeds
    - B. Cons
        1. Less traffic volumes accommodated
        2. Turning movements: may need more lanes
        3. Pedestrians just look both ways

Mr. Brierley said that a lot of downtown areas have one way streets and some have gone back to two-way streets - if you can have two way streets -you should.

7. How to Change First Street to A Two-Way Street -

Re-route eastbound traffic to Second Street or? (Unknown). Mr. Brierley reviewed the 1986 plan for traffic flow. The Planning Commission reviewed this - and smoothed out the curves. The example still shows traffic going through buildings and taking out real estate to do this. The east end of Second Street would avoid the Hoover Minthhorn House.

8. Second Street Re-Routing:
    - A. Pros
        1. Make First Street two way
        2. Make First Street a destination rather than a path to get somewhere else
    - B. Cons
        1. Impacts on Second Street
        2. Costs a big factor
        3. Land/buildings used
        4. Customer traffic re-routed also
        5. Extended downtown traffic area
        6. Longer distance

We would like to see what other people's experiences have been. The Fire Station on Second Street has had issues.

9. Change Lane Configurations
    - A. There are 3 lanes on First and Hancock Street each way
    - B. Each is two way possible post-bypass

10. Reduce to Two Lanes
    - A. Pros
        1. Extra space for parking; angled parking; wider sidewalks
        2. Traffic calming

        3. Shorter crossing for pedestrians
    B. Con
        1. Less traffic capacity
        2. Costs of reconfiguration

11. Parking Configurations
    A. Parallel, angled and parking lots
    B. Angle Parking
        1. Pros
            a. More spaces; easier to enter; traffic calming; downtown "feel"
        2. Cons
            b. More difficult to exit; more accidents possible; takes more widt; would require special state approval
        3. Special Transportation area gives flexibility on how to design traffic flow, parking and other elements

12. Curb Extensions
    A. Pros
        1. Shorter pedestrian crossing; traffic calming; more sidewalk width and aesthetic opportunities; i.e. sidewalk sales

    B. Cons
        2. Some cost; limits parking (though parking not allowed near crosswalks).

13. Crosswalk improvements

14. Medians
    A. Pros
        1. Aesthetics: pedestrian refuge; traffic calming
    B. Con
        1. Limited applicability; costs; maintenance; limits turning

John Bridges, 515 E. First Street Newberg, an attorney who has an office building and law practice on First Street that is directly impacted. He has specific ideas, but it occurred to him the City offices were closed on Monday for Martin Luther King's birthday. One lesson he learned is to have vision and NOT accept what other people tell you what you have to have for your life/community. This is an opportunity to think outside the box and create a plan that will allow us to reach goals loftier than can be imagined. ODOT is dictating how downtown Newberg exist as a community. He thinks there are obvious opportunities that exist for our community if a bypass does occur. We would drastically sell ourselves short if we don't plan for a better community. We ought to be looking at a two pronged approach, what we can take advantage of if there is a bypass. We need to have a dual plan, with and without a bypass (or until it is done). As a business owner in the community and someone who has had to interact with government, he is not satisfied with just doing what they tell us to do. The goals, in the short term, ought to be cost efficiency and returning the couplet of 2 lanes on First Street and on Hancock. ODOT said that it could happen if the bypass is built. Once the bypass is built, trucks will be gone, but there will still be 22,000 cars a day. Now, the 22,000 figure would enable us to reduce traffic from 3 lanes to 2 lanes. If traffic is reduced from 3 to 2 lanes, he prefers diagonal parking which will result in slower and quieter traffic. Why 2 lanes with couplet (cars through)? Where else on Hwy 99W is there 3 lanes, in Dundee there is only one lane). To the east, there is a small segment with 3 lanes and a median that does not allow pedestrians. Travel through King City and Tigard is accomplished with two lanes, we ought to be able to manage. All those places are not the same as couplet and built for pedestrian friendly activity. He has not researched one his own, but encourages research to see if the couplets are good for the pedestrian friendly businesses. He also recognized that ODOT would not move that far. Second Street is a $10 million waste of money.

Commissioner Larson said if we go to one way from two way we create an island for downtown and cut it off from the rest of the community. Mr. Bridges said that we don';t have $10 million to do the work.

Commissioner Haug asked Mr. Bridges his thoughts on slowing down traffic on First and Hancock Streets. Mr. Bridges said that the speed should be reduced, but there is an enforcement issue. Discussion was held concerning speed bumps, lights and diagonal parking. Mr. Bridges said diagonal parking requires traffic entering and exiting the lanes. One way people drive faster. Mr. Bridges said to slow down, pedestrian lights should have more control over traffic. The focus of your vision ought to be that this segment is completely built and committed as a pedestrian zone. Let's recognize that our road needs to change if that is to happen. When was this a viable, walk able area, at least 20 years ago. Mr. Bridges said a pedestrian zone is completely building a high density urban area and the goal in that high density urban area is to encourage pedestrian traffic vs Portland Road.

SIDE 2 - TAPE 1:

Mr. Bridges said the reason most businesses failed is we are not giving them an opportunity .

Alan Fox ODOT - he does not speak for ODOT on this matter, this is an operational matter, Regional Maintenance and Operations people. In the Main Street Handbook, a bypass or Special Transportation area is offered as an alternative. When you don't have a bypass, you can accept a higher level of congestion with greater flexibility with design standards. Maybe you want to have an alternative strategy. He is doing everything he can to make the project a reality. Would you ask ODOT to help design if there was not a bypass. Why have autos on first street at all? Make it a pedestrian mall bypass. Traffic is moving adequately now, but will increase by the time the bypass is complete. Future traffic volumes should be included when discussing options.

Lorraine Hall, 114 S. Center (corner of Second and Center Street). In May 2001 the Newberg Transportation Task Force decided to move traffic away from First Street and listed 18 projects and priorities. ODOT had no interest in seeing this happen. In the summer of 2002, the state was not interested in funding a new road bed. Another issue is that many people making suggestions did not realize 63% of those impacted are residents and there 37% businesses. Residents would lose front yards and it would condemn them to a dismal future they didn't intend when they invested in their property. Mr. Dave Bishop said that ODOT would be tied up in court. She is not sure why this was split into two one-ways. It is frustrating to even consider this and sacrifice the residential, the schools, the churches and the fire station. It needs to be off the list and stay off it. Don't think of turning Second Street into a State Road. Why aren't we using the creative approach. We did not need to knuckle under to ODOT. We should fight to get back down to 2 lanes

Alan Fox said that the reasons given seem to be logical, but there is a lot of demand on the few dollars available. He said it didn't seem likely. They are guarding the money for the bypass. The issue of jurisdictional transfer of Hwy 99W should be discussed at negotiations for street improvements etc., with Newberg taking back Hwy 99W. While the jurisdictional transfer is an assumption with the bypass policy, it is not a given. Is it more functional as a State Highway or inner-urban issue?

Commissioner Haug said that John Bridges mentioned traffic calming. What could ODOT recommend that would be reasonable, and make it a little safer and more comfortable to walk down into the area and still handle traffic. Speed bumps are not on the list. There are flashing lights and strobe lights. Mr. Fox said the book has ideas on traffic calming. It is fairly well accepted that an urban structure with wider sidewalks, street tree plantings, medians and bulb-outs have a calming effect. Mr. Fox said he is not the planner for the area and he cannot speak to those issues while representing ODOT. He is the project leader for the bypass not the planner for the Transportation Plan. He can only put out ideas for review on the Transportation System.

Commissioner Smith said, suppose the City comes up with various, creative proposals for slowing traffic, what would be the criteria to apply to these proposals. Mr. Fox said it is already at 25 mph and they are not obeying it. Traffic calming is the way to go that does not take any change to th. Try to see if they can really live with that. His idea is to get more officers to ticket people. Discussion was held concerning raising the fines for a money making proposal. Commissioner Haug proposed a $250 fine if speeding. Mr Fox said that in Amity the police enforce it and fines are double in school areas.

Commissioner Brittell asked about Ms. Hall's statements about 63/37% for land for Second Street couplets. He can't see more than 17 residences and does not have anything to do with problems with residences and businesses. Ms. Hall said the proposal was for a much longer section of Second Street. There are quite a few apartments, she encouraged the Commissioner to walk the neighborhood, take with the people, count the houses and businesses and find out for himself. These are huge decisions that impact people's lives. Commissioner Brittell said that he challenges the length of Second Street (full length of it).

Commissioner Haug said that Mr Bridges said, even if we put traffic off First and onto Second, no one will be able to get inside that area. The question has to be asked and answered, if we make Second Street a highway, would it really help? Ms. Hall said when asked, as the proposal reads, would they be for it or against it, 99% of the people said NO. What about store front space and who would be interested in the back of the store? The committee made a two page recommendation for improvements.

Kristen Horn, 610 E. Sheridan Street, also the President of Downtown Association dittoed what Mr. Bridges said. He said it is a good time to say that he and a lot of people assumed that she was proponent of Second Street strategy even though she had never expressed it. She is in favor of doing something, but not waiting for the elusive bypass to happen. We have to come up with a better plan. We need to take the bull by the horns and do something. She dittoed John's comments. She said moving Second Street is not a good idea. She lives downtown and it is worth demanding improvements. We have to project the National Historic buildings from the large trucks streaming by the buildings. We have not taken appropriate measures to protect the downtown area.

Attachment "B :" (Downtown Vision) Some were with us at the time the vision meetings were held in 2000, and they worked hard passing out flyers to the community. They had 125 people at the first meeting and it was the most successful meeting the City had ever seen. That document and what the majority of the people wanted was discussed. There was a lot of public input. The proposal said we would do two-way streets.

Commissioner Brittell - read the statement from paragraph 3 which is Exhibit B. Ms. Horn said there was a very well attended City wide meeting dealing with that. The citizens involved said that was absolutely not what they wanted and would not go along with it. She remembered that the City said they would take it out of the mix. Ms. Horn said the future fair was that the bypass was not a reality. One of the things brought up was that the bypass may never happen and we have to have that traffic flow. She believes the bypass is going to happen and the plans we make now for the downtown should assume it will happen.

Commissioner Haug said there is a problem with money, the URD fell apart. The idea of slowing down traffic as a means to generate funds. Commissioner Haug asked how are we going to raise money. Is it too late to rebuild the road and we get Hancock Street. Ms. Horn said having 3 lanes allows us to have 2 lanes and have a center area or more parking. Discussion was held to get back to the 2-way First Street and Hancock and City ownership with highway down the middle and slow it down. Ms. Horn said we can't say it can't happen and we have to be forceful and do this.

Bill Womack, 304 W. First Street said that it would drastically affect them. Mr. Bridges is right on the money. We need to make do with what we have. We don't have the money to make it happen and we need to make do with what we have. The traffic is faster than the posted speed. He would like to slow the traffic outside of Newberg. They take the back roads to McMinnville. It is difficult to listen to sometimes, it is like the tail wagging the dog. We need to set up Newberg to provide money and safety for her citizens. He is hoping the bypass will come through and the traffic will be reduced . People that live here know the streets. The people that drive through, speed. There has to be an alternative to spending money on Second Street. Mr. Womack said Germany has speed traps. We need to reduce the labor factor.

Sally Dallas, 115 N. College Street, also on the budget committee and owner of the Newberg Frame Shop, said if we do not have a vision for the future it would never happen. We encourage commercial businesses. She does not want to see things stifled and we have to assume and make things improve. Think positive.

Commissioner Haug said of the 1986 Plan: How much of that Plan was not completed? Ms. Dallas has to think beyond what a few have brought into the community. We have to sell it to the community.

Commissioner Smith addressed downtown being pedestrian friendly. Does pedestrian friendly go along with economic development? Ms. Dallas said a pedestrian mall did not go well in Eugene.

Michael Sherman, Fire Chief, 1307 Brook Drive, Newberg, 80% of the Fire Department are volunteers. We dealt with the Second Street detour and it was a nightmare. It does not mean it cannot happen, but there are complications. He lived in a community in California that chose years ago to take what was proposed as a 3 lane road to improve the traffic flow and turned it into 2 lanes. It went down for about 8-10 blocks and traffic slowed down. The speed limit was not an issue, traffic could only go 15-20 mph. There are ways to think outside the box. If we don't - our kids will be dealing with the same problems.

Discussion was held concerning the cost to convert to 2-way. Mr Bridges said reducing from 3 lanes to 2 on Hancock and First Street.

Lon Wall, 625 N. Morton, Newberg spoke on the following issues

A. In his capacity as representative from the department of redundancy, John and he have been on opposite sides. As an attorney, he was absolutely brilliant and his comments and ideas were right on. He thinks a lot of things and attitudes have changed. We need not speak up for our benefit, we cannot be deterred from that.

B. Regardless of details, when he sat on the body for 6 years, many times they were told they could not do things on First and Hancock Streets because ODOT did not want it. Do we really want to concede the right of way to ODOT.

C. If the City of Newberg and the County of Yamhill do not make a commitment to deal with residential growth, our discussions tonight and this hearing are really a superfluous joke without planning. Hyper growth is right at our doorstep and we will have bigger problems.

Kathy Thelander, 212 W. First Street, Newberg, as Lorraine and others mentioned in the 2001 meetings - she was told that Second Street would be taken off the 1986 Plan. She said when she received the notice she was surprised. Her home is a 1916 bungalow and she loves small towns. As a single parent she works hard, she puts up with traffic has complained about air brakes, and sees that her house is on the chopping block and she takes offense.

Commissioner Haug said it was a Transportation Task Force work shop and they will go through the recommendations to the Council. They have to sort through them. We want to make a recommendation -adopt city ordinances and city laws. Their group was lead to believe that it would be removed from the board. Commissioner Haug said that they will be feeling this out and there is a lot of opposition to go Second Street. The detour was a negative experience on Second Street

Commissioner Brittell said that it has not worked. He hoped that the Police Chief would be in attendance to here the discussion that was being held and add his input.

Andrew Stevens, 210 W. Second, Newberg, said when they were working on Hancock there were a lot of accidents and traffic issues and 9-1-1 was called many times.

Chair Van Noord asked if anyone had any bad experience during the Second Street detour. Ms. Horn said the two-way traffic had positive feedback.
]
Discussion was held concerning a positive statement of Second Street. Mr. Stevens said that the echoes coming out of Nap's were separate transportation/traffic issues.

Bill Leaser, 300 Green Valley Drive, work done on Hwy 99W had improved Newberg and made it a nice town rather than a dumpy town. He sees nothing wrong with the set-up and it is a big improvement. He does not shop downtown Newberg, there is no place to park. He has lived here since 1968 has not walked the streets of Newberg in years. We have to do something to slow the traffic down. We need to be doing something with the parking problems. The Second Street bypass route meant that most people were not taking the cutoff and going through town both ways.

Commissioner Larson said the issue was on Second Street. He did have an opportunity to talk with City Manager Duane Cole and thought Second Street was off the table. He also was surprised. The hassle of what we went through when Hancock Street was built and there was an opportunity to drive through. There were many days First Street had difficulty in processing the flow of traffic.

Commissioner Brittell said he has other questions to staff**:**

A. Was the Plan of 1986 adopted by the Council and the Planing Commission. Mr. Brittell said he believed it was but was not sure, Mr Brierley said he was not sure.

B. Comprehensive Plan not changed since 2000? Mr. Brierley said not substantively, especially in the transportation area.

C. Are following goals and plans important -

1. Section - (D) policies - relates to downtown This goes along with John Bridges and others' testimony - slow down traffic and look alternatives.
2. Goal 3 - alternative transportation -
3. Goal 4- emphasis-desire to provide alternate routes and it was strong and the re-routing of Hwy 219 around to the east - we need to talk about this.
4. He feels we need not to look at several layouts. $8-10M is realistic and it would be ridiculous to spend more money. He had hoped that the State of Oregon and ODOT would to work together and look at goals and policies and make them work. The 1986 study was a good study. Why are we not looking at it more. Discussion was held concerning putting it aside. It was a forum for future plans. We are talking about traffic. The 1986 is an excellent plan. The plan may cost less than $2M by rounding out corners and rounding off corners now. Maybe recommend it again to the Council.

Commissioner Haug discussed routing the highway to First and Second Street. First Street is two way and part of the 1986 Plan. He concurs with Kris Horn that they did a great job interacting with the committee so why reinvent the wheel and why are we even looking at transportation. Take it out of the hands of ODOT. He is going to recommend to the council that the couplets at First Street, and that whole system be based on classifications of roads, (minor arterial similar to Mountainview). We only need one major arterial (bypass). The city would take control, maintain and improve it. It would be later on about 10 years. Make downtown Newberg a viable place to shop and live. The 1986 mapping is different than that currently proposed. The 1986 mapping follows the current roads. Some of the ideas of the 1986 Plan are outdated.

Commissioner Haug addressed Hwy 219 and Hwy 240. Move them to the arterial and bypass and not have them even come into the city. We should get significant City interest. Take Hwy. 219 to St. Paul and it follows the bypass to past Villa Road and to the airport until it connects to the bypass. Hwy 240 then would eventually connect to the northern arterial. Would it help the livability of the town. Discussion was held concerning make this a high priority.

Commissioner Haug said there is a difference in the current and the 1986 Plan. The 1986 Plan is consistent with the livability. Use what we have and improve it. Use what we have in the most constructive way.

Commissioner Larson said that it appeared we are still making Second Street one-way east. Discussion was held concerning both ends of Second Street being one-way, thereby making Second Street more accessible. We need to see what the plan says and whatever works on Hancock and Second Street, same zone. Take traffic off First Street to have the full capacity.

Commissioner Smith said if the City goes through the trouble of making a plan we should not ignore the plan in our current thinking. We don't need to look at the Second Street Plan with curves as the only option. Discussion was held concerning the 1986 Plan. Testimony for the new Plan was not favored by the audience. We should consider the earlier Plan, he is concerned about the costs of adopting the Plan. Tonight we have to work on the primary goal and the testimony tonight is to make downtown pedestrian friendly. The 1986 Plan has the same goal in mind with specific details. He likes the ideas presented by Mr. Bridges with the two road couplet. We ought to examine and use that .

Commissioner Haug said that in using what we have, there are no trees in the area from the older Plan, we can significantly enhance the area with a canopy of trees. We agree to incorporate the idea from 1986 without changing the streets.

Commissioner Smith said much of the parking for Newberg is off Second Street. There will be an increase in traffic on Second Street anyway, but the improvements projected encourage traffic to slow down.

Tape 2 - Side 2

Discussion was held concerning the people driving through and not necessarily parking downtown. Discussion was held concerning traffic in 1986. 20,000 on Hancock and 20,000 on First Street (cars now)

Mr. Daniel Seeman said the numbers are in the Downtown Development Plan. The volumes are about 15-1700 in the west bound direction and 1500-2000 in the east bound direction during the peak hour. Multiply by 10 for the daily volume. The traffic volume for the two streets combined is 27-32,000 vehicles each day. It takes 3 lanes to get through town. This is a volume to capacity standard. State Highways are designated at this level. This is a statewide traffic and truck route until the bypass is constructed. The highway through Newberg is a standard. Any attempt to slow down the traffic would be met with resistence. Mr. Seeman is addressing traffic lanes. It is important to note this. Discussion was held concerning Tigard traffic (through downtown). Discussion was held concerning proceeding with going from 3 lanes to 2 lanes. ODOT is seriously pursuing the bypass. At that point you can have this road through Newberg and a lower order of highway taken over by Newberg and can operate as two lanes in each direction of the couplet.

Ms. Horn said she disagrees. She has attended meetings with ODOT and representatives from other cities. They worked with ODOT to achieve their goals, work out compromises and make things happen. ODOT will work with people, but we have to have a plan. Who is the person at ODOT to share the vision? Mr. Fox said that structural improvements to First Street with the jurisdictional transfer discussion is a give and take and you have the strongest leverage. ODOT has a planning section in the interim. They need to be talking to ODOT planning people with specific proposals. The director has taken a positive approach and will say yes when possible. There are realities of traffic volumes to deal with but they are always willing to listen to a reasonable proposal.

Discussion was held concerning the traffic volume of 1986 (figure 4), summer weekday traffic and peak hour volumes; 15,500 in one direction and 14,600 in another. There were about 30,000 cars in 1986 and today there is a slight increase. The seasonal factor is about 30% higher than the average annual volume.

Mr. Brierley said that you can estimate average daily traffic, but in fact the average daily traffic is higher, especially during the peak hours.

Commissioner Brittell asked how Kittleson is involved because of the decisions to be made by the southern bypass? Mr. Seeman said they have two plans to be coordinated. We need to discuss local things.

Discussion was held about how much traffic would be taken away from the downtown area. Mr Seeman said it will not take out as much as eastern areas, about 40% which will increase 50-60,000 over the next 20 years. In 20 years they can expect about a 20,000 growth. There is a fairly constant growth of traffic.

Chair Van Noord asked about the casino traffic on the weekend. Mr. Seaman said ODOT is designing into the system a reasonable worst case scenario. Also involves beach traffic .

Commissioner Brittell noted discrepancies in what is happening. He hears from good sources that the bypass is not planned to have more than two lanes in each direction, but is taking land for 4 lanes in each direction. What about the cost to add more lanes? They are still planning on Main and Hancock being the State Highways. The goal of NDTIP is to be compatible with other ODOT efforts.

Mr. Alan Fox noted they are planning for four lanes. It is twice as wide during the corridor, it is an environmental study and there is room to be flexible in a four lane road. Secondly, Transportation System Plan adopts a different role for Hwy 219 and Hwy 240. ODOT is working with the City and will not meddle in their plans, if the City wants to change the Plan ODOT will respond to it. The letter is well stated. Why hasn't ODOT planned for 6 lane traffic versus having to maintain the corridor downtown. Mr. Fox said they have projected the volume of traffic through the reduction of congestion in Newberg and Dundee. The function of Hwy 99W after the bypass is built is not resolved. The bypass policy of the State assumes that it is not 100%, but the bypass would be on the table for discussion and possible transfer back to local jurisdiction (negotiations with give and take). The function that the road serves after the bypass may just be a district highway and not a State Highway. It is not an automatic jurisdictional transfer back to the City. There are a lot of issues to resolve including the percentage of traffic and the reasonableness of how we can take care of it.

Mr. Brierley said they accomplished the goal set for hearing issues of the Commission and the public. The comments will be noted and will be part of the record.

VII. ITEMS FROM STAFF

A. Update on Council items

Mr. Brierley said they heard a conditional use permit for Granite Motor Sports, applicants appealed to the Council. The Council considered the appeal and it was successful. The applicants were not able to speak at the hearing, but they were able to submit written argument. The Council voted to uphold the Commission's decision with the exception that they were not allowed to display vehicles in parking lot for advertising purposes. They cannot do it in landscape area. Discussion was held concerning removal of auto related businesses in the downtown area. It could not be any clearer and stick to the intent of the ordinances. It is a contradiction to the purpose of allowing auto businesses back in the downtown area.

Councilor Soppe said he went through the notes handed with correction with requirement number 9 and he was looking for the logic behind it. Findings have to be tied to criteria. Restrictions are based upon city ordinances. Councilor Soppe said that they pass the resolution to things on the record (not a thorough record). A discussion was held concerning having the record be correct. Unfortunately it was not taken. Councilor Soppe said that he did not see the correction in the minutes, the discussion and what was deliberated. When we make a decision it has to be tied to criteria and dealing with findings. Discussion was held concerning the minutes not reflecting the discussion of the matter.

Commissioner Brittell referred to item 3 and read the statement for the purpose of findings.

Commissioner Larson addressed the appeal at the January 5th meeting. Mr Larson said that on January 20th the business had a vehicle in the landscape area which was in contrast to what was allowed.

Councilor Soppe said he spoke with the auto repair business owners and they asked about Newberg Ford's compliance. He said two other dealerships on Portland Road have similar situations but it has now pretty much vanished. Discussion was held concerning the downtown (C-3) zone and the highway and about notifying Mr. Brierley about compliance.

Councilor Soppe said this was his view about a commission's decision being overturned by the Council based on the information they have presented before them.

B. Other reports, letters, or correspondence - none

C. Next Planning Commission Meeting: February 12, 2004, They have a full agenda with 3 hearings.

VIII. ITEMS FROM COMMISSIONERS

Commissioner Larson addressed a code violation for the property located at 3220 Juniper Drive. He said that he did not get a response from the Planning Department concerning the trees in the development not meeting the code. It was his understanding that we are or are not following code. We need specific standards and the public should be notified. If the tree code is not followed, what other codes are not being followed. Another house on Juniper got a completion notice before it was completed. The wallboard contractor showed up the next day to do more work even though it says it is completed? What does the completion notice mean - that the project is done? Commissioner Larson said that he has had a hard time dealing with it. Discussion was held concerning the tree size not being within code regulations. Commissioner Larson said his trees are 15 feet and in code compliance. Further discussion was held concerning compliance.

Commissioner Smith addressed testimony and transportation issues in relation to downtown development. What is the next step? He does not want to see the good input left alone. Mr. Brierley said the next step is to put together a draft plan as a proposal for review.

VI. ADJOURNMENT

The meeting was adjourned at approximately 10:00 p.m.

Passed by the Planning Commission of the City of Newberg this _____ day of March, 2004.

AYES:	NO:	ABSTAIN: (list names)	ABSENT:

ATTEST:

____ ____
Planning Commission Recording Secretary Signature Print Name Date

INFORMATION RECEIVED INTO THE RECORD AT THE JANUARY 21, 2004 PLANNING COMMISSION MEETING.

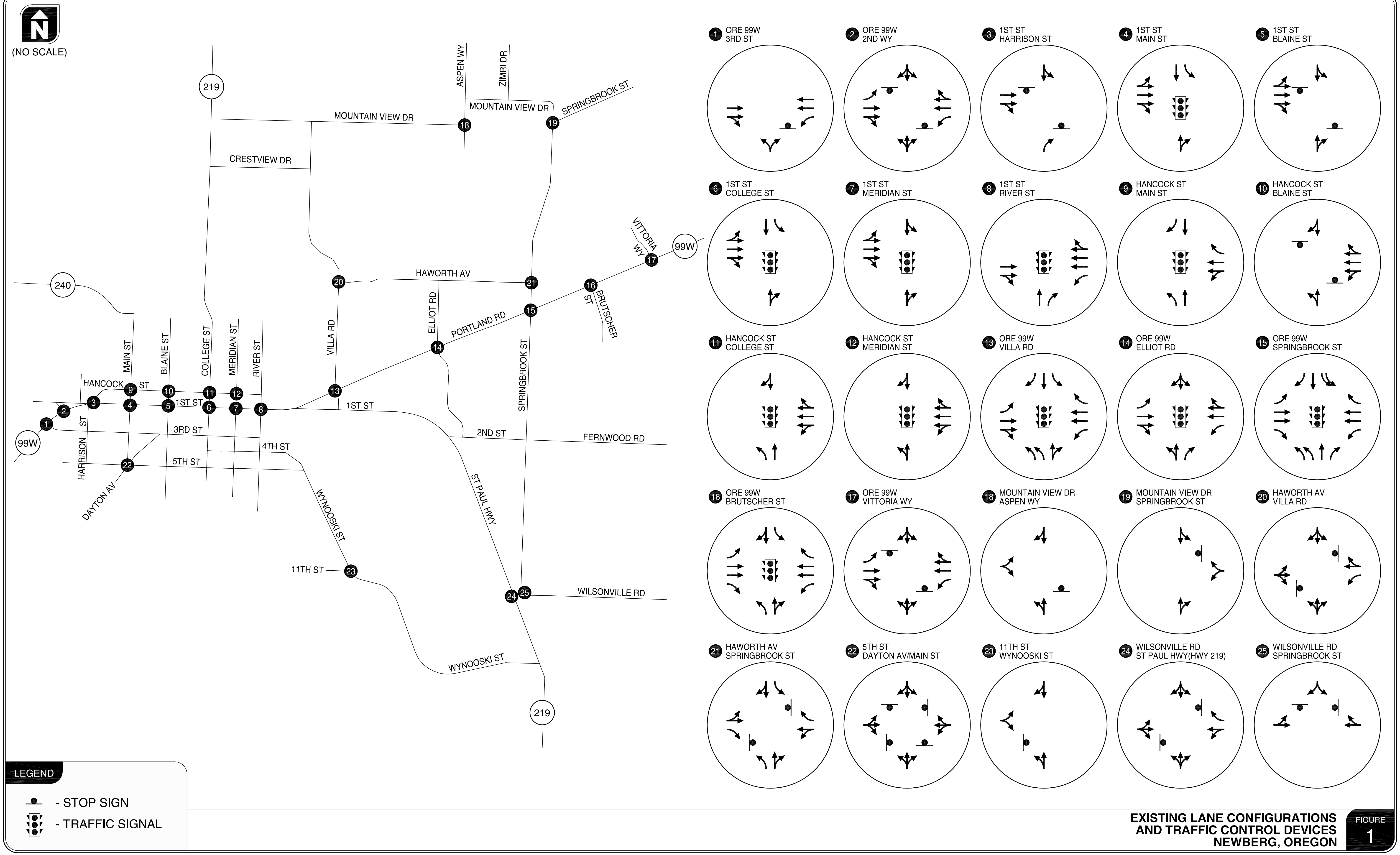
THIS INFORMATION IS ON FILE AT THE COMMUNITY DEVELOPMENT OFFICE ATTACHED TO THE MINUTES OF THE MEETING AND IN THE PROJECT FILE IT PERTAINS TO.

PROJECT FILE #

None.

Appendix D

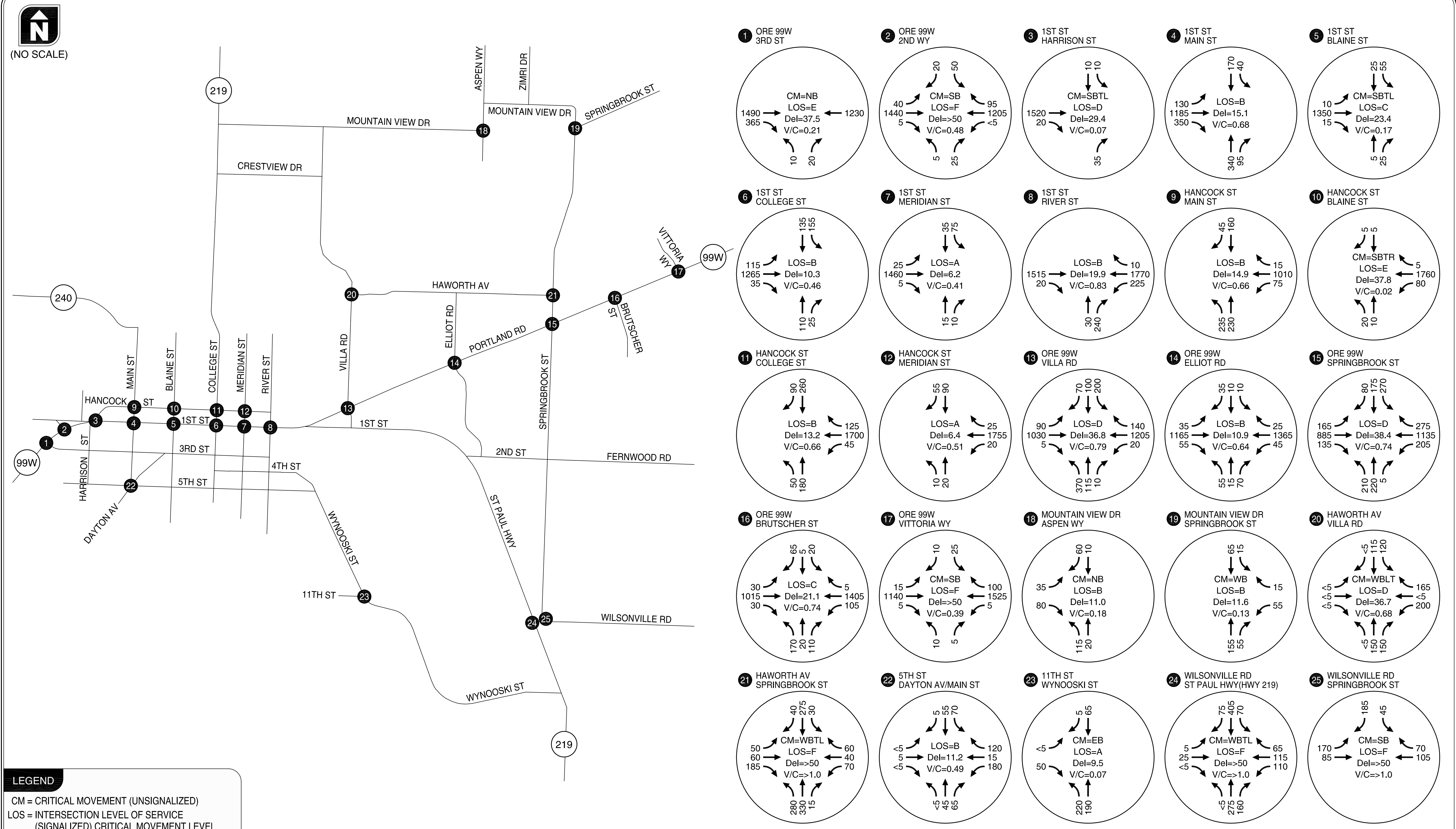
Existing Traffic Conditions



EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES
NEWBERG, OREGON

FIGURE 1

5193FIG_TM1



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

EXISTING TRAFFIC CONDITIONS
WEEKDAY PM PEAK HOUR
NEWBERG, OREGON

FIGURE
2

5193FIG_TM1

Appendix E

Existing Conditions
Signal Warrant Analysis Worksheets

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #: 5193
Project Name: Newberg TSP
Analyst:
Date: 6/13/2005
File: H:\projfile\5193\excel\sigwar\[219_Wilsonville 02 sigwar.xls]Data Input
Intersection: Hwy 219/Wilsonville
Scenario: Year 2002 Weekday PM Peak Hour

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:15 PM	5:15 PM	436	550	30	225
2nd	Highest Hour	419	528	29	216
3rd	Highest Hour	410	517	28	212
4th	Highest Hour	349	440	24	180
5th	Highest Hour	331	418	23	171
6th	Highest Hour	296	374	20	153
7th	Highest Hour	275	347	19	142
8th	Highest Hour	262	330	18	135
9th	Highest Hour	209	264	14	108
10th	Highest Hour	196	248	14	101
11th	Highest Hour	196	248	14	101
12th	Highest Hour	187	237	13	97
13th	Highest Hour	170	215	12	88
14th	Highest Hour	157	198	11	81
15th	Highest Hour	157	198	11	81
16th	Highest Hour	153	193	11	79
17th	Highest Hour	87	110	6	45
18th	Highest Hour	48	61	3	25
19th	Highest Hour	44	55	3	23
20th	Highest Hour	17	22	1	9
21st	Highest Hour	13	17	1	7
22nd	Highest Hour	13	17	1	7
23rd	Highest Hour	9	11	1	5
24th	Highest Hour	9	11	1	5

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:15 PM	5:15 PM	436	550	30	225
2nd	Highest Hour	419	528	29	216
3rd	Highest Hour	410	517	28	212
4th	Highest Hour	349	440	24	180
5th	Highest Hour	331	418	23	171
6th	Highest Hour	296	374	20	153
7th	Highest Hour	275	347	19	142
8th	Highest Hour	262	330	18	135
9th	Highest Hour	209	264	14	108
10th	Highest Hour	196	248	14	101
11th	Highest Hour	196	248	14	101
12th	Highest Hour	187	237	13	97
13th	Highest Hour	170	215	12	88
14th	Highest Hour	157	198	11	81
15th	Highest Hour	157	198	11	81
16th	Highest Hour	153	193	11	79
17th	Highest Hour	87	110	6	45
18th	Highest Hour	48	61	3	25
19th	Highest Hour	44	55	3	23
20th	Highest Hour	17	22	1	9
21st	Highest Hour	13	17	1	7
22nd	Highest Hour	13	17	1	7
23rd	Highest Hour	9	11	1	5
24th	Highest Hour	9	11	1	5

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Portland, Oregon 97205
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Fax: (503) 273-8169

Project #: 5193
Project Name: Newberg TSP
Analyst:
Date: 6/13/2005
File: H:\projfile\5193\excel\sigwar\[99_2nd 02 sigwar.xls]Data Input

Intersection: Ore 99W/2nd Way
Scenario: Year 2002 Weekday PM Peak Hour

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:15 PM	5:15 PM	1485	1300	30	70
2nd	Highest Hour	1426	1248	29	67
3rd	Highest Hour	1396	1222	28	66
4th	Highest Hour	1188	1040	24	56
5th	Highest Hour	1129	988	23	53
6th	Highest Hour	1010	884	20	48
7th	Highest Hour	936	819	19	44
8th	Highest Hour	891	780	18	42
9th	Highest Hour	713	624	14	34
10th	Highest Hour	668	585	14	32
11th	Highest Hour	668	585	14	32
12th	Highest Hour	639	559	13	30
13th	Highest Hour	579	507	12	27
14th	Highest Hour	535	468	11	25
15th	Highest Hour	535	468	11	25
16th	Highest Hour	520	455	11	25
17th	Highest Hour	297	260	6	14
18th	Highest Hour	163	143	3	8
19th	Highest Hour	149	130	3	7
20th	Highest Hour	59	52	1	3
21st	Highest Hour	45	39	1	2
22nd	Highest Hour	45	39	1	2
23rd	Highest Hour	30	26	1	1
24th	Highest Hour	30	26	1	1

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:15 PM	5:15 PM	1485	1300	30	70
2nd	Highest Hour	1426	1248	29	67
3rd	Highest Hour	1396	1222	28	66
4th	Highest Hour	1188	1040	24	56
5th	Highest Hour	1129	988	23	53
6th	Highest Hour	1010	884	20	48
7th	Highest Hour	936	819	19	44
8th	Highest Hour	891	780	18	42
9th	Highest Hour	713	624	14	34
10th	Highest Hour	668	585	14	32
11th	Highest Hour	668	585	14	32
12th	Highest Hour	639	559	13	30
13th	Highest Hour	579	507	12	27
14th	Highest Hour	535	468	11	25
15th	Highest Hour	535	468	11	25
16th	Highest Hour	520	455	11	25
17th	Highest Hour	297	260	6	14
18th	Highest Hour	163	143	3	8
19th	Highest Hour	149	130	3	7
20th	Highest Hour	59	52	1	3
21st	Highest Hour	45	39	1	2
22nd	Highest Hour	45	39	1	2
23rd	Highest Hour	30	26	1	1
24th	Highest Hour	30	26	1	1

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Project #: 5193
Project Name: Newberg TSP
Analyst:
Date: 6/13/2005
File: H:\projfile\5193\excel\sigwar\[Haworth_Springbrook 02 sigwar.xls]Data Input
Intersection: Haworth/Springbrook
Scenario: Year 2002 Weekday PM Peak Hour

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:15 PM	5:15 PM	625	345	110	110
2nd	Highest Hour	600	331	106	106
3rd	Highest Hour	588	324	103	103
4th	Highest Hour	500	276	88	88
5th	Highest Hour	475	262	84	84
6th	Highest Hour	425	235	75	75
7th	Highest Hour	394	217	69	69
8th	Highest Hour	375	207	66	66
9th	Highest Hour	300	166	53	53
10th	Highest Hour	281	155	50	50
11th	Highest Hour	281	155	50	50
12th	Highest Hour	269	148	47	47
13th	Highest Hour	244	135	43	43
14th	Highest Hour	225	124	40	40
15th	Highest Hour	225	124	40	40
16th	Highest Hour	219	121	39	39
17th	Highest Hour	125	69	22	22
18th	Highest Hour	69	38	12	12
19th	Highest Hour	63	35	11	11
20th	Highest Hour	25	14	4	4
21st	Highest Hour	19	10	3	3
22nd	Highest Hour	19	10	3	3
23rd	Highest Hour	13	7	2	2
24th	Highest Hour	13	7	2	2

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:15 PM	5:15 PM	625	345	110	110
2nd	Highest Hour	600	331	106	106
3rd	Highest Hour	588	324	103	103
4th	Highest Hour	500	276	88	88
5th	Highest Hour	475	262	84	84
6th	Highest Hour	425	235	75	75
7th	Highest Hour	394	217	69	69
8th	Highest Hour	375	207	66	66
9th	Highest Hour	300	166	53	53
10th	Highest Hour	281	155	50	50
11th	Highest Hour	281	155	50	50
12th	Highest Hour	269	148	47	47
13th	Highest Hour	244	135	43	43
14th	Highest Hour	225	124	40	40
15th	Highest Hour	225	124	40	40
16th	Highest Hour	219	121	39	39
17th	Highest Hour	125	69	22	22
18th	Highest Hour	69	38	12	12
19th	Highest Hour	63	35	11	11
20th	Highest Hour	25	14	4	4
21st	Highest Hour	19	10	3	3
22nd	Highest Hour	19	10	3	3
23rd	Highest Hour	13	7	2	2
24th	Highest Hour	13	7	2	2

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Project #: 5193
Project Name: Newberg TSP
Analyst:
Date: 6/13/2005
File: H:\projfile\5193\excel\sigwar\[99_Vittoria 02 sigwar.xls]Data Input
Intersection: Ore 99W/Vittoria Street
Scenario: Year 2002 Weekday PM Peak Hour

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:15 PM	5:15 PM	1160	1630	15	35
2nd	Highest Hour	1114	1565	14	34
3rd	Highest Hour	1090	1532	14	33
4th	Highest Hour	928	1304	12	28
5th	Highest Hour	882	1239	11	27
6th	Highest Hour	789	1108	10	24
7th	Highest Hour	731	1027	9	22
8th	Highest Hour	696	978	9	21
9th	Highest Hour	557	782	7	17
10th	Highest Hour	522	734	7	16
11th	Highest Hour	522	734	7	16
12th	Highest Hour	499	701	6	15
13th	Highest Hour	452	636	6	14
14th	Highest Hour	418	587	5	13
15th	Highest Hour	418	587	5	13
16th	Highest Hour	406	571	5	12
17th	Highest Hour	232	326	3	7
18th	Highest Hour	128	179	2	4
19th	Highest Hour	116	163	2	4
20th	Highest Hour	46	65	1	1
21st	Highest Hour	35	49	0	1
22nd	Highest Hour	35	49	0	1
23rd	Highest Hour	23	33	0	1
24th	Highest Hour	23	33	0	1

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:15 PM	5:15 PM	1160	1630	15	35
2nd	Highest Hour	1114	1565	14	34
3rd	Highest Hour	1090	1532	14	33
4th	Highest Hour	928	1304	12	28
5th	Highest Hour	882	1239	11	27
6th	Highest Hour	789	1108	10	24
7th	Highest Hour	731	1027	9	22
8th	Highest Hour	696	978	9	21
9th	Highest Hour	557	782	7	17
10th	Highest Hour	522	734	7	16
11th	Highest Hour	522	734	7	16
12th	Highest Hour	499	701	6	15
13th	Highest Hour	452	636	6	14
14th	Highest Hour	418	587	5	13
15th	Highest Hour	418	587	5	13
16th	Highest Hour	406	571	5	12
17th	Highest Hour	232	326	3	7
18th	Highest Hour	128	179	2	4
19th	Highest Hour	116	163	2	4
20th	Highest Hour	46	65	1	1
21st	Highest Hour	35	49	0	1
22nd	Highest Hour	35	49	0	1
23rd	Highest Hour	23	33	0	1
24th	Highest Hour	23	33	0	1

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Project #: 5193
Project Name: Newberg TSP
Analyst:
Date: 6/13/2005
File: H:\projfile\5193\excel\sigwar\[99_3rd 02 sigwar.xls]Data Input

Intersection: Ore 99W/3rd Street
Scenario: Year 2002 Weekday PM Peak Hour

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:15 PM	5:15 PM	1785	1230	30	0
2nd	Highest Hour	1714	1181	29	0
3rd	Highest Hour	1678	1156	28	0
4th	Highest Hour	1428	984	24	0
5th	Highest Hour	1357	935	23	0
6th	Highest Hour	1214	836	20	0
7th	Highest Hour	1125	775	19	0
8th	Highest Hour	1071	738	18	0
9th	Highest Hour	857	590	14	0
10th	Highest Hour	803	554	14	0
11th	Highest Hour	803	554	14	0
12th	Highest Hour	768	529	13	0
13th	Highest Hour	696	480	12	0
14th	Highest Hour	643	443	11	0
15th	Highest Hour	643	443	11	0
16th	Highest Hour	625	431	11	0
17th	Highest Hour	357	246	6	0
18th	Highest Hour	196	135	3	0
19th	Highest Hour	179	123	3	0
20th	Highest Hour	71	49	1	0
21st	Highest Hour	54	37	1	0
22nd	Highest Hour	54	37	1	0
23rd	Highest Hour	36	25	1	0
24th	Highest Hour	36	25	1	0

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:15 PM	5:15 PM	1785	1230	30	0
2nd	Highest Hour	1714	1181	29	0
3rd	Highest Hour	1678	1156	28	0
4th	Highest Hour	1428	984	24	0
5th	Highest Hour	1357	935	23	0
6th	Highest Hour	1214	836	20	0
7th	Highest Hour	1125	775	19	0
8th	Highest Hour	1071	738	18	0
9th	Highest Hour	857	590	14	0
10th	Highest Hour	803	554	14	0
11th	Highest Hour	803	554	14	0
12th	Highest Hour	768	529	13	0
13th	Highest Hour	696	480	12	0
14th	Highest Hour	643	443	11	0
15th	Highest Hour	643	443	11	0
16th	Highest Hour	625	431	11	0
17th	Highest Hour	357	246	6	0
18th	Highest Hour	196	135	3	0
19th	Highest Hour	179	123	3	0
20th	Highest Hour	71	49	1	0
21st	Highest Hour	54	37	1	0
22nd	Highest Hour	54	37	1	0
23rd	Highest Hour	36	25	1	0
24th	Highest Hour	36	25	1	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

KITTELSON & ASSOCIATES, INC.
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Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #: 5193
Project Name: Newberg TSP
Analyst:
Date: 6/13/2005
File: H:\projfile\5193\excel\sigwar\[Wilsonville_Spingbrook 02 sigwar.xls]Data Input
Intersection: Wilsonville/Springbrook
Scenario: Year 2002 Weekday PM Peak Hour

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

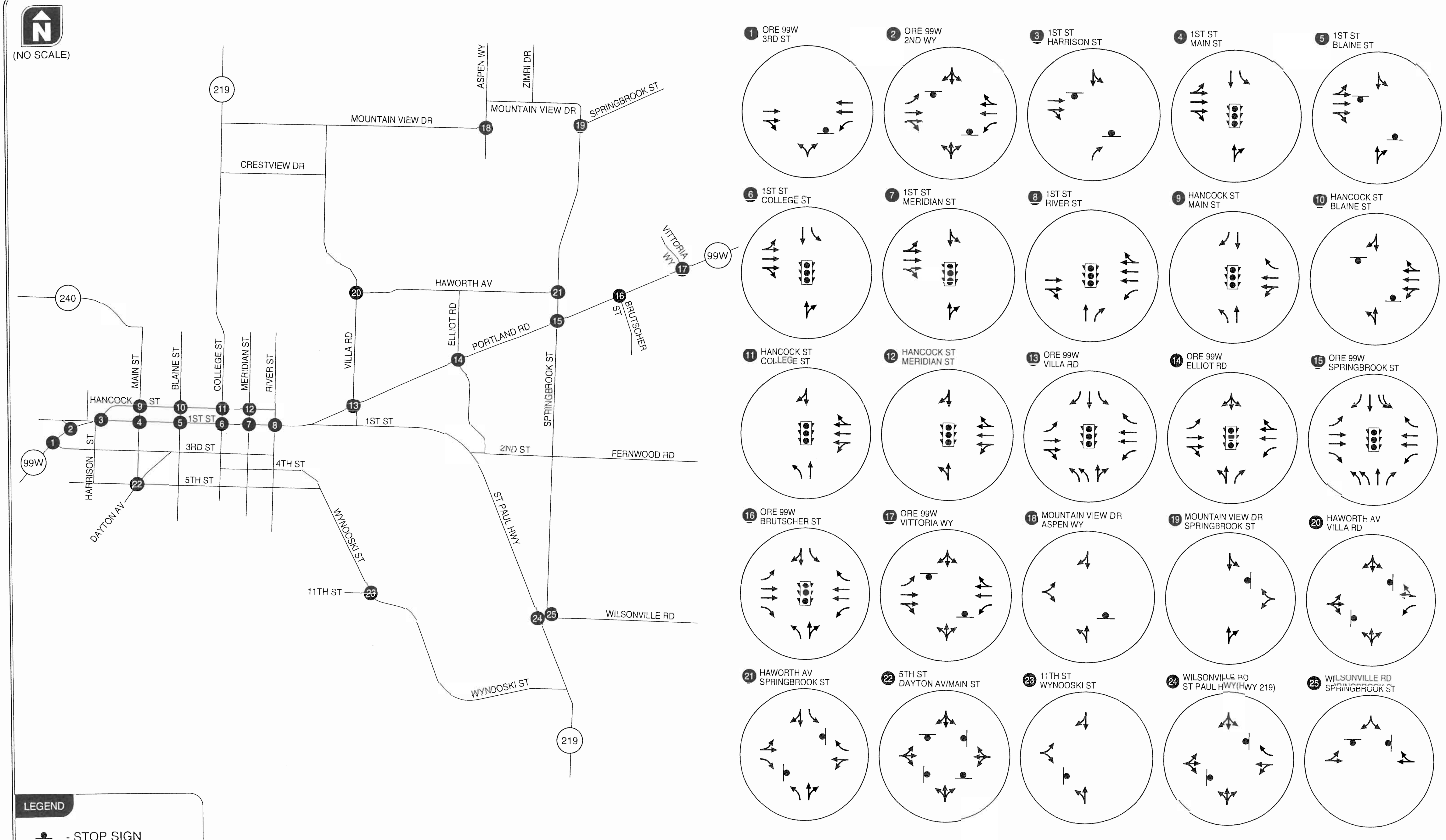
Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:15 PM	5:15 PM	255	175	0	230
2nd	Highest Hour	245	168	0	221
3rd	Highest Hour	240	165	0	216
4th	Highest Hour	204	140	0	184
5th	Highest Hour	194	133	0	175
6th	Highest Hour	173	119	0	156
7th	Highest Hour	161	110	0	145
8th	Highest Hour	153	105	0	138
9th	Highest Hour	122	84	0	110
10th	Highest Hour	115	79	0	104
11th	Highest Hour	115	79	0	104
12th	Highest Hour	110	75	0	99
13th	Highest Hour	99	68	0	90
14th	Highest Hour	92	63	0	83
15th	Highest Hour	92	63	0	83
16th	Highest Hour	89	61	0	81
17th	Highest Hour	51	35	0	46
18th	Highest Hour	28	19	0	25
19th	Highest Hour	26	18	0	23
20th	Highest Hour	10	7	0	9
21st	Highest Hour	8	5	0	7
22nd	Highest Hour	8	5	0	7
23rd	Highest Hour	5	4	0	5
24th	Highest Hour	5	4	0	5

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:15 PM	5:15 PM	255	175	0	230
2nd	Highest Hour	245	168	0	221
3rd	Highest Hour	240	165	0	216
4th	Highest Hour	204	140	0	184
5th	Highest Hour	194	133	0	175
6th	Highest Hour	173	119	0	156
7th	Highest Hour	161	110	0	145
8th	Highest Hour	153	105	0	138
9th	Highest Hour	122	84	0	110
10th	Highest Hour	115	79	0	104
11th	Highest Hour	115	79	0	104
12th	Highest Hour	110	75	0	99
13th	Highest Hour	99	68	0	90
14th	Highest Hour	92	63	0	83
15th	Highest Hour	92	63	0	83
16th	Highest Hour	89	61	0	81
17th	Highest Hour	51	35	0	46
18th	Highest Hour	28	19	0	25
19th	Highest Hour	26	18	0	23
20th	Highest Hour	10	7	0	9
21st	Highest Hour	8	5	0	7
22nd	Highest Hour	8	5	0	7
23rd	Highest Hour	5	4	0	5
24th	Highest Hour	5	4	0	5

Appendix F

2025 No Build Future Traffic Conditions



LEGEND

- STOP SIGN

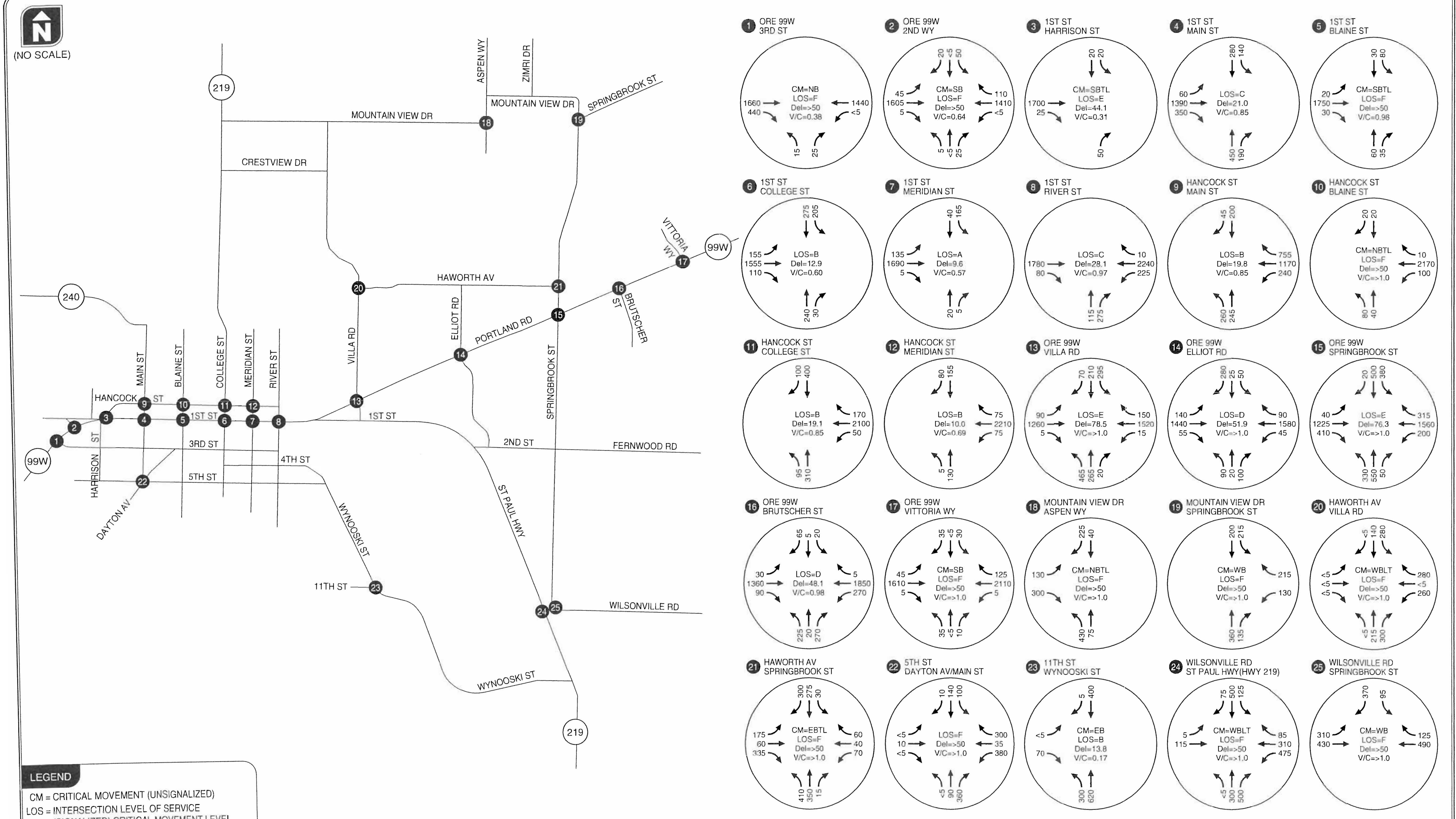
- TRAFFIC SIGNAL

EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES
ALTERNATIVE 1: NO BUILD
NEWBERG, OREGON

FIGURE
A1

5193Figs

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2025 WEEKDAY PM PEAK HOUR TRAFFIC CONDITIONS
ALTERNATIVE 1: NO-BUILD
NEWBERG, OREGON

FIGURE
A2

5193Figs

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                                 Scenario Report
Scenario:                   pm

Command:                    pm
Volume:                     pm
Geometry:                   pm
Impact Fee:                 impact
Trip Generation:            pm
Trip Distribution:          tripdist
Paths:                      path
Routes:                     route
Configuration:              config
```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                           Turning Movement Report

Volume     Northbound       Southbound       Eastbound        Westbound      Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume

#1 Hwy 99 / 3rd St.
Base      15    0    25     0    0     0     0 1660   440     0 1440     0   3580
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     15    0    25     0    0     0     0 1660   440     0 1440     0   3580

#2 Ore 99W /  2nd Street
Base       5    0    25    50    0    20    45 1605     5     1 1410   110   3276
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      5    0    25    50    0    20    45 1605     5     1 1410   110   3276

#3 Ore 99W / Harrison St.
Base       0    0    50    20   20     0     0 1700    25     0    0     0   1815
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0    0    50    20   20     0     0 1700    25     0    0     0   1815

#4 1st St. / Main St.
Base       0  450   190   140  280     0    60 1390   350     0    0     0   2860
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0  450   190   140  280     0    60 1390   350     0    0     0   2860

#5 1st St. / Blaine St.
Base       0   60    35    80   30     0    20 1750    30     0    0     0   2005
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0   60    35    80   30     0    20 1750    30     0    0     0   2005

#6 1st St. / College St.
Base       0  240    30   205  275     0   155 1555   110     0    0     0   2570
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0  240    30   205  275     0   155 1555   110     0    0     0   2570

#7 1st St. / Meridian St.
Base       0   20     5   165   40     0   135 1690     5     0    0     0   2060
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0   20     5   165   40     0   135 1690     5     0    0     0   2060

#8 Hwy 99 / River St.
Base       0  115   275     0    0     0     0 1780    80   225 2240    10   4725
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0  115   275     0    0     0     0 1780    80   225 2240    10   4725

#9 Hancock St. / Main St.
Base     260  245     0     0  200    45     0    0     0   240 1170   755   2915
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    260  245     0     0  200    45     0    0     0   240 1170   755   2915
```

```
---------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------
Volume    Northbound      Southbound      Eastbound       Westbound      Total
Type   Left Thru Right Left Thru Right Left Thru Right Left Thru Right  Volume

#10 Hancock St / Blaine St.
Base     80   40     0    0   20    20    0    0     0  100 2170    10   2440
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    80   40     0    0   20    20    0    0     0  100 2170    10   2440

#11 Hancock St. / College St.
Base     95  310     0    0  400   100    0    0     0   50 2100   170   3225
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    95  310     0    0  400   100    0    0     0   50 2100   170   3225

#12 Hancock St. / Meridian St.
Base      5  130     0    0  155    80    0    0     0   75 2210    75   2730
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     5  130     0    0  155    80    0    0     0   75 2210    75   2730

#13 Hwy 99 / Villa Rd.
Base    465  265    20  295  210    70   90 1260     5   15 1520   150   4365
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   465  265    20  295  210    70   90 1260     5   15 1520   150   4365

#14 Hwy 99 / Elliot Rd.
Base     90   20   100   50   25   280  140 1440    55   45 1580    90   3915
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    90   20   100   50   25   280  140 1440    55   45 1580    90   3915

#15 Hwy 99 / Springbrook St.
Base    330  550    50  380  500    20   40 1225   410  200 1560   315   5580
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   330  550    50  380  500    20   40 1225   410  200 1560   315   5580

#16 Hwy 99 / Brutcher St.
Base    225   20   270   20    5    65   30 1360    90  270 1850     5   4210
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   225   20   270   20    5    65   30 1360    90  270 1850     5   4210

#17 Hwy 99 / Vittoria St.
Base     35    0    10   30    0    35   45 1610     5    5 2110   125   4010
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    35    0    10   30    0    35   45 1610     5    5 2110   125   4010

#18 Mountainview/Aspen S. (VOLS)
Base    430   75     0    0   40   225  130    0   300    0    0     0   1200
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   430   75     0    0   40   225  130    0   300    0    0     0   1200
```

```
---------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------
Volume    Northbound      Southbound      Eastbound       Westbound      Total
Type   Left Thru Right Left Thru Right Left Thru Right Left Thru Right  Volume

#19 Springbrook St. / Mt. View Dr.
Base      0  360   135  215  200     0    0    0     0  130    0   215   1255
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     0  360   135  215  200     0    0    0     0  130    0   215   1255

#20 Villa Rd. / Haworth Av.
Base      1  215   300  280  140     1    1    1     1  260    0   280   1480
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     1  215   300  280  140     1    1    1     1  260    0   280   1480

#21 Springbrook St. / Haworth Av.
Base    410  350    15   30  275   300  175   60   335   70   40    60   2120
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   410  350    15   30  275   300  175   60   335   70   40    60   2120

#22 5th St. / Dayton St.
Base      1   90   360  100  140    10    1   10     1  380   35   300   1428
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     1   90   360  100  140    10    1   10     1  380   35   300   1428

#23 Wynooski St. / 11th St.
Base    300  620     0    0  400     5    1    0    70    0    0     0   1396
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   300  620     0    0  400     5    1    0    70    0    0     0   1396

#24 Hwy 219 / Wilsonville Rd.
Base      1  300   500  125  500    75    5  115     0  475  310    85   2491
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     1  300   500  125  500    75    5  115     0  475  310    85   2491

#25 Springbrook/Wilsonville (VOLS)
Base      0    0     0   95    0   370  310  430     0    0  490   125   1820
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     0    0     0   95    0   370  310  430     0    0  490   125   1820

#118 Mountainview/Aspen S. (OPS)
Base    430    0    75    0    0     0    0  130   300   40  225     0   1200
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   430    0    75    0    0     0    0  130   300   40  225     0   1200

#125 Springbrook/Wilsonville (OPS)
Base    490  125     0    0   95   370  310    0   430    0    0     0   1820
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   490  125     0    0   95   370  310    0   430    0    0     0   1820
```

```
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                             Impact Analysis Report
                                Level Of Service

Intersection                                  Base          Future       Change
                                            Del/   V/     Del/   V/        in
                                        LOS Veh    C  LOS Veh    C
#  1 Hwy 99 / 3rd St.                   F  59.9 0.000  F  59.9 0.000  + 0.000 V/C

#  2 Ore 99W /  2nd Street              F  82.1 0.000  F  82.1 0.000  + 0.000 V/C

#  3 Ore 99W / Harrison St.             E  44.1 0.000  E  44.1 0.000  + 0.000 V/C

#  4 1st St. / Main St.                 C  21.0 0.853  C  21.0 0.853  + 0.000 D/V

#  5 1st St. / Blaine St.               F 151.5 0.000  F 151.5 0.000  + 0.000 V/C

#  6 1st St. / College St.              B  12.9 0.598  B  12.9 0.598  + 0.000 D/V

#  7 1st St. / Meridian St.             A   9.6 0.565  A   9.6 0.565  + 0.000 D/V

#  8 Hwy 99 / River St.                 C  28.1 0.969  C  28.1 0.969  + 0.000 D/V

#  9 Hancock St. / Main St.             B  19.8 0.851  B  19.8 0.851  + 0.000 D/V

# 10 Hancock St / Blaine St.            F 497.4 0.000  F 497.4 0.000  + 0.000 V/C

# 11 Hancock St. / College St.          B  19.1 0.854  B  19.1 0.854  + 0.000 D/V

# 12 Hancock St. / Meridian St.         B  10.0 0.694  B  10.0 0.694  + 0.000 D/V

# 13 Hwy 99 / Villa Rd.                 E  78.5 1.108  E  78.5 1.108  + 0.000 D/V

# 14 Hwy 99 / Elliot Rd.                D  51.9 1.054  D  51.9 1.054  + 0.000 D/V

# 15 Hwy 99 / Springbrook St.           E  76.3 1.054  E  76.3 1.054  + 0.000 D/V

# 16 Hwy 99 / Brutcher St.              D  48.1 0.983  D  48.1 0.983  + 0.000 D/V

# 17 Hwy 99 / Vittoria St.              F 379.0 0.000  F 379.0 0.000  + 0.000 V/C

# 18 Mountainview/Aspen S. (VOLS)       F OVRFL 0.000  F OVRFL 0.000  + 0.000 V/C

# 19 Springbrook St. / Mt. View Dr.     F 444.3 0.000  F 444.3 0.000  + 0.000 V/C

# 20 Villa Rd. / Haworth Av.            F 422.1 0.000  F 422.1 0.000  + 0.000 V/C

# 21 Springbrook St. / Haworth Av.      F OVRFL 0.000  F OVRFL 0.000  + 0.000 V/C

# 22 5th St. / Dayton St.               F 126.9 1.431  F 126.9 1.431  + 0.000 V/C

# 23 Wynooski St. / 11th St.            B  13.8 0.000  B  13.8 0.000  + 0.000 V/C


  Traffix 7.5.1115 (c) 2001 Dowling Assoc. Licensed to DOWLING ASSOCIATES, INC.
```

```
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
Intersection                                  Base          Future       Change
                                            Del/   V/     Del/   V/        in
                                        LOS Veh    C  LOS Veh    C
# 24 Hwy 219 / Wilsonville Rd.          F OVRFL 0.000  F OVRFL 0.000  + 0.000 V/C

# 25 Springbrook/Wilsonville (VOLS)     F 992.1 0.000  F 992.1 0.000  + 0.000 V/C

#118 Mountainview/Aspen S. (OPS)        F 345.8 0.000  F 345.8 0.000  + 0.000 V/C

#125 Springbrook/Wilsonville (OPS)      F OVRFL 0.000  F OVRFL 0.000  + 0.000 V/C


  Traffix 7.5.1115 (c) 2001 Dowling Assoc. Licensed to DOWLING ASSOCIATES, INC.
```

```
---------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #: 5193
                     Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------

                        Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
*********************************************************************************
Intersection #1 Hwy 99 / 3rd St.
*********************************************************************************
Average Delay (sec/veh):     59.9          Worst Case Level Of Service:         F
*********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:         Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
------------|----------------||----------------||----------------||----------------|
Volume Module: 16:15-17:15
Base Vol:      15     0    25     0     0     0     0  1660   440     0  1440     0
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   15     0    25     0     0     0     0  1660   440     0  1440     0
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    15     0    25     0     0     0     0  1660   440     0  1440     0
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:    15     0    25     0     0     0     0  1660   440     0  1440     0
------------|----------------||----------------||----------------||----------------|
Critical Gap Module:
Critical Gp:  7.4 xxxx   7.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.8 xxxx   3.6 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol: 2600 xxxx  1050  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:   13 xxxx   180  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     13 xxxx   180  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Total Cap:     61    0 xxxxx     0    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  104 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 59.9 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    F     *     *    *     *     *    *     *     *    *     *
ApproachDel:        59.9           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:           F                *                *                *
```

```
---------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #: 5193
                     Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------

                    Level Of Service Detailed Computation Report
                          2000 HCM Unsignalized Method
                            Base Volume Alternative
*********************************************************************************
Intersection #1 Hwy 99 / 3rd St.
*********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:            31%               0%              19%              20%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                                                        #14
Dist(miles):                                                       0.000
Speed (mph):                                                        0.00
SignalIndex:                                                       #9
Cycle Time:                                                              0 secs
InitVolume:                                                      0      0
Saturation:                                                      0      0
ArrivalType:                                                     0      0
G/C:                                                          0.00   0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                                           0.000 0.000
gq1:                                                          0.00   0.00
gq2:                                                          0.00   0.00
gq:                                                           0.00   0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                                             0.000
beta:                                                              0.000
ta (secs):                                                         0.000
F:                                                                 0.000
f:                                                           0.000 0.000
vcmax:                                                           0      0
vcmin:                                                           0      0
tp:                                                            0.0    0.0
p:                                                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                       0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:2600     0  1050     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamSat:   0     0     0     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:2600     0  1050     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:   13     0   180     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:    13     0   180     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage:  1 car ]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:1880    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00 1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol:1880    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:   76    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00 1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.:  76    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:    76    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol: 720    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00 1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol: 720    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:  374    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00 1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 374    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   374    0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                   Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #2 Ore 99W /  2nd Street
*******************************************************************************
Average Delay (sec/veh):     82.1            Worst Case Level Of Service:     F
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:            Include          Include          Include          Include
Lanes:         0  0  1! 0  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:        5    0    25    50    0    20    45 1605     5     1 1410   110
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     5    0    25    50    0    20    45 1605     5     1 1410   110
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:      5    0    25    50    0    20    45 1605     5     1 1410   110
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      5    0    25    50    0    20    45 1605     5     1 1410   110
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.5 xxxx   6.9   7.5 xxxx   6.9   4.6 xxxx xxxxx   4.6 xxxx xxxxx
FollowUpTim:  3.5 xxxx   3.3   3.5 xxxx   3.3   2.4 xxxx xxxxx   2.5 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 2405 xxxx   805  2360 xxxx   760  1520 xxxx xxxxx  1610 xxxx xxxxx
Potent Cap.:   18 xxxx   330    19 xxxx   353   345 xxxx xxxxx   306 xxxx xxxxx
Move Cap.:     15 xxxx   330    16 xxxx   353   345 xxxx xxxxx   306 xxxx xxxxx
Total Cap:     66    0 xxxxx    87    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  17.0 xxxx xxxxx  16.8 xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     C    *     *     C    *     *
Movement:       LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  198 xxxxx  xxxx  110 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 26.4 xxxxx xxxxx 82.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    D     *     *    F     *     *    *     *     *    *     *
ApproachDel:        26.4             82.1            xxxxxx           xxxxxx
ApproachLOS:           D                F                *                *
```

```
------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                          Base Volume Alternative
******************************************************************************
Intersection #2 Ore 99W /  2nd Street
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:             0%               0%              23%              26%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                                                          #14
Dist(miles):                                                         0.000
Speed (mph):                                                          0.00
SignalIndex:                                                         #9
Cycle Time:                                                              0 secs
InitVolume:                                                        0     0
Saturation:                                                        0     0
ArrivalType:                                                       0     0
G/C:                                                            0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                                             0.000 0.000
gq1:                                                            0.00  0.00
gq2:                                                            0.00  0.00
gq:                                                             0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                                               0.000
beta:                                                                0.000
ta (secs):                                                           0.000
F:                                                                   0.000
f:                                                             0.000 0.000
vcmax:                                                             0     0
vcmin:                                                             0     0
tp:                                                              0.0   0.0
p:                                                                   0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                        0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:2405     0   805 2360     0   760 1520 xxxxx xxxxx 1610 xxxxx xxxxx
UpstreamSat:   0     0     0    0     0     0    0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:2405     0   805 2360     0   760 1520 xxxxx xxxxx 1610 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:   18     0   330   19     0   353  345 xxxxx xxxxx  306 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:    18     0   330   19     0   353  345 xxxxx xxxxx  306 xxxxx xxxxx
```

```
------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
------------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car ]
------------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:1698     0 xxxxx 1467     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol:1698     0 xxxxx 1467     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:   98     0 xxxxx  137     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.:  98     0 xxxxx  137     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:    85     0 xxxxx  136     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
------------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol: 707     0 xxxxx  893     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol: 707     0 xxxxx  893     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:  397     0 xxxxx  307     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 397     0 xxxxx  307     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   373     0 xxxxx  247     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #3 Ore 99W / Harrison St.
*******************************************************************************
Average Delay (sec/veh):     44.1          Worst Case Level Of Service:      E
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  0  1   0  1  0  0  0   0  0  1  1  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       0    0    50    20   20     0     0 1700    25     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0    50    20   20     0     0 1700    25     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0    50    20   20     0     0 1700    25     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0    50    20   20     0     0 1700    25     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx   6.2   7.1  6.5 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx   3.3   3.5  4.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx   863   850 1725 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx   353   283   90 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx   353   243   90 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx  16.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     C     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   131 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx  44.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     E    *     *     *    *     *     *    *     *
ApproachDel:       16.9             44.1            xxxxxx           xxxxxx
ApproachLOS:         C                E                *                *
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                      2000 HCM Unsignalized Method
                        Base Volume Alternative
*******************************************************************************
Intersection #3 Ore 99W / Harrison St.
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:            3%               0%               7%               0%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:      12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------|---------------|---------------|---------------|
Upstream Signals:
Link Index:                                                      #14
Dist(miles):                                                     0.000
Speed (mph):                                                      0.00
SignalIndex:                                                     #9
Cycle Time:                                                           0 secs
InitVolume:                                                    0     0
Saturation:                                                    0     0
ArrivalType:                                                   0     0
G/C:                                                        0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                                         0.000 0.000
gq1:                                                        0.00  0.00
gq2:                                                        0.00  0.00
gq:                                                         0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                                           0.000
beta:                                                            0.000
ta (secs):                                                       0.000
F:                                                               0.000
f:                                                         0.000 0.000
vcmax:                                                         0     0
vcmin:                                                         0     0
tp:                                                          0.0   0.0
p:                                                               0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0     0   863   850  1725     0     0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamSat:   0     0     0     0     0     0     0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:   0     0   863   850  1725     0     0 xxxxx xxxxx    0 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:    0     0   353   283    90     0     0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:     0     0   353   283    90     0     0 xxxxx xxxxx    0 xxxxx xxxxx
```

```
---------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                    Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #4 1st St. / Main St.
***************************************************************************
Cycle (sec):          70                Critical Vol./Cap. (X):        0.853
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        21.0
Optimal Cycle:        70                Level Of Service:                  C
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       0  450   190   140  280     0    60 1390   350     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  450   190   140  280     0    60 1390   350     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  450   190   140  280     0    60 1390   350     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  450   190   140  280     0    60 1390   350     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     0  450   190   140  280     0    60 1390   350     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.91  0.67 0.96  1.00  0.82 0.82  0.82  1.00 1.00  1.00
Lanes:       0.00 0.70  0.30  1.00 1.00  0.00  0.10 2.32  0.58  0.00 0.00  0.00
Final Sat.:     0 1221   516  1272 1828     0   155 3595   905     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.37  0.37  0.11 0.15  0.00  0.39 0.39  0.39  0.00 0.00  0.00
Crit Moves:       ****                               ****
Green/Cycle: 0.00 0.43  0.43  0.43 0.43  0.00  0.45 0.45  0.45  0.00 0.00  0.00
Volume/Cap:  0.00 0.85  0.85  0.25 0.35  0.00  0.85 0.85  0.85  0.00 0.00  0.00
Delay/Veh:    0.0 27.2  27.2  12.9 13.6   0.0  20.6 20.6  20.6   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 27.2  27.2  12.9 13.6   0.0  20.6 20.6  20.6   0.0  0.0   0.0
DesignQueue:    0   11     5     3    6     0     1   32     8     0    0     0
***************************************************************************
```

```
---------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #4 1st St. / Main St.
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group:  xxxx  RT    RT     L    T  xxxx   LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:     0    1     1     1    1     0     3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           5                4                5                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.95  0.95  0.96 0.96 xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.96  0.96  xxxx xxxx xxxxx  0.97 0.97  0.97  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.70 xxxx xxxxx  0.97 0.97  0.97  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.91  0.91  0.67 0.96  1.00  0.90 0.90  0.90  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.91  0.91  0.67 0.96  1.00  0.82 0.82  0.82  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
***************************************************************************
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************

Intersection #4 1st St. / Main St.
*******************************************************************************
Approach:                                      North     South     East     West
Cycle Length, C:                              xxxxxx      70     xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          xxxxxx    30.26    xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       xxxxxx    30.26    xxxxxx   xxxxxx
Opposing Effective Green Time, go:            xxxxxx    30.26    xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                 xxxxxx       1     xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:             xxxxxx       1     xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:            xxxxxx     140     xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:  xxxxxx     1.00    xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx     1.00    xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    xxxxxx     2.72    xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:              xxxxxx     640     xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       xxxxxx    12.44    xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                  xxxxxx     1.00    xxxxxx   xxxxxx
Lost Time Per Phase, tl:                      xxxxxx     4.00    xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:   xxxxxx     0.96    xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                    xxxxxx     0.57    xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        xxxxxx    14.51    xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     xxxxxx    15.75    xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx     6.78    xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx     0.00    xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx    xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx     1.00    xxxxxx   xxxxxx
Through-car Equivalents, el1:                 xxxxxx     2.40    xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx     1.00    xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    xxxxxx     0.13    xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  xxxxxx     0.70    xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:             xxxxxx     0.70    xxxxxx   xxxxxx
*******************************************************************************
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                    Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #5 1st St. / Blaine St.
*******************************************************************************
Average Delay (sec/veh):     151.5          Worst Case Level Of Service:      F
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       0   60    35    80   30     0    20 1750    30     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   60    35    80   30     0    20 1750    30     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0   60    35    80   30     0    20 1750    30     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0   60    35    80   30     0    20 1750    30     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx  6.5   6.2   7.1  6.5 xxxxx   4.2 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx  4.0   3.3   3.5  4.0 xxxxx   2.3 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx 1805   598   653 1820 xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx   79   502   382   78 xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx   79   502   134   78 xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   115   112 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx 112.2 151.5 xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     F     F    *     *     A    *     *     *    *     *
ApproachDel:        112.2            151.5            xxxxxx           xxxxxx
ApproachLOS:          F                F                *                *
```

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----------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                     2000 HCM Unsignalized Method
                       Base Volume Alternative
**********************************************************************************
Intersection #5 1st St. / Blaine St.
**********************************************************************************
Approach:      North Bound       South Bound       East Bound        West Bound
Movement:     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:             2%                1%                6%                0%
Grade:              0%                0%                0%                0%
Peds/Hour:          0                 0                 0                 0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet           12 feet           12 feet           12 feet
Time Period: 0.25 hour
------------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                                  #6
Dist(miles):                                 0.000
Speed (mph):                                  0.00
SignalIndex:                                 #4
Cycle Time:                                     0 secs
InitVolume:                                0      0
Saturation:                                0      0
ArrivalType:                               0      0
G/C:                                    0.00   0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                     0.000  0.000
gq1:                                    0.00   0.00
gq2:                                    0.00   0.00
gq:                                     0.00   0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                        0.000
beta:                                         0.000
ta (secs):                                    0.000
F:                                            0.000
f:                                     0.000  0.000
vcmax:                                     0      0
vcmin:                                     0      0
tp:                                      0.0    0.0
p:                                            0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                  0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0  1805   598  653  1820     0    0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamSat:   0     0     0    0     0     0    0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:   0  1805   598  653  1820     0    0 xxxxx xxxxx    0 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:    0    79   502  382    78     0    0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:     0    79   502  382    78     0    0 xxxxx xxxxx    0 xxxxx xxxxx
```

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----------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------

                    Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
**********************************************************************************
Intersection #6 1st St. / College St.
**********************************************************************************
Cycle (sec):           70               Critical Vol./Cap. (X):         0.598
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):        12.9
Optimal Cycle:         37               Level Of Service:                   B
**********************************************************************************
Approach:       North Bound       South Bound       East Bound        West Bound
Movement:      L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted         Permitted         Permitted         Permitted
Rights:          Include           Include           Include           Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  0  1  0   1  0  1  0  0   0  1  1  1  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       0  240    30   205  275     0   155 1555   110     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  240    30   205  275     0   155 1555   110     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  240    30   205  275     0   155 1555   110     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  240    30   205  275     0   155 1555   110     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     0  240    30   205  275     0   155 1555   110     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.96  0.96  0.76 0.96  1.00  0.84 0.84  0.84  1.00 1.00  1.00
Lanes:       0.00 0.89  0.11  1.00 1.00  0.00  0.26 2.56  0.18  0.00 0.00  0.00
Final Sat.:     0 1615   202  1451 1828     0   409 4104   290     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.15  0.15  0.14 0.15  0.00  0.38 0.38  0.38  0.00 0.00  0.00
Crit Moves:                        ****             ****
Green/Cycle: 0.00 0.25  0.25  0.25 0.25  0.00  0.63 0.63  0.63  0.00 0.00  0.00
Volume/Cap:  0.00 0.59  0.59  0.56 0.60  0.00  0.60 0.60  0.60  0.00 0.00  0.00
Delay/Veh:    0.0 25.1  25.1  24.8 25.2   0.0   7.9  7.9   7.9   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 25.1  25.1  24.8 25.2   0.0   7.9  7.9   7.9   0.0  0.0   0.0
DesignQueue:    0    7     1     6    8     0     2   24     2     0    0     0
**********************************************************************************
```

```
pm                        Mon Jul 21, 2003 15:10:41                  Page 15-1
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #: 5193
                     Newberg TSP Refinement - Newberg, Oregon
          Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                   Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                            Base Volume Alternative
*******************************************************************************
Intersection #6 1st St. / College St.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0   1  0  1  0  0   0  1  1  1  0   0  0  0  0  0
Lane Group:  xxxx  RT     RT    L    T   xxxx  LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:     0    1     1    1    1     0    3    3     3    0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid         8               8               8               8
% Hev Veh:           3               4               6               0
Grade:              0%              0%              0%              0%
Parking/Hr:         No              No              No              No
Bus Stp/Hr:          0               0               0               0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0               0               0
ExclusiveRT:     Include         Include         Include         Include
% RT Prtct:          0               0               0               0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.97  0.97 0.96 0.96 xxxxx 0.94 0.94  0.94 xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00 xxxx 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00 xxxx 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
RT Adj:      xxxx 0.99  0.99 xxxx xxxx xxxxx 0.99 0.99  0.99 xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx 0.79 xxxx xxxxx 0.99 0.99  0.99 xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96 0.76 0.96  1.00 0.93 0.93  0.93 1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 0.91 0.91  0.91 1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96 0.76 0.96  1.00 0.84 0.84  0.84 1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00 1.00 1.00  0.00 1.00 1.00  1.00 0.00 0.00  0.00
*******************************************************************************



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pm                        Mon Jul 21, 2003 15:10:41                  Page 15-2
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #: 5193
                     Newberg TSP Refinement - Newberg, Oregon
          Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                          2000 HCM Operations Method
                            Base Volume Alternative
*******************************************************************************
Intersection #6 1st St. / College St.
*******************************************************************************
Approach:                                     North    South     East     West
Cycle Length, C:                             xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:         xxxxxx    17.62   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:      xxxxxx    17.62   xxxxxx   xxxxxx
Opposing Effective Green Time, go:           xxxxxx    17.62   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                xxxxxx        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:            xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:           xxxxxx      205   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt: xxxxxx     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx     1.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                   xxxxxx     3.99   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:             xxxxxx      270   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:      xxxxxx     5.25   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                 xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                     xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:  xxxxxx     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                   xxxxxx     0.75   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:       xxxxxx     8.86   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:    xxxxxx     8.76   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:  xxxxxx     4.43   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx     0.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                xxxxxx     1.71   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:    xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:   xxxxxx     0.23   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm: xxxxxx     0.79   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:            xxxxxx     0.79   xxxxxx   xxxxxx
*******************************************************************************



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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                       Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #7 1st St. / Meridian St.
*****************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):        0.565
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):       9.6
Optimal Cycle:        34              Level Of Service:                  A
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  0  0  1  0   0  1  0  0  0   0  1  1  1  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      0   20     5  165   40     0  135 1690     5    0    0     0
Growth Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   0   20     5  165   40     0  135 1690     5    0    0     0
User Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:    0   20     5  165   40     0  135 1690     5    0    0     0
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   0   20     5  165   40     0  135 1690     5    0    0     0
PCE Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:    0   20     5  165   40     0  135 1690     5    0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment: 1.00 0.96  0.96 0.73 0.73  1.00 0.91 0.91  0.91 1.00 1.00  1.00
Lanes:      0.00 0.80  0.20 0.80 0.20  0.00 0.22 2.77  0.01 0.00 0.00  0.00
Final Sat.:    0 1464   366 1120  272     0  383 4790    14    0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.00 0.01  0.01 0.15 0.15  0.00 0.35 0.35  0.35 0.00 0.00  0.00
Crit Moves:                     ****             ****
Green/Cycle: 0.00 0.26 0.26 0.26 0.26  0.00 0.62 0.62  0.62 0.00 0.00  0.00
Volume/Cap: 0.00 0.05  0.05 0.56 0.56  0.00 0.56 0.56  0.56 0.00 0.00  0.00
Delay/Veh:   0.0 19.4  19.4 24.5 24.5   0.0  7.8  7.8   7.8  0.0  0.0   0.0
User DelAdj: 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  0.0 19.4  19.4 24.5 24.5   0.0  7.8  7.8   7.8  0.0  0.0   0.0
DesignQueue:   0    1     0    5    1     0    2   27     0    0    0     0
*****************************************************************************
```

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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                           Base Volume Alternative
*****************************************************************************
Intersection #7 1st St. / Meridian St.
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  0  0  1  0   0  1  0  0  0   0  1  1  1  0   0  0  0  0  0
Lane Group: xxxx  RT    RT   LT   LT  xxxx  LTR  LTR   LTR xxxx xxxx  xxxx
#LnsInGrps:    0    1     1    1    1     0    3    3     3    0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid       8                8                8                8
% Hev Veh:         1                1                0                6
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx    5    5  xxxx   5r   5r    5r xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.99  0.99 0.99 0.99 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
RT Adj:      xxxx 0.97  0.97 xxxx xxxx xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx 0.74 0.74 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96 0.73 0.73  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 0.91 0.91  0.91 1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96 0.73 0.73  1.00 0.91 0.91  0.91 1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00 1.00 1.00  0.00 1.00 1.00  1.00 0.00 0.00  0.00
*****************************************************************************
```

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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #7 1st St. / Meridian St.
*******************************************************************************
Approach:                                     North    South     East     West
Cycle Length, C:                             xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:         xxxxxx    18.27   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:      xxxxxx    18.27   xxxxxx   xxxxxx
Opposing Effective Green Time, go:           xxxxxx    18.27   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                xxxxxx        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:            xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:           xxxxxx      165   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt: xxxxxx     0.81   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx     0.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                   xxxxxx     3.21   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:             xxxxxx       25   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:      xxxxxx     0.49   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                 xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                     xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:  xxxxxx     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                   xxxxxx     0.74   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:       xxxxxx     0.00   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:    xxxxxx    18.27   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:  xxxxxx     0.00   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx     1.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                xxxxxx     1.44   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:    xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:   xxxxxx     0.20   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm: xxxxxx     0.74   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:            xxxxxx     0.74   xxxxxx   xxxxxx
*******************************************************************************
```

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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #8 Hwy 99 / River St.
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap. (X):         0.969
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):         28.1
Optimal Cycle:       155                Level Of Service:                   C
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       0  0  1  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      0   115   275    0     0     0    0  1780    80  225  2240    10
Growth Adj:  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Initial Bse:   0   115   275    0     0     0    0  1780    80  225  2240    10
User Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Volume:    0   115   275    0     0     0    0  1780    80  225  2240    10
Reduct Vol:    0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:   0   115   275    0     0     0    0  1780    80  225  2240    10
PCE Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Final Vol.:    0   115   275    0     0     0    0  1780    80  225  2240    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900  1900
Adjustment:  1.00  0.98  0.83 1.00  1.00  1.00 1.00  0.89  0.89 0.91  0.87  0.87
Lanes:       0.00  1.00  1.00 0.00  0.00  0.00 0.00  1.91  0.09 1.00  2.99  0.01
Final Sat.:    0  1862  1583    0     0     0    0  3238   146 1736  4963    22
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00  0.06  0.17 0.00  0.00  0.00 0.00  0.55  0.55 0.13  0.45  0.45
Crit Moves:              ****                        ****       ****
Green/Cycle: 0.00  0.18  0.18 0.00  0.00  0.00 0.00  0.57  0.57 0.13  0.70  0.70
Volume/Cap:  0.00  0.34  0.97 0.00  0.00  0.00 0.00  0.97  0.97 0.97  0.64  0.64
Delay/Veh:    0.0  36.5  85.6  0.0   0.0   0.0  0.0  34.8  34.8 93.3   8.6   8.6
User DelAdj: 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
AdjDel/Veh:   0.0  36.5  85.6  0.0   0.0   0.0  0.0  34.8  34.8 93.3   8.6   8.6
DesignQueue:   0     5    13    0     0     0    0    49     2   11    42     0
*******************************************************************************
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               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
********************************************************************************
Intersection #8 Hwy 99 / River St.
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  1  0  1    0  0  0  0  0   0  0  1  1  0   1  0  2  1  0
Lane Group:  xxxx   T     R   xxxx xxxx  xxxx  xxxx  RT    RT   L   RT    RT
#LnsInGrps:     0    1     1     0    0     0     0    2     2    1    3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12   12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                0                6                4
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: xxxx 0.98  0.98  xxxx xxxx xxxxx  xxxx 0.94  0.94  0.96 0.96  0.96
Grade Adj:   xxxx 1.00  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    xxxx 1.00  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  xxxx xxxx xxxxx  xxxx 0.99  0.99  xxxx 1.00  1.00
LT Adj:      xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.98  0.83  1.00 1.00  1.00  1.00 0.94  0.94  0.91 0.96  0.96
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.95  1.00 0.91  0.91
Fnl Sat Adj: 1.00 0.98  0.83  1.00 1.00  1.00  1.00 0.89  0.89  0.91 0.87  0.87
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  0.00 0.00  0.00  0.00 1.00  1.00  1.00 1.00  1.00
********************************************************************************
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               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #9 Hancock St. / Main St.
********************************************************************************
Cycle (sec):          70                 Critical Vol./Cap. (X):         0.851
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):         19.8
Optimal Cycle:        70                 Level Of Service:                   B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0    0    0     0
Lanes:        1  0  1  0  0    0  0  1  0  1   0  0  0  0  0   0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     260  245     0     0  200    45     0    0     0  240 1170   755
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  260  245     0     0  200    45     0    0     0  240 1170   755
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   260  245     0     0  200    45     0    0     0  240 1170   755
Reduct Vol:     0    0     0     0    0     0     0    0     0    0    0     0
Reduced Vol:  260  245     0     0  200    45     0    0     0  240 1170   755
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   260  245     0     0  200    45     0    0     0  240 1170   755
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.54 0.96  1.00  1.00 0.97  0.83  1.00 1.00  1.00  0.76 0.76  0.79
Lanes:       1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  0.34 1.66  1.00
Final Sat.:  1025 1828     0     0 1845  1568     0    0     0  488 2381  1510
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.25 0.13  0.00  0.00 0.11  0.03  0.00 0.00  0.00  0.49 0.49  0.50
Crit Moves:  ****                                                          ****
Green/Cycle: 0.30 0.30  0.00  0.00 0.30  0.30  0.00 0.00  0.00  0.59 0.59  0.59
Volume/Cap:  0.85 0.45  0.00  0.00 0.36  0.10  0.00 0.00  0.00  0.84 0.84  0.85
Delay/Veh:   42.9 20.5   0.0   0.0 19.8  17.8   0.0  0.0   0.0  15.5 15.5  19.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  42.9 20.5   0.0   0.0 19.8  17.8   0.0  0.0   0.0  15.5 15.5  19.8
DesignQueue:    7    7     0     0    6     1     0    0     0    4   21    14
********************************************************************************
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-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #9 Hancock St. / Main St.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  0  1
Lane Group:    L    T   xxxx xxxx   T     R   xxxx xxxx  xxxx   LT   LT     R
#LnsInGrps:      1    1    0    0    1     1    0    0     0    2    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           4                3                0                7
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    2r   2r  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.96 0.96 xxxxx  xxxx 0.97  0.97  xxxx xxxx xxxxx  0.94 0.94  0.94
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx xxxx  0.85  xxxx xxxx xxxxx  xxxx xxxx  0.85
LT Adj:      0.56 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.85 0.85 xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.54 0.96  1.00  1.00 0.97  0.83  1.00 1.00  1.00  0.79 0.79  0.79
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.95 0.95  1.00
Fnl Sat Adj: 0.54 0.96  1.00  1.00 0.97  0.83  1.00 1.00  1.00  0.76 0.76  0.79
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
*******************************************************************************
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #9 Hancock St. / Main St.
*******************************************************************************
Approach:                                       North    South     East     West
Cycle Length, C:                                   70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:            20.87   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:         20.87   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:              20.87   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                       1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                   1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                260   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:     1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                       5.06   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                  200   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:          3.89   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                     1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                         4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:      0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                       0.70   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:           2.14   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       18.73   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                 0.75   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:     1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                    1.60   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:      xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.19   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     0.56   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                0.56   xxxxxx   xxxxxx   xxxxxx
*******************************************************************************
```

```
------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #10 Hancock St / Blaine St.
********************************************************************************
Average Delay (sec/veh):    497.4          Worst Case Level Of Service:        F
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  1  0  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      80   40     0     0   20    20     0    0     0   100 2170    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   80   40     0     0   20    20     0    0     0   100 2170    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    80   40     0     0   20    20     0    0     0   100 2170    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    80   40     0     0   20    20     0    0     0   100 2170    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5 xxxxx xxxxx  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0 xxxxx xxxxx  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  933 2380 xxxxx  xxxx 2375   728  xxxx xxxx xxxxx     0 xxxx xxxxx
Potent Cap.:  248   35 xxxxx  xxxx   35   427  xxxx xxxx xxxxx     0 xxxx xxxxx
Move Cap.:    130   35 xxxxx  xxxx   35   427  xxxx xxxx xxxxx     0 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:   68 xxxx xxxxx  xxxx xxxx    65  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:497.4 xxxx xxxxx xxxxx xxxx 125.3 xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Shared LOS:     F    *     *     *    *     F     *    *     *     A    *     *
ApproachDel:      497.4            125.3            xxxxxx           xxxxxx
ApproachLOS:        F                F                *                *
```

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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                      2000 HCM Unsignalized Method
                        Base Volume Alternative
********************************************************************************
Intersection #10 Hancock St / Blaine St.
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:            0%               0%               0%               4%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:      12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                                                        #12
Dist(miles):                                                       0.000
Speed (mph):                                                        0.00
SignalIndex:                                                       #11
Cycle Time:                                                            0 secs
InitVolume:                                                      0     0
Saturation:                                                      0     0
ArrivalType:                                                     0     0
G/C:                                                          0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                                           0.000 0.000
gq1:                                                          0.00  0.00
gq2:                                                          0.00  0.00
gq:                                                           0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                                             0.000
beta:                                                              0.000
ta (secs):                                                         0.000
F:                                                                 0.000
f:                                                           0.000 0.000
vcmax:                                                           0     0
vcmin:                                                           0     0
tp:                                                            0.0   0.0
p:                                                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 933  2380     0     0  2375   728     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamSat:   0     0     0     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol: 933  2380     0     0  2375   728     0 xxxxx xxxxx     0 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  248    35     0     0    35   427     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:   248    35     0     0    35   427     0 xxxxx xxxxx     0 xxxxx xxxxx
```

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               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                    Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #11 Hancock St. / College St.
*******************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):         0.854
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        19.1
Optimal Cycle:        71              Level Of Service:                 B
*******************************************************************************
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      95   310     0     0   400   100     0     0     0    50  2100   170
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   95   310     0     0   400   100     0     0     0    50  2100   170
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    95   310     0     0   400   100     0     0     0    50  2100   170
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   95   310     0     0   400   100     0     0     0    50  2100   170
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    95   310     0     0   400   100     0     0     0    50  2100   170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.79  0.99  1.00  1.00  0.94  0.94  1.00  1.00  1.00  0.86  0.86  0.86
Lanes:       1.00  1.00  0.00  0.00  0.80  0.20  0.00  0.00  0.00  0.06  2.72  0.22
Final Sat.:  1507  1881     0     0  1423   356     0     0     0   105  4418   358
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06  0.16  0.00  0.00  0.28  0.28  0.00  0.00  0.00  0.48  0.48  0.48
Crit Moves:                          ****                                   ****
Green/Cycle: 0.33  0.33  0.00  0.00  0.33  0.33  0.00  0.00  0.00  0.56  0.56  0.56
Volume/Cap:  0.19  0.50  0.00  0.00  0.85  0.85  0.00  0.00  0.00  0.85  0.85  0.85
Delay/Veh:   17.0  19.5   0.0   0.0  33.6  33.6   0.0   0.0   0.0  16.0  16.0  16.0
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  17.0  19.5   0.0   0.0  33.6  33.6   0.0   0.0   0.0  16.0  16.0  16.0
DesignQueue:    3     8     0     0    11     3     0     0     0     1    41     3
*******************************************************************************
```

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-------------------------------------------------------------------------------

               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************
Intersection #11 Hancock St. / College St.
*******************************************************************************
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
Lane Group:     L     T  xxxx  xxxx    RT    RT  xxxx  xxxx  xxxx   LTR   LTR   LTR
#LnsInGrps:     1     1     0     0     1     1     0     0     0     3     3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:            1                 4                 0                 4
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:     Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      2  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx    5r    5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Hev Veh Adj: 0.99  0.99 xxxxx  xxxx  0.96  0.96  xxxx  xxxx xxxxx  0.96  0.96  0.96
Grade Adj:   1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Parking Adj: xxxx  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Bus Stp Adj: xxxx  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Area Adj:    1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
RT Adj:      xxxx  xxxx xxxxx  xxxx  0.97  0.97  xxxx  xxxx xxxxx  0.99  0.99  0.99
LT Adj:      0.80  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  0.99  0.99  0.99
PedBike Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj: 0.79  0.99  1.00  1.00  0.94  0.94  1.00  1.00  1.00  0.94  0.94  0.94
Usr Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.91  0.91  0.91
Fnl Sat Adj: 0.79  0.99  1.00  1.00  0.94  0.94  1.00  1.00  1.00  0.86  0.86  0.86
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00  1.00  0.00  0.00  1.00  1.00  0.00  0.00  0.00  1.00  1.00  1.00
*******************************************************************************
```

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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #11 Hancock St. / College St.
*****************************************************************************
Approach:                                     North    South     East     West
Cycle Length, C:                                 70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          23.04   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        23.04   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            23.04   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                     1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                 1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               95   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:   1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    1.00   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                     1.85   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                500   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        9.72   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                       4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:    1.86   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                     0.67   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        14.31   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:      8.73   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:    6.23   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   0.00   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:   1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                  2.10   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:      1.00   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.17   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.80   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:              0.80   xxxxxx   xxxxxx   xxxxxx
*****************************************************************************
```

```
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #12 Hancock St. / Meridian St.
*****************************************************************************
Cycle (sec):            70               Critical Vol./Cap. (X):        0.694
Loss Time (sec):         8 (Y+R =  4 sec) Average Delay (sec/veh):       10.0
Optimal Cycle:          45               Level Of Service:                  B
*****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted        Permitted        Permitted
Rights:         Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  1  0  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      5  130     0    0  155    80    0    0     0   75 2210    75
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   5  130     0    0  155    80    0    0     0   75 2210    75
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:    5  130     0    0  155    80    0    0     0   75 2210    75
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   5  130     0    0  155    80    0    0     0   75 2210    75
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:    5  130     0    0  155    80    0    0     0   75 2210    75
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.97 0.97  1.00 1.00 0.93  0.93 1.00 1.00  1.00 0.86 0.86  0.86
Lanes:       0.04 0.96  0.00 0.00 0.66  0.34 0.00 0.00  0.00 0.09 2.81  0.10
Final Sat.:    68 1775     0    0 1172   605    0    0     0  155 4578   155
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.07  0.00 0.00 0.13  0.13 0.00 0.00  0.00 0.48 0.48  0.48
Crit Moves:                       ****                               ****
Green/Cycle: 0.19 0.19  0.00 0.00 0.19  0.19 0.00 0.00  0.00 0.70 0.70  0.70
Volume/Cap:  0.38 0.38  0.00 0.00 0.69  0.69 0.00 0.00  0.00 0.69 0.69  0.69
Delay/Veh:   25.4 25.4   0.0  0.0 32.6  32.6  0.0  0.0   0.0  6.9  6.9   6.9
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  25.4 25.4   0.0  0.0 32.6  32.6  0.0  0.0   0.0  6.9  6.9   6.9
DesignQueue:    0    4     0    0    5     3    0    0     0    1   29     1
*****************************************************************************
```

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-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #12 Hancock St. / Meridian St.
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  1  0  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
Lane Group:   LT   LT  xxxx  xxxx  RT    RT  xxxx xxxx  xxxx   LTR  LTR   LTR
#LnsInGrps:     1    1     0     0    1     1    0    0     0     3    3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12   12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                0                5
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    5r   5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98  0.98  xxxx xxxx xxxxx  0.95 0.95  0.95
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: 1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Bus Stp Adj: 1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx 0.95  0.95  xxxx xxxx xxxxx  1.00 1.00  1.00
LT Adj:      0.99 0.99 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  1.00 1.00  1.00
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.97 0.97  1.00  1.00 0.93  0.93  1.00 1.00  1.00  0.94 0.94  0.94
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91
Fnl Sat Adj: 0.97 0.97  1.00  1.00 0.93  0.93  1.00 1.00  1.00  0.86 0.86  0.86
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
*******************************************************************************
```

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-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #12 Hancock St. / Meridian St.
*******************************************************************************
Approach:                                     North     South      East      West
Cycle Length, C:                                 70    xxxxxx    xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:          13.34    xxxxxx    xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:       13.34    xxxxxx    xxxxxx    xxxxxx
Opposing Effective Green Time, go:            13.34    xxxxxx    xxxxxx    xxxxxx
Number Of Opposing Lanes, No:                     1    xxxxxx    xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:                 1    xxxxxx    xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                5    xxxxxx    xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt:   0.04    xxxxxx    xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    0.00    xxxxxx    xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                     0.10    xxxxxx    xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:                235    xxxxxx    xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        4.57    xxxxxx    xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00    xxxxxx    xxxxxx    xxxxxx
Lost Time Per Phase, tl:                       4.00    xxxxxx    xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:    6.93    xxxxxx    xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                     0.81    xxxxxx    xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:         8.57    xxxxxx    xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu:      4.77    xxxxxx    xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n:    0.82    xxxxxx    xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   1.00    xxxxxx    xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx    xxxxxx    xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx    xxxxxx    xxxxxx    xxxxxx
Through-car Equivalents, el1:                  1.77    xxxxxx    xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2:      1.00    xxxxxx    xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.16    xxxxxx    xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.99    xxxxxx    xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:              0.99    xxxxxx    xxxxxx    xxxxxx
*******************************************************************************
```

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---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
               Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                   Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #13 Hwy 99 / Villa Rd.
***************************************************************************
Cycle (sec):          135             Critical Vol./Cap. (X):        1.108
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):     78.5
Optimal Cycle:        180             Level Of Service:                  E
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     465  265    20  295  210    70   90 1260     5   15 1520   150
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  465  265    20  295  210    70   90 1260     5   15 1520   150
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:   465  265    20  295  210    70   90 1260     5   15 1520   150
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  465  265    20  295  210    70   90 1260     5   15 1520   150
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:   465  265    20  295  210    70   90 1260     5   15 1520   150
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.71 0.76  0.76 0.83 0.87  0.74 0.77 0.76  0.76 0.75 0.75  0.67
Lanes:       2.00 0.93  0.07 1.00 1.00  1.00 1.00 1.99  0.01 1.00 2.00  1.00
Final Sat.:  2693 1345   102 1570 1653  1405 1455 2895    11 1433 2866  1282
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.20  0.20 0.19 0.13  0.05 0.06 0.44  0.44 0.01 0.53  0.12
Crit Moves:       ****       ****            ****                 ****
Green/Cycle: 0.20 0.18  0.18 0.17 0.15  0.15 0.06 0.52  0.52 0.01 0.48  0.48
Volume/Cap:  0.86 1.11  1.11 1.11 0.86  0.34 1.11 0.83  0.83 0.83 1.11  0.24
Delay/Veh:   65.7  144 143.8 143.4 81.9 52.6 196.1 31.5 31.5 199.5 94.9 21.0
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  65.7  144 143.8 143.4 81.9 52.6 196.1 31.5 31.5 199.5 94.9 21.0
DesignQueue:   29   17     1   19   14     5    6   50     0    1   66     6
***************************************************************************
```

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---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
               Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

              Level Of Service Detailed Computation Report
                     2000 HCM Operations Method
                       Base Volume Alternative
***************************************************************************
Intersection #13 Hwy 99 / Villa Rd.
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
Lane Group:     L   RT     RT    L    T     R    L   RT    RT    L    T     R
#LnsInGrps:     2    1      1    1    1     1    1    2     2    1    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid         8               8                8                8
% Hev Veh:          30              15               24               26
Grade:              0%              0%               0%               0%
Parking/Hr:         No              No               No               No
Bus Stp/Hr:          0               0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0                0                0
ExclusiveRT:    Include         Include          Include          Include
% RT Prtct:          0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:       1 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Hev Veh Adj: 0.77 0.77  0.77 0.87 0.87  0.87 0.81 0.81  0.81 0.79 0.79  0.79
Grade Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00 xxxx xxxx  1.00 xxxx 1.00  1.00 xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00  1.00 xxxx xxxx  1.00 xxxx 1.00  1.00 xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99 xxxx xxxx  0.85 xxxx 1.00  1.00 xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 0.73 0.76  0.76 0.83 0.87  0.74 0.77 0.81  0.81 0.75 0.79  0.67
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 0.97 1.00  1.00 1.00 1.00  1.00 1.00 0.95  0.95 1.00 0.95  1.00
Fnl Sat Adj: 0.71 0.76  0.76 0.83 0.87  0.74 0.77 0.76  0.76 0.75 0.75  0.67
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
***************************************************************************
```

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--------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #: 5193
                     Newberg TSP Refinement - Newberg, Oregon
          Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                       Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #14 Hwy 99 / Elliot Rd.
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):         1.054
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):        51.9
Optimal Cycle:       180               Level Of Service:                   D
********************************************************************************
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected         Protected
Rights:          Include          Include          Include           Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  1  0  0  1   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       90   20   100    50   25   280   140 1440    55    45 1580    90
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    90   20   100    50   25   280   140 1440    55    45 1580    90
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     90   20   100    50   25   280   140 1440    55    45 1580    90
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    90   20   100    50   25   280   140 1440    55    45 1580    90
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     90   20   100    50   25   280   140 1440    55    45 1580    90
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   0.28 0.28  0.70  0.73 0.73  0.73  0.79 0.79  0.79  0.77 0.76  0.76
Lanes:        0.82 0.18  1.00  0.14 0.07  0.79  1.00 1.93  0.07  1.00 1.89  0.11
Final Sat.:    431   96  1324   195   98  1094  1504 2879   110  1455 2731   156
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.21 0.21  0.08  0.26 0.26  0.26  0.09 0.50  0.50  0.03 0.58  0.58
Crit Moves:                         ****        ****                   ****
Green/Cycle:  0.24 0.24  0.24  0.24 0.24  0.24  0.09 0.60  0.60  0.04 0.55  0.55
Volume/Cap:   0.86 0.86  0.31  1.05 1.05  1.05  1.05 0.83  0.83  0.83 1.05  1.05
Delay/Veh:    77.1 77.1  31.6 101.8  102 101.8 138.8 19.5  19.5 113.2 60.9  60.9
User DelAdj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   77.1 77.1  31.6 101.8  102 101.8 138.8 19.5  19.5 113.2 60.9  60.9
DesignQueue:     4    1     4     2    1    12     7   36     1     2   45     3
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--------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #: 5193
                     Newberg TSP Refinement - Newberg, Oregon
          Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                            Base Volume Alternative
********************************************************************************
Intersection #14 Hwy 99 / Elliot Rd.
********************************************************************************
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  1  0  0  1   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
Lane Group:   LT   LT     R   LTR  LTR   LTR     L   RT    RT     L   RT    RT
#LnsInGrps:     1    1     1     1    1     1     1    2     2     1    2     2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid          8                8                8                8
% Hev Veh:           22               15               20               24
Grade:               0%               0%               0%               0%
Parking/Hr:          No               No               No               No
Bus Stp/Hr:           0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                0                0                0
ExclusiveRT:       Include          Include          Include          Include
% RT Prtct:           0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      5    5  xxxx     5    5     5     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj:  0.82 0.82  0.82  0.87 0.87  0.87  0.83 0.83  0.83  0.81 0.81  0.81
Grade Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj:  xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj:  xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:       xxxx xxxx  0.85  0.89 0.89  0.89  xxxx 0.99  0.99  xxxx 0.99  0.99
LT Adj:       0.34 0.34 xxxxx  0.94 0.94  0.94  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj:  0.28 0.28  0.70  0.73 0.73  0.73  0.79 0.83  0.83  0.77 0.80  0.80
Usr Sat Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.95  1.00 0.95  0.95
Fnl Sat Adj:  0.28 0.28  0.70  0.73 0.73  0.73  0.79 0.79  0.79  0.77 0.76  0.76
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
********************************************************************************
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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                           Base Volume Alternative
*****************************************************************************
Intersection #14 Hwy 99 / Elliot Rd.
*****************************************************************************
Approach:                                    North    South    East     West
Cycle Length, C:                               100      100   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:         24.27    24.27   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:      24.27    24.27   xxxxxx   xxxxxx
Opposing Effective Green Time, go:           24.27    24.27   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                    1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:              90       50   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:  0.82     0.14   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   0.14   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    2.50     1.39   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:               355      110   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       9.86     3.06   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                  1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                      4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:   0.43     4.43   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                    0.76     0.76   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:       17.05     0.93   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     7.22    19.84   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   8.31   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  0.86   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:            xxxxxx     0.81   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  0.82     0.14   xxxxxx   xxxxxx
Through-car Equivalents, el1:                 2.01     1.57   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     5.09   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    0.15     0.09   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  0.34     0.94   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:             0.34     0.94   xxxxxx   xxxxxx
*****************************************************************************
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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #15 Hwy 99 / Springbrook St.
*****************************************************************************
Cycle (sec):       135              Critical Vol./Cap. (X):        1.054
Loss Time (sec):     4 (Y+R = 16 sec) Average Delay (sec/veh):      76.3
Optimal Cycle:     180              Level Of Service:                  E
*****************************************************************************
Approach:     North Bound     South Bound      East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected       Protected       Protected       Protected
Rights:          Include         Include         Include         Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       2  0  1  0  1   2  0  1  0  1   1  0  2  0  1   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     330  550    50   380  500    20    40 1225   410   200 1560   315
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  330  550    50   380  500    20    40 1225   410   200 1560   315
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   330  550    50   380  500    20    40 1225   410   200 1560   315
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  330  550    50   380  500    20    40 1225   410   200 1560   315
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   330  550    50   380  500    20    40 1225   410   200 1560   315
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.79 0.86  0.73  0.82 0.89  0.76  0.79 0.79  0.71  0.77 0.77  0.69
Lanes:       2.00 1.00  1.00  2.00 1.00  1.00  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  2994 1625  1381  3127 1697  1442  1504 3007  1345  1455 2910  1302
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.34  0.04  0.12 0.29  0.01  0.03 0.41  0.30  0.14 0.54  0.24
Crit Moves:       ****        ****             ****                   ****
Green/Cycle: 0.12 0.32  0.32  0.12 0.32  0.32  0.03 0.40  0.40  0.13 0.51  0.51
Volume/Cap:  0.93 1.05  0.11  1.05 0.93  0.04  1.05 1.02  0.76  1.02 1.05  0.48
Delay/Veh:   88.8  100  32.4 122.0 67.0  31.9 228.5 71.8  41.5 128.1 72.3  22.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  88.8  100  32.4 122.0 67.0  31.9 228.5 71.8  41.5 128.1 72.3  22.0
DesignQueue:   22   30     3    26   27     1     3   60    20    13   64    12
*****************************************************************************
```

```
-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************

Intersection #15 Hwy 99 / Springbrook St.
*******************************************************************************

Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
Lane Group:    L    T     R     L    T     R     L    T     R     L    T     R
#LnsInGrps:    2    1     1     2    1     1     1    2     1     1    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid       8                8                8                8
% Hev Veh:        17               12               20               24
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.86 0.86  0.86  0.89 0.89  0.89  0.83 0.83  0.83  0.81 0.81  0.81
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.81 0.86  0.73  0.85 0.89  0.76  0.79 0.83  0.71  0.77 0.81  0.69
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 0.97 1.00  1.00  0.97 1.00  1.00  1.00 0.95  1.00  1.00 0.95  1.00
Fnl Sat Adj: 0.79 0.86  0.73  0.82 0.89  0.76  0.79 0.79  0.71  0.77 0.77  0.69
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************
```

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-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
      Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                   Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #16 Hwy 99 / Brutcher St.
*******************************************************************************
Cycle (sec):         110               Critical Vol./Cap. (X):         0.983
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):        48.1
Optimal Cycle:       180               Level Of Service:                  D
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    5    5     5     5    5     5     3   10     0     3   10     0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     225   20   270    20    5    65    30 1360    90   270 1850     5
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  225   20   270    20    5    65    30 1360    90   270 1850     5
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   225   20   270    20    5    65    30 1360    90   270 1850     5
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  225   20   270    20    5    65    30 1360    90   270 1850     5
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   225   20   270    20    5    65    30 1360    90   270 1850     5
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.59 0.71  0.71  0.21 0.68  0.68  0.78 0.78  0.70  0.76 0.76  0.68
Lanes:       1.00 0.07  0.93  1.00 0.07  0.93  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  1117   93  1257   408   92  1195  1491 2982  1334  1444 2888  1292
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.21  0.21  0.05 0.05  0.05  0.02 0.46  0.07  0.19 0.64  0.00
Crit Moves:       ****                         ****                   ****
Green/Cycle: 0.22 0.22  0.22  0.22 0.22  0.22  0.03 0.48  0.48  0.20 0.65  0.65
Volume/Cap:  0.93 0.99  0.99  0.23 0.25  0.25  0.74 0.95  0.14  0.95 0.99  0.01
Delay/Veh:   80.9 92.8  92.8  36.8 36.1  36.1 104.5 41.9  16.2  84.8 37.6   6.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  80.9 92.8  92.8  36.8 36.1  36.1 104.5 41.9  16.2  84.8 37.6   6.9
DesignQueue:   11    1    13     1    0     3     2   48     3    14   46     0
*******************************************************************************
```

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pm                      Mon Jul 21, 2003 15:10:41                    Page 35-1
------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
******************************************************************************
Intersection #16 Hwy 99 / Brutcher St.
******************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  2  0  1    1  0  2  0  1
Lane Group:   L    RT    RT    L    RT    RT    L    T     R    L    T     R
#LnsInGrps:   1    1      1    1    1      1    1    2      1    1    2      1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:  12   12     12   12   12     12   12   12     12   12   12     12
CrosswalkWid      8                8                8                8
% Hev Veh:        21               27               21               25
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:       0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:      0                0                0                0
ExclusiveRT:   Include          Include          Include          Include
% RT Prtct:       0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx    2 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.83 0.83  0.83  0.79 0.79  0.79  0.83 0.83  0.83  0.80 0.80  0.80
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.86  0.86  xxxx 0.86  0.86  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:      0.71 xxxx xxxxx  0.27 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.59 0.71  0.71  0.21 0.68  0.68  0.78 0.83  0.70  0.76 0.80  0.68
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.95  1.00  1.00 0.95  1.00
Fnl Sat Adj: 0.59 0.71  0.71  0.21 0.68  0.68  0.78 0.78  0.70  0.76 0.76  0.68
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
******************************************************************************



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pm                      Mon Jul 21, 2003 15:10:41                    Page 35-2
------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
******************************************************************************
Intersection #16 Hwy 99 / Brutcher St.
******************************************************************************
Approach:                                       North    South     East    West
Cycle Length, C:                                  110      110   xxxxxx  xxxxxx
Actual Green Time Per Lane Group, G:            23.86    23.86   xxxxxx  xxxxxx
Effective Green Time Per Lane Group, g:         23.86    23.86   xxxxxx  xxxxxx
Opposing Effective Green Time, go:              23.86    23.86   xxxxxx  xxxxxx
Number Of Opposing Lanes, No:                       1        1   xxxxxx  xxxxxx
Number Of Lanes In Lane Group, N:                   1        1   xxxxxx  xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                225       20   xxxxxx  xxxxxx
Proportion of Left Turns in Lane Group, Plt:     1.00     1.00   xxxxxx  xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    xxxxxx   xxxxxx   xxxxxx  xxxxxx
Left Turns Per Cycle, LTC:                       6.88     0.61   xxxxxx  xxxxxx
Adjusted Opposing Flow Rate, Vo:                   70      290   xxxxxx  xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:          2.14     8.86   xxxxxx  xxxxxx
Opposing Platoon Ratio, Rpo:                     1.00     1.00   xxxxxx  xxxxxx
Lost Time Per Phase, tl:                         4.00     4.00   xxxxxx  xxxxxx
Eff grn until arrival of left-turn car, gf:      0.00     0.00   xxxxxx  xxxxxx
Opposing Queue Ratio, qro:                       0.78     0.78   xxxxxx  xxxxxx
Eff grn blocked by opposing queue, gq:           0.00    12.54   xxxxxx  xxxxxx
Eff grn while left turns filter thru, gu:       23.86    11.32   xxxxxx  xxxxxx
Max opposing cars arriving during gq-gf, n:    xxxxxx   xxxxxx   xxxxxx  xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   xxxxxx   xxxxxx   xxxxxx  xxxxxx
Left-turn Saturation Factor, fs:                 0.83     0.69   xxxxxx  xxxxxx
Proportion of Left Turns in Shared Lane, pl:     1.00     1.00   xxxxxx  xxxxxx
Through-car Equivalents, el1:                    1.41     1.74   xxxxxx  xxxxxx
Single Lane Through-car Equivalents, el2:      xxxxxx   xxxxxx   xxxxxx  xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.17     0.17   xxxxxx  xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     0.71     0.27   xxxxxx  xxxxxx
Left Turn Adjustment Factor, flt:                0.71     0.27   xxxxxx  xxxxxx
******************************************************************************



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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #17 Hwy 99 / Vittoria St.
*******************************************************************************
Average Delay (sec/veh):    379.0           Worst Case Level Of Service:      F
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0   0  1! 0   0   0   0  1! 0   0   1   0  1   1  0   1   0  1   1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      35     0    10    30     0    35    45  1610     5     5  2110   125
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   35     0    10    30     0    35    45  1610     5     5  2110   125
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    35     0    10    30     0    35    45  1610     5     5  2110   125
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Final Vol.:    35     0    10    30     0    35    45  1610     5     5  2110   125
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.9  xxxx   7.3   8.0  xxxx   7.4   4.5  xxxx xxxxx   4.6  xxxx xxxxx
FollowUpTim:  3.7  xxxx   3.5   3.8  xxxx   3.6   2.4  xxxx xxxxx   2.5  xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 2768  xxxx   807  3078  xxxx  1118  2235  xxxx xxxxx  1615  xxxx xxxxx
Potent Cap.:    7  xxxx   285     3  xxxx   167   172  xxxx xxxxx   301  xxxx xxxxx
Move Cap.:      4  xxxx   285     3  xxxx   167   172  xxxx xxxxx   301  xxxx xxxxx
Total Cap:     36     0 xxxxx    27     0 xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx  33.3  xxxx xxxxx  17.2  xxxx xxxxx
LOS by Move:    *     *     *     *     *     *     D     *     *     C     *     *
Movement:      LT  - LTR  - RT    LT  - LTR  - RT    LT  - LTR  - RT    LT  - LTR  - RT
Shared Cap.: xxxx    45 xxxxx  xxxx    49 xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
Shrd StpDel:xxxxx   274 xxxxx xxxxx   379 xxxxx xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shared LOS:     *     F     *     *     F     *     *     *     *     *     *     *
ApproachDel:       273.8             379.0            xxxxxx            xxxxxx
ApproachLOS:          F                 F                 *                 *


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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                           Base Volume Alternative
*******************************************************************************
Intersection #17 Hwy 99 / Vittoria St.
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:            22%              26%              22%              27%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------|---------------|---------------|---------------|
Upstream Signals:
Link Index:                                     #83
Dist(miles):                                   0.000
Speed (mph):                                    0.00
SignalIndex:                                    #16
Cycle Time:                                         0 secs
InitVolume:                                   0     0
Saturation:                                   0     0
ArrivalType:                                  0     0
G/C:                                       0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                        0.000 0.000
gq1:                                       0.00  0.00
gq2:                                       0.00  0.00
gq:                                        0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                          0.000
beta:                                           0.000
ta (secs):                                      0.000
F:                                              0.000
f:                                        0.000 0.000
vcmax:                                        0     0
vcmin:                                        0     0
tp:                                         0.0   0.0
p:                                              0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                  0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:2768     0   808 3078     0  1118 2235 xxxxx xxxxx 1615 xxxxx xxxxx
UpstreamSat:   0     0     0    0     0     0    0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:2768     0   808 3078     0  1118 2235 xxxxx xxxxx 1615 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:    7     0   285    3     0   167  172 xxxxx xxxxx  301 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:     7     0   285    3     0   167  172 xxxxx xxxxx  301 xxxxx xxxxx

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```

```
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage:  1 car ]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:1703     0 xxxxx 2183     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol:1703     0 xxxxx 2183     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:   77     0 xxxxx   34     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.:  77     0 xxxxx   34     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:    57     0 xxxxx   34     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:1065     0 xxxxx  895     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol:1065     0 xxxxx  895     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:  205     0 xxxxx  257     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 205     0 xxxxx  257     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   159     0 xxxxx  183     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
```

```
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #18 Mountainview/Aspen S. (VOLS)
********************************************************************************
Average Delay (sec/veh): OVERFLOW          Worst Case Level Of Service:      F
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Yield Sign      Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     430   75     0     0   40   225   130    0   300     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  430   75     0     0   40   225   130    0   300     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80
PHF Volume:   538   94     0     0   50   281   163    0   375     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   538   94     0     0   50   281   163    0   375     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.3  6.7 xxxxx xxxxx  6.7   6.4   4.3 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.7  4.2 xxxxx xxxxx  4.2   3.5   2.4 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  538  513 xxxxx  xxxx  700     0     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  428  440 xxxxx  xxxx  339     0     0 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    379  440 xxxxx  xxxx  339     0     0 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  387 xxxx xxxxx  xxxx xxxx     0  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:320.5 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     F    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      320.5            xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        F                F                *                *
```

```
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                          Base Volume Alternative
*******************************************************************************
Intersection #18 Mountainview/Aspen S. (VOLS)
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
-----------|---------------|---------------|---------------|---------------|
HevVeh:            20%             23%             20%              0%
Grade:              0%              0%              0%              0%
Peds/Hour:          0               0               0               0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet         12 feet         12 feet         12 feet
Time Period: 0.25 hour
```

