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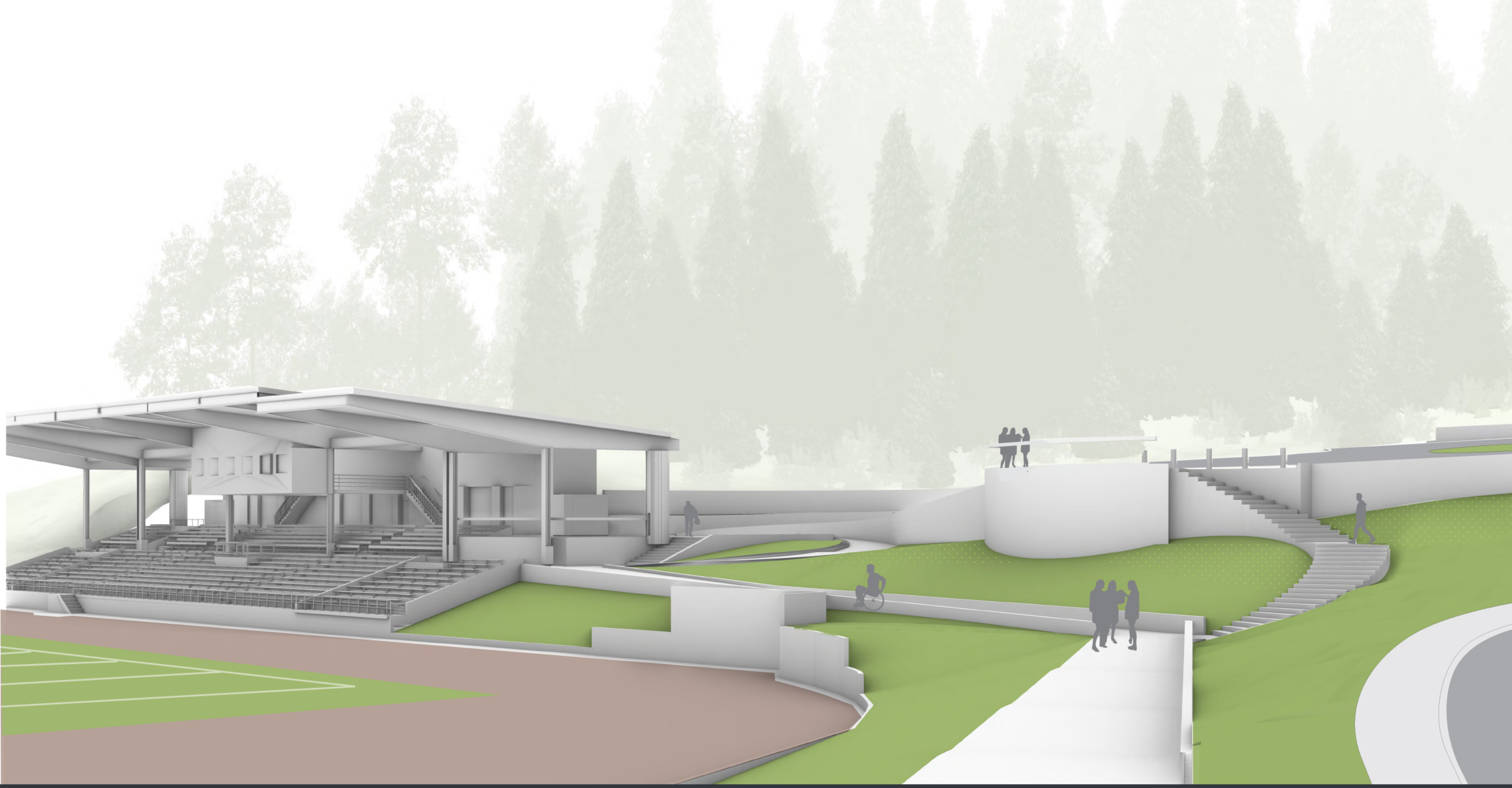

APPLICANT'S REPRESENTATIVE

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APPLICATION TYPE

CONDITIONAL USE MODIFICATION
DESIGN REVIEW
VARIANCE

SUBMITTAL DATE

OCTOBER 13, 2020

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GENERAL INFORMATION

Property Owner and Applicant:

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SITE INFORMATION

Parcel Numbers:	22E3000800, 22E30CA10300, 22E30CA10100, 22E30CA10200 22E30CD04500, 22E30CD04501, & 22E30CD04502
Address:	5464 West A Street
Size:	40.58 acres
Zoning Designation:	R-10, R-5, OBC
Existing Use:	West Linn High School
Surrounding Zoning:	The properties to the north are zoned R10 and R5. The properties to the east are zoned R5 and R4.5. The properties to the south are zoned GC and R5. The properties to the west are zoned R10.
Street Classification:	West A Street and Skyline Drive are both classified as collectors.

INTRODUCTION

APPLICANT'S REQUEST

The West Linn-Wilsonville School District ("the District") is proposing modifications to the West Linn High School campus and seeks approval of an application for a Type III Conditional Use Permit Alteration and Design Review with two Class II Variances. The school was approved as a Conditional Use Permit (CUP 99-01). This narrative has been prepared to describe the proposed development and to document compliance with the relevant sections of West Linn's Community Development Code (CDC).

SITE DESCRIPTION/SURROUNDING LAND USE

The West Linn High School campus is located at 5464 West A Street within the City of West Linn. The school site consists of seven tax lots; 22E3000800, 22E30CA10300, 22E30CA10100, 22E30CA10200 22E30CD04500, 22E30CD04501, and 22E30CD04502. The site is approximately 40.58 acres in size and is zoned Single Family R10, Single Family R5, and Office Business Center (OBC). The existing site has a total of 429 parking stalls. A 10.48-acre conservation easement for the purpose of protecting all trees within the conservation easement area and the natural resource area buffer was recorded in 2004 and amended in 2011.

PROPOSAL

The District is proposing an expansion to the existing stadium seating, expanding and renovating existing restrooms, a new entry plaza to the stadium, a new parking lot on the north side of the site off of Skyline Drive, an expansion of the existing parking lot on the south side of the site and upgraded lighting for the football field. In order to maximize improvements while bringing the project in under budget, the District has developed a series of additive alternates. The alternates can be selected in the event that the District receives favorable bids.

A phased development is allowed under CDC Section 99.125. Chapter 99.125 requires that each phase will meet all applicable development standards individually, without relying on subsequent phases. The proposed improvements have been structured so that the development standards can be met at each stage of development. At each stage of the development, adequate parking will be provided to meet the stadium seating requirements of this section.

The Base Proposal will include expanded covered home stadium seating, renovations to the main stadium building, upgraded field lighting, 64 new parking stalls north of the stadium, and new pedestrian pathways and landscaping connecting the stadium, parking lot and main school building. Add Alt A will include an addition of 34 parking spaces to the parking lot north of the stadium. Add Alt B will be an expansion of the south parking lot to add 18 new parking stalls. Add Alt C will include additional visitor seating, which is contingent upon the corresponding parking expansion. The visitor seating expansion will add 424 feet of bench seating and four accessible seats, requiring 54 parking stalls. The parking required for this expansion will be provided in Base Proposal, Add Alt A and Add Alt B.

NEIGHBORHOOD MEETING

In accordance with the Governor's Executive Order 20-12 requiring social distancing, two web-based virtual meetings were held with neighboring property owners within 500 feet of the site and members of the Sunset and Bolton Neighborhood Associations. Included within this application is a copy of the certified letter sent to the neighborhood association board members, with a copy of the return receipt, a copy of the letter sent to neighbors, a mailing list, a copy of the required posting, affidavits of mailing and posting, a copy of the neighborhood meeting minutes, and an audiotape of the meeting.

APPLICABLE CRITERIA

The following sections of West Linn's Zoning Code have been extracted as they have been deemed to be applicable to the proposal. Following each **bold** applicable criteria or design standard, the Applicant has provided a series of draft findings. The intent of providing code and detailed responses and findings is to document, with absolute certainty, that the proposed development has satisfied the approval criteria for a Type III Conditional Use Permit Alteration and Design Review with twos Class II Variances.

DIVISION 2. ZONING PROVISIONS

Chapter 11 SINGLE-FAMILY RESIDENTIAL DETACHED, R-10

11.060 CONDITIONAL USES

The following are conditional uses which may be allowed in this zoning district subject to the provisions of Chapter 60 CDC, Conditional Uses.

7. Schools.

Finding: Schools are conditional use, subject to the conditional use standards of CDC Chapter 60. Chapter 60 is addressed below.

Chapter 21 OFFICE BUSINESS CENTER, OBC

21.030 PERMITTED USES

9. Parking facilities.

Finding: The south parking lot is located on a parcel that is zoned OBC. The proposed addition of parking spaces in the OBC zone is a permitted use.

Chapter 32 WATER RESOURCE AREA PROTECTION

32.020 APPLICABILITY

A. This chapter applies to all development, activity or uses within WRAs identified on the WRA Map. It also applies to all verified, unmapped WRAs. The WRA Map shall be amended to include the previously unmapped WRAs.

B. The burden is on the property owner to demonstrate that the requirements of this chapter are met, or are not applicable to the land, development activity, or other proposed use or alteration of land. The Planning Director may make a determination of applicability based on the WRA Map, field visits, and any other relevant maps, site plans and information, as to:

1. **The existence of a WRA;**
2. **The exact location of the WRA; and/or**
3. **Whether the proposed development, activity or use is within the WRA boundary.**

   In cases where the location of the WRA is unclear or disputed, the Planning Director may require a survey, delineation, or sworn statement prepared by a natural resource professional/wetland biologist or specialist that no WRA exists on the site. Any required survey, delineation, or statement shall be prepared at the applicant's sole expense.

Finding: The exact location of the WRA has been shown on the Stadium Existing Conditions Plan (Sheet C101) South Lot Existing Conditions and Demo Plan (Sheet C102). The proposed development will not include any work within the WRA boundary. This standard is met.

Chapter 41 BUILDING HEIGHT, STRUCTURES ON STEEP LOTS, EXCEPTIONS

41.005 DETERMINING HEIGHT OF BUILDING

A. For all zoning districts, building height shall be the vertical distance above a reference datum measured to the highest point of a flat roof or to the deck line of a mansard roof or to the highest gable, ridgeline or peak of a pitched or hipped roof, not including projections above roofs such as cupolas, towers, etc. The reference datum shall be selected by either of the following, whichever yields a greater height of building.

1. **For relatively flat sites where there is less than a 10-foot difference in grade between the front and rear of the building, the height of the building shall be measured from grade five feet out from the exterior wall at the front of the building; or**
2. **For steeper lots where there is more than a 10-foot difference in grade between the front and rear of the building, the height of the building is measured from grade at a point five feet out from the exterior wall on the lowest side (front or rear) of the building. One then measures vertically to the peak or ridgeline of the roof to determine the height.**
3. **Buildings on cross slopes or side slopes are measured at either the front or rear of the building using methods described in subsections (A)(1) and (2) of this definition only. Even if the cross slope creates a tall elevation on the side, the method of determining height is not modified.**

Finding: The City considers public schools to be government buildings, as noted in the pre-application conference notes provided under Appendix B of this application. The height requirements of section 41.040 are applicable. Section 41.040 has been addressed within this narrative.

41.040 PLACES OF WORSHIP OR GOVERNMENT BUILDINGS

The height of a place of worship or governmental building may be built to a maximum height of 50 feet provided:

A. The total floor area of the building does not exceed one and one-half times the area of the site;

B. The yard dimensions in each case are equal to at least two-thirds of the building height of the principal structure; and

C. The approval of this exception is a part of the approval of the conditional use allowed under Chapter 60 CDC.

Finding: The school stadium has a maximum height of 44 feet, which does not exceed the 50-foot maximum height allowed for government buildings. The existing total floor area for the school site is 286,502 square feet. The proposed stadium expansion will add 2,625 square feet, for a total of 290,127 square feet. The site has a total area of 1,767,650 square feet. The total floor area of the buildings on site is approximately

16 percent. The floor area does not exceed one and one-half times the area of the site. This application is an alteration of a Conditional Use allowed under Chapter 60. The requirements of this section have been met.

Chapter 42 CLEAR VISION AREAS

42.020 CLEAR VISION AREAS REQUIRED, USES PROHIBITED

A. A clear vision area shall be maintained on the corners of all property adjacent to an intersection as provided by CDC 42.040 and 42.050.

B. A clear vision area shall contain no planting, fence, wall, structure or temporary or permanent obstruction (except for an occasional utility pole or tree) exceeding three feet in height, measured from the top of the curb, or, where no curb exists, from the street centerline grade, except that trees exceeding this height may be located in this area, provided all branches below eight feet are removed.

Finding: A clear vision area will be maintained at the proposed parking lot accessway on Skyline drive. The clear vision area will not contain plantings, fences, walls, or structures exceeding three feet in height. This requirement is met.

42.050 COMPUTATION; ACCESSWAY LESS THAN 24 FEET IN WIDTH

The clear vision area for street and accessway intersections (accessways having less than 24 feet in width) shall be that triangular area whose base extends 30 feet along the street right-of-way line in both directions from the centerline of the accessway at the front setback line of a single-family and two-family residence, and 30 feet back from the property line on all other types of uses.

Clear vision area for corner lots and driveways less than 24 feet in width:

Finding: The proposed parking lot accessway is 23 feet wide measured curb-to-curb. Clear vision area triangles consistent with the requirements of this section have been shown on the Stadium Expansion and Lot Plan (Sheet C201). This standard is met.

Chapter 44 FENCES

A. A sight- or non-sight-obscuring fence may be located on the property line or in a yard setback area subject to the following:

1. **The fence is located within:**
    - a. **A required front yard area, and it does not exceed three feet, except pillars and driveway entry features subject to the requirements of Chapter 42 CDC, Clear Vision Areas, and approval by the Planning Director;**
    - b. **A required side yard which abuts a street and it is within that portion of the side yard which is also part of the front yard setback area and it does not exceed three feet;**
    - c. **A required side yard which abuts a street and it is within that portion of the side yard which is not also a portion of the front yard setback area and it does not exceed six feet provided the provisions of Chapter 42 CDC are met;**
    - d. **A required rear yard which abuts a street and it does not exceed six feet; or**

e. A required side yard area which does not abut a street or a rear yard and it does not exceed six feet.

Finding: The proposed development will include fences along the street side yard along Skyline Boulevard. The proposed fencing will not exceed six feet in height. The location of the proposed fencing has been shown on the Landscape Site Plan (Sheet L100) and the Landscape Site Plan – West Enlargement (sheet L101). This standard is met.

B. Fence or wall on a retaining wall. When a fence is built on a retaining wall or an artificial berm, the following standards shall apply:

1. **When the retaining wall or artificial berm is 30 inches or less in height from finished grade, the maximum fence or wall height on top of the retaining wall shall be six feet.**
2. **When the retaining wall or earth berm is greater than 30 inches in height, the combined height of the retaining wall and fence or wall from finished grade shall not exceed eight and one-half feet.**
3. **Fences or walls located on top of retaining walls or earth berms in excess of 30 inches above finished grade may exceed the total allowed combined height of eight and one-half feet; provided, that the fence or wall is located a minimum of two feet from the retaining wall and the fence or wall height shall not exceed six feet.**

Finding: Where fences are proposed on retaining walls less than 30 inches in height, the maximum fence height will be 42 inches. The combined height of the retaining walls over 30 inches and height and fences do not exceed eight- and one-half feet. This standard is met.

44.030 SCREENING OF OUTDOOR STORAGE

A. All service, repair, and storage activities carried on in connection with any commercial, business or industrial activity and not conducted within an enclosed building shall be screened from view of all adjacent properties and adjacent streets by a sight-obscuring fence.

B. The sight-obscuring fence shall be in accordance with provisions of Chapter 42 CDC, Clear Vision Areas, and shall be subject to the provisions of Chapter 55 CDC, Design Review.

Finding: The proposed stadium and parking lot expansion will not require new outdoor storage areas on the site. The requirements of this section are not applicable.

44.040 LANDSCAPING

Landscaping which is located on the fence line and which impairs sight vision shall not be located within the clear vision area as provided in Chapter 42 CDC.

Finding: Landscaping which impairs sight vision will not be located in the clear vision areas. This standard is met.

44.050 STANDARDS FOR CONSTRUCTION

A. The structural side of the fence shall face the owner's property; and

B. The sides of the fence abutting adjoining properties and the street shall be maintained.

Finding: The structural side of all proposed fences will face the owner's property. The sides of the fence abutting adjoining properties and the street will be maintained. This standard is met.

Chapter 46 OFF-STREET PARKING, LOADING AND RESERVOIR AREAS

46.020 APPLICABILITY AND GENERAL PROVISIONS

A. At the time a structure is erected or enlarged, or the use of a structure or unit of land is changed within any zone, parking spaces, loading areas and reservoir areas shall be provided in accordance with the requirements of this chapter unless other requirements are otherwise established as a part of the development approval process.

Finding: Additional parking required to support the enlarged stadium seating will be provided as part of project. The standard is met.

B. The provision and maintenance of off-street parking and loading spaces are the continuing obligation of the property owner.

Finding: The applicant acknowledges that the provision and maintenance of off-street parking and loading spaces are the continuing obligation of the property owner. This standard is met.

C. No building or other permit shall be issued until plans are approved that show the property that is and will remain available for exclusive use as off-street parking and loading space as required by this chapter.

Finding: The applicant acknowledges that no building or other permits will be issued until plans are approved that show the property that is and will remain for the exclusive use as off-street parking. This standard is met.

D. Required parking spaces and loading areas shall be improved to the standards contained in this chapter and shall be available for use at the time of the final building inspection except as provided in CDC 46.150.

Finding: All proposed parking spaces will be improved to the standards contained in this chapter. This standard is met.

46.030 SUBMITTAL REQUIREMENTS

For any application requiring design review approval, which includes parking areas, the applicant shall submit, within the design review package, a plan drawn to scale showing all the elements necessary to indicate that the requirements of Chapter 55 CDC are met and it shall include but not be limited to:

A. The delineation of individual parking and loading spaces and their dimensions;
B. The identification of compact parking spaces;
C. The location of the circulation area necessary to serve spaces;
D. The access point(s) to streets, alleys, and properties to be served;
E. The location of curb cuts;

F. The location and dimensions of all landscaping, including the type and size of plant material to be used, as well as any other landscape material incorporated into the overall plan;

G. The proposed grading and drainage plans and the slope (percentage) of parking lot;

H. Specifications as to signs and bumper guards;

I. Identification of disabled parking spaces;

J. Location of pedestrian walkways and crossings; and

K. Location of bicycle racks.

Finding: A Stadium & Parking Lot Plan (Sheet C201), South Parking Lot Expansion Plan (Sheet C202), Stadium Grading & Erosion Control Plan (Sheet C231), and Landscape Site Plan (Sheet L100-L102) have been submitted illustrating requirements A-K above. This standard is met.

46.040 APPROVAL STANDARDS

Approval shall be based on the standards set forth in this chapter and Chapter 48 CDC, Access, Egress and Circulation; Chapter 52 CDC, Signs; and Chapter 54 CDC, Landscaping.

Finding: Chapter 48 CDC, Access, Egress and Circulation; Chapter 52 CDC, Signs; and Chapter 54 CDC, Landscaping has been addressed within this narrative. This standard is met.

46.050 JOINT USE OF A PARKING AREA

A. Joint use of required parking spaces may occur where two or more uses on the same or separate sites are able to share the same parking spaces because their parking demands occur at different times. Joint use of required parking spaces is allowed if the following documentation is submitted in writing to the Planning Director as part of a building or zoning permit application or land use review:

1. **The names and addresses of the owners or tenants that are sharing the parking and the uses at those locations;**
2. **The location and number of parking spaces that are being shared;**
3. **An analysis showing that the peak parking times of the uses occur at different times and that the parking area will be large enough for the anticipated demands of both uses; and**
4. **A legal instrument such as an easement or deed restriction that guarantees access to the parking for all uses.**

B. If a joint use arrangement is subsequently terminated, the requirements of this chapter will apply to each use separately.

Finding: The school does not utilize a joint parking agreement. The requirements of this section are not applicable.

46.070 MAXIMUM DISTANCE ALLOWED BETWEEN PARKING AREA AND USE

A. Off-street parking spaces for single- and two-family dwellings shall be located on the same lot with the dwelling.

B. Off-street parking spaces for uses not listed in subsection A of this section shall be located not farther than 200 feet from an entryway to the building or use they are required to serve, measured in a straight line from the building, with the following exceptions:

1. **Shared parking areas for commercial uses which require more than 40 parking spaces may provide for the spaces in excess of the required 40 spaces up to a distance of 300 feet from the entryway to the commercial building or use.**
2. **Industrial and manufacturing uses which require in excess of 40 spaces may locate the required spaces in excess of the 40 spaces up to a distance of 300 feet from the entryway to the building.**
3. **Employee parking areas for carpools and vanpools shall be located closer to the entryway to the building than general employee parking.**
4. **Stacked or valet parking is allowed if an attendant is present to move vehicles. If stacked parking is used for required parking spaces, the applicant shall ensure that an attendant will always be present when the lot is in operation. The requirements for minimum or maximum spaces and all parking area development standards continue to apply for stacked parking.**
5. **All disabled parking shall be placed closest to building entrances than all other parking. Appropriate ADA curb cuts and ramps to go from the parking lot to the ADA-accessible entrance shall be provided unless exempted by ADA code.**

Finding: The school campus has multiple buildings, recreation facilities and parking areas across the campus. The proposed north and south parking lots will serve the stadium expansion area and the main school campus. The proposed parking is located more than 200 feet from the stadium entrance. The school campus has multiple buildings, recreation facilities and parking areas across the campus. The proposed north parking lot expansion has been located as close as possible to the main entrance of the stadium, given the site terrain and existing development of the site. The closest parking stall in the north parking lot is located approximately 100 feet from the stadium entrance. The furthest parking stall in the north parking lot is located approximately 385 feet from the main stadium entrance.

The proposed south parking lot expansion has been located adjacent to several campus facilities, including the main building, music wing building, visitor stadium, the tennis courts and baseball fields. The closest parking stall in the south parking lot is located approximately 200 feet from the tennis courts, 285 feet from the music wing building and 360 feet from an entrance to the main school building. The furthest parking stall in the south parking lot is located approximately 305 feet from the tennis courts, 370 feet from the music wing building and 445 feet from an entrance to the main school building. ADA parking has been located closest to the primary entrance.

A class II variance has been requested for the off-street parking lot spacing. The class II variance criteria have been addressed within this narrative.

46.080 COMPUTATION OF REQUIRED PARKING SPACES AND LOADING AREA

A. Where several uses occupy a single structure or unit of land, a combination of uses is included in one business, or a combination of uses in the same or separate buildings share a common parking area as in the case of a shopping center, the total off-street parking spaces and loading area shall be the sum of the requirements of the several uses, computed separately. For example, parking for an auto sales and repair business would be calculated using the "retail-bulky" calculation for the sales area and the "service and repair" calculation for the repair area. In another example, parking for a shopping center with a grocery store, a restaurant, and a medical office would be calculated using the "general retail store" calculation for the grocery store, the "restaurant" calculation for the restaurant, and the "medical/dental clinics" calculation for the medical office. The total number of required parking spaces may be reduced by up to 10 percent to account for cross-patronage (when a customer visits several commercial establishments during one visit to the commercial center) of adjacent businesses or services in a commercial center with five or more separate commercial establishments.

B. To calculate building square footage as a basis for determining how many parking spaces are needed, the area measured shall be gross floor area under the roof measured from the faces of the structure, including all habitable floors and excluding only space devoted to covered off-street parking or loading.

C. Where employees are specified, the employees counted are the persons who work on the premises including proprietors, executives, professional people, production, sales, and distribution employees, during the largest shift.

D. Fractional space requirements shall be counted as a whole space.

E. On-street parking along the immediate property frontage(s) may be counted toward the minimum parking requirement with approval from the City Engineer.

F. When an office or commercial development is proposed which has yet to identify its tenants, the parking requirement shall be based upon the "office" or "general retail" categories, respectively.

G. As permitted uses are replaced with new permitted uses within an existing commercial or business center, modification of the number of parking spaces relative to the new mix of uses is not required unless other modifications of the site which require design review approval pursuant to Chapter 55 CDC are proposed.

46.090 MINIMUM OFF-STREET PARKING SPACE REQUIREMENTS

B. Commercial recreation.

1. Auditorium, stadium, gymnasium.	**One space for each 4 seats, or 8 feet of bench length, or 1 space for each 40 square feet of floor area.**

Finding: The existing school campus has a total of 429 existing parking stalls on site. Based on the preliminary conditional use permit approved in 1999 for the school, 423 parking stalls are required for the site. The school currently has an excess of six parking stalls.

In order to maximize improvements while bringing the project in under budget, the District has developed a series of additive alternates. The alternates can be selected in the event that the District receives favorable bids. The proposed Base Proposal will include expanded covered home stadium seating, renovations to the main stadium building, upgraded field lighting, 64 new parking stalls north of the stadium, and new pedestrian pathways and landscaping connecting the stadium, parking lot and main school building. The proposed Add Alt A will include an addition of 34 parking spaces to the parking lot north of the stadium. The proposed Add Alt B will be an expansion of the south parking lot to add 18 new parking stalls. The proposed Add Alt C will include additional visitor seating, which is contingent upon the corresponding parking expansion.

A phased development is allowed under CDC Section 99.125. Chapter 99.125 requires that each phase will meet all applicable development standards individually, without relying on subsequent phases. The proposed improvements have been structured so that the development standards can be met at each stage of development. At each stage of the development, adequate parking will be provided to meet the stadium seating requirements of this section.

The seating and parking calculations for each stage and the total build out of the site are provided in the table below.

	Base Proposal	**Add Alt A**	**Add Alt B**	**Add Alt C**	**Add Total**
1999 Cup Bench Length (feet)	2,538	2,538	2,538	2,538	2,538
Final Bench Length (feet)	3,042	3,042	3,042	3,466	3,466
Total Added Bench Length (feet)	504	504	504	928	928
Added Seats	20	20	20	24	24
Required Parking Stalls Per Added Bench Length	63	63	63	116	116
Required Parking Stalls Per Added Seats	5	5	5	6	6
Total Required Stalls for Expansion	68	68	68	122	122
1999 Minimum Required Stalls	423	423	423	423	423
Total Required Stalls (Minimum)	**491**	**491**	**491**	**545**	**545**
Total Allowed Stalls (Maximum)	540	540	540	599	599
Existing Off-Street Parking Stalls	429	429	429	429	429
Minimum Required New Stalls	**62**	**62**	**62**	**116**	**116**
Maximum Allowed New Stalls	**111**	**111**	**111**	**170**	**170**

Base Proposal

The Base Proposal will add 504 feet of bench seating and 20 seats to the main stadium building. The total seating on site after the construction of Phase Bid Alt A will be 3,042 feet of bench seating and 20 seats. The total required off-street parking required will be 491 stalls. The school site currently has a total of 429 parking stalls, therefore an addition of 62 stalls will be required. A total of 64 parking stalls will be added to the site. The total number of parking stalls on site will be 493 stalls.

Add Alt A

Add Alt A includes additional parking stalls. No additional stadium seating is proposed. A total of 34 parking stalls will be added to the site. Add Alt A can be accepted by itself or together with Add Alt B and Add Alt C, while maintaining compliance with code.

Add Alt B

Add Alt B includes additional parking stalls. No additional stadium seating is proposed. A total of 18 parking stalls will be added to the site. Add Alt B can be accepted by itself or together with Add Alt A and Add Alt C, while maintaining compliance with code.

Add Alt C

Add Alt C is visitor bleacher expansion phase. No additional parking is proposed. Alternate 3 will add 424 feet of bench seating and 4 seats to the visitor stadium building. The total seating on site after the construction of Add Alt C will be 3,466 feet of bench seating and 24 seats. The total required off-street parking required is 545 stalls. The total number of parking stalls on site will be 545 stalls. Add Alt C cannot be accepted without the required additional parking.

This standard is met.

F. Maximum parking. Parking spaces (except for single-family and two-family residential uses) shall not exceed the minimum required number of spaces by more than 10 percent.

Finding: The proposed parking meets the minimum requirement of 545 stalls for the proposed stadium expansion. The maximum parking allowed of 599 stalls (10% more than 545) is not exceeded. The requirements of this section have been met.

G. Parking reductions. An applicant may reduce parking up to 10 percent for development sites within one-quarter mile of a transit corridor or within a mixed-use commercial area, and up to 10 percent for commercial development sites adjacent to multi-family residential sites with the potential to accommodate more than 20 dwelling units.

Finding: A reduction in parking spaces is not requested. The requirements of this section are not applicable.

H. For office, industrial, and public uses where there are more than 20 parking spaces for employees on the site, at least 10 percent of the required employee parking spaces shall be reserved for carpool use before 9:00 a.m. on weekdays. The spaces will be the closest to the building entrance, except for any disabled parking and those signed for exclusive customer use. The carpool/vanpool spaces shall be clearly marked "Reserved – Carpool/Vanpool Before 9:00 a.m."

Finding: The existing staff parking lots are not being impacted by this development. The requirements of this section are not applicable.

I. Existing developments along transit streets or near transit stops may redevelop up to 10 percent of the existing parking spaces to provide transit-oriented facilities, including bus pullouts, bus stops and shelters, park and ride stations, and other similar facilities.

Finding: A reduction in parking spaces is not requested. The requirements of this section are not applicable.

J. Development in water resource areas may reduce the required number of parking spaces by up to 25 percent. Adjacent improved street frontage with curb and sidewalk may also be counted towards the parking requirement at a rate of one parking space per 20 lineal feet of street frontage adjacent to the property.

Finding: Development is not proposed in a water resource area. The requirements of this section are not applicable.

46.120 DRIVEWAYS REQUIRED ON SITE

Any school or other meeting place which is designed to accommodate more than 25 people at one time shall provide a 15-foot-wide driveway designed for continuous forward flow of passenger vehicles for the purpose of loading and unloading passengers. Depending on functional requirements, the width may be increased with Planning Director approval.

Finding: The proposed stadium and parking lot are ancillary to the existing school circulation system and parking areas. The existing school site has a 15-foot-wide driveway designed for continuous forward flow of passenger vehicles for the purpose of loading and unloading passengers. This standard is met.

46.130 OFF-STREET LOADING SPACES

Buildings or structures to be built or substantially altered, which receive and distribute material or merchandise by truck, shall provide and maintain off-street loading and maneuvering space. The dimensional standard for loading spaces is a minimum of 14 feet wide by 20 feet long or proportionate to accommodate the size of delivery trucks that typically serve the proposed use as follows:

Land Use	**Gross Floor Area**	
	At Which First Berth Is Required	**At Which Second Berth Is Required**
Institutional:		
Schools	**10,000**	**100,000**

Finding: The proposed stadium expansion will not require an additional loading berth. This standard is met.

46.140 EXEMPTIONS TO PARKING REQUIREMENTS

To facilitate the design requirements of Chapter 58 CDC, properties in the Willamette Falls Drive Commercial Design District, located between 10th and 16th Streets, shall be exempt from the minimum parking and off-street loading requirements as identified in this chapter. Any off-street parking or loading spaces voluntarily provided shall be designed and installed per the dimensional standards of this code.

Finding: The proposed development is not located within the Willamette Falls Drive Commercial Design District. This standard is met.

46.150 DESIGN AND STANDARDS

The following standards apply to the design and improvement of areas used for vehicle parking, storage, loading, and circulation:

A. Design standards.

1. **"One standard parking space" means a minimum for a parking stall of eight feet in width and 16 feet in length. These stalls shall be identified as "compact." To accommodate larger cars, 50 percent of the required parking spaces shall have a minimum dimension of nine feet in width and 18 feet in length (nine feet by 18 feet). When multi-family parking stalls back onto a main driveway, the stalls shall be nine feet by 20 feet. Parking for development in water resource areas may have 100 percent compact spaces.**

Finding: All proposed parking stalls meet a minimum dimension of nine feet in width and 18 feet in length. Compact parking is not proposed. This standard is met.

2. **Disabled parking and maneuvering spaces shall be consistent with current federal dimensional standards and subsection B of this section and placed nearest to accessible building entryways and ramps.**

Finding: All proposed disabled parking and maneuvering spaces have been designed to be consistent with current federal dimensional standards. This requirement is met.

3. **Repealed by Ord. 1622.**
4. **Service drives shall be designed and constructed to facilitate the flow of traffic, provide maximum safety of traffic access and egress, and maximum safety of pedestrians and vehicular traffic on the site.**

Finding: All service drives have been designed to facilitate the flow of traffic, provide maximum safety of traffic access and egress, and maximum safety of pedestrians and vehicular traffic on site. This standard is met.

