



MEMORANDUM

DATE: October 15, 2021

TO: Nikki Fowler | Newberg School District

CC: Casey Cunningham | Cornerstone Management

FROM: Lacy Brown, Ph. D., P.E. | DKS Associates
Jenna Bogert, P.E. | DKS Associates

SUBJECT: Newberg Catalyst School Upgrades Transportation Evaluation Project #21164-001

This memorandum provides a transportation evaluation of the proposed upgrades to Catalyst School in Newberg, Oregon. The transportation evaluation will include an estimate of the anticipated increase in vehicle trip generation due to the proposed site upgrades. The evaluation will also include an assessment of the parking needs for the site and a safety analysis of the surrounding roadways.

EXISTING USES AND PROPOSED CHANGES

Catalyst School currently provides in-person, online, or “blended learning” class schedules to high school students and middle school students. Supplemental half day educational programs are conducted in the existing building, which is located on the same property as Newberg High School. The existing on-site building is approximately 13,700 square feet.

The proposed addition currently carries two sets of potential upgrade plans: a smaller 14,300 square-foot addition plan and a larger 15,600 square-foot addition plan. For the purposes of this traffic study, the larger 15,600 square-foot addition plan will be analyzed. The upgrades in this plan will include a modification to the existing north parking lot and an addition of another drop off zone, a large multipurpose room, fabrication lab, additional offices, classrooms, extra administrative space/family rooms, a wellness room, and staff/student storage. Access locations to the site are not proposed to change, but on-site circulation will be affected by modifications to off-street parking. The fire lane will be extended to become a utility access path along the southern property line.

These site upgrades allow for an expansion of the services provided by Catalyst and will result in an increase in enrollment for middle school and high school students. The on-site attendance at the Catalyst School site is estimated to increase from approximately 130 on-site students per day (existing) to 230 on-site students per day (after project). Note that these are not the total enrollment numbers for the Catalyst program, only the number of students that will be traveling to the Catalyst site during school hours.

VEHICLE TRIP GENERATION

Trip generation is the method used to estimate the number of vehicles added to site driveways and the adjacent roadway network by a development during a specified period (such as the PM peak hour). Trip generation for schools are typically driven by student enrollment. As stated earlier, the Catalyst School has a combination of online students and in-person students in the total enrollment. Because this analysis focuses on site-related vehicle trip generation, only the on-site student counts will be evaluated. The increase of on-site students for the school is estimated to be 100 students total.

To estimate the site’s vehicle trip generation, vehicle trip rates for a High School (Land Use Code 525) from the Institute of Transportation Engineers (ITE) Trip Generation Manual were utilized.¹ Although the increase in 100 students includes both high school and middle school students, it is our understanding that the majority of on-site students at the Catalyst site are high school students. See Table 1 below for the estimated increase in vehicle trip generation for the AM and PM peak hours and daily trips for an average weekday.

TABLE 1: ESTIMATED VEHICLE TRIP GENERATION INCREASE

LAND USE (ITE CODE)	SCENARIO	SIZE	AM PEAK HOUR TRIPS			PM PEAK HOUR TRIPS			DAILY WEEKDAY TRIPS
			IN	OUT	TOTAL	IN	OUT	TOTAL	
HIGH SCHOOL (525)	Existing	130 on-site students	45	23	68	9	9	18	252
	Future	230 on-site students	80	40	120	15	17	32	446
TOTAL INCREASE		+100 on-site students	+35	+17	+52	+6	+8	+14	+194

As shown in the table above, a total 14 p.m. peak hour trips are estimated to be generated during the typical p.m. peak hour of street traffic. Based on the Newberg City Development Code², if a project generates 40 or more p.m. peak hour trips, a full traffic impact study is required. Based on the results of the trip generation for the Catalyst site, a full traffic impact study is not required for this project.

SAFETY ANALYSIS

A crash analysis for the study area was conducted based on the most recent five years (2015 - 2019) of crash data available. Crash data was obtained from ODOT and visualized using an online application developed by DKS Associates³. During the specified time period, five crashes were recorded along Deborah Road between, and including, the intersections with Douglas Avenue and Haworth Avenue. There were two turning crashes, one angle crash, one sideswipe-meeting crash,

¹ Trip Generation Manual, 11th Edition, Institute of Transportation Engineers, 2021.