```
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #19 Springbrook St. / Mt. View Dr.
*******************************************************************************
Average Delay (sec/veh):     444.3           Worst Case Level Of Service:     F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  1  0   0  1  0  0  0   0  0  0  0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:        0  360   135  215  200     0    0    0     0  130    0   215
Growth Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:     0  360   135  215  200     0    0    0     0  130    0   215
User Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:      0.82 0.82  0.82 0.82 0.82  0.82 0.82 0.82  0.82 0.82 0.82  0.82
PHF Volume:      0  439   165  262  244     0    0    0     0  159    0   262
Reduct Vol:      0    0     0    0    0     0    0    0     0    0    0     0
Final Vol.:      0  439   165  262  244     0    0    0     0  159    0   262
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.3 xxxx xxxxx xxxxx xxxx xxxxx   6.7 xxxx   6.5
FollowUpTim:xxxxx xxxx xxxxx   2.4 xxxx xxxxx xxxxx xxxx xxxxx   3.7 xxxx   3.5
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   604 xxxx xxxxx  xxxx xxxx xxxxx  1290 xxxx   521
Potent Cap.: xxxx xxxx xxxxx   871 xxxx xxxxx  xxxx xxxx xxxxx   161 xxxx   511
Move Cap.:   xxxx xxxx xxxxx   871 xxxx xxxxx  xxxx xxxx xxxxx   117 xxxx   511
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx   9.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  225 xxxxx
Shrd StpDel:xxxxx xxxx xxxxx  10.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  444 xxxxx
Shared LOS:     *    *     *     B    *     *     *    *     *     *    F     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           444.3
ApproachLOS:        *                *                *                F
```

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-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
          Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                       2000 HCM Unsignalized Method
                          Base Volume Alternative
*******************************************************************************
Intersection #19 Springbrook St. / Mt. View Dr.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:            27%              25%               0%              26%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:      #90
Dist(miles):     0.000
Speed (mph):      0.00
SignalIndex:     #15
Cycle Time:            0 secs
InitVolume:     0      0
Saturation:     0      0
ArrivalType:    0      0
G/C:         0.00   0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:          0.000  0.000
gq1:         0.00   0.00
gq2:         0.00   0.00
gq:          0.00   0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:               0.000
beta:                0.000
ta (secs):           0.000
F:                   0.000
f:          0.000  0.000
vcmax:          0      0
vcmin:          0      0
tp:           0.0    0.0
p:                   0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:        0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:    0 xxxxx xxxxx  604 xxxxx xxxxx    0     0     0 1290     0   521
UpstreamSat:    0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol:    0 xxxxx xxxxx  604 xxxxx xxxxx    0     0     0 1290     0   521
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:     0 xxxxx xxxxx  871 xxxxx xxxxx    0     0     0  161     0   511
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:      0 xxxxx xxxxx  871 xxxxx xxxxx    0     0     0  161     0   511
```

```
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
          Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #20 Villa Rd. / Haworth Av.
*******************************************************************************
Average Delay (sec/veh):    422.1           Worst Case Level Of Service:      F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:        1  215   300   280  140     1     1    1     1   260    0   280
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     1  215   300   280  140     1     1    1     1   260    0   280
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:      1  236   330   308  154     1     1    1     1   286    0   308
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      1  236   330   308  154     1     1    1     1   286    0   308
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.3 xxxx xxxxx   4.3 xxxx xxxxx   7.1  6.5   6.2   7.3 xxxx   6.4
FollowUpTim:  2.4 xxxx xxxxx   2.4 xxxx xxxxx   3.5  4.0   3.3   3.7 xxxx   3.5
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  155 xxxx xxxxx   566 xxxx xxxxx  1327 1338   154  1174 xxxx   401
Potent Cap.: 1323 xxxx xxxxx   931 xxxx xxxxx   134  154   897   155 xxxx   610
Move Cap.:   1323 xxxx xxxxx   931 xxxx xxxxx    46   93   897   105 xxxx   610
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  7.7 xxxx xxxxx   8.9 xxxx xxxxx xxxxx xxxx xxxxx 858.6 xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     F    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx   89 xxxxx  xxxx xxxx   610
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 47.1 xxxxx xxxxx xxxx  16.8
Shared LOS:     *    *     *     *    *     *     *    E     *     *    *     C
ApproachDel:      xxxxxx           xxxxxx            47.1            422.1
ApproachLOS:         *                *                E                F
```

```
----------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                            Base Volume Alternative
**********************************************************************************
Intersection #20 Villa Rd. / Haworth Av.
**********************************************************************************
Approach:        North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:            20%              18%               0%              21%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:        #86
Dist(miles):       0.000
Speed (mph):        0.00
SignalIndex:       #13
Cycle Time:             0 secs
InitVolume:      0      0
Saturation:      0      0
ArrivalType:     0      0
G/C:          0.00   0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:           0.000  0.000
gq1:          0.00   0.00
gq2:          0.00   0.00
gq:           0.00   0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:             0.000
beta:              0.000
ta (secs):         0.000
F:                 0.000
f:           0.000 0.000
vcmax:           0      0
vcmin:           0      0
tp:            0.0    0.0
p:                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 155 xxxxx xxxxx  566 xxxxx xxxxx 1327  1338   154 1174     0   401
UpstreamSat:   0 xxxxx xxxxx    0 xxxxx xxxxx    0     0     0    0     0     0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 155 xxxxx xxxxx  566 xxxxx xxxxx 1327  1338   154 1174     0   401
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1323 xxxxx xxxxx  931 xxxxx xxxxx  134   154   897  155     0   610
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1323 xxxxx xxxxx  931 xxxxx xxxxx  134   154   897  155     0   610
```

```
----------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------

                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
**********************************************************************************
Intersection #21 Springbrook St. / Haworth Av.
**********************************************************************************
Average Delay (sec/veh): OVERFLOW          Worst Case Level Of Service:        F
**********************************************************************************
Approach:        North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:         1  0  0  1  0    1  0  0  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     410  350    15    30  275   300   175   60   335    70   40    60
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  410  350    15    30  275   300   175   60   335    70   40    60
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.89 0.89  0.89  0.89 0.89  0.89  0.89 0.89  0.89  0.89 0.89  0.89
PHF Volume:   461  393    17    34  309   337   197   67   376    79   45    67
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   461  393    17    34  309   337   197   67   376    79   45    67
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.3 xxxx xxxxx   4.3 xxxx xxxxx   7.3  6.7   6.4   7.3  6.7   6.4
FollowUpTim:  2.4 xxxx xxxxx   2.3 xxxx xxxxx   3.6  4.1   3.4   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  646 xxxx xxxxx   410 xxxx xxxxx  1924 1876   478  2090 2037   402
Potent Cap.:  851 xxxx xxxxx  1077 xxxx xxxxx    46   66   560    35   52   621
Move Cap.:    851 xxxx xxxxx  1077 xxxx xxxxx     0   29   560     0   23   621
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del: 14.1 xxxx xxxxx   8.5 xxxx xxxxx xxxxx xxxx  23.6 xxxxx xxxx  11.5
LOS by Move:    B    *     *     A    *     *     *    *     C     *    *     B
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx     0 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                F                F
```

```
pm                     Mon Jul 21, 2003 15:10:41                  Page 45-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                    Newberg TSP Refinement - Newberg, Oregon
          Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                            Base Volume Alternative
*******************************************************************************
Intersection #21 Springbrook St. / Haworth Av.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------|----------------|----------------|----------------|
HevVeh:            22%              16%              16%              15%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|---------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:         #90
Dist(miles):        0.000
Speed (mph):         0.00
SignalIndex:        #15
Cycle Time:             0 secs
InitVolume:       0     0
Saturation:       0     0
ArrivalType:      0     0
G/C:           0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:            0.000 0.000
gq1:           0.00  0.00
gq2:           0.00  0.00
gq:            0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:              0.000
beta:               0.000
ta (secs):          0.000
F:                  0.000
f:            0.000 0.000
vcmax:            0     0
vcmin:            0     0
tp:             0.0   0.0
p:                  0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:       0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 646 xxxxx xxxxx   410 xxxxx xxxxx 1924   1876    478 2090   2037    402
UpstreamSat:   0 xxxxx xxxxx     0 xxxxx xxxxx    0      0      0    0      0      0
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 646 xxxxx xxxxx   410 xxxxx xxxxx 1924   1876    478 2090   2037    402
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  851 xxxxx xxxxx 1077 xxxxx xxxxx   46     66    560   35     52    621
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:   851 xxxxx xxxxx 1077 xxxxx xxxxx   46     66    560   35     52    621

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pm                     Mon Jul 21, 2003 15:10:41                  Page 46-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                    Newberg TSP Refinement - Newberg, Oregon
          Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
*******************************************************************************
Intersection #22 5th St. / Dayton St.
*******************************************************************************
Cycle (sec):           100                Critical Vol./Cap. (X):        1.431
Loss Time (sec):         0 (Y+R =  4 sec) Average Delay (sec/veh):       126.9
Optimal Cycle:           0                Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      1    90   360  100   140    10    1    10     1  380    35   300
Growth Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   1    90   360  100   140    10    1    10     1  380    35   300
User Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:    0.91 0.91  0.91 0.91 0.91  0.91 0.91 0.91  0.91 0.91 0.91  0.91
PHF Volume:    1    99   396  110   154    11    1    11     1  418    38   330
Reduct Vol:    0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:   1    99   396  110   154    11    1    11     1  418    38   330
PCE Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:    1    99   396  110   154    11    1    11     1  418    38   330
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:      0.01 0.20  0.79 0.40 0.56  0.04 0.08 0.84  0.08 0.53 0.05  0.42
Final Sat.:    1   114   455  194   272    19   33   334    33  292    27   230
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.87 0.87  0.87 0.57 0.57  0.57 0.03 0.03  0.03 1.43 1.43  1.43
Crit Moves:      ****              ****        ****              ****
Delay/Veh:  37.3 37.3  37.3 19.2 19.2  19.2 11.5 11.5  11.5 223.1  223 223.1
Delay Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh: 37.3 37.3  37.3 19.2 19.2  19.2 11.5 11.5  11.5 223.1  223 223.1
LOS by Move:   E    E     E    C    C     C    B    B     B    F    F     F
ApproachDel:      37.3             19.2             11.5            223.1
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       37.3             19.2             11.5            223.1
LOS by Appr:        E                C                B                F
*******************************************************************************


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```

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------------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #: 5193
                     Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                           2000 HCM 4-Way Stop Method
                             Base Volume Alternative
************************************************************************************
Intersection #22 5th St. / Dayton St.
************************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|-----------------|-----------------|-----------------|-----------------|
Time Period: 0.25 hour
HevVeh:            21%              30%              28%              28%
Alpha Value: 0.01
-----------|-----------------|-----------------|-----------------|-----------------|
GroupType:          1                1                1                1
P[C1]:           0.0000           0.0000           0.0000           0.0570
P[C2]:           0.0000           0.0588           0.0588           0.0018
P[C3]:           0.4273           0.1294           0.0000           0.4427
P[C4]:           0.5558           0.8444           0.4565           0.4839
P[C5]:           0.0169           0.0262           0.4847           0.0147
Padj[C1]:        0.02590          0.02897          0.03367          0.02397
Padj[C2]:        0.01590          0.01897          0.02308          0.01453
Padj[C3]:       -0.00692          0.00509          0.01426         -0.00815
Padj[C4]:       -0.03318         -0.05040         -0.02254         -0.02889
Padj[C5]:       -0.00169         -0.00262         -0.04847         -0.00147
-----------|-----------------|-----------------|-----------------|-----------------|
Lane:              L1               L1               L1               L1
LaneType:     LEFTTHRURITE     LEFTTHRURITE     LEFTTHRURITE     LEFTTHRURITE
-----------|-----------------|-----------------|-----------------|-----------------|
HeadwayAdj:       -0.121            0.566            0.443            0.331
Volume:            496              275               13              786
Capacity:          571              485              401              549
DegOfUtil:         0.87             0.56             0.03             1.43
DepHeadway:        6.30             7.33             8.27             6.55
ServiceTime:       4.3              5.3              6.3              4.6
Delay:            37.3             19.2             11.5            223.1
-----------|-----------------|-----------------|-----------------|-----------------|
Approach:      North Bound      South Bound       East Bound       West Bound
-----------|-----------------|-----------------|-----------------|-----------------|
ApproachDel:      37.3             19.2             11.5            223.1
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       37.3             19.2             11.5            223.1
LOS by Appr:       E                C                B                F
OverallDel:                              126.9
OverallLOS:                                F
```

```
------------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project #: 5193
                     Newberg TSP Refinement - Newberg, Oregon
         Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------------

                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
************************************************************************************
Intersection #23 Wynooski St. / 11th St.
************************************************************************************
Average Delay (sec/veh):         13.8          Worst Case Level Of Service:        B
************************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------||----------------||----------------||----------------|
Control:       Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
-----------|----------------||----------------||----------------||----------------|
Volume Module: 16:15-17:15
Base Vol:      300  620    0      0  400    5      1    0   70      0    0    0
Growth Adj:   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:   300  620    0      0  400    5      1    0   70      0    0    0
User Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:      0.88 0.88 0.88   0.88 0.88 0.88   0.88 0.88 0.88   0.88 0.88 0.88
PHF Volume:    341  705    0      0  455    6      1    0   80      0    0    0
Reduct Vol:      0    0    0      0    0    0      0    0    0      0    0    0
Final Vol.:    341  705    0      0  455    6      1    0   80      0    0    0
-----------|----------------||----------------||----------------||----------------|
Critical Gap Module:
Critical Gp:   4.4 xxxx xxxxx xxxxx xxxx xxxxx   6.6 xxxx   6.4 xxxxx xxxx xxxxx
FollowUpTim:   2.5 xxxx xxxxx xxxxx xxxx xxxxx   3.7 xxxx   3.5 xxxxx xxxx xxxxx
-----------|----------------||----------------||----------------||----------------|
Capacity Module:
Cnflict Vol:   460 xxxx xxxxx  xxxx xxxx xxxxx  1844 xxxx   457  xxxx xxxx xxxxx
Potent Cap.:   973 xxxx xxxxx  xxxx xxxx xxxxx    73 xxxx   562  xxxx xxxx xxxxx
Move Cap.:     973 xxxx xxxxx  xxxx xxxx xxxxx    48 xxxx   562  xxxx xxxx xxxxx
-----------|----------------||----------------||----------------||----------------|
Level Of Service Module:
Stopped Del:   8.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:     A    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  489 xxxxx  xxxx xxxx xxxxx
Shrd StpDel:  10.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.8 xxxxx xxxxx xxxx xxxxx
Shared LOS:      B    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:      xxxxxx           xxxxxx             13.8            xxxxxx
ApproachLOS:        *                *                 B                *
```

```
-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
               Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

              Level Of Service Detailed Computation Report
                    2000 HCM Unsignalized Method
                       Base Volume Alternative
*******************************************************************************
Intersection #23 Wynooski St. / 11th St.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:            29%              24%              23%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:      12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

```
-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
               Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #24 Hwy 219 / Wilsonville Rd.
*******************************************************************************
Average Delay (sec/veh): OVERFLOW          Worst Case Level Of Service:       F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  1  0  0  0    0  1  0  0  1
-----------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:         1  300   500   125  500    75     5  115     0   475  310    85
Growth Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:      1  300   500   125  500    75     5  115     0   475  310    85
User Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:       1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:       1  300   500   125  500    75     5  115     0   475  310    85
Reduct Vol:       0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:       1  300   500   125  500    75     5  115     0   475  310    85
-----------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.4 xxxx xxxxx   4.3 xxxx xxxxx   7.4  6.8 xxxxx   7.3  6.7   6.4
FollowUpTim:  2.4 xxxx xxxxx   2.4 xxxx xxxxx   3.8  4.3 xxxxx   3.7  4.2   3.5
-----------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  575 xxxx xxxxx   800 xxxx xxxxx  1537 1590 xxxxx  1397 1377   550
Potent Cap.:  890 xxxx xxxxx   734 xxxx xxxxx    82   94 xxxxx   106  131   495
Move Cap.:    890 xxxx xxxxx   734 xxxx xxxxx     0   76 xxxxx     0  107   495
-----------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  9.0 xxxx xxxxx   9.9 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  13.8
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     B
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx     0 xxxx xxxxx     0 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        *                *                F                F
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                          Base Volume Alternative
*******************************************************************************
Intersection #24 Hwy 219 / Wilsonville Rd.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------|----------------|----------------|----------------|
HevVeh:            26%              24%              29%              24%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #25 Springbrook/Wilsonville (VOLS)
*******************************************************************************
Average Delay (sec/veh):    992.1          Worst Case Level Of Service:       F
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  0  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       0    0     0     95    0   370    310  430     0      0  490   125
Growth Adj:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Initial Bse:    0    0     0     95    0   370    310  430     0      0  490   125
User Adj:    1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91   0.91 0.91  0.91   0.91 0.91  0.91   0.91 0.91  0.91
PHF Volume:     0    0     0    104    0   407    341  473     0      0  538   137
Reduct Vol:     0    0     0      0    0     0      0    0     0      0    0     0
Final Vol.:     0    0     0    104    0   407    341  473     0      0  538   137
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx    6.6 xxxx   6.4    4.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx    3.7 xxxx   3.5    2.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   1761 xxxx   607    676 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx     82 xxxx   458    797 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx     48 xxxx   458    797 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx    9.5 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *      *    *     *      A    *     *      *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   xxxx  166 xxxxx   xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx  992 xxxxx   12.8 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *      *    F     *      B    *     *      *    *     *
ApproachDel:      xxxxxx             992.1            xxxxxx           xxxxxx
ApproachLOS:         *                 F                 *                *
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                         2000 HCM Unsignalized Method
                            Base Volume Alternative
*******************************************************************************
Intersection #25 Springbrook/Wilsonville (VOLS)
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             0%              24%              30%              29%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #118 Mountainview/Aspen S. (OPS)
*******************************************************************************
Average Delay (sec/veh):     345.8           Worst Case Level Of Service:     F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  0  0  1  0    0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     430    0    75      0    0     0      0  130   300     40  225     0
Growth Adj:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Initial Bse:  430    0    75      0    0     0      0  130   300     40  225     0
User Adj:    1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
PHF Adj:     0.80 0.80  0.80   0.80 0.80  0.80   0.80 0.80  0.80   0.80 0.80  0.80
PHF Volume:   538    0    94      0    0     0      0  163   375     50  281     0
Reduct Vol:     0    0     0      0    0     0      0    0     0      0    0     0
Final Vol.:   538    0    94      0    0     0      0  163   375     50  281     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.6 xxxx   6.4 xxxxx xxxx xxxxx xxxxx xxxx xxxxx   4.3 xxxx xxxxx
FollowUpTim:  3.7 xxxx   3.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx   2.4 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  731 xxxx   350  xxxx xxxx xxxxx  xxxx xxxx xxxxx   538 xxxx xxxxx
Potent Cap.:  363 xxxx   654  xxxx xxxx xxxxx  xxxx xxxx xxxxx   933 xxxx xxxxx
Move Cap.:    348 xxxx   654  xxxx xxxx xxxxx  xxxx xxxx xxxxx   933 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.9 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx  374 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx  346 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.1 xxxx xxxxx
Shared LOS:     *    F     *     *    *     *     *    *     *     A    *     *
ApproachDel:      345.8           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        F                *                *                *
```

```
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                     2000 HCM Unsignalized Method
                       Base Volume Alternative
*****************************************************************************
Intersection #118 Mountainview/Aspen S. (OPS)
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:            20%              0%              20%              23%
Grade:              0%              0%               0%               0%
Peds/Hour:          0               0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

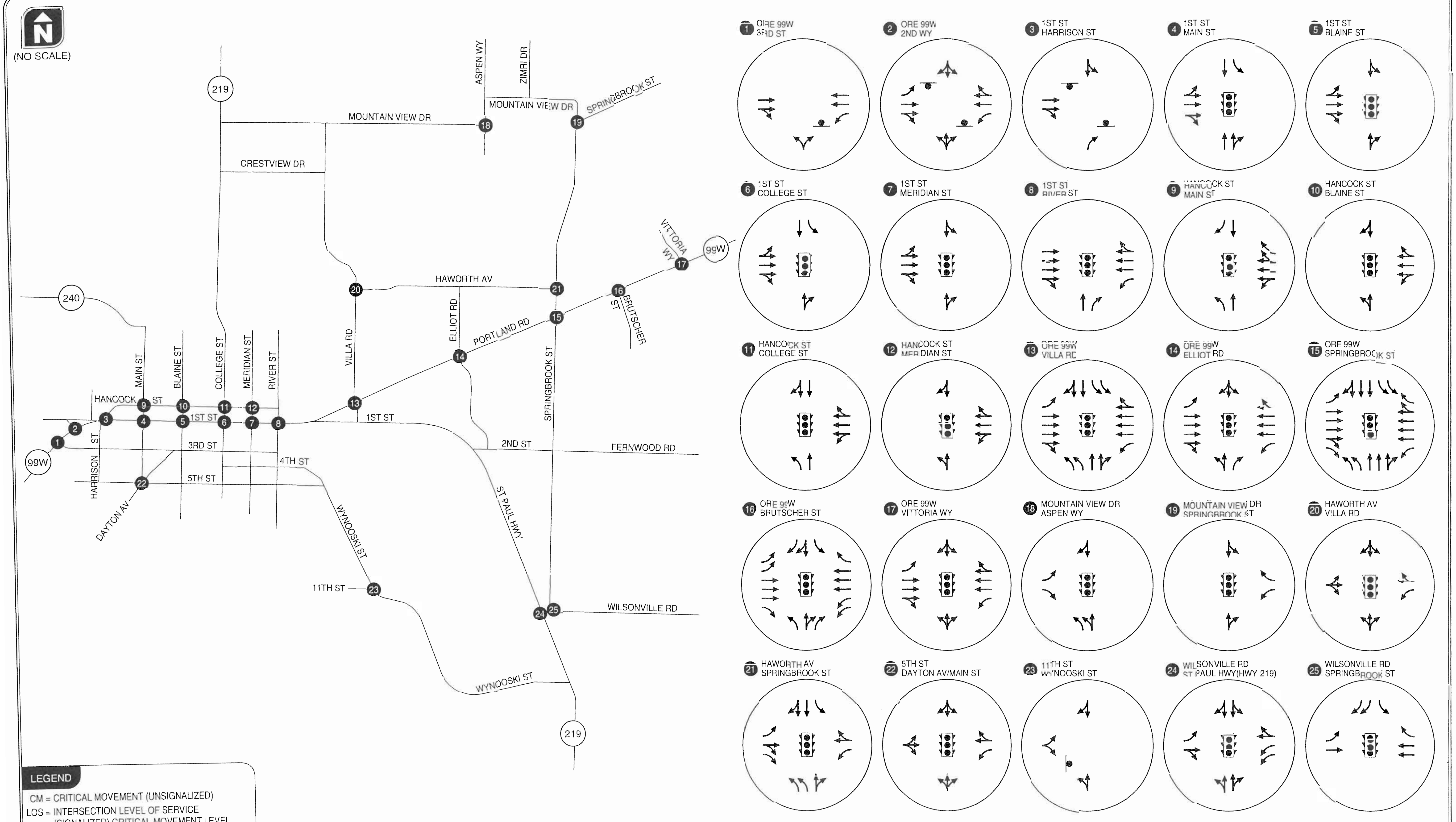
```
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
        Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #125 Springbrook/Wilsonville (OPS)
*****************************************************************************
Average Delay (sec/veh): OVERFLOW          Worst Case Level Of Service:      F
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     490  125     0     0   95   370   310    0   430     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  490  125     0     0   95   370   310    0   430     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:   538  137     0     0  104   407   341    0   473     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   538  137     0     0  104   407   341    0   473     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.4  6.8 xxxxx xxxxx  6.7   6.4   4.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.8  4.3 xxxxx xxxxx  4.2   3.5   2.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  970  918 xxxxx  xxxx 1154     0     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  208  245 xxxxx  xxxx  180     0     0 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    112  245 xxxxx  xxxx  180     0     0 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  126 xxxx xxxxx  xxxx xxxx     0  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel: 2037 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     F    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      2036.8           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         F                F                *                *
```

```
-----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
               Newberg TSP Refinement - Newberg, Oregon
       Alternative 1:  2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                           Base Volume Alternative
*****************************************************************************
Intersection #125 Springbrook/Wilsonville (OPS)
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:            29%              24%              30%               0%
Grade:             0%               0%               0%                0%
Peds/Hour:         0                0                0                 0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

Appendix G

Alternative 1 Mitigated
2025 Future Traffic Conditions



LEGEND

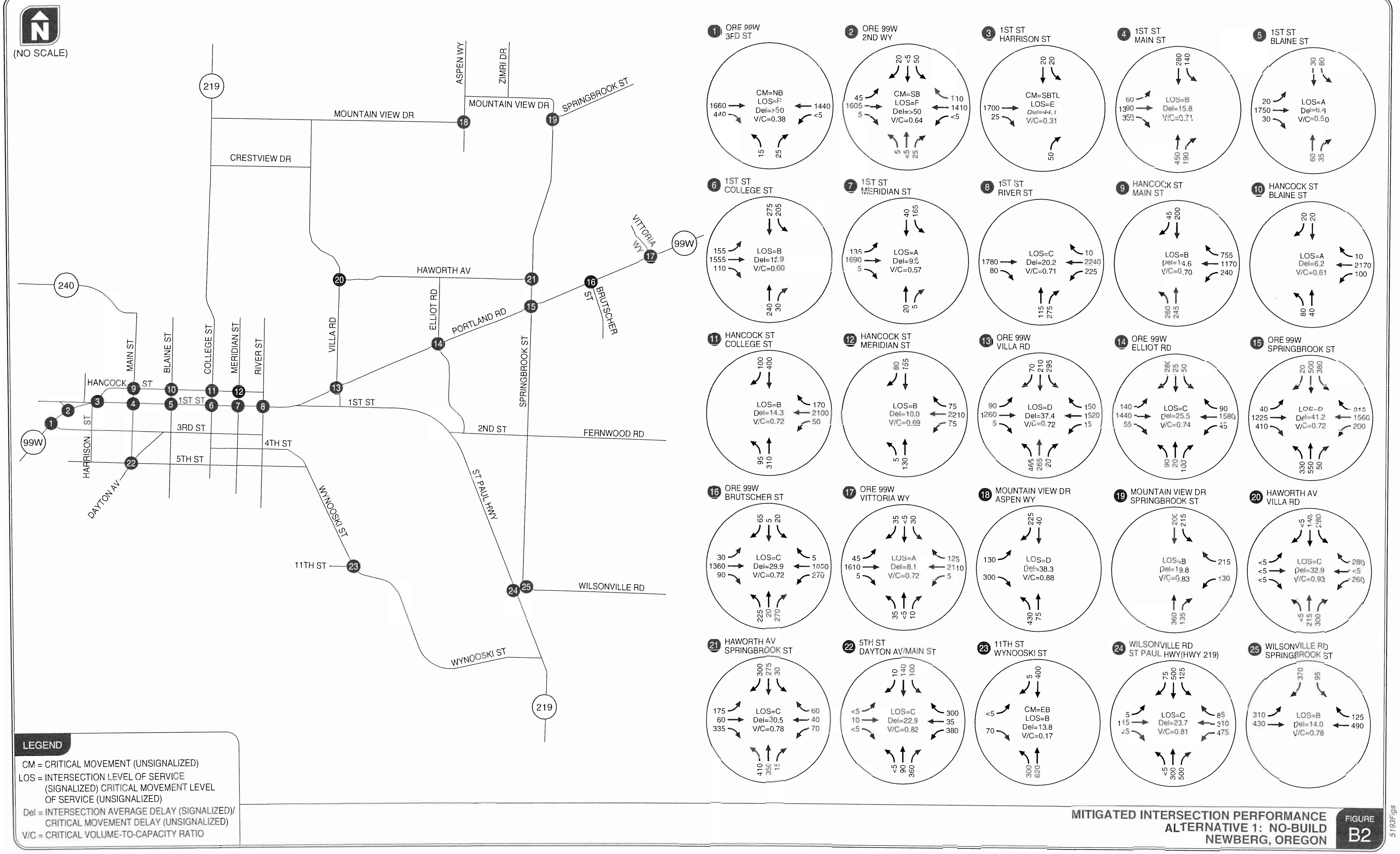
CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

LANE CONFIGURATION AND TRAFFIC CONTROL DEVICE MITIGATIONS
ALTERNATIVE 1: NO-BUILD
NEWBERG, OREGON

FIGURE
B1

5193Figs

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

MITIGATED INTERSECTION PERFORMANCE ALTERNATIVE 1: NO-BUILD NEWBERG, OREGON

FIGURE B2

```
pm                         Mon Jul 21, 2003 15:12:38                   Page 1-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                    Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                                Scenario Report
Scenario:              pm

Command:               pm
Volume:                pm
Geometry:              pm
Impact Fee:            impact
Trip Generation:       pm
Trip Distribution:     tripdist
Paths:                 path
Routes:                route
Configuration:         config

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```

```
pm                         Mon Jul 21, 2003 15:12:38                   Page 2-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                    Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                           Turning Movement Report

Volume     Northbound       Southbound       Eastbound        Westbound      Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right  Volume

#1 Hwy 99 / 3rd St.
Base      15    0   25      0    0    0      0 1660  440      0 1440    0    3580
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total     15    0   25      0    0    0      0 1660  440      0 1440    0    3580

#2 Ore 99W /  2nd Street
Base       5    0   25     50    0   20     45 1605    5      1 1410  110    3276
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total      5    0   25     50    0   20     45 1605    5      1 1410  110    3276

#3 Ore 99W / Harrison St.
Base       0    0   50     20   20    0      0 1700   25      0    0    0    1815
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total      0    0   50     20   20    0      0 1700   25      0    0    0    1815

#4 1st St. / Main St.
Base       0  450  190    140  280    0     60 1390  350      0    0    0    2860
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total      0  450  190    140  280    0     60 1390  350      0    0    0    2860

#5 1st St. / Blaine St.
Base       0   60   35     80   30    0     20 1750   30      0    0    0    2005
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total      0   60   35     80   30    0     20 1750   30      0    0    0    2005

#6 1st St. / College St.
Base       0  240   30    205  275    0    155 1555  110      0    0    0    2570
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total      0  240   30    205  275    0    155 1555  110      0    0    0    2570

#7 1st St. / Meridian St.
Base       0   20    5    165   40    0    135 1690    5      0    0    0    2060
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total      0   20    5    165   40    0    135 1690    5      0    0    0    2060

#8 Hwy 99 / River St.
Base       0  115  275      0    0    0      0 1780   80    225 2240   10    4725
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total      0  115  275      0    0    0      0 1780   80    225 2240   10    4725

#9 Hancock St. / Main St.
Base     260  245    0      0  200   45      0    0    0    240 1170  755    2915
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total    260  245    0      0  200   45      0    0    0    240 1170  755    2915



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```

```
pm                  Mon Jul 21, 2003 15:12:38                  Page 2-2
-----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
               Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
Volume    Northbound        Southbound        Eastbound         Westbound     Total
Type   Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume


#10 Hancock St / Blaine St.
Base     80   40     0    0   20    20    0    0     0  100 2170    10   2440
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    80   40     0    0   20    20    0    0     0  100 2170    10   2440

#11 Hancock St. / College St.
Base     95  310     0    0  400   100    0    0     0   50 2100   170   3225
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    95  310     0    0  400   100    0    0     0   50 2100   170   3225

#12 Hancock St. / Meridian St.
Base      5  130     0    0  155    80    0    0     0   75 2210    75   2730
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     5  130     0    0  155    80    0    0     0   75 2210    75   2730

#13 Hwy 99 / Villa Rd.
Base    465  265    20  295  210    70   90 1260     5   15 1520   150   4365
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   465  265    20  295  210    70   90 1260     5   15 1520   150   4365

#14 Hwy 99 / Elliot Rd.
Base     90   20   100   50   25   280  140 1440    55   45 1580    90   3915
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    90   20   100   50   25   280  140 1440    55   45 1580    90   3915

#15 Hwy 99 / Springbrook St.
Base    330  550    50  380  500    20   40 1225   410  200 1560   315   5580
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   330  550    50  380  500    20   40 1225   410  200 1560   315   5580

#16 Hwy 99 / Brutscher St.
Base    225   20   270   20    5    65   30 1360    90  270 1850     5   4210
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   225   20   270   20    5    65   30 1360    90  270 1850     5   4210

#17 Hwy 99 / Vittoria St.
Base     35    0    10   30    0    35   45 1610     5    5 2110   125   4010
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    35    0    10   30    0    35   45 1610     5    5 2110   125   4010

#18 Mountainview/Aspen S. (VOLS)
Base    430   75     0    0   40   225  130    0   300    0    0     0   1200
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   430   75     0    0   40   225  130    0   300    0    0     0   1200



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```
pm                  Mon Jul 21, 2003 15:12:38                  Page 2-3
-----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
               Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
Volume    Northbound        Southbound        Eastbound         Westbound     Total
Type   Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume


#19 Springbrook St. / Mt. View Dr.
Base      0  360   135  215  200     0    0    0     0  130    0   215   1255
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     0  360   135  215  200     0    0    0     0  130    0   215   1255

#20 Villa Rd. / Haworth Av.
Base      1  215   300  280  140     1    1    1     1  260    0   280   1480
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     1  215   300  280  140     1    1    1     1  260    0   280   1480

#21 Springbrook St. / Haworth Av.
Base    410  350    15   30  275   300  175   60   335   70   40    60   2120
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   410  350    15   30  275   300  175   60   335   70   40    60   2120

#22 5th St. / Dayton St.
Base      1   90   360  100  140    10    1   10     1  380   35   300   1428
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     1   90   360  100  140    10    1   10     1  380   35   300   1428

#23 Wynooski St. / 11th St.
Base    300  620     0    0  400     5    1    0    70    0    0     0   1396
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   300  620     0    0  400     5    1    0    70    0    0     0   1396

#24 Hwy 219 / Wilsonville Rd.
Base      1  300   500  125  500    75    5  115     0  475  310    85   2491
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     1  300   500  125  500    75    5  115     0  475  310    85   2491

#25 Springbrook/Wilsonville (VOLS)
Base      0    0     0   95    0   370  310  430     0    0  490   125   1820
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total     0    0     0   95    0   370  310  430     0    0  490   125   1820

#118 Mountainview/Aspen S. (OPS)
Base    430    0    75    0    0     0    0  130   300   40  225     0   1200
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   430    0    75    0    0     0    0  130   300   40  225     0   1200

#125 Springbrook/Wilsonville (OPS)
Base    490  125     0    0   95   370  310    0   430    0    0     0   1820
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   490  125     0    0   95   370  310    0   430    0    0     0   1820



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```

```
pm                    Mon Jul 21, 2003 15:12:40                    Page 3-1
----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
              Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------
                          Impact Analysis Report
                             Level Of Service

Intersection                            Base            Future       Change
                                      Del/   V/       Del/   V/        in
                                   LOS Veh    C    LOS Veh    C
#  1 Hwy 99 / 3rd St.              F  59.9 0.000   F  59.9 0.000   + 0.000 V/C

#  2 Ore 99W /  2nd Street         F  82.1 0.000   F  82.1 0.000   + 0.000 V/C

#  3 Ore 99W / Harrison St.        E  44.1 0.000   E  44.1 0.000   + 0.000 V/C

#  4 1st St. / Main St.            B  15.8 0.712   B  15.8 0.712   + 0.000 D/V

#  5 1st St. / Blaine St.          A   6.4 0.502   A   6.4 0.502   + 0.000 D/V

#  6 1st St. / College St.         B  12.9 0.598   B  12.9 0.598   + 0.000 D/V

#  7 1st St. / Meridian St.        A   9.6 0.565   A   9.6 0.565   + 0.000 D/V

#  8 Hwy 99 / River St.            C  20.2 0.710   C  20.2 0.710   + 0.000 D/V

#  9 Hancock St. / Main St.        B  14.6 0.697   B  14.6 0.697   + 0.000 D/V

# 10 Hancock St / Blaine St.       A   6.2 0.610   A   6.2 0.610   + 0.000 D/V

# 11 Hancock St. / College St.     B  14.3 0.723   B  14.3 0.723   + 0.000 D/V

# 12 Hancock St. / Meridian St.    B  10.0 0.694   B  10.0 0.694   + 0.000 D/V

# 13 Hwy 99 / Villa Rd.            D  37.4 0.721   D  37.4 0.721   + 0.000 D/V

# 14 Hwy 99 / Elliot Rd.           C  25.5 0.738   C  25.5 0.738   + 0.000 D/V

# 15 Hwy 99 / Springbrook St.      D  41.2 0.717   D  41.2 0.717   + 0.000 D/V

# 16 Hwy 99 / Brutscher St.        C  29.9 0.720   C  29.9 0.720   + 0.000 D/V

# 17 Hwy 99 / Vittoria St.         A   8.1 0.724   A   8.1 0.724   + 0.000 D/V

# 18 Mountainview/Aspen S. (VOLS)  D  38.3 0.880   D  38.3 0.880   + 0.000 D/V

# 19 Springbrook St. / Mt. View Dr. B  19.8 0.829  B  19.8 0.829   + 0.000 D/V

# 20 Villa Rd. / Haworth Av.       C  32.9 0.926   C  32.9 0.926   + 0.000 D/V

# 21 Springbrook St. / Haworth Av. C  30.5 0.779   C  30.5 0.779   + 0.000 D/V

# 22 5th St. / Dayton St.          C  22.9 0.819   C  22.9 0.819   + 0.000 D/V

# 23 Wynooski St. / 11th St.       B  13.8 0.000   B  13.8 0.000   + 0.000 V/C


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```

```
pm                    Mon Jul 21, 2003 15:12:40                    Page 3-2
----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
              Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------
Intersection                            Base            Future       Change
                                      Del/   V/       Del/   V/        in
                                   LOS Veh    C    LOS Veh    C
# 24 Hwy 219 / Wilsonville Rd.     C  23.7 0.813   C  23.7 0.813   + 0.000 D/V

# 25 Springbrook/Wilsonville (VOLS) B  14.0 0.776  B  14.0 0.776   + 0.000 D/V

#118 Mountainview/Aspen S. (OPS)   F 345.8 0.000   F 345.8 0.000   + 0.000 V/C

#125 Springbrook/Wilsonville (OPS) F OVRFL 0.000   F OVRFL 0.000   + 0.000 V/C


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```

```
pm                    Mon Jul 21, 2003 15:12:40                 Page 4-1
-------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*************************************************************************
Intersection #1 Hwy 99 / 3rd St.
*************************************************************************
Average Delay (sec/veh):     59.9          Worst Case Level Of Service:    F
*************************************************************************
Approach:      North Bound     South Bound      East Bound      West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign       Stop Sign      Uncontrolled    Uncontrolled
Rights:          Include         Include          Include         Include
Lanes:        0  0  1! 0  0   0  0  0  0  0   0  0  1  1  0   1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      15    0    25     0    0     0     0 1660   440     0 1440     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   15    0    25     0    0     0     0 1660   440     0 1440     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    15    0    25     0    0     0     0 1660   440     0 1440     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    15    0    25     0    0     0     0 1660   440     0 1440     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.4 xxxx   7.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.8 xxxx   3.6 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 2600 xxxx  1050  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:   13 xxxx   180  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:     13 xxxx   180  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Total Cap:     61    0 xxxxx     0    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  104 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 59.9 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    F     *     *    *     *     *    *     *     *    *     *
ApproachDel:      59.9            xxxxxx            xxxxxx            xxxxxx
ApproachLOS:        F                *                 *                 *


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```

```
pm                    Mon Jul 21, 2003 15:12:40                 Page 5-1
-------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                     2000 HCM Unsignalized Method
                       Base Volume Alternative
*************************************************************************
Intersection #1 Hwy 99 / 3rd St.
*************************************************************************
Approach:      North Bound     South Bound      East Bound      West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:            31%              0%              19%              20%
Grade:              0%              0%               0%               0%
Peds/Hour:          0               0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet         12 feet         12 feet         12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                                                     #14
Dist(miles):                                                    0.000
Speed (mph):                                                     0.00
SignalIndex:                                                    #9
Cycle Time:                                                          0 secs
InitVolume:                                                   0      0
Saturation:                                                   0      0
ArrivalType:                                                  0      0
G/C:                                                       0.00   0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                                        0.000 0.000
gq1:                                                       0.00   0.00
gq2:                                                       0.00   0.00
gq:                                                        0.00   0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                                          0.000
beta:                                                           0.000
ta (secs):                                                      0.000
F:                                                              0.000
f:                                                        0.000 0.000
vcmax:                                                        0      0
vcmin:                                                        0      0
tp:                                                         0.0    0.0
p:                                                              0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                     0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:2600     0  1050     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamSat:   0     0     0     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:2600     0  1050     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:   13     0   180     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:    13     0   180     0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx

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-----------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------------
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL] [Median Storage: 1 car ]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:1880     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol:1880     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:   76     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.:  76     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:    76     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol: 720     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol: 720     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:  374     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 374     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   374     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
```

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-----------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------------

                  Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
***********************************************************************************
Intersection #2 Ore 99W / 2nd Street
***********************************************************************************
Average Delay (sec/veh):     82.1          Worst Case Level Of Service:           F
***********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|----------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:        5    0    25    50    0    20    45 1605     5     1 1410   110
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     5    0    25    50    0    20    45 1605     5     1 1410   110
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:      5    0    25    50    0    20    45 1605     5     1 1410   110
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:      5    0    25    50    0    20    45 1605     5     1 1410   110
------------|----------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.5 xxxx    6.9   7.5 xxxx   6.9   4.6 xxxx xxxxx   4.6 xxxx xxxxx
FollowUpTim:  3.5 xxxx    3.3   3.5 xxxx   3.3   2.4 xxxx xxxxx   2.5 xxxx xxxxx
------------|----------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 2405 xxxx    805  2360 xxxx   760  1520 xxxx xxxxx  1610 xxxx xxxxx
Potent Cap.:   18 xxxx    330    19 xxxx   353   345 xxxx xxxxx   306 xxxx xxxxx
Move Cap.:     15 xxxx    330    16 xxxx   353   345 xxxx xxxxx   306 xxxx xxxxx
Total Cap:     66    0 xxxxx     87    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|----------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  17.0 xxxx xxxxx  16.8 xxxx xxxxx
LOS by Move:     *    *     *     *    *     *     C    *     *     C    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  198 xxxxx  xxxx  110 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx 26.4 xxxxx xxxxx 82.1 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:      *    D     *     *    F     *     *    *     *     *    *     *
ApproachDel:        26.4             82.1            xxxxxx           xxxxxx
ApproachLOS:           D                F                *                *
```

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--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                           Base Volume Alternative
********************************************************************************
Intersection #2 Ore 99W /  2nd Street
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:              0%               0%              23%              26%
Grade:               0%               0%               0%               0%
Peds/Hour:           0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                                                          #14
Dist(miles):                                                         0.000
Speed (mph):                                                          0.00
SignalIndex:                                                         #9
Cycle Time:                                                              0 secs
InitVolume:                                                     0     0
Saturation:                                                     0     0
ArrivalType:                                                    0     0
G/C:                                                         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                                          0.000 0.000
gq1:                                                         0.00  0.00
gq2:                                                         0.00  0.00
gq:                                                          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                                             0.000
beta:                                                              0.000
ta (secs):                                                         0.000
F:                                                                 0.000
f:                                                          0.000 0.000
vcmax:                                                          0     0
vcmin:                                                          0     0
tp:                                                           0.0   0.0
p:                                                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                            0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:2405     0   805 2360     0   760 1520 xxxxx xxxxx 1610 xxxxx xxxxx
UpstreamSat:   0     0     0    0     0     0    0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:2405     0   805 2360     0   760 1520 xxxxx xxxxx 1610 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:   18     0   330   19     0   353  345 xxxxx xxxxx  306 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:    18     0   330   19     0   353  345 xxxxx xxxxx  306 xxxxx xxxxx
```

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--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car ]
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:1698     0 xxxxx 1467     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol:1698     0 xxxxx 1467     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:   98     0 xxxxx  137     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.:  98     0 xxxxx  137     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:    85     0 xxxxx  136     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
-----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol: 707     0 xxxxx  893     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol: 707     0 xxxxx  893     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:  397     0 xxxxx  307     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 397     0 xxxxx  307     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   373     0 xxxxx  247     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
```

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--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                    Newberg TSP Refinement - Newberg, Oregon
     Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                       Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #3 Ore 99W / Harrison St.
********************************************************************************
Average Delay (sec/veh):      44.1         Worst Case Level Of Service:        E
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  0  0  1    0  1  0  0  0    0  0  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:        0    0   50    20   20    0     0 1700   25     0    0    0
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     0    0   50    20   20    0     0 1700   25     0    0    0
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:      0    0   50    20   20    0     0 1700   25     0    0    0
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:      0    0   50    20   20    0     0 1700   25     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx  6.2   7.1  6.5 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx  3.3   3.5  4.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx  863   850 1725 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx  353   283   90 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx  353   243   90 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx 16.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *    C     *    *    *     *    *    *     *    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   131 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx  44.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     E    *    *     *    *    *     *    *    *
ApproachDel:       16.9             44.1            xxxxxx           xxxxxx
ApproachLOS:         C                E               *                *
```

```
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                    Newberg TSP Refinement - Newberg, Oregon
     Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                   Level Of Service Detailed Computation Report
                          2000 HCM Unsignalized Method
                            Base Volume Alternative
********************************************************************************
Intersection #3 Ore 99W / Harrison St.
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:            3%               0%               7%               0%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                                                        #14
Dist(miles):                                                      0.000
Speed (mph):                                                       0.00
SignalIndex:                                                       #9
Cycle Time:                                                           0 secs
InitVolume:                                                      0    0
Saturation:                                                      0    0
ArrivalType:                                                     0    0
G/C:                                                          0.00 0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                                           0.000 0.000
gq1:                                                          0.00  0.00
gq2:                                                          0.00  0.00
gq:                                                           0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                                             0.000
beta:                                                              0.000
ta (secs):                                                         0.000
F:                                                                 0.000
f:                                                           0.000 0.000
vcmax:                                                           0     0
vcmin:                                                           0     0
tp:                                                            0.0   0.0
p:                                                                 0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                        0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0     0   863  850  1725     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamSat:   0     0     0    0     0     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:   0     0   863  850  1725     0     0 xxxxx xxxxx     0 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:    0     0   353  283    90     0     0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:     0     0   353  283    90     0     0 xxxxx xxxxx     0 xxxxx xxxxx
```

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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
     Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #4 1st St. / Main St.
*******************************************************************************
Cycle (sec):         70                 Critical Vol./Cap. (X):         0.712
Loss Time (sec):      8 (Y+R =  4 sec) Average Delay (sec/veh):          15.8
Optimal Cycle:       47                 Level Of Service:                   B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:       0  0  1  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|----------------||----------------||----------------||----------------|
Volume Module: 16:15-17:15
Base Vol:       0  450   190   140  280     0    60 1390   350     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  450   190   140  280     0    60 1390   350     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  450   190   140  280     0    60 1390   350     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  450   190   140  280     0    60 1390   350     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     0  450   190   140  280     0    60 1390   350     0    0     0
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.86  0.86  0.30 0.96  1.00  0.82 0.82  0.82  1.00 1.00  1.00
Lanes:       0.00 1.41  0.59  1.00 1.00  0.00  0.10 2.32  0.58  0.00 0.00  0.00
Final Sat.:     0 2308   974   574 1828     0   155 3595   905     0    0     0
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.19  0.19  0.24 0.15  0.00  0.39 0.39  0.39  0.00 0.00  0.00
Crit Moves:                   ****                    ****
Green/Cycle: 0.00 0.34  0.34  0.34 0.34  0.00  0.54 0.54  0.54  0.00 0.00  0.00
Volume/Cap:  0.00 0.57  0.57  0.71 0.45  0.00  0.71 0.71  0.71  0.00 0.00  0.00
Delay/Veh:    0.0 19.5  19.5  31.6 18.4   0.0  12.9 12.9  12.9   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 19.5  19.5  31.6 18.4   0.0  12.9 12.9  12.9   0.0  0.0   0.0
DesignQueue:    0   12     5     4    7     0     1   27     7     0    0     0
*******************************************************************************
```

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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
     Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #4 1st St. / Main St.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  0  1  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group:  xxxx   RT    RT     L    T  xxxx   LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:     0    2     2     1    1     0     3    3     3     0    0     0
------------|----------------||----------------||----------------||----------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           5                4                5                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|----------------||----------------||----------------||----------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|----------------||----------------||----------------||----------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.95  0.95  0.96 0.96 xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.96  0.96  xxxx xxxx xxxxx  0.97 0.97  0.97  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.31 xxxx xxxxx  0.97 0.97  0.97  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.91  0.91  0.30 0.96  1.00  0.90 0.90  0.90  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 0.95  0.95  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.86  0.86  0.30 0.96  1.00  0.82 0.82  0.82  1.00 1.00  1.00
------------|----------------||----------------||----------------||----------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
*******************************************************************************
```

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--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #4 1st St. / Main St.
********************************************************************************
Approach:                                        North    South     East     West
Cycle Length, C:                                xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:            xxxxxx    24.01   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:         xxxxxx    24.01   xxxxxx   xxxxxx
Opposing Effective Green Time, go:              xxxxxx    24.01   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                   xxxxxx        2   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:               xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:              xxxxxx      140   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    xxxxxx     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      xxxxxx     2.72   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                xxxxxx      640   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         xxxxxx     6.22   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     xxxxxx     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      xxxxxx     0.66   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          xxxxxx     5.94   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       xxxxxx    18.07   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                xxxxxx     0.48   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:    xxxxxx     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   xxxxxx     2.40   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:       xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      xxxxxx     0.17   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    xxxxxx     0.31   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               xxxxxx     0.31   xxxxxx   xxxxxx
********************************************************************************
```

```
--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #5 1st St. / Blaine St.
********************************************************************************
Cycle (sec):            70                Critical Vol./Cap. (X):        0.502
Loss Time (sec):         8 (Y+R =  4 sec) Average Delay (sec/veh):         6.4
Optimal Cycle:          31                Level Of Service:                  A
********************************************************************************
Approach:       North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       0   60    35   80   30     0   20 1750    30    0    0     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0   60    35   80   30     0   20 1750    30    0    0     0
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:     0   60    35   80   30     0   20 1750    30    0    0     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:    0   60    35   80   30     0   20 1750    30    0    0     0
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:     0   60    35   80   30     0   20 1750    30    0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  1.00 0.93  0.93 0.78 0.78  1.00 0.85 0.85  0.85 1.00 1.00  1.00
Lanes:       0.00 0.63  0.37 0.73 0.27  0.00 0.03 2.92  0.05 0.00 0.00  0.00
Final Sat.:     0 1117   652 1081  405     0   54 4727    81    0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.05  0.05 0.07 0.07  0.00 0.37 0.37  0.37 0.00 0.00  0.00
Crit Moves:                       ****            ****
Green/Cycle: 0.00 0.15  0.15 0.15 0.15  0.00 0.74 0.74  0.74 0.00 0.00  0.00
Volume/Cap:  0.00 0.36  0.36 0.50 0.50  0.00 0.50 0.50  0.50 0.00 0.00  0.00
Delay/Veh:    0.0 27.7  27.7 29.3 29.3   0.0  3.9  3.9   3.9  0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:   0.0 27.7  27.7 29.3 29.3   0.0  3.9  3.9   3.9  0.0  0.0   0.0
DesignQueue:    0    2     1    3    1     0    0   19     0    0    0     0
********************************************************************************
```

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---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #5 1st St. / Blaine St.
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group:  xxxx  RT     RT   LT   LT   xxxx  LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:    0    1      1    1    1     0    3    3     3    0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12     12   12   12    12   12   12    12   12   12    12
CrosswalkWid        8               8               8               8
% Hev Veh:          2               1               6               0
Grade:             0%              0%              0%              0%
Parking/Hr:        No              No              No              No
Bus Stp/Hr:         0               0               0               0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0               0               0               0
ExclusiveRT:     Include         Include         Include         Include
% RT Prtct:         0               0               0               0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     5    5  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.99 0.99 xxxxx  0.94 0.94  0.94  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.95  0.95  xxxx xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.79 0.79 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.93  0.93  0.78 0.78  1.00  0.94 0.94  0.94  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.93  0.93  0.78 0.78  1.00  0.85 0.85  0.85  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
***************************************************************************
```

```
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #5 1st St. / Blaine St.
***************************************************************************
Approach:                                         North    South    East    West
Cycle Length, C:                                 xxxxxx       70  xxxxxx  xxxxxx
Actual Green Time Per Lane Group, G:             xxxxxx    10.33  xxxxxx  xxxxxx
Effective Green Time Per Lane Group, g:          xxxxxx    10.33  xxxxxx  xxxxxx
Opposing Effective Green Time, go:               xxxxxx    10.33  xxxxxx  xxxxxx
Number Of Opposing Lanes, No:                    xxxxxx        1  xxxxxx  xxxxxx
Number Of Lanes In Lane Group, N:                xxxxxx        1  xxxxxx  xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               xxxxxx       80  xxxxxx  xxxxxx
Proportion of Left Turns in Lane Group, Plt:     xxxxxx     0.73  xxxxxx  xxxxxx
Proportion of Left Turns in Opp Flow, Plto:      xxxxxx     0.00  xxxxxx  xxxxxx
Left Turns Per Cycle, LTC:                       xxxxxx     1.56  xxxxxx  xxxxxx
Adjusted Opposing Flow Rate, Vo:                 xxxxxx       95  xxxxxx  xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:          xxxxxx     1.85  xxxxxx  xxxxxx
Opposing Platoon Ratio, Rpo:                     xxxxxx     1.00  xxxxxx  xxxxxx
Lost Time Per Phase, tl:                         xxxxxx     4.00  xxxxxx  xxxxxx
Eff grn until arrival of left-turn car, gf:      xxxxxx     0.00  xxxxxx  xxxxxx
Opposing Queue Ratio, qro:                       xxxxxx     0.85  xxxxxx  xxxxxx
Eff grn blocked by opposing queue, gq:           xxxxxx     2.66  xxxxxx  xxxxxx
Eff grn while left turns filter thru, gu:        xxxxxx     7.67  xxxxxx  xxxxxx
Max opposing cars arriving during gq-gf, n:      xxxxxx     1.33  xxxxxx  xxxxxx
Proportion of Opposing Thru & RT cars, ptho:     xxxxxx     1.00  xxxxxx  xxxxxx
Left-turn Saturation Factor, fs:                 xxxxxx   xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Shared Lane, pl:     xxxxxx   xxxxxx  xxxxxx  xxxxxx
Through-car Equivalents, el1:                    xxxxxx     1.54  xxxxxx  xxxxxx
Single Lane Through-car Equivalents, el2:        xxxxxx     1.00  xxxxxx  xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       xxxxxx     0.33  xxxxxx  xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     xxxxxx     0.79  xxxxxx  xxxxxx
Left Turn Adjustment Factor, flt:                xxxxxx     0.79  xxxxxx  xxxxxx
***************************************************************************
```

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pm                   Mon Jul 21, 2003 15:12:40                 Page 14-1
----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

                    Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
****************************************************************************
Intersection #6 1st St. / College St.
****************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):         0.598
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):       12.9
Optimal Cycle:        37              Level Of Service:                   B
****************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       0  240    30   205  275     0   155 1555   110     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  240    30   205  275     0   155 1555   110     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  240    30   205  275     0   155 1555   110     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  240    30   205  275     0   155 1555   110     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     0  240    30   205  275     0   155 1555   110     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.96  0.96  0.76 0.96  1.00  0.84 0.84  0.84  1.00 1.00  1.00
Lanes:       0.00 0.89  0.11  1.00 1.00  0.00  0.26 2.56  0.18  0.00 0.00  0.00
Final Sat.:     0 1615   202  1451 1828     0   409 4104   290     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.15  0.15  0.14 0.15  0.00  0.38 0.38  0.38  0.00 0.00  0.00
Crit Moves:                        ****             ****
Green/Cycle: 0.00 0.25  0.25  0.25 0.25  0.00  0.63 0.63  0.63  0.00 0.00  0.00
Volume/Cap:  0.00 0.59  0.59  0.56 0.60  0.00  0.60 0.60  0.60  0.00 0.00  0.00
Delay/Veh:    0.0 25.1  25.1  24.8 25.2   0.0   7.9  7.9   7.9   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 25.1  25.1  24.8 25.2   0.0   7.9  7.9   7.9   0.0  0.0   0.0
DesignQueue:    0    7     1     6    8     0     2   24     2     0    0     0
****************************************************************************




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pm                   Mon Jul 21, 2003 15:12:40                 Page 15-1
----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
****************************************************************************
Intersection #6 1st St. / College St.
****************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group:  xxxx  RT    RT     L    T  xxxx   LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:     0    1     1     1    1     0     3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           3                4                6                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.97  0.97  0.96 0.96 xxxxx  0.94 0.94  0.94  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.99  0.99  xxxx xxxx xxxxx  0.99 0.99  0.99  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.79 xxxx xxxxx  0.99 0.99  0.99  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.76 0.96  1.00  0.93 0.93  0.93  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.76 0.96  1.00  0.84 0.84  0.84  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < <     Actuated     > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
****************************************************************************




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---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #6 1st St. / College St.
***************************************************************************
Approach:                                   North    South     East     West
Cycle Length, C:                           xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:       xxxxxx    17.62   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:    xxxxxx    17.62   xxxxxx   xxxxxx
Opposing Effective Green Time, go:         xxxxxx    17.62   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:              xxxxxx        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:          xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:         xxxxxx      205   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt: xxxxxx   1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx   1.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                 xxxxxx     3.99   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:           xxxxxx      270   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:    xxxxxx     5.25   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:               xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                   xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf: xxxxxx    0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                 xxxxxx     0.75   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:     xxxxxx     8.86   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:  xxxxxx     8.76   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n: xxxxxx    4.43   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   0.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:           xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx   1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:              xxxxxx     1.71   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:  xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin: xxxxxx     0.23   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm: xxxxxx   0.79   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:          xxxxxx     0.79   xxxxxx   xxxxxx
***************************************************************************
```

```
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                    Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #7 1st St. / Meridian St.
***************************************************************************
Cycle (sec):            70             Critical Vol./Cap. (X):        0.565
Loss Time (sec):         8 (Y+R =  4 sec) Average Delay (sec/veh):      9.6
Optimal Cycle:          34             Level Of Service:                 A
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  0  1  0   0  1  0  0  0   0  1  1  1  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      0   20    5   165   40    0   135 1690    5     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   0   20    5   165   40    0   135 1690    5     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    0   20    5   165   40    0   135 1690    5     0    0    0
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   0   20    5   165   40    0   135 1690    5     0    0    0
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:    0   20    5   165   40    0   135 1690    5     0    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  1.00 0.96 0.96  0.73 0.73 1.00  0.91 0.91 0.91  1.00 1.00 1.00
Lanes:       0.00 0.80 0.20  0.80 0.20 0.00  0.22 2.77 0.01  0.00 0.00 0.00
Final Sat.:    0 1464  366  1120  272    0   383 4790   14     0    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.01 0.01  0.15 0.15 0.00  0.35 0.35 0.35  0.00 0.00 0.00
Crit Moves:                       ****             ****
Green/Cycle: 0.00 0.26 0.26  0.26 0.26 0.00  0.62 0.62 0.62  0.00 0.00 0.00
Volume/Cap:  0.00 0.05 0.05  0.56 0.56 0.00  0.56 0.56 0.56  0.00 0.00 0.00
Delay/Veh:    0.0 19.4 19.4  24.5 24.5  0.0   7.8  7.8  7.8   0.0  0.0  0.0
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:   0.0 19.4 19.4  24.5 24.5  0.0   7.8  7.8  7.8   0.0  0.0  0.0
DesignQueue:   0    1    0     5    1    0     2   27    0     0    0    0
***************************************************************************
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--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #7 1st St. / Meridian St.
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group: xxxx  RT     RT   LT   LT   xxxx  LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:    0    1     1    1    1     0     3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12   12   12    12    12   12    12    12   12    12
CrosswalkWid       8               8                8                8
% Hev Veh:         1               1                0                6
Grade:            0%              0%               0%               0%
Parking/Hr:       No              No               No               No
Bus Stp/Hr:        0               0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0               0                0                0
ExclusiveRT:    Include         Include          Include          Include
% RT Prtct:        0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case: xxxx xxxx  xxxx     5    5  xxxx     5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj: xxxx 1.00  1.00 1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.99  0.99 0.99 0.99 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Grade Adj:  xxxx 1.00  1.00 1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00 1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00 1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:   xxxx 1.00  1.00 1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:     xxxx 0.97  0.97 xxxx xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
LT Adj:     xxxx xxxx xxxxx 0.74 0.74 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96 0.73 0.73  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96 0.73 0.73  1.00  0.91 0.91  0.91  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00 1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
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--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #7 1st St. / Meridian St.
********************************************************************************
Approach:                                      North     South     East     West
Cycle Length, C:                              xxxxxx        70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          xxxxxx     18.27   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       xxxxxx     18.27   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            xxxxxx     18.27   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                 xxxxxx         1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:             xxxxxx         1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:            xxxxxx       165   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:  xxxxxx      0.81   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx      0.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    xxxxxx      3.21   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:              xxxxxx        25   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       xxxxxx      0.49   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                  xxxxxx      1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                      xxxxxx      4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:   xxxxxx      0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                    xxxxxx      0.74   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        xxxxxx      0.00   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     xxxxxx     18.27   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx      0.00   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx      1.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx    xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx    xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                 xxxxxx      1.44   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx      1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    xxxxxx      0.20   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  xxxxxx      0.74   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:             xxxxxx      0.74   xxxxxx   xxxxxx
********************************************************************************
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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #8 Hwy 99 / River St.
******************************************************************************
Cycle (sec):          100              Critical Vol./Cap. (X):         0.710
Loss Time (sec):       12 (Y+R =  4 sec) Average Delay (sec/veh):       20.2
Optimal Cycle:         61              Level Of Service:                   C
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         0  0  1  0  1   0  0  0  0  0   0  0  3  1  0   1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       0  115   275    0    0     0    0 1780    80  225 2240    10
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0  115   275    0    0     0    0 1780    80  225 2240    10
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:     0  115   275    0    0     0    0 1780    80  225 2240    10
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:    0  115   275    0    0     0    0 1780    80  225 2240    10
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:     0  115   275    0    0     0    0 1780    80  225 2240    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  1.00 0.98  0.83 1.00 1.00  1.00 1.00 0.85  0.85 0.91 0.87  0.87
Lanes:       0.00 1.00  1.00 0.00 0.00  0.00 0.00 3.83  0.17 1.00 2.99  0.01
Final Sat.:     0 1862  1583    0    0     0    0 6204   279 1736 4963    22
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.06  0.17 0.00 0.00  0.00 0.00 0.29  0.29 0.13 0.45  0.45
Crit Moves:             ****                ****                  ****
Green/Cycle: 0.00 0.24  0.24 0.00 0.00  0.00 0.00 0.44  0.44 0.20 0.64  0.64
Volume/Cap:  0.00 0.25  0.71 0.00 0.00  0.00 0.00 0.66  0.66 0.66 0.71  0.71
Delay/Veh:    0.0 30.7  40.6  0.0  0.0   0.0  0.0 22.7  22.7 41.5 12.9  12.9
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:   0.0 30.7  40.6  0.0  0.0   0.0  0.0 22.7  22.7 41.5 12.9  12.9
DesignQueue:    0    5    12    0    0     0    0   59     3   10   51     0
******************************************************************************
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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
******************************************************************************
Intersection #8 Hwy 99 / River St.
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         0  0  1  0  1   0  0  0  0  0   0  0  3  1  0   1  0  2  1  0
Lane Group:  xxxx    T     R xxxx xxxx  xxxx xxxx   RT    RT    L   RT    RT
#LnsInGrps:     0    1     1    0    0     0    0    4     4    1    3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid         8               8                8                8
% Hev Veh:           2               0                6                4
Grade:              0%              0%               0%               0%
Parking/Hr:         No              No               No               No
Bus Stp/Hr:          0               0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0                0                0
ExclusiveRT:      Include         Include          Include          Include
% RT Prtct:          0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx  xxxx    1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00 xxxx xxxx xxxxx xxxx 1.00  1.00 1.00 1.00  1.00
Hev Veh Adj: xxxx 0.98  0.98 xxxx xxxx xxxxx xxxx 0.94  0.94 0.96 0.96  0.96
Grade Adj:   xxxx 1.00  1.00 xxxx xxxx xxxxx xxxx 1.00  1.00 1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00 xxxx xxxx xxxxx xxxx 1.00  1.00 xxxx 1.00  1.00
Bus Stp Adj: xxxx xxxx  1.00 xxxx xxxx xxxxx xxxx 1.00  1.00 xxxx 1.00  1.00
Area Adj:    xxxx 1.00  1.00 xxxx xxxx xxxxx xxxx 1.00  1.00 1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85 xxxx xxxx xxxxx xxxx 0.99  0.99 xxxx 1.00  1.00
LT Adj:      xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 1.00 0.98  0.83 1.00 1.00  1.00 1.00 0.94  0.94 0.91 0.96  0.96
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 0.91  0.91 1.00 0.91  0.91
Fnl Sat Adj: 1.00 0.98  0.83 1.00 1.00  1.00 1.00 0.85  0.85 0.91 0.87  0.87
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00 0.00 0.00  0.00 0.00 1.00  1.00 1.00 1.00  1.00
******************************************************************************
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-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                   Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #9 Hancock St. / Main St.
*******************************************************************************
Cycle (sec):          70               Critical Vol./Cap. (X):        0.697
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):       14.6
Optimal Cycle:        45               Level Of Service:                  B
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  1  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     260  245     0     0  200    45     0     0     0   240 1170   755
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  260  245     0     0  200    45     0     0     0   240 1170   755
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   260  245     0     0  200    45     0     0     0   240 1170   755
Reduct Vol:     0    0     0     0    0     0     0     0     0     0    0     0
Reduced Vol:  260  245     0     0  200    45     0     0     0   240 1170   755
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   260  245     0     0  200    45     0     0     0   240 1170   755
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.56 0.96  1.00  1.00 0.97  0.83  1.00 1.00  1.00  0.76 0.76  0.76
Lanes:       1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  0.44 2.17  1.39
Final Sat.:  1064 1828     0     0 1845  1568     0     0     0   644 3141  2027
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.13  0.00  0.00 0.11  0.03  0.00 0.00  0.00  0.37 0.37  0.37
Crit Moves:  ****                                                    ****
Green/Cycle: 0.35 0.35  0.00  0.00 0.35  0.35  0.00 0.00  0.00  0.53 0.53  0.53
Volume/Cap:  0.70 0.38  0.00  0.00 0.31  0.08  0.00 0.00  0.00  0.70 0.70  0.70
Delay/Veh:   25.2 17.4   0.0   0.0 16.8  15.2   0.0  0.0   0.0  12.8 12.8  12.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  25.2 17.4   0.0   0.0 16.8  15.2   0.0  0.0   0.0  12.8 12.8  12.8
DesignQueue:    7    6     0     0    5     1     0     0     0     5   23    15
*******************************************************************************
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-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************
Intersection #9 Hancock St. / Main St.
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  1  1
Lane Group:     L    T  xxxx  xxxx    T     R  xxxx xxxx  xxxx   LTR  LTR   LTR
#LnsInGrps:     1    1     0     0    1     1     0    0     0     4    4     4
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           4                3                0                7
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    5r   5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.96 0.96 xxxxx  xxxx 0.97  0.97  xxxx xxxx xxxxx  0.94 0.94  0.94
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx xxxx  0.85  xxxx xxxx xxxxx  0.95 0.95  0.95
LT Adj:      0.58 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.95 0.95  0.95
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.56 0.96  1.00  1.00 0.97  0.83  1.00 1.00  1.00  0.84 0.84  0.84
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91
Fnl Sat Adj: 0.56 0.96  1.00  1.00 0.97  0.83  1.00 1.00  1.00  0.76 0.76  0.76
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
*******************************************************************************
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #9 Hancock St. / Main St.
*******************************************************************************
Approach:                                     North    South     East     West
Cycle Length, C:                                 70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          24.55   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       24.55   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            24.55   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                     1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                 1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:              260   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:   1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                     5.06   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                200   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        3.89   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                       4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:    0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                     0.65   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:         1.68   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     22.87   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:               0.75   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:   1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                  1.60   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.16   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.58   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:              0.58   xxxxxx   xxxxxx   xxxxxx
*******************************************************************************
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
                2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #10 Hancock St / Blaine St.
*******************************************************************************
Cycle (sec):           70                Critical Vol./Cap. (X):        0.610
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):         6.2
Optimal Cycle:         37                Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  1  0  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      80    40     0    0    20    20    0     0     0  100  2170    10
Growth Adj:  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Initial Bse:   80    40     0    0    20    20    0     0     0  100  2170    10
User Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Volume:    80    40     0    0    20    20    0     0     0  100  2170    10
Reduct Vol:     0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:   80    40     0    0    20    20    0     0     0  100  2170    10
PCE Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Final Vol.:    80    40     0    0    20    20    0     0     0  100  2170    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900  1900
Adjustment:  0.77  0.77  1.00 1.00  0.93  0.93 1.00  1.00  1.00 0.87  0.87  0.87
Lanes:       0.67  0.33  0.00 0.00  0.50  0.50 0.00  0.00  0.00 0.13  2.86  0.01
Final Sat.:   969   485     0    0   886   886    0     0     0  218  4740    22
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08  0.08  0.00 0.00  0.02  0.02 0.00  0.00  0.00 0.46  0.46  0.46
Crit Moves:        ****                                               ****
Green/Cycle: 0.14  0.14  0.00 0.00  0.14  0.14 0.00  0.00  0.00 0.75  0.75  0.75
Volume/Cap:  0.61  0.61  0.00 0.00  0.17  0.17 0.00  0.00  0.00 0.61  0.61  0.61
Delay/Veh:   34.0  34.0   0.0  0.0  27.1  27.1  0.0   0.0   0.0  4.3   4.3   4.3
User DelAdj: 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
AdjDel/Veh:  34.0  34.0   0.0  0.0  27.1  27.1  0.0   0.0   0.0  4.3   4.3   4.3
DesignQueue:    3     1     0    0     1     1    0     0     0    1    24     0
*******************************************************************************
```

```
---------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
              Newberg TSP Refinement - Newberg, Oregon
 Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

            Level Of Service Detailed Computation Report
                    2000 HCM Operations Method
                     Base Volume Alternative
***************************************************************************
Intersection #10 Hancock St / Blaine St.
***************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         0  1  0  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
Lane Group:    LT   LT   xxxx  xxxx  RT    RT   xxxx xxxx  xxxx   LTR  LTR   LTR
#LnsInGrps:     1    1    0     0    1     1     0    0     0     3    3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           0                0                0                4
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5  xxxx   xxxx xxxx  xxxx   xxxx xxxx  xxxx    5r   5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  0.96 0.96  0.96
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: 1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Bus Stp Adj: 1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx 0.93  0.93  xxxx xxxx xxxxx  1.00 1.00  1.00
LT Adj:      0.77 0.77 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  1.00 1.00  1.00
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.77 0.77  1.00  1.00 0.93  0.93  1.00 1.00  1.00  0.96 0.96  0.96
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91
Fnl Sat Adj: 0.77 0.77  1.00  1.00 0.93  0.93  1.00 1.00  1.00  0.87 0.87  0.87
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
***************************************************************************
```

```
---------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
              Newberg TSP Refinement - Newberg, Oregon
 Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                    2000 HCM Operations Method
                     Base Volume Alternative
***************************************************************************
Intersection #10 Hancock St / Blaine St.
***************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                  70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:            9.47   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:         9.47   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:              9.47   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                      1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                  1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                80   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    0.67   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     0.00   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      1.56   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                  40   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         0.78   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      0.86   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          0.00   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       9.47   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:     0.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    1.00   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   1.46   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:       1.00   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.35   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.77   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               0.77   xxxxxx   xxxxxx   xxxxxx
***************************************************************************
```

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pm                         Mon Jul 21, 2003 15:12:40                Page 24-1
--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #11 Hancock St. / College St.
********************************************************************************
Cycle (sec):         70                Critical Vol./Cap. (X):        0.723
Loss Time (sec):      8 (Y+R =  4 sec) Average Delay (sec/veh):        14.3
Optimal Cycle:       48                Level Of Service:                  B
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  0  0    0  0  1  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      95  310     0     0  400   100     0    0     0    50 2100   170
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   95  310     0     0  400   100     0    0     0    50 2100   170
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    95  310     0     0  400   100     0    0     0    50 2100   170
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   95  310     0     0  400   100     0    0     0    50 2100   170
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    95  310     0     0  400   100     0    0     0    50 2100   170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.33 0.99  1.00  1.00 0.89  0.89  1.00 1.00  1.00  0.86 0.86  0.86
Lanes:       1.00 1.00  0.00  0.00 1.60  0.40  0.00 0.00  0.00  0.06 2.72  0.22
Final Sat.:   630 1881     0     0 2695   674     0    0     0   105 4418   358
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.16  0.00  0.00 0.15  0.15  0.00 0.00  0.00  0.48 0.48  0.48
Crit Moves:       ****                                               ****
Green/Cycle: 0.23 0.23  0.00  0.00 0.23  0.23  0.00 0.00  0.00  0.66 0.66  0.66
Volume/Cap:  0.66 0.72  0.00  0.00 0.65  0.65  0.00 0.00  0.00  0.72 0.72  0.72
Delay/Veh:   35.5 30.9   0.0   0.0 26.5  26.5   0.0  0.0   0.0   8.6  8.6   8.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  35.5 30.9   0.0   0.0 26.5  26.5   0.0  0.0   0.0   8.6  8.6   8.6
DesignQueue:    3   10     0     0   12     3     0    0     0     1   31     3
********************************************************************************




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pm                         Mon Jul 21, 2003 15:12:40                Page 25-1
--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                            Base Volume Alternative
********************************************************************************
Intersection #11 Hancock St. / College St.
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  0    0  0  1  1  0    0  0  0  0  0    0  1  1  1  0
Lane Group:    L    T   xxxx  xxxx  RT     RT  xxxx xxxx  xxxx   LTR  LTR   LTR
#LnsInGrps:     1    1     0     0    2     2     0    0     0     3    3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           1                4                0                4
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    5r   5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.99 0.99 xxxxx  xxxx 0.96  0.96  xxxx xxxx xxxxx  0.96 0.96  0.96
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx 0.97  0.97  xxxx xxxx xxxxx  0.99 0.99  0.99
LT Adj:      0.34 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.99 0.99  0.99
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.33 0.99  1.00  1.00 0.93  0.93  1.00 1.00  1.00  0.94 0.94  0.94
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 0.95  0.95  1.00 1.00  1.00  0.91 0.91  0.91
Fnl Sat Adj: 0.33 0.99  1.00  1.00 0.89  0.89  1.00 1.00  1.00  0.86 0.86  0.86
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
********************************************************************************




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-----------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                      2000 HCM Operations Method
                        Base Volume Alternative
*****************************************************************************
Intersection #11 Hancock St. / College St.
*****************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                  70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           15.96   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        15.96   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             15.96   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                      2   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                  1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                95   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      1.85   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 500   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         4.86   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      0.77   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          4.72   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:      11.24   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                0.56   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:    1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   2.10   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.25   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.34   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               0.34   xxxxxx   xxxxxx   xxxxxx
*****************************************************************************
```

```
-----------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                   Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #12 Hancock St. / Meridian St.
*****************************************************************************
Cycle (sec):           70              Critical Vol./Cap. (X):        0.694
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):      10.0
Optimal Cycle:         45              Level Of Service:                 B
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  1  0  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      5  130     0    0  155    80    0    0     0   75 2210    75
Growth Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   5  130     0    0  155    80    0    0     0   75 2210    75
User Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:    5  130     0    0  155    80    0    0     0   75 2210    75
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   5  130     0    0  155    80    0    0     0   75 2210    75
PCE Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:    5  130     0    0  155    80    0    0     0   75 2210    75
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment: 0.97 0.97  1.00 1.00 0.93  0.93 1.00 1.00  1.00 0.86 0.86  0.86
Lanes:      0.04 0.96  0.00 0.00 0.66  0.34 0.00 0.00  0.00 0.09 2.81  0.10
Final Sat.:   68 1775     0    0 1172   605    0    0     0  155 4578   155
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.07 0.07  0.00 0.00 0.13  0.13 0.00 0.00  0.00 0.48 0.48  0.48
Crit Moves:                       ****                               ****
Green/Cycle: 0.19 0.19  0.00 0.00 0.19  0.19 0.00 0.00  0.00 0.70 0.70  0.70
Volume/Cap: 0.38 0.38  0.00 0.00 0.69  0.69 0.00 0.00  0.00 0.69 0.69  0.69
Delay/Veh:  25.4 25.4   0.0  0.0 32.6  32.6  0.0  0.0   0.0  6.9  6.9   6.9
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh: 25.4 25.4   0.0  0.0 32.6  32.6  0.0  0.0   0.0  6.9  6.9   6.9
DesignQueue:   0    4     0    0    5     3    0    0     0    1   29     1
*****************************************************************************
```

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pm                      Mon Jul 21, 2003 15:12:40                Page 27-1
--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
********************************************************************************
Intersection #12 Hancock St. / Meridian St.
********************************************************************************
Approach:       North Bound       South Bound       East Bound        West Bound
Movement:      L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         0  1  0  0  0     0  0  0  1  0     0  0  0  0  0     0  1  1  1  0
Lane Group:    LT    LT   xxxx  xxxx  RT     RT  xxxx xxxx   xxxx   LTR  LTR   LTR
#LnsInGrps:      1     1     0     0     1     1     0     0     0     3     3     3
------------|----------------||----------------||----------------||----------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid           8                 8                 8                 8
% Hev Veh:             2                 2                 0                 5
Grade:                0%                0%                0%                0%
Parking/Hr:           No                No                No                No
Bus Stp/Hr:            0                 0                 0                 0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:           0                 0                 0                 0
ExclusiveRT:       Include           Include           Include           Include
% RT Prtct:            0                 0                 0                 0
------------|----------------||----------------||----------------||----------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      5     5  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx    5r    5r    5r
------------|----------------||----------------||----------------||----------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98  0.98  xxxx xxxx xxxxx  0.95 0.95  0.95
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: 1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Bus Stp Adj: 1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx 0.95  0.95  xxxx xxxx xxxxx  1.00 1.00  1.00
LT Adj:      0.99 0.99 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  1.00 1.00  1.00
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.97 0.97  1.00  1.00 0.93  0.93  1.00 1.00  1.00  0.94 0.94  0.94
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91
Fnl Sat Adj: 0.97 0.97  1.00  1.00 0.93  0.93  1.00 1.00  1.00  0.86 0.86  0.86
------------|----------------||----------------||----------------||----------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
********************************************************************************



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pm                      Mon Jul 21, 2003 15:12:40                Page 27-2
--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                         Base Volume Alternative
********************************************************************************
Intersection #12 Hancock St. / Meridian St.
********************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                  70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           13.34   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        13.34   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             13.34   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                      1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                  1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                 5   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    0.04   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     0.00   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      0.10   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 235   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         4.57   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     6.93   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      0.81   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          8.57   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       4.77   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:     0.82   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    1.00   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   1.77   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:       1.00   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.16   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.99   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               0.99   xxxxxx   xxxxxx   xxxxxx
********************************************************************************



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------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #13 Hwy 99 / Villa Rd.
*******************************************************************************
Cycle (sec):          135              Critical Vol./Cap. (X):        0.721
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):     37.4
Optimal Cycle:         78              Level Of Service:                 D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        2  0  1  1  0   2  0  1  1  0   1  0  3  1  0   1  0  3  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     465  265    20  295  210    70   90 1260     5   15 1520   150
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  465  265    20  295  210    70   90 1260     5   15 1520   150
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:   465  265    20  295  210    70   90 1260     5   15 1520   150
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  465  265    20  295  210    70   90 1260     5   15 1520   150
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:   465  265    20  295  210    70   90 1260     5   15 1520   150
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.71 0.72  0.72 0.80 0.80  0.80 0.77 0.73  0.73 0.75 0.71  0.71
Lanes:       2.00 1.86  0.14 2.00 1.50  0.50 1.00 3.98  0.02 1.00 3.64  0.36
Final Sat.:  2693 2555   193 3046 2268   756 1455 5547    22 1433 4933   487
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.10  0.10 0.10 0.09  0.09 0.06 0.23  0.23 0.01 0.31  0.31
Crit Moves:  ****                ****       ****                   ****
Green/Cycle: 0.24 0.19  0.19 0.18 0.13  0.13 0.09 0.49  0.49 0.02 0.43  0.43
Volume/Cap:  0.72 0.54  0.54 0.54 0.72  0.72 0.72 0.46  0.46 0.46 0.72  0.72
Delay/Veh:   51.1 50.6  50.6 51.7 63.0  63.0 78.6 22.8  22.8 75.3 33.1  33.1
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  51.1 50.6  50.6 51.7 63.0  63.0 78.6 22.8  22.8 75.3 33.1  33.1
DesignQueue:   27   16     1   19   14     5    6   50     0    1   69     7
*******************************************************************************
```

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------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #13 Hwy 99 / Villa Rd.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  1  1  0   2  0  1  1  0   1  0  3  1  0   1  0  3  1  0
Lane Group:     L   RT    RT    L   RT    RT    L   RT    RT    L   RT    RT
#LnsInGrps:     2    2     2    2    2     2    1    4     4    1    4     4
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid         8               8               8               8
% Hev Veh:          30              15              24              26
Grade:              0%              0%              0%              0%
Parking/Hr:         No              No              No              No
Bus Stp/Hr:          0               0               0               0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0               0               0
ExclusiveRT:      Include         Include         Include         Include
% RT Prtct:          0               0               0               0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Hev Veh Adj: 0.77 0.77  0.77 0.87 0.87  0.87 0.81 0.81  0.81 0.79 0.79  0.79
Grade Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00 xxxx 1.00  1.00 xxxx 1.00  1.00 xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00 xxxx 1.00  1.00 xxxx 1.00  1.00 xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99 xxxx 0.96  0.96 xxxx 1.00  1.00 xxxx 0.99  0.99
LT Adj:      0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 0.73 0.76  0.76 0.83 0.84  0.84 0.77 0.81  0.81 0.75 0.78  0.78
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 0.97 0.95  0.95 0.97 0.95  0.95 1.00 0.91  0.91 1.00 0.91  0.91
Fnl Sat Adj: 0.71 0.72  0.72 0.80 0.80  0.80 0.77 0.73  0.73 0.75 0.71  0.71
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < <     Actuated     > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
*******************************************************************************
```

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-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #14 Hwy 99 / Elliot Rd.
*******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):         0.738
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):       25.5
Optimal Cycle:        65              Level Of Service:                   C
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       0  1  0  0  1   0  0  1! 0  0   1  0  3  1  0   1  0  3  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      90   20   100    50   25   280   140 1440    55    45 1580    90
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   90   20   100    50   25   280   140 1440    55    45 1580    90
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    90   20   100    50   25   280   140 1440    55    45 1580    90
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   90   20   100    50   25   280   140 1440    55    45 1580    90
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    90   20   100    50   25   280   140 1440    55    45 1580    90
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.40 0.40  0.70  0.73 0.73  0.73  0.79 0.75  0.75  0.77 0.73  0.73
Lanes:       0.82 0.18  1.00  0.14 0.07  0.79  1.00 3.85  0.15  1.00 3.78  0.22
Final Sat.:   618  137  1324   196   98  1099  1504 5516   211  1455 5232   298
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.15  0.08  0.25 0.25  0.25  0.09 0.26  0.26  0.03 0.30  0.30
Crit Moves:                        ****        ****                   ****
Green/Cycle: 0.34 0.34  0.34  0.34 0.34  0.34  0.13 0.48  0.48  0.06 0.41  0.41
Volume/Cap:  0.42 0.42  0.22  0.74 0.74  0.74  0.74 0.55  0.55  0.55 0.74  0.74
Delay/Veh:   26.2 26.2  23.4  34.8 34.8  34.8  56.3 18.6  18.6  53.3 26.3  26.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  26.2 26.2  23.4  34.8 34.8  34.8  56.3 18.6  18.6  53.3 26.3  26.3
DesignQueue:    3    1     4     2    1    11     7   44     2     2   55     3
*******************************************************************************
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #14 Hwy 99 / Elliot Rd.
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  1  0  0  1   0  0  1! 0  0   1  0  3  1  0   1  0  3  1  0
Lane Group:   LT   LT    R   LTR  LTR   LTR    L   RT    RT     L   RT    RT
#LnsInGrps:     1    1     1     1    1     1     1    4     4     1    4     4
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:          22               15               20               24
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5  xxxx     5    5     5     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.82 0.82  0.82  0.87 0.87  0.87  0.83 0.83  0.83  0.81 0.81  0.81
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  0.89 0.89  0.89  xxxx 0.99  0.99  xxxx 0.99  0.99
LT Adj:      0.49 0.49 xxxxx  0.94 0.94  0.94  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.40 0.40  0.70  0.73 0.73  0.73  0.79 0.83  0.83  0.77 0.80  0.80
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.91  0.91  1.00 0.91  0.91
Fnl Sat Adj: 0.40 0.40  0.70  0.73 0.73  0.73  0.79 0.75  0.75  0.77 0.73  0.73
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************
```

```
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                         Base Volume Alternative
******************************************************************************
Intersection #14 Hwy 99 / Elliot Rd.
******************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                100      100   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          34.50    34.50   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       34.50    34.50   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            34.50    34.50   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                     1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                 1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               90       50   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:   0.82     0.14   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    0.14   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                     2.50     1.39   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                355      110   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        9.86     3.06   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                       4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:    2.29     7.99   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                     0.65     0.65   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        14.05     0.26   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     20.45    26.51   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:    5.88   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   0.86   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx     0.81   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:   0.82     0.14   xxxxxx   xxxxxx
Through-car Equivalents, el1:                  2.01     1.57   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:      4.19   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.11     0.07   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.48     0.94   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:              0.48     0.94   xxxxxx   xxxxxx
******************************************************************************
```

```
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #15 Hwy 99 / Springbrook St.
******************************************************************************
Cycle (sec):          135                 Critical Vol./Cap. (X):        0.717
Loss Time (sec):       16 (Y+R = 16 sec) Average Delay (sec/veh):         41.2
Optimal Cycle:         77                 Level Of Service:                  D
******************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         2  0  2  1  0   2  0  2  1  0   1  0  3  1  1   1  0  3  1  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     330  550    50  380  500    20   40 1225   410  200 1560   315
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  330  550    50  380  500    20   40 1225   410  200 1560   315
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:   330  550    50  380  500    20   40 1225   410  200 1560   315
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  330  550    50  380  500    20   40 1225   410  200 1560   315
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:   330  550    50  380  500    20   40 1225   410  200 1560   315
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.79 0.77  0.77 0.82 0.81  0.81 0.79 0.73  0.73 0.77 0.72  0.72
Lanes:       2.00 2.75  0.25 2.00 2.88  0.12 1.00 3.75  1.25 1.00 4.00  1.00
Final Sat.:  2994 4017   365 3127 4427   177 1504 5190  1737 1455 5435  1359
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.14  0.14 0.12 0.11  0.11 0.03 0.24  0.24 0.14 0.29  0.23
Crit Moves:       ****       ****                   ****       ****
Green/Cycle: 0.18 0.19  0.19 0.17 0.18  0.18 0.04 0.33  0.33 0.19 0.48  0.48
Volume/Cap:  0.62 0.72  0.72 0.72 0.62  0.62 0.60 0.72  0.72 0.72 0.60  0.49
Delay/Veh:   53.5 54.2  54.2 57.7 52.3  52.3 77.9 40.9  40.9 59.7 26.3  24.2
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  53.5 54.2  54.2 57.7 52.3  52.3 77.9 40.9  40.9 59.7 26.3  24.2
DesignQueue:   21   34     3   24   31     1    3   65    22   12   65    13
******************************************************************************
```

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pm                        Mon Jul 21, 2003 15:12:40                  Page 33-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
     Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #15 Hwy 99 / Springbrook St.
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  3  1  1    1  0  3  1  1
Lane Group:    L   RT     RT    L   RT     RT    L   RT     RT    L   RT     RT
#LnsInGrps:    2    3      3    2    3      3    1    5      5    1    5      5
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12     12   12   12     12   12   12     12   12   12     12
CrosswalkWid        8                8                8                8
% Hev Veh:         17               12               20               24
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.86 0.86  0.86  0.89 0.89  0.89  0.83 0.83  0.83  0.81 0.81  0.81
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99  xxxx 0.99  0.99  xxxx 0.96  0.96  xxxx 0.98  0.98
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.81 0.84  0.84  0.85 0.89  0.89  0.79 0.80  0.80  0.77 0.79  0.79
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 0.97 0.91  0.91  0.97 0.91  0.91  1.00 0.91  0.91  1.00 0.91  0.91
Fnl Sat Adj: 0.79 0.77  0.77  0.82 0.81  0.81  0.79 0.73  0.73  0.77 0.72  0.72
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************


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pm                        Mon Jul 21, 2003 15:12:40                  Page 34-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
     Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                       Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #16 Hwy 99 / Brutscher St.
*******************************************************************************
Cycle (sec):          135               Critical Vol./Cap. (X):         0.720
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):        29.9
Optimal Cycle:        78                Level Of Service:                  C
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:     5    5     5    5    5     5    3   10     0    3   10     0
Lanes:        1  0  0  1  1    1  0  0  1  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     225   20   270    20    5    65    30 1360    90   270 1850     5
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  225   20   270    20    5    65    30 1360    90   270 1850     5
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   225   20   270    20    5    65    30 1360    90   270 1850     5
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  225   20   270    20    5    65    30 1360    90   270 1850     5
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   225   20   270    20    5    65    30 1360    90   270 1850     5
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.78 0.71  0.71  0.75 0.68  0.68  0.76 0.75  0.70  0.74 0.73  0.68
Lanes:       1.00 0.14  1.86  1.00 0.14  1.86  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  1491  186  2513  1421  184  2391  2892 4284  1334  2801 4150  1292
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.11  0.11  0.01 0.03  0.03  0.01 0.32  0.07  0.10 0.45  0.00
Crit Moves:  ****                  ****        ****                  ****
Green/Cycle: 0.21 0.21  0.21  0.04 0.04  0.04  0.02 0.49  0.49  0.15 0.61  0.61
Volume/Cap:  0.73 0.52  0.52  0.38 0.73  0.73  0.47 0.65  0.14  0.65 0.73  0.01
Delay/Veh:   58.2 48.2  48.2  68.0 88.2  88.2  70.5 26.7  19.1  57.8 19.2  10.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  58.2 48.2  48.2  68.0 88.2  88.2  70.5 26.7  19.1  57.8 19.2  10.1
DesignQueue:   14    1    16     1    0     5     2   56     3    18   59     0
*******************************************************************************


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pm                      Mon Jul 21, 2003 15:12:40                    Page 35-1
-------------------------------------------------------------------------------

               Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************
Intersection #16 Hwy 99 / Brutscher St.
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  0  1  1    1  0  0  1  1    2  0  3  0  1    2  0  3  0  1
Lane Group:     L    RT    RT    L    RT    RT    L    T     R     L    T     R
#LnsInGrps:     1     2     2    1     2     2    2    3     1     2    3     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid         8                 8                 8                 8
% Hev Veh:          21                27                21                25
Grade:              0%                0%                0%                0%
Parking/Hr:         No                No                No                No
Bus Stp/Hr:          0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                 0                 0                 0
ExclusiveRT:     Include           Include           Include           Include
% RT Prtct:          0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.83 0.83  0.83  0.79 0.79  0.79  0.83 0.83  0.83  0.80 0.80  0.80
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.86  0.86  xxxx 0.86  0.86  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.78 0.71  0.71  0.75 0.68  0.68  0.78 0.83  0.70  0.76 0.80  0.68
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.97 0.91  1.00  0.97 0.91  1.00
Fnl Sat Adj: 0.78 0.71  0.71  0.75 0.68  0.68  0.76 0.75  0.70  0.74 0.73  0.68
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <      Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************

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pm                      Mon Jul 21, 2003 15:12:40                    Page 36-1
-------------------------------------------------------------------------------

               Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #17 Hwy 99 / Vittoria St.
*******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        0.724
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):       8.1
Optimal Cycle:        63              Level Of Service:                  A
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted         Permitted         Protected         Protected
Rights:          Include           Include           Include           Include
Min. Green:    0     0     0     0     0     0     0     0     0     0     0     0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      35     0    10    30     0    35    45  1610     5     5  2110   125
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   35     0    10    30     0    35    45  1610     5     5  2110   125
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    35     0    10    30     0    35    45  1610     5     5  2110   125
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   35     0    10    30     0    35    45  1610     5     5  2110   125
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    35     0    10    30     0    35    45  1610     5     5  2110   125
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.60  1.00  0.60  0.63  1.00  0.63  0.78  0.75  0.75  0.75  0.71  0.71
Lanes:       0.78  0.00  0.22  0.46  0.00  0.54  1.00  2.99  0.01  1.00  2.83  0.17
Final Sat.:   880     0   252   552     0   644  1480  4240    13  1421  3823   226
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04  0.00  0.04  0.05  0.00  0.05  0.03  0.38  0.38  0.00  0.55  0.55
Crit Moves:                    ****              ****                    ****
Green/Cycle: 0.08  0.00  0.08  0.08  0.00  0.08  0.04  0.80  0.80  0.01  0.76  0.76
Volume/Cap:  0.53  0.00  0.53  0.72  0.00  0.72  0.72  0.48  0.48  0.48  0.72  0.72
Delay/Veh:   50.7   0.0  50.7  70.2   0.0  70.2  81.4   3.4   3.4  79.8   7.1   7.1
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  50.7   0.0  50.7  70.2   0.0  70.2  81.4   3.4   3.4  79.8   7.1   7.1
DesignQueue:    2     0     1     2     0     2     2    20     0     0    31     2
*******************************************************************************

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--------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #17 Hwy 99 / Vittoria St.
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  1! 0  0   0  0  1! 0  0   1  0  2  1  0   1  0  2  1  0
Lane Group:   LTR  LTR  LTR   LTR  LTR  LTR    L   RT    RT    L   RT    RT
#LnsInGrps:     1    1    1     1    1    1    1    3     3    1    3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12   12    12   12   12   12   12    12   12   12    12
CrosswalkWid         8               8               8               8
% Hev Veh:          22              26              22              27
Grade:              0%              0%              0%              0%
Parking/Hr:         No              No              No              No
Bus Stp/Hr:          0               0               0               0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0               0               0
ExclusiveRT:      Include         Include         Include         Include
% RT Prtct:          0               0               0               0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5 xxxx     5    5 xxxx     5    1 xxxx  xxxx    1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 xxxx  1.00  1.00 xxxx  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.82 xxxx  0.82  0.79 xxxx  0.79  0.82 0.82  0.82  0.79 0.79  0.79
Grade Adj:   1.00 xxxx  1.00  1.00 xxxx  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: 1.00 xxxx  1.00  1.00 xxxx  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: 1.00 xxxx  1.00  1.00 xxxx  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 xxxx  1.00  1.00 xxxx  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      0.97 xxxx  0.97  0.93 xxxx  0.93  xxxx 1.00  1.00  xxxx 0.99  0.99
LT Adj:      0.75 xxxx  0.75  0.86 xxxx  0.86  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.60 1.00  0.60  0.63 1.00  0.63  0.78 0.82  0.82  0.75 0.78  0.78
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.91  0.91  1.00 0.91  0.91
Fnl Sat Adj: 0.60 1.00  0.60  0.63 1.00  0.63  0.78 0.75  0.75  0.75 0.71  0.71
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 0.00  1.00  1.00 0.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
********************************************************************************
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--------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #17 Hwy 99 / Vittoria St.
********************************************************************************
Approach:                                     North    South     East     West
Cycle Length, C:                                100      100   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           7.51     7.51   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        7.51     7.51   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             7.51     7.51   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                     1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                 1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               35       30   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:   0.78     0.46   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    0.46     0.78   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                     0.97     0.83   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 65       45   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        1.81     1.25   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                       4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:    0.00     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                     0.92     0.92   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:         3.14     1.39   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:      4.37     6.12   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:    1.57     0.70   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   0.54     0.22   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                  1.50     1.47   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:      1.35     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.47     0.39   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.75     0.86   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:              0.75     0.86   xxxxxx   xxxxxx
********************************************************************************
```

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-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #18 Mountainview/Aspen S. (VOLS)
*****************************************************************************
Cycle (sec):          70                Critical Vol./Cap. (X):        0.880
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):        38.3
Optimal Cycle:        84                Level Of Service:                  D
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  1  0  0  0   0  0  0  1  0   1  0  0  0  1   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      430   75     0     0   40   225   130    0   300     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   430   75     0     0   40   225   130    0   300     0    0     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80
PHF Volume:    538   94     0     0   50   281   163    0   375     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   538   94     0     0   50   281   163    0   375     0    0     0
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    538   94     0     0   50   281   163    0   375     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   0.80 0.80  1.00  1.00 0.72  0.72  0.64 1.00  0.71  1.00 1.00  1.00
Lanes:        1.70 0.30  0.00  0.00 0.15  0.85  1.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:   2585  451     0     0  206  1161  1217    0  1345     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.21 0.21  0.00  0.00 0.24  0.24  0.13 0.00  0.28  0.00 0.00  0.00
Crit Moves:   ****                  ****                   ****
Green/Cycle:  0.24 0.24  0.00  0.00 0.28  0.28  0.32 0.00  0.32  0.00 0.00  0.00
Volume/Cap:   0.88 0.88  0.00  0.00 0.88  0.88  0.42 0.00  0.88  0.00 0.00  0.00
Delay/Veh:    37.9 37.9   0.0   0.0 44.8  44.8  19.6  0.0  41.2   0.0  0.0   0.0
User DelAdj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   37.9 37.9   0.0   0.0 44.8  44.8  19.6  0.0  41.2   0.0  0.0   0.0
DesignQueue:    17    3     0     0    1     8     4    0    11     0    0     0
*****************************************************************************
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-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #18 Mountainview/Aspen S. (VOLS)
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  1  0  0  0   0  0  0  1  0   1  0  0  0  1   0  0  0  0  0
Lane Group:   LT   LT   xxxx  xxxx RT    RT    L  xxxx    R  xxxx xxxx  xxxx
#LnsInGrps:     2    2     0     0    1     1     1    0     1     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:          20               23               20                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:     < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:       4    4  xxxx  xxxx xxxx  xxxx     2 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  1.00 xxxx  1.00  xxxx xxxx xxxxx
Hev Veh Adj:  0.83 0.83 xxxxx  xxxx 0.81  0.81  0.83 xxxx  0.83  xxxx xxxx xxxxx
Grade Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  1.00 xxxx  1.00  xxxx xxxx xxxxx
Parking Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx xxxxx
Bus Stp Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx xxxxx
Area Adj:     1.00 1.00 xxxxx  xxxx 1.00  1.00  1.00 xxxx  1.00  xxxx xxxx xxxxx
RT Adj:       xxxx xxxx xxxxx  xxxx 0.89  0.89  xxxx xxxx  0.85  xxxx xxxx xxxxx
LT Adj:       0.96 0.96 xxxxx  xxxx xxxx xxxxx  0.77 xxxx xxxxx  xxxx xxxx xxxxx
PedBike Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj:  0.80 0.80  1.00  1.00 0.72  0.72  0.64 1.00  0.71  1.00 1.00  1.00
Usr Sat Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj:  0.80 0.80  1.00  1.00 0.72  0.72  0.64 1.00  0.71  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:   < < < < < < < < < < < < < < No     > > > > > > > > > > > > > > > >
Signal Type:   < < < < < < < < < < < <      Actuated      > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
*****************************************************************************
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------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
   Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
******************************************************************************
Intersection #18 Mountainview/Aspen S. (VOLS)
******************************************************************************
Approach:                                     North    South     East    West
Cycle Length, C:                             xxxxxx   xxxxxx       70   xxxxxx
Actual Green Time Per Lane Group, G:         xxxxxx   xxxxxx    22.18   xxxxxx
Effective Green Time Per Lane Group, g:      xxxxxx   xxxxxx    22.18   xxxxxx
Opposing Effective Green Time, go:           xxxxxx   xxxxxx    22.18   xxxxxx
Number Of Opposing Lanes, No:                xxxxxx   xxxxxx        0   xxxxxx
Number Of Lanes In Lane Group, N:            xxxxxx   xxxxxx        1   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:           xxxxxx   xxxxxx      163   xxxxxx
Proportion of Left Turns in Lane Group, Plt: xxxxxx   xxxxxx     1.00   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx   xxxxxx     1.00   xxxxxx
Left Turns Per Cycle, LTC:                   xxxxxx   xxxxxx     3.16   xxxxxx
Adjusted Opposing Flow Rate, Vo:             xxxxxx   xxxxxx        0   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:      xxxxxx   xxxxxx     0.00   xxxxxx
Opposing Platoon Ratio, Rpo:                 xxxxxx   xxxxxx     1.00   xxxxxx
Lost Time Per Phase, tl:                     xxxxxx   xxxxxx     4.00   xxxxxx
Eff grn until arrival of left-turn car, gf:  xxxxxx   xxxxxx     0.00   xxxxxx
Opposing Queue Ratio, qro:                   xxxxxx   xxxxxx     0.68   xxxxxx
Eff grn blocked by opposing queue, gq:       xxxxxx   xxxxxx     0.00   xxxxxx
Eff grn while left turns filter thru, gu:    xxxxxx   xxxxxx    22.18   xxxxxx
Max opposing cars arriving during gq-gf, n:  xxxxxx   xxxxxx     0.00   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   xxxxxx     0.00   xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx   xxxxxx     1.00   xxxxxx
Through-car Equivalents, el1:                xxxxxx   xxxxxx     1.30   xxxxxx
Single Lane Through-car Equivalents, el2:    xxxxxx   xxxxxx     1.00   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:   xxxxxx   xxxxxx     0.18   xxxxxx
Single Lane Left Turn Adjustment Factor, fm: xxxxxx   xxxxxx     0.77   xxxxxx
Left Turn Adjustment Factor, flt:            xxxxxx   xxxxxx     0.77   xxxxxx
******************************************************************************
```

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------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #19 Springbrook St. / Mt. View Dr.
******************************************************************************
Cycle (sec):           70               Critical Vol./Cap. (X):        0.829
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):       19.8
Optimal Cycle:         65               Level Of Service:                 B
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R    L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        0  0  0  1  0   0  1  0  0  0   0  0  0  0  0   1  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       0  360   135   215  200     0     0    0     0   130    0   215
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  360   135   215  200     0     0    0     0   130    0   215
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82  0.82 0.82  0.82
PHF Volume:     0  439   165   262  244     0     0    0     0   159    0   262
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  439   165   262  244     0     0    0     0   159    0   262
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     0  439   165   262  244     0     0    0     0   159    0   262
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.76  0.76  0.50 0.50  1.00  1.00 1.00  1.00  0.61 1.00  0.67
Lanes:       0.00 0.73  0.27  0.52 0.48  0.00  0.00 0.00  0.00  1.00 0.00  1.00
Final Sat.:     0 1047   393   495  461     0     0    0     0  1160    0  1282
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.42  0.42  0.53 0.53  0.00  0.00 0.00  0.00  0.14 0.00  0.20
Crit Moves:                        ****                                     ****
Green/Cycle: 0.00 0.64  0.64  0.64 0.64  0.00  0.00 0.00  0.00  0.25 0.00  0.25
Volume/Cap:  0.00 0.66  0.66  0.83 0.83  0.00  0.00 0.00  0.00  0.55 0.00  0.83
Delay/Veh:    0.0  9.6   9.6  18.9 18.9   0.0   0.0  0.0   0.0  25.4  0.0  41.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  9.6   9.6  18.9 18.9   0.0   0.0  0.0   0.0  25.4  0.0  41.4
DesignQueue:    0    7     3     4    4     0     0    0     0     5    0     8
******************************************************************************
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pm                     Mon Jul 21, 2003 15:12:40                   Page 41-1
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #19 Springbrook St. / Mt. View Dr.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0    0  1  0  0  0    0  0  0  0  0    1  0  0  0  1
Lane Group: xxxx  RT     RT   LT   LT   xxxx  xxxx xxxx  xxxx    L  xxxx     R
#LnsInGrps:    0    1     1    1    1     0     0    0     0    1    0     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12   12   12    12    12   12    12   12   12    12
CrosswalkWid        8               8                8                8
% Hev Veh:         27              25                0               26
Grade:             0%              0%               0%               0%
Parking/Hr:        No              No               No               No
Bus Stp/Hr:         0               0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0               0                0                0
ExclusiveRT:     Include         Include          Include          Include
% RT Prtct:         0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case: xxxx xxxx  xxxx     5    5  xxxx  xxxx xxxx  xxxx     2 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj: xxxx 1.00  1.00  1.00 1.00 xxxxx  xxxx xxxx xxxxx  1.00 xxxx  1.00
Hev Veh Adj: xxxx 0.79  0.79  0.80 0.80 xxxxx  xxxx xxxx xxxxx  0.79 xxxx  0.79
Grade Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  xxxx xxxx xxxxx  1.00 xxxx  1.00
Parking Adj: xxxx 1.00  1.00  1.00 1.00 xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00  1.00  1.00 1.00 xxxxx  xxxx xxxx xxxxx  xxxx xxxx  1.00
Area Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  xxxx xxxx xxxxx  1.00 xxxx  1.00
RT Adj:     xxxx 0.96  0.96  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx  0.85
LT Adj:     xxxx xxxx xxxxx  0.63 0.63 xxxxx  xxxx xxxx xxxxx  0.77 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.76  0.76  0.50 0.50  1.00  1.00 1.00  1.00  0.61 1.00  0.67
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.76  0.76  0.50 0.50  1.00  1.00 1.00  1.00  0.61 1.00  0.67
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  0.00 0.00  0.00  1.00 0.00  1.00
*******************************************************************************



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pm                     Mon Jul 21, 2003 15:12:40                   Page 41-2
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #19 Springbrook St. / Mt. View Dr.
*******************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                              xxxxxx       70   xxxxxx       70
Actual Green Time Per Lane Group, G:          xxxxxx    44.72   xxxxxx    17.28
Effective Green Time Per Lane Group, g:       xxxxxx    44.72   xxxxxx    17.28
Opposing Effective Green Time, go:            xxxxxx    44.72   xxxxxx    17.28
Number Of Opposing Lanes, No:                 xxxxxx        1   xxxxxx        0
Number Of Lanes In Lane Group, N:             xxxxxx        1   xxxxxx        1
Adjusted Left-Turn Flow Rate, Vlt:            xxxxxx      262   xxxxxx      159
Proportion of Left Turns in Lane Group, Plt:  xxxxxx     0.52   xxxxxx     1.00
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx     0.00   xxxxxx     1.00
Left Turns Per Cycle, LTC:                    xxxxxx     5.10   xxxxxx     3.08
Adjusted Opposing Flow Rate, Vo:              xxxxxx      604   xxxxxx        0
Opposing Flow Per Lane Per Cycle, Volc:       xxxxxx    11.74   xxxxxx     0.00
Opposing Platoon Ratio, Rpo:                  xxxxxx     1.00   xxxxxx     1.00
Lost Time Per Phase, tl:                      xxxxxx     4.00   xxxxxx     4.00
Eff grn until arrival of left-turn car, gf:   xxxxxx     0.07   xxxxxx     0.00
Opposing Queue Ratio, qro:                    xxxxxx     0.36   xxxxxx     0.75
Eff grn blocked by opposing queue, gq:        xxxxxx     6.96   xxxxxx     0.00
Eff grn while left turns filter thru, gu:     xxxxxx    37.76   xxxxxx    17.28
Max opposing cars arriving during gq-gf, n:   xxxxxx     3.45   xxxxxx     0.00
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx     1.00   xxxxxx     0.00
Left-turn Saturation Factor, fs:              xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx   xxxxxx   xxxxxx     1.00
Through-car Equivalents, el1:                 xxxxxx     2.51   xxxxxx     1.30
Single Lane Through-car Equivalents, el2:     xxxxxx     1.00   xxxxxx     1.00
Minimum Left Turn Adjustment Factor, fmin:    xxxxxx     0.07   xxxxxx     0.23
Single Lane Left Turn Adjustment Factor, fm:  xxxxxx     0.63   xxxxxx     0.77
Left Turn Adjustment Factor, flt:             xxxxxx     0.63   xxxxxx     0.77
*******************************************************************************



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---------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
              Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #20 Villa Rd. / Haworth Av.
***************************************************************************
Cycle (sec):          70                Critical Vol./Cap. (X):        0.926
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        32.9
Optimal Cycle:        96                Level Of Service:                  C
***************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:       1  215   300   280  140    1     1    1     1   260    0   280
Growth Adj:  1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    1  215   300   280  140    1     1    1     1   260    0   280
User Adj:    1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91 0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:     1  236   330   308  154    1     1    1     1   286    0   308
Reduct Vol:     0    0     0     0    0    0     0    0     0     0    0     0
Reduced Vol:    1  236   330   308  154    1     1    1     1   286    0   308
PCE Adj:     1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     1  236   330   308  154    1     1    1     1   286    0   308
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900 1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.77 0.77  0.77  0.42 0.42 0.42  0.89 0.89  0.89  0.63 1.00  0.70
Lanes:       0.01 0.41  0.58  0.66 0.33 0.01  0.34 0.33  0.33  1.00 0.00  1.00
Final Sat.:     3  608   848   528  264    2   563  563   563  1204    0  1334
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.39 0.39  0.39  0.58 0.58 0.58  0.00 0.00  0.00  0.24 0.00  0.23
Crit Moves:                        ****                          ****
Green/Cycle: 0.63 0.63  0.63  0.63 0.63 0.63  0.26 0.26  0.26  0.26 0.00  0.26
Volume/Cap:  0.62 0.62  0.62  0.93 0.93 0.93  0.01 0.01  0.01  0.93 0.00  0.90
Delay/Veh:    9.1  9.1   9.1  35.0 35.0 35.0  19.4 19.4  19.4  58.0  0.0  50.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   9.1  9.1   9.1  35.0 35.0 35.0  19.4 19.4  19.4  58.0  0.0  50.6
DesignQueue:    0    4     5     5    2    0     0    0     0     9    0     9
***************************************************************************
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---------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
              Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

              Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
***************************************************************************
Intersection #20 Villa Rd. / Haworth Av.
***************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0
Lane Group:   LTR  LTR   LTR   LTR  LTR  LTR   LTR  LTR   LTR    L   RT    RT
#LnsInGrps:     1    1     1     1    1    1     1    1     1     1    1     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12   12    12   12    12    12   12    12
CrosswalkWid         8               8                8                8
% Hev Veh:          20              18                0               21
Grade:              0%              0%               0%               0%
Parking/Hr:         No              No               No               No
Bus Stp/Hr:          0               0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0                0                0
ExclusiveRT:     Include         Include          Include          Include
% RT Prtct:          0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5     5     5    5    5     5    5     5     2 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 xxxx  1.00
Hev Veh Adj: 0.83 0.83  0.83  0.85 0.85 0.85  1.00 1.00  1.00  0.83 xxxx  0.83
Grade Adj:   1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 xxxx  1.00
Parking Adj: 1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  xxxx xxxx  1.00
Bus Stp Adj: 1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 xxxx  1.00
RT Adj:      0.92 0.92  0.92  1.00 1.00 1.00  0.96 0.96  0.96  xxxx xxxx  0.85
LT Adj:      1.00 1.00  1.00  0.49 0.49 0.49  0.93 0.93  0.93  0.77 xxxx  xxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.77 0.77  0.77  0.42 0.42 0.42  0.89 0.89  0.89  0.63 1.00  0.70
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.77 0.77  0.77  0.42 0.42 0.42  0.89 0.89  0.89  0.63 1.00  0.70
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00  1.00 0.00  1.00
***************************************************************************
```

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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #20 Villa Rd. / Haworth Av.
*******************************************************************************
Approach:                                   North     South      East      West
Cycle Length, C:                               70        70        70        70
Actual Green Time Per Lane Group, G:        44.05     44.05     17.95     17.95
Effective Green Time Per Lane Group, g:     44.05     44.05     17.95     17.95
Opposing Effective Green Time, go:          44.05     44.05     17.95     17.95
Number Of Opposing Lanes, No:                   1         1         1         1
Number Of Lanes In Lane Group, N:               1         1         1         1
Adjusted Left-Turn Flow Rate, Vlt:              1       308         1       286
Proportion of Left Turns in Lane Group, Plt: 0.00      0.67      0.33      1.00
Proportion of Left Turns in Opp Flow, Plto:  0.67      0.00    xxxxxx      1.00
Left Turns Per Cycle, LTC:                   0.02      5.98      0.02      5.56
Adjusted Opposing Flow Rate, Vo:              463       567       308         3
Opposing Flow Per Lane Per Cycle, Volc:      9.00     11.03      5.99      0.06
Opposing Platoon Ratio, Rpo:                 1.00      1.00      1.00      1.00
Lost Time Per Phase, tl:                     4.00      4.00      4.00      4.00
Eff grn until arrival of left-turn car, gf: 36.81      0.00     12.62      0.00
Opposing Queue Ratio, qro:                   0.37      0.37      0.74      0.74
Eff grn blocked by opposing queue, gq:       5.20      6.74      6.75      0.00
Eff grn while left turns filter thru, gu:    7.24     37.31      5.33     17.95
Max opposing cars arriving during gq-gf, n:  0.00      3.37    xxxxxx      0.00
Proportion of Opposing Thru & RT cars, ptho: 0.33      1.00    xxxxxx      0.00
Left-turn Saturation Factor, fs:           xxxxxx    xxxxxx      0.68    xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx  xxxxxx      0.33      1.00
Through-car Equivalents, el1:                2.23      2.43      1.92      1.30
Single Lane Through-car Equivalents, el2:    1.00      3.36    xxxxxx      1.00
Minimum Left Turn Adjustment Factor, fmin:   0.05      0.08      0.15      0.22
Single Lane Left Turn Adjustment Factor, fm: 1.00      0.49      0.93      0.77
Left Turn Adjustment Factor, flt:            1.00      0.49      0.93      0.77
*******************************************************************************
```

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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                    Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #21 Springbrook St. / Haworth Av.
*******************************************************************************
Cycle (sec):            70              Critical Vol./Cap. (X):         0.779
Loss Time (sec):        16 (Y+R =  4 sec) Average Delay (sec/veh):       30.5
Optimal Cycle:          71              Level Of Service:                   C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:   0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       2  0  0  1  0    1  0  1  1  0    1  0  0  1  1    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     410  350     15    30  275    300   175   60    335    70   40     60
Growth Adj:  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
Initial Bse:  410  350     15    30  275    300   175   60    335    70   40     60
User Adj:    1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
PHF Adj:     0.89 0.89   0.89  0.89 0.89   0.89  0.89 0.89   0.89  0.89 0.89   0.89
PHF Volume:   461  393     17    34  309    337   197   67    376    79   45     67
Reduct Vol:     0    0      0     0    0      0     0    0      0     0    0      0
Reduced Vol:  461  393     17    34  309    337   197   67    376    79   45     67
PCE Adj:     1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
MLF Adj:     1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
Final Vol.:   461  393     17    34  309    337   197   67    376    79   45     67
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900   1900  1900 1900   1900  1900 1900   1900  1900 1900   1900
Adjustment:  0.76 0.82   0.82  0.82 0.76   0.76  0.82 0.75   0.75  0.83 0.79   0.79
Lanes:       2.00 0.96   0.04  1.00 1.00   1.00  1.00 0.30   1.70  1.00 0.40   0.60
Final Sat.:  2871 1485     64  1556 1435   1435  1556  434   2425  1570  602    903
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.26   0.26  0.02 0.22   0.23  0.13 0.16   0.16  0.05 0.07   0.07
Crit Moves:  ****                          ****       ****         ****
Green/Cycle: 0.21 0.47   0.47  0.04 0.30   0.30  0.17 0.20   0.20  0.06 0.10   0.10
Volume/Cap:  0.78 0.56   0.56  0.56 0.71   0.78  0.76 0.78   0.78  0.78 0.76   0.76
Delay/Veh:   32.8 14.4   14.4  44.9 24.5   27.0  40.5 33.3   33.3  63.3 51.4   51.4
User DelAdj: 1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
AdjDel/Veh:  32.8 14.4   14.4  44.9 24.5   27.0  40.5 33.3   33.3  63.3 51.4   51.4
DesignQueue:   15    9      0     1    9     10     7    2     12     3    2      2
*******************************************************************************
```

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pm                       Mon Jul 21, 2003 15:12:40                Page 45-1
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #21 Springbrook St. / Haworth Av.
*******************************************************************************
Approach:       North Bound       South Bound       East Bound        West Bound
Movement:     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  0  1  0     1  0  1  1  0     1  0  0  1  1     1  0  0  1  0
Lane Group:    L    RT    RT     L    RT    RT     L    RT    RT     L    RT    RT
#LnsInGrps:    2     1     1     1     2     2     1     2     2     1     1     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid        8                 8                 8                 8
% Hev Veh:         22                16                16                15
Grade:             0%                0%                0%                0%
Parking/Hr:        No                No                No                No
Bus Stp/Hr:         0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                 0                 0                 0
ExclusiveRT:     Include           Include           Include           Include
% RT Prtct:         0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.82 0.82  0.82  0.86 0.86  0.86  0.86 0.86  0.86  0.87 0.87  0.87
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99  xxxx 0.92  0.92  xxxx 0.87  0.87  xxxx 0.91  0.91
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.78 0.82  0.82  0.82 0.79  0.79  0.82 0.75  0.75  0.83 0.79  0.79
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 0.97 1.00  1.00  1.00 0.95  0.95  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.76 0.82  0.82  0.82 0.76  0.76  0.82 0.75  0.75  0.83 0.79  0.79
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************


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pm                       Mon Jul 21, 2003 15:12:40                Page 46-1
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project #: 5193
                  Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #22 5th St. / Dayton St.
*******************************************************************************
Cycle (sec):         70               Critical Vol./Cap. (X):        0.819
Loss Time (sec):      8 (Y+R =  4 sec) Average Delay (sec/veh):       22.9
Optimal Cycle:       63               Level Of Service:                  C
*******************************************************************************
Approach:       North Bound       South Bound       East Bound        West Bound
Movement:     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted         Permitted         Permitted         Permitted
Rights:          Include           Include           Include           Include
Min. Green:    0     0     0     0     0     0     0     0     0     0     0     0
Lanes:        0  0  1! 0  0     0  0  1! 0  0     0  0  1! 0  0     1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      1    90   360   100   140    10     1    10     1   380    35   300
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   1    90   360   100   140    10     1    10     1   380    35   300
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    1    99   396   110   154    11     1    11     1   418    38   330
Reduct Vol:    0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   1    99   396   110   154    11     1    11     1   418    38   330
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    1    99   396   110   154    11     1    11     1   418    38   330
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.74 0.74  0.74  0.50 0.50  0.50  0.76 0.76  0.76  0.59 0.68  0.68
Lanes:       0.01 0.20  0.79  0.40 0.56  0.04  0.08 0.84  0.08  1.00 0.10  0.90
Final Sat.:     3  279  1117   379  530    38   120 1205   120  1125  134  1151
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.35 0.35  0.35  0.29 0.29  0.29  0.01 0.01  0.01  0.37 0.29  0.29
Crit Moves:       ****                                          ****
Green/Cycle: 0.43 0.43  0.43  0.43 0.43  0.43  0.45 0.45  0.45  0.45 0.45  0.45
Volume/Cap:  0.82 0.82  0.82  0.67 0.67  0.67  0.02 0.02  0.02  0.82 0.63  0.63
Delay/Veh:   26.1 26.1  26.1  20.2 20.2  20.2  10.6 10.6  10.6  26.7 16.9  16.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  26.1 26.1  26.1  20.2 20.2  20.2  10.6 10.6  10.6  26.7 16.9  16.9
DesignQueue:    0    2     9     3    4     0     0    0     0     9    1     7
*******************************************************************************


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pm                         Mon Jul 21, 2003 15:12:40                  Page 47-1
-------------------------------------------------------------------------------

                 Kittelson & Associates, Inc. - Project #: 5193
                      Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #22 5th St. / Dayton St.
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0
Lane Group:   LTR  LTR   LTR   LTR  LTR   LTR   LTR  LTR   LTR    L   RT     RT
#LnsInGrps:     1    1     1     1    1     1     1    1     1    1    1      1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12   12   12     12
CrosswalkWid         8                8                8                8
% Hev Veh:          21               30               28               28
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5     5     5    5     5     5    5     5     2 xxxx   xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.83 0.83  0.83  0.77 0.77  0.77  0.78 0.78  0.78  0.78 0.78  0.78
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      0.89 0.89  0.89  1.00 1.00  1.00  0.99 0.99  0.99  xxxx 0.87  0.87
LT Adj:      1.00 1.00  1.00  0.65 0.65  0.65  0.99 0.99  0.99  0.76 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.74 0.74  0.74  0.50 0.50  0.50  0.76 0.76  0.76  0.59 0.68  0.68
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.74 0.74  0.74  0.50 0.50  0.50  0.76 0.76  0.76  0.59 0.68  0.68
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <   Actuated   > > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************



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pm                         Mon Jul 21, 2003 15:12:40                  Page 47-2
-------------------------------------------------------------------------------

                 Kittelson & Associates, Inc. - Project #: 5193
                      Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #22 5th St. / Dayton St.
*******************************************************************************
Approach:                                     North     South      East    West
Cycle Length, C:                                 70        70        70      70
Actual Green Time Per Lane Group, G:          30.27     30.27     31.73   31.73
Effective Green Time Per Lane Group, g:       30.27     30.27     31.73   31.73
Opposing Effective Green Time, go:            30.27     30.27     31.73   31.73
Number Of Opposing Lanes, No:                     1         1         1       1
Number Of Lanes In Lane Group, N:                 1         1         1       1
Adjusted Left-Turn Flow Rate, Vlt:                1       110         1     418
Proportion of Left Turns in Lane Group, Plt:   0.00      0.40      0.08    1.00
Proportion of Left Turns in Opp Flow, Plto:    0.40      0.00    xxxxxx    1.00
Left Turns Per Cycle, LTC:                     0.02      2.14      0.02    8.12
Adjusted Opposing Flow Rate, Vo:                275       496       368      13
Opposing Flow Per Lane Per Cycle, Volc:        5.35      9.64      7.16    0.25
Opposing Platoon Ratio, Rpo:                   1.00      1.00      1.00    1.00
Lost Time Per Phase, tl:                       4.00      4.00      4.00    4.00
Eff grn until arrival of left-turn car, gf:   24.04      3.57     25.40    0.00
Opposing Queue Ratio, qro:                     0.57      0.57      0.55    0.55
Eff grn blocked by opposing queue, gq:         5.72     11.24      5.83    0.00
Eff grn while left turns filter thru, gu:      6.23     19.03      6.33   31.73
Max opposing cars arriving during gq-gf, n:    0.00      3.84    xxxxxx    0.00
Proportion of Opposing Thru & RT cars, ptho:   0.60      1.00    xxxxxx    0.00
Left-turn Saturation Factor, fs:             xxxxxx    xxxxxx      0.65  xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx    xxxxxx      0.08    1.00
Through-car Equivalents, el1:                  1.85      2.29      2.04    1.32
Single Lane Through-car Equivalents, el2:      1.00      3.82    xxxxxx    1.00
Minimum Left Turn Adjustment Factor, fmin:     0.07      0.09      0.07    0.13
Single Lane Left Turn Adjustment Factor, fm:   1.00      0.65      0.98    0.76
Left Turn Adjustment Factor, flt:              1.00      0.65      0.98    0.76
*******************************************************************************



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-----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #23 Wynooski St. / 11th St.
*****************************************************************************
Average Delay (sec/veh):      13.8         Worst Case Level Of Service:     B
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:     300  620    0     0  400    5     1    0   70     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  300  620    0     0  400    5     1    0   70     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88  0.88 0.88 0.88
PHF Volume:   341  705    0     0  455    6     1    0   80     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:   341  705    0     0  455    6     1    0   80     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.4 xxxx xxxxx xxxxx xxxx xxxxx   6.6 xxxx   6.4 xxxxx xxxx xxxxx
FollowUpTim:  2.5 xxxx xxxxx xxxxx xxxx xxxxx   3.7 xxxx   3.5 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  460 xxxx xxxxx  xxxx xxxx xxxxx  1844 xxxx   457  xxxx xxxx xxxxx
Potent Cap.:  973 xxxx xxxxx  xxxx xxxx xxxxx    73 xxxx   562  xxxx xxxx xxxxx
Move Cap.:    973 xxxx xxxxx  xxxx xxxx xxxxx    48 xxxx   562  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  8.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  489 xxxxx  xxxx xxxx xxxxx
Shrd StpDel: 10.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.8 xxxxx xxxxx xxxx xxxxx
Shared LOS:     B    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:      xxxxxx           xxxxxx             13.8           xxxxxx
ApproachLOS:         *                *                 B                *
```

```
-----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
               Level Of Service Detailed Computation Report
                       2000 HCM Unsignalized Method
                         Base Volume Alternative
*****************************************************************************
Intersection #23 Wynooski St. / 11th St.
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
----------|---------------|----------------|----------------|----------------|
HevVeh:              29%              24%              23%               0%
Grade:                0%               0%               0%               0%
Peds/Hour:            0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

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----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

                    Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
****************************************************************************
Intersection #24 Hwy 219 / Wilsonville Rd.
****************************************************************************
Cycle (sec):          70             Critical Vol./Cap. (X):        0.813
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):     23.7
Optimal Cycle:        70             Level Of Service:                  C
****************************************************************************
Approach:      North Bound     South Bound      East Bound      West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted       Permitted       Protected       Protected
Rights:          Include         Include         Include         Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  1  0  1  0   0  1  0  1  0   1  0  0  1  0   2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:        1   300   500   125   500    75     5   115     0   475   310    85
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:     1   300   500   125   500    75     5   115     0   475   310    85
User Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:      1   300   500   125   500    75     5   115     0   475   310    85
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:     1   300   500   125   500    75     5   115     0   475   310    85
PCE Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:      1   300   500   125   500    75     5   115     0   475   310    85
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:   0.65  0.65  0.65  0.50  0.50  0.50  0.74  0.78  1.00  0.74  0.78  0.78
Lanes:        0.01  0.99  1.00  0.36  1.43  0.21  1.00  1.00  0.00  2.00  0.78  0.22
Final Sat.:      4  1236  1240   341  1364   205  1399  1473     0  2822  1163   319
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.24  0.24  0.40  0.37  0.37  0.37  0.00  0.08  0.00  0.17  0.27  0.27
Crit Moves:               ****              ****                    ****
Green/Cycle:  0.50  0.50  0.50  0.50  0.50  0.50  0.00  0.11  0.00  0.23  0.33  0.33
Volume/Cap:   0.49  0.49  0.81  0.74  0.74  0.74  0.81  0.74  0.00  0.74  0.81  0.81
Delay/Veh:    12.0  12.0  20.1  17.1  17.1  17.1 269.5  47.7   0.0  29.8  31.6  31.6
User DelAdj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:   12.0  12.0  20.1  17.1  17.1  17.1 269.5  47.7   0.0  29.8  31.6  31.6
DesignQueue:     0     6    11     3    10     2     0     4     0    15     9     2
****************************************************************************
```

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----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                        Base Volume Alternative
****************************************************************************
Intersection #24 Hwy 219 / Wilsonville Rd.
****************************************************************************
Approach:      North Bound     South Bound      East Bound      West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  1  0  1  0   0  1  0  1  0   1  0  0  1  0   2  0  0  1  0
Lane Group:    LTR   LTR   LTR   LTR   LTR   LTR     L    RT    RT     L    RT    RT
#LnsInGrps:      2     2     2     2     2     2     1     1     1     2     1     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:           26                24                29                24
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:      Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      5     5     5     5     5     5     1  xxxx  xxxx     1  xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00 xxxxx  1.00  1.00  1.00
Hev Veh Adj:  0.79  0.79  0.79  0.81  0.81  0.81  0.78  0.78 xxxxx  0.81  0.81  0.81
Grade Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00 xxxxx  1.00  1.00  1.00
Parking Adj:  1.00  1.00  1.00  1.00  1.00  1.00  xxxx  1.00 xxxxx  xxxx  1.00  1.00
Bus Stp Adj:  1.00  1.00  1.00  1.00  1.00  1.00  xxxx  1.00 xxxxx  xxxx  1.00  1.00
Area Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00 xxxxx  1.00  1.00  1.00
RT Adj:       0.91  0.91  0.91  0.98  0.98  0.98  xxxx  xxxx xxxxx  xxxx  0.97  0.97
LT Adj:       0.96  0.96  0.96  0.67  0.67  0.67  0.95  xxxx xxxxx  0.95  xxxx xxxxx
PedBike Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj:  0.69  0.69  0.69  0.53  0.53  0.53  0.74  0.78  1.00  0.77  0.78  0.78
Usr Sat Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj:  0.95  0.95  0.95  0.95  0.95  0.95  1.00  1.00  1.00  0.97  1.00  1.00
Fnl Sat Adj:  0.65  0.65  0.65  0.50  0.50  0.50  0.74  0.78  1.00  0.74  0.78  0.78
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated    > > > > > > > > > > > > >
DelAdjFctr:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
****************************************************************************
```