5. **Each parking and/or loading space shall have clear access, whereby the relocation of other vehicles to utilize the parking space is not required.**

Finding: Each proposed parking space will have clear access. This standard is met.

6. **Except for single- and two-family residences, any area intended to be used to meet the off-street parking requirements as contained in this chapter shall have all parking**

spaces clearly marked using a permanent paint. All interior drives and access aisles shall be clearly marked and signed to show direction of flow and maintain vehicular and pedestrian safety. Permeable parking surface spaces may have an alternative delineation for parking spaces.

Finding: All proposed areas intended to be used to meet the off-street parking requirements will have all parking spaces clearly marked using permanent paint. All interior drives and access aisles will be clearly marked and signed to show direction of flow and maintain vehicular and pedestrian safety. This standard is met.

7. **Except for residential parking, and parking for public parks and trailheads, at least 50 percent of all areas used for the parking and/or storage and/or maneuvering of any vehicle, boat and/or trailer shall be improved with asphalt or concrete surfaces according to the same standards required for the construction and acceptance of City streets. The remainder of the areas used for parking may use a permeable paving surface designed to reduce surface runoff. Parking for public parks or trailheads may use a permeable paving surface designed to reduce surface runoff for all parking areas. Where a parking lot contains both paved and unpaved areas, the paved areas shall be located closest to the use which they serve.**

Finding: The proposed parking areas will be improved with asphalt or concrete surfaces according to the same standard required for the construction and acceptance of City streets. This standard is met.

8. **Off-street parking spaces for single- and two-family residences shall be improved with an asphalt or concrete surface, or a permeable parking surface designed to reduce surface runoff, to specifications as approved by the Building Official. Other parking facilities for two- and single-family homes that are to accommodate additional vehicles, boats, recreational vehicles, and trailers, etc., need not be paved. All parking for multi-family residential development shall be paved with concrete or asphalt. Driveways shall measure at least 20 feet from the back of sidewalk to garage or the end of the parking pad to accommodate cars and sport utility vehicles without the vehicles blocking the public sidewalk.**

Finding: The proposed development is an institutional use. The requirements of this section are not applicable to the proposed development.

9. **Access drives from the street to off-street parking or loading areas shall be designed and constructed to facilitate the flow of traffic and provide maximum safety for pedestrian and vehicular traffic on the site. The number of access drives shall be limited to the minimum that will allow the property to accommodate and service the anticipated traffic. Access drives shall be clearly and permanently marked and defined through use of rails, fences, walls, or other barriers or markers on frontage not occupied by service drives.**

Finding: All proposed access drives have been designed and will be constructed to facilitate the flow of traffic. The number of access drives will be limited to the minimum to accommodate and service the anticipated traffic. All access drives will be clearly and permanently marked. This standard is met.

10. **Access drives shall have a minimum vision clearance as provided in Chapter 42 CDC, Clear Vision Areas.**

Finding: Clear vision area triangles consistent with Chapter 42 have been shown on the Stadium & Parking Lot Plan (Sheet C201). This standard is met.

11. **Parking spaces along the boundaries of a parking lot or adjacent to interior landscaped areas or sidewalks shall be provided with a wheel stop at least four inches high located two feet back from the front of the parking stall. Such parking spaces may be provided without wheel stops if the sidewalks or landscaped areas adjacent the parking stalls are two feet wider than the minimum width.**

Finding: Wheel stops will be provided on parking spaces along the boundary of the proposed parking lot where parking stalls are adjacent to sidewalks or landscape areas. This standard is met.

12. **Off-street parking and loading areas shall be drained in accordance with plans and specifications approved by the City Engineer. Storm drainage at commercial sites may also have to be collected to treat oils and other residue.**

Finding: The proposed parking areas will be drained in accordance with the City's plans and specifications. The Preliminary Storm Water Report submitted under Attachment D provides a detailed analysis of the proposed stormwater management system. This standard is met.

13. **Artificial lighting on all off-street parking facilities shall be designed to deflect all light downward away from surrounding residences and so as not to create a hazard to the public use of any road or street.**

Finding: As shown on the submitted Photometrics Plan (Sheet E100), the proposed parking lot lighting has been designed to deflect all light downward away from surrounding residences. This standard is met.

14. **Directional arrows and traffic control devices which are placed on parking lots shall be identified.**

Finding: All proposed traffic control devices in the proposed parking lot will be identified. This standard is met.

15. **The maximum driveway grade for single-family housing shall be 15 percent. The 15 percent shall be measured along the centerline of the driveway only. Grades elsewhere along the driveway shall not apply. Variations require approval of a Class II variance by the Planning Commission pursuant to Chapter 75 CDC. Regardless, the last 18 feet in**

front of the garage must maintain a maximum grade of 12 percent as measured along the centerline of the driveway only. Grades elsewhere along the driveway shall not apply.

Finding: The proposed development is not residential. The requirements of this section are not applicable.

16. **Visitor or guest parking must be identified by painted "GUEST" or "VISITOR."**

Finding: The proposed development is not residential; therefore, visitor and guest designated parking are not required. The school has existing visitor parking spaces which have been identified as visitor stalls. This standard is met.

17. **The parking area shall have less than a five percent grade. No drainage across adjacent sidewalks or walkways is allowed.**

Finding: A Stadium Grading & Erosion Control Plan (Sheet C231) and South Lot Grading and Erosion Control Plan (Sheet C232) showing the proposed parking lot grading has been provided under Appendix E. The requirements of this section are met.

18. **Commercial, office, industrial, and public parking lots may not occupy more than 50 percent of the main lot frontage of a development site. The remaining frontage shall comprise buildings or landscaping. If over 50 percent of the lineal frontage comprises parking lot, the landscape strip between the right-of-way and parking lot shall be increased to 15 feet wide and shall include terrain variations (e.g., one-foot-high berm) plus landscaping. The defensible space of the parking lot should not be compromised.**

Finding: The main lot frontage for the site is on West A Street. The proposed parking lot will be located off of the main lot frontage street with access from Skyline Drive. The requirements of this section are not appliable to the proposed parking lot.

19. **Areas of the parking lot improved with asphalt or concrete surfaces shall be designed into areas of 12 or less spaces through the use of defined landscaped area. Groups of 12 or less spaces are defined as:**
    - a. **Twelve spaces in a row, provided there are no abutting parking spaces, as in the case when the spaces are abutting the perimeter of the lot; or**
    - b. **Twelve spaces in a group with six spaces abutting together; or**
    - c. **Two groups of 12 spaces abutting each other, but separated by a 15-foot-wide landscape area including a six-foot-wide walkway.**
    - d. **Parking areas improved with a permeable parking surface may be designed using the configurations shown in subsections (A)(19)(a), (b) and (c) of this section except that groups of up to 18 spaces are allowed.**
    - e. **The requirements of this chapter relating to total parking lot landscaping, landscaping buffers, perimeter landscaping, and landscaping the parking lot islands and interior may be waived or reduced pursuant to CDC 32.110(F) in a WRA application without a variance being required.**

Finding: The proposed parking lot has been designed with groups of 12 or less parking spaces, defined by landscape islands consistent with the requirements of this section. This standard is met.

20. **Pedestrian walkways shall be provided in parking areas having 20 or more spaces. Walkways or sidewalks shall be constructed between major buildings/activity areas (an example in multi-family housing: between recreation center, swimming pool, manager's office, park or open space areas, parking lots, etc.) within a development, between adjacent developments and the new development, as feasible, and between major buildings/activity areas within the development and adjacent streets and all adjacent transit stops. Internal parking lot circulation and design should maintain ease of access for pedestrians from streets and transit stops. Walkways shall be constructed using a material that visually contrasts with the parking lot and driveway surface. Walkways shall be further identifiable to pedestrians and motorists by grade separation, walls, curbs, surface texture (surface texture shall not interfere with safe use of wheelchairs, baby carriages, shopping carts, etc.), and/or landscaping. Walkways shall be six feet wide. The arrangement and layout of the paths shall depend on functional requirements.**

Finding: The proposed development features a new pedestrian pathway system which will connect the new parking lot with the main entrance of the stadium, the sidewalk on Skyline Drive and the existing pedestrian circulation system on the school site. All new walkways will be constructed with a material that contrasts with the parking lot and driveway surface. This standard is met.

21. **The parking and circulation patterns are easily comprehended and defined. The patterns shall be clear to minimize traffic hazards and congestion and to facilitate emergency vehicles.**

Finding: The proposed parking and circulation pattern have been designed to be easily comprehended and defined. This standard is met.

22. **The parking spaces shall be close to the related use.**

Finding: The proposed parking area will serve West Linn High School and the associated stadium. This standard is met.

23. **Permeable parking spaces shall be designed and built to City standards.**

Finding: The proposed parking area has not been designed using permeable surfaces. The requirements of this standard are not applicable.

B. Accessible parking standards for persons with disabilities. If any parking is provided for the public or visitors, or both, the needs of the people with disabilities shall be based upon the following standards or current applicable federal standards, whichever are more stringent:

1. **Minimum number of accessible parking space requirements (see following table):**

MINIMUM REQUIRED NUMBER OF TOTAL PARKING SPACES	TOTAL NUMBER OF ACCESSIBLE SPACES	NUMBER OF VAN-ACCESSIBLE SPACES REQUIRED, OF TOTAL	SPACES SIGNED “WHEELCHAIR USE ONLY”
1-25	1	1	-
26-50	2	1	-
51-75	3	1	-
76-100	4	1	-
101-150	5	-	1
151-200	6	-	1
201-300	7	-	2
301-400	8	-	2
401-500	9	-	2
501-999	2 percent of total spaces	-	1 in every 6 accessible spaces or portion thereof
Over 1,000	20 spaces plus 1 for every 100 spaces, or fraction thereof, over 1,000	-	1 in every 6 spaces or portion thereof

2. **Location of parking spaces. Parking spaces for the individual with a disability that serve a particular building shall be located on the shortest possible accessible circulation route to an accessible entrance to a building. In separate parking structures or lots that do not serve a particular building, parking spaces for the persons with disabilities shall be located on the shortest possible circulation route to an accessible pedestrian entrance of the parking facility.**
3. **Accessible parking space and aisle shall meet ADA vertical and horizontal slope standards.**
4. **Where any differences exist between this section and current federal standards, those standards shall prevail over this code section.**
5. **One in every eight accessible spaces, but not less than one, shall be served by an access aisle 96 inches wide.**
6. **Van-accessible parking spaces shall have an additional sign marked “Van Accessible” mounted below the accessible parking sign. A van-accessible parking space reserved for wheelchair users shall have a sign that includes the words “Wheelchair Use Only.” Van-accessible parking shall have an adjacent eight-foot-wide aisle. All other accessible stalls shall have a six-foot-wide aisle. Two vehicles may share the same aisle if it is between them. The vertical clearance of the van space shall be 96 inches.**

Finding: The existing site has a total of 429 parking stalls and 12 ADA stalls. The proposed development will add 116 parking stalls and 2 ADA stalls. Based on a total of 545 parking stalls, 11 ADA stalls are required. A total of 14 ADA, including the 2 new stalls will be provided on site. This standard is met.

C. Landscaping in parking areas. Reference Chapter 54 CDC, Landscaping.

Finding: Chapter 54 CDC has been addressed within this narrative.

D. Bicycle facilities and parking.

1. **Provisions shall be made for pedestrian and bicycle ways if such facilities are shown on an adopted plan.**
2. **Bicycle parking facilities shall either be lockable enclosures in which the bicycle is stored, or secure stationary racks which accommodate bicyclist’s locks securing the frame and both wheels. The bicycle parking shall be no more than 50 feet from the entrance to the building, well-lit, observable, and properly signed.**
3. **Bicycle parking must be provided in the following amounts:**

LAND USE CATEGORY	MINIMUM REQUIRED BICYCLE PARKING SPACES	MINIMUM COVERED AMOUNT
Schools – Sr. High	2 spaces per classroom	50%

Finding: The proposed stadium expansion will not result in additional classrooms. The requirements of this section are not applicable.

F. (See Figures 1 and 2 below.)

Figure 1. MINIMUM STANDARDS FOR PARKING LOT LAYOUT

Figure 2. MINIMUM DISTANCE FOR PARKING STALLS

ANGLE OF PARKING	DIRECTION OF PARKING	AISLE WIDTH		DIMENSION ‘A’		DIMENSION ‘B’	
		STALL WIDTH		STALL WIDTH		STALL WIDTH	
		9.0’	8.0’	9.0’	8.0’	9.0’	8.0’
30°	DRIVE-IN	12.5’	12.5’	16.8’	13.8’	18.0’	16.0’
45°	DRIVE-IN	12.5’	12.5’	19.1’	17.0’	12.7’	11.3’
60°	DRIVE-IN	19.0’	18.0’	20.1’	17.8’	10.4’	9.2’
60°	BACK-IN	17.0’	17.0’	20.1’	17.8’	10.4’	9.2’
90°	DRIVE-IN	23.0’	23.0’	18.0’	16.0’	9.0’	8.0’
90°	BACK-IN	22.0’	22.0’	18.0’	16.0’	9.0’	8.0’

Finding: All proposed stalls will be 90 degrees. The stalls have been designed to be 9.0 feet in width, 18.0 feet in length with 23.0-foot minimum drive aisles. This standard is met.

Chapter 48 ACCESS, EGRESS AND CIRCULATION

48.020 APPLICABILITY AND GENERAL PROVISIONS

A. The provisions of this chapter do not apply where the provisions of the Transportation System Plan or land division chapter are applicable and set forth differing standards.

Finding: The proposed development meets the applicable provisions of the Transportation System Plan and the standards of this chapter. The proposed stadium and parking lot expansion do not result in a land division. This standard is met.

B. All lots shall have access from a public street or from a platted private street approved under the land division chapter.

Finding: The subject site has access from a public street. This standard is met.

C. No building or other permit shall be issued until scaled plans are presented to the City and approved by the City as provided by this chapter, and show how the access, egress, and circulation requirements are to be fulfilled. Access to State or County roads may require review, approval, and permits from the appropriate authority.

Finding: The subject site has access from a public street. This standard is met.

D. Should the owner or occupant of a lot, parcel or building enlarge or change the use to which the lot, parcel or building is put, resulting in increasing any of the requirements of this chapter, it shall be unlawful and a violation of this code to begin or maintain such altered use until the provisions of this chapter have been met, and, if required, until the appropriate approval authority under Chapter 99 CDC has approved the change.

Finding: The provisions of this chapter have been addressed as applicable to the proposed stadium and parking lot expansion. The proposed development is subject to quasi-judicial review under Chapter 99 CDC. This standard is met.

E. Owners of two or more uses, structures, lots, parcels, or units of land may agree to utilize jointly the same access and egress when the combined access and egress of both uses, structures, or parcels of land satisfies the requirements as designated in this code; provided, that satisfactory legal evidence is presented to the City Attorney in the form of deeds, easements, leases, or contracts to establish joint use. Copies of said instrument shall be placed on permanent file with the City Recorder.

Finding: The site is used solely for the purpose of a high school and the associated activities related to the operation of the high school. This standard is not applicable to the proposed development.

F. Property owners shall not be compelled to access their homes via platted stems of flag lots if other driveways and easements are available and approved by the City Engineer.

Finding: The proposed development will not utilize a flat lot. This standard is not applicable to the proposed development.

48.025 ACCESS CONTROL

A. Purpose. The following access control standards apply to public, industrial, commercial and residential developments including land divisions. Access shall be managed to maintain an adequate level of service and to maintain the functional classification of roadways as required by the West Linn Transportation System Plan.

B. Access control standards.

1. **Traffic impact analysis requirements. The City or other agency with access jurisdiction may require a traffic study prepared by a qualified professional to determine access, circulation and other transportation requirements. (See also CDC 55.125, Transportation Impact Analysis.)**

Finding: A Traffic Impact Analysis for the site prepared by DKS Associates has been submitted under Appendix D. This standard is met.

2. **The City or other agency with access permit jurisdiction may require the closing or consolidation of existing curb cuts or other vehicle access points, recording of reciprocal access easements (i.e., for shared driveways), development of a frontage street, installation of traffic control devices, and/or other mitigation as a condition of granting an access permit, to ensure the safe and efficient operation of the street and highway system. Access to and from off-street parking areas shall not permit backing onto a public street.**

Finding: The Traffic Impact Analysis did not identify the need to close existing access points or the installation of traffic control devices. The proposed parking lot access will not require backing onto Skyline Drive. This standard is met.

3. **Access options. When vehicle access is required for development (i.e., for off-street parking, delivery, service, drive-through facilities, etc.), access shall be provided by one of the following methods (planned access shall be consistent with adopted public works standards and TSP). These methods are "options" as approved by the City Engineer.**
   - **a) Option 1. Access is from an existing or proposed alley or mid-block lane. If a property has access to an alley or lane, direct access to a public street is not permitted.**
   - **b) Option 2. Access is from a private street or driveway connected to an adjoining property that has direct access to a public street (i.e., "shared driveway"). A public access easement covering the driveway shall be recorded in this case to assure access to the closest public street for all users of the private street/drive.**
   - **c) Option 3. Access is from a public street adjacent to the development lot or parcel. If practicable, the owner/developer may be required to close or consolidate an existing access point as a condition of approving a new access. Street accesses shall comply with the access spacing standards in subsection (B)(6) of this section.**

Finding: The proposed parking lot will take access from Skyline Drive, a public street. This standard is met.

4. **Subdivisions fronting onto an arterial street. New residential land divisions fronting onto an arterial street shall be required to provide alleys or secondary (local or collector) streets for access to individual lots. When alleys or secondary streets cannot be constructed due to topographic or other physical constraints, access may be**

provided by consolidating driveways for clusters of two or more lots (e.g., includes flag lots and mid-block lanes).

Finding: The proposed development is not a subdivision. The requirements of this section are not applicable.

5. **Double-frontage lots. When a lot or parcel has frontage onto two or more streets, access shall be provided first from the street with the lowest classification. For example, access shall be provided from a local street before a collector or arterial street. When a lot or parcel has frontage opposite that of the adjacent lots or parcels, access shall be provided from the street with the lowest classification.**

Finding: The subject property has access from West A Street and Skyline Drive. Both streets are classified as collector streets. The new parking lot access is proposed from Skyline Drive. This standard is met.

6. **Access spacing.**
   a. **The access spacing standards found in the adopted Transportation System Plan (TSP) shall be applicable to all newly established public street intersections and non-traversable medians. Deviation from the access spacing standards may be granted by the City Engineer if conditions are met as described in the access spacing variances section in the adopted TSP.**
   b. **Private drives and other access ways are subject to the requirements of CDC 48.060.**

Finding: The proposed development does not include any new public street intersections. A private access drive into the proposed parking lot is proposed. Section 48.060 has been addressed within this narrative.

7. **Number of access points. For single-family (detached and attached), two-family, and duplex housing types, one street access point is permitted per lot or parcel, when alley access cannot otherwise be provided; except that two access points may be permitted corner lots (i.e., no more than one access per street), subject to the access spacing standards in subsection (B)(6) of this section. The number of street access points for multiple family, commercial, industrial, and public/institutional developments shall be minimized to protect the function, safety and operation of the street(s) and sidewalk(s) for all users. Shared access may be required, in conformance with subsection (B)(8) of this section, in order to maintain the required access spacing, and minimize the number of access points.**

Finding: The school is classified as a public/institutional development. The proposed access point for the new parking lot has been located to protect the function, safety and operation of the street and sidewalk for all users. The access spacing standards for a collector street have been met. This standard is met.

8. **Shared driveways. The number of driveway and private street intersections with public 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:**
    a. **Shared driveways and frontage streets may be required to consolidate access onto a collector or arterial street. When shared driveways or frontage streets are required, they shall be stubbed to adjacent developable parcels to indicate future extension. "Stub" means that a driveway or street temporarily ends at the property line, but may be extended in the future as the adjacent lot or parcel develops. "Developable" means that a lot or parcel is either vacant or it is likely to receive additional development (i.e., due to infill or redevelopment potential).**
    b. **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.**
    c. **Exception. Shared driveways are not required when existing development patterns or physical constraints (e.g., topography, lot or parcel configuration, and similar conditions) prevent extending the street/driveway in the future.**

Finding: A shared driveway is not proposed or feasible for the proposed parking lot. The requirements of this section are not applicable to the proposed development.

C. Street connectivity and formation of blocks required. In order to promote efficient vehicular and pedestrian circulation throughout the City, land divisions and large site developments shall produce complete blocks bounded by a connecting network of public and/or private streets, in accordance with the following standards:

Finding: The proposed stadium expansion will not require the creation of new streets. The requirements of this section are not applicable.

48.040 MINIMUM VEHICLE REQUIREMENTS FOR NON-RESIDENTIAL USES

Access, egress, and circulation system for all non-residential uses shall not be less than the following:

A. Service drives for non-residential uses shall be fully improved with hard surface pavement:

1. **With a minimum of 24-foot width when accommodating two-way traffic; or**
2. **With a minimum of 15-foot width when accommodating one-way traffic. Horizontal clearance shall be two and one-half feet wide on either side of the driveway.**
3. **Meet the requirements of CDC 48.030(E)(3) through (6).**
4. **Pickup window driveways may be 12 feet wide unless the Fire Chief determines additional width is required.**

Finding: The proposed driveway to the off-street parking area does not include a service drive. An existing service drive to serve the main school building is located adjacent to the school building. The requirements of this section are met.

B. All non-residential uses shall be served by one or more service drives as determined necessary to provide convenient and safe access to the property and designed according to CDC 48.030(A). In no case shall the design of the service drive or drives require or facilitate the backward movement or other maneuvering of a vehicle within a street, other than an alley.

Finding: An existing service drive to serve the main school building is located adjacent to the school building. The requirements of this section are met.

C. All on-site maneuvering and/or access drives shall be maintained pursuant to CDC 46.130.

Finding: All on-site maneuvering and access drives will be maintained pursuant to CDC 46.130. This standard is met.

D. Gated accessways to non-residential uses are prohibited unless required for public safety or security.

Finding: Gated accessways are not proposed. The requirements of this section are not appliable to this development.

48.050 ONE-WAY VEHICULAR ACCESS POINTS

Where a proposed parking facility plan indicates only one-way traffic flow on the site, it shall be accommodated by a specific driveway serving the facility, and the entrance drive shall be situated closest to oncoming traffic, and the exit drive shall be situated farthest from oncoming traffic.

Finding: The proposed parking facility will provide for two-way traffic flow on site. The requirements of this section are not appliable.

48.060 WIDTH AND LOCATION OF CURB CUTS AND ACCESS SEPARATION REQUIREMENTS

A. Minimum curb cut width shall be 16 feet.

B. Maximum curb cut width shall be 36 feet, except along Highway 43 in which case the maximum curb cut shall be 40 feet. For emergency service providers, including fire stations, the maximum shall be 50 feet.

C. No curb cuts shall be allowed any closer to an intersecting street right-of-way line than the following:

1. **On an arterial when intersected by another arterial, 150 feet.**
2. **On an arterial when intersected by a collector, 100 feet.**
3. **On an arterial when intersected by a local street, 100 feet.**
4. **On a collector when intersecting an arterial street, 100 feet.**
5. **On a collector when intersected by another collector or local street, 35 feet.**
6. **On a local street when intersecting any other street, 35 feet.**

D. There shall be a minimum distance between any two adjacent curb cuts on the same side of a public street, except for one-way entrances and exits, as follows:

1. **On an arterial street, 150 feet.**
2. **On a collector street, 75 feet.**
3. **Between any two curb cuts on the same lot or parcel on a local street, 30 feet.**

E. A rolled curb may be installed in lieu of curb cuts and access separation requirements.

F. Curb cuts shall be kept to the minimum, particularly on Highway 43. Consolidation of driveways is preferred. The standard on Highway 43 is one curb cut per business if consolidation of driveways is not possible.

G. Adequate line of sight pursuant to engineering standards should be afforded at each driveway or accessway.

Finding: The proposed curb cuts have been designed to meet the requirements of this section. This standard is met.

48.080 BICYCLE AND PEDESTRIAN CIRCULATION

A. Within all multi-family developments (except two-family/duplex dwellings), each residential dwelling shall be connected to vehicular parking stalls, common open space, and recreation facilities by a pedestrian pathway system having a minimum width of six feet and constructed of an all-weather material. The pathway material shall be of a different color or composition from the driveway. (Bicycle routes adjacent to the travel lanes do not have to be of different color or composition.)

B. Bicycle and pedestrian ways within a subdivision shall be constructed according to the provisions in CDC 85.200(A)(3).

C. Bicycle and pedestrian ways at commercial or industrial sites shall be provided according to the provisions of Chapter 55 CDC, Design Review.

Finding: The proposed development is a public institutional use. The requirements of this section are not applicable.

Chapter 52 SIGNS

52.109 EXEMPTIONS

B. Parking lot signs up to three square feet in area with a maximum height no greater than five feet above grade and directed to the interior of a parking lot and not to a right-of-way shall not require a sign permit.

Finding: The proposed development will include parking lot signs, which are exempt from the sign standards of this section. No other signs are proposed. This standard is met.

Chapter 54 LANDSCAPING

54.020 APPROVAL CRITERIA

A. Every development proposal requires inventorying existing site conditions which include trees and landscaping. In designing the new project, every reasonable attempt should be made to preserve and protect existing trees and to incorporate them into the new landscape plan. Similarly, significant landscaping (e.g., bushes, shrubs) should be integrated. The rationale is that saving a 30-foot-tall mature tree helps maintain the continuity of the site, they are qualitatively superior to two or three two-inch caliper street trees, they provide immediate micro-climate benefits (e.g., shade), they soften views of the street, and they can increase the attractiveness, marketability, and value of the development.

Finding: A tree inventory and preservation plan have been provided in the land use application. A 10.48-acre conservation easement on the site for the purpose of protecting all trees within the conservation easement area and the natural resource area buffer was recorded in 2004 and amended in 2011.

This standard is met.

B. To encourage tree preservation, the parking requirement may be reduced by one space for every significant tree that is preserved in the parking lot area for a maximum reduction of 10 percent of the required parking. The City Parks Supervisor or Arborist shall determine the significance of the tree and/or landscaping to determine eligibility for these reductions.

Finding: A reduction in required parking has not been requested as part of this application. This standard is to applicable.

C. Developers must also comply with the municipal code chapter on tree protection.

Finding: The District will comply with all municipal code requirements for tree protection.

This standard is met.

D. Heritage trees. Heritage trees are trees which, because of their age, type, notability, or historical association, are of special importance. Heritage trees are trees designated by the City Council following review of a nomination. A heritage tree may not be removed without a public hearing at least 30 days prior to the proposed date of removal. Development proposals involving land with heritage tree(s) shall be required to protect and save the tree(s). Further discussion of heritage trees is found in the municipal code.

Finding: No heritage trees have been identified on this site. The requirements of this section are not applicable.

E. Landscaping – By type, location and amount.

1. **Residential uses (non-single-family). A minimum of 25 percent of the gross area including parking, loading and service areas shall be landscaped, and may include the open space and recreation area requirements under CDC 55.100. Parking lot landscaping may be counted in the percentage.**
2. **Non-residential uses. A minimum of 20 percent of the gross site area shall be landscaped. Parking lot landscaping may be counted in the percentage.**

Finding: The site has a gross area of 1,767,650 square feet. The total landscape area at full build out of the site, including parking lot landscaping for the site is 1,005,212 square feet, or 56 percent of the site area. This standard is met.

3. **All uses (residential uses (non-single-family) and non-residential uses):**
    a. **The landscaping shall be located in defined landscaped areas which are uniformly distributed throughout the parking or loading area. There shall be one shade tree planted for every eight parking spaces. These trees shall be evenly distributed**

throughout the parking lot to provide shade. Parking lots with over 20 spaces shall have a minimum 10 percent of the interior of the parking lot devoted to landscaping. Pedestrian walkways in the landscaped areas are not to be counted in the percentage. The perimeter landscaping, explained in subsection (E)(3)(d) of this section, shall not be included in the 10 percent figure. Parking lots with 10 to 20 spaces shall have a minimum five percent of the interior of the parking lot devoted to landscaping. The perimeter landscaping, as explained above, shall not be included in the five percent. Parking lots with fewer than 10 spaces shall have the standard perimeter landscaping and at least two shade trees. Non-residential parking areas paved with a permeable parking surface may reduce the required minimum interior landscaping by one-third for the area with the permeable parking surface only.

Finding: In order to maximize improvements while bringing the project in under budget, the District has developed a series of additive alternates. The alternates can be selected in the event that the District receives favorable bids.

A phased development is allowed under CDC Section 99.125. Chapter 99.125 requires that each phase will meet all applicable development standards individually, without relying on subsequent phases. The proposed improvements have been structured so that the development standards can be met at each stage of development. At each stage of the development, adequate landscaping and parking lot landscaping will be provided to meet the requirements of this section.

Parking on the school site exceeds 20 parking spaces. The proposed renovation will be constructed in four phases. The Base Proposal, Add Alt A and Add Alt C will include parking lot expansions. The table provided below lists the total parking lot area added, the total parking lot landscaping provided in each addition, and the total percentage of landscaping in each parking lot. Each additive alternate exceeds the 10 percent parking lot landscaping requirement. A total of 116 parking stalls will be provided in phases 1-3; therefore, a total of 15 shade trees are required in the proposed parking areas. A total of 17 interior parking lot trees have been provided.

	Base Proposal	**Add Alt A**	**Add Alt B**	**Add Alt C**
Parking Lot Area Added (sq. ft.)	25,327	5,513	8,180	0
Parking Lot Landscaping Added (sq. ft.)	2,919	530	978	0
Cumulative Parking Lot Area (sq. ft.)	25,327	30,840	39,020	39,020
Cumulative Parking Lot Landscaping Added (sq. ft.)	2,919	3,449	4,427	4,427
Percent of Parking Lot Area (not including perimeter)	11.5%	11.2%	11.3%	11.3%

This standard is met.

b. The landscaped areas shall not have a width of less than five feet.

Finding: All proposed parking lot landscape areas have a width of at least five feet. This standard is met.

c. The soils, site, proposed soil amendments, and proposed irrigation system shall be appropriate for the healthy and long-term maintenance of the proposed plant species.

Finding: The soils, site and proposed soil amendments, and proposed irrigation system are appropriate for the healthy and long-term maintenance of the proposed plant species. This standard is met.

d. A parking, loading, or service area which abuts a street shall be set back from the right-of-way line by perimeter landscaping in the form of a landscaped strip at least 10 feet in width. When a parking, loading, or service area or driveway is contiguous to an adjoining lot or parcel, there shall be an intervening five-foot-wide landscape strip. The landscaped area shall contain:

1) **Street trees spaced as appropriate to the species, not to exceed 50 feet apart on the average;**
2) **Shrubs, not to reach a height greater than three feet, six inches, spaced no more than five feet apart on the average; or**
3) **Vegetative ground cover such as grass, wildflowers, or other landscape material to cover 100 percent of the exposed ground within two growing seasons. No bark mulch shall be allowed except under the canopy of low level shrubs.**

Finding: A proposed City project will realign the Skyline Drive right-of-way to correspond to the existing road alignment. The realignment of Skyline Drive shifts the right-of-way along the school property approximately 10 feet. The proposed parking lot is approximately 10 feet from the back of the existing sidewalk on Skyline Drive, and one foot from the new alignment of the right-of-way line in the smallest dimension. The area between the back of sidewalk and the parking lot is at least 10 feet in width and will be landscaped with street trees per the requirements of subsection 1-3 above.

Street tree planting along Skyline is required and every effort will be made to plant the arborist approved street tree species. The setbacks may allow for some of the existing trees to be retained considering the rocky nature of the site. As mentioned, the site consists of rock at and below the surface of the site and therefor planting of trees in solid rock, if discovered, may prove infeasible. The applicant will work with the City's Arborist per CDC 8.720.C if existing conditions become such that an alternative to planting of new trees becomes infeasible.