² Title 15.220, City of Newberg Development Code.

³ https://public.tableau.com/app/profile/veronica.sullivan/viz/OregonDASH2015-2019_16265353660650/Overview

and one pedestrian crash. There were no fatal or serious injury crashes in the study area. The crashes consisted of one minor injury crash, one possible injury crash, and three property damage only crashes.

The single pedestrian crash occurred in 2016 on a clear and dry afternoon in the marked school crossing for Mable Rush Elementary School. The vehicle traveling northbound failed to yield at the crosswalk and struck a pedestrian, resulting in a minor injury. Neither speed nor alcohol/drugs were involved. The pedestrian crossing is properly signed and marked, and visibility of the crossing is not obscured by vegetation or on-street parking (parking is prohibited near the crosswalk). There is a posted school speed zone of 20 mph (when students are present) on Deborah Road. Because of the low speeds and narrow cross-section, this location is not a candidate for an active pedestrian crossing like a Rectangular Rapid Flashing Beacon (RRFB).

No vehicle or pedestrian safety improvements are recommended at this time.

SITE EVALUATION

A conceptual site plan showing the proposed site improvements is provided as an attachment. As previously stated, site improvements include a modification to the existing north parking lot and the addition of a student drop-off zone.

SITE ACCESSES

No changes are proposed to the two existing site accesses on Deborah Road. However, prior to occupancy, sight distance at any existing or proposed access points will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon.

STUDENT LOADING AREA

Student drop-off and pick-up activity will occur in the north parking lot, which is shown on the site plan to have a new designated curb for this purpose. The site plan shows approximately 190 feet of drop-off and pick-up curb which is sufficient to accommodate 7 – 8 vehicles. There is currently no on-site student loading area. The addition of this drop-off and pick-up space is expected to improve student safety and on-site circulation over current conditions.

SCHOOL BUS LOADING AREA

School bus loading activity currently occurs in the east parking lot at the main entrance of the existing building (east end of building). School buses will continue to utilize the same 50-foot curb for loading activity after the project is constructed. The School District has not noted any issues with the existing bus loading area.

PARKING

Vehicle parking for the site is provided in the north parking lot and the east parking lot. After the proposed site plan updates, a total of 98 stalls will be available on-site.

The proposed project is required to comply with the Newberg City Development Code for the number of vehicular parking stalls that are provided on site.⁴ However, because the Catalyst site is not defined specifically as High School, Middle School, or Elementary School, then this analysis looks at both the City Code requirements as well as parking demand rates from the Institute of Transportation Engineers (ITE) Parking Generation⁵ book to determine the parking demand for the site. Table 2 lists the vehicular parking demand based on City Code requirements for high schools and middle schools as well as for high schools from the ITE Trip Generation book; high school rates were selected because high schools have a higher parking demand than middle schools or elementary schools. Additionally, the enrollment at the Catalyst site is predominantly high school students who may be able to drive themselves to and from the site.

TABLE 2: ESTIMATED PEAK VEHICLE PARKING DEMAND

LAND USE	PARKING STALL RATE	SIZE OF UNIT	PARKING STALLS
CITY CODE REQUIREMENT (15.440.030)			
MIDDLE SCHOOL	1 stall for every 42 square feet of assembly space (no fixed seating)	2,565 sq. ft. Multi-Purpose Room for assembly purposes	61 stalls
HIGH SCHOOL	1 stall for every 28 square feet of assembly space (no fixed seating)	2,565 sq. ft. Multi-Purpose Room for assembly purposes	92 stalls
ITE PARKING GENERATION			
HIGH SCHOOL (530)	0.25 vehicles per student	230 on-site students	58 stalls
Proposed Vehicle Parking Stalls			98 stalls

Based on the proposed site plan, there is a sufficient amount of parking proposed on-site (98 stalls) to meet the either the City Code requirement or the estimated parking demand per ITE rates.

⁴ Newberg Development Code, Chapter 15.440.

⁵ Parking Generation, 4th Edition, Institute of Transportation Engineers, 2010.