```
---------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project #: 5193
                Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #24 Hwy 219 / Wilsonville Rd.
***************************************************************************
Approach:                                         North    South     East     West
Cycle Length, C:                                     70       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:              34.74    34.74   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:           34.74    34.74   xxxxxx   xxxxxx
Opposing Effective Green Time, go:                34.74    34.74   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                         2        2   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                     2        2   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                    1      125   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:       0.00     0.18   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:      xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                         0.02     2.43   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                    700      801   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:            7.16     8.20   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                       1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                           4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:       28.97     2.56   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                         0.50     0.50   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:             5.08     6.78   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:          5.77    27.96   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:      xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                   0.44     0.37   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:       0.00     0.58   xxxxxx   xxxxxx
Through-car Equivalents, el1:                      2.91     3.23   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:        xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:         0.06     0.09   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:       1.00     0.42   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                  0.96     0.67   xxxxxx   xxxxxx
***************************************************************************
```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
   Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #25 Springbrook/Wilsonville (VOLS)
***************************************************************************
Cycle (sec):           70               Critical Vol./Cap. (X):        0.776
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):       14.0
Optimal Cycle:         55               Level Of Service:                  B
***************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       0  0  0  0  0    1  0  0  0  2    1  0  1  0  0    0  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: 16:15-17:15
Base Vol:      0     0     0   95     0   370  310   430     0    0   490   125
Growth Adj: 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Initial Bse:   0     0     0   95     0   370  310   430     0    0   490   125
User Adj:   1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Adj:    0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91
PHF Volume:    0     0     0  104     0   407  341   473     0    0   538   137
Reduct Vol:    0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:   0     0     0  104     0   407  341   473     0    0   538   137
PCE Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
MLF Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Final Vol.:    0     0     0  104     0   407  341   473     0    0   538   137
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900  1900
Adjustment: 1.00  1.00  1.00 0.62  1.00  0.60 0.35  0.77  1.00 1.00  0.74  0.66
Lanes:      0.00  0.00  0.00 1.00  0.00  2.00 1.00  1.00  0.00 0.00  2.00  1.00
Final Sat.:    0     0     0 1178     0  2291  668  1461     0    0  2798  1252
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.00  0.00  0.00 0.09  0.00  0.18 0.51  0.32  0.00 0.00  0.19  0.11
Crit Moves:                              **** ****
Green/Cycle: 0.00 0.00  0.00 0.23  0.00  0.23 0.66  0.66  0.00 0.00  0.66  0.66
Volume/Cap: 0.00  0.00  0.00 0.39  0.00  0.78 0.78  0.49  0.00 0.00  0.29  0.17
Delay/Veh:   0.0   0.0   0.0 23.8   0.0  32.5 16.9   6.5   0.0  0.0   5.2   4.7
User DelAdj: 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
AdjDel/Veh:  0.0   0.0   0.0 23.8   0.0  32.5 16.9   6.5   0.0  0.0   5.2   4.7
DesignQueue:   0     0     0    3     0    13    5     7     0    0     7     2
***************************************************************************
```

```
pm                    Mon Jul 21, 2003 15:12:40                     Page 53-1
-------------------------------------------------------------------------------

              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #25 Springbrook/Wilsonville (VOLS)
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  0  0    1  0  0  0  2    1  0  1  0  0    0  0  2  0  1
Lane Group:  xxxx xxxx  xxxx    L  xxxx    R    L    T   xxxx  xxxx   T    R
#LnsInGrps:     0    0     0    1    0     2    1    1     0     0    2     1
------------|----------------||----------------||----------------||----------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12    12   12    12
CrosswalkWid         8               8                8                8
% Hev Veh:           0              24               30               29
Grade:              0%              0%               0%               0%
Parking/Hr:         No              No               No               No
Bus Stp/Hr:          0               0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0                0                0
ExclusiveRT:     Include         Include          Include          Include
% RT Prtct:          0               0                0                0
------------|----------------||----------------||----------------||----------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx      2 xxxx  xxxx      2 xxxx  xxxx  xxxx xxxx  xxxx
------------|----------------||----------------||----------------||----------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx xxxx xxxxx  1.00 xxxx  1.00  1.00 1.00 xxxxx  xxxx 1.00  1.00
Hev Veh Adj: xxxx xxxx xxxxx  0.81 xxxx  0.81  0.77 0.77 xxxxx  xxxx 0.78  0.78
Grade Adj:   xxxx xxxx xxxxx  1.00 xxxx  1.00  1.00 1.00 xxxxx  xxxx 1.00  1.00
Parking Adj: xxxx xxxx xxxxx  xxxx xxxx  1.00  xxxx 1.00 xxxxx  xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx xxxxx  xxxx xxxx  1.00  xxxx 1.00 xxxxx  xxxx xxxx  1.00
Area Adj:    xxxx xxxx xxxxx  1.00 xxxx  1.00  1.00 1.00 xxxxx  xxxx 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx xxxx  0.85  xxxx xxxx xxxxx  xxxx xxxx  0.85
LT Adj:      xxxx xxxx xxxxx  0.77 xxxx xxxxx  0.46 xxxx xxxxx  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 1.00  1.00  0.62 1.00  0.69  0.35 0.77  1.00  1.00 0.78  0.66
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  0.88  1.00 1.00  1.00  1.00 0.95  1.00
Fnl Sat Adj: 1.00 1.00  1.00  0.62 1.00  0.60  0.35 0.77  1.00  1.00 0.74  0.66
------------|----------------||----------------||----------------||----------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > > >
DelAdjFctr:  0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 1.00  1.00
*******************************************************************************


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pm                    Mon Jul 21, 2003 15:12:40                     Page 53-2
-------------------------------------------------------------------------------

              Kittelson & Associates, Inc. - Project #: 5193
                 Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #25 Springbrook/Wilsonville (VOLS)
*******************************************************************************
Approach:                                    North    South     East     West
Cycle Length, C:                            xxxxxx       70       70   xxxxxx
Actual Green Time Per Lane Group, G:        xxxxxx    16.01    45.99   xxxxxx
Effective Green Time Per Lane Group, g:     xxxxxx    16.01    45.99   xxxxxx
Opposing Effective Green Time, go:          xxxxxx    16.01    45.99   xxxxxx
Number Of Opposing Lanes, No:               xxxxxx        0        2   xxxxxx
Number Of Lanes In Lane Group, N:           xxxxxx        1        1   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:          xxxxxx      104      341   xxxxxx
Proportion of Left Turns in Lane Group, Plt: xxxxxx     1.00     1.00   xxxxxx
Proportion of Left Turns in Opp Flow, Plto: xxxxxx     1.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                  xxxxxx     2.03     6.62   xxxxxx
Adjusted Opposing Flow Rate, Vo:            xxxxxx        0      538   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:     xxxxxx     0.00     5.23   xxxxxx
Opposing Platoon Ratio, Rpo:                xxxxxx     1.00     1.00   xxxxxx
Lost Time Per Phase, tl:                    xxxxxx     4.00     4.00   xxxxxx
Eff grn until arrival of left-turn car, gf: xxxxxx     0.00     0.00   xxxxxx
Opposing Queue Ratio, qro:                  xxxxxx     0.77     0.34   xxxxxx
Eff grn blocked by opposing queue, gq:      xxxxxx     0.00     0.22   xxxxxx
Eff grn while left turns filter thru, gu:   xxxxxx    16.01    45.77   xxxxxx
Max opposing cars arriving during gq-gf, n: xxxxxx     0.00   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx    0.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:            xxxxxx   xxxxxx     0.54   xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx    1.00     1.00   xxxxxx
Through-car Equivalents, el1:               xxxxxx     1.30     2.18   xxxxxx
Single Lane Through-car Equivalents, el2:   xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:  xxxxxx     0.25     0.09   xxxxxx
Single Lane Left Turn Adjustment Factor, fm: xxxxxx    0.77     0.46   xxxxxx
Left Turn Adjustment Factor, flt:           xxxxxx     0.77     0.46   xxxxxx
*******************************************************************************


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```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
               Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                  Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #118 Mountainview/Aspen S. (OPS)
***************************************************************************
Average Delay (sec/veh):     345.8        Worst Case Level Of Service:     F
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  0  0  1  0    0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     430    0    75     0    0     0     0  130   300    40  225     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  430    0    75     0    0     0     0  130   300    40  225     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80  0.80 0.80  0.80
PHF Volume:   538    0    94     0    0     0     0  163   375    50  281     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   538    0    94     0    0     0     0  163   375    50  281     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  6.6 xxxx   6.4 xxxxx xxxx xxxxx xxxxx xxxx xxxxx   4.3 xxxx xxxxx
FollowUpTim:  3.7 xxxx   3.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx   2.4 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  731 xxxx   350  xxxx xxxx xxxxx  xxxx xxxx xxxxx   538 xxxx xxxxx
Potent Cap.:  363 xxxx   654  xxxx xxxx xxxxx  xxxx xxxx xxxxx   933 xxxx xxxxx
Move Cap.:    348 xxxx   654  xxxx xxxx xxxxx  xxxx xxxx xxxxx   933 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.9 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  374 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx  346 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.1 xxxx xxxxx
Shared LOS:     *    F     *     *    *     *     *    *     *     A    *     *
ApproachDel:       345.8           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:         F                *                *                *
```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project #: 5193
               Newberg TSP Refinement - Newberg, Oregon
  Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

              Level Of Service Detailed Computation Report
                      2000 HCM Unsignalized Method
                        Base Volume Alternative
***************************************************************************
Intersection #118 Mountainview/Aspen S. (OPS)
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HevVeh:            20%              0%              20%              23%
Grade:              0%              0%               0%               0%
Peds/Hour:          0               0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

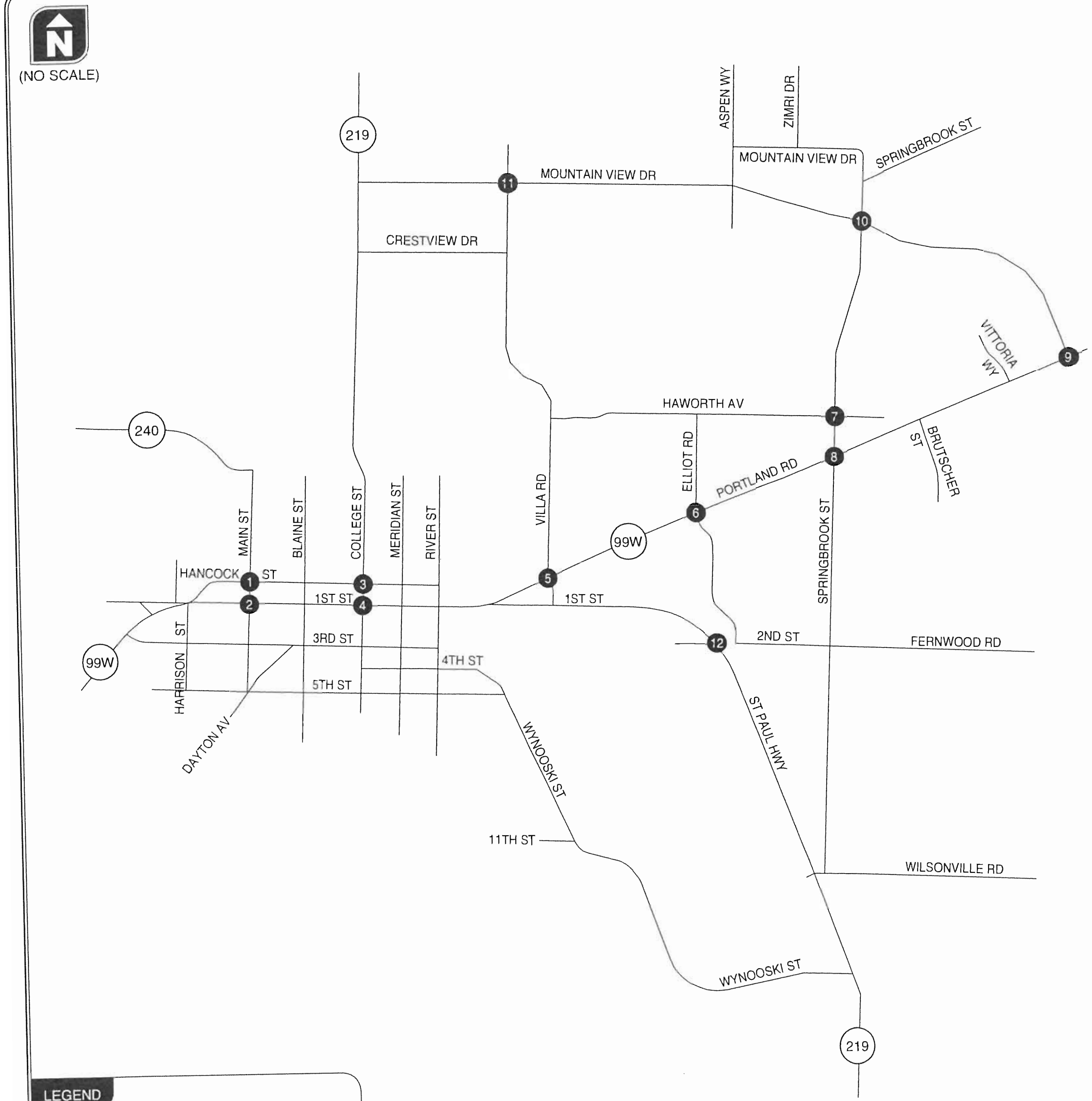
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #125 Springbrook/Wilsonville (OPS)
*******************************************************************************
Average Delay (sec/veh):  OVERFLOW          Worst Case Level Of Service:      F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     490  125    0      0   95  370    310    0  430      0    0    0
Growth Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:  490  125    0      0   95  370    310    0  430      0    0    0
User Adj:    1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     0.91 0.91 0.91   0.91 0.91 0.91   0.91 0.91 0.91   0.91 0.91 0.91
PHF Volume:   538  137    0      0  104  407    341    0  473      0    0    0
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Final Vol.:   538  137    0      0  104  407    341    0  473      0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.4  6.8 xxxxx xxxxx  6.7  6.4    4.4 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:  3.8  4.3 xxxxx xxxxx  4.2  3.5    2.5 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  970  918 xxxxx  xxxx 1154    0      0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.:  208  245 xxxxx  xxxx  180    0      0 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:    112  245 xxxxx  xxxx  180    0      0 xxxx xxxxx  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  126 xxxx xxxxx  xxxx xxxx     0  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel: 2037 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     F    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     2036.8           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:        F                F                *                *
```

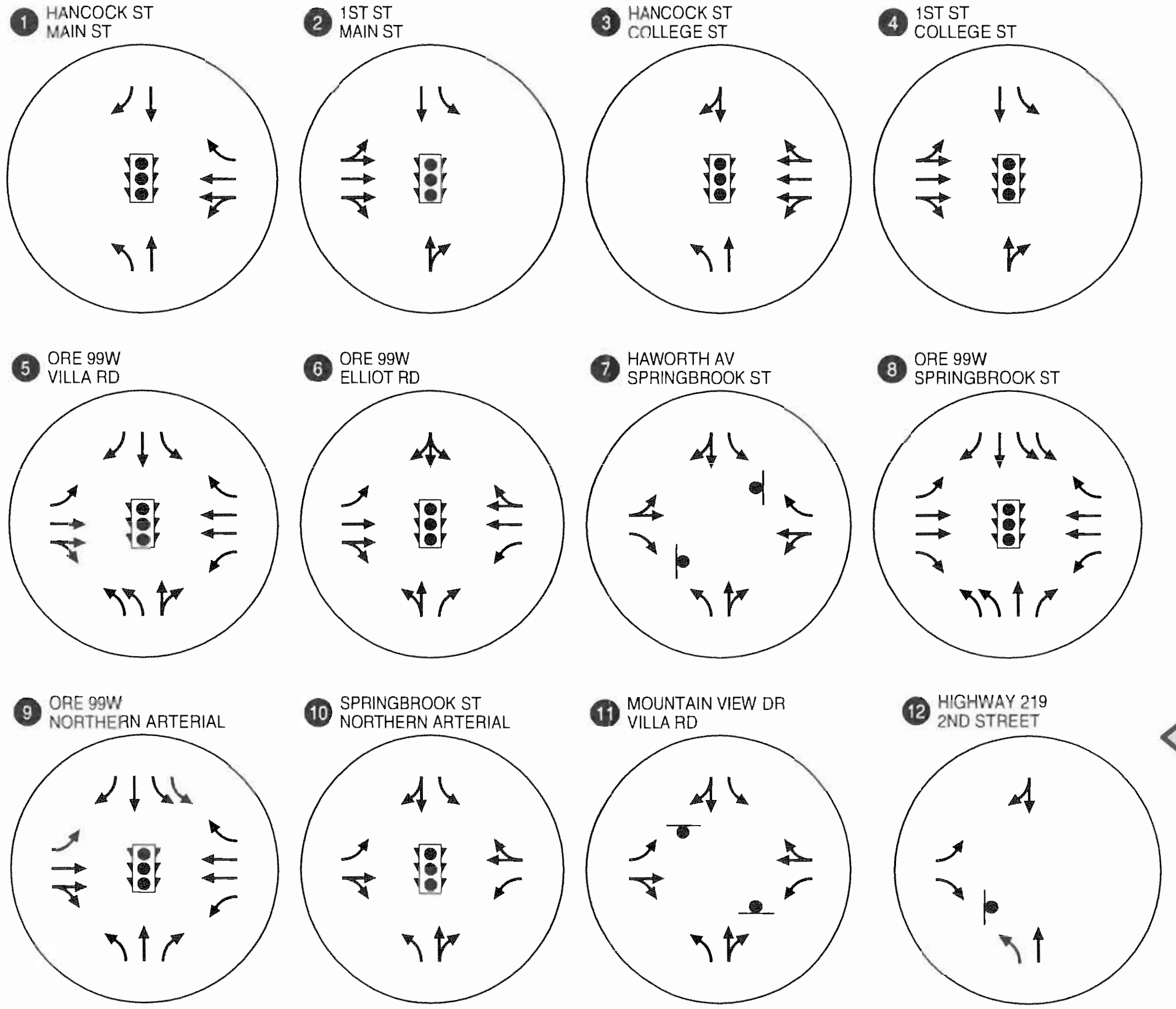
```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project #: 5193
                   Newberg TSP Refinement - Newberg, Oregon
    Alternative 1: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                          Base Volume Alternative
*******************************************************************************
Intersection #125 Springbrook/Wilsonville (OPS)
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:            29%              24%              30%              0%
Grade:              0%               0%               0%              0%
Peds/Hour:          0                0                0               0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

Appendix H

Alternative 2
2025 Future Traffic Conditions





LEGEND

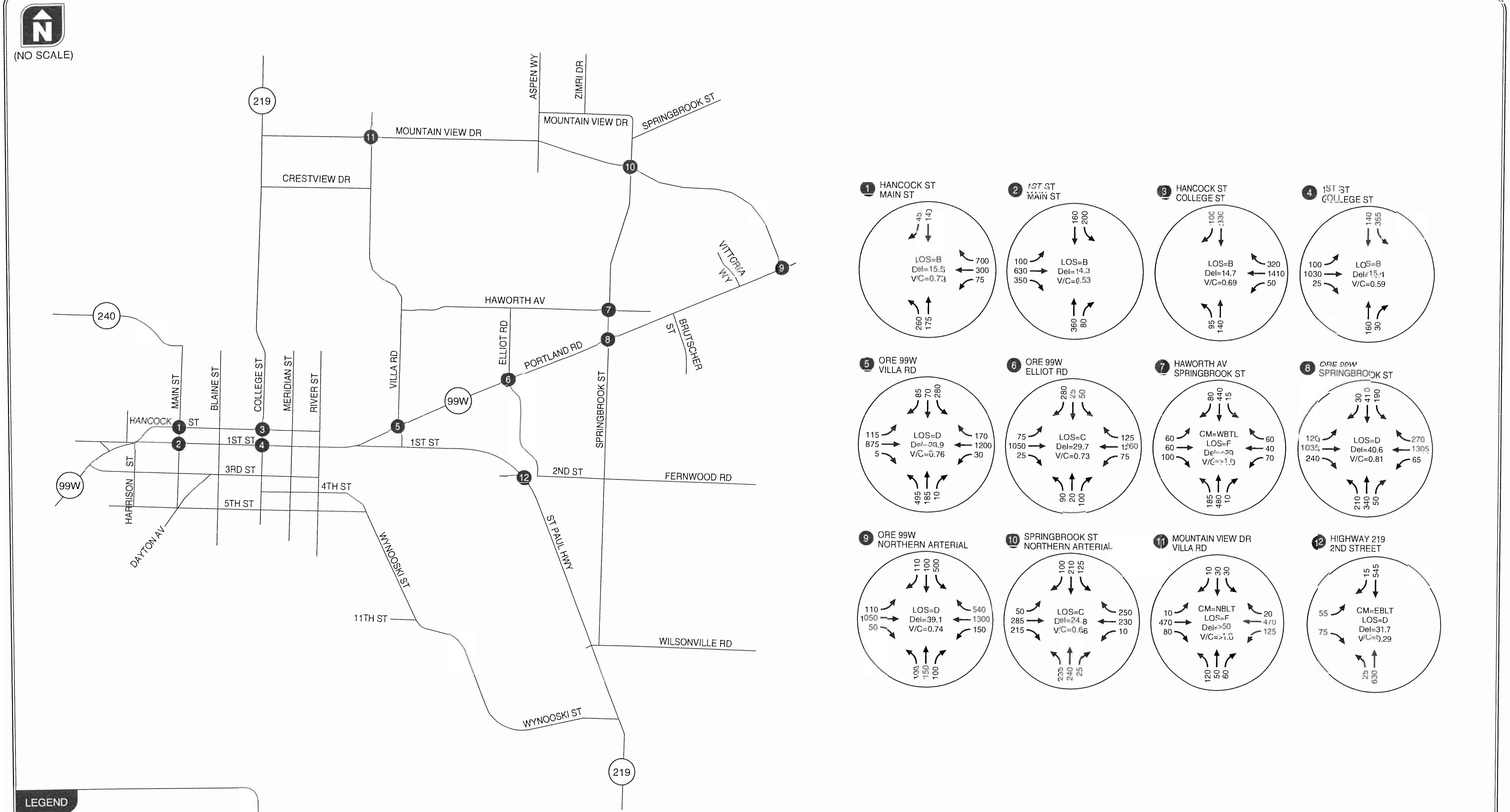
CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

EXISTING LANE CONFIGURATIONS ANDTRAFFIC CONTROL DEVICES
ALTERNATIVE 2: WITH BYPASS
NEWBERG, OREGON

FIGURE
C1

5193Figs

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING



LEGEND
CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2025 WEEKDAY PM PEAK HOUR TRAFFIC CONDITIONS
ALTERNATIVE 2: WITH BYPASS
NEWBERG, OREGON

FIGURE
C2

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

```
------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                               Scenario Report
Scenario:               Default Scenario

Command:                Default Command
Volume:                 Default Volume
Geometry:               Default Geometry
Impact Fee:             Default Impact Fee
Trip Generation:        Default Trip Generation
Trip Distribution:      Default Trip Distribution
Paths:                  Default Paths
Routes:                 Default Routes
Configuration:          Default Configuration
```

```
------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                          Turning Movement Report

Volume    Northbound       Southbound        Eastbound        Westbound     Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right  Volume

#1 Main Street/Hancock Street
Base     260  175    0      0  140   45      0    0    0     75  300  700    1695
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total    260  175    0      0  140   45      0    0    0     75  300  700    1695

#2 Main Street/1st Street
Base       0  360   80    200  160    0    100  630  350      0    0    0    1880
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total      0  360   80    200  160    0    100  630  350      0    0    0    1880

#3 College Street/Hancock Street
Base      95  140    0      0  330  100      0    0    0     50 1410  320    2445
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total     95  140    0      0  330  100      0    0    0     50 1410  320    2445

#4 College Street/1st Street
Base       0  160   30    355  140    0    100 1030   25      0    0    0    1840
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total      0  160   30    355  140    0    100 1030   25      0    0    0    1840

#5 OR 99W/Villa Road
Base     495  185   10    280   70   85    115  875    5     30 1200  170    3520
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total    495  185   10    280   70   85    115  875    5     30 1200  170    3520

#6 OR 99W/Elliot Road
Base      90   20  100     50   25  280     75 1050   25     75 1260  125    3175
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total     90   20  100     50   25  280     75 1050   25     75 1260  125    3175

#7 Haworth Avenue/Springbrook Street
Base     185  480   10     15  440   80     60   60  100     70   40   60    1600
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total    185  480   10     15  440   80     60   60  100     70   40   60    1600

#8 OR 99W/Springbrook Street
Base     210  340   50    190  410   30    120 1035  240     65 1305  270    4265
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total    210  340   50    190  410   30    120 1035  240     65 1305  270    4265

#9 OR 99W/Northern Arterial
Base     100  150  100    500  100  110    110 1050   50    150 1300  540    4260
Added      0    0    0      0    0    0      0    0    0      0    0    0       0
Total    100  150  100    500  100  110    110 1050   50    150 1300  540    4260
```

```
Default Scenario              Mon Jul 21, 2003 15:14:20                  Page 2-2
-------------------------------------------------------------------------------
                    Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
             Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
Volume     Northbound       Southbound       Eastbound        Westbound     Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume

#10 Springbrook Street/Northern Arterial
Base     235  240   25    125  210  100    50  285  215    10  230  250   1975
Added      0    0    0      0    0    0     0    0    0     0    0    0      0
Total    235  240   25    125  210  100    50  285  215    10  230  250   1975

#11 Mountain View Drive/Villa Road
Base     120   50   60     30   30   10    10  470   80   125  470   20   1475
Added      0    0    0      0    0    0     0    0    0     0    0    0      0
Total    120   50   60     30   30   10    10  470   80   125  470   20   1475

#12 Hwy 219/2nd Street
Base      25  630    0      0  545   15    55    0   75     0    0    0   1345
Added      0    0    0      0    0    0     0    0    0     0    0    0      0
Total     25  630    0      0  545   15    55    0   75     0    0    0   1345



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Default Scenario              Mon Jul 21, 2003 15:14:20                  Page 3-1
-------------------------------------------------------------------------------
                    Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
             Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                              Impact Analysis Report
                                 Level Of Service

Intersection                              Base              Future          Change
                                       Del/    V/        Del/    V/          in
                                   LOS Veh     C     LOS Veh     C
#  1 Main Street/Hancock Street    B   15.5 0.730    B   15.5 0.730    + 0.000 D/V

#  2 Main Street/1st Street        B   14.3 0.534    B   14.3 0.534    + 0.000 D/V

#  3 College Street/Hancock Street B   14.7 0.687    B   14.7 0.687    + 0.000 D/V

#  4 College Street/1st Street     B   15.4 0.586    B   15.4 0.586    + 0.000 D/V

#  5 OR 99W/Villa Road             D   38.9 0.758    D   38.9 0.758    + 0.000 D/V

#  6 OR 99W/Elliot Road            C   29.7 0.731    C   29.7 0.731    + 0.000 D/V

#  7 Haworth Avenue/Springbrook Str F 353.3 0.000    F 353.3 0.000    + 0.000 V/C

#  8 OR 99W/Springbrook Street     D   40.6 0.815    D   40.6 0.815    + 0.000 D/V

#  9 OR 99W/Northern Arterial      D   39.1 0.744    D   39.1 0.744    + 0.000 D/V

# 10 Springbrook Street/Northern Ar C  24.8 0.664    C   24.8 0.664    + 0.000 D/V

# 11 Mountain View Drive/Villa Road F 121.6 0.000    F 121.6 0.000    + 0.000 V/C

# 12 Hwy 219/2nd Street            C   20.9 0.000    C   20.9 0.000    + 0.000 V/C



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```
Default Scenario            Mon Jul 21, 2003 15:14:20                 Page 4-1
-------------------------------------------------------------------------------
                   Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
           Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 Main Street/Hancock Street
*******************************************************************************
Cycle (sec):          70               Critical Vol./Cap. (X):         0.730
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        15.5
Optimal Cycle:        49               Level Of Service:                  B
*******************************************************************************
Approach:       North Bound       South Bound       East Bound        West Bound
Movement:     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted         Permitted         Permitted         Permitted
Rights:          Include           Include           Include           Include
Min. Green:    0     0     0     0     0     0     0     0     0     0     0     0
Lanes:       1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    260   175     0     0   140    45     0     0     0    75   300   700
Growth Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse: 260   175     0     0   140    45     0     0     0    75   300   700
User Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:  260   175     0     0   140    45     0     0     0    75   300   700
Reduct Vol:    0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol: 260   175     0     0   140    45     0     0     0    75   300   700
PCE Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:  260   175     0     0   140    45     0     0     0    75   300   700
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment: 0.64  0.98  1.00  1.00  0.98  0.83  1.00  1.00  1.00  0.81  0.81  0.85
Lanes:      1.00  1.00  0.00  0.00  1.00  1.00  0.00  0.00  0.00  0.40  1.60  1.00
Final Sat.: 1221  1862     0     0  1862  1583     0     0     0   614  2455  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.21  0.09  0.00  0.00  0.08  0.03  0.00  0.00  0.00  0.12  0.12  0.43
Crit Moves: ****                                                              ****
Green/Cycle: 0.29 0.29  0.00  0.00  0.29  0.29  0.00  0.00  0.00  0.59  0.59  0.59
Volume/Cap: 0.73  0.32  0.00  0.00  0.26  0.10  0.00  0.00  0.00  0.21  0.21  0.73
Delay/Veh:  29.8  19.7   0.0   0.0  19.2  18.2   0.0   0.0   0.0   6.6   6.6  13.1
User DelAdj: 1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh: 29.8  19.7   0.0   0.0  19.2  18.2   0.0   0.0   0.0   6.6   6.6  13.1
DesignQueue:   7     5     0     0     4     1     0     0     0     1     5    12
*******************************************************************************




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Default Scenario            Mon Jul 21, 2003 15:14:20                 Page 5-1
-------------------------------------------------------------------------------
                   Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
           Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #1 Main Street/Hancock Street
*******************************************************************************
Approach:       North Bound       South Bound       East Bound        West Bound
Movement:     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  0  1
Lane Group:     L     T  xxxx  xxxx     T     R  xxxx xxxx  xxxx    LT    LT     R
#LnsInGrps:     1     1     0     0     1     1     0     0     0     2     2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid         8                 8                 8                 8
% Hev Veh:           2                 2                 2                 0
Grade:              0%                0%                0%                0%
Parking/Hr:         No                No                No                No
Bus Stp/Hr:          0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                 0                 0                 0
ExclusiveRT:     Include           Include           Include           Include
% RT Prtct:          0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:       2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    2r    2r  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98  0.98  xxxx xxxx xxxxx  1.00 1.00  1.00
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx xxxx  0.85  xxxx xxxx xxxxx  xxxx xxxx  0.85
LT Adj:      0.66 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.85 0.85 xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.64 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.85 0.85  0.85
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.95 0.95  1.00
Fnl Sat Adj: 0.64 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.81 0.81  0.85
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated      > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
*******************************************************************************




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```

```
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #1 Main Street/Hancock Street
*******************************************************************************
Approach:                                       North    South     East     West
Cycle Length, C:                                   70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:            20.41   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:         20.41   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:              20.41   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                       1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                   1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                260   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:     1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                       5.06   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                  140   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:          2.72   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                     1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                         4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:      0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                       0.71   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:           0.18   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       20.23   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                 0.79   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:     1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                    1.51   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:      xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.20   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     0.66   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                0.66   xxxxxx   xxxxxx   xxxxxx
*******************************************************************************
```

```
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #2 Main Street/1st Street
*******************************************************************************
Cycle (sec):           70               Critical Vol./Cap. (X):        0.534
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):       14.3
Optimal Cycle:         33               Level Of Service:                  B
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:   0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        0  360    80   200  160     0   100  630   350     0    0     0
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:     0  360    80   200  160     0   100  630   350     0    0     0
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:      0  360    80   200  160     0   100  630   350     0    0     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:     0  360    80   200  160     0   100  630   350     0    0     0
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:      0  360    80   200  160     0   100  630   350     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   1.00 0.96  0.96  0.64 0.98  1.00  0.82 0.82  0.82  1.00 1.00  1.00
Lanes:        0.00 0.82  0.18  1.00 1.00  0.00  0.28 1.75  0.97  0.00 0.00  0.00
Final Sat.:      0 1485   330  1212 1862     0   434 2736  1520     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.00 0.24  0.24  0.16 0.09  0.00  0.23 0.23  0.23  0.00 0.00  0.00
Crit Moves:        ****                              ****
Green/Cycle:  0.00 0.45  0.45  0.45 0.45  0.00  0.43 0.43  0.43  0.00 0.00  0.00
Volume/Cap:   0.00 0.53  0.53  0.36 0.19  0.00  0.53 0.53  0.53  0.00 0.00  0.00
Delay/Veh:     0.0 14.4  14.4  12.9 11.5   0.0  15.0 15.0  15.0   0.0  0.0   0.0
User DelAdj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:    0.0 14.4  14.4  12.9 11.5   0.0  15.0 15.0  15.0   0.0  0.0   0.0
DesignQueue:     0    8     2     4    3     0     2   15     8     0    0     0
*******************************************************************************
```

```
Default Scenario              Mon Jul 21, 2003 15:14:20                Page 7-1
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                           2000 HCM Operations Method
                            Base Volume Alternative
*******************************************************************************
Intersection #2 Main Street/1st Street
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0   1  0  1  0  0   0  1  1  1  0   0  0  0  0  0
Lane Group:  xxxx  RT     RT   L    T   xxxx  LTR  LTR   LTR xxxx xxxx  xxxx
#LnsInGrps:     0   1      1   1    1      0    3    3     3    0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid        8               8               8                8
% Hev Veh:          2               2               0                2
Grade:             0%              0%              0%               0%
Parking/Hr:        No              No              No               No
Bus Stp/Hr:         0               0               0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0               0               0                0
ExclusiveRT:     Include         Include         Include          Include
% RT Prtct:         0               0               0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx    2 xxxx  xxxx   5r   5r    5r xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98 0.98 0.98 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00 xxxx 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00 xxxx 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00 1.00 1.00 xxxxx 1.00 1.00  1.00 xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98 xxxx xxxx xxxxx 0.95 0.95  0.95 xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx 0.65 xxxx xxxxx 0.95 0.95  0.95 xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96 0.64 0.98  1.00 0.90 0.90  0.90 1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 0.91 0.91  0.91 1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96 0.64 0.98  1.00 0.82 0.82  0.82 1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:   0.00 1.00  1.00 1.00 1.00  0.00 1.00 1.00  1.00 0.00 0.00  0.00
*******************************************************************************



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Default Scenario              Mon Jul 21, 2003 15:14:20                Page 7-2
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
   Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                           2000 HCM Operations Method
                            Base Volume Alternative
*******************************************************************************
Intersection #2 Main Street/1st Street
*******************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                              xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          xxxxxx    31.80   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       xxxxxx    31.80   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            xxxxxx    31.80   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                 xxxxxx        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:             xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:            xxxxxx      200   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:  xxxxxx     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx     1.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    xxxxxx     3.89   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:              xxxxxx      440   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       xxxxxx     8.56   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                  xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                      xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:   xxxxxx     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                    xxxxxx     0.55   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        xxxxxx     9.35   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     xxxxxx    22.45   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx     4.68   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx     0.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                 xxxxxx     1.98   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    xxxxxx     0.13   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  xxxxxx     0.65   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:             xxxxxx     0.65   xxxxxx   xxxxxx
*******************************************************************************



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Default Scenario             Mon Jul 21, 2003 15:14:21                 Page 8-1
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #3 College Street/Hancock Street
*******************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):        0.687
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):       14.7
Optimal Cycle:        44              Level Of Service:                  B
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95  140    0     0  330  100     0    0    0    50 1410  320
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   95  140    0     0  330  100     0    0    0    50 1410  320
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    95  140    0     0  330  100     0    0    0    50 1410  320
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   95  140    0     0  330  100     0    0    0    50 1410  320
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:    95  140    0     0  330  100     0    0    0    50 1410  320
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.73 0.98 1.00  1.00 0.95 0.95  1.00 1.00 1.00  0.84 0.84 0.84
Lanes:       1.00 1.00 0.00  0.00 0.77 0.23  0.00 0.00 0.00  0.08 2.38 0.54
Final Sat.:  1395 1862    0     0 1385  420     0    0    0   135 3812  865
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.08 0.00  0.00 0.24 0.24  0.00 0.00 0.00  0.37 0.37 0.37
Crit Moves:                       ****                             ****
Green/Cycle: 0.35 0.35 0.00  0.00 0.35 0.35  0.00 0.00 0.00  0.54 0.54 0.54
Volume/Cap:  0.20 0.22 0.00  0.00 0.69 0.69  0.00 0.00 0.00  0.69 0.69 0.69
Delay/Veh:   16.2 16.3  0.0   0.0 22.8 22.8   0.0  0.0  0.0  12.6 12.6 12.6
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  16.2 16.3  0.0   0.0 22.8 22.8   0.0  0.0  0.0  12.6 12.6 12.6
DesignQueue:    2    4    0     0    9    3     0    0    0     1   28    6
*******************************************************************************



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Default Scenario             Mon Jul 21, 2003 15:14:21                 Page 9-1
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
               Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************
Intersection #3 College Street/Hancock Street
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
Lane Group:     L    T xxxx  xxxx   RT   RT  xxxx xxxx xxxx   LTR  LTR  LTR
#LnsInGrps:     1    1    0     0    1    1     0    0    0     3    3    3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12   12    12   12   12    12   12   12    12   12   12
CrosswalkWid:        8                8                8                8
% Hev Veh:           2                2                0                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx    5r   5r   5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 xxxxx xxxx 0.98 0.98  xxxx xxxx xxxxx 0.98 0.98 0.98
Grade Adj:   1.00 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
Parking Adj: xxxx 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
Bus Stp Adj: xxxx 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
Area Adj:    1.00 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
RT Adj:      xxxx xxxx xxxxx xxxx 0.97 0.97  xxxx xxxx xxxxx 0.97 0.97 0.97
LT Adj:      0.75 xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx 0.97 0.97 0.97
PedBike Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
HCM Sat Adj: 0.73 0.98 1.00  1.00 0.95 0.95  1.00 1.00 1.00  0.93 0.93 0.93
Usr Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  0.91 0.91 0.91
Fnl Sat Adj: 0.73 0.98 1.00  1.00 0.95 0.95  1.00 1.00 1.00  0.84 0.84 0.84
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 0.00  0.00 1.00 1.00  0.00 0.00 0.00  1.00 1.00 1.00
*******************************************************************************



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--------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #3 College Street/Hancock Street
********************************************************************************
Approach:                                        North   South    East    West
Cycle Length, C:                                    70  xxxxxx  xxxxxx  xxxxxx
Actual Green Time Per Lane Group, G:             24.29  xxxxxx  xxxxxx  xxxxxx
Effective Green Time Per Lane Group, g:          24.29  xxxxxx  xxxxxx  xxxxxx
Opposing Effective Green Time, go:               24.29  xxxxxx  xxxxxx  xxxxxx
Number Of Opposing Lanes, No:                        1  xxxxxx  xxxxxx  xxxxxx
Number Of Lanes In Lane Group, N:                    1  xxxxxx  xxxxxx  xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                  95  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Lane Group, Plt:      1.00  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Opp Flow, Plto:       1.00  xxxxxx  xxxxxx  xxxxxx
Left Turns Per Cycle, LTC:                        1.85  xxxxxx  xxxxxx  xxxxxx
Adjusted Opposing Flow Rate, Vo:                   430  xxxxxx  xxxxxx  xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:           8.36  xxxxxx  xxxxxx  xxxxxx
Opposing Platoon Ratio, Rpo:                      1.00  xxxxxx  xxxxxx  xxxxxx
Lost Time Per Phase, tl:                          4.00  xxxxxx  xxxxxx  xxxxxx
Eff grn until arrival of left-turn car, gf:       2.18  xxxxxx  xxxxxx  xxxxxx
Opposing Queue Ratio, qro:                        0.65  xxxxxx  xxxxxx  xxxxxx
Eff grn blocked by opposing queue, gq:           11.86  xxxxxx  xxxxxx  xxxxxx
Eff grn while left turns filter thru, gu:        12.43  xxxxxx  xxxxxx  xxxxxx
Max opposing cars arriving during gq-gf, n:       4.84  xxxxxx  xxxxxx  xxxxxx
Proportion of Opposing Thru & RT cars, ptho:      0.00  xxxxxx  xxxxxx  xxxxxx
Left-turn Saturation Factor, fs:                xxxxxx  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Shared Lane, pl:      1.00  xxxxxx  xxxxxx  xxxxxx
Through-car Equivalents, el1:                     1.96  xxxxxx  xxxxxx  xxxxxx
Single Lane Through-car Equivalents, el2:         1.00  xxxxxx  xxxxxx  xxxxxx
Minimum Left Turn Adjustment Factor, fmin:        0.16  xxxxxx  xxxxxx  xxxxxx
Single Lane Left Turn Adjustment Factor, fm:      0.75  xxxxxx  xxxxxx  xxxxxx
Left Turn Adjustment Factor, flt:                 0.75  xxxxxx  xxxxxx  xxxxxx
********************************************************************************
```

```
--------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #4 College Street/1st Street
********************************************************************************
Cycle (sec):          70                 Critical Vol./Cap. (X):         0.586
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):         15.4
Optimal Cycle:        36                 Level Of Service:                   B
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   160    30   355   140     0   100  1030    25     0     0     0
Growth Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   0   160    30   355   140     0   100  1030    25     0     0     0
User Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    0   160    30   355   140     0   100  1030    25     0     0     0
Reduct Vol:    0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   0   160    30   355   140     0   100  1030    25     0     0     0
PCE Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    0   160    30   355   140     0   100  1030    25     0     0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment: 1.00  0.96  0.96  0.64  0.98  1.00  0.89  0.89  0.89  1.00  1.00  1.00
Lanes:      0.00  0.84  0.16  1.00  1.00  0.00  0.26  2.68  0.06  0.00  0.00  0.00
Final Sat.:    0  1535   288  1223  1862     0   437  4506   109     0     0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.00  0.10  0.10  0.29  0.08  0.00  0.23  0.23  0.23  0.00  0.00  0.00
Crit Moves:                   ****                    ****
Green/Cycle: 0.00 0.50  0.50  0.50  0.50  0.00  0.39  0.39  0.39  0.00  0.00  0.00
Volume/Cap: 0.00  0.21  0.21  0.59  0.15  0.00  0.59  0.59  0.59  0.00  0.00  0.00
Delay/Veh:   0.0  10.1  10.1  14.0   9.7   0.0  17.3  17.3  17.3   0.0   0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  0.0  10.1  10.1  14.0   9.7   0.0  17.3  17.3  17.3   0.0   0.0   0.0
DesignQueue:   0     3     1     7     3     0     3    26     1     0     0     0
********************************************************************************
```

```
Default Scenario            Mon Jul 21, 2003 15:14:21                 Page 11-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                            Base Volume Alternative
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group: xxxx  RT     RT     L    T   xxxx  LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:    0   1      1     1    1     0     3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12     12    12   12    12    12   12    12    12   12    12
CrosswalkWid:       8                 8                 8                 8
% Hev Veh:          2                 2                 2                 0
Grade:             0%                0%                0%                0%
Parking/Hr:        No                No                No                No
Bus Stp/Hr:         0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                 0                 0                 0
ExclusiveRT:    Include           Include           Include           Include
% RT Prtct:         0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.98 0.98 xxxxx  0.98 0.98  0.98  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98  xxxx xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.66 xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.97 0.97  0.97  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.89 0.89  0.89  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
*******************************************************************************




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```
Default Scenario            Mon Jul 21, 2003 15:14:21                 Page 11-2
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                          2000 HCM Operations Method
                            Base Volume Alternative
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Approach:                                   North    South     East     West
Cycle Length, C:                           xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:       xxxxxx    34.67   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:    xxxxxx    34.67   xxxxxx   xxxxxx
Opposing Effective Green Time, go:         xxxxxx    34.67   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:              xxxxxx        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:          xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:         xxxxxx      355   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt: xxxxxx   1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto: xxxxxx    1.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                 xxxxxx     6.90   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:           xxxxxx      190   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:    xxxxxx     3.69   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:               xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                   xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf: xxxxxx    0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                 xxxxxx     0.50   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:     xxxxxx     2.48   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:  xxxxxx    32.19   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n: xxxxxx    1.24   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   0.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:           xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx   1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:              xxxxxx     1.59   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:  xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin: xxxxxx     0.12   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm: xxxxxx   0.66   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:          xxxxxx     0.66   xxxxxx   xxxxxx
*******************************************************************************




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-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                     Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #5 OR 99W/Villa Road
*****************************************************************************
Cycle (sec):        135             Critical Vol./Cap. (X):        0.758
Loss Time (sec):     16 (Y+R =  4 sec) Average Delay (sec/veh):     38.9
Optimal Cycle:       86             Level Of Service:                D
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     495  185   10    280   70   85    115  875    5     30 1200  170
Growth Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:  495  185   10    280   70   85    115  875    5     30 1200  170
User Adj:    1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Volume:   495  185   10    280   70   85    115  875    5     30 1200  170
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Reduced Vol:  495  185   10    280   70   85    115  875    5     30 1200  170
PCE Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Final Vol.:   495  185   10    280   70   85    115  875    5     30 1200  170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900   1900 1900 1900   1900 1900 1900   1900 1900 1900
Adjustment:  0.90 0.97 0.97   0.93 0.98 0.83   0.93 0.93 0.93   0.93 0.93 0.83
Lanes:       2.00 0.95 0.05   1.00 1.00 1.00   1.00 1.99 0.01   1.00 2.00 1.00
Final Sat.:  3432 1752   95   1769 1862 1583   1769 3514   20   1769 3538 1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.11 0.11   0.16 0.04 0.05   0.07 0.25 0.25   0.02 0.34 0.11
Crit Moves:       ****        ****             ****                  ****
Green/Cycle: 0.25 0.14 0.14   0.21 0.09 0.09   0.09 0.50 0.50   0.03 0.45 0.45
Volume/Cap:  0.57 0.76 0.76   0.76 0.40 0.57   0.76 0.50 0.50   0.50 0.76 0.24
Delay/Veh:   44.8 68.1 68.1   59.0 59.0 63.6   79.9 22.8 22.8   70.4 33.3 23.3
User DelAdj: 1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
AdjDel/Veh:  44.8 68.1 68.1   59.0 59.0 63.6   79.9 22.8 22.8   70.4 33.3 23.3
DesignQueue:   29   12    1     17    5    6      8   35    0      2   54    7
*****************************************************************************
```

```
-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #5 OR 99W/Villa Road
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  1  1  0    1  0  2  0  1
Lane Group:     L   RT    RT     L    T    R     L   RT    RT     L    T    R
#LnsInGrps:     2    1     1     1    1    1     1    2     2     1    2    1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12   12     12   12   12     12   12   12     12   12   12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1 xxxx xxxx      1 xxxx xxxx      1 xxxx xxxx      1 xxxx xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 0.98   0.98 0.98 0.98   0.98 0.98 0.98   0.98 0.98 0.98
Grade Adj:   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Parking Adj: xxxx 1.00 1.00   xxxx xxxx 1.00   xxxx 1.00 1.00   xxxx xxxx 1.00
Bus Stp Adj: xxxx 1.00 1.00   xxxx xxxx 1.00   xxxx 1.00 1.00   xxxx xxxx 1.00
Area Adj:    1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
RT Adj:      xxxx 0.99 0.99   xxxx xxxx 0.85   xxxx 1.00 1.00   xxxx xxxx 0.85
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
HCM Sat Adj: 0.93 0.97 0.97   0.93 0.98 0.83   0.93 0.98 0.98   0.93 0.98 0.83
Usr Sat Adj: 1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Sat Adj: 0.97 1.00 1.00   1.00 1.00 1.00   1.00 0.95 0.95   1.00 0.95 1.00
Fnl Sat Adj: 0.90 0.97 0.97   0.93 0.98 0.83   0.93 0.93 0.93   0.93 0.93 0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <     Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
*****************************************************************************
```

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Default Scenario              Mon Jul 21, 2003 15:14:21                 Page 14-1
-------------------------------------------------------------------------------

                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #6 OR 99W/Elliot Road
*******************************************************************************
Cycle (sec):       135               Critical Vol./Cap. (X):        0.731
Loss Time (sec):    12 (Y+R =  4 sec) Average Delay (sec/veh):       29.7
Optimal Cycle:      68               Level Of Service:                 C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:       0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      90   20   100    50   25   280    75 1050    25    75 1260   125
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   90   20   100    50   25   280    75 1050    25    75 1260   125
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    90   20   100    50   25   280    75 1050    25    75 1260   125
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   90   20   100    50   25   280    75 1050    25    75 1260   125
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    90   20   100    50   25   280    75 1050    25    75 1260   125
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.40 0.40  0.83  0.82 0.82  0.82  0.93 0.93  0.93  0.93 0.92  0.92
Lanes:       0.82 0.18  1.00  0.14 0.07  0.79  1.00 1.95  0.05  1.00 1.82  0.18
Final Sat.:   625  139  1583   220  110  1233  1769 3445    82  1769 3177   315
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.14  0.06  0.23 0.23  0.23  0.04 0.30  0.30  0.04 0.40  0.40
Crit Moves:                        ****        ****                   ****
Green/Cycle: 0.31 0.31  0.31  0.31 0.31  0.31  0.06 0.53  0.53  0.07 0.54  0.54
Volume/Cap:  0.46 0.46  0.20  0.73 0.73  0.73  0.73 0.58  0.58  0.58 0.73  0.73
Delay/Veh:   38.9 38.9  34.4  47.1 47.1  47.1  85.9 22.2  22.2  66.9 24.9  24.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  38.9 38.9  34.4  47.1 47.1  47.1  85.9 22.2  22.2  66.9 24.9  24.9
DesignQueue:    5    1     5     3    1    15     5   40     1     5   48     5
*******************************************************************************



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Default Scenario              Mon Jul 21, 2003 15:14:21                 Page 15-1
-------------------------------------------------------------------------------

                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

              Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                       Base Volume Alternative
*******************************************************************************
Intersection #6 OR 99W/Elliot Road
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
Lane Group:    LT   LT     R   LTR  LTR   LTR     L   RT    RT     L   RT    RT
#LnsInGrps:     1    1     1     1    1     1     1    2     2     1    2     2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5  xxxx     5    5     5     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  0.89 0.89  0.89  xxxx 1.00  1.00  xxxx 0.99  0.99
LT Adj:      0.41 0.41 xxxxx  0.94 0.94  0.94  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.40 0.40  0.83  0.82 0.82  0.82  0.93 0.98  0.98  0.93 0.97  0.97
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.95  1.00 0.95  0.95
Fnl Sat Adj: 0.40 0.40  0.83  0.82 0.82  0.82  0.93 0.93  0.93  0.93 0.92  0.92
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************



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------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                           Base Volume Alternative
******************************************************************************
Intersection #6 OR 99W/Elliot Road
******************************************************************************
Approach:                                       North    South     East     West
Cycle Length, C:                                  135      135   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:            41.93    41.93   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:         41.93    41.93   xxxxxx   xxxxxx
Opposing Effective Green Time, go:              41.93    41.93   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                       1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                   1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                 90       50   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:     0.82     0.14   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:      0.14   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                       3.38     1.88   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                  355      110   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         13.31     4.13   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                     1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                         4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:      1.08     7.69   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                       0.69     0.69   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          19.95     2.06   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       21.98    34.24   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:      9.43   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:     0.86   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:               xxxxxx     0.81   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:     0.82     0.14   xxxxxx   xxxxxx
Through-car Equivalents, el1:                    2.01     1.57   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:        5.40   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.09     0.05   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     0.41     0.94   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                0.41     0.94   xxxxxx   xxxxxx
******************************************************************************
```

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------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
******************************************************************************
Average Delay (sec/veh):    353.3          Worst Case Level Of Service:        F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  1  0   1  0  0  1  0   0  1  0  0  1   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      185  480    10    15  440    80    60   60   100    70   40    60
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   185  480    10    15  440    80    60   60   100    70   40    60
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    185  480    10    15  440    80    60   60   100    70   40    60
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    185  480    10    15  440    80    60   60   100    70   40    60
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  520 xxxx xxxxx   490 xxxx xxxxx  1415 1370   480  1445 1405   485
Potent Cap.: 1046 xxxx xxxxx  1073 xxxx xxxxx   115  146   586   110  139   582
Move Cap.:   1046 xxxx xxxxx  1073 xxxx xxxxx    65  119   586    48  113   582
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  9.2 xxxx xxxxx   8.4 xxxx xxxxx xxxxx xxxx  12.4 xxxxx xxxx  11.9
LOS by Move:    A    *     *     A    *     *     *    *     B     *    *     B
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx    84 xxxx xxxxx    60 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx 338.4 xxxx xxxxx 539.5 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     F    *     *     F    *     *
ApproachDel:     xxxxxx           xxxxxx            190.2            353.3
ApproachLOS:        *                *                F                F
```

```
--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                      2000 HCM Unsignalized Method
                        Base Volume Alternative
********************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
********************************************************************************
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:            2%               2%               2%               2%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:      12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

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--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                   Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #8 OR 99W/Springbrook Street
********************************************************************************
Cycle (sec):         135              Critical Vol./Cap. (X):          0.815
Loss Time (sec):      16 (Y+R =  4 sec) Average Delay (sec/veh):        40.6
Optimal Cycle:       101              Level Of Service:                    D
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        2  0  1  0  1   2  0  1  0  1   1  0  2  0  1   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     210  340    50   190  410    30   120 1035   240    65 1305   270
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  210  340    50   190  410    30   120 1035   240    65 1305   270
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   210  340    50   190  410    30   120 1035   240    65 1305   270
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  210  340    50   190  410    30   120 1035   240    65 1305   270
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   210  340    50   190  410    30   120 1035   240    65 1305   270
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.83  0.93 0.93  0.83
Lanes:       2.00 1.00  1.00  2.00 1.00  1.00  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3432 1862  1583  3432 1862  1583  1769 3538  1583  1769 3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.18  0.03  0.06 0.22  0.02  0.07 0.29  0.15  0.04 0.37  0.17
Crit Moves:  ****                  ****        ****                   ****
Green/Cycle: 0.08 0.27  0.27  0.08 0.27  0.27  0.08 0.48  0.48  0.06 0.45  0.45
Volume/Cap:  0.81 0.69  0.12  0.69 0.81  0.07  0.81 0.61  0.32  0.61 0.81  0.38
Delay/Veh:   79.3 48.7  37.8  67.6 56.0  36.7  89.1 26.9  22.1  72.2 35.4  24.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  79.3 48.7  37.8  67.6 56.0  36.7  89.1 26.9  22.1  72.2 35.4  24.7
DesignQueue:   15   20     3    13   24     2     8   44    10     5   59    12
********************************************************************************
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #8 OR 99W/Springbrook Street
*******************************************************************************
Approach:        North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
Lane Group:     L    T     R     L    T     R     L    T     R     L    T     R
#LnsInGrps:     2    1     1     2    1     1     1    2     1     1    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid          8                8                8                8
% Hev Veh:            2                2                2                2
Grade:               0%               0%               0%               0%
Parking/Hr:          No               No               No               No
Bus Stp/Hr:           0                0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:           0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:       1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 0.97 1.00  1.00  0.97 1.00  1.00  1.00 0.95  1.00  1.00 0.95  1.00
Fnl Sat Adj: 0.90 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.83  0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:   < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:   < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************
```

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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #9 OR 99W/Northern Arterial
*******************************************************************************
Cycle (sec):       135                 Critical Vol./Cap. (X):        0.744
Loss Time (sec):    16 (Y+R =  4 sec) Average Delay (sec/veh):        39.1
Optimal Cycle:      83                 Level Of Service:                 D
*******************************************************************************
Approach:        North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Protected        Protected        Protected        Protected
Rights:            Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:         1  0  1  0  1    2  0  1  0  1    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     100  150   100   500  100   110   110 1050    50   150 1300   540
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  100  150   100   500  100   110   110 1050    50   150 1300   540
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   100  150   100   500  100   110   110 1050    50   150 1300   540
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  100  150   100   500  100   110   110 1050    50   150 1300   540
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   100  150   100   500  100   110   110 1050    50   150 1300   540
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.93 0.98  0.83  0.90 0.98  0.83  0.93 0.92  0.92  0.93 0.93  0.83
Lanes:       1.00 1.00  1.00  2.00 1.00  1.00  1.00 1.91  0.09  1.00 2.00  1.00
Final Sat.:  1769 1862  1583  3432 1862  1583  1769 3353   160  1769 3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.08  0.06  0.15 0.05  0.07  0.06 0.31  0.31  0.08 0.37  0.34
Crit Moves:       ****        ****             ****                  ****
Green/Cycle: 0.14 0.11  0.11  0.20 0.17  0.17  0.08 0.45  0.45  0.12 0.49  0.49
Volume/Cap:  0.41 0.74  0.58  0.74 0.32  0.41  0.74 0.69  0.69  0.69 0.74  0.69
Delay/Veh:   54.5 72.3  62.4  55.6 50.0  51.3  78.8 30.6  30.6  65.7 29.1  28.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.5 72.3  62.4  55.6 50.0  51.3  78.8 30.6  30.6  65.7 29.1  28.9
DesignQueue:    7   10     7    31    6     7     8   47     2    10   54    22
*******************************************************************************
```

```
Default Scenario         Mon Jul 21, 2003 15:14:21             Page 21-1
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #9 OR 99W/Northern Arterial
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  1    2  0  1  0  1    1  0  1  1  0    1  0  2  0  1
Lane Group:    L    T    R      L    T    R      L   RT    RT     L    T    R
#LnsInGrps:    1    1    1      2    1    1      1    2    2      1    2    1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12   12     12   12   12     12   12   12     12   12   12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                2                2
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx 0.99  0.99  xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.97  0.97  0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  0.97 1.00  1.00  1.00 0.95  0.95  1.00 0.95  1.00
Fnl Sat Adj: 0.93 0.98  0.83  0.90 0.98  0.83  0.93 0.92  0.92  0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
********************************************************************************



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Default Scenario         Mon Jul 21, 2003 15:14:21             Page 22-1
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
********************************************************************************
Cycle (sec):          100             Critical Vol./Cap. (X):        0.664
Loss Time (sec):       12 (Y+R =  4 sec) Average Delay (sec/veh):      24.8
Optimal Cycle:         55             Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0      0    0    0      0    0    0      0    0    0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     235  240    25   125  210   100    50  285   215    10  230   250
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  235  240    25   125  210   100    50  285   215    10  230   250
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   235  240    25   125  210   100    50  285   215    10  230   250
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  235  240    25   125  210   100    50  285   215    10  230   250
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   235  240    25   125  210   100    50  285   215    10  230   250
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.45 0.97  0.97  0.49 0.93  0.93  0.93 0.92  0.92  0.93 0.90  0.90
Lanes:       1.00 0.91  0.09  1.00 0.68  0.32  1.00 0.57  0.43  1.00 0.48  0.52
Final Sat.:   849 1663   173   937 1201   572  1769  993   749  1769  823   894
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28 0.14  0.14  0.13 0.17  0.17  0.03 0.29  0.29  0.01 0.28  0.28
Crit Moves:  ****                              ****                   ****
Green/Cycle: 0.42 0.42  0.42  0.42 0.42  0.42  0.04 0.45  0.45  0.01 0.42  0.42
Volume/Cap:  0.66 0.35  0.35  0.32 0.42  0.42  0.66 0.63  0.63  0.63 0.66  0.66
Delay/Veh:   28.2 20.2  20.2  20.1 21.0  21.0  67.3 22.5  22.5 110.5 25.6  25.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  28.2 20.2  20.2  20.1 21.0  21.0  67.3 22.5  22.5 110.5 25.6  25.6
DesignQueue:    8    8     1     4    7     3     3    9     7     1    8     9
********************************************************************************



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---------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
Lane Group:   L   RT     RT    L   RT     RT    L   RT     RT    L   RT     RT
#LnsInGrps:   1    1      1    1    1      1    1    1      1    1    1      1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12   12   12     12   12   12     12   12   12     12
CrosswalkWid        8               8                8                8
% Hev Veh:          2               2                2                2
Grade:             0%              0%               0%               0%
Parking/Hr:        No              No               No               No
Bus Stp/Hr:         0               0                0                0
Area Type:   < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0               0                0                0
ExclusiveRT:    Include         Include          Include          Include
% RT Prtct:         0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx    2 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99  xxxx 0.95  0.95  xxxx 0.94  0.94  xxxx 0.92  0.92
LT Adj:      0.46 xxxx xxxxx  0.50 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.45 0.97  0.97  0.49 0.93  0.93  0.93 0.92  0.92  0.93 0.90  0.90
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.45 0.97  0.97  0.49 0.93  0.93  0.93 0.92  0.92  0.93 0.90  0.90
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
***************************************************************************
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```
---------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
***************************************************************************
Approach:                                      North     South     East      West
Cycle Length, C:                                 100       100   xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:           41.67     41.67   xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:        41.67     41.67   xxxxxx    xxxxxx
Opposing Effective Green Time, go:             41.67     41.67   xxxxxx    xxxxxx
Number Of Opposing Lanes, No:                      1         1   xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:                  1         1   xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               235       125   xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt:    1.00      1.00   xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx    xxxxxx   xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                      6.53      3.47   xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:                 310       265   xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         8.61      7.36   xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00      1.00   xxxxxx    xxxxxx
Lost Time Per Phase, tl:                        4.00      4.00   xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:     0.00      0.00   xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                      0.58      0.58   xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:          8.14      6.07   xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu:      33.53     35.60   xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx    xxxxxx   xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx    xxxxxx   xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:                0.68      0.71   xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl:    1.00      1.00   xxxxxx    xxxxxx
Through-car Equivalents, el1:                   1.77      1.70   xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx    xxxxxx   xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.10      0.10   xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.46      0.50   xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:               0.46      0.50   xxxxxx    xxxxxx
***************************************************************************
```

```
Default Scenario           Mon Jul 21, 2003 15:14:21              Page 24-1
---------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #11 Mountain View Drive/Villa Road
***************************************************************************
Average Delay (sec/veh):     121.6          Worst Case Level Of Service:    F
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     120   50    60    30   30    10    10  470    80   125  470    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  120   50    60    30   30    10    10  470    80   125  470    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   120   50    60    30   30    10    10  470    80   125  470    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   120   50    60    30   30    10    10  470    80   125  470    20
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1280 1270   510  1315 1300   480   490 xxxx xxxxx   550 xxxx xxxxx
Potent Cap.:  143  168   563   135  161   586  1073 xxxx xxxxx  1020 xxxx xxxxx
Move Cap.:    106  146   563    80  140   586  1073 xxxx xxxxx  1020 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:204.5 xxxx xxxxx  74.6 xxxx xxxxx   8.4 xxxx xxxxx   9.0 xxxx xxxxx
LOS by Move:    F    *     *     F    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx   245  xxxx xxxx   173  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx  31.1 xxxxx xxxx  31.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     D     *    *     D     *    *     *     *    *     *
ApproachDel:      121.6             50.2            xxxxxx           xxxxxx
ApproachLOS:        F                 F                *                *


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```

```
Default Scenario           Mon Jul 21, 2003 15:14:21              Page 25-1
---------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                  Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                          Base Volume Alternative
***************************************************************************
Intersection #11 Mountain View Drive/Villa Road
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:            2%               2%               2%               2%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour


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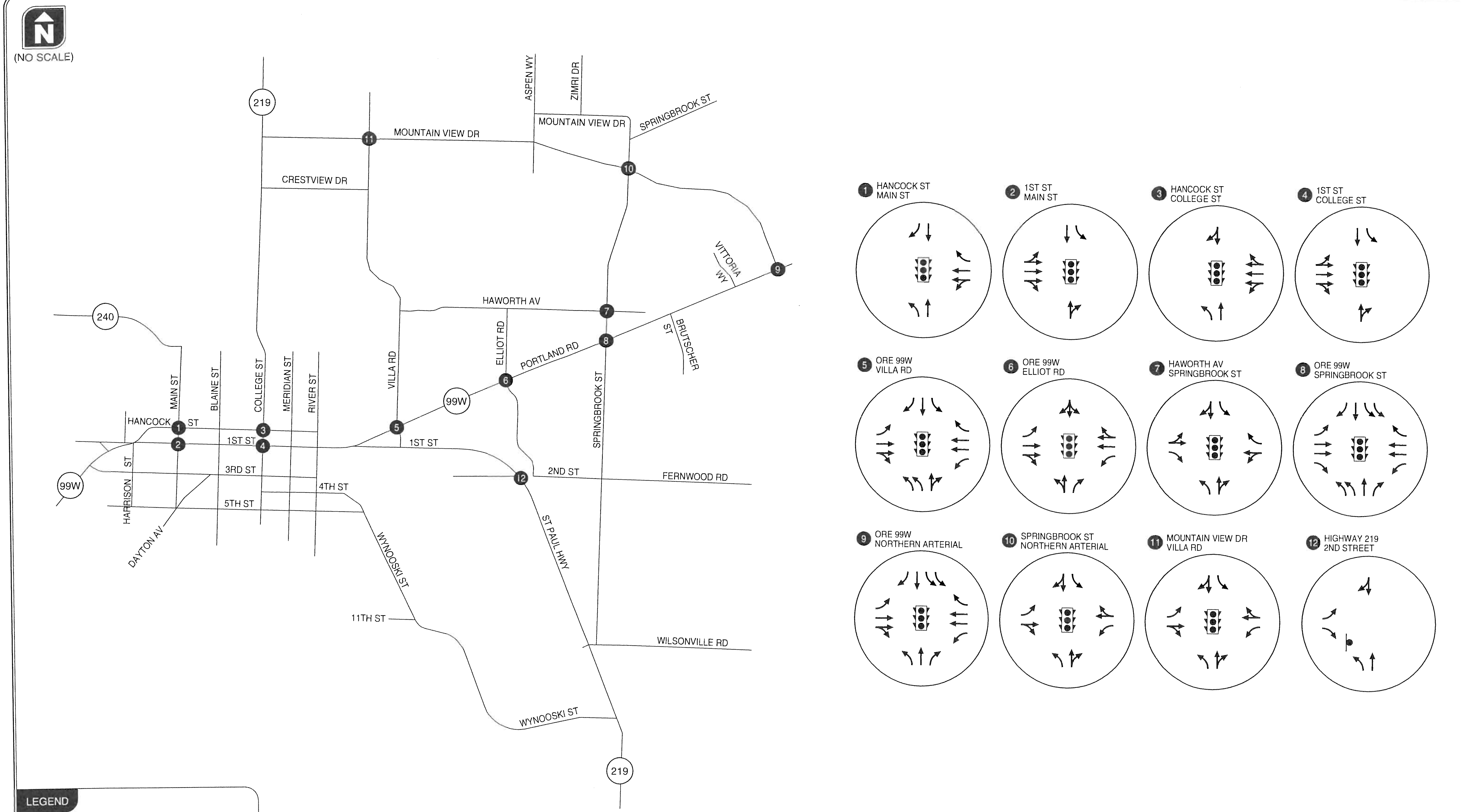
```

```
-----------------------------------------------------------------------------
          Kittelson & Associates, Inc. - Project # 5193
        City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                 Level Of Service Computation Report
      2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #12 Hwy 219/2nd Street
*****************************************************************************
Average Delay (sec/veh):     20.9       Worst Case Level Of Service:        C
*****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:       1  0  1  0  0    0  0  0  1  0    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     25  630     0     0  545    15    55    0    75     0    0     0
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  25  630     0     0  545    15    55    0    75     0    0     0
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   25  630     0     0  545    15    55    0    75     0    0     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   25  630     0     0  545    15    55    0    75     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  560 xxxx xxxxx  xxxx xxxx xxxxx  1233 xxxx   553  xxxx xxxx xxxxx
Potent Cap.:  996 xxxx xxxxx  xxxx xxxx xxxxx   193 xxxx   527  xxxx xxxx xxxxx
Move Cap.:    996 xxxx xxxxx  xxxx xxxx xxxxx   189 xxxx   527  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  8.7 xxxx xxxxx xxxxx xxxx xxxxx  31.7 xxxx  13.0 xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     D    *     B     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx            20.9            xxxxxx
ApproachLOS:        *                *                C                *
```

```
-----------------------------------------------------------------------------
          Kittelson & Associates, Inc. - Project # 5193
        City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
              Level Of Service Detailed Computation Report
                   2000 HCM Unsignalized Method
                     Base Volume Alternative
*****************************************************************************
Intersection #12 Hwy 219/2nd Street
*****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             5%               5%               5%               5%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

Appendix I

Alternative 2 Mitigated
2025 Future Traffic Conditions



LEGEND

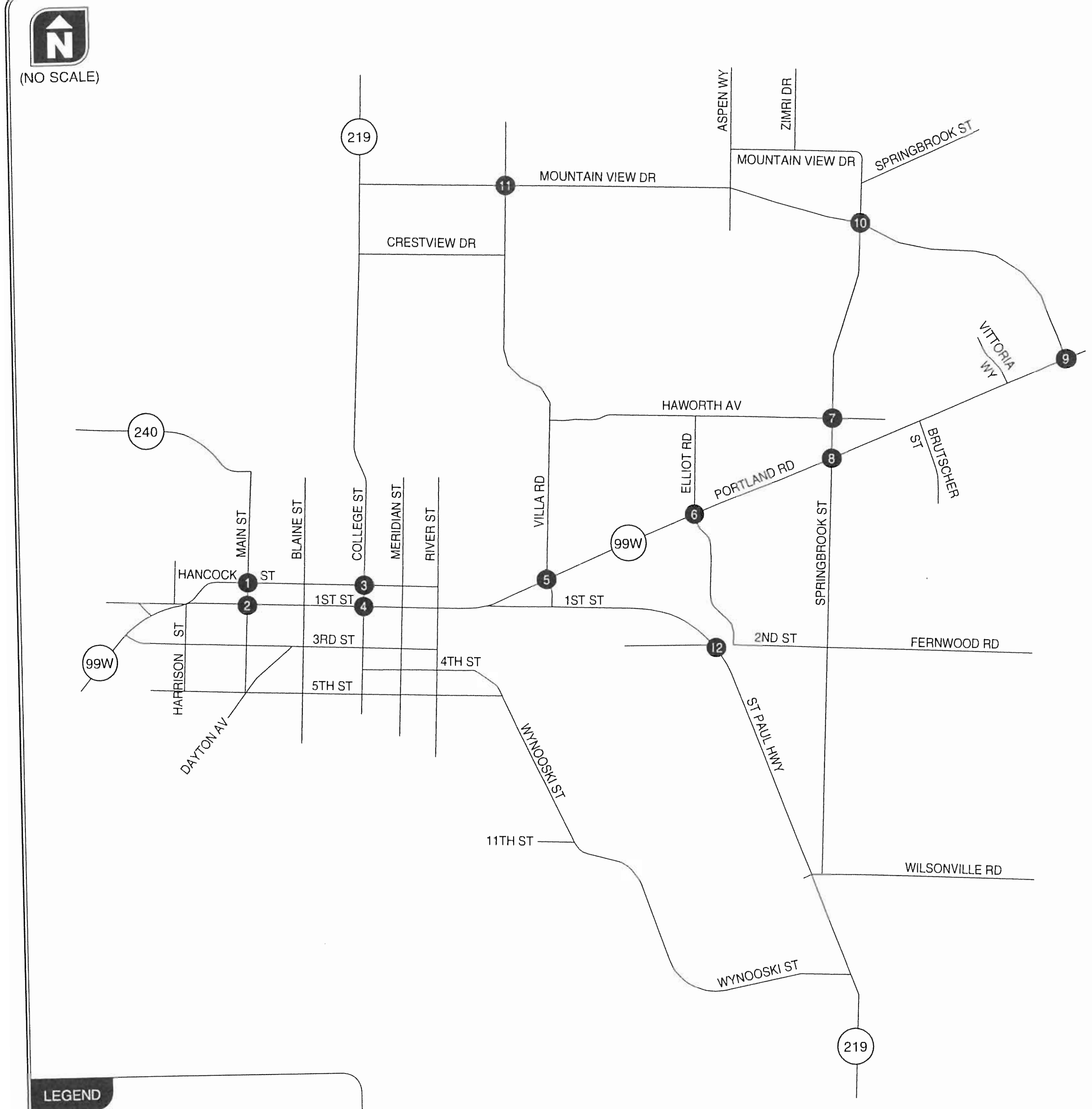
CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

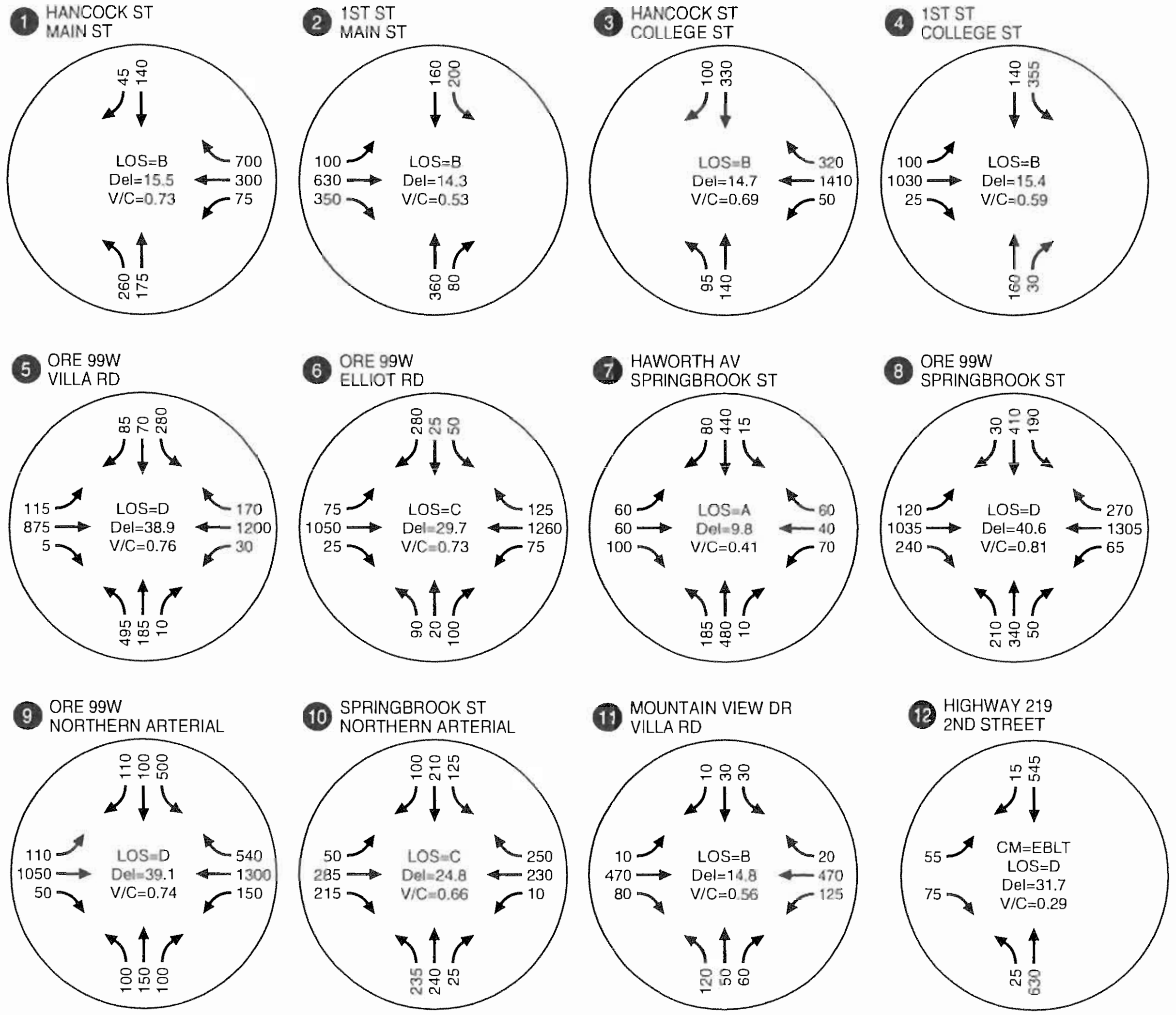
LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICE MITIGATIONS
ALTERNATIVE 2: WITH BYPASS
NEWBERG, OREGON

FIGURE
D1

5193Figs

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING





LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)

LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)

Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)

V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

MITIGATED INTERSECTION PERFORMANCE
ALTERNATIVE 2: WITH BYPASS
NEWBERG, OREGON

FIGURE D2

```
----------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------
                          Scenario Report
Scenario:             Default Scenario

Command:              Default Command
Volume:               Default Volume
Geometry:             Default Geometry
Impact Fee:           Default Impact Fee
Trip Generation:      Default Trip Generation
Trip Distribution:    Default Trip Distribution
Paths:                Default Paths
Routes:               Default Routes
Configuration:        Default Configuration
```

```
----------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------
                       Turning Movement Report

Volume    Northbound      Southbound       Eastbound       Westbound     Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume

#1 Main Street/Hancock Street
Base     260  175     0     0  140    45     0    0     0    75  300   700   1695
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    260  175     0     0  140    45     0    0     0    75  300   700   1695

#2 Main Street/1st Street
Base       0  360    80   200  160     0   100  630   350     0    0     0   1880
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0  360    80   200  160     0   100  630   350     0    0     0   1880

#3 College Street/Hancock Street
Base      95  140     0     0  330   100     0    0     0    50 1410   320   2445
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     95  140     0     0  330   100     0    0     0    50 1410   320   2445

#4 College Street/1st Street
Base       0  160    30   355  140     0   100 1030    25     0    0     0   1840
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0  160    30   355  140     0   100 1030    25     0    0     0   1840

#5 OR 99W/Villa Road
Base     495  185    10   280   70    85   115  875     5    30 1200   170   3520
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    495  185    10   280   70    85   115  875     5    30 1200   170   3520

#6 OR 99W/Elliot Road
Base      90   20   100    50   25   280    75 1050    25    75 1260   125   3175
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     90   20   100    50   25   280    75 1050    25    75 1260   125   3175

#7 Haworth Avenue/Springbrook Street
Base     185  480    10    15  440    80    60   60   100    70   40    60   1600
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    185  480    10    15  440    80    60   60   100    70   40    60   1600

#8 OR 99W/Springbrook Street
Base     210  340    50   190  410    30   120 1035   240    65 1305   270   4265
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    210  340    50   190  410    30   120 1035   240    65 1305   270   4265

#9 OR 99W/Northern Arterial
Base     100  150   100   500  100   110   110 1050    50   150 1300   540   4260
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    100  150   100   500  100   110   110 1050    50   150 1300   540   4260
```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
Volume    Northbound      Southbound       Eastbound       Westbound    Total
Type   Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume


#10 Springbrook Street/Northern Arterial
Base    235  240   25    125  210  100    50  285  215    10  230  250   1975
Added     0    0    0      0    0    0     0    0    0     0    0    0      0
Total   235  240   25    125  210  100    50  285  215    10  230  250   1975

#11 Mountain View Drive/Villa Road
Base    120   50   60     30   30   10    10  470   80   125  470   20   1475
Added     0    0    0      0    0    0     0    0    0     0    0    0      0
Total   120   50   60     30   30   10    10  470   80   125  470   20   1475

#12 Hwy 219/2nd Street
Base     25  630    0      0  545   15    55    0   75     0    0    0   1345
Added     0    0    0      0    0    0     0    0    0     0    0    0      0
Total    25  630    0      0  545   15    55    0   75     0    0    0   1345
```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                        Impact Analysis Report
                           Level Of Service

Intersection                             Base          Future        Change
                                      Del/   V/     Del/   V/          in
                                  LOS Veh    C  LOS Veh    C
#  1 Main Street/Hancock Street    B  15.5 0.730  B  15.5 0.730  + 0.000 D/V

#  2 Main Street/1st Street        B  14.3 0.534  B  14.3 0.534  + 0.000 D/V

#  3 College Street/Hancock Street B  14.7 0.687  B  14.7 0.687  + 0.000 D/V

#  4 College Street/1st Street     B  15.4 0.586  B  15.4 0.586  + 0.000 D/V

#  5 OR 99W/Villa Road             D  38.9 0.758  D  38.9 0.758  + 0.000 D/V

#  6 OR 99W/Elliot Road            C  29.7 0.731  C  29.7 0.731  + 0.000 D/V

#  7 Haworth Avenue/Springbrook Str A   9.8 0.414  A   9.8 0.414  + 0.000 D/V

#  8 OR 99W/Springbrook Street     D  40.6 0.815  D  40.6 0.815  + 0.000 D/V

#  9 OR 99W/Northern Arterial      D  39.1 0.744  D  39.1 0.744  + 0.000 D/V

# 10 Springbrook Street/Northern Ar C  24.8 0.664  C  24.8 0.664  + 0.000 D/V

# 11 Mountain View Drive/Villa Road B  14.8 0.556  B  14.8 0.556  + 0.000 D/V

# 12 Hwy 219/2nd Street            C  20.9 0.000  C  20.9 0.000  + 0.000 V/C
```

```
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                   Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1 Main Street/Hancock Street
********************************************************************************
Cycle (sec):           70              Critical Vol./Cap. (X):        0.730
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):      15.5
Optimal Cycle:         49              Level Of Service:                 B
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     260  175    0     0  140   45     0    0    0    75  300  700
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  260  175    0     0  140   45     0    0    0    75  300  700
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:   260  175    0     0  140   45     0    0    0    75  300  700
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  260  175    0     0  140   45     0    0    0    75  300  700
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:   260  175    0     0  140   45     0    0    0    75  300  700
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.64 0.98 1.00  1.00 0.98 0.83  1.00 1.00 1.00  0.81 0.81 0.85
Lanes:       1.00 1.00 0.00  0.00 1.00 1.00  0.00 0.00 0.00  0.40 1.60 1.00
Final Sat.:  1221 1862    0     0 1862 1583     0    0    0   614 2455 1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.09 0.00  0.00 0.08 0.03  0.00 0.00 0.00  0.12 0.12 0.43
Crit Moves:  ****                                                        ****
Green/Cycle: 0.29 0.29 0.00  0.00 0.29 0.29  0.00 0.00 0.00  0.59 0.59 0.59
Volume/Cap:  0.73 0.32 0.00  0.00 0.26 0.10  0.00 0.00 0.00  0.21 0.21 0.73
Delay/Veh:   29.8 19.7  0.0   0.0 19.2 18.2   0.0  0.0  0.0   6.6  6.6 13.1
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  29.8 19.7  0.0   0.0 19.2 18.2   0.0  0.0  0.0   6.6  6.6 13.1
DesignQueue:    7    5    0     0    4    1     0    0    0     1    5   12
********************************************************************************
```

```
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
********************************************************************************
Intersection #1 Main Street/Hancock Street
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  0  1
Lane Group:     L    T  xxxx  xxxx    T     R  xxxx xxxx  xxxx   LT   LT     R
#LnsInGrps:     1    1     0     0    1     1     0    0     0    2    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12   12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    2r   2r  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98  0.98  xxxx xxxx xxxxx  1.00 1.00  1.00
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx xxxx  0.85  xxxx xxxx xxxxx  xxxx xxxx  0.85
LT Adj:      0.66 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.85 0.85 xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.64 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.85 0.85  0.85
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.95 0.95  1.00
Fnl Sat Adj: 0.64 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.81 0.81  0.85
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
********************************************************************************
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----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                           Base Volume Alternative
****************************************************************************
Intersection #1 Main Street/Hancock Street
****************************************************************************
Approach:                                    North   South    East    West
Cycle Length, C:                                70  xxxxxx  xxxxxx  xxxxxx
Actual Green Time Per Lane Group, G:         20.41  xxxxxx  xxxxxx  xxxxxx
Effective Green Time Per Lane Group, g:      20.41  xxxxxx  xxxxxx  xxxxxx
Opposing Effective Green Time, go:           20.41  xxxxxx  xxxxxx  xxxxxx
Number Of Opposing Lanes, No:                    1  xxxxxx  xxxxxx  xxxxxx
Number Of Lanes In Lane Group, N:                1  xxxxxx  xxxxxx  xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:             260  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Lane Group, Plt:  1.00  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Opp Flow, Plto: xxxxxx  xxxxxx  xxxxxx  xxxxxx
Left Turns Per Cycle, LTC:                    5.06  xxxxxx  xxxxxx  xxxxxx
Adjusted Opposing Flow Rate, Vo:               140  xxxxxx  xxxxxx  xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       2.72  xxxxxx  xxxxxx  xxxxxx
Opposing Platoon Ratio, Rpo:                  1.00  xxxxxx  xxxxxx  xxxxxx
Lost Time Per Phase, tl:                      4.00  xxxxxx  xxxxxx  xxxxxx
Eff grn until arrival of left-turn car, gf:   0.00  xxxxxx  xxxxxx  xxxxxx
Opposing Queue Ratio, qro:                    0.71  xxxxxx  xxxxxx  xxxxxx
Eff grn blocked by opposing queue, gq:        0.18  xxxxxx  xxxxxx  xxxxxx
Eff grn while left turns filter thru, gu:    20.23  xxxxxx  xxxxxx  xxxxxx
Max opposing cars arriving during gq-gf, n: xxxxxx  xxxxxx  xxxxxx  xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx xxxxxx  xxxxxx  xxxxxx
Left-turn Saturation Factor, fs:              0.79  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Shared Lane, pl:  1.00  xxxxxx  xxxxxx  xxxxxx
Through-car Equivalents, el1:                 1.51  xxxxxx  xxxxxx  xxxxxx
Single Lane Through-car Equivalents, el2:   xxxxxx  xxxxxx  xxxxxx  xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    0.20  xxxxxx  xxxxxx  xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  0.66  xxxxxx  xxxxxx  xxxxxx
Left Turn Adjustment Factor, flt:             0.66  xxxxxx  xxxxxx  xxxxxx
****************************************************************************
```

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----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

                    Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
****************************************************************************
Intersection #2 Main Street/1st Street
****************************************************************************
Cycle (sec):           70                Critical Vol./Cap. (X):        0.534
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):        14.3
Optimal Cycle:         33                Level Of Service:                  B
****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   360    80   200   160     0   100   630   350     0     0     0
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   0   360    80   200   160     0   100   630   350     0     0     0
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    0   360    80   200   160     0   100   630   350     0     0     0
Reduct Vol:    0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   0   360    80   200   160     0   100   630   350     0     0     0
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    0   360    80   200   160     0   100   630   350     0     0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  1.00  0.96  0.96  0.64  0.98  1.00  0.82  0.82  0.82  1.00  1.00  1.00
Lanes:       0.00  0.82  0.18  1.00  1.00  0.00  0.28  1.75  0.97  0.00  0.00  0.00
Final Sat.:    0  1485   330  1212  1862     0   434  2736  1520     0     0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00  0.24  0.24  0.16  0.09  0.00  0.23  0.23  0.23  0.00  0.00  0.00
Crit Moves:        ****                                 ****
Green/Cycle: 0.00  0.45  0.45  0.45  0.45  0.00  0.43  0.43  0.43  0.00  0.00  0.00
Volume/Cap:  0.00  0.53  0.53  0.36  0.19  0.00  0.53  0.53  0.53  0.00  0.00  0.00
Delay/Veh:    0.0  14.4  14.4  12.9  11.5   0.0  15.0  15.0  15.0   0.0   0.0   0.0
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:   0.0  14.4  14.4  12.9  11.5   0.0  15.0  15.0  15.0   0.0   0.0   0.0
DesignQueue:    0     8     2     4     3     0     2    15     8     0     0     0
****************************************************************************
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------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #2 Main Street/1st Street
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0   0  0   1  0    1  0  1   0  0    0  1  1   1  0    0  0  0   0  0
Lane Group:  xxxx  RT     RT     L    T    xxxx   LTR  LTR    LTR  xxxx xxxx  xxxx
#LnsInGrps:     0    1      1     1    1      0     3    3      3     0    0     0
-------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12     12    12   12     12    12   12     12    12   12    12
CrosswalkWid         8                 8                8                8
% Hev Veh:           2                 2                0                2
Grade:              0%                0%               0%               0%
Parking/Hr:         No                No               No               No
Bus Stp/Hr:          0                 0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                 0                0                0
ExclusiveRT:      Include           Include          Include          Include
% RT Prtct:          0                 0                0                0
-------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r     5r  xxxx xxxx  xxxx
-------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.98 0.98 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98  xxxx xxxx xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.65 xxxx xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.90 0.90  0.90  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.82 0.82  0.82  1.00 1.00  1.00
-------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <   Actuated    > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
*******************************************************************************
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------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #2 Main Street/1st Street
*******************************************************************************
Approach:                                      North     South     East     West
Cycle Length, C:                              xxxxxx        70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          xxxxxx     31.80   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       xxxxxx     31.80   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            xxxxxx     31.80   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                 xxxxxx         1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:             xxxxxx         1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:            xxxxxx       200   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:  xxxxxx      1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx      1.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    xxxxxx      3.89   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:              xxxxxx       440   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       xxxxxx      8.56   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                  xxxxxx      1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                      xxxxxx      4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:   xxxxxx      0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                    xxxxxx      0.55   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        xxxxxx      9.35   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     xxxxxx     22.45   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx      4.68   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx      0.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx    xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx      1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                 xxxxxx      1.98   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx      1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    xxxxxx      0.13   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  xxxxxx      0.65   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:             xxxxxx      0.65   xxxxxx   xxxxxx
*******************************************************************************
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--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #3 College Street/Hancock Street
********************************************************************************
Cycle (sec):        70              Critical Vol./Cap. (X):         0.687
Loss Time (sec):     8 (Y+R =  4 sec) Average Delay (sec/veh):        14.7
Optimal Cycle:      44              Level Of Service:                  B
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     95  140     0     0  330   100     0    0     0    50 1410   320
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  95  140     0     0  330   100     0    0     0    50 1410   320
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   95  140     0     0  330   100     0    0     0    50 1410   320
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  95  140     0     0  330   100     0    0     0    50 1410   320
PCE Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   95  140     0     0  330   100     0    0     0    50 1410   320
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.73 0.98  1.00  1.00 0.95  0.95  1.00 1.00  1.00  0.84 0.84  0.84
Lanes:      1.00 1.00  0.00  0.00 0.77  0.23  0.00 0.00  0.00  0.08 2.38  0.54
Final Sat.: 1395 1862     0     0 1385   420     0    0     0   135 3812   865
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.07 0.08  0.00  0.00 0.24  0.24  0.00 0.00  0.00  0.37 0.37  0.37
Crit Moves:                        ****                              ****
Green/Cycle: 0.35 0.35 0.00  0.00 0.35  0.35  0.00 0.00  0.00  0.54 0.54  0.54
Volume/Cap: 0.20 0.22  0.00  0.00 0.69  0.69  0.00 0.00  0.00  0.69 0.69  0.69
Delay/Veh:  16.2 16.3   0.0   0.0 22.8  22.8   0.0  0.0   0.0  12.6 12.6  12.6
User DelAdj: 1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 16.2 16.3   0.0   0.0 22.8  22.8   0.0  0.0   0.0  12.6 12.6  12.6
DesignQueue:   2    4     0     0    9     3     0    0     0     1   28     6
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--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #3 College Street/Hancock Street
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
Lane Group:    L    T  xxxx  xxxx   RT    RT  xxxx xxxx  xxxx   LTR  LTR   LTR
#LnsInGrps:    1    1     0     0    1     1     0    0     0     3    3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                0                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:  < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:    2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    5r   5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98  0.98  xxxx xxxx xxxxx  0.98 0.98  0.98
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx 0.97  0.97  xxxx xxxx xxxxx  0.97 0.97  0.97
LT Adj:      0.75 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.97 0.97  0.97
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.73 0.98  1.00  1.00 0.95  0.95  1.00 1.00  1.00  0.93 0.93  0.93
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91
Fnl Sat Adj: 0.73 0.98  1.00  1.00 0.95  0.95  1.00 1.00  1.00  0.84 0.84  0.84
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
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---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
***************************************************************************
Intersection #3 College Street/Hancock Street
***************************************************************************
Approach:                                     North   South    East    West
Cycle Length, C:                                 70  xxxxxx  xxxxxx  xxxxxx
Actual Green Time Per Lane Group, G:          24.29  xxxxxx  xxxxxx  xxxxxx
Effective Green Time Per Lane Group, g:       24.29  xxxxxx  xxxxxx  xxxxxx
Opposing Effective Green Time, go:            24.29  xxxxxx  xxxxxx  xxxxxx
Number Of Opposing Lanes, No:                     1  xxxxxx  xxxxxx  xxxxxx
Number Of Lanes In Lane Group, N:                 1  xxxxxx  xxxxxx  xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               95  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Lane Group, Plt:   1.00  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    1.00  xxxxxx  xxxxxx  xxxxxx
Left Turns Per Cycle, LTC:                     1.85  xxxxxx  xxxxxx  xxxxxx
Adjusted Opposing Flow Rate, Vo:                430  xxxxxx  xxxxxx  xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        8.36  xxxxxx  xxxxxx  xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00  xxxxxx  xxxxxx  xxxxxx
Lost Time Per Phase, tl:                       4.00  xxxxxx  xxxxxx  xxxxxx
Eff grn until arrival of left-turn car, gf:    2.18  xxxxxx  xxxxxx  xxxxxx
Opposing Queue Ratio, qro:                     0.65  xxxxxx  xxxxxx  xxxxxx
Eff grn blocked by opposing queue, gq:        11.86  xxxxxx  xxxxxx  xxxxxx
Eff grn while left turns filter thru, gu:     12.43  xxxxxx  xxxxxx  xxxxxx
Max opposing cars arriving during gq-gf, n:    4.84  xxxxxx  xxxxxx  xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   0.00  xxxxxx  xxxxxx  xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Shared Lane, pl:   1.00  xxxxxx  xxxxxx  xxxxxx
Through-car Equivalents, el1:                  1.96  xxxxxx  xxxxxx  xxxxxx
Single Lane Through-car Equivalents, el2:      1.00  xxxxxx  xxxxxx  xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.16  xxxxxx  xxxxxx  xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.75  xxxxxx  xxxxxx  xxxxxx
Left Turn Adjustment Factor, flt:              0.75  xxxxxx  xxxxxx  xxxxxx
***************************************************************************
```

```
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #4 College Street/1st Street
***************************************************************************
Cycle (sec):              70               Critical Vol./Cap. (X):        0.586
Loss Time (sec):           8 (Y+R =  4 sec) Average Delay (sec/veh):       15.4
Optimal Cycle:            36               Level Of Service:                 B
***************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   160    30  355   140     0  100  1030    25    0     0     0
Growth Adj:  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Initial Bse:    0   160    30  355   140     0  100  1030    25    0     0     0
User Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Volume:     0   160    30  355   140     0  100  1030    25    0     0     0
Reduct Vol:     0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:    0   160    30  355   140     0  100  1030    25    0     0     0
PCE Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Final Vol.:     0   160    30  355   140     0  100  1030    25    0     0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900  1900
Adjustment:  1.00  0.96  0.96 0.64  0.98  1.00 0.89  0.89  0.89 1.00  1.00  1.00
Lanes:       0.00  0.84  0.16 1.00  1.00  0.00 0.26  2.68  0.06 0.00  0.00  0.00
Final Sat.:     0  1535   288 1223  1862     0  437  4506   109    0     0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00  0.10  0.10 0.29  0.08  0.00 0.23  0.23  0.23 0.00  0.00  0.00
Crit Moves:                   ****                    ****
Green/Cycle: 0.00  0.50  0.50 0.50  0.50  0.00 0.39  0.39  0.39 0.00  0.00  0.00
Volume/Cap:  0.00  0.21  0.21 0.59  0.15  0.00 0.59  0.59  0.59 0.00  0.00  0.00
Delay/Veh:    0.0  10.1  10.1 14.0   9.7   0.0 17.3  17.3  17.3  0.0   0.0   0.0
User DelAdj: 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
AdjDel/Veh:   0.0  10.1  10.1 14.0   9.7   0.0 17.3  17.3  17.3  0.0   0.0   0.0
DesignQueue:    0     3     1    7     3     0    3    26     1    0     0     0
***************************************************************************
```

```
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group: xxxx  RT    RT     L    T  xxxx   LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:    0    1    1     1    1    0      3    3    3     0    0    0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12   12    12   12   12     12   12   12    12   12   12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                2                0
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx     5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.98 0.98 xxxxx  0.98 0.98  0.98  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98  xxxx xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.66 xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.97 0.97  0.97  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.89 0.89  0.89  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
*******************************************************************************
```

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-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                              xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          xxxxxx    34.67   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       xxxxxx    34.67   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            xxxxxx    34.67   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                 xxxxxx        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:             xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:            xxxxxx      355   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:  xxxxxx     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx     1.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    xxxxxx     6.90   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:              xxxxxx      190   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       xxxxxx     3.69   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                  xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                      xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:   xxxxxx     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                    xxxxxx     0.50   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        xxxxxx     2.48   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     xxxxxx    32.19   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx     1.24   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx     0.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                 xxxxxx     1.59   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    xxxxxx     0.12   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  xxxxxx     0.66   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:             xxxxxx     0.66   xxxxxx   xxxxxx
*******************************************************************************
```

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Default Scenario           Mon Jul 21, 2003 15:17:07                Page 12-1
-----------------------------------------------------------------------------

                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                    Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #5 OR 99W/Villa Road
*****************************************************************************
Cycle (sec):          135                Critical Vol./Cap. (X):        0.758
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):        38.9
Optimal Cycle:         86                Level Of Service:                  D
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     495  185    10  280   70    85  115  875     5   30 1200   170
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  495  185    10  280   70    85  115  875     5   30 1200   170
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:   495  185    10  280   70    85  115  875     5   30 1200   170
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  495  185    10  280   70    85  115  875     5   30 1200   170
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:   495  185    10  280   70    85  115  875     5   30 1200   170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.90 0.97  0.97 0.93 0.98  0.83 0.93 0.93  0.93 0.93 0.93  0.83
Lanes:       2.00 0.95  0.05 1.00 1.00  1.00 1.00 1.99  0.01 1.00 2.00  1.00
Final Sat.:  3432 1752    95 1769 1862  1583 1769 3514    20 1769 3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.11  0.11 0.16 0.04  0.05 0.07 0.25  0.25 0.02 0.34  0.11
Crit Moves:       ****       ****            ****                  ****
Green/Cycle: 0.25 0.14  0.14 0.21 0.09  0.09 0.09 0.50  0.50 0.03 0.45  0.45
Volume/Cap:  0.57 0.76  0.76 0.76 0.40  0.57 0.76 0.50  0.50 0.50 0.76  0.24
Delay/Veh:   44.8 68.1  68.1 59.0 59.0  63.6 79.9 22.8  22.8 70.4 33.3  23.3
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  44.8 68.1  68.1 59.0 59.0  63.6 79.9 22.8  22.8 70.4 33.3  23.3
DesignQueue:   29   12     1   17    5     6    8   35     0    2   54     7
*****************************************************************************



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Default Scenario           Mon Jul 21, 2003 15:17:07                Page 13-1
-----------------------------------------------------------------------------

                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #5 OR 99W/Villa Road
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
Lane Group:    L   RT     RT   L    T     R    L   RT    RT    L    T     R
#LnsInGrps:    2    1     1    1    1     1    1    2     2    1    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid         8               8                8                8
% Hev Veh:           2               2                2                2
Grade:              0%              0%               0%               0%
Parking/Hr:         No              No               No               No
Bus Stp/Hr:          0               0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0                0                0
ExclusiveRT:     Include         Include          Include          Include
% RT Prtct:          0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:       1 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00 xxxx xxxx  1.00 xxxx 1.00  1.00 xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00  1.00 xxxx xxxx  1.00 xxxx 1.00  1.00 xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99 xxxx xxxx  0.85 xxxx 1.00  1.00 xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 0.93 0.97  0.97 0.93 0.98  0.83 0.93 0.98  0.98 0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 0.97 1.00  1.00 1.00 1.00  1.00 1.00 0.95  0.95 1.00 0.95  1.00
Fnl Sat Adj: 0.90 0.97  0.97 0.93 0.98  0.83 0.93 0.93  0.93 0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < <    Actuated    > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
*****************************************************************************



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                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #6 OR 99W/Elliot Road
********************************************************************************
Cycle (sec):         135                Critical Vol./Cap. (X):         0.731
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):         29.7
Optimal Cycle:        68                Level Of Service:                   C
********************************************************************************
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted         Permitted         Protected         Protected
Rights:          Include           Include           Include           Include
Min. Green:   0     0     0     0     0     0     0     0     0     0     0     0
Lanes:        0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      90    20   100    50    25   280    75  1050    25    75  1260   125
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   90    20   100    50    25   280    75  1050    25    75  1260   125
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    90    20   100    50    25   280    75  1050    25    75  1260   125
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   90    20   100    50    25   280    75  1050    25    75  1260   125
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    90    20   100    50    25   280    75  1050    25    75  1260   125
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.40  0.40  0.83  0.82  0.82  0.82  0.93  0.93  0.93  0.93  0.92  0.92
Lanes:       0.82  0.18  1.00  0.14  0.07  0.79  1.00  1.95  0.05  1.00  1.82  0.18
Final Sat.:   625   139  1583   220   110  1233  1769  3445    82  1769  3177   315
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14  0.14  0.06  0.23  0.23  0.23  0.04  0.30  0.30  0.04  0.40  0.40
Crit Moves:                         ****        ****                    ****
Green/Cycle: 0.31  0.31  0.31  0.31  0.31  0.31  0.06  0.53  0.53  0.07  0.54  0.54
Volume/Cap:  0.46  0.46  0.20  0.73  0.73  0.73  0.73  0.58  0.58  0.58  0.73  0.73
Delay/Veh:   38.9  38.9  34.4  47.1  47.1  47.1  85.9  22.2  22.2  66.9  24.9  24.9
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  38.9  38.9  34.4  47.1  47.1  47.1  85.9  22.2  22.2  66.9  24.9  24.9
DesignQueue:    5     1     5     3     1    15     5    40     1     5    48     5
********************************************************************************
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--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                            Base Volume Alternative
********************************************************************************
Intersection #6 OR 99W/Elliot Road
********************************************************************************
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
Lane Group:    LT    LT     R   LTR   LTR   LTR     L    RT    RT     L    RT    RT
#LnsInGrps:     1     1     1     1     1     1     1     2     2     1     2     2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:            2                 2                 2                 2
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:      Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5     5  xxxx     5     5     5     1  xxxx  xxxx     1  xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Hev Veh Adj: 0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98
Grade Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Parking Adj: xxxx  xxxx  1.00  1.00  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00
Bus Stp Adj: xxxx  xxxx  1.00  1.00  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00
Area Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
RT Adj:      xxxx  xxxx  0.85  0.89  0.89  0.89  xxxx  1.00  1.00  xxxx  0.99  0.99
LT Adj:      0.41  0.41 xxxxx  0.94  0.94  0.94  0.95  xxxx xxxxx  0.95  xxxx xxxxx
PedBike Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj: 0.40  0.40  0.83  0.82  0.82  0.82  0.93  0.98  0.98  0.93  0.97  0.97
Usr Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.95  0.95  1.00  0.95  0.95
Fnl Sat Adj: 0.40  0.40  0.83  0.82  0.82  0.82  0.93  0.93  0.93  0.93  0.92  0.92
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
********************************************************************************
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---------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                           Base Volume Alternative
***************************************************************************
Intersection #6 OR 99W/Elliot Road
***************************************************************************
Approach:                                     North     South    East    West
Cycle Length, C:                                135       135  xxxxxx  xxxxxx
Actual Green Time Per Lane Group, G:          41.93     41.93  xxxxxx  xxxxxx
Effective Green Time Per Lane Group, g:       41.93     41.93  xxxxxx  xxxxxx
Opposing Effective Green Time, go:            41.93     41.93  xxxxxx  xxxxxx
Number Of Opposing Lanes, No:                     1         1  xxxxxx  xxxxxx
Number Of Lanes In Lane Group, N:                 1         1  xxxxxx  xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               90        50  xxxxxx  xxxxxx
Proportion of Left Turns in Lane Group, Plt:   0.82      0.14  xxxxxx  xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    0.14    xxxxxx  xxxxxx  xxxxxx
Left Turns Per Cycle, LTC:                     3.38      1.88  xxxxxx  xxxxxx
Adjusted Opposing Flow Rate, Vo:                355       110  xxxxxx  xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       13.31      4.13  xxxxxx  xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00      1.00  xxxxxx  xxxxxx
Lost Time Per Phase, tl:                       4.00      4.00  xxxxxx  xxxxxx
Eff grn until arrival of left-turn car, gf:    1.08      7.69  xxxxxx  xxxxxx
Opposing Queue Ratio, qro:                     0.69      0.69  xxxxxx  xxxxxx
Eff grn blocked by opposing queue, gq:        19.95      2.06  xxxxxx  xxxxxx
Eff grn while left turns filter thru, gu:     21.98     34.24  xxxxxx  xxxxxx
Max opposing cars arriving during gq-gf, n:    9.43    xxxxxx  xxxxxx  xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   0.86    xxxxxx  xxxxxx  xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx      0.81  xxxxxx  xxxxxx
Proportion of Left Turns in Shared Lane, pl:   0.82      0.14  xxxxxx  xxxxxx
Through-car Equivalents, el1:                  2.01      1.57  xxxxxx  xxxxxx
Single Lane Through-car Equivalents, el2:      5.40    xxxxxx  xxxxxx  xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.09      0.05  xxxxxx  xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.41      0.94  xxxxxx  xxxxxx
Left Turn Adjustment Factor, flt:              0.41      0.94  xxxxxx  xxxxxx
***************************************************************************
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---------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
***************************************************************************
Cycle (sec):           70                Critical Vol./Cap. (X):        0.414
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):         9.8
Optimal Cycle:         27                Level Of Service:                  A
***************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  0  1  0   1  0  0  1  0   0  1  0  0  1   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    185  480   10    15  440   80    60   60  100    70   40   60
Growth Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse: 185  480   10    15  440   80    60   60  100    70   40   60
User Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:  185  480   10    15  440   80    60   60  100    70   40   60
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol: 185  480   10    15  440   80    60   60  100    70   40   60
PCE Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:  185  480   10    15  440   80    60   60  100    70   40   60
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment: 0.41 0.98 0.98  0.43 0.96 0.96  0.78 0.78 0.83  0.73 0.73 0.83
Lanes:      1.00 0.98 0.02  1.00 0.85 0.15  0.50 0.50 1.00  0.64 0.36 1.00
Final Sat.:  784 1819   38   819 1539  280   742  742 1583   877  501 1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.24 0.26 0.26  0.02 0.29 0.29  0.08 0.08 0.06  0.08 0.08 0.04
Crit Moves:                      ****             ****
Green/Cycle: 0.69 0.69 0.69  0.69 0.69 0.69  0.20 0.20 0.20  0.20 0.20 0.20
Volume/Cap: 0.34 0.38 0.38  0.03 0.41 0.41  0.41 0.41 0.32  0.41 0.41 0.19
Delay/Veh:   4.8  4.7  4.7   3.4  4.9  4.9  25.6 25.6 24.8  25.6 25.6 23.9
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  4.8  4.7  4.7   3.4  4.9  4.9  25.6 25.6 24.8  25.6 25.6 23.9
DesignQueue:   2    6    0     0    6    1     2    2    3     2    1    2
***************************************************************************
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  0  1    0  1  0  0  1
Lane Group:    L   RT    RT     L   RT    RT    LT   LT     R    LT   LT     R
#LnsInGrps:    1    1     1     1    1     1     1    1     1     1    1     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                2                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx     2 xxxx  xxxx     5    5  xxxx     5    5  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 1.00  1.00  xxxx 0.98  0.98  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:      0.42 xxxx xxxxx  0.44 xxxx xxxxx  0.80 0.80 xxxxx  0.74 0.74 xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.41 0.98  0.98  0.43 0.96  0.96  0.78 0.78  0.83  0.73 0.73  0.83
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.41 0.98  0.98  0.43 0.96  0.96  0.78 0.78  0.83  0.73 0.73  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************
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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
*******************************************************************************
Approach:                                      North     South     East     West
Cycle Length, C:                                  70        70       70       70
Actual Green Time Per Lane Group, G:           48.33     48.33    13.67    13.67
Effective Green Time Per Lane Group, g:        48.33     48.33    13.67    13.67
Opposing Effective Green Time, go:             48.33     48.33    13.67    13.67
Number Of Opposing Lanes, No:                      1         1        1        1
Number Of Lanes In Lane Group, N:                  1         1        1        1
Adjusted Left-Turn Flow Rate, Vlt:               185        15       60       70
Proportion of Left Turns in Lane Group, Plt:    1.00      1.00     0.50     0.64
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx    xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      3.60      0.29     1.17     1.36
Adjusted Opposing Flow Rate, Vo:                 520       490      110      120
Opposing Flow Per Lane Per Cycle, Volc:        10.11      9.53     2.14     2.33
Opposing Platoon Ratio, Rpo:                    1.00      1.00     1.00     1.00
Lost Time Per Phase, tl:                        4.00      4.00     4.00     4.00
Eff grn until arrival of left-turn car, gf:     0.00      0.00     1.10     0.55
Opposing Queue Ratio, qro:                      0.31      0.31     0.80     0.80
Eff grn blocked by opposing queue, gq:          4.80      4.10     0.00     0.02
Eff grn while left turns filter thru, gu:      43.53     44.23    12.57    13.12
Max opposing cars arriving during gq-gf, n:   xxxxxx    xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx    xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                0.55      0.57     0.81     0.80
Proportion of Left Turns in Shared Lane, pl:    1.00      1.00     0.50     0.64
Through-car Equivalents, el1:                   2.14      2.08     1.57     1.58
Single Lane Through-car Equivalents, el2:     xxxxxx    xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.08      0.08     0.22     0.24
Single Lane Left Turn Adjustment Factor, fm:    0.42      0.44     0.80     0.74
Left Turn Adjustment Factor, flt:               0.42      0.44     0.80     0.74
*******************************************************************************
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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #8 OR 99W/Springbrook Street
*******************************************************************************
Cycle (sec):        135                 Critical Vol./Cap. (X):        0.815
Loss Time (sec):     16 (Y+R =  4 sec)  Average Delay (sec/veh):        40.6
Optimal Cycle:      101                 Level Of Service:                  D
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    210  340   50  190  410   30  120 1035  240   65 1305  270
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 210  340   50  190  410   30  120 1035  240   65 1305  270
User Adj:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume:  210  340   50  190  410   30  120 1035  240   65 1305  270
Reduct Vol:    0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol: 210  340   50  190  410   30  120 1035  240   65 1305  270
PCE Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.:  210  340   50  190  410   30  120 1035  240   65 1305  270
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.90 0.98 0.83 0.90 0.98 0.83 0.93 0.93 0.83 0.93 0.93 0.83
Lanes:      2.00 1.00 1.00 2.00 1.00 1.00 1.00 2.00 1.00 1.00 2.00 1.00
Final Sat.: 3432 1862 1583 3432 1862 1583 1769 3538 1583 1769 3538 1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.06 0.18 0.03 0.06 0.22 0.02 0.07 0.29 0.15 0.04 0.37 0.17
Crit Moves: ****                     ****      ****                     ****
Green/Cycle: 0.08 0.27 0.27 0.08 0.27 0.27 0.08 0.48 0.48 0.06 0.45 0.45
Volume/Cap: 0.81 0.69 0.12 0.69 0.81 0.07 0.81 0.61 0.32 0.61 0.81 0.38
Delay/Veh:  79.3 48.7 37.8 67.6 56.0 36.7 89.1 26.9 22.1 72.2 35.4 24.7
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 79.3 48.7 37.8 67.6 56.0 36.7 89.1 26.9 22.1 72.2 35.4 24.7
DesignQueue:  15   20    3   13   24    2    8   44   10    5   59   12
*******************************************************************************
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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #8 OR 99W/Springbrook Street
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
Lane Group:   L    T    R    L    T    R    L    T    R    L    T    R
#LnsInGrps:   2    1    1    2    1    1    1    2    1    1    2    1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12   12   12   12   12   12   12   12   12   12   12
CrosswalkWid       8              8              8              8
% Hev Veh:         2              2              2              2
Grade:            0%             0%             0%             0%
Parking/Hr:       No             No             No             No
Bus Stp/Hr:        0              0              0              0
Area Type:  < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0              0              0              0
ExclusiveRT:    Include        Include        Include        Include
% RT Prtct:        0              0              0              0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:    1 xxxx xxxx    1 xxxx xxxx    1 xxxx xxxx    1 xxxx xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98
Grade Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Parking Adj: xxxx xxxx 1.00 xxxx xxxx 1.00 xxxx xxxx 1.00 xxxx xxxx 1.00
Bus Stp Adj: xxxx xxxx 1.00 xxxx xxxx 1.00 xxxx xxxx 1.00 xxxx xxxx 1.00
Area Adj:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
RT Adj:     xxxx xxxx 0.85 xxxx xxxx 0.85 xxxx xxxx 0.85 xxxx xxxx 0.85
LT Adj:     0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
HCM Sat Adj: 0.93 0.98 0.83 0.93 0.98 0.83 0.93 0.98 0.83 0.93 0.98 0.83
Usr Sat Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Sat Adj: 0.97 1.00 1.00 0.97 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00
Fnl Sat Adj: 0.90 0.98 0.83 0.90 0.98 0.83 0.93 0.93 0.83 0.93 0.93 0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
*******************************************************************************
```

```
-----------------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                 Level Of Service Computation Report
        2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #9 OR 99W/Northern Arterial
*****************************************************************************
Cycle (sec):          135             Critical Vol./Cap. (X):        0.744
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):     39.1
Optimal Cycle:         83             Level Of Service:                  D
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:         Include          Include          Include          Include
Min. Green:   0    0    0    0    0    0    0    0    0    0    0    0
Lanes:      1  0  1  0  1   2  0  1  0  1   1  0  1  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    100  150   100   500  100   110   110 1050    50   150 1300   540
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse: 100  150   100   500  100   110   110 1050    50   150 1300   540
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:  100  150   100   500  100   110   110 1050    50   150 1300   540
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 100  150   100   500  100   110   110 1050    50   150 1300   540
PCE Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:  100  150   100   500  100   110   110 1050    50   150 1300   540
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.93 0.98  0.83  0.90 0.98  0.83  0.93 0.92  0.92  0.93 0.93  0.83
Lanes:      1.00 1.00  1.00  2.00 1.00  1.00  1.00 1.91  0.09  1.00 2.00  1.00
Final Sat.: 1769 1862  1583  3432 1862  1583  1769 3353   160  1769 3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.06 0.08  0.06  0.15 0.05  0.07  0.06 0.31  0.31  0.08 0.37  0.34
Crit Moves:      ****        ****             ****                   ****
Green/Cycle: 0.14 0.11  0.11  0.20 0.17  0.17  0.08 0.45  0.45  0.12 0.49  0.49
Volume/Cap: 0.41 0.74  0.58  0.74 0.32  0.41  0.74 0.69  0.69  0.69 0.74  0.69
Delay/Veh:  54.5 72.3  62.4  55.6 50.0  51.3  78.8 30.6  30.6  65.7 29.1  28.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 54.5 72.3  62.4  55.6 50.0  51.3  78.8 30.6  30.6  65.7 29.1  28.9
DesignQueue:   7   10     7    31    6     7     8   47     2    10   54    22
*****************************************************************************
```

```
-----------------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

             Level Of Service Detailed Computation Report
                   2000 HCM Operations Method
                     Base Volume Alternative
*****************************************************************************
Intersection #9 OR 99W/Northern Arterial
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:      1  0  1  0  1   2  0  1  0  1   1  0  1  1  0   1  0  2  0  1
Lane Group:  L    T     R    L    T     R    L   RT    RT    L    T     R
#LnsInGrps:  1    1     1    2    1     1    1    2     2    1    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                2                2
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:  < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00
Area Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:     xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx 0.99  0.99  xxxx xxxx  0.85
LT Adj:     0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.97  0.97  0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  0.97 1.00  1.00  1.00 0.95  0.95  1.00 0.95  1.00
Fnl Sat Adj: 0.93 0.98  0.83  0.90 0.98  0.83  0.93 0.92  0.92  0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <     Actuated      > > > > > > > > > > > > >
DelAdjFctr: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*****************************************************************************
```

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Default Scenario            Mon Jul 21, 2003 15:17:07                 Page 22-1
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
********************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.664
Loss Time (sec):       12 (Y+R =  4 sec) Average Delay (sec/veh):       24.8
Optimal Cycle:         55               Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     235  240   25    125  210  100     50  285  215     10  230  250
Growth Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:  235  240   25    125  210  100     50  285  215     10  230  250
User Adj:    1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Volume:   235  240   25    125  210  100     50  285  215     10  230  250
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Reduced Vol:  235  240   25    125  210  100     50  285  215     10  230  250
PCE Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Final Vol.:   235  240   25    125  210  100     50  285  215     10  230  250
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900   1900 1900 1900   1900 1900 1900   1900 1900 1900
Adjustment:  0.45 0.97 0.97   0.49 0.93 0.93   0.93 0.92 0.92   0.93 0.90 0.90
Lanes:       1.00 0.91 0.09   1.00 0.68 0.32   1.00 0.57 0.43   1.00 0.48 0.52
Final Sat.:   849 1663  173    937 1201  572   1769  993  749   1769  823  894
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28 0.14 0.14   0.13 0.17 0.17   0.03 0.29 0.29   0.01 0.28 0.28
Crit Moves:  ****                              ****                  ****
Green/Cycle: 0.42 0.42 0.42   0.42 0.42 0.42   0.04 0.45 0.45   0.01 0.42 0.42
Volume/Cap:  0.66 0.35 0.35   0.32 0.42 0.42   0.66 0.63 0.63   0.63 0.66 0.66
Delay/Veh:   28.2 20.2 20.2   20.1 21.0 21.0   67.3 22.5 22.5  110.5 25.6 25.6
User DelAdj: 1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
AdjDel/Veh:  28.2 20.2 20.2   20.1 21.0 21.0   67.3 22.5 22.5  110.5 25.6 25.6
DesignQueue:    8    8    1      4    7    3      3    9    7      1    8    9
********************************************************************************



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Default Scenario            Mon Jul 21, 2003 15:17:07                 Page 23-1
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                  Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                            Base Volume Alternative
********************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
Lane Group:     L   RT     RT     L   RT     RT     L   RT     RT     L   RT     RT
#LnsInGrps:     1    1      1     1    1      1     1    1      1     1    1      1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12   12     12   12   12     12   12   12     12   12   12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx     2 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 0.98   0.98 0.98 0.98   0.98 0.98 0.98   0.98 0.98 0.98
Grade Adj:   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Parking Adj: xxxx 1.00 1.00   xxxx 1.00 1.00   xxxx 1.00 1.00   xxxx 1.00 1.00
Bus Stp Adj: xxxx 1.00 1.00   xxxx 1.00 1.00   xxxx 1.00 1.00   xxxx 1.00 1.00
Area Adj:    1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
RT Adj:      xxxx 0.99 0.99   xxxx 0.95 0.95   xxxx 0.94 0.94   xxxx 0.92 0.92
LT Adj:      0.46 xxxx xxxxx  0.50 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
HCM Sat Adj: 0.45 0.97 0.97   0.49 0.93 0.93   0.93 0.92 0.92   0.93 0.90 0.90
Usr Sat Adj: 1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Sat Adj: 1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Fnl Sat Adj: 0.45 0.97 0.97   0.49 0.93 0.93   0.93 0.92 0.92   0.93 0.90 0.90
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
********************************************************************************



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-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                      2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
*******************************************************************************
Approach:                                     North    South     East     West
Cycle Length, C:                                100      100   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          41.67    41.67   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       41.67    41.67   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            41.67    41.67   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                     1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                 1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:              235      125   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:   1.00     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                     6.53     3.47   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                310      265   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        8.61     7.36   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                       4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:    0.00     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                     0.58     0.58   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:         8.14     6.07   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     33.53    35.60   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:               0.68     0.71   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:   1.00     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                  1.77     1.70   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.10     0.10   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.46     0.50   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:              0.46     0.50   xxxxxx   xxxxxx
*******************************************************************************
```

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-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #11 Mountain View Drive/Villa Road
*******************************************************************************
Cycle (sec):          70                Critical Vol./Cap. (X):        0.556
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):        14.8
Optimal Cycle:        42                Level Of Service:                  B
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:   0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     120   50    60    30   30    10    10  470    80   125  470    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  120   50    60    30   30    10    10  470    80   125  470    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   120   50    60    30   30    10    10  470    80   125  470    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  120   50    60    30   30    10    10  470    80   125  470    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   120   50    60    30   30    10    10  470    80   125  470    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.72 0.90  0.90  0.67 0.94  0.94  0.93 0.96  0.96  0.93 0.97  0.97
Lanes:       1.00 0.45  0.55  1.00 0.75  0.25  1.00 0.85  0.15  1.00 0.96  0.04
Final Sat.:  1369  777   932  1272 1345   448  1769 1556   265  1769 1775    76
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.06  0.06  0.02 0.02  0.02  0.01 0.30  0.30  0.07 0.26  0.26
Crit Moves:  ****                                    ****        ****
Green/Cycle: 0.16 0.16  0.16  0.16 0.16  0.16  0.01 0.54  0.54  0.13 0.66  0.66
Volume/Cap:  0.56 0.41  0.41  0.15 0.14  0.14  0.40 0.56  0.56  0.56 0.40  0.40
Delay/Veh:   30.4 27.5  27.5  25.8 25.6  25.6  44.6 11.1  11.1  31.7  5.8   5.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  30.4 27.5  27.5  25.8 25.6  25.6  44.6 11.1  11.1  31.7  5.8   5.8
DesignQueue:    4    2     2     1    1     0     0    9     2     4    7     0
*******************************************************************************
```

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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

              Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
********************************************************************************
Intersection #11 Mountain View Drive/Villa Road
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
Lane Group:    L   RT     RT    L   RT     RT    L   RT     RT    L   RT     RT
#LnsInGrps:     1    1     1     1    1     1     1    1     1     1    1     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx     2 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.92  0.92  xxxx 0.96  0.96  xxxx 0.98  0.98  xxxx 0.99  0.99
LT Adj:      0.74 xxxx xxxxx  0.68 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.72 0.90  0.90  0.67 0.94  0.94  0.93 0.96  0.96  0.93 0.97  0.97
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.72 0.90  0.90  0.67 0.94  0.94  0.93 0.96  0.96  0.93 0.97  0.97
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
********************************************************************************
```

```
------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                      2000 HCM Operations Method
                        Base Volume Alternative
********************************************************************************
Intersection #11 Mountain View Drive/Villa Road
********************************************************************************
Approach:                                     North     South      East      West
Cycle Length, C:                                 70        70    xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:          11.04     11.04    xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:       11.04     11.04    xxxxxx    xxxxxx
Opposing Effective Green Time, go:            11.04     11.04    xxxxxx    xxxxxx
Number Of Opposing Lanes, No:                     1         1    xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:                 1         1    xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:              120        30    xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt:   1.00      1.00    xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx    xxxxxx    xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                     2.33      0.58    xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:                 40       110    xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        0.78      2.14    xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00      1.00    xxxxxx    xxxxxx
Lost Time Per Phase, tl:                       4.00      4.00    xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:    0.00      0.00    xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                     0.84      0.84    xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:         0.00      0.00    xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu:     11.04     11.04    xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n:  xxxxxx    xxxxxx    xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx    xxxxxx    xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:               0.85      0.81    xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl:   1.00      1.00    xxxxxx    xxxxxx
Through-car Equivalents, el1:                  1.36      1.47    xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2:    xxxxxx    xxxxxx    xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.36      0.36    xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.74      0.68    xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:              0.74      0.68    xxxxxx    xxxxxx
********************************************************************************
```

```
--------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

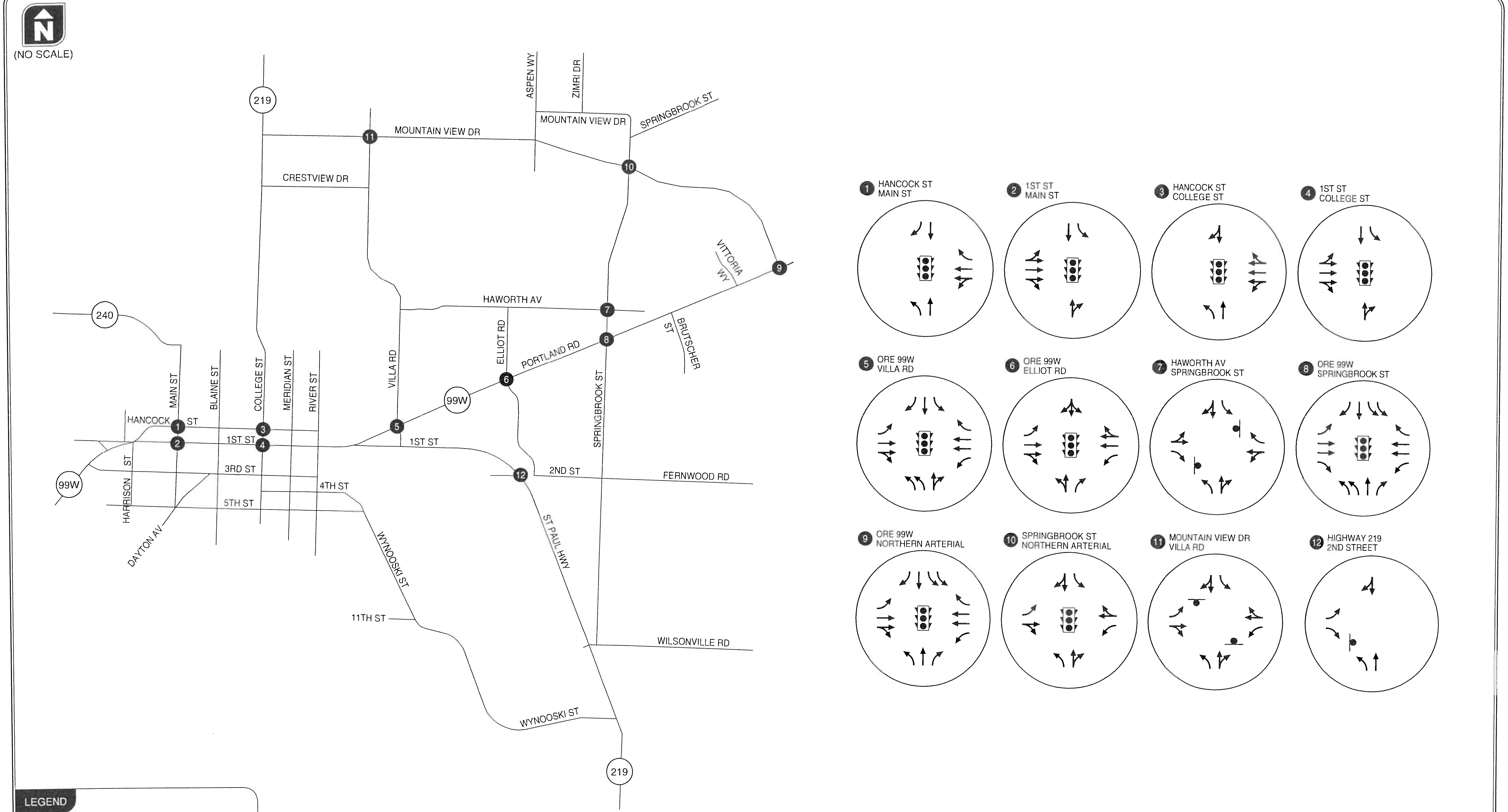
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #12 Hwy 219/2nd Street
********************************************************************************
Average Delay (sec/veh):     20.9           Worst Case Level Of Service:     C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25  630     0     0  545    15    55    0    75     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25  630     0     0  545    15    55    0    75     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    25  630     0     0  545    15    55    0    75     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    25  630     0     0  545    15    55    0    75     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  560 xxxx xxxxx  xxxx xxxx xxxxx  1233 xxxx   553  xxxx xxxx xxxxx
Potent Cap.:  996 xxxx xxxxx  xxxx xxxx xxxxx   193 xxxx   527  xxxx xxxx xxxxx
Move Cap.:    996 xxxx xxxxx  xxxx xxxx xxxxx   189 xxxx   527  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  8.7 xxxx xxxxx xxxxx xxxx xxxxx  31.7 xxxx  13.0 xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     D    *     B     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      xxxxxx           xxxxxx             20.9           xxxxxx
ApproachLOS:        *                *                  C              *
```

```
--------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 2: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                           Base Volume Alternative
********************************************************************************
Intersection #12 Hwy 219/2nd Street
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:             5%               5%               5%               5%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

Appendix J

Alternative 3
2025 Future Traffic Conditions

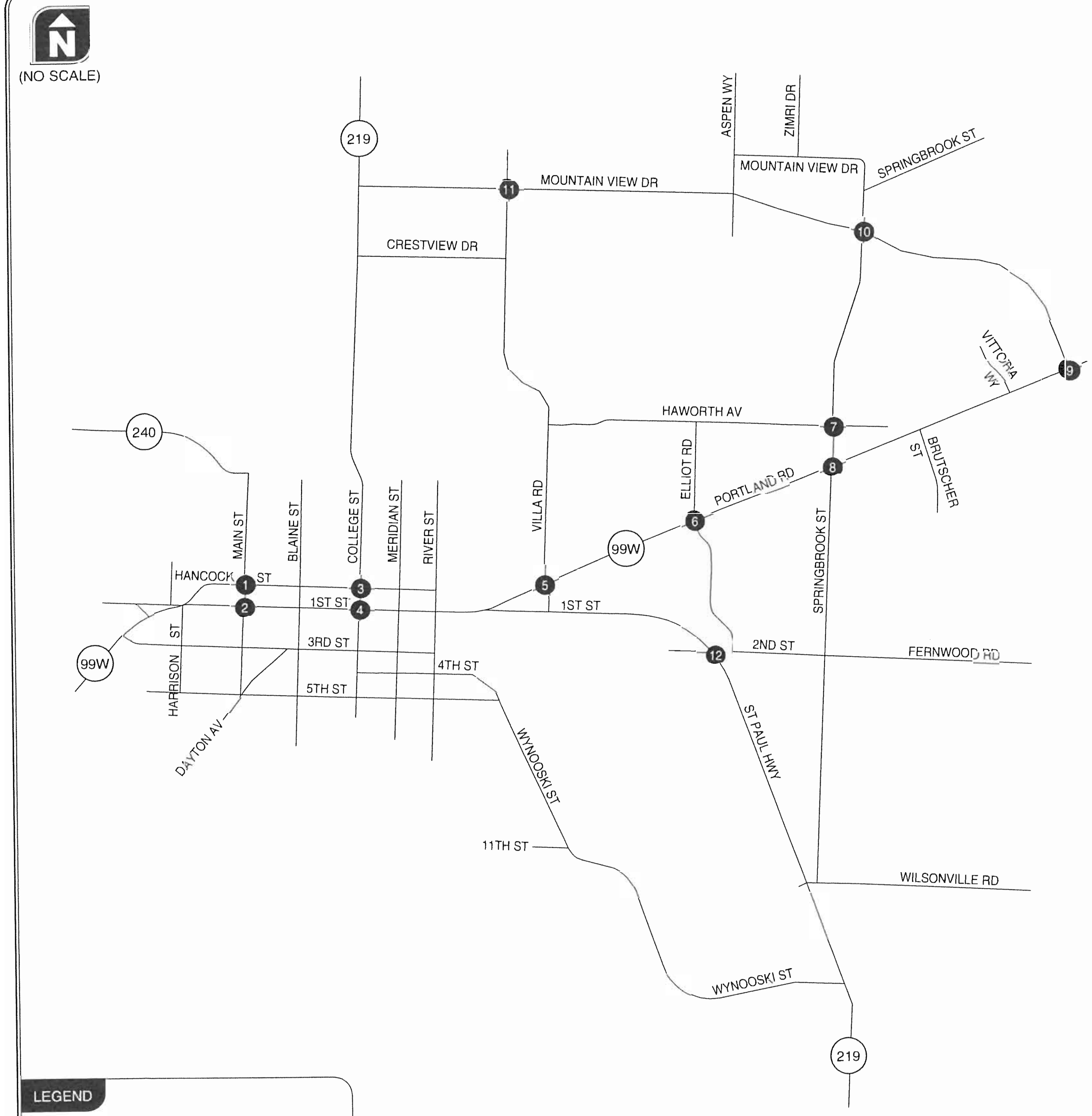


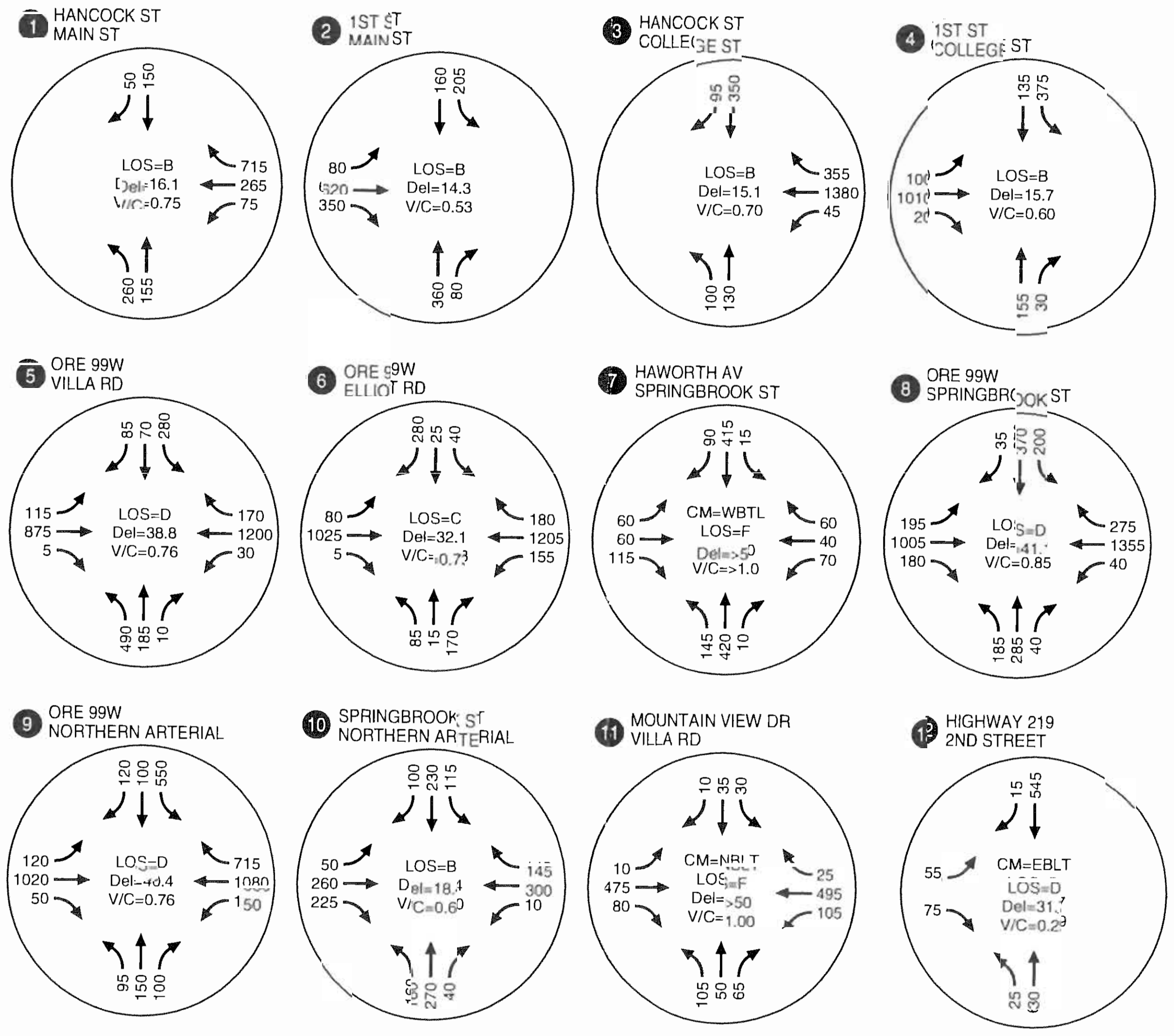
LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES
ALTERNATIVE 3: WITH BYPASS
NEWBERG, OREGON

FIGURE
E1





LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2025 WEEKDAY PM PEAK HOUR TRAFFIC CONDITIONS
ALTERNATIVE 3: WITH BYPASS
NEWBERG, OREGON

FIGURE
E2

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

5193Figs