A Class II variance has been requested for this standard. The variance criteria have been addressed in this narrative under Chapter 75.

e. **If over 50 percent of the lineal frontage of the main street or arterial adjacent to the development site comprises parking lot, the landscape strip between the right-of-way and parking lot shall be increased to 15 feet in width and shall include terrain variations (e.g., one-foot-high berm) plus landscaping. This extra requirement only applies to one street frontage.**

Finding: The main street frontage of the school property is West A Street. The property does not have more than 50 percent of lineal parking frontage on West A Street. The requirements of this section are not applicable.

f. **A parking, loading, or service area which abuts a property line shall be separated from the property line by a landscaped area at least five feet in width and which shall act as a screen and noise buffer, and the adequacy of the screen and buffer shall be determined by the criteria set forth in CDC 55.100(C) and (D), except where shared parking is approved under CDC 46.050.**

Finding: The proposed parking lot is set back from the property line to the north by 8 feet. The property to the north is densely forested. Landscaping and a retaining wall will be provided in this area and will act as a screen and noise buffer. This standard is met.

g. **All areas in a parking lot not used for parking, maneuvering, or circulation shall be landscaped.**

Finding: All proposed parking lot areas not used for parking, maneuvering and circulation will be landscaped. This standard is met.

h. **The landscaping in parking areas shall not obstruct lines of sight for safe traffic operation.**

Finding: The proposed parking lot landscaping will not obstruct lines of sight for safe traffic operation. A vision clearance triangle has been provided on the Landscape Site Plan (Sheet L100). This standard is met.

i. **Outdoor storage areas, service areas (loading docks, refuse deposits, and delivery areas), and above-ground utility facilities shall be buffered and screened to obscure their view from adjoining properties and to reduce noise levels to acceptable levels at the property line. The adequacy of the buffer and screening shall be determined by the criteria set forth in CDC 55.100(C)(1).**

Finding: Outdoor storage areas, service areas, and above-ground utility facilities will be buffered and screened to obscure their view from adjoining properties and to reduce noise levels to acceptable levels at the property line. This standard is met.

j. Crime prevention shall be considered and plant materials shall not be located in a manner which prohibits surveillance of public and semi-public areas (shared or common areas).

Finding: The proposed plant materials have been located in a manner that will not prohibit the surveillance of public and semi-public areas. This standard is met.

k. Irrigation facilities shall be located so that landscaped areas can be properly maintained and so that the facilities do not interfere with vehicular or pedestrian circulation.

Finding: The irrigation facilities will be located so that landscaped areas can be properly maintained and so that the facilities do not interfere with vehicular or pedestrian circulation. This standard is met.

l. For commercial, office, multi-family, and other sites, the developer shall select trees that possess the following characteristics:

1) **Provide generous "spreading" canopy for shade.**
2) **Roots do not break up adjacent paving.**
3) **Tree canopy spread starts at least six feet up from grade in, or adjacent to, parking lots, roads, or sidewalks unless the tree is columnar in nature.**
4) **No sticky leaves or sap-dripping trees (no honey-dew excretion).**
5) **No seed pods or fruit-bearing trees (flowering trees are acceptable).**
6) **Disease-resistant.**
7) **Compatible with planter size.**
8) **Drought-tolerant unless irrigation is provided.**
9) **Attractive foliage or form all seasons.**

Finding: A planting plan has been provided under Appendix E of this application. All trees that have been selected meet the characteristics provided in subsection 1-9 above. This standard is met.

m. Plant materials (shrubs, ground cover, etc.) shall be selected for their appropriateness to the site, drought tolerance, year-round greenery and coverage, staggered flowering periods, and avoidance of nuisance plants (Scotch broom, etc.).

Finding: A planting plan has been provided under Appendix E of this application. All proposed plant materials have been selected for their appropriateness to the site, drought tolerance, year-round greenery and coverage, staggered flowering periods and avoidance of nuisance plants. This standard is met.

F. Landscaping (trees) in new subdivision. (Not applicable)

54.030 PLANTING STRIPS FOR MODIFIED AND NEW STREETS

All proposed changes in width in a public street right-of-way or any proposed street improvement shall, where feasible, include allowances for planting strips. Plans and

specifications for planting such areas shall be integrated into the general plan of street improvements. This chapter requires any multi-family, commercial, or public facility which causes change in public right-of-way or street improvement to comply with the street tree planting plan and standards.

Finding: A proposed City project will realign the Skyline Drive right-of-way to correspond to the existing road alignment. The street will not be modified as part of the right-of-way realignment. The requirements of this section are not applicable.

54.040 INSTALLATION

A. All landscaping shall be installed according to accepted planting procedures.

B. The soil and plant materials shall be of good quality.

C. Landscaping shall be installed in accordance with the provisions of this code.

D. Certificates of occupancy shall not be issued unless the landscaping requirements have been met or other arrangements have been made and approved by the City such as the posting of a bond.

Finding: All landscaping installation will meet the requirements of this section. This standard is met.

54.050 PROTECTION OF STREET TREES

Street trees may not be topped or trimmed unless approval is granted by the Parks Supervisor or, in emergency cases, when a tree imminently threatens power lines.

Finding: There are no existing street trees adjacent to the project area. The requirements of this section are not applicable.

54.060 MAINTENANCE

A. The owner, tenant and their agent, if any, shall be jointly and severally responsible for the maintenance of all landscaping which shall be maintained in good condition so as to present a healthy, neat, and orderly appearance and shall be kept free from refuse and debris.

B. All plant growth in interior landscaped areas shall be controlled by pruning, trimming, or otherwise so that:

1. **It will not interfere with the maintenance or repair of any public utility;**
2. **It will not restrict pedestrian or vehicular access; and**
3. **It will not constitute a traffic hazard because of reduced visibility.**

Finding: The applicant acknowledges that the owner is responsible for the maintenance of the landscaping on site. This standard is met.

DIVISION 4. DESIGN REVIEW

Chapter 55 DESIGN REVIEW

55.020 CLASSES OF DESIGN REVIEW

B. Class II Design Review. Class II design review applies to all uses/activities except those uses/activities listed under Class I design review, and the exemptions of CDC 55.025. Class II

design review applies to the proposed improvements listed in this section when the proposed improvement (e.g., new sidewalk) is part of a major commercial, office, industrial, public, or multi-family construction project

Finding: The proposed development is classified as a major public construction project; therefore, Class II design review is applicable.

55.100 APPROVAL STANDARDS – CLASS II DESIGN REVIEW

The approval authority shall make findings with respect to the following criteria when approving, approving with conditions, or denying a Class II design review application:

A. The provisions of the following chapters shall be met:

1. **Chapter 34 CDC, Accessory Structures, Accessory Dwelling Units, and Accessory Uses.**
2. **Chapter 38 CDC, Additional Yard Area Required; Exceptions to Yard Requirements; Storage in Yards; Projections into Yards.**
3. **Chapter 41 CDC, Building Height, Structures on Steep Lots, Exceptions.**
4. **Chapter 42 CDC, Clear Vision Areas.**
5. **Chapter 44 CDC, Fences.**
6. **Chapter 46 CDC, Off-Street Parking, Loading and Reservoir Areas.**
7. **Chapter 48 CDC, Access, Egress and Circulation.**
8. **Chapter 52 CDC, Signs.**
9. **Chapter 54 CDC, Landscaping.**

Finding: The provisions of Chapter 41, 42, 44, 46, 48, 52, and 54 have been addressed in this narrative as they have been deemed applicable. Chapters 34 and 38 are not applicable to the proposed development. This standard is met.

B. Relationship to the natural and physical environment.

1. **The buildings and other site elements shall be designed and located so that all heritage trees, as defined in the municipal code, shall be saved. Diseased heritage trees, as determined by the City Arborist, may be removed at his/her direction.**
2. **All heritage trees, as defined in the municipal code, all trees and clusters of trees (“cluster” is defined as three or more trees with overlapping driplines; however, native oaks need not have an overlapping dripline) that are considered significant by the City Arborist, either individually or in consultation with certified arborists or similarly qualified professionals, based on accepted arboricultural standards including consideration of their size, type, location, health, long term survivability, and/or numbers, shall be protected pursuant to the criteria of subsections (B)(2)(a) through (f) of this section. In cases where there is a difference of opinion on the significance of a tree or tree cluster, the City Arborist’s findings shall prevail. It is important to acknowledge that all trees are not significant and, further, that this code section will not necessarily protect all trees deemed significant.**
    - a. **Non-residential and residential projects on Type I and II lands shall protect all heritage trees and all significant trees and tree clusters by limiting**

development in the protected area. The protected area includes the protected tree, its dripline, and an additional 10 feet beyond the dripline, as depicted in the figure below. Development of Type I and II lands shall require the careful layout of streets, driveways, building pads, lots, and utilities to avoid heritage trees and significant trees and tree clusters, and other natural resources pursuant to this code. The method for delineating the protected trees or tree clusters ("dripline plus 10 feet") is explained in subsection (B)(2)(b) of this section. Exemptions of subsections (B)(2)(c), (e), and (f) of this section shall apply.

b. Non-residential and residential projects on non-Type I and II lands shall set aside up to 20 percent of the protected areas for significant trees and tree clusters, plus any heritage trees. Therefore, in the event that the City Arborist determines that a significant tree cluster exists at a development site, then up to 20 percent of the non-Type I and II lands shall be devoted to the protection of those trees by limiting development in the protected areas. The exact percentage is determined by establishing the driplines of the trees or tree clusters that are to be protected. In order to protect the roots which typically extend further, an additional 10-foot measurement beyond the dripline shall be added. The square footage of the area inside this "dripline plus 10 feet" measurement shall be the basis for calculating the percentage (see figure below). The City Arborist will identify which tree(s) are to be protected. Development of non-Type I and II lands shall also require the careful layout of streets, driveways, building pads, lots, and utilities to avoid significant trees, tree clusters, heritage trees, and other natural resources pursuant to this code. Exemptions of subsections (B)(2)(c), (e), and (f) of this section shall apply. Please note that in the event that more than 20 percent of the non-Type I and II lands comprise significant trees or tree clusters, the developer shall not be required to save the excess trees, but is encouraged to do so.

c. Where stubouts of streets occur on abutting properties, and the extension of those streets will mean the loss of significant trees, tree clusters, or heritage trees, it is understood that tree loss may be inevitable. In these cases, the objective shall be to minimize tree loss. These provisions shall also apply in those cases where access, per construction code standards, to a lot or parcel is blocked by a row or screen of significant trees or tree clusters.

d. For both non-residential and residential development, the layout shall achieve at least 70 percent of maximum density for the developable net area. The developable net area excludes all Type I and II lands and up to 20 percent of the remainder of the site for the purpose of protection of stands or clusters of trees as defined in subsection (B)(2) of this section.

e. For arterial and collector street projects, including Oregon Department of Transportation street improvements, the roads and graded areas shall avoid

tree clusters where possible. Significant trees, tree clusters, and heritage tree loss may occur, however, but shall be minimized.

f. **If the protection of significant tree(s) or tree clusters is to occur in an area of grading that is necessary for the development of street grades, per City construction codes, which will result in an adjustment in the grade of over or under two feet, which will then threaten the health of the tree(s), the applicant will submit evidence to the Planning Director that all reasonable alternative grading plans have been considered and cannot work. The applicant will then submit a mitigation plan to the City Arborist to compensate for the removal of the tree(s) on an "inch by inch" basis (e.g., a 48-inch Douglas fir could be replaced by 12 trees, each four-inch). The mix of tree sizes and types shall be approved by the City Arborist.**

Finding: A tree inventory of the project area and preservation plan have been provided in the land use application. Within the project area, 25 significant trees will be removed. A 10.48-acre conservation easement on the site for the purpose of protecting all trees within the conservation easement area and the natural resource area buffer was recorded in 2004 and amended in 2011. The conservation easement covers approximately 25.8 percent of the site and is densely forested. The trees proposed for removal are not located within the conservation easement. This standard is met.

3. **The topography and natural drainage shall be preserved to the greatest degree possible.**

Finding: The topography and natural drainage will be preserved to the greatest degree possible. A grading plan has been submitted under Appendix E. This standard is met.

4. **The structures shall not be located in areas subject to slumping and sliding. The Comprehensive Plan Background Report's Hazard Map, or updated material as available and as deemed acceptable by the Planning Director, shall be the basis for preliminary determination.**

Finding: The proposed stadium is not located in an area subject to slumping or sliding. This standard is met.

5. **There shall be adequate distance between on-site buildings and on-site and off-site buildings on adjoining properties to provide for adequate light and air circulation and for fire protection.**

Finding: The proposed stadium expansion is not located directly adjacent to on-site or off-site buildings on adjoining properties. Adequate spacing for light, air circulation and fire protection has been provided. This standard is met.

6. **Architecture.**

   a. **The proposed structure(s) scale shall be compatible with the existing structure(s) on site and on adjoining sites. Contextual design is required. Contextual design means respecting and incorporating prominent**

architectural styles, building lines, roof forms, rhythm of windows, building scale and massing of surrounding buildings in the proposed structure. The materials and colors shall be complementary to the surrounding buildings.

b. While there has been discussion in Chapter 24 CDC about transition, it is appropriate that new buildings should architecturally transition in terms of bulk and mass to work with, or fit, adjacent existing buildings. This transition can be accomplished by selecting designs that “step down” or “step up” from small to big structures and vice versa (see figure below). Transitions may also take the form of carrying building patterns and lines (e.g., parapets, windows, etc.) from the existing building to the new one.

c. Contrasting architecture shall only be permitted when the design is manifestly superior to adjacent architecture in terms of creativity, design, and workmanship, and/or it is adequately separated from other buildings by distance, screening, grade variations, or is part of a development site that is large enough to set its own style of architecture.

d. Human scale is a term that seeks to accommodate the users of the building and the notion that buildings should be designed around the human scale (i.e., their size and the average range of their perception). Human scale shall be accommodated in all designs by, for example, multi-light windows that are broken up into numerous panes, intimately scaled entryways, and visual breaks (exaggerated eaves, indentations, ledges, parapets, awnings, engaged columns, etc.) in the facades of buildings, both vertically and horizontally.

The human scale is enhanced by bringing the building and its main entrance up to the edge of the sidewalk. It creates a more dramatic and interesting streetscape and improves the “height and width” ratio referenced in this section.

e. The main front elevation of commercial and office buildings shall provide at least 60 percent windows or transparency at the pedestrian level to create more interesting streetscape and window shopping opportunities. One side elevation shall provide at least 30 percent transparency. Any additional side or rear elevation, which is visible from a collector road or greater classification, shall also have at least 30 percent transparency. Transparency on other elevations is optional. The transparency is measured in lineal fashion. For example, a 100-foot-long building elevation shall have at least 60 feet (60 percent of 100 feet) in length of windows. The window height shall be, at minimum, three feet tall. The exception to transparency would be cases where demonstrated functional constraints or topography restrict that elevation from being used. When this exemption is applied to the main front elevation, the square footage of transparency that would ordinarily be required by the above formula shall be installed on the remaining elevations at pedestrian level in addition to any transparency required by a side elevation, and vice

versa. The rear of the building is not required to include transparency. The transparency must be flush with the building elevation.

- **f. Variations in depth and roof line are encouraged for all elevations.**
  To vary the otherwise blank wall of most rear elevations, continuous flat elevations of over 100 feet in length should be avoided by indents or variations in the wall. The use of decorative brick, masonry, or stone insets and/or designs is encouraged. Another way to vary or soften this elevation is through terrain variations such as an undulating grass area with trees to provide vertical relief.
- **g. Consideration of the micro-climate (e.g., sensitivity to wind, sun angles, shade, etc.) shall be made for building users, pedestrians, and transit users, including features like awnings.**
- **h. The vision statement identified a strong commitment to developing safe and attractive pedestrian environments with broad sidewalks, canopied with trees and awnings.**
- **i. Sidewalk cafes, kiosks, vendors, and street furniture are encouraged. However, at least a four-foot-wide pedestrian accessway must be maintained per Chapter 53 CDC, Sidewalk Use.**

Finding: The proposed development will be an expansion of the existing grand-stand stadium on site. The stadium expansion has been designed to blend with the existing stadium, utilizing similar materials. Elevations of the stadium and proposed materials have been provided under Appendix E of this application.

7. Transportation. The automobile shall be shifted from a dominant role, relative to other modes of transportation, by the following means:

- **a. Commercial and office development shall be oriented to the street. At least one public entrance shall be located facing an arterial street; or, if the project does not front on an arterial, facing a collector street; or, if the project does not front on a collector, facing the local street with highest traffic levels. Parking lots shall be placed behind or to the side of commercial and office development. When a large and/or multi-building development is occurring on a large undeveloped tract (three plus acres), it is acceptable to focus internally; however, at least 20 percent of the main adjacent right-of-way shall have buildings contiguous to it unless waived per subsection (B)(7)(c) of this section. These buildings shall be oriented to the adjacent street and include pedestrian-oriented transparencies on those elevations.**
  For individual buildings on smaller individual lots, at least 30 lineal feet or 50 percent of the building must be adjacent to the right-of-way unless waived per subsection (B)(7)(c) of this section. The elevations oriented to the right-of-way must incorporate pedestrian-oriented transparency.

Finding: The proposed development is not a commercial or office use. The requirements of this section are not applicable.

b. **Multi-family projects shall be required to keep the parking at the side or rear of the buildings or behind the building line of the structure as it would appear from the right-of-way inside the multi-family project. For any garage which is located behind the building line of the structure, but still facing the front of the structure, architectural features such as patios, patio walls, trellis, porch roofs, overhangs, pergolas, etc., shall be used to downplay the visual impact of the garage, and to emphasize the rest of the house and front entry.**

The parking may be positioned inside small courtyard areas around which the units are built. These courtyard spaces encourage socialization, defensible space, and can provide a central location for landscaping, particularly trees, which can provide an effective canopy and softening effect on the courtyard in only a few years. Vehicular access and driveways through these courtyard areas is permitted.

Finding: The proposed development is not a multifamily use. The requirements of this section are not applicable.

c. **Commercial, office, and multi-family projects shall be built as close to the adjacent main right-of-way as practical to facilitate safe pedestrian and transit access. Reduced frontages by buildings on public rights-of-way may be allowed due to extreme topographic (e.g., slope, creek, wetlands, etc.) conditions or compelling functional limitations, not just inconveniences or design challenges.**

Finding: The proposed development is not a commercial, office use or multi-family use. The requirements of this section are not applicable.

d. **Accessways, parking lots, and internal driveways shall accommodate pedestrian circulation and access by specially textured, colored, or clearly defined footpaths at least six feet wide. Paths shall be eight feet wide when abutting parking areas or travel lanes. Paths shall be separated from parking or travel lanes by either landscaping, planters, curbs, bollards, or raised surfaces. Sidewalks in front of storefronts on the arterials and main store entrances on the arterials identified in CDC 85.200(A)(3) shall be 12 feet wide to accommodate pedestrians, sidewalk sales, sidewalk cafes, etc. Sidewalks in front of storefronts and main store entrances in commercial/OBC zone development on local streets and collectors shall be eight feet wide.**

Finding: All proposed sidewalks adjacent to the proposed parking lot and access will be separated from parking and travel lanes through the use of curbs. This standard is met.

e. **Paths shall provide direct routes that pedestrians will use between buildings, adjacent rights-of-way, and adjacent commercial developments. They shall be**

clearly identified. They shall be laid out to attract use and to discourage people from cutting through parking lots and impacting environmentally sensitive areas.

Finding: The proposed sidewalks provide direct routes for pedestrians between the new parking lot, Skyline Drive, the stadium and existing school building. This standard is met.

f. **At least one entrance to the building shall be on the main street, or as close as possible to the main street. The entrance shall be designed to identify itself as a main point of ingress/egress.**

Finding: The main school building is located on the main street. The requirements of this section are not applicable to the proposed parking lot and stadium expansion.

g. **Where transit service exists, or is expected to exist, there shall be a main entrance within a safe and reasonable distance of the transit stop. A pathway shall be provided to facilitate a direct connection.**

Finding: Transit service is not provided on Skyline Drive or West A Street. The requirements of this section are not applicable.

h. **Projects shall bring at least part of the project adjacent to or near the main street right-of-way in order to enhance the height-to-width ratio along that particular street. (The "height-to-width ratio" is an architectural term that emphasizes height or vertical dimension of buildings adjacent to streets. The higher and closer the building is, and the narrower the width of the street, the more attractive and intimate the streetscape becomes.) For every one foot in street width, the adjacent building ideally should be one to two feet higher. This ratio is considered ideal in framing and defining the streetscape.**

Finding: The main school building is located on the main street. The requirements of this section are not applicable to the proposed parking lot and stadium expansion.

i. **These architectural standards shall apply to public facilities such as reservoirs, water towers, treatment plants, fire stations, pump stations, power transmission facilities, etc. It is recognized that many of these facilities, due to their functional requirements, cannot readily be configured to meet these architectural standards. However, attempts shall be made to make the design sympathetic to surrounding properties by landscaping, setbacks, buffers, and all reasonable architectural means.**

Finding: The requirements of this section are not applicable to the proposed parking lot and stadium expansion.

j. **Parking spaces at trailheads shall be located so as to preserve the view of, and access to, the trailhead entrance from the roadway. The entrance apron to the**

trailhead shall be marked: "No Parking," and include design features to foster trail recognition.

Finding: The proposed parking lot is not located at a trailhead. The requirements of this section are not applicable.

C. Compatibility between adjoining uses, buffering, and screening.

1. **In addition to the compatibility requirements contained in Chapter 24 CDC, buffering shall be provided between different types of land uses; for example, buffering between single-family homes and apartment blocks. However, no buffering is required between single-family homes and duplexes or single-family attached units. The following factors shall be considered in determining the adequacy of the type and extent of the buffer:**
   - a. **The purpose of the buffer, for example to decrease noise levels, absorb air pollution, filter dust, or to provide a visual barrier.**
   - b. **The size of the buffer required to achieve the purpose in terms of width and height.**
   - c. **The direction(s) from which buffering is needed.**
   - d. **The required density of the buffering.**
   - e. **Whether the viewer is stationary or mobile.**
2. **On-site screening from view from adjoining properties of such things as service areas, storage areas, and parking lots shall be provided and the following factors will be considered in determining the adequacy of the type and extent of the screening:**
   - a. **What needs to be screened?**
   - b. **The direction from which it is needed.**
   - c. **How dense the screen needs to be.**
   - d. **Whether the viewer is stationary or mobile.**
   - e. **Whether the screening needs to be year-round.**
3. **Rooftop air cooling and heating systems and other mechanical equipment shall be screened from view from adjoining properties.**

Finding: The proposed stadium expansion and parking lot addition are not located directly adjacent to residential development. A conservation easement along the western boundary of the school site provides a buffer between the school and the properties located to the west of the school. The property to the north of the proposed parking lot is a forested wilderness area. Perimeter landscaping is provided along the northern border of the property to provide a buffer between the property the wilderness area. This standard is met.

D. Privacy and noise.

1. **Structures which include residential dwelling units shall provide private outdoor areas for each ground floor unit which is screened from view from adjoining units.**
2. **Residential dwelling units shall be placed on the site in areas having minimal noise exposure to the extent possible. Natural-appearing sound barriers shall be used to**

lessen noise impacts where noise levels exceed the noise standards contained in West Linn Municipal Code Section 5.487.

3. **Structures or on-site activity areas which generate noise, lights, or glare shall be buffered from adjoining residential uses in accordance with the standards in subsection C of this section where applicable.**
4. **Businesses or activities that can reasonably be expected to generate noise in excess of the noise standards contained in West Linn Municipal Code Section 5.487 shall undertake and submit appropriate noise studies and mitigate as necessary to comply with the code. (See CDC 55.110(B)(11) and 55.120(M).)**

   If the decision-making authority reasonably believes a proposed use may generate noise exceeding the standards specified in the municipal code, then the authority may require the applicant to supply professional noise studies from time to time during the user's first year of operation to monitor compliance with City standards and permit requirements.

Finding: The proposed stadium expansion and parking lot addition are not located directly adjacent to residential development. A conservation easement along the western boundary of the school site provides a buffer between the school and the properties located to the west of the school. The property to the north of the proposed parking lot is a forested wilderness area. Perimeter landscaping is provided along the northern border of the property to provide a buffer between the property the wilderness area. This standard is met.

E. Private outdoor area. This section only applies to multi-family projects.

Finding: The proposed development is not a multi-family project. The requirements of this section are not applicable.

F. Shared outdoor recreation areas. This section only applies to multi-family projects and projects with 10 or more duplexes or single-family attached dwellings on lots under 4,000 square feet. In those cases, shared outdoor recreation areas are calculated on the duplexes or single-family attached dwellings only. It also applies to qualifying PUDs under the provisions of CDC 24.170.

Finding: The proposed development is not a multi-family project. The requirements of this section are not applicable.

G. Demarcation of public, semi-public, and private spaces. The structures and site improvements shall be designed so that public areas such as streets or public gathering places, semi-public areas, and private outdoor areas are clearly defined in order to establish persons having a right to be in the space, to provide for crime prevention, and to establish maintenance responsibility. These areas may be defined by:

1. **A deck, patio, fence, low wall, hedge, or draping vine;**
2. **A trellis or arbor;**
3. **A change in level;**

4. **A change in the texture of the path material;**
5. **Sign; or**
6. **Landscaping.**

Use of gates to demarcate the boundary between a public street and a private access driveway is prohibited.

Finding: The school is a semi-public use. The structures and site improvements have been designed so that public areas, semi-public areas and private areas are defined. This standard is met.

H. Public transit.

1. **Provisions for public transit may be required where the site abuts an existing or planned public transit route. The required facilities shall be based on the following:**
    - **a. The location of other transit facilities in the area.**
    - **b. The size and type of the proposed development.**
    - **c. The rough proportionality between the impacts from the development and the required facility.**
2. **The required facilities shall be limited to such facilities as the following:**
    - **a. A waiting shelter with a bench surrounded by a three-sided covered structure, with transparency to allow easy surveillance of approaching buses.**
    - **b. A turnout area for loading and unloading designed per regional transit agency standards.**
    - **c. Hard-surface paths connecting the development to the waiting and boarding areas.**
    - **d. Regional transit agency standards shall, however, prevail if they supersede these standards.**
3. **The transit stop shall be located as close as possible to the main entrance to the shopping center, public or office building, or multi-family project. The entrance shall not be more than 200 feet from the transit stop with a clearly identified pedestrian link.**
4. **All commercial business centers (over three acres) and multi-family projects (over 40 units) may be required to provide for the relocation of transit stops to the front of the site if the existing stop is within 200 to 400 yards of the site and the exaction is roughly proportional to the impact of the development. The commercial or multi-family project may be required to provide new facilities in those cases where the nearest stop is over 400 yards away. The transit stop shall be built per subsection (H)(2) of this section.**

Finding: Transit service is not provided on Skyline Drive or West A Street. The requirements of this section are not applicable.

I. Public facilities. An application may only be approved if adequate public facilities will be available to provide service to the property prior to occupancy.

1. **Streets. Sufficient right-of-way and slope easement shall be dedicated to accommodate all abutting streets to be improved to the City's Improvement Standards and Specifications. The City Engineer shall determine the appropriate level of street and traffic control improvements to be required, including any off-site street and traffic control improvements, based upon the transportation analysis submitted. The City Engineer's determination of developer obligation, the extent of road improvement and City's share, if any, of improvements and the timing of improvements shall be made based upon the City's systems development charge ordinance and capital improvement program, and the rough proportionality between the impact of the development and the street improvements.**

    In determining the appropriate sizing of the street in commercial, office, multi-family, and public settings, the street should be the minimum necessary to accommodate anticipated traffic load and needs and should provide substantial accommodations for pedestrians and bicyclists. Road and driveway alignment should consider and mitigate impacts on adjacent properties and in neighborhoods in terms of increased traffic loads, noise, vibrations, and glare.

    The realignment or redesign of roads shall consider how the proposal meets accepted engineering standards, enhances public safety, and favorably relates to adjacent lands and land uses. Consideration should also be given to selecting an alignment or design that minimizes or avoids hazard areas and loss of significant natural features (drainageways, wetlands, heavily forested areas, etc.) unless site mitigation can clearly produce a superior landscape in terms of shape, grades, and reforestation, and is fully consistent with applicable code restrictions regarding resource areas.

    Streets shall be installed per Chapter 85 CDC standards. The City Engineer has the authority to require that street widths match adjacent street widths. Sidewalks shall be installed per CDC 85.200(A)(3) for commercial and office projects, and CDC 85.200(A)(16) and 92.010(H) for residential projects, and applicable provisions of this chapter. Where streets bisect or traverse water resource areas (WRAs) the street width shall be reduced to the appropriate "constrained" cross-section width indicated in the TSP or alternate configurations which are appropriate to site conditions, minimize WRA disturbance or are consistent with an adopted transportation system plan. The street design shall also be consistent with habitat friendly provisions of CDC 32.060(I).

    Based upon the City Manager's or Manager's designee's determination, the applicant shall construct or cause to be constructed, or contribute a proportionate share of the costs, for all necessary off-site improvements identified by the transportation analysis commissioned to address CDC 55.125 that are required to mitigate impacts from the proposed development. Proportionate share of the costs shall be determined by the City Manager or Manager's designee, who shall assume that the proposed development provides improvements in rough proportion to identified impacts of the development.

Finding: A proposed City project will realign the Skyline Drive right-of-way to correspond to the existing road alignment. Skyline Drive will have a right-of-way width of 58 feet. The proposed right-of-way realignment is consistent with the requirements of this section. This standard is met.

2. **Storm detention and treatment and geologic hazards. Per the submittals required by CDC 55.130 and 92.010(E), all proposed storm detention and treatment facilities must comply with the standards for the improvement of public and private drainage systems located in the West Linn Public Works Design Standards, there will be no adverse off-site impacts caused by the development (including impacts from increased intensity of runoff downstream or constrictions causing ponding upstream), and the applicant must provide sufficient factual data to support the conclusions of the submitted plan.**

   Per the submittals required by CDC 55.130(E), the applicant must demonstrate that the proposed methods of rendering known or potential hazard sites safe for development, including proposed geotechnical remediation, are feasible and adequate to prevent landslides or other damage to property and safety. The review authority may impose conditions, including limits on type or intensity of land use, which it determines are necessary to mitigate known risks of landslides or property damage.

Finding: A Preliminary Stormwater Report detailing the proposed storm detention and treatment system for the parking lot and stadium expansion has been submitted under Appendix D of this application. This standard is met.

3. **Municipal water. A registered civil engineer shall prepare a plan for the provision of water which demonstrates to the City Engineer's satisfaction the availability of sufficient volume, capacity, and pressure to serve the proposed development's domestic, commercial, and industrial fire flows. All plans will then be reviewed by the City Engineer.**

Finding: A Stadium Composite Utility Plan (Sheet C301) and South Lot Composite Utility Plan (Sheet C302) showing the proposed water connections has been submitted under Appendix E of this application. This standard is met.

4. **Sanitary sewers. A registered civil engineer shall prepare a sewerage collection system plan which demonstrates sufficient on-site capacity to serve the proposed development. The City Engineer shall determine whether the existing City system has sufficient capacity to serve the development.**

Finding: A Stadium Composite Utility Plan (Sheet C301) and South Lot Composite Utility Plan (Sheet C302) showing the proposed sanitary sewer connections has been submitted under Appendix E of this application. This standard is met.

5. **Solid waste and recycling storage areas. Appropriately sized and located solid waste and recycling storage areas shall be provided. Metro standards shall be used.**

Finding: The proposed development does not include new solid waste or recycling storage areas. The existing solid waste and recycling facilities on site will continue to be used. This standard is met.

J. Crime prevention and safety/defensible space.

1. **Windows shall be located so that areas vulnerable to crime can be surveyed by the occupants.**
2. **Interior laundry and service areas shall be located in a way that they can be observed by others.**
3. **Mailboxes, recycling, and solid waste facilities shall be located in lighted areas having vehicular or pedestrian traffic.**
4. **The exterior lighting levels shall be selected and the angles shall be oriented towards areas vulnerable to crime.**
5. **Light fixtures shall be provided in areas having heavy pedestrian or vehicular traffic and in potentially dangerous areas such as parking lots, stairs, ramps, and abrupt grade changes.**
6. **Fixtures shall be placed at a height so that light patterns overlap at a height of seven feet which is sufficient to illuminate a person. All commercial, industrial, residential, and public facility projects undergoing design review shall use low or high pressure sodium bulbs and be able to demonstrate effective shielding so that the light is directed downwards rather than omni-directional. Omni-directional lights of an ornamental nature may be used in general commercial districts only.**
7. **Lines of sight shall be reasonably established so that the development site is visible to police and residents.**
8. **Security fences for utilities (e.g., power transformers, pump stations, pipeline control equipment, etc.) or wireless communication facilities may be up to eight feet tall in order to protect public safety. No variances are required regardless of location.**

Finding: The proposed lighting has been shown on the Photometrics Plan (Sheet E100) included under Appendix E of this application. The exterior lighting selected are consistent with the requirements of this section. The lines of sight haven been maintained as much as possible on site. This standard is met.