SUMMARY

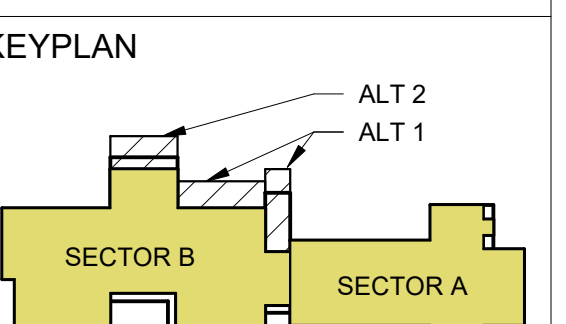
The following list is a summary of the traffic analysis for the Catalyst School Upgrade project.

- The estimated increase in trip generation for the Catalyst site is 52 a.m. peak hour trips and 14 p.m. peak hour trips. The increase in trip generation does not trigger the need for a full traffic impact study per City of Newberg code.
- Data review of the most recent five years of available crash data did not indicate the need for any off-site safety improvements.
- Prior to occupancy, sight distance at any existing or proposed site access points will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon.
- The proposed addition of the on-site student drop-off and pick-up area is expected to improve student safety and on-site circulation over current conditions.
- School buses will continue to utilize the same 50-foot curb for loading activity.
- There is a sufficient amount of proposed parking stalls (98 stalls) to meet the both the City Code requirement and the estimated parking demand per ITE rates.

Attachment(s)

- Site Plan

NOT FOR CONSTRUCTION

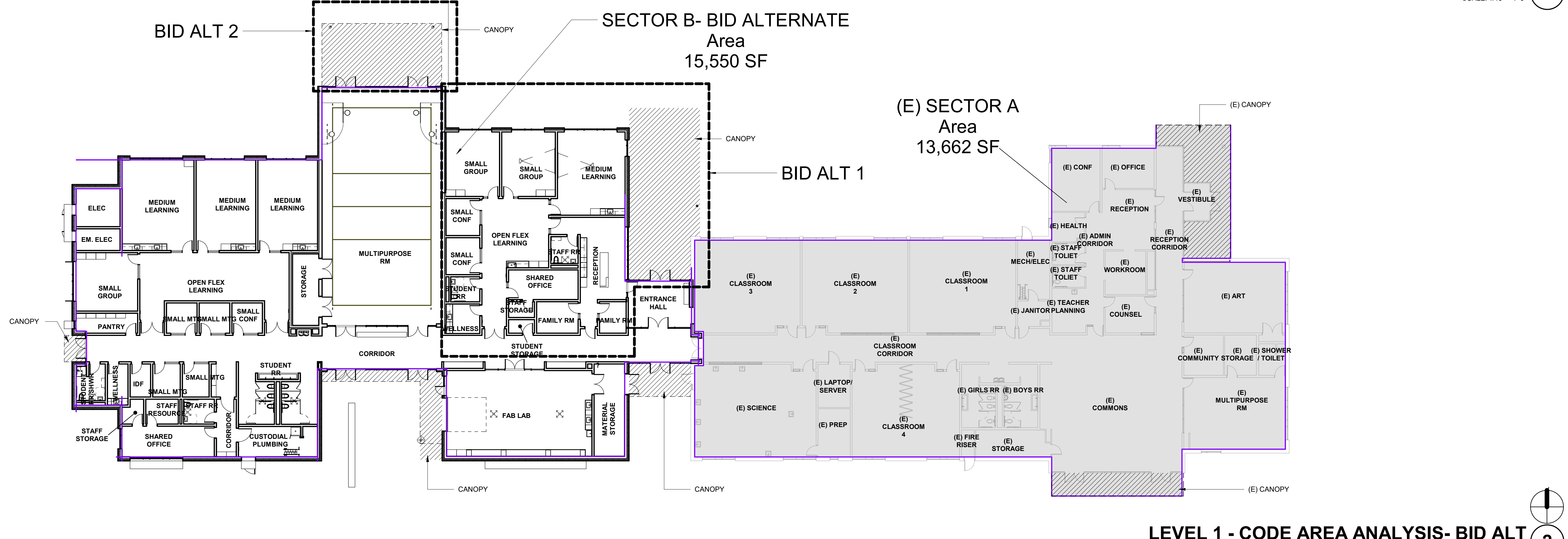
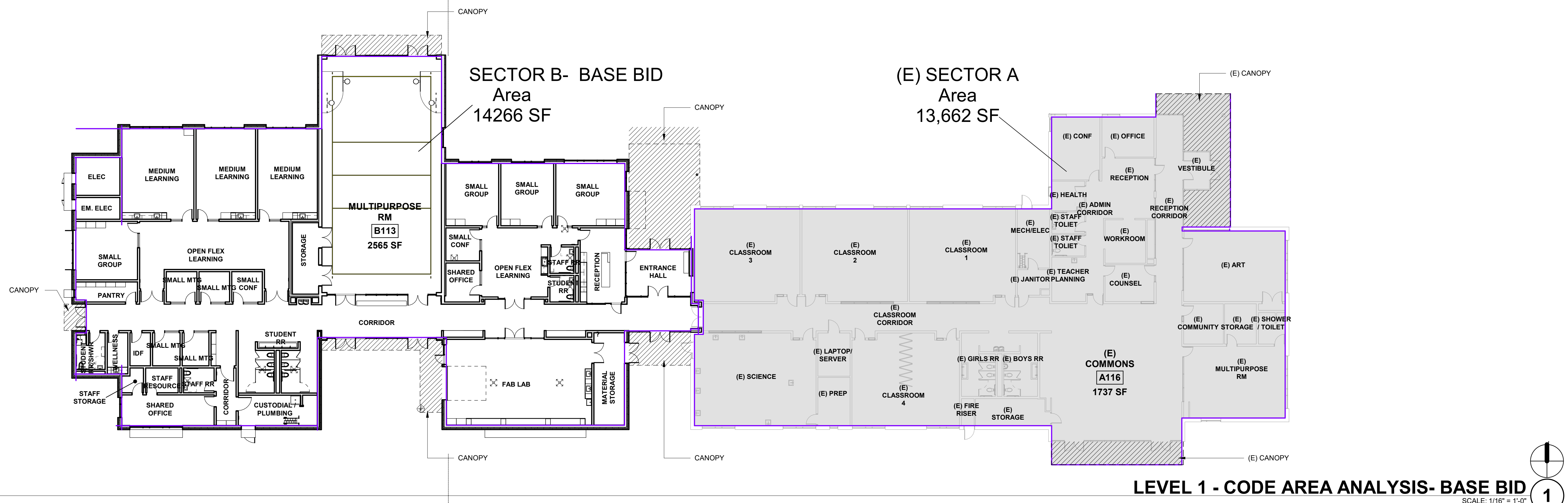