```
Default Scenario            Mon Jul 21, 2003 15:15:21                Page 1-1
------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                                 Scenario Report
Scenario:                  Default Scenario

Command:                   Default Command
Volume:                    Default Volume
Geometry:                  Default Geometry
Impact Fee:                Default Impact Fee
Trip Generation:           Default Trip Generation
Trip Distribution:         Default Trip Distribution
Paths:                     Default Paths
Routes:                    Default Routes
Configuration:             Default Configuration





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```

```
Default Scenario            Mon Jul 21, 2003 15:15:21                Page 2-1
------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                            Turning Movement Report

Volume     Northbound       Southbound        Eastbound        Westbound      Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right  Volume

#1 Main Street/Hancock Street
Base     260  155     0     0  150    50     0    0     0    75  265   715    1670
Added      0    0     0     0    0     0     0    0     0     0    0     0       0
Total    260  155     0     0  150    50     0    0     0    75  265   715    1670

#2 Main Street/1st Street
Base       0  360    80   205  160     0    80  620   350     0    0     0    1855
Added      0    0     0     0    0     0     0    0     0     0    0     0       0
Total      0  360    80   205  160     0    80  620   350     0    0     0    1855

#3 College Street/Hancock Street
Base     100  130     0     0  350    95     0    0     0    45 1380   355    2455
Added      0    0     0     0    0     0     0    0     0     0    0     0       0
Total    100  130     0     0  350    95     0    0     0    45 1380   355    2455

#4 College Street/1st Street
Base       0  155    30   375  135     0   100 1010    20     0    0     0    1825
Added      0    0     0     0    0     0     0    0     0     0    0     0       0
Total      0  155    30   375  135     0   100 1010    20     0    0     0    1825

#5 OR 99W/Villa Road
Base     490  185    10   280   70    85   115  875     5    30 1200   170    3515
Added      0    0     0     0    0     0     0    0     0     0    0     0       0
Total    490  185    10   280   70    85   115  875     5    30 1200   170    3515

#6 OR 99W/Elliot Road
Base      85   15   170    40   25   280    80 1025     5   155 1205   180    3265
Added      0    0     0     0    0     0     0    0     0     0    0     0       0
Total     85   15   170    40   25   280    80 1025     5   155 1205   180    3265

#7 Haworth Avenue/Springbrook Street
Base     145  420    10    15  415    90    60   60   115    70   40    60    1500
Added      0    0     0     0    0     0     0    0     0     0    0     0       0
Total    145  420    10    15  415    90    60   60   115    70   40    60    1500

#8 OR 99W/Springbrook Street
Base     185  285    40   200  370    35   195 1005   180    40 1355   275    4165
Added      0    0     0     0    0     0     0    0     0     0    0     0       0
Total    185  285    40   200  370    35   195 1005   180    40 1355   275    4165

#9 OR 99W/Northern Arterial
Base      95  150   100   550  100   120   120 1020    50   150 1080   715    4250
Added      0    0     0     0    0     0     0    0     0     0    0     0       0
Total     95  150   100   550  100   120   120 1020    50   150 1080   715    4250


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```
Default Scenario           Mon Jul 21, 2003 15:15:21                 Page 2-2
-----------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
Volume     Northbound       Southbound       Eastbound        Westbound     Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume


#10 Springbrook Street/Northern Arterial
Base     160  270    40   115  230   100    50  260   225    10  300   145   1905
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    160  270    40   115  230   100    50  260   225    10  300   145   1905

#11 Mountain View Drive/Villa Road
Base     105   50    65    30   35    10    10  475    80   105  495    25   1485
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    105   50    65    30   35    10    10  475    80   105  495    25   1485

#12 Hwy 219/2nd Street
Base      25  630     0     0  545    15    55    0    75     0    0     0   1345
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     25  630     0     0  545    15    55    0    75     0    0     0   1345










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```

```
Default Scenario           Mon Jul 21, 2003 15:15:21                 Page 3-1
-----------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                            Impact Analysis Report
                               Level Of Service

Intersection                            Base             Future          Change
                                     Del/   V/        Del/   V/            in
                                  LOS Veh    C     LOS Veh    C
#  1 Main Street/Hancock Street    B  16.1 0.746    B  16.1 0.746   + 0.000 D/V

#  2 Main Street/1st Street        B  14.3 0.527    B  14.3 0.527   + 0.000 D/V

#  3 College Street/Hancock Street B  15.1 0.698    B  15.1 0.698   + 0.000 D/V

#  4 College Street/1st Street     B  15.7 0.599    B  15.7 0.599   + 0.000 D/V

#  5 OR 99W/Villa Road             D  38.8 0.758    D  38.8 0.758   + 0.000 D/V

#  6 OR 99W/Elliot Road            C  32.1 0.728    C  32.1 0.728   + 0.000 D/V

#  7 Haworth Avenue/Springbrook Str F 178.2 0.000    F 178.2 0.000   + 0.000 V/C

#  8 OR 99W/Springbrook Street     D  41.1 0.846    D  41.1 0.846   + 0.000 D/V

#  9 OR 99W/Northern Arterial      D  40.4 0.758    D  40.4 0.758   + 0.000 D/V

# 10 Springbrook Street/Northern Ar B  18.4 0.595    B  18.4 0.595   + 0.000 D/V

# 11 Mountain View Drive/Villa Road F  93.0 0.000    F  93.0 0.000   + 0.000 V/C

# 12 Hwy 219/2nd Street            C  20.9 0.000    C  20.9 0.000   + 0.000 V/C










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```

```
Default Scenario              Mon Jul 21, 2003 15:15:21                Page 4-1
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                   Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 Main Street/Hancock Street
*******************************************************************************
Cycle (sec):          70             Critical Vol./Cap. (X):        0.746
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):     16.1
Optimal Cycle:        51             Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  0  0   0  0  1  0  1   0  0  0  0  0   0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    260  155     0     0  150    50     0    0     0    75  265   715
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse: 260  155     0     0  150    50     0    0     0    75  265   715
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:  260  155     0     0  150    50     0    0     0    75  265   715
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 260  155     0     0  150    50     0    0     0    75  265   715
PCE Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:  260  155     0     0  150    50     0    0     0    75  265   715
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.63 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.81 0.81  0.85
Lanes:      1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  0.44 1.56  1.00
Final Sat.: 1192 1862     0     0 1862  1583     0    0     0   677 2392  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.22 0.08  0.00  0.00 0.08  0.03  0.00 0.00  0.00  0.11 0.11  0.44
Crit Moves: ****                                                          ****
Green/Cycle: 0.29 0.29  0.00  0.00 0.29  0.29  0.00 0.00  0.00  0.59 0.59  0.59
Volume/Cap: 0.75 0.28  0.00  0.00 0.28  0.11  0.00 0.00  0.00  0.19 0.19  0.75
Delay/Veh:  31.0 19.4   0.0   0.0 19.3  18.2   0.0  0.0   0.0   6.6  6.6  13.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 31.0 19.4   0.0   0.0 19.3  18.2   0.0  0.0   0.0   6.6  6.6  13.6
DesignQueue:   7    4     0     0    4     1     0    0     0     1    4    13
*******************************************************************************

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```

```
Default Scenario              Mon Jul 21, 2003 15:15:21                Page 5-1
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************
Intersection #1 Main Street/Hancock Street
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  0   0  0  1  0  1   0  0  0  0  0   0  1  1  0  1
Lane Group:    L    T  xxxx  xxxx    T     R  xxxx xxxx  xxxx    LT   LT     R
#LnsInGrps:    1    1     0     0    1     1     0    0     0     2    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                2                0
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:    2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    2r   2r  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj: 1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98  0.98  xxxx xxxx xxxxx  1.00 1.00  1.00
Grade Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Area Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:     xxxx xxxx xxxxx  xxxx xxxx  0.85  xxxx xxxx xxxxx  xxxx xxxx  0.85
LT Adj:     0.64 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.85 0.85 xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.63 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.85 0.85  0.85
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.95 0.95  1.00
Fnl Sat Adj: 0.63 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.81 0.81  0.85
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr: 1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
*******************************************************************************

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4APRINT

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Default Scenario           Mon Jul 21, 2003 15:15:21                Page 5-2
----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
****************************************************************************
Intersection #1 Main Street/Hancock Street
****************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                  70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           20.47   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        20.47   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             20.47   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                      1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                  1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               260   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      5.06   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 150   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         2.92   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      0.71   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          0.50   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:      19.97   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                0.78   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:    1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   1.53   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.20   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.64   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               0.64   xxxxxx   xxxxxx   xxxxxx
****************************************************************************




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Default Scenario           Mon Jul 21, 2003 15:15:21                Page 6-1
----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
****************************************************************************
Intersection #2 Main Street/1st Street
****************************************************************************
Cycle (sec):           70              Critical Vol./Cap. (X):         0.527
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):       14.3
Optimal Cycle:         32              Level Of Service:                   B
****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        0  0  0  1  0   1  0  1  0  0   0  1  1  1  0   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0  360    80  205  160     0   80  620   350    0    0     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   0  360    80  205  160     0   80  620   350    0    0     0
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:    0  360    80  205  160     0   80  620   350    0    0     0
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   0  360    80  205  160     0   80  620   350    0    0     0
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:    0  360    80  205  160     0   80  620   350    0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  1.00 0.96  0.96 0.63 0.98  1.00 0.82 0.82  0.82 1.00 1.00  1.00
Lanes:       0.00 0.82  0.18 1.00 1.00  0.00 0.23 1.77  1.00 0.00 0.00  0.00
Final Sat.:     0 1485   330 1203 1862     0  357 2764  1560    0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.24  0.24 0.17 0.09  0.00 0.22 0.22  0.22 0.00 0.00  0.00
Crit Moves:       ****                           ****
Green/Cycle: 0.00 0.46  0.46 0.46 0.46  0.00 0.43 0.43  0.43 0.00 0.00  0.00
Volume/Cap:  0.00 0.53  0.53 0.37 0.19  0.00 0.53 0.53  0.53 0.00 0.00  0.00
Delay/Veh:    0.0 14.1  14.1 12.7 11.3   0.0 15.1 15.1  15.1  0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:   0.0 14.1  14.1 12.7 11.3   0.0 15.1 15.1  15.1  0.0  0.0   0.0
DesignQueue:    0    8     2    4    3     0    2   15     8    0    0     0
****************************************************************************




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-----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #2 Main Street/1st Street
*****************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group:  xxxx  RT     RT    L     T  xxxx  LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:     0   1      1    1     1     0    3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid        8               8                8                8
% Hev Veh:          2               2                0                2
Grade:             0%              0%               0%               0%
Parking/Hr:        No              No               No               No
Bus Stp/Hr:         0               0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0               0                0                0
ExclusiveRT:     Include         Include          Include          Include
% RT Prtct:         0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.98 0.98 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98  xxxx xxxx xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.65 xxxx xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.63 0.98  1.00  0.90 0.90  0.90  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.63 0.98  1.00  0.82 0.82  0.82  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:   < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:   < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
*****************************************************************************
```

```
-----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #2 Main Street/1st Street
*****************************************************************************
Approach:                                       North   South    East    West
Cycle Length, C:                               xxxxxx      70  xxxxxx  xxxxxx
Actual Green Time Per Lane Group, G:           xxxxxx   32.20  xxxxxx  xxxxxx
Effective Green Time Per Lane Group, g:        xxxxxx   32.20  xxxxxx  xxxxxx
Opposing Effective Green Time, go:             xxxxxx   32.20  xxxxxx  xxxxxx
Number Of Opposing Lanes, No:                  xxxxxx       1  xxxxxx  xxxxxx
Number Of Lanes In Lane Group, N:              xxxxxx       1  xxxxxx  xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:             xxxxxx     205  xxxxxx  xxxxxx
Proportion of Left Turns in Lane Group, Plt:   xxxxxx    1.00  xxxxxx  xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    xxxxxx    1.00  xxxxxx  xxxxxx
Left Turns Per Cycle, LTC:                     xxxxxx    3.99  xxxxxx  xxxxxx
Adjusted Opposing Flow Rate, Vo:               xxxxxx     440  xxxxxx  xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        xxxxxx    8.56  xxxxxx  xxxxxx
Opposing Platoon Ratio, Rpo:                   xxxxxx    1.00  xxxxxx  xxxxxx
Lost Time Per Phase, tl:                       xxxxxx    4.00  xxxxxx  xxxxxx
Eff grn until arrival of left-turn car, gf:    xxxxxx    0.00  xxxxxx  xxxxxx
Opposing Queue Ratio, qro:                     xxxxxx    0.54  xxxxxx  xxxxxx
Eff grn blocked by opposing queue, gq:         xxxxxx    9.20  xxxxxx  xxxxxx
Eff grn while left turns filter thru, gu:      xxxxxx   23.00  xxxxxx  xxxxxx
Max opposing cars arriving during gq-gf, n:    xxxxxx    4.60  xxxxxx  xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   xxxxxx    0.00  xxxxxx  xxxxxx
Left-turn Saturation Factor, fs:               xxxxxx  xxxxxx  xxxxxx  xxxxxx
Proportion of Left Turns in Shared Lane, pl:   xxxxxx    1.00  xxxxxx  xxxxxx
Through-car Equivalents, el1:                  xxxxxx    1.98  xxxxxx  xxxxxx
Single Lane Through-car Equivalents, el2:      xxxxxx    1.00  xxxxxx  xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     xxxxxx    0.12  xxxxxx  xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   xxxxxx    0.65  xxxxxx  xxxxxx
Left Turn Adjustment Factor, flt:              xxxxxx    0.65  xxxxxx  xxxxxx
*****************************************************************************
```

```
Default Scenario            Mon Jul 21, 2003 15:15:21               Page 8-1
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #3 College Street/Hancock Street
*******************************************************************************
Cycle (sec):         70                Critical Vol./Cap. (X):        0.698
Loss Time (sec):      8 (Y+R =  4 sec) Average Delay (sec/veh):        15.1
Optimal Cycle:       45                Level Of Service:                  B
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     100   130     0     0   350    95     0     0     0    45  1380   355
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  100   130     0     0   350    95     0     0     0    45  1380   355
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   100   130     0     0   350    95     0     0     0    45  1380   355
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  100   130     0     0   350    95     0     0     0    45  1380   355
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   100   130     0     0   350    95     0     0     0    45  1380   355
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.73  0.98  1.00  1.00  0.95  0.95  1.00  1.00  1.00  0.84  0.84  0.84
Lanes:       1.00  1.00  0.00  0.00  0.79  0.21  0.00  0.00  0.00  0.07  2.33  0.60
Final Sat.:  1391  1862     0     0  1422   386     0     0     0   121  3708   954
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07  0.07  0.00  0.00  0.25  0.25  0.00  0.00  0.00  0.37  0.37  0.37
Crit Moves:                          ****                                 ****
Green/Cycle: 0.35  0.35  0.00  0.00  0.35  0.35  0.00  0.00  0.00  0.53  0.53  0.53
Volume/Cap:  0.20  0.20  0.00  0.00  0.70  0.70  0.00  0.00  0.00  0.70  0.70  0.70
Delay/Veh:   16.0  15.9   0.0   0.0  22.9  22.9   0.0   0.0   0.0  13.0  13.0  13.0
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  16.0  15.9   0.0   0.0  22.9  22.9   0.0   0.0   0.0  13.0  13.0  13.0
DesignQueue:    3     3     0     0     9     3     0     0     0     1    27     7
*******************************************************************************



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Default Scenario            Mon Jul 21, 2003 15:15:21               Page 9-1
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #3 College Street/Hancock Street
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
Lane Group:     L     T  xxxx  xxxx    RT    RT  xxxx  xxxx  xxxx   LTR   LTR   LTR
#LnsInGrps:     1     1     0     0     1     1     0     0     0     3     3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid        8                 8                 8                 8
% Hev Veh:          2                 2                 0                 2
Grade:             0%                0%                0%                0%
Parking/Hr:        No                No                No                No
Bus Stp/Hr:         0                 0                 0                 0
Area Type:   < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                 0                 0                 0
ExclusiveRT:     Include           Include           Include           Include
% RT Prtct:         0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx    5r    5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Hev Veh Adj: 0.98  0.98 xxxxx  xxxx  0.98  0.98  xxxx  xxxx xxxxx  0.98  0.98  0.98
Grade Adj:   1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Parking Adj: xxxx  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Bus Stp Adj: xxxx  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Area Adj:    1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
RT Adj:      xxxx  xxxx xxxxx  xxxx  0.97  0.97  xxxx  xxxx xxxxx  0.97  0.97  0.97
LT Adj:      0.75  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  0.97  0.97  0.97
PedBike Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj: 0.73  0.98  1.00  1.00  0.95  0.95  1.00  1.00  1.00  0.92  0.92  0.92
Usr Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.91  0.91  0.91
Fnl Sat Adj: 0.73  0.98  1.00  1.00  0.95  0.95  1.00  1.00  1.00  0.84  0.84  0.84
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00  1.00  0.00  0.00  1.00  1.00  0.00  0.00  0.00  1.00  1.00  1.00
*******************************************************************************



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--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #3 College Street/Hancock Street
********************************************************************************
Approach:                                   North    South     East     West
Cycle Length, C:                               70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:        24.68   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:     24.68   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:          24.68   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                   1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:               1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:            100   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt: 1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  1.00   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                   1.94   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:              445   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:      8.65   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                 1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                     4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:  1.96   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                   0.65   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:      12.14   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:   12.54   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:  5.09   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: 0.00   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:           xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl: 1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                1.99   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:    1.00   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:   0.16   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm: 0.75   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:            0.75   xxxxxx   xxxxxx   xxxxxx
********************************************************************************
```

```
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #4 College Street/1st Street
********************************************************************************
Cycle (sec):            70              Critical Vol./Cap. (X):        0.599
Loss Time (sec):         8 (Y+R =  4 sec) Average Delay (sec/veh):      15.7
Optimal Cycle:          37              Level Of Service:                  B
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted        Permitted        Permitted
Rights:         Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   155    30  375   135     0  100  1010    20    0     0     0
Growth Adj: 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Initial Bse:   0   155    30  375   135     0  100  1010    20    0     0     0
User Adj:   1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Volume:    0   155    30  375   135     0  100  1010    20    0     0     0
Reduct Vol:    0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:   0   155    30  375   135     0  100  1010    20    0     0     0
PCE Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
MLF Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Final Vol.:    0   155    30  375   135     0  100  1010    20    0     0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900  1900
Adjustment: 1.00  0.96  0.96 0.64  0.98  1.00 0.89  0.89  0.89 1.00  1.00  1.00
Lanes:      0.00  0.84  0.16 1.00  1.00  0.00 0.27  2.68  0.05 0.00  0.00  0.00
Final Sat.:    0  1526   295 1221  1862     0  447  4516    89    0     0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.00  0.10  0.10 0.31  0.07  0.00 0.22  0.22  0.22 0.00  0.00  0.00
Crit Moves:                  ****                   ****
Green/Cycle: 0.00 0.51  0.51 0.51  0.51  0.00 0.37  0.37  0.37 0.00  0.00  0.00
Volume/Cap: 0.00  0.20  0.20 0.60  0.14  0.00 0.60  0.60  0.60 0.00  0.00  0.00
Delay/Veh:   0.0   9.4   9.4 13.6   9.0   0.0 18.2  18.2  18.2  0.0   0.0   0.0
User DelAdj: 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
AdjDel/Veh:  0.0   9.4   9.4 13.6   9.0   0.0 18.2  18.2  18.2  0.0   0.0   0.0
DesignQueue:   0     3     1    8     3     0    3    26     1    0     0     0
********************************************************************************
```

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Default Scenario            Mon Jul 21, 2003 15:15:21                Page 11-1
-------------------------------------------------------------------------------

                  Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0   1  0  1  0  0   0  1  1  1  0   0  0  0  0  0
Lane Group:  xxxx  RT     RT    L    T   xxxx  LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:     0    1      1    1    1     0    3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12     12   12   12    12   12   12    12    12   12    12
CrosswalkWid         8               8                8               8
% Hev Veh:           2               2                2               0
Grade:              0%              0%               0%              0%
Parking/Hr:         No              No               No              No
Bus Stp/Hr:          0               0                0               0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0                0               0
ExclusiveRT:      Include         Include          Include         Include
% RT Prtct:          0               0                0               0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.98 0.98 xxxxx  0.98 0.98  0.98  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98  xxxx xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.66 xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.97 0.97  0.97  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.89 0.89  0.89  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
*******************************************************************************



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Default Scenario            Mon Jul 21, 2003 15:15:21                Page 11-2
-------------------------------------------------------------------------------

                  Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Approach:                                  North      South      East      West
Cycle Length, C:                          xxxxxx         70    xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:      xxxxxx      35.88    xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:   xxxxxx      35.88    xxxxxx    xxxxxx
Opposing Effective Green Time, go:        xxxxxx      35.88    xxxxxx    xxxxxx
Number Of Opposing Lanes, No:             xxxxxx          1    xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:         xxxxxx          1    xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:        xxxxxx        375    xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt:  xxxxxx   1.00    xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx   1.00    xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                xxxxxx       7.29    xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:          xxxxxx        185    xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:   xxxxxx       3.60    xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:              xxxxxx       1.00    xxxxxx    xxxxxx
Lost Time Per Phase, tl:                  xxxxxx       4.00    xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:   xxxxxx   0.00    xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                xxxxxx       0.49    xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:    xxxxxx       2.12    xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu: xxxxxx      33.76    xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx   1.06    xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx   0.00    xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:          xxxxxx     xxxxxx    xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx   1.00    xxxxxx    xxxxxx
Through-car Equivalents, el1:             xxxxxx       1.58    xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2: xxxxxx       1.00    xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    xxxxxx   0.11    xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  xxxxxx   0.66    xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:         xxxxxx       0.66    xxxxxx    xxxxxx
*******************************************************************************



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```
Default Scenario            Mon Jul 21, 2003 15:15:21             Page 12-1
----------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
**********************************************************************************
Intersection #5 OR 99W/Villa Road
**********************************************************************************
Cycle (sec):          135             Critical Vol./Cap. (X):         0.758
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):      38.8
Optimal Cycle:         86             Level Of Service:                  D
**********************************************************************************
Approach:      North Bound       South Bound       East Bound        West Bound
Movement:      L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected         Protected         Protected         Protected
Rights:          Include           Include           Include           Include
Min. Green:      0    0     0      0    0     0      0    0     0      0    0     0
Lanes:        2  0  0  1  0     1  0  1  0  1     1  0  1  1  0     1  0  2  0  1
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      490  185    10    280   70    85    115  875     5     30 1200   170
Growth Adj:   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Initial Bse:   490  185    10    280   70    85    115  875     5     30 1200   170
User Adj:     1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
PHF Volume:    490  185    10    280   70    85    115  875     5     30 1200   170
Reduct Vol:      0    0     0      0    0     0      0    0     0      0    0     0
Reduced Vol:   490  185    10    280   70    85    115  875     5     30 1200   170
PCE Adj:      1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Final Vol.:    490  185    10    280   70    85    115  875     5     30 1200   170
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900   1900 1900  1900   1900 1900  1900   1900 1900  1900
Adjustment:   0.90 0.97  0.97   0.93 0.98  0.83   0.93 0.93  0.93   0.93 0.93  0.83
Lanes:        2.00 0.95  0.05   1.00 1.00  1.00   1.00 1.99  0.01   1.00 2.00  1.00
Final Sat.:   3432 1752    95   1769 1862  1583   1769 3514    20   1769 3538  1583
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.14 0.11  0.11   0.16 0.04  0.05   0.07 0.25  0.25   0.02 0.34  0.11
Crit Moves:        ****         ****              ****                   ****
Green/Cycle:  0.25 0.14  0.14   0.21 0.10  0.10   0.09 0.50  0.50   0.03 0.45  0.45
Volume/Cap:   0.56 0.76  0.76   0.76 0.40  0.56   0.76 0.50  0.50   0.50 0.76  0.24
Delay/Veh:    44.8 68.1  68.1   59.0 58.9  63.3   79.9 22.8  22.8   70.4 33.3  23.3
User DelAdj:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
AdjDel/Veh:   44.8 68.1  68.1   59.0 58.9  63.3   79.9 22.8  22.8   70.4 33.3  23.3
DesignQueue:    28   12     1     17    5     6      8   35     0      2   54     7
**********************************************************************************

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Default Scenario            Mon Jul 21, 2003 15:15:21             Page 13-1
----------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                          Base Volume Alternative
**********************************************************************************
Intersection #5 OR 99W/Villa Road
**********************************************************************************
Approach:      North Bound       South Bound       East Bound        West Bound
Movement:      L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  0  1  0     1  0  1  0  1     1  0  1  1  0     1  0  2  0  1
Lane Group:      L   RT    RT      L    T     R      L   RT    RT      L    T     R
#LnsInGrps:      2    1     1      1    1     1      1    2     2      1    2     1
------------|----------------||----------------||----------------||----------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12   12    12     12   12    12     12   12    12     12   12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:            2                 2                 2                 2
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:      Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|----------------||----------------||----------------||----------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:        1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx
------------|----------------||----------------||----------------||----------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Hev Veh Adj:  0.98 0.98  0.98   0.98 0.98  0.98   0.98 0.98  0.98   0.98 0.98  0.98
Grade Adj:    1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Parking Adj:  xxxx 1.00  1.00   xxxx xxxx  1.00   xxxx 1.00  1.00   xxxx xxxx  1.00
Bus Stp Adj:  xxxx 1.00  1.00   xxxx xxxx  1.00   xxxx 1.00  1.00   xxxx xxxx  1.00
Area Adj:     1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
RT Adj:       xxxx 0.99  0.99   xxxx xxxx  0.85   xxxx 1.00  1.00   xxxx xxxx  0.85
LT Adj:       0.95 xxxx xxxxx   0.95 xxxx xxxxx   0.95 xxxx xxxxx   0.95 xxxx xxxxx
PedBike Adj:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
HCM Sat Adj:  0.93 0.97  0.97   0.93 0.98  0.83   0.93 0.98  0.98   0.93 0.98  0.83
Usr Sat Adj:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
MLF Sat Adj:  0.97 1.00  1.00   1.00 1.00  1.00   1.00 0.95  0.95   1.00 0.95  1.00
Fnl Sat Adj:  0.90 0.97  0.97   0.93 0.98  0.83   0.93 0.93  0.93   0.93 0.93  0.83
------------|----------------||----------------||----------------||----------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <      Actuated     > > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
**********************************************************************************

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-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #6 OR 99W/Elliot Road
*******************************************************************************
Cycle (sec):         135              Critical Vol./Cap. (X):        0.728
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):      32.1
Optimal Cycle:        68              Level Of Service:                 C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted         Permitted         Protected         Protected
Rights:           Include           Include           Include           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      85   15   170    40   25   280    80 1025     5   155 1205   180
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   85   15   170    40   25   280    80 1025     5   155 1205   180
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    85   15   170    40   25   280    80 1025     5   155 1205   180
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   85   15   170    40   25   280    80 1025     5   155 1205   180
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    85   15   170    40   25   280    80 1025     5   155 1205   180
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.39 0.39  0.83  0.83 0.83  0.83  0.93 0.93  0.93  0.93 0.91  0.91
Lanes:       0.85 0.15  1.00  0.12 0.07  0.81  1.00 1.99  0.01  1.00 1.74  0.26
Final Sat.:   633  112  1583   183  114  1280  1769 3517    17  1769 3020   451
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.13  0.11  0.22 0.22  0.22  0.05 0.29  0.29  0.09 0.40  0.40
Crit Moves:                        ****        ****                   ****
Green/Cycle: 0.30 0.30  0.30  0.30 0.30  0.30  0.06 0.47  0.47  0.14 0.55  0.55
Volume/Cap:  0.45 0.45  0.36  0.73 0.73  0.73  0.73 0.62  0.62  0.62 0.73  0.73
Delay/Veh:   39.6 39.6  37.5  47.9 47.9  47.9  83.7 27.5  27.5  59.3 24.4  24.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  39.6 39.6  37.5  47.9 47.9  47.9  83.7 27.5  27.5  59.3 24.4  24.4
DesignQueue:    5    1     9     2    1    15     6   44     0    10   45     7
*******************************************************************************
```

```
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                       Base Volume Alternative
*******************************************************************************
Intersection #6 OR 99W/Elliot Road
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
Lane Group:    LT   LT     R   LTR  LTR   LTR     L   RT    RT     L   RT    RT
#LnsInGrps:     1    1     1     1    1     1     1    2     2     1    2     2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5  xxxx     5    5     5     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  0.89 0.89  0.89  xxxx 1.00  1.00  xxxx 0.98  0.98
LT Adj:      0.40 0.40 xxxxx  0.95 0.95  0.95  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.39 0.39  0.83  0.83 0.83  0.83  0.93 0.98  0.98  0.93 0.96  0.96
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.95  1.00 0.95  0.95
Fnl Sat Adj: 0.39 0.39  0.83  0.83 0.83  0.83  0.93 0.93  0.93  0.93 0.91  0.91
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************
```

```
------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                         Base Volume Alternative
******************************************************************************
Intersection #6 OR 99W/Elliot Road
******************************************************************************
Approach:                                     North    South    East     West
Cycle Length, C:                                135      135  xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          40.56    40.56  xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       40.56    40.56  xxxxxx   xxxxxx
Opposing Effective Green Time, go:            40.56    40.56  xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                     1        1  xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                 1        1  xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               85       40  xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:   0.85     0.12  xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    0.12   xxxxxx  xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                     3.19     1.50  xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                345      100  xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       12.94     3.75  xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00     1.00  xxxxxx   xxxxxx
Lost Time Per Phase, tl:                       4.00     4.00  xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:    1.35     9.37  xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                     0.70     0.70  xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        19.80     1.56  xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     20.76    31.19  xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:    9.23   xxxxxx  xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   0.88   xxxxxx  xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx     0.81  xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:   0.85     0.12  xxxxxx   xxxxxx
Through-car Equivalents, el1:                  1.99     1.55  xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:      5.86   xxxxxx  xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.09     0.06  xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.40     0.95  xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:              0.40     0.95  xxxxxx   xxxxxx
******************************************************************************
```

```
------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
******************************************************************************
Average Delay (sec/veh):    178.2         Worst Case Level Of Service:       F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  1  0   1  0  0  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     145  420    10    15  415    90    60   60   115    70   40    60
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  145  420    10    15  415    90    60   60   115    70   40    60
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   145  420    10    15  415    90    60   60   115    70   40    60
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   145  420    10    15  415    90    60   60   115    70   40    60
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  505 xxxx xxxxx   430 xxxx xxxxx  1255 1210   460  1293 1250   425
Potent Cap.: 1060 xxxx xxxxx  1129 xxxx xxxxx   148  183   601   140  173   629
Move Cap.:   1060 xxxx xxxxx  1129 xxxx xxxxx    95  155   601    71  147   629
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  8.9 xxxx xxxxx   8.2 xxxx xxxxx xxxxx xxxx  12.4 xxxxx xxxx  11.3
LOS by Move:    A    *     *     A    *     *     *    *     B     *    *     B
Movement:     LT - LTR - RT   LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx   118 xxxx xxxxx    87 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx 158.9 xxxx xxxxx 269.2 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     F    *     *     F    *     *
ApproachDel:     xxxxxx           xxxxxx             87.2            178.2
ApproachLOS:        *                *                F                F
```

```
-----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                Level Of Service Detailed Computation Report
                      2000 HCM Unsignalized Method
                        Base Volume Alternative
*****************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
*****************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:            2%               2%               2%               2%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:      12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

```
------------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                  Level Of Service Computation Report
         2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #8 OR 99W/Springbrook Street
******************************************************************************
Cycle (sec):         135              Critical Vol./Cap. (X):        0.846
Loss Time (sec):      16 (Y+R =  4 sec) Average Delay (sec/veh):      41.1
Optimal Cycle:       112              Level Of Service:                 D
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        2  0  1  0  1   2  0  1  0  1   1  0  2  0  1   1  0  2  0  1
-----------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    185  285    40  200  370    35  195 1005   180   40 1355   275
Growth Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse: 185  285    40  200  370    35  195 1005   180   40 1355   275
User Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:  185  285    40  200  370    35  195 1005   180   40 1355   275
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol: 185  285    40  200  370    35  195 1005   180   40 1355   275
PCE Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:  185  285    40  200  370    35  195 1005   180   40 1355   275
-----------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment: 0.90 0.98  0.83 0.90 0.98  0.83 0.93 0.93  0.83 0.93 0.93  0.83
Lanes:      2.00 1.00  1.00 2.00 1.00  1.00 1.00 2.00  1.00 1.00 2.00  1.00
Final Sat.: 3432 1862  1583 3432 1862  1583 1769 3538  1583 1769 3538  1583
-----------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.05 0.15  0.03 0.06 0.20  0.02 0.11 0.28  0.11 0.02 0.38  0.17
Crit Moves: ****                 ****       ****                 ****
Green/Cycle: 0.06 0.22  0.22 0.08 0.23  0.23 0.13 0.54  0.54 0.04 0.45  0.45
Volume/Cap: 0.85 0.71  0.12 0.71 0.85  0.09 0.85 0.53  0.21 0.53 0.85  0.38
Delay/Veh:  87.6 54.7  42.7 68.4 63.5  40.5 81.4 20.2  16.2 69.9 37.2  24.8
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh: 87.6 54.7  42.7 68.4 63.5  40.5 81.4 20.2  16.2 69.9 37.2  24.8
DesignQueue:  13   17     2   14   22     2   13   37     6    3   61    12
******************************************************************************
```

```
Default Scenario             Mon Jul 21, 2003 15:15:22                 Page 19-1
--------------------------------------------------------------------------------
                   Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
           Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                   Level Of Service Detailed Computation Report
                           2000 HCM Operations Method
                             Base Volume Alternative
********************************************************************************
Intersection #8 OR 99W/Springbrook Street
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
Lane Group:   L     T     R    L     T     R    L     T     R    L     T     R
#LnsInGrps:    2     1     1    2     1     1    1     2     1    1     2     1
------------|----------------||----------------||----------------||----------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12   12    12    12   12    12    12   12    12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|----------------||----------------||----------------||----------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|----------------||----------------||----------------||----------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 0.97 1.00  1.00  0.97 1.00  1.00  1.00 0.95  1.00  1.00 0.95  1.00
Fnl Sat Adj: 0.90 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.83  0.93 0.93  0.83
------------|----------------||----------------||----------------||----------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
********************************************************************************



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Default Scenario             Mon Jul 21, 2003 15:15:22                 Page 20-1
--------------------------------------------------------------------------------
                   Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
           Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                       Level Of Service Computation Report
                2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #9 OR 99W/Northern Arterial
********************************************************************************
Cycle (sec):        135              Critical Vol./Cap. (X):        0.758
Loss Time (sec):     16 (Y+R =  4 sec) Average Delay (sec/veh):      40.4
Optimal Cycle:       86              Level Of Service:                 D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  1  0  1    2  0  1  0  1    1  0  1  1  0    1  0  1  1  1
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      95   150   100   550   100   120   120  1020    50   150  1080   715
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   95   150   100   550   100   120   120  1020    50   150  1080   715
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    95   150   100   550   100   120   120  1020    50   150  1080   715
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   95   150   100   550   100   120   120  1020    50   150  1080   715
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    95   150   100   550   100   120   120  1020    50   150  1080   715
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.93 0.98  0.83  0.90 0.98  0.83  0.93 0.92  0.92  0.93 0.88  0.88
Lanes:       1.00 1.00  1.00  2.00 1.00  1.00  1.00 1.91  0.09  1.00 1.81  1.19
Final Sat.:  1769 1862  1583  3432 1862  1583  1769 3349   164  1769 3001  1987
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.08  0.06  0.16 0.05  0.08  0.07 0.30  0.30  0.08 0.36  0.36
Crit Moves:       ****        ****             ****                   ****
Green/Cycle: 0.13 0.11  0.11  0.21 0.19  0.19  0.09 0.44  0.44  0.12 0.47  0.47
Volume/Cap:  0.41 0.76  0.59  0.76 0.29  0.41  0.76 0.69  0.69  0.69 0.76  0.76
Delay/Veh:   54.9 74.2  63.2  54.6 47.7  49.3  78.9 31.7  31.7  65.9 30.6  30.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.9 74.2  63.2  54.6 47.7  49.3  78.9 31.7  31.7  65.9 30.6  30.6
DesignQueue:    6   10     7    34    6     7     8   46     2    10   46    31
********************************************************************************



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---------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*********************************************************************************
Intersection #9 OR 99W/Northern Arterial
*********************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  1  0  1    2  0  1  0  1    1  0  1  1  0    1  0  1  1  1
Lane Group:     L    T     R     L    T     R     L   RT     RT    L   RT     RT
#LnsInGrps:     1    1     1     2    1     1     1    2      2    1    3      3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12     12   12   12     12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx 0.99  0.99  xxxx 0.94  0.94
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.97  0.97  0.93 0.92  0.92
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  0.97 1.00  1.00  1.00 0.95  0.95  1.00 0.95  0.95
Fnl Sat Adj: 0.93 0.98  0.83  0.90 0.98  0.83  0.93 0.92  0.92  0.93 0.88  0.88
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*********************************************************************************
```

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---------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------

                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*********************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
*********************************************************************************
Cycle (sec):         70              Critical Vol./Cap. (X):         0.595
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):       18.4
Optimal Cycle:       45              Level Of Service:                  B
*********************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:         1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     160  270    40   115  230   100    50  260   225    10  300   145
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  160  270    40   115  230   100    50  260   225    10  300   145
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   160  270    40   115  230   100    50  260   225    10  300   145
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  160  270    40   115  230   100    50  260   225    10  300   145
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   160  270    40   115  230   100    50  260   225    10  300   145
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.41 0.96  0.96  0.43 0.94  0.94  0.93 0.91  0.91  0.93 0.93  0.93
Lanes:       1.00 0.87  0.13  1.00 0.70  0.30  1.00 0.54  0.46  1.00 0.67  0.33
Final Sat.:   773 1591   236   817 1239   539  1769  928   803  1769 1194   577
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.17  0.17  0.14 0.19  0.19  0.03 0.28  0.28  0.01 0.25  0.25
Crit Moves:  ****                                   ****        ****
Green/Cycle: 0.35 0.35  0.35  0.35 0.35  0.35  0.05 0.47  0.47  0.01 0.43  0.43
Volume/Cap:  0.59 0.49  0.49  0.40 0.53  0.53  0.58 0.59  0.59  0.59 0.58  0.58
Delay/Veh:   22.3 18.5  18.5  18.2 19.2  19.2  42.3 14.8  14.8  81.0 16.2  16.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  22.3 18.5  18.5  18.2 19.2  19.2  42.3 14.8  14.8  81.0 16.2  16.2
DesignQueue:    4    7     1     3    6     3     2    6     5     0    7     3
*********************************************************************************
```

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Default Scenario          Mon Jul 21, 2003 15:15:22              Page 23-1
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                        Base Volume Alternative
******************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
Lane Group:   L   RT     RT    L   RT     RT    L   RT     RT    L   RT     RT
#LnsInGrps:    1    1     1     1    1     1     1    1     1     1    1     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:    2 xxxx  xxxx     2 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.98  0.98  xxxx 0.96  0.96  xxxx 0.93  0.93  xxxx 0.95  0.95
LT Adj:      0.42 xxxx xxxxx  0.44 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.41 0.96  0.96  0.43 0.94  0.94  0.93 0.91  0.91  0.93 0.93  0.93
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.41 0.96  0.96  0.43 0.94  0.94  0.93 0.91  0.91  0.93 0.93  0.93
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
******************************************************************************




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Default Scenario          Mon Jul 21, 2003 15:15:22              Page 23-2
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                        Base Volume Alternative
******************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
******************************************************************************
Approach:                                    North    South     East     West
Cycle Length, C:                                70       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:         24.39    24.39   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:      24.39    24.39   xxxxxx   xxxxxx
Opposing Effective Green Time, go:           24.39    24.39   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                    1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:             160      115   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:  1.00     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    3.11     2.24   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:               330      310   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       6.42     6.03   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                  1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                      4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:   0.00     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                    0.65     0.65   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        6.24     5.49   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:    18.15    18.90   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx  xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              0.67     0.68   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  1.00     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                 1.80     1.77   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    0.16     0.16   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  0.41     0.44   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:             0.41     0.44   xxxxxx   xxxxxx
******************************************************************************




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------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #11 Mountain View Drive/Villa Road
******************************************************************************
Average Delay (sec/veh):     93.0       Worst Case Level Of Service:         F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     105   50    65    30   35    10    10  475    80   105  495    25
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  105   50    65    30   35    10    10  475    80   105  495    25
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   105   50    65    30   35    10    10  475    80   105  495    25
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   105   50    65    30   35    10    10  475    80   105  495    25
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1275 1265   515  1310 1293   508   520 xxxx xxxxx   555 xxxx xxxxx
Potent Cap.:  144  169   560   136  163   565  1046 xxxx xxxxx  1015 xxxx xxxxx
Move Cap.:    105  150   560    82  145   565  1046 xxxx xxxxx  1015 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:161.9 xxxx xxxxx  72.3 xxxx xxxxx   8.5 xxxx xxxxx   9.0 xxxx xxxxx
LOS by Move:    F    *     *     F    *     *     A    *     *     A    *     *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx   256  xxxx xxxx   173  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx  30.0 xxxxx xxxx  32.9 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     D     *    *     D     *    *     *     *    *     *
ApproachDel:       93.0             48.7            xxxxxx           xxxxxx
ApproachLOS:         F                E                *                *
```

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------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                          2000 HCM Unsignalized Method
                            Base Volume Alternative
******************************************************************************
Intersection #11 Mountain View Drive/Villa Road
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
----------|---------------|---------------|---------------|---------------|
HevVeh:             2%              2%              2%              2%
Grade:              0%              0%              0%              0%
Peds/Hour:          0               0               0               0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet         12 feet         12 feet         12 feet
Time Period: 0.25 hour
```

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---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

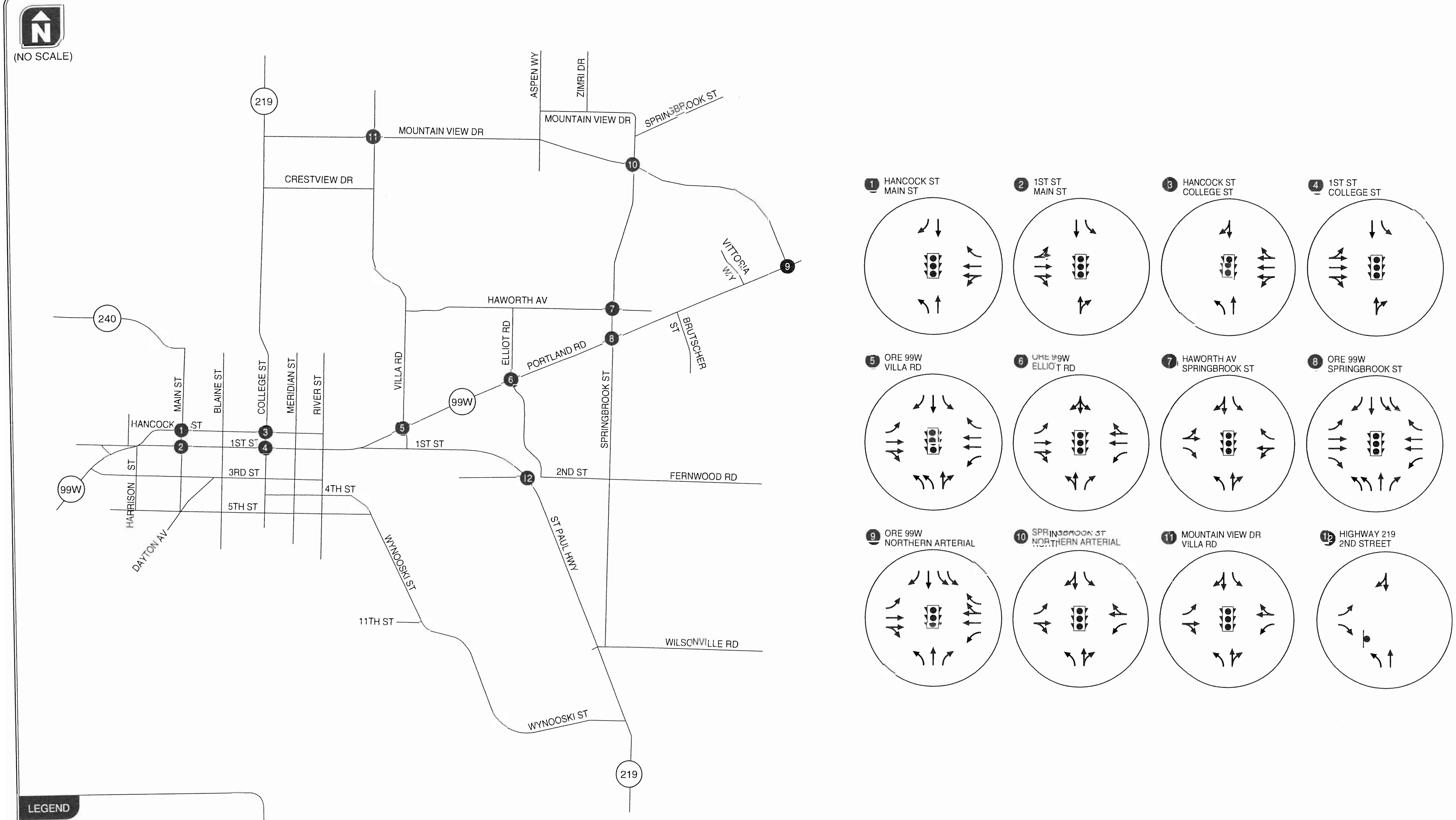
                  Level Of Service Computation Report
       2000 HCM Unsignalized Method (Base Volume Alternative)
***************************************************************************
Intersection #12 Hwy 219/2nd Street
***************************************************************************
Average Delay (sec/veh):     20.9     Worst Case Level Of Service:        C
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  1  0  0   0  0  0  1  0   1  0  0  0  1   0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     25  630     0     0  545    15    55    0    75     0    0     0
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  25  630     0     0  545    15    55    0    75     0    0     0
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   25  630     0     0  545    15    55    0    75     0    0     0
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:   25  630     0     0  545    15    55    0    75     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  560 xxxx xxxxx  xxxx xxxx xxxxx  1233 xxxx   553  xxxx xxxx xxxxx
Potent Cap.:  996 xxxx xxxxx  xxxx xxxx xxxxx   193 xxxx   527  xxxx xxxx xxxxx
Move Cap.:    996 xxxx xxxxx  xxxx xxxx xxxxx   189 xxxx   527  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  8.7 xxxx xxxxx xxxxx xxxx xxxxx  31.7 xxxx  13.0 xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     D    *     B     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      xxxxxx           xxxxxx             20.9           xxxxxx
ApproachLOS:         *                *                 C               *
```

```
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 3: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                    2000 HCM Unsignalized Method
                       Base Volume Alternative
***************************************************************************
Intersection #12 Hwy 219/2nd Street
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:             5%              5%              5%              5%
Grade:              0%              0%              0%              0%
Peds/Hour:          0               0               0               0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:      12 feet         12 feet         12 feet         12 feet
Time Period: 0.25 hour
```

Appendix K

Alternative 3 Mitigated
2025 Future Traffic Conditions



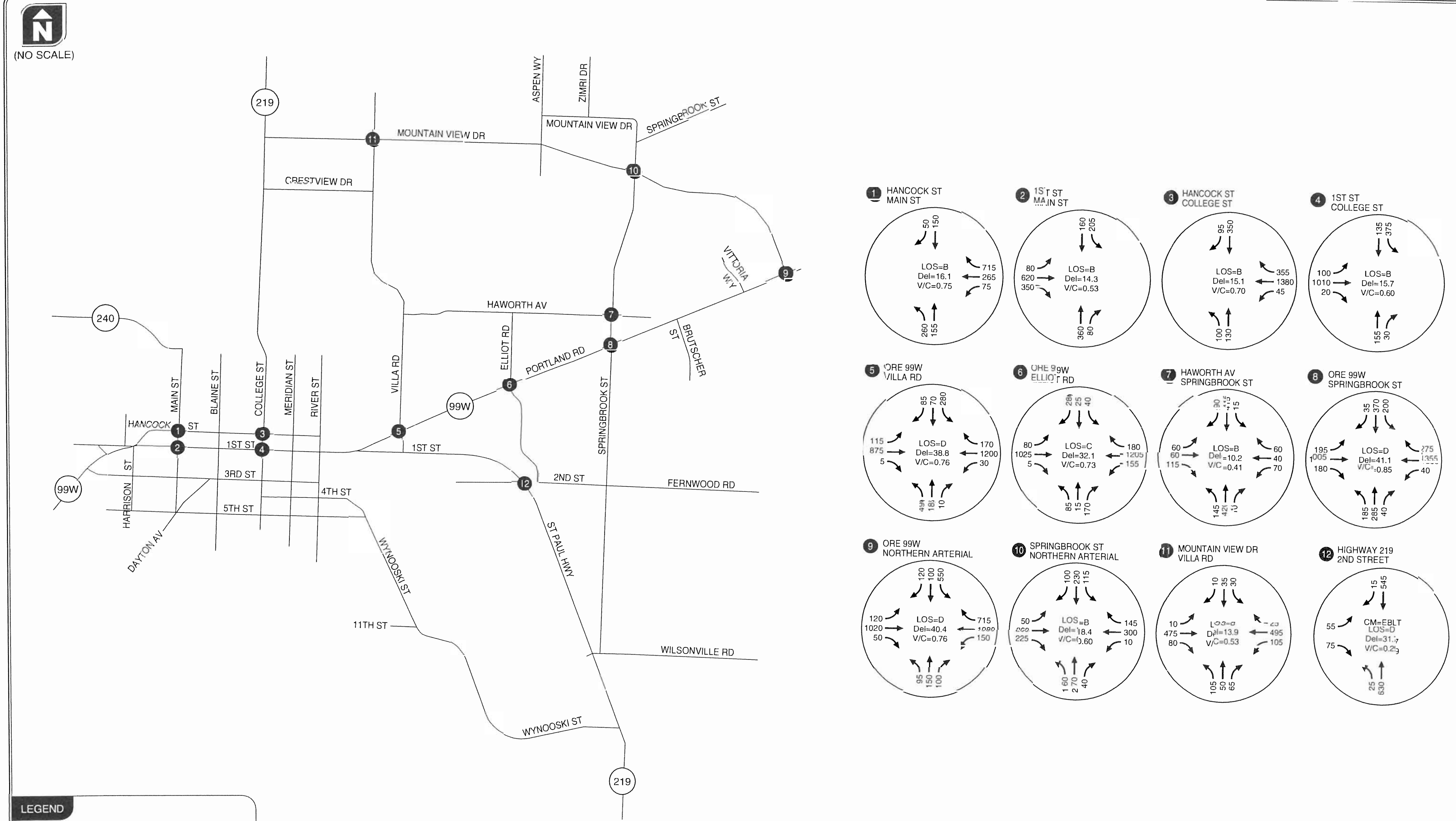
LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICE MITIGATIONS
ALTERNATIVE 3: WITH BYPASS
NEWBERG, OREGON

FIGURE
F1

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

MITIGATED INTERSECTION PERFORMANCE
ALTERNATIVE 3: WITH BYPASS
NEWBERG, OREGON

FIGURE
F2

```
Default Scenario           Mon Jul 21, 2003 15:18:05               Page 1-1
-------------------------------------------------------------------------------
                   Kittelson & Associates, Inc. - Project # 5193
                  City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                              Scenario Report
Scenario:                Default Scenario

Command:                 Default Command
Volume:                  Default Volume
Geometry:                Default Geometry
Impact Fee:              Default Impact Fee
Trip Generation:         Default Trip Generation
Trip Distribution:       Default Trip Distribution
Paths:                   Default Paths
Routes:                  Default Routes
Configuration:           Default Configuration

       Traffix 7.5.1115 (c) 2001 Dowling Assoc. Licensed to DOWLING ASSOCIATES, INC.
```

```
Default Scenario           Mon Jul 21, 2003 15:18:05               Page 2-1
-------------------------------------------------------------------------------
                   Kittelson & Associates, Inc. - Project # 5193
                  City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                          Turning Movement Report

Volume    Northbound       Southbound       Eastbound        Westbound      Total
Type   Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right  Volume

#1 Main Street/Hancock Street
Base    260  155    0     0  150   50     0    0    0    75  265  715    1670
Added     0    0    0     0    0    0     0    0    0     0    0    0       0
Total   260  155    0     0  150   50     0    0    0    75  265  715    1670

#2 Main Street/1st Street
Base      0  360   80   205  160    0    80  620  350     0    0    0    1855
Added     0    0    0     0    0    0     0    0    0     0    0    0       0
Total     0  360   80   205  160    0    80  620  350     0    0    0    1855

#3 College Street/Hancock Street
Base    100  130    0     0  350   95     0    0    0    45 1380  355    2455
Added     0    0    0     0    0    0     0    0    0     0    0    0       0
Total   100  130    0     0  350   95     0    0    0    45 1380  355    2455

#4 College Street/1st Street
Base      0  155   30   375  135    0   100 1010   20     0    0    0    1825
Added     0    0    0     0    0    0     0    0    0     0    0    0       0
Total     0  155   30   375  135    0   100 1010   20     0    0    0    1825

#5 OR 99W/Villa Road
Base    490  185   10   280   70   85   115  875    5    30 1200  170    3515
Added     0    0    0     0    0    0     0    0    0     0    0    0       0
Total   490  185   10   280   70   85   115  875    5    30 1200  170    3515

#6 OR 99W/Elliot Road
Base     85   15  170    40   25  280    80 1025    5   155 1205  180    3265
Added     0    0    0     0    0    0     0    0    0     0    0    0       0
Total    85   15  170    40   25  280    80 1025    5   155 1205  180    3265

#7 Haworth Avenue/Springbrook Street
Base    145  420   10    15  415   90    60   60  115    70   40   60    1500
Added     0    0    0     0    0    0     0    0    0     0    0    0       0
Total   145  420   10    15  415   90    60   60  115    70   40   60    1500

#8 OR 99W/Springbrook Street
Base    185  285   40   200  370   35   195 1005  180    40 1355  275    4165
Added     0    0    0     0    0    0     0    0    0     0    0    0       0
Total   185  285   40   200  370   35   195 1005  180    40 1355  275    4165

#9 OR 99W/Northern Arterial
Base     95  150  100   550  100  120   120 1020   50   150 1080  715    4250
Added     0    0    0     0    0    0     0    0    0     0    0    0       0
Total    95  150  100   550  100  120   120 1020   50   150 1080  715    4250

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```

```
--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
Volume     Northbound       Southbound       Eastbound        Westbound      Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume


#10 Springbrook Street/Northern Arterial
Base     160  270    40   115  230   100    50  260   225    10  300   145   1905
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    160  270    40   115  230   100    50  260   225    10  300   145   1905

#11 Mountain View Drive/Villa Road
Base     105   50    65    30   35    10    10  475    80   105  495    25   1485
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    105   50    65    30   35    10    10  475    80   105  495    25   1485

#12 Hwy 219/2nd Street
Base      25  630     0     0  545    15    55    0    75     0    0     0   1345
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     25  630     0     0  545    15    55    0    75     0    0     0   1345
```

```
--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                           Impact Analysis Report
                              Level Of Service

Intersection                                Base           Future        Change
                                         Del/   V/      Del/   V/         in
                                     LOS Veh    C   LOS Veh    C
#  1 Main Street/Hancock Street      B  16.1 0.746  B  16.1 0.746  + 0.000 D/V

#  2 Main Street/1st Street          B  14.3 0.527  B  14.3 0.527  + 0.000 D/V

#  3 College Street/Hancock Street   B  15.1 0.698  B  15.1 0.698  + 0.000 D/V

#  4 College Street/1st Street       B  15.7 0.599  B  15.7 0.599  + 0.000 D/V

#  5 OR 99W/Villa Road               D  38.8 0.758  D  38.8 0.758  + 0.000 D/V

#  6 OR 99W/Elliot Road              C  32.1 0.728  C  32.1 0.728  + 0.000 D/V

#  7 Haworth Avenue/Springbrook Str  B  10.2 0.406  B  10.2 0.406  + 0.000 D/V

#  8 OR 99W/Springbrook Street       D  41.1 0.846  D  41.1 0.846  + 0.000 D/V

#  9 OR 99W/Northern Arterial        D  40.4 0.758  D  40.4 0.758  + 0.000 D/V

# 10 Springbrook Street/Northern Ar  B  18.4 0.595  B  18.4 0.595  + 0.000 D/V

# 11 Mountain View Drive/Villa Road  B  13.9 0.533  B  13.9 0.533  + 0.000 D/V

# 12 Hwy 219/2nd Street              C  20.9 0.000  C  20.9 0.000  + 0.000 V/C
```

```
-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 Main Street/Hancock Street
*******************************************************************************
Cycle (sec):        70               Critical Vol./Cap. (X):        0.746
Loss Time (sec):     8 (Y+R =  4 sec) Average Delay (sec/veh):       16.1
Optimal Cycle:      51               Level Of Service:                  B
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         1  0  1  0  0   0  0  1  0  1   0  0  0  0  0   0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      260  155     0    0  150    50    0    0     0   75  265   715
Growth Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   260  155     0    0  150    50    0    0     0   75  265   715
User Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:    260  155     0    0  150    50    0    0     0   75  265   715
Reduct Vol:      0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   260  155     0    0  150    50    0    0     0   75  265   715
PCE Adj:      1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:    260  155     0    0  150    50    0    0     0   75  265   715
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:   0.63 0.98  1.00 1.00 0.98  0.83 1.00 1.00  1.00 0.81 0.81  0.85
Lanes:        1.00 1.00  0.00 0.00 1.00  1.00 0.00 0.00  0.00 0.44 1.56  1.00
Final Sat.:   1192 1862     0    0 1862  1583    0    0     0  677 2392  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.22 0.08  0.00 0.00 0.08  0.03 0.00 0.00  0.00 0.11 0.11  0.44
Crit Moves:   ****                                                        ****
Green/Cycle:  0.29 0.29  0.00 0.00 0.29  0.29 0.00 0.00  0.00 0.59 0.59  0.59
Volume/Cap:   0.75 0.28  0.00 0.00 0.28  0.11 0.00 0.00  0.00 0.19 0.19  0.75
Delay/Veh:    31.0 19.4   0.0  0.0 19.3  18.2  0.0  0.0   0.0  6.6  6.6  13.6
User DelAdj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:   31.0 19.4   0.0  0.0 19.3  18.2  0.0  0.0   0.0  6.6  6.6  13.6
DesignQueue:     7    4     0    0    4     1    0    0     0    1    4    13
*******************************************************************************
```

```
-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #1 Main Street/Hancock Street
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  1  0  0   0  0  1  0  1   0  0  0  0  0   0  1  1  0  1
Lane Group:     L    T  xxxx xxxx    T     R xxxx xxxx  xxxx   LT   LT     R
#LnsInGrps:     1    1     0    0    1     1    0    0     0    2    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:       2 xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx  xxxx   2r   2r  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   1.00 1.00 xxxxx xxxx 1.00  1.00 xxxx xxxx xxxxx 1.00 1.00  1.00
Hev Veh Adj:  0.98 0.98 xxxxx xxxx 0.98  0.98 xxxx xxxx xxxxx 1.00 1.00  1.00
Grade Adj:    1.00 1.00 xxxxx xxxx 1.00  1.00 xxxx xxxx xxxxx 1.00 1.00  1.00
Parking Adj:  xxxx 1.00 xxxxx xxxx xxxx  1.00 xxxx xxxx xxxxx xxxx xxxx  1.00
Bus Stp Adj:  xxxx 1.00 xxxxx xxxx xxxx  1.00 xxxx xxxx xxxxx xxxx xxxx  1.00
Area Adj:     1.00 1.00 xxxxx xxxx 1.00  1.00 xxxx xxxx xxxxx 1.00 1.00  1.00
RT Adj:       xxxx xxxx xxxxx xxxx xxxx  0.85 xxxx xxxx xxxxx xxxx xxxx  0.85
LT Adj:       0.64 xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx 0.85 0.85 xxxxx
PedBike Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj:  0.63 0.98  1.00 1.00 0.98  0.83 1.00 1.00  1.00 0.85 0.85  0.85
Usr Sat Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 0.95 0.95  1.00
Fnl Sat Adj:  0.63 0.98  1.00 1.00 0.98  0.83 1.00 1.00  1.00 0.81 0.81  0.85
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <   Actuated    > > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00  0.00 0.00 1.00  1.00 0.00 0.00  0.00 1.00 1.00  1.00
*******************************************************************************
```

```
---------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
*********************************************************************************
Intersection #1 Main Street/Hancock Street
*********************************************************************************
Approach:                                        North    South     East     West
Cycle Length, C:                                    70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:             20.47   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:          20.47   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:               20.47   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                        1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                    1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                 260   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:      1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                        5.06   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                   150   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:           2.92   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                      1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                          4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:       0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                        0.71   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:            0.50   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:        19.97   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                  0.78   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:      1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                     1.53   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:       xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:        0.20   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:      0.64   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                 0.64   xxxxxx   xxxxxx   xxxxxx
*********************************************************************************
```

```
---------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------

                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*********************************************************************************
Intersection #2 Main Street/1st Street
*********************************************************************************
Cycle (sec):            70              Critical Vol./Cap. (X):         0.527
Loss Time (sec):         8 (Y+R =  4 sec) Average Delay (sec/veh):       14.3
Optimal Cycle:          32              Level Of Service:                  B
*********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   360    80  205   160     0   80   620   350    0     0     0
Growth Adj: 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Initial Bse:   0   360    80  205   160     0   80   620   350    0     0     0
User Adj:   1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
PHF Volume:    0   360    80  205   160     0   80   620   350    0     0     0
Reduct Vol:    0     0     0    0     0     0    0     0     0    0     0     0
Reduced Vol:   0   360    80  205   160     0   80   620   350    0     0     0
PCE Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
MLF Adj:    1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
Final Vol.:    0   360    80  205   160     0   80   620   350    0     0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900  1900
Adjustment: 1.00  0.96  0.96 0.63  0.98  1.00 0.82  0.82  0.82 1.00  1.00  1.00
Lanes:      0.00  0.82  0.18 1.00  1.00  0.00 0.23  1.77  1.00 0.00  0.00  0.00
Final Sat.:    0  1485   330 1203  1862     0  357  2764  1560    0     0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.00  0.24  0.24 0.17  0.09  0.00 0.22  0.22  0.22 0.00  0.00  0.00
Crit Moves:       ****                              ****
Green/Cycle: 0.00 0.46  0.46 0.46  0.46  0.00 0.43  0.43  0.43 0.00  0.00  0.00
Volume/Cap: 0.00  0.53  0.53 0.37  0.19  0.00 0.53  0.53  0.53 0.00  0.00  0.00
Delay/Veh:   0.0  14.1  14.1 12.7  11.3   0.0 15.1  15.1  15.1  0.0   0.0   0.0
User DelAdj: 1.00 1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00
AdjDel/Veh:  0.0  14.1  14.1 12.7  11.3   0.0 15.1  15.1  15.1  0.0   0.0   0.0
DesignQueue:   0     8     2    4     3     0    2    15     8    0     0     0
*********************************************************************************
```

```
Default Scenario           Mon Jul 21, 2003 15:18:05                 Page 7-1
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                            Base Volume Alternative
******************************************************************************
Intersection #2 Main Street/1st Street
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group:  xxxx  RT     RT     L     T  xxxx   LTR  LTR    LTR  xxxx xxxx  xxxx
#LnsInGrps:     0   1      1     1     1     0     3    3      3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12     12    12   12    12    12   12     12    12   12    12
CrosswalkWid        8                  8                8                8
% Hev Veh:          2                  2                0                2
Grade:             0%                 0%               0%               0%
Parking/Hr:        No                 No               No               No
Bus Stp/Hr:         0                  0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                  0                0                0
ExclusiveRT:     Include            Include          Include          Include
% RT Prtct:         0                  0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r     5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.98 0.98 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98  xxxx xxxx xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.65 xxxx xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.63 0.98  1.00  0.90 0.90  0.90  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.63 0.98  1.00  0.82 0.82  0.82  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:   < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:   < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
******************************************************************************



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Default Scenario           Mon Jul 21, 2003 15:18:05                 Page 7-2
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                          2000 HCM Operations Method
                            Base Volume Alternative
******************************************************************************
Intersection #2 Main Street/1st Street
******************************************************************************
Approach:                                     North     South      East      West
Cycle Length, C:                             xxxxxx        70    xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:         xxxxxx     32.20    xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:      xxxxxx     32.20    xxxxxx    xxxxxx
Opposing Effective Green Time, go:           xxxxxx     32.20    xxxxxx    xxxxxx
Number Of Opposing Lanes, No:                xxxxxx         1    xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:            xxxxxx         1    xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:           xxxxxx       205    xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt: xxxxxx      1.00    xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx      1.00    xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                   xxxxxx      3.99    xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:             xxxxxx       440    xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:      xxxxxx      8.56    xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:                 xxxxxx      1.00    xxxxxx    xxxxxx
Lost Time Per Phase, tl:                     xxxxxx      4.00    xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:  xxxxxx      0.00    xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                   xxxxxx      0.54    xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:       xxxxxx      9.20    xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu:    xxxxxx     23.00    xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n:  xxxxxx      4.60    xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx      0.00    xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx    xxxxxx    xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx      1.00    xxxxxx    xxxxxx
Through-car Equivalents, el1:                xxxxxx      1.98    xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2:    xxxxxx      1.00    xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:   xxxxxx      0.12    xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm: xxxxxx      0.65    xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:            xxxxxx      0.65    xxxxxx    xxxxxx
******************************************************************************



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Default Scenario          Mon Jul 21, 2003 15:18:05                 Page 8-1
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #3 College Street/Hancock Street
******************************************************************************
Cycle (sec):          70               Critical Vol./Cap. (X):        0.698
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):       15.1
Optimal Cycle:        45               Level Of Service:                  B
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0     0     0     0     0     0     0     0     0     0
Lanes:         1  0  1  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     100   130     0     0   350    95     0     0     0    45  1380   355
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  100   130     0     0   350    95     0     0     0    45  1380   355
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   100   130     0     0   350    95     0     0     0    45  1380   355
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  100   130     0     0   350    95     0     0     0    45  1380   355
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   100   130     0     0   350    95     0     0     0    45  1380   355
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.73  0.98  1.00  1.00  0.95  0.95  1.00  1.00  1.00  0.84  0.84  0.84
Lanes:       1.00  1.00  0.00  0.00  0.79  0.21  0.00  0.00  0.00  0.07  2.33  0.60
Final Sat.:  1391  1862     0     0  1422   386     0     0     0   121  3708   954
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07  0.07  0.00  0.00  0.25  0.25  0.00  0.00  0.00  0.37  0.37  0.37
Crit Moves:                         ****                                ****
Green/Cycle: 0.35  0.35  0.00  0.00  0.35  0.35  0.00  0.00  0.00  0.53  0.53  0.53
Volume/Cap:  0.20  0.20  0.00  0.00  0.70  0.70  0.00  0.00  0.00  0.70  0.70  0.70
Delay/Veh:   16.0  15.9   0.0   0.0  22.9  22.9   0.0   0.0   0.0  13.0  13.0  13.0
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  16.0  15.9   0.0   0.0  22.9  22.9   0.0   0.0   0.0  13.0  13.0  13.0
DesignQueue:    3     3     0     0     9     3     0     0     0     1    27     7
******************************************************************************




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Default Scenario          Mon Jul 21, 2003 15:18:06                 Page 9-1
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                           Base Volume Alternative
******************************************************************************
Intersection #3 College Street/Hancock Street
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  1  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
Lane Group:     L     T  xxxx  xxxx    RT    RT  xxxx  xxxx  xxxx   LTR   LTR   LTR
#LnsInGrps:     1     1     0     0     1     1     0     0     0     3     3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:            2                 2                 0                 2
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:       Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      2  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx    5r    5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Hev Veh Adj: 0.98  0.98 xxxxx  xxxx  0.98  0.98  xxxx  xxxx xxxxx  0.98  0.98  0.98
Grade Adj:   1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Parking Adj: xxxx  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Bus Stp Adj: xxxx  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Area Adj:    1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
RT Adj:      xxxx  xxxx xxxxx  xxxx  0.97  0.97  xxxx  xxxx xxxxx  0.97  0.97  0.97
LT Adj:      0.75  xxxx xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  0.97  0.97  0.97
PedBike Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj: 0.73  0.98  1.00  1.00  0.95  0.95  1.00  1.00  1.00  0.92  0.92  0.92
Usr Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.91  0.91  0.91
Fnl Sat Adj: 0.73  0.98  1.00  1.00  0.95  0.95  1.00  1.00  1.00  0.84  0.84  0.84
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:   < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:   < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > > >
DelAdjFctr:  1.00  1.00  0.00  0.00  1.00  1.00  0.00  0.00  0.00  1.00  1.00  1.00
******************************************************************************




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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #3 College Street/Hancock Street
*******************************************************************************
Approach:                                       North    South    East     West
Cycle Length, C:                                   70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:            24.68   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:         24.68   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:              24.68   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                       1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                   1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                100   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:     1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:      1.00   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                       1.94   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                  445   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:          8.65   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                     1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                         4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:      1.96   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                       0.65   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          12.14   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       12.54   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:      5.09   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:     0.00   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:               xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:     1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                    1.99   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:        1.00   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.16   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     0.75   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                0.75   xxxxxx   xxxxxx   xxxxxx
*******************************************************************************
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Cycle (sec):           70               Critical Vol./Cap. (X):        0.599
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):       15.7
Optimal Cycle:         37               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  155   30   375  135    0   100 1010   20     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0  155   30   375  135    0   100 1010   20     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:     0  155   30   375  135    0   100 1010   20     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:    0  155   30   375  135    0   100 1010   20     0    0    0
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:     0  155   30   375  135    0   100 1010   20     0    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  1.00 0.96 0.96  0.64 0.98 1.00  0.89 0.89 0.89  1.00 1.00 1.00
Lanes:       0.00 0.84 0.16  1.00 1.00 0.00  0.27 2.68 0.05  0.00 0.00 0.00
Final Sat.:     0 1526  295  1221 1862    0   447 4516   89     0    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.10 0.10  0.31 0.07 0.00  0.22 0.22 0.22  0.00 0.00 0.00
Crit Moves:                  ****                  ****
Green/Cycle: 0.00 0.51 0.51  0.51 0.51 0.00  0.37 0.37 0.37  0.00 0.00 0.00
Volume/Cap:  0.00 0.20 0.20  0.60 0.14 0.00  0.60 0.60 0.60  0.00 0.00 0.00
Delay/Veh:    0.0  9.4  9.4  13.6  9.0  0.0  18.2 18.2 18.2   0.0  0.0  0.0
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:   0.0  9.4  9.4  13.6  9.0  0.0  18.2 18.2 18.2   0.0  0.0  0.0
DesignQueue:    0    3    1     8    3    0     3   26    1     0    0    0
*******************************************************************************
```

```
-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #4 College Street/1st Street
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group: xxxx  RT    RT     L    T   xxxx   LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:    0    1    1     1    1     0     3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12   12    12   12    12    12   12    12    12   12    12
CrosswalkWid        8               8                8                8
% Hev Veh:          2               2                2                0
Grade:             0%              0%               0%               0%
Parking/Hr:        No              No               No               No
Bus Stp/Hr:         0               0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0               0                0                0
ExclusiveRT:     Include         Include          Include          Include
% RT Prtct:         0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.98 0.98 xxxxx  0.98 0.98  0.98  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98  xxxx xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.66 xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.97 0.97  0.97  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.89 0.89  0.89  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
*****************************************************************************
```

```
-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #4 College Street/1st Street
*****************************************************************************
Approach:                                       North    South     East     West
Cycle Length, C:                               xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           xxxxxx    35.88   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        xxxxxx    35.88   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             xxxxxx    35.88   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                  xxxxxx        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:              xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:             xxxxxx      375   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:   xxxxxx     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    xxxxxx     1.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                     xxxxxx     7.29   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:               xxxxxx      185   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        xxxxxx     3.60   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                   xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                       xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:    xxxxxx     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                     xxxxxx     0.49   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:         xxxxxx     2.12   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:      xxxxxx    33.76   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:    xxxxxx     1.06   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   xxxxxx     0.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:               xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:   xxxxxx     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                  xxxxxx     1.58   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:      xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     xxxxxx     0.11   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   xxxxxx     0.66   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:              xxxxxx     0.66   xxxxxx   xxxxxx
*****************************************************************************
```

```
Default Scenario            Mon Jul 21, 2003 15:18:06                Page 12-1
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #5 OR 99W/Villa Road
*******************************************************************************
Cycle (sec):          135                Critical Vol./Cap. (X):         0.758
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):         38.8
Optimal Cycle:         86                Level Of Service:                   D
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:   0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     490   185    10   280    70    85   115   875     5    30  1200   170
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  490   185    10   280    70    85   115   875     5    30  1200   170
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   490   185    10   280    70    85   115   875     5    30  1200   170
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  490   185    10   280    70    85   115   875     5    30  1200   170
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   490   185    10   280    70    85   115   875     5    30  1200   170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.90  0.97  0.97  0.93  0.98  0.83  0.93  0.93  0.93  0.93  0.93  0.83
Lanes:       2.00  0.95  0.05  1.00  1.00  1.00  1.00  1.99  0.01  1.00  2.00  1.00
Final Sat.:  3432  1752    95  1769  1862  1583  1769  3514    20  1769  3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14  0.11  0.11  0.16  0.04  0.05  0.07  0.25  0.25  0.02  0.34  0.11
Crit Moves:        ****        ****              ****                    ****
Green/Cycle: 0.25  0.14  0.14  0.21  0.10  0.10  0.09  0.50  0.50  0.03  0.45  0.45
Volume/Cap:  0.56  0.76  0.76  0.76  0.40  0.56  0.76  0.50  0.50  0.50  0.76  0.24
Delay/Veh:   44.8  68.1  68.1  59.0  58.9  63.3  79.9  22.8  22.8  70.4  33.3  23.3
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  44.8  68.1  68.1  59.0  58.9  63.3  79.9  22.8  22.8  70.4  33.3  23.3
DesignQueue:   28    12     1    17     5     6     8    35     0     2    54     7
*******************************************************************************




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Default Scenario            Mon Jul 21, 2003 15:18:06                Page 13-1
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #5 OR 99W/Villa Road
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  1  1  0    1  0  2  0  1
Lane Group:    L    RT    RT    L     T     R    L    RT    RT    L     T     R
#LnsInGrps:    2     1     1    1     1     1    1     2     2    1     2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid        8                 8                 8                 8
% Hev Veh:          2                 2                 2                 2
Grade:             0%                0%                0%                0%
Parking/Hr:        No                No                No                No
Bus Stp/Hr:         0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                 0                 0                 0
ExclusiveRT:     Include           Include           Include           Include
% RT Prtct:         0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Hev Veh Adj: 0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98
Grade Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Parking Adj: xxxx  1.00  1.00  xxxx  xxxx  1.00  xxxx  1.00  1.00  xxxx  xxxx  1.00
Bus Stp Adj: xxxx  1.00  1.00  xxxx  xxxx  1.00  xxxx  1.00  1.00  xxxx  xxxx  1.00
Area Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
RT Adj:      xxxx  0.99  0.99  xxxx  xxxx  0.85  xxxx  1.00  1.00  xxxx  xxxx  0.85
LT Adj:      0.95  xxxx xxxxx  0.95  xxxx xxxxx  0.95  xxxx xxxxx  0.95  xxxx xxxxx
PedBike Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj: 0.93  0.97  0.97  0.93  0.98  0.83  0.93  0.98  0.98  0.93  0.98  0.83
Usr Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj: 0.97  1.00  1.00  1.00  1.00  1.00  1.00  0.95  0.95  1.00  0.95  1.00
Fnl Sat Adj: 0.90  0.97  0.97  0.93  0.98  0.83  0.93  0.93  0.93  0.93  0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > >
DelAdjFctr:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
*******************************************************************************




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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                    Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #6 OR 99W/Elliot Road
*******************************************************************************
Cycle (sec):        135              Critical Vol./Cap. (X):         0.728
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):        32.1
Optimal Cycle:       68              Level Of Service:                   C
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted        Protected        Protected
Rights:         Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     85   15   170    40   25   280    80 1025     5   155 1205   180
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  85   15   170    40   25   280    80 1025     5   155 1205   180
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   85   15   170    40   25   280    80 1025     5   155 1205   180
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  85   15   170    40   25   280    80 1025     5   155 1205   180
PCE Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   85   15   170    40   25   280    80 1025     5   155 1205   180
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.39 0.39  0.83  0.83 0.83  0.83  0.93 0.93  0.93  0.93 0.91  0.91
Lanes:      0.85 0.15  1.00  0.12 0.07  0.81  1.00 1.99  0.01  1.00 1.74  0.26
Final Sat.:  633  112  1583   183  114  1280  1769 3517    17  1769 3020   451
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.13 0.13  0.11  0.22 0.22  0.22  0.05 0.29  0.29  0.09 0.40  0.40
Crit Moves:                       ****        ****                   ****
Green/Cycle: 0.30 0.30  0.30  0.30 0.30  0.30  0.06 0.47  0.47  0.14 0.55  0.55
Volume/Cap: 0.45 0.45  0.36  0.73 0.73  0.73  0.73 0.62  0.62  0.62 0.73  0.73
Delay/Veh:  39.6 39.6  37.5  47.9 47.9  47.9  83.7 27.5  27.5  59.3 24.4  24.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 39.6 39.6  37.5  47.9 47.9  47.9  83.7 27.5  27.5  59.3 24.4  24.4
DesignQueue:   5    1     9     2    1    15     6   44     0    10   45     7
*******************************************************************************
```

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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************
Intersection #6 OR 99W/Elliot Road
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
Lane Group:   LT   LT     R   LTR  LTR   LTR     L   RT    RT     L   RT    RT
#LnsInGrps:    1    1     1     1    1     1     1    2     2     1    2     2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                2                2
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:    5    5  xxxx     5    5     5     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  0.89 0.89  0.89  xxxx 1.00  1.00  xxxx 0.98  0.98
LT Adj:      0.40 0.40 xxxxx  0.95 0.95  0.95  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.39 0.39  0.83  0.83 0.83  0.83  0.93 0.98  0.98  0.93 0.96  0.96
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.95  1.00 0.95  0.95
Fnl Sat Adj: 0.39 0.39  0.83  0.83 0.83  0.83  0.93 0.93  0.93  0.93 0.91  0.91
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************
```

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-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #6 OR 99W/Elliot Road
*****************************************************************************
Approach:                                      North    South    East     West
Cycle Length, C:                                135      135    xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           40.56    40.56   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        40.56    40.56   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             40.56    40.56   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                      1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                  1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                85       40   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    0.85     0.12   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     0.12   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      3.19     1.50   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 345      100   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        12.94     3.75   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     1.35     9.37   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      0.70     0.70   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:         19.80     1.56   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:      20.76    31.19   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:     9.23   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    0.88   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx     0.81   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:    0.85     0.12   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   1.99     1.55   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:       5.86   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.09     0.06   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.40     0.95   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               0.40     0.95   xxxxxx   xxxxxx
*****************************************************************************
```

```
-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
*****************************************************************************
Cycle (sec):          70                 Critical Vol./Cap. (X):        0.406
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        10.2
Optimal Cycle:        27                 Level Of Service:                 B
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       1  0  0  1  0   1  0  0  1  0   0  1  0  0  1   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    145  420    10    15  415    90    60   60   115    70   40    60
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse: 145  420    10    15  415    90    60   60   115    70   40    60
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:  145  420    10    15  415    90    60   60   115    70   40    60
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 145  420    10    15  415    90    60   60   115    70   40    60
PCE Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:  145  420    10    15  415    90    60   60   115    70   40    60
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.42 0.98  0.98  0.47 0.95  0.95  0.78 0.78  0.83  0.73 0.73  0.83
Lanes:      1.00 0.98  0.02  1.00 0.82  0.18  0.50 0.50  1.00  0.64 0.36  1.00
Final Sat.:  799 1813    43   894 1489   323   744  744  1583   879  502  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.18 0.23  0.23  0.02 0.28  0.28  0.08 0.08  0.07  0.08 0.08  0.04
Crit Moves:                       ****             ****
Green/Cycle: 0.69 0.69  0.69  0.69 0.69  0.69  0.20 0.20  0.20  0.20 0.20  0.20
Volume/Cap: 0.26 0.34  0.34  0.02 0.41  0.41  0.41 0.41  0.37  0.40 0.40  0.19
Delay/Veh:   4.5  4.6   4.6   3.5  5.0   5.0  25.4 25.4  25.0  25.4 25.4  23.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  4.5  4.6   4.6   3.5  5.0   5.0  25.4 25.4  25.0  25.4 25.4  23.7
DesignQueue:   2    5     0     0    5     1     2    2     4     2    1     2
*****************************************************************************
```

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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
******************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
******************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  0  1    0  1  0  0  1
Lane Group:    L   RT     RT    L   RT     RT   LT   LT     R    LT   LT     R
#LnsInGrps:    1    1      1    1    1      1    1    1     1     1    1     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12     12   12   12     12   12   12    12    12   12    12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                2                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx    2 xxxx  xxxx     5    5  xxxx     5    5  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 1.00  1.00  xxxx 0.97  0.97  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:      0.43 xxxx xxxxx  0.48 xxxx xxxxx  0.80 0.80 xxxxx  0.74 0.74 xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.42 0.98  0.98  0.47 0.95  0.95  0.78 0.78  0.83  0.73 0.73  0.83
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.42 0.98  0.98  0.47 0.95  0.95  0.78 0.78  0.83  0.73 0.73  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
******************************************************************************
```

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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
******************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
******************************************************************************
Approach:                                    North    South     East     West
Cycle Length, C:                                70       70       70       70
Actual Green Time Per Lane Group, G:         48.08    48.08    13.92    13.92
Effective Green Time Per Lane Group, g:      48.08    48.08    13.92    13.92
Opposing Effective Green Time, go:           48.08    48.08    13.92    13.92
Number Of Opposing Lanes, No:                    1        1        1        1
Number Of Lanes In Lane Group, N:                1        1        1        1
Adjusted Left-Turn Flow Rate, Vlt:             145       15       60       70
Proportion of Left Turns in Lane Group, Plt:  1.00     1.00     0.50     0.64
Proportion of Left Turns in Opp Flow, Plto: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    2.82     0.29     1.17     1.36
Adjusted Opposing Flow Rate, Vo:               505      430      110      120
Opposing Flow Per Lane Per Cycle, Volc:       9.82     8.36     2.14     2.33
Opposing Platoon Ratio, Rpo:                  1.00     1.00     1.00     1.00
Lost Time Per Phase, tl:                      4.00     4.00     4.00     4.00
Eff grn until arrival of left-turn car, gf:   0.00     0.00     1.20     0.63
Opposing Queue Ratio, qro:                    0.31     0.31     0.80     0.80
Eff grn blocked by opposing queue, gq:        4.55     2.88     0.00     0.01
Eff grn while left turns filter thru, gu:    43.53    45.20    12.72    13.29
Max opposing cars arriving during gq-gf, n: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              0.56     0.61     0.81     0.80
Proportion of Left Turns in Shared Lane, pl:  1.00     1.00     0.50     0.64
Through-car Equivalents, el1:                 2.11     1.96     1.57     1.58
Single Lane Through-car Equivalents, el2:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    0.08     0.08     0.22     0.24
Single Lane Left Turn Adjustment Factor, fm:  0.43     0.48     0.80     0.74
Left Turn Adjustment Factor, flt:             0.43     0.48     0.80     0.74
******************************************************************************
```

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-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #8 OR 99W/Springbrook Street
*****************************************************************************
Cycle (sec):          135            Critical Vol./Cap. (X):        0.846
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):     41.1
Optimal Cycle:        112            Level Of Service:                  D
*****************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     185  285    40   200  370    35   195 1005   180    40 1355   275
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  185  285    40   200  370    35   195 1005   180    40 1355   275
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   185  285    40   200  370    35   195 1005   180    40 1355   275
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  185  285    40   200  370    35   195 1005   180    40 1355   275
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   185  285    40   200  370    35   195 1005   180    40 1355   275
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.83  0.93 0.93  0.83
Lanes:       2.00 1.00  1.00  2.00 1.00  1.00  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3432 1862  1583  3432 1862  1583  1769 3538  1583  1769 3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.15  0.03  0.06 0.20  0.02  0.11 0.28  0.11  0.02 0.38  0.17
Crit Moves:  ****                  ****        ****                  ****
Green/Cycle: 0.06 0.22  0.22  0.08 0.23  0.23  0.13 0.54  0.54  0.04 0.45  0.45
Volume/Cap:  0.85 0.71  0.12  0.71 0.85  0.09  0.85 0.53  0.21  0.53 0.85  0.38
Delay/Veh:   87.6 54.7  42.7  68.4 63.5  40.5  81.4 20.2  16.2  69.9 37.2  24.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  87.6 54.7  42.7  68.4 63.5  40.5  81.4 20.2  16.2  69.9 37.2  24.8
DesignQueue:   13   17     2    14   22     2    13   37     6     3   61    12
*****************************************************************************
```

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-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #8 OR 99W/Springbrook Street
*****************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
Lane Group:   L     T     R    L     T     R    L     T     R    L     T     R
#LnsInGrps:   2     1     1    2     1     1    1     2     1    1     2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 0.97 1.00  1.00  0.97 1.00  1.00  1.00 0.95  1.00  1.00 0.95  1.00
Fnl Sat Adj: 0.90 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.83  0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <   Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*****************************************************************************
```

```
Default Scenario            Mon Jul 21, 2003 15:18:06               Page 20-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #9 OR 99W/Northern Arterial
*******************************************************************************
Cycle (sec):          135              Critical Vol./Cap. (X):        0.758
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):      40.4
Optimal Cycle:         86              Level Of Service:                 D
*******************************************************************************
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:      L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected         Protected         Protected         Protected
Rights:          Include           Include           Include           Include
Min. Green:     0    0      0     0    0      0     0    0      0     0    0      0
Lanes:          1  0  1  0  1     2  0  1  0  1     1  0  1  1  0     1  0  1  1  1
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      95  150    100    550  100    120    120 1020     50    150 1080    715
Growth Adj:  1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
Initial Bse:   95  150    100    550  100    120    120 1020     50    150 1080    715
User Adj:    1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
PHF Adj:     1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
PHF Volume:    95  150    100    550  100    120    120 1020     50    150 1080    715
Reduct Vol:     0    0      0      0    0      0      0    0      0      0    0      0
Reduced Vol:   95  150    100    550  100    120    120 1020     50    150 1080    715
PCE Adj:     1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
MLF Adj:     1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
Final Vol.:    95  150    100    550  100    120    120 1020     50    150 1080    715
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1900 1900   1900   1900 1900   1900   1900 1900   1900   1900 1900   1900
Adjustment:  0.93 0.98   0.83   0.90 0.98   0.83   0.93 0.92   0.92   0.93 0.88   0.88
Lanes:       1.00 1.00   1.00   2.00 1.00   1.00   1.00 1.91   0.09   1.00 1.81   1.19
Final Sat.:  1769 1862   1583   3432 1862   1583   1769 3349    164   1769 3001   1987
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.08   0.06   0.16 0.05   0.08   0.07 0.30   0.30   0.08 0.36   0.36
Crit Moves:       ****          ****               ****                      ****
Green/Cycle: 0.13 0.11   0.11   0.21 0.19   0.19   0.09 0.44   0.44   0.12 0.47   0.47
Volume/Cap:  0.41 0.76   0.59   0.76 0.29   0.41   0.76 0.69   0.69   0.69 0.76   0.76
Delay/Veh:   54.9 74.2   63.2   54.6 47.7   49.3   78.9 31.7   31.7   65.9 30.6   30.6
User DelAdj: 1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
AdjDel/Veh:  54.9 74.2   63.2   54.6 47.7   49.3   78.9 31.7   31.7   65.9 30.6   30.6
DesignQueue:    6   10      7     34    6      7      8   46      2     10   46     31
*******************************************************************************


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Default Scenario            Mon Jul 21, 2003 15:18:06               Page 21-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #9 OR 99W/Northern Arterial
*******************************************************************************
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:      L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:          1  0  1  0  1     2  0  1  0  1     1  0  1  1  0     1  0  1  1  1
Lane Group:     L    T      R     L    T      R     L   RT     RT     L   RT     RT
#LnsInGrps:     1    1      1     2    1      1     1    2      2     1    3      3
------------|----------------||----------------||----------------||----------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12     12     12   12     12     12   12     12     12   12     12
CrosswalkWid         8                  8                  8                  8
% Hev Veh:           2                  2                  2                  2
Grade:              0%                 0%                 0%                 0%
Parking/Hr:         No                 No                 No                 No
Bus Stp/Hr:          0                  0                  0                  0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                  0                  0                  0
ExclusiveRT:      Include            Include            Include            Include
% RT Prtct:          0                  0                  0                  0
------------|----------------||----------------||----------------||----------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1 xxxx   xxxx      1 xxxx   xxxx      1 xxxx   xxxx      1 xxxx   xxxx
------------|----------------||----------------||----------------||----------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
Hev Veh Adj: 0.98 0.98   0.98   0.98 0.98   0.98   0.98 0.98   0.98   0.98 0.98   0.98
Grade Adj:   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
Parking Adj: xxxx xxxx   1.00   xxxx xxxx   1.00   xxxx 1.00   1.00   xxxx 1.00   1.00
Bus Stp Adj: xxxx xxxx   1.00   xxxx xxxx   1.00   xxxx 1.00   1.00   xxxx 1.00   1.00
Area Adj:    1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
RT Adj:      xxxx xxxx   0.85   xxxx xxxx   0.85   xxxx 0.99   0.99   xxxx 0.94   0.94
LT Adj:      0.95 xxxx  xxxxx   0.95 xxxx  xxxxx   0.95 xxxx  xxxxx   0.95 xxxx  xxxxx
PedBike Adj: 1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
HCM Sat Adj: 0.93 0.98   0.83   0.93 0.98   0.83   0.93 0.97   0.97   0.93 0.92   0.92
Usr Sat Adj: 1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
MLF Sat Adj: 1.00 1.00   1.00   0.97 1.00   1.00   1.00 0.95   0.95   1.00 0.95   0.95
Fnl Sat Adj: 0.93 0.98   0.83   0.90 0.98   0.83   0.93 0.92   0.92   0.93 0.88   0.88
------------|----------------||----------------||----------------||----------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00   1.00 1.00   1.00
*******************************************************************************


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------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
******************************************************************************
Cycle (sec):          70               Critical Vol./Cap. (X):        0.595
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):       18.4
Optimal Cycle:        45               Level Of Service:                 B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     160   270    40   115   230   100    50   260   225    10   300   145
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  160   270    40   115   230   100    50   260   225    10   300   145
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   160   270    40   115   230   100    50   260   225    10   300   145
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  160   270    40   115   230   100    50   260   225    10   300   145
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   160   270    40   115   230   100    50   260   225    10   300   145
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.41  0.96  0.96  0.43  0.94  0.94  0.93  0.91  0.91  0.93  0.93  0.93
Lanes:       1.00  0.87  0.13  1.00  0.70  0.30  1.00  0.54  0.46  1.00  0.67  0.33
Final Sat.:   773  1591   236   817  1239   539  1769   928   803  1769  1194   577
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21  0.17  0.17  0.14  0.19  0.19  0.03  0.28  0.28  0.01  0.25  0.25
Crit Moves:  ****                                     ****        ****
Green/Cycle: 0.35  0.35  0.35  0.35  0.35  0.35  0.05  0.47  0.47  0.01  0.43  0.43
Volume/Cap:  0.59  0.49  0.49  0.40  0.53  0.53  0.58  0.59  0.59  0.59  0.58  0.58
Delay/Veh:   22.3  18.5  18.5  18.2  19.2  19.2  42.3  14.8  14.8  81.0  16.2  16.2
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  22.3  18.5  18.5  18.2  19.2  19.2  42.3  14.8  14.8  81.0  16.2  16.2
DesignQueue:    4     7     1     3     6     3     2     6     5     0     7     3
******************************************************************************
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------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                        Base Volume Alternative
******************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
Lane Group:     L    RT     RT    L    RT     RT    L    RT     RT    L    RT     RT
#LnsInGrps:     1     1      1    1     1      1    1     1      1    1     1      1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid         8                 8                 8                 8
% Hev Veh:           2                 2                 2                 2
Grade:              0%                0%                0%                0%
Parking/Hr:         No                No                No                No
Bus Stp/Hr:          0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                 0                 0                 0
ExclusiveRT:    Include           Include           Include           Include
% RT Prtct:          0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      2 xxxx  xxxx     2 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Hev Veh Adj:  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98
Grade Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Parking Adj:  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00
Bus Stp Adj:  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00
Area Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
RT Adj:       xxxx  0.98  0.98  xxxx  0.96  0.96  xxxx  0.93  0.93  xxxx  0.95  0.95
LT Adj:       0.42  xxxx xxxxx  0.44  xxxx xxxxx  0.95  xxxx xxxxx  0.95  xxxx xxxxx
PedBike Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj:  0.41  0.96  0.96  0.43  0.94  0.94  0.93  0.91  0.91  0.93  0.93  0.93
Usr Sat Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Fnl Sat Adj:  0.41  0.96  0.96  0.43  0.94  0.94  0.93  0.91  0.91  0.93  0.93  0.93
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
******************************************************************************
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-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
*****************************************************************************
Approach:                                         North    South     East     West
Cycle Length, C:                                     70       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:              24.39    24.39   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:           24.39    24.39   xxxxxx   xxxxxx
Opposing Effective Green Time, go:                24.39    24.39   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                         1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                     1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                  160      115   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:       1.00     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:      xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                         3.11     2.24   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                    330      310   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:            6.42     6.03   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                       1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                           4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:        0.00     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                         0.65     0.65   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:             6.24     5.49   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:         18.15    18.90   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:      xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                   0.67     0.68   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:       1.00     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                      1.80     1.77   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:        xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:         0.16     0.16   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:       0.41     0.44   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                  0.41     0.44   xxxxxx   xxxxxx
*****************************************************************************
```

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-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #11 Mountain View Drive/Villa Road
*****************************************************************************
Cycle (sec):          70               Critical Vol./Cap. (X):        0.533
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):       13.9
Optimal Cycle:        41               Level Of Service:                  B
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted        Protected        Protected
Rights:         Include          Include          Include          Include
Min. Green:   0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     105   50    65    30   35    10    10  475    80   105  495    25
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  105   50    65    30   35    10    10  475    80   105  495    25
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   105   50    65    30   35    10    10  475    80   105  495    25
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  105   50    65    30   35    10    10  475    80   105  495    25
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   105   50    65    30   35    10    10  475    80   105  495    25
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.72 0.90  0.90  0.66 0.95  0.95  0.93 0.96  0.96  0.93 0.97  0.97
Lanes:       1.00 0.43  0.57  1.00 0.78  0.22  1.00 0.86  0.14  1.00 0.95  0.05
Final Sat.:  1361  741   963  1253 1400   400  1769 1559   262  1769 1760    89
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.07  0.07  0.02 0.02  0.02  0.01 0.30  0.30  0.06 0.28  0.28
Crit Moves:  ****                                   ****        ****
Green/Cycle: 0.14 0.14  0.14  0.14 0.14  0.14  0.01 0.57  0.57  0.11 0.67  0.67
Volume/Cap:  0.53 0.47  0.47  0.17 0.17  0.17  0.42 0.53  0.53  0.53 0.42  0.42
Delay/Veh:   30.5 28.8  28.8  26.7 26.6  26.6  45.8  9.7   9.7  32.2  5.5   5.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  30.5 28.8  28.8  26.7 26.6  26.6  45.8  9.7   9.7  32.2  5.5   5.5
DesignQueue:    4    2     2     1    1     0     0    9     1     4    7     0
*****************************************************************************
```

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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #11 Mountain View Drive/Villa Road
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
Lane Group:   L   RT     RT    L   RT     RT    L   RT     RT    L   RT     RT
#LnsInGrps:    1    1      1    1    1      1    1    1      1    1    1      1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12     12   12   12     12   12   12     12   12   12     12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                2                2
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:   < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx     2 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.92  0.92  xxxx 0.97  0.97  xxxx 0.98  0.98  xxxx 0.99  0.99
LT Adj:      0.73 xxxx xxxxx  0.67 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.72 0.90  0.90  0.66 0.95  0.95  0.93 0.96  0.96  0.93 0.97  0.97
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.72 0.90  0.90  0.66 0.95  0.95  0.93 0.96  0.96  0.93 0.97  0.97
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*****************************************************************************
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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #11 Mountain View Drive/Villa Road
*****************************************************************************
Approach:                                     North    South     East     West
Cycle Length, C:                                 70       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          10.14    10.14   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       10.14    10.14   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            10.14    10.14   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                     1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                 1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:              105       30   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:   1.00     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                     2.04     0.58   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 45      115   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        0.88     2.24   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                   1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                       4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:    0.00     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                     0.86     0.86   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:         0.00     0.09   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     10.14    10.05   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:               0.85     0.80   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:   1.00     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                  1.37     1.47   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.39     0.39   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:   0.73     0.67   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:              0.73     0.67   xxxxxx   xxxxxx
*****************************************************************************
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--------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

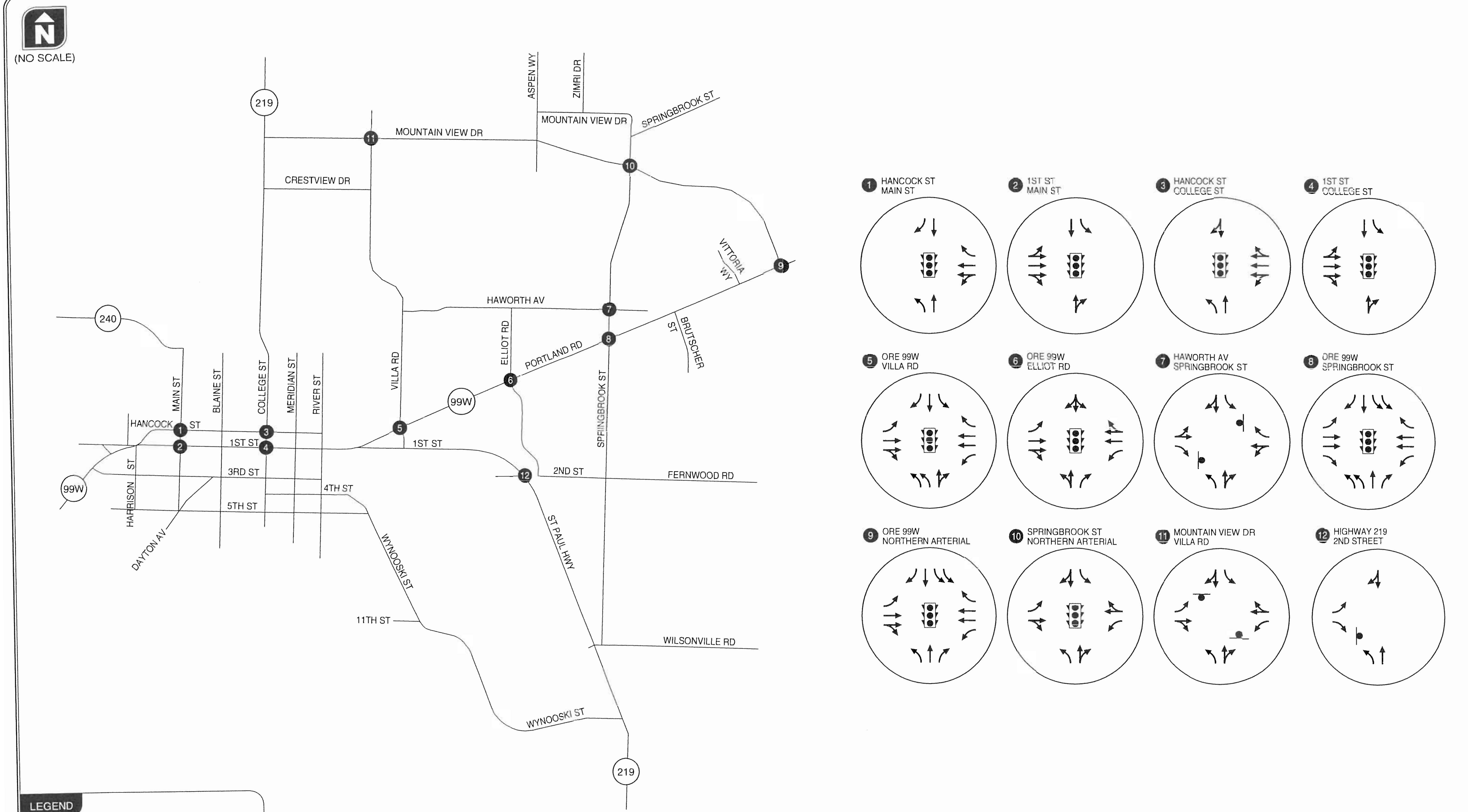
                      Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #12 Hwy 219/2nd Street
********************************************************************************
Average Delay (sec/veh):     20.9          Worst Case Level Of Service:        C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25  630     0     0  545    15    55     0    75     0     0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25  630     0     0  545    15    55     0    75     0     0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    25  630     0     0  545    15    55     0    75     0     0     0
Reduct Vol:     0    0     0     0    0     0     0     0     0     0     0     0
Final Vol.:    25  630     0     0  545    15    55     0    75     0     0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  560 xxxx xxxxx  xxxx xxxx xxxxx  1233 xxxx   553  xxxx xxxx xxxxx
Potent Cap.:  996 xxxx xxxxx  xxxx xxxx xxxxx   193 xxxx   527  xxxx xxxx xxxxx
Move Cap.:    996 xxxx xxxxx  xxxx xxxx xxxxx   189 xxxx   527  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  8.7 xxxx xxxxx xxxxx xxxx xxxxx  31.7 xxxx  13.0 xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     D    *     B     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      xxxxxx           xxxxxx            20.9            xxxxxx
ApproachLOS:        *                *                 C                *
```

```
--------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 3: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                           Base Volume Alternative
********************************************************************************
Intersection #12 Hwy 219/2nd Street
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:             5%               5%               5%               5%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

Appendix L

Alternative 4
2025 Future Traffic Conditions



LEGEND

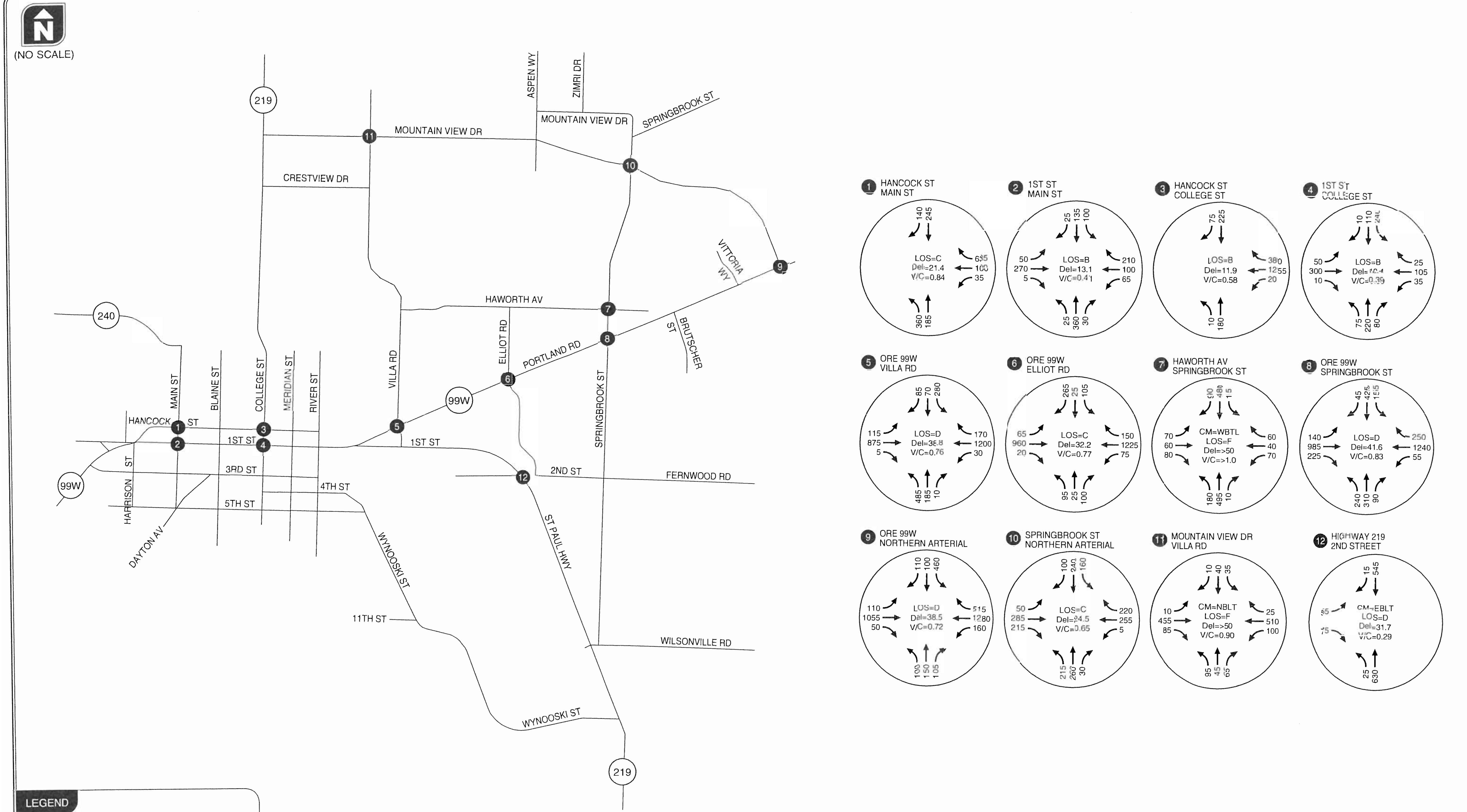
CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES
ALTERNATIVE 4: WITH BYPASS
NEWBERG, OREGON

FIGURE
G1

5193Figs

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2025 WEEKDAY PM PEAK HOUR TRAFFIC CONDITIONS
ALTERNATIVE 4: WITH BYPASS
NEWBERG, OREGON

FIGURE
G2

5193Figs

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

```
--------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                                Scenario Report
Scenario:                 Default Scenario

Command:                  Default Command
Volume:                   Default Volume
Geometry:                 Default Geometry
Impact Fee:               Default Impact Fee
Trip Generation:          Default Trip Generation
Trip Distribution:        Default Trip Distribution
Paths:                    Default Paths
Routes:                   Default Routes
Configuration:            Default Configuration
```

```
--------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
       Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                          Turning Movement Report


Volume     Northbound       Southbound        Eastbound        Westbound      Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right  Volume

#1 Main Street/Hancock Street
Base     360  185    0     0  245  140     0    0    0    35  100  635    1700
Added      0    0    0     0    0    0     0    0    0     0    0    0       0
Total    360  185    0     0  245  140     0    0    0    35  100  635    1700

#2 Main Street/1st Street
Base      25  360   30   100  135   25    50  270    5    65  100  210    1375
Added      0    0    0     0    0    0     0    0    0     0    0    0       0
Total     25  360   30   100  135   25    50  270    5    65  100  210    1375

#3 College Street/Hancock Street
Base      10  180    0     0  225   75     0    0    0    20 1255  380    2145
Added      0    0    0     0    0    0     0    0    0     0    0    0       0
Total     10  180    0     0  225   75     0    0    0    20 1255  380    2145

#4 College Street/1st Street
Base      75  220   80   240  110   10    50  300   10    35  105   25    1260
Added      0    0    0     0    0    0     0    0    0     0    0    0       0
Total     75  220   80   240  110   10    50  300   10    35  105   25    1260

#5 OR 99W/Villa Road
Base     485  185   10   280   70   85   115  875    5    30 1200  170    3510
Added      0    0    0     0    0    0     0    0    0     0    0    0       0
Total    485  185   10   280   70   85   115  875    5    30 1200  170    3510

#6 OR 99W/Elliot Road
Base      95   25  100   105   25  265    65  960   20    75 1225  150    3110
Added      0    0    0     0    0    0     0    0    0     0    0    0       0
Total     95   25  100   105   25  265    65  960   20    75 1225  150    3110

#7 Haworth Avenue/Springbrook Street
Base     180  495   10    15  480   90    70   60   80    70   40   60    1650
Added      0    0    0     0    0    0     0    0    0     0    0    0       0
Total    180  495   10    15  480   90    70   60   80    70   40   60    1650

#8 OR 99W/Springbrook Street
Base     240  310   90   155  425   45   140  985  225    55 1240  250    4160
Added      0    0    0     0    0    0     0    0    0     0    0    0       0
Total    240  310   90   155  425   45   140  985  225    55 1240  250    4160

#9 OR 99W/Northern Arterial
Base     100  150  105   460  100  110   110 1055   50   160 1280  515    4195
Added      0    0    0     0    0    0     0    0    0     0    0    0       0
Total    100  150  105   460  100  110   110 1055   50   160 1280  515    4195
```

```
Default Scenario            Mon Jul 21, 2003 15:16:09                 Page 2-2
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
Volume     Northbound      Southbound      Eastbound       Westbound     Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume


#10 Springbrook Street/Northern Arterial
Base     215  260    30   160  240   100    50  285   215     5  255   220   2035
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    215  260    30   160  240   100    50  285   215     5  255   220   2035

#11 Mountain View Drive/Villa Road
Base      95   45    65    35   40    10    10  455    85   100  510    25   1475
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     95   45    65    35   40    10    10  455    85   100  510    25   1475

#12 Hwy 219/2nd Street
Base      25  630     0     0  545    15    55    0    75     0    0     0   1345
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     25  630     0     0  545    15    55    0    75     0    0     0   1345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```
Default Scenario            Mon Jul 21, 2003 15:16:09                 Page 3-1
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                         Impact Analysis Report
                            Level Of Service

Intersection                               Base          Future        Change
                                         Del/   V/     Del/   V/        in
                                     LOS Veh    C    LOS Veh    C
#  1 Main Street/Hancock Street      C  21.4 0.841   C  21.4 0.841   + 0.000 D/V

#  2 Main Street/1st Street          B  13.1 0.413   B  13.1 0.413   + 0.000 D/V

#  3 College Street/Hancock Street   B  11.9 0.582   B  11.9 0.582   + 0.000 D/V

#  4 College Street/1st Street       B  12.4 0.394   B  12.4 0.394   + 0.000 D/V

#  5 OR 99W/Villa Road               D  38.8 0.758   D  38.8 0.758   + 0.000 D/V

#  6 OR 99W/Elliot Road              C  32.2 0.769   C  32.2 0.769   + 0.000 D/V

#  7 Haworth Avenue/Springbrook Str  F 406.8 0.000   F 406.8 0.000   + 0.000 V/C

#  8 OR 99W/Springbrook Street       D  41.6 0.826   D  41.6 0.826   + 0.000 D/V

#  9 OR 99W/Northern Arterial        D  38.5 0.724   D  38.5 0.724   + 0.000 D/V

# 10 Springbrook Street/Northern Ar  C  24.5 0.652   C  24.5 0.652   + 0.000 D/V

# 11 Mountain View Drive/Villa Road  F  78.9 0.000   F  78.9 0.000   + 0.000 V/C

# 12 Hwy 219/2nd Street              C  20.9 0.000   C  20.9 0.000   + 0.000 V/C


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```

```
Default Scenario             Mon Jul 21, 2003 15:16:09                Page 4-1
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1 Main Street/Hancock Street
******************************************************************************
Cycle (sec):          70                Critical Vol./Cap. (X):        0.841
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        21.4
Optimal Cycle:        67                Level Of Service:                  C
******************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:         1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     360  185     0     0  245   140     0    0     0    35  100   635
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  360  185     0     0  245   140     0    0     0    35  100   635
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   360  185     0     0  245   140     0    0     0    35  100   635
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  360  185     0     0  245   140     0    0     0    35  100   635
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   360  185     0     0  245   140     0    0     0    35  100   635
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.54 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.81 0.81  0.85
Lanes:       1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  0.52 1.48  1.00
Final Sat.:  1024 1862     0     0 1862  1583     0    0     0   796 2273  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.35 0.10  0.00  0.00 0.13  0.09  0.00 0.00  0.00  0.04 0.04  0.39
Crit Moves:  ****                                                          ****
Green/Cycle: 0.42 0.42  0.00  0.00 0.42  0.42  0.00 0.00  0.00  0.47 0.47  0.47
Volume/Cap:  0.84 0.24  0.00  0.00 0.31  0.21  0.00 0.00  0.00  0.09 0.09  0.84
Delay/Veh:   32.1 13.3   0.0   0.0 13.9  13.2   0.0  0.0   0.0  10.4 10.4  24.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  32.1 13.3   0.0   0.0 13.9  13.2   0.0  0.0   0.0  10.4 10.4  24.7
DesignQueue:    9    4     0     0    6     3     0    0     0     1    2    14
******************************************************************************



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```

```
Default Scenario             Mon Jul 21, 2003 15:16:09                Page 5-1
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
         Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                          Base Volume Alternative
******************************************************************************
Intersection #1 Main Street/Hancock Street
******************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  0  1
Lane Group:     L    T  xxxx  xxxx    T     R  xxxx xxxx  xxxx    LT   LT     R
#LnsInGrps:     1    1     0     0    1     1     0    0     0     2    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    2r   2r  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98  0.98  xxxx xxxx xxxxx  1.00 1.00  1.00
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx xxxx  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx xxxx  0.85  xxxx xxxx xxxxx  xxxx xxxx  0.85
LT Adj:      0.55 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.85 0.85 xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.54 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.85 0.85  0.85
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.95 0.95  1.00
Fnl Sat Adj: 0.54 0.98  1.00  1.00 0.98  0.83  1.00 1.00  1.00  0.81 0.81  0.85
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
******************************************************************************



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```
Default Scenario           Mon Jul 21, 2003 15:16:09              Page 5-2
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
***************************************************************************
Intersection #1 Main Street/Hancock Street
***************************************************************************
Approach:                                       North    South    East     West
Cycle Length, C:                                   70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:            29.26   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:         29.26   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:              29.26   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                       1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                   1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                360   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:     1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                       7.00   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                  245   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:          4.76   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                     1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                         4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:      0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                       0.58   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:           2.42   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       26.84   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                 0.72   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:     1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                    1.67   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:      xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.14   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     0.55   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                0.55   xxxxxx   xxxxxx   xxxxxx
***************************************************************************

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```
Default Scenario           Mon Jul 21, 2003 15:16:09              Page 6-1
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                   Level Of Service Computation Report
         2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #2 Main Street/1st Street
***************************************************************************
Cycle (sec):           70             Critical Vol./Cap. (X):        0.413
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):     13.1
Optimal Cycle:         27             Level Of Service:                  B
***************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:         1  0  0  1  0   1  0  0  1  0   0  1  0  1  0   0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25  360    30   100  135    25    50  270     5    65  100   210
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25  360    30   100  135    25    50  270     5    65  100   210
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    25  360    30   100  135    25    50  270     5    65  100   210
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   25  360    30   100  135    25    50  270     5    65  100   210
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    25  360    30   100  135    25    50  270     5    65  100   210
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.64 0.97  0.97  0.44 0.96  0.96  0.81 0.81  0.81  0.72 0.72  0.72
Lanes:       1.00 0.92  0.08  1.00 0.84  0.16  0.31 1.66  0.03  0.39 0.61  1.00
Final Sat.:  1208 1698   142   838 1535   284   473 2556    47   537  827  1364
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.21  0.21  0.12 0.09  0.09  0.11 0.11  0.11  0.12 0.12  0.15
Crit Moves:       ****                                                     ****
Green/Cycle: 0.51 0.51  0.51  0.51 0.51  0.51  0.37 0.37  0.37  0.37 0.37  0.37
Volume/Cap:  0.04 0.41  0.41  0.23 0.17  0.17  0.28 0.28  0.28  0.32 0.32  0.41
Delay/Veh:    8.5 10.8  10.8   9.7  9.2   9.2  15.5 15.5  15.5  15.8 15.8  16.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   8.5 10.8  10.8   9.7  9.2   9.2  15.5 15.5  15.5  15.8 15.8  16.6
DesignQueue:    0    7     1     2    3     0     1    7     0     2    2     5
***************************************************************************

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Default Scenario            Mon Jul 21, 2003 15:16:09                Page 7-1
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #2 Main Street/1st Street
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  1  0    0  1  0  1  0
Lane Group:    L   RT     RT    L   RT     RT   LTR  LTR   LTR   LTR  LTR   LTR
#LnsInGrps:    1    1      1    1    1      1    2    2     2     2    2     2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12     12   12   12     12   12   12    12    12   12    12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                0                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      2 xxxx  xxxx     2 xxxx  xxxx     5    5     5     5    5     5
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  1.00 1.00  1.00  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99  xxxx 0.98  0.98  1.00 1.00  1.00  0.92 0.92  0.92
LT Adj:      0.65 xxxx xxxxx  0.45 xxxx xxxxx  0.85 0.85  0.85  0.84 0.84  0.84
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.64 0.97  0.97  0.44 0.96  0.96  0.85 0.85  0.85  0.76 0.76  0.76
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.95 0.95  0.95  0.95 0.95  0.95
Fnl Sat Adj: 0.64 0.97  0.97  0.44 0.96  0.96  0.81 0.81  0.81  0.72 0.72  0.72
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************



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Default Scenario            Mon Jul 21, 2003 15:16:09                Page 7-2
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #2 Main Street/1st Street
*******************************************************************************
Approach:                                       North     South      East      West
Cycle Length, C:                                   70        70        70        70
Actual Green Time Per Lane Group, G:            35.92     35.92     26.08     26.08
Effective Green Time Per Lane Group, g:         35.92     35.92     26.08     26.08
Opposing Effective Green Time, go:              35.92     35.92     26.08     26.08
Number Of Opposing Lanes, No:                       1         1         2         2
Number Of Lanes In Lane Group, N:                   1         1         2         2
Adjusted Left-Turn Flow Rate, Vlt:                 25       100        50        65
Proportion of Left Turns in Lane Group, Plt:     1.00      1.00      0.15      0.17
Proportion of Left Turns in Opp Flow, Plto:    xxxxxx    xxxxxx    xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                       0.49      1.94      0.97      1.26
Adjusted Opposing Flow Rate, Vo:                  160       390       375       325
Opposing Flow Per Lane Per Cycle, Volc:          3.11      7.58      3.84      3.33
Opposing Platoon Ratio, Rpo:                     1.00      1.00      1.00      1.00
Lost Time Per Phase, tl:                         4.00      4.00      4.00      4.00
Eff grn until arrival of left-turn car, gf:      0.00      0.00      6.99      5.19
Opposing Queue Ratio, qro:                       0.49      0.49      0.63      0.63
Eff grn blocked by opposing queue, gq:           0.00      5.43      1.41      0.61
Eff grn while left turns filter thru, gu:       35.92     30.49     19.09     20.89
Max opposing cars arriving during gq-gf, n:    xxxxxx    xxxxxx    xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   xxxxxx    xxxxxx    xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:                 0.78      0.63      0.64      0.67
Proportion of Left Turns in Shared Lane, pl:     1.00      1.00      0.35      0.40
Through-car Equivalents, el1:                    1.54      1.88      2.09      1.98
Single Lane Through-car Equivalents, el2:      xxxxxx    xxxxxx    xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.11      0.11      0.10      0.11
Single Lane Left Turn Adjustment Factor, fm:     0.65      0.45      0.80      0.77
Left Turn Adjustment Factor, flt:                0.65      0.45      0.85      0.84
*******************************************************************************