K. Provisions for persons with disabilities.

1. **The needs of a person with a disability shall be provided for. Accessible routes shall be provided between all buildings and accessible site facilities. The accessible route shall be the most practical direct route between accessible building entries, accessible site facilities, and the accessible entry to the site. An accessible route shall connect to the public right-of-way and to at least one on-site or adjacent transit stop (if the area is served by transit). All facilities shall conform to, or exceed, the Americans with Disabilities Act (ADA) standards, including those included in the Uniform Building Code.**

Finding: The proposed site improvements will include provisions for persons with a disability, including new ADA parking stalls and an accessible route between the new parking lot stadium and main school building. This standard is met.

L. Signs.

1. **Based on considerations of crime prevention and the needs of emergency vehicles, a system of signs for identifying the location of each residential unit, store, or industry shall be established.**
2. **The signs, graphics, and letter styles shall be designed to be compatible with surrounding development, to contribute to a sense of project identity, or, when appropriate, to reflect a sense of the history of the area and the architectural style.**
3. **The sign graphics and letter styles shall announce, inform, and designate particular areas or uses as simply and clearly as possible.**
4. **The signs shall not obscure vehicle driver's sight distance.**
5. **Signs indicating future use shall be installed on land dedicated for public facilities (e.g., parks, water reservoir, fire halls, etc.).**
6. **Signs and appropriate traffic control devices and markings shall be installed or painted in the driveway and parking lot areas to identify bicycle and pedestrian routes.**

Finding: The proposed development will include parking lot signs consistent with the requirements of this section. No other signs are proposed. This standard is met.

M. Utilities. The developer shall make necessary arrangements with utility companies or other persons or corporations affected for the installation of underground lines and facilities. Electrical lines and other wires, including but not limited to communication, street lighting, and cable television, shall be placed underground, as practical. The design standards of Tables 1 and 2 above, and of subsection 5.487 of the West Linn Municipal Code relative to existing high ambient noise levels shall apply to this section.

Finding: The developer will make the necessary arrangements with utility companies. This standard is met.

N. Wireless communication facilities (WCFs). (This section only applicable to WCFs.)

Finding: The proposed development is not a wireless communication facility. The requirements of this section are not applicable.

O. Refuse and recycling standards.

1. **All commercial, industrial and multi-family developments over five units requiring Class II design review shall comply with the standards set forth in these provisions. Modifications to these provisions may be permitted if the Planning Commission determines that the changes are consistent with the purpose of these provisions and the City receives written evidence from the local franchised solid waste and recycling firm that they are in agreement with the proposed modifications.**

2. **Compactors, containers, and drop boxes shall be located on a level Portland cement concrete pad, a minimum of four inches thick, at ground elevation or other location compatible with the local franchise collection firm's equipment at the time of construction. The pad shall be designed to discharge surface water runoff to avoid ponding.**
3. **Recycling and solid waste service areas.**
    a. **Recycling receptacles shall be designed and located to serve the collection requirements for the specific type of material.**
    b. **The recycling area shall be located in close proximity to the garbage container areas and be accessible to the local franchised collection firm's equipment.**
    c. **Recycling receptacles or shelters located outside a structure shall have lids and be covered by a roof constructed of water and insect-resistive material. The maintenance of enclosures, receptacles and shelters is the responsibility of the property owner.**
    d. **The location of the recycling area and method of storage shall be approved by the local fire marshal.**
    e. **Recycling and solid waste service areas shall be at ground level and/or otherwise accessible to the franchised solid waste and recycling collection firm.**
    f. **Recycling and solid waste service areas shall be used only for purposes of storing solid waste and recyclable materials and shall not be a general storage area to store personal belongings of tenants, lessees, property management or owners of the development or premises.**
    g. **Recyclable material service areas shall be maintained in a clean and safe condition.**
4. **Special wastes or recyclable materials.**
    a. **Environmentally hazardous wastes defined in ORS 466.005 shall be located, prepared, stored, maintained, collected, transported, and disposed in a manner acceptable to the Oregon Department of Environmental Quality.**
    b. **Containers used to store cooking oils, grease or animal renderings for recycling or disposal shall not be located in the principal recyclable materials or solid waste storage areas. These materials shall be stored in a separate storage area designed for such purpose.**
5. **Screening and buffering.**
    a. **Enclosures shall include a curbed landscape area at least three feet in width on the sides and rear. Landscaping shall include, at a minimum, a continuous hedge maintained at a height of 36 inches.**
    b. **Placement of enclosures adjacent to residentially zoned property and along street frontages is strongly discouraged. They shall be located so as to conceal them from public view to the maximum extent possible.**

c. All dumpsters and other trash containers shall be completely screened on all four sides with an enclosure that is comprised of a durable material such as masonry with a finish that is architecturally compatible with the project. Chain link fencing, with or without slats, will not be allowed.

6. Litter receptacles.

  a. Location. Litter receptacles may not encroach upon the minimum required walkway widths.

  b. Litter receptacles may not be located within public rights-of-way except as permitted through an agreement with the City in a manner acceptable to the City Attorney or his/her designee.

  c. Number. The number and location of proposed litter receptacles shall be based on the type and size of the proposed uses. However, at a minimum, for non-residential uses, at least one external litter receptacle shall be provided for every 25 parking spaces for first 100 spaces, plus one receptacle for every additional 100 spaces.

Finding: The proposed development does not include new solid waste or recycling storage areas. The existing solid waste and recycling facilities on site will continue to be used. This standard is met.

55.110 SITE ANALYSIS

The site analysis shall include:

A. A vicinity map showing the location of the property in relation to adjacent properties, roads, pedestrian and bike ways, transit stops and utility access.

B. A site analysis on a drawing at a suitable scale (in order of preference, one inch equals 10 feet to one inch equals 30 feet) which shows:

1. **The property boundaries, dimensions, and gross area.**
2. **Contour lines at the following minimum intervals:**
   - **a. Two-foot intervals for slopes from zero to 25 percent; and**
   - **b. Five- or 10-foot intervals for slopes in excess of 25 percent.**
3. **Tables and maps identifying acreage, location and type of development constraints due to site characteristics such as slope, drainage and geologic hazards, including a slope analysis which identifies portions of the site according to the land types (I, II, III and IV) defined in Chapter 02 CDC.**
4. **The location and width of adjoining streets.**
5. **The drainage patterns and drainage courses on the site and on adjacent lands.**
6. **Potential natural hazard areas including:**
   - **a. Floodplain areas pursuant to the site’s applicable FEMA Flood Map panel;**
   - **b. Water resource areas as defined by Chapter 32 CDC;**
   - **c. Landslide areas designated by the Natural Hazard Mitigation Plan, Map 16; and**
   - **d. Landslide vulnerable analysis areas, designated by the Natural Hazard Mitigation Plan, Map 17.**

7. **Resource areas including:**
    a. **Wetlands;**
    b. **Riparian corridors;**
    c. **Streams, including intermittent and ephemeral streams;**
    d. **Habitat conservation areas; and**
    e. **Large rock outcroppings.**
8. **Potential historic landmarks and registered archaeological sites. The existence of such sites on the property shall be verified from records maintained by the Community Development Department and other recognized sources.**
9. **Identification information including the name and address of the owner, developer, project designer, lineal scale and north arrow.**
10. **Identify Type I and II lands in map form. Provide a table which identifies square footage of Type I and II lands also as percentage of total site square footage.**

Finding: A site analysis consistent with the requirements of this section has been submitted under Appendix E. This standard is met.

55.120 SITE PLAN

The site plan shall be at the same scale as the site analysis (CDC 55.110) and shall show:

A. The applicant's entire property and the surrounding property to a distance sufficient to determine the relationship between the applicant's property and proposed development and adjacent property and development.

B. Boundary lines and dimensions for the perimeter of the property and the dimensions for all proposed lot or parcel lines.

C. Streams and stream corridors.

D. Identification information, including the name and address of the owner, developer, project designer, lineal scale and north arrow.

E. The location, dimensions, and names of all existing and proposed streets, public pathways, easements on adjacent properties and on the site, and all associated rights-of-way.

F. The location, dimensions and setback distances of all:

1. **Existing and proposed structures, improvements, and utility facilities on site; and**
2. **Existing structures and driveways on adjoining properties.**

G. The location and dimensions of:

1. **The entrances and exits to the site;**
2. **The parking and circulation areas;**
3. **Areas for waste disposal, recycling, loading, and delivery;**
4. **Pedestrian and bicycle routes, including designated routes, through parking lots and to adjacent rights-of-way;**
5. **On-site outdoor recreation spaces and common areas;**
6. **All utilities, including stormwater detention and treatment; and**
7. **Sign locations.**

H. The location of areas to be landscaped.

Finding: A site plan consistent with the requirements of this section has been submitted under Appendix E. This standard is met.

55.125 TRANSPORTATION ANALYSIS

Certain development proposals required that a Traffic Impact Analysis (TIA) be provided which may result in modifications to the site plan or conditions of approval to address or minimize any adverse impacts created by the proposal. The purpose, applicability and standards of this analysis are found in CDC 85.170(B)(2).

Finding: A transportation analysis completed by DKS has been submitted under Appendix D of this application. This standard is met.

55.130 GRADING AND DRAINAGE PLANS

For Type I, II and III lands (refer to definitions in Chapter 02 CDC), a registered civil engineer must prepare a grading plan and a storm detention and treatment plan pursuant to CDC 92.010(E), at a scale sufficient to evaluate all aspects of the proposal, and a statement that demonstrates:

A. The location and extent to which grading will take place indicating general contour lines, slope ratios, slope stabilization proposals, and location and height of retaining walls, if proposed.

B. All proposed storm detention and treatment facilities comply with the standards for the improvement of public and private drainage systems located in the West Linn Public Works Design Standards.

C. There is sufficient factual data to support the conclusions of the plan.

D. Per CDC 99.035, the Planning Director may require the information in subsections A, B and C of this section for Type IV lands if the information is needed to properly evaluate the proposed site plan.

E. For Type I, II and III lands (refer to definitions in Chapter 02 CDC), the applicant must provide a geologic report, with text, figures and attachments as needed to meet the industry standard of practice, prepared by a certified engineering geologist and/or a geotechnical professional engineer, that includes:

1. **Site characteristics, geologic descriptions and a summary of the site investigation conducted;**
2. **Assessment of engineering geological conditions and factors;**
3. **Review of the City of West Linn's Natural Hazard Mitigation Plan and applicability to the site; and**
4. **Conclusions and recommendations focused on geologic constraints for the proposed land use or development activity, limitations and potential risks of development, recommendations for mitigation approaches and additional work needed at future development stages including further testing and monitoring.**

F. Identification information, including the name and address of the owner, developer, project designer, and the project engineer.

Finding: Grading and Drainage Plans consistent with the requirements of this section have been submitted under Appendix E. This standard is met.

55.140 ARCHITECTURAL DRAWINGS

This section does not apply to single-family residential subdivisions or partitions, or up to two duplexes or single-family attached dwellings.

Architectural drawings shall be submitted showing:

A. Building elevations and sections tied to curb elevation;

B. Building materials: color and type; and

C. The name of the architect or designer.

Finding: Architectural Drawings consistent with the requirements of this section have been submitted under Appendix E. This standard is met.

55.150 LANDSCAPE PLAN

This section does not apply to detached single-family residential subdivisions or partitions, or up to two duplexes or single-family attached dwellings.

A. The landscape plan shall be prepared and shall show the following:

1. **Preliminary underground irrigation system, if proposed;**
2. **The location and height of fences and other buffering of screening materials, if proposed;**
3. **The location of terraces, decks, patios, shelters, and play areas, if proposed;**
4. **The location, size, and species of the existing and proposed plant materials, if proposed; and**
5. **Building and pavement outlines.**

B. The landscape plan shall be accompanied by:

1. **The erosion controls that will be used, if necessary;**
2. **Planting list; and**
3. **Supplemental information as required by the Planning Director or City Arborist.**

Finding: A Landscape Plan package consistent with the requirements of this section has been submitted under Appendix E. This standard is met.

55.180 MAINTENANCE

All on-site improvements shall be the ongoing responsibility of the property owner or occupant.

Finding: The applicant acknowledges that all on-site improvements will be the ongoing responsibility of the property owner. This standard is met.

55.190 SHARED OPEN SPACE

Where the open space is designated on the plan as common open space, the following shall apply:

A. The open space area shall be shown on the final plan and recorded with the Planning Director.

B. The open space shall be conveyed in accordance with one of the following methods:

1. **By dedication to the City as publicly owned and maintained as open space. Open space proposed for dedication to the City must be acceptable to it with regard to the size, shape, location, improvement, and budgetary and maintenance limitations.**
2. **By leasing or conveying title (including beneficial ownership) to a corporation, home association, or other legal entity with the City retaining the development rights to the property. The terms of such lease or other instrument of conveyance must include provisions suitable to the City Attorney for guaranteeing the following:**
   - **a. The continued use of such land for intended purposes.**
   - **b. Continuity of property maintenance.**
   - **c. When appropriate, the availability of funds required for such maintenance.**
   - **d. Adequate insurance protection.**
   - **e. Recovery for loss sustained by casualty and condemnation, or otherwise.**
3. **By any method that achieves the objectives set forth in subsection (B)(2) of this section.**

Finding: The site does not have areas designated as common open space. The requirements of this section are not applicable.

DIVISION 7. DISCRETIONARY PROVISIONS

Chapter 60 CONDITIONAL USES

60.070 APPROVAL STANDARDS AND CONDITIONS

A. The Planning Commission shall approve, approve with conditions, or deny an application for a conditional use, except for a manufactured home subdivision in which case the approval standards and conditions shall be those specified in CDC 36.030, or to enlarge or alter a conditional use based on findings of fact with respect to each of the following criteria:

1. **The site size and dimensions provide:**
   - **a. Adequate area for the needs of the proposed use; and**
   - **b. Adequate area for aesthetic design treatment to mitigate any possible adverse effect from the use on surrounding properties and uses.**

Finding: The site is approximately 40.58 acres in size. The site is an adequate area for the needs of the proposed use and provides adequate area to mitigate for possible adverse effect on the surrounding property uses.

2. **The characteristics of the site are suitable for the proposed use considering size, shape, location, topography, and natural features.**

Finding: The proposed stadium expansion and parking lot expansion will be located on the existing West Linn High School site. The site is approximately 40.58 acres in size, with sloped topography and mapped habitat area to the west. A conservation easement has been established on site to protect the site's natural features. The proposed improvements are located entirely outside of the conservation easement. The school is located centrally within the community it serves. The improvements to the school will continue to serve the surrounding population without creating a major impact to students and families it serves.

3. **The granting of the proposal will produce a facility that provides an overall benefit to the City.**

Finding: West Linn High School has served the residents of West Linn for 101 years. The proposed stadium renovation was voted on by members of the community as a part of the West Linn-Wilsonville School 2019 Capital Bond, which was passed with overwhelming support. The proposed stadium expansion is necessary to accommodate the student capacity of the school and will dramatically increase safety on site. The proposed expansion will provide seating for the entire student body in one location on campus for assemblies as well as emergencies. The additional seating will also serve event spectators that currently observe events from the track. Additional parking on site will provide a benefit to the student body during school hours and improve parking lot safety during community events, while reducing congestion on surrounding streets. This standard is met.

4. **Adequate public facilities will be available to provide service to the property at the time of occupancy.**

Finding: A Traffic Analysis has been submitted with this land use application which has provided a detailed analysis of the adequacy of the transportation systems and public facilities and services that exist or are planned for the site.

5. **The applicable requirements of the zone are met, except as modified by this chapter.**

Finding: The applicable requirements of the zone have been addressed within this narrative. This standard is met.

6. **The supplementary requirements set forth in Chapters 52 to 55 CDC and CDC 92.010(E) are met, if applicable.**

Finding: The supplementary requirements set forth in Chapters 52 to 55 CDC and CDC 92.010(E) have been addressed within this narrative. This standard is met.

7. **The use will comply with the applicable policies of the Comprehensive Plan.**

Finding: The following goals and policies have been identified as potentially applicable to the proposed use and are addressed below:

Goal 2 - Land Use Planning

Policy 3 - Develop incentives to encourage superior design, preserve environmentally sensitive open space, and include recreational amenities.

Policy 5 - New construction and remodeling shall be designed to be compatible with the existing neighborhood through appropriate design and scale

Policy 8 - Protect residentially zoned areas from the negative impacts of commercial, civic, and mixed-use development, and other potentially incompatible land uses.

Policy 9 - Foster land use planning that emphasizes livability and carrying capacity.

Goal 11 – Public Facilities and Services

Section 7: Schools

Policy 1 - Encourage the School District to build schools on collectors or arterial streets and, where possible, along transit lines.

Policy 2 - Encourage the use of energy-responsive materials and processes in the design of schools where economically feasible.

Policy 3 - The City shall participate in the siting of future school facilities, per the currently approved Intergovernmental Agreement with the School District.

Policy 4 - School design, use, and parking will be responsive to and compatible with surrounding neighborhoods and existing land uses.

Policy 5 - Work cooperatively with the school district to develop a safe-routes to school program and incorporate related improvements into the transportation capital improvements program

Response: West Linn High School has served the neighborhood for over 101 years and has provided a sense of place and identity for the neighborhood by providing a quality educational institution for many of the residents of West Linn. The site provides for community gathering in the use of the building facilities and outdoor recreational facilities. The expanded stadium and parking lot will provide the needed capacity to serve the student body and residents of West Linn to attend events held at the school.

The proposed stadium expansion and parking lot addition are not located directly adjacent to residential development. A conservation easement along the western boundary of the school site provides a buffer between the school and the properties located to the west of the school. The property to the north of the proposed parking lot is a forested wilderness area. Perimeter landscaping is provided along the northern border of the property to provide a buffer between the property the wilderness area.

A traffic study has been provided for the proposed parking lot expansion. The additional parking provided on site is expected to shift vehicles from the existing on-street parking in the adjacent neighborhood to the school site, reducing the negative impact of the school on the adjacent neighborhood.

The proposed development satisfies the applicable goals and policies of the City's Comprehensive Plan.

B. An approved conditional use or enlargement or alteration of an existing conditional use shall be subject to the development review provisions set forth in Chapter 55 CDC.

Finding: The provisions of Chapter 55 of the CDC have been addressed in this narrative. This standard is met.

C. The Planning Commission may impose conditions on its approval of a conditional use which it finds are necessary to assure the use is compatible with other uses in the vicinity. These conditions may include, but are not limited to, the following:

1. **Limiting the hours, days, place, and manner of operation.**
2. **Requiring design features which minimize environmental impacts such as noise, vibration, air pollution, glare, odor, and dust.**
3. **Requiring additional setback areas, lot area, or lot depth, or width.**
4. **Limiting the building height, size or lot coverage, or location on the site.**
5. **Designating the size, number, location and design of vehicle access points.**
6. **Requiring street right-of-way to be dedicated and the street to be improved including all steps necessary to address future street improvements identified in the adopted Transportation System Plan.**
7. **Requiring participation in making the intersection improvement or improvements identified in the Transportation System Plan when a traffic analysis (compiled as an element of a conditional use application for the property) indicates the application should contribute toward.**
8. **Requiring landscaping, screening, drainage, and surfacing of parking and loading areas.**
9. **Limiting the number, size, location, height, and lighting of signs.**
10. **Limiting or setting standards for the location and intensity of outdoor lighting.**
11. **Requiring berming, screening, or landscaping and the establishment of standards for their installation and maintenance.**
12. **Requiring and designating the size, height, location, and materials for fences.**
13. **Requiring the protection and preservation of existing trees, soils, vegetation, watercourses, habitat areas, and drainage areas.**

Finding: The applicant acknowledges that the Planning Commission may impose conditions of approval on a conditional use, including those listed in subsections 1-13 above. This standard is met.

D. Aggregate extraction uses shall also be subject to the provisions of ORS 541.605.

Finding: The proposed use is not an aggregate extraction use. The requirements of this section are not applicable.

E. The Historic Review Board shall review an application for a conditional use, or to enlarge a conditional use on a property designated as a historic resource, based on findings of fact that the use will:

1. **Preserve or improve a historic resource which would probably not be preserved or improved otherwise; and**
2. **Utilize existing structures rather than new structures.**

Finding: The subject site is not designated as a historic resource. The requirements of this section are not applicable.

60.080 SITE PLAN AND MAP

A. All site plans and maps shall include the name, address, and telephone number of the applicant, the scale of the site plan, north arrow, and a vicinity map.

B. The applicant shall submit a site plan drawn to an appropriate scale (in order of preference, one inch equals 10 feet to one inch equals 30 feet) which contains the following information:

1. **The subdivision name, block, and lot number or the section, township, range, and tax lot number.**
2. **The lot or parcel boundaries, dimensions, and gross area.**
3. **The applicant's property and the surrounding property to a distance sufficient to determine the relationship between the applicant's property and proposed development to the adjacent property and development.**
4. **The location, dimensions, and names of all existing and platted streets and other public ways and easements on adjacent property and on the site.**
5. **The location, dimensions, and setback distances of all:**
    - **a. Existing structures, improvements, utilities, and drainage facilities on adjoining properties;**
    - **b. Existing structures, improvements, utilities, and drainage facilities to remain on the site; and**
    - **c. Proposed structures or changes to existing structures, improvements, utilities, and drainage facilities.**
6. **The existing and proposed dimensions of:**
    - **a. The entrances and exits to the site;**
    - **b. The parking and circulation areas;**
    - **c. Loading and service areas for waste disposal, loading and delivery;**
    - **d. Pedestrian and bicycle circulation area;**
    - **e. On-site outdoor recreation spaces and common areas; and**
    - **f. Above-ground utilities.**
7. **The location of areas to be landscaped and the proposed landscape plan.**
8. **The location of all trees having a six-inch caliper at a height of five feet.**

C. The applicant shall submit the site plan on a map showing two-foot contours up to 20 percent grade and 10-foot contours on grades above 20 percent.

Finding: A Stadium & Parking Lot Plan (Sheet C201) and South Parking Lot Expansion Plan (Sheet C202) consistent with the requirements of this section has been submitted under Appendix E. This standard is met.

60.100 ADDITIONAL CRITERIA FOR SCHOOLS AND OTHER GOVERNMENT FACILITIES

Schools and other government facilities that attract a regular and significant volume of users shall, to the greatest extent possible, be centrally located relative to the majority of the population that they will serve and be serviceable by sidewalks and bike routes/lanes. Police and fire stations shall meet these standards to the greatest extent possible but it is acknowledged that access to arterials remains a key locational determinant for those uses.

Finding: The location of West Linn High School will not change as a result of this application. The requirements of this section are not applicable.

Chapter 75 VARIANCES AND SPECIAL WAIVERS

75.020 CLASSIFICATION OF VARIANCES

A. Class I Variance. Class I variances provide minor relief from certain code provisions where it can be demonstrated that the modification will not harm adjacent properties, and it conforms with any other code requirements. Class I variances are allowed for the following code provisions:

1. **Required Yard and Minimum Lot Dimensional Requirements. Required yards may be modified up to 20 percent, lot dimensions by up to 10 percent and lot area by up to five percent if the decision-making authority finds that the resulting approval:**

B. Class II Variance. Class II variances may be utilized when strict application of code requirements would be inconsistent with the general purpose of the CDC and would create a burden upon a property owner with no corresponding public benefit. A Class II variance will involve a significant change from the code requirements and may create adverse impacts on adjacent property or occupants. It includes any variance that is not classified as a Class I variance or special waiver.

1. **Class II Variance Approval Criteria. The approval authority may impose appropriate conditions to ensure compliance with the criteria. The appropriate approval authority shall approve a variance request if all the following criteria are met and corresponding findings of fact prepared.**
   a. **The variance is the minimum variance necessary to make reasonable use of the property. To make this determination, the following factors may be considered, together with any other relevant facts or circumstances:**
      1) **Whether the development is similar in size, intensity and type to developments on other properties in the City that have the same zoning designation.**
      2) **Physical characteristics of the property such as lot size or shape, topography, or the existence of natural resources.**
      3) **The potential for economic development of the subject property.**

Finding: The applicant is requesting two class II variances for the proposed renovations. A variance to CDC Chapter 54.020.E.3.d, which requires a 10-foot wide landscape buffer between parking and the right-of-way and a variance to CDC Chapter 46.070.B which requires all parking stalls be located within 200 feet of a building entrance.

<u>**Class II Variance to CDC Chapter 54.020.E.3.d**</u>

CDC Chapter 54.020.E.3.d requires a 10-foot wide landscape buffer be provided between the right-of-way and a parking lot.

A proposed City project will realign the Skyline Drive right-of-way to correspond to the existing road alignment. The realignment of Skyline Drive shifts the right-of-way line along the school property approximately 10 feet to the west into the existing school site. Approximately 76 linear feet of the proposed parking lot that has frontage along Skyline Drive is located less than 10 feet from the back of the proposed right-of-way line. The width of the buffer in this area varies between one foot and 9.9 feet. The remaining parking lot frontage meets the 10-foot buffer requirement. The proposed parking lot is located at least 10 feet from the back of the existing sidewalk on Skyline Drive. The area between the back of sidewalk of the existing road and the parking lot will be landscaped to meet the requirements of Chapter 54.020.E.3.d.

This variance is the minimum variance necessary due to the physical characteristics of the site. The topography of the site changes materially beyond the proposed improvements, creating the potential for geotechnical slope stability concerns. Additionally, the slope is currently populated and stabilized by existing trees, which the applicant wishes to preserve.

Class II Variance to CDC Chapter 46.070.B

CDC Chapter 46.070.B requires that all parking spaces be located within 200 feet of a building entrance.

The school campus has multiple buildings, recreation facilities and parking areas across the campus. The proposed north parking lot expansion has been located as close as possible to the main entrance of the stadium, given the site terrain and existing development of the site. The closest parking stall in the north parking lot is located approximately 100 feet from the stadium entrance. The furthest parking stall in the north parking lot is located approximately 385 feet from the main stadium entrance.

The proposed south parking lot expansion has been located adjacent to several campus facilities, including the main building, music wing building, visitor stadium, the tennis courts and baseball fields. The closest parking stall in the south parking lot is located approximately 200 feet from the tennis courts, 285 feet from the music wing building and 360 feet from an entrance to the main school building. The furthest parking stall in the south parking lot is located approximately 305 feet from the tennis courts, 370 feet from the music wing building and 445 feet from an entrance to the main school building.

This variance is the minimum variance necessary due to the physical characteristics and existing development of the site.

The applicant requests a class II variance to code section 54.020.E.3.d and a class II variance to CDC Chapter 46.070.B. This standard is met.

b. The variance will not result in violation(s) of any other code standard, and the variance will meet the purposes of the regulation being modified.

Finding: The proposed variances will not result in the violation of any other code standards. This standard is met.

c. The need for the variance was not created by the applicant and/or owner requesting the variance.

Finding: A proposed City project will realign the Skyline Drive right-of-way to correspond to the existing road alignment and vacate the portions of Skyline Drive right-of-way that have not been developed as roadway. The need for the proposed variance was not created by the District.

The proposed parking lots have been located as close as possible to on-site facilities. The need for the proposed variance was not created by the applicant.

This standard is met.

d. If more than one variance is requested, the cumulative effect of the variances results in a project that is consistent with the overall purpose of the zone.

Finding: The applicant is requesting two class II variances. The purpose of the R-10 zone is to provide for urban development at levels which relate to the site development limitations, proximity to commercial development and to public facilities and public transportation. The cumulative effect of the two proposed variances will not result in a project that is inconsistent with the overall purpose of the zone.

This standard is met

Chapter 92 REQUIRED IMPROVEMENTS

92.010 PUBLIC IMPROVEMENTS FOR ALL DEVELOPMENT

The following improvements shall be installed at the expense of the developer and meet all City codes and standards:

A. Streets within subdivisions.

Finding: The proposed development is not a subdivision. The requirements of this section are not applicable.

B. Extension of streets to subdivisions. The extension of subdivision streets to the intercepting paving line of existing streets with which subdivision streets intersect shall be graded for the full right-of-way width and improved to a minimum street structural section and width of 24 feet.

Finding: The proposed development is not a subdivision. The requirements of this section are not applicable.

C. Local and minor collector streets within the rights-of-way abutting a subdivision shall be graded for the full right-of-way width and approved to the City's permanent improvement standards and specifications. The City Engineer shall review the need for street improvements and shall specify whether full street or partial street improvements shall be required. The City Engineer shall also specify the extent of storm drainage improvements required. The City Engineer shall be guided by the purpose of the City's systems development charge program in determining the extent of improvements which are the responsibility of the subdivider.

Finding: The proposed development is not a subdivision. The requirements of this section are not applicable.

D. Monuments. Upon completion of the first pavement lift of all street improvements, monuments shall be installed and/or reestablished at every street intersection and all points of curvature and points of tangency of street centerlines with an iron survey control rod. Elevation benchmarks shall be established at each street intersection monument with a cap (in a monument box) with elevations to a U.S. Geological Survey datum that exceeds a distance of 800 feet from an existing benchmark.

Finding: Street improvements are not proposed as part of this development. The requirements of this section are not applicable.

E. Storm detention and treatment. For Type I, II and III lands (refer to definitions in Chapter 02 CDC), a registered civil engineer must prepare a storm detention and treatment plan, at a scale sufficient to evaluate all aspects of the proposal, and a statement that demonstrates:

1. **The location and extent to which grading will take place indicating general contour lines, slope ratios, slope stabilization proposals, and location and height of retaining walls, if proposed.**
2. **All proposed storm detention and treatment facilities comply with the standards for the improvement of public and private drainage systems located in the West Linn Public Works Design Standards.**
3. **There will be no adverse off-site impacts, including impacts from increased intensity of runoff downstream or constrictions causing ponding upstream.**
4. **There is sufficient factual data to support the conclusions of the plan.**
5. **Per CDC 99.035, the Planning Director may require the information in subsections (E)(1), (2), (3) and (4) of this section for Type IV lands if the information is needed to properly evaluate the proposed site plan.**

Finding: A Preliminary Stormwater Report detailing the proposed storm detention and treatment system for the parking lot and stadium expansion has been submitted under Appendix D of this application. This standard is met.

F. Sanitary sewers. Sanitary sewers shall be installed to City standards to serve the subdivision and to connect the subdivision to existing mains.

1. **If the area outside the subdivision to be directly served by the sewer line has reached a state of development to justify sewer installation at the time, the Planning Commission may recommend to the City Council construction as an assessment project with such arrangement with the subdivider as is desirable to assure financing his or her share of the construction.**
2. **If the installation is not made as an assessment project, the City may reimburse the subdivider an amount estimated to be a proportionate share of the cost for each connection made to the sewer by property owners outside of the subdivision for a**

period of 10 years from the time of installation of the sewers. The actual amount shall be determined by the City Administrator considering current construction costs.

Finding: The proposed development is not a subdivision. The requirements of this section are not applicable.

G. Water system. Water lines with valves and fire hydrants providing service to each building site in the subdivision and connecting the subdivision to City mains shall be installed. Prior to starting building construction, the design shall take into account provisions for extension beyond the subdivision and to adequately grid the City system. Hydrant spacing is to be based on accessible area served according to the City Engineer's recommendations and City standards. If required water mains will directly serve property outside the subdivision, the City may reimburse the developer an amount estimated to be the proportionate share of the cost for each connection made to the water mains by property owners outside the subdivision for a period of 10 years from the time of installation of the mains. If oversizing of water mains is required to areas outside the subdivision as a general improvement, but to which no new connections can be identified, the City may reimburse the developer that proportionate share of the cost for oversizing. The actual amount and reimbursement method shall be as determined by the City Administrator considering current or actual construction costs.

Finding: The proposed development is not a subdivision. The requirements of this section are not applicable.

H. Sidewalks.

1. **Sidewalks shall be installed on both sides of a public street and in any special pedestrian way within the subdivision, except that in the case of primary or secondary arterials, or special type industrial districts, or special site conditions, the Planning Commission may approve a subdivision without sidewalks if alternate pedestrian routes are available.**

   In the case of the double-frontage lots, provision of sidewalks along the frontage not used for access shall be the responsibility of the developer. Providing front and side yard sidewalks shall be the responsibility of the land owner at the time a request for a building permit is received. Additionally, deed restrictions and CC&Rs shall reflect that sidewalks are to be installed prior to occupancy and it is the responsibility of the lot or homeowner to provide the sidewalk, except as required above for double-frontage lots.
2. **On local streets serving only single-family dwellings, sidewalks may be constructed during home construction, but a letter of credit shall be required from the developer to ensure construction of all missing sidewalk segments within four years of final plat approval pursuant to CDC 91.010(A)(2).**
3. **The sidewalks shall measure at least six feet in width and be separated from the curb by a six-foot minimum width planter strip. Reductions in widths to preserve trees or**

other topographic features, inadequate right-of-way, or constraints, may be permitted if approved by the City Engineer in consultation with the Planning Director.