revisions	phase	LAND USE SUBMITTAL
	date	10/15/2021
	project	21006

CODE ANALYSIS-ALLOWABLE AREA

A0.02

10/14/2021, 10:57:27 AM BIM 360//21006 Catalyst HS Addition/21004-Catalyst HS Add-Central.rvt

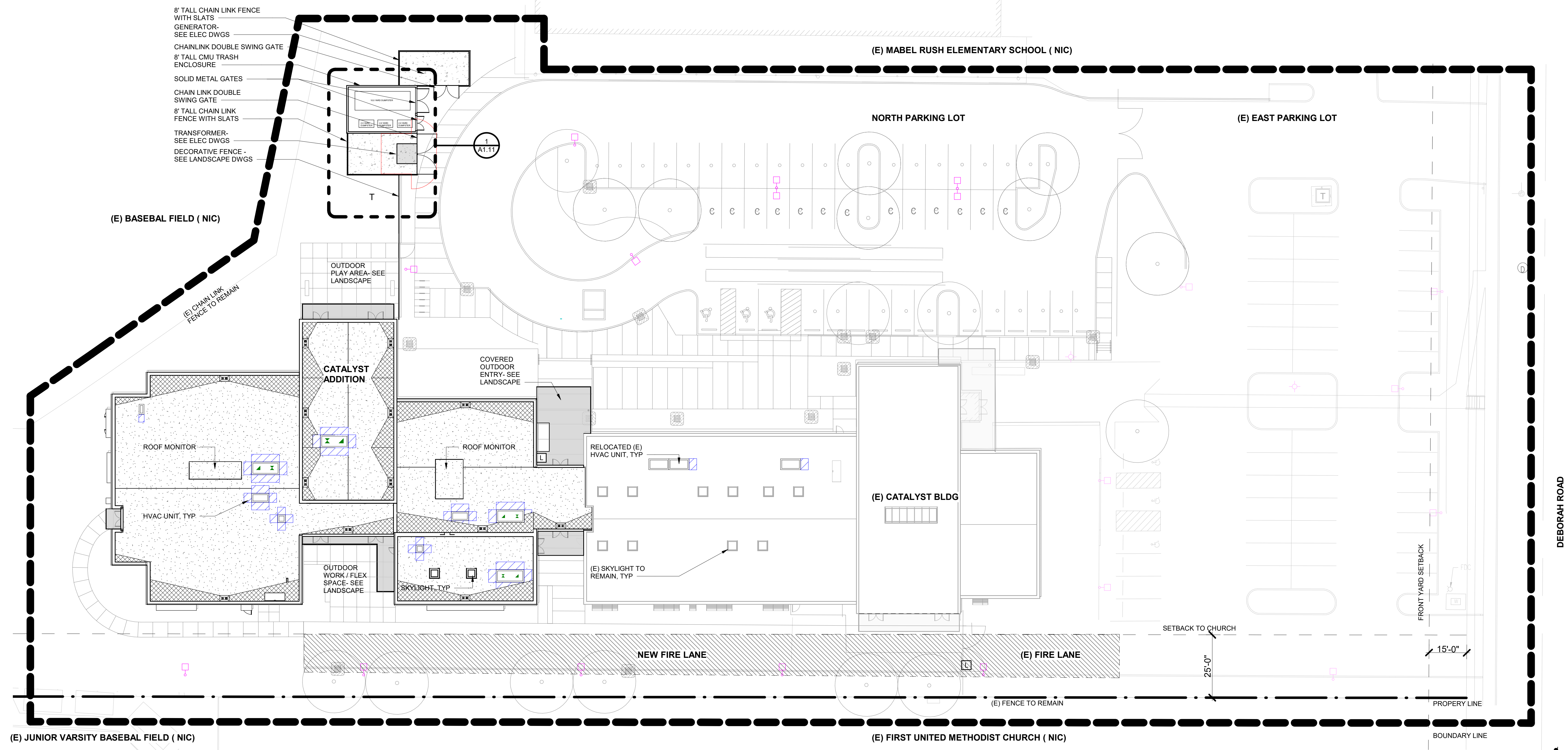


LEGEND:

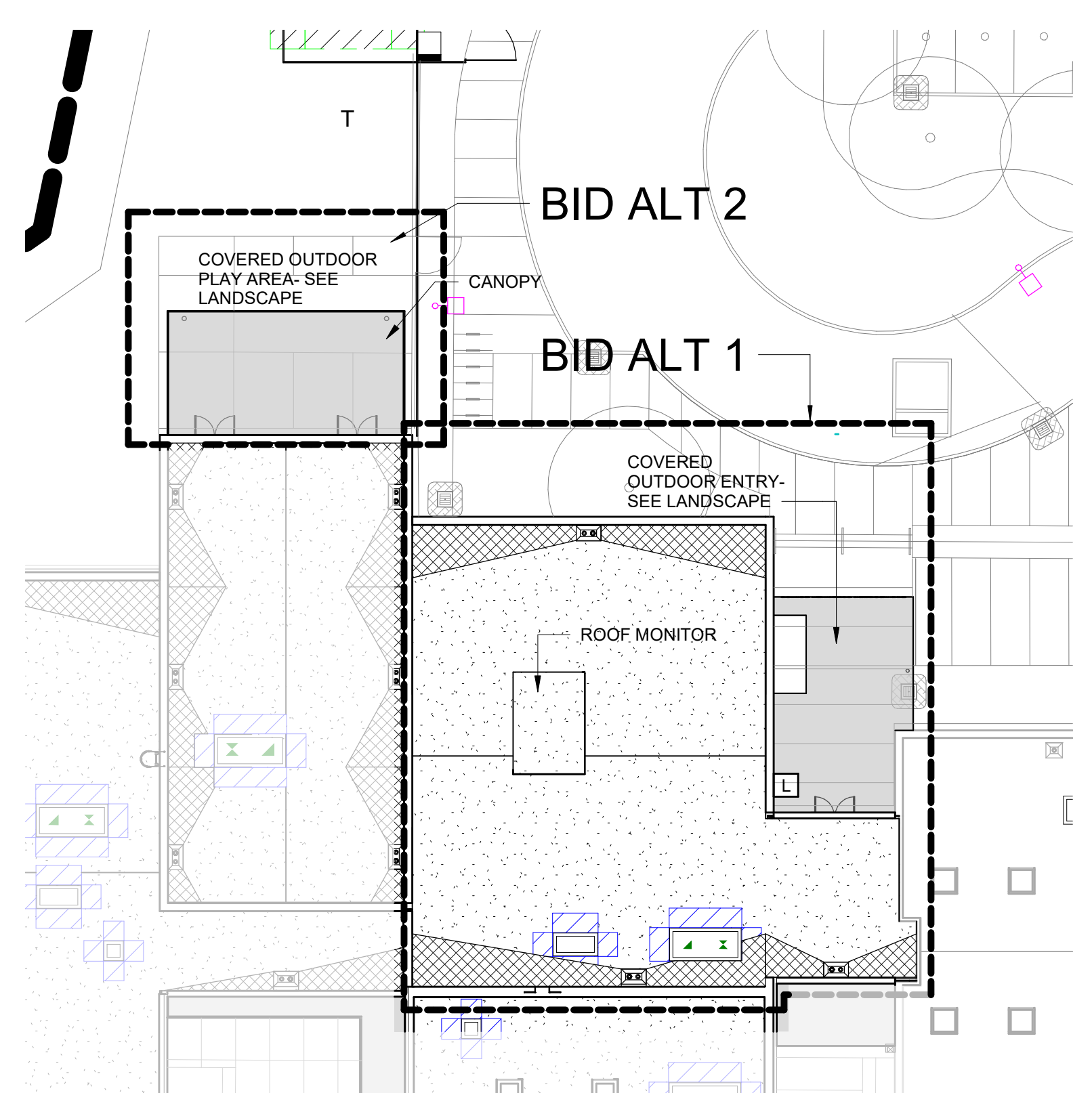
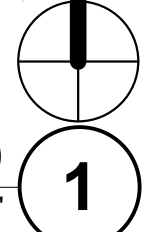
	NEW BUILDING AREA
	EXISTING BUILDING AREA
	SCOPE OF WORK IN EXISTING BUILDING
	COVERED AREA

ALLOWABLE AREA ANALYSIS:

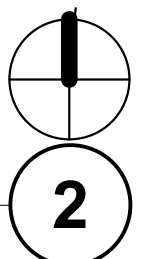
(E) SECTOR A	NEW SECTOR B	BUILDING BASE BID																												
<p>SUMMARY (BASED ON OSSC 2019): EXISTING BUILDING A IS ONE-STORY COMBUSTIBLE CONSTRUCTION. THE BUILDING'S PERIMETER FRONTS OPEN SPACE HAVING A WIDTH OF GREATER THAN 30'-0" (30'-0" + TO CENTERLINE OF ADJACENT STREETS AND PROPERTY LINES AT ALL YARDS). IT HAS AN AUTOMATIC SPRINKLER SYSTEM THROUGHOUT PER SECTION 903.3.1.1.</p> <p>USE & OCCUPANCY (305.1): EDUCATIONAL GROUP E CONSISTING OF GENERAL CLASSROOMS, ADMINISTRATION OFFICES, MULTIPURPOSE ROOM, COMMONS/DINING SPACE (SEE NOTE 1 BELOW), STORAGE (SEE NOTE 2 BELOW), FAB LAB (SEE NOTE 3 BELOW), SCIENCE LAB (SEE NOTE 3 BELOW).</p> <p>NOTES: 1. EXISTING COMMONS/DINING SPACE USED FOR ASSEMBLY PURPOSES IS ASSOCIATED WITH GROUP E OCC IS NOT CONSIDERED A SEPARATED OCCUPANCY (303.1.3). NO SEPARATION IS REQUIRED BETWEEN ACCESSORY OCCUPANCIES AND THE MAIN OCCUPANCY (508.2.4). 2. A ROOM USED FOR STORAGE PURPOSES THAT IS ACCESSORY TO ANOTHER OCCUPANCY MAY BE CLASSIFIED AS PART OF THAT OCCUPANCY (311.1.1). 3. MECH / ELEC / CUSTODIAL ROOMS AND LABS ARE INCIDENTAL USE AREAS AS PER TABLE 509. AUTOMATIC SPRINKLER SYSTEM IS PROVIDED.</p> <p>CONSTRUCTION TYPE (602.5): TYPE VB, FULLY SPRINKLERED (ORIGINALLY PERMITTED UNDER 2010 OSSC)</p> <p>FIRE RESISTANCE REQUIREMENTS (TABLE 601):</p> <table border="1"> <tr><td>PRIMARY STRUCTURAL FRAME</td><td>0</td></tr> <tr><td>EXTERIOR BEARING WALLS</td><td>0</td></tr> <tr><td>INTERIOR BEARING WALLS</td><td>0</td></tr> <tr><td>EXTERIOR NON BEARING WALL</td><td>0</td></tr> <tr><td>INTERIOR NON BEARING WALL</td><td>0</td></tr> <tr><td>FLOOR CONSTRUCTION</td><td>0</td></tr> <tr><td>ROOF CONSTRUCTION</td><td>0</td></tr> </table>	PRIMARY STRUCTURAL FRAME	0	EXTERIOR BEARING WALLS	0	INTERIOR BEARING WALLS	0	EXTERIOR NON BEARING WALL	0	INTERIOR NON BEARING WALL	0	FLOOR CONSTRUCTION	0	ROOF CONSTRUCTION	0	<p>SUMMARY (BASED ON OSSC 2019): NEW BUILDING A IS ONE-STORY COMBUSTIBLE CONSTRUCTION. THE BUILDING'S PERIMETER FRONTS OPEN SPACE HAVING A WIDTH OF GREATER THAN 30'-0" (30'-0" + TO CENTERLINE OF ADJACENT STREETS AND PROPERTY LINES AT ALL YARDS). IT HAS AN AUTOMATIC SPRINKLER SYSTEM THROUGHOUT PER SECTION 903.3.1.1.