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----------------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
****************************************************************************
Intersection #3 College Street/Hancock Street
****************************************************************************
Cycle (sec):          70                 Critical Vol./Cap. (X):        0.582
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        11.9
Optimal Cycle:        36                 Level Of Service:                  B
****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:   0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      10  180     0     0  225    75     0    0     0    20 1255   380
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   10  180     0     0  225    75     0    0     0    20 1255   380
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    10  180     0     0  225    75     0    0     0    20 1255   380
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   10  180     0     0  225    75     0    0     0    20 1255   380
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    10  180     0     0  225    75     0    0     0    20 1255   380
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.80 0.98  1.00  1.00 0.95  0.95  1.00 1.00  1.00  0.83 0.83  0.83
Lanes:       1.00 1.00  0.00  0.00 0.75  0.25  0.00 0.00  0.00  0.04 2.27  0.69
Final Sat.:  1512 1862     0     0 1349   450     0    0     0    57 3597  1089
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.10  0.00  0.00 0.17  0.17  0.00 0.00  0.00  0.35 0.35  0.35
Crit Moves:                         ****                             ****
Green/Cycle: 0.29 0.29  0.00  0.00 0.29  0.29  0.00 0.00  0.00  0.60 0.60  0.60
Volume/Cap:  0.02 0.34  0.00  0.00 0.58  0.58  0.00 0.00  0.00  0.58 0.58  0.58
Delay/Veh:   18.0 20.1   0.0   0.0 23.1  23.1   0.0  0.0   0.0   8.9  8.9   8.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  18.0 20.1   0.0   0.0 23.1  23.1   0.0  0.0   0.0   8.9  8.9   8.9
DesignQueue:    0    5     0     0    7     2     0    0     0     0   21     6
****************************************************************************
```

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----------------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                       Base Volume Alternative
****************************************************************************
Intersection #3 College Street/Hancock Street
****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
Lane Group:    L    T  xxxx  xxxx  RT    RT  xxxx xxxx  xxxx   LTR  LTR   LTR
#LnsInGrps:    1    1     0     0    1     1     0    0     0     3    3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                0                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    5r   5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98  0.98  xxxx xxxx xxxxx  0.98 0.98  0.98
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00  1.00  xxxx xxxx xxxxx  1.00 1.00  1.00
RT Adj:      xxxx xxxx xxxxx  xxxx 0.97  0.97  xxxx xxxx xxxxx  0.97 0.97  0.97
LT Adj:      0.81 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.97 0.97  0.97
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.80 0.98  1.00  1.00 0.95  0.95  1.00 1.00  1.00  0.91 0.91  0.91
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91
Fnl Sat Adj: 0.80 0.98  1.00  1.00 0.95  0.95  1.00 1.00  1.00  0.83 0.83  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
****************************************************************************
```

```
---------------------------------------------------------------------------
          Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                      2000 HCM Operations Method
                        Base Volume Alternative
***************************************************************************
Intersection #3 College Street/Hancock Street
***************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                  70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           20.05   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        20.05   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             20.05   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                      1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                  1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                10   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     1.00   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      0.19   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 300   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         5.83   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:    11.27   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      0.71   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          9.25   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       8.78   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:     0.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    0.00   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:    1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   1.75   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:       1.00   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.20   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.81   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               0.81   xxxxxx   xxxxxx   xxxxxx
***************************************************************************
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Cycle (sec):               70               Critical Vol./Cap. (X):        0.394
Loss Time (sec):            8 (Y+R =  4 sec) Average Delay (sec/veh):       12.4
Optimal Cycle:             26               Level Of Service:                  B
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Permitted         Permitted        Permitted         Permitted
Rights:          Include           Include          Include           Include
Min. Green:     0     0     0     0     0     0     0     0     0     0     0     0
Lanes:        1  0  0  1  0   1  0  0  1  0   0  1  0  1  0   0  1  0  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      75   220    80   240   110    10    50   300    10    35   105    25
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   75   220    80   240   110    10    50   300    10    35   105    25
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    75   220    80   240   110    10    50   300    10    35   105    25
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   75   220    80   240   110    10    50   300    10    35   105    25
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    75   220    80   240   110    10    50   300    10    35   105    25
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.66  0.94  0.94  0.54  0.97  0.97  0.83  0.83  0.83  0.78  0.78  0.78
Lanes:       1.00  0.73  0.27  1.00  0.92  0.08  0.28  1.67  0.05  0.42  1.28  0.30
Final Sat.:  1259  1311   477  1022  1686   153   437  2622    87   631  1892   450
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.06  0.17  0.17  0.23  0.07  0.07  0.11  0.11  0.11  0.06  0.06  0.06
Crit Moves:                    ****                    ****
Green/Cycle: 0.60  0.60  0.60  0.60  0.60  0.60  0.29  0.29  0.29  0.29  0.29  0.29
Volume/Cap:  0.10  0.28  0.28  0.39  0.11  0.11  0.39  0.39  0.39  0.19  0.19  0.19
Delay/Veh:    6.1   7.0   7.0   7.9   6.2   6.2  20.2  20.2  20.2  18.8  18.8  18.8
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:   6.1   7.0   7.0   7.9   6.2   6.2  20.2  20.2  20.2  18.8  18.8  18.8
DesignQueue:    1     4     1     4     2     0     1     8     0     1     3     1
*******************************************************************************
```

```
Default Scenario           Mon Jul 21, 2003 15:16:09              Page 11-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  1  0    0  1  0  1  0
Lane Group:     L    RT   RT     L    RT   RT    LTR  LTR   LTR   LTR  LTR   LTR
#LnsInGrps:     1     1    1     1     1    1     2    2     2     2    2     2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12   12    12    12   12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx     2 xxxx  xxxx     5    5     5     5    5     5
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  1.00 1.00  1.00
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.96  0.96  xxxx 0.99  0.99  1.00 1.00  1.00  0.98 0.98  0.98
LT Adj:      0.68 xxxx xxxxx  0.55 xxxx xxxxx  0.89 0.89  0.89  0.84 0.84  0.84
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.66 0.94  0.94  0.54 0.97  0.97  0.87 0.87  0.87  0.82 0.82  0.82
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.95 0.95  0.95  0.95 0.95  0.95
Fnl Sat Adj: 0.66 0.94  0.94  0.54 0.97  0.97  0.83 0.83  0.83  0.78 0.78  0.78
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************



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Default Scenario           Mon Jul 21, 2003 15:16:09              Page 11-2
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #4 College Street/1st Street
*******************************************************************************
Approach:                                     North     South     East     West
Cycle Length, C:                                 70        70       70       70
Actual Green Time Per Lane Group, G:          41.69     41.69    20.31    20.31
Effective Green Time Per Lane Group, g:       41.69     41.69    20.31    20.31
Opposing Effective Green Time, go:            41.69     41.69    20.31    20.31
Number Of Opposing Lanes, No:                     1         1        2        2
Number Of Lanes In Lane Group, N:                 1         1        2        2
Adjusted Left-Turn Flow Rate, Vlt:               75       240       50       35
Proportion of Left Turns in Lane Group, Plt:   1.00      1.00     0.14     0.21
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx    xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                     1.46      4.67     0.97     0.68
Adjusted Opposing Flow Rate, Vo:                120       300      165      360
Opposing Flow Per Lane Per Cycle, Volc:        2.33      5.83     1.69     3.68
Opposing Platoon Ratio, Rpo:                   1.00      1.00     1.00     1.00
Lost Time Per Phase, tl:                       4.00      4.00     4.00     4.00
Eff grn until arrival of left-turn car, gf:    0.00      0.00     4.56     6.40
Opposing Queue Ratio, qro:                     0.40      0.40     0.71     0.71
Eff grn blocked by opposing queue, gq:         0.00      1.66     0.00     1.85
Eff grn while left turns filter thru, gu:     41.69     40.03    15.75    13.91
Max opposing cars arriving during gq-gf, n:  xxxxxx    xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx    xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:               0.80      0.69     0.77     0.65
Proportion of Left Turns in Shared Lane, pl:   1.00      1.00     0.29     0.46
Through-car Equivalents, el1:                  1.48      1.75     1.66     2.06
Single Lane Through-car Equivalents, el2:    xxxxxx    xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:     0.10      0.10     0.13     0.14
Single Lane Left Turn Adjustment Factor, fm:   0.68      0.55     0.88     0.78
Left Turn Adjustment Factor, flt:              0.68      0.55     0.89     0.84
*******************************************************************************



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```
Default Scenario          Mon Jul 21, 2003 15:16:09               Page 12-1
-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #5 OR 99W/Villa Road
*****************************************************************************
Cycle (sec):         135              Critical Vol./Cap. (X):        0.758
Loss Time (sec):      16 (Y+R =  4 sec) Average Delay (sec/veh):      38.8
Optimal Cycle:        86              Level Of Service:                  D
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Protected        Protected        Protected        Protected
Rights:            Include          Include          Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     485  185   10  280   70   85  115  875    5   30 1200  170
Growth Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:  485  185   10  280   70   85  115  875    5   30 1200  170
User Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume:   485  185   10  280   70   85  115  875    5   30 1200  170
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:  485  185   10  280   70   85  115  875    5   30 1200  170
PCE Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.:   485  185   10  280   70   85  115  875    5   30 1200  170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment:  0.90 0.97 0.97 0.93 0.98 0.83 0.93 0.93 0.93 0.93 0.93 0.83
Lanes:       2.00 0.95 0.05 1.00 1.00 1.00 1.00 1.99 0.01 1.00 2.00 1.00
Final Sat.:  3432 1752   95 1769 1862 1583 1769 3514   20 1769 3538 1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.11 0.11 0.16 0.04 0.05 0.07 0.25 0.25 0.02 0.34 0.11
Crit Moves:       ****      ****           ****                     ****
Green/Cycle: 0.25 0.14 0.14 0.21 0.10 0.10 0.09 0.50 0.50 0.03 0.45 0.45
Volume/Cap:  0.56 0.76 0.76 0.76 0.39 0.56 0.76 0.50 0.50 0.50 0.76 0.24
Delay/Veh:   44.8 68.1 68.1 59.0 58.8 63.0 79.9 22.8 22.8 70.4 33.3 23.3
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:  44.8 68.1 68.1 59.0 58.8 63.0 79.9 22.8 22.8 70.4 33.3 23.3
DesignQueue:   28   12    1   17    5    6    8   35    0    2   54    7
*****************************************************************************


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Default Scenario          Mon Jul 21, 2003 15:16:09               Page 13-1
-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
               Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
*****************************************************************************
Intersection #5 OR 99W/Villa Road
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
Lane Group:     L   RT   RT    L    T    R    L   RT   RT    L    T    R
#LnsInGrps:     2    1    1    1    1    1    1    2    2    1    2    1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12   12   12   12   12   12   12   12   12   12   12
CrosswalkWid         8              8              8              8
% Hev Veh:           2              2              2              2
Grade:              0%             0%             0%             0%
Parking/Hr:         No             No             No             No
Bus Stp/Hr:          0              0              0              0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0              0              0              0
ExclusiveRT:      Include        Include        Include        Include
% RT Prtct:          0              0              0              0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1 xxxx xxxx     1 xxxx xxxx     1 xxxx xxxx     1 xxxx xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98
Grade Adj:   1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Parking Adj: xxxx 1.00 1.00 xxxx xxxx 1.00 xxxx 1.00 1.00 xxxx xxxx 1.00
Bus Stp Adj: xxxx 1.00 1.00 xxxx xxxx 1.00 xxxx 1.00 1.00 xxxx xxxx 1.00
Area Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
RT Adj:      xxxx 0.99 0.99 xxxx xxxx 0.85 xxxx 1.00 1.00 xxxx xxxx 0.85
LT Adj:      0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
HCM Sat Adj: 0.93 0.97 0.97 0.93 0.98 0.83 0.93 0.98 0.98 0.93 0.98 0.83
Usr Sat Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Sat Adj: 0.97 1.00 1.00 1.00 1.00 1.00 1.00 0.95 0.95 1.00 0.95 1.00
Fnl Sat Adj: 0.90 0.97 0.97 0.93 0.98 0.83 0.93 0.93 0.93 0.93 0.93 0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
*****************************************************************************


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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #6 OR 99W/Elliot Road
*****************************************************************************
Cycle (sec):        135              Critical Vol./Cap. (X):        0.769
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):      32.2
Optimal Cycle:       76              Level Of Service:                  C
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        0  1  0  0  1   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95   25   100   105   25   265    65  960    20    75 1225   150
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   95   25   100   105   25   265    65  960    20    75 1225   150
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    95   25   100   105   25   265    65  960    20    75 1225   150
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   95   25   100   105   25   265    65  960    20    75 1225   150
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    95   25   100   105   25   265    65  960    20    75 1225   150
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.46 0.46  0.83  0.77 0.77  0.77  0.93 0.93  0.93  0.93 0.92  0.92
Lanes:       0.79 0.21  1.00  0.27 0.06  0.67  1.00 1.96  0.04  1.00 1.78  0.22
Final Sat.:   687  181  1583   391   93   987  1769 3455    72  1769 3101   380
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.14  0.06  0.27 0.27  0.27  0.04 0.28  0.28  0.04 0.39  0.39
Crit Moves:                        ****        ****                   ****
Green/Cycle: 0.35 0.35  0.35  0.35 0.35  0.35  0.05 0.49  0.49  0.07 0.51  0.51
Volume/Cap:  0.40 0.40  0.18  0.77 0.77  0.77  0.77 0.57  0.57  0.57 0.77  0.77
Delay/Veh:   34.0 34.0  30.7  46.0 46.0  46.0  97.5 25.0  25.0  66.2 28.4  28.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  34.0 34.0  30.7  46.0 46.0  46.0  97.5 25.0  25.0  66.2 28.4  28.4
DesignQueue:    5    1     5     5    1    14     5   40     1     5   49     6
*****************************************************************************
```

```
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #6 OR 99W/Elliot Road
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  1  0  0  1   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
Lane Group:   LT   LT    R    LTR  LTR   LTR   L   RT    RT    L   RT    RT
#LnsInGrps:     1    1     1     1    1     1     1    2     2     1    2     2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5  xxxx     5    5     5     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  0.91 0.91  0.91  xxxx 1.00  1.00  xxxx 0.98  0.98
LT Adj:      0.47 0.47 xxxxx  0.87 0.87  0.87  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.46 0.46  0.83  0.77 0.77  0.77  0.93 0.98  0.98  0.93 0.96  0.96
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.95  1.00 0.95  0.95
Fnl Sat Adj: 0.46 0.46  0.83  0.77 0.77  0.77  0.93 0.93  0.93  0.93 0.92  0.92
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated    > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*****************************************************************************
```

```
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
******************************************************************************
Intersection #6 OR 99W/Elliot Road
******************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                 135      135   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           47.18    47.18   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        47.18    47.18   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             47.18    47.18   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                      1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                  1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                95      105   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    0.79     0.27   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     0.27   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      3.56     3.94   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 395      120   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:        14.81     4.50   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     1.26     2.16   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      0.65     0.65   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:         20.43     2.27   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:      26.75    44.91   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:     9.58   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    0.73   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx     0.80   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:    0.79     0.27   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   2.09     1.58   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:       3.57   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.08     0.05   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.47     0.87   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               0.47     0.87   xxxxxx   xxxxxx
******************************************************************************
```

```
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
*******************************************************************************
Average Delay (sec/veh):     406.8          Worst Case Level Of Service:      F
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:       1  0  0  1  0   1  0  0  1  0   0  1  0  0  1   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    180  495    10    15  480    90    70   60    80    70   40    60
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse: 180  495    10    15  480    90    70   60    80    70   40    60
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:  180  495    10    15  480    90    70   60    80    70   40    60
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:  180  495    10    15  480    90    70   60    80    70   40    60
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  570 xxxx xxxxx   505 xxxx xxxxx  1465 1420   525  1485 1460   500
Potent Cap.: 1002 xxxx xxxxx  1060 xxxx xxxxx   106  136   552   103  129   571
Move Cap.:   1002 xxxx xxxxx  1060 xxxx xxxxx    58  110   552    44  104   571
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  9.4 xxxx xxxxx   8.4 xxxx xxxxx xxxxx xxxx  12.6 xxxxx xxxx  12.0
LOS by Move:    A    *     *     A    *     *     *    *     B     *    *     B
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx    74 xxxx xxxxx    55 xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx 485.4 xxxx xxxxx 622.2 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     F    *     *     F    *     *
ApproachDel:      xxxxxx           xxxxxx            305.3            406.8
ApproachLOS:         *                *                F                F
```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
              Level Of Service Detailed Computation Report
                     2000 HCM Unsignalized Method
                        Base Volume Alternative
***************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------|---------------|---------------|---------------|
HevVeh:            2%               2%               2%               2%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                 Level Of Service Computation Report
        2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #8 OR 99W/Springbrook Street
***************************************************************************
Cycle (sec):        135                Critical Vol./Cap. (X):       0.826
Loss Time (sec):     16 (Y+R =  4 sec) Average Delay (sec/veh):       41.6
Optimal Cycle:      104                Level Of Service:                 D
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        2  0  1  0  1   2  0  1  0  1   1  0  2  0  1   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     240  310    90   155  425    45   140  985   225    55 1240   250
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  240  310    90   155  425    45   140  985   225    55 1240   250
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   240  310    90   155  425    45   140  985   225    55 1240   250
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  240  310    90   155  425    45   140  985   225    55 1240   250
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   240  310    90   155  425    45   140  985   225    55 1240   250
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.83  0.93 0.93  0.83
Lanes:       2.00 1.00  1.00  2.00 1.00  1.00  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3432 1862  1583  3432 1862  1583  1769 3538  1583  1769 3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.17  0.06  0.05 0.23  0.03  0.08 0.28  0.14  0.03 0.35  0.16
Crit Moves:  ****                  ****        ****                  ****
Green/Cycle: 0.08 0.28  0.28  0.08 0.28  0.28  0.10 0.47  0.47  0.05 0.42  0.42
Volume/Cap:  0.83 0.59  0.20  0.59 0.83  0.10  0.83 0.59  0.30  0.59 0.83  0.37
Delay/Veh:   78.1 43.2  36.9  63.6 56.3  36.5  86.9 27.1  22.5  72.6 38.3  26.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  78.1 43.2  36.9  63.6 56.3  36.5  86.9 27.1  22.5  72.6 38.3  26.9
DesignQueue:   17   17     5    11   25     2    10   42     9     4   59    11
***************************************************************************
```

```
Default Scenario          Mon Jul 21, 2003 15:16:09              Page 19-1
----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

             Level Of Service Detailed Computation Report
                    2000 HCM Operations Method
                      Base Volume Alternative
****************************************************************************
Intersection #8 OR 99W/Springbrook Street
****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  1  0  1   2  0  1  0  1   1  0  2  0  1   1  0  2  0  1
Lane Group:    L    T     R    L    T     R    L    T     R    L    T     R
#LnsInGrps:    2    1     1    2    1     1    1    2     1    1    2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                2                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj:  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj:  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj:  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:       xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:       0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj:  0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83
Usr Sat Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj:  0.97 1.00  1.00  0.97 1.00  1.00  1.00 0.95  1.00  1.00 0.95  1.00
Fnl Sat Adj:  0.90 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.83  0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
****************************************************************************


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Default Scenario          Mon Jul 21, 2003 15:16:09              Page 20-1
----------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------

                 Level Of Service Computation Report
        2000 HCM Operations Method (Base Volume Alternative)
****************************************************************************
Intersection #9 OR 99W/Northern Arterial
****************************************************************************
Cycle (sec):         135               Critical Vol./Cap. (X):        0.724
Loss Time (sec):      16 (Y+R =  4 sec) Average Delay (sec/veh):       38.5
Optimal Cycle:        79               Level Of Service:                 D
****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        1  0  1  0  1   2  0  1  0  1   1  0  1  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      100  150   105   460  100   110   110 1055    50   160 1280   515
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   100  150   105   460  100   110   110 1055    50   160 1280   515
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    100  150   105   460  100   110   110 1055    50   160 1280   515
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   100  150   105   460  100   110   110 1055    50   160 1280   515
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    100  150   105   460  100   110   110 1055    50   160 1280   515
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:   0.93 0.98  0.83  0.90 0.98  0.83  0.93 0.92  0.92  0.93 0.93  0.83
Lanes:        1.00 1.00  1.00  2.00 1.00  1.00  1.00 1.91  0.09  1.00 2.00  1.00
Final Sat.:   1769 1862  1583  3432 1862  1583  1769 3354   159  1769 3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.06 0.08  0.07  0.13 0.05  0.07  0.06 0.31  0.31  0.09 0.36  0.33
Crit Moves:        ****        ****             ****                   ****
Green/Cycle:  0.13 0.11  0.11  0.19 0.16  0.16  0.09 0.45  0.45  0.13 0.50  0.50
Volume/Cap:   0.43 0.72  0.60  0.72 0.33  0.43  0.72 0.69  0.69  0.69 0.72  0.65
Delay/Veh:    55.0 70.0  62.6  55.9 50.6  51.9  76.0 30.6  30.6  64.8 28.0  27.0
User DelAdj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   55.0 70.0  62.6  55.9 50.6  51.9  76.0 30.6  30.6  64.8 28.0  27.0
DesignQueue:     7   10     7    29    6     7     8   47     2    11   53    21
****************************************************************************


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Default Scenario          Mon Jul 21, 2003 15:16:09                Page 21-1
------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

             Level Of Service Detailed Computation Report
                     2000 HCM Operations Method
                      Base Volume Alternative
******************************************************************************
Intersection #9 OR 99W/Northern Arterial
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  1  0  1   2  0  1  0  1   1  0  1  1  0   1  0  2  0  1
Lane Group:    L     T     R   L     T     R   L    RT    RT   L     T     R
#LnsInGrps:    1     1     1   2     1     1   1     2     2   1     2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid         8               8               8               8
% Hev Veh:           2               2               2               2
Grade:              0%              0%              0%              0%
Parking/Hr:         No              No              No              No
Bus Stp/Hr:          0               0               0               0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0               0               0
ExclusiveRT:      Include         Include         Include         Include
% RT Prtct:          0               0               0               0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00 xxxx xxxx  1.00 xxxx 1.00  1.00 xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx  1.00 xxxx xxxx  1.00 xxxx 1.00  1.00 xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85 xxxx xxxx  0.85 xxxx 0.99  0.99 xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 0.93 0.98  0.83 0.93 0.98  0.83 0.93 0.97  0.97 0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00 0.97 1.00  1.00 1.00 0.95  0.95 1.00 0.95  1.00
Fnl Sat Adj: 0.93 0.98  0.83 0.90 0.98  0.83 0.93 0.92  0.92 0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:   < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type:   < < < < < < < < < < < < <   Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
******************************************************************************



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Default Scenario          Mon Jul 21, 2003 15:16:09                Page 22-1
------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                  Level Of Service Computation Report
         2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
******************************************************************************
Cycle (sec):        100              Critical Vol./Cap. (X):        0.652
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):      24.5
Optimal Cycle:       54              Level Of Service:                 C
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     215  260    30  160  240   100   50  285   215    5  255   220
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  215  260    30  160  240   100   50  285   215    5  255   220
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:   215  260    30  160  240   100   50  285   215    5  255   220
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  215  260    30  160  240   100   50  285   215    5  255   220
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:   215  260    30  160  240   100   50  285   215    5  255   220
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.42 0.97  0.97 0.47 0.94  0.94 0.93 0.92  0.92 0.93 0.91  0.91
Lanes:       1.00 0.90  0.10 1.00 0.71  0.29 1.00 0.57  0.43 1.00 0.54  0.46
Final Sat.:   791 1644   190  888 1257   524 1769  993   749 1769  931   803
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.27 0.16  0.16 0.18 0.19  0.19 0.03 0.29  0.29 0.00 0.27  0.27
Crit Moves:  ****                           ****                     ****
Green/Cycle: 0.42 0.42  0.42 0.42 0.42  0.42 0.04 0.46  0.46 0.00 0.42  0.42
Volume/Cap:  0.65 0.38  0.38 0.43 0.46  0.46 0.65 0.63  0.63 0.63 0.65  0.65
Delay/Veh:   28.0 20.5  20.5 21.6 21.5  21.5 65.4 22.1  22.1 149.0 25.3 25.3
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  28.0 20.5  20.5 21.6 21.5  21.5 65.4 22.1  22.1 149.0 25.3 25.3
DesignQueue:    7    9     1    5    8     3    3    9     7    0    9     8
******************************************************************************



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```

```
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
Lane Group:    L   RT     RT    L   RT     RT    L   RT     RT    L   RT     RT
#LnsInGrps:    1    1      1    1    1      1    1    1      1    1    1      1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12     12   12   12     12   12   12     12   12   12     12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                2                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:    2 xxxx  xxxx    2 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99  xxxx 0.96  0.96  xxxx 0.94  0.94  xxxx 0.93  0.93
LT Adj:      0.43 xxxx xxxxx  0.48 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.42 0.97  0.97  0.47 0.94  0.94  0.93 0.92  0.92  0.93 0.91  0.91
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.42 0.97  0.97  0.47 0.94  0.94  0.93 0.92  0.92  0.93 0.91  0.91
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <   Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
***************************************************************************
```

```
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
***************************************************************************
Approach:                                        North     South     East      West
Cycle Length, C:                                   100       100   xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:             41.64     41.64   xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:          41.64     41.64   xxxxxx    xxxxxx
Opposing Effective Green Time, go:               41.64     41.64   xxxxxx    xxxxxx
Number Of Opposing Lanes, No:                        1         1   xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:                    1         1   xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                 215       160   xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt:      1.00      1.00   xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     xxxxxx    xxxxxx   xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                        5.97      4.44   xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:                   340       290   xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:           9.44      8.06   xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:                      1.00      1.00   xxxxxx    xxxxxx
Lost Time Per Phase, tl:                          4.00      4.00   xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:       0.00      0.00   xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                        0.58      0.58   xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:            9.59      7.21   xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu:        32.05     34.43   xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n:     xxxxxx    xxxxxx   xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    xxxxxx    xxxxxx   xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:                  0.66      0.69   xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl:      1.00      1.00   xxxxxx    xxxxxx
Through-car Equivalents, el1:                     1.81      1.74   xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2:       xxxxxx    xxxxxx   xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:        0.10      0.10   xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm:      0.43      0.48   xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:                 0.43      0.48   xxxxxx    xxxxxx
***************************************************************************
```

```
Default Scenario          Mon Jul 21, 2003 15:16:09                  Page 24-1
-------------------------------------------------------------------------------
                    Kittelson & Associates, Inc. - Project # 5193
                  City of Newberg TSP Refinement - Newberg, Oregon
             Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                        Level Of Service Computation Report
              2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #11 Mountain View Drive/Villa Road
*******************************************************************************
Average Delay (sec/veh):     78.9         Worst Case Level Of Service:        F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95   45    65    35   40    10    10  455    85   100  510    25
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   95   45    65    35   40    10    10  455    85   100  510    25
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    95   45    65    35   40    10    10  455    85   100  510    25
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    95   45    65    35   40    10    10  455    85   100  510    25
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5   6.2   7.1  6.5   6.2   4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0   3.3   3.5  4.0   3.3   2.2 xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1265 1253   497  1295 1283   522   535 xxxx xxxxx   540 xxxx xxxxx
Potent Cap.:  146  172   573   139  165   554  1033 xxxx xxxxx  1028 xxxx xxxxx
Move Cap.:    105  154   573    88  148   554  1033 xxxx xxxxx  1028 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:139.0 xxxx xxxxx  70.4 xxxx xxxxx   8.5 xxxx xxxxx   8.9 xxxx xxxxx
LOS by Move:    F    *     *     F    *     *     A    *     *     A    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx   271  xxxx xxxx   173  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx  27.1 xxxxx xxxx  34.0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     D     *    *     D     *    *     *     *    *     *
ApproachDel:       78.9             49.0            xxxxxx           xxxxxx
ApproachLOS:         F                E                *                *

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```
Default Scenario          Mon Jul 21, 2003 15:16:09                  Page 25-1
-------------------------------------------------------------------------------
                    Kittelson & Associates, Inc. - Project # 5193
                  City of Newberg TSP Refinement - Newberg, Oregon
             Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                    Level Of Service Detailed Computation Report
                          2000 HCM Unsignalized Method
                            Base Volume Alternative
*******************************************************************************
Intersection #11 Mountain View Drive/Villa Road
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:             2%              2%              2%              2%
Grade:              0%              0%              0%              0%
Peds/Hour:          0               0               0               0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet         12 feet         12 feet         12 feet
Time Period: 0.25 hour

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```

```
Default Scenario             Mon Jul 21, 2003 15:16:09                 Page 26-1
--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #12 Hwy 219/2nd Street
********************************************************************************
Average Delay (sec/veh):     20.9         Worst Case Level Of Service:         C
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25  630     0     0  545    15    55    0    75     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25  630     0     0  545    15    55    0    75     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    25  630     0     0  545    15    55    0    75     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    25  630     0     0  545    15    55    0    75     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  560 xxxx xxxxx  xxxx xxxx xxxxx  1233 xxxx   553  xxxx xxxx xxxxx
Potent Cap.:  996 xxxx xxxxx  xxxx xxxx xxxxx   193 xxxx   527  xxxx xxxx xxxxx
Move Cap.:    996 xxxx xxxxx  xxxx xxxx xxxxx   189 xxxx   527  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  8.7 xxxx xxxxx xxxxx xxxx xxxxx  31.7 xxxx  13.0 xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     D    *     B     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             20.9            xxxxxx
ApproachLOS:        *                *                 C                *

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```

```
Default Scenario             Mon Jul 21, 2003 15:16:09                 Page 27-1
--------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
        Alternative 4: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                          Base Volume Alternative
********************************************************************************
Intersection #12 Hwy 219/2nd Street
********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:            5%               5%               5%               5%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:      12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour

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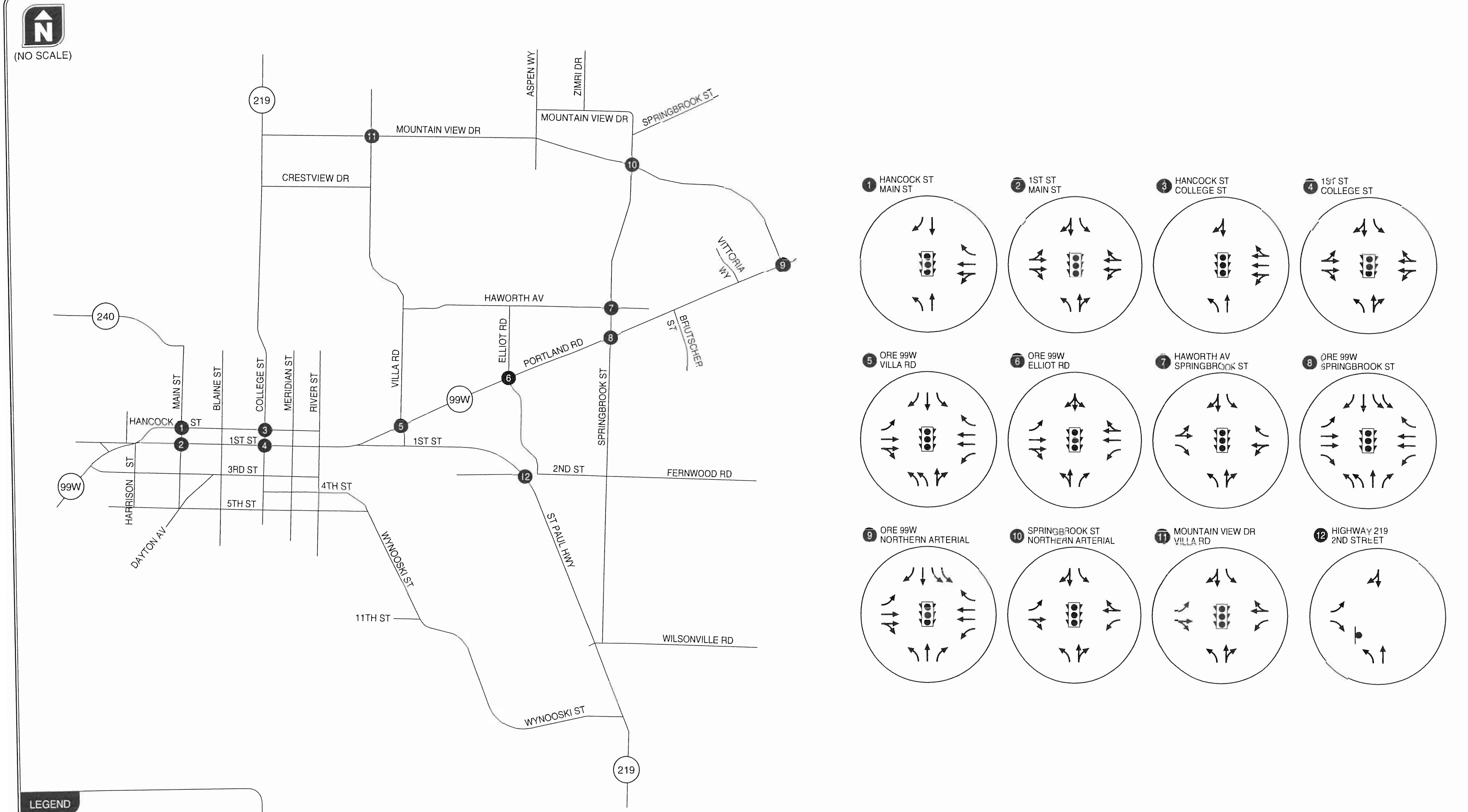
```

Appendix H

Alternative 4: Mitigations Operational Analysis Worksheets

Appendix M

Alternative 4 Mitigated
2025 Future Traffic Conditions



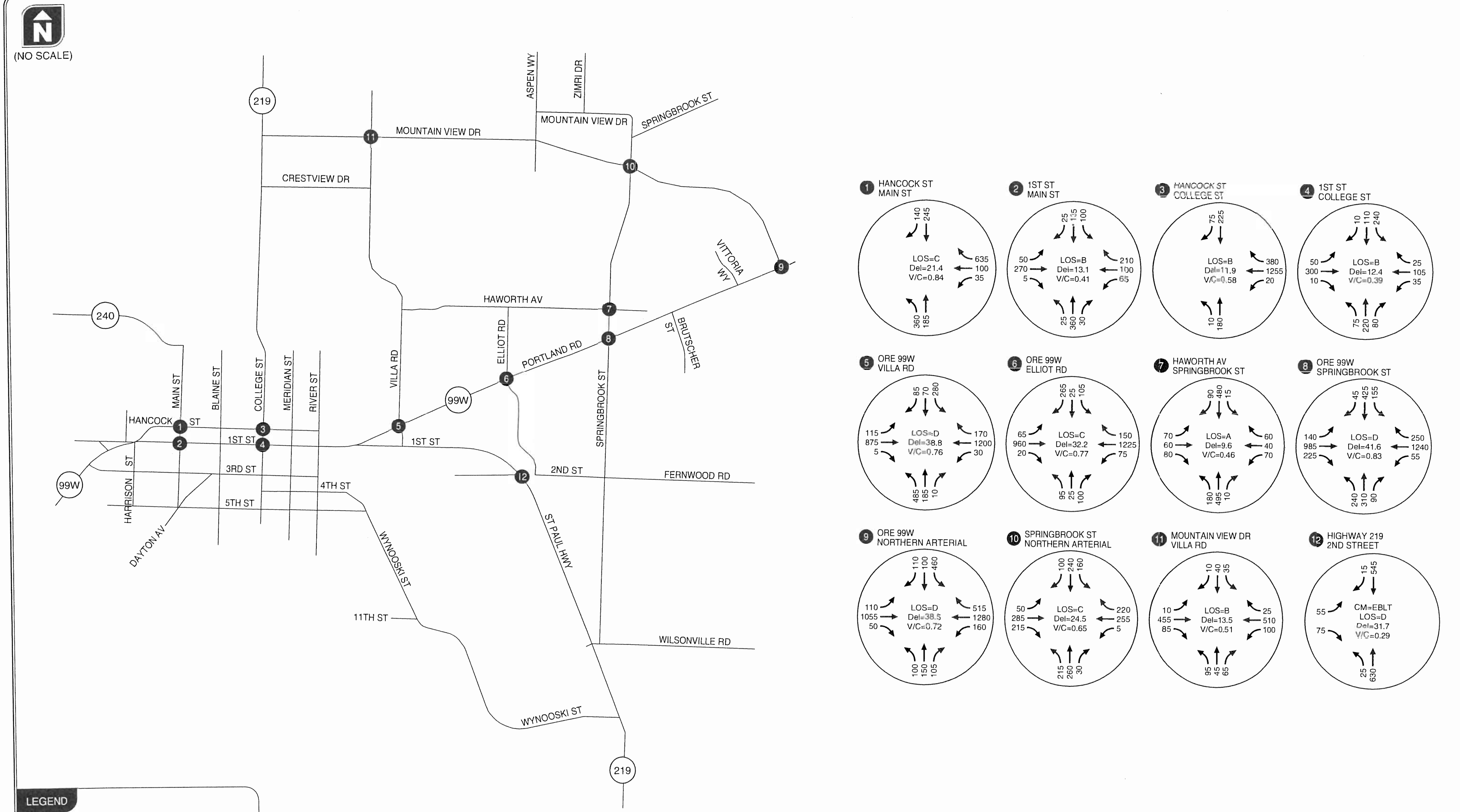
LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICE MITIGATIONS
ALTERNATIVE 4: WITH BYPASS
NEWBERG, OREGON

FIGURE
H1

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

MITIGATED INTERSECTION PERFORMANCE
ALTERNATIVE 4: WITH BYPASS
NEWBERG, OREGON

FIGURE
H2

5193Figs

```
----------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------
                             Scenario Report
Scenario:            Default Scenario

Command:             Default Command
Volume:              Default Volume
Geometry:            Default Geometry
Impact Fee:          Default Impact Fee
Trip Generation:     Default Trip Generation
Trip Distribution:   Default Trip Distribution
Paths:               Default Paths
Routes:              Default Routes
Configuration:       Default Configuration
```

```
----------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------
                        Turning Movement Report


Volume    Northbound      Southbound      Eastbound       Westbound     Total
Type   Left Thru Right Left Thru Right Left Thru Right Left Thru Right Volume

#1 Main Street/Hancock Street
Base    360  185     0    0  245   140    0    0     0   35  100   635   1700
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   360  185     0    0  245   140    0    0     0   35  100   635   1700

#2 Main Street/1st Street
Base     25  360    30  100  135    25   50  270     5   65  100   210   1375
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    25  360    30  100  135    25   50  270     5   65  100   210   1375

#3 College Street/Hancock Street
Base     10  180     0    0  225    75    0    0     0   20 1255   380   2145
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    10  180     0    0  225    75    0    0     0   20 1255   380   2145

#4 College Street/1st Street
Base     75  220    80  240  110    10   50  300    10   35  105    25   1260
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    75  220    80  240  110    10   50  300    10   35  105    25   1260

#5 OR 99W/Villa Road
Base    485  185    10  280   70    85  115  875     5   30 1200   170   3510
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   485  185    10  280   70    85  115  875     5   30 1200   170   3510

#6 OR 99W/Elliot Road
Base     95   25   100  105   25   265   65  960    20   75 1225   150   3110
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total    95   25   100  105   25   265   65  960    20   75 1225   150   3110

#7 Haworth Avenue/Springbrook Street
Base    180  495    10   15  480    90   70   60    80   70   40    60   1650
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   180  495    10   15  480    90   70   60    80   70   40    60   1650

#8 OR 99W/Springbrook Street
Base    240  310    90  155  425    45  140  985   225   55 1240   250   4160
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   240  310    90  155  425    45  140  985   225   55 1240   250   4160

#9 OR 99W/Northern Arterial
Base    100  150   105  460  100   110  110 1055    50  160 1280   515   4195
Added     0    0     0    0    0     0    0    0     0    0    0     0      0
Total   100  150   105  460  100   110  110 1055    50  160 1280   515   4195
```

```
------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
Volume    Northbound      Southbound       Eastbound       Westbound     Total
Type   Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume

#10 Springbrook Street/Northern Arterial
Base    215  260   30   160  240  100    50  285  215     5  255  220   2035
Added     0    0    0     0    0    0     0    0    0     0    0    0      0
Total   215  260   30   160  240  100    50  285  215     5  255  220   2035

#11 Mountain View Drive/Villa Road
Base     95   45   65    35   40   10    10  455   85   100  510   25   1475
Added     0    0    0     0    0    0     0    0    0     0    0    0      0
Total    95   45   65    35   40   10    10  455   85   100  510   25   1475

#12 Hwy 219/2nd Street
Base     25  630    0     0  545   15    55    0   75     0    0    0   1345
Added     0    0    0     0    0    0     0    0    0     0    0    0      0
Total    25  630    0     0  545   15    55    0   75     0    0    0   1345
```

```
------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                         Impact Analysis Report
                            Level Of Service

Intersection                           Base          Future        Change
                                    Del/   V/     Del/   V/          in
                                 LOS Veh    C   LOS Veh    C
#  1 Main Street/Hancock Street   C 21.4 0.841  C 21.4 0.841  + 0.000 D/V

#  2 Main Street/1st Street       B 13.1 0.413  B 13.1 0.413  + 0.000 D/V

#  3 College Street/Hancock Street B 11.9 0.582 B 11.9 0.582  + 0.000 D/V

#  4 College Street/1st Street    B 12.4 0.394  B 12.4 0.394  + 0.000 D/V

#  5 OR 99W/Villa Road            D 38.8 0.758  D 38.8 0.758  + 0.000 D/V

#  6 OR 99W/Elliot Road           C 32.2 0.769  C 32.2 0.769  + 0.000 D/V

#  7 Haworth Avenue/Springbrook Str A 9.6 0.456 A  9.6 0.456  + 0.000 D/V

#  8 OR 99W/Springbrook Street    D 41.6 0.826  D 41.6 0.826  + 0.000 D/V

#  9 OR 99W/Northern Arterial     D 38.5 0.724  D 38.5 0.724  + 0.000 D/V

# 10 Springbrook Street/Northern Ar C 24.5 0.652 C 24.5 0.652 + 0.000 D/V

# 11 Mountain View Drive/Villa Road B 13.5 0.512 B 13.5 0.512 + 0.000 D/V

# 12 Hwy 219/2nd Street           C 20.9 0.000  C 20.9 0.000  + 0.000 V/C
```

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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1 Main Street/Hancock Street
******************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):         0.841
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        21.4
Optimal Cycle:        67              Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     360  185    0     0  245  140     0    0    0    35  100  635
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  360  185    0     0  245  140     0    0    0    35  100  635
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:   360  185    0     0  245  140     0    0    0    35  100  635
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  360  185    0     0  245  140     0    0    0    35  100  635
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:   360  185    0     0  245  140     0    0    0    35  100  635
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.54 0.98 1.00  1.00 0.98 0.83  1.00 1.00 1.00  0.81 0.81 0.85
Lanes:       1.00 1.00 0.00  0.00 1.00 1.00  0.00 0.00 0.00  0.52 1.48 1.00
Final Sat.:  1024 1862    0     0 1862 1583     0    0    0   796 2273 1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.35 0.10 0.00  0.00 0.13 0.09  0.00 0.00 0.00  0.04 0.04 0.39
Crit Moves:  ****                                                        ****
Green/Cycle: 0.42 0.42 0.00  0.00 0.42 0.42  0.00 0.00 0.00  0.47 0.47 0.47
Volume/Cap:  0.84 0.24 0.00  0.00 0.31 0.21  0.00 0.00 0.00  0.09 0.09 0.84
Delay/Veh:   32.1 13.3  0.0   0.0 13.9 13.2   0.0  0.0  0.0  10.4 10.4 24.7
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  32.1 13.3  0.0   0.0 13.9 13.2   0.0  0.0  0.0  10.4 10.4 24.7
DesignQueue:    9    4    0     0    6    3     0    0    0     1    2   14
******************************************************************************
```

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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
******************************************************************************
Intersection #1 Main Street/Hancock Street
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  0    0  0  1  0  1    0  0  0  0  0    0  1  1  0  1
Lane Group:     L    T xxxx  xxxx    T    R  xxxx xxxx xxxx    LT   LT    R
#LnsInGrps:     1    1    0     0    1    1     0    0    0     2    2    1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12   12    12   12   12    12   12   12    12   12   12
CrosswalkWid:        8                8                8                8
% Hev Veh:           2                2                2                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx    2r   2r xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98 0.98  xxxx xxxx xxxxx  1.00 1.00 1.00
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx xxxx 1.00  xxxx xxxx xxxxx  xxxx xxxx 1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx xxxx 1.00  xxxx xxxx xxxxx  xxxx xxxx 1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
RT Adj:      xxxx xxxx xxxxx  xxxx xxxx 0.85  xxxx xxxx xxxxx  xxxx xxxx 0.85
LT Adj:      0.55 xxxx xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx  0.85 0.85 xxxxx
PedBike Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
HCM Sat Adj: 0.54 0.98 1.00  1.00 0.98 0.83  1.00 1.00 1.00  0.85 0.85 0.85
Usr Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  0.95 0.95 1.00
Fnl Sat Adj: 0.54 0.98 1.00  1.00 0.98 0.83  1.00 1.00 1.00  0.81 0.81 0.85
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <   Actuated   > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 0.00  0.00 1.00 1.00  0.00 0.00 0.00  1.00 1.00 1.00
******************************************************************************
```

```
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #1 Main Street/Hancock Street
***************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                  70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           29.26   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        29.26   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             29.26   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                      1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                  1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               360   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      7.00   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 245   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         4.76   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      0.58   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          2.42   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:      26.84   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                0.72   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:    1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   1.67   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.14   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.55   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               0.55   xxxxxx   xxxxxx   xxxxxx
***************************************************************************
```

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---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #2 Main Street/1st Street
***************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):        0.413
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):      13.1
Optimal Cycle:        27              Level Of Service:                  B
***************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  1  0    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25   360    30   100   135    25    50   270     5    65   100   210
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   25   360    30   100   135    25    50   270     5    65   100   210
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    25   360    30   100   135    25    50   270     5    65   100   210
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   25   360    30   100   135    25    50   270     5    65   100   210
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    25   360    30   100   135    25    50   270     5    65   100   210
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.64  0.97  0.97  0.44  0.96  0.96  0.81  0.81  0.81  0.72  0.72  0.72
Lanes:       1.00  0.92  0.08  1.00  0.84  0.16  0.31  1.66  0.03  0.39  0.61  1.00
Final Sat.:  1208  1698   142   838  1535   284   473  2556    47   537   827  1364
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02  0.21  0.21  0.12  0.09  0.09  0.11  0.11  0.11  0.12  0.12  0.15
Crit Moves:        ****                                                        ****
Green/Cycle: 0.51  0.51  0.51  0.51  0.51  0.51  0.37  0.37  0.37  0.37  0.37  0.37
Volume/Cap:  0.04  0.41  0.41  0.23  0.17  0.17  0.28  0.28  0.28  0.32  0.32  0.41
Delay/Veh:    8.5  10.8  10.8   9.7   9.2   9.2  15.5  15.5  15.5  15.8  15.8  16.6
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:   8.5  10.8  10.8   9.7   9.2   9.2  15.5  15.5  15.5  15.8  15.8  16.6
DesignQueue:    0     7     1     2     3     0     1     7     0     2     2     5
***************************************************************************
```

```
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #2 Main Street/1st Street
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  0  1  0    1  0  0  1  0    0  1  0  1  0    0  1  0  1  0
Lane Group:     L   RT     RT    L   RT     RT   LTR  LTR   LTR   LTR  LTR   LTR
#LnsInGrps:     1    1      1    1    1      1    2    2     2     2    2     2
------------|----------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12     12   12   12     12   12   12    12    12   12    12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                0                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|----------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx    2 xxxx  xxxx     5    5     5     5    5     5
------------|----------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  1.00 1.00  1.00  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99  xxxx 0.98  0.98  1.00 1.00  1.00  0.92 0.92  0.92
LT Adj:      0.65 xxxx xxxxx  0.45 xxxx xxxxx  0.85 0.85  0.85  0.84 0.84  0.84
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.64 0.97  0.97  0.44 0.96  0.96  0.85 0.85  0.85  0.76 0.76  0.76
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.95 0.95  0.95  0.95 0.95  0.95
Fnl Sat Adj: 0.64 0.97  0.97  0.44 0.96  0.96  0.81 0.81  0.81  0.72 0.72  0.72
------------|----------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************
```

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-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #2 Main Street/1st Street
*******************************************************************************
Approach:                                    North    South     East     West
Cycle Length, C:                                70       70       70       70
Actual Green Time Per Lane Group, G:         35.92    35.92    26.08    26.08
Effective Green Time Per Lane Group, g:      35.92    35.92    26.08    26.08
Opposing Effective Green Time, go:           35.92    35.92    26.08    26.08
Number Of Opposing Lanes, No:                    1        1        2        2
Number Of Lanes In Lane Group, N:                1        1        2        2
Adjusted Left-Turn Flow Rate, Vlt:              25      100       50       65
Proportion of Left Turns in Lane Group, Plt:  1.00     1.00     0.15     0.17
Proportion of Left Turns in Opp Flow, Plto: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    0.49     1.94     0.97     1.26
Adjusted Opposing Flow Rate, Vo:               160      390      375      325
Opposing Flow Per Lane Per Cycle, Volc:       3.11     7.58     3.84     3.33
Opposing Platoon Ratio, Rpo:                  1.00     1.00     1.00     1.00
Lost Time Per Phase, tl:                      4.00     4.00     4.00     4.00
Eff grn until arrival of left-turn car, gf:   0.00     0.00     6.99     5.19
Opposing Queue Ratio, qro:                    0.49     0.49     0.63     0.63
Eff grn blocked by opposing queue, gq:        0.00     5.43     1.41     0.61
Eff grn while left turns filter thru, gu:    35.92    30.49    19.09    20.89
Max opposing cars arriving during gq-gf, n: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx  xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              0.78     0.63     0.64     0.67
Proportion of Left Turns in Shared Lane, pl:  1.00     1.00     0.35     0.40
Through-car Equivalents, el1:                 1.54     1.88     2.09     1.98
Single Lane Through-car Equivalents, el2:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    0.11     0.11     0.10     0.11
Single Lane Left Turn Adjustment Factor, fm:  0.65     0.45     0.80     0.77
Left Turn Adjustment Factor, flt:             0.65     0.45     0.85     0.84
*******************************************************************************
```

```
Default Scenario            Mon Jul 21, 2003 15:18:55                  Page 8-1
-------------------------------------------------------------------------------

                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #3 College Street/Hancock Street
*******************************************************************************
Cycle (sec):         70               Critical Vol./Cap. (X):        0.582
Loss Time (sec):      8 (Y+R =  4 sec) Average Delay (sec/veh):       11.9
Optimal Cycle:       36               Level Of Service:                 B
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted        Permitted        Permitted
Rights:         Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     10  180    0    0  225   75    0    0    0   20 1255  380
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  10  180    0    0  225   75    0    0    0   20 1255  380
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:   10  180    0    0  225   75    0    0    0   20 1255  380
Reduct Vol:    0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:  10  180    0    0  225   75    0    0    0   20 1255  380
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:   10  180    0    0  225   75    0    0    0   20 1255  380
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.80 0.98 1.00  1.00 0.95 0.95  1.00 1.00 1.00  0.83 0.83 0.83
Lanes:       1.00 1.00 0.00  0.00 0.75 0.25  0.00 0.00 0.00  0.04 2.27 0.69
Final Sat.:  1512 1862    0     0 1349  450     0    0    0    57 3597 1089
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.10 0.00  0.00 0.17 0.17  0.00 0.00 0.00  0.35 0.35 0.35
Crit Moves:                       ****                              ****
Green/Cycle: 0.29 0.29 0.00  0.00 0.29 0.29  0.00 0.00 0.00  0.60 0.60 0.60
Volume/Cap:  0.02 0.34 0.00  0.00 0.58 0.58  0.00 0.00 0.00  0.58 0.58 0.58
Delay/Veh:   18.0 20.1  0.0   0.0 23.1 23.1   0.0  0.0  0.0   8.9  8.9  8.9
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  18.0 20.1  0.0   0.0 23.1 23.1   0.0  0.0  0.0   8.9  8.9  8.9
DesignQueue:    0    5    0    0    7    2    0    0    0    0   21    6
*******************************************************************************




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Default Scenario            Mon Jul 21, 2003 15:18:55                  Page 9-1
-------------------------------------------------------------------------------

                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #3 College Street/Hancock Street
*******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  1  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
Lane Group:    L    T  xxxx  xxxx  RT    RT  xxxx xxxx  xxxx   LTR  LTR  LTR
#LnsInGrps:    1    1    0     0    1    1     0    0     0     3    3    3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12   12    12   12   12    12   12   12    12   12   12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                0                2
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      2 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx    5r   5r   5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 xxxxx  xxxx 0.98 0.98  xxxx xxxx xxxxx  0.98 0.98 0.98
Grade Adj:   1.00 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
Parking Adj: xxxx 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
Bus Stp Adj: xxxx 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
Area Adj:    1.00 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
RT Adj:      xxxx xxxx xxxxx  xxxx 0.97 0.97  xxxx xxxx xxxxx  0.97 0.97 0.97
LT Adj:      0.81 xxxx xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx  0.97 0.97 0.97
PedBike Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
HCM Sat Adj: 0.80 0.98 1.00  1.00 0.95 0.95  1.00 1.00 1.00  0.91 0.91 0.91
Usr Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  0.91 0.91 0.91
Fnl Sat Adj: 0.80 0.98 1.00  1.00 0.95 0.95  1.00 1.00 1.00  0.83 0.83 0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 0.00  0.00 1.00 1.00  0.00 0.00 0.00  1.00 1.00 1.00
*******************************************************************************




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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #3 College Street/Hancock Street
*****************************************************************************
Approach:                                       North    South     East     West
Cycle Length, C:                                   70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:            20.05   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:         20.05   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:              20.05   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                       1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                   1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                 10   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:     1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:      1.00   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                       0.19   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                  300   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:          5.83   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                     1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                         4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     11.27   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                       0.71   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:           9.25   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:        8.78   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:      0.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:     0.00   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:               xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:     1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                    1.75   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:        1.00   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.20   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     0.81   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                0.81   xxxxxx   xxxxxx   xxxxxx
*****************************************************************************
```

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-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #4 College Street/1st Street
*****************************************************************************
Cycle (sec):           70              Critical Vol./Cap. (X):        0.394
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):      12.4
Optimal Cycle:         26              Level Of Service:                 B
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  0  1  0   1  0  0  1  0   0  1  0  1  0   0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      75  220   80    240  110   10     50  300   10     35  105   25
Growth Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:   75  220   80    240  110   10     50  300   10     35  105   25
User Adj:    1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Volume:    75  220   80    240  110   10     50  300   10     35  105   25
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Reduced Vol:   75  220   80    240  110   10     50  300   10     35  105   25
PCE Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Final Vol.:    75  220   80    240  110   10     50  300   10     35  105   25
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900   1900 1900 1900   1900 1900 1900   1900 1900 1900
Adjustment:  0.66 0.94 0.94   0.54 0.97 0.97   0.83 0.83 0.83   0.78 0.78 0.78
Lanes:       1.00 0.73 0.27   1.00 0.92 0.08   0.28 1.67 0.05   0.42 1.28 0.30
Final Sat.:  1259 1311  477   1022 1686  153    437 2622   87    631 1892  450
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.17 0.17   0.23 0.07 0.07   0.11 0.11 0.11   0.06 0.06 0.06
Crit Moves:                   ****                  ****
Green/Cycle: 0.60 0.60 0.60   0.60 0.60 0.60   0.29 0.29 0.29   0.29 0.29 0.29
Volume/Cap:  0.10 0.28 0.28   0.39 0.11 0.11   0.39 0.39 0.39   0.19 0.19 0.19
Delay/Veh:    6.1  7.0  7.0    7.9  6.2  6.2   20.2 20.2 20.2   18.8 18.8 18.8
User DelAdj: 1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
AdjDel/Veh:   6.1  7.0  7.0    7.9  6.2  6.2   20.2 20.2 20.2   18.8 18.8 18.8
DesignQueue:    1    4    1      4    2    0      1    8    0      1    3    1
*****************************************************************************
```

```
-----------------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
            Level Of Service Detailed Computation Report
                     2000 HCM Operations Method
                      Base Volume Alternative
*****************************************************************************
Intersection #4 College Street/1st Street
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  1  0    0  1  0  1  0
Lane Group:    L   RT     RT    L   RT     RT   LTR  LTR    LTR  LTR  LTR    LTR
#LnsInGrps:    1    1      1    1    1      1    2    2      2    2    2      2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12     12   12   12     12   12   12     12   12   12     12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                0
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx   xxxx     2 xxxx   xxxx     5    5      5    5    5      5
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
Hev Veh Adj: 0.98 0.98   0.98  0.98 0.98   0.98  0.98 0.98   0.98  1.00 1.00   1.00
Grade Adj:   1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
Parking Adj: xxxx 1.00   1.00  xxxx 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
Bus Stp Adj: xxxx 1.00   1.00  xxxx 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
Area Adj:    1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
RT Adj:      xxxx 0.96   0.96  xxxx 0.99   0.99  1.00 1.00   1.00  0.98 0.98   0.98
LT Adj:      0.68 xxxx  xxxxx  0.55 xxxx  xxxxx  0.89 0.89   0.89  0.84 0.84   0.84
PedBike Adj: 1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
HCM Sat Adj: 0.66 0.94   0.94  0.54 0.97   0.97  0.87 0.87   0.87  0.82 0.82   0.82
Usr Sat Adj: 1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
MLF Sat Adj: 1.00 1.00   1.00  1.00 1.00   1.00  0.95 0.95   0.95  0.95 0.95   0.95
Fnl Sat Adj: 0.66 0.94   0.94  0.54 0.97   0.97  0.83 0.83   0.83  0.78 0.78   0.78
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00  1.00 1.00   1.00
*****************************************************************************
```

```
-----------------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                     2000 HCM Operations Method
                      Base Volume Alternative
*****************************************************************************
Intersection #4 College Street/1st Street
*****************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                  70       70       70       70
Actual Green Time Per Lane Group, G:           41.69    41.69    20.31    20.31
Effective Green Time Per Lane Group, g:        41.69    41.69    20.31    20.31
Opposing Effective Green Time, go:             41.69    41.69    20.31    20.31
Number Of Opposing Lanes, No:                      1        1        2        2
Number Of Lanes In Lane Group, N:                  1        1        2        2
Adjusted Left-Turn Flow Rate, Vlt:                75      240       50       35
Proportion of Left Turns in Lane Group, Plt:    1.00     1.00     0.14     0.21
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      1.46     4.67     0.97     0.68
Adjusted Opposing Flow Rate, Vo:                 120      300      165      360
Opposing Flow Per Lane Per Cycle, Volc:         2.33     5.83     1.69     3.68
Opposing Platoon Ratio, Rpo:                    1.00     1.00     1.00     1.00
Lost Time Per Phase, tl:                        4.00     4.00     4.00     4.00
Eff grn until arrival of left-turn car, gf:     0.00     0.00     4.56     6.40
Opposing Queue Ratio, qro:                      0.40     0.40     0.71     0.71
Eff grn blocked by opposing queue, gq:          0.00     1.66     0.00     1.85
Eff grn while left turns filter thru, gu:      41.69    40.03    15.75    13.91
Max opposing cars arriving during gq-gf, n:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                0.80     0.69     0.77     0.65
Proportion of Left Turns in Shared Lane, pl:    1.00     1.00     0.29     0.46
Through-car Equivalents, el1:                   1.48     1.75     1.66     2.06
Single Lane Through-car Equivalents, el2:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.10     0.10     0.13     0.14
Single Lane Left Turn Adjustment Factor, fm:    0.68     0.55     0.88     0.78
Left Turn Adjustment Factor, flt:               0.68     0.55     0.89     0.84
*****************************************************************************
```

```
-----------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                      Level Of Service Computation Report
               2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #5 OR 99W/Villa Road
*****************************************************************************
Cycle (sec):        135              Critical Vol./Cap. (X):        0.758
Loss Time (sec):     16 (Y+R =  4 sec) Average Delay (sec/veh):      38.8
Optimal Cycle:       86              Level Of Service:                  D
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     485  185   10   280   70   85   115  875    5    30 1200  170
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  485  185   10   280   70   85   115  875    5    30 1200  170
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:   485  185   10   280   70   85   115  875    5    30 1200  170
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  485  185   10   280   70   85   115  875    5    30 1200  170
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:   485  185   10   280   70   85   115  875    5    30 1200  170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.90 0.97 0.97  0.93 0.98 0.83  0.93 0.93 0.93  0.93 0.93 0.83
Lanes:       2.00 0.95 0.05  1.00 1.00 1.00  1.00 1.99 0.01  1.00 2.00 1.00
Final Sat.:  3432 1752   95  1769 1862 1583  1769 3514   20  1769 3538 1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.11 0.11  0.16 0.04 0.05  0.07 0.25 0.25  0.02 0.34 0.11
Crit Moves:       ****       ****            ****                   ****
Green/Cycle: 0.25 0.14 0.14  0.21 0.10 0.10  0.09 0.50 0.50  0.03 0.45 0.45
Volume/Cap:  0.56 0.76 0.76  0.76 0.39 0.56  0.76 0.50 0.50  0.50 0.76 0.24
Delay/Veh:   44.8 68.1 68.1  59.0 58.8 63.0  79.9 22.8 22.8  70.4 33.3 23.3
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  44.8 68.1 68.1  59.0 58.8 63.0  79.9 22.8 22.8  70.4 33.3 23.3
DesignQueue:   28   12    1    17    5    6     8   35    0     2   54    7
*****************************************************************************
```

```
-----------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #5 OR 99W/Villa Road
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
Lane Group:   L   RT    RT    L    T    R     L   RT   RT     L    T    R
#LnsInGrps:   2    1     1    1    1    1     1    2    2     1    2    1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12   12    12   12   12    12   12   12    12   12   12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                2                2
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1 xxxx xxxx     1 xxxx xxxx     1 xxxx xxxx     1 xxxx xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98
Grade Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Parking Adj: xxxx 1.00 1.00  xxxx xxxx 1.00  xxxx 1.00 1.00  xxxx xxxx 1.00
Bus Stp Adj: xxxx 1.00 1.00  xxxx xxxx 1.00  xxxx 1.00 1.00  xxxx xxxx 1.00
Area Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
RT Adj:      xxxx 0.99 0.99  xxxx xxxx 0.85  xxxx 1.00 1.00  xxxx xxxx 0.85
LT Adj:      0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
HCM Sat Adj: 0.93 0.97 0.97  0.93 0.98 0.83  0.93 0.98 0.98  0.93 0.98 0.83
Usr Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Sat Adj: 0.97 1.00 1.00  1.00 1.00 1.00  1.00 0.95 0.95  1.00 0.95 1.00
Fnl Sat Adj: 0.90 0.97 0.97  0.93 0.98 0.83  0.93 0.93 0.93  0.93 0.93 0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
*****************************************************************************
```

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------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                       Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #6 OR 99W/Elliot Road
********************************************************************************
Cycle (sec):        135              Critical Vol./Cap. (X):        0.769
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):       32.2
Optimal Cycle:       76              Level Of Service:                C
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:   0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       0  1  0  0  1   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95   25  100   105   25  265    65  960   20    75 1225  150
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   95   25  100   105   25  265    65  960   20    75 1225  150
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    95   25  100   105   25  265    65  960   20    75 1225  150
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   95   25  100   105   25  265    65  960   20    75 1225  150
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:    95   25  100   105   25  265    65  960   20    75 1225  150
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.46 0.46 0.83  0.77 0.77 0.77  0.93 0.93 0.93  0.93 0.92 0.92
Lanes:       0.79 0.21 1.00  0.27 0.06 0.67  1.00 1.96 0.04  1.00 1.78 0.22
Final Sat.:   687  181 1583   391   93  987  1769 3455   72  1769 3101  380
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.14 0.06  0.27 0.27 0.27  0.04 0.28 0.28  0.04 0.39 0.39
Crit Moves:                       ****       ****                    ****
Green/Cycle: 0.35 0.35 0.35  0.35 0.35 0.35  0.05 0.49 0.49  0.07 0.51 0.51
Volume/Cap:  0.40 0.40 0.18  0.77 0.77 0.77  0.77 0.57 0.57  0.57 0.77 0.77
Delay/Veh:   34.0 34.0 30.7  46.0 46.0 46.0  97.5 25.0 25.0  66.2 28.4 28.4
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  34.0 34.0 30.7  46.0 46.0 46.0  97.5 25.0 25.0  66.2 28.4 28.4
DesignQueue:    5    1    5     5    1   14     5   40    1     5   49    6
********************************************************************************
```

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------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                   Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
********************************************************************************
Intersection #6 OR 99W/Elliot Road
********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  1  0  0  1   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
Lane Group:  LT   LT    R   LTR  LTR  LTR    L   RT   RT     L   RT   RT
#LnsInGrps:     1    1    1     1    1    1     1    2    2     1    2    2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12   12    12   12   12    12   12   12    12   12   12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                2                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5 xxxx     5    5    5     1 xxxx xxxx     1 xxxx xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98
Grade Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Parking Adj: xxxx xxxx 1.00  1.00 1.00 1.00  xxxx 1.00 1.00  xxxx 1.00 1.00
Bus Stp Adj: xxxx xxxx 1.00  1.00 1.00 1.00  xxxx 1.00 1.00  xxxx 1.00 1.00
Area Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
RT Adj:      xxxx xxxx 0.85  0.91 0.91 0.91  xxxx 1.00 1.00  xxxx 0.98 0.98
LT Adj:      0.47 0.47 xxxxx 0.87 0.87 0.87  0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
HCM Sat Adj: 0.46 0.46 0.83  0.77 0.77 0.77  0.93 0.98 0.98  0.93 0.96 0.96
Usr Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 0.95 0.95  1.00 0.95 0.95
Fnl Sat Adj: 0.46 0.46 0.83  0.77 0.77 0.77  0.93 0.93 0.93  0.93 0.92 0.92
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
********************************************************************************
```

```
Default Scenario          Mon Jul 21, 2003 15:18:55                Page 15-2
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                          2000 HCM Operations Method
                            Base Volume Alternative
******************************************************************************
Intersection #6 OR 99W/Elliot Road
******************************************************************************
Approach:                                        North     South     East     West
Cycle Length, C:                                  135       135    xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:             47.18     47.18   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:          47.18     47.18   xxxxxx   xxxxxx
Opposing Effective Green Time, go:               47.18     47.18   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                       1         1    xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                   1         1    xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                 95       105    xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:     0.79      0.27    xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:      0.27    xxxxxx    xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                       3.56      3.94    xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                  395       120    xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         14.81      4.50    xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                     1.00      1.00    xxxxxx   xxxxxx
Lost Time Per Phase, tl:                         4.00      4.00    xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:      1.26      2.16    xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                       0.65      0.65    xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          20.43      2.27    xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       26.75     44.91    xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:      9.58    xxxxxx    xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:     0.73    xxxxxx    xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:               xxxxxx      0.80    xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:     0.79      0.27    xxxxxx   xxxxxx
Through-car Equivalents, el1:                    2.09      1.58    xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:        3.57    xxxxxx    xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.08      0.05    xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     0.47      0.87    xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                0.47      0.87    xxxxxx   xxxxxx
******************************************************************************






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Default Scenario          Mon Jul 21, 2003 15:18:55                Page 16-1
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
      Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
******************************************************************************
Cycle (sec):          70             Critical Vol./Cap. (X):        0.456
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):      9.6
Optimal Cycle:        29             Level Of Service:                  A
******************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:       Permitted        Permitted        Permitted        Permitted
Rights:         Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       1  0  0  1  0   1  0  0  1  0   0  1  0  0  1   0  1  0  0  1
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:     180  495    10    15  480    90    70   60    80    70   40    60
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  180  495    10    15  480    90    70   60    80    70   40    60
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   180  495    10    15  480    90    70   60    80    70   40    60
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  180  495    10    15  480    90    70   60    80    70   40    60
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   180  495    10    15  480    90    70   60    80    70   40    60
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.38 0.98  0.98  0.42 0.96  0.96  0.76 0.76  0.83  0.72 0.72  0.83
Lanes:       1.00 0.98  0.02  1.00 0.84  0.16  0.54 0.46  1.00  0.64 0.36  1.00
Final Sat.:   726 1820    37   801 1530   287   778  667  1583   872  498  1583
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.25 0.27  0.27  0.02 0.31  0.31  0.09 0.09  0.05  0.08 0.08  0.04
Crit Moves:                        ****             ****
Green/Cycle: 0.69 0.69  0.69  0.69 0.69  0.69  0.20 0.20  0.20  0.20 0.20  0.20
Volume/Cap:  0.36 0.40  0.40  0.03 0.46  0.46  0.46 0.46  0.26  0.41 0.41  0.19
Delay/Veh:    5.0  4.9   4.9   3.5  5.2   5.2  25.9 25.9  24.2  25.5 25.5  23.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   5.0  4.9   4.9   3.5  5.2   5.2  25.9 25.9  24.2  25.5 25.5  23.7
DesignQueue:    2    6     0     0    6     1     2    2     3     2    1     2
******************************************************************************






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--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                        Base Volume Alternative
********************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
********************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  0  1  0   1  0  0  1  0   0  1  0  0  1   0  1  0  0  1
Lane Group:     L   RT     RT   L   RT     RT  LT   LT     R   LT   LT     R
#LnsInGrps:     1    1      1   1    1      1   1    1      1   1    1      1
------------|----------------||----------------||----------------||----------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12     12  12   12     12  12   12     12  12   12     12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|----------------||----------------||----------------||----------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx   xxxx   2 xxxx   xxxx   5    5   xxxx   5    5   xxxx
------------|----------------||----------------||----------------||----------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
Hev Veh Adj: 0.98 0.98   0.98 0.98 0.98   0.98 0.98 0.98   0.98 0.98 0.98   0.98
Grade Adj:   1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
Parking Adj: xxxx 1.00   1.00 xxxx 1.00   1.00 xxxx xxxx   1.00 xxxx xxxx   1.00
Bus Stp Adj: xxxx 1.00   1.00 xxxx 1.00   1.00 xxxx xxxx   1.00 xxxx xxxx   1.00
Area Adj:    1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
RT Adj:      xxxx 1.00   1.00 xxxx 0.98   0.98 xxxx xxxx   0.85 xxxx xxxx   0.85
LT Adj:      0.39 xxxx  xxxxx 0.43 xxxx  xxxxx 0.78 0.78  xxxxx 0.74 0.74  xxxxx
PedBike Adj: 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
HCM Sat Adj: 0.38 0.98   0.98 0.42 0.96   0.96 0.76 0.76   0.83 0.72 0.72   0.83
Usr Sat Adj: 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
MLF Sat Adj: 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
Fnl Sat Adj: 0.38 0.98   0.98 0.42 0.96   0.96 0.76 0.76   0.83 0.72 0.72   0.83
------------|----------------||----------------||----------------||----------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < <     Actuated      > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00
********************************************************************************
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--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

 Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                        Base Volume Alternative
********************************************************************************
Intersection #7 Haworth Avenue/Springbrook Street
********************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                                  70       70       70       70
Actual Green Time Per Lane Group, G:           48.18    48.18    13.82    13.82
Effective Green Time Per Lane Group, g:        48.18    48.18    13.82    13.82
Opposing Effective Green Time, go:             48.18    48.18    13.82    13.82
Number Of Opposing Lanes, No:                      1        1        1        1
Number Of Lanes In Lane Group, N:                  1        1        1        1
Adjusted Left-Turn Flow Rate, Vlt:               180       15       70       70
Proportion of Left Turns in Lane Group, Plt:    1.00     1.00     0.54     0.64
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      3.50     0.29     1.36     1.36
Adjusted Opposing Flow Rate, Vo:                 570      505      110      130
Opposing Flow Per Lane Per Cycle, Volc:        11.08     9.82     2.14     2.53
Opposing Platoon Ratio, Rpo:                    1.00     1.00     1.00     1.00
Lost Time Per Phase, tl:                        4.00     4.00     4.00     4.00
Eff grn until arrival of left-turn car, gf:     0.00     0.00     0.60     0.60
Opposing Queue Ratio, qro:                      0.31     0.31     0.80     0.80
Eff grn blocked by opposing queue, gq:          6.11     4.51     0.00     0.37
Eff grn while left turns filter thru, gu:      42.07    43.67    13.22    13.22
Max opposing cars arriving during gq-gf, n:   xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                0.52     0.56     0.81     0.79
Proportion of Left Turns in Shared Lane, pl:    1.00     1.00     0.54     0.64
Through-car Equivalents, el1:                   2.24     2.11     1.57     1.60
Single Lane Through-car Equivalents, el2:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.08     0.08     0.22     0.24
Single Lane Left Turn Adjustment Factor, fm:    0.39     0.43     0.78     0.74
Left Turn Adjustment Factor, flt:               0.39     0.43     0.78     0.74
********************************************************************************
```

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-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
 Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #8 OR 99W/Springbrook Street
*******************************************************************************
Cycle (sec):          135               Critical Vol./Cap. (X):         0.826
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):        41.6
Optimal Cycle:        104               Level Of Service:                   D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:   0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     240  310   90   155  425   45   140  985  225    55 1240  250
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:  240  310   90   155  425   45   140  985  225    55 1240  250
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:   240  310   90   155  425   45   140  985  225    55 1240  250
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  240  310   90   155  425   45   140  985  225    55 1240  250
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:   240  310   90   155  425   45   140  985  225    55 1240  250
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.90 0.98 0.83  0.90 0.98 0.83  0.93 0.93 0.83  0.93 0.93 0.83
Lanes:       2.00 1.00 1.00  2.00 1.00 1.00  1.00 2.00 1.00  1.00 2.00 1.00
Final Sat.:  3432 1862 1583  3432 1862 1583  1769 3538 1583  1769 3538 1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.17 0.06  0.05 0.23 0.03  0.08 0.28 0.14  0.03 0.35 0.16
Crit Moves:  ****                 ****       ****                   ****
Green/Cycle: 0.08 0.28 0.28  0.08 0.28 0.28  0.10 0.47 0.47  0.05 0.42 0.42
Volume/Cap:  0.83 0.59 0.20  0.59 0.83 0.10  0.83 0.59 0.30  0.59 0.83 0.37
Delay/Veh:   78.1 43.2 36.9  63.6 56.3 36.5  86.9 27.1 22.5  72.6 38.3 26.9
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  78.1 43.2 36.9  63.6 56.3 36.5  86.9 27.1 22.5  72.6 38.3 26.9
DesignQueue:   17   17    5    11   25    2    10   42    9     4   59   11
*******************************************************************************
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
 Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                            Base Volume Alternative
*******************************************************************************
Intersection #8 OR 99W/Springbrook Street
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
Lane Group:   L    T    R     L    T    R     L    T    R     L    T    R
#LnsInGrps:   2    1    1     2    1    1     1    2    1     1    2    1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12   12    12   12   12    12   12   12    12   12   12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                2                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1 xxxx xxxx     1 xxxx xxxx     1 xxxx xxxx     1 xxxx xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98
Grade Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Parking Adj: xxxx xxxx 1.00  xxxx xxxx 1.00  xxxx xxxx 1.00  xxxx xxxx 1.00
Bus Stp Adj: xxxx xxxx 1.00  xxxx xxxx 1.00  xxxx xxxx 1.00  xxxx xxxx 1.00
Area Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
RT Adj:      xxxx xxxx 0.85  xxxx xxxx 0.85  xxxx xxxx 0.85  xxxx xxxx 0.85
LT Adj:      0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
HCM Sat Adj: 0.93 0.98 0.83  0.93 0.98 0.83  0.93 0.98 0.83  0.93 0.98 0.83
Usr Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Sat Adj: 0.97 1.00 1.00  0.97 1.00 1.00  1.00 0.95 1.00  1.00 0.95 1.00
Fnl Sat Adj: 0.90 0.98 0.83  0.90 0.98 0.83  0.93 0.93 0.83  0.93 0.93 0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
*******************************************************************************
```

```
Default Scenario              Mon Jul 21, 2003 15:18:55                  Page 20-1
-----------------------------------------------------------------------------------
                    Kittelson & Associates, Inc. - Project # 5193
                  City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------------
                        Level Of Service Computation Report
               2000 HCM Operations Method (Base Volume Alternative)
***********************************************************************************
Intersection #9 OR 99W/Northern Arterial
***********************************************************************************
Cycle (sec):          135               Critical Vol./Cap. (X):        0.724
Loss Time (sec):       16 (Y+R =  4 sec) Average Delay (sec/veh):       38.5
Optimal Cycle:         79               Level Of Service:                 D
***********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       1   0  1   0  1   2  0  1   0  1   1  0  1   1  0   1  0  2   0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     100   150   105   460   100   110   110  1055    50   160  1280   515
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  100   150   105   460   100   110   110  1055    50   160  1280   515
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   100   150   105   460   100   110   110  1055    50   160  1280   515
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  100   150   105   460   100   110   110  1055    50   160  1280   515
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   100   150   105   460   100   110   110  1055    50   160  1280   515
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.93  0.98  0.83  0.90  0.98  0.83  0.93  0.92  0.92  0.93  0.93  0.83
Lanes:       1.00  1.00  1.00  2.00  1.00  1.00  1.00  1.91  0.09  1.00  2.00  1.00
Final Sat.:  1769  1862  1583  3432  1862  1583  1769  3354   159  1769  3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06  0.08  0.07  0.13  0.05  0.07  0.06  0.31  0.31  0.09  0.36  0.33
Crit Moves:        ****        ****              ****                    ****
Green/Cycle: 0.13  0.11  0.11  0.19  0.16  0.16  0.09  0.45  0.45  0.13  0.50  0.50
Volume/Cap:  0.43  0.72  0.60  0.72  0.33  0.43  0.72  0.69  0.69  0.69  0.72  0.65
Delay/Veh:   55.0  70.0  62.6  55.9  50.6  51.9  76.0  30.6  30.6  64.8  28.0  27.0
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  55.0  70.0  62.6  55.9  50.6  51.9  76.0  30.6  30.6  64.8  28.0  27.0
DesignQueue:    7    10     7    29     6     7     8    47     2    11    53    21
***********************************************************************************




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Default Scenario              Mon Jul 21, 2003 15:18:55                  Page 21-1
-----------------------------------------------------------------------------------
                    Kittelson & Associates, Inc. - Project # 5193
                  City of Newberg TSP Refinement - Newberg, Oregon
          Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------------
                    Level Of Service Detailed Computation Report
                            2000 HCM Operations Method
                              Base Volume Alternative
***********************************************************************************
Intersection #9 OR 99W/Northern Arterial
***********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1   0  1   0  1   2  0  1   0  1   1  0  1   1  0   1  0  2   0  1
Lane Group:     L     T     R     L     T     R     L    RT    RT     L     T     R
#LnsInGrps:     1     1     1     2     1     1     1     2     2     1     2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:            2                 2                 2                 2
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:      Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1  xxxx  xxxx     1  xxxx  xxxx     1  xxxx  xxxx     1  xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Hev Veh Adj: 0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98
Grade Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Parking Adj: xxxx  xxxx  1.00  xxxx  xxxx  1.00  xxxx  1.00  1.00  xxxx  xxxx  1.00
Bus Stp Adj: xxxx  xxxx  1.00  xxxx  xxxx  1.00  xxxx  1.00  1.00  xxxx  xxxx  1.00
Area Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
RT Adj:      xxxx  xxxx  0.85  xxxx  xxxx  0.85  xxxx  0.99  0.99  xxxx  xxxx  0.85
LT Adj:      0.95  xxxx xxxxx  0.95  xxxx xxxxx  0.95  xxxx xxxxx  0.95  xxxx xxxxx
PedBike Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj: 0.93  0.98  0.83  0.93  0.98  0.83  0.93  0.97  0.97  0.93  0.98  0.83
Usr Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj: 1.00  1.00  1.00  0.97  1.00  1.00  1.00  0.95  0.95  1.00  0.95  1.00
Fnl Sat Adj: 0.93  0.98  0.83  0.90  0.98  0.83  0.93  0.92  0.92  0.93  0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
***********************************************************************************




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Default Scenario          Mon Jul 21, 2003 15:18:55               Page 22-1
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
*****************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.652
Loss Time (sec):       12 (Y+R =  4 sec) Average Delay (sec/veh):       24.5
Optimal Cycle:         54               Level Of Service:                  C
*****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted        Protected        Protected
Rights:         Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    215  260    30  160  240   100   50  285   215    5  255   220
Growth Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse: 215  260    30  160  240   100   50  285   215    5  255   220
User Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:  215  260    30  160  240   100   50  285   215    5  255   220
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol: 215  260    30  160  240   100   50  285   215    5  255   220
PCE Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Final Vol.:  215  260    30  160  240   100   50  285   215    5  255   220
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment: 0.42 0.97  0.97 0.47 0.94  0.94 0.93 0.92  0.92 0.93 0.91  0.91
Lanes:      1.00 0.90  0.10 1.00 0.71  0.29 1.00 0.57  0.43 1.00 0.54  0.46
Final Sat.:  791 1644   190  888 1257   524 1769  993   749 1769  931   803
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.27 0.16  0.16 0.18 0.19  0.19 0.03 0.29  0.29 0.00 0.27  0.27
Crit Moves: ****                            ****                   ****
Green/Cycle: 0.42 0.42 0.42 0.42 0.42  0.42 0.04 0.46  0.46 0.00 0.42  0.42
Volume/Cap: 0.65 0.38  0.38 0.43 0.46  0.46 0.65 0.63  0.63 0.63 0.65  0.65
Delay/Veh:  28.0 20.5  20.5 21.6 21.5  21.5 65.4 22.1  22.1 149.0 25.3 25.3
User DelAdj: 1.00 1.00 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh: 28.0 20.5  20.5 21.6 21.5  21.5 65.4 22.1  22.1 149.0 25.3 25.3
DesignQueue:   7    9     1    5    8     3    3    9     7    0    9     8
*****************************************************************************

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Default Scenario          Mon Jul 21, 2003 15:18:55               Page 23-1
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
   Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
*****************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
Lane Group:   L   RT    RT    L   RT    RT    L   RT    RT    L   RT    RT
#LnsInGrps:   1    1     1    1    1     1    1    1     1    1    1     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                2                2
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:   < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx  xxxx    2 xxxx  xxxx    1 xxxx  xxxx    1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00 xxxx 1.00  1.00 xxxx 1.00  1.00 xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00 xxxx 1.00  1.00 xxxx 1.00  1.00 xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99 xxxx 0.96  0.96 xxxx 0.94  0.94 xxxx 0.93  0.93
LT Adj:      0.43 xxxx xxxxx 0.48 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 0.42 0.97  0.97 0.47 0.94  0.94 0.93 0.92  0.92 0.93 0.91  0.91
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Fnl Sat Adj: 0.42 0.97  0.97 0.47 0.94  0.94 0.93 0.92  0.92 0.93 0.91  0.91
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
*****************************************************************************

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-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #10 Springbrook Street/Northern Arterial
*******************************************************************************
Approach:                                      North     South     East     West
Cycle Length, C:                                 100       100   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:           41.64     41.64   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:        41.64     41.64   xxxxxx   xxxxxx
Opposing Effective Green Time, go:             41.64     41.64   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                      1         1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                  1         1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               215       160   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    1.00      1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx    xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      5.97      4.44   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                 340       290   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         9.44      8.06   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00      1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        4.00      4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     0.00      0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      0.58      0.58   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          9.59      7.21   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:      32.05     34.43   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx    xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx    xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                0.66      0.69   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:    1.00      1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   1.81      1.74   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx    xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.10      0.10   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.43      0.48   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               0.43      0.48   xxxxxx   xxxxxx
*******************************************************************************
```

```
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
     Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #11 Mountain View Drive/Villa Road
*******************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):        0.512
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):      13.5
Optimal Cycle:        40              Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95   45    65    35   40    10    10  455    85   100  510    25
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   95   45    65    35   40    10    10  455    85   100  510    25
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    95   45    65    35   40    10    10  455    85   100  510    25
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   95   45    65    35   40    10    10  455    85   100  510    25
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    95   45    65    35   40    10    10  455    85   100  510    25
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.71 0.89  0.89  0.67 0.95  0.95  0.93 0.96  0.96  0.93 0.97  0.97
Lanes:       1.00 0.41  0.59  1.00 0.80  0.20  1.00 0.84  0.16  1.00 0.95  0.05
Final Sat.:  1354  694  1002  1272 1445   361  1769 1531   286  1769 1763    86
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.06  0.06  0.03 0.03  0.03  0.01 0.30  0.30  0.06 0.29  0.29
Crit Moves:  ****                                   ****        ****
Green/Cycle: 0.14 0.14  0.14  0.14 0.14  0.14  0.01 0.58  0.58  0.11 0.68  0.68
Volume/Cap:  0.51 0.47  0.47  0.20 0.20  0.20  0.43 0.51  0.51  0.51 0.43  0.43
Delay/Veh:   30.4 29.4  29.4  27.4 27.2  27.2  46.3  9.2   9.2  31.6  5.3   5.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  30.4 29.4  29.4  27.4 27.2  27.2  46.3  9.2   9.2  31.6  5.3   5.3
DesignQueue:    3    2     2     1    1     0     0    8     1     4    7     0
*******************************************************************************
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                Level Of Service Detailed Computation Report
                         2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #11 Mountain View Drive/Villa Road
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
Lane Group:     L   RT      RT    L   RT      RT    L   RT      RT    L   RT      RT
#LnsInGrps:     1    1       1    1    1       1    1    1       1    1    1       1
------------|----------------||----------------||----------------||----------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12      12   12   12      12   12   12      12   12   12      12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:     < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:      Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|----------------||----------------||----------------||----------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:       2 xxxx  xxxx     2 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|----------------||----------------||----------------||----------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.91  0.91  xxxx 0.97  0.97  xxxx 0.98  0.98  xxxx 0.99  0.99
LT Adj:      0.73 xxxx xxxxx  0.68 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.71 0.89  0.89  0.67 0.95  0.95  0.93 0.96  0.96  0.93 0.97  0.97
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Fnl Sat Adj: 0.71 0.89  0.89  0.67 0.95  0.95  0.93 0.96  0.96  0.93 0.97  0.97
------------|----------------||----------------||----------------||----------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*******************************************************************************
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
    Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #11 Mountain View Drive/Villa Road
*******************************************************************************
Approach:                                       North     South      East     West
Cycle Length, C:                                   70        70    xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:             9.60      9.60    xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:          9.60      9.60    xxxxxx   xxxxxx
Opposing Effective Green Time, go:               9.60      9.60    xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                       1         1    xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                   1         1    xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                 95        35    xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:     1.00      1.00    xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:    xxxxxx    xxxxxx    xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                       1.85      0.68    xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                   50       110    xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:          0.97      2.14    xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                     1.00      1.00    xxxxxx   xxxxxx
Lost Time Per Phase, tl:                         4.00      4.00    xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:      0.00      0.00    xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                       0.86      0.86    xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:           0.00      0.00    xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:        9.60      9.60    xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:    xxxxxx    xxxxxx    xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:   xxxxxx    xxxxxx    xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                 0.84      0.81    xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:     1.00      1.00    xxxxxx   xxxxxx
Through-car Equivalents, el1:                    1.38      1.47    xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:      xxxxxx    xxxxxx    xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:       0.42      0.42    xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:     0.73      0.68    xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                0.73      0.68    xxxxxx   xxxxxx
*******************************************************************************
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                  Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #12 Hwy 219/2nd Street
*******************************************************************************
Average Delay (sec/veh):     20.9        Worst Case Level Of Service:        C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        1  0  1  0  0    0  0  0  1  0    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       25  630    0     0  545   15    55    0   75     0    0    0
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    25  630    0     0  545   15    55    0   75     0    0    0
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:     25  630    0     0  545   15    55    0   75     0    0    0
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:     25  630    0     0  545   15    55    0   75     0    0    0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:   4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4 xxxx   6.3 xxxxx xxxx xxxxx
FollowUpTim:   2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5 xxxx   3.3 xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  560 xxxx xxxxx  xxxx xxxx xxxxx  1233 xxxx   553  xxxx xxxx xxxxx
Potent Cap.:  996 xxxx xxxxx  xxxx xxxx xxxxx   193 xxxx   527  xxxx xxxx xxxxx
Move Cap.:    996 xxxx xxxxx  xxxx xxxx xxxxx   189 xxxx   527  xxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Stopped Del:  8.7 xxxx xxxxx xxxxx xxxx xxxxx  31.7 xxxx  13.0 xxxxx xxxx xxxxx
LOS by Move:    A    *    *     *    *    *     D    *     B     *    *    *
Movement:      LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *    *     *    *    *     *    *     *     *    *    *
ApproachDel:     xxxxxx           xxxxxx            20.9            xxxxxx
ApproachLOS:        *                *                C                *
```

```
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
  Alternative 4: 2025 Mitigated Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
              Level Of Service Detailed Computation Report
                     2000 HCM Unsignalized Method
                       Base Volume Alternative
*******************************************************************************
Intersection #12 Hwy 219/2nd Street
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             5%               5%               5%               5%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
```

Appendix N

ORE 219-Springbrook-Wilsonville Road-9th Street Improvements


9th Street
Industrial Way
Springbrook Rd.
Hwy. 219
Remove Existing
Roadway Surfacing
Sandoz Rd.
Wilsonville Rd.
Adolf Rd.
S

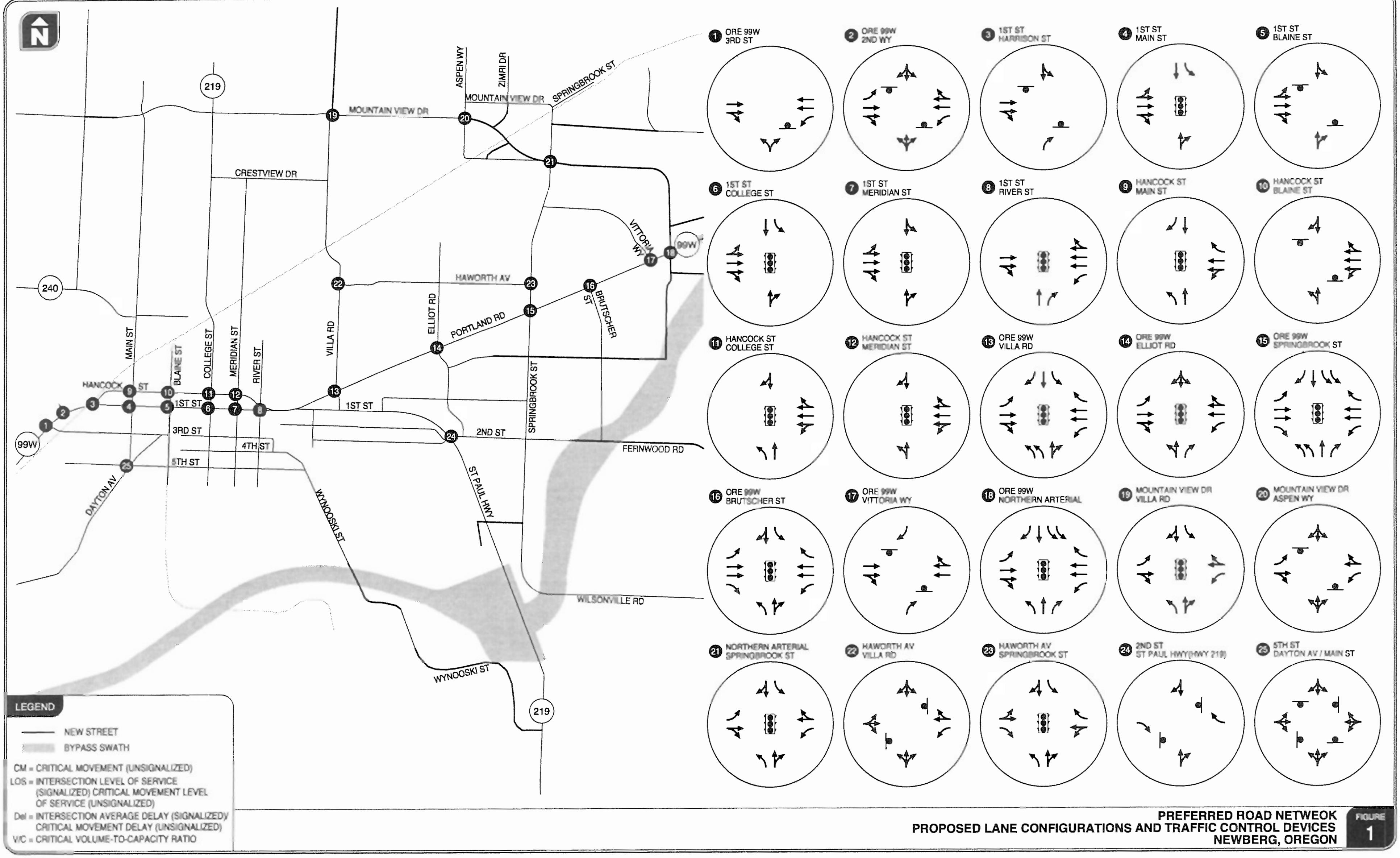

N
Adolf Rd.
Remove Existing
Roadway Surfacing
Wynooski Rd

Appendix O

Preferred Road Network
2025 Future Traffic Conditions

Appendix O

Preferred Road Network
2025 Future Traffic Conditions



PREFERRED ROAD NETWEOK
PROPOSED LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES
NEWBERG, OREGON

FIGURE
1

5193\DWGS\TSP\5193FIG_TSP

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

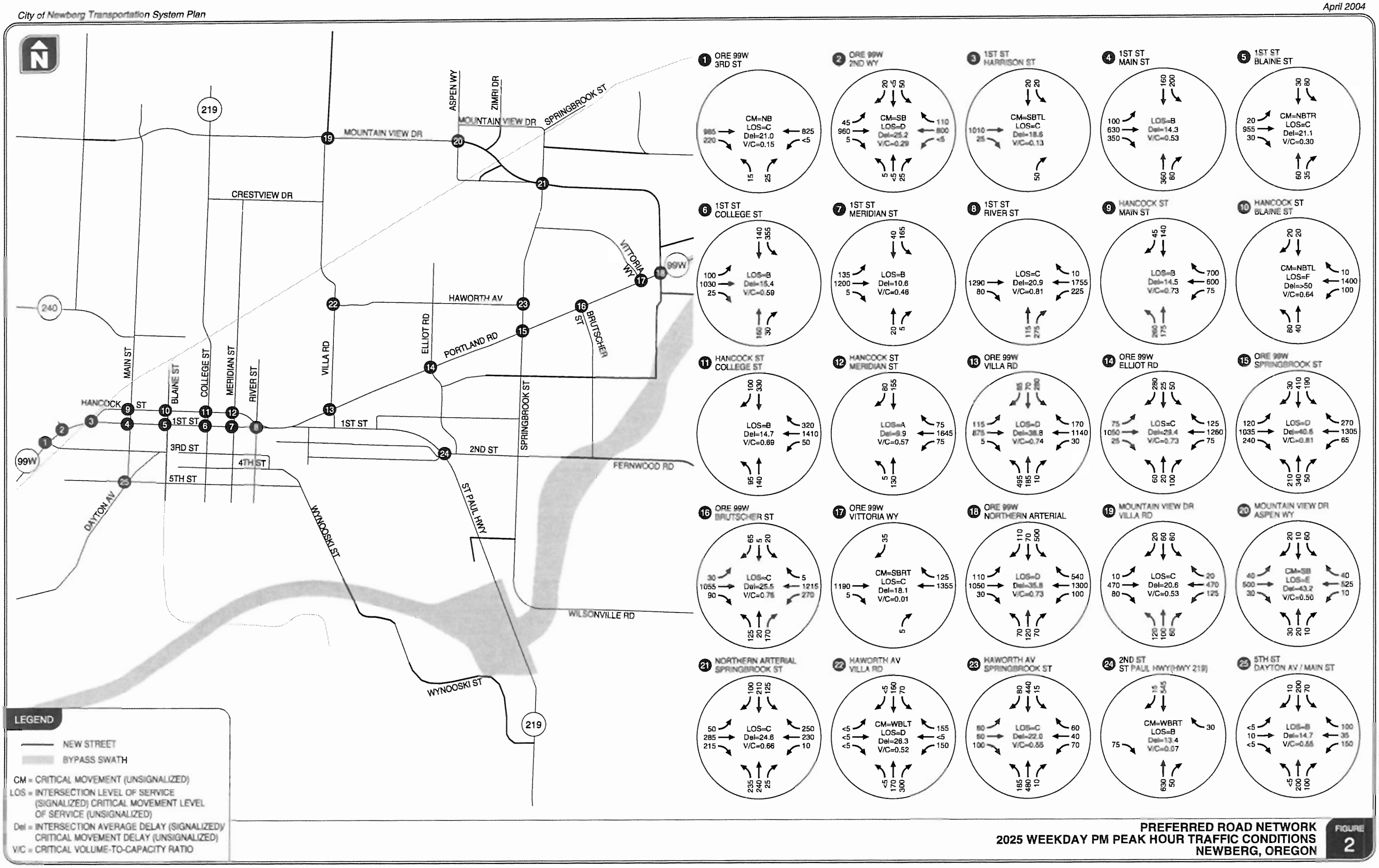


FIGURE 2

PREFERRED ROAD NETWORK
2025 WEEKDAY PM PEAK HOUR TRAFFIC CONDITIONS
NEWBERG, OREGON

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

```
pm                         Tue Jun 28, 2005 08:56:51                    Page 1-1
--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                                Scenario Report
Scenario:                  pm

Command:                   pm
Volume:                    pm
Geometry:                  pm
Impact Fee:                Default Impact Fee
Trip Generation:           Default Trip Generation
Trip Distribution:         Default Trip Distribution
Paths:                     Default Paths
Routes:                    Default Routes
Configuration:             Default Configuration

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```
pm                         Tue Jun 28, 2005 08:56:51                    Page 2-1
--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                           Turning Movement Report

Volume    Northbound      Southbound       Eastbound        Westbound     Total
Type   Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume

#1 ORE 99W/3rd St
Base     15    0    25     0    0     0     0  985   220     1  825     0   2071
Added     0    0     0     0    0     0     0    0     0     0    0     0      0
Total    15    0    25     0    0     0     0  985   220     1  825     0   2071

#2 ORE 99W/2nd WY
Base      5    1    25    50    1    20    45  960     5     1  800   110   2023
Added     0    0     0     0    0     0     0    0     0     0    0     0      0
Total     5    1    25    50    1    20    45  960     5     1  800   110   2023

#3 1st St/Harrison St
Base      0    0    50    20   20     0     0 1010    25     0    0     0   1125
Added     0    0     0     0    0     0     0    0     0     0    0     0      0
Total     0    0    50    20   20     0     0 1010    25     0    0     0   1125

#4 Main Street/1st Street
Base      0  360    80   200  160     0   100  630   350     0    0     0   1880
Added     0    0     0     0    0     0     0    0     0     0    0     0      0
Total     0  360    80   200  160     0   100  630   350     0    0     0   1880

#5 1st St/Blaine St
Base      0   60    35    80   30     0    20  955    30     0    0     0   1210
Added     0    0     0     0    0     0     0    0     0     0    0     0      0
Total     0   60    35    80   30     0    20  955    30     0    0     0   1210

#6 College Street/1st Street
Base      0  160    30   355  140     0   100 1030    25     0    0     0   1840
Added     0    0     0     0    0     0     0    0     0     0    0     0      0
Total     0  160    30   355  140     0   100 1030    25     0    0     0   1840

#7 1st St/Meridian St
Base      0   20     5   165   40     0   135 1200     5     0    0     0   1570
Added     0    0     0     0    0     0     0    0     0     0    0     0      0
Total     0   20     5   165   40     0   135 1200     5     0    0     0   1570

#8 1st St/River St
Base      0  115   275     0    0     0     0 1290    80   225 1755    10   3750
Added     0    0     0     0    0     0     0    0     0     0    0     0      0
Total     0  115   275     0    0     0     0 1290    80   225 1755    10   3750

#9 Main Street/Hancock Street
Base    260  175     0     0  140    45     0    0     0    75  600   700   1995
Added     0    0     0     0    0     0     0    0     0     0    0     0      0
Total   260  175     0     0  140    45     0    0     0    75  600   700   1995



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```
pm                       Tue Jun 28, 2005 08:56:51                  Page 2-2
----------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------
Volume     Northbound       Southbound       Eastbound        Westbound     Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume


#10 Hancock St/Blaine St
Base      80   40     0     0   20    20     0    0     0   100 1400    10   1670
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     80   40     0     0   20    20     0    0     0   100 1400    10   1670

#11 College Street/Hancock Street
Base      95  140     0     0  330   100     0    0     0    50 1410   320   2445
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     95  140     0     0  330   100     0    0     0    50 1410   320   2445

#12 Hancock St/Meridian St
Base       5  130     0     0  155    80     0    0     0    75 1645    75   2165
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      5  130     0     0  155    80     0    0     0    75 1645    75   2165

#13 OR 99W/Villa Road
Base     560  185    10   280   70   100   115  875     5    30 1290   170   3690
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    560  185    10   280   70   100   115  875     5    30 1290   170   3690

#14 OR 99W/Elliot Road
Base      60   20   100    50   25   280    75 1050    25    75 1260   125   3145
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     60   20   100    50   25   280    75 1050    25    75 1260   125   3145

#15 OR 99W/Springbrook Street
Base     210  340    50   190  410    30   120 1035   240    65 1305   270   4265
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    210  340    50   190  410    30   120 1035   240    65 1305   270   4265

#16 ORE 99W/Brutscher St
Base     125   20   170    20    5    65    30 1055    90   270 1215     5   3070
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    125   20   170    20    5    65    30 1055    90   270 1215     5   3070

#17 ORE 99W/Vittoria Wy
Base       0    0     5     0    0    35     0 1190     5     0 1355   125   2715
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0    0     5     0    0    35     0 1190     5     0 1355   125   2715

#18 OR 99W/Northern Arterial
Base      70  120    70   500   70   110   110 1050    30   100 1300   540   4070
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     70  120    70   500   70   110   110 1050    30   100 1300   540   4070



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pm                       Tue Jun 28, 2005 08:56:51                  Page 2-3
----------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------
Volume     Northbound       Southbound       Eastbound        Westbound     Total
Type    Left Thru Right  Left Thru Right  Left Thru Right  Left Thru Right Volume

#19 Mountain View Drive/Villa Road
Base     120  100    60    60   60    20    10  470    80   125  470    20   1595
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    120  100    60    60   60    20    10  470    80   125  470    20   1595

#20 Mountain View Dr/Aspen Way
Base      30   20    10    60   10    20    40  500    30    10  525    40   1295
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total     30   20    10    60   10    20    40  500    30    10  525    40   1295

#21 Springbrook Street/Northern Arterial
Base     235  240    25   125  210   100    50  285   215    10  230   250   1975
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    235  240    25   125  210   100    50  285   215    10  230   250   1975

#22 Haworth Ave/Villa Rd
Base       1  170   300    70  160     1     1    1     1   150    1   155   1011
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      1  170   300    70  160     1     1    1     1   150    1   155   1011

#23 Haworth Avenue/Springbrook Street
Base     185  480    10    15  440    80    60   60   100    70   40    60   1600
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total    185  480    10    15  440    80    60   60   100    70   40    60   1600

#24 Hwy 219/2nd Street
Base       0  630    50     0  545    15     0    0    75     0    0    30   1345
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      0  630    50     0  545    15     0    0    75     0    0    30   1345

#25 5th St/Dayton Ave/Main St
Base       1  200   100    70  200    10     1   10     1   150   35   100    878
Added      0    0     0     0    0     0     0    0     0     0    0     0      0
Total      1  200   100    70  200    10     1   10     1   150   35   100    878



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```

```
pm                      Tue Jun 28, 2005 08:56:52                   Page 3-1
----------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------
                           Impact Analysis Report
                              Level Of Service

Intersection                           Base            Future          Change
                                    Del/   V/        Del/   V/         in
                                 LOS Veh    C     LOS Veh    C
#  1 ORE 99W/3rd St              C  21.0 0.000   C  21.0 0.000   + 0.000 D/V

#  2 ORE 99W/2nd WY              D  25.2 0.000   D  25.2 0.000   + 0.000 D/V

#  3 1st St/Harrison St          C  18.6 0.000   C  18.6 0.000   + 0.000 D/V

#  4 Main Street/1st Street      B  14.3 0.534   B  14.3 0.534   + 0.000 D/V

#  5 1st St/Blaine St            C  21.6 0.000   C  21.6 0.000   + 0.000 D/V

#  6 College Street/1st Street   B  15.4 0.586   B  15.4 0.586   + 0.000 D/V

#  7 1st St/Meridian St          B  10.6 0.459   B  10.6 0.459   + 0.000 D/V

#  8 1st St/River St             C  20.9 0.806   C  20.9 0.806   + 0.000 D/V

#  9 Main Street/Hancock Street  B  14.5 0.730   B  14.5 0.730   + 0.000 D/V

# 10 Hancock St/Blaine St        F  69.0 0.000   F  69.0 0.000   + 0.000 D/V

# 11 College Street/Hancock Street B  14.7 0.687   B  14.7 0.687   + 0.000 D/V

# 12 Hancock St/Meridian St      A   9.9 0.565   A   9.9 0.565   + 0.000 D/V

# 13 OR 99W/Villa Road           D  39.9 0.787   D  39.9 0.787   + 0.000 D/V

# 14 OR 99W/Elliot Road          C  29.4 0.730   C  29.4 0.730   + 0.000 D/V

# 15 OR 99W/Springbrook Street   D  40.6 0.815   D  40.6 0.815   + 0.000 D/V

# 16 ORE 99W/Brutscher St        C  25.5 0.764   C  25.5 0.764   + 0.000 D/V

# 17 ORE 99W/Vittoria Wy         C  18.1 0.000   C  18.1 0.000   + 0.000 D/V

# 18 OR 99W/Northern Arterial    D  35.8 0.726   D  35.8 0.726   + 0.000 D/V

# 19 Mountain View Drive/Villa Road C  20.6 0.527   C  20.6 0.527   + 0.000 D/V

# 20 Mountain View Dr/Aspen Way  E  43.2 0.000   E  43.2 0.000   + 0.000 D/V

# 21 Springbrook Street/Northern Ar C  24.8 0.664   C  24.8 0.664   + 0.000 D/V

# 22 Haworth Ave/Villa Rd        C  20.3 0.000   C  20.3 0.000   + 0.000 D/V

# 23 Haworth Avenue/Springbrook Str C  22.0 0.548   C  22.0 0.548   + 0.000 D/V

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```

```
pm                      Tue Jun 28, 2005 08:56:52                   Page 3-2
----------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------
Intersection                           Base            Future          Change
                                    Del/   V/        Del/   V/         in
                                 LOS Veh    C     LOS Veh    C
# 24 Hwy 219/2nd Street          B  13.4 0.000   B  13.4 0.000   + 0.000 D/V

# 25 5th St/Dayton Ave/Main St   B  14.7 0.546   B  14.7 0.546   + 0.000 V/C

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```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                         Signal Warrant Summary Report
Intersection                                 Base Met          Future Met
                                            [Del / Vol]        [Del / Vol]
#  1 ORE 99W/3rd St                           No  / No           No  / No
#  2 ORE 99W/2nd WY                           No  / No           No  / No
#  3 1st St/Harrison St                       No  / No           No  / No
#  5 1st St/Blaine St                         No  / No           No  / No
# 10 Hancock St/Blaine St                     No  / No           No  / No
# 17 ORE 99W/Vittoria Wy                      No  / No           No  / No
# 20 Mountain View Dr/Aspen Way               No  / No           No  / No
# 22 Haworth Ave/Villa Rd                     No  / No           No  / No
# 24 Hwy 219/2nd Street                       No  / No           No  / No
# 25 5th St/Dayton Ave/Main St                No  / No           No  / No
```

```
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                    Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #1 ORE 99W/3rd St
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
Final Vol.:     15    0    25    0    0    0    0  985   220    1  825    0
ApproachDel:       21.0            xxxxxx           xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=2071]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
```

```
--------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
             Peak Hour Volume Signal Warrant Report [Urban]
********************************************************************************
Intersection #1 ORE 99W/3rd St
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
------------|----------------||----------------||----------------||----------------|
Approach:      North Bound       South Bound        East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Stop Sign         Stop Sign        Uncontrolled      Uncontrolled
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
Final Vol.:    15    0    25     0    0     0     0  985   220     1  825     0
------------|----------------||----------------||----------------||----------------|
Major Street Volume:            2031
Minor Approach Volume:            40
Minor Approach Volume Threshold: 41 [less than minimum of 100]
```

```
--------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                  Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #1 ORE 99W/3rd St
********************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
------------|----------------||----------------||----------------||----------------|
Approach:      North Bound       South Bound        East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Stop Sign         Stop Sign        Uncontrolled      Uncontrolled
Lanes:        0  0  1! 0  0    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
Final Vol.:    15    0    25     0    0     0     0  985   220     1  825     0
ApproachDel:      21.0             xxxxxx            xxxxxx            xxxxxx
------------|----------------||----------------||----------------||----------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=2071]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
```

```
pm                      Tue Jun 28, 2005 08:56:52                    Page 5-4
-----------------------------------------------------------------------------
                   Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                 Peak Hour Volume Signal Warrant Report [Urban]
*****************************************************************************
Intersection #1 ORE 99W/3rd St
*****************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
Final Vol.:    15    0   25     0    0    0     0  985  220     1  825    0
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:              2031
Minor Approach Volume:            40
Minor Approach Volume Threshold:  41 [less than minimum of 100]




















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```
pm                      Tue Jun 28, 2005 08:56:52                    Page 5-5
-----------------------------------------------------------------------------
                   Kittelson & Associates, Inc. - Project # 5193
                 City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                    Peak Hour Delay Signal Warrant Report
*****************************************************************************
Intersection #2 ORE 99W/2nd WY
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
Final Vol.:     5    1   25    50    1   20    45  960    5     1  800  110
ApproachDel:      15.3             25.2           xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=31]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=2023]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
-----------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.5]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=71]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=2023]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
















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```
pm                      Tue Jun 28, 2005 08:56:52                 Page 5-6
--------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------
              Peak Hour Volume Signal Warrant Report [Urban]
**************************************************************************
Intersection #2 ORE 99W/2nd WY
**************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
Final Vol.:     5    1    25    50    1    20    45  960     5     1  800   110
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:            1921
Minor Approach Volume:            71
Minor Approach Volume Threshold: 60 [less than minimum of 100]




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```

```
pm                      Tue Jun 28, 2005 08:56:52                 Page 5-7
--------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------
                   Peak Hour Delay Signal Warrant Report
**************************************************************************
Intersection #2 ORE 99W/2nd WY
**************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  1! 0  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
Final Vol.:     5    1    25    50    1    20    45  960     5     1  800   110
ApproachDel:      15.3             25.2            xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=31]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=2023]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
--------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.5]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=71]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=2023]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.




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```

```
pm                        Tue Jun 28, 2005 08:56:52                     Page 5-8
---------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------
                Peak Hour Volume Signal Warrant Report [Urban]
*********************************************************************************
Intersection #2 ORE 99W/2nd WY
*********************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  0  1! 0  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
Final Vol.:     5     1    25   50     1    20   45  960     5     1  800   110
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:             1921
Minor Approach Volume:           71
Minor Approach Volume Threshold: 60 [less than minimum of 100]
```

```
pm                        Tue Jun 28, 2005 08:56:52                     Page 5-9
---------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------
                  Peak Hour Delay Signal Warrant Report
*********************************************************************************
Intersection #3 1st St/Harrison St
*********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  0  0  0  1    0  1  0  0  0    0  0  1  1  0    0  0  0  0  0
Final Vol.:     0     0    50   20    20     0    0 1010    25     0     0     0
ApproachDel:       12.1             18.6            xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=50]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1125]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
---------------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1125]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
```

```
pm                      Tue Jun 28, 2005 08:56:52                 Page 5-10
---------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
              Peak Hour Volume Signal Warrant Report [Urban]
***************************************************************************
Intersection #3 1st St/Harrison St
***************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  1    0  1  0  0  0    0  0  1  1  0    0  0  0  0  0
Final Vol.:     0    0   50     20   20    0      0 1010   25      0    0    0
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:            1035
Minor Approach Volume:            50
Minor Approach Volume Threshold: 273



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```
pm                      Tue Jun 28, 2005 08:56:52                 Page 5-11
---------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                 Peak Hour Delay Signal Warrant Report
***************************************************************************
Intersection #3 1st St/Harrison St
***************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  1    0  1  0  0  0    0  0  1  1  0    0  0  0  0  0
Final Vol.:     0    0   50     20   20    0      0 1010   25      0    0    0
ApproachDel:      12.1             18.6            xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=50]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1125]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
---------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1125]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.



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```

```
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
              Peak Hour Volume Signal Warrant Report [Urban]
******************************************************************************
Intersection #3 1st St/Harrison St
******************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  1    0  1  0  0  0    0  0  1  1  0    0  0  0  0  0
Final Vol.:     0     0    50   20    20     0    0 1010    25    0     0     0
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:          1035
Minor Approach Volume:          50
Minor Approach Volume Threshold: 273
```

```
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                  Peak Hour Delay Signal Warrant Report
******************************************************************************
Intersection #5 1st St/Blaine St
******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
Final Vol.:     0    60    35   80    30     0   20  955    30    0     0     0
ApproachDel:       21.6             20.1           xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=95]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1210]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
------------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=110]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1210]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
```

```
--------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
              Peak Hour Volume Signal Warrant Report [Urban]
********************************************************************************
Intersection #5 1st St/Blaine St
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
Final Vol.:    0   60   35     80   30    0     20  955   30      0    0    0
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:          1005
Minor Approach Volume:         110
Minor Approach Volume Threshold: 283
```

```
--------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                   Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #5 1st St/Blaine St
********************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
Final Vol.:    0   60   35     80   30    0     20  955   30      0    0    0
ApproachDel:      21.6             20.1            xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=95]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1210]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
--------------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=110]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1210]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
```

```
------------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------------

                Peak Hour Volume Signal Warrant Report [Urban]
************************************************************************************
Intersection #5 1st St/Blaine St
************************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
Final Vol.:      0   60   35    80   30    0     20  955   30     0    0    0
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:           1005
Minor Approach Volume:          110
Minor Approach Volume Threshold: 283
```

```
------------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------------

                    Peak Hour Delay Signal Warrant Report
************************************************************************************
Intersection #10 Hancock St/Blaine St
************************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
Final Vol.:     80   40    0     0   20   20     0    0    0    100 1400   10
ApproachDel:       69.0             34.3           xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=2.3]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=120]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1670]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
------------------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1670]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
```

```
pm                      Tue Jun 28, 2005 08:56:52                  Page 5-18
-----------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
              Peak Hour Volume Signal Warrant Report [Urban]
*****************************************************************************
Intersection #10 Hancock St/Blaine St
*****************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:      North Bound       South Bound        East Bound        West Bound
Movement:    L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign         Stop Sign        Uncontrolled      Uncontrolled
Lanes:       0  1  0  0  0     0  0  0  1  0     0  0  0  0  0     0  1  1  1  0
Final Vol.:    80   40     0     0   20    20      0     0     0   100 1400    10
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:            1510
Minor Approach Volume:          120
Minor Approach Volume Threshold: 143




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```

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pm                      Tue Jun 28, 2005 08:56:52                  Page 5-19
-----------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                   Peak Hour Delay Signal Warrant Report
*****************************************************************************
Intersection #10 Hancock St/Blaine St
*****************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:      North Bound       South Bound        East Bound        West Bound
Movement:    L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign         Stop Sign        Uncontrolled      Uncontrolled
Lanes:       0  1  0  0  0     0  0  0  1  0     0  0  0  0  0     0  1  1  1  0
Final Vol.:    80   40     0     0   20    20      0     0     0   100 1400    10
ApproachDel:      69.0              34.3             xxxxxx            xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=2.3]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=120]
   SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1670]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.
-----------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.4]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=40]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=3][total volume=1670]
   SUCCEED - Total volume greater than or equal to 650 for intersection
             with less than four approaches.