4. **Sidewalks should be buffered from the roadway on high volume arterials or collectors by landscape strip or berm of three and one-half-foot minimum width.**
5. **The City Engineer may allow the installation of sidewalks on one side of any street only if the City Engineer finds that the presence of any of the factors listed below justifies such waiver:**
   a. **The street has, or is projected to have, very low volume traffic density;**
   b. **The street is a dead-end street;**
   c. **The housing along the street is very low density; or**
   d. **The street contains exceptional topographic conditions such as steep slopes, unstable soils, or other similar conditions making the location of a sidewalk undesirable.**

Finding: Skyline Drive has an existing six-foot wide curb-tight sidewalk along the frontage of the school property. The proposed development will require the replacement of sidewalk in three areas along Skyline Drive. This standard is met.

I. Bicycle routes. If appropriate to the extension of a system of bicycle routes, existing or planned, the Planning Commission may require the installation of separate bicycle lanes within streets and separate bicycle paths.

Finding: Street improvements are not proposed as part of this development. The requirements of this section are not applicable.

J. Street name signs. All street name signs and traffic control devices for the initial signing of the new development shall be installed by the City with sign and installation costs paid by the developer

Finding: Street improvements are not proposed as part of this development. The requirements of this section are not applicable.

K. Dead-end street signs. Signs indicating "future roadway" shall be installed at the end of all discontinued streets. Signs shall be installed by the City per City standards, with sign and installation costs paid by the developer.

Finding: Street improvements are not proposed as part of this development. The requirements of this section are not applicable.

L. Signs indicating future use shall be installed on land dedicated for public facilities (e.g., parks, water reservoir, fire halls, etc.). Sign and installation costs shall be paid by the developer.

Finding: Street improvements are not proposed as part of this development. The requirements of this section are not applicable.

M. Street lights. Street lights shall be installed and shall be served from an underground source of supply. The street lighting shall meet IES lighting standards. The street lights shall be the shoe-box style light (flat lens) with a 30-foot bronze pole in residential (non-intersection) areas. The street light shall be the cobra head style (drop lens) with an approximate 50-foot (sized for intersection width) bronze pole. The developer shall submit to the City Engineer for approval of any alternate residential, commercial, and industrial lighting, and alternate lighting fixture design. The developer and/or homeowners association is required to pay for all expenses related to street light energy and maintenance costs until annexed into the City.

Finding: Street improvements are not proposed as part of this development. The requirements of this section are not applicable.

N. Utilities. The developer shall make necessary arrangements with utility companies or other persons or corporations affected for the installation of underground lines and facilities. Electrical lines and other wires, including but not limited to communication, street lighting, and cable television, shall be placed underground.

Finding:

O. Curb cuts and driveways. Curb cuts and driveway installations are not required of the subdivider at the time of street construction, but, if installed, shall be according to City standards. Proper curb cuts and hard-surfaced driveways shall be required at the time buildings are constructed.

Finding: The proposed parking lot will require a new curb cut and driveway. The access will be provided according to City Standards. This standard is met.

P. Street trees. Street trees shall be provided by the City Parks and Recreation Department in accordance with standards as adopted by the City in the Municipal Code. The fee charged the subdivider for providing and maintaining these trees shall be set by resolution of the City Council.

Finding: There are no existing street trees along Skyline Drive within the existing right-of-way alignment. Street tree planting along Skyline is required and every effort will be made to plant the arborist approved street tree species. The setbacks may allow for some of the existing trees to be retained considering the rocky nature of the site. As mentioned, the site consists of rock at and below the surface of the site and therefore planting of trees in solid rock, if discovered, may prove infeasible. The applicant will work with the City's Arborist per CDC 8.720.C if existing conditions become such that an alternative to planting of new trees becomes infeasible.

Q. Joint mailbox facilities shall be provided in all residential subdivisions, with each joint mailbox serving at least two, but no more than eight, dwelling units. Joint mailbox structures shall be placed in the street right-of-way adjacent to roadway curbs. Proposed locations of joint mailboxes shall be designated on a copy of the tentative plan of the subdivision, and shall be approved as part of the tentative plan approval. In addition, sketch plans for the joint mailbox

structures to be used shall be submitted and approved by the City Engineer prior to final plat approval.

Finding: The proposed development does not require joint mailbox facilities. The requirements of this section are not applicable.

Chapter 96 STREET IMPROVEMENT CONSTRUCTION

96.010 CONSTRUCTION REQUIRED

A. New construction.

1. **Building permits shall not be issued for the construction of any new building or structure, or for the remodeling of any existing building or structure, which results in an increase in size or includes a change in use, including building permits for single-family dwellings but excepting building permits for alteration or addition to an existing single-family dwelling, unless the applicant for said building permit agrees to construct street improvements as required by the land use decision authorizing the construction activity. The placement of new curbs and the drainage facilities required shall be determined by the City Manager or the Manager's designee.**
2. **If the building permit did not require a prior land use decision, the applicant shall construct street improvements which shall include curbs, sidewalks, drainage facilities, and pavement widening to meet new curbs, along all City streets which abut the property described in the building permits.**
3. **An applicant for a building permit may apply for a waiver of street improvements and the option to make a payment in lieu of construction. The option is available if the City Manager or the Manager's designee determines the transportation system plan does not include the street improvement for which the waiver is requested.**
4. **When an applicant applies for and is granted a waiver of street improvements under subsection (A)(3) of this section, the applicant shall pay an in-lieu fee equal to the estimated cost, accepted by the City Engineer, of the otherwise required street improvements. As a basis for this determination, the City Engineer shall consider the cost of similar improvements in recent development projects and may require up to three estimates from the applicant. The in-lieu fee shall be used for in kind or related improvements.**

Finding: The proposed development is an expansion of an existing building. The requirements of this section are not applicable.

B. Remodeling of an existing building.

1. **Building permits shall not be issued for the remodeling and conversion of any existing building or structure which results in an increase in size or includes a change of use excepting building permits for the alteration or addition to an existing single-family dwelling, unless:**
   a. **The applicant for said building permit agrees to construct street improvements; and**

b. The City Manager or the Manager's designee determines that the remodeling of a structure or change of use is sufficient to cause construction of street improvements.

2. The determination of whether the remodeling of an existing building or structure is sufficient to cause the property owner to construct street improvements, shall be made by the City Manager or the Manager's designee. This determination shall be based upon finding that the increase in building size or change of use results in either:

a. An increase in floor area which creates the need for additional on-site parking in accordance with the Community Development Code; or

b. A change in use that results in a need for additional on-site parking; or

c. An increase in the dwelling unit density on the site; or

d. A change in the type, number, or location of accessways where off-site traffic will be affected.

3. An applicant for a remodeling of an existing building or structure change may apply for a waiver of street improvements and the option to make a payment in lieu of construction utilizing the process described in subsection (A)(3) of this section.

C. Replacement of an existing building.

D. Notwithstanding any other provisions of this chapter, in cases where the issuance of the building permit pertains to the construction or reconstruction of a building or structure within a large development owned by the same owner or owners, the City Council may, in its sole discretion, authorize the installation of street improvements of equivalent cost on another portion of the total development area.

Finding: At the pre-application conference, the City indicated that off-site improvements would not be required. Street improvements along the school's frontage on Skyline Drive have been completed in recent years. This requirement is not applicable.

Chapter 99 PROCEDURES FOR DECISION MAKING: QUASI-JUDICIAL

99.125 STAGED OR PHASED DEVELOPMENT

An applicant may elect to develop a proposed project in phases. The timing of each development phase shall be set forth in the application and subject to approval by the appropriate approval authority. Each phase shall meet all applicable development standards individually (e.g., access, parking, landscaping, utilities, etc.) without having to rely upon subsequent phases. Each phase shall also install all necessary improvements to serve the development within that phase.

Finding: In order to maximize improvements while bringing the project in under budget, the District has developed a series of additive alternates. The alternates can be selected in the event that the District receives favorable bids.

A phased development is allowed under CDC Section 99.125. Chapter 99.125 requires that each phase will meet all applicable development standards individually, without relying on subsequent phases. The proposed improvements have been structured so that the development standards can be met at each stage of development. At each stage of the development, adequate parking will be provided to meet the stadium seating requirements of this section.

The proposed development will consist of the Base Proposal, Add Alt A, Add Alt B and Add Alt C development stages. The Base Proposal and add alternates will be structured so that the project will meet the applicable development standards individually. The applicable code criteria standards for the development have been addressed within this narrative to demonstrate compliance with each additive alternative without relying on subsequent phases. This standard is met.

SUMMARY AND CONCLUSION

Based upon the materials submitted herein, the Applicant respectfully requests approval from the City's Planning Department for this Type III Conditional Use application and Design Review application with two Class II Variances.

ATTACHMENT A: DEVELOPMENT APPLICATION

City of West Linn

Planning & Development • 22500 Salamo Rd #1000 • West Linn, Oregon 97068
Telephone 503.656.4211 • Fax 503.656.4106 • westlinnoregon.gov

DEVELOPMENT REVIEW APPLICATION

For Office Use Only

STAFF CONTACT	PROJECT NO(S).	PRE-APPLICATION NO.
NON-REFUNDABLE FEE(S)	REFUNDABLE DEPOSIT(S)	TOTAL

Type of Review (Please check all that apply):

☐ Annexation (ANX)
☐ Appeal and Review (AP)
☒ Conditional Use (CUP)
☒ Design Review (DR)
☐ Easement Vacation
☐ Extraterritorial Ext. of Utilities
☐ Final Plat or Plan (FP)
☐ Flood Management Area
☐ Hillside Protection & Erosion Control
☐ Historic Review
☐ Legislative Plan or Change
☐ Lot Line Adjustment (LLA)
☐ Minor Partition (MIP) (Preliminary Plat or Plan)
☐ Non-Conforming Lots, Uses & Structures
☐ Planned Unit Development (PUD)
☐ Pre-Application Conference (PA)
☐ Street Vacation
☐ Subdivision (SUB)
☐ Temporary Uses
☐ Time Extension
☒ Variance (VAR)
☐ Water Resource Area Protection/Single Lot (WAP)
☐ Water Resource Area Protection/Wetland (WAP)
☐ Willamette & Tualatin River Greenway (WRG)
☐ Zone Change

Home Occupation, Pre-Application, Sidewalk Use, Sign Review Permit, and Temporary Sign Permit applications require different or additional application forms, available on the City website or at City Hall.

Site Location/Address: 5464 West A Street

Assessor's Map No.: 22E30 | 22E30CA | 22E30CD
Tax Lot(s): 800 | 10300, 10100,10200 | 4500, 4501, & 4502
Total Land Area: 39.8 acres

Brief Description of Proposal:

The WLWV School District is proposing to modifications to the West Linn High School campus. Improvements include an expansion of the existing stadium, pedestrian improvements and an expansion of on-site parking.

Applicant Name: West Linn-Wilsonville School District
(please print)
Address: 2755 SW Borland Road
City State Zip: Tualatin, OR 97062
Phone: 503-673-7988
Email: douglasr@wlwv.k12.or.us

Owner Name (required): West Linn-Wilsonville School District
(please print)
Address: 2755 SW Borland Road
City State Zip: Tualatin, OR 97062
Phone: 503-673-7988
Email: douglasr@wlwv.k12.or.us

Consultant Name: 3J Consulting, Inc.
(please print)
Address: 9600 SW Nimbus Avenue, Suite 100
City State Zip: Beaverton, OR 97008
Phone: 503-946-9365 x211
Email: mercedes.serra@3j-consulting.com

1. All application fees are non-refundable (excluding deposit). **Any overruns to deposit will result in additional billing.**
2. The owner/applicant or their representative should be present at all public hearings.
3. A decision may be reversed on appeal. No permit will be in effect until the appeal period has expired.
4. **One complete hard-copy set of application materials must be submitted with this application. One complete digital set of application materials must also be submitted electronically in PDF format. If large sets of plans are required in application please submit one set.**

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application. Acceptance of this application does not infer a complete submittal. All amendments to the Community Development Code and to other regulations adopted after the application is approved shall be enforced where applicable. Approved applications and subsequent development is not vested under the provisions in place at the time of the initial application.

Applicant's signature
Date: 10-13-20

Owner's signature *(required)*
Date: 10-13-20

ATTACHMENT B:
PRE-APPLICATION CONFERENCE NOTES

City of West Linn
PRE-APPLICATION CONFERENCE MEETING
SUMMARY NOTES
August 5, 2020

SUBJECT:	Proposed modifications to the West Linn High School Stadium and surrounding parking lots
FILE:	PA-20-05
ATTENDEES:	Applicant: Andrew Tull, Remo Douglas, Jim Fitzpatrick, Scott Johnson, Ryan Carlson, Mercedes Serra, John Howorth, and Steve Winkle Staff: Chris Myers and Darren Wyss (Planning), Amy Pepper (Engineering) Public: Kathie Halicki, Willamette Neighborhood Association, Lynn McKelvey, Vince Miles

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The following is a summary of the meeting discussion provided to you from staff meeting notes. Additional information may be provided to address any "follow-up" items identified during the meeting. These comments are PRELIMINARY in nature. Please contact the Planning Department with any questions regarding approval criteria, submittal requirements, or any other planning-related items. Please note disclaimer statement below.

Site Information

Site Address:	5464 West A Street
Tax Not No.:	Tax lot 0800 of Assessor's Map 22E30
Site Area:	31.449 Acres
Zoning:	Single-Family Residential Detached, R-10
Neighborhood:	Bolton
Applicable Code:	Community Development Code: Chapter 11: Single-Family Residential Detached, R-10 Chapter 32: Water Resource Area Protection Chapter 41: Building Height, Structures on Steep Lots, Exceptions Chapter 42: Clear Vision Areas Chapter 44: Fences Chapter 46: Off-Street Parking, Loading and Reservoir Areas Chapter 48; Access, Egress, and Circulation Chapter 52: Signs Chapter 54: Landscaping Chapter 55: Design Review Chapter 60: Conditional Uses Chapter 92: Required Improvements Chapter 96: Street Improvement Construction Chapter 99: Procedures for Decision Making, Quasi-Judicial

Project Details: The applicant proposes modifying the current stadium at West Linn High School. The modifications include constructing a new parking lot, expanding an existing parking lot, creating a promenade, increasing the seating capacity, improved concession stand, and improved stadium entry.

Public Comments: None

Discussion:

Community Development Code Chapters to address in application, based on the preliminary proposal, with a few sections are highlighted:

Chapter 11: Single-Family Residential Detached, R-10

- 11.060(7) Conditional Uses, Schools
- Alteration to Conditional Use Permit

Chapter 32: Water Resource Area Protection

- This will be relevant IF the impervious surface is being increased/changed for the pathway leading from the south parking lot to the stadium

Chapter 41: Building Height, Structures on Steep Lots, Exceptions

- 41.040 Places of Worship or Government Buildings, Exception up to 50ft

Chapter 42: Clear Vision Areas (parking lot specific)

- 42.040 Computation; Street and Accessway 24 feet or more in width. Ensure 30 foot clear distance from each side of accessway. Can have up to 3 foot tall fence, limited height landscaping, tree ok if pruned for sight lines.

Chapter 44: Fences (parking lot and possibly promenade)

- 44.020 Sight-Obscuring Fence; Setback and Height Limitations.
- 44.040 Landscaping

Chapter 46: Off-Street Parking, Loading and Reservoir Areas

- Pay attention to the entire chapter. Pay particular attention to 46.150 Design and Standards. Your starting point is existing 423 spaces required in previous conditional use permit review, build off of that. The number of parking spaces that you will create will determine how large the seating expansion can be.

Chapter 48; Access, Egress, and Circulation

- 48.060 Width and Location of Curb Cuts and Access Separation Requirements.

Chapter 52: Signs (primarily for new parking lot, promenade)

- 52.210 Approval Standards, 52.300 Permanent Sign Design Standards

Chapter 54: Landscaping

- This chapter will apply to the ROW corner of Skyline and to the parking lot on Skyline. No specific call out, abide by approval criteria 54.020

Chapter 55: Design Review

- Most of this chapter is in reference to commercial properties. Pay close attention to 55.100 Approval Standards – Class II Design Review. Make note of significant tree protection (55.100.A(9))
- Lighting, safety in parking lots

Chapter 60: Conditional Uses

- West Linn High School has an existing conditional use permit (CUP). The proposal is an alteration of the CUP. Discuss or highlight the benefit to the City. All CUPs are decided by the Planning Commission.

- 60.070.A.1(B) and 60.070(C)

Chapter 92: Required Improvements

- 92.010 Public Improvements for All Development
- Remodel of an existing building

Chapter 96: Street Improvement Construction

- No street improvements anticipated

Chapter 99: Procedures for Decision Making, Quasi-Judicial

- 99.030 Application Process: Who May Apply, Pre-Application Conference, Requirements, Refusal of Application, Fees.
- 99.038 Neighborhood Contact Required for Certain Applications
- Good chapter as a reference for the Quasi-Judicial process and what is generally required of the applicant.

City Arborist: contact Mike Perkins at mperkins@westlinnoregon.gov or 503-742-6046

Engineering Comments: contact Amy Pepper at apepper@westlinnoregon.gov or 503-722-3437

Tualatin Valley Fire & Rescue Comments: contact Jason Arn at jason.arn@tvfr.com or 503-259-1510

Process: For an alteration to an existing Conditional Use Permit (CUP) and Class II Design Review, address the submittal requirements and standards for decision making listed above. Pay particular attention to the sections called out under each chapter. N/A is not an acceptable response to approval criteria.

Submittal requirements may be waived by the Planning Manager following a request by the applicant. Such a request must identify the specific grounds for the waiver and must be submitted to the Planning Manager (or designee) in letter form (email is acceptable).

A neighborhood meeting is required per 99.038.

The deposit for a Conditional Use alteration is $4,500 with a $200 inspection fee. The deposit for a Class II Design Review is 4% of construction value with a maximum of $20,000. If a Water Resource Area Permit is required, the deposit is $1,850.

Once the application and fees/deposits are submitted, the City has 30 days to determine if the application is complete or not. If the application is not complete, the applicant has 180 days to make it complete or provide written notice to staff that no other information will be provided.

An alteration of a Conditional Use Permit and Class II Design Review requires approval by the West Linn Planning Commission (PC). Once the submittal is declared complete, staff will schedule a public hearing date, send a 20-day public hearing notice, and complete a staff report with a recommendation. There is a 14-day window following the PC decision to appeal the decision to City Council. If no appeal has been received by the close of the appeal period, the PC decision is final and the applicant may move forward with the development of their proposal.

Pre-application notes are void after 18 months. After 18 months with no application approved or in process, a new pre-application conference is required.

Typical land use applications can take 6-10 months from beginning to end.

DISCLAIMER: This summary discussion covers issues identified to date. It does not imply that these are the only issues. The burden of proof is on the applicant to demonstrate that all approval criteria have been met. These notes do not constitute an endorsement of the proposed application ***or provide any assurance of potential outcomes***. Staff responses are based on limited material presented at this pre-application meeting. New issues, requirements, etc. could emerge as the application is developed. Pre-application notes are void after 18 months. After 18 months with no application approved or in process, a new pre-application conference is required. Any changes to the CDC standards may require a different design or submittal.

ATTACHMENT C: NEIGHBORHOOD MEETING MATERIALS

3J CONSULTING
9600 SW NIMBUS AVENUE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 946.9365
WWW.3JCONSULTING.COM

October 22, 2020

Sunset Neighborhood Association
Legion Anders
4708 Riverview Avenue
West Linn, Oregon 97068

West Linn Stadium Improvements
Neighborhood Meeting

Dear Mr. Anders,

3J Consulting acts on behalf of the West Linn-Wilsonville School District regarding the planned expansion of the West Linn High School's stadium, the creation of a new pedestrian plaza and the expansion of the site's parking lot. The High School property is located at 5464 West A Street. The location of the property and the proposed project is shown on the attached map. The tax lot numbers for the property are 22E30 00800, 22E30CA 10100, 10200, 10300, and 22E30CD 04500, 04501, 04502. The property is currently located inside the City of West Linn's boundaries and it is zoned R-10 or Single Family Residential.

We would like to discuss this proposal with the members of the Sunset and Bolton Neighborhood Associations and with property owners residing within 500 feet of the property. We are writing today to formally request a meeting with the neighborhood association. The City's code requires us to inquire as to whether you have a preferred date and time. If after 20 days from the date of this letter, we have not heard from you with a preferred meeting date, we will schedule a meeting, in accordance with the City's notification requirements.

The purpose of this meeting is to provide a forum for surrounding property owners and residents to review the proposal and to identify issues so they can be given proper consideration. These meetings are required by the City and they allow the public to share information about the project. The project team will try to answer questions related to how the project meets the relevant development standards consistent with West Linn's land use regulations.

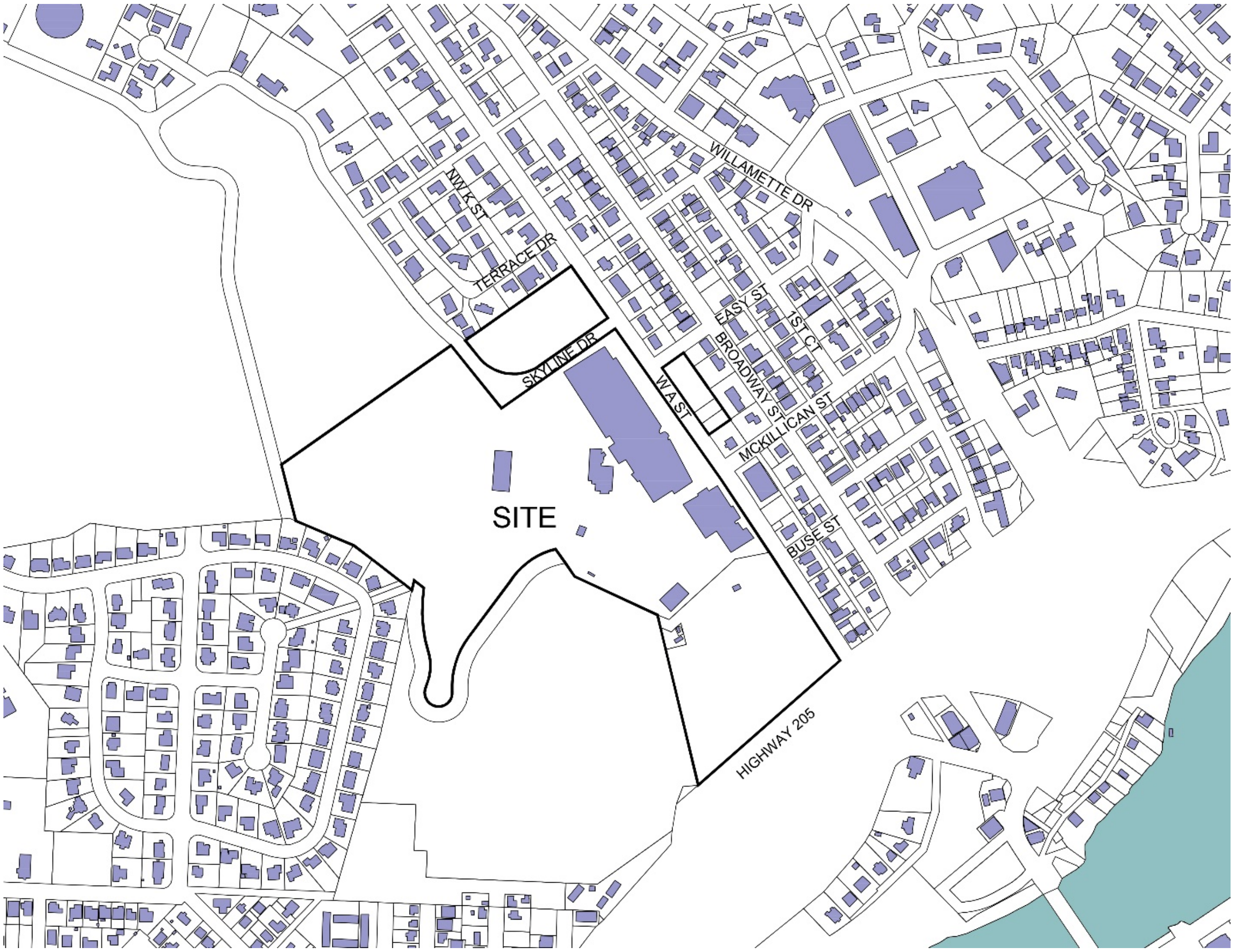
If the proposed meeting is acceptable, we would ask that you please respond to this letter with an email to mercedes.serra@3j-consulting.com. If you have any questions, feel free to call at 503-946-9365x211.

Sincerely,

M Serra

Mercedes Serra
Senior Urban Designer
3J Consulting, Inc.

Copy: Robert McCarthy, Bolton NA President
Jan McCarthy, Bolton NA Secretary
Doug Vokes, Sunset NA Secretary



Vicinity Map

3J CONSULTING
9600 SW NIMBUS AVENUE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 946.9365
WWW.3JCONSULTING.COM

October 22, 2020

Bolton Neighborhood Association
Jan McCarthy
1535 Burns Street
West Linn, Oregon 97068

West Linn Stadium Improvements
Neighborhood Meeting

Dear Mrs. McCarthy,

3J Consulting acts on behalf of the West Linn-Wilsonville School District regarding the planned expansion of the West Linn High School's stadium, the creation of a new pedestrian plaza and the expansion of the site's parking lot. The High School property is located at 5464 West A Street. The location of the property and the proposed project is shown on the attached map. The tax lot numbers for the property are 22E30 00800, 22E30CA 10100, 10200, 10300, and 22E30CD 04500, 04501, 04502. The property is currently located inside the City of West Linn's boundaries and it is zoned R-10 or Single Family Residential.

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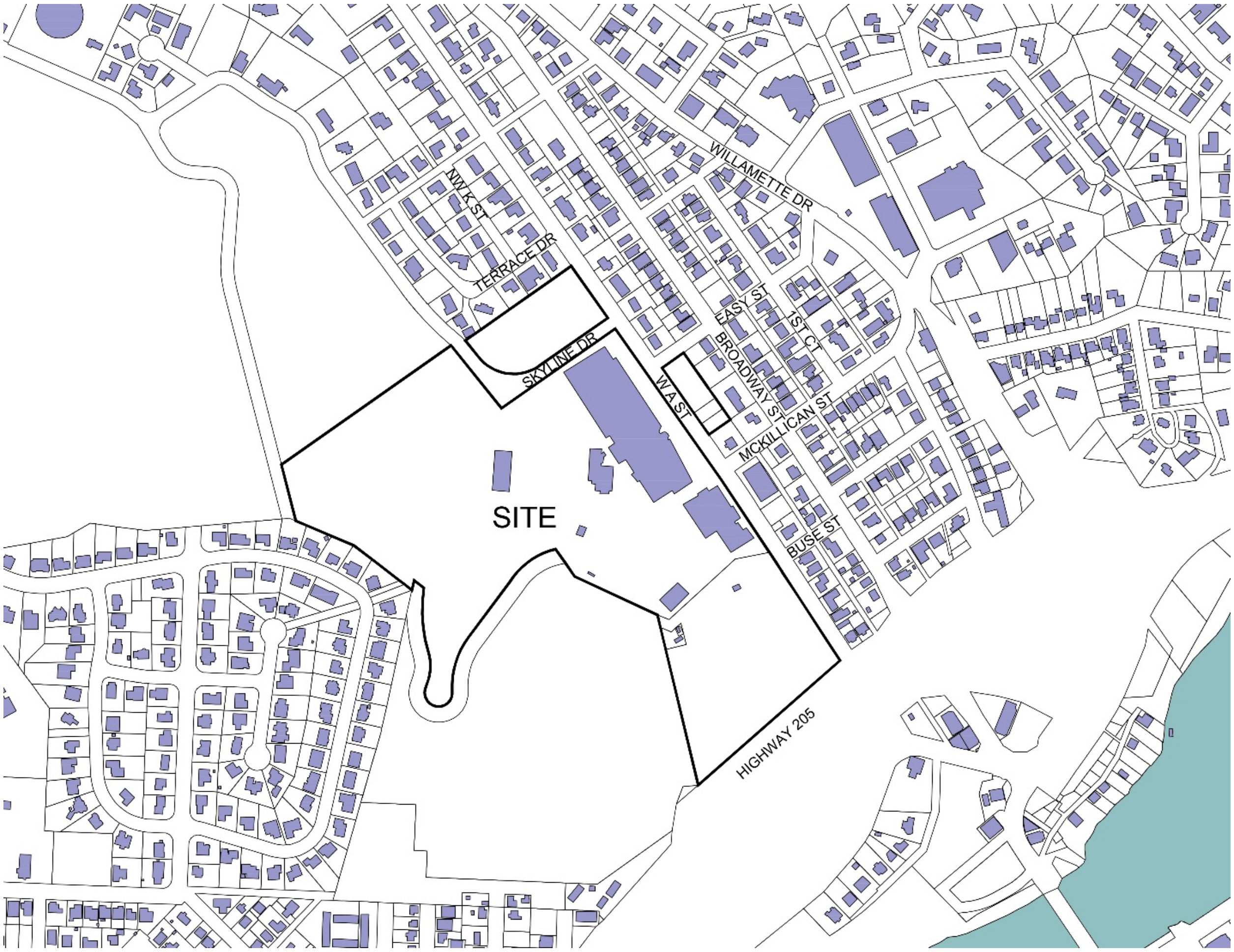
Sincerely,

Mercedes Serra
Senior Urban Designer
3J Consulting, Inc.

Copy: Robert McCarthy, Bolton NA President
Legion Anders, Sunset NA President
Doug Vokes, Sunset NA Secretary



Vicinity Map

3J CONSULTING
9600 SW NIMBUS AVENUE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 946.9365
WWW.3JCONSULTING.COM

October 22, 2020

Bolton Neighborhood Association
Robert McCarthy
1535 Burns Street
West Linn, Oregon 97068

West Linn Stadium Improvements
Neighborhood Meeting

Dear Mr. McCarthy,

3J Consulting acts on behalf of the West Linn-Wilsonville School District regarding the planned expansion of the West Linn High School's stadium, the creation of a new pedestrian plaza and the expansion of the site's parking lot. The High School property is located at 5464 West A Street. The location of the property and the proposed project is shown on the attached map. The tax lot numbers for the property are 22E30 00800, 22E30CA 10100, 10200, 10300, and 22E30CD 04500, 04501, 04502. The property is currently located inside the City of West Linn's boundaries and it is zoned R-10 or Single Family Residential.

We would like to discuss this proposal with the members of the Sunset and Bolton Neighborhood Associations and with property owners residing within 500 feet of the property. We are writing today to formally request a meeting with the neighborhood association. The City's code requires us to inquire as to whether you have a preferred date and time. If after 20 days from the date of this letter, we have not heard from you with a preferred meeting date, we will schedule a meeting, in accordance with the City's notification requirements.