</p> <p>USE & OCCUPANCY (305.1): EDUCATIONAL GROUP E CONSISTING OF GENERAL CLASSROOMS, ADMINISTRATION OFFICES, MULTIPURPOSE ROOM (SEE NOTE 1 BELOW), STORAGE (SEE NOTE 2 BELOW), FAB LAB (SEE NOTE 3 BELOW), CUSTODIAL, MECH, ELEC ROOM (SEE NOTE 3 BELOW).</p> <p>NOTES: 1. MULTIPURPOSE ROOM USED FOR ASSEMBLY PURPOSES IS ASSOCIATED WITH GROUP E OCC IS NOT CONSIDERED A SEPARATED OCCUPANCY (303.1.3). NO SEPARATION IS REQUIRED BETWEEN ACCESSORY OCCUPANCIES AND THE MAIN OCCUPANCY (508.2.4). 2. A ROOM USED FOR STORAGE PURPOSES THAT IS ACCESSORY TO ANOTHER OCCUPANCY MAY BE CLASSIFIED AS PART OF THAT OCCUPANCY (311.1.1). 3. MECH / ELEC / CUSTODIAL ROOMS AND LABS ARE INCIDENTAL USE AREAS AS PER TABLE 509. AUTOMATIC SPRINKLER SYSTEM IS PROVIDED.</p> <p>CONSTRUCTION TYPE (602.5): TYPE VB, FULLY SPRINKLERED</p> <p>FIRE RESISTANCE REQUIREMENTS (TABLE 601):</p> <table border="1"> <tr><td>PRIMARY STRUCTURAL FRAME</td><td>0</td></tr> <tr><td>EXTERIOR BEARING WALLS</td><td>0</td></tr> <tr><td>INTERIOR BEARING WALLS</td><td>0</td></tr> <tr><td>EXTERIOR NON BEARING WALL</td><td>0</td></tr> <tr><td>INTERIOR NON BEARING WALL</td><td>0</td></tr> <tr><td>FLOOR CONSTRUCTION</td><td>0</td></tr> <tr><td>ROOF CONSTRUCTION</td><td>0</td></tr> </table>	PRIMARY STRUCTURAL FRAME	0	EXTERIOR BEARING WALLS	0	INTERIOR BEARING WALLS	0	EXTERIOR NON BEARING WALL	0	INTERIOR NON BEARING WALL	0	FLOOR CONSTRUCTION	0	ROOF CONSTRUCTION	0	<p>BUILDING BASE BID</p> <p>ALLOWABLE HEIGHT - (TABLE 504.3) ALLOWABLE (60 FEET), ZONING CODE LIMIT = 30'-0" ACTUAL 18 FEET</p> <p>ALLOWABLE NUMBER OF STORIES - (TABLE 504.4) ALLOWABLE 2 STORIES ACTUAL 1 STORY</p> <p>ALLOWABLE AREA E OCC. TYPE VB - (TABLE 506.2) At (S1) 38,000 SF</p> <p>TOTAL ACTUAL AREA PER SECTOR A+B (BASE BID): 13,662 SF (SECTOR A) + 14,494 SF (SECTOR B) = 28,156 SF < 38,000 SF = OK</p> <p>BUILDING BID ALTERNATE</p> <p>ALLOWABLE HEIGHT - (TABLE 504.3) ALLOWABLE (60 FEET), ZONING CODE LIMIT = 30'-0" ACTUAL 18 FEET</p> <p>ALLOWABLE NUMBER OF STORIES - (TABLE 504.4) ALLOWABLE 2 STORIES ACTUAL 1 STORY</p> <p>ALLOWABLE AREA E OCC. TYPE VB - (TABLE 506.2) At (S1) 38,000 SF</p> <p>TOTAL ACTUAL AREA PER SECTOR A+B (BID ALT): 13,662 SF (SECTOR A) + 15,550 SF (SECTOR B) = 29,212 SF < 38,000 SF = OK</p>
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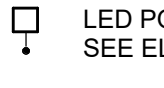
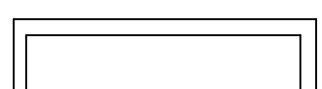