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```
pm                    Tue Jun 28, 2005 08:56:52                  Page 5-20
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
             Peak Hour Volume Signal Warrant Report [Urban]
***************************************************************************
Intersection #10 Hancock St/Blaine St
***************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Lanes:       0  1  0  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
Final Vol.:   80   40     0     0   20    20     0    0     0   100 1400    10
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:           1510
Minor Approach Volume:          120
Minor Approach Volume Threshold: 143




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```

```
pm                    Tue Jun 28, 2005 08:56:52                  Page 5-21
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                   Peak Hour Delay Signal Warrant Report
***************************************************************************
Intersection #17 ORE 99W/Vittoria Wy
***************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  1    0  0  0  0  1    0  0  1  1  0    0  0  1  1  0
Final Vol.:    0    0     5     0    0    35     0 1190     5     0 1355   125
ApproachDel:      14.1             18.1           xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.0]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=5]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=2715]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
---------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=35]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=2715]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.




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```

```
------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

            Peak Hour Volume Signal Warrant Report [Urban]
******************************************************************************
Intersection #17 ORE 99W/Vittoria Wy
******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  1    0  0  0  0  1    0  0  1  1  0    0  0  1  1  0
Final Vol.:     0    0    5      0    0   35      0 1190    5      0 1355  125
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:              2675
Minor Approach Volume:            35
Minor Approach Volume Threshold: -54 [less than minimum of 100]
```

```
------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                 Peak Hour Delay Signal Warrant Report
******************************************************************************
Intersection #17 ORE 99W/Vittoria Wy
******************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:       0  0  0  0  1    0  0  0  0  1    0  0  1  1  0    0  0  1  1  0
Final Vol.:     0    0    5      0    0   35      0 1190    5      0 1355  125
ApproachDel:      14.1             18.1            xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.0]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=5]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=2715]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
------------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.2]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=35]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=2715]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
```

```
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                 Peak Hour Volume Signal Warrant Report [Urban]
***************************************************************************
Intersection #17 ORE 99W/Vittoria Wy
***************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  0  0  0  1    0  0  0  0  1    0  0  1  1  0    0  0  1  1  0
Final Vol.:     0     0     5    0     0    35    0 1190     5    0 1355   125
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:          2675
Minor Approach Volume:        35
Minor Approach Volume Threshold: -54 [less than minimum of 100]
```

```
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                   Peak Hour Delay Signal Warrant Report
***************************************************************************
Intersection #20 Mountain View Dr/Aspen Way
***************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Lanes:        0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0    1  0  0  1  0
Final Vol.:    30    20    10   60    10    20   40  500    30   10  525    40
ApproachDel:       33.7             43.2            xxxxxx           xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=60]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1295]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
---------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=1.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=90]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1295]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
```

```
------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
            Peak Hour Volume Signal Warrant Report [Urban]
******************************************************************************
Intersection #20 Mountain View Dr/Aspen Way
******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Lanes:       0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0    1  0  0  1  0
Final Vol.:   30   20    10    60   10    20    40  500    30    10  525    40
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:           1145
Minor Approach Volume:           90
Minor Approach Volume Threshold: 238
```

```
------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                Peak Hour Delay Signal Warrant Report
******************************************************************************
Intersection #20 Mountain View Dr/Aspen Way
******************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound        West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled      Uncontrolled
Lanes:       0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0    1  0  0  1  0
Final Vol.:   30   20    10    60   10    20    40  500    30    10  525    40
ApproachDel:      33.7             43.2           xxxxxx            xxxxxx
-----------|---------------||---------------||---------------||---------------|
Approach[northbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.6]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=60]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1295]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
------------------------------------------------------------------------------
Approach[southbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=1.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=90]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1295]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
```

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pm                     Tue Jun 28, 2005 08:56:53                   Page 5-28
------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
              Peak Hour Volume Signal Warrant Report [Urban]
******************************************************************************
Intersection #20 Mountain View Dr/Aspen Way
******************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign      Uncontrolled     Uncontrolled
Lanes:        0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0    1  0  0  1  0
Final Vol.:    30   20    10    60   10    20    40  500    30    10  525    40
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:          1145
Minor Approach Volume:          90
Minor Approach Volume Threshold: 238





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pm                     Tue Jun 28, 2005 08:56:53                   Page 5-29
------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                  Peak Hour Delay Signal Warrant Report
******************************************************************************
Intersection #22 Haworth Ave/Villa Rd
******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0
Final Vol.:     1  187   330    77  176     1     1    1     1   165    1   170
ApproachDel:     xxxxxx           xxxxxx            16.3             20.3
-----------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.0]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=3]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1111]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
------------------------------------------------------------------------------
Approach[westbound][lanes=2][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=1.9]
   FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=336]
   SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1111]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.





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```
pm                       Tue Jun 28, 2005 08:56:53                   Page 5-30
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                 Peak Hour Volume Signal Warrant Report [Urban]
*******************************************************************************
Intersection #22 Haworth Ave/Villa Rd
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0
Final Vol.:    1  187   330    77  176     1      1     1     1  165     1   170
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:              771
Minor Approach Volume:            336
Minor Approach Volume Threshold:  374




















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pm                       Tue Jun 28, 2005 08:56:53                   Page 5-31
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                    Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #22 Haworth Ave/Villa Rd
*******************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0
Final Vol.:    1  187   330    77  176     1      1     1     1  165     1   170
ApproachDel:    xxxxxx           xxxxxx             16.3             20.3
-----------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.0]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=3]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1111]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
-------------------------------------------------------------------------------
Approach[westbound][lanes=2][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=1.9]
   FAIL - Vehicle-hours less than 5 for two or more lane approach.
Signal Warrant Rule #2: [approach volume=336]
   SUCCEED - Approach volume >= 150 for two or more lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1111]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.











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```

```
--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

            Peak Hour Volume Signal Warrant Report [Urban]
********************************************************************************
Intersection #22 Haworth Ave/Villa Rd
********************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Lanes:       0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0
Final Vol.:     1  187   330    77  176     1     1     1     1   165     1   170
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:           771
Minor Approach Volume:         336
Minor Approach Volume Threshold: 374
```

```
--------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                 Peak Hour Delay Signal Warrant Report
********************************************************************************
Intersection #24 Hwy 219/2nd Street
********************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Lanes:       0  0  0  1  0    0  0  0  1  0    0  0  0  0  1    0  0  0  0  1
Final Vol.:     0  630    50     0  545    15     0     0    75     0     0    30
ApproachDel:     xxxxxx           xxxxxx            13.0             13.4
-----------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.3]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=75]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1345]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
--------------------------------------------------------------------------------
Approach[westbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=30]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1345]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
               Peak Hour Volume Signal Warrant Report [Urban]
*******************************************************************************
Intersection #24 Hwy 219/2nd Street
*******************************************************************************
Base Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  0  1  0    0  0  0  1  0    0  0  0  0  1    0  0  0  0  1
Final Vol.:    0  630    50     0  545    15     0     0    75     0     0    30
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:            1240
Minor Approach Volume:          75
Minor Approach Volume Threshold: 162
```

```
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                    Peak Hour Delay Signal Warrant Report
*******************************************************************************
Intersection #24 Hwy 219/2nd Street
*******************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  0  1  0    0  0  0  1  0    0  0  0  0  1    0  0  0  0  1
Final Vol.:    0  630    50     0  545    15     0     0    75     0     0    30
ApproachDel:    xxxxxx           xxxxxx            13.0             13.4
-----------|---------------||---------------||---------------||---------------|
Approach[eastbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.3]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=75]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1345]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
-------------------------------------------------------------------------------
Approach[westbound][lanes=1][control=Stop]
Signal Warrant Rule #1: [vehicle-hours=0.1]
   FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=30]
   FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=4][total volume=1345]
   SUCCEED - Total volume greater than or equal to 800 for intersection
             with four or more approaches.
```

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pm                      Tue Jun 28, 2005 08:56:53                    Page 5-36
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
              Peak Hour Volume Signal Warrant Report [Urban]
*******************************************************************************
Intersection #24 Hwy 219/2nd Street
*******************************************************************************
Future Volume Alternative: Peak Hour Warrant NOT Met
-----------|---------------||---------------||---------------||---------------|
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Lanes:       0  0  0  1  0    0  0  0  1  0    0  0  0  0  1    0  0  0  0  1
Final Vol.:    0  630    50     0  545    15     0    0    75     0    0    30
-----------|---------------||---------------||---------------||---------------|
Major Street Volume:           1240
Minor Approach Volume:           75
Minor Approach Volume Threshold: 162






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```
pm                      Tue Jun 28, 2005 08:56:53                     Page 6-1
-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 ORE 99W/3rd St
*******************************************************************************
Average Delay (sec/veh):        0.4    Worst Case Level Of Service:    C[ 21.0]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  1! 0  0    0  0  0  0  0    0  0  1  1  0    1  0  2  0  0
-----------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      15    0    25     0    0     0     0  985   220     1  825     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   15    0    25     0    0     0     0  985   220     1  825     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    15    0    25     0    0     0     0  985   220     1  825     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    15    0    25     0    0     0     0  985   220     1  825     0
-----------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.4 xxxx   7.5 xxxxx xxxx xxxxx xxxxx xxxx xxxxx   4.5 xxxx xxxxx
FollowUpTim:  3.8 xxxx   3.6 xxxxx xxxx xxxxx xxxxx xxxx xxxxx   2.4 xxxx xxxxx
-----------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1510 xxxx   603  xxxx xxxx xxxxx  xxxx xxxx xxxxx  1205 xxxx xxxxx
Potent Cap.:   84 xxxx   377  xxxx xxxx xxxxx  xxxx xxxx xxxxx   484 xxxx xxxxx
Move Cap.:     84 xxxx   377  xxxx xxxx xxxxx  xxxx xxxx xxxxx   484 xxxx xxxxx
Total Cap:    177    0 xxxxx   766    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  0.08 xxxx  0.07  xxxx xxxx  xxxx  xxxx xxxx  xxxx  0.00 xxxx  xxxx
-----------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.0 xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx  12.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     B    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  265 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  0.5 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx 21.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    C     *     *    *     *     *    *     *     *    *     *
ApproachDel:        21.0           xxxxxx           xxxxxx           xxxxxx
ApproachLOS:          C               *                *                *





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```
pm                     Tue Jun 28, 2005 08:56:53                   Page 7-1
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
              Level Of Service Detailed Computation Report
                 2000 HCM Unsignalized Method
                      Base Volume Alternative
*******************************************************************************
Intersection #1 ORE 99W/3rd St
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------|---------------|---------------|---------------|
HevVeh:           31%              0%              19%              20%
Grade:             0%              0%               0%               0%
Peds/Hour:         0               0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|---------------|---------------|---------------|---------------|
Two-Stage Gap Acceptance [Median Type: TWLTL] [Median Storage:  1 car ]
-----------|---------------|---------------|---------------|---------------|
Two-Stage Gap Acceptance - Stage One Module:
Cnflict Vol:1095     0 xxxxx     0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 226   900 xxxxx   900   900 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   226   900 xxxxx   898   898 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
-----------|---------------|---------------|---------------|---------------|
Two-Stage Gap Acceptance - Stage Two Module:
Cnflict Vol: 415     0 xxxxx     0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 557   900 xxxxx   900   900 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   556   898 xxxxx   840   900 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx









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pm                     Tue Jun 28, 2005 08:56:53                   Page 8-1
-------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #2 ORE 99W/2nd WY
*******************************************************************************
Average Delay (sec/veh):        1.4    Worst Case Level Of Service:     D[ 25.2]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
-----------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      5     1    25     50     1    20     45   960     5      1   800   110
Growth Adj: 1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00
Initial Bse:   5     1    25     50     1    20     45   960     5      1   800   110
User Adj:   1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00
PHF Adj:    1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00
PHF Volume:    5     1    25     50     1    20     45   960     5      1   800   110
Reduct Vol:    0     0     0      0     0     0      0     0     0      0     0     0
Final Vol.:    5     1    25     50     1    20     45   960     5      1   800   110
-----------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.5   6.5   6.9    7.5   6.5   6.9    4.6  xxxx xxxxx   4.6  xxxx xxxxx
FollowUpTim:  3.5   4.0   3.3    3.5   4.0   3.3    2.4  xxxx xxxxx   2.5  xxxx xxxxx
-----------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1455  1965   483   1428  1912   455    910  xxxx xxxxx   965  xxxx xxxxx
Potent Cap.:   93    64   535     97    69   558    626  xxxx xxxxx   579  xxxx xxxxx
Move Cap.:     83    59   535     86    64   558    626  xxxx xxxxx   579  xxxx xxxxx
Total Cap:    176   162 xxxxx    205   175 xxxxx   xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
Volume/Cap:  0.03  0.01  0.05   0.24  0.01  0.04   0.07  xxxx  xxxx  0.00  xxxx  xxxx
-----------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:       xxxxx  xxxx xxxxx  xxxxx  xxxx xxxxx    0.2  xxxx xxxxx    0.0  xxxx xxxxx
Stopped Del:xxxxx  xxxx xxxxx  xxxxx  xxxx xxxxx   11.2  xxxx xxxxx   11.2  xxxx xxxxx
LOS by Move:    *     *     *      *     *     *      B     *     *      B     *     *
Movement:     LT - LTR - RT    LT - LTR - RT     LT - LTR - RT     LT - LTR - RT
Shared Cap.: xxxx   381 xxxxx   xxxx   249 xxxxx   xxxx  xxxx xxxxx  xxxx  xxxx xxxxx
SharedQueue:xxxxx   0.3 xxxxx  xxxxx   1.1 xxxxx  xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shrd StpDel:xxxxx  15.3 xxxxx  xxxxx  25.2 xxxxx  xxxxx  xxxx xxxxx xxxxx  xxxx xxxxx
Shared LOS:     *     C     *      *     D     *      *     *     *      *     *     *
ApproachDel:       15.3               25.2             xxxxxx            xxxxxx
ApproachLOS:         C                  D                 *                 *









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----------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                       2000 HCM Unsignalized Method
                         Base Volume Alternative
**********************************************************************************
Intersection #2 ORE 99W/2nd WY
**********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
----------|----------------|----------------|----------------|----------------|
HevVeh:          0%               0%              23%              26%
Grade:           0%               0%               0%               0%
Peds/Hour:       0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:     12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance [Median Type: TWLTL] [Median Storage:  1 car ]
----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage One Module:
Cnflict Vol:1053  1053 xxxxx  857   857 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 246   306 xxxxx  323   377 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   228   284 xxxxx  322   376 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
----------|----------------|----------------|----------------|----------------|
Two-Stage Gap Acceptance - Stage Two Module:
Cnflict Vol: 403   912 xxxxx  571  1055 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 601   355 xxxxx  478   305 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   577   355 xxxxx  422   283 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
```

```
----------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------

                     Level Of Service Computation Report
             2000 HCM Unsignalized Method (Base Volume Alternative)
**********************************************************************************
Intersection #3 1st St/Harrison St
**********************************************************************************
Average Delay (sec/veh):        1.2    Worst Case Level Of Service:       C[ 18.6]
**********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  0  1    0  1  0  0  0    0  0  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0    50    20   20     0     0 1010    25     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0    50    20   20     0     0 1010    25     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0    50    20   20     0     0 1010    25     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0    0    50    20   20     0     0 1010    25     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx   6.2   7.1  6.5 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx   3.3   3.5  4.0 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx   518   505 1035 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx   556   481  234 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx   556   438  234 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  0.09  0.05 0.09  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx   0.3 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx  12.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx   305 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx  18.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     C    *     *     *    *     *     *    *     *
ApproachDel:       12.1              18.6            xxxxxx           xxxxxx
ApproachLOS:         B                 C                *                *
```

```
pm                       Tue Jun 28, 2005 08:56:53                  Page 11-1
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
               Level Of Service Detailed Computation Report
                       2000 HCM Unsignalized Method
                          Base Volume Alternative
*****************************************************************************
Intersection #3 1st St/Harrison St
*****************************************************************************
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:             3%               0%               7%               0%
Grade:              0%               0%               0%               0%
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour





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pm                       Tue Jun 28, 2005 08:56:53                  Page 12-1
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
            2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #4 Main Street/1st Street
*****************************************************************************
Cycle (sec):           70               Critical Vol./Cap. (X):        0.534
Loss Time (sec):        8 (Y+R =  4 sec) Average Delay (sec/veh):       14.3
Optimal Cycle:         33               Level Of Service:                  B
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  360   80   200  160    0   100  630  350     0    0    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    0  360   80   200  160    0   100  630  350     0    0    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:     0  360   80   200  160    0   100  630  350     0    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:    0  360   80   200  160    0   100  630  350     0    0    0
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:     0  360   80   200  160    0   100  630  350     0    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  1.00 0.96 0.96  0.64 0.98 1.00  0.82 0.82 0.82  1.00 1.00 1.00
Lanes:       0.00 0.82 0.18  1.00 1.00 0.00  0.28 1.75 0.97  0.00 0.00 0.00
Final Sat.:     0 1485  330  1212 1862    0   434 2736 1520     0    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.24 0.24  0.16 0.09 0.00  0.23 0.23 0.23  0.00 0.00 0.00
Crit Moves:       ****                            ****
Green/Cycle: 0.00 0.45 0.45  0.45 0.45 0.00  0.43 0.43 0.43  0.00 0.00 0.00
Volume/Cap:  0.00 0.53 0.53  0.36 0.19 0.00  0.53 0.53 0.53  0.00 0.00 0.00
Delay/Veh:    0.0 14.4 14.4  12.9 11.5  0.0  15.0 15.0 15.0   0.0  0.0  0.0
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:   0.0 14.4 14.4  12.9 11.5  0.0  15.0 15.0 15.0   0.0  0.0  0.0
HCM2kAvg:       0    7    7     4    2    0     7    7    7     0    0    0
*****************************************************************************




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pm                       Tue Jun 28, 2005 08:56:53                    Page 13-1
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                            Base Volume Alternative
*******************************************************************************
Intersection #4 Main Street/1st Street
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group:  xxxx  RT    RT    L    T   xxxx   LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:    0    1     1    1    1     0     3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12   12   12    12    12   12    12    12   12    12
CrosswalkWid        8               8                8                8
% Hev Veh:          2               2                0                2
Grade:             0%              0%               0%               0%
Parking/Hr:        No              No               No               No
Bus Stp/Hr:         0               0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0               0                0                0
ExclusiveRT:     Include         Include          Include          Include
% RT Prtct:         0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx    2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.98 0.98 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98  xxxx xxxx xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.65 xxxx xxxxx  0.95 0.95  0.95  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.90 0.90  0.90  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.82 0.82  0.82  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
*******************************************************************************


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pm                       Tue Jun 28, 2005 08:56:53                    Page 13-2
-------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                          2000 HCM Operations Method
                            Base Volume Alternative
*******************************************************************************
Intersection #4 Main Street/1st Street
*******************************************************************************
Approach:                                        North    South     East     West
Cycle Length, C:                                xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:            xxxxxx    31.80   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:         xxxxxx    31.80   xxxxxx   xxxxxx
Opposing Effective Green Time, go:              xxxxxx    31.80   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                   xxxxxx        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:               xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:              xxxxxx      200   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:    xxxxxx     1.00   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     xxxxxx     1.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                      xxxxxx     3.89   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                xxxxxx      440   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         xxxxxx     8.56   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                    xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                        xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:     xxxxxx     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                      xxxxxx     0.55   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:          xxxxxx     9.35   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:       xxxxxx    22.45   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:     xxxxxx     4.68   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    xxxxxx     0.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:    xxxxxx     1.00   xxxxxx   xxxxxx
Through-car Equivalents, el1:                   xxxxxx     1.98   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:       xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      xxxxxx     0.13   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    xxxxxx     0.65   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:               xxxxxx     0.65   xxxxxx   xxxxxx
*******************************************************************************


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pm                        Tue Jun 28, 2005 08:56:53                      Page 13-3
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
       Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                          2000 HCM Operations Method
                           Base Volume Alternative
*******************************************************************************
Intersection #4 Main Street/1st Street
*******************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Green/Cycle: 0.00 0.45  0.45  0.45 0.45  0.00  0.43 0.43  0.43  0.00 0.00  0.00
ArrivalType:         3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           0.0  6.2   6.2   3.9  1.9   0.0   5.4  5.4   5.4   0.0  0.0   0.0
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
Q2:           0.0  1.1   1.1   0.6  0.2   0.0   1.1  1.1   1.1   0.0  0.0   0.0
HCM2KQueue:   0.0  7.3   7.3   4.5  2.1   0.0   6.6  6.6   6.6   0.0  0.0   0.0
-----------|---------------||---------------||---------------||---------------|
70th%Factor: 1.20 1.18  1.18  1.19 1.19  1.20  1.18 1.18  1.18  1.20 1.20  1.20
70th%HCM2kQ:  0.0  8.6   8.6   5.3  2.5   0.0   7.8  7.8   7.8   0.0  0.0   0.0
-----------|---------------||---------------||---------------||---------------|
85th%Factor: 1.60 1.54  1.54  1.56 1.58  1.60  1.54 1.54  1.54  1.60 1.60  1.60
85th%HCM2kQ:  0.0 11.2  11.2   7.0  3.3   0.0  10.1 10.1  10.1   0.0  0.0   0.0
-----------|---------------||---------------||---------------||---------------|
90th%Factor: 1.80 1.68  1.68  1.72 1.76  1.80  1.69 1.69  1.69  1.80 1.80  1.80
90th%HCM2kQ:  0.0 12.2  12.2   7.7  3.7   0.0  11.1 11.1  11.1   0.0  0.0   0.0
-----------|---------------||---------------||---------------||---------------|
95th%Factor: 2.10 1.90  1.90  1.97 2.03  2.10  1.92 1.92  1.92  2.10 2.10  2.10
95th%HCM2kQ:  0.0 13.8  13.8   8.8  4.3   0.0  12.6 12.6  12.6   0.0  0.0   0.0
-----------|---------------||---------------||---------------||---------------|
98th%Factor: 2.70 2.27  2.27  2.41 2.55  2.70  2.30 2.30  2.30  2.70 2.70  2.70
98th%HCM2kQ:  0.0 16.5  16.5  10.8  5.3   0.0  15.1 15.1  15.1   0.0  0.0   0.0




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pm                        Tue Jun 28, 2005 08:56:53                      Page 14-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #5 1st St/Blaine St
*******************************************************************************
Average Delay (sec/veh):        3.7     Worst Case Level Of Service:      C[ 21.6]
*******************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:       0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
-----------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   60    35    80   30     0    20  955    30     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   60    35    80   30     0    20  955    30     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0   60    35    80   30     0    20  955    30     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:     0   60    35    80   30     0    20  955    30     0    0     0
-----------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx  6.5   6.2   7.1  6.5 xxxxx   4.2 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx  4.0   3.3   3.5  4.0 xxxxx   2.3 xxxx xxxxx xxxxx xxxx xxxxx
-----------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx 1010   333   388 1025 xxxxx     0 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx  240   708   572  236 xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx  234   708   429  231 xxxxx   900 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx 0.26  0.05  0.19 0.13  xxxx  0.02 xxxx  xxxx  xxxx xxxx  xxxx
-----------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:       xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.1 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     A    *     *     *    *     *
Movement:      LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx   311   348 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx   1.3   1.3 xxxx xxxxx   0.1 xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx  21.6  20.1 xxxx xxxxx   9.1 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     C     C    *     *     A    *     *     *    *     *
ApproachDel:        21.6             20.1            xxxxxx           xxxxxx
ApproachLOS:          C                C                *                *




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pm                         Tue Jun 28, 2005 08:56:53                  Page 15-1
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                  Level Of Service Detailed Computation Report
                          2000 HCM Unsignalized Method
                             Base Volume Alternative
********************************************************************************
Intersection #5 1st St/Blaine St
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
HevVeh:          2%               1%               6%               0%
Grade:           0%               0%               0%               0%
Peds/Hour:       0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:    12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                                   #6
Dist(miles):                                  0.000
Speed (mph):                                   0.00
SignalIndex:                                  #4
Cycle Time:                                       0 secs
InitVolume:                                 0     0
Saturation:                                 0     0
ArrivalType:                                0     0
G/C:                                     0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                      0.000 0.000
gq1:                                     0.00  0.00
gq2:                                     0.00  0.00
gq:                                      0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                        0.000
beta:                                         0.000
ta (secs):                                    0.000
F:                                            0.000
f:                                      0.000 0.000
vcmax:                                      0     0
vcg:                                        0     0
vcmin:                                      0     0
tp:                                       0.0   0.0
p:                                            0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                   0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:   0  1010   333  388  1025    0    0 xxxxx xxxxx     0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:   0  1010   333  388  1025    0    0 xxxxx xxxxx     0 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  900   240   708  572   236   900  900 xxxxx xxxxx  900 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:   900   240   708  572   236   900  900 xxxxx xxxxx  900 xxxxx xxxxx

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pm                         Tue Jun 28, 2005 08:56:53                  Page 16-1
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #6 College Street/1st Street
********************************************************************************
Cycle (sec):          70                Critical Vol./Cap. (X):         0.586
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):         15.4
Optimal Cycle:        36                Level Of Service:                   B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0   160    30   355   140     0   100  1030    25     0     0     0
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   0   160    30   355   140     0   100  1030    25     0     0     0
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    0   160    30   355   140     0   100  1030    25     0     0     0
Reduct Vol:    0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   0   160    30   355   140     0   100  1030    25     0     0     0
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    0   160    30   355   140     0   100  1030    25     0     0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  1.00  0.96  0.96  0.64  0.98  1.00  0.89  0.89  0.89  1.00  1.00  1.00
Lanes:       0.00  0.84  0.16  1.00  1.00  0.00  0.26  2.68  0.06  0.00  0.00  0.00
Final Sat.:    0  1535   288  1223  1862     0   437  4506   109     0     0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00  0.10  0.10  0.29  0.08  0.00  0.23  0.23  0.23  0.00  0.00  0.00
Crit Moves:                    ****                    ****
Green/Cycle: 0.00  0.50  0.50  0.50  0.50  0.00  0.39  0.39  0.39  0.00  0.00  0.00
Volume/Cap:  0.00  0.21  0.21  0.59  0.15  0.00  0.59  0.59  0.59  0.00  0.00  0.00
Delay/Veh:    0.0  10.1  10.1  14.0   9.7   0.0  17.3  17.3  17.3   0.0   0.0   0.0
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:   0.0  10.1  10.1  14.0   9.7   0.0  17.3  17.3  17.3   0.0   0.0   0.0
HCM2kAvg:       0     2     2     9     2     0     7     7     7     0     0     0
********************************************************************************

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```
pm                  Tue Jun 28, 2005 08:56:53                  Page 17-1
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
               Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
***************************************************************************
Intersection #6 College Street/1st Street
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        0  0  0  1  0    1  0  1  0  0    0  1  1  1  0    0  0  0  0  0
Lane Group:  xxxx  RT    RT    L    T   xxxx   LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:    0    1     1    1    1     0     3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12    12   12   12    12    12   12    12    12   12    12
CrosswalkWid        8               8               8               8
% Hev Veh:          2               2               2               0
Grade:             0%              0%              0%              0%
Parking/Hr:        No              No              No              No
Bus Stp/Hr:         0               0               0               0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0               0               0               0
ExclusiveRT:     Include         Include         Include         Include
% RT Prtct:         0               0               0               0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx     2 xxxx  xxxx    5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.98  0.98  0.98 0.98 xxxxx  0.98 0.98  0.98  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  xxxx 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.98  0.98  xxxx xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.66 xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.97 0.97  0.97  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.64 0.98  1.00  0.89 0.89  0.89  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > > >
DelAdjFctr:  0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
***************************************************************************


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pm                  Tue Jun 28, 2005 08:56:53                  Page 17-2
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                      2000 HCM Operations Method
                        Base Volume Alternative
***************************************************************************
Intersection #6 College Street/1st Street
***************************************************************************
Approach:                                       North     South     East      West
Cycle Length, C:                                xxxxxx       70    xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:            xxxxxx    34.67    xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:         xxxxxx    34.67    xxxxxx    xxxxxx
Opposing Effective Green Time, go:              xxxxxx    34.67    xxxxxx    xxxxxx
Number Of Opposing Lanes, No:                   xxxxxx        1    xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:               xxxxxx        1    xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:              xxxxxx      355    xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt:    xxxxxx     1.00    xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     xxxxxx     1.00    xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                      xxxxxx     6.90    xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:                xxxxxx      190    xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         xxxxxx     3.69    xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:                    xxxxxx     1.00    xxxxxx    xxxxxx
Lost Time Per Phase, tl:                        xxxxxx     4.00    xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:     xxxxxx     0.00    xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                      xxxxxx     0.50    xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:          xxxxxx     2.48    xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu:       xxxxxx    32.19    xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n:     xxxxxx     1.24    xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    xxxxxx     0.00    xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:                xxxxxx   xxxxxx    xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl:    xxxxxx     1.00    xxxxxx    xxxxxx
Through-car Equivalents, el1:                   xxxxxx     1.59    xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2:       xxxxxx     1.00    xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      xxxxxx     0.12    xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    xxxxxx     0.66    xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:               xxxxxx     0.66    xxxxxx    xxxxxx
***************************************************************************


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pm                      Tue Jun 28, 2005 08:56:53                     Page 17-3
---------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------
      Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                        2000 HCM Operations Method
                          Base Volume Alternative
*********************************************************************************
Intersection #6 College Street/1st Street
*********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Green/Cycle: 0.00 0.50  0.50  0.50 0.50  0.00  0.39 0.39  0.39  0.00 0.00  0.00
ArrivalType:        3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           0.0  2.1   2.1   7.5  1.5   0.0   5.9  5.9   5.9   0.0  0.0   0.0
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
Q2:           0.0  0.3   0.3   1.4  0.2   0.0   1.4  1.4   1.4   0.0  0.0   0.0
HCM2KQueue:   0.0  2.3   2.3   8.8  1.7   0.0   7.3  7.3   7.3   0.0  0.0   0.0
------------|----------------||----------------||----------------||----------------|
70th%Factor: 1.20 1.19  1.19  1.18 1.20  1.20  1.18 1.18  1.18  1.20 1.20  1.20
70th%HCM2kQ:  0.0  2.8   2.8  10.4  2.0   0.0   8.6  8.6   8.6   0.0  0.0   0.0
------------|----------------||----------------||----------------||----------------|
85th%Factor: 1.60 1.58  1.58  1.52 1.58  1.60  1.54 1.54  1.54  1.60 1.60  1.60
85th%HCM2kQ:  0.0  3.7   3.7  13.5  2.6   0.0  11.2 11.2  11.2   0.0  0.0   0.0
------------|----------------||----------------||----------------||----------------|
90th%Factor: 1.80 1.76  1.76  1.66 1.77  1.80  1.68 1.68  1.68  1.80 1.80  1.80
90th%HCM2kQ:  0.0  4.1   4.1  14.7  2.9   0.0  12.2 12.2  12.2   0.0  0.0   0.0
------------|----------------||----------------||----------------||----------------|
95th%Factor: 2.10 2.03  2.03  1.87 2.05  2.10  1.90 1.90  1.90  2.10 2.10  2.10
95th%HCM2kQ:  0.0  4.8   4.8  16.5  3.4   0.0  13.9 13.9  13.9   0.0  0.0   0.0
------------|----------------||----------------||----------------||----------------|
98th%Factor: 2.70 2.53  2.53  2.21 2.58  2.70  2.27 2.27  2.27  2.70 2.70  2.70
98th%HCM2kQ:  0.0  5.9   5.9  19.5  4.3   0.0  16.6 16.6  16.6   0.0  0.0   0.0




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pm                      Tue Jun 28, 2005 08:56:53                     Page 18-1
---------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------
                    Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*********************************************************************************
Intersection #7 1st St/Meridian St
*********************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):         0.459
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        10.6
Optimal Cycle:        29              Level Of Service:                  B
*********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Permitted        Permitted        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        0  0  0  1  0    0  1  0  0  0    0  1  1  1  0    0  0  0  0  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:       0   20     5   165   40     0   135 1200     5     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   20     5   165   40     0   135 1200     5     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0   20     5   165   40     0   135 1200     5     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0   20     5   165   40     0   135 1200     5     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     0   20     5   165   40     0   135 1200     5     0    0     0
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.96  0.96  0.73 0.73  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Lanes:       0.00 0.80  0.20  0.80 0.20  0.00  0.30 2.69  0.01  0.00 0.00  0.00
Final Sat.:     0 1464   366  1120  272     0   522 4636    19     0    0     0
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.01  0.01  0.15 0.15  0.00  0.26 0.26  0.26  0.00 0.00  0.00
Crit Moves:                        ****              ****
Green/Cycle: 0.00 0.32  0.32  0.32 0.32  0.00  0.56 0.56  0.56  0.00 0.00  0.00
Volume/Cap:  0.00 0.04  0.04  0.46 0.46  0.00  0.46 0.46  0.46  0.00 0.00  0.00
Delay/Veh:    0.0 16.4  16.4  19.7 19.7   0.0   9.1  9.1   9.1   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 16.4  16.4  19.7 19.7   0.0   9.1  9.1   9.1   0.0  0.0   0.0
HCM2kAvg:       0    0     0     5    5     0     6    6     6     0    0     0
*********************************************************************************




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pm                      Tue Jun 28, 2005 08:56:53                   Page 19-1
-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #7 1st St/Meridian St
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         0  0  0  1  0   0  1  0  0  0   0  1  1  1  0   0  0  0  0  0
Lane Group:  xxxx  RT     RT   LT   LT   xxxx  LTR  LTR   LTR  xxxx xxxx  xxxx
#LnsInGrps:     0   1      1    1    1     0    3    3     3     0    0     0
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12   12   12    12   12   12    12   12   12    12
CrosswalkWid         8               8               8               8
% Hev Veh:           1               1               0               6
Grade:              0%              0%              0%              0%
Parking/Hr:         No              No              No              No
Bus Stp/Hr:          0               0               0               0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0               0               0
ExclusiveRT:      Include         Include         Include         Include
% RT Prtct:          0               0               0               0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:  xxxx xxxx  xxxx    5    5  xxxx   5r   5r    5r  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Hev Veh Adj: xxxx 0.99  0.99  0.99 0.99 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Grade Adj:   xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Parking Adj: xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Bus Stp Adj: xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
Area Adj:    xxxx 1.00  1.00  1.00 1.00 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
RT Adj:      xxxx 0.97  0.97  xxxx xxxx xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
LT Adj:      xxxx xxxx xxxxx  0.74 0.74 xxxxx  1.00 1.00  1.00  xxxx xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 1.00 0.96  0.96  0.73 0.73  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  0.91 0.91  0.91  1.00 1.00  1.00
Fnl Sat Adj: 1.00 0.96  0.96  0.73 0.73  1.00  0.91 0.91  0.91  1.00 1.00  1.00
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:   0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
*****************************************************************************


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pm                      Tue Jun 28, 2005 08:56:53                   Page 19-2
-----------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
   Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #7 1st St/Meridian St
*****************************************************************************
Approach:                                      North    South     East     West
Cycle Length, C:                              xxxxxx       70   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:          xxxxxx    22.49   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:       xxxxxx    22.49   xxxxxx   xxxxxx
Opposing Effective Green Time, go:            xxxxxx    22.49   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                 xxxxxx        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:             xxxxxx        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:            xxxxxx      165   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:  xxxxxx     0.81   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx     0.00   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                    xxxxxx     3.21   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:              xxxxxx       25   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:       xxxxxx     0.49   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                  xxxxxx     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                      xxxxxx     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:   xxxxxx     0.00   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                    xxxxxx     0.68   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:        xxxxxx     0.00   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:     xxxxxx    22.49   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx     0.00   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx     1.00   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:              xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                 xxxxxx     1.44   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx     1.00   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:    xxxxxx     0.16   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:  xxxxxx     0.74   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:             xxxxxx     0.74   xxxxxx   xxxxxx
*****************************************************************************


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pm                    Tue Jun 28, 2005 08:56:53                   Page 19-3
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
     Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                        2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #7 1st St/Meridian St
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Green/Cycle: 0.00 0.32  0.32  0.32 0.32  0.00  0.56 0.56  0.56  0.00 0.00  0.00
ArrivalType:         3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           0.0  0.3   0.3   4.3  4.3   0.0   5.1  5.1   5.1   0.0  0.0   0.0
UpstreamVC:  xxxx 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 0.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  0.00 0.00  0.00
Q2:           0.0  0.0   0.0   0.8  0.8   0.0   0.8  0.8   0.8   0.0  0.0   0.0
HCM2KQueue:   0.0  0.4   0.4   5.1  5.1   0.0   5.9  5.9   5.9   0.0  0.0   0.0
------------|---------------||---------------||---------------||---------------|
70th%Factor: 1.20 1.20  1.20  1.19 1.19  1.20  1.19 1.19  1.19  1.20 1.20  1.20
70th%HCM2kQ:  0.0  0.5   0.5   6.1  6.1   0.0   7.1  7.1   7.1   0.0  0.0   0.0
------------|---------------||---------------||---------------||---------------|
85th%Factor: 1.60 1.60  1.60  1.55 1.55  1.60  1.55 1.55  1.55  1.60 1.60  1.60
85th%HCM2kQ:  0.0  0.6   0.6   7.9  7.9   0.0   9.2  9.2   9.2   0.0  0.0   0.0
------------|---------------||---------------||---------------||---------------|
90th%Factor: 1.80 1.79  1.79  1.71 1.71  1.80  1.70 1.70  1.70  1.80 1.80  1.80
90th%HCM2kQ:  0.0  0.7   0.7   8.8  8.8   0.0  10.1 10.1  10.1   0.0  0.0   0.0
------------|---------------||---------------||---------------||---------------|
95th%Factor: 2.10 2.09  2.09  1.95 1.95  2.10  1.93 1.93  1.93  2.10 2.10  2.10
95th%HCM2kQ:  0.0  0.8   0.8  10.0 10.0   0.0  11.5 11.5  11.5   0.0  0.0   0.0
------------|---------------||---------------||---------------||---------------|
98th%Factor: 2.70 2.67  2.67  2.37 2.37  2.70  2.33 2.33  2.33  2.70 2.70  2.70
98th%HCM2kQ:  0.0  1.0   1.0  12.2 12.2   0.0  13.9 13.9  13.9   0.0  0.0   0.0











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pm                    Tue Jun 28, 2005 08:56:53                   Page 20-1
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                  Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #8 1st St/River St
*****************************************************************************
Cycle (sec):        100              Critical Vol./Cap. (X):        0.806
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):      20.9
Optimal Cycle:       78              Level Of Service:                  C
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  1  0  1   0  0  0  0  0   0  0  1  1  0   1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  115   275     0    0     0     0 1290    80   225 1755    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  115   275     0    0     0     0 1290    80   225 1755    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  115   275     0    0     0     0 1290    80   225 1755    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  115   275     0    0     0     0 1290    80   225 1755    10
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     0  115   275     0    0     0     0 1290    80   225 1755    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.98  0.83  1.00 1.00  1.00  1.00 0.89  0.89  0.91 0.87  0.87
Lanes:       0.00 1.00  1.00  0.00 0.00  0.00  0.00 1.88  0.12  1.00 2.98  0.02
Final Sat.:     0 1862  1583     0    0     0     0 3177   197  1736 4957    28
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.06  0.17  0.00 0.00  0.00  0.00 0.41  0.41  0.13 0.35  0.35
Crit Moves:             ****                        ****         ****
Green/Cycle: 0.00 0.22  0.22  0.00 0.00  0.00  0.00 0.50  0.50  0.16 0.66  0.66
Volume/Cap:  0.00 0.29  0.81  0.00 0.00  0.00  0.00 0.81  0.81  0.81 0.53  0.53
Delay/Veh:    0.0 33.2  50.4   0.0  0.0   0.0   0.0 23.7  23.7  56.1  8.9   8.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 33.2  50.4   0.0  0.0   0.0   0.0 23.7  23.7  56.1  8.9   8.9
HCM2kAvg:       0    3    10     0    0     0     0   19    19     9   10    10
*****************************************************************************







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---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

              Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
***************************************************************************
Intersection #8 1st St/River St
***************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         0  0  1  0  1    0  0  0  0  0    0  0  1  1  0    1  0  2  1  0
Lane Group:   xxxx   T     R    xxxx xxxx  xxxx  xxxx  RT    RT    L   RT     RT
#LnsInGrps:      0   1     1       0    0     0     0   2     2    1    3      3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid          8               8                8                8
% Hev Veh:            2               0                6                4
Grade:               0%              0%               0%               0%
Parking/Hr:          No              No               No               No
Bus Stp/Hr:           0               0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0               0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:           0               0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:   xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   xxxx 1.00  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj:  xxxx 0.98  0.98  xxxx xxxx xxxxx  xxxx 0.94  0.94  0.96 0.96  0.96
Grade Adj:    xxxx 1.00  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  1.00 1.00  1.00
Parking Adj:  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj:  xxxx xxxx  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:     xxxx 1.00  1.00  xxxx xxxx xxxxx  xxxx 1.00  1.00  1.00 1.00  1.00
RT Adj:       xxxx xxxx  0.85  xxxx xxxx xxxxx  xxxx 0.99  0.99  xxxx 1.00  1.00
LT Adj:       xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj:  1.00 0.98  0.83  1.00 1.00  1.00  1.00 0.93  0.93  0.91 0.96  0.96
Usr Sat Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.95  1.00 0.91  0.91
Fnl Sat Adj:  1.00 0.98  0.83  1.00 1.00  1.00  1.00 0.89  0.89  0.91 0.87  0.87
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <     Actuated     > > > > > > > > > > > > >
DelAdjFctr:   0.00 1.00  1.00  0.00 0.00  0.00  0.00 1.00  1.00  1.00 1.00  1.00
***************************************************************************


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---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
      Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                      2000 HCM Operations Method
                        Base Volume Alternative
***************************************************************************
Intersection #8 1st St/River St
***************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Green/Cycle:  0.00 0.22  0.22  0.00 0.00  0.00  0.00 0.50  0.50  0.16 0.66  0.66
ArrivalType:          3               3                3                3
ProgFactor:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:            0.0  2.7   7.3   0.0  0.0   0.0   0.0 15.9  15.9   6.3  8.5   8.5
UpstreamVC:   0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj:  0.00 1.00  1.00  0.00 0.00  0.00  0.00 1.00  1.00  1.00 1.00  1.00
Q2:            0.0  0.4   3.0   0.0  0.0   0.0   0.0  3.5   3.5   2.9  1.1   1.1
HCM2KQueue:    0.0  3.1  10.3   0.0  0.0   0.0   0.0 19.4  19.4   9.3  9.6   9.6
------------|---------------||---------------||---------------||---------------|
70th%Factor:  1.20 1.19  1.18  1.20 1.20  1.20  1.20 1.16  1.16  1.18 1.18  1.18
70th%HCM2kQ:   0.0  3.7  12.1   0.0  0.0   0.0   0.0 22.6  22.6  11.0 11.3  11.3
------------|---------------||---------------||---------------||---------------|
85th%Factor:  1.60 1.57  1.51  1.60 1.60  1.60  1.60 1.46  1.46  1.52 1.52  1.52
85th%HCM2kQ:   0.0  4.8  15.6   0.0  0.0   0.0   0.0 28.3  28.3  14.1 14.6  14.6
------------|---------------||---------------||---------------||---------------|
90th%Factor:  1.80 1.74  1.64  1.80 1.80  1.80  1.80 1.55  1.55  1.65 1.65  1.65
90th%HCM2kQ:   0.0  5.3  16.9   0.0  0.0   0.0   0.0 30.2  30.2  15.3 15.8  15.8
------------|---------------||---------------||---------------||---------------|
95th%Factor:  2.10 2.01  1.84  2.10 2.10  2.10  2.10 1.70  1.70  1.86 1.85  1.85
95th%HCM2kQ:   0.0  6.2  18.9   0.0  0.0   0.0   0.0 33.1  33.1  17.3 17.8  17.8
------------|---------------||---------------||---------------||---------------|
98th%Factor:  2.70 2.49  2.15  2.70 2.70  2.70  2.70 1.92  1.92  2.19 2.18  2.18
98th%HCM2kQ:   0.0  7.6  22.2   0.0  0.0   0.0   0.0 37.4  37.4  20.3 20.9  20.9


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pm                    Tue Jun 28, 2005 08:56:53                 Page 22-1
-----------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                       Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #9 Main Street/Hancock Street
*****************************************************************************
Cycle (sec):          70                Critical Vol./Cap. (X):        0.730
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):        14.5
Optimal Cycle:        49                Level Of Service:                  B
*****************************************************************************
Approach:     North Bound    South Bound     East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted       Permitted       Permitted       Permitted
Rights:          Include         Include         Include         Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  1  0  0   0  0  1  0  1   0  0  0  0  0   0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      260  175    0     0  140   45     0    0    0    75  600  700
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   260  175    0     0  140   45     0    0    0    75  600  700
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    260  175    0     0  140   45     0    0    0    75  600  700
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   260  175    0     0  140   45     0    0    0    75  600  700
PCE Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:    260  175    0     0  140   45     0    0    0    75  600  700
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:   0.64 0.98 1.00  1.00 0.98 0.83  1.00 1.00 1.00  0.81 0.81 0.85
Lanes:        1.00 1.00 0.00  0.00 1.00 1.00  0.00 0.00 0.00  0.22 1.78 1.00
Final Sat.:   1221 1862    0     0 1862 1583     0    0    0   341 2728 1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.21 0.09 0.00  0.00 0.08 0.03  0.00 0.00 0.00  0.22 0.22 0.43
Crit Moves:   ****                                                        ****
Green/Cycle:  0.29 0.29 0.00  0.00 0.29 0.29  0.00 0.00 0.00  0.59 0.59 0.59
Volume/Cap:   0.73 0.32 0.00  0.00 0.26 0.10  0.00 0.00 0.00  0.37 0.37 0.73
Delay/Veh:    29.8 19.7  0.0   0.0 19.2 18.2   0.0  0.0  0.0   7.5  7.5 13.1
User DelAdj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:   29.8 19.7  0.0   0.0 19.2 18.2   0.0  0.0  0.0   7.5  7.5 13.1
HCM2kAvg:        9    3    0     0    2    1     0    0    0     5    5   12
*****************************************************************************


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pm                    Tue Jun 28, 2005 08:56:53                 Page 23-1
-----------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                   Level Of Service Detailed Computation Report
                          2000 HCM Operations Method
                           Base Volume Alternative
*****************************************************************************
Intersection #9 Main Street/Hancock Street
*****************************************************************************
Approach:     North Bound    South Bound     East Bound      West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  1  0  0   0  0  1  0  1   0  0  0  0  0   0  1  1  0  1
Lane Group:     L    T xxxx  xxxx    T    R  xxxx xxxx xxxx    LT   LT    R
#LnsInGrps:     1    1    0     0    1    1     0    0    0     2    2    1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:     12   12   12    12   12   12    12   12   12    12   12   12
CrosswalkWid         8               8               8               8
% Hev Veh:           2               2               2               0
Grade:              0%              0%              0%              0%
Parking/Hr:         No              No              No              No
Bus Stp/Hr:          0               0               0               0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0               0               0               0
ExclusiveRT:      Include         Include         Include         Include
% RT Prtct:          0               0               0               0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      2 xxxx xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx    2r   2r xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   1.00 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
Hev Veh Adj:  0.98 0.98 xxxxx  xxxx 0.98 0.98  xxxx xxxx xxxxx  1.00 1.00 1.00
Grade Adj:    1.00 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
Parking Adj:  xxxx 1.00 xxxxx  xxxx xxxx 1.00  xxxx xxxx xxxxx  xxxx xxxx 1.00
Bus Stp Adj:  xxxx 1.00 xxxxx  xxxx xxxx 1.00  xxxx xxxx xxxxx  xxxx xxxx 1.00
Area Adj:     1.00 1.00 xxxxx  xxxx 1.00 1.00  xxxx xxxx xxxxx  1.00 1.00 1.00
RT Adj:       xxxx xxxx xxxxx  xxxx xxxx 0.85  xxxx xxxx xxxxx  xxxx xxxx 0.85
LT Adj:       0.66 xxxx xxxxx  xxxx xxxx xxxxx xxxx xxxx xxxxx  0.85 0.85 xxxxx
PedBike Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
HCM Sat Adj:  0.64 0.98 1.00  1.00 0.98 0.83  1.00 1.00 1.00  0.85 0.85 0.85
Usr Sat Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Sat Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  0.95 0.95 1.00
Fnl Sat Adj:  0.64 0.98 1.00  1.00 0.98 0.83  1.00 1.00 1.00  0.81 0.81 0.85
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00 0.00  0.00 1.00 1.00  0.00 0.00 0.00  1.00 1.00 1.00
*****************************************************************************


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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #9 Main Street/Hancock Street
*******************************************************************************
Approach:                                        North    South     East     West
Cycle Length, C:                                    70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:             20.41   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:          20.41   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:               20.41   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                        1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                    1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                 260   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:      1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                        5.06   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                   140   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:           2.72   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                      1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                          4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:       0.00   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                        0.71   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:            0.18   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:        20.23   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:     xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                  0.79   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:      1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                     1.51   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:       xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:        0.20   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:      0.66   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                 0.66   xxxxxx   xxxxxx   xxxxxx
*******************************************************************************
```

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-------------------------------------------------------------------------------
                Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
      Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #9 Main Street/Hancock Street
*******************************************************************************
Approach:       North Bound       South Bound        East Bound        West Bound
Movement:      L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|-----------------||-----------------||-----------------||-----------------|
Green/Cycle: 0.29 0.29  0.00    0.00 0.29  0.29    0.00 0.00  0.00    0.59 0.59  0.59
ArrivalType:         3                  3                  3                  3
ProgFactor:  1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00
Q1:           6.9  2.7   0.0     0.0  2.1   0.6     0.0  0.0   0.0     4.0  4.0   9.8
UpstreamVC:  0.00 0.00  0.00    0.00 0.00  0.00    0.00 0.00  0.00    0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00    0.00 0.00  0.00    0.00 0.00  0.00    0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  0.00    0.00 1.00  1.00    0.00 0.00  0.00    1.00 1.00  1.00
Q2:           2.4  0.5   0.0     0.0  0.3   0.1     0.0  0.0   0.0     0.6  0.6   2.5
HCM2KQueue:   9.3  3.1   0.0     0.0  2.4   0.7     0.0  0.0   0.0     4.6  4.6  12.3
------------|-----------------||-----------------||-----------------||-----------------|
70th%Factor: 1.18 1.19  1.20    1.20 1.19  1.20    1.20 1.20  1.20    1.19 1.19  1.17
70th%HCM2kQ: 11.0  3.7   0.0     0.0  2.9   0.9     0.0  0.0   0.0     5.5  5.5  14.4
------------|-----------------||-----------------||-----------------||-----------------|
85th%Factor: 1.52 1.57  1.60    1.60 1.58  1.59    1.60 1.60  1.60    1.56 1.56  1.50
85th%HCM2kQ: 14.2  4.9   0.0     0.0  3.8   1.2     0.0  0.0   0.0     7.2  7.2  18.4
------------|-----------------||-----------------||-----------------||-----------------|
90th%Factor: 1.65 1.74  1.80    1.80 1.75  1.79    1.80 1.80  1.80    1.72 1.72  1.62
90th%HCM2kQ: 15.4  5.5   0.0     0.0  4.3   1.3     0.0  0.0   0.0     7.9  7.9  19.8
------------|-----------------||-----------------||-----------------||-----------------|
95th%Factor: 1.86 2.00  2.10    2.10 2.02  2.08    2.10 2.10  2.10    1.96 1.96  1.80
95th%HCM2kQ: 17.3  6.3   0.0     0.0  4.9   1.5     0.0  0.0   0.0     9.0  9.0  22.1
------------|-----------------||-----------------||-----------------||-----------------|
98th%Factor: 2.19 2.49  2.70    2.70 2.53  2.64    2.70 2.70  2.70    2.40 2.40  2.09
98th%HCM2kQ: 20.4  7.8   0.0     0.0  6.1   2.0     0.0  0.0   0.0    11.1 11.1  25.6
```

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pm                    Tue Jun 28, 2005 08:56:53                    Page 24-1
------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                   Level Of Service Computation Report
        2000 HCM Unsignalized Method (Base Volume Alternative)
******************************************************************************
Intersection #10 Hancock St/Blaine St
******************************************************************************
Average Delay (sec/veh):       6.3    Worst Case Level Of Service:     F[ 69.0]
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  1  0  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      80   40     0     0   20    20     0    0     0   100 1400    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   80   40     0     0   20    20     0    0     0   100 1400    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    80   40     0     0   20    20     0    0     0   100 1400    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Final Vol.:    80   40     0     0   20    20     0    0     0   100 1400    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5 xxxxx xxxxx  6.5   6.2 xxxxx xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0 xxxxx xxxxx  4.0   3.3 xxxxx xxxx xxxxx   2.2 xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  677 1610 xxxxx  xxxx 1605   472  xxxx xxxx xxxxx     0 xxxx xxxxx
Potent Cap.:  370  106 xxxxx  xxxx  106   596  xxxx xxxx xxxxx   900 xxxx xxxxx
Move Cap.:    272   93 xxxxx  xxxx   94   596  xxxx xxxx xxxxx   900 xxxx xxxxx
Volume/Cap:  0.29 0.43  xxxx  xxxx 0.21  0.03  xxxx xxxx  xxxx  0.11 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:       xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx   9.5 xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     *    *     *     A    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.:  166 xxxx xxxxx  xxxx xxxx   162  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:  4.4 xxxx xxxxx xxxxx xxxx   0.9 xxxxx xxxx xxxxx   0.4 xxxx xxxxx
Shrd StpDel: 69.0 xxxx xxxxx xxxxx xxxx  34.3 xxxxx xxxx xxxxx   9.5 xxxx xxxxx
Shared LOS:     F    *     *     *    *     D     *    *     *     A    *     *
ApproachDel:        69.0             34.3            xxxxxx           xxxxxx
ApproachLOS:          F                D                *                *


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pm                    Tue Jun 28, 2005 08:56:53                    Page 25-1
------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                       2000 HCM Unsignalized Method
                         Base Volume Alternative
******************************************************************************
Intersection #10 Hancock St/Blaine St
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|----------------|----------------|----------------|----------------|
HevVeh:            0%               0%               0%               4%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:      12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|----------------|----------------|----------------|----------------|
Upstream Signals:
Link Index:                                                        #12
Dist(miles):                                                     0.000
Speed (mph):                                                      0.00
SignalIndex:                                                       #11
Cycle Time:                                                          0 secs
InitVolume:                                                     0    0
Saturation:                                                     0    0
ArrivalType:                                                    0    0
G/C:                                                         0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                                          0.000 0.000
gq1:                                                         0.00  0.00
gq2:                                                         0.00  0.00
gq:                                                          0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                                            0.000
beta:                                                             0.000
ta (secs):                                                        0.000
F:                                                                0.000
f:                                                          0.000 0.000
vcmax:                                                          0     0
vcg:                                                            0     0
vcmin:                                                          0     0
tp:                                                           0.0   0.0
p:                                                                0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 677  1610     0    0  1605   472    0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol: 677  1610     0    0  1605   472    0 xxxxx xxxxx    0 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  370   106   900  900   106   596  900 xxxxx xxxxx  900 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:   370   106   900  900   106   596  900 xxxxx xxxxx  900 xxxxx xxxxx

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pm                          Tue Jun 28, 2005 08:56:53                   Page 26-1
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                   Level Of Service Computation Report
         2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #11 College Street/Hancock Street
*******************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):        0.687
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):      14.7
Optimal Cycle:        44              Level Of Service:                 B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Permitted        Permitted        Permitted
Rights:         Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95  140    0     0  330  100     0    0    0    50 1410  320
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   95  140    0     0  330  100     0    0    0    50 1410  320
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    95  140    0     0  330  100     0    0    0    50 1410  320
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   95  140    0     0  330  100     0    0    0    50 1410  320
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:    95  140    0     0  330  100     0    0    0    50 1410  320
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment:  0.73 0.98 1.00  1.00 0.95 0.95  1.00 1.00 1.00  0.84 0.84 0.84
Lanes:       1.00 1.00 0.00  0.00 0.77 0.23  0.00 0.00 0.00  0.08 2.38 0.54
Final Sat.:  1395 1862    0     0 1385  420     0    0    0   135 3812  865
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.08 0.00  0.00 0.24 0.24  0.00 0.00 0.00  0.37 0.37 0.37
Crit Moves:                       ****                              ****
Green/Cycle: 0.35 0.35 0.00  0.00 0.35 0.35  0.00 0.00 0.00  0.54 0.54 0.54
Volume/Cap:  0.20 0.22 0.00  0.00 0.69 0.69  0.00 0.00 0.00  0.69 0.69 0.69
Delay/Veh:   16.2 16.3  0.0   0.0 22.8 22.8   0.0  0.0  0.0  12.6 12.6 12.6
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh:  16.2 16.3  0.0   0.0 22.8 22.8   0.0  0.0  0.0  12.6 12.6 12.6
HCM2kAvg:       2    2    0     0    9    9     0    0    0    11   11   11
*******************************************************************************




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pm                          Tue Jun 28, 2005 08:56:53                   Page 27-1
-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                   Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
*******************************************************************************
Intersection #11 College Street/Hancock Street
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        1  0  1  0  0   0  0  0  1  0   0  0  0  0  0   0  1  1  1  0
Lane Group:     L    T xxxx  xxxx   RT   RT  xxxx xxxx xxxx   LTR  LTR  LTR
#LnsInGrps:     1    1    0     0    1    1     0    0    0     3    3    3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12   12    12   12   12    12   12   12    12   12   12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                0                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2 xxxx xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx    5r   5r   5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 xxxxx xxxx 0.98 0.98  xxxx xxxx xxxxx 0.98 0.98 0.98
Grade Adj:   1.00 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
Parking Adj: xxxx 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
Bus Stp Adj: xxxx 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
Area Adj:    1.00 1.00 xxxxx xxxx 1.00 1.00  xxxx xxxx xxxxx 1.00 1.00 1.00
RT Adj:      xxxx xxxx xxxxx xxxx 0.97 0.97  xxxx xxxx xxxxx 0.97 0.97 0.97
LT Adj:      0.75 xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx 0.97 0.97 0.97
PedBike Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
HCM Sat Adj: 0.73 0.98 1.00  1.00 0.95 0.95  1.00 1.00 1.00  0.93 0.93 0.93
Usr Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  0.91 0.91 0.91
Fnl Sat Adj: 0.73 0.98 1.00  1.00 0.95 0.95  1.00 1.00 1.00  0.84 0.84 0.84
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No     > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 0.00  0.00 1.00 1.00  0.00 0.00 0.00  1.00 1.00 1.00
*******************************************************************************




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-------------------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #11 College Street/Hancock Street
*******************************************************************************
Approach:                                        North    South     East     West
Cycle Length, C:                                    70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:             24.29   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:          24.29   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:               24.29   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                        1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                    1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                  95   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:      1.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:       1.00   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                        1.85   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                   430   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:           8.36   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                      1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                          4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:       2.18   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                        0.65   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:           11.86   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:        12.43   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:       4.84   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:      0.00   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:      1.00   xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                     1.96   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:         1.00   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:        0.16   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:      0.75   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                 0.75   xxxxxx   xxxxxx   xxxxxx
*******************************************************************************
```

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-------------------------------------------------------------------------------
           Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

    Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #11 College Street/Hancock Street
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Green/Cycle: 0.35 0.35  0.00  0.00 0.35  0.35  0.00 0.00  0.00  0.54 0.54  0.54
ArrivalType:        3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           1.7  1.9   0.0   0.0  7.2   7.2   0.0  0.0   0.0   8.7  8.7   8.7
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
Q2:           0.2  0.3   0.0   0.0  2.0   2.0   0.0  0.0   0.0   2.1  2.1   2.1
HCM2KQueue:   2.0  2.2   0.0   0.0  9.2   9.2   0.0  0.0   0.0  10.7 10.7  10.7
------------|---------------||---------------||---------------||---------------|
70th%Factor: 1.20 1.19  1.20  1.20 1.18  1.18  1.20 1.20  1.20  1.18 1.18  1.18
70th%HCM2kQ:  2.4  2.6   0.0   0.0 10.8  10.8   0.0  0.0   0.0  12.6 12.6  12.6
------------|---------------||---------------||---------------||---------------|
85th%Factor: 1.58 1.58  1.60  1.60 1.52  1.52  1.60 1.60  1.60  1.51 1.51  1.51
85th%HCM2kQ:  3.1  3.5   0.0   0.0 14.0  14.0   0.0  0.0   0.0  16.2 16.2  16.2
------------|---------------||---------------||---------------||---------------|
90th%Factor: 1.76 1.76  1.80  1.80 1.65  1.65  1.80 1.80  1.80  1.63 1.63  1.63
90th%HCM2kQ:  3.5  3.9   0.0   0.0 15.2  15.2   0.0  0.0   0.0  17.6 17.6  17.6
------------|---------------||---------------||---------------||---------------|
95th%Factor: 2.04 2.03  2.10  2.10 1.86  1.86  2.10 2.10  2.10  1.83 1.83  1.83
95th%HCM2kQ:  4.0  4.5   0.0   0.0 17.1  17.1   0.0  0.0   0.0  19.7 19.7  19.7
------------|---------------||---------------||---------------||---------------|
98th%Factor: 2.56 2.54  2.70  2.70 2.19  2.19  2.70 2.70  2.70  2.14 2.14  2.14
98th%HCM2kQ:  5.0  5.6   0.0   0.0 20.2  20.2   0.0  0.0   0.0  23.0 23.0  23.0
```

```
pm                       Tue Jun 28, 2005 08:56:53                  Page 28-1
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                    Level Of Service Computation Report
         2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #12 Hancock St/Meridian St
*****************************************************************************
Cycle (sec):          70              Critical Vol./Cap. (X):          0.565
Loss Time (sec):       8 (Y+R =  4 sec) Average Delay (sec/veh):         9.9
Optimal Cycle:        34              Level Of Service:                    A
*****************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       0  1  0  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5   130     0     0   155    80     0     0     0    75  1645    75
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:    5   130     0     0   155    80     0     0     0    75  1645    75
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:     5   130     0     0   155    80     0     0     0    75  1645    75
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:    5   130     0     0   155    80     0     0     0    75  1645    75
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:     5   130     0     0   155    80     0     0     0    75  1645    75
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.97  0.97  1.00  1.00  0.93  0.93  1.00  1.00  1.00  0.86  0.86  0.86
Lanes:       0.04  0.96  0.00  0.00  0.66  0.34  0.00  0.00  0.00  0.12  2.75  0.13
Final Sat.:    68  1772     0     0  1172   605     0     0     0   204  4471   204
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07  0.07  0.00  0.00  0.13  0.13  0.00  0.00  0.00  0.37  0.37  0.37
Crit Moves:                          ****                               ****
Green/Cycle: 0.23  0.23  0.00  0.00  0.23  0.23  0.00  0.00  0.00  0.65  0.65  0.65
Volume/Cap:  0.31  0.31  0.00  0.00  0.56  0.56  0.00  0.00  0.00  0.56  0.56  0.56
Delay/Veh:   22.6  22.6   0.0   0.0  25.5  25.5   0.0   0.0   0.0   7.0   7.0   7.0
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  22.6  22.6   0.0   0.0  25.5  25.5   0.0   0.0   0.0   7.0   7.0   7.0
HCM2kAvg:       3     3     0     0     5     5     0     0     0     8     8     8
*****************************************************************************



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pm                       Tue Jun 28, 2005 08:56:53                  Page 29-1
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*****************************************************************************
Intersection #12 Hancock St/Meridian St
*****************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       0  1  0  0  0    0  0  0  1  0    0  0  0  0  0    0  1  1  1  0
Lane Group:    LT    LT  xxxx  xxxx    RT    RT  xxxx  xxxx  xxxx   LTR   LTR   LTR
#LnsInGrps:     1     1     0     0     1     1     0     0     0     3     3     3
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:            2                 2                 0                 5
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:     < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:     Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5     5  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx    5r    5r    5r
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Hev Veh Adj: 0.98  0.98 xxxxx  xxxx  0.98  0.98  xxxx  xxxx xxxxx  0.95  0.95  0.95
Grade Adj:   1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Parking Adj: 1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Bus Stp Adj: 1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
Area Adj:    1.00  1.00 xxxxx  xxxx  1.00  1.00  xxxx  xxxx xxxxx  1.00  1.00  1.00
RT Adj:      xxxx  xxxx xxxxx  xxxx  0.95  0.95  xxxx  xxxx xxxxx  0.99  0.99  0.99
LT Adj:      0.99  0.99 xxxxx  xxxx  xxxx xxxxx  xxxx  xxxx xxxxx  0.99  0.99  0.99
PedBike Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj: 0.97  0.97  1.00  1.00  0.93  0.93  1.00  1.00  1.00  0.94  0.94  0.94
Usr Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.91  0.91  0.91
Fnl Sat Adj: 0.97  0.97  1.00  1.00  0.93  0.93  1.00  1.00  1.00  0.86  0.86  0.86
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:   < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:   < < < < < < < < < < < < <     Actuated      > > > > > > > > > > > > >
DelAdjFctr:  1.00  1.00  0.00  0.00  1.00  1.00  0.00  0.00  0.00  1.00  1.00  1.00
*****************************************************************************



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pm                      Tue Jun 28, 2005 08:56:53                    Page 29-2
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                         2000 HCM Operations Method
                          Base Volume Alternative
******************************************************************************
Intersection #12 Hancock St/Meridian St
******************************************************************************
Approach:                                   North    South     East     West
Cycle Length, C:                               70   xxxxxx   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:        16.40   xxxxxx   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:     16.40   xxxxxx   xxxxxx   xxxxxx
Opposing Effective Green Time, go:          16.40   xxxxxx   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                   1   xxxxxx   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:               1   xxxxxx   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:              5   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt: 0.04   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  0.00   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                   0.10   xxxxxx   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:              235   xxxxxx   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:      4.57   xxxxxx   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                 1.00   xxxxxx   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                     4.00   xxxxxx   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:  9.45   xxxxxx   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                   0.77   xxxxxx   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:       7.85   xxxxxx   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:    6.95   xxxxxx   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:  0.00   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: 1.00   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:           xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl: xxxxxx xxxxxx   xxxxxx   xxxxxx
Through-car Equivalents, el1:                1.77   xxxxxx   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:    1.00   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:   0.13   xxxxxx   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm: 0.99   xxxxxx   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:            0.99   xxxxxx   xxxxxx   xxxxxx
******************************************************************************




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pm                      Tue Jun 28, 2005 08:56:53                    Page 29-3
------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

      Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                         2000 HCM Operations Method
                          Base Volume Alternative
******************************************************************************
Intersection #12 Hancock St/Meridian St
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Green/Cycle: 0.23 0.23  0.00  0.00 0.23  0.23  0.00 0.00  0.00  0.65 0.65  0.65
ArrivalType:         3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           2.2  2.2   0.0   0.0  4.0   4.0   0.0  0.0   0.0   6.5  6.5   6.5
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  0.00  0.00 1.00  1.00  0.00 0.00  0.00  1.00 1.00  1.00
Q2:           0.5  0.5   0.0   0.0  1.2   1.2   0.0  0.0   0.0   1.3  1.3   1.3
HCM2KQueue:   2.6  2.6   0.0   0.0  5.3   5.3   0.0  0.0   0.0   7.7  7.7   7.7
------------|----------------||----------------||----------------||----------------|
70th%Factor: 1.19 1.19  1.20  1.20 1.19  1.19  1.20 1.20  1.20  1.18 1.18  1.18
70th%HCM2kQ:  3.2  3.2   0.0   0.0  6.3   6.3   0.0  0.0   0.0   9.1  9.1   9.1
------------|----------------||----------------||----------------||----------------|
85th%Factor: 1.57 1.57  1.60  1.60 1.55  1.55  1.60 1.60  1.60  1.53 1.53  1.53
85th%HCM2kQ:  4.2  4.2   0.0   0.0  8.2   8.2   0.0  0.0   0.0  11.8 11.8  11.8
------------|----------------||----------------||----------------||----------------|
90th%Factor: 1.75 1.75  1.80  1.80 1.71  1.71  1.80 1.80  1.80  1.67 1.67  1.67
90th%HCM2kQ:  4.6  4.6   0.0   0.0  9.0   9.0   0.0  0.0   0.0  12.9 12.9  12.9
------------|----------------||----------------||----------------||----------------|
95th%Factor: 2.02 2.02  2.10  2.10 1.95  1.95  2.10 2.10  2.10  1.89 1.89  1.89
95th%HCM2kQ:  5.3  5.3   0.0   0.0 10.3  10.3   0.0  0.0   0.0  14.6 14.6  14.6
------------|----------------||----------------||----------------||----------------|
98th%Factor: 2.52 2.52  2.70  2.70 2.37  2.37  2.70 2.70  2.70  2.25 2.25  2.25
98th%HCM2kQ:  6.7  6.7   0.0   0.0 12.5  12.5   0.0  0.0   0.0  17.4 17.4  17.4




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               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                   Level Of Service Computation Report
         2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #13 OR 99W/Villa Road
********************************************************************************
Cycle (sec):        135              Critical Vol./Cap. (X):         0.787
Loss Time (sec):     16 (Y+R =  4 sec) Average Delay (sec/veh):      39.9
Optimal Cycle:       93              Level Of Service:                   D
********************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0   0     0     0   0     0     0   0     0     0
Lanes:        2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     560  185    10   280   70   100   115  875     5    30 1290   170
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  560  185    10   280   70   100   115  875     5    30 1290   170
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   560  185    10   280   70   100   115  875     5    30 1290   170
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  560  185    10   280   70   100   115  875     5    30 1290   170
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   560  185    10   280   70   100   115  875     5    30 1290   170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.97  0.97  0.93 0.98  0.83  0.93 0.93  0.93  0.93 0.93  0.83
Lanes:       2.00 0.95  0.05  1.00 1.00  1.00  1.00 1.99  0.01  1.00 2.00  1.00
Final Sat.:  3432 1752    95  1769 1862  1583  1769 3514    20  1769 3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.11  0.11  0.16 0.04  0.06  0.07 0.25  0.25  0.02 0.36  0.11
Crit Moves:       ****        ****             ****                  ****
Green/Cycle: 0.24 0.13  0.13  0.20 0.09  0.09  0.08 0.51  0.51  0.03 0.46  0.46
Volume/Cap:  0.67 0.79  0.79  0.79 0.40  0.67  0.79 0.49  0.49  0.49 0.79  0.23
Delay/Veh:   48.6 71.9  71.9  62.2 59.1  70.9  84.8 21.7  21.7  69.9 33.2  21.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  48.6 71.9  71.9  62.2 59.1  70.9  84.8 21.7  21.7  69.9 33.2  21.9
HCM2kAvg:      12   10    10    13    3     5     7   12    12     2   24     4
********************************************************************************


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               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
--------------------------------------------------------------------------------

                   Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
********************************************************************************
Intersection #13 OR 99W/Villa Road
********************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:        2  0  0  1  0   1  0  1  0  1   1  0  1  1  0   1  0  2  0  1
Lane Group:   L    RT     RT   L     T     R   L    RT     RT   L     T     R
#LnsInGrps:   2     1      1   1     1     1   1     2      2   1     2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12    12    12   12    12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                2                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:     < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:       1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx 1.00  1.00  xxxx xxxx  1.00  xxxx 1.00  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx 0.99  0.99  xxxx xxxx  0.85  xxxx 1.00  1.00  xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.93 0.97  0.97  0.93 0.98  0.83  0.93 0.98  0.98  0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 0.97 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.95  1.00 0.95  1.00
Fnl Sat Adj: 0.90 0.97  0.97  0.93 0.98  0.83  0.93 0.93  0.93  0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
********************************************************************************


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pm                     Tue Jun 28, 2005 08:56:53                   Page 31-2
-----------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

     Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                        2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #13 OR 99W/Villa Road
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Green/Cycle: 0.24 0.13  0.13  0.20 0.09  0.09  0.08 0.51  0.51  0.03 0.46  0.46
ArrivalType:       3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:          10.0  7.1   7.1  10.5  2.5   3.6   4.5 10.7  10.7   1.2 20.4   3.8
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q2:           1.9  2.6   2.6   2.9  0.6   1.6   2.3  0.9   0.9   0.8  3.2   0.3
HCM2KQueue:  11.9  9.7   9.7  13.4  3.1   5.3   6.8 11.7  11.7   2.0 23.6   4.1
------------|----------------||----------------||----------------||----------------|
70th%Factor: 1.17 1.18  1.18  1.17 1.19  1.19  1.18 1.17  1.17  1.20 1.16  1.19
70th%HCM2kQ: 14.0 11.4  11.4  15.6  3.7   6.2   8.1 13.7  13.7   2.3 27.3   4.9
------------|----------------||----------------||----------------||----------------|
85th%Factor: 1.50 1.52  1.52  1.49 1.57  1.55  1.54 1.50  1.50  1.58 1.44  1.56
85th%HCM2kQ: 17.9 14.7  14.7  19.9  4.9   8.2  10.5 17.5  17.5   3.1 34.0   6.5
------------|----------------||----------------||----------------||----------------|
90th%Factor: 1.62 1.65  1.65  1.61 1.74  1.71  1.68 1.62  1.62  1.76 1.52  1.73
90th%HCM2kQ: 19.3 16.0  16.0  21.4  5.4   9.0  11.5 18.9  18.9   3.5 36.0   7.1
------------|----------------||----------------||----------------||----------------|
95th%Factor: 1.81 1.85  1.85  1.79 2.00  1.95  1.91 1.81  1.81  2.04 1.66  1.98
95th%HCM2kQ: 21.5 18.0  18.0  23.8  6.2  10.2  13.0 21.2  21.2   4.0 39.3   8.2
------------|----------------||----------------||----------------||----------------|
98th%Factor: 2.10 2.17  2.17  2.06 2.49  2.37  2.29 2.11  2.11  2.56 1.86  2.43
98th%HCM2kQ: 25.0 21.1  21.1  27.5  7.7  12.5  15.6 24.6  24.6   5.0 44.0  10.0




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pm                     Tue Jun 28, 2005 08:56:53                   Page 32-1
-----------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #14 OR 99W/Elliot Road
*****************************************************************************
Cycle (sec):          135              Critical Vol./Cap. (X):         0.730
Loss Time (sec):       12 (Y+R =  4 sec) Average Delay (sec/veh):      29.4
Optimal Cycle:         68              Level Of Service:                  C
*****************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0     0    0     0     0    0     0     0    0     0
Lanes:       0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:      60   20   100    50   25   280    75 1050    25    75 1260   125
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   60   20   100    50   25   280    75 1050    25    75 1260   125
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    60   20   100    50   25   280    75 1050    25    75 1260   125
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   60   20   100    50   25   280    75 1050    25    75 1260   125
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    60   20   100    50   25   280    75 1050    25    75 1260   125
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.49 0.49  0.83  0.83 0.83  0.83  0.93 0.93  0.93  0.93 0.92  0.92
Lanes:       0.75 0.25  1.00  0.14 0.07  0.79  1.00 1.95  0.05  1.00 1.82  0.18
Final Sat.:   701  234  1583   221  111  1239  1769 3445    82  1769 3177   315
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.09  0.06  0.23 0.23  0.23  0.04 0.30  0.30  0.04 0.40  0.40
Crit Moves:                        ****        ****                   ****
Green/Cycle: 0.31 0.31  0.31  0.31 0.31  0.31  0.06 0.53  0.53  0.07 0.54  0.54
Volume/Cap:  0.28 0.28  0.20  0.73 0.73  0.73  0.73 0.58  0.58  0.58 0.73  0.73
Delay/Veh:   35.7 35.7  34.6  47.1 47.1  47.1  85.7 22.1  22.1  66.8 24.8  24.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  35.7 35.7  34.6  47.1 47.1  47.1  85.7 22.1  22.1  66.8 24.8  24.8
HCM2kAvg:       5    5     3    15   15    15     5   15    15     4   22    22
*****************************************************************************




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pm                      Tue Jun 28, 2005 08:56:53                   Page 33-1
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #14 OR 99W/Elliot Road
*****************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         0  1  0  0  1    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
Lane Group:    LT   LT     R    LTR  LTR   LTR    L   RT     RT    L   RT     RT
#LnsInGrps:     1    1     1     1    1     1     1    2      2    1    2      2
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12   12    12    12   12    12    12   12     12   12   12     12
CrosswalkWid         8                8                8                8
% Hev Veh:           2                2                2                2
Grade:              0%               0%               0%               0%
Parking/Hr:         No               No               No               No
Bus Stp/Hr:          0                0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:         0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:          0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     5    5  xxxx     5    5     5     1 xxxx   xxxx    1 xxxx   xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Bus Stp Adj: xxxx xxxx  1.00  1.00 1.00  1.00  xxxx 1.00  1.00  xxxx 1.00  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  0.89 0.89  0.89  xxxx 1.00  1.00  xxxx 0.99  0.99
LT Adj:      0.50 0.50 xxxxx  0.95 0.95  0.95  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.49 0.49  0.83  0.83 0.83  0.83  0.93 0.98  0.98  0.93 0.97  0.97
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.95  1.00 0.95  0.95
Fnl Sat Adj: 0.49 0.49  0.83  0.83 0.83  0.83  0.93 0.93  0.93  0.93 0.92  0.92
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:   < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type:   < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*****************************************************************************


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pm                      Tue Jun 28, 2005 08:56:53                   Page 33-2
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
*****************************************************************************
Intersection #14 OR 99W/Elliot Road
*****************************************************************************
Approach:                                        North    South     East     West
Cycle Length, C:                                   135      135   xxxxxx   xxxxxx
Actual Green Time Per Lane Group, G:             41.80    41.80   xxxxxx   xxxxxx
Effective Green Time Per Lane Group, g:          41.80    41.80   xxxxxx   xxxxxx
Opposing Effective Green Time, go:               41.80    41.80   xxxxxx   xxxxxx
Number Of Opposing Lanes, No:                        1        1   xxxxxx   xxxxxx
Number Of Lanes In Lane Group, N:                    1        1   xxxxxx   xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:                  60       50   xxxxxx   xxxxxx
Proportion of Left Turns in Lane Group, Plt:      0.75     0.14   xxxxxx   xxxxxx
Proportion of Left Turns in Opp Flow, Plto:       0.14   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                        2.25     1.88   xxxxxx   xxxxxx
Adjusted Opposing Flow Rate, Vo:                   355       80   xxxxxx   xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:          13.31     3.00   xxxxxx   xxxxxx
Opposing Platoon Ratio, Rpo:                      1.00     1.00   xxxxxx   xxxxxx
Lost Time Per Phase, tl:                          4.00     4.00   xxxxxx   xxxxxx
Eff grn until arrival of left-turn car, gf:       4.63     7.66   xxxxxx   xxxxxx
Opposing Queue Ratio, qro:                        0.69     0.69   xxxxxx   xxxxxx
Eff grn blocked by opposing queue, gq:           19.98     0.33   xxxxxx   xxxxxx
Eff grn while left turns filter thru, gu:        21.82    34.14   xxxxxx   xxxxxx
Max opposing cars arriving during gq-gf, n:       7.68   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho:      0.86   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:                xxxxxx     0.83   xxxxxx   xxxxxx
Proportion of Left Turns in Shared Lane, pl:      0.75     0.14   xxxxxx   xxxxxx
Through-car Equivalents, el1:                     2.01     1.52   xxxxxx   xxxxxx
Single Lane Through-car Equivalents, el2:         4.88   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:        0.08     0.05   xxxxxx   xxxxxx
Single Lane Left Turn Adjustment Factor, fm:      0.50     0.94   xxxxxx   xxxxxx
Left Turn Adjustment Factor, flt:                 0.50     0.94   xxxxxx   xxxxxx
*****************************************************************************


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pm                    Tue Jun 28, 2005 08:56:53                   Page 33-3
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

     Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                      2000 HCM Operations Method
                        Base Volume Alternative
***************************************************************************
Intersection #14 OR 99W/Elliot Road
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Green/Cycle: 0.31 0.31  0.31  0.31 0.31  0.31  0.06 0.53  0.53  0.07 0.54  0.54
ArrivalType:         3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           4.5  4.5   2.8  12.6 12.6  12.6   2.9 13.7  13.7   2.9 19.6  19.6
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q2:           0.4  0.4   0.3   2.4  2.4   2.4   1.8  1.3   1.3   1.2  2.5   2.5
HCM2KQueue:   4.9  4.9   3.0  14.9 14.9  14.9   4.7 15.0  15.0   4.0 22.2  22.2
------------|----------------||----------------||----------------||----------------|
70th%Factor: 1.19 1.19  1.19  1.17 1.17  1.17  1.19 1.17  1.17  1.19 1.16  1.16
70th%HCM2kQ:  5.8  5.8   3.6  17.5 17.5  17.5   5.6 17.5  17.5   4.8 25.6  25.6
------------|----------------||----------------||----------------||----------------|
85th%Factor: 1.55 1.55  1.57  1.48 1.48  1.48  1.56 1.48  1.48  1.56 1.44  1.44
85th%HCM2kQ:  7.6  7.6   4.7  22.1 22.1  22.1   7.3 22.2  22.2   6.3 32.0  32.0
------------|----------------||----------------||----------------||----------------|
90th%Factor: 1.71 1.71  1.74  1.59 1.59  1.59  1.72 1.59  1.59  1.73 1.53  1.53
90th%HCM2kQ:  8.4  8.4   5.3  23.8 23.8  23.8   8.1 23.8  23.8   7.0 33.9  33.9
------------|----------------||----------------||----------------||----------------|
95th%Factor: 1.96 1.96  2.01  1.76 1.76  1.76  1.96 1.76  1.76  1.98 1.68  1.68
95th%HCM2kQ:  9.6  9.6   6.1  26.3 26.3  26.3   9.3 26.4  26.4   8.0 37.1  37.1
------------|----------------||----------------||----------------||----------------|
98th%Factor: 2.39 2.39  2.49  2.02 2.02  2.02  2.40 2.02  2.02  2.43 1.88  1.88
98th%HCM2kQ: 11.7 11.7   7.5  30.1 30.1  30.1  11.3 30.2  30.2   9.8 41.7  41.7





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pm                    Tue Jun 28, 2005 08:56:53                   Page 34-1
---------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                   Level Of Service Computation Report
           2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #15 OR 99W/Springbrook Street
***************************************************************************
Cycle (sec):        135             Critical Vol./Cap. (X):         0.815
Loss Time (sec):     16 (Y+R =  4 sec) Average Delay (sec/veh):      40.6
Optimal Cycle:      101             Level Of Service:                   D
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0     0    0     0     0    0     0     0    0     0
Lanes:       2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
------------|----------------||----------------||----------------||----------------|
Volume Module:
Base Vol:     210  340    50   190  410    30   120 1035   240    65 1305   270
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  210  340    50   190  410    30   120 1035   240    65 1305   270
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   210  340    50   190  410    30   120 1035   240    65 1305   270
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  210  340    50   190  410    30   120 1035   240    65 1305   270
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   210  340    50   190  410    30   120 1035   240    65 1305   270
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.83  0.93 0.93  0.83
Lanes:       2.00 1.00  1.00  2.00 1.00  1.00  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3432 1862  1583  3432 1862  1583  1769 3538  1583  1769 3538  1583
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.18  0.03  0.06 0.22  0.02  0.07 0.29  0.15  0.04 0.37  0.17
Crit Moves:  ****                  ****         ****                   ****
Green/Cycle: 0.08 0.27  0.27  0.08 0.27  0.27  0.08 0.48  0.48  0.06 0.45  0.45
Volume/Cap:  0.81 0.69  0.12  0.69 0.81  0.07  0.81 0.61  0.32  0.61 0.81  0.38
Delay/Veh:   79.3 48.7  37.8  67.6 56.0  36.7  89.1 26.9  22.1  72.2 35.4  24.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  79.3 48.7  37.8  67.6 56.0  36.7  89.1 26.9  22.1  72.2 35.4  24.7
HCM2kAvg:       7   13     2     5   18     1     7   16     6     4   25     7
***************************************************************************





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pm                     Tue Jun 28, 2005 08:56:53                  Page 35-1
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                      2000 HCM Operations Method
                        Base Volume Alternative
*****************************************************************************
Intersection #15 OR 99W/Springbrook Street
*****************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         2  0  1  0  1    2  0  1  0  1    1  0  2  0  1    1  0  2  0  1
Lane Group:    L     T     R    L     T     R    L     T     R    L     T     R
#LnsInGrps:    2     1     1    2     1     1    1     2     1    1     2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12    12    12   12    12    12   12    12    12   12    12    12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                2                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:    < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:     Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:      1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx      1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00  xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85  xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx  0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
HCM Sat Adj: 0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83  0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Sat Adj: 0.97 1.00  1.00  0.97 1.00  1.00  1.00 0.95  1.00  1.00 0.95  1.00
Fnl Sat Adj: 0.90 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.83  0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
*****************************************************************************


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pm                     Tue Jun 28, 2005 08:56:53                  Page 35-2
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

    Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                      2000 HCM Operations Method
                        Base Volume Alternative
*****************************************************************************
Intersection #15 OR 99W/Springbrook Street
*****************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Green/Cycle: 0.08 0.27  0.27  0.08 0.27  0.27  0.08 0.48  0.48  0.06 0.45  0.45
ArrivalType:        3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           4.1 11.5   1.4   3.7 14.4   0.8   4.7 14.4   5.6   2.5 21.2   6.7
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q2:           2.5  2.0   0.1   1.7  3.4   0.1   2.6  1.5   0.5   1.3  3.7   0.6
HCM2KQueue:   6.5 13.5   1.6   5.4 17.8   0.9   7.2 15.9   6.0   3.8 24.9   7.3
------------|---------------||---------------||---------------||---------------|
70th%Factor: 1.18 1.17  1.20  1.19 1.16  1.20  1.18 1.17  1.19  1.19 1.15  1.18
70th%HCM2kQ:  7.8 15.8   1.9   6.4 20.7   1.1   8.5 18.6   7.1   4.5 28.7   8.6
------------|---------------||---------------||---------------||---------------|
85th%Factor: 1.54 1.49  1.58  1.55 1.47  1.59  1.54 1.48  1.55  1.56 1.43  1.54
85th%HCM2kQ: 10.1 20.1   2.5   8.3 26.1   1.5  11.1 23.5   9.3   5.9 35.6  11.2
------------|---------------||---------------||---------------||---------------|
90th%Factor: 1.69 1.60  1.77  1.71 1.56  1.78  1.68 1.58  1.70  1.73 1.52  1.68
90th%HCM2kQ: 11.1 21.6   2.8   9.1 27.8   1.6  12.1 25.1  10.2   6.6 37.7  12.2
------------|---------------||---------------||---------------||---------------|
95th%Factor: 1.92 1.78  2.05  1.95 1.72  2.07  1.90 1.75  1.93  1.99 1.65  1.90
95th%HCM2kQ: 12.6 24.0   3.2  10.4 30.7   1.9  13.7 27.8  11.6   7.5 41.1  13.8
------------|---------------||---------------||---------------||---------------|
98th%Factor: 2.30 2.05  2.59  2.36 1.95  2.63  2.27 1.99  2.33  2.45 1.85  2.27
98th%HCM2kQ: 15.1 27.7   4.0  12.6 34.8   2.4  16.4 31.7  14.0   9.3 46.0  16.5


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-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                  Level Of Service Computation Report
         2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #16 ORE 99W/Brutscher St
*******************************************************************************
Cycle (sec):        110              Critical Vol./Cap. (X):        0.764
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):      25.5
Optimal Cycle:       71              Level Of Service:                 C
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         1  0  0  1  0    1  0  0  1  0    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     125    20   170    20     5    65    30  1055    90   270  1215     5
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  125    20   170    20     5    65    30  1055    90   270  1215     5
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   125    20   170    20     5    65    30  1055    90   270  1215     5
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  125    20   170    20     5    65    30  1055    90   270  1215     5
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   125    20   170    20     5    65    30  1055    90   270  1215     5
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.59  0.72  0.72  0.33  0.68  0.68  0.78  0.78  0.70  0.76  0.76  0.68
Lanes:       1.00  0.11  0.89  1.00  0.07  0.93  1.00  2.00  1.00  1.00  2.00  1.00
Final Sat.:  1117   143  1216   634    92  1195  1491  2982  1334  1444  2888  1292
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11  0.14  0.14  0.03  0.05  0.05  0.02  0.35  0.07  0.19  0.42  0.00
Crit Moves:        ****                              ****        ****
Green/Cycle: 0.18  0.18  0.18  0.18  0.18  0.18  0.03  0.46  0.46  0.24  0.68  0.68
Volume/Cap:  0.61  0.76  0.76  0.17  0.30  0.30  0.62  0.76  0.15  0.76  0.62  0.01
Delay/Veh:   46.7  55.8  55.8  38.6  39.5  39.5  75.2  27.1  17.1  48.1  10.6   5.8
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  46.7  55.8  55.8  38.6  39.5  39.5  75.2  27.1  17.1  48.1  10.6   5.8
HCM2kAvg:       6     8     8     1     2     2     2    16     2    11    12     0
*******************************************************************************
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-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
            City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

               Level Of Service Detailed Computation Report
                     2000 HCM Operations Method
                      Base Volume Alternative
*******************************************************************************
Intersection #16 ORE 99W/Brutscher St
*******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  0  1  0    1  0  0  1  0    1  0  2  0  1    1  0  2  0  1
Lane Group:     L   RT    RT     L   RT    RT     L     T     R     L     T     R
#LnsInGrps:     1     1     1     1     1     1     1     2     1     1     2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:           21                27                21                25
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:   < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:     Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2  xxxx  xxxx     2  xxxx  xxxx     1  xxxx  xxxx     1  xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Hev Veh Adj: 0.83  0.83  0.83  0.79  0.79  0.79  0.83  0.83  0.83  0.80  0.80  0.80
Grade Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Parking Adj: xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  xxxx  1.00  xxxx  xxxx  1.00
Bus Stp Adj: xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  xxxx  1.00  xxxx  xxxx  1.00
Area Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
RT Adj:      xxxx  0.87  0.87  xxxx  0.86  0.86  xxxx  xxxx  0.85  xxxx  xxxx  0.85
LT Adj:      0.71  xxxx xxxxx  0.42  xxxx xxxxx  0.95  xxxx xxxxx  0.95  xxxx xxxxx
PedBike Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj: 0.59  0.72  0.72  0.33  0.68  0.68  0.78  0.83  0.70  0.76  0.80  0.68
Usr Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.95  1.00  1.00  0.95  1.00
Fnl Sat Adj: 0.59  0.72  0.72  0.33  0.68  0.68  0.78  0.78  0.70  0.76  0.76  0.68
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < < No   > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
*******************************************************************************
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pm                   Tue Jun 28, 2005 08:56:53                  Page 37-2
-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                      2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************
Intersection #16 ORE 99W/Brutscher St
*******************************************************************************
Approach:                                   North     South      East      West
Cycle Length, C:                              110       110    xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:        20.13     20.13    xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:     20.13     20.13    xxxxxx    xxxxxx
Opposing Effective Green Time, go:          20.13     20.13    xxxxxx    xxxxxx
Number Of Opposing Lanes, No:                   1         1    xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:               1         1    xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:            125        20    xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt: 1.00      1.00    xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto: xxxxxx    xxxxxx    xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                   3.82      0.61    xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:               70       190    xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:      2.14      5.81    xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:                 1.00      1.00    xxxxxx    xxxxxx
Lost Time Per Phase, tl:                     4.00      4.00    xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:  0.00      0.00    xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                   0.82      0.82    xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:       0.00      6.61    xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu:   20.13     13.52    xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n: xxxxxx    xxxxxx    xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   xxxxxx    xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:             0.83      0.76    xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl: 1.00      1.00    xxxxxx    xxxxxx
Through-car Equivalents, el1:                1.41      1.59    xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2:   xxxxxx    xxxxxx    xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:   0.20      0.20    xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm: 0.71      0.42    xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:            0.71      0.42    xxxxxx    xxxxxx
*******************************************************************************

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pm                   Tue Jun 28, 2005 08:56:53                  Page 37-3
-------------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
     Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                      2000 HCM Operations Method
                        Base Volume Alternative
*******************************************************************************
Intersection #16 ORE 99W/Brutscher St
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Green/Cycle: 0.18 0.18  0.18  0.18 0.18  0.18  0.03 0.46  0.46  0.24 0.68  0.68
ArrivalType:        3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           4.9  5.5   5.5   1.2  1.8   1.8   1.0 13.4   1.6   8.1 10.4   0.0
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q2:           1.4  2.4   2.4   0.2  0.4   0.4   1.1  2.8   0.2   2.6  1.6   0.0
HCM2KQueue:   6.4  7.9   7.9   1.4  2.3   2.3   2.1 16.2   1.8  10.7 12.0   0.1
------------|---------------||---------------||---------------||---------------|
70th%Factor: 1.19 1.18  1.18  1.20 1.19  1.19  1.19 1.17  1.20  1.18 1.17  1.20
70th%HCM2kQ:  7.5  9.4   9.4   1.7  2.7   2.7   2.5 18.9   2.1  12.6 14.1   0.1
------------|---------------||---------------||---------------||---------------|
85th%Factor: 1.54 1.53  1.53  1.59 1.58  1.58  1.58 1.47  1.58  1.51 1.50  1.60
85th%HCM2kQ:  9.8 12.2  12.2   2.3  3.6   3.6   3.3 23.9   2.8  16.1 18.0   0.1
------------|---------------||---------------||---------------||---------------|
90th%Factor: 1.69 1.67  1.67  1.77 1.76  1.76  1.76 1.58  1.77  1.63 1.62  1.80
90th%HCM2kQ: 10.8 13.3  13.3   2.5  4.0   4.0   3.7 25.6   3.1  17.5 19.4   0.1
------------|---------------||---------------||---------------||---------------|
95th%Factor: 1.92 1.89  1.89  2.05 2.03  2.03  2.03 1.74  2.04  1.83 1.81  2.10
95th%HCM2kQ: 12.2 15.0  15.0   2.9  4.6   4.6   4.2 28.3   3.6  19.6 21.7   0.1
------------|---------------||---------------||---------------||---------------|
98th%Factor: 2.31 2.24  2.24  2.60 2.54  2.54  2.55 1.99  2.57  2.14 2.10  2.70
98th%HCM2kQ: 14.7 17.8  17.8   3.7  5.7   5.7   5.3 32.2   4.5  22.9 25.2   0.1

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pm                       Tue Jun 28, 2005 08:56:53                  Page 38-1
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                   Level Of Service Computation Report
          2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #17 ORE 99W/Vittoria Wy
*****************************************************************************
Average Delay (sec/veh):         0.3    Worst Case Level Of Service:     C[ 18.1]
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include           Include          Include
Lanes:        0   0  0  0   1   0   0  0  0   1   0   0  1  1   0   0   0  1  1   0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     5    0    0    35    0 1190     5    0 1355   125
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    0    0     5    0    0    35    0 1190     5    0 1355   125
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:     0    0     5    0    0    35    0 1190     5    0 1355   125
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Final Vol.:     0    0     5    0    0    35    0 1190     5    0 1355   125
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx   7.3 xxxxx xxxx   7.4 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx   3.5 xxxxx xxxx   3.6 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx   598  xxxx xxxx   740  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx   399  xxxx xxxx   310  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx   399  xxxx xxxx   310  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Total Cap:      0    0 xxxxx     0    0 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  0.01  xxxx xxxx  0.11  xxxx xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:       xxxxx xxxx   0.0 xxxxx xxxx   0.4 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Stopped Del:xxxxx xxxx  14.1 xxxxx xxxx  18.1 xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     B     *    *     C     *    *     *     *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      14.1              18.1            xxxxxx           xxxxxx
ApproachLOS:        B                 C                *                *


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pm                       Tue Jun 28, 2005 08:56:53                  Page 39-1
-----------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

              Level Of Service Detailed Computation Report
                     2000 HCM Unsignalized Method
                        Base Volume Alternative
*****************************************************************************
Intersection #17 ORE 99W/Vittoria Wy
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:           22%              26%              22%              27%
Grade:             0%               0%               0%               0%
UserCritGp:   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Peds/Hour:          0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:      12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
------------|---------------|---------------|---------------|---------------|
Upstream Signals:
Link Index:                                        #28              #31
Dist(miles):                                       0.000            0.000
Speed (mph):                                        0.00             0.00
SignalIndex:                                       #16              #18
Cycle Time:                                           0 secs           0 secs
InitVolume:                                    0     0           0     0
Saturation:                                    0     0           0     0
ArrivalType:                                   0     0           0     0
G/C:                                        0.00  0.00        0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                         0.000 0.000       0.000 0.000
gq1:                                        0.00  0.00        0.00  0.00
gq2:                                        0.00  0.00        0.00  0.00
gq:                                         0.00  0.00        0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                           0.000            0.000
beta:                                            0.000            0.000
ta (secs):                                       0.000            0.000
F:                                               0.000            0.000
f:                                         0.000 0.000       0.000 0.000
vcmax:                                         0     0           0     0
vcg:                                           0     0           0     0
vcmin:                                         0     0           0     0
tp:                                          0.0   0.0         0.0   0.0
p:                                               0.000            0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:    0     0   598    0     0   740    0 xxxxx xxxxx    0 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:    0     0   598    0     0   740    0 xxxxx xxxxx    0 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:   900   900   399  900   900   310  900 xxxxx xxxxx  900 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx


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pm                    Tue Jun 28, 2005 08:56:53                   Page 39-2
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
PotentCap:   900   900   399  900   900   310  900 xxxxx xxxxx  900 xxxxx xxxxx
-----------|---------------|---------------|---------------|---------------|
Two-Stage Gap Acceptance [Median Type: TWLTL][Median Storage: 1 car ]
-----------|---------------|---------------|---------------|---------------|
Two-Stage Gap Acceptance - Stage One Module:
InitCfltVol:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:  900   900 xxxxx  900   900 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 900   900 xxxxx  900   900 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   900   900 xxxxx  900   900 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
-----------|---------------|---------------|---------------|---------------|
Two-Stage Gap Acceptance - Stage Two Module:
InitCfltVol:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamSat:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Cnflict Vol:   0     0 xxxxx    0     0 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
InitPotCap:  900   900 xxxxx  900   900 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
UpstreamAdj:1.00  1.00 xxxxx 1.00  1.00 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Potent Cap.: 900   900 xxxxx  900   900 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx
Move Cap.:   798   900 xxxxx  889   900 xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx


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pm                    Tue Jun 28, 2005 08:56:53                   Page 40-1
---------------------------------------------------------------------------
             Kittelson & Associates, Inc. - Project # 5193
           City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
                 Level Of Service Computation Report
        2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #18 OR 99W/Northern Arterial
***************************************************************************
Cycle (sec):        135             Critical Vol./Cap. (X):        0.726
Loss Time (sec):     16 (Y+R =  4 sec) Average Delay (sec/veh):     35.8
Optimal Cycle:       79             Level Of Service:                  D
***************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:       1  0  1  0  1   2  0  1  0  1   1  0  1  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     70  120    70   500   70   110   110 1050    30   100 1300   540
Growth Adj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  70  120    70   500   70   110   110 1050    30   100 1300   540
User Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   70  120    70   500   70   110   110 1050    30   100 1300   540
Reduct Vol:    0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  70  120    70   500   70   110   110 1050    30   100 1300   540
PCE Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   70  120    70   500   70   110   110 1050    30   100 1300   540
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment: 0.93 0.98  0.83  0.90 0.98  0.83  0.93 0.93  0.93  0.93 0.93  0.83
Lanes:      1.00 1.00  1.00  2.00 1.00  1.00  1.00 1.94  0.06  1.00 2.00  1.00
Final Sat.: 1769 1862  1583  3432 1862  1583  1769 3426    98  1769 3538  1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.04 0.06  0.04  0.15 0.04  0.07  0.06 0.31  0.31  0.06 0.37  0.34
Crit Moves:      ****        ****             ****                   ****
Green/Cycle: 0.11 0.09  0.09  0.20 0.18  0.18  0.09 0.50  0.50  0.09 0.51  0.51
Volume/Cap: 0.38 0.73  0.50  0.73 0.20  0.38  0.73 0.61  0.61  0.61 0.73  0.67
Delay/Veh:  57.6 74.7  61.4  54.3 46.9  49.1  76.2 25.0  25.0  65.7 27.5  27.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 57.6 74.7  61.4  54.3 46.9  49.1  76.2 25.0  25.0  65.7 27.5  27.3
HCM2kAvg:      3    6     3    11    2     4     6   16    16     5   21    17
***************************************************************************


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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                     2000 HCM Operations Method
                      Base Volume Alternative
******************************************************************************
Intersection #18 OR 99W/Northern Arterial
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  1  0  1    2  0  1  0  1    1  0  1  1  0    1  0  2  0  1
Lane Group:    L     T     R    L     T     R    L    RT    RT    L     T     R
#LnsInGrps:    1     1     1    2     1     1    1     2     2    1     2     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12    12    12   12    12    12   12    12    12   12    12    12
CrosswalkWid        8                8                8                8
% Hev Veh:          2                2                2                2
Grade:             0%               0%               0%               0%
Parking/Hr:        No               No               No               No
Bus Stp/Hr:         0                0                0                0
Area Type:     < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:        0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:         0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx     1 xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Hev Veh Adj: 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98
Grade Adj:   1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Parking Adj: xxxx xxxx  1.00 xxxx xxxx  1.00 xxxx 1.00  1.00 xxxx xxxx  1.00
Bus Stp Adj: xxxx xxxx  1.00 xxxx xxxx  1.00 xxxx 1.00  1.00 xxxx xxxx  1.00
Area Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
RT Adj:      xxxx xxxx  0.85 xxxx xxxx  0.85 xxxx 1.00  1.00 xxxx xxxx  0.85
LT Adj:      0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.95 xxxx xxxxx
PedBike Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
HCM Sat Adj: 0.93 0.98  0.83 0.93 0.98  0.83 0.93 0.98  0.98 0.93 0.98  0.83
Usr Sat Adj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Sat Adj: 1.00 1.00  1.00 0.97 1.00  1.00 1.00 0.95  0.95 1.00 0.95  1.00
Fnl Sat Adj: 0.93 0.98  0.83 0.90 0.98  0.83 0.93 0.93  0.93 0.93 0.93  0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <   Actuated   > > > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
******************************************************************************
```

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------------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------

      Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                     2000 HCM Operations Method
                      Base Volume Alternative
******************************************************************************
Intersection #18 OR 99W/Northern Arterial
******************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Green/Cycle: 0.11 0.09  0.09 0.20 0.18  0.18 0.09 0.50  0.50 0.09 0.51  0.51
ArrivalType:         3                3                3                3
ProgFactor:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Q1:           2.6  4.4   2.5  9.2  2.2   3.6  4.2 14.6  14.6  3.8 19.0  15.2
UpstreamVC:  0.00 0.00  0.00 0.00 0.00  0.00 0.00 0.00  0.00 0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00 0.00 0.00  0.00 0.00 0.00  0.00 0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Q2:           0.6  2.0   0.9  2.2  0.3   0.6  2.0  1.5   1.5  1.4  2.5   2.0
HCM2KQueue:   3.2  6.3   3.4 11.5  2.5   4.2  6.2 16.1  16.1  5.2 21.5  17.1
------------|---------------||---------------||---------------||---------------|
70th%Factor: 1.19 1.19  1.19 1.18 1.19  1.19 1.19 1.17  1.17 1.19 1.16  1.17
70th%HCM2kQ:  3.8  7.5   4.1 13.5  3.0   5.0  7.3 18.8  18.8  6.1 24.9  20.0
------------|---------------||---------------||---------------||---------------|
85th%Factor: 1.57 1.54  1.57 1.50 1.58  1.56 1.54 1.48  1.48 1.55 1.45  1.47
85th%HCM2kQ:  5.0  9.8   5.3 17.3  3.9   6.6  9.5 23.8  23.8  8.0 31.1  25.2
------------|---------------||---------------||---------------||---------------|
90th%Factor: 1.74 1.69  1.74 1.63 1.75  1.72 1.69 1.58  1.58 1.71 1.54  1.57
90th%HCM2kQ:  5.5 10.7   5.9 18.7  4.3   7.2 10.5 25.5  25.5  8.8 33.0  26.9
------------|---------------||---------------||---------------||---------------|
95th%Factor: 2.00 1.92  2.00 1.82 2.02  1.98 1.93 1.74  1.74 1.95 1.68  1.73
95th%HCM2kQ:  6.3 12.2   6.8 20.9  5.0   8.3 11.9 28.2  28.2 10.1 36.1  29.7
------------|---------------||---------------||---------------||---------------|
98th%Factor: 2.48 2.31  2.47 2.11 2.53  2.42 2.32 1.99  1.99 2.37 1.89  1.97
98th%HCM2kQ:  7.8 14.7   8.4 24.3  6.3  10.2 14.4 32.1  32.1 12.2 40.6  33.7
```

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pm                       Tue Jun 28, 2005 08:56:53                  Page 42-1
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                  Level Of Service Computation Report
        2000 HCM Operations Method (Base Volume Alternative)
*****************************************************************************
Intersection #19 Mountain View Drive/Villa Road
*****************************************************************************
Cycle (sec):         100             Critical Vol./Cap. (X):          0.527
Loss Time (sec):      12 (Y+R =  4 sec) Average Delay (sec/veh):       20.6
Optimal Cycle:        43             Level Of Service:                   C
*****************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0   0     0     0   0     0     0   0     0     0
Lanes:         1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     120   100    60    60    60    20    10   470    80   125   470    20
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  120   100    60    60    60    20    10   470    80   125   470    20
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   120   100    60    60    60    20    10   470    80   125   470    20
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  120   100    60    60    60    20    10   470    80   125   470    20
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   120   100    60    60    60    20    10   470    80   125   470    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.69  0.93  0.93  0.49  0.94  0.94  0.93  0.96  0.96  0.93  0.97  0.97
Lanes:       1.00  0.62  0.38  1.00  0.75  0.25  1.00  0.85  0.15  1.00  0.96  0.04
Final Sat.:  1311  1099   659   924  1345   448  1769  1556   265  1769  1775    76
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09  0.09  0.09  0.06  0.04  0.04  0.01  0.30  0.30  0.07  0.26  0.26
Crit Moves:        ****                                ****        ****
Green/Cycle: 0.17  0.17  0.17  0.17  0.17  0.17  0.01  0.57  0.57  0.13  0.69  0.69
Volume/Cap:  0.53  0.53  0.53  0.38  0.26  0.26  0.38  0.53  0.53  0.53  0.38  0.38
Delay/Veh:   40.0  39.4  39.4  38.1  36.3  36.3  57.9  13.6  13.6  42.5   6.6   6.6
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  40.0  39.4  39.4  38.1  36.3  36.3  57.9  13.6  13.6  42.5   6.6   6.6
HCM2kAvg:       5     5     5     4     2     2     1    10    10     4     6     6
*****************************************************************************



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pm                       Tue Jun 28, 2005 08:56:53                  Page 43-1
-----------------------------------------------------------------------------
              Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

              Level Of Service Detailed Computation Report
                     2000 HCM Operations Method
                       Base Volume Alternative
*****************************************************************************
Intersection #19 Mountain View Drive/Villa Road
*****************************************************************************
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  0  1  0   1  0  0  1  0   1  0  0  1  0   1  0  0  1  0
Lane Group:    L    RT     RT    L    RT     RT    L    RT     RT    L    RT     RT
#LnsInGrps:    1     1      1    1     1      1    1     1      1    1     1      1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:            2                 2                 2                 2
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:     < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:    Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2  xxxx  xxxx     2  xxxx  xxxx     1  xxxx  xxxx     1  xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Hev Veh Adj:  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98
Grade Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Parking Adj:  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00
Bus Stp Adj:  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00
Area Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
RT Adj:       xxxx  0.94  0.94  xxxx  0.96  0.96  xxxx  0.98  0.98  xxxx  0.99  0.99
LT Adj:       0.70  xxxx xxxxx  0.50  xxxx xxxxx  0.95  xxxx xxxxx  0.95  xxxx xxxxx
PedBike Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj:  0.69  0.93  0.93  0.49  0.94  0.94  0.93  0.96  0.96  0.93  0.97  0.97
Usr Sat Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Fnl Sat Adj:  0.69  0.93  0.93  0.49  0.94  0.94  0.93  0.96  0.96  0.93  0.97  0.97
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:   < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type:   < < < < < < < < < < < <    Actuated    > > > > > > > > > > > > >
DelAdjFctr:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
*****************************************************************************



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pm                  Tue Jun 28, 2005 08:56:53                Page 43-2
---------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #19 Mountain View Drive/Villa Road
***************************************************************************
Approach:                                  North     South     East      West
Cycle Length, C:                             100       100    xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:       17.27     17.27    xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:    17.27     17.27    xxxxxx    xxxxxx
Opposing Effective Green Time, go:         17.27     17.27    xxxxxx    xxxxxx
Number Of Opposing Lanes, No:                  1         1    xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:              1         1    xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:           120        60    xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt:  1.00      1.00  xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx    xxxxxx  xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                  3.33      1.67    xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:              80       160    xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:     2.22      4.44    xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:                1.00      1.00    xxxxxx    xxxxxx
Lost Time Per Phase, tl:                    4.00      4.00    xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:  0.00      0.00    xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                  0.83      0.83    xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:      0.00      4.07    xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu:  17.27     13.20    xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n: xxxxxx    xxxxxx  xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   xxxxxx  xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:            0.83      0.78    xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl: 1.00      1.00    xxxxxx    xxxxxx
Through-car Equivalents, el1:               1.42      1.54    xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2:  xxxxxx    xxxxxx   xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:   0.23      0.23    xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm: 0.70      0.50    xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:           0.70      0.50    xxxxxx    xxxxxx
***************************************************************************

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pm                  Tue Jun 28, 2005 08:56:53                Page 43-3
---------------------------------------------------------------------------
            Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
     Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                        2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #19 Mountain View Drive/Villa Road
***************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Green/Cycle: 0.17 0.17  0.17  0.17 0.17  0.17  0.01 0.57  0.57  0.13 0.69  0.69
ArrivalType:        3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           4.3  4.0   4.0   3.0  1.9   1.9   0.3  9.3   9.3   3.4  5.7   5.7
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q2:           1.1  1.1   1.1   0.6  0.3   0.3   0.5  1.1   1.1   1.0  0.6   0.6
HCM2KQueue:   5.4  5.1   5.1   3.6  2.3   2.3   0.8 10.4  10.4   4.4  6.3   6.3
------------|---------------||---------------||---------------||---------------|
70th%Factor: 1.19 1.19  1.19  1.19 1.19  1.19  1.20 1.18  1.18  1.19 1.19  1.19
70th%HCM2kQ:  6.4  6.1   6.1   4.2  2.7   2.7   0.9 12.3  12.3   5.3  7.5   7.5
------------|---------------||---------------||---------------||---------------|
85th%Factor: 1.55 1.55  1.55  1.57 1.58  1.58  1.59 1.51  1.51  1.56 1.54  1.54
85th%HCM2kQ:  8.3  7.9   7.9   5.6  3.6   3.6   1.3 15.8  15.8   6.9  9.7   9.7
------------|---------------||---------------||---------------||---------------|
90th%Factor: 1.71 1.71  1.71  1.73 1.76  1.76  1.78 1.64  1.64  1.72 1.69  1.69
90th%HCM2kQ:  9.2  8.7   8.7   6.2  4.0   4.0   1.4 17.1  17.1   7.6 10.7  10.7
------------|---------------||---------------||---------------||---------------|
95th%Factor: 1.95 1.95  1.95  1.99 2.03  2.03  2.07 1.84  1.84  1.97 1.92  1.92
95th%HCM2kQ: 10.5  9.9   9.9   7.1  4.6   4.6   1.6 19.2  19.2   8.8 12.1  12.1
------------|---------------||---------------||---------------||---------------|
98th%Factor: 2.36 2.38  2.38  2.46 2.54  2.54  2.64 2.15  2.15  2.41 2.32  2.32
98th%HCM2kQ: 12.7 12.1  12.1   8.8  5.8   5.8   2.1 22.4  22.4  10.7 14.6  14.6

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-----------------------------------------------------------------------------
          Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

                 Level Of Service Computation Report
        2000 HCM Unsignalized Method (Base Volume Alternative)
*****************************************************************************
Intersection #20 Mountain View Dr/Aspen Way
*****************************************************************************
Average Delay (sec/veh):      4.9    Worst Case Level Of Service:      E[ 43.2]
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0    1  0  0  1  0
-----------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   20   10     60   10   20     40  500   30     10  525   40
Growth Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:   30   20   10     60   10   20     40  500   30     10  525   40
User Adj:    1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Volume:    30   20   10     60   10   20     40  500   30     10  525   40
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Final Vol.:    30   20   10     60   10   20     40  500   30     10  525   40
-----------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  7.1  6.5  6.2    7.1  6.5  6.2    4.1 xxxx xxxxx   4.1 xxxx xxxxx
FollowUpTim:  3.5  4.0  3.3    3.5  4.0  3.3    2.2 xxxx xxxxx   2.2 xxxx xxxxx
-----------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: 1175 1180  515   1175 1175  545    565 xxxx xxxxx   530 xxxx xxxxx
Potent Cap.:  170  192  564    170  193  542   1017 xxxx xxxxx  1048 xxxx xxxxx
Move Cap.:    151  183  564    147  184  542   1017 xxxx xxxxx  1048 xxxx xxxxx
Volume/Cap:  0.20 0.11 0.02   0.41 0.05 0.04   0.04 xxxx  xxxx  0.01 xxxx  xxxx
-----------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:       xxxxx xxxx xxxxx xxxxx xxxx xxxxx   0.1 xxxx xxxxx   0.0 xxxx xxxxx
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx   8.7 xxxx xxxxx   8.5 xxxx xxxxx
LOS by Move:    *    *    *      *    *    *      A    *    *      A    *    *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx  184 xxxxx  xxxx  181 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx  1.3 xxxxx xxxxx  2.4 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx 33.7 xxxxx xxxxx 43.2 xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    D    *      *    E    *      *    *    *      *    *    *
ApproachDel:       33.7             43.2            xxxxxx           xxxxxx
ApproachLOS:          D                E                *                *
```

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-----------------------------------------------------------------------------
          Kittelson & Associates, Inc. - Project # 5193
          City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-----------------------------------------------------------------------------

             Level Of Service Detailed Computation Report
                    2000 HCM Unsignalized Method
                       Base Volume Alternative
*****************************************************************************
Intersection #20 Mountain View Dr/Aspen Way
*****************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------|---------------|---------------|---------------|
HevVeh:              0%               0%               0%               0%
Grade:               0%               0%               0%               0%
Peds/Hour:           0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|---------------|---------------|---------------|---------------|
Upstream Signals:
Link Index:                                        #51              #48
Dist(miles):                                       0.000            0.000
Speed (mph):                                        0.00             0.00
SignalIndex:                                       #19              #21
Cycle Time:                                           0 secs           0 secs
InitVolume:                                     0    0           0    0
Saturation:                                     0    0           0    0
ArrivalType:                                    0    0           0    0
G/C:                                         0.00 0.00        0.00 0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:                                          0.000 0.000       0.000 0.000
gq1:                                         0.00 0.00        0.00 0.00
gq2:                                         0.00 0.00        0.00 0.00
gq:                                          0.00 0.00        0.00 0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:                                           0.000            0.000
beta:                                            0.000            0.000
ta (secs):                                       0.000            0.000
F:                                               0.000            0.000
f:                                          0.000 0.000       0.000 0.000
vcmax:                                          0    0           0    0
vcg:                                            0    0           0    0
vcmin:                                          0    0           0    0
tp:                                           0.0  0.0         0.0  0.0
p:                                              0.000            0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:                                   0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol:1175  1180   515 1175  1175   545  565 xxxxx xxxxx  530 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
ConflictVol:1175  1180   515 1175  1175   545  565 xxxxx xxxxx  530 xxxxx xxxxx
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap:  170   192   564  170   193   542 1017 xxxxx xxxxx 1048 xxxxx xxxxx
UpstreamAdj:1.00 1.000 1.000 1.00 1.000 1.000 1.00 x.xxx x.xxx 1.00 x.xxx x.xxx
PotentCap:   170   192   564  170   193   542 1017 xxxxx xxxxx 1048 xxxxx xxxxx
```

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pm                     Tue Jun 28, 2005 08:56:53                  Page 46-1
---------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
***************************************************************************
Intersection #21 Springbrook Street/Northern Arterial
***************************************************************************
Cycle (sec):        100              Critical Vol./Cap. (X):        0.664
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):      24.8
Optimal Cycle:       55              Level Of Service:                  C
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     235   240    25   125   210   100    50   285   215    10   230   250
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  235   240    25   125   210   100    50   285   215    10   230   250
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   235   240    25   125   210   100    50   285   215    10   230   250
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  235   240    25   125   210   100    50   285   215    10   230   250
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   235   240    25   125   210   100    50   285   215    10   230   250
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.45  0.97  0.97  0.49  0.93  0.93  0.93  0.92  0.92  0.93  0.90  0.90
Lanes:       1.00  0.91  0.09  1.00  0.68  0.32  1.00  0.57  0.43  1.00  0.48  0.52
Final Sat.:   849  1663   173   937  1201   572  1769   993   749  1769   823   894
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28  0.14  0.14  0.13  0.17  0.17  0.03  0.29  0.29  0.01  0.28  0.28
Crit Moves:  ****                                ****                    ****
Green/Cycle: 0.42  0.42  0.42  0.42  0.42  0.42  0.04  0.45  0.45  0.01  0.42  0.42
Volume/Cap:  0.66  0.35  0.35  0.32  0.42  0.42  0.66  0.63  0.63  0.63  0.66  0.66
Delay/Veh:   28.2  20.2  20.2  20.1  21.0  21.0  67.3  22.5  22.5 110.5  25.6  25.6
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  28.2  20.2  20.2  20.1  21.0  21.0  67.3  22.5  22.5 110.5  25.6  25.6
HCM2kAvg:      13     6     6     5     7     7     3    12    12     1    13    13
***************************************************************************



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pm                     Tue Jun 28, 2005 08:56:53                  Page 47-1
---------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------
               Level Of Service Detailed Computation Report
                       2000 HCM Operations Method
                         Base Volume Alternative
***************************************************************************
Intersection #21 Springbrook Street/Northern Arterial
***************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:         1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
Lane Group:     L    RT    RT    L    RT    RT    L    RT    RT    L    RT    RT
#LnsInGrps:     1     1     1    1     1     1    1     1     1    1     1     1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:    12    12    12    12    12    12    12    12    12    12    12    12
CrosswalkWid          8                 8                 8                 8
% Hev Veh:            2                 2                 2                 2
Grade:               0%                0%                0%                0%
Parking/Hr:          No                No                No                No
Bus Stp/Hr:           0                 0                 0                 0
Area Type:    < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:          0                 0                 0                 0
ExclusiveRT:     Include           Include           Include           Include
% RT Prtct:           0                 0                 0                 0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     2  xxxx  xxxx     2  xxxx  xxxx     1  xxxx  xxxx     1  xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Hev Veh Adj: 0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98  0.98
Grade Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Parking Adj: xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00
Bus Stp Adj: xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00  xxxx  1.00  1.00
Area Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
RT Adj:      xxxx  0.99  0.99  xxxx  0.95  0.95  xxxx  0.94  0.94  xxxx  0.92  0.92
LT Adj:      0.46  xxxx xxxxx  0.50  xxxx xxxxx  0.95  xxxx xxxxx  0.95  xxxx xxxxx
PedBike Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
HCM Sat Adj: 0.45  0.97  0.97  0.49  0.93  0.93  0.93  0.92  0.92  0.93  0.90  0.90
Usr Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Sat Adj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Fnl Sat Adj: 0.45  0.97  0.97  0.49  0.93  0.93  0.93  0.92  0.92  0.93  0.90  0.90
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated:  < < < < < < < < < < < < < < < No  > > > > > > > > > > > > > > > >
Signal Type:  < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > > >
DelAdjFctr:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
***************************************************************************



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-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #21 Springbrook Street/Northern Arterial
*******************************************************************************
Approach:                                      North     South      East      West
Cycle Length, C:                                 100       100    xxxxxx    xxxxxx
Actual Green Time Per Lane Group, G:           41.67     41.67    xxxxxx    xxxxxx
Effective Green Time Per Lane Group, g:        41.67     41.67    xxxxxx    xxxxxx
Opposing Effective Green Time, go:             41.67     41.67    xxxxxx    xxxxxx
Number Of Opposing Lanes, No:                      1         1    xxxxxx    xxxxxx
Number Of Lanes In Lane Group, N:                  1         1    xxxxxx    xxxxxx
Adjusted Left-Turn Flow Rate, Vlt:               235       125    xxxxxx    xxxxxx
Proportion of Left Turns in Lane Group, Plt:    1.00      1.00    xxxxxx    xxxxxx
Proportion of Left Turns in Opp Flow, Plto:   xxxxxx    xxxxxx    xxxxxx    xxxxxx
Left Turns Per Cycle, LTC:                      6.53      3.47    xxxxxx    xxxxxx
Adjusted Opposing Flow Rate, Vo:                 310       265    xxxxxx    xxxxxx
Opposing Flow Per Lane Per Cycle, Volc:         8.61      7.36    xxxxxx    xxxxxx
Opposing Platoon Ratio, Rpo:                    1.00      1.00    xxxxxx    xxxxxx
Lost Time Per Phase, tl:                        4.00      4.00    xxxxxx    xxxxxx
Eff grn until arrival of left-turn car, gf:     0.00      0.00    xxxxxx    xxxxxx
Opposing Queue Ratio, qro:                      0.58      0.58    xxxxxx    xxxxxx
Eff grn blocked by opposing queue, gq:          8.14      6.07    xxxxxx    xxxxxx
Eff grn while left turns filter thru, gu:      33.53     35.60    xxxxxx    xxxxxx
Max opposing cars arriving during gq-gf, n:   xxxxxx    xxxxxx    xxxxxx    xxxxxx
Proportion of Opposing Thru & RT cars, ptho:  xxxxxx    xxxxxx    xxxxxx    xxxxxx
Left-turn Saturation Factor, fs:                0.68      0.71    xxxxxx    xxxxxx
Proportion of Left Turns in Shared Lane, pl:    1.00      1.00    xxxxxx    xxxxxx
Through-car Equivalents, el1:                   1.77      1.70    xxxxxx    xxxxxx
Single Lane Through-car Equivalents, el2:     xxxxxx    xxxxxx    xxxxxx    xxxxxx
Minimum Left Turn Adjustment Factor, fmin:      0.10      0.10    xxxxxx    xxxxxx
Single Lane Left Turn Adjustment Factor, fm:    0.46      0.50    xxxxxx    xxxxxx
Left Turn Adjustment Factor, flt:               0.46      0.50    xxxxxx    xxxxxx
*******************************************************************************
```

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-------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
             City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------
     Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #21 Springbrook Street/Northern Arterial
*******************************************************************************
Approach:      North Bound       South Bound        East Bound        West Bound
Movement:     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R     L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Green/Cycle: 0.42 0.42  0.42   0.42 0.42  0.42   0.04 0.45  0.45   0.01 0.42  0.42
ArrivalType:         3                 3                 3                 3
ProgFactor:  1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Q1:          11.5  5.0   5.0    4.6  6.1   6.1    1.4 10.6  10.6    0.3 10.7  10.7
UpstreamVC:  0.00 0.00  0.00   0.00 0.00  0.00   0.00 0.00  0.00   0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00   0.00 0.00  0.00   0.00 0.00  0.00   0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00   1.00 1.00  1.00
Q2:           1.9  0.5   0.5    0.5  0.7   0.7    1.4  1.6   1.6    0.8  1.9   1.9
HCM2KQueue:  13.4  5.5   5.5    5.1  6.8   6.8    2.8 12.3  12.3    1.1 12.6  12.6
------------|----------------||----------------||----------------||----------------|
70th%Factor: 1.17 1.19  1.19   1.19 1.18  1.18   1.19 1.17  1.17   1.20 1.17  1.17
70th%HCM2kQ: 15.7  6.6   6.6    6.1  8.1   8.1    3.4 14.4  14.4    1.3 14.8  14.8
------------|----------------||----------------||----------------||----------------|
85th%Factor: 1.49 1.55  1.55   1.55 1.54  1.54   1.57 1.50  1.50   1.59 1.50  1.50
85th%HCM2kQ: 20.0  8.6   8.6    7.9 10.5  10.5    4.5 18.4  18.4    1.8 18.8  18.8
------------|----------------||----------------||----------------||----------------|
90th%Factor: 1.60 1.70  1.70   1.71 1.68  1.68   1.75 1.62  1.62   1.78 1.61  1.61
90th%HCM2kQ: 21.5  9.4   9.4    8.7 11.5  11.5    5.0 19.8  19.8    2.0 20.3  20.3
------------|----------------||----------------||----------------||----------------|
95th%Factor: 1.78 1.94  1.94   1.95 1.91  1.91   2.01 1.80  1.80   2.06 1.80  1.80
95th%HCM2kQ: 23.9 10.8  10.8   10.0 13.0  13.0    5.7 22.1  22.1    2.3 22.6  22.6
------------|----------------||----------------||----------------||----------------|
98th%Factor: 2.06 2.35  2.35   2.37 2.29  2.29   2.50 2.09  2.09   2.62 2.08  2.08
98th%HCM2kQ: 27.6 13.0  13.0   12.1 15.6  15.6    7.1 25.6  25.6    2.9 26.2  26.2
```

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pm                    Tue Jun 28, 2005 08:56:53                   Page 48-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #22 Haworth Ave/Villa Rd
*******************************************************************************
Average Delay (sec/veh):        6.8     Worst Case Level Of Service:     C[ 20.3]
*******************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:        1  170  300    70  160    1     1    1    1   150    1  155
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:     1  170  300    70  160    1     1    1    1   150    1  155
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      0.91 0.91 0.91  0.91 0.91 0.91  0.91 0.91 0.91  0.91 0.91 0.91
PHF Volume:      1  187  330    77  176    1     1    1    1   165    1  170
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Final Vol.:      1  187  330    77  176    1     1    1    1   165    1  170
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.3 xxxx xxxxx   4.3 xxxx xxxxx  7.1  6.5  6.2   7.3  6.7  6.4
FollowUpTim:  2.4 xxxx xxxxx   2.4 xxxx xxxxx  3.5  4.0  3.3   3.7  4.2  3.5
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  177 xxxx xxxxx   516 xxxx xxxxx  770  849  176   685  685  352
Potent Cap.: 1297 xxxx xxxxx   972 xxxx xxxxx  320  300  872   338  348  651
Move Cap.:   1297 xxxx xxxxx   972 xxxx xxxxx  221  275  872   315  319  651
Volume/Cap:  0.00 xxxx  xxxx  0.08 xxxx  xxxx 0.00 0.00 0.00  0.52 0.00 0.26
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:        0.0 xxxx xxxxx   0.3 xxxx xxxxx xxxxx xxxx xxxxx   2.9 xxxx xxxxx
Stopped Del:  7.8 xxxx xxxxx   9.0 xxxx xxxxx xxxxx xxxx xxxxx  28.3 xxxx xxxxx
LOS by Move:    A    *    *      A    *    *     *    *    *     D    *    *
Movement:     LT - LTR - RT    LT - LTR - RT   LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx xxxx  322 xxxxx  xxxx xxxx  647
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 0.0 xxxxx xxxxx xxxx  1.1
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 16.3 xxxxx xxxxx xxxx 12.6
Shared LOS:     *    *    *      *    *    *     *    C    *     *    *    B
ApproachDel:      xxxxxx           xxxxxx           16.3             20.3
ApproachLOS:         *                *                C                C

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pm                    Tue Jun 28, 2005 08:56:53                   Page 49-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                 Level Of Service Detailed Computation Report
                       2000 HCM Unsignalized Method
                          Base Volume Alternative
*******************************************************************************
Intersection #22 Haworth Ave/Villa Rd
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
-----------|---------------|---------------|---------------|---------------|
HevVeh:            20%              18%              0%              21%
Grade:              0%               0%              0%               0%
Peds/Hour:           0                0               0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:       12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour
-----------|---------------|---------------|---------------|---------------|
Upstream Signals:
Link Index:       #55             #52
Dist(miles):      0.000           0.000
Speed (mph):       0.00            0.00
SignalIndex:      #13             #19
Cycle Time:             0 secs          0 secs
InitVolume:       0     0          0     0
Saturation:       0     0          0     0
ArrivalType:      0     0          0     0
G/C:           0.00  0.00       0.00  0.00
*** Computation 1: Time for Queue to Clear at Each Upstream Intersection
P:            0.000 0.000      0.000 0.000
gq1:           0.00  0.00       0.00  0.00
gq2:           0.00  0.00       0.00  0.00
gq:            0.00  0.00       0.00  0.00
*** Computation 2: Time Intersection Blocked Because of Upstream Platoons
alpha:            0.000           0.000
beta:             0.000           0.000
ta (secs):        0.000           0.000
F:                0.000           0.000
f:            0.000 0.000      0.000 0.000
vcmax:            0     0          0     0
vcg:              0     0          0     0
vcmin:            0     0          0     0
tp:             0.0   0.0        0.0   0.0
p:                0.000           0.000
*** Computation 3: Platoon Event Periods
pdom/psubo:      0.000/0.000/Unconstrained
*** Computation 4: Conflicting Flows During Each Unblocked Period
InitCnflVol: 177 xxxxx xxxxx  516 xxxxx xxxxx  770   849   176  685   685   352
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
ConflictVol: 177 xxxxx xxxxx  516 xxxxx xxxxx  770   849   176  685   685   352
*** Computation 5: Capactiy for Subject Movement During Unblocked Period
InitPotCap: 1297 xxxxx xxxxx  972 xxxxx xxxxx  320   300   872  338   348   651
UpstreamAdj:1.00 x.xxx x.xxx 1.00 x.xxx x.xxx 1.00 1.000 1.000 1.00 1.000 1.000
PotentCap:  1297 xxxxx xxxxx  972 xxxxx xxxxx  320   300   872  338   348   651

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pm                       Tue Jun 28, 2005 08:56:53                    Page 50-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                    Level Of Service Computation Report
          2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #23 Haworth Avenue/Springbrook Street
*******************************************************************************
Cycle (sec):        100                Critical Vol./Cap. (X):        0.548
Loss Time (sec):     12 (Y+R =  4 sec) Average Delay (sec/veh):        22.0
Optimal Cycle:       44                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Permitted        Permitted
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       1  0  0  1  0   1  0  0  1  0   0  1  0  0  1   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    185  480   10    15  440   80    60   60  100    70   40   60
Growth Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse: 185  480   10    15  440   80    60   60  100    70   40   60
User Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:  185  480   10    15  440   80    60   60  100    70   40   60
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol: 185  480   10    15  440   80    60   60  100    70   40   60
PCE Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:  185  480   10    15  440   80    60   60  100    70   40   60
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1900 1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900
Adjustment: 0.93 0.98 0.98  0.93 0.96 0.96  0.74 0.74 0.83  0.63 0.63 0.83
Lanes:      1.00 0.98 0.02  1.00 0.85 0.15  0.50 0.50 1.00  0.64 0.36 1.00
Final Sat.: 1769 1819   38  1769 1539  280   702  702 1583   765  437 1583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.10 0.26 0.26  0.01 0.29 0.29  0.09 0.09 0.06  0.09 0.09 0.04
Crit Moves: ****                 ****                             ****
Green/Cycle: 0.19 0.69 0.69  0.02 0.52 0.52  0.17 0.17 0.17  0.17 0.17 0.17
Volume/Cap: 0.55 0.38 0.38  0.38 0.55 0.55  0.51 0.51 0.38  0.55 0.55 0.23
Delay/Veh:  38.4  6.7  6.7  54.3 16.7 16.7  39.8 39.8 37.9  41.3 41.3 36.5
User DelAdj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
AdjDel/Veh: 38.4  6.7  6.7  54.3 16.7 16.7  39.8 39.8 37.9  41.3 41.3 36.5
HCM2kAvg:      6    6    6     1   11   11     5    5    3     5    5    2
*******************************************************************************




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pm                       Tue Jun 28, 2005 08:56:53                    Page 51-1
-------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
               City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
-------------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                        2000 HCM Operations Method
                          Base Volume Alternative
*******************************************************************************
Intersection #23 Haworth Avenue/Springbrook Street
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
HCM Ops Adjusted Lane Utilization Module:
Lanes:       1  0  0  1  0   1  0  0  1  0   0  1  0  0  1   0  1  0  0  1
Lane Group:    L   RT    RT    L   RT    RT   LT   LT    R    LT   LT    R
#LnsInGrps:    1    1     1    1    1     1    1    1    1     1    1    1
------------|---------------||---------------||---------------||---------------|
HCM Ops Input Saturation Adj Module:
Lane Width:   12   12   12    12   12   12    12   12   12    12   12   12
CrosswalkWid       8                8                8                8
% Hev Veh:         2                2                2                2
Grade:            0%               0%               0%               0%
Parking/Hr:       No               No               No               No
Bus Stp/Hr:        0                0                0                0
Area Type:   < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > >
Cnft Ped/Hr:       0                0                0                0
ExclusiveRT:    Include          Include          Include          Include
% RT Prtct:        0                0                0                0
------------|---------------||---------------||---------------||---------------|
HCM Ops f(lt) Adj Case Module:
f(lt) Case:     1 xxxx xxxx     1 xxxx xxxx     5    5 xxxx     5    5 xxxx
------------|---------------||---------------||---------------||---------------|
HCM Ops Saturation Adj Module:
Ln Wid Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Hev Veh Adj: 0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98
Grade Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Parking Adj: xxxx 1.00 1.00  xxxx 1.00 1.00  xxxx xxxx 1.00  xxxx xxxx 1.00
Bus Stp Adj: xxxx 1.00 1.00  xxxx 1.00 1.00  xxxx xxxx 1.00  xxxx xxxx 1.00
Area Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
RT Adj:      xxxx 1.00 1.00  xxxx 0.98 0.98  xxxx xxxx 0.85  xxxx xxxx 0.85
LT Adj:      0.95 xxxx xxxxx 0.95 xxxx xxxxx 0.75 0.75 xxxxx 0.65 0.65 xxxxx
PedBike Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
HCM Sat Adj: 0.93 0.98 0.98  0.93 0.96 0.96  0.74 0.74 0.83  0.63 0.63 0.83
Usr Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Sat Adj: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Fnl Sat Adj: 0.93 0.98 0.98  0.93 0.96 0.96  0.74 0.74 0.83  0.63 0.63 0.83
------------|---------------||---------------||---------------||---------------|
Delay Adjustment Factor Module:
Coordinated: < < < < < < < < < < < < < < No    > > > > > > > > > > > > > > > >
Signal Type: < < < < < < < < < < < < <    Actuated     > > > > > > > > > > > >
DelAdjFctr:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
*******************************************************************************




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pm                       Tue Jun 28, 2005 08:56:53                   Page 51-2
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
  Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
                       2000 HCM Operations Method
                        Base Volume Alternative
******************************************************************************
Intersection #23 Haworth Avenue/Springbrook Street
******************************************************************************
Approach:                                     North    South     East     West
Cycle Length, C:                             xxxxxx   xxxxxx      100      100
Actual Green Time Per Lane Group, G:         xxxxxx   xxxxxx    16.70    16.70
Effective Green Time Per Lane Group, g:      xxxxxx   xxxxxx    16.70    16.70
Opposing Effective Green Time, go:           xxxxxx   xxxxxx    16.70    16.70
Number Of Opposing Lanes, No:                xxxxxx   xxxxxx        1        1
Number Of Lanes In Lane Group, N:            xxxxxx   xxxxxx        1        1
Adjusted Left-Turn Flow Rate, Vlt:           xxxxxx   xxxxxx       60       70
Proportion of Left Turns in Lane Group, Plt: xxxxxx   xxxxxx     0.50     0.64
Proportion of Left Turns in Opp Flow, Plto:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left Turns Per Cycle, LTC:                   xxxxxx   xxxxxx     1.67     1.94
Adjusted Opposing Flow Rate, Vo:             xxxxxx   xxxxxx      110      120
Opposing Flow Per Lane Per Cycle, Volc:      xxxxxx   xxxxxx     3.06     3.33
Opposing Platoon Ratio, Rpo:                 xxxxxx   xxxxxx     1.00     1.00
Lost Time Per Phase, tl:                     xxxxxx   xxxxxx     4.00     4.00
Eff grn until arrival of left-turn car, gf:  xxxxxx   xxxxxx     0.68     0.03
Opposing Queue Ratio, qro:                   xxxxxx   xxxxxx     0.83     0.83
Eff grn blocked by opposing queue, gq:       xxxxxx   xxxxxx     1.42     1.95
Eff grn while left turns filter thru, gu:    xxxxxx   xxxxxx    15.28    14.75
Max opposing cars arriving during gq-gf, n:  xxxxxx   xxxxxx   xxxxxx   xxxxxx
Proportion of Opposing Thru & RT cars, ptho: xxxxxx   xxxxxx   xxxxxx   xxxxxx
Left-turn Saturation Factor, fs:             xxxxxx   xxxxxx     0.81     0.80
Proportion of Left Turns in Shared Lane, pl: xxxxxx   xxxxxx     0.50     0.64
Through-car Equivalents, el1:                xxxxxx   xxxxxx     1.57     1.58
Single Lane Through-car Equivalents, el2:    xxxxxx   xxxxxx   xxxxxx   xxxxxx
Minimum Left Turn Adjustment Factor, fmin:   xxxxxx   xxxxxx     0.18     0.20
Single Lane Left Turn Adjustment Factor, fm: xxxxxx   xxxxxx     0.75     0.65
Left Turn Adjustment Factor, flt:            xxxxxx   xxxxxx     0.75     0.65
******************************************************************************





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pm                       Tue Jun 28, 2005 08:56:53                   Page 51-3
------------------------------------------------------------------------------
               Kittelson & Associates, Inc. - Project # 5193
              City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
------------------------------------------------------------------------------
     Level Of Service Detailed Computation Report (HCM2000 Queue Method)
                       2000 HCM Operations Method
                        Base Volume Alternative
******************************************************************************
Intersection #23 Haworth Avenue/Springbrook Street
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Green/Cycle: 0.19 0.69  0.69  0.02 0.52  0.52  0.17 0.17  0.17  0.17 0.17  0.17
ArrivalType:         3                3                3                3
ProgFactor:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q1:           4.9  5.7   5.7   0.4  9.7   9.7   4.0  4.0   2.5   4.3  4.3   1.4
UpstreamVC:  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
UpstreamAdj: 0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00
EarlyArrAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Q2:           1.1  0.6   0.6   0.5  1.2   1.2   1.0  1.0   0.6   1.1  1.1   0.3
HCM2KQueue:   6.0  6.3   6.3   1.0 10.9  10.9   5.0  5.0   3.1   5.5  5.5   1.7
------------|---------------||---------------||---------------||---------------|
70th%Factor: 1.19 1.19  1.19  1.20 1.18  1.18  1.19 1.19  1.19  1.19 1.19  1.20
70th%HCM2kQ:  7.2  7.5   7.5   1.2 12.8  12.8   6.0  6.0   3.7   6.5  6.5   2.1
------------|---------------||---------------||---------------||---------------|
85th%Factor: 1.55 1.54  1.54  1.59 1.51  1.51  1.55 1.55  1.57  1.55 1.55  1.58
85th%HCM2kQ:  9.3  9.8   9.8   1.5 16.4  16.4   7.8  7.8   4.8   8.5  8.5   2.7
------------|---------------||---------------||---------------||---------------|
90th%Factor: 1.70 1.69  1.69  1.78 1.63  1.63  1.71 1.71  1.74  1.70 1.70  1.77
90th%HCM2kQ: 10.2 10.7  10.7   1.7 17.7  17.7   8.6  8.6   5.3   9.3  9.3   3.1
------------|---------------||---------------||---------------||---------------|
95th%Factor: 1.93 1.92  1.92  2.07 1.83  1.83  1.95 1.95  2.01  1.94 1.94  2.04
95th%HCM2kQ: 11.6 12.2  12.2   2.0 19.8  19.8   9.8  9.8   6.1  10.6 10.6   3.5
------------|---------------||---------------||---------------||---------------|
98th%Factor: 2.33 2.31  2.31  2.63 2.13  2.13  2.38 2.38  2.49  2.36 2.36  2.58
98th%HCM2kQ: 14.0 14.7  14.7   2.5 23.2  23.2  12.0 12.0   7.6  12.9 12.9   4.5





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pm                        Tue Jun 28, 2005 08:56:53                    Page 52-1
----------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------

                     Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
**********************************************************************************
Intersection #24 Hwy 219/2nd Street
**********************************************************************************
Average Delay (sec/veh):        1.0    Worst Case Level Of Service:        B[ 13.4]
**********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:     Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:         Include          Include          Include          Include
Lanes:       0  0  0  1  0    0  0  0  1  0    0  0  0  0  1    0  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  630    50     0  545    15     0     0    75     0     0    30
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  630    50     0  545    15     0     0    75     0     0    30
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  630    50     0  545    15     0     0    75     0     0    30
Reduct Vol:     0    0     0     0    0     0     0     0     0     0     0     0
Final Vol.:     0  630    50     0  545    15     0     0    75     0     0    30
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   6.3 xxxxx xxxx   6.3
FollowUpTim:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   3.3 xxxxx xxxx   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   553  xxxx xxxx   655
Potent Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   527  xxxx xxxx   461
Move Cap.:   xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx   527  xxxx xxxx   461
Volume/Cap:  xxxx xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  0.14  xxxx xxxx  0.07
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
Queue:      xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx   0.5 xxxxx xxxx   0.2
Stopped Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx  13.0 xxxxx xxxx  13.4
LOS by Move:    *    *     *     *    *     *     *    *     B     *    *     B
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shrd StpDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    *     *     *    *     *
ApproachDel:      xxxxxx           xxxxxx            13.0             13.4
ApproachLOS:         *                *                 B                B




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pm                        Tue Jun 28, 2005 08:56:53                    Page 53-1
----------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
----------------------------------------------------------------------------------
                 Level Of Service Detailed Computation Report
                        2000 HCM Unsignalized Method
                          Base Volume Alternative
**********************************************************************************
Intersection #24 Hwy 219/2nd Street
**********************************************************************************
Approach:     North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------|---------------|---------------|---------------|
HevVeh:            5%               5%               5%               5%
Grade:             0%               0%               0%               0%
Peds/Hour:         0                0                0                0
Pedestrian Walk Speed: 4.00 feet/sec
LaneWidth:        12 feet          12 feet          12 feet          12 feet
Time Period: 0.25 hour




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---------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------

                     Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Base Volume Alternative)
*********************************************************************************
Intersection #25 5th St/Dayton Ave/Main St
*********************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):         0.546
Loss Time (sec):        0 (Y+R =  4 sec) Average Delay (sec/veh):        14.7
Optimal Cycle:          0               Level Of Service:                  B
*********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       1   200   100    70   200    10     1    10     1   150    35   100
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:    1   200   100    70   200    10     1    10     1   150    35   100
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     0.91  0.91  0.91  0.91  0.91  0.91  0.91  0.91  0.91  0.91  0.91  0.91
PHF Volume:     1   220   110    77   220    11     1    11     1   165    38   110
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:    1   220   110    77   220    11     1    11     1   165    38   110
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:     1   220   110    77   220    11     1    11     1   165    38   110
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Lanes:       0.01  0.66  0.33  0.25  0.71  0.04  0.08  0.84  0.08  0.53  0.12  0.35
Final Sat.:     2   416   208   147   419    21    38   380    38   302    70   201
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.53  0.53  0.53  0.52  0.52  0.52  0.03  0.03  0.03  0.55  0.55  0.55
Crit Moves:        ****        ****              ****                    ****
Delay/Veh:   14.2  14.2  14.2  14.9  14.9  14.9   9.9   9.9   9.9  15.3  15.3  15.3
Delay Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  14.2  14.2  14.2  14.9  14.9  14.9   9.9   9.9   9.9  15.3  15.3  15.3
LOS by Move:    B     B     B     B     B     B     A     A     A     C     C     C
ApproachDel:       14.2              14.9               9.9              15.3
Delay Adj:         1.00              1.00              1.00              1.00
ApprAdjDel:        14.2              14.9               9.9              15.3
LOS by Appr:          B                 B                 A                 C
*********************************************************************************
```

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---------------------------------------------------------------------------------
                  Kittelson & Associates, Inc. - Project # 5193
                City of Newberg TSP Refinement - Newberg, Oregon
Recommended Street Improvements: 2025 Traffic Conditions - Weekday PM Peak Hour
---------------------------------------------------------------------------------

                Level Of Service Detailed Computation Report
                       2000 HCM 4-Way Stop Method
                         Base Volume Alternative
*********************************************************************************
Intersection #25 5th St/Dayton Ave/Main St
*********************************************************************************
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
-----------|----------------|----------------|----------------|----------------|
Time Period: 0.25 hour
HevVeh:            21%              30%              28%              28%
Alpha Value: 0.01
-----------|----------------|----------------|----------------|----------------|
GroupType:          1                1                1                1
P[C1]:           0.23             0.23             0.12             0.24
P[C2]:           0.24             0.24             0.13             0.01
P[C3]:           0.26             0.25             0.24             0.49
P[C4]:           0.27             0.27             0.38             0.26
P[C5]:           0.01             0.01             0.13             0.01
Padj[C1]:       0.016            0.016            0.023            0.018
Padj[C2]:       0.006            0.006            0.013            0.010
Padj[C3]:      -0.005           -0.005           -0.001           -0.012
Padj[C4]:      -0.016           -0.016           -0.022           -0.016
Padj[C5]:      -0.001           -0.001           -0.013           -0.001
-----------|----------------|----------------|----------------|----------------|
Lane:               L1               L1               L1               L1
LaneType:      LEFTTHRURITE     LEFTTHRURITE     LEFTTHRURITE     LEFTTHRURITE
-----------|----------------|----------------|----------------|----------------|
HeadwayAdj:     0.158            0.539            0.443            0.371
Volume:           331              308               13              313
Capacity:         626              587              456              574
DegOfUtil:       0.51             0.51             0.02             0.52
DepHeadway:      5.55             5.93             6.72             5.99
ServiceTime:      3.6              3.9              4.7              4.0
Delay:           14.2             14.9              9.9             15.3
-----------|----------------|----------------|----------------|----------------|
Approach:       North Bound      South Bound       East Bound       West Bound
-----------|----------------|----------------|----------------|----------------|
ApproachDel:     14.2             14.9              9.9             15.3
Delay Adj:       1.00             1.00             1.00             1.00
ApprAdjDel:      14.2             14.9              9.9             15.3
LOS by Appr:        B                B                A                C
OverallDel:                              14.7
OverallLOS:                                 B
```

Appendix P

Transit Technical Memorandum

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING
610 SW ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

TECHNICAL MEMORANDUM

Newberg Transportation System Plan Update

Transit: Local Bus Routes, Park & Ride Lots, and Regional Transit Stations

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Date: June 24, 2003 **Project** #: 5193.0

To: Barton Brierley (City of Newberg)
From: Dan Seeman, Mark O'Brien

cc: Elizabeth Ledet (Oregon Department of Transportation)

This Technical Memorandum assesses potential transit centers and park-and-ride lot locations for incorporation into the Newberg Transportation System Plan. In addition, this memorandum examines six intra-city fixed bus route options assembled into four distinct patterns to serve the potential park-and-ride lots and regional transit stations, as well as activity centers and high-density neighborhoods.