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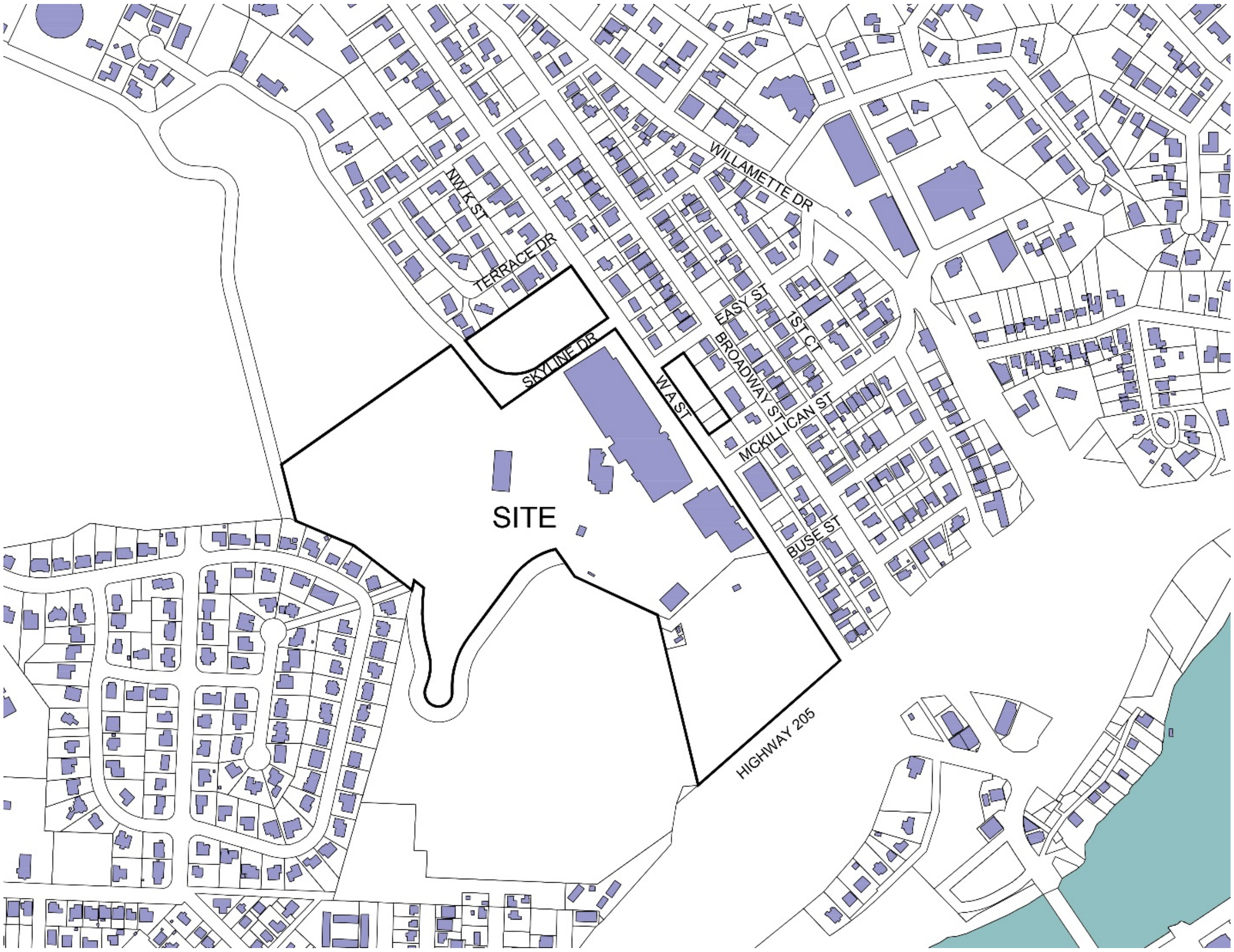
Sincerely,

Mercedes Serra
Senior Urban Designer
3J Consulting, Inc.

Copy: Jan McCarthy, Bolton NA Secretary
Legion Anders, Sunset NA President
Doug Vokes, Sunset NA Secretary



Vicinity Map

3J CONSULTING
9600 SW NIMBUS AVENUE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 946.9365
WWW.3JCONSULTING.COM

October 22, 2020

Sunset Neighborhood Association
Doug Vokes
4972 Prospect St
West Linn, Oregon 97068

West Linn Stadium Improvements
Neighborhood Meeting

Dear Mr. Vokes,

3J Consulting acts on behalf of the West Linn-Wilsonville School District regarding the planned expansion of the West Linn High School's stadium, the creation of a new pedestrian plaza and the expansion of the site's parking lot. The High School property is located at 5464 West A Street. The location of the property and the proposed project is shown on the attached map. The tax lot numbers for the property are 22E30 00800, 22E30CA 10100, 10200, 10300, and 22E30CD 04500, 04501, 04502. The property is currently located inside the City of West Linn's boundaries and it is zoned R-10 or Single Family Residential.

We would like to discuss this proposal with the members of the Sunset and Bolton Neighborhood Associations and with property owners residing within 500 feet of the property. We are writing today to formally request a meeting with the neighborhood association. The City's code requires us to inquire as to whether you have a preferred date and time. If after 20 days from the date of this letter, we have not heard from you with a preferred meeting date, we will schedule a meeting, in accordance with the City's notification requirements.

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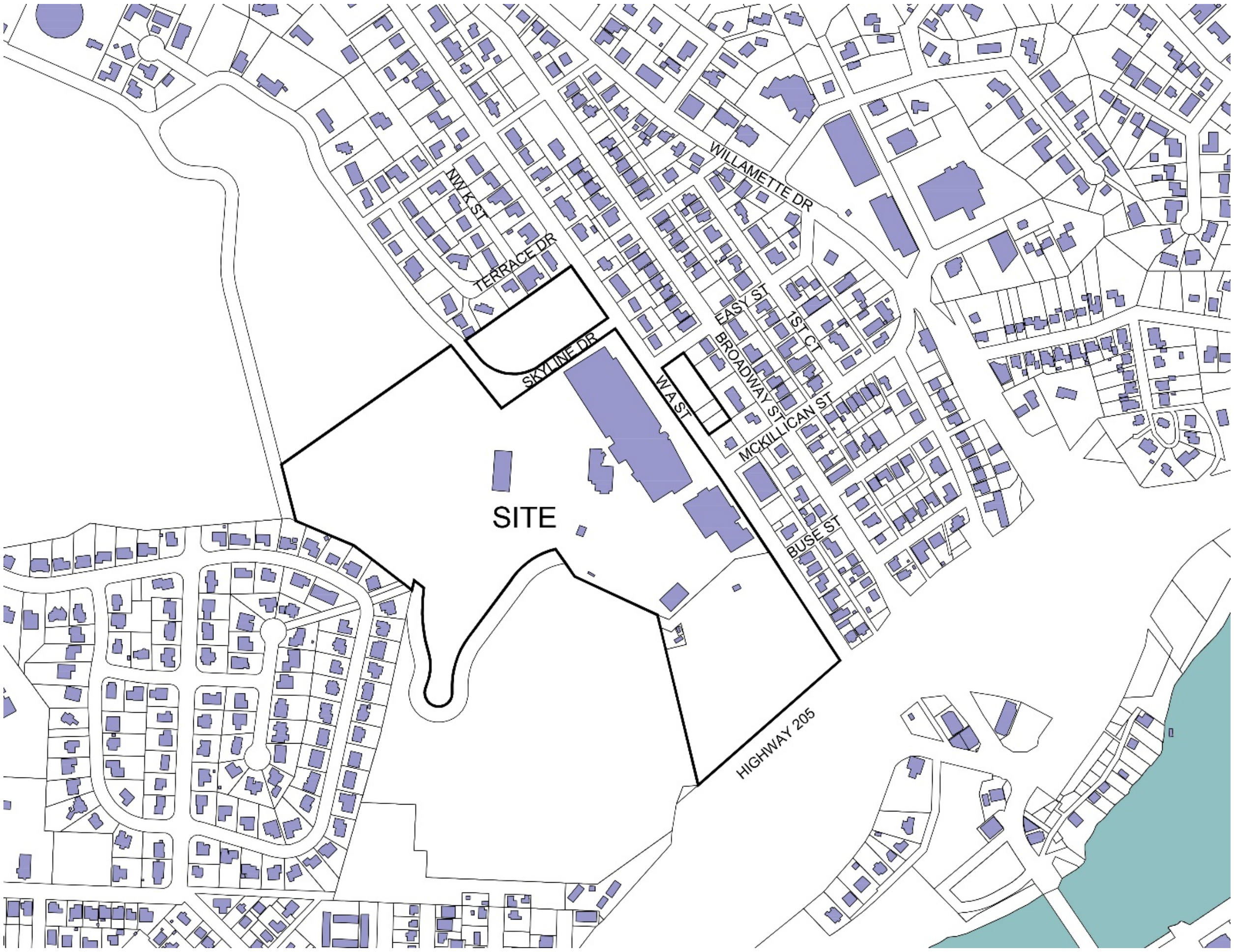
Sincerely,

Mercedes Serra
Senior Urban Designer
3J Consulting, Inc.

Copy: Robert McCarthy, Bolton NA President
Jan McCarthy, Bolton NA Secretary
Legion Anders, Sunset NA President



Vicinity Map

3J CONSULTING
9600 SW NIMBUS AVENUE, SUITE 100
BEAVERTON, OREGON 97008
PH: (503) 946.9365
WWW.3JCONSULTING.COM

November 20, 2020

West Linn High School Stadium Improvements
Neighborhood Meeting

Dear Neighbors,

3J Consulting acts on behalf of the West Linn-Wilsonville School District regarding the planned expansion of the West Linn High School stadium, the creation of a new pedestrian plaza and the expansion of the site's parking lots. The High School property is located at 5464 West A Street. The location of the property and the proposed project is shown on the attached map. The tax lot numbers for the property are 22E30 00800, 22E30CA 10100, 10200, 10300, and 22E30CD 04500, 04501, 04502. The property is currently located inside the City of West Linn's boundaries and is zoned R-10 or Single Family Residential.

We would like to discuss this proposal with the members of the Bolton and Sunset Neighborhood Associations and with property owners within 500 feet of the property. We have been invited to join the Bolton Neighborhood Association's regularly scheduled meeting and will be added to their agenda for the evening.

You are invited to attend a **VIRTUAL** Zoom® meeting on:
Tuesday, December 15, 2020 at 7:00pm
The meeting will be held via a web-based meeting platform
facilitated by the Bolton Neighborhood Association

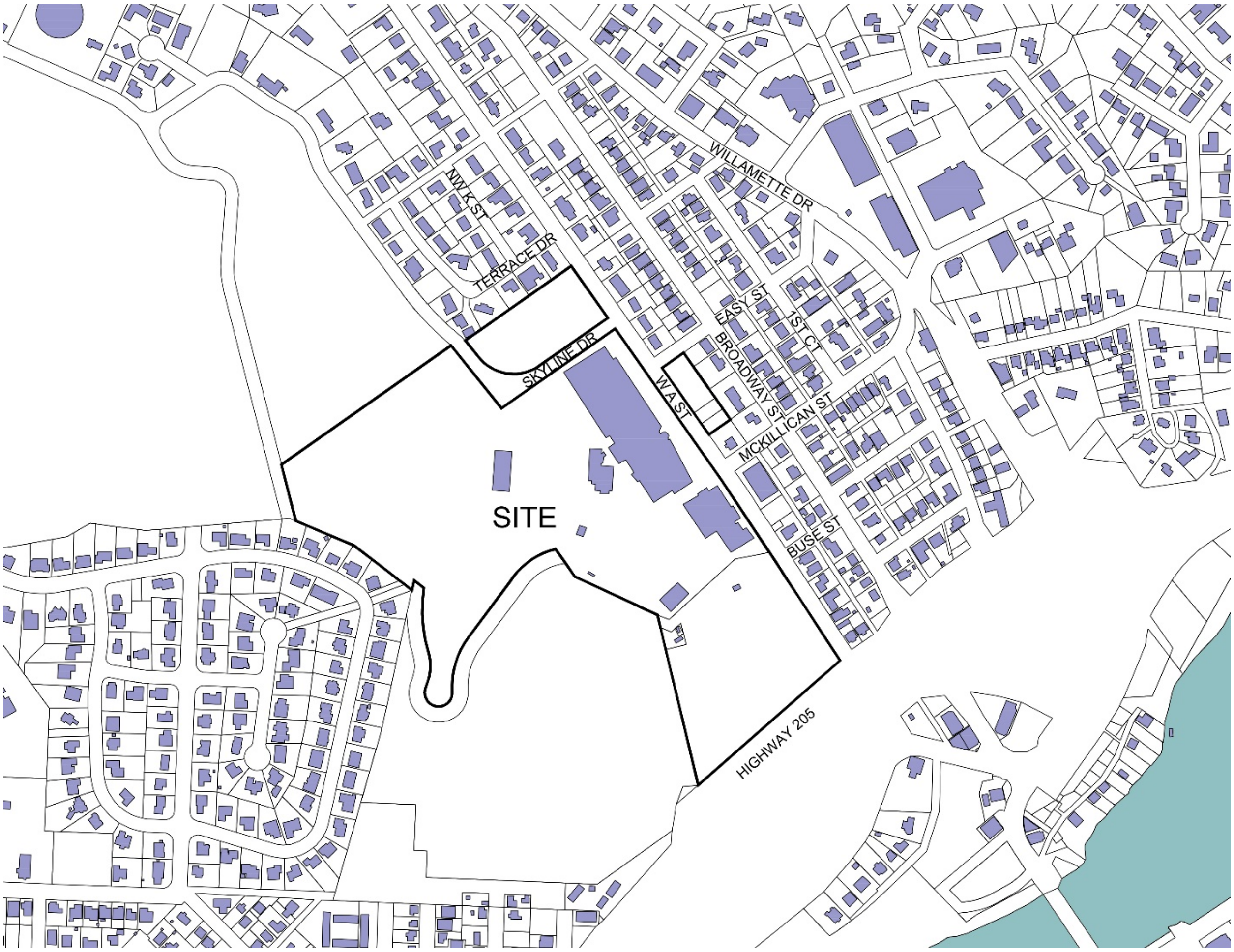
The purpose of this meeting is to provide a forum for surrounding property owners and residents to review the proposal and identify issues so they can be given proper consideration by the project team. We invite you to join us, review the preliminary plans, and share any special information you may have about the property. The project team will answer questions related to how the project meets the relevant development standards consistent with West Linn's land use regulations.

The Bolton Neighborhood Association will provide a link and passcode to the 12/15/2020 Zoom® meeting on the City's Bolton Neighborhood Association website a few days prior to the meeting. **If you would like to attend this web-based meeting, we would invite you to visit the Neighborhood Association's website:** **https://westlinnoregon.gov/Bolton** Meetings are listed by date at the bottom of the page. The link and agenda to the meeting will be listed under the 12/15/2020 meeting. We look forward to discussing the proposal with you. If you have questions on how to participate in the proposed meeting, please contact us at mercedes.serra@3j-consulting.com or (503) 946-9365x211.

Sincerely,

M Serra

Mercedes Serra
3J Consulting, Inc.



Vicinity Map

21E25 00300
City Of West Linn
22500 Salamo Rd STE 600
West Linn, OR 97068

21E25DD04400
Jerry Gompers
2431 Oregon City Blvd
West Linn, OR 97068

21E25DD04500
Jamba 5 Investments Llc
5715 Broadway St
West Linn, OR 97068

21E25DD04600
Joseph & Kathleen Mollusky
5201 Windsor Ter
West Linn, OR 97068

21E25DD04700
Todd & Kelly Harman
5221 Windsor Ter
West Linn, OR 97068

21E25DD04800
Gregory & Michelle Bonham
5231 Windsor Ter
West Linn, OR 97068

21E25DD04900
Raymond & Sandra Kindley
5241 Windsor Ter
West Linn, OR 97068

21E25DD05000
Tim & Kathryn Collins
5251 Windsor Ter
West Linn, OR 97068

21E25DD05100
Stephen Cheng & Chiying Lynn
5261 Windsor Ter
West Linn, OR 97068

21E25DD05200
Annie Eissler
5271 Windsor Ter
West Linn, OR 97068

21E25DD05300
Paul Dumas
5281 Windsor Ter
West Linn, OR 97068

21E25DD05400
Joseph Gibbs
5291 Windsor Ter
West Linn, OR 97068

21E25DD05500
Mark & Stacey Bernal
5311 Windsor Ter
West Linn, OR 97068

21E25DD05600
Jacob & Van Vanhouten
5321 Windsor Ter
West Linn, OR 97068

21E25DD05700
Marcel Jonker & Sanderson Clarity
5331 Windsor Ter
West Linn, OR 97068

21E25DD05800
Mark & Pamela Blackwell
5341 Windsor Ter
West Linn, OR 97068

21E25DD05900
David & Suzanne Pitzer
5351 Windsor Ter
West Linn, OR 97068

21E25DD06000
Edward & Veronica Buurman
5361 Windsor Ter
West Linn, OR 97068

21E25DD06100
Michael & Doris Mady
5371 Windsor Ter
West Linn, OR 97068

21E25DD06200
Margaret Clark
5381 Windsor Ter
West Linn, OR 97068

21E25DD06300
Esther Spencer
16298 NW Joscelyn St
Beaverton, OR 97006

21E25DD06400
Dennis Meyer
15205 SW 74th Ave
Portland, OR 97224

21E25DD07300
John & Donna Gomena
22510 Clark St
West Linn, OR 97068

21E25DD07400
Bart & Karen Sunseri
5220 Windsor Ter
West Linn, OR 97068

21E25DD07500
Jeffrey Munns
5230 Windsor Ter
West Linn, OR 97068

21E25DD07600
Jerry Prosa
5250 Windsor Ter
West Linn, OR 97068

21E25DD07700
Donald Leblanc
5270 Windsor Ter
West Linn, OR 97068

21E25DD07800
Thomas & Lori Elliott
Po Box 575
Tualatin, OR 97062

21E25DD07900
Darell Provencher
5320 Windsor Ter
West Linn, OR 97068

21E25DD08000
Carrol Smith
5340 Windsor Ter
West Linn, OR 97068

21E25DD08100
Matthew & Janae Wolf
5350 Windsor Ter
West Linn, OR 97068

21E25DD08200
Terry & Lori Williams
5360 Windsor Ter
West Linn, OR 97068

21E25DD08300
Leslie Bodi
5370 Windsor Ter
West Linn, OR 97068

21E25DD08400
Eric Roberts & Chau Bui
6380 Windsor Ter
West Linn, OR 97068

21E25DD08500
Michael Hainley
5390 Windsor Ter
West Linn, OR 97068

21E25DD08600
Michael & Diane Gruber
5400 Windsor Ter
West Linn, OR 97068

21E25DD10200
Wells David E & K L G Rev Liv Trust
22760 Kobuk Ct
West Linn, OR 97068

21E25DD10300
Trevor & Megan Reink
22740 Kobuk Ct
West Linn, OR 97068

21E25DD10400
Jon & Alecia Woodward
22720 Kobuk Ct
West Linn, OR 97068

21E25DD10500
Douglas & Lauren Retzlaff
22700 Kobuk Ct
West Linn, OR 97068

21E25DD10600
Timothy & Carla Serban
22680 Crown Ct
West Linn, OR 97068

21E25DD10700
Steve & Linda Williamson
22640 Crown Ct
West Linn, OR 97068

21E25DD10800
Roger & Darlene Beck
22620 Crown Ct
West Linn, OR 97068

21E25DD10900
Jay & Patricia Mccoy
22615 Crown Ct
West Linn, OR 97068

21E25DD11000
Cheryl & Joseph Prior
Po Box 616
West Linn, OR 97068

21E25DD11100
Robin & Ronald Bostard
22655 Crown Ct
West Linn, OR 97068

21E25DD11200
Robert Ohnstad
5275 Crown St
West Linn, OR 97068

21E25DD11300
Lynn & George Mckelvey
22680 Clark St
West Linn, OR 97068

21E25DD11400
Janet Vangilder
22660 Clark St
West Linn, OR 97068

21E25DD11500
Jason Kost
22580 Clark St
West Linn, OR 97068

21E25DD11800
Mark & Amy Evertz
2420 Oregon City Blvd
West Linn, OR 97068

21E25DD11900
Richard & Nancy Espinoza
22581 Clark St
West Linn, OR 97068

21E25DD13700
Bank Of America Or Corp Real Est
Po Box 6400
Portland, OR 97228

21E25DD13900
West Linn & Wils Sch Dist #3
22210 SW Stafford Rd
Tualatin, OR 97062

22E30 00800
West Linn & Wils Sch Dist #3
22210 SW Stafford Rd
Tualatin, OR 97062

22E30 01000
The Nature Conservancy & Oregon Field
821 SE 14th Ave
Portland, OR 97214

22E30CA04200
Dorothy Deline
5665 First Ct
West Linn, OR 97068

22E30CA04300
Phillippe & Bonnie Jeuris
5661 First Ct
West Linn, OR 97068

22E30CA04400
David & Summer Buzza
5615 First Ct
West Linn, OR 97068

22E30CA04600
Mackenzie Laughlin
1725 Easy St
West Linn, OR 97068

22E30CA06400
Randy Le & Joanne Dang
1771 Buse St
West Linn, OR 97068

22E30CA06500
Randy Le & Joanne Dang
1771 Buse St
West Linn, OR 97068

22E30CA06600
Erin & Gabriel Welp
1781 Buse St
West Linn, OR 97068

22E30CA06700
Ronald & Jacqueline Mccarville
1795 Buse St
West Linn, OR 97068

22E30CA06800
Timothy Cavanagh
Po Box 1581
Oregon City, OR 97045

22E30CA06900
Roy Girasa
5447 Broadway St
West Linn, OR 97068

22E30CA07000
Roy Girasa
5447 Broadway St
West Linn, OR 97068

22E30CA07100
Rebecca Lanxon
5479 Broadway St
West Linn, OR 97068

22E30CA07200
Rebecca Lanxon
5479 Broadway St
West Linn, OR 97068

22E30CA07300
Mark Mckinley
1011 SW Schaeffer Rd
West Linn, OR 97068

22E30CA07400
Christopher Bortnem
1816 Mckillican St
West Linn, OR 97068

22E30CA07500
Thomas & Kathleen Watton
1820 Mckillican St
West Linn, OR 97068

22E30CA07600
Cheryl Atherly
Po Box 53
West Linn, OR 97068

22E30CA07601
Gregory & Mabel Madden
1786 Mckillican St
West Linn, OR 97068

22E30CA07700
Swinford Properties Llc
3720 Camels Vw
Colorado Springs, CO 80904

22E30CA07800
Piergiorgio & Catherine Parisio
1762 Mckillican St
West Linn, OR 97068

22E30CA07900
Frank Dibenedetto
5507 First Ct
West Linn, OR 97068

22E30CA08000
Douglas Dickston
5533 First Ct
West Linn, OR 97068

22E30CA08100
Ronald Chappell
5541 First Ct
West Linn, OR 97068

22E30CA08200
Ken Harmon
5575 First Ct
West Linn, OR 97068

22E30CA08300
Deana & Gregory Uhrig
1770 Easy St
West Linn, OR 97068

22E30CA08301
Stephen Nutter
Po Box 3557
Portland, OR 97208

22E30CA08400
Gerald Preston
Po Box 8075
Portland, OR 97207

22E30CA08401
James Callas
6127 Churchill Downs Dr
West Linn, OR 97068

22E30CA08500
Richard Wiitanen
4092 Elmran Dr
West Linn, OR 97068

22E30CA08501
Justin & Laura Santos
7510 Springhill Dr
Gladstone, OR 97027

22E30CA08502
Richard Wiitanen
4092 Elmran Dr
West Linn, OR 97068

22E30CA08600
Kareem Bushnaq
5518 First Ct
West Linn, OR 97068

22E30CA08601
Floyd Roell & Sally Betser
5510 First Ct
West Linn, OR 97068

22E30CA08700
Charles & Rachel Anderson
5505 Broadway St
West Linn, OR 97068

22E30CA08800
Douglas & Heather Berggren
2051 Bay Meadows Dr
West Linn, OR 97068

22E30CA08900
Dominic & Ann Hughes
5525 Broadway St
West Linn, OR 97068

22E30CA09000
Marjorie Logsdon
5535 Broadway St
West Linn, OR 97068

22E30CA09201
Vance Dunlop
5585 Broadway St
West Linn, OR 97068

22E30CA09400
Steven & Dalia Leitz
5591 Broadway St
West Linn, OR 97068

22E30CA09500
Aubrie Poppleton
5590 Broadway St
West Linn, OR 97068

22E30CA09600
Dennis Bissig
5570 Broadway St
West Linn, OR 97068

22E30CA09700
Garry & Rita Kenny
5536 Broadway St
West Linn, OR 97068

22E30CA09800
New Church
Po Box 5
West Linn, OR 97068

22E30CA10000
New Church
Po Box 5
West Linn, OR 97068

22E30CA10100
West Linn & Wils Sch Dist #3
22210 SW Stafford Rd
Tualatin, OR 97062

22E30CA10200
West Linn & Wils Sch Dist #3
22210 SW Stafford Rd
Tualatin, OR 97062

22E30CA10300
West Linn & Wils Sch Dist #3
22210 SW Stafford Rd
Tualatin, OR 97062

22E30CB00400
Sherry Clyman
21795 Willamette Dr
West Linn, OR 97068

22E30CB00600
Larry & Kristin Fein
21815 Willamette Dr
West Linn, OR 97068

22E30CB00700
John Shultz
21835 Willamette Dr
West Linn, OR 97068

22E30CB00800
Kenneth Meese & Dayle Dermatis
21845 Willamette Dr
West Linn, OR 97068

22E30CB01000
Matthew Hackl
1801 Willson St
West Linn, OR 97068

22E30CB01100
Matthew Hackl
1801 Willson St
West Linn, OR 97068

22E30CB01200
Linda Quinn
2105 Peregrine Ct
West Linn, OR 97068

22E30CB01300
Wallace Glausi
5709 Broadway St
West Linn, OR 97068

22E30CB01400
Alla Comardelle
5715 Broadway St
West Linn, OR 97068

22E30CB01500
B Davis
18264 S Holly Ln
Oregon City, OR 97045

22E30CB01600
Brandon & Sarah Tilton
5729 Broadway St
West Linn, OR 97068

22E30CB01700
Troughton Caleb & Troughton Xiao
5739 Broadway St
West Linn, OR 97068

22E30CB01800
Dreambuilder Custom Homes Inc
16805 Gassner Ln
Lake Oswego, OR 97035

22E30CB01900
Dreambuilder Custom Homes Inc
16805 Gassner Ln
Lake Oswego, OR 97035

22E30CB01901
Dreambuilder Custom Homes Inc
16805 Gassner Ln
Lake Oswego, OR 97035

22E30CB02300
Russell Carter
Po Box 22
West Linn, OR 97068

22E30CB02400
Linda Quinn
2105 Peregrine Ct
West Linn, OR 97068

22E30CB02401
Mark Rosales
21151 Serango Dr
West Linn, OR 97068

22E30CB02402
Cameron Larson & Lindsey Moneta
5702 Broadway St
West Linn, OR 97068

22E30CB02403
Gaspar Aguila
5722 Broadway St
West Linn, OR 97068

22E30CB02404
Cameron Larson & Lindsey Moneta
5702 Broadway St
West Linn, OR 97068

22E30CB02405
Jin & Lang Long
5742 Broadway St
West Linn, OR 97068

22E30CB02600
Douglas Johnston
5711 W A St
West Linn, OR 97068

22E30CB02700
Robert Klossen
Po Box 73
West Linn, OR 97068

22E30CB02800
Robert Klossen
Po Box 73
West Linn, OR 97068

22E30CB02900
Robert Klossen
Po Box 73
West Linn, OR 97068

22E30CB03000
Daniel Mcdonogh & Amanda Scales
5757 W A St
West Linn, OR 97068

22E30CB03200
Bryan & Carley Faulkner
5783 W A St
West Linn, OR 97068

22E30CB03300
Mark & Darlene Laski
5791 W A St
West Linn, OR 97068

22E30CB03400
Janet Miles
5767 K St
West Linn, OR 97068

22E30CB03500
Jason & Jennifer Fosberg
5765 K St
West Linn, OR 97068

22E30CB03600
Scott Murphy
5745 K St
West Linn, OR 97068

22E30CB03700
David Goldstein
Po Box 1029
Lake Oswego, OR 97034

22E30CB03800
Guy Shinagawa & Kathryn Lyons
5716 W A St
West Linn, OR 97068

22E30CB03900
Michael & Katherine Gaeir
5720 K St
West Linn, OR 97068

22E30CB04100
Edwin Moeller & Betsy Jane
5732 K St
West Linn, OR 97068

22E30CB04200
Brandon & Jennifer Davis
5746 K St
West Linn, OR 97068

22E30CB04300
Summer & Paul Reichow
5764 K St
West Linn, OR 97068

22E30CB04400
Scott Elliott
2112 Webb St
West Linn, OR 97068

22E30CB04500
Coni Rosati
5781 Terrace Dr
West Linn, OR 97068

22E30CB04600
Angela Dreher
5767 Terrace Dr
West Linn, OR 97068

22E30CB04700
Gerda Edwards
5749 Terrace Dr
West Linn, OR 97068

22E30CB04800
Jane Hendrickson & Camille Komine
7122 Duchess Dr
Whittier, CA 90606

22E30CB04900
Cornelia Luca
5795 Skyline Dr
West Linn, OR 97068

22E30CB05000
Nathan & Danielle Grant
5785 Skyline Dr
West Linn, OR 97068

22E30CB05100
Jessica Hale & Guy Skeele
5775 Skyline Dr
West Linn, OR 97068

22E30CB05200
Leroy & Donna Lundy
2401 SE Swain Ave
Portland, OR 97267

22E30CB05300
Meyer & Weil Llc
Po Box 515
Dundee, OR 97115

22E30CB05301
John & Diana Demaria
5745 Skyline Dr
West Linn, OR 97068

22E30CB05400
N Campbell
5718 Terrace Dr
West Linn, OR 97068

22E30CB05500
John & Yulia Benavides
5714 Terrace Dr
West Linn, OR 97068

22E30CB05600
Viorel & Marioara Mocan
5712 Terrace Dr
West Linn, OR 97068

22E30CB05700
Jeremy Barnett
1933 Willamette Falls Dr # 111
West Linn, OR 97068

22E30CB05800
Jeremy Barnett
19363 Willamette Dr # 111
West Linn, OR 97068

22E30CB05801
Glasoe & Glasoe Kelly
5679 W A St
West Linn, OR 97068

22E30CB05900
Jacob Fiscus
5673 W A St
West Linn, OR 97068

22E30CB06000
Matthew & Kimberley Kellogg
5645 W A St
West Linn, OR 97068

22E30CB06100
Debra Silver
5621 W A St
West Linn, OR 97068

22E30CB06200
Thomas Burlin
5617 W A St
West Linn, OR 97068

22E30CB06400
Susan Schmidt
5610 Broadway St
West Linn, OR 97068

22E30CB06500
Jan Tostar & Heidi Streeter
5622 Broadway St
West Linn, OR 97068

22E30CB06600
Angela & Erik Neumann
5632 Broadway St
West Linn, OR 97068

22E30CB06700
Bruce Hoelle & Andrea Crosman
5638 Broadway St
West Linn, OR 97068

22E30CB06800
Sarmad Hannosh & Nada Jazrawi
5642 Broadway St
West Linn, OR 97068

22E30CB06900
Stephanie & Muhammad Rahman
5650 Broadway St
West Linn, OR 97068

22E30CB07000
Eric Mueller & Caroline Coughlan
5672 Broadway St
West Linn, OR 97068

22E30CB07100
Ronn & Peggy Pricer
5678 Broadway St
West Linn, OR 97068

22E30CB07200
Victoria Strand
5682 Broadway St
West Linn, OR 97068

22E30CB07300
S Kusaka
5685 Broadway St
West Linn, OR 97068

22E30CB07400
Mitchell Milliron & Scarlet Shelton
5681 Broadway St
West Linn, OR 97068

22E30CB07500
Bashar & Zahra Tappouni
2804 Southshore Blvd
Lake Oswego, OR 97034

22E30CB07600
Ellen Leventhal
5663 Broadway St
West Linn, OR 97068

22E30CB07700
Jonathan & Elizabeth Isensee
5651 Broadway St
West Linn, OR 97068

22E30CB07800
Edward Porsov & Larisa Porsova
5645 Broadway St
West Linn, OR 97068

22E30CB07900
John Steele
5612 First Ct
West Linn, OR 97068

22E30CB08000
John Steele
5612 First Ct
West Linn, OR 97068

22E30CB08100
John Steele
5612 First Ct
West Linn, OR 97068

22E30CB08200
Sunny Olsen
5622 First Ct
West Linn, OR 97068

22E30CB08300
Richard Ogle & Karen Lee
5632 First Ct
West Linn, OR 97068

22E30CB08400
Adrian & Shallyse Olson
5650 First Ct
West Linn, OR 97068

22E30CB08500
Lindsay Fitzsimmons
5672 First Ct
West Linn, OR 97068

22E30CB08600
David Austin
3802 Rivers Edge Dr
Lake Oswego, OR 97034

22E30CB08700
Robert Grigoryan & Alex Beglets
7703 N Lamar Blvd # 205
Austin, TX 78752