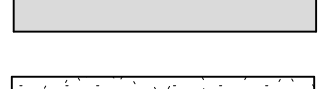
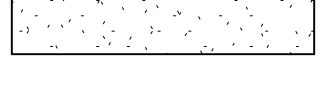


SITE PLAN - BASE BID
SCALE: 1" = 20'-0"



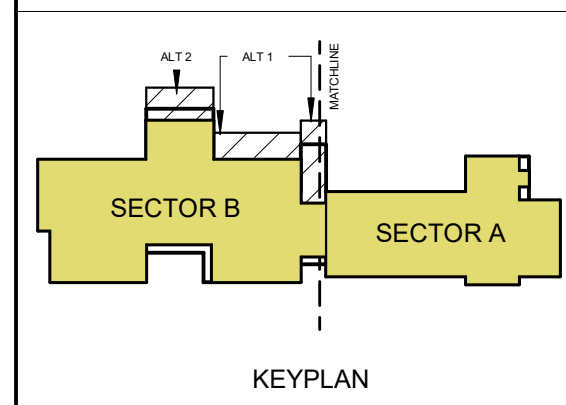
SITE PLAN - BID ALTERNATE
SCALE: 1" = 20'-0"



SITE PLAN LEGEND

	EXISTING BUILDING		LED POLE AREA LUMINAIRE - SEE ELECTRICAL SITE DWG.
	NEW BUILDING		LOCK BOX
	EXISTING CANOPY		ROOF DRAIN WITH OVERFLOW DRAIN
	NEW CANOPY		
	2-PLY MOD BIT MEMBRANE ROOFING OVER RIGID INSULATION ON STRUCTURAL SHEATHING, TYP.		
	FIRE LANE		
	PROPERTY LINE		
	BOUNDARY LINE		

NOT FOR CONSTRUCTION



revisions	phase	LAND USE SUBMITTAL
	date	10/15/2021
	project	21006

SITE PLAN- BASE BID + BID ALT

A1.01