Existing Transit Provision in the City of Newberg

In order to evaluate the most appropriate regional park-and-ride lot location and the future local bus route options, it is necessary to consider the current and proposed future transit operations in the City of Newberg. The Chehalem Valley Senior Citizens Council (CVSCC) currently operates the following public transportation services in Newberg. The details of the operation and performance are shown in Table 1.

- LINKS, a commuter service that connects McMinnville with Meridian Park Hospital in Tualatin, which makes scheduled stops in Newberg. This service makes morning, afternoon, and evening round trips every weekday, with a transfer connection in Sherwood to the Tri-Met system serving the Portland urban area.
- Link Express, a commuter service that provides service twice a day from Newberg (Nap’s) to Hillsboro through Gaston, connecting to the light rail in Hillsboro.
- Dial-a-ride service is offered to the transportation disadvantaged between 8:00 a.m. and 5:00 p.m., Monday through Friday.
- The Town Flyer, an intra-city fixed-route bus service, operates approximately 6 hours a day (9:15 a.m.-3:12 p.m.), Monday through Friday. Figure 4 shows the route location and transit stops of the Town Flyer service.

Table 1
Features of Transit Services Operated by Chehalem Valley Senior Citizens Council

Name	Service Type	Patronage 2002-2003 (11 months)	Buses Used to Provide Service	Bus Capacity
LINKS	Regional Bus	15,895	1	17-20 passengers
Link Express	Regional Express Bus	Figures not available	Figures not available	Figures not available
Dial-a-ride	Demand Response	11,587	2	Figures not available
Town Flyer	Local Bus	4,475	1	15 passengers

Other operators, such as Greyhound operate intercity bus routes that stop in Newberg, although these services are not oriented towards commuter uses.

The possible future local and regional transit services will be addressed in this Technical Memorandum in the context of local bus route options and park-and-ride lot locations, respectively.

Future Regional Transit

In order to perform an analysis of the most appropriate locations for regional transit park-and-ride facilities in Newberg, the following issues must be addressed: which mode(s) will be used to provide future regional transit services, which organization(s) will be responsible for providing it, and how much service will be provided? The assumptions made in this Technical Memorandum when considering these issues will reflect the transit element of the ongoing Newberg-Dundee Transportation Improvement Project (NDTIP), to ensure a consistent approach between the two.

Which mode will it be?

The transit element of the NDTIP identifies *express bus* service as being the most cost-effective means of providing regional commuter transit service between northeast Yamhill County and the Portland metropolitan area for the foreseeable future. Although not ruling out commuter rail as a longer-term option, the NDTIP analysis indicates that commuter rail would not be cost-effective based on its relatively modest ridership and high cost. Hence, the remainder of the discussion is focused on commuter bus provision.

Who might provide it?

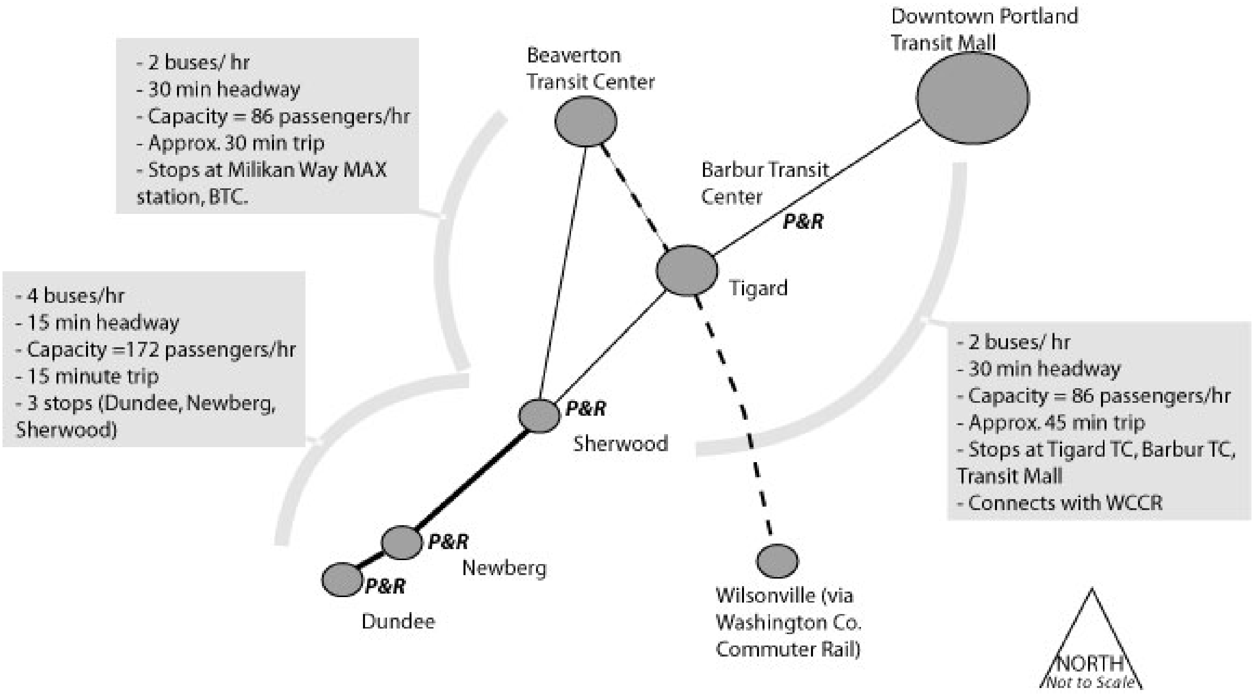
Several different providers operate the existing regional transit services in the City of Newberg. Whether future regional commuter transit should be operated by one of the existing providers, a new provider at the local or County level, or some combination of the existing providers is not yet determined. However, identifying a service provider will be an important step in developing such a regional service. The NDTIP transit element considered how a County-level transit agency might be formed and recommended that, in the long term, a transit district with income taxing powers, be considered by Yamhill County to cover its northeast region.

How much Regional Transit will be provided?

The NDTIP transit plan proposes two peak-hour commuter routes linking Yamhill County with the Portland metropolitan region. Specifically, the plan proposes one route between Dundee and downtown Portland, and another between Dundee and the City of Beaverton. Both routes were assumed by the NDTIP study to run along Ore 99W, and both would serve a park-and-ride facility in the City of Newberg.

Both services would originate in Dundee, with stops in downtown Newberg and at a park-and-ride lot on the northeast side of Newberg. It was felt that since only 10% of commuters from McMinville travel to the Portland metro area for work, whereas 33% of workers from Newberg and Dundee travel to Portland[1], the demand for service from McMinnville to Portland did not appear to justify the additional travel time between Dundee and McMinnville. The service concept is shown in Figure 1 and the demand and capacity assumptions used to develop the service concept are shown in Table 2.

Figure 1 – Commuter Route Service Concept from NDTIP Transit Element



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[1] Yamhill County Public Transportation Survey, 2000. Cited in the Yamhill County Public Transportation Needs Assessment, 2000.

Table 2
Estimated AM Peak Demand and Number of Buses Needed to Meet Demand

	Dundee to Sherwood		Sherwood to Beaverton Transit Center		Sherwood to Downtown Portland	
Year	Passengers/ Hour (Demand)	Buses/ Hour to Meet Demand	Passengers/ Hour (Demand)	Buses/Hour to Meet Demand	Passengers/ Hour (Demand)	Buses/ Hour to Meet Demand
2008	166	5	100	3	66	2
2018	279	7	167	4	112	3

The NDTIP assumed that 80% of the patrons would access the route by car over a two-hour AM peak period, there would be a demand for approximately and concluded 150-200 cars in a Year 2018 park-and-ride lot on the northeast side of Newberg. Since the typical “capture area” for a park-and-ride lot is upstream from the direction of travel (meaning people typically will not drive out of direction to access the bus), the study suggested that the park-and-ride lot be located on the northeast side of Newberg.

However, given the high number of assumptions involved in the passenger and park-and-ride demand estimates, it was recommended that more investigation into these issues be undertaken before any actual service changes are instituted.

Future regional transit relationship to the park-and-ride lot analysis

The analysis of potential park-and-ride sites in the rest section takes into account the possibility of future commuter rail in the weighting given to the location of sites near the rail line, and applies equally whether existing or new operators provide the service. The regional transit park-and-ride lot demand is assumed to be 150-200 stalls, as determined by the NDTIP.

Assessment of the Location of Park & Ride Lots in Newberg

The aim of the following assessment is to identify the five most suitable candidate sites to incorporate into the Newberg TSP as potential future locations for park-and-ride facilities serving regional transit services.

Park-and-Ride Siting Considerations

The proposed park-and-ride facilities would serve a commuter-oriented ridership market, and are generally located near to an arterial street that is easily accessed by both the proposed transit service and the riders who will use it. The task of determining the most appropriate location for a park-and-ride facility in the City of Newberg was undertaken with several goals in mind, including to:

- Minimize time and effort for riders to reach facility;
- Minimize deviation time from Ore 99W for transit routes to serve facility;
- Maximize passenger safety, both accessing the facility and while waiting for service; and
- Avoid environmentally sensitive areas, or if impossible, minimize the facility’s impact.

The methodology used in the ranking of potential park-and-ride facilities in the City of Newberg was based on ranking criteria developed by the consultant, using an overall approach outlined by the American Association of State Highway and Transportation Officials (AASHTO). The final set of criteria and their relative weights is included at the end of this report as Appendix A.

The tax lot data on which the rankings are based were supplied by the City of Newberg. Thirty-two tax lots suitable in size and location for a park-and-ride facility were assessed and, in some cases, several smaller adjacent tax lots were consolidated to reach a suitable size. The result was a final set of 23 potential locations for a park-and-ride facility, which are shown marked "A" through "W" in Figure 2. These locations were then analyzed in terms of three sets of criteria: location, transit, and site-specific.

Location Criteria

One of the most important considerations in establishing a park-and-ride facility is its location. The park-and-ride lot should be easily accessible to commuters and visible from the main arterial. Since commuters tend to use park-and-ride facilities during peak hours only, such a facility could be expected to experience short periods of highly directional congestion during the a.m. and p.m. peak periods. As a result the street network surrounding a suitable location should provide an acceptable level of access. Finally, commuters tend not to travel out of direction to access a park-and-ride facility, so ideally the facility should be located on the path between the commuter's origin and destination. In the case of the City of Newberg, this goal would tend to favor sites on the eastern side of the City, closer to Portland.

The criteria used to evaluate park-and-ride locations included proximity to, and ease of access and visibility from, the main arterial, as well as impacts to local traffic circulation and the need for out of direction travel. Travel distances were measured in GIS. The accessibility of each site from existing bicycle facilities was also considered.

Transit Criteria

Two transit criteria were considered in the ranking of potential sites. These were (1) the estimated deviation time for proposed transit service running along Ore 99W to serve the park-and-ride facility, and (2) the potential for the park-and-ride to serve a multimodal function for possible future commuter rail.

Demand for commuter service is considered to be elastic, meaning that ridership is highly sensitive to quality and reliability of service. Minimizing the time necessary to deviate from the main arterial translates into faster overall travel times. Examples of how this could be achieved by a carefully selected placement of a park-and-ride lot include ensuring that buses:

- Only need to make a right turn or a protected left-turn into the facility,
- Do not need to travel much distance to reach the facility or traverse multiple traffic signals, and
- Are able to easily serve passengers and return to the arterial.

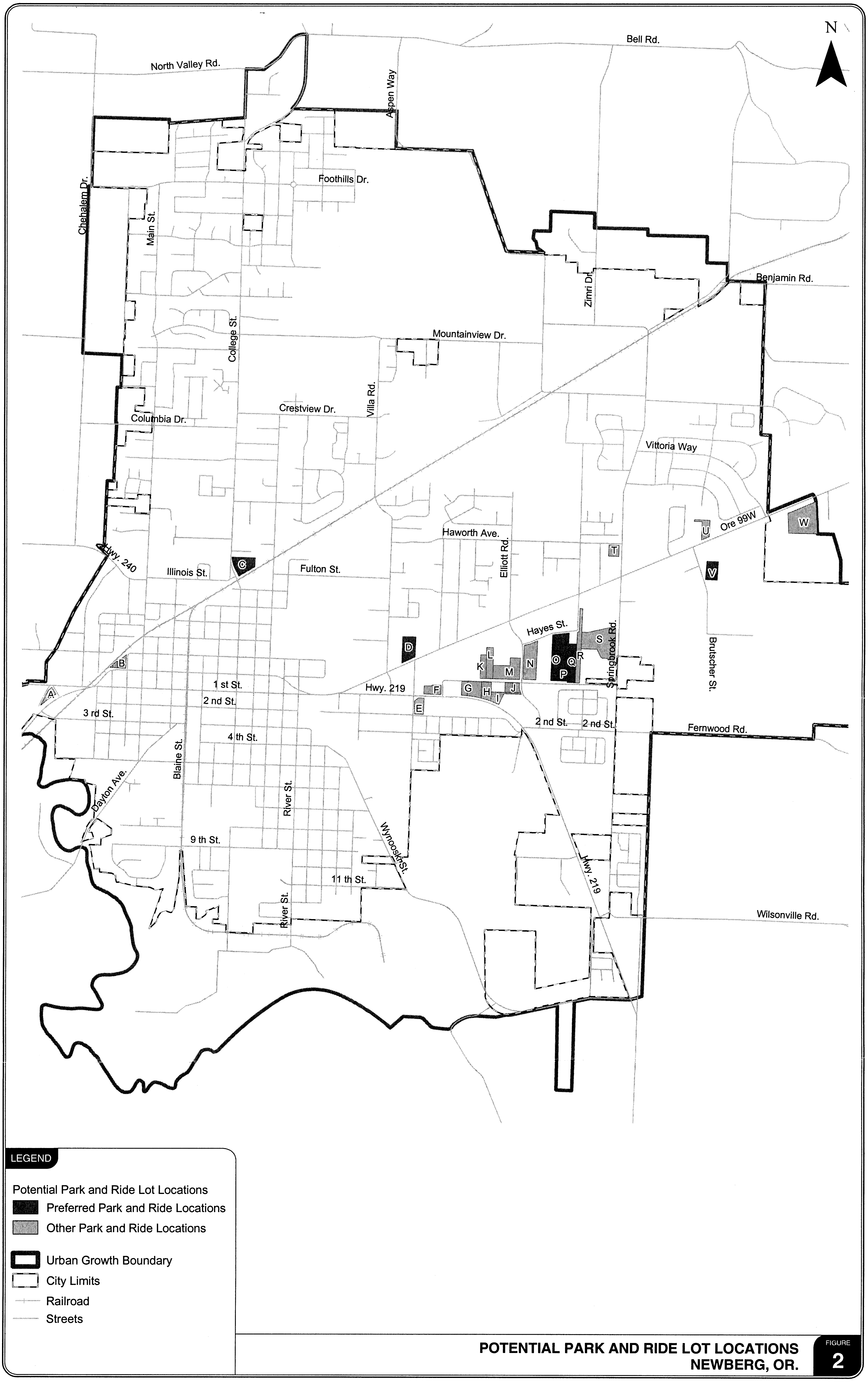


FIGURE 2

POTENTIAL PARK AND RIDE LOT LOCATIONS
NEWBERG, OR.

H:\profile\5193\GIS\TCM1 Figures\New Figures\ParkRideLocations.mdx

Yamhill County conducted a commuter rail study in 1998 that proposed service using existing Portland & Western rail lines, roughly parallel to Ore 99W. While commuter rail has been determined not to be appropriate at this time, it has been recommended in both the City's and the County's TSPs that this option be preserved for the future. As a result, there are long-term benefits to locating a park-and-ride facility so that it can ultimately be converted into a multimodal transit center.

Site Considerations Criteria

Site considerations criteria for this task were evaluated using GIS data from the City of Newberg on zoning, land use, and environmentally sensitive lands.

The most important site considerations criterion relates to the size of the available parcel. The NDTIP calls for a 150-200 stall park-and-ride lot. Assuming a typical layout with 9 x 18.5 feet parking stalls, plus proper circulation, bays, shelters, and landscaping, the park-and-ride lot should be approximately 1.5 acres in size. Ideally, the park-and-ride lot should be somewhat larger to allow for future expansion, although the need to expand much beyond 200 stalls in the City of Newberg context is unlikely. To reflect this uncertainty of demand, it is recommended that while there is a need for a parcel of 1.5 acres in size be purchased at the outset, the lot should be developed in increments of 50 spaces as demand grows over time to its ultimate size of 150-200 spaces.

The compatibility of adjacent land uses is also important. If located in a residential area, the facility will need to consider proper illumination plans and noise mitigation. Locating a facility near a commercial or high-density residential land use could improve the security of the facility, by providing "eyes on the street." Furthermore, some possibilities exist for shared use of the parking lot with an adjacent commercial or institutional land use, such as a movie theater or a church, which would have a need for the parking stalls at a different time from the lot's primary commuter use.

Finally, environmentally sensitive lands should be avoided if at all possible. If it is impossible to avoid significant impacts to the natural environment, proper mitigation should be included in the project budget and schedule. Moreover, the inability to obtain permits from regulatory agencies may jeopardize the use of a given site.

Important Criteria for Future Assessment

A number of additional criteria will need to be considered when making a final selection of which, if any, of the most highly ranked sites should be actually constructed. These criteria are beyond the scope of a planning-level analysis but need to be addressed in the final site selection. They include economic considerations such as the cost to acquire the land, the ease with which the land could be acquired, and the cost to develop the facility. Also, the existing land use, zoning and crime history of each site will need to be addressed. The current land use and zoning of a land parcel should support and not discourage the use of that parcel for a park-and-ride lot. Ideally, the parcel's zoning would permit the construction of the lot, or permit the construction as a conditional use. Parcels that would require a rezone application should not be excluded from the final selection analysis, but assessed with the understanding that any rezoning process could jeopardize the use of the site.

Potential Park-and-Ride Site Ranking

The Table 3 shows the results of the ranking of the relative merits of the various potential park-and-ride sites. The criteria on which the rankings are based and the methods by which scores for the criteria are allocated are described above and detailed in *Appendix A*.

Findings: Potential Park-and-Ride Lots

The top six rankings in alphabetical order for potential park-and-ride locations in the City of Newberg, as shown in Table 3, are as follows:

- Site C,
- Site D,
- Site O,
- Site P,
- Site Q, and
- Site V.

Any further refinement of the preferred sites listed above that is undertaken by the City in the future will need to consider economic, zoning and safety issues that were not addressed in the above rankings. Also, an incremental development plan should be considered for any site that is eventually selected for construction.

Table 3
Park-and-Ride Relative Ranking Results

Potential Park-and-Ride Sites	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**
Location																							
Ease of access from main arterial	5	5	**5**	**5**	5	5	5	5	5	5	5	5	5	5	**5**	**5**	**5**	3	3	3	5	**3**	5
Visibility from main arterial	5	3	**5**	**5**	3	3	0	0	0	0	0	0	3	3	**3**	**3**	**3**	3	3	3	5	**5**	5
Requires out-of-direction travel?	2	2	**3**	**3**	3	3	3	3	3	3	3	3	3	3	**5**	**5**	**5**	5	5	5	5	**5**	5
Impacts to local traffic circulation	5	5	**5**	**5**	5	5	5	5	3	3	3	3	3	3	**3**	**3**	**3**	3	3	3	5	**5**	5
Bike Route Access	3	5	**5**	**5**	3	3	5	5	5	5	5	5	5	5	**5**	**5**	**5**	3	3	3	3	**5**	5
Transit																							
Connection with future commuter rail	5	5	**5**	**3**	2	2	2	2	2	2	2	2	2	2	**2**	**2**	**2**	2	2	3	2	**2**	2
Ease of access for bus transit	5	3	**2**	**5**	3	3	2	2	2	2	2	2	2	2	**2**	**2**	**2**	2	2	3	5	**5**	5
Site Considerations																							
Appropriate adjacent land use	2	5	**2**	**5**	2	5	5	5	5	5	5	5	5	5	**5**	**5**	**5**	5	5	2	2	**3**	3
Size of facility	5	1	**5**	**5**	5	5	1	1	1	1	1	5	3	3	**5**	**5**	**5**	5	3	1	1	**5**	3
Potential for future expansion	2	1	**5**	**5**	1	2	2	2	1	1	1	2	1	1	**5**	**5**	**5**	1	1	1	1	**2**	1
TOTAL	39	35	**42**	**46**	32	36	30	30	27	27	27	32	32	32	**40**	**40**	**40**	32	30	27	34	**40**	39

Intra-City Fixed Route Bus Services

Six intra-city bus route options were examined, considering the location of the potential park-and-ride lots and transit stations and service needs to activity centers and high-density neighborhoods. This examination considered the existing local transit service and discusses possible alternative route patterns that may be preferable in the future.

Current fixed route bus operations

As previously noted, the Town Flyer, operated by the Chehalem Valley Senior Citizen's Council is the existing intra-city fixed bus service in the City of Newberg. The Town Flyer currently operates approximately six hours a day (9:15 a.m.-3:15 p.m.), Monday through Friday. The operational features and implications of the existing route structure and stop locations, shown in Figure 3 as Route A, for the Town Flyer are addressed in the future alternatives discussion below.

Future relationship between regional transit park-and-ride lots and local transit

The relationship between regional transit park-and-ride lots and local transit depends on the mode that is used to provide the regional service. In the following discussion, a regional bus service will be assumed. A regional bus park-and-ride site that is located outside the downtown area will likely not generate significant transit demand except for the peak hours when the regional commuter service is operating. Therefore, some method of connecting the local transit system to the regional bus system should be determined to maximize the ridership of both services. It is assumed that the most appropriate place for a central node ("Transit Center") for a local bus service pattern that has more than one route would be located in downtown Newberg. A downtown location is not compatible with a park-and-ride lot due to the amount of land required for the facility.

The method assumed in the local bus route assessment is as follows.

- A transit center (most likely just a curbside stop) for local and regional transit is located in the downtown along Ore 99W.
- The regional bus runs along Ore 99W rather than the proposed Newberg-Dundee Bypass and stops once in the downtown at the core of the local transit network. This should produce less than one minute delay to the regional service.
- After picking up local transit passengers in the downtown area, the regional bus proceeds along Ore 99W to access the second Newberg stop at the park-and-ride lot.

This assumed local/regional bus connection scenario has the following advantages:

- It enables local transit service to be focused on meeting local needs that exist throughout the day, rather than for brief periods, while still capturing as many regional transit rider trips as possible.
- Local transit services do not need to be planned around a park-and-ride facility, the location of which is not yet determined.

- It is envisaged that a downtown stop for the regional bus service would be a minimal curbside stop arrangement that may be utilized by local bus services as well. This would save the money and disruption that may be caused by using a dedicated regional bus stop.

However, the assumed scenario also has the following disadvantages:

- Any interaction between the regional commuter transit and local buses would benefit by extension to the current operating hours of local transit (both earlier and later).
- Regional buses must run on Ore 99W. However, since most of the potential park-and-ride sites are more accessible from Ore 99W than the proposed Newberg-Dundee Bypass, this would probably be a preferable operating scenario for the regional bus service whether or not a second stop to interchange with transit is used.

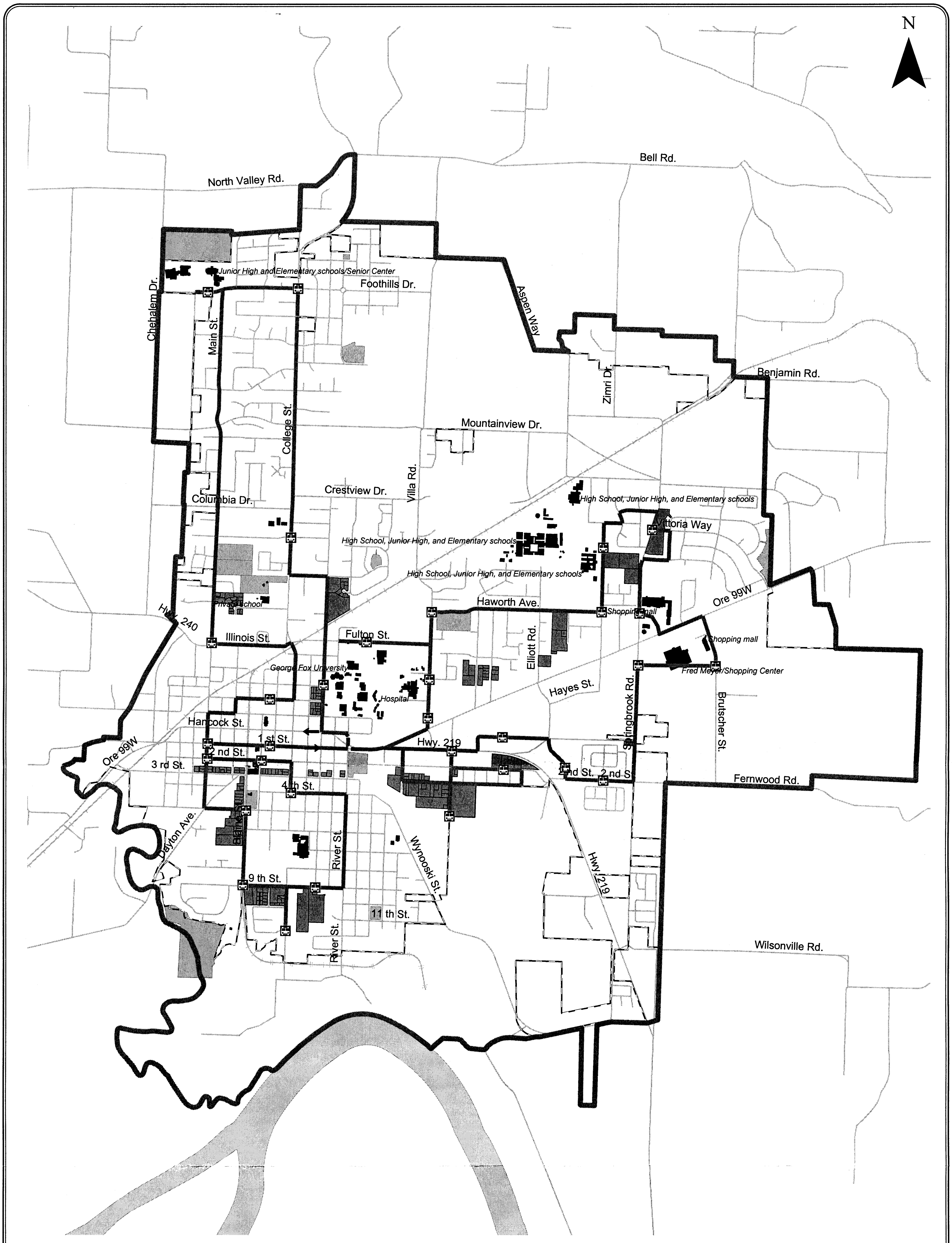
Proposed future local fixed route bus services

The transit element of the NDTIP referenced the Yamhill County Transit Needs Study, which stated that there is strong potential for transit use to grow in Newberg and suggested that a future investigation should develop options for local fixed route bus lines to serve the communities and tie into the express commuter routes. It made the specific suggestion that the existing Town Flyer single route could be split into two overlapping routes (one north-south route, the other east-west). Additionally, the NDTIP transit element advocated the eventual growth of the service time to serve the peak commute periods and the connection of the local bus routes to the proposed regional commuter service park and ride lots.

Possible Service Patterns

Using the NDTIP transit element as a starting point, the following four potential future route patterns for the local bus service were generated for discussion purposes.

- Possible Route Pattern 1: Existing Route Structure (shown conceptually in Figure 3).
- Possible Route Pattern 2: Broad Loop (shown conceptually in Figure 4).
- Possible Route Pattern 3: North-South & East-West Loops (shown conceptually in Figure 5).
- Possible Route Pattern 4: Maximum patronage, minimum cost service (shown conceptually in Figure 6)



PROPOSED SERVICE PATTERN 1: EXISTING TOWN FLYER ROUTE
NEWBERG, OR.

FIGURE
3

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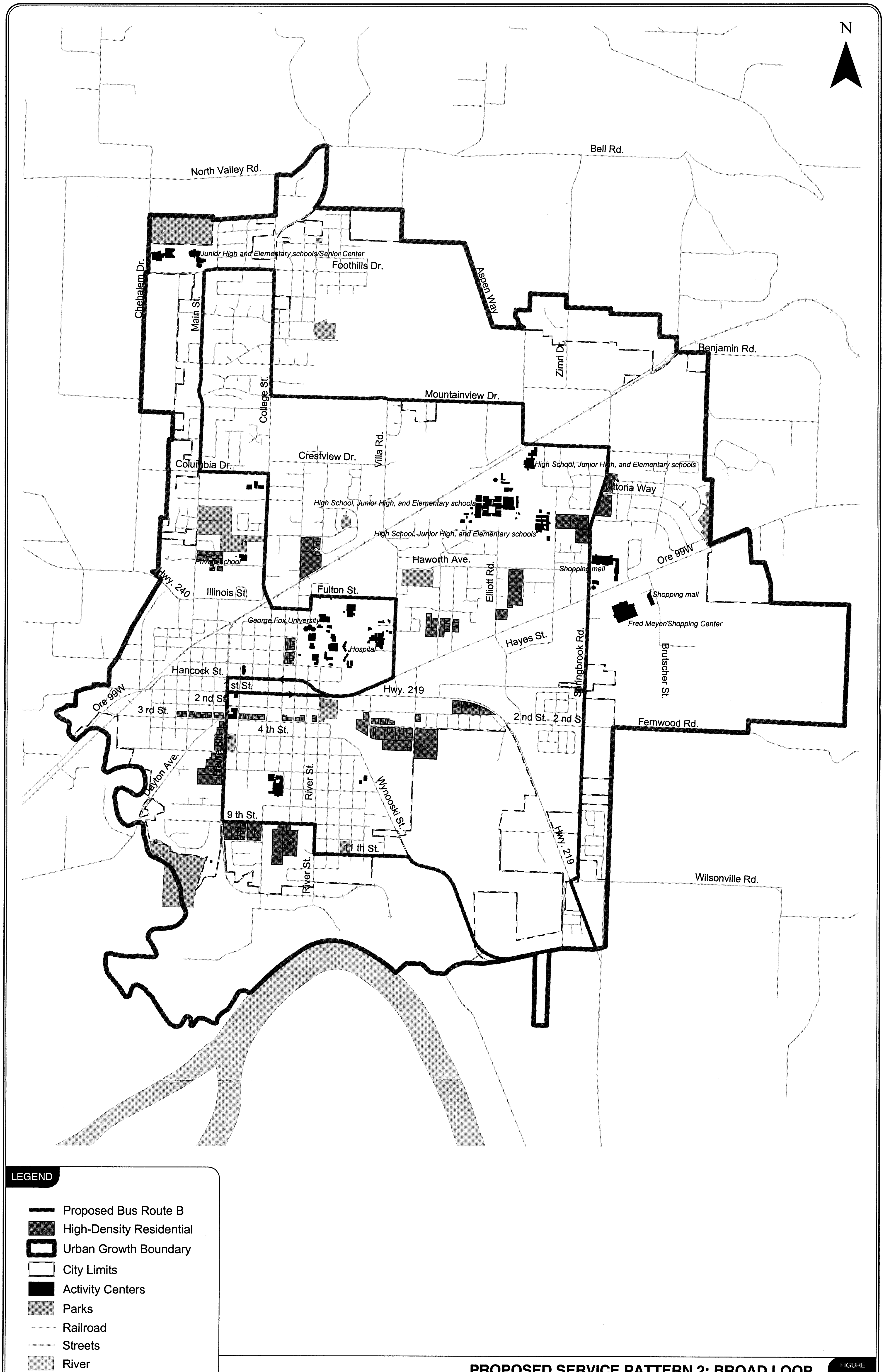

PROPOSED SERVICE PATTERN 2: BROAD LOOP
NEWBERG, OR.

FIGURE
4

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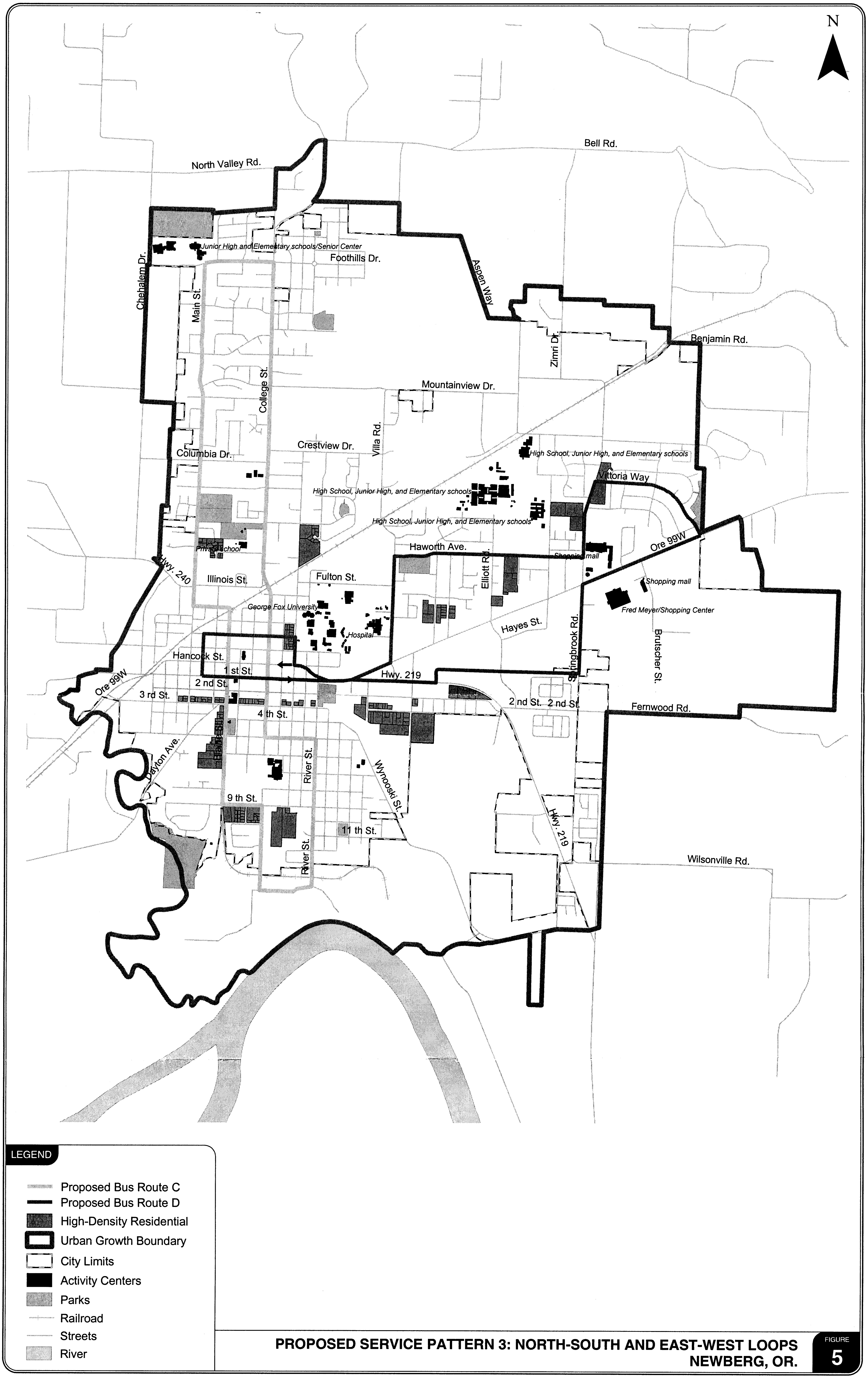

PROPOSED SERVICE PATTERN 3: NORTH-SOUTH AND EAST-WEST LOOPS
NEWBERG, OR.

FIGURE
5

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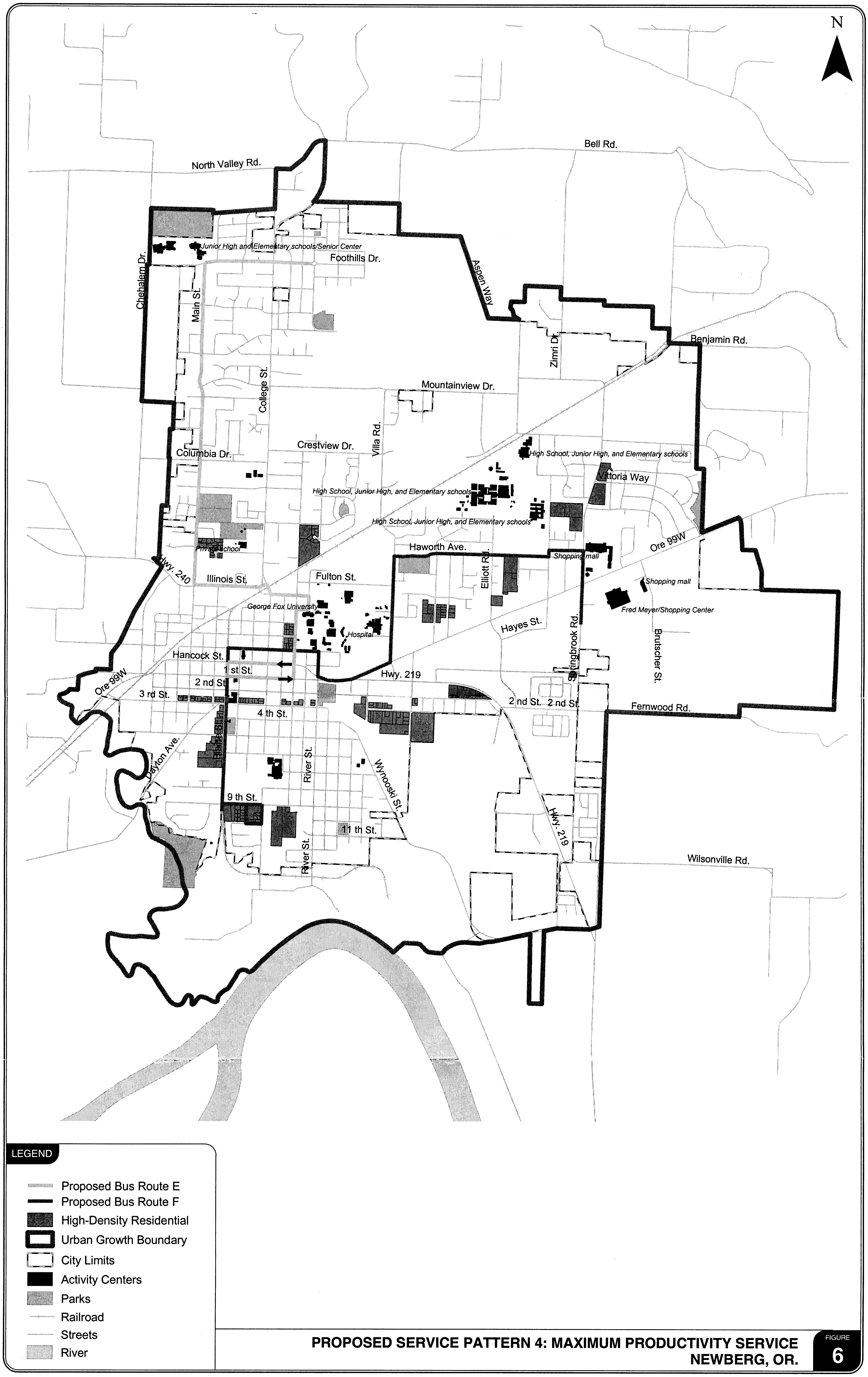

PROPOSED SERVICE PATTERN 4: MAXIMUM PRODUCTIVITY SERVICE
NEWBERG, OR.

FIGURE
6

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The following discussion describes the general operational features of each proposed route pattern, considers the advantages and disadvantages of each pattern for potential users and operators, and gives examples of similar route patterns (if any) in other locations in Oregon. Following the discussion, a Table 3 compares the geographic coverage, estimated frequency, and estimated journey times for the proposed service patterns.

1. Existing Route Structure

Pattern 1 is effectively the local transit service "no build" option and is illustrated in Figure 3. It assumes the continuation of the existing service pattern, shown as "Route A". The existing service has excellent service coverage, meaning that a large percentage of the urban area of the City of Newberg is near the Town Flyer route. However, the route serves all of the stops sequentially in a single run which takes approximately one hour to complete. The service effectively operates as a tangled one-way loop with numerous double-backs, reflecting its origins as a service provided primarily to senior citizens to access as wide a variety of destinations as possible but without an imperative for service speed. However, this history means that the service is very indirect and unattractive to all but captive users, since it is very time consuming to reach destinations nearby but against the direction of the loop.

At present, a single bus that can carry approximately 15 passengers provides the Town Flyer service. This means that the frequency is effectively the journey time of one hour plus a few minutes for a driver to break. The use of additional buses would enable the operation of the existing route pattern at higher frequencies, hourly in both directions around the loop, or half hourly in one direction, and would increase the service's attractiveness to potential users. However, the benefits and costs of such an increase in service provision would need to be investigated in more detail.

Interchange with the proposed regional bus service could be provided at a stop in downtown Newberg but may also be able to be provided at a park-and-ride lot if that facility is located adjacent to the route. However, as discussed above, the time saving for the regional bus service associated with co-locating the park-and-ride lot and the local bus transfer stop would be minimal. Therefore, the overall performance of both the regional and local bus services is not affected by the local-to-regional bus transfer location chosen for this service pattern.

2. Broad Loop

Pattern 2, illustrated in Figure 4, is similar in concept to the existing Town Flyer service described in Pattern 1 because the single "Route B" functions as a large loop that covers most of the City. However, it has fewer double-backs and intersects itself on fewer occasions, providing a shorter travel time for the complete circuit but provides less geographic coverage. The lower geographic coverage is a trade-off made to create a faster service. However, if the trade-off is carefully made, the loss in coverage and the consequent impact on dependent users can be minimized. Therefore, this pattern, which is analogous to the service provided in Woodburn, Oregon would seem to offer advantages over Pattern 1.

Interchange with the proposed regional bus service for this pattern could be provided at a stop in downtown Newberg at the Blaine Street/1st Street intersection. It is less likely that local buses following this pattern could serve a park-and-ride facility because the geographic coverage is lower than for Pattern 1, but a stop may be able to be provided at a park-and-ride lot if that facility is located adjacent to the route.

3. North-South & East-West Loops

Pattern 3, illustrated in Figure 5, is a comprised of "Route C" and "Route D", which are both radial routes from downtown Newberg. They are loops rather than out-and-back linear routes and therefore provide a reasonably broad geographic coverage. However, this geographic coverage is traded for slower journey times than would be possible with more linear routes.

The two routes comprising this operating pattern would interact in a "pulse-time transfer" manner similar to the existing services in Corvallis and Albany, Oregon. Such a pattern has the advantage of focusing service provision on different radial routes at appropriate levels, depending on the transit use in a particular corridor, but still permits cross-town travel by providing minimal waiting time transfers at a central point. A good example of this service is provided in Corvallis, Oregon. The Corvallis Transit System utilizes 11 bus fixed bus routes with two timed transfer points (at the Downtown Intermodal Mall or Timberhill Shopping Center). Pattern 3 is designed to use only one timed transfer point (at Blaine Street/1st Street in downtown Newberg), based on the relative size of downtown Newberg. This timed transfer point, where each route will arrive at the same time to allow passengers to swap from "Route C" to "Route D" or vice versa, will also be the logical location for the second regional bus stop in Newberg. Therefore, the local bus to regional bus transfers would occur at this location rather than at a more remote park-and-ride lot.

4. Maximum Productivity Service

Pattern 4, illustrated in Figure 6, is a comprised of "Route E" and "Route F", which are both radial routes from downtown Newberg. They are linear rather than loops and therefore provide the least geographic coverage. However, this lack of geographic coverage creates the fastest journey times and highest frequencies than the other service patterns, for the same cost. Since most of the primary trip generators and high-density residential uses are served in this manner, the overall route pattern is expected to produce higher patronage per bus revenue hour than the other options.

This service pattern operates on the same pulse time transfer principal described in Pattern 3 and would have a regional bus stop adjacent to the time transfer point at the Blaine Street/1st Street intersection.

Comparison of Patterns

As reflected in the discussion of the service Patterns 1-4, the planning-level comparison of the service patterns revolves around the geographic coverage, estimated frequency, and estimated journey time provided by each. The results represented in Table 4 is based on a visual inspection of the route layouts of each pattern and the assumptions that the more extensive the coverage, the shorter the journey time, and the higher the frequency, the better a service pattern is considered to perform.

Table 4
General Comparison of Patterns 1-4

Pattern	Geographic Coverage	Average Journey Time	Frequency[1]
1	Most extensive	Longest	Lowest
2	2nd most extensive	2nd longest	2nd lowest
3	2nd least extensive	2nd shortest	2nd highest
4	Least extensive	Shortest	Highest

1. Frequency for a given number of service vehicles

A more specific operational assessment of the performance of each of the patterns for a given investment in vehicles is shown in Table 5. The number of vehicles assumed to be used in each pattern is two. Therefore, those patterns featuring only one route will be assumed to have two vehicles operating on that route and those with two routes will be assumed to utilize one vehicle on that route. The approximate headway shows the time spacing between buses at a point along the route and functions as an estimate of the frequency of the service.

Table 5
Operational Comparison of Patterns 1-4

Pattern	Route	Route length (miles)	Approximate Journey Time[1] (minutes)	Approximate Headway (minutes)[2]	No. of Vehicles on Route
1	A	12.9	60	40	2
2	B	10.3	48	30	2
3	C	6.1	28	30	1
	D	5.5	25	30	1
4	E	3.2	15	20	1
	F	3.3	15	20	1

1. Based on the average operating speed of 13 mph for the existing Town Flyer.
2. Includes driver layover time and allowance for buses at the transfer point.

An inspection of Table 5 reveals the following features of the proposed service patterns:

- The estimated journey times for each pattern reflect the rankings in Table 4 with Pattern 4 being the fastest and Patterns 1, 2, and 3 taking approximately four times, three times and twice as long, respectively.
- Pattern 4 has buses serve the same point about twice as often as Pattern 1 and 50 percent more often than Patterns 2 and 3 for the same investment in vehicles

Findings: Local Bus Pattern Assessment

The service patterns options all allow for transfers with the proposed regional bus service if the regional service adopts a two-stop operating pattern in Newberg. Patterns 1 and 2 may allow for a transfer even if a one-stop pattern is adopted. However, as mentioned, the ability to transfer at the park-and-ride lot provides little advantage to either the local or regional bus service.

Therefore, this feature of Patterns 1-4 should not be a determining factor in deciding, which of them is most appropriate for a future local bus service in Newberg.

The selection of the most appropriate service pattern for the City of Newberg's fixed route bus service depends on a decision about what type of rider the service should be aimed at. This is a community decision: however, in the absence of a clear public preference, Pattern 4 can be recommended as the most promising option.

Pattern 4 is recommended because it provides the greatest potential ridership for the number of vehicles operated. The anticipated higher ridership is due to the concentration of route miles around high-density residential and trip attractors, and the short length of "Routes E" and "Route F", which creates frequency and journey time advantages. It is recognized that this pattern represents a shift away from serving senior citizens and persons with disabilities who do not live nearby to the new route. However, the existing dial-a-ride service in the City of Newberg currently has three times the annual patronage than the existing Town Flyer service. Therefore, it is anticipated that the dial-a-ride service is a more appropriate and effective method of providing transit services to these potential users. A more detailed study into whether this assumption is correct should be carried out before any service changes are made.

Recommendations

Potential park-and-ride locations

The top six potential park-and-ride lots should be incorporated into the TSP and further analysis should be undertaken to select one of them. The six highest ranked potential park-and-ride lots in alphabetical order are:

- Site C,
- Site D,
- Site O,
- Site P,
- Site Q, and
- Site V.

A further, more-detailed analysis should be undertaken by the City to determine which, if any, of the highest-ranked sites should be selected. This analysis should include consideration of the economic, zoning, and safety factors that were not considered in this memorandum.

It is also recommended that any park-and-ride lot of 150-200 stalls capacity that is eventually developed should have all the necessary land purchased at the outset but should be constructed in increments of 50 stalls to allow capacity to match demand as it grows over time.

Local bus service patterns

The City needs to facilitate a community decisions as to which types of users the local fixed route bus system should seek to serve. This decision will determine whether the preference is for speed and frequency, or for service coverage, and may influence the overall funding level for local transit.

In the absence of a clear community preference, Pattern 4 is recommended since it provides the highest potential ridership per revenue mile and the successful existing dial-a-ride service should be able to adequately cater to senior citizens and persons with disabilities, who would be most disadvantaged by the lower geographic coverage of this option.

General

The City should consult with the existing local and regional transit providers before pursuing any service changes. Further it should discuss any potential changes to the existing local bus services with other agencies and jurisdictions to avoid any unnecessary duplication of effort in the provision of local and regional transit services.

The City should seek to ensure that any future regional bus services utilize the existing Ore 99W to travel through Newberg. This provides maximum flexibility in the location of park-and-ride lots and also allows for a possible second stop within Newberg that provides a more cost-effective transfer between the local and regional bus networks.

Appendix A

Park-and-Ride
Evaluation Criteria

Park-and-Ride Evaluation Criteria

Location			
Ease of access from main arterial	Along major arterial *5 points*	Within ¼ mile of major arterial *3 points*	Within ½ mile of major arterial *2 points*
Visibility from main arterial	Clearly visible *5 points*	Partially visible *3 points*	Not visible *0 points*
Requires out-of-direction travel?	Upstream from most residential *5 points*	Centrally located, could require some backtracking *3 points*	Downstream from downtown *2 points*
Impacts to local traffic circulation	No impact *5 points*	Some impact *3 points*	Definite impact *2 points*
Bike Route Access	Bike route at site *5 points*	Bike route within 1 mile *3 points*	Bike route within 3 miles *2 points*
Transit			
Connection with future commuter rail	Adjacent to railroad tracks *5 points*	Within ¼ mile of railroad tracks *3 points*	Within ½ mile of railroad tracks *2 points*
Ease of access for bus transit	Requires minimal route deviation *5 points*	Requires some route deviation *3 points*	Requires moderate route deviation *1 points*
Site Considerations			
Appropriate land uses adjacent to site	Commercial, public, or industrial *5 points*	High-density residential, medium-density residential, mixed-use *3 points*	Single-family residential *2 points*
Size of facility (assume 150-200 stalls, ≈ 1.5 acres)	Size between 1.5-3 acres *5 points*	Size greater than 3 acres *3 points*	Size smaller than 1.5 acres *1 points*
Potential for future expansion (assume 50-100 stalls)	Surface expansion possible within current footprint *5 points*	Structure expansion possible within current footprint *2 points*	No expansion possible within current footprint *1 points*

Sources:

1. American Association of State Highway and Transportation Officials. Guide for the Design of Park-and-Ride Facilities. American Association of State Highway and Transportation Officials, 1992.
2. Spillar, R.J., Park-and-Ride Planning and Design Guidelines. Parsons Brinckerhoff, Inc., 1997.
3. Yamhill County Commuter Rail Study, Final Report, January 1998

Appendix Q

Ordinance 2005-2619

ORDINANCE NO. 2005-2619

AN ORDINANCE ADOPTING THE NEWBERG TRANSPORTATION SYSTEM PLAN, AND AMENDING THE NEWBERG DEVELOPMENT CODE AND COMPREHENSIVE PLAN POLICIES

RECITALS:

1. The Newberg Transportation System Plan originally was adopted in June 1994.

2. Beginning in 2001, the City began the process to update the plan to reflect changes since the original adoption.

3. City staff, in conjunction with Kittelson and Associates, have prepared an updated draft Transportation System Plan.

4. The City held three public events, five Planning Commission workshops, and several public hearings to consider and refine the proposed plan.

5. The Newberg Planning Commission has recommended adoption of the proposed transportation system plan.

6. On April 4, 2005, after proper notice, the City Council held a hearing to consider adoption of the Transportation System Plan.

7. The City Council deliberated on April 18, 2005, May 2, 2005, and May 16, 2005.

THE CITY OF NEWBERG ORDAINS AS FOLLOWS:

1. The findings shown in Exhibit A are hereby adopted.

2. The Newberg Transportation System Plan, as shown in Exhibit B, along with the technical appendix shown in Exhibit C and the amendments shown in Exhibit F are hereby adopted.

3. The Development Code amendments shown in Exhibit D are hereby adopted.

4. The Comprehensive Plan policy amendments shown in Exhibit E are hereby adopted.

5. The City Council initiates a review of the items listed in Exhibit G.

6. The June 1994 Transportation System plan, adopted by Ordinance 2384, and as amended, is

hereby repealed.

- **EFFECTIVE DATE** of this ordinance is 30 days after the adoption date, which is: ________, 2005.

ADOPTED by the City Council of the City of Newberg, Oregon, this 16th day of _May_, 2005, by the following votes:

AYE: **NAY:** **ABSENT:** **ABSTAIN:**

____
James H. Bennett, City Recorder

ATTEST by the Mayor this _______ day of ______, 2005.

____
Bob Stewart, Mayor

List of Exhibits
Exhibit A: Findings
Exhibit B: Newberg Transportation System Plan Draft March 2005
Exhibit C: Technical Appendix
Exhibit D: Development Code Text amendments
Exhibit E: Comprehensive Plan Policy Amendments
Exhibit F: Amendments to the March 2005 Draft Transportation System Plan
Exhibit G: Planning Commission Recommendations for further study

LEGISLATIVE HISTORY

By and through _Newberg Planning Commission_ at _3 / 10/2005_ meeting. Or, ___ None.
(committee name) *(date)* *(check if applicable)*

EXHIBIT A TO ORDINANCE 2005-2619 – FINDINGS

I. Background

Beginning in March 2002, the City of Newberg, in conjunction with ODOT, initiated a study of the City's transportation system with the intent of updating the City's Transportation System Plan (TSP). The TSP will guide the management and development of the of transportation facilities within Newberg over the next 20 years, incorporating the community's vision while remaining consistent with state, regional and other local plans. The TSP examines and evaluates existing future transportation system conditions, alternatives and finance plan. The contents of the updated TSP were guided by requirements of ORS 197.712 and the Transportation Planning Rule (OAR 660-060-0045). These documents require that the TSP include the following elements:

- a road plan for a network of arterial and other streets
- a public transit plan
- a bicycle and pedestrian plan
- an air, rail, water and pipeline plan
- a transportation financing plan, and
- policies and ordinances for implementing the TSP

Amendments to Section II (K), *Transportation* of the Comprehensive Plan and to various chapters of the Development Code are proposed in order to implement the updated TSP. The TSP will be adopted as the transportation element of the Comprehensive Plan.

The Newberg Technical Advisory Committee (NTAC), consisting of representatives form local, regional and state agencies affected by the project met six times between June 2002 and January 2005. NTAC members worked with the City and consultant team to provide information on technical and regulatory matters to be considered and their possible outcomes. They also reviewed materials and maintained communication between the project team and the agencies they represented. In addition, public comments were invited at key steps in the process through a series of three public events. Also, the Newberg Planning Commission held five public workshops prior to holding their first public hearing.

I. Summary of Key Policy Issues

The following text summarizes the major transportation policy changes that are recommended to the Newberg Comprehensive Plan.

- Goal 1: Establish cooperative agreements to address transportation based planning, development, operation and maintenance. Add a new policy that specifically addresses the TPR requirement that TSP be developed consistent with state and federal air and water quality laws. Also add two new policies calling for cooperation in planning for the bypass and commuter rail services. Also clarify existing policies to expand the definition of transit to include commuter rail.
- Goal 2: Establish consistent policies which require concurrent consideration of transportation/land use system impacts. Add four new policies that address land use and transportation consistency between the city's comprehensive plan and major ODOT corridor plans, the Newberg Dundee Bypass plan, and city parking and downtown development strategies.
- Goal 3: Promote reliance on multiple modes of transportation and reduce reliance on the automobile. Add a policy supporting development of transportation demand management programs and strategies and amend existing policies to include language that reflects multi-

modal objectives outlined in the TPR.

- Goal 4: Minimize the impact of regional traffic on the local transportation planning system. Amend or replace policies related to the Bypass to reflect the conclusions of the Location EIS alignment and access recommendations. Replace policies related to OR 219 to be consistent with ODOT preferences for the use of corridor management plans. Also revise several other policies to reflect city preferences for development of a northern arterial and reducing traffic impacts on local streets.
- Goal 5: Maximize pedestrian, bicycle and other non-motorized travel throughout the City. Amend policy a. to include terms that are consistent with the TPR and add policy i. to include consideration of non-motorized projects in prioritizing system investment.
- Goal 6: Provide effective levels of non-auto oriented support facilities (e.g. bus shelters, bicycle racks, etc.). Add a new policy that addresses Americans with Disabilities Act requirements and clarify the meaning of other policies.
- Goal 7: Minimize the capital improvement and community costs to implement the transportation plan. Clarify the meaning of the terms Future Street Plan and Specific Area Plan and required contents of these plans. Also clarify the meaning of other policies using terms that are consistent with the TPR.
- Goal 8: Maintain and enhance the City's image, character, and quality of life. Add and amend policies relating to parking to consistent with the TPR and supporting coordinated plans for off and on street parking downtown. Revise policy text to be consistent with the TPR.
- Goal 9: Create effective circulation and access for the local transportation system. Modify policies for street classifications to be consistent with terms and requirements in the TPR. Add a new roadway classification for the Bypass.

II. Summary of Newberg Development Code (NDC) Issues

The following text summarizes the major changes that are recommended to the NDC, Chapter 151.

- NDC 151.003: Definitions – New definitions are added and many existing terms are clarified to ensure consistence between the code and the TSP. In particular, the term *Transportation Facilities and Improvements* is defined.
- Many sections of Chapter 151 are amended to allow *Transportation Facilities and Improvements* as a permitted use in all zoning districts. Transit Centers are permitted in some districts and Transit Shelters are conditionally permitted in yard setbacks.
- NDC 151.043 is clarified to provide the Oregon Department of Transportation (ODOT) the opportunity to comment on development applications that may affect state transportation facilities.
- NDC 151.703 in amended to define and clarify access spacing requirements for all roadway classifications.
- Several sections of the code are amended to clarify requirements for preparing a traffic impact study.
- NDC 151.243.1 and 151.247 are amended to clarify requirements and approval procedures for Future Street Plans.
- Various sections within NDC 151.122 are amended to clarify requirements for demonstrating compliance with the city's TSP and with the state Transportation Planning Rule (TPR) for comprehensive plan and zoning map amendments.
- Various sections of the code are amended to clarify design and connectivity requirements for

private walkways, public walkways, and pedestrian connections from the ends of cul-de-sacs.

- Various section of the code are amended to clarify requirements for sidewalks, bike lanes, signs, and lane widths. In particular, NDC Table 151.685 is added, which summarizes Newberg street design standards.
- A variety of section renumbering and reorganization changes are recommended to improve the organization of the code document.

III. Findings of Fact

FINDINGS FOR A TEXT AMENDMENT TO THE CITY OF NEWBERG COMPREHENSIVE PLAN AND DEVELOPMENT CODE

Consistency with Statewide Planning Goals

The proposed Transportation system Plan and related Comprehensive Plan and Development Code text amendments are consistent with all applicable Statewide Planning Goals. The proposed amendments implement the following Statewide Planning Goals:

> ***Statewide Goal 1: - CITIZEN PARTICIPATION***
> *To develop a citizen involvement program that insures the opportunity to be involved in all phases of the planning process.*

Finding: Three public events were held at key steps in the process to provide citizens with information about the project and also give them with an opportunity to provide input. The events were advertised to the public through flyers in utility bills mailed to each Newberg resident, and the input taken at each of the public events was carefully considered before final recommendations were made. Appendix B of the TSP includes minutes from each of the following public meetings:

Event #1: July 11, 2002.
This event included presentations of project goals, schedule and anticipated products. In addition to the public, TAC members, Planning Commission and City Council were invited to attend and participate. Approximately five of the attendees provided comments.

Event #2: April 23, 2003
This event included the presentation of display boards outlining current and possible future transportation conditions, alternatives to incorporating the proposed Newberg-Dundee bypass of Ore 99W into the existing network of local roads, and proposed revisions to the City's land use planning documents. Approximately 30 people attended Event #2.

Event #3: August 26, 2003
Consultants presented display boards summarizing proposed improvements to the transportation system. Approximately 14 people attended.

In addition, the Newberg Planning Commission held five public workshops. These were held on November 6, 2003, November 23, 2003, December 4, 2003, January 22, 2004, and October 13, 2004.

As a Type IV legislative action, pursuant to Section 151.077, the city must provide notice in a “newspaper of general circulation” at least 10 days prior to the first public hearing on the action**.** Notices of the hearings of the Newberg Planning Commission were mailed to interested parties and property owners on November 30, 2004 and December 23, 2004, and published in the Newberg Graphic on December 4 and December 29, 2004. Notice of the City Council hearing published on March 12, 2005 and mailed to affected property owners and interested parties on March 11, 2005 and March 15, 2005.

The Planning Commission held public hearings to consider adoption of the project on December 9, 2004, January 13, 2005, and January 26, 2005.

The City Council held a public hearing to consider adoption of this ordinance April 4, 2005.

Statewide Goal 2: Land Use Planning

To establish a land use planning process and framework as a basis for all decisions and actions related to the use of land and to assure an adequate factual base for such decisions and actions.

Finding: While the proposed TSP will be adopted as the transportation element of the City’s Comprehensive Plan, which was acknowledged by LCDC in 1979 as complying with state planning goals. It underwent a major revision in 1990. The City adopted a transportation system plan in 1994. This plan is an update to that original plan. The proposed TSP is consistent with the City’s Comprehensive Plan. The Plan Text Amendment and Development Code Text Amendment are being processed as a Type IV legislative action, consistent with the Newberg Development Code Section 151.025.

TSP development was consistent with the planning process required by Goal 2. It underwent a phased process, which moved from a broad identification of issues and collection of data to establish a factual basis for the plan to specific alternatives and solutions for dealing with identified issues. Opportunity for plan review was provided at all phases through the TAC and public events. The development of the TSP was coordinated with all applicable plans of affected agencies. Implementation measures for the TSP include amendments to the Development Code, which affect land uses throughout the City as they relate to transportation improvements and facilities. These are consistent with the adopted and acknowledged Comprehensive Plan.

The amendment therefore conforms to the established land use planning process and framework consistent with Goal 2.

Statewide Goal 3: Agricultural Lands

Agricultural lands shall be preserved and maintained for farm use, consistent with existing and future needs for agricultural products, forest and open space and with the state's agricultural land use policy expressed in ORS 215.243 and 215.700.

Finding: The study area for the Newberg TSP generally consists of the area within the Newberg Urban Growth Boundary (UGB) and the Urban Reserve Areas (URA). In a few instances, some planned roadways continue outside the study area. Since lands inside the Urban Growth Boundary are designated for urban uses, planned transportation facilities inside the UGB are also consistent with Statewide Goal 3. OAR 660-021-0040 (6) expressly authorizes planning for urban transportation facilities inside the urban reserve area, provided actual provision of such facilities does not occur until inclusion of the area into the UGB. Accordingly, road facilities shown in designated urban reserve areas are intended for construction only upon inclusion of the area within the UGB. It should be noted that all areas within the Newberg URA are exception areas.

The 2005 update to the Newberg Transportation System Plan included two new roads that extend beyond the Urban Growth Boundary and urban reserve areas: the Wynooski Road realignment, and the local street connection from the Greens Drive to Corral Creek Road. Streets located in rural areas fall under Yamhill County's jurisdiction.

OAR 660-012-0065 identifies transportation facilities, services and improvements which may be permitted on rural lands consistent with Goals 3, 4, 11, and 14 without a goal exception. All the roadways planned are or can be approved in accordance with this rule and without the need for a goal exception. OAR 660-12-0065 (g) allows construction of New access roads and collectors within a built or committed exception area, or in other areas where the function of the road is to reduce local access to or local traffic on a state highway. These roads shall be limited to two travel lanes. Private access and intersections shall be limited to rural needs or to provide adequate emergency access.

The Wynooksi Road realignment is intended to provide adequate separation between Wynooski and the future OR219/OR18 interchange. The function on Wynooski Road is not changed by this realignment. This meets the definition under OAR 660-12-0065 (2) (f), which states:

"Realignment" means rebuilding an existing roadway on a new alignment where the new centerline shifts outside the existing right of way, and where the existing road surface is either removed, maintained as an access road or maintained as a connection between the realigned roadway and a road that intersects the original alignment. The realignment shall maintain the function of the existing road segment being realigned as specified in the acknowledged comprehensive plan;

A realignment is allowed in rural areas without a goal exception under OAR 660-12-0065 (3) (d). Thus, this may be allowed without a goal exception.

The Greens access road is necessary to provide adequate emergency access. The Greens access road provides emergency access to an area that is bounded on two sides by resource land, one side by a creek, and one side by Fernwood Road. Two access are necessary for emergency and safety purposes. One access has been made to Fernwood Road. Access across the creek is unlikely due to the environmental permits needed. Thus, the second access needs to be through EFU zoned land. Thus, this road provides a second access for approximately 290 lots that otherwise have only one access to Fernwood Road. The second access is needed not only for emergency vehicles, but also for passenger vehicle exiting in case the first access is blocked. This second access is allowed under OAR 660-12-0065 (o) Transportation facilities, services and improvements other than those listed in this rule that serve local travel needs. The travel capacity and level of service of facilities and improvements serving local travel needs shall be limited to that necessary to support rural land uses identified in the acknowledged comprehensive plan or to provide adequate emergency access.

Because these three road segments are within exclusive farm use districts, construction of these facilities must meet the standards of OAR 660-12-0065(5), which states as follows:

For transportation uses or improvements listed in subsection (3)(d) to (g) and (o) of this rule within an exclusive farm use (EFU) or forest zone, a jurisdiction shall, in addition to demonstrating compliance with the requirements of ORS 215.296:

(a) Identify reasonable build design alternatives, such as alternative alignments, that are safe and can be constructed at a reasonable cost, not considering raw land costs, with available technology. Until adoption of a local TSP pursuant to the requirements of OAR 660-012-0035, the jurisdiction shall consider design and operations alternatives within the project area that would not result in a substantial reduction in peak hour travel time for projects in the urban fringe that would significantly reduce peak hour travel time. A determination that a project will significantly reduce peak hour travel time is based on OAR 660-012-0035(10). The jurisdiction need not consider alternatives that are inconsistent with applicable standards or not approved by a registered professional engineer;

(b) Assess the effects of the identified alternatives on farm and forest practices, considering impacts to farm and forest lands, structures and facilities, considering the effects of traffic on the movement of farm and forest vehicles and equipment and considering the effects of access to parcels created on farm and forest lands; and

(c) Select from the identified alternatives, the one, or combination of identified alternatives that has the least impact on lands in the immediate vicinity devoted to farm or forest use.

The Newberg Transportation System Plan contains a detailed analysis of reasonable build design alternatives, including alternative alignments the facilities. These alternatives are detailed in the plan text. This satisfies the alternatives analysis required under (a) above.

The Wynooski Road realignment will have very minimal effects on farm practices in the area. The property where the realignment is generally proposed has no structures or facilities. It is bounded on one side by OR 219, and on the other two sides by properties within the Newberg UGB or URA. Because of this, the property is a fairly isolated farm parcel. The road construction should have no effects on the movement of farm and forest vehicles other than on the property itself. The final alignment should be designed to not divide the property as far as practical, which would minimize the effects on traffic movement of farm vehicles. Farm access could be taken from the new Wynooski realignment.

The Greens access road is designed to be in a location that is shortest distance between the Greens property and Corral Creek Road. It is in an area that has an existing emergency access road. Thus, it will have the smallest possible impacts to farm land and farm practices.

The proposed Wilsonville Road/Springbrook Road/OR219 intersection improvement lies entirely within the Newberg Urban Growth Boundary. The alternatives to the proposed project included in the Draft Newberg TSP update all lie outside Newberg's UGB in land zoned for Exclusive Farm Use (EFU). Any realignment of an existing intersection that would lie in EFU-zoned land outside the UGB requires a Conditional Use permit from Yamhill Co. In order obtain this Conditional Use permit, the applicant must show that there are no other reasonable alternatives with lesser impacts to EFU-zoned land. Therefore, since the proposed project does not require a conditional use permit, *and* has lesser impacts on EFU land than the alternatives described in the Draft TSP, or any other alternatives that would require a Conditional Use permit. Accordingly it best meets Goal 3 objectives.

Thus, in all cases, the alternatives selected for inclusion in the plan have the least impact on lands in the immediate vicinity devoted to farm or forest use.

> ***Statewide Goal 4: Forest Lands***
> *To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the*

> *continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.*

Finding: None of the lands where transportation facilities are planned are designated forest resource lands. The plan is consistent with Goal 4.

> ***Statewide Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources***
> *To protect natural resources and conserve scenic and historic areas and open spaces.*

Finding The treatment of resources regulated under Goal 5 will not change as a result of the TSP update, and therefore the goal is otherwise not relevant to this amendment. The designated natural areas that could be affected are within stream corridors. The final alignment of the Newberg Dundee Bypass is specifically allowed under City's stream corridor protection provisions. Based upon these findings, the TSP update is consistent with Goal 5.

> ***Statewide Goal 6: Air, Water and Land Resources Quality***
> *To maintain and improve the quality of the air, water and land resources of the state.*

Finding: The addition of one policy to Section K of the Newberg Comprehensive Plan associated with the TSP update will enhance Goal 6 protections. The new policy K (1)(b) states that "The City shall work to ensure that the transportation system is developed in a manner consistent with state and federal standards for the protection of air, land, and water quality, including the State Implementation Plan for complying with the Clean Air Act and Clean Water Act.

Proposed text amendments to Section K of the Newberg Comprehensive Plan also will help protect air quality by encouraging the development and use of transit and alternative modes. In particular, text amendments to K(1)(g), K(3)(a)(8, and 9), K(3)(c), K(5)(i), and K(9)(a)(3,4, and 5) are intended to promote and enable the use of alternative modes. Additionally, several of the proposed amendments to the Development Code associated with the TSP update related to the enhancement of alternative modes will serve to improve air quality.

The treatment of resources regulated under Goal 6 will not change as a result of the TSP update, and therefore the goal is otherwise not relevant to this amendment. Based upon these findings, the TSP update is consistent with Goal 6.

> ***Statewide Goal 7: Areas Subject to Natural Disasters and Hazards***
> *To protect people and property from natural hazards.*

Finding: The TSP update and associated changes to Section K of the Comprehensive Plan or Development Code do not include any changes relevant to management of areas subject to natural disasters and hazards so the goal is not relevant to this amendment.

> ***Statewide Goal 8: Recreational Needs***
> *To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.*

Finding: The TSP update does not include any changes related to management of recreational resources, so this goal is not relevant to the amendment.

> ***Statewide Goal 9: Economic Development***
> *To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.*

Finding: The TSP update will provide for the continued orderly development of the City's street network which is vital to economic development activity. Testimony has been given regarding the Wilsonville/Springbrook/219 reconfiguration project as it relates to Goal 9. While this project does involve the use of vacant industrial land, it also provides significant benefits to the overall state and local transportation system, including safe and efficient movement of freight and goods. Most importantly, this project will eliminate a significant safety problem enhancing the efficiency of the transportation system which connects the industrial areas to the south of Newberg to Highway 99W and on to the Portland market area. Written and oral testimony addresses these benefits, and shows that the plan does comply with Goal 9.

> ***Statewide Goal 10: Housing***
> *To provide for the housing needs of citizens of the state.*

Finding: The TSP update will not change any City requirements related to housing, so this goal is not relevant to the amendment.

> ***Statewide Goal 11: Public Facilities and Services***
> *To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.*

Finding: Transportation facilities are identified as public facilities under this goal. OAR 660-011-0035(1) requires,

> *The public facility plan shall include rough cost estimates for those sewer, water, and transportation public facility projects identified in the facility plan . . .*

Section 7.1.1, *Planned Transportation Facilities and Major Improvements* includes two tables identifying street and road improvement projects along with cost estimates and potential funding sources for each. The tables are divided into capacity and non-capacity improvements.

Other public facility projects, for example water, sewer and public transit improvements, are identified in other long range planning documents adopted separately from the TSP.

The cost of the Wilsonville/Springbrook/219 project is estimated at about $3.6 million, and will be funded by ODOT as a safety improvement project.

> ***Statewide Goal 12: Transportation***
> *To provide and encourage a safe, convenient and economic transportation system.*

Finding: OAR 660 Division 12 is the Transportation Planning Rule (TPR) that implements statewide planning Goal 12. In April 1991, the Land Conservation and Development Commission (LCDC), with the concurrence of ODOT, adopted the Transportation Planning Rule (TPR), OAR 660-12. The table below outlines the requirements Transportation System Plan (left column) listed in the TPR and how each of the requirements has been addressed in the City of Newberg TSP (right column). The comparison demonstrates that the City of Newberg TSP is in compliance with the provisions of the TPR. Only applicable sections of the OAR have been included in the table. Findings responding to subsequent sections of the TPR (660-012-0045 through 660-012-0060) will follow.

TPR Requirements by Section	Findings
OAR 660-012-0015: Preparation and Coordination of the TSPs	
(3) Preparation, adoption, and amendment of Local TSPs	
(a) Local TSPs shall establish a system of transportation facilities and services adequate to meet identified local transportation needs and shall be consistent with adopted elements of regional and state TSPs.	Chapters3 and 4 of the TSP document the City's existing conditions and future local transportation needs. Chapter 6 contains the City's TSP which provides a system of transportation facilities and services to meet these needs. These chapters have been prepared in accordance with the Oregon Transportation Planning Rule and the Oregon Highway Plan.
(b) Coordinate the preparation of the local TSP to assure regional and state transportation needs are met.	All state transportation needs were considered in the development of the City of Newberg TSP throughout the use of the Technical Advisory Committee and various coordination meetings with affected organizations and agencies.
(4) Cities shall adopt regional and local TSPs as part of their comprehensive plan.	The City is adopting this TSP as part of its Comprehensive Plan.
(5) TSPs preparation shall be coordinated with affected state, federal, and regional agencies; local governments; special districts; and private providers of transportation services.	To ensure that the City of Newberg TSP would be consistent with the policies, goals, and needs of affected agencies, a Technical Advisory Committee (TAC) was established at the outset of the planning process. The TAC was made up of public representatives from the City as well as Yamhill County and the Oregon Department of Transportation (ODOT) The City also coordinated with special districts and local providers of transportation services, including Greyhound (no longer a local service provider), CVSCC, the Newberg School District, and CPRD.
OAR 660-012-0020: Elements of Transportation System Plans	
(1) Establish a coordinated network of facilities to serve state, regional, and local transportation needs.	All planned transportation facilities were coordinated with the identified needs of state and local agencies.
(2) The TSP shall include the following elements:	
(a) Determination of transportation needs per OAR 660-012-0030.	The City of Newberg's 20-year transportation needs are documented in Section 4 of the TSP.
(b) A road plan for a system of arterials and collectors and standards for the layout of local streets and connections.	The City of Newberg roadway plan is documented in Section 6.2 and 6.3 of this report.
(c) A public transportation plan.	The City of Newberg public transportation plan is documented in Section 6.3.
(d) A bicycle and pedestrian plan	The City of Newberg pedestrian and bicycle

consistent with ORS 365.514.	plans are documented in Section 6.3 and 6.4.
(e) An air, rail, water, and pipeline plan that identifies public use airports, mainline and branchline railroads, port facilities, and major regional pipelines and terminals.	The air, rail water and pipeline system plans are documented in Section 6.5
(h) Policies and land use regulation for TSP implementation per OAR 660-012-0045.	Implementing policies are located in Section 8. Implementing land use regulations are also included with the proposed amendment.
(i) For areas within an urban growth boundary containing a population of 2500 or more , a transportation financing program as provided in OAR660-12-0040	The transportation finance plan is described in Section 7 of the TSP.
(3) Each element identified in (2)(b)-(d) shall contain:	
(a) An inventory and assessment of existing and committed facilities and services by function, type, capacity, and condition.	An inventory of Newberg's existing transportation facilities is documented in Section 3 of the TSP.
(b) A system of planned facilities, services, and major improvements. (c) A description of planned facilities, services, and major improvements including a map showing general location of proposed improvements, minimum and maximum right-or-way widths, and a description of facility or service.	A system of planned facilities, services and major improvements is documented in Section 6 of the TSP. Section 6 of the TSP document contains a description of Newberg's planned facilities, services, and major improvements. A map showing the general location of the proposed improvements is included in Figure 6-3. Minimum and maximum right-of-way widths are illustrated in Figures 6-2. A description of each facility type is provided in Section 6.2, divided into "capacity" and "non-capacity" improvements.
(d) Identification of the provider of each facility or service.	The responsible agency/provider of each facility is documented as part of the lists of improvements in Section 6.2.
OAR 660-012-0025: Complying with the Goals in Preparing TSPs; Refinement Plans	
(1) Adoption of a TSP shall constitute the land use decision regarding the need for transportation facilities services, and major improvements and their function, mode, and general location.	The TSP is being adopted through a Type IV process for legislative actions with public notice and opportunity for testimony. The proposed legislation will be heard by Planning Commission and City Council.
(2) Findings of compliance with applicable statewide planning goals and comprehensive plan policies shall be developed in conjunction with adoption of the TSP.	This staff report addresses the need for findings of compliance with applicable statewide planning goals and comprehensive plan policies.
OAR 660-012-0030: Determination of Transportation Needs	
(1) The TSP shall identify transportation needs including:	
(a) State and local transportation needs;	State and local transportation needs are documented in Sections 3, 4 and 5 of the TSP.

(b) Needs of the transportation disadvantaged;	The needs of the transportation disadvantaged are documented in Sections 3, 4 and 5 of the TSP.
(c) Needs for the movement of goods and services.	The needs for movement of goods and services are documented in Sections 3, 4 and 5 of the TSP.
(3) Within UGBs the determination of transportation needs shall be based upon:	
(a) Population and employment forecasts and distributions consistent with the acknowledged comprehensive plan. Forecasts shall be for 20 years and, if desired, longer periods;	Year 2025 population and employment forecasts for the City of Newberg that are consistent with the comprehensive plan were used to simulate future traffic conditions. This information is documented in Technical Memorandum #1 to the TSP, which is referenced as a supplemental reference document to this plan. The results are summarized in TSP Section 4 – Future Conditions.
(b) Measures adopted pursuant to OAR 660-012-0045 to encourage reduced reliance on the automobile.	The use of the EMME/2 travel forecasting model developed by ODOT/TPAU was used to determine future transportation needs and to examine alternative measures for addressing them. Alternatives are outlined in TSP Chapter 5, were evaluated to test system response to various strategies for addressing future needs. All modeled alternatives assume measures that encourage reduced reliance on the automobile will be implemented in the modal splits assumed for future conditions vs. current conditions. All alternatives include investment in pedestrian system connectivity, bicycle network connectivity, and the expansion of transit and demand management programs. Proposed text amendments to Comprehensive Plan policies in Appendix Q of the TSP and include Section K, policies (1)(g), (3)(a)(8, and 9), (3)(c), (5)(i), and (9)(a)(3,4, and 5) are intended to promote and enable the achievement of these mode splits.
OAR 660-012-0035: Evaluation and Selection of Transportation System Alternatives	
(1) The TSP shall be based upon evaluation of potential impacts of system alternatives that can reasonably be expected to meet the identified needs at reasonable cost. The following shall be evaluated as components of the system alternatives:	
(a) Improvements to existing facilities or services;	Reasonable and cost effective solutions to existing facilities were evaluated before new facilities were considered.
(b) New facilities and services including different modes of travel;	All new facilities were evaluated based on their reasonableness and cost-effectiveness.
(c) Transportation system management measures;	Transportation system management strategies were anticipated in the development of the TSP. They include improved signal timing through downtown on OR 99-W, redesign of downtown streets, increase use of alternative modes, and

	other measures outlined in the Chapter 6, Section 6.3 of the TSP.
(d) Demand management measures;	Demand management measures were assumed to be in effect with the development of the future travel demand forecasts.
(e) A no-build system alternative required by the national EPA.	Section 4 and Figures 4-1 and 4-2 document the "no-build" system alternative and its inadequacies to meet the future transportation needs of Newberg.
(3) The following standards shall be used to evaluate and select alternatives:	
(a) The transportation system shall support urban and rural development by providing types and levels of facilities and services appropriate to serve the land uses identified in the acknowledged comprehensive plan;	The TSP is based on the current, acknowledged comprehensive plan for the City and provides enhancement of the integration of transportation and land use systems.
(b) The transportation system shall be consistent with state and federal standards for the protection of air, land and water quality;	The standards used to evaluate and select transportation alternatives are documented in Section 1 and 5 of the TSP. Newberg is not in an air quality limited area and is not expected to be so designated in the planning period so an air quality assessment was not required for the alternatives analysis. Water quality enhancements associated with application of best management practices in the design of transportation facilities was assumed for all alternatives. No significant difference in water quality response is anticipated to result from any alternative.
(c) The transportation system plan shall minimize adverse economic, social, environmental, and energy (ESEE) consequences;	The standards used to evaluate and select transportation alternatives are documented in Section 1 and 5 of the TSP. An ESEE analysis was prepared as part of the Location EIS for the Bypass and the results contributed significantly in the recommendation of the preferred southern alignment.
(d) The transportation system shall minimize conflicts and facilitate connections between modes of transportation.	The standards used to evaluate and select transportation alternatives are documented in Section 1 and 5 of the TSP. All alternatives assumed that plan policies and development code requirements would have similar outcomes in terms of facilitating connectivity between modes. The preferred alternative incorporates a higher level of intra-city connectivity in the road network and consequently also provides a higher degree of connectivity between modes.
(e) The transportation system plan shall avoid principal reliance of any one mode of transportation and reduce principal reliance on the automobile.	The standards used to evaluate and select transportation alternatives are documented in Section 1 and 5 of the TSP. All alternatives assumed a multi-modal approach to system development, including pedestrian, bicycle, and transit. Additional plan policy and code amendments are proposed to ensure the public

	has access to and viable choices to the automotive mode.
(7) Local TSPs shall include interim benchmarks to assure satisfactory progress towards meeting the requirements of this chapter at five-year intervals. Local governments shall evaluate progress in meeting interim benchmarks at five year intervals from adoption of the TSP.	The City will evaluate progress toward meeting the requirements of the TPR though regular review of the TSP at five-year intervals. This update in itself is a review of the plan that was adopted in 1994.
OAR 660-012-0040: Transportation Financing System	
(1) For areas within an urban growth boundary containing a population greater than 2,500 persons, the TSP shall include a transportation-financing program.	The City's transportation financing program is included in Section 7.
(2) A Transportation financing program shall include the items listed in (a) – (d):	
(a) A list of planned transportation facilities and major improvements;	A list of planned transportation facilities and major improvements is provided in Section 7 and associated tables.
(b) A general estimate of the timing for planned facilities and major improvements;	Section 7 tables list the planned transportation facilities and major improvements within the "short", "medium" and "long" term timeline.
(c) A determination of rough cost estimates for the facilities and major improvements identified in the TSP;	Section 7 tables list the rough cost estimates and major improvements within the "short", "medium" and "long" term timelines.
(3) The financing plan shall include a discussion of the facility provider's existing funding mechanisms to fund the development of each facility and major improvement.	Documentation of Oregon and the City of Newberg's existing funding mechanisms is included in Chapter 7 of the TSP.
(5) The financing program shall provide for phasing of major improvements to encourage infill and redevelopment of urban lands prior to premature development of urbanizing or rural lands.	Investment in transportation improvements has been prioritized to encourage infill and redevelopment of urban lands prior to premature development of urbanizing or rural lands.

OAR 660-12 -0045 deals with TSP implementation and requires that land use regulations and ordinances be adopted consistent with the TPR. The requirements can be divided into three major policy areas: 1) Ordinances that enable TSP implementation, 2) Ordinances that protect transportation facility and corridor functions, and 3) Ordinances that Encourage Alternative Modes.

Requirements include land use regulations that specify transportation uses and services allowed in each land use zone; other regulations specifying access control measures and acceptable road performance levels; other transportation system protection measures consistent with road functional classes; measures to protect public use airports; a process for coordinated review of land use decisions; a process to apply development proposal conditions to minimize impacts and protect transportation facilities; regulations to require notice to public agencies; and regulations to assure that land use designations, densities, and design standards are consistent with functions, capacities and levels of service of facilities.

Regulations to provide for safe, convenient, and reasonably direct access for bicycles and pedestrians are also required. Finally, this section of the TPR requires that standards for local streets be adopted that minimize pavement width and total right-of- way consistent with the operational needs of the facility.

Some of the requirements of section -0045 are already in place in Newberg's land use implementing documents, such as the ability for the City to assign conditions to development proposals. However, in order to implement the updated TSP and comply with the TPR, certain additional changes are needed. Amendments to various sections of the Newberg Development Code (see Appendix Q of the proposed TSP) are proposed in order to implement the TSP in compliance with the above noted requirements.

Changes to the NDC are proposed to enable TSP implementation. One of the policy goals of this section of the TPR is to streamline the review process for transportation improvements that are identified in the TSP. Minor improvements should be allowed with a minimum of local review and major improvements, particularly those projects that are identified in the TSP and have undergone public review as part of the TSP adoption process, are allowed under a simplified review process. Changes to the NDC associated with these goals include permitting transportation facilities and improvements outright in most land use districts, clarification about the situations when state agencies get notice as part of the land use review process. This will allow for a more coordinated approach to project review.

Ordinances that Protect Transportation Facility and Corridor Functions. The efficient management of a jurisdiction's transportation system should be a major concern in developing a plan. To achieve this efficiency The TPR states that local jurisdictions need to adopt development ordinances that contain requirements to protect transportation facilities for their functions as described in the transportation plan.

Amendments that are proposed to achieve this policy objective include additions to Section 151.703 to implement new access control measures and to the block length standards of Section 151.695. These provide a maximum block length and perimeter and specify where access is allowed. Changes to Section 151.247 clarify that Future Street Plans have to be consistent with the Comprehensive Plan and the TSP. Section 151.122 has been amended to require compliance with the TPR (-0060) when Comprehensive Plan and Zoning map amendments significantly affect transportation facilities. The amended section also requires the applicant to submit a traffic study when transportation facilities would be significantly affected, or when a development is proposed that would generate more than 40 trips per p.m. peak hour.

Several new policies have been added to the TSP regarding access control to the Newberg-Dundee Bypass and land uses in the vicinity of access locations. Access will be limited to grade-separated interchanges at two or three locations in the city. Section K, Policy 2(b) and (c) have the effect of requiring development of an interchange area management plan (IAMP) at interchange locations to establish zoning and development regulations for interchange areas and to control local access at interchange locations and in other highway corridors through the city. These plans also will implement existing land use policies concerning commercial development as it relates to the Bypass. The planning process for the Bypass, however, has not yet entered the design stage and the timing for that work is uncertain. Therefore the implementing measures associated with interchange management plans are not part of the proposed TSP amendments; they will be developed and adopted as part of the Bypass design process.

Ordinances that encourage alternative modes. The TPR includes language stating that development ordinances need to contain requirements that new developments be accessible to pedestrians, bicyclists, and public transportation. This is important to reduce reliance on the auto and provide safe, convenient mode choices To address this policy objective, amendments are being recommended to the following sections of the NDC: 151.620, 151.724, 151.680, 151.681, 151.683, 151.684, 151.685 and 151.686.

The TSP also includes related, overarching goals and policies. Therefore, the amendment is consistent with the requirements of -0045.

-0050 includes provisions for transportation project development, and specifies requirements for public involvement and compliance with the comprehensive plan and land use regulations when a land use decision is involved in project development.

-0060(1) and (2) provides that plan and land use regulation amendments which significantly affect a transportation facility shall ensure that land uses allowed by the amendment are consistent with road function, capacity, level of service, and other performance standards. The TPR also specifies under what conditions a plan or land use regulation amendment significantly affects a transportation facility. Proposed changes to NDC Section 151.122 implements this requirement with regard to plan amendments. The amended amendment criteria state that the applicant (Type III) or the City (Type IV) must demonstrate "Compliance with the State Transportation Planning Rule (OAR 660-012-0060) for amendments that significantly affect transportation planning facilities." Amendments to 151.122 and 151.043, as well as policies under "Section K: Goal 1" of the Comprehensive Plan also address -0060(3), which requires coordination with other agencies regarding determinations under -0060(1) and (2).

0060(4) provides that the presence of a transportation facility or improvement shall not be the basis for an exception to allow certain development on rural lands. The few portions of facilities that are currently shown on rural lands are not currently under the jurisdiction of Newberg and urban uses are not allowed.

0060(5) provides that local governments must give consideration to the affect of non-vehicular mitigation and design elements, such as transit-friendly orientation, bicycle and pedestrian features, mixed use impacts on trip generation, and other trip reduction factors when determining a project's consistency with planned transportation facilities. For developments that require a plan map or zoning map amendment, NDC 151.122(3)(c) requires that the applicant demonstrate compliance with all elements of OAR 660-012-0060, including subsection (5) and (6). NDC 151.122(5) requires that the applicant prepare a traffic study conducted according to Newberg Design Standards in NDC 151.685. The Director has discretion in reviewing the traffic study to consider design related trip reduction effects that are supported in the methodology for the traffic study. In addition, the City's Design Standards include features that provide for non-vehicular travel modes including bike lanes, sidewalks and transit features. For projects that do not require a plan or zoning map amendment and are expected to generate more than 40 peak-hour trips, NDC 151.192(14) required preparation of a traffic study. The Director may waive this requirement when there is adequate system capacity. Traffic studies must conform to City Design Standards, which as noted above incorporate non-vehicular mode features into the street design. The Director has discretion in reviewing the traffic study to consider design related trip reduction effects that are supported in the methodology for the traffic study. Such methodological support would include the use of ITE Manual trip generation rates for pedestrian or transit friendly developments, trip reduction related to mixed use projects, and other documented design features that are demonstrated to reduce trip generation such as those strategies outlined in 0060(5)(a-d).

0060(6) provides for consideration of the need for amendments to the comprehensive plan and TSP for development projects deemed to have a significant affect on transportation facilities as defined in 0060(2) or for commercial developments greater than 2 acres. As noted above, NDC 151.122(3) requires an applicant seeking a plan map or zoning map amendment to demonstrate compliance with TPR 0060. NDC 151.243(1)(C) requires preparation of a future street plan for an application for partition or subdivision. The NDC requires the future street plan demonstrate conceptual street alignment and access to adjoining parcels. This method is specifically referenced in 0060(6) as a means for compliance with the rule. When combined with the requirement for a traffic impact study on projects that generate more than 40 peak hour trips, which would apply to all projects deemed to have a significant impact on transportation facilities defined in 0060(2), the NDC includes provisions that are adequate to address the requirements of 0060(6).

As described in the findings above, the current TSP is consistent with the requirements of the Oregon Transportation Planning Rule (OAR 660 Division 12). The proposed amendment to include the realignment of the Wilsonville Road/Springbrook Road/OR 219 Intersection is also consistent with OAR 660 Division 12.

We find that the need for the realignment has been established as resolving a significant safety problem. The current intersection configuration is ranked in the top 10% of the approximately 170 worst crash sites in Region 2 in the Safety Priority Index System (SPIS), based upon number and severity of crashes. During the period 1998-2004 there have been six crashes involving severe injuries or fatalities and 25 other crashes, 13 of which involved bodily injuries. Highway 219 serves as a major arterial for the City of Newberg, and as a District Level Highway for the State of Oregon. Over 2,200,000 vehicles pass through this segment of highway with the dangerous intersection each year.

We find that ODOT analyzed a number of alternatives when it sought safety improvements to this intersection, including a five-legged intersection at Wilsonville Road, a severed Connection at Sandoz Road, a 2-Signal system north of 9th Street with a connection to Springbrook but cul-de-sac Springbrook, and placing new road connections outside the urban growth boundary. We find that the proposed solution is the only solution that met the engineering criteria, safety criteria and satisfies the comprehensive planning requirements for both Newberg and Yamhill County.

We find that the functional classification of the affected roadways is not changing. We find that the financing program pursuant to OAR 660-012-0040 will be amended accordingly to include this project. Therefore, we find that this proposed amendment to include the realignment of the Wilsonville Road/Springbrook Road/OR 219 Intersection is consistent with Goal 12 and the Transportation Planning Rule.

As described in the findings above, the proposed TSP is consistent with the requirements of the Oregon Transportation Planning Rule (OAR 660 Division 12).

Statewide Goal 13: Energy Conservation
To conserve energy.

Finding: The TSP update will not change any City requirements related to energy use, although indirectly some amendments may improve the efficiency of the transportation system and alternative mode choices for system users. The lack of any direct implication for energy use means this goal is not relevant to the amendment.

Statewide Goal 14: Urbanization
To provide for an orderly and efficient transition from rural to urban land use.

Finding: The study area for the TSP update includes the Newberg Urban Growth Boundary and Urban Reserve areas. In order to provide an orderly and efficient transition from rural to urban land use, a comprehensive transportation plan is necessary. This plan provides that comprehensive system. Small segments of a few transportation facilities are currently shown on rural lands, which are not currently under the jurisdiction of Newberg. These facilities are not planned to accommodate any urban uses outside Urban Growth Boundaries. Any such recommended improvements will need to be coordinated with Yamhill County. All the facilities can be approved without an exception to Goal 14, as stated in the findings addressing Goal 3 above. Thus, the plan is consistent with Goal 14.

Statewide Goal 15: Willamette River Greenway

To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Finding: The TSP update will not change any City policies or requirements related to the Willamette River Greenway, so this goal is not relevant to the amendment.

Statewide Goal 16: Estuarine Resources

To recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and to protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries.

Finding: Neither the project area for the TSP update nor the City of Newberg includes identified estuarine resources. Therefore, Goal 16 does not apply.

Statewide Goal 17: Coastal Shorelands

To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-depending uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and to reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting form the use and enjoyment of Oregon's coastal shorelands.

Finding: Neither the project area for the TSP update nor the City of Newberg includes coastal shorelands. Therefore, Goal 17 does not apply.

Statewide Goal 18: Beaches and Dunes

To conserve, protect, where appropriate develop and where appropriate restore the resources and benefits of coastal beach and dune areas; and to reduce the hazard to human life and property from natural or man-induced actions associated with these areas.

Finding: Neither the project area for the TSP update nor the City of Newberg includes coastal beach and dune areas. Therefore, Goal 18 does not apply.

Statewide Goal 19: Ocean Resources:

To conserve the long-term values, benefits, and natural resources of the nearshore ocean and the continental shelf. All local, state, and federal plans, policies, projects, and activities which affect the territorial sea shall be developed, managed and conducted to maintain, and where appropriate, enhance and restore, the long-term benefits derived from the nearshore oceanic resources of Oregon. Since renewable ocean resources and uses, such as food production, water quality, navigation, recreation, and aesthetic enjoyment, will provide greater long-term benefits than will nonrenewable resources,

> *such plans and activities shall give clear priority to the proper management and protection of renewable resources.*

Finding: Neither the project area for the TSP update nor the City of Newberg includes ocean resources. Therefore, Goal 18 does not apply.

Findings of Consistency with the Newberg Comprehensive Plan

Pursuant to and OAR 660-012-0025(2) above, findings of compliance with applicable local policies, including the applicable Comprehensive Plan policies are required to adopt this amendment.

The TSP update does not include any changes relevant to management of areas subject to the following Sections of the Newberg Comprehensive Plan, or associated policies and standards, so those Sections are not relevant to the proposed amendment.

C. AGRICULTURAL LANDS
D. WOODED AREAS
F. AREAS SUBJECT TO NATURAL DISASTERS AND HAZARDS
G. OPEN SPACE, SCENIC, NATURAL HISTORIC AND RECREATIONAL RESOURCES
I. HOUSING
M. ENERGY
N. URBANIZATION

Findings of consistency with the applicable goals and policies of the Newberg Comprehensive Plan follow.

A. CITIZEN INVOLVEMENT

GOAL: To maintain a Citizen Involvement Program that offers citizens the opportunity for involvement in all phases of the planning process.

Finding: Findings addressing Statewide Planning Goal 1 (above) demonstrate that the plan amendment is consistent with the above Newberg Comprehensive Plan goal, and are incorporated here by reference. The plan amendment is consistent with Section A., *Citizen Involvement.*

B. LAND USE PLANNING

GOAL: To maintain an on-going land use planning program to implement statewide and local goals. The program shall be consistent with natural and cultural resources and needs.

POLICIES:

1. *To implement the Comprehensive Plan, the following detailed plans shall be periodically updated by the City:*
   - *b. Six-Year Capital Improvements Program*
   - *c. Bikeway and Pedestrian Plan*
   - *d. Streets Plan*

2. *The Comprehensive Plan and implementing ordinances shall be reviewed continually and revised as needed. Major reviews shall be conducted during the State periodic review process.*

Finding: Findings addressing Statewide Planning Goal 2 (above) demonstrate that the plan amendment is consistent with the above Newberg Comprehensive Plan goal, and are incorporated here by reference. The TSP update, which is the subject of the proposed plan amendment, accomplishes the purpose of implementing the Newberg Comprehensive Plan by providing a Streets Plan, a Bikeway and Pedestrian Plan, and a CIP for transportation facilities. In 2002, the City and ODOT determined that an update to the City's existing TSP was needed, which includes a review of Section K, *Transportation* of the Comprehensive Plan and associated implementing ordinances.

Findings addressing Statewide Planning Goal 2 (above) demonstrate that the Wilsonville/Springbrook/219 project is consistent with the above Newberg Comprehensive Plan goal, and are incorporated herein by reference. This intersection reconfiguration is needed due to a significant accident history at the intersection as shown in the testimony and demonstrated by ODOT with their engineering analysis and traffic data.

Therefore, the amendment is also consistent with Policies 1 and 2 of Section B., *Land Use Planning.*

E. AIR, WATER, AND LAND RESOURCE QUALITY

GOAL: To maintain and, where feasible, enhance the air, water and land resource qualities within the community.

POLICIES:

6. The City will cooperate with State and Federal agencies which regulate environmental quality and shall adhere to the standards established by these agencies in the issuance of any permits or approvals given by the City. This policy is intended to cover discharges and emissions which may impair air, water or land quality or exceed the established standards for noise or other emissions.

Finding: The TSP update does not change any existing provisions that would impact the City's air, water and land resource qualities. A new policy in Section K, *Transportation* expands on and furthers Policy 6 of Section E, *Air, Water and Land Resource* goal "To maintain…and enhance the air, water and land resource qualities within the community." The new policy states that:

> *b. The City shall work to ensure that the transportation system is developed in a manner consistent with state and federal standards for the protection of air, land and water quality, including the State Implementation Plan for complying with the Clean Air Act and the Clean Water Act.*

It should be noted that the Newberg area is not in a federal non-compliance area with respect to air quality. The proposed plan amendments, however, include policy amendments in Section K and development code amendments that are intended to enhance the viability and connectivity of alternative modes of transportation, which taken together may have the effect of improving air quality by reducing automotive emissions. The plan amendment is therefore consistent with Section E and Policy 6.

H. THE ECONOMY

GOAL: ***To develop a diverse and stable economic base.***

POLICIES:

POLICIES:

1. General Policies

a. *In order to lessen the percentage of persons who live in Newberg but must work elsewhere, the City should encourage a diverse and stable economic base through tax incentive programs, land use controls, preferential assessments and capital improvement programs. The formation of a community development corporation should also be considered.*

b. *The City shall encourage economic expansion consistent with local needs.*

c. *The City will encourage the creation of a diversified employment base, the strengthening of trade centers, and the attraction of both capital and labor intensive enterprises.*

d. *Newberg will encourage the development of industries which represent the most efficient use of existing resources including land, air, water, energy and labor.*

e. *Economic expansion shall not exceed the carrying capacity of the air, water or land resource quality of the planning area.*

f. *The City shall participate with local and regional groups to coordinate economic planning.*

g. *The City shall encourage business and industry to locate within the Newberg City limits.*

h. *Yamhill County history, products and activities should be promoted.*

i. *The City shall encourage tourist-related activities and services such as motor inns, restaurants, parks and recreation facilities, a visitor center, conference and seminar activities.*

j. *A regional destination resort shall be encouraged to be built near the Willamette River.*

k. *The City shall promote Newberg as a tourist destination location.*

l. *The City shall promote the expansion of local viticulture and wine production as a method for increasing tourism.*

2. Industrial Areas Policies

a. *Industrial expansion shall be located and designed to minimize impacts on surrounding land uses.*

b. *The City shall encourage industrial development, preferring firms that:*

- *Meet or exceed state or local environmental standards;*
- *Utilize the existing labor force and help to reduce seasonal unemployment fluctuations; and*
- *Are efficient consumers of energy.*

c. *Newberg shall actively pursue the inclusion of large industrial sites within the urban growth boundary.*

d. *The City shall reserve land for industrial development prior to demand and attract new industries in accordance with future community needs.*

e. *Established industrial areas may be extended and new industrial areas designated by plan amendment where development trends warrant such extension or designation. Full urban services will be extended into the area if appropriate, if the extension of land use and services is consistent with all other goals and policies of the plan.*

f. *Concerted community efforts should be made to see that industrial development expands outward from existing areas rather than occurring in haphazard patterns.*

Finding: We find that a safe and efficient transportation is essential to a diverse and stable economic base. Many of Newberg's industrial parks depend upon Highway 219 for ingress and egress and many of its trucks are routed through this unsafe intersection. The Newberg economy is compromised with current unsafe road connection at Wilsonville Road; accidents slow commerce, damages cost business and injuries harm our community and families. As traffic growth increases, our economy expands this unsafe intersection will have greater costs to our community. These intersection improvements will improve transportation safety and efficiency, stabilizing the Newberg economic base. We find that this intersection realignment will require an additional 2.4 acres of right-of-way that is currently vacant but zoned for industrial use. We recognize that infrastructure projects such as transportation projects, require right-of-way in our community and we acknowledge that transportation facilities are allowed on land zoned for industrial purposes. We note that this land has yet to be developed and placed into production so no actual "jobs" will be lost. While we regret that such land will be taken out of future production and will not be available for possible industrial opportunities for the Newberg community, we believe, that proposed realignment is more important for the long-term economic stability and diversity of Newberg and is consistent with the Newberg goals and industrial policies; the safe and the efficient transportation of goods.

3. ***Commercial Areas Policies***

c. ***Commercial development will be encouraged to be clustered and to develop off-street parking facilities in conjunction with other nearby developments.***

d. To maintain the integrity and function of the highway system, new commercial development shall be discouraged along the route of any limited access highway.

Finding: The TSP update will provide for the continued orderly development of the City's street network, which is vital to economic development activity. New policies in Comprehensive Plan Section K, *Transportation* serve to support Commercial Areas Policy 3(c) as shown below. Section K, Policy 2(d) and Policy 8(c) provide policy direction for the provision of additional off street parking areas for commercial uses and downtown and are consistent with 3(c) above.

> *d. The City shall maintain development regulations that provide adequate off-street parking and truck loading areas for commercial and industrial uses, especially in areas adjacent to arterial and collector routes, to promote efficient traffic movement through the city.*
>
> *c. The City shall work cooperatively with the business community to ensure there is an adequate supply of on-street and off street parking in the downtown. The City shall prepare and periodically update a public parking management plan for the central business district.*
>
> *b.* Section K also includes the addition of new policies that will have the effect of limiting commercial development, and highway commercial development in particular, which would adversely affect the function and operation of a limited access highway. The proposed Newberg-Dundee Bypass (Bypass) will be a limited access highway. Several plan policies in Section K are specifically intended to protect the function and operation of this new facility. Section K, Policy 9(b)(1) provides a new *Expressway* road classification that allows no private access points, and only limited public access points preferably at grade-separated interchanges

Taken together, these policies in effect call for the preparation of interchange area management plans (IAMP) for all access points along the Bypass route through Newberg. The combined effect of restricted access and planning for land uses in the vicinity of Bypass interchanges meet the intent of Section H, Policy (3)(d).

J. URBAN DESIGN

GOAL: To maintain and improve the natural beauty and visual character of the City.

POLICIES:

1. General Policies

h. Landscaping shall be required along street frontage strips within the street right-of-way in order to soften the appearance of commercial and industrial developments.

j. Curbs, gutters, and sidewalks are to be required in all new developments.

k. Curb ramps will be required at intersections and pedestrian crosswalks wherever new curbs are installed. These ramps improve access for the

elderly and handicapped, as well as for strollers, bicycles and other wheeled vehicles.

Finding: The TSP update, including amendments to the NDC serve to supplement and support urban design policies J(1)(h), (j) and (k), above. Updated street standards are shown in Figure 6-2 of the TSP and are also included in new section 151.685 (G) Street Width and Design Standards of the NDC. This figure shows the typical design standards for major and minor arterials, major and minor collectors, and local streets. "Planter strips" have been included in the cross-sections for all of the street functional classifications These are located in the street right-of-way and function to soften the appearance of commercial and industrial developments. In addition, several of the City's zoning districts have been amended to allow transportation facilities and improvements, the definition of which includes "landscaping as part of a transportation facility." This further facilitates the construction of landscaping in the right-of-way.

In addition the TSPs updated street design standards show that sidewalks are required for all public streets. The updated TSP calls for upgrading all existing streets to City standards, which includes sidewalks. In terms of requiring that new private developments provide sidewalks, Section 151.620.2 already addresses the provision of "private walkways" which are required for all projects undergoing type II design review. However, note that there is a terminology change from "on-site walks" to "private walkways." Crosswalks are included as part of many of the improvement projects that have been identified as part of the TSP update.

Therefore, the TSP update is consistent with the above urban design policies.

5. Downtown Policies

g. The City shall encourage:

- ***Reconstruction of First Street and both sidewalks to accommodate a two-way flow of traffic with diagonal and parallel parking.***
- ***Adequate off-street parking to serve retail and institutional needs.***
- ***Construction of a new one-way eastbound couplet to encourage downtown core development.***

Finding: The list of "non-capacity" improvements in Section 6.2.3 of the updated TSP includes Project #31, *Downtown Street Redevelopment*, which implements policy 5(g) by calling for pedestrian enhancements, including improving crosswalks, sidewalks, curb amenities, etc. It also states that after the Bypass is completed, the traffic volumes would decrease enough to allow reduction to two through lanes, which would allow the City to pursue angled parking, wider sidewalks and additional urban design amenities. This plan calls for a special study to be conducted, focusing on enhancing First Street with items such as bulb-outs, angled parking, and wide sidewalks. On December 9, 2004, Planning Commission accepted Staff's recommendation to adopt policies to create a plan to that would make certain improvements to downtown after the bypass is constructed. Policy 5.g is being amended as follows so that is consistent with the Planning Commission's December 9 action.

5. Downtown Policies

g. The City shall ~~encourage~~ consider:

~~-Reconstruction of First Street and both sidewalks to accommodate a two-way flow of traffic with diagonal and parallel parking.~~

- Modifying the configuration of the existing downtown couplet after construction of the bypass, exploring options such as reducing the number of lanes from three to two, providing angled parking, wider sidewalks, planter strips or medians, and additional crosswalks.
-Creation of a major attraction in the downtown retail core to showcase Yamhill County's agriculture, industry, arts, culture and history.
-Retention of a post office within the downtown and continued occupancy of the existing post office building.
-Adequate off-street parking to serve retail and institutional needs.
~~*-Construction of a new one-way eastbound couplet to encourage downtown core development.*~~
-Adoption of a downtown design ordinance, instituted to review and control all private and public improvements.

K. TRANSPORTATION

GOAL 1: Establish cooperative agreements to address transportation based planning, development, operation and maintenance.

POLICIES:

a. The City shall coordinate with the State Department of Transportation to manage access to the state highway system and to implement the State Highway Improvement Program.

b. The City shall coordinate its Transportation System Plan with the planning process of other jurisdictions to assure adequate connections to streets and transportation systems outside City boundaries.

Finding: Throughout the development of the updated TSP, the City's coordination with ODOT and other regional partners, such as Yamhill County, on access and all other matters has been carefully considered. The formal body for coordination on the TSP was the Newberg Technical Advisory Committee (NTAC). NTAC members were provided draft technical reports, proposed policy and code text revisions, draft plan text, and feedback on public information events. Copies of the NTAC meeting agenda and summaries are included in Appendix A of the Updated TSP and are incorporated herein by reference as evidence of coordination activities.

c. The City shall participate in the planning efforts to bring light rail transit to Newberg.

Finding: This policy has been amended in the updated TSP, which notes that it is currently beyond the City's financial capacities to bring light rail to Newberg in the near future. The amended text is as follows:

c. The City shall participate in the planning efforts to bring ~~light~~ rail transit to Newberg.

d. The City shall promote transportation improvements which would result in less through automobile and truck traffic on First Street and maintain the option of future development of light rail to serve the downtown core area.

Finding: Transportation improvements called out in the updated TSP, such as the Newberg-Dundee Bypass of OR 99W will result in less through automobile and truck traffic on First Street by creating an alternate route for through traffic. Similar to policy (c) above, this policy as been rewritten as follows to reflect that light rail is not anticipated in the City's future because of financial constraints.

d. *The City shall promote transportation improvements which would result in less through automobile and truck traffic on First Street and maintain the option of future development of ~~light~~ rail to serve the downtown core area.*

The following three policies are proposed to be included under Goal 1 to further support the goal and to ensure additional coordination on specific projects and related to coordination with particular regulatory bodies on certain issues.

b. The City shall work to ensure that the transportation system is developed in a manner consistent with state and federal standards for the protection of air, land and water quality, including the State Implementation Plan for complying with the Clean Air Act and the Clean Water Act.

f. The City shall coordinate with Yamhill County and the State on the development of the Newberg-Dundee Bypass.

g. The City will work with public and private entities to plan and, if feasible, establish commuter rail service between the Portland Metro area and communities in Yamhill County.

In conclusion, the TSP update is consistent with the above Comprehensive Plan policies.

GOAL 2: ***Establish consistent policies which require concurrent consideration of transportation/land use system impacts.***

POLICY: ***Transportation improvements shall be used to guide urban development and shall be designed to serve anticipated future needs.***

Finding: An extensive analysis of existing conditions, future conditions and applicable policies was undertaken in order to determine the City's transportation system needs, which were used to formulate solution alternatives and ultimately the preferred alternative. The analysis is summarized in Chapters 2, 3 and 4 of the updated TSP. The following additional policies are proposed to be added under Goal 2 in order to supplement and support the policy that transportation improvements be used to guide urban development and designed to serve anticipates future needs as outlined in the TSP.

The Wilsonville/Springbrook/219 intersection realignment is a modification to existing roadway facilities. It will improve access to Springbrook Industrial Park by providing more direct access to Ore 219 and improve spacing standards to make the area more safe and consistent with ODOT access management spacing standards and highway design standards. Access and circulation to three properties --- a residence at the intersection of the proposed connector road and Ore 219 and the coffee stand at the intersection of Wilsonville Road and Ore 219 --- will be changed, but all properties will retain reasonable access to the roadway. ODOT, through the project development process must coordinate and work with the owners and/or the tenants of these affected parcels to ensure that this transition will occur with as much notice and communication as possible. One 2.4 acre parcel which is currently vacant is necessary for the road extension and connection. This parcel is zoned for industrial use. This parcel will need to be acquired by ODOT as right-of-way for the road extension. State and federal right of way laws control the acquisition process and will provide that the owner of the property is fairly compensated to the extent provided by law. We find that the roadway improvements will enhance the industrial areas and facilitate intensification of future industrial growth in the large areas zoned for industrial parks. Finally, we find that this project will minimize future capital improvements and community and state tax payer costs. It has been determined that this design is compatible with the design of future transportation facilities including the NDTIP bypass without having to throw away pieces and avoids excessive impacts to adjacent developed by utilizing vacant urban land.

b.The City shall maintain development regulations that provide adequate off-street parking and truck loading areas for commercial and industrial uses, especially in areas adjacent to arterial and collector routes, to promote efficient traffic movement through the city.

c. The City will encourage the development of retail development within the downtown area.

Furthermore, amendments are proposed to the NDC that implement Section K, Policy 2(d) and (e) regarding procedures for balancing on-street and off-street parking in the downtown as well as in other plan districts. Future NDC amendments will address planning in areas adjacent to the Bypass. Findings that support adoption of implementing measures related to those policies are addressed elsewhere in the staff report. The proposed amendments comply with the policy outlined in the above goal.

GOAL 3: Promote reliance on multiple modes of transportation and reduce reliance on the automobile.

POLICIES:

a. Design the transportation system and related facilities to accommodate multiple modes of transportation where appropriate and encourage their integrated use; and

1) The City shall plan for a network of transportation facilities and services including but not limited to air, water, rail, auto, pedestrian, bicycle and public transit.

2) The City shall encourage the continued operation of the existing public transit system.

4) The City should conduct a market assessment to determine the demand and needs for commuter transit service from Newberg and McMinnville to the downtown Portland Metro area employment centers.

5) The City should evaluate the market assessment and, if it is financially feasible, develop transit service to the Portland area either as a City operation or by another agency.

6) The City should establish a local transit service district to include but not be limited to the City of Newberg, City of McMinnville and Yamhill County.

7) The City should establish a long term funding base for local and commuter transit service within the local transit district to include federal and state funding sources for capital and operating expenses.

8) The City should develop a policy agreements between local transit service districts and Tri-Met for provision of service operations inside Tri-Met service district.

9) The City shall encourage more efficient use of existing transportation systems, including car pooling, park and ride stations and bus service.

c. Modifications should be made to the City's land use plan and development ordinances that will decrease trip length and encourage non-auto oriented development.

Finding: The TSP update includes planning for air, water, rail, vehicle, transit, bicycle and pedestrian transportation systems. It includes many provisions that are intended to promote multiple modes and reduce the use of single occupancy vehicles. Section 6.4 of the updated TSP document is a "Bicycle/Pedestrian Plan" for the City identifies 33 bicycle and pedestrian improvements to be included as part of the City transportation system. The projects promote safety, reduce trip length for cyclists and walkers by providing more direct routes and improving system connectivity. They also provide direct access to the City's arterial/collector street system as well as recreational opportunities. In addition, the NDC includes new standards that reflect TSP policy, such as access management.

Chapter 6 of the updated TSP also includes policies that are intended to reduce reliance on single occupancy vehicles (SOV), such as recommendations about how to improve the City's existing commuter transit options and siting criteria for the location of Park and Ride lots.

In addition, policies 3(a)(4), (5), (6), (7), (8), and (9) under Goal 3(a) have been amended as follows in order to consistently implement the updated TSP.

4) The City should conduct a market assessment to determine the demand and needs for commuter transit service from Newberg and McMinnville to the ~~downtown~~ Portland Metro area employment centers.

5) The City should evaluate the market assessment and, if it is financially feasible, support the development of ~~develop~~ commuter transit service to the Portland area ~~either as a City operation or by another agency~~.

6) The City ~~should~~ will work to help establish a ~~local~~ regional transit service district ~~to include but not be limited to the City of Newberg, City of McMinnville and~~ in Yamhill County to address transportation needs of disadvantaged residents.

7) The City ~~should establish~~ will support efforts to develop a long term funding base for local and commuter transit service within the ~~local transit district~~ region to include federal and state funding sources for capital and operating expenses.

8) The City ~~should develop a policy~~ will work to establish appropriate cooperation agreements between local transit service providers ~~districts~~ and Tri-Met for ~~provision of~~ improving commuter service ~~operations inside~~ connections within the Tri-Met service district.

9) The City shall encourage more efficient use of existing transportation systems by implementing programs that reduce single occupancy vehicle use, including car pooling, park and ride stations and commuter bus or rail service.

In addition, policies 3(b)(1), (2), and (3), under Goal 3(b) have been amended as follows in order to consistently implement the updated TSP.

1) The City shall encourage neighborhood medium density and mixed use commercial development nodes.

2) *The City shall encourage higher density development ~~around~~ in residential areas near transit corridors, commercial areas and employment centers, including the downtown.*

The following new policy is proposed under Goal 3 in order to address the need for transportation demand management. TDM includes the use of carpools, park-and rides and other measures that reduce the use of SOVs.

c. The City shall develop and implement a transportation demand management strategy that provides incentives, such as: flex time, carpooling, staggered shifting and telecommuting by public and private employers.