22E30CD01600
Robert & Romayne Harding
2075 Ostman Rd
West Linn, OR 97068

22E30CD01700
Sara Ecker
5271 Broadway St
West Linn, OR 97068

22E30CD01800
Ken Brazer
17560 Kirkwood St
Gladstone, OR 97027

22E30CD01900
David & Kandace Kling
5738 River St
West Linn, OR 97068

22E30CD02000
Wally & Penny Boyes
1815 Lewthwaite St
West Linn, OR 97068

22E30CD02200
Donald Rasmussen
2155 Maple Ter
West Linn, OR 97068

22E30CD03000
Nancy & Jacob Alexander
1776 Buse St
West Linn, OR 97068

22E30CD03001
John & Tina Welle
1788 Buse St
West Linn, OR 97068

22E30CD03200
James & Judith Morton
Po Box 8
West Linn, OR 97068

22E30CD03300
Kevin Egan & Paris Hancock
5345 Broadway St
West Linn, OR 97068

22E30CD03400
Saad Jazrawi
5230 Crown St
West Linn, OR 97068

22E30CD03500
Joseph & Shatrine Krake
5395 Broadway St
West Linn, OR 97068

22E30CD03600
Denise Dallman
1921 Buse St
West Linn, OR 97068

22E30CD03700
Gary Hines
1931 Buse St
West Linn, OR 97068

22E30CD03800
Judson Wood
5426 Broadway St
West Linn, OR 97068

22E30CD03900
David & Diane Guzman
5462 Broadway St
West Linn, OR 97068

22E30CD04000
R Scott & Marcia Reavely
2277 Ostman Rd
West Linn, OR 97068

22E30CD04001
West Linn Baptist Church
Po Box 5
West Linn, OR 97068

22E30CD04100
New Church River Falls
Po Box 5
West Linn, OR 97068

22E30CD04200
Judson Wood
5426 Broadway St
West Linn, OR 97068

22E30CD04300
New Church River Falls
Po Box 5
West Linn, OR 97068

22E30CD04400
New Church River Falls
Po Box 5
West Linn, OR 97068

22E30CD04500
West Linn-Wils Sch Dist #3
22210 SW Stafford Rd
Tualatin, OR 97062

22E30CD04501
West Linn-Wils Sch Dist #3
22210 SW Stafford Rd
Tualatin, OR 97062

22E30CD04502
West Linn-Wils Sch Dist #3
22210 SW Stafford Rd
Tualatin, OR 97062

22E30CD04900
Christopher Thorn
3492 Ponderosa Loop
West Linn, OR 97068

22E30CD05000
Pamela Anderson
5250 Broadway St
West Linn, OR 97068

22E30CD05100
David Faul
5263 W A St
West Linn, OR 97068

22E30CD05200
Carol Mccutcheon
10336 SE Crescent Ridge Loop
Happy Valley, OR 97086

22E30CD05300
Guy Romine
5285 W A St
West Linn, OR 97068

22E30CD05400
Dennis Seely
16165 NW Blueridge Dr
Beaverton, OR 97006

22E30CD05500
Nancy Mitchell
5330 Broadway St
West Linn, OR 97068

22E30CD05600
Mutschler Group Llc
22580 S Grapevine Rd
West Linn, OR 97068

22E30CD05700
Richard Bender
5280 Broadway St
West Linn, OR 97068

22E30CD05800
Chloe & Maryanne Kennedy
5270 Broadway St
West Linn, OR 97068

22E30CD05900
Michael & Denise Morrison
5260 Broadway St
West Linn, OR 97068

22E30CD06000
City Of West Linn
22500 Salamo Rd STE 600
West Linn, OR 97068

22E30CD06100
Dewitt Montgomery Iii
1928 SE 60th Ave
Portland, OR 97215

22E30CD06200
Dewitt Montgomery Iii
1928 SE 60th Ave
Portland, OR 97215

22E30CD06300
Dewitt Montgomery Iii
1928 SE 60th Ave
Portland, OR 97215

22E30CD06400
Dewitt Montgomery Iii
1928 SE 60th Ave
Portland, OR 97215

22E30CD06800
Pixton Properties Llc
5070 Linn Ln
West Linn, OR 97068

22E31BA00400
Keith Vanapeldoorn
Po Box
,

22E31BA00600
Alchemy Enterprises Of Oregon Llc
7402 SW Mapleleaf St
Portland, OR 97223

22E31BA00700
Curtis Abbott
12980 Joys Dr
Oregon City, OR 97045

22E31BB00100
City Of West Linn
22500 Salamo Rd STE 600
West Linn, OR 97068

22E31BB00200
Pixton Properties Llc
5070 Linn Ln
West Linn, OR 97068

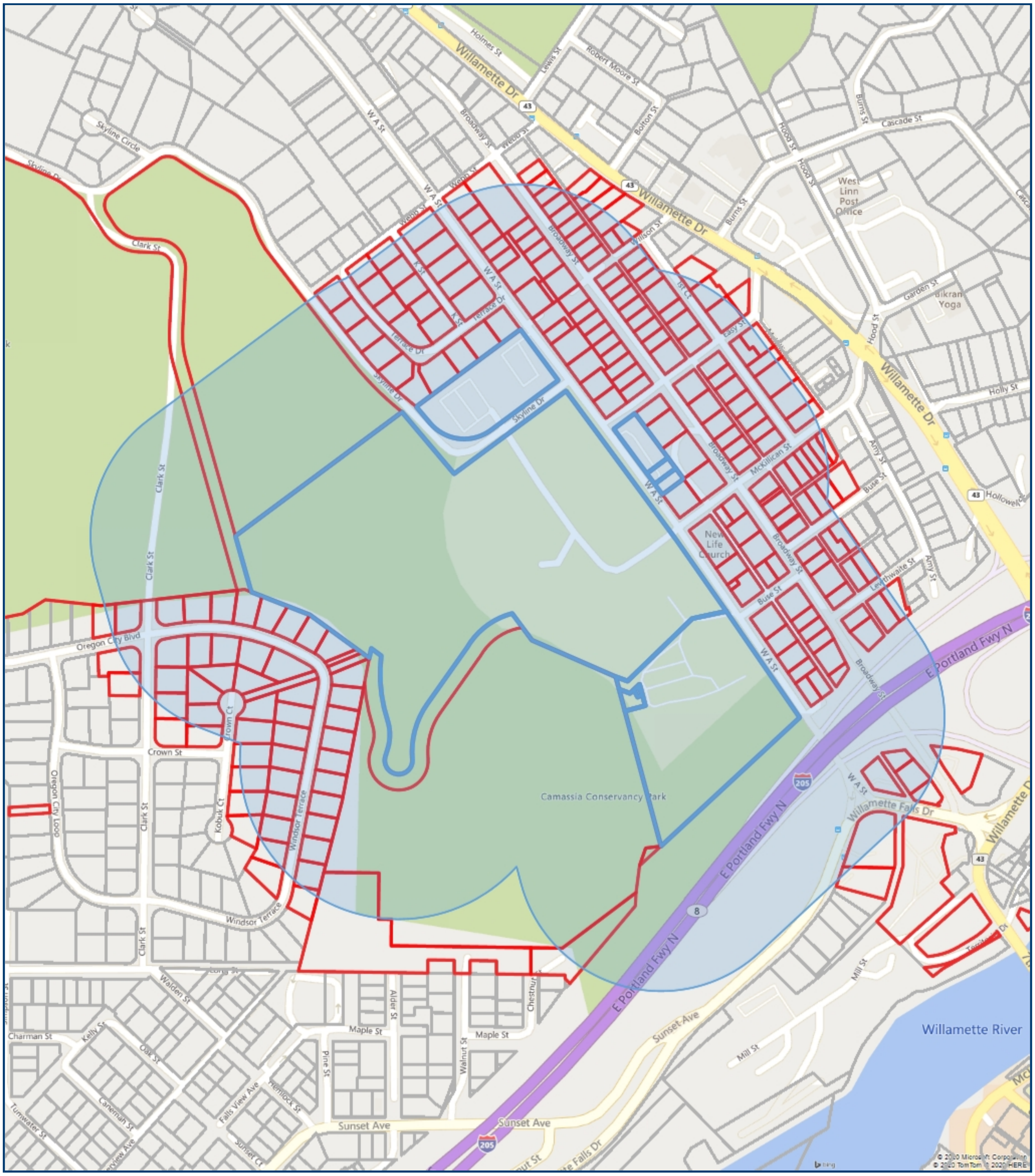
22E31BB01600
The Nature Conservancy
821 SE 14th Ave
Portland, OR 97214

First American Title™

550 ft Buffer

5464 W A St, West Linn, OR 97068

Report Generated: 11/20/2020



Eric Kunrath,
Bolton NA Vice President
5725 Hood Street
West Linn, Oregon 97068

Robert and Janet McCarthy,
Bolton NA President
1535 Burns Street
West Linn, Oregon 97068

Walt Swan
Bolton NA Treasurer
5777 Cascade
West Linn, Oregon 97068

Legion Anders
Sunset NA President
4708 Riverview Ave
West Linn, OR 97068

Barbara Dobroth,
Sunset NA Vice President
4727 Exeter Street
West Linn, OR 97068

Douglas & Doreen Vokes
Sunset NA
4972 Prospect Street
West Linn, OR 97068

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Doug Vokes
Sunset NA Secretary
4972 Prospect St
West Linn, OR, 97068

9590 9402 6071 0125 6563 02

2. Article Number (Transfer from service label)

7020 0090 0001 9292 4838

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X
☐ Agent
☒ Addresse

B. Received by *(Printed Name)*

C. Date of Deliver
10/24

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☒ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
d Mail
d Mail Restricted Delivery
$500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restric Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receip

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SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Jan McCarthy
Bolton NA Secretary
1535 Burns St
West Linn, OR, 9706~~9~~8

9590 9402 6071 0125 6563 26

2. Article Number (Transfer from service label)

7020 0090 0001 9292 4814

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X AK Cll
☒ Agent
☐ Addresse

B. Received by *(Printed Name)*
C19

C. Date of Deliver
10-26-2

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☒ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
nsured Mail
nsured Mail Restricted Delivery
over $500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restric Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receip

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SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Bob McCarthy
Bolton NA President
1535 Burns St
West Linn, OR, 9706~~9~~8

9590 9402 6071 0125 6563 33

2. Article Number (Transfer from service label)

7020 0090 0001 9292 4807

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X AK Cll
☒ Agent
☐ Addresse

B. Received by *(Printed Name)*
C19

C. Date of Deliver
10-26-2

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☒ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
ured Mail
ured Mail Restricted Delivery
r $500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restric Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receip

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Legion Anders
Sunset NA President
4708 Riverview Ave
West Linn, OR, 97068

9590 9402 6071 0125 6563 19

2. Article Number *(Transfer from service label)*

7020 0090 0001 9292 4821

COMPLETE THIS SE ON DELIVERY

A. Signature

X 10-20-20

B. Received by *(Printed Name)*

LEGION ANDERS

D. Is delivery address different from item 1? ☐
If YES, enter delivery address below: ☐ No

3. Service Type

☐ Adult Signature
☐ Adult Signature Restricted Delivery
☒ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
ed Mail
ed Mail Restricted Delivery
$500)

☐ Priority Mail Exp
☐ Registered Mail
☐ Registered Mail R ct
Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053

Domestic Return Receipt

NEIGHBORHOOD MEETING

AFFIDAVIT OF MAILING

STATE OF OREGON)

SS

County of Clackamas)

I, Elsa Beirwagen, being duly sworn, state that I represent the party initiating interest in a Type III Conditional Use Permit affecting the land located at 5464 West A Street and that pursuant to Community development Code Section 99, did on the 20th day of November 2020 caused to have mailed, to each of the persons on the attached list, a notice of a meeting to discuss the proposed development of the aforementioned property.

I further state that said notices were enclosed in plainly addressed envelopes to said persons and were deposited on the date indicated above in the United States Post Office with postage prepaid thereon.

This 23rd day of December, 2020.

Signature

Subscribed and sworn to, or affirmed, before me this 23rd day of December, 2020.

Audrey Jones

Notary Public for the State of Oregon

County of Washington

My Commission Expires: September 3, 2023

OFFICIAL STAMP
AUDREY L JONES
NOTARY PUBLIC - OREGON
COMMISSION NO. 990916
MY COMMISSION EXPIRES SEPTEMBER 03, 2023

NEIGHBORHOOD MEETING

AFFIDAVIT OF POSTING

STATE OF OREGON)

SS

County of Clackamas)

I, Mercedes Serra, being duly sworn, state that I represent the party initiating interest in a Type III Conditional Use Permit affecting the land located at 5464 West A Street and that pursuant to Community development Code Section 99, did on the 20th day of November post notice indicating that the site may be proposed for a Modification to a Conditional Use Permit application.

The sign was posted at the frontage of the school along W A Street and at the northwest corner of the site at the curve in Skyline Drive near the entry to the stadium.

(Location of sign on property)

This 6TH day of January, 2021.

Signature

Subscribed and sworn to, or affirmed, before me this 6th day of January, 2021.

Audrey Jones

Notary Public for the State of Oregon

County of Washington

My Commission Expires: September 03, 2023

OFFICIAL STAMP
AUDREY L JONES
NOTARY PUBLIC - OREGON
COMMISSION NO. 990916
MY COMMISSION EXPIRES SEPTEMBER 03, 2023

NEIGHBORHOOD MEETING NOTICE

PROPOSED STADIUM EXPANSION
MODIFICATION TO A
CONDITIONAL USE PERMIT

MEETING INFORMATION:

TUESDAY, DECEMBER 15 AT 7:00PM
VIRTUAL COMMUNITY MEETING
TO ATTEND, PLEASE VISIT:
HTTPS://WESTLINNOREGON.GOV/BOLTON

CONTACT: MERCEDES SERRA
MERCEDES.SERRA@3J-CONSULTING.COM
PHONE NUMBER: 503-946-9365

BOLTON NEIGHBORHOOD ASSOCIATION

DRAFT MINUTES: Tuesday, December 15, 2020

Zoom Monthly Meeting

Meeting Called to Order: Bob McCarthy, President: 7:00 PM

Welcome to attendees and get acquainted with Zoom:

Attendees: 27 (including 11 presenters)

Draft Minutes: November 17, 2020 Minutes: reviewed and approved

Draft Agenda: Approved

Treasurer's Report: Walt Swan: $5116.71 in BNA checking account, Note: $1,000 was deposited in July, 2020 and was not included in previous reports. Expenses deducted: $14.99 was debited for monthly Zoom license, FedEx: $154.23 – printing of 20 stick-on laminated QR codes and 20 laminated ZOOM labels added to BNA signs; supplies (clips to temporarily attach ZOOM). Fast Signs: $158.00 – 4 new BNA signs that include the QR codes to the West Linn, Bolton Neighborhood site.

Presentation Re: WLWV School District High School Stadium/Parking Plan

Jim Fitzpatrick, IBI group and Remo Douglas, Capital Construction Program Manager, Mercedes Serra, 3J Consulting, along with other members of the team reviewed the updates for the new proposed plan for West Linn High School stadium and additional parking. They answered questions from BNA residents. These questions included:

- Does the school believe this additional parking will solve the challenges for all students wishing for a parking spot? No, however, it begins to address the growing issue for student parking and the issue of students parking within the surrounding neighborhood. The high school and students will have an opportunity to help resolve the ongoing parking issues. If there is a second high school built in the city, this additional parking will have a more positive impact with lower enrollment.

- ADA accessibility at various points for parking and seating? The plan has addressed easy access between the new parking lot and the stadium seating and concession stand. Meets ADA Accessibility standards.
- Parking lot will be used daily for students as well as for events.
- The treed area is under the Tree Conservation Plan is protected. There is NO development in this area.
- Skyline Drive will not be widened to accommodate additional traffic A traffic study found no issues of noncompliance with city standards or failures with traffic issues.
- Additional parking will be between 64–98 spaces depending on bids and costs.
- New LED down lighting will be a dramatic improvement on the night sky and a big reduction in ongoing lighting costs.
- Runoff is the #1 goal of meeting City's Storm Water Management Code. The plan includes using perforated pipes around the hill to capture water and empty it into underground tanks. The water is slowly metered out and filtered through the environment safely to storm water connections in the street.

For more information on the plan go to: https://www.wlwv.k12.or.us/WLHSstadiumor https://www.wlwv.k12.or.us/domain/3509

Reaching Out to the Bolton Neighborhood:

Attendees suggested several options: Further discussions and steps at our next meeting:

- Establish a partnership with the business community. Involve the West Linn Chamber of Commerce. (1980 Willamette Falls Drive was at one time the Chamber's location)
- Annually contact the entire BMA community with information about the BNA and important events in our neighborhood.
- Re-establish "The Bolton Neighborhood Celebration" and combine it with the new neighborhood walking tour.
- Support the efforts of the Old City Hall Coalition and the Willamette Falls Heritage & Landings Historical Coalition.

Review 2019 Annual Report and 2020 Annual Report: Reviewed and unanimously approved.

NA Presidents Post Office Resolution: Unanimously approved to support.

Post Office: Dec. 16, 2020 Planning Commission: Bob McCarthy and Erich Kunrath will remotely attend and speak at the meeting. They will ask the Commission to include a comprehensive traffic improvement plan as part of any approval of Gramor Development design review. This should include the provision of an egress behind the existing post office to Concord Street. If necessary they will appeal the failure of the Planning Commission to include this provision.

McLean House:

Attendees voted and agreed to donate $500 for security system to be installed in the McLean House. Mike Watters shared that the front door is decorated for families to come and take their Holiday pictures. If the photos are submitted by Friday, Dec. 18th, the McLean House will forward them to The Tidings to be published.

West Linn Food Pantry: All attendees voted unanimously to suspend rule 501C3 to expedite and make a $300 donation to the Food Pantry for West Linn families.

Future Agenda Items:

January

- Central Village traffic flow: Lance Calbert
- Post Office Plan and NA Presidents Post Office Resolution
- Promoting the BNA with a Postcard and Survey
- Walking Tour App, Activities to engage neighborhood such as "Bolton Daze Celebration."
- Old Bolton Fire House as a Community Center and memorial for James Weaver

Thank you, everyone, for another great meeting. Adjourn: 8:49 pm

If you wish to receive our monthly reminder for upcoming BNA meetings and meeting minutes please send your authorization and email address to: Robert McCarthy, President of the BoltonNA@WestLinnOregon.gov.

Bolton Neighborhood Association Board Members
Robert McCarthy, President; Erich Kunrath, Vice President
Walter Swan, Treasurer; Janet McCarthy, Secretary

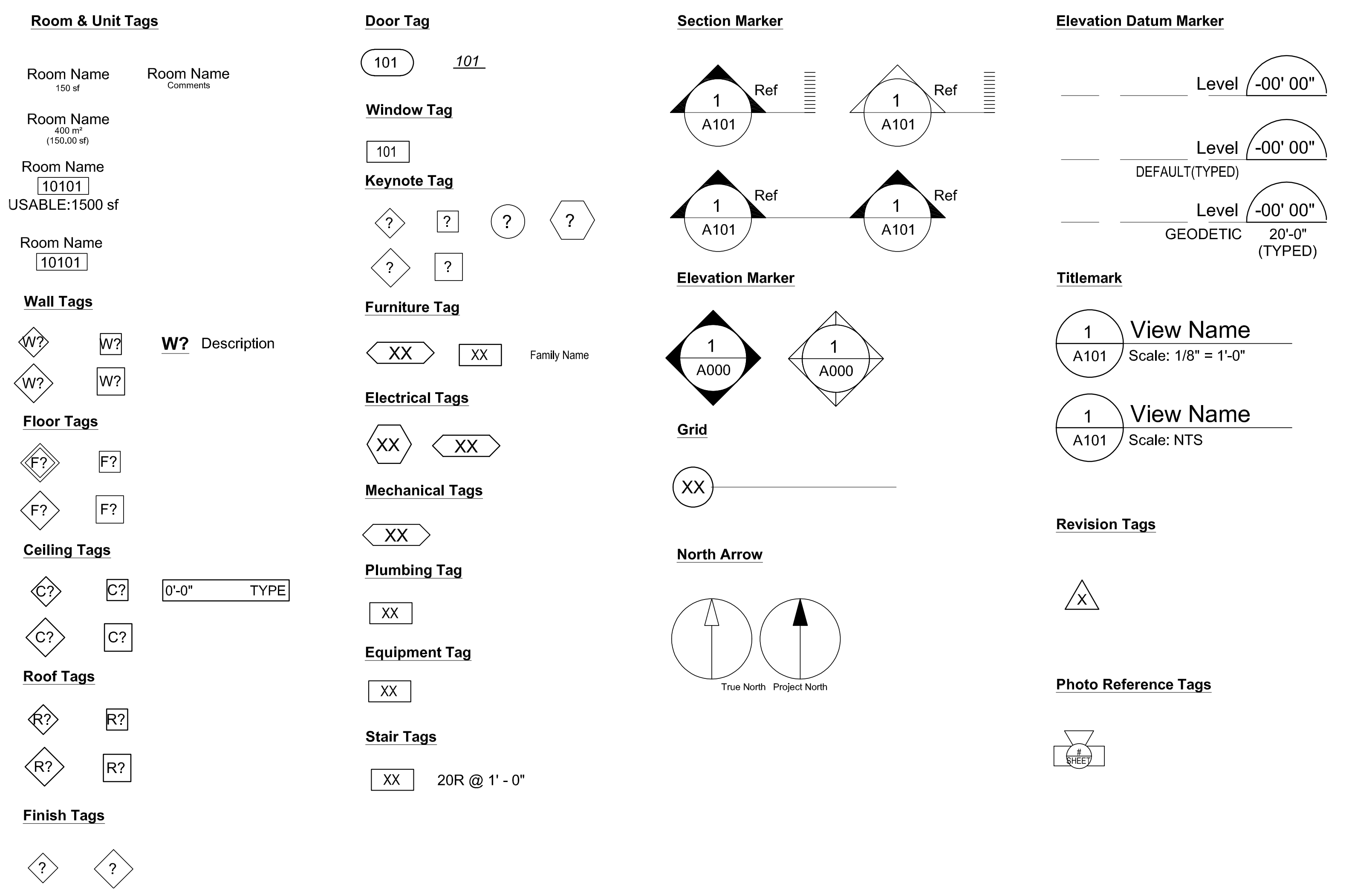
ATTACHMENT E:
LAND USE PLANS

WEST LINN WILSONVILLE SCHOOL DISTRICT

WLHS PARKING/STADIUM ADDITIONS

LAND USE APPLICATION

5464 W. A Street
West Linn, OR 97068



VICINITY MAP:

	ANGLE
&	AND
AB	ANCHOR BOLT
ACT	ACOUSTICAL CEILING TILE
ADD	ADDENDUM
AESS	ARCHITECTURAL EXPOSED STRUCTURAL STEEL
AFF	ABOVE FINISH FLOOR
ALS	AREA LIGHT STANDARD
ALUM	ALUMINUM
ANOD	ANODIZED
BD	BOARD
BLDG	BUILDING
BLKG	BLOCKING
BM	BENCH MARK
BOT	BOTTOM
BTWN	BETWEEN
C	CHANNEL
CB	CATCH BASIN
CCTV	CLOSED CIRCUIT TELEVISION
CG	CORNER GUARD
CIP	CAST IN PLACE CONCRETE
CJ	CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CONT	CONTINUOUS
CORR	CORRIDOR
CR	CLASSROOM
CSJ	CONSTRUCTION JOINT
CSMT	CASEMENT
CT	CERAMIC TILE
CTR	CENTER
DBL	DOUBLE
DF	DRINKING FOUNTAIN
DIAG	DIAGONAL
DIM	DIMENSION
DISP	DISPENSER
DN	DOWN
DP	DAMPROOFING
DR	DOOR
DS	DOWNSPOUT
DTL	DETAIL
DWG	DRAWING
E	EXISTING
EA	EACH
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ENGR	ENGINEER
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR
FA	FIRE ALARM
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FECB	FIRE EXTINGUISHER CABINET WITH BLANKET
FF	FINISH FLOOR
FIN	FINISH
FL	FLOOR
FO	FACE OF
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FRT	FIRE RETARDANT TREATED
FTG	FOOTING
FURR	FURRING
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GL	GLASS
GND	GROUND
GVP	GYPSUM VENEER PLASTER
GWB	GYPSUM WALL BOARD
HB	HOSE BIBB
HC	HANDICAP
HM	HOLLOW METAL
HPC	HIGH PERFORMANCE COATING
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING
HW	HOT WATER
INSUL	INSULATION
INT	INTERIOR
JAN	JANITOR
JST	JOIST
JT	JOINT
L	LENGTH
LAV	LAVATORY
LB	LAG BOLT
LKR	LOCKER
LS	LANDSCAPING
LVR	LOUVER
MATL	MATERIAL
MAX	MAXIMUM
MB	MARKERBOARD
MECH	MECHANICAL
MED	MEDIUM
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MTD	MOUNTED
MTL	METAL
N	NEW
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NOM	NOMINAL
NS	NELSON STUD
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OD	OVERFLOW DRAIN
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
OS	OUTSIDE
PL	PROPERTY LINE
PLAS	PLASTER
PLYWD	PLYWOOD
PSF	PER SQUARE FOOT
PT	PRESSURE TREATED
PVMT	PAVEMENT
R	RADIUS
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REQ'D	REQUIRED
REV	REVISE OR REVISION
RM	ROOM
RO	ROUGH OPENING
SAHTS	SELF-ADHERED HIGH TEMPERATURE SHEET
SAM	SELF-ADHERED MEMBRANE
SC	SOLID CORE
SECT	SECTION
SF	SQUARE FOOT
SHT	SHEET
SHTG	SHEATHING
SHWR	SHOWER
SIM	SIMILAR
SJ	SEISMIC JOINT
SM	SHEET METAL
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
T	TEMPERED GLAZING
T&G	TONGUE AND GROOVE
T/M	TO MATCH
TC	TOP OF CURB
TEL	TELEPHONE
THK	THICK
TJ	TOOL JOINT
TO	TOP OF
TOD	TOP OF DECK
TOS	TOP OF STRUCTURE
TP	TOILET PAPER
TS	TUBE STEEL
TYP	TYPICAL
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
VB	VAPOR BARRIER
VERT	VERTICAL
VEST	VESTIBULE
VFY	VERIFY
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WF	WIDE FLANGE
WH	WATER HEATER
WP	WATERPROOFING
WRB	WATER-RESISTIVE BARRIER
WT	WEIGHT

SHEET INDEX

General	
AG0000	COVER PAGE
Civil	
C000	COVER SHEET
C050	PHASING PLAN
C100	OVERALL SITE PLAN
C101	STADIUM EXISTING CONDITIONS AND DEMOLITION PLAN
C102	SOUTH LOT EXISTING CONDITIONS AND DEMOLITION PLAN
C201	STADIUM & PARKING LOT PLAN
C202	SOUTH PARKING LOT EXPANSION PLAN
C231	STADIUM GRADING & EROSION CONTROL PLAN
C232	SOUTH LOT GRADING & EROSION CONTROL PLAN
C301	STADIUM COMPOSITE UTILITY PLAN
C302	SOUTH LOT COMPOSITE UTILITY PLAN
Landscape	
L000	LANDSCAPE OVERALL CONTEXT PLAN
L001	TREE PROTECTION AND REMOVAL NOTES AND LEGEND
L002	TREE PROTECTION AND REMOVAL PLAN
L100	LANDSCAPE SITE PLAN
L101	LANDSCAPE SITE PLAN - WEST ENLARGEMENT
L102	LANDSCAPE SITE PLAN - ADD ALTERNATE A NORTH PARKING EXPANSION
L110	LANDSCAPE SITE PLAN 3D VIEWS
L200	SITE PLANTING AND IRRIGATION PLAN NOTES AND LEGENDS
L201	SITE PLANTING AND IRRIGATION PLAN
L202	ADD ALTERNATE A SITE PLANTING AND IRRIGATION PLAN - NORTH PARKING EXPANSION
Architecture	
A1101	PLANS
A1104	EAST STANDS PLAN AND SECTION
A2102	SECTION THROUGH EXISTING ROOF, EXISTING BENCHES & NEW WASHROOM
A2104	NEW ROOF & NEW BENCHES ADDITION
A3101	ELEVATIONS
A4101	3D VIEWS
Lighting	
E100	PHOTOMETRICS PLAN

OWNER
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VERTEX
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Hillsboro, OR, 97123, USA
NAME: Darcy Tucker
EMAIL: darcyt@vertex-tech.com
PHONE: 503 201 6568

2020-06-22 2:17:00 PM

LAND USE APPLICATION

WEST LINN
WILSONVILLE SCHOOL
DISTRICT

22210 SW STAFFORD ROAD
TUALATIN, OR 97062

ISSUES

No.	DESCRIPTION	DATE
1	LAND USE APPLICATION	10-07-2020

WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
LAND USE APPLICATION

5464 W. A Street
West Linn, OR 97068

PRIME CONSULTANT
IBI GROUP
907 SW Harvey Milk Street
Portland, OR 97205, USA
tel 503 226 6950 fax 503 273 9192
ibigroup-edpnw.com

PROJECT NO:
124724

DATE:
OCTOBER 7, 2020

SHEET NUMBER
AG0000

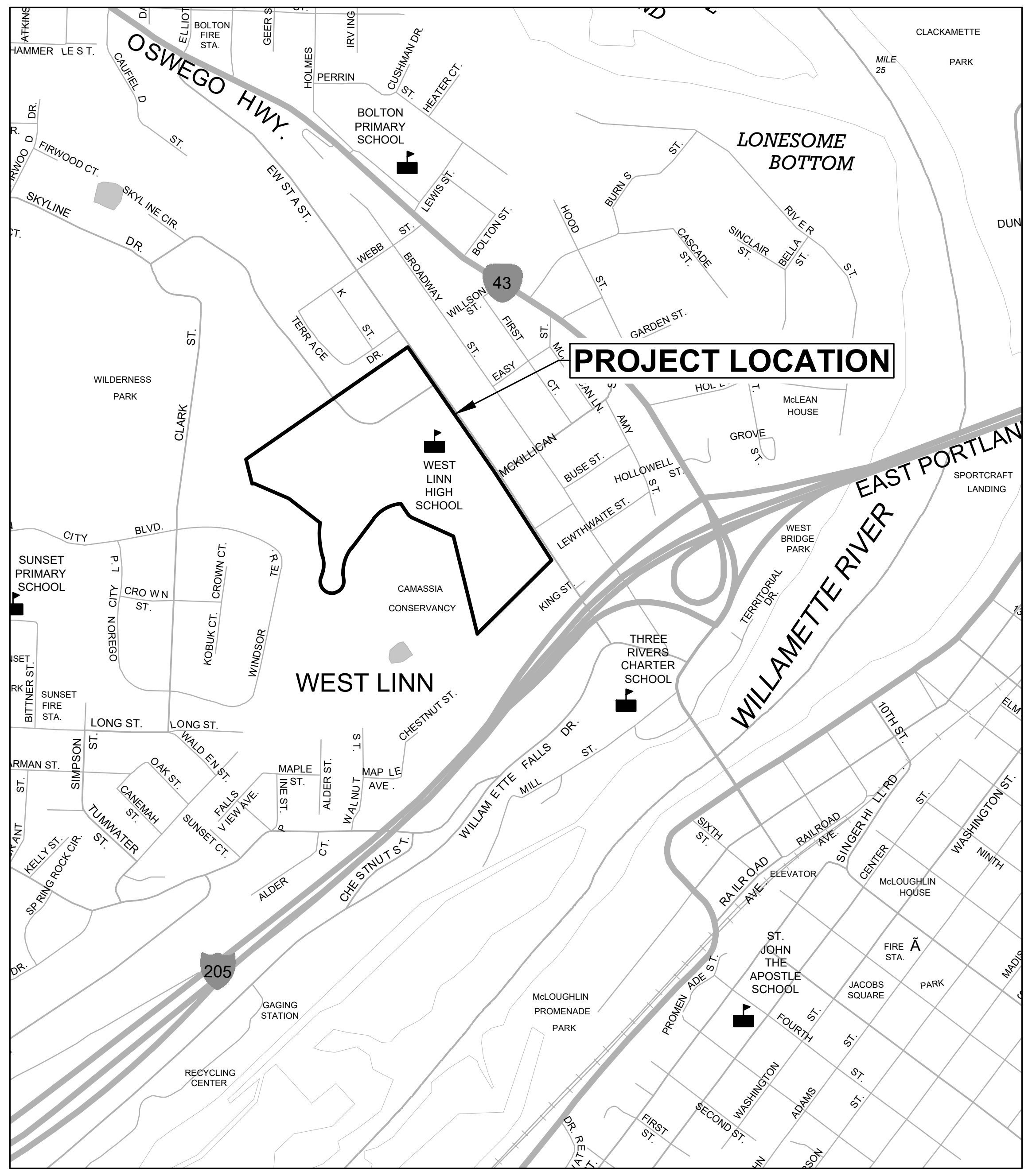
DESIGN DEVELOPMENT DOCUMENTS

FOR

WEST LINN HIGH SCHOOL
STADIUM AND PARKING ADDITIONS

PREPARED FOR

WEST LINN WILSONVILLE SCHOOL DISTRICT



VICINITY MAP

NOT TO SCALE

N
W E
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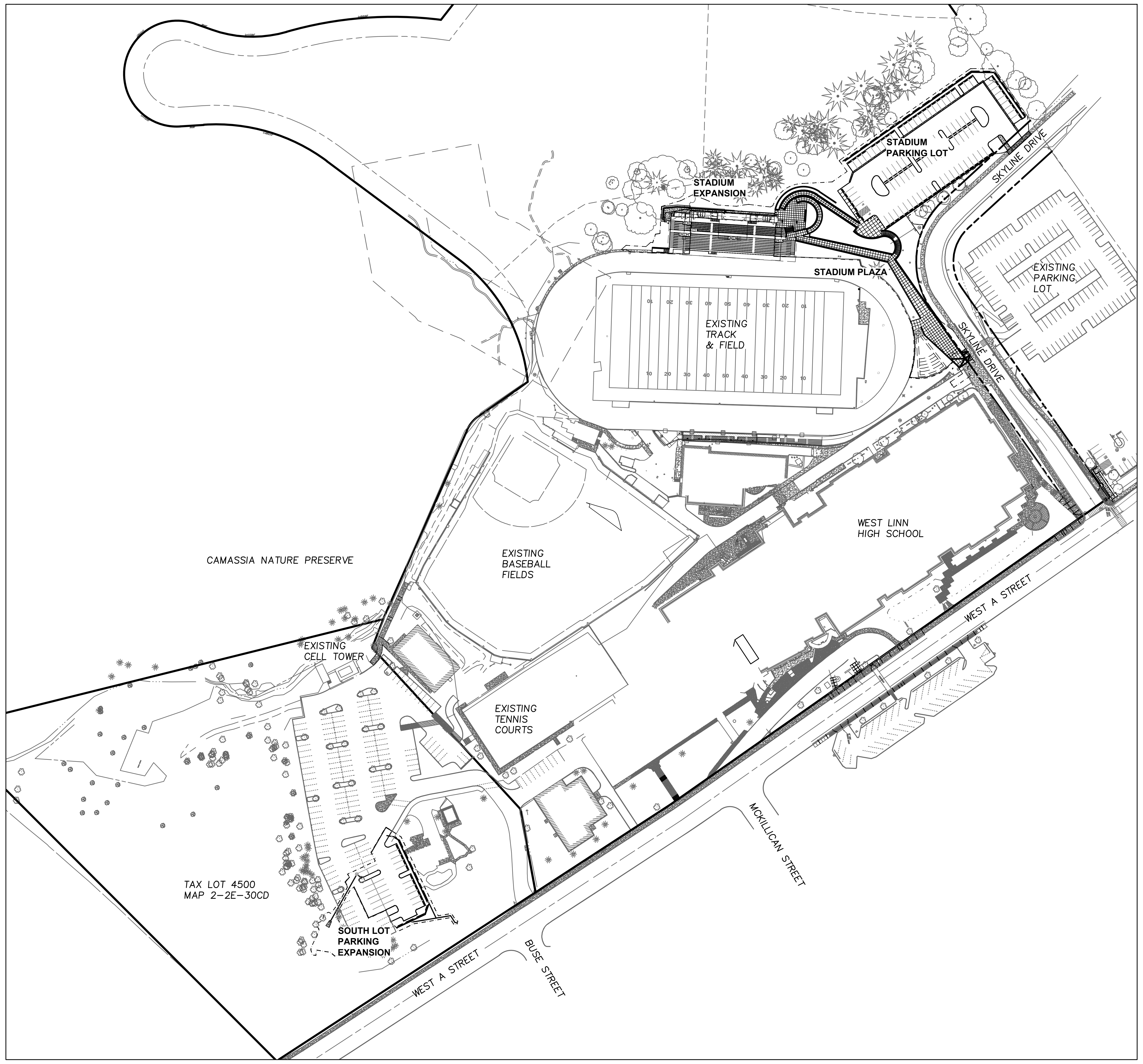

SITE MAP

NOT TO SCALE

W
S N
E

PROJECT TEAM

OWNER/APPLICANT	**ARCHITECT**
WEST LINN - WILSONVILLE SCHOOL DISTRICT 2755 SW BORLAND RD TUALATIN, OR 97035 USA CONTACT: REMO DOUGLAS PHONE: (503) 673-7995 EMAIL: douglasr@wlwv.k12.or.us	IBI GROUP 907 SW HARVEY MILK STREET PORTLAND, OR 97205 USA CONTACT: STEVE WINKLE, AIA PHONE: (503) 222-2045 EMAIL: steve.winkle@ibigroup.com
LANDSCAPE ARCHITECT	**CIVIL ENGINEER**
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LAND SURVEYOR	**GEOTECHNICAL ENGINEER**
COMPASS LAND SURVEYORS 4107 SW INTERNATIONAL WAY, SUITE 705 MILWAUKIE, OR 97222 CONTACT: JOE MCCALLISTER, P.L.S. PHONE: (503) 653-9093 EMAIL: joem@compass-landsurveyors.com	GEODESIGN, INC. 9450 SW COMMERCE CIRLE SUITE 300 WILSONVILLE, OR 97070 CONTACT: GEORGE SAUNDERS, P.E., G.E. PHONE: (503) 968-8787 EMAIL: gsaunders@geodesigninc.com

SITE INFORMATION

SITE LOCATION	**LATITUDE / LONGITUDE**
S.E. 1/4 SECTION 25, T.2S., R.1E., AND S.W. 1/4 SECTION 30, T.2S., R.2E., W.M. CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON	45°21'54"N 122°37'16"W
JURISDICTION	**ZONING**
CITY OF WEST LINN, OREGON	R10 & OBC

FLOOD ZONE

FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP(S): THE IMPROVEMENTS ARE LOCATED WITHIN FLOOD ZONE "X". MAP ID 41005C0276D, DATED 6/17/2008.

HORIZONTAL CONTROL

OREGON NORTH STATE PLANE, OREGON COORDINATE REFERENCE SYSTEM (OCRS), PORTLAND ZONE

VERTICAL CONTROL

NAVD '88, OREGON NORTH STATE PLANE.

LIST OF PLANS

Sheet Number	Sheet Title
C000	COVER SHEET
C050	PHASING PLAN
C100	OVERALL SITE PLAN
C101	STADIUM EXISTING CONDITIONS AND DEMOLITION PLAN
C102	SOUTH LOT EXISTING CONDITIONS AND DEMOLITION PLAN
C201	GRANDSTANDS & STADIUM PARKING SITE PLAN - BASE PROPOSAL
C202	STADIUM PARKING SITE PLAN - ADD ALT A
C203	SOUTH PARKING LOT SITE PLAN - ADD ALT B
C231	GRANDSTANDS & STADIUM PARKING GRADING PLAN - BASE PROPOSAL
C232	STADIUM PARKING GRADING PLAN - ADD ALT A
C233	SOUTH PARKING LOT GRADING PLAN - ADD ALT B
C301	GRANDSTANDS & STADIUM PARKING UTILITY PLAN - BASE PROPOSAL
C302	STADIUM PARKING UTILITY PLAN - ADD ALT A
C303	SOUTH PARKING LOT UTILITY PLAN - ADD ALT B

CLIENT

WEST LINN
WILSONVILLE SCHOOL
DISTRICT

2755 SW BORLAND ROAD
TUALATIN, OR 97062

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ISSUES

No.	DESCRIPTION	DATE
1	DESIGN DEVELOPMENT	10-07-2020

NOT FOR CONSTRUCTION

CONSULTANTS

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
9600 SW NIMBUS AVE., SUITE 100; BEAVERTON, OR 97008

SEAL

70657PE
PRELIMINARY
JUNE 16, 2011
JESSE T. EMERSON
EXPIRES: 12/31/21

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907 SW Harvey Milk Street
Portland, OR 97205, USA
tel 503 226 6950 fax 503 273 9192
ibigroup-edpnw.com

PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY:	CHECKED BY:
TEG, JTE, ZMS	**JDH**
PROJECT MGR:	APPROVED BY:
JDH	**JDH**

SHEET TITLE
COVER SHEET

SHEET NUMBER
C000

ISSUE
1

SCALE CHECK
1 in
10mm

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-COVER.DWG
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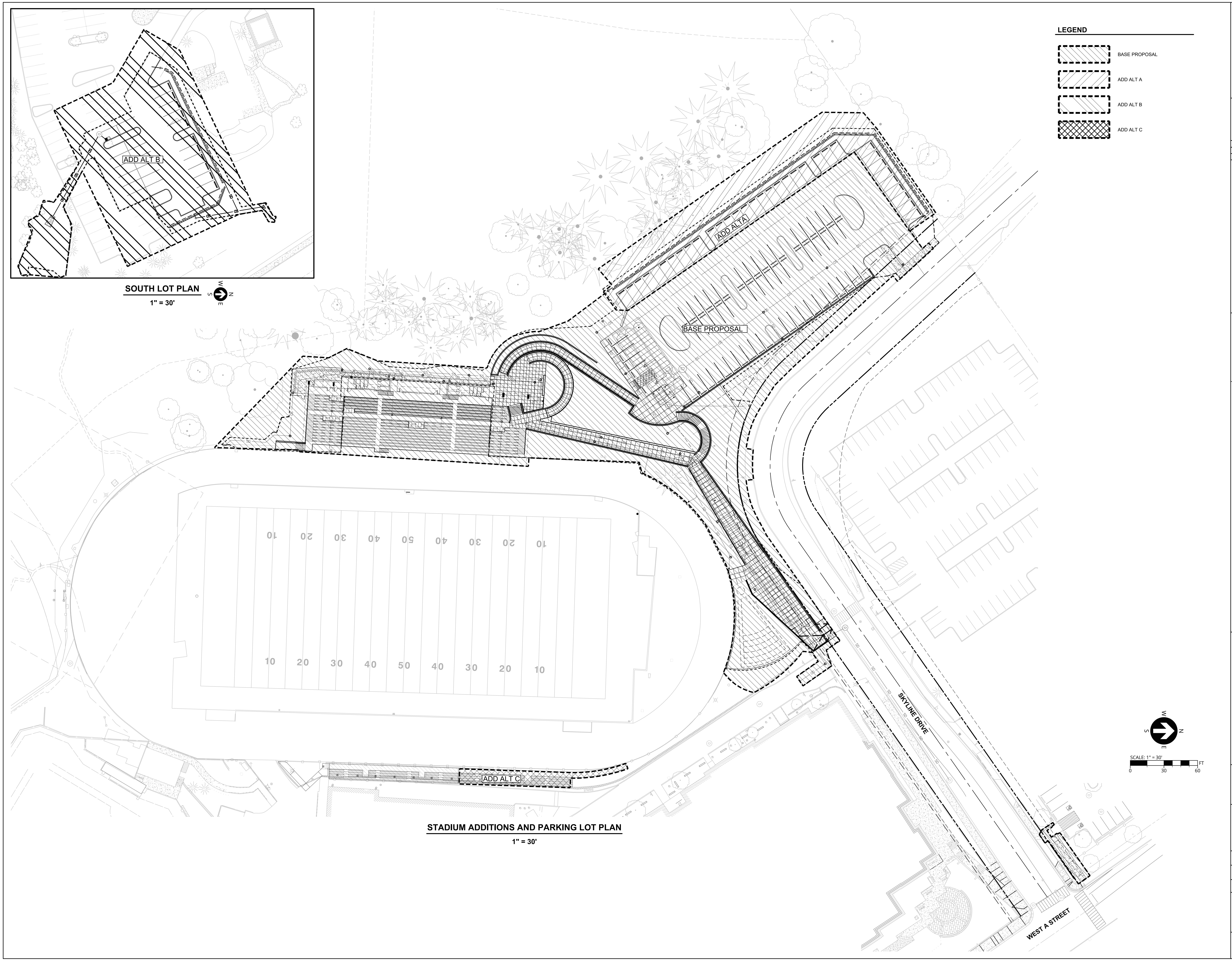

SOUTH LOT PLAN

1" = 30'

STADIUM ADDITIONS AND PARKING LOT PLAN

1" = 30'

LEGEND

▨	BASE PROPOSAL
▨	ADD ALT A
▨	ADD ALT B
▩	ADD ALT C

CLIENT

WEST LINN
WILSONVILLE SCHOOL
DISTRICT

2755 SW BORLAND ROAD
TUALATIN, OR 97062

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ISSUES

No.	DESCRIPTION	DATE
1	DESIGN DEVELOPMENT	10-07-2020

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY:	CHECKED BY:
TEG, JTE, ZMS	JDH
PROJECT MGR:	APPROVED BY:
JDH	JDH

SHEET TITLE
PHASING PLAN

SHEET NUMBER
C050

ISSUE
1

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-PHASE PLAN.DWG
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SCALE CHECK
10mm
1 in

2020-12-16 3:43:34 PM

LEGEND

EXISTING LOT LINE
EXISTING RIGHT OF WAY LINE
EXISTING CONSERVATION EASEMENT LINE
EXISTING FENCE LINE
EXISTING WALL
EXISTING WHITE STRIPING
EXISTING DRAINAGE DITCH
WATER RESOURCE AREA (WRA) BUFFER
110 EXISTING MAJOR CONTOUR
108 EXISTING MINOR CONTOUR
LIMITS OF GRADING
PROPOSED RIGHT OF WAY LINE
PROPERTY SETBACK LINE
PROPOSED EASEMENT
PROPOSED CURB
PROPOSED RETAINING WALL
PROPOSED WHITE PAVEMENT STRIPING

SCALE: 1" = 80
0 80 160 FT

CLIENT

WEST LINN
WILSONVILLE SCHOOL
DISTRICT

West Linn-Wilsonville
School District

2755 SW BORLAND ROAD
TUALATIN, OR 97062

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ISSUES

No.	DESCRIPTION	DATE
1	DESIGN DEVELOPMENT	10-07-2020

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EXPIRES: 12/31/21

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: **TEG, JTE, ZMS**	CHECKED BY: **JDH**
PROJECT MGR: **JDH**	APPROVED BY: **JDH**

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
C100

ISSUE
1

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-OVERALL SITE PLAN.DWG
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SCALE CHECK
1 in
10mm

2020-12-16 3:43:34 PM

LEGEND

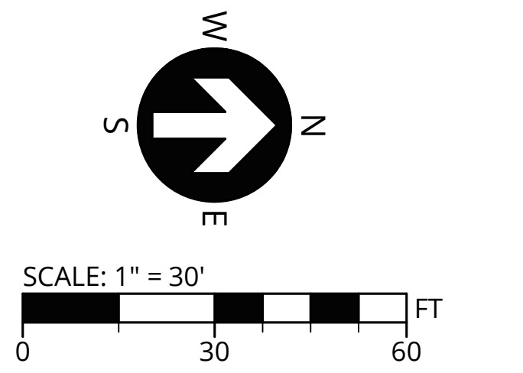
▬ ▬ ▬	EXISTING LOT LINE
▬ ▬ ▬	EXISTING RIGHT OF WAY LINE
— — —	EXISTING CONSERVATION EASEMENT LINE
—□—□—	EXISTING FENCE LINE
▨	EXISTING WALL
······	EXISTING WHITE STRIPING
—···—	EXISTING DRAINAGE DITCH
— — —	WATER RESOURCE AREA (WRA) BUFFER
— SD —	EXISTING STORM DRAINAGE PIPE
— SS —	EXISTING SANITARY SEWER PIPE
— W —	EXISTING WATER PIPE
— UGP —	EXISTING UNDERGROUND POWER LINE
— OP —	EXISTING OVERHEAD POWER LINE
— G —	EXISTING GAS LINE
— C —	EXISTING CABLE LINE
▨	EXISTING CONCRETE
- - - 110 - - -	EXISTING MAJOR CONTOUR
----- 108 -----	EXISTING MINOR CONTOUR
-·-·-·-	PROPOSED GRADING/WORK LIMITS
— SAW —	PROPOSED ASPHALT/CONCRETE SAWCUT LIMIT
▩	PROPOSED ASPHALT/CONCRETE REMOVAL
— — —	PROPOSED TRACK SURFACE REMOVAL LIMIT
∿□∿□∿	REMOVE EXISTING FENCE

DEMOLITION KEY NOTES

1	SAWCUT CURB AT NEAREST JOINT, REMOVE CURB AND DISPOSE OFFSITE. MINIMUM LIMITS SHOWN.
2	REMOVE EXISTING ASPHALT PAVEMENT WITHIN AREA INDICATED. SAWCUT ASPHALT PAVEMENT AT LIMITS. REMOVE PAVING AND DISPOSE OFFSITE.
3	REMOVE EXISTING CONCRETE PAVEMENT WITHIN AREA INDICATED. SAWCUT AT NEAREST JOINT, REMOVE CONCRETE AND DISPOSE OFFSITE. MINIMUM LIMITS SHOWN.
4	DEMOLISH RETAINING WALL TO NEAREST FULL JOINT OR BLOCK, REMOVE ASSOCIATED APPURTENANCES AND SUBDRAINAGE AS REQUIRED AND DISPOSE OFFSITE. MAINTAIN DRAINAGE CONNECTIONS FOR REMAINING WALL. COORDINATE WITH ENGINEER IF PIPING REMOVED IMPACTS CONNECTIONS TO DISCHARGE POINT.
5	REMOVE FENCING, GATES, POSTS, CONCRETE FOOTINGS AND ALL ASSOCIATED APPURTENANCES. CONFIRM SALVAGE OR DISPOSAL WITH OWNER.
6	REMOVE LIGHT STRUCTURE, CONCRETE FOOTINGS, ALL ASSOCIATED APPURTENANCES AND DISPOSE.
8	REMOVE BENCH AND ASSOCIATED APPURTENANCES. CONFIRM SALVAGE OR DISPOSAL WITH OWNER.
9	REMOVE STADIUM SIGN AND ALL ASSOCIATED APPURTENANCES. SALVAGE FOR REINSTALLATION.
10	PROTECT EXISTING FIBER COMMUNICATIONS UTILITIES THROUGHOUT CONSTRUCTION. DAMAGE SHALL BE REPAIRED TO SATISFACTION OF UTILITY PURVEYOR, AT NO ADDITIONAL COST TO OWNER. RESET RIM LIDS TO FINAL GRADE AS NECESSARY.
11	REMOVE STORM DRAIN LINE TO LIMITS SHOWN. STAGE CONSTRUCTION ACTIVITIES TO MINIMIZE INTERRUPTION OF STORM CONVEYANCE. BYPASS FLOWS DURING CONSTRUCTION AS REQUIRED. CONTRACTOR TO COORDINATE WORK WITH CITY.
12	CONTRACTOR TO FIELD LOCATE EXISTING WATER SERVICE SOUTH OF PROPOSED IMPROVEMENTS. REMOVE TO LIMITS INDICATED. NOTIFY ENGINEER PRIOR TO CONSTRUCTION ACTIVITIES IMPACTING WATER UTILITIES WITH EXISTING WATER SERVICE LOCATION (IF DIFFERENT), MATERIAL, CONDITION AND SIZE.
13	REMOVE FLAG POLE AND FOOTING THROUGHOUT CONSTRUCTION ACTIVITIES.
14	REFER TO SITE ELECTRICAL DESIGN FOR REMOVAL/ABANDONMENT OF EXISTING CONDUITS, VAULTS, ASSOCIATED APPURTENANCES AND ENERGIZING MATERIALS.
15	REMOVE EXISTING SIGN, POST, SIGN BASE AND ASSOCIATED APPURTENANCES. STOCKPILE SIGN FOR REINSTALLATION.
16	REMOVE EXISTING SANITARY SEWER LATERAL AND ALL ASSOCIATED STRUCTURES, APPURTENANCES TO LIMITS SHOWN AND DISPOSE.
17	REMOVE EXISTING SITE LIGHT POLE. CONFIRM SALVAGE OR DISPOSAL WITH OWNER.

TREE REMOVAL AND PRESERVATION:

SEE LANDSCAPE PLANS FOR ALL TREE REMOVAL AND PRESERVATION CONSIDERATIONS.



FLOOD ZONE INFORMATION

FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP(S): THE IMPROVEMENTS ARE LOCATED WITHIN FLOOD ZONE "X". MAP ID 41005C0276D, DATED 6/17/2008.

HORIZONTAL DATUM

OREGON NORTH STATE PLANE, OREGON COORDINATE REFERENCE SYSTEM (OCRS), PORTLAND ZONE

VERTICAL DATUM

NAVD '88, OREGON NORTH STATE PLANE.

EXISTING CONDITIONS PLAN

THIS PLAN HAS BEEN PREPARED FOR INFORMATIVE PURPOSES ONLY. SITE BACKGROUND INFORMATION AND FEATURES HAVE BEEN GENERATED FROM A COMBINATION OF TOPOGRAPHIC SURVEY DATA PROVIDED BY COMPASS LAND SURVEYORS, DATED JANUARY 2020, AERIAL IMAGERY, PUBLIC GIS DATA AND SITE ASSESSMENT/OBSERVATION. NO WARRANTY OR GUARANTEE OF ACCURACY IS EXPRESSED OR IMPLIED.

2020-12-16 3:43:34 PM

CLIENT
WEST LINN
WILSONVILLE SCHOOL
DISTRICT
West Linn-Wilsonville School District
2755 SW BORLAND ROAD
TUALATIN, OR 97062

ISSUES

No.	DESCRIPTION	DATE
1	DESIGN DEVELOPMENT	10-07-2020

NOT FOR CONSTRUCTION

CONSULTANTS
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CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
9600 SW NIMBUS AVE., SUITE 100; BEAVERTON, OR 97008

SEAL
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PRELIMINARY
JUNE 16, 2011
JESSE T. EMERSON
EXPIRES: 12/31/21

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ibigroup-edpnw.com

PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY:	CHECKED BY:
TEG, JTE, ZMS	**JDH**
PROJECT MGR:	APPROVED BY:
JDH	**JDH**

SHEET TITLE
STADIUM EXISTING
CONDITIONS AND
DEMOLITION PLAN

SHEET NUMBER
C101

ISSUE
1

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-EXISTING CONDITIONS.DWG
BIM 360://124724 - WLHS Stadium Seating and Parking R2020/12472 -WLHS-Stadium-A-R20.rvt

SCALE CHECK
10mm
1 in

LEGEND

▬ ▬ ▬	EXISTING LOT LINE
▬ ▬ ▬	EXISTING RIGHT OF WAY LINE
— — —	EXISTING CONSERVATION EASEMENT LINE
—□—□—	EXISTING FENCE LINE
▨	EXISTING WALL
······	EXISTING WHITE STRIPING
—···—	EXISTING DRAINAGE DITCH
— — —	WATER RESOURCE AREA (WRA) BUFFER
— SD —	EXISTING STORM DRAINAGE PIPE
— SS —	EXISTING SANITARY SEWER PIPE
— W —	EXISTING WATER PIPE
— UGP —	EXISTING UNDERGROUND POWER LINE
— OP —	EXISTING OVERHEAD POWER LINE
— G —	EXISTING GAS LINE
— C —	EXISTING CABLE LINE
▒	EXISTING CONCRETE
- - - 110 - - -	EXISTING MAJOR CONTOUR
······ 108 ······	EXISTING MINOR CONTOUR
▪-▪-▪	PROPOSED WORK LIMITS
—SAW—SAW—SAW—	PROPOSED ASPHALT/CONCRETE SAWCUT LIMIT
▨	PROPOSED ASPHALT/CONCRETE REMOVAL
— — —	PROPOSED TRACK SURFACE REMOVAL LIMIT
~□~□~	REMOVE EXISTING FENCE

DEMOLITION KEY NOTES

1	SAWCUT CONCRETE PAVEMENT AT NEAREST JOINT TO FULL SLAB DEPTH AND/OR SAWCUT ASPHALT PAVEMENT AT LOCATION SHOWN TO FULL EXISTING PAVEMENT DEPTH. PROTECT ALL ADJACENT SURFACES FROM DAMAGE.
2	REMOVE AND DISPOSE OFFSITE OF EXISTING ASPHALT/CONCRETE WITHIN LIMITS SHOWN.
3	REMOVE AND DISPOSE OFFSITE OF EXISTING CONCRETE CURB.
6	REMOVE LIGHT STRUCTURE, CONCRETE FOOTINGS AND ALL ASSOCIATED APPURTENANCES. SALVAGE FOR REINSTALLATION.
7	REMOVE EXISTING STORM DRAIN CATCH BASIN. CAP AND ABANDON EXISTING LATERAL STORM LINE.
13	(RESERVED)

TREE REMOVAL AND PRESERVATION:

SEE LANDSCAPE PLANS FOR ALL TREE REMOVAL AND PRESERVATION CONSIDERATIONS.

FLOOD ZONE INFORMATION

FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP(S): THE IMPROVEMENTS ARE LOCATED WITHIN FLOOD ZONE "X". MAP ID 41005C0276D, DATED 6/17/2008.

HORIZONTAL DATUM

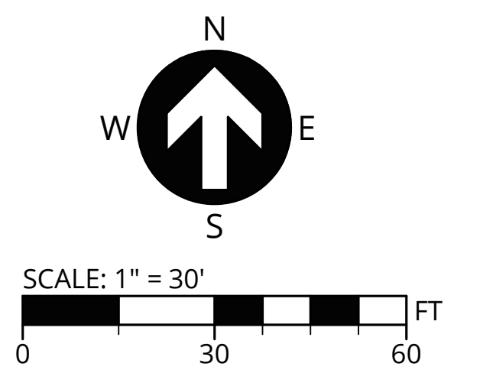
OREGON NORTH STATE PLANE, OREGON COORDINATE REFERENCE SYSTEM (OCRS), PORTLAND ZONE

VERTICAL DATUM

NAVD '88, OREGON NORTH STATE PLANE.

EXISTING CONDITIONS PLAN

THIS PLAN HAS BEEN PREPARED FOR INFORMATIVE PURPOSES ONLY. SITE BACKGROUND INFORMATION AND FEATURES HAVE BEEN GENERATED FROM A COMBINATION OF TOPOGRAPHIC SURVEY DATA PROVIDED BY COMPASS LAND SURVEYORS, DATED JANUARY 2020, AERIAL IMAGERY, PUBLIC GIS DATA AND SITE ASSESSMENT/OBSERVATION. NO WARRANTY OR GUARANTEE OF ACCURACY IS EXPRESSED OR IMPLIED.



SCALE: 1" = 30'

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No.	DESCRIPTION	DATE
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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY:	CHECKED BY:
TEG, JTE, ZMS	**JDH**
PROJECT MGR:	APPROVED BY:
JDH	**JDH**

SHEET TITLE
SOUTH LOT EXISTING
CONDITIONS AND
DEMOLITION PLAN

SHEET NUMBER
C102

ISSUE
1

SCALE CHECK
1 in
10mm

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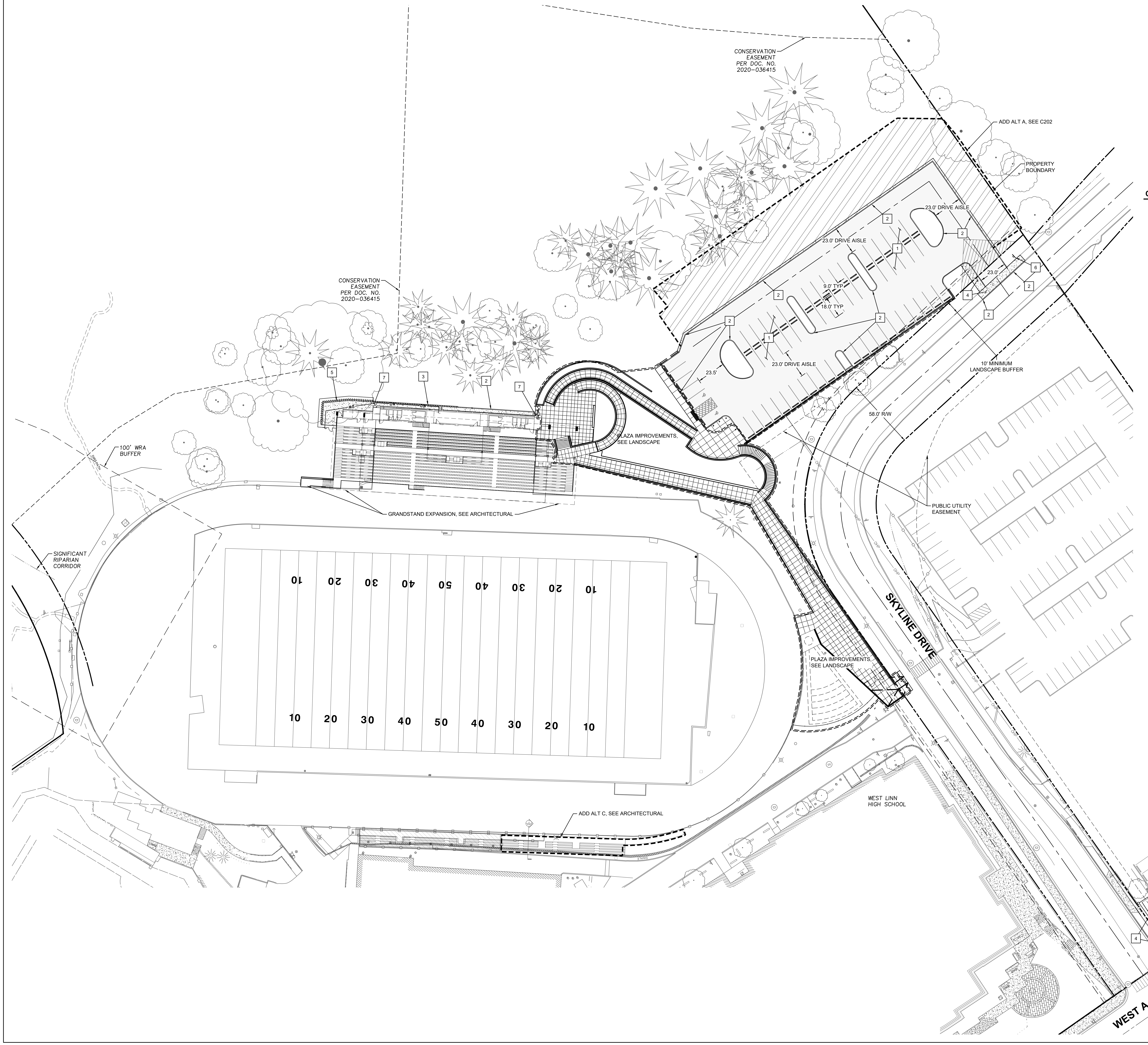

LEGEND

━ ━ ━	PROPOSED RIGHT-OF-WAY LINE
- - - -	PROPOSED EASEMENT LINE
— — —	PROPERTY SETBACK LINE
═	PROPOSED CURB
▭	PROPOSED ASPHALT
▒	PROPOSED GRAVEL ACCESS PATH
▭	PROPOSED WHEEL STOP
▨	PROPOSED RETAINING WALL
—	PROPOSED WHITE PAVEMENT STRIPING
◬	CLEAR VISION TRIANGLE AREA
*	RE-PAVED EXISTING PARKING STALL
═ ═ ═	SCOPE LIMIT: SEE LANDSCAPE PLANS

CONSTRUCTION KEY NOTES

1	CONSTRUCT ASPHALT PAVING WITHIN LIMITS SHOWN.
2	CONSTRUCT STANDARD CURB.
3	CONSTRUCT CAST IN PLACE RETAINING WALL.
4	CONSTRUCT CONCRETE SIDEWALK.
5	CONSTRUCT SOIL NAIL WALL.
6	INSTALL RELOCATED SHARP TURN AHEAD WARNING SIGN.
7	CONSTRUCT 3' WIDE CONCRETE VALLEY GUTTER WITHIN LIMITS SHOWN.

WLHS NEW PARKING SUMMARY

ALL PHASES	
STANDARD PARKING STALLS	114
ADA PARKING STALLS	2
BASE PROPOSAL (THIS SHEET)	
STANDARD PARKING STALLS	62
ADA PARKING STALLS	2

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PROJECT
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PARKING/STADIUM ADDITIONS

PROJECT NO:
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DRAWN BY:	CHECKED BY:
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PROJECT MGR:	APPROVED BY:
JDH	JDH

SHEET TITLE
GRANDSTANDS &
STADIUM PARKING SITE
PLAN - BASE PROPOSAL

SHEET NUMBER
C201

ISSUE
1

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-SITE PLAN.DWG
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SCALE CHECK
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