At the time this policy was recommended, the alternatives analysis was not completed and it was not known if these measures would be necessary in order to reduce peak-hour demand to meet performance objectives. It now appears that the system will provide acceptable performance, as measured by peak-hour intersection operating conditions. While the use of the techniques referenced in the policy are desirable, the programs that fund them are unlikely to be advanced in Newberg in order to apply these resources in other parts of the state where such programs are essential for meeting minimum operating performance measures. Therefore, it is recommended that this policy be revised to include the following clause at the end of the policy:

…employers, if and when overall operating conditions in the city fall below acceptable levels and depending on the availability of state funding to support these programs. The City will encourage the use of demand management strategies by public and private employers in certain locations when operating conditions warrant their consideration.

GOAL 4: Minimize the impact of regional traffic on the local transportation system.

POLICIES:

a. Enhance the efficiency of the existing collector/arterial street system to move local traffic off the regional system.

b. Provide for alternative routes for regional traffic.

c. Identify and analyze options for the re-routing of 219 in conjunction with ODOT, in an effort to support both Bypass and delayed Bypass development scenarios.

d. Before choosing the 219 re-route to be included in the City's Capital Improvement Program, hold public hearings to determine which re-route alternative is most satisfactory to the public.

e. Include the 219 re-route alternative most favorable to the public in the City's Capital Improvement Plan, Transportation Section.

f. Minimize the use of local and minor collector streets for regional traffic through application of traffic calming measures as traffic operations and/or safety problems occur. (Adopted by Ord. 99-2513, approved by City Council 8-2-99).

g. The City shall coordinate with the State of Oregon to synchronize all signals on Highway 99W.

f. ***Minimize the use of local and minor collector streets for regional traffic through application of traffic calming measures as traffic operations and/or safety problems occur. (Adopted by Ord. 99-2513, approved by City Council 8-2-99).***

Findings: As part of the transportation plan update, staff, the consultant and technical advisory committee considered a number options for modifying the alignment of Highway 219 through Newberg. As part of its review of the transportation plan, the Commission considered various options. The Commission agreed that an important goal is to minimize traffic through downtown. The Commission discussed a number of ways to achieve this. A proposal was put forth that would reroute OR 219 up Springbrook Road and terminate through access along St. Paul Highway (OR 219) near the airport. OR 219 then would continue up Springbrook to the Northern Arterial, head west to College Street (also OR 219), then remain on the existing route. The Commission had lengthy discussion on the feasibility and effectiveness of this route. The Planning Commission ultimately recommended that such a re-route be included within the plan. References to retaining and improving the existing route also were included in the plan. The advantages to this routing include:

It will have some effect in lowering traffic volumes through downtown Newberg.

It will positive effects on certain other facilities, such as the 2nd Street/St. Paul Highway, Villa Road/OR 99W intersections.

It also will change operations at the Wilsonville Road/219/Springbrook intersection.

A detailed study is still needed to determine the full impacts and costs of such a reroute. The Planning Commission felt this re-route would be less costly that improving the existing OR 219 route.

We find that the Springbrook/Wilsonville/219 intersection reconfiguration enhances the efficiencies of the existing collector street system. The extension of Springbrook, a City Street/County Road is classified as a major collector north of the intersection and a minor arterial south of the proposed new connector road. Minor arterials are designed to collect and distribute traffic from major arterials to collectors and local streets. Springbrook will connect Ore 219, a major arterial to collectors and local roads. We also find that this road connection will enhance the accessibility of Springbrook to function as its intended purpose to function as a major collector, minor arterial, and will take some of the regional traffic off of segments of Highway 219.

h. ***The City actively supports the development of the Bypass in the southern location corridor described as Modified 3J in the Location Environmental Impact Statement.***

i. ***The City supports the designation of the Bypass as a moderate to high-speed statewide expressway and freight route as defined in the Oregon Highway Plan. The Bypass and interchanges will be fully access controlled and no direct access will be allowed from private properties onto the Bypass. The primary function of the Bypass is to provide for moderate to high-speed through trips and to relieve congestion through the downtown Newberg.***

j. ***The functions of the Bypass are to accommodate and divert longer-distance through trips around the Newberg-Dundee urban area and to serve regional trips going to and***

from Newberg or Dundee (i.e., those trips with either an origin or destination outside of the Newberg-Dundee urban area). The function of the planned intermediate interchanges is to provide access between Newberg or Dundee and other regions (e.g., McMinnville, Portland or the coast). It is not the function of the interchanges to provide for or attract regional commercial or highway commercial development in the vicinity of the interchanges. In general, needs for commercial development should be accommodated in areas planned for commercial development within Newberg. Plan amendments and zone changes shall be consistent with the function of the bypass and interchanges as set forth in this policy.

k. For the purposes of compliance with the Transportation Planning Rule, OAR 660-12-0060 and in order to support the goal exception that Yamhill County must take to advance construction of the Bypass, the City of Newberg acknowledges that reliance upon the Bypass as a planned facility to support comprehensive plan amendments, zone changes or UGB expansions is premature.

Accordingly, proposed changes to lands already planned and zoned for urban uses inside the Newberg UGB or annexations or UGB expansions outside of designated Urban Reserve Areas approved as of August 1, 2004 shall be subject to the analysis and mitigation requirements of OAR 660-12-0060. Upon adoption of a Bypass financing plan by the Oregon Transportation Commission, those portions of the Bypass identified to be constructed within the 20-year planning horizon by the financial plan can be considered planned transportation facilities pursuant to OAR 660-12-0060. It is expected that the Oregon Transportation Commission will adopt a financing plan in approximately three years of adopting this plan policy.

Lands designated as Urban Reserve Areas as of August 1, 2004, and identified in Appendix A may or may not depend upon the transportation capacity of the future bypass or the improved capacity of Oregon 99W due to the future construction of the bypass. It is the policy of the City of Newberg to plan and zone those planned urban reserve areas that are outside the Interchange Area Management Plan Areas, as identified in Appendix A, to be compatible with the trip generation assumptions used to develop the Newberg 2025 Transportation Model when they are annexed into the City. For the purposes of this policy, compatibility means that trips estimated as attributable to planning and zoning in an Urban Reserve Area shall be no greater than 5 percent above the estimates used for that area in the Newberg 2025 Transportation Model. The trip generation assumptions for each Urban Reserve Area and a map illustrating these areas are provided in Appendix A and Table A-1. Annexation of the Urban Reserve Areas will not occur at a rate any greater than 30 percent of the total Urban Reserve Area in any five year period from the date of the adoption of this policy or until the adopted financing plan proposes construction of the bypass or portions of the bypass relied upon for capacity by the development proposal within the planning horizon. This assumption addresses assumed capacity on Oregon 99W only; development in these Urban Reserve Areas will continue to be subject to OAR 660-012-0060 for impacts to transportation facilities other than Oregon 99W.

Those planned Urban Reserve Areas located within the Bypass Interchange Overlay District shall be subject to the provisions of the Overlay District in the interim period before the City of Newberg and the Oregon Transportation Commission adopt Interchange Area Management Plans for the Oregon 219 and East Newberg Interchanges. Upon adoption, the IAMPs will guide land use and capacity issues for purposes of complying

with OAR 660-012-0060.

l. ***The City will coordinate with ODOT, Yamhill County and affected property owners to participate in preparation and adoption of Interchange Area Management Plans (IAMPs) for the East Newberg and Oregon 219 Interchanges, consistent with the requirements of the 1999 Oregon Highway Plan and OAR 734-051-0200 (the Access Management Rule). The IAMPs will address the following at a minimum: access management standards, road connections and local street circulation, compatible land uses and bypass termini protection. The IAMPs will be designed to protect the function and capacity of the interchanges for at least a 20-year planning period.***

m. ***To protect the function of the Bypass to serve primarily longer-distance through trips, the City of Newberg will apply an Interchange Overlay District to lands that are within the Newberg city limits and within approximately ¼ mile of the East Newberg and Oregon 219 interchange ramps.***

n. ***To enable the City and ODOT to adequately plan land uses and local circulation for the interchange areas, the City of Newberg will retain existing base zoning within the Interchange Overlay District in the interim period before IAMPs are prepared and adopted. Annexations will be allowed if the associated zone change is consistent with the acknowledged Newberg Comprehensive Plan designation for the property in effect at the date of adoption of the Interchange Overlay. Permitted and conditional uses that are authorized under existing base city zones will generally be allowed within the Interchange Overlay, with certain limitations on commercial uses in the industrial zones.***

o. ***The Bypass location corridor was selected to avoid displacement of the Sportsman Airpark. The City supports the continued operation of the airport. The airport is located within the Newberg UGB, is within ¼ mile of the Oregon 219 interchange and is currently under Yamhill County jurisdiction. If the airport property is annexed, the City intends to apply an Airport Zone that maintains the ongoing use of the facility as an airport. The City will not support conversion of the airport property to commercial zoning or uses. The Bypass itself should be designed to avoid conflicts with existing air transportation corridors.***

p. ***The City of Newberg will coordinate with ODOT on any development proposal within the Bypass location corridor and interchange management areas through the City's established Site Design Review process. Development planning should consider and complement the intended function of the bypass. Land use decisions should consider the planned corridor location and avoid conflicts where feasible.***

q. ***The City recognizes that the Oregon Highway Plan seeks to avoid UGB expansions along Statewide Highways and around interchanges unless ODOT and the appropriate local governments agree to an Interchange Area Management Plan to protect interchange operation or access management for segments along the highways. [OHP Action 1B.4]. Thus, the City will work with ODOT, property owners, and citizens to create IAMPs as soon as possible.***

r. ***The City agrees not to approve expansion of the Newberg UGB or Urban Reserve Areas around the East Newberg or Oregon 219 interchanges until IAMPs for the two interchanges are prepared and adopted by ODOT, Yamhill County and the City of Newberg. An exception to this policy will be allowed for a limited expansion of the Newberg UGB into the westerly portion of Urban Reserve Area C to accommodate construction of the Northern Arterial in the general location shown on the City of Newberg acknowledged Transportation System Plan.***

s. ***Special planning and efforts shall be made to replace affordable housing displaced by construction of the bypass within the community. ODOT shall be encouraged to provide relocation assistance to the maximum extent allowed under Federal law.***

t. ***Special planning and efforts shall be made to retain and create livable and desirable neighborhoods near the bypass. This shall include retaining or creating street connections, pedestrian paths, recreational areas, landscaping, noise attenuation, physical barriers to the bypass, and other community features.***

Findings: The policies contained in this section provide policy direction regarding the City's support of the Newberg-Dundee Bypass. The Bypass is included as an element in the updated TSP's preferred future transportation system (which the State will fund). The policies under Goal 4 have been heavily modified as part of the TSP update process so that they are current with the most recent developments in the Newberg-Dundee Transportation Improvement Project also known as "NDTIP." For example, since this Comprehensive Plan was last revised, the steering committee selected a southern Bypass route. As part of Chapter 4 of the TSP, future roadway operations were evaluated in the absence of the Bypass, an analysis which results in the need for a 5-lane section of OR99W through the City. This option with its severe impacts to adjacent land uses was seen as unacceptable. This result is consistent with the findings in the draft NDTIP Locational Environmental Impact Statement. As part of Ordinance 2004-2602 the "Bypass Location Decision" new policies have been adopted under Comprehensive Plan Section K, Goal 4. Therefore, these "newer" policies have been included as applicable to the TSP update. The proposed TSP is consistent with all new policies in this section related to the Bypass.

The TSP update is consistent with the policies under Section K Goal 4.

GOAL 5: ***Maximize pedestrian, bicycle and other non-motorized travel throughout the City.***

POLICIES:

a. ***The City shall provide safe, convenient and well-maintained bicycle and pedestrian transportation systems.***

f. ***The City shall encourage pedestrian access throughout commercially zoned areas.***

g. ***On-street bike lanes or parallel bikeways should be provided on all designated major collector and arterial roadways, and on certain neighborhood collectors if warranted from a bicycle system connectivity standpoint.***

h. ***Sidewalks or parallel pathways should be provided on all designated collector and arterial roadways.***

Finding: The policies contained in this section provide policy direction regarding the City's support for the development of pedestrian and bicycle infrastructure that supports use of alternative modes of transportation.

The TSP includes an analysis of pedestrian facilities and deficiencies (Chapter 5, Section 5.5.1) and bicycle facilities and deficiencies (Chapter 5, Section 5.5.2). The TSP also includes an analysis of the cost to remedy existing system deficiencies by improving connectivity between residential areas and community destinations (Chapter 5, Section 5.5). The transportation plan includes a list of improvements to 30 sections of existing collector streets to meet city standards, including the addition of sidewalks and bicycle lanes. Pedestrian improvements also are called for on many downtown streets (Chapter 6, Section 6.2). The plan includes a separate section that identifies other needed pedestrian and bicycle network improvements including both on-street and off-street improvements to enhance connectivity (Chapter 6, Section 6.4). The plan includes revised function street classifications and design standards that call for sidewalks on all arterial, collector, and local streets and bike lanes on all streets at or above Major Collector classification (Chapter 6, Table 6-2).

The recommended amendments to the NDC also include requirements for the provision of bicycle and pedestrian facilities in residential and commercial developments. Some of the Code changes are based on Oregon Model Code elements and incorporate requirements to provide sidewalks and bike lanes on streets consistent with plan policies (NDC 151.685), pedestrian connectivity at the ends of long cul-de-sacs (NDC 151.691 and 151.705), internal pedestrian circulation networks that are linked to the public system in large commercial and high density residential developments (NDC 151.620), requirements for pedestrian and bicycle system connectivity in planning for future streets (NDC 151.680) and other requirements in order to comply with the TPR. Recommended code amendments are presented in Appendix P of the draft TSP.

The TSP also includes recommendations to strengthen and clarify the existing plan policies regarding bicycle and pedestrian and a new policy that calls for the City to consider bike and pedestrian system needs when prioritizing transportation system investments. The following Goal 5 policy amendments are recommended.

a. *The City shall provide safe, convenient and well-maintained bicycle and pedestrian transportation systems that connect neighborhoods with identified community destinations, such as schools, parks, neighborhood commercial centers, and employment centers.*

g. *On-street bike lanes or parallel bikeways ~~should~~ will be provided on all designated major collector and arterial roadways, and on certain minor collectors if warranted from a bicycle system connectivity standpoint.*

h. *Sidewalks or parallel pathways should be provided on all ~~designated collector and arterial~~ public roadways. (As amended by Ord. 98-2494, Approved by City Council 4-6-98)*

i. *The City will consider the need for pedestrian and bike facilities as one of the criteria in prioritizing transportation improvement projects.*

The proposed amendments to the TSP comply with applicable Goal 5 plan policies.

GOAL 6: Provide effective levels of non-auto oriented support facilities (e.g. bus shelters, bicycle racks, etc.).

POLICIES:

b. New development shall be designed to accommodate integrated multiple modes of transportation facilities where appropriate.

c. The City, in cooperation with the public transit agencies, shall develop park and ride facilities.

Finding: The policies contained in this section provide policy direction regarding the City's support for the use of alternative modes of transportation. The TSP includes an analysis of public transportation needs including transit and passenger rail (Chapter 5, Section 5.5.3). Potential park and ride facility locations are identified and evaluated as are transit service options. The transportation plan includes recommended investments in public transportation that integrate local bus transit, park and ride, and inter-city bus transit services (Chapter 6, Section 6.3).

Proposed amendments to the NDC include new definitions for transit centers and transit stops (NDC 151.003), define a transit stop as a transportation facility (NDC 151.003), a series of amendments that enable transit stops as a permitted uses in all zones.). Park and Ride facilities are described in such a way that they would be considered either a Transit Stop when parking is provided for less than 20 cars, or a Transit Center for larger facilities. Transit Centers are allowed as a conditional use in all zones.

The TSP also includes revisions to several Goal 6 policies to strengthen and clarify them and a new policy that calls for the City to develop transportation facilities that comply with the Americans with Disabilities Act (ADA). The following Goal 6 policy amendments are recommended.

b. *New development shall be designed to accommodate integrated multiple modes of transportation ~~facilities where appropriate~~.*

c. *The City, in cooperation with ~~the~~ public transit agencies and commuter service providers, shall develop park and ride facilities at the locations specified in the Transportation System Plan.*

d. *The City shall provide a transportation system (traffic, bicycle, pedestrian and transit) with facilities that are accessible to all people, complying in the process with applicable provisions of the Americans with Disabilities Act (ADA).*

The proposed TSP amendments comply with applicable Goal 6 policies.

GOAL 7: Minimize the capital improvement and community costs to implement the transportation plan.

POLICIES:

a. ***The Transportation System Plan shall identify short and long term improvements to the collector/arterial street system, the public transit system, the pedestrian/bicycle system and the air, rail, water, and pipeline systems.***

b. ***The list of improvement projects in the Transportation System Plan shall guide development of the city's capital improvement plan for transportation projects.***

c. ***Periodically prioritize the list of transportation-related capital improvements to be included in the City's Capital Improvement Plan.***

d. ***For those priority transportation projects included in the City's Capital Improvement Plan (CIP), provide updated cost estimates, each time the CIP list is revised.***

f. ***A Future Streets Plan shall be developed to serve as a guide in the decision-making process on new development requests.***

g. ***Future rights-of-way should be identified in undeveloped areas to facilitate acquisition with minimal disruption and cost.***

h. ***Transportation facilities will be designed to minimize impacts on:***

- ***Present and Planned Land Use patterns;***
- ***Natural and Scenic Resources;***
- ***Air Resource Quality, including noise;***
- ***Water and Land Resource Quality; and***
- ***Existing and Planned Transportation Facilities.***

Finding: The policies contained in this section provide policy direction regarding the City's desire to develop a cost-effective transportation system. The proposed TSP includes a finance plan with a list of improvement projects divided into near-term, medium term, and long term priorities. The estimated cost for each project is presented in the plan along with the major source(s) of revenue to finance the improvement (Chapter 7, Table 7.2). Procedures for selecting and prioritizing transportation system investments to include in the City's Capital Improvement Plan are guided by plan policies and requirements in Comprehensive Plan Section H: PROVISION FOR FUTURE USES. The TSP revisions inform that process.

In addition, the Springbrook/Wilsonville/219 intersection project will be added to the financial program as a short term project with an estimated cost of 3.6 million and it is anticipated that the cost will be funded by ODOT.

Proposed amendments to the NDC clarify procedures for the preparation of a Future Street Plan (NDC 151.243.1 and 151.247). The recommended street design standards (NDC 151.685) and street layout and connectivity requirements (NDC 151.681 and NDC Figure 151.705) provide guidance on the location and size of future streets.

The TSP also includes proposed revisions to several Goal 7 policies to strengthen and clarify them. The following Goal 7 policy amendments are recommended.

c. *The City will ~~Periodically~~ prioritize the list of transportation-related capital improvements to be included in the City's Capital Improvement Plan (CIP) including phasing for major transportation system improvements.*

d. *For those priority transportation projects included in the City's ~~Capital Improvement Plan~~ (CIP), provide updated cost estimates, each time the ~~CIP~~ project list is revised.*

e. *Adverse economic, social, environmental, and energy ~~Excessive~~ impacts ~~of~~ from transportation system improvements ~~to~~ on adjacent properties shall be minimized as far as practical.*

~~f~~g. *The City may require preparation of a ~~A~~ Future Streets Plan ~~shall be developed~~ for all commercial and industrial developments and residential development projects greater than 1-acre to serve as a guide in the decision-making process on new development requests.*

~~g~~f. *Future public rights-of-way should be identified in undeveloped areas through a Future Street Plan or a specific area plan, to facilitate right-of-way acquisition and dedication with minimal disruption and cost. A Future Street Plan is usually prepared by a private party to show street and bike/pedestrian connectivity for development projects when transportation connectivity is needed through adjoining private properties and neighborhoods. A Specific Area Plan is usually prepared by the City in collaboration with affected property owners to show street and*

bike/pedestrian connectivity for planned land uses in undeveloped or partially developed areas. Corridor plans are a type of specific area plan.

i. *New development and existing development undergoing expansion or modification shall be designed to accommodate planned long-term transportation improvement projects ~~which are adjacent to~~ in the vicinity of the development.*

~~j. *The City shall encourage the use of specific area plans in order to minimize the impacts of transportation facilities on neighboring properties.*~~

The proposed TSP amendments comply with applicable Goal 7 policies.

GOAL 8: Maintain and enhance the City's image, character and quality of life.

POLICIES:

b. New office park and commercial developments shall provide internal pedestrian circulation by clustering of buildings, construction of pedestrian ways, covered walkways and skywalks, and other similar techniques.

3) The City shall develop 100 off-street parking places, in a cooperative effort with the business community, in the central business district, to offset parking lost by the Hancock Street widening project.

Finding: The policies contained in this section provide policy direction regarding the City's desire to have the transportation system enhance livability and community character. The proposed TSP includes a list of capital improvement projects in the downtown that are not intended to add system capacity but rather to enhance the character and functionality. In particular, recommended improvement to 2nd and 3rd Streets, OR 99W, Main Street, along with redesign of parking and pedestrian facilities on 1st Street and Hancock Street are intended to improve the availability of public parking and access to the downtown. These improvements, combined with construction of the Bypass, will result in additional downtown parking that was unforeseen when Policy b.3) was written. In the revised TSP, this policy is rewritten to address overall parking and pedestrian circulation needs in the downtown (see below).

The NDC already included requirements for internal pedestrian ways in office parks and commercial developments. Recommended changes to the development code provided added specificity for how those private elements must connect to the external public pedestrian system and clarify design character for private walkways and pedestrian features (NDC 151.620.3).

The TSP also includes proposed revisions to several Goal 8 policies to strengthen and clarify them. The following Goal 8 policy amendments are recommended.

a. *Adopt transportation and ~~/~~land use ~~system~~ design standards ~~which~~ that emphasize visual and aesthetic quality.*

b. *New office park and commercial developments shall provide ~~internal~~ for pedestrian circulation by clustering ~~of~~ buildings, ~~construction of~~ constructing pedestrian pathways, ~~covered~~ making use of walkways and skywalks, and other similar techniques that make walking convenient for people accessing and working within the development.*

c. The City shall work cooperatively with the business community to ensure there is an adequate supply of on-street and off street parking in the downtown. The City shall prepare and periodically update a public parking management plan for the central business district.

~~e~~d. The City will encourage ~~Encourage plans which protect~~ development that protects the integrity of existing neighborhoods, commercial, and industrial areas using the following design techniques.

1) New development and new transportation facilities shall be designed to meet the street classification, design, and access ~~standard~~ standards identified in the Transportation System Plan.

2) City ~~New minor~~ arterials ~~shall~~ should include sound walls and/or landscaping ~~buffering~~ buffers between ~~the~~ residential ~~use~~ areas and the street.

3) ~~The City shall develop 100 off street parking places, in a cooperative effort with the business community, shall prepare and periodically update a public marking management plan for~~ Make use of on-street parking and buildings that abut the street frontage in the central business district and designated neighborhood commercial areas to create pedestrian friendly retail and commercial service environments.~~, to offset parking lost by the Hancock Street widening project~~.

The proposed TSP amendments comply with applicable Goal 8 policies.

GOAL 9: Create effective circulation and access for the local transportation system.

POLICIES:

1) The City shall coordinate the development of a continuous interconnected street pattern which connects adjacent developments and minimizes the use of cul-de-sacs.

2) The City shall develop and implement standards for cul-de-sac design.

c. Develop a system of roads which provide for efficient movement of traffic, considering the general design guidelines below: (note that these policies have changed; see policy amendments below).

6) New private streets shall not be allowed.

K. ***Apply appropriate access spacing criteria to enhance traffic operation and safety on City streets. The access spacing standards apply to traffic signals, public street intersections, private driveways, and non-traversable median openings. The standards shall be applied to new street construction, reconstruction of existing streets, and new street access associated with development.***

Findings: The policies contained in this section provide policy direction regarding the City's desire to have a transportation system that is cohesive and serves local residential areas and businesses. The majority of these policies no longer apply because conditions have changed, making them obsolete, or because design requirements have been changed to accommodate projected traffic needs and the needs of citizens choosing to use alternative modes.

The Wilsonville/Springbrook/219 intersection realignment will improve safety at a well traveled intersection as well as enhancing local circulation and increasing access to the Springbrook Industrial Park and industrial properties just west of Ore 219.

- Safety and Local Circulation. The project improves safety at the existing intersection of Ore 219/ Wilsonville Rd./Springbrook by separating Wilsonville Rd. from the existing intersection and re-routing local traffic exiting the state highway to Springbrook via a new connector road. Thus, the safety issues at a complex intersection are addressed while preserving the options of local traffic.
- Springbrook Industrial Park. The project will add a new traffic signal at the intersection of the proposed new connector road between Ore 219 and Springbrook and re-align the 9th Street intersection between Industrial Drive and Ore 219. This signal will provide safe, dependable access from Springbrook Industrial Park to the state highway. In addition, the new connector road itself will have a middle turning lane, which will facilitate safe turning movements into the Springbrook Industrial Park. Ore 219 will include turning lanes and a right-turn lane onto the new connector road designed for large semi-tractor trailer trucks.

Previous responses have noted proposed revisions to plan policies and code elements related to local street connectivity. The code already includes standards defining maximum lengths for cul-de-sacs. Significant changes are proposed to the list of functional classifications for Policy 9.c., including a new functional classification for an Expressway to accommodate the Bypass (see below). The development code makes no allowances for private streets.

With regard to Policy 9.d and access spacing, recommended amendments to the NDC include new sections that address public and private access spacing for ensuring public safety and to maintain functional operation of the transportation system. Requirements and standards are set forth in NDC 151.703.

The TSP also includes proposed revisions to several Goal 9 policies to strengthen and clarify them. The following Goal 9 policy amendments are recommended.

~~*a. Analyze alternative routes for the re-routing of 219 to facilitate both local and regional traffic.*~~

~~*b*~~*a. Enhance existing and add alternative routes for local travel.*

1) The City development code shall ~~coordinate~~ encourage the development of a continuous interconnected street pattern ~~which~~ that connects adjacent developments and minimizes the use of cul-de-sacs.

2) The City shall implement standards for cul-de-sac design.

3) The City shall coordinate the development of an integrated bike and pedestrian system that provides for connections between and through adjacent development and that provides convenient links to community destinations.
4) The City will actively pursue development of park and ride lots for the convenience of area residents making use of carpooling, van pooling, and commuter transit.
5) The City will support efforts to increase public transit options for area residents.

~~c~~b. Develop a system of roads ~~which~~ that provide for efficient movement of traffic, considering the general design guidelines below:

1) Expressway. Expresways shall be designed to expedite the movement of regional traffic through the urban area; they function as freeways with limited access points and no private development access points. Intersections shall be grade separated and access shall be provided only at grade separated interchanges. General design criteria are summarized as follows:

- *100 to 120 feet of right of way*
- *80 feet curb to curb cross-section*
- *No direct access from adjoining private property*
- *Limited access points, preferably at grade separated interchanges*
- *Separated pedestrian and bicycle facility on one side of the facility*
- *No parking; emergency shoulder for disabled vehicle use only*
- *Sound buffering provided to protect existing and future residential property as necessary*
- *Roadway designed for travel speeds exceeding 55 m.p.h.*

Within the City of Newberg, the ***Highway 99W Bypass Corridor*** *is intended to be an expressway, which is generally aligned east/west along the southern alignment route depicted in the Newberg/Dundee Bypass Location Environmental Impact Statement. The length of the Highway 99W Bypass within the City is approximately 3 miles.*

~~1~~2) Major Arterials. Major Arterials ~~shall~~ expedite the movement of traffic to and from major trip generators and between communities~~;~~, collect and distribute traffic from ~~freeways and~~ expressways to collector streets, or directly to traffic generators. The functional emphasis is on the movement of people, goods, and services through the city, therefore consolidating access points, minimizing parking, and managing traffic flow to promote through-travel is the desired condition. Exceptions may occur in the central business district and in designated neighborhood commercial areas. General design criteria are summarized as follows:

- *85 to 100 feet of right-of-way.*
- *~~70~~74 feet curb to curb cross section.*
- *Direct access is minimized (no residential access).*
- *Signalization at intersections with arterials, and ~~with~~ collectors as warranted.*
- *Bicycle lanes ~~paths~~ shall ~~may~~ be provided on both sides of street. Bicycle lanes should be four to six feet wide ~~on both sides of the street~~. Alternatively, a parallel bikeway may be provided on one side of the street when bike lanes are not feasible.*
- *~~Seven~~Five foot sidewalks and curbs are required on both sides of the street.*
- *Parking is generally not allowed except ~~allowed on one side~~ in ~~some~~ special designated areas, such as the downtown; no parking allowed within twenty feet of curb return.*
- *Sound buffering ~~will~~ or landscape buffers may be required to protect existing and future residential property where deemed necessary.*

Within the City of Newberg, ***Highway 99W*** *is ~~an~~ a major arterial ~~which~~ that is generally aligned east/west. The length of Highway 99W within the City is approximately 3.3 miles ~~representing 15% of the total nonresidential street mileage~~.* ***Highway 219 (Hillsboro-Silverton Highway)*** *from First Street to the southern urban boundary is also ~~an~~ a major* *arterial ~~within the City of Newberg~~, and that is generally aligned north/south. The length of Highway 219 within Newberg (south of Villa Road) is approximately 3.0 miles.*

~~2~~3) Minor Arterial. Minor Arterials ~~shall~~ collect and distribute traffic from major arterials to collector and local streets~~;~~ and~~,~~ facilitate traffic movement between neighborhoods. General street design criteria shall be as follows:

- *60 to 80 feet of right-of-way.*
- *46 feet curb to curb cross section.*
- *Signalization at intersections with major arterials and collector streets as warranted.*
- *A 5-foot bicycle lane in each direction adjacent to the curb.*
- *Seven-foot curb sidewalks. In commercial areas sidewalks preferred from curb to property line. Sidewalks and curbs required on both sides of street. Five-foot sidewalks in non-commercial areas.*
- *On-street parking ~~allowed on one side in some areas where there are existing curbs~~ is generally not allowed except in the downtown and other areas where special circumstances warrant. ~~In general, no~~No parking will be allowed within ~~100~~ 20 feet of curb return.*
- *Sound buffering ~~will~~ or landscape buffers may be required to protect ~~all~~ existing and future residential property where deemed necessary.*

~~3~~4) Major Collectors. Major collectors shall serve multi-neighborhood areas. They are intended to channel traffic from local streets and/or minor collectors to the arterial street system. A major collector can also provide access to abutting properties.

- *60 to 80 feet of right-of-way with ten foot public utility easements..*
- *34 to 46 feet curb to curb cross section.*
- *Five-foot bike lanes on both sides of the street.*
- *~~No parking on both sides of the street, generally.~~ On-street parking is generally not allowed except in the downtown and other areas where special circumstances warrant. No parking will be allowed within 20 feet of curb return.*

- *A minimum six-foot planter strip and six-foot sidewalk ~~a~~on both sides of the street.*

~~4~~5) Minor Collectors. A minor collector provides access to abutting properties and serves the local access needs of neighborhoods by channeling traffic to the major collector and arterial street system. A minor collector is not intended to serve through traffic.

- *56 to 65 feet of right-of-way with 10 foot public utility easements.*
- *34 to 42 feet curb to curb.*
- *Parking on both sides of the street replaced by bike lanes where needed.*
- *A minimum four and one-half (4 1/2) foot planter strip and five-foot sidewalk on both sides of the street.*

~~5~~6) Local Streets. Local streets provide direct access to adjoining properties and connect to collector streets. The system design criteria for local streets include:

- *54-65 feet of right-of-way with 10 foot public utility easements.*
- *For residential streets, standard 32 feet curb to curb with parking on both sides.*
- *A minimum four and one half foot wide planting strip and five foot wide sidewalk on both sides of the street.*

~~6~~7) New private streets shall not be allowed.

~~d.~~c. The City shall apply appropriate access spacing criteria as part of its Engineering Design Standards to enhance traffic operation and safety on City streets. The access spacing standards apply to traffic signals, public street intersections, private driveways, and non-traversable median openings. The standards shall be applied to new street construction, reconstruction of existing streets, and new street access associated with development. (Adopted by Ord. 99-2513, approved by City Council 8-2-99).

The proposed TSP amendments comply with applicable Goal 9 policies.

GOAL 10: Maintain the viability of existing rail, water and air transportation systems.

POLICIES:

a. Encourage and support compatible transportation and land use development.

b. Evaluate and mitigate potential losses whenever possible.

1) The City shall maintain the viability of existing rail, water, and air transportation systems.

2) The City shall maintain an airport overlay zone as long as there is an operating airport in or near the City.

Finding: The policies contained in this section provide policy direction regarding these required elements of a TSP. The proposed TSP includes an analysis of rail, water, air, and pipeline transportation facilities in TSP Chapter 5, Section 5.5. The transportation plan also includes recommendations for the management and regulation of these assets in TSP Chapter 6, Section 6.5. The revisions to this section of the TSP do not effect existing code requirements related to the regulation of these transportation systems.

The proposed TSP amendments comply with applicable Goal 10 policies.

GOAL 11: Establish fair and equitable distribution of transportation improvement costs.

POLICIES:

a. Define appropriate phasing and funding which relates to the benefits received.

b. The City shall utilize the Transportation Improvement Funding policies outlined in the Transportation System Plan for determining responsibilities and costs for funding improvements.

Finding: The policies contained in this section provide policy direction regarding the allocation of public costs to public and private interests that benefit from the development and use of the transportation system. No changes are recommended to plan policies under this goal. No proposed changes to the TSP affect how costs are to be allocated to benefiting properties. The TSP includes a financial plan that outlines the anticipated timing for building system improvements and prospective sources for financing those improvements. The plan notes that the City's existing system development charge fee structure is only expected to generate about 1/3 of the revenue needed to build identified capacity increasing improvements. While the fees will need to be increased, it is not clear what percentage of capacity related system improvements may be eligible for recovery through SDCs under state law. A figure showing the expected allocation of costs to finance the plan is in TSP Chapter 7, Figure 7.1.

The cost of the Wilsonville/Springbrook/219 project is $3.6 million. ODOT is proposing to fund the entire cost of the project. We find that this is a fair and equitable distribution of transportation costs. This intersection reconfiguration is driven by a significant safety issue. We find that responding to this safety concern in the most expeditious manner is responsible, prudent and best meets our community needs. Such planning will enhance our community livability and help expand our industrial activities along the roadways within the influence of the intersection and make our transportation routes to our other significant transportation areas more efficient and safe.

The proposed TSP amendments comply with applicable Goal 11 policies.

GOAL 12: Minimize the negative impact of a Highway 99 bypass on the Newberg community.

POLICIES:

a. The bypass should be located within the study area as far from the Willamette River as practical.

b. ~~If the Southern bypass route is chosen, p~~Pedestrian/bike trails, streets, and rail lines should have access across the bypass route. The bypass should not block access to the Willamette Greenway or the Chehalem Creek corridor and Ewing Young Park. Trails connecting across the bypass should be welcoming and pedestrian-friendly amenities, such as benches, decorative lighting, decorative walkway paving materials, and special landscaping.

c. The bypass route should be located as far north as practical within the study area to consolidate the Riverfront District residential and commercial land on the south side of the bypass.

d. ~~If the Southern bypass route is chosen, t~~The bypass should be below grade through the riverfront area.

e. ~~If the Southern bypass route is chosen, s~~Significant landscaping should be located along the bypass, including trees.

f. If ~~the Southern bypass route is chosen, m~~Measures should be taken to minimize noise in adjacent residential, tourist commercial and recreational areas.

g. Impacts to Scott Leavitt Park shall be mitigated to significantly enhance the function of the park after construction of the bypass.

h. Safe pedestrian and bicycle connections shall be maintained between the riverfront area and downtown.

Finding: The policies contained in this section provide policy direction regarding planning for the Newberg-Dundee Bypass. This planning process is ongoing. No changes are recommended to plan policies under this goal, with the exception of a minor amendment to recognize that the southern bypass route has been chosen. The planning process is continuing under work program and policy guidance that is unchanged from the existing TSP. The need to develop implementing land use regulations for interchange areas is addressed in early policy responses; that same process would address the policy issues listed above. The recommended alignment for the Bypass is the southern alignment so all the above policies remain relevant to the ongoing planning process.

The proposed TSP amendments comply with applicable Goal 12 policies.

L. PUBLIC FACILITIES AND SERVICES

GOAL: *To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban development.*

POLICIES:

1. All Facilities & Services Policies

a. The provision of public facilities and services shall be used as tools to implement the land use plan and encourage an orderly and efficient development pattern.
e. Owners of properties which are located on unimproved streets should be encouraged to develop their streets to City standards.
f. Maximum efficiency for existing urban facilities and services will be encouraged through infill of vacant City land.
h. New residential areas shall have: paved streets, curbs, pedestrian ways, water, sewer, storm drainage, street lights and underground utilities.

Findings: The public facilities section of the plan primarily deals with the provision of utility infrastructure, such as water, sewer, and drainage facilities, that enable new development. Public facility investment in this sense becomes a growth management tool. Given that transportation and utility extensions generally occur in the same public right of way, the need for coordination between public facility plans and transportation plans is obvious. The responsibility for coordinating planned utility investment with planned transportation system investment rests with the City Council when it updates and adopts the City's Capital Improvement Plan. The recommended phasing program outlined in the TSP providence to the Council when it considers transportation and public facility investment priorities. The CIP is updated every year as part of the City's budget process.

TSP policies mandate that new streets be improved to city standards. The TSP and plan policies identify street design standards for various functional classifications. Proposed NDC amendments include street design standards that are consistent with the TSP (NDC 151.685). City public works staff participated in the TSP planning process and affirmed that recommended street widths are sufficient to accommodate utility needs by not objecting to proposed standards.

Newberg Comprehensive Plan Chapter IV – Plan Description, Section H – Provision for Future Needs, Subsection 2 – Public Facilities states that city priorities for water, sewer, and storm drainage improvements are outlined in adopted Master Plans. The plan includes lists of utility projects that were priority projects in 1990, which have since been updated with new master plans for water sewer and storm drainage. These master plans and the TSP provide a current list of investment priorities that the City Council may consider when it updates its Capital Improvement Plan each year.

The proposed TSP is consistent with Goal 11 Public Facility Plan policies.

EXHIBIT B TO ORDINANCE 2005-2619

Newberg Transportation System Plan Draft March 2005

[Copy of Plan Enclosed]

EXHIBIT C TO ORDINANCE 2005-2619: TECHNICAL APPENDIX

[Copy of Appendix Enclosed]

EXHIBIT D TO ORDINANCE 2005-2619:
DEVELOPMENT CODE TEXT AMENDMENTS

This memo presents recommended changes to the City of Newberg Development Code (Newberg City Code, Section 151) in order to comply with implementation provisions of the Oregon Transportation Planning Rule (TPR) as codified in OAR 660-012-045.

The discussion of recommended changes is generally organized by referencing the applicable section(s) of the TPR, or new city policies, that prompt a change in the city code followed by the recommended revisions. Revisions are presented with deletions shown ~~strikethrough~~ and additions shown underlined.

The following definitions should be added to the NDC in order to support suggested changes to the subsequent chapters.

AIRPORT. A facility, either on land or water, where aircraft can take off and land, typically including hard-surfaced landing strips, a control tower, hangars, and accommodations for passengers and cargo.

ARTERIAL. A street so designated in the Newberg Transportation System Plan. ***ARTERIALS*** are intended to expedite the movement of traffic to and from major trip generators and between communities, and to collect and distribute traffic from expressways to collector streets, or directly to traffic generators. ***ARTERIALS*** are of two types:

(1) Major Arterial: An ***ARTERIAL*** typically with or planned to have more than one travel lane in each travel direction.
(2) Minor Arterial: An ***ARTERIAL*** typically with or planned to have one travel lane in each travel direction.

BIKEWAY. Any road, path or way that is in some manner specifically open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are shared with other transportation modes. The five types of bikeways are:

a. Multi-use Path. A paved way (typically 10 to 12-feet wide) that is physically separated from motorized vehicular traffic; typically shared with pedestrians, skaters, and other non-motorized users.

b. Bike Lane. A portion of the street (typically 4 to 6-feet wide) that has been designated by permanent striping and pavement markings for the exclusive use of bicycles.

c. Shoulder Bikeway. The paved shoulder of a street that does not have curbs or sidewalks that is 4 feet or wider and is typically shared with pedestrians.

d. Shared Roadway. A travel lane that is shared by bicyclists and motor vehicles.

e. Multi-use Trail. An unpaved path that accommodates all-terrain bicycles; typically shared with pedestrians.

BLOCK. ~~A parcel of land bounded by three or more streets in a subdivision~~. A tract of land bounded by public or private street right-of-ways or public walkways.

COLLECTOR. A street so designated in the Newberg Transportation System Plan. ***COLLECTORS*** are intended to channel traffic from local streets or other collectors to the arterial street system. They can also provide access to abutting properties. ***COLLECTORS*** are of two types:

(1) Major Collector: A ***COLLECTOR*** that is intended to serve through traffic, and that typically has sufficient traffic volume to warrant striped bike lanes.
(2) Minor Collector: A ***COLLECTOR*** that is not intended to serve through traffic, and that typically does not have sufficient traffic volume to warrant striped bike lanes.

CUL-DE-SAC. A dead-end street intended for local traffic that typically terminates with a bulb or other vehicle turnaround.

DRIVEWAY. An area that provides vehicular access to a site, except for public streets. A driveway begins at the property line and extends into the site. Driveways include parking, maneuvering, or circulation areas in parking lots and parking spaces. See also "Private Drive" and "Service Drive".

EXPRESSWAY. A highway designated in the Newberg Transportation System Plan that is intended to provide safe and efficient high speed and high volume traffic movements. Its primary function is to provide for interurban travel and connections with minimal interruptions. A secondary function is to provide for long distance intra-urban travel. Access is limited to designated public street interchanges.

FUNCTIONAL CLASSIFICATION **-** The classification given to streets and highways in the Newberg Transportation System Plan. The classification is intended to describe the purpose of the street relative to access and mobility. Classifications include, from highest to lowest, expressways, major and minor arterials, major and minor collectors, local commercial, industrial and residential streets

HELIPORT. *A FACILITY USED FOR LANDING AND ASCENDING OF HELICOPTERS, TYPICALLY WITH A CONTROL TOWER, HANGARS, AND ACCOMMODATIONS FOR PASSENGERS AND CARGO.*

HELIPAD. A transportation structure or area used for the landing and ascending of a helicopter, typically associated with a single use, such as a hospital.

LANDING FIELD. A facility, either on land or water, where aircraft can take off and land, typically excluding hard-surfacing, control towers, hangars, or accommodations for passengers and cargo.
See also ***AIRPORT***.

~~WALK, ON-SITE~~ ***WALKWAY, PRIVATE***~~.~~. A pathway within a lot with a durable, hard, smooth surface intended for pedestrian use, including general pedestrian areas such as plazas and courts.

WALKWAY, PUBLIC. A pedestrian path within a public right-of-way or a dedicated public easement other than sidewalks adjacent to a street, that is designed to allow travel through a block.

ODOT. The Oregon Department of Transportation

TRANSPORTATION FACILITIES AND IMPROVEMENTS. The physical improvements used to move people and goods from one place to another. ***TRANSPORTATION FACILITIES AND IMPROVEMENTS*** include the following:

(1) Construction of streets, walkways, and associated improvements as part of an approved subdivision, partition, design review, or similar application.
(2) Projects identified in the City's adopted Transportation System Plan.
(3) Installation of culverts, pathways, medians, fencing, guardrails, walls, lighting, and similar types of improvements.
(4) Normal operation, maintenance, repair, and preservation activities of existing transportation facilities.
(5) Landscaping as part of a transportation facility.
(6) Transit stops.

TRANSPORTATION FACILITIES AND IMPROVEMENTS do not include airports, landing fields, heliports, helipads, transit centers, or parking areas.

TRANSIT CENTER. A location for boarding or departing of passengers from buses, trains, taxis or similar common passenger carriers (excluding aircraft), typically for several fixed routes. TRANSIT CENTER may include accessories such as multiple shelters, restrooms, food vending , parking lots, offices for transit personnel, and transit vehicle storage and repair areas.

TRANSIT STOP. A location for boarding or departing of passengers from buses, trains, taxis or similar common passenger carriers (excluding aircraft), typically for one or two fixed routes. TRANSIT STOP may include accessories such as a single shelter, passenger parking for up to 20 vehicles, trash receptacles and a restroom. See also TRANSIT CENTER.

WALKWAY. See "***WALKWAY, PUBLIC***" "***WALKWAY, PRIVATE***" and "***SIDEWALK***."

OAR 660-12-0045 Implementation of the Transportation System Plan (TSP)

(1) (b) To the extent, if any, that a transportation facility, service or improvement concerns the application of a comprehensive plan provision or land use regulation, it may be allowed without further land use review if it is permitted outright or if it is subject to standards that do not require interpretation or the exercise of factual, policy or legal judgment;

Several sections of the NCS should be modified related to this rule requirement. For example, none of the City's plan districts allow transportation facilities and improvements outright; a series of revisions are recommended to enable the development of these facilities within land use districts. Transportation facilities include public improvements for streets, transit, parking and bicycle and pedestrian facilities. Because many revisions are required, the recommended changes to the permitted use sections of the code are presented here in tabular format. In the amended ordinance, these will be included in the permitted use list for the relevant section.

The construction of the Newberg-Dundee Bypass is going to create interchanges where restricted access and development is going to be desired. This memo includes a placeholder for the interchanges as an overlay zone. Additionally, certain high-impact transportation facilities and improvements should only be allowed as conditional uses, as noted in Section 151.211.

District	Code Section	Permitted Uses
R-1 Low Density Residential District	151.281/282	Transportation facilities and improvements[1]
R-2 Medium Density Residential District	151.296/297	Transportation facilities and improvements[1],
R-3 High Density Residential District	151.311/312	Transportation facilities and improvements[1]
RP Residential-Professional District	151.326/327	Transportation facilities and improvements[1]
C-1 Neighborhood Commercial District	151.341/342	Transportation facilities and improvements[1]
C-2 Community Commercial District	151.356/357	Transportation facilities and improvements[1] ~~Bus terminals~~ **Transit Centers**
C-3 Central Business District	151.371/372	Transportation facilities and improvements[1] ~~Bus terminals~~ **Transit Centers**
C-4 Riverfront Commercial District	151.376/377	Transportation facilities and improvements, Transit Centers[1]
M-1 Limited Industrial District	151.386/387	Transportation facilities and improvements, Transit Centers[1]
M-2 Light Industrial District	151.401/402	Transportation facilities and improvements, Transit Centers[1]
M-3 Heavy Industrial District	151.416/417	Transportation facilities and improvements[1]
Springbrook District (SD)	151.426	Transportation facilities and improvements[1]
Springbrook District (SD)	151.426	~~Bike racks, street furniture, drinking fountains, and other pedestrian amenities.~~
Institutional District (I)	151.436	Transportation facilities and improvements, Transit Center[1]
Community Facilities (CF) District	151.446/447	Transportation facilities and improvements[1]

§ 151.211 CONDITIONAL USES PERMITTED IN ANY ZONING DISTRICT

In addition to those conditional uses listed within individual zoning districts, the following uses may be permitted in any zoning district subject to a conditional use permit issued through a Type III procedure. Where any of the following uses are listed as a permitted use within the applicable zoning district, a conditional use permit is not necessary. Where a use is not authorized, or where ambiguity exists concerning the appropriate classification or procedure for the establishment of a particular use or type of development within the meaning and intent of this code, said use or type of development may only be established by conditional use permit.

(A) Airports and landing fields.

(B) Amusement parks.

(C) Carnivals and circuses, if established for more than two weeks, except those in conjunction with a county fair or other outdoor governmentally sponsored event.

(D) Cemeteries.

(E) Facilities for the care and/or lodging of alcoholics, except publicly or privately operated rehabilitation centers providing clinical supervision, care and intensive treatment to persons with alcohol and/or chemical dependency problems.

(F) Garbage dumps, sanitary land fills. Solid waste collection facility when under franchise by the city. This conditional use would include temporary storage and transfer of recyclable solid waste, supply storage, vehicle and equipment storage, service or repair and related accessory uses including disposal or landfill sites.

(G) Heliports and ~~helistops~~ helipads.

(H) Jails or penal farms.

(I) Mental hospitals.

(J) Pound, dog or cat, (kennel).

(K) Race tracks, including drag strips and go-cart tracks.

(L) Sewage treatment plants.

(M) Home occupations with more than one outside paid employee working at the residence at any given time.

(N) Modifications to public street standards for the purpose of ingress and egress to a minimum of three and not more than six lots.

(O) (Ord. 96-2451, passed 12-2-96; Am. Ord. 99-2507, passed 3-1-99)

§ 151.556 YARD EXCEPTIONS AND PERMITTED INTRUSIONS INTO REQUIRED YARD SETBACKS.

The following intrusions may project into required yards to the extent and under the conditions and limitations indicated:

(F) Public telephone booths and public ~~bus~~ **transit** shelters. Public telephone booths and public ~~bus~~ **transit** shelters shall be permitted, provided that vision clearance is maintained for vehicles requirements for vision clearance.

OAR 660-12-0045
(1)(c) In the event that a transportation facility, service or improvement is determined to have a significant impact on land use or to concern the application of a comprehensive plan or land use regulation and to be subject to standards that require interpretation or the exercise of factual, policy or legal judgment, the local government shall provide a review and approval process that is consistent with 660-012-0050. To facilitate implementation of the TSP, each local government shall amend its land use regulations to provide for consolidated review of land use decisions required to permit a transportation project.

To comply with the above TPR requirement, the following provisions for noticing ODOT should be added to the existing notice procedures in section 151.043, *Referral of Development Permit Applications.*

§ 151.043 REFERRAL OF DEVELOPMENT PERMIT APPLICATIONS.

Within five working days of accepting an application, the Director shall do the following:

(A) On Type I procedures, the Director is only required to make referrals to the extent necessary to make a decision on the development permit.

(B) On Type II and Type III procedures, the Director shall transmit a copy of the application, or appropriate parts of the application, to each affected agency and city department for review and comment, including ODOT and others ~~those~~ responsible for determining compliance with state and federal requirements. The affected agencies and city departments shall have 15 calendar days to comment. The referral agency or city department is presumed to have no comments if comments are not received within the specified time period. The Director shall grant an extension only if the application involves unusual circumstances. Any extension shall only be for a maximum of 15 additional days.

(C) On Type IV procedures, the Director shall provide referrals to ODOT and other agencies in compliance with state law and as otherwise determined by the city.
(Ord. 96-2451, passed 12-2-96)

OAR 660-012-0045
(2) Local governments shall adopt land use or subdivision ordinance regulations, consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions. Such regulations shall include:
(a) Access control measures, for example, driveway and public road spacing, median control and signal spacing standards, which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;

The Newberg Code includes a table in Section 151.703 that establishes access spacing for streets and roads based on functional classification. On its own, the table offers limited guidance on access management guidelines to aid decision-makers in determining appropriate vehicular access solutions. In order to comply with the TPR, the Access Control section should include more than access spacing standards, such as different options for access management. The block length standards have also been slightly modified to ensure the creation of appropriate sized blocks for specific zones.

§ 151.703 VEHICULAR ACCESS ~~SPACING~~ STANDARDS

(A) *Purpose*. The purpose of these standards is to manage vehicle access to maintain traffic flow, safety, roadway capacity, and efficiency. They help to maintain an adequate level of service consistent with the functional classification of the street. Major roadways, including arterials, and collectors, serve as the primary system for moving people and goods within and through the City. Access is limited and managed on these roads to promote efficient through movement. Local streets and alleys provide access to individual properties. Access is managed on these roads to maintain safe maneuvering of vehicles in and out of properties, and to allow safe through movements. If vehicular access and circulation are not properly designed, these roadways will be unable to accommodate the needs of development and serve their transportation function.

(B) *Access Spacing Standards*. Public street intersection and driveway spacing shall follow the table below:

Access Spacing Standards

Roadway Functional Classification	**Area[1]**	**Minimum Public Street Intersection Spacing (Feet)[2]**	**Frontage Required per Additional Driveway[3]**	**Driveway Setback from Intersecting Street[4]**	**Typical Median Treatment**	**Minimum Spacing of Median Openings**
Expressway	All	As shown in Newberg Transportation System Plan	NA	NA	Recessed swale and/or crash barrier	NA
Major arterial	Urban CBD	600 200	300 ~~NA~~300	150 100	Raised median or center left-turn lane	600 NA
Minor arterial	Urban CBD	300 100	200 ~~NA~~200	100 100	Raised median or center left-turn lane	300 NA
Major collector	All	200	150	100	Center left-turn lane	NA
Minor collector	All	150	75	75	None	NA
Local streets	All	100	75	50	None	NA

1 *Urban* refers to intersections inside the city urban growth outside the Central Business District (C-3 Zone).

Roadway Functional Classification	**Area**[1]	**Minimum Public Street Intersection Spacing (Feet)**[2]	**Frontage Required per Additional Driveway**[3]	**Driveway Setback from Intersecting Street**[4]	**Typical Median Treatment**	**Minimum Spacing of Median Openings**

CBD refers to intersections within the Central Business District (C-3 Zone).
All refers to all intersections within the Newberg Urban Growth Boundary.
2 Measured centerline to centerline.
3 Requirement is the minimum frontage required per additional driveway beyond the first. Where two driveways are constructed, at least once curb parking space shall separate each driveway approach.
4 The setback is based on the higher classification of the intersecting streets. Measured from the curb-line of the intersecting street to the beginning of the driveway, excluding flares. If the driveway setback listed above would preclude a lot from having at least one driveway, including shared driveways or driveways on adjoining streets, one driveway is allowed as far from the intersection as possible.

(C) *Properties With Multiple Frontages*. Where a property has frontage on more than one street, access shall be limited to the street with lesser classification.

(D) Alley Access. Where a property has frontage on an alley and the only other frontages are on collector or arterial streets, access shall be taken from the alley only.

(5) (E) Closure of Existing Accesses. Existing accesses that are not used as part of development or redevelopment of a property shall be closed and replaced with curbing, sidewalks, and landscaping, as appropriate.

(F) *Shared Driveways*. The number of driveways onto arterial streets shall be minimized by the use of shared driveways with adjoining lots where feasible. The City shall require shared driveways as a condition of land division or site design review, as applicable, for traffic safety and access management purposes in accordance with the following standards:

(1) Where there is an abutting developable property, a shared driveway shall be provided. When shared driveways are required, they shall be stubbed to adjacent developable parcels to indicate future extension. “Stub” means that a driveway temporarily ends at the property line, but may be accessed or extended in the future as the adjacent parcel develops. “Developable” means that a parcel is either vacant or it is likely to receive additional development (i.e., due to infill or redevelopment potential).

(2) Access easements (i.e., for the benefit of affected properties) shall be recorded for all shared driveways, including pathways, at the time of final plat approval or as a condition of site development approval.

(3) No more than two lots may access one shared driveway.

(G) *Frontage Streets and Alleys*. The review body for a design review or subdivision may require construction of a frontage street to provide access to properties fronting an arterial or collector street.

(H) *Exceptions*. The Director may allow exceptions to the access standards above in any of the following circumstances:

(1) Where existing and planned future development patterns or physical constraints,

such as topography, parcel configuration, and similar conditions, prevent access in accordance with the above standards.

(2) Where the proposal is to relocate an existing access for existing development, where the relocated access is closer to conformance with the standards above and does not increase the type or volume of access.

(3) Where the proposed access results in safer access, less congestion, a better level of service, and more functional circulation, both on-street and on-site than access otherwise allowed under these standards.

Where an exception is approved, the access shall be as safe and functional as practical in the particular circumstance. The Director may require that the applicant submit a traffic study by a registered engineer to show the proposed access meets these criteria.

[Delete 151.695 (C) and incorporate into a new section 151.705, Public Walkways]

~~(C) *Public access ways*. When necessary for public convenience and safety, the Director may require the land divider to dedicate to the public access ways to connect to cul-de-sacs, to pass through oddly shaped or unusually long blocks, to provide for networks of public paths according to adopted plans, or to provide access to schools, parks or public areas of such design, width, and location as reasonably required to facilitate public use. Where possible, said dedications may also be employed to accommodate uses as included in division (D) of this section.~~

[Move 151.695 (D) "Easements for utilities" to a new section 151.726]

~~(D) *Easements for utilities.*~~ **§ 151.726 EASEMENTS FOR UTILITIES.** Dedication of easements for storm water sewers, and for access thereto for maintenance, in order to safeguard the public against flood damage and the accumulation of surface water, and maintenance, and dedication of easements for other public utilities, may be required of the land divider at sufficient widths for their intended uses, by the Director along lot or parcel rear lines or side lines, or elsewhere as necessary to provide needed facilities for present or future development of the area in accordance with the purpose of this code. Before a partition or subdivision can be approved, there shall appear thereon a restriction providing that no building, structure, or other obstruction shall be placed or located on or in a public utility easement.

OAR 660-12-045
(2)(b) Local governments shall adopt …Standards to protect future operation of roads, transit ways and major transit corridors;
(2)(e) Local governments shall adopt …A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors and sites.

This section addresses the need anticipate potential development impacts on roadways and transit corridors and to ensure that they continue to meet community needs. In addition to coordination with affected agencies, access management, and adherence to road design standards, requiring traffic impact studies in certain cases is one way to meet this part of the TPR. The NDC currently requires traffic studies in the following situations.

- Section 151.192, Site Design Review Requirements, requires a traffic study for any development undergoing Site Design Review, which includes all new development and redevelopment, and telecommunication facilities, which generate more than 40 trips per peak PM hour. A traffic study can also be required when the development is adjacent to an intersection functioning at a poor level of service.
- Section 151.681, Subdivision Applications, requires a traffic study for all subdivision applications that meet the same 40+ trips per peak hour criteria.

§ 151.192 SITE DESIGN REVIEW REQUIREMENTS .

(14) *Traffic study.* A traffic study shall be submitted for any project that generates in excess of 40 trips per p.m. peak hour. This requirement may be waived by the Director when a determination is made that a previous traffic study adequately addresses the proposal and/or when off-site and frontage improvements have already been completed which adequately mitigate any traffic impacts and/or the proposed use is not in a location which is adjacent to an intersection which is functioning at a poor level of service. A traffic study may be required by the Director for projects below 40 trips per p.m. peak hour where the use is located immediately adjacent to an intersection functioning at a poor level of service. The traffic study shall be conducted according to the City of Newberg Design Standards.

~~§ 151.681~~ § 151.242.1 SUBDIVISION APPLICATIONS.

(C) *Traffic study.* A traffic study shall be submitted for any project that generates in excess of 40 trips per p.m. peak hour. This requirement may be waived by the Director when a determination is made that a previous traffic study adequately addresses the proposal and/or when off-site and frontage improvements have already been completed which adequately mitigate any traffic impacts and/or the proposed use is not in a location which is adjacent to an intersection which is functioning at a poor level of service. A traffic study may be required by the Director for projects below 40 trips per p.m. peak hour where the use is located immediately adjacent to an intersection functioning at a poor level of service. The traffic study shall be conducted according to the City of Newberg Design Standards.

To further meet subsection OAR 660-12-045 (2) (b), the criteria for the future street plan section needs to be more closely tied to policies in the comprehensive plan and the TSP.

§ 151.243.1 FUTURE STREET PLAN

(A) A future street plan shall not be required for any portion of an area for which a proposed street layout has been established by either the Newberg comprehensive plan, its implementing ordinances, or a future street plan previously approved by a hearing body.

(B) A future street plan is a conceptual plan in that its adoption does not establish a precise alignment. The plan shall demonstrate how access can be provided to adjoining parcels. The Director may require that a traffic ~~analysis~~ study be ~~required~~ submitted where access to the land division includes streets that are classified as a collector or greater functional classification status.

(C) Except as provided in division (A) of this section, a future street plan shall be filed and reviewed as part of an application for a partition or subdivision.
(Ord. 96-2451, passed 12-2-96)

§ 151.247 CRITERIA FOR APPROVAL FOR A FUTURE STREET PLAN

(A) Approval does not impede the future best use of the remainder of the property under the same ownership or adversely affect the safe and healthful development of such remainder or any adjoining land or access thereto; and

(B) The future street plan complies with this code and its implementing ordinances and resolutions, and standards and policies of the Newberg Comprehensive Plan and Newberg the Transportation System Plan.

(C) Except as provided by the provisions of this code, approval as stipulated herein does not relieve the applicant from other applicable provisions of Oregon Revised Statutes or contained elsewhere in this code.

(D) The future street plan shall adequately serve traffic with an origin in, and destination to, the area of the plan.

(E) The future street plan shall provide for the logical extension of streets, to serve circulation, and access needs within a district or neighborhood.
(Ord. 96-2451, passed 12-2-96)

ORA 660-12-045 (2)(g) Local governments must adopt…Regulations assuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities and levels of service of facilities identified in the TSP.

The above TPR regulation ensures that amendments to the Comprehensive Plan and land use regulations are reviewed for their impact on transportation facilities identified in the TSP. Currently, the NDC contains general language about amendments in section 151.008 - *Amendments*. . The NDC classifies Development Code amendments are a Type IV procedure, which requires referral of applications to affected agencies and if our recommendations of this memo are implemented, will specifically require notice to ODOT. The NDC also states that Type III and IV Zoning Map Amendments must be consistent with the Comprehensive Plan. However, it does not include specific provisions for amendments that impact transportation facilities, and more specific, clear language about amendments should be included.

To comply with the TPR, it is recommended that a new subsection be added to Section 151.122 - *Procedures for Comprehensive Plan Map and Zoning Map Amendments*. The purpose of this subsection is to specify how land use amendments are to comply with the TPR. New language in is also included to provide guidance in determining *when* a code amendment is considered to have an impact on transportation facilities. The section then goes on to discuss how to ensure that amendments to the comprehensive plan or to the development code are consistent with the TSP when it significantly affects a transportation facility.

Additionally, subsections have been added to subsection (A) Type III Plan and Zoning Map Amendments and Type IV Plan and Zoning Map Amendments. The section needs to apply to amendments (to plan, map and land use regulations) that are deemed to significantly affect transportation facilities.

§ 151.122 PROCEDURES FOR COMPREHENSIVE PLAN MAP AND ZONING MAP AMENDMENTS

This section describes the procedures and criteria that apply to any application to amend the land use designations identified on the comprehensive plan map, zoning map and land use regulations.

(A) Type III Plan and zoning map amendments - one parcel or small group of parcels.

(1) Property owners or the city may initiate a map amendment for one parcel or a small group of parcels under the Type III procedure. May be initiated by a resolution of the Planning Commission or City Council. Unlike other Type III procedures, the decision of the Planning Commission on a Type III plan map amendment shall be in the form of a recommendation to the City Council. The City Council shall hold another new hearing and make a final decision.

(2) Where an application has been denied, no new application for the same purpose shall be filed within one year of the date of the previous denial unless the City Council for good cause shall grant permission to do so.

(3) Amendment criteria. The applicant must demonstrate compliance with the following criteria:

(a) The proposed change is consistent with and promotes the goals and policies of the Newberg Comprehensive Plan and this Code;

(b) Public facilities and services are or can be reasonably made available to support the uses allowed by the proposed change.

(c) Compliance with the State Transportation Planning Rule (OAR 660-012-0060).for proposals that significantly affect transportation facilities

(4) The property owner who desired to have his property reclassified has the burden of establishing that the requested classification meets the requirements of this section.

(5) A traffic study shall be submitted for any proposed change that would significantly affect a transportation facility, or that would allow uses that would increase trip generation in excess of 40 trips per p.m. peak hour. This requirement may be waived by the

Director when a determination is made that a previous traffic study adequately addresses the proposal and/or when off-site and frontage improvements have already been completed which adequately mitigate any traffic impacts and/or the proposed use is not in a location which is adjacent to an intersection which is functioning at a poor level of service. A traffic study may be required by the Director for changes in areas below 40 trips per p.m. peak hour where the use is located immediately adjacent to an intersection functioning at a poor level of service. The traffic study shall be conducted according to the City of Newberg Design Standards.

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(B) Type IV plan and zoning map amendments - large area of the city and multiple ownerships.

(1) The city may initiate plan map amendments affecting large areas and multiple ownerships under the Type IV procedure. No public notice is required to initiate the amendment. Initiation must be done by resolution of the Planning Commission or City Council. These map changes include those that have widespread and significant impact beyond the immediate area of change.

(2) Amendment criteria. The city must demonstrate:

(a) The proposed change is consistent with and promotes the objectives of the Newberg Comprehensive Plan and this code;

(b) There is a public need for a change of the kind in question;

(c) The need will be best served by changing the classification of the particular piece of property in question as compared with other available property.

(d) Compliance with the State Transportation Planning Rule (OAR 660-012-0060) for proposals that significantly affect transportation facilities

(C) *Amendment of land use regulation.* A change in requirements, general provisions, exceptions or other provisions of a land use regulation may be initiated by a resolution of the Planning Commission or the City Council. No notice is required to initiate the amendment. Amendments to land use regulation shall be reviewed under the Type IV procedure.

OAR 660-12-045

(3) Local governments shall adopt land use or subdivision regulations for urban areas and rural communities as set forth below. The purposes of this section are to provide for safe and convenient pedestrian, bicycle and vehicular circulation consistent with access management standards and the function of affected streets, to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel in areas where pedestrian and bicycle travel is likely if connections are provided, and which avoids wherever possible levels of automobile traffic which might interfere with or discourage pedestrian or bicycle travel.

(a) Bicycle parking facilities as part of new multi-family residential developments of four units or more, new retail, office and institutional developments, and all transit transfer stations and park-and-ride lots.

(b) On-site facilities shall be provided which accommodate safe and convenient pedestrian and bicycle access from within new subdivisions, multi-family developments, planned developments, shopping centers, and commercial districts to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. Single-family residential developments shall generally include streets and accessways. Pedestrian circulation through parking lots should generally be provided in the form of accessways.

(B) Bikeways shall be required along arterials and major collectors. Sidewalks shall be required along arterials, collectors and most local streets in urban areas, except that sidewalks are not required along controlled access roadways, such as freeways;

(C) Cul-de-sacs and other dead-end streets may be used as part of a development plan, consistent with the purposes set forth in this section;

(D) Local governments shall establish their own standards or criteria for providing streets and accessways consistent with the purposes of this section. Such measures may include but are not limited to: standards for spacing of streets or accessways; and standards for excessive out-of-direction travel;

(E) Streets and accessways need not be required where one or more of the following conditions exist:

(i) Physical or topographic conditions make a street or accessway connection impracticable. Such conditions include but are not limited to freeways, railroads, steep slopes, wetlands or other bodies of water where a connection could not reasonably be provided;

(ii) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or

(iii) Where streets or accessways would violate provisions of leases, easements, covenants, restrictions or other agreements existing as of May 1, 1995, which preclude a required street or accessway connection.

(c) Where off-site road improvements are otherwise required as a condition of development approval, they shall include facilities accommodating convenient pedestrian and bicycle travel, including bicycle ways along arterials and major collectors;

(e) Internal pedestrian circulation within new office parks and commercial developments shall be provided through clustering of buildings, construction of accessways, walkways and similar techniques.

(6) In developing a bicycle and pedestrian circulation plan as required by 660-012-0020(2)(d), local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas. Appropriate improvements should provide for more direct, convenient and safer bicycle or pedestrian travel within and between residential areas and neighborhood activity centers (i.e., schools, shopping, transit stops). Specific measures include, for example, constructing walkways between cul-de-sacs and adjacent roads, providing walkways between buildings, and providing direct access between adjacent uses

The purpose of these portions of the TPR is to ensure that safe and convenient circulation and facilities are available to pedestrians and bicyclists, within new residential and commercial development and on public streets. In general, the bicycle parking requirements in the NDC are sufficient and do not need to

be amended. However, Section 151.192, Site Design Review Requirements, should require site development plans to show bicycle parking (Type I and II). This will be added to the list for Type I and Type II site plan requirements but to conserve space, the section is not included in this memo.
When revised cross-section are adopted, the standards in this section will be revised to reflect them.

Because the TAC was uncomfortable with the specificity of the recommended standards regarding on-site walkways and multi-use pathways, this section has been rewritten to better integrate existing language NDC while ensuring that the section meets the “safe and convenient” requirements of the TPR. The standard for on-site walks has been upgraded from a minimum 4-foot width to a minimum 5-foot width. The standards for multi-use pathways and lighting recommended in the last draft were removed and deferred to the City Engineer.

~~ON-SITE WALKS~~ PRIVATE WALKWAYS

§ 151.620.1 PURPOSE.

Sidewalks and ~~on-site walks~~ **private walkways** are part of the city's transportation system. Requiring their construction is part of the city's plan to encourage multi-modal travel and to reduce reliance on the automobile. Considerable funds have and will be expended to install sidewalks along the streets in the city. Yet there is little point to this expense if it is not possible for people to walk from the sidewalk to the developments along each side. The following requirements are intended to provide safe and convenient paths for employees, customers, and residents to walk from public sidewalks to development entrances, and to walk between buildings on larger sites.
(Ord. 99-2513, passed 8-2-99)

§ 151.620.2 WHERE REQUIRED.

~~**On-site walks**~~ **Private walkways** shall be constructed as part of any development requiring Type II design review, including mobile home parks. In addition, they may be required as part of conditional use permits or planned unit developments.
(Ord. 99-2513, passed 8-2-99)

§ 151.620.3 ~~On-site walks~~ PRIVATE WALKWAY DESIGN.

(A) All ~~on-site walks~~ **required private walkways** shall meet the applicable building code and Americans With Disabilities Act requirements.

(B) ~~On-site walks~~ **Required private walkways** shall be a minimum of four feet wide.

(C) ~~On-site walks~~ **Required private walkways** shall be constructed of Portland cement concrete or brick..

(D) ~~Walks~~ **Crosswalks** crossing ~~asphalt~~ service drives shall, at a minimum, be painted on the asphalt **or clearly marked with contrasting paving materials, or humps/raised crossings. If painted striping is used, it should consist of thermo-plastic striping or similar type of durable application.**

(~~D~~**E**) At a minimum, ~~on-site walks~~ **required private walkways** shall connect each main pedestrian building entrance to each abutting public street and to each other.

(~~E~~**F**) The review body may require on-site walks to connect to development on adjoining sites.

(~~F~~**G**) The review body may modify these requirements where, in its opinion, the development provides adequate on-site pedestrian circulation, or where lot dimensions, existing building layout, or topography preclude compliance with these standards.

Section 151.691, Cul de sac, has been amended so that it refers to the on-site walk standards of Section 151.620.

§ 151.691 CUL-DE-SAC.

(A) Cul-de-sacs shall only be permitted when one or more of the circumstances listed in this section exist. When cul-de-sacs are justified, ~~pedestrian~~ **public** walkway connections shall be provided to connect with another street, greenway, school, or similar destination unless one or more of the circumstances listed in this section exist.

(1) Physical or topographic conditions make a street or walkway connection impracticable. These conditions include but are not limited to controlled access streets, railroads, steep slopes, wetlands, or water bodies where a connection could not be reasonably made.

(2) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment.

(3) Where streets or accessways would violate provisions of leases, easements, or similar restrictions.

(4) Where the streets or accessways abut the urban growth boundary and rural resource land in farm or forest use, except where the adjoining land is designated as an urban reserve area.

(B) There shall be no cul-de-sacs more than 400 feet long (measured form the centerline of the intersection to the radius point of the bulb) or serving more than 18 single family dwellings. ~~Each cul-de-sac shall have a circular end with a minimum diameter of right-of-way width and paving as shown in the table in § 151.686.~~

(C) Each cul-de-sac shall have a circular end with a minimum diameter of 90 feet, curb-to-curb, within a 103-foot minimum diameter right-of-way. For residential uses, a 35-foot radius may be allowed if the street has no parking, a mountable curb, attached sidewalks, and sprinkler systems in every building along the street.

[Renumber § Section 151.724 as § Section 151.705 and amend as follows]

§ ~~151.724 PEDESTRIAN WAYS~~ §151.705 PUBLIC WALKWAYS.

(A) The review body for a design review or land division may require easements for and construction of public walkways where such walkway is needed for the public safety and convenience or where the walkway is necessary to meet the standards of this code or a walkway plan. Public walkways are to connect to cul-de-sacs, to pass through oddly shaped or unusually long blocks, to provide for networks of public paths according to adopted plans, or to provide access to schools, parks or other community destinations or public areas of such design, width, and location as reasonably required to facilitate public use. Where possible, said dedications may also be employed to accommodate public utilities.

(B) Public walkways shall be located within a public access easement a minimum of 15 feet in width.

(C) A walk strip, not less than five feet in width, shall be paved in the center of all ~~dedicated pedestrian ways~~ public walkways easements. Such paving shall conform to specifications adopted by the City Council under § 151.717

(D) Public walkways shall be designed, as far as practical, to meet the American with Disabilities Act requirements.

(E) Public walkways connecting one right-of-way to another shall be designed to provide as short and straight of a route as practical.

(F) The developer of the public walkway shall provide a homeowners association or similar entity to maintain the public walkway and associated improvements.

(G) Lighting may be required for public walkways in excess of 250 feet in length.

(H) The review body may modify these requirements where it finds that topographic, pre-existing development, or similar constraints exist.

§ 151.511 The Northwest Newberg Specific Plan *(A)(3)(a) Street and ~~pedestrian pathway~~ public walkway standards are as follows:*

	ROW	***Paved Surface***
Local Street	60'	32'
Collector Street	74'	36'
~~Pedestrian Connection~~ Public Walkway	16'	6'

To further meet OAR 660-12-045(3), it is recommended that the City replace existing Section 151.685, *Street Width,* with a new Section 151.685, called *Transportation Improvements and Street Design Standards*. This provides a place in the NDC for the city's street design standards including ROW width, pavement width, bike lanes, sidewalks, and cross sections, as well as, additional recommended language like a purpose statement and conditions of development approval. Additionally, the updated cross-sections should be inserted upon adoption.

Street and Transportation Improvements Design Standards

§ 151.680 PURPOSE.

The purpose of this section is to provide planning and design standards for streets and other transportation facilities. Streets are the most common public spaces, touching virtually every parcel of land. Therefore, one of the primary purposes of this section is to provide standards for attractive and safe streets that can accommodate vehicle traffic from planned growth, and provide a range of transportation options, including options for driving, walking and bicycling. This section is also intended to implement the Newberg Transportation System Plan.

§ 151.681 LAYOUT OF STREETS, ALLEYS, BIKEWAYS, AND WALKWAYS

(A) Streets, alleys, bikeways, and walkways shall be laid out and constructed as shown in the Newberg Transportation System Plan or in adopted future street plans.

(B) In areas where the Transportation System Plan or future street plans do not show specific transportation improvements, roads and streets shall be laid out so as to conform to subdivisions, partitions, and developments previously approved for adjoining property as to width, general direction and in other aspects, unless it is found in the public interest to modify these patterns. In addition, transportation improvements shall conform to the standards within this Code.

§ ~~151.721~~ 151.682 CONSTRUCTION OF NEW STREETS AND ALLEYS.

The land divider **or developer** shall grade and pave all streets and alleys in the subdivision ~~or~~**,** partition **or development** to the width specified in § 151.685, and provide for drainage of all such streets and alleys, construct curbs and gutters within in the subdivision ~~or~~**,** partition **or development** in accordance with specifications adopted by the City Council under § 151.717. Such improvements shall be constructed to specifications of the city under the supervision and direction of the Director. It shall be the responsibility of the land divider **or developer** to provide street signs.

§ ~~151.722~~ 151.683 IMPROVEMENTS TO EXISTING STREETS.

A subdivision ~~or~~**,** partition **or development requiring a Type II design review** abutting or adjacent to an existing road of inadequate width, shall dedicate additional right-of-way to and improve the street to the width specified in § 151.685.

§ 151.684 IMPROVEMENTS RELATING TO IMPACTS.

Improvements required as a condition of development approval shall be roughly proportional to the impact of development on public facilities and services. The review body must make findings in the development approval that indicate how the required improvements are roughly proportional to the impact. Development may not occur until required transportation facilities are in place or guaranteed, in conformance with the provisions of this Code. If required transportation facilities cannot be put in place or be guaranteed, then the review shall deny the requested land use application.

§ ~~151.686~~151.685 STREET WIDTH AND DESIGN STANDARDS

(A) *Design Standards*. All streets shall conform with the standards contained in Table 151.685.C. Where a range of values is listed, the Director shall determine the width based on a consideration of the total street section width needed, existing street widths, and existing development patterns. Preference shall be given to the higher value. Where values may be modified by the Director, the overall width shall be determined using the standards under subsection (B) through (E),

Table 151.685.C City of Newberg Street Design Standards

Type of Street	**Right of Way Width**	**Curb to Curb Pavement Width**	**Motor Vehicle Travel Lanes**	**Center Turn Lane**	**Striped Bike Lane (both sides)**	**On-Street Parking**
Arterial Streets						
Expressway	**	**	**	**	**	**
Major Arterial	85-100 feet	74 feet	4 lanes	Yes	**Yes**	No*
Minor Arterial	60-80 feet	46 feet	2 lanes	Yes*	Yes	No*
Collectors						
Major	60-80 feet	34 feet	2 lanes	No*	Yes	No*
Minor	56-65 feet	34 feet	2 lanes	No*	No*	Yes*
Local Streets						
Local Residential	54-60 feet	32 feet	2 lanes	No	No*	Yes
Local Commercial/ Industrial	56-65 feet	34 feet	2 lanes	No*	No*	No*
*May be modified with approval of the Director. Modification will change overall curb-to-curb and ROW width. ** All standards shall be per ODOT Expressway standards						

(B) *Motor Vehicle Travel Lanes*. Collector and arterial streets shall have a minimum width of 12 feet. Where circumstances warrant, the Director may allow a reduction of this width to 11 feet.

(C) *Bike Lanes*. Striped bike lanes shall be a minimum of 5 feet wide. Where circumstances warrant, the Director may allow a reduction of this width to 4 feet. Bike lanes shall be provided where shown in the Newberg Transportation System Plan.

(D) *Parking Lanes*. Where on-street parking is allowed on collector and arterial streets, the parking lane shall be a minimum of 8 feet wide. Where circumstances warrant, the Director may allow a reduction of this width to 7 feet.

(E) *Center Turn Lanes*. Where a center turn lane is provided, it shall be a minimum of 12 feet wide.

(F) *Sidewalks*. Sidewalks shall be provided on both sides of all public streets. Minimum width is 5 feet.

(G) *Planter Strip*. A planter strip shall be provided between the sidewalk and the curb line. This strip shall be landscaped in accordance with the standards in § 151.581.

(F) *Slope Easements*. Slope easement shall be provided adjacent to the street where required to maintain the stability of the street.

§ 151.686 INTERIM STREET IMPROVEMENTS

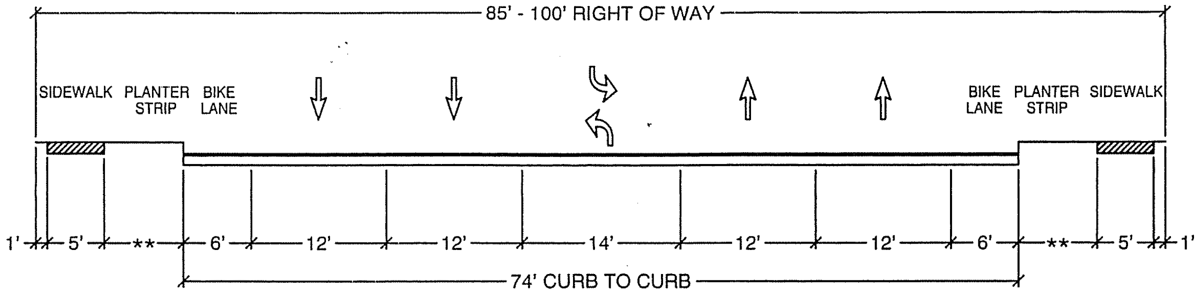
~~(E)~~ (A)Temporary street improvements. Three-quarter width streets may be provided temporarily to access lots where a full street will eventually be provided when all abutting lots are developed, unless otherwise approved as a half street by the Director and Fire Chief

(B) Temporary Turn-arounds. Where a street will be extended as part of a future phase of a development, or as part of development of an abutting property, the street may be terminated with a temporary turn around in lieu of a standard street connection or circular cul-de-sac bulb. The Director and Fire Chief shall approve the temporary turn around. It shall have an all-weather surface. The turn around may include a hammerhead-type turn around meeting fire apparatus access road standards, a paved or graveled circular turn around, a paved or graveled temporary access road. For streets extending less than 150 feet and/or with no significant access, the Director may approve the street without a temporary turn around.

§ ~~151.723~~151.704 SIDEWALKS.

Sidewalks shall be located and constructed in accordance with the provisions of § 151.717. Minimum width is 5 feet.

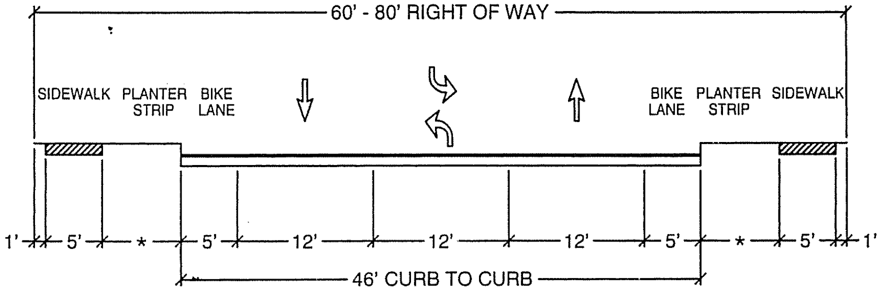
MAJOR ARTERIAL



* SUBJECT TO ODOT STANDARDS. IN SECTIONS WITH A ONE-WAY COUPLET, SAME MINIMUM WIDTHS APPLY FOR TRAVEL LANES, BIKE LANES. PLANTER STRIP AND SIDEWALK.

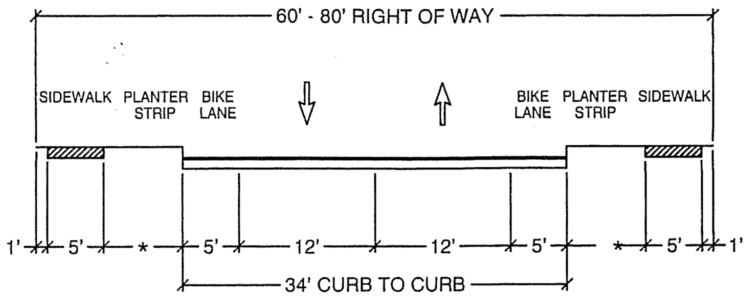
**DEPENDING ON RIGHT-OF-WAY.

MINOR ARTERIAL



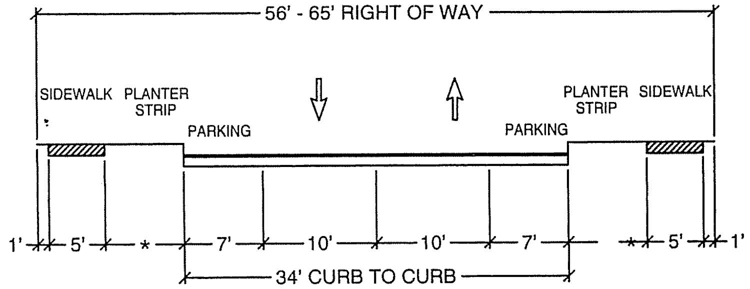
*DEPENDING ON RIGHT-OF-WAY.

MAJOR COLLECTOR



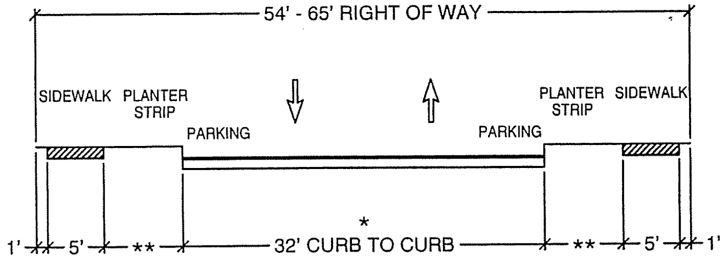
*DEPENDING ON RIGHT-OF-WAY.

MINOR COLLECTOR



*DEPENDING ON RIGHT-OF-WAY.

LOCAL STREET



*LOCAL RESIDENTIAL STREETS SHALL HAVE 32' CURB-TO-CURB SECTION. LOCAL COMMERCIAL STREETS SHALL HAVE 34' CURB-TO-CURB SECTION.

**DEPENDING ON RIGHT-OF-WAY.

Development Code Sequencing: The changes below are intended to group all the land division procedures and standards within one section of the Development Code, and all the street and transportation standards in another.

General Section Renumbering

Add the section title *Street And Transportation Improvements Design Standards* before §§ 151.686 et seq.

Renumber the following Development Code Sections:

151.240 Division of Land **Renumber as** § **151.240.1**
151.682 Tentative plan application and copies **Renumber as** § **151.240.2**
151.680 Partition applications **Renumber as** § **151.241.1**
151.241 Partition Requirements – Type II **Renumber as** § **151.241.2**
151.681 Subdivision applications **Renumber as** § **151.242.1**
151.242 Subdivision Requirements – Type II and Type III **Renumber as** §**151.242.2**
151.683 Final partition map and subdivision plat; drafting requirements **Renumber as** § **151.250.1**
151.250 Submission and Review of Final Plat or Final Partition Map. **Renumber as** § **151.250.2**
151.684 Information required **Renumber as** § **151.250.3**

Move the section title *Standards for Land Divisions* (§§ 151.680 et seq.) to be just before §§ 151.252 et seq.

151.685 Dedication **Renumber as** § **151.252.1**
151.696 Lot and parcel side lines **Renumber as** § **151.252.2**
151.697 Suitability for intended use **Renumber as** § **151.252.3**
151.698 Future subdivision or partition of lots or parcels **Renumber as** § **151.252.4**
151.699 Platting standards **Renumber as** § **151.252.5**

Measure 37 Issues**:** In order to address the passage of Measure 37 in November 2004, the following is proposed for inclusion in the Development Code

Add the following as Newberg Development Code §151.252.1(E)

(E) Inclusion of a transportation route in the Transportation Plan is intended to indicate the public's need to acquire a public right-of-way in the area through legally and constitutionally allowed means. Notwithstanding other provisions of this Code or the Comprehensive Plan, inclusion of such a route does not restrict the use of the property by the owner who owns the property when the route is first included in any City plan, unless the review body finds the restriction is exempt from those Section 1 of those provisions of Oregon Revised Statutes Chapter 197, as amended by Ballot Measure 37, passed November 2, 2004, or that just compensation will be paid in accordance with that section.

EXHIBIT E TO ORDINANCE 2005-2619:
COMPREHENSIVE PLAN POLICY AMENDMENTS

Note: Additions to the text are underlined.
Deleted text has ~~**strikeout.**~~

K. TRANSPORTATION

GOAL 1: Establish cooperative agreements to address transportation based planning, development, operation and maintenance.

POLICIES:

a. The City shall coordinate with the State Department of Transportation to manage access to the state highway system and to implement the State Highway Improvement Program.

b. The City shall work to ensure the transportation system is developed in a manner consistent with state and federal standards for the protection of air, land and water quality, including the State Implementation Plan for complying with the Clean Air Act and the Clean Water Act.

~~b~~.c. The City shall coordinate its Transportation System Plan with the planning process of other jurisdictions to assure adequate connections to streets and transportation systems outside City boundaries.

~~c.~~d. The City shall participate in the planning efforts to bring ~~light~~ rail transit to Newberg.

~~d.~~e. The City shall promote transportation improvements, which would result in less through automobile and truck traffic on First Street and maintain the option of future development of rail transit to serve the downtown core area.

h. The City will work with public and private entities to plan and, if feasible, establish commuter rail service between the Portland Metro area and communities in Yamhill County.

GOAL 2: Establish consistent policies which require concurrent consideration of transportation/land use system impacts.

POLICIES:

a. Transportation improvements shall be used to guide urban development and shall be designed to serve anticipated future needs.

b. The City shall maintain development regulations that provide adequate off-street parking and truck loading areas for commercial and industrial uses, especially in areas adjacent to arterial and collector routes, to promote efficient traffic movement through the city.

c. The City will encourage the development of retail development within the downtown area.

GOAL 3: Promote reliance on multiple modes of transportation and reduce reliance on the automobile.

POLICIES:

a. Design the transportation system and related facilities to accommodate multiple modes of transportation, where appropriate, and encourage their integrated use.~~;~~ ~~and~~

1) The City shall plan for a network of transportation facilities and services including but not limited to air, water, rail, auto, pedestrian, bicycle and public transit.

2) The City shall encourage the continued operation of the existing public transit system.

3) All local and commuter transit services must implement the accessible transportation requirements established by the Americans with Disabilities Act of 1990.

4) The City should conduct a market assessment to determine the demand and needs for commuter transit service from Newberg and McMinnville to the ~~downtown~~ Portland Metro area employment centers.

5) The City should evaluate the market assessment and, if it is financially feasible, support the development of ~~develop~~ commuter transit service to the Portland area ~~either as a City operation or by another agency~~.

6) The City ~~should~~ will work to help establish a ~~local~~ regional transit service district ~~to include but not be limited to the City of Newberg, City of McMinnville and~~ in Yamhill County to address transportation needs of disadvantaged residents.

7) The City ~~should establish~~ will support efforts to develop a long term funding base for local and commuter transit service within the ~~local transit district~~ region to include federal and state funding sources for capital and operating expenses.

8) The City ~~should develop a policy~~ will work to establish appropriate cooperation agreements between local transit service providers ~~districts~~

and Tri-Met for ~~provision of~~ improving commuter service ~~operations inside~~ connections within the Tri-Met service district.

9) The City shall encourage more efficient use of existing transportation systems by implementing programs that reduce single occupancy vehicle use, including car pooling, park and ride stations and commuter bus or rail service.

b. Modifications should be made to the City's land use plan and development ordinances that will decrease trip length and encourage non-auto oriented development.

1) The City shall encourage neighborhood medium density and mixed use commercial development nodes.

2) The City shall encourage higher density development ~~around~~ in residential areas near transit corridors, commercial areas and employment centers, including the downtown.

c. The City shall develop and implement a transportation demand management strategy that provides incentives for the use, such as: flex time, carpooling, staggered shifting and telecommuting by public and private employers, if and when overall operating conditions in the city fall below acceptable levels and depending on the availability of state funding to support these programs. The City will encourage the use of demand management strategies by public and private employers in certain locations when operating conditions warrant their consideration.

GOAL 4: Minimize the impact of regional traffic on the local transportation system.

POLICIES:

a. Enhance the efficiency of the existing collector/arterial street system to move local traffic off the regional system.

b. Provide for alternate routes for regional traffic.

c. Identify and analyze options for the re-routing of 219 in conjunction with ODOT, ~~in an effort to support both Bypass and delayed Bypass development scenarios.~~ with the goal of minimizing through traffic, including truck traffic, in downtown.

d. Before choosing the 219 re-route to be included in the City's Capital Improvement Program, hold public hearings to determine which re-route alternative is most satisfactory to the public.

e. Include re-route alternative most favorable to the public in the City's Capital Improvement Plan, Transportation Section

f. A special design study shall be conducted prior to improving College Street from Hancock Street to the railroad. The purpose of this study will be to maintain and enhance the aesthetic and historic character of this area. Alternatives bike lane, street width and other configurations will be considered to preserve significant street trees, add additional street trees, and preserve and enhance historic features.

~~f.~~g Minimize the use of local and minor collector streets for regional traffic through application of traffic calming measures as traffic operations and/or safety problems occur.

~~g.~~h The City shall coordinate with the State of Oregon to synchronize all signals on in the Highway 99W corridor.

[reletter policies h. through t.]

GOAL 5: Maximize pedestrian, bicycle and other non-motorized travel throughout the City.

POLICIES:

a. The City shall provide safe, convenient and well-maintained bicycle and pedestrian transportation systems that connect neighborhoods with identified community destinations, such as schools, parks, neighborhood commercial centers, and employment centers.

b. Bicycle parking facilities shall be required for all new and improved commercial, institutional, office, industrial, and multi-family development.

c. All new and improved commercial, office, institutional, and multi-family development shall be conveniently and directly accessible from the public right-of-way by bicycle and on foot.

d. Public sidewalks shall be provided along all public street frontages. Pedestrian traffic shall be separated from automobile traffic whenever possible.

(1) Sidewalks should be provided whenever there is development of abutting properties.
(2) Sidewalks should be constructed when any new road is constructed (3)
When existing roads are widened or improved, sidewalks should be provided.

e. The City will develop a capital improvement program for filling existing gaps in the pedestrian system. Priority shall go to:

(1) Areas near schools or other pedestrian traffic generators.
(2) Areas frequently used by pedestrians or disabled persons.
(3) Areas where modest improvements are needed to create continuous pedestrian systems.
(4) Roads with high traffic volumes and/or narrow shoulders.

f. All sidewalks, corner ramps, and other transportation improvements shall meet applicable standards of the Americans with Disabilities Act.

~~e. All schools shall be serviced by pedestrian and bicycle systems.~~

~~f.~~g. The City shall encourage pedestrian access throughout commercially zoned areas.

~~g.~~h. On-street bike lanes or parallel bikeways ~~should~~ will be provided on all designated major collector and arterial roadways, and on certain minor collectors if warranted from a bicycle system connectivity standpoint.

i A bicycle path shall be provided along or near the bypass.

j. The City will develop a capital improvement program for providing bicycle paths planned in the transportation plan. Priority shall go to:

(1) Areas near schools, parks, commercial areas, or other bicycle traffic generators.

(2) Paths that go between facilities used by bicyclists, such as schools, parks, and libraries.

(3) Areas frequently used by bicyclists.

(4) Areas where small gaps need to be filled to provide continuous bicycle paths.

(5) Areas where modest improvements are needed to provide planned bicycle paths, such as roads where additional pavement width is not needed to stripe bike lanes.

(6) Roads with high traffic volumes and/or narrow shoulders.

j. ~~Sidewalks or parallel pathways should be provided on all designated collector and arterial roadways.~~ (As amended by Ord. 98-2494, Approved by City Council 4-6-98)

GOAL 6: Provide effective levels of non-auto oriented support facilities (e.g. bus shelters, bicycle racks, etc.).

POLICIES:

a. The City shall develop land use, density, and design standards to encourage development patterns that accommodate pedestrian, bicycle and transit uses.

b. New development shall be designed to accommodate integrated multiple modes of transportation ~~facilities where appropriate~~.

c. The City, in cooperation with ~~the~~ public transit agencies and commuter service providers, shall develop park and ride facilities at the locations specified in the Transportation System Plan.

d. The City shall provide a transportation system (traffic, bicycle, pedestrian and transit) with facilities that are accessible to all people, complying in the process with applicable provisions of the Americans with Disabilities Act (ADA).

GOAL 7: Minimize the capital improvement and community costs to implement the transportation plan.

POLICIES:

a. The Transportation System Plan shall identify short and long term improvements to the collector/arterial street system, the public transit system, the pedestrian/bicycle system and the air, rail, water, and pipeline systems.

b. The list of improvement projects in the Transportation System Plan shall guide development of the city's capital improvement plan for transportation projects.

c. The City will ~~Periodically~~ prioritize the list of transportation-related capital improvements to be included in the City's Capital Improvement Plan (CIP) including phasing for major transportation system improvements.

d. For those priority transportation projects included in the City's ~~Capital Improvement Plan~~ (CIP), provide updated cost estimates, each time the ~~CIP~~ project list is revised.

e. Adverse economic, social, environmental, and energy ~~Excessive~~ impacts ~~of~~ from transportation system improvements ~~to~~ on adjacent properties shall be minimized as far as practical.

~~f~~g. The City may require preparation of a ~~A~~ Future Streets Plan ~~shall be developed~~ for all commercial and industrial developments and residential development projects greater than 1-acre to serve as a guide in the decision-making process on new development requests.

~~g~~f. Future public rights-of-way should be identified in undeveloped areas through a Future Street Plan or a specific area plan, to facilitate right-of-way acquisition and dedication with minimal disruption and cost. A Future Street Plan is usually prepared by a private party to show street and bike/pedestrian connectivity for development projects when transportation connectivity is needed through adjoining private properties and neighborhoods. A Specific Area Plan is usually prepared by the City in collaboration with affected property owners to show street and bike/pedestrian connectivity for planned land uses in undeveloped or partially developed areas. Corridor plans are a type of specific area plan.

h. Transportation facilities will be designed to minimize impacts on:

- Present and Planned Land Use patterns;
- Natural and Scenic Resources;
- Air Resource Quality, including noise;
- Water and Land Resource Quality; and
- Existing and Planned Transportation Facilities.

i. New development and existing development undergoing expansion or modification shall be designed to accommodate planned long-term transportation improvement projects ~~which are adjacent to~~ in the vicinity of the development.

~~j. The City shall encourage the use of specific area plans in order to minimize the impacts of transportation facilities on neighboring properties.~~

GOAL 8: Maintain and enhance the City's image, character and quality of life.

POLICIES:

a. Adopt transportation and ~~/~~land use ~~system~~ design standards ~~which~~ that emphasize visual and aesthetic quality.

b. New office park and commercial developments shall provide ~~internal~~ for pedestrian circulation by clustering ~~of~~ buildings, ~~construction of~~ constructing pedestrian pathways, ~~covered~~ making use of walkways and skywalks, and other similar techniques that make walking convenient for people accessing and working within the development.

c. The City shall work cooperatively with the business community to ensure there is an adequate supply of on-street and off street parking in the downtown. The City shall prepare and periodically update a public parking management plan for the central business district.

~~e~~d. The City will encourage ~~Encourage plans which protect~~ development that protects the integrity of existing neighborhoods, commercial, and industrial areas using the following design techniques.

1) New development and new transportation facilities shall be designed to meet the street classification, design, and access ~~standard~~ standards identified in the Transportation System Plan.

2) City ~~New minor~~ arterials ~~shall~~ should include sound walls and/or landscaping ~~buffering~~ buffers between ~~the~~ residential ~~use~~ areas and the street.

3) ~~The City shall develop 100 off-street parking places, in a cooperative effort with the business community, shall prepare and periodically update a public marking management plan for~~ Make use of on-street parking and buildings that abut the street frontage in the central business district and designated neighborhood commercial areas to create pedestrian friendly retail and commercial service environments.~~, to offset parking lost by the Hancock Street widening project~~.

GOAL 9: Create effective circulation and access for the local transportation system.

POLICIES:

a. Analyze alternative routes for the re-routing of 219 to facilitate both local and regional traffic.

~~b~~a. Enhance existing and add alternative routes for local travel.

1) The City development code shall ~~coordinate~~ encourage the development of a continuous interconnected street pattern ~~which~~ that connects adjacent developments and minimizes the use of cul-de-sacs.

2) The City shall implement standards for cul-de-sac design.

3) The City shall coordinate the development of an integrated bike and pedestrian system that provides for connections between and through adjacent development and that provides convenient links to community destinations.

4) The City will actively pursue development of park and ride lots for the convenience of area residents making use of carpooling, van pooling, and commuter transit.

5) The City will support efforts to increase public transit options for area residents.

~~c~~b. Develop a system of roads ~~which~~ that provide for efficient movement of traffic, considering the general design guidelines below:

1) Expressway. Expressways shall be designed to expedite the movement of regional traffic through the urban area; they function as freeways with limited access points and no private development access points. Intersections shall be grade separated and access shall be provided only at grade separated interchanges. General design criteria are summarized as follows:

- 100 to 120 feet of right of way
- 80 feet curb to curb cross-section
- No direct access from adjoining private property
- Limited access points, preferably at grade separated interchanges
- Separated pedestrian and bicycle facility on one side of the facility
- No parking; emergency shoulder for disabled vehicle use only
- Sound buffering provided to protect existing and future residential property as necessary
- Roadway designed for travel speeds exceeding 55 m.p.h.

Within the City of Newberg, the **Highway 99W Bypass Corridor** is intended to be a expressway, which is generally aligned east/west along the southern alignment route depicted in the Newberg/Dundee Bypass Location Environmental Impact Statement. The length of the Highway 99W Bypass within the City is approximately 3 miles.

~~1~~2) Major Arterials. Major Arterials ~~shall~~ expedite the movement of traffic to and from major trip generators and between communities~~;~~, collect and distribute traffic from ~~freeways and expressways~~ principal arterials to collector streets, or directly to traffic generators. The functional emphasis is on the movement of people, goods, and services through the city, therefore consolidating access points, minimizing parking, and managing traffic flow to promote through-travel is the desired condition. Exceptions may occur in the central business district and in designated neighborhood commercial areas. General design criteria are summarized as follows:

- 85 to 100 feet of right-of-way.
- 70 feet curb to curb cross section.
- Direct access is minimized (no residential access).
- Signalization at intersections with arterials, and ~~with~~ collectors as warranted.
- Bicycle lanes ~~paths~~ shall ~~may~~ be provided on both sides of street. Bicycle lanes should be four to six feet wide~~ on both sides of the street~~. Alternatively, a parallel bikeway may be provided on one side of the street when bike lanes are not feasible.
- Seven foot sidewalks and curbs are required on both sides of the street.

- Parking is generally not allowed except ~~allowed on one side~~ in ~~some~~ special designated areas, such as the downtown; no parking allowed within twenty feet of curb return.
- Sound buffering ~~will~~ or landscape buffers may be required to protect existing and future residential property where deemed necessary.

Within the City of Newberg, **Highway 99W** is ~~an~~ a major arterial ~~which~~ that is generally aligned east/west. The length of Highway 99W within the City is approximately 3.3 miles ~~representing 15% of the total nonresidential street mileage~~. **Highway 219 (Hillsboro-Silverton Highway)** from First Street to the southern urban boundary is also ~~an~~ a major arterial ~~within the City of Newberg~~, and that is generally aligned north/south. The length of Highway 219 within Newberg (south of Villa Road) is approximately 3.0 miles.

~~2~~3) Minor Arterial. Minor Arterials shall collect and distribute traffic from major arterials to collector and local streets; and, facilitate traffic movement between neighborhoods. General street design criteria shall be as follows:

- 60 to 80 feet of right-of-way.
- 46 feet curb to curb cross section.
- Signalization at intersections with major arterials and collector streets as warranted.
- A 5-foot bicycle lane in each direction adjacent to the curb.
- Seven-foot curb sidewalks. In commercial areas sidewalks preferred from curb to property line. Sidewalks and curbs required on both sides of street. Five-foot sidewalks in non-commercial areas.
- On-street parking ~~allowed on one side in some areas where there are existing curbs~~ is generally not allowed except in the downtown and other areas where special circumstances warrent. ~~In general, no~~No parking will be allowed within ~~100~~ 20 feet of curb return.
- Sound buffering ~~will~~ or landscape buffers may be required to protect all existing and future residential property where deemed necessary.

~~3~~4) Major Collectors. Major collectors shall serve multi-neighborhood areas. They are intended to channel traffic from local streets and/or minor collectors to the arterial street system. A major collector can also provide access to abutting properties.

- 60 to 80 feet of right-of-way with ten foot public utility easements..

- 34 to 46 feet curb to curb cross section.
- Five-foot bike lanes on both sides of the street.
- ~~No parking on both sides of the street, generally.~~ On-street parking is generally not allowed except in the downtown and other areas where special circumstances warrant. No parking will be allowed within 20 feet of curb return.

- A minimum six-foot planter strip and six-foot sidewalk ~~a~~on both sides of the street.

~~4~~5) Minor Collectors. A minor collector provides access to abutting properties and serves the local access needs of neighborhoods by channeling traffic to the major collector and arterial street system. A minor collector is not intended to serve through traffic.

- 56 to 65 feet of right-of-way with 10 foot public utility easements.
- 34 to 42 feet curb to curb.
- Parking on both sides of the street replaced by bike lanes where needed.
- A minimum four and one-half (4 1/2) foot planter strip and five-foot sidewalk on both sides of the street.

~~5~~6) Local Streets. Local streets provide direct access to adjoining properties and connect to collector streets. The system design criteria for local streets include:

- 54-65 feet of right-of-way with 10 foot public utility easements.
- For residential streets, standard 32 feet curb to curb with parking on both sides.
- A minimum four and one half foot wide planting strip and five foot wide sidewalk on both sides of the street.

~~6~~7) New private streets shall not be allowed.

~~d.~~c. The City shall apply appropriate access spacing criteria as part of its Engineering Design Standards to enhance traffic operation and safety on City streets. The access spacing standards apply to traffic signals, public street intersections, private driveways, and non-traversable median openings. The standards shall be applied to new street construction, reconstruction of existing streets, and new street access associated with development. (Adopted by Ord. 99-2513, approved by City Council 8-2-99).

GOAL 10: Maintain the viability of existing rail, water and air transportation systems.

POLICIES:

a. Encourage and support compatible transportation and land use development.

b. Evaluate and mitigate potential losses whenever possible.

  1) The City shall maintain the viability of existing rail, water, and air transportation systems.

  2) The City shall maintain an airport overlay zone as long as there is an operating airport in or near the City.

  3) Adequate open space and landscaping shall be provided by all new development around the airport to reduce the noise impact of airport operations on surrounding residential areas.

  4) The City shall encourage the use of properties adjacent to the airport for industrial parks, related commercial activities and community facilities in order to maximize airport services and provide a buffer for surrounding residences.

GOAL 11: Establish fair and equitable distribution of transportation improvement costs.

POLICIES:

a. Define appropriate phasing and funding which relates to the benefits received.

b. The City shall utilize the Transportation Improvement Funding policies outlined in the Transportation System Plan for determining responsibilities and costs for funding improvements.

(As amended by Ord. 94-2384, 8-1-94 and as amended by Ord. 98-2494, 4-6-98. Ord. 94-2384 also adopted the Newberg Transportation System Plan, a technical supplement to the Comprehensive Plan).

GOAL 12: Minimize the negative impact of a Highway 99 bypass on the Newberg community.

  a. The bypass should be located within the study area as far from the Willamette River as practical.

  b. ~~If the Southern bypass route is chosen, p~~Pedestrian/bike trails, streets, and rail lines should have access across the bypass route. The bypass should not block access to the Willamette Greenway or the Chehalem Creek corridor and Ewing Young Park. Trails connecting across the bypass should be welcoming and pedestrian-friendly amenities, such as benches, decorative lighting, decorative walkway paving materials, and special landscaping.

c. The bypass route should be located as far north as practical within the study area to consolidate the Riverfront District residential and commercial land on the south side of the bypass.

d. ~~If the Southern bypass route is chosen, t~~The bypass should be below grade through the riverfront area.

e. ~~If the Southern bypass route is chosen, s~~Significant landscaping should be located along the bypass, including trees.

f. If ~~the Southern bypass route is chosen, m~~Measures should be taken to minimize noise in adjacent residential, tourist commercial and recreational areas.

g. Impacts to Scott Leavitt Park shall be mitigated to significantly enhance the function of the park after construction of the bypass.

h. Safe pedestrian and bicycle connections shall be maintained between the riverfront area and downtown.

J. URBAN DESIGN

5. Downtown Policies

g. The City shall ~~encourage~~ consider:

~~-Reconstruction of First Street and both sidewalks to accommodate a two-way flow of traffic with diagonal and parallel parking.~~
- Modifying the configuration of the existing downtown couplet after construction of the bypass, exploring options such as reducing the number of lanes from three to two, providing angled parking, wider sidewalks, planter strips or medians, and additional crosswalks.

-Creation of a major attraction in the downtown retail core to showcase Yamhill County's agriculture, industry, arts, culture and history.
-Retention of a post office within the downtown and continued occupancy of the existing post office building.
-Adequate off-street parking to serve retail and institutional needs.
~~-Construction of a new one-way eastbound couplet to encourage downtown core development.~~
-Adoption of a downtown design ordinance, instituted to review and control all private and public improvements.

EXHIBIT F TO ORDINANCE 2005-2619:
AMENDMENTS TO THE MARCH 2005 DRAFT TRANSPORTATION SYSTEM PLAN

1. Modify Project 5, Section 6.2.2. as follows:

5. Ore 219: Rerouting of Ore 219 through Newberg. The objective of this reroute is to minimize through traffic, including truck traffic, in downtown Newberg. The recommended route is to re-route Ore 219 to Mountainview Drive and Springbrook Road. A special study should be conducted to evaluate this re-route. The special study should analyze the traffic impacts, neighborhood impacts and costs of the re-route. The study should also plan for portions of the current 219 including (1) where it would change into Springbrook,(2) the intersection of Wilsonville Road and the new 219,(3) what the improvements would be at the intersection of the 2nd Street with the current 219 AND the new 219 and (4) the impact on businesses and services along the new 219 as well as the old 219.

Consideration was also given to reconstructing Ore 219 (St. Paul Highway) to minor arterial street standards between 1 Street and the UGB to include sidewalks and bicycle lanes on each side of Ore 219. Total length of this improvement is approximately 1.77 miles and is estimated to cost $5.9 million. This would reconstruct the intersection of Fcrnwood-2nd/Ore 29 to a right-in/right-out only for Fernwood and 2nd Street approaches (by installation of a center median) ~~and reconstruct Ore 219 by lowering its elevation, thereby minimizing conflicts with the Sportsman Airpark take off and landing maneuvers~~. The median will be designed in consultation with the Newberg Fire Department to allow the southbound left-turn movement for emergency vehicles. Estimated cost of channelization improvements is $10,000~~; estimated cost of lowering approximately 0.30 miles of Ore 219 is $1.2 million~~.

[changes 2-5 deleted]

6. **Amend Page ix** Transportation Funding, third sentence:

It is estimated that ~~an additional~~ approximately $23.17 million of ~~the total costs would be borne by ODOT, because they are on other~~ improvements will occur on ODOT facilities within the City.

7. **Amend Page 10**, first paragraph, third sentence as follows:

There are ~~four~~ three state-owned facilities in or adjacent to Newberg:
- Ore 99W is designated as a Statewide Highway and is on the National Highway System.
- Ore 219 is designated as a District Highway.
- Ore 240 is designated as a District Highway.

8. **Amend page 12, Table 2-2 and 2-3** to replace “>55” with “≥55”

9. **Amend Page 52,** first line as follows:

“*Villa Road*: the completion of the partial sidewalks from Ore 99W to ~~College Street~~ Mountainview Drive would serve the Newberg Community Hospital site, Chehalem Aquatic Center and George Fox University, Joan Austin Elementary School, and the George Fox

University Sports Complex.

10. Amend Page 132, Project 9 (Hayes Street), fourth sentence.

This street segment will be constructed to major collector street standards and will likely be built concurrent with development of adjacent parcels, and will be funded by development and system development charges.

11. Delete Project 10, page 132, (New East-West Bypass Connection), and amend maps, tables, and findings as needed.

12. Amend page 132, project 11 (Providence Drive), second sentence as follows: This street will be constructed to major collector street standards, will be built concurrent with development of adjacent parcels, and will be funded by development and system development charges.

13. Amend page 133, project 12:

12. New Greens Drive (North-South Street Within Springbrook Oaks): This new street (hereafter called Greens Drive) is to be constructed to local street standards. It will provide access from the Springbrook Oaks development to Fernwood Road and Corral Creek Road. This street will be built concurrent with development of the Springbrook Oaks development, and will be funded by development. The connection to Corral Creek Road is to be made only after safety improvements are made to Corral Creek Road and some combination of limiting the Corral Creek/99W intersection ~~and construction of the frontage road (project 10)~~ is made. The length of this new road is about 0.85 miles, with an estimated cost of $2.7 million. A portion of this segment is outside of the City's UGB ~~and within its designated Urban Reserve Area~~, and therefore is currently within the jurisdiction of Yamhill County. Hence, at this time the construction of this street would be conducted under the authority of Yamhill County. ~~At such time when Newberg annexes these Urban Reserves into its UGB, this portion of the project would become the City's responsibility.~~

14. Change the Right-of-way width range for major arterials from 85-100 feet to 87-100 feet on all tables and figures.

15. Correct all right-of-way widths in Table 6-4 to match those listed elsewhere in the document.

16. Add the following as Section 6.7 and renumber *COORDINATION WITH STATE OF OREGON & YAMHILL COUNTY* as Section 6.8.

6.7 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) programs seek to improve the efficiency of the transportation system by shifting single-occupant vehicle trips to other modes, or away from times of peak traffic volumes. When implemented by a number of employers, TDM measures may help to avoid the need for some roadway capacity improvement projects, or at least defer the need further into the future. Examples of these measures may include:

- Having employers subsidize the cost of transit passes and tickets for their employees
- Establishing carpool matching programs for ridesharing
- Providing reserved spaces near building entrances for carpools
- Allowing employees to work at home one day a week
- Scheduling shift changes to occur outside of peak travel periods
- Establishing neighborhood commercial and mixed-use nodes within the City. As part of these developments, provide direct sidewalk connections, bus stop provisions and proper building orientation to provide opportunities for trips to be made via walking or cycling or short driving distances
- Establishing zoning and land use plans that allow people to both live and work within Newberg.

These types of strategies can be adopted into the Newberg Development Code in the form of requirements for new developments, or other incentives that could be made to encourage employers or other high traffic generators to implement these measures.

17. Amend Section 7.1.1, page 157, second sentence

This finance section has excluded the cost of the Newberg-Dundee Bypass Project, in recognition that ~~this project will be fully funded by ODOT~~. a financial strategy for the project has not been developed or approved. Funding for this facility has not been determined, but could come from a combination of federal, state, local and/or private funding sources. ~~this project will be fully funded by ODOT.~~

18. Amend Section 7.1.1, page 157, sixth sentence

An estimated $23.17 (24%) million of improvements are located on ~~would be funded by ODOT~~ facilities. Funding for these facilities has not been determined but could come from federal, state, local and/or private funding sources.

19. Amend Section 7.1.2, Page 158, first sentence

As shown in Table 7-1, there are an estimated $72.988 million in transportation infrastructure costs that the City would be responsible for over the planning horizon (subtracting out the $23.17 million under ODOT's ~~responsibility~~ jurisdiction and the $1.75 million under the County's jurisdiction ~~responsibility~~).

20. Correct Page 163, Project 30 (Foothills Drive:Aldersgate toVilla) to change total funding from $0.01 Million to 0.4 Million. Assign $0.39 Million to New Development and $0.01 Million to SDCs.

21. Amend Page 167, Section 7.1.3.2, first paragraph, as follows:

7.1.3.2 Local Gasoline Tax

The City could use revenues from a local gasoline tax to fund the improvements. There is currently no local gasoline tax in Newberg. It is estimated that there are approximately 700,000 gallons of gasoline pumped each month in Newberg. Thus, a one cent per gallon gas tax would generate approximately $7,000 per month in revenue, or $84,000 per year, assuming there is no decline in total volume distributed due to the tax. The imposition of such a tax would probably require voter approval. If voter approval is unlikely, this option should probably not be relied upon. The uncertainty of voter approval is a disadvantage of this funding mechanism in the financial planning for the improvements.

22. **Amend Section 7.2.1** Page 171, Cost Assessment Summary, sentences 4 and 5:

(The estimated cost of the Newberg portion of the NDTIP Bypass is $310 million. A financial strategy will be developed and approved to fund the construction of the bypass and interchanges which established the financial obligations. ~~to be funded by ODOT.~~) In addition, an estimated $23.17 million of additional improvements are planned for the state system. The funding source for these projects has not been determined.~~and are also attributable to ODOT for funding~~.

And second paragraph, first sentence:
The costs estimated for ~~assessed to~~ the State of Oregon include costs to all state highways (Ore 99W, Ore219 and Ore 240) within Newberg excluding the NDTIP Bypass project.

23. **Amend Table 7-1** to add a line above Improvement type "Jurisdiction"

24. **Amend Table 7-3** Adjust final column under ODOT to read "2.8-4.8"

25. **Amend Table 7-4** to add a line above project "Jurisdiction"

26. **Add Technical Memorandum #1** to as Appendix T.

27. **Amend Transportation Goal 3, Policy 6** as follows:

6) The City ~~should~~ will work to help establish a ~~local~~ regional transit service district ~~to include but not be limited to the City of Newberg, City of McMinnville and~~ in Yamhill County to address transportation needs of area residents, particularly the transportation disadvantaged.

28. Amend the findings Page 11, findings for OAR 660-012-0015 (5): Preparation and Coordination of the TSPs as follows:

(5) TSPs preparation shall be coordinated with affected state, federal, and regional agencies; local governments; special districts; and private providers of transportation services.	To ensure that the City of Newberg TSP would be consistent with the policies, goals, and needs of affected agencies, a Technical Advisory Committee (TAC) was established at the outset of the planning process. The TAC was made up of public representatives from the City as well as Yamhill County and the Oregon Department of Transportation (ODOT). The City also coordinated with special districts and local providers of transportation services, including Greyhound (no longer a local service provider),

	CVSCC, the Newberg School District, and CPRD.

29. Correct spelling and typographical, and table and figure reference errors as needed, and make other changes as necessary to insure internal consistency within the document.

30. Modify Figure 6-4, 219/2nd Street intersection inset to remove the words “and lower intersection.”

31. Amend Page 97: Downtown Area Couplet Options, as follows:

Downtown Area Couplet Options

Currently, Newberg has a one-way couplet, with three lanes in each direction, traversing the downtown from Harrison Street (on the west) to River Street (on the east). The existing one-way couplet resides on Hancock Street (westbound) and 1st Street (eastbound). There are bike lanes and parking provided on both streets of the existing couplet. The current designated travel speed is 25 miles per hour.

A 1986 study for the City entitled Downtown Development Plan: Newberg, Oregon (1986) considered a “split couplet” through downtown Newberg as an alternative to the existing couplet arrangement. Figure 5-12 shows a downtown area couplet option that features a one-way couplet along Hancock Street and 2nd Street, which is split by a two-way 1st Street. The project would include curb extensions, planters, landscaping, improved crosswalks, two lanes in each direction on the couplet streets and a single lane in each direction on 1st Street. Based on an inflated cost estimate from the downtown study, the estimated cost of the project is $10-12 million.

The current street width on Street is 42 feet wide curb-to-curb, which would accommodate two travel lanes, bike lanes and parking on only one side of the street if this option were implemented. Creating the transition curves onto and off of Street would require acquisition of additional right-of-way and possible removal of some buildings. As part of this transportation plan update, this split couplet option was analyzed from a traffic flow standpoint. The general finding was that implementing the split couplet after construction of the bypass would not present significant traffic capacity issues. Thus, from a traffic flow view, the split couplet could be implemented if the community desires.

The Newberg Planning Commission had a special workshop in January 2004 to discuss the “split couplet” option. The reaction of the Planning Commission and the general public that testified was mixed. There was some support for the idea, while there was also significant opposition from particularly those residents and business owners on 2nd Street. ~~As a result of this, and because of the high expense of implementing the split couplet, this option is not recommended in this transportation system plan.~~

Travel forecasts indicate that the Bypass will reduce downtown traffic volumes by 40-50%. Accordingly, once the Bypass in constructed, the existing downtown couplet could be reduced in capacity to two lanes, from the existing three lanes. This modification could provide numerous opportunities that could be further explored:

- Angled parking
- Wider sidewalks
- Planter strips or medians
- Additional crosswalks

This plan recommends that a detailed plan be developed for downtown transportation improvements ~~to~~ that may be constructed after construction of the bypass. That plan should explore both the split couplet option and the option reducing lanes and implementing the opportunities listed above ~~this lane reduction and how these opportunities can be implemented~~. Creation of this plan should involve significant public involvement.

32. Amend project 34, Page 136 as follows:

34. Downtown Street Redevelopment Prior to the development of the bypass, pedestrian enhancements should be considered on 1st Street and Hancock Street in the downtown such as improving crosswalks, providing pedestrian activation at existing signalized intersections, curb extensions, and sidewalk amenities. After the Bypass is implemented, traffic volumes on the downtown couplet could potentially allow reducing 1st Street and Hancock Street to two through lanes. This would allow the City the ability to explore opportunities on these streets including: angled parking, wider sidewalks, planter strips, and additional crosswalks.

~~After the Bypass is constructed and operational, t~~The City may choose to consider implementation of a split couplet, in which 1st Street would be converted to two-way and 2nd Street would be converted to one-way eastbound. If chosen, this would be implemented after the Bypass is constructed and operational. The length of the two-way 1st Street would be approximately 7-10 blocks — from approximately Main Street to approximately Edwards Street. In addition to two-way traffic on 1st Street, this project would provide wider sidewalks, increased landscaping and pedestrian amenities, thereby creating a more pedestrian-scale that would encourage walking and improve business in the downtown. The estimated cost of the project is $10-12 million. Based on its relatively high cost and potential impacts to local properties, it is recommended ~~that this project not be considered for implementation until after the NDTIP Bypass project is constructed and in operation, and~~ that substantial community input be provided prior to deciding to implement this option.
ODOT may consider preparation of an Ore 99W Refinement Plan for the downtown section of the highway. This plan would consider future changes that may be made for the short- and long-range future (before and after the Bypass is constructed). Possible rerouting of Ore 99W though the downtown section (to 2nd Street for the eastbound direction) may be considered in that later study, but should not be considered for implementation until after the Bypass is constructed. Total cost for all non-capacity improvement projects is estimated at $46.648 million. The total cost of all capacity and non-capacity roadway improvements is $98.808 million, including bicycle and pedestrian projects included in a later section.

33. Amend Policy J.5.g as follows

J. URBAN DESIGN

5. Downtown Policies

g. The City shall ~~encourage~~ consider:

-Reconstruction of First Street and both sidewalks to accommodate a two-way flow of traffic with diagonal and parallel parking.

-Creation of a major attraction in the downtown retail core to showcase Yamhill County's agriculture, industry, arts, culture and history.
-Retention of a post office within the downtown and continued occupancy of the existing post office building.
-Adequate off-street parking to serve retail and institutional needs.
-Construction of a new one-way eastbound couplet to encourage downtown core development or modification of the configuration of the existing downtown couplet after construction of the bypass, exploring options such as reducing the number of lanes from three to two, providing angled parking, wider sidewalks, planter strips or medians, and additional crosswalks.

-Adoption of a downtown design ordinance, instituted to review and control all private and public improvements.

34. Amend Exhibit G, Recommendations for Further Study, to add:

4. A study to consider allowing expanding the allowable use of cul-de-sacs.

EXHIBIT G TO ORDINANCE 2005-2619:
PLANNING COMMISSION RECOMMENDATIONS FOR FURTHER STUDY

The City Council initiates the following studies and potential amendments.

1. A study and public process to consider local street width standards, with the objective of considering whether the current standards should be retained or should be replaced with a narrower width standard. This study should include consideration of the recommendations of the *Neighborhood Street Design Guidelines: An Oregon Guide for Reducing Street Widths.*

2. A study and public process to consider private street/common driveway standards. The objective should be to consider whether the current standards should be retained or should allow greater use of common driveways, such as to allow a common driveway to serve up to four lots.

3. A study and public process to consider the realignment of Wynooski Street and Wilsonville Road as part of the TSP. The objective should be to consider whether Wilsonville Road should be realigned to the south to align with a realigned Wynooksi Street should this area at sometime in the future be included in the Urban Growth Boundary, if a Wilsonville Road crossing of the bypass is not feasible, or if similar circumstances warrant.

4. A study to consider allowing expanding the allowable use of cul-de-sacs.

REQUEST FOR COUNCIL ACTION

DATE ACTION REQUESTED: 2005, May 16

Ordinance XX Resolution__ Motion ___ Information
No. 2005-2619 No.

Date Submitted: May 4, 2005

SUBJECT: Ordinance adopting the Newberg Transportation System Plan, and amending the Newberg Development Code and Comprehensive Plan policies

Contact Person (Preparer) for this Ordinance: _Barton Brierley, AICP
Planning and Building Director

Dept.: Planning and Building

File No.: GR-25-01
(if applicable)

HEARING TYPE: *(if applicable)* **___ Quasi-Judicial _X_ Legislative**

RECOMMENDATION:

Adopt **Ordinance No. 2005-2619**, adopting the updated Transportation System Plan, and amending the Newberg Development Code and Comprehensive Plan, with amendments as the Council feels is appropriate.

BACKGROUND: At the May 2, 2005 Council meeting, the Council made a number of motions on the Transportation System Plan. The changes recommended by the Council are highlighted in the attached Exhibit F.

One outstanding issue was the configuration of the Wilsonville Road/OR 219/Springbrook intersection. While the Council seemed to agree that improvements to the intersection were needed, the Council did not come to an agreement on what type or configuration of improvements should be made. In case the Council cannot decide the improvement to be included in the plan, staff has included an alternate amendment in this packet. This alternative would plan for some type of improvement and/or realignment of that intersection, but would leave the final definition of that improvement to a future study.

SUBMITTED BY: APPROVED BY:

Barton Brierley, AICP
Planning and Building Director

James H. Bennett
City Manager

Attachments:
Ordinance 2005-2619 (with only Exhibit F attached)
Exhibit F: Amendments to the March 2005 Draft Transportation System Plan (Revised)
Potential amendment to Ordinance 2005-2619 concerning Wilsonville/Ore 219/Springbrook Road intersection

List of Attachments and Enclosures

Ordinance 2005-2619 with Exhibits
- Exhibit A: Findings
- Exhibit B: Newberg Transportation System Plan Draft March 2005 (enclosed)
- Exhibit C: Technical Appendix (enclosed)
- Exhibit D: Development Code Text amendments
- Exhibit E: Comprehensive Plan Policy Amendments
- Exhibit F: Amendments to the March 2005 Draft Transportation System Plan
- Exhibit G: Planning Commission Recommendations for further study

Ordinance 2005-2619 version A with Exhibits
- Exhibit A: Findings
- Exhibit B: Project Maps
- Exhibit C: Project Description

Attachment 1: Public Comments received since Planning Commission

Enclosure

1. Planning Commission items (w/o attachments)
   - a. Resolution 2004-190 (as adopted) with
     - Exhibit A: Findings
     - Exhibit B: Newberg Transportation System Plan Draft December 2005 (by reference)
     - Exhibit C: Technical Appendix (by reference)
     - Exhibit D: Proposed Development Code Text amendments (by reference)
     - Exhibit E: Proposed Comprehensive Plan Policy Amendments (by reference)
     - Exhibit F: Proposed Amendments to the December 2004 Draft Transportation System Plan
     - Exhibit G: Planning Commission Recommendations for further study
   - b. Staff Report 12-09-04
   - c. Minutes 12-09-04
   - d. Staff Report 1-13-04
   - e. Minutes 1-13-04
   - f. Staff Report 1-26-04
   - g. Minutes 1-26-04
   - h. Staff Report 2-10-04
   - i. Minutes 2-10-04
   - j. Staff Report 2-24-04
   - k. Minutes 2-24-04
   - l. Staff Report 3-10-04
   - m. Minutes 3-10-04
2. Various technical information
   - a. Transportation Planning Rule
   - b. East Newberg Transportation Plan
   - c. Memo addressing written comments submitted at December 9, 2004 Planning Commission meeting
3. Public Comments Received at Planning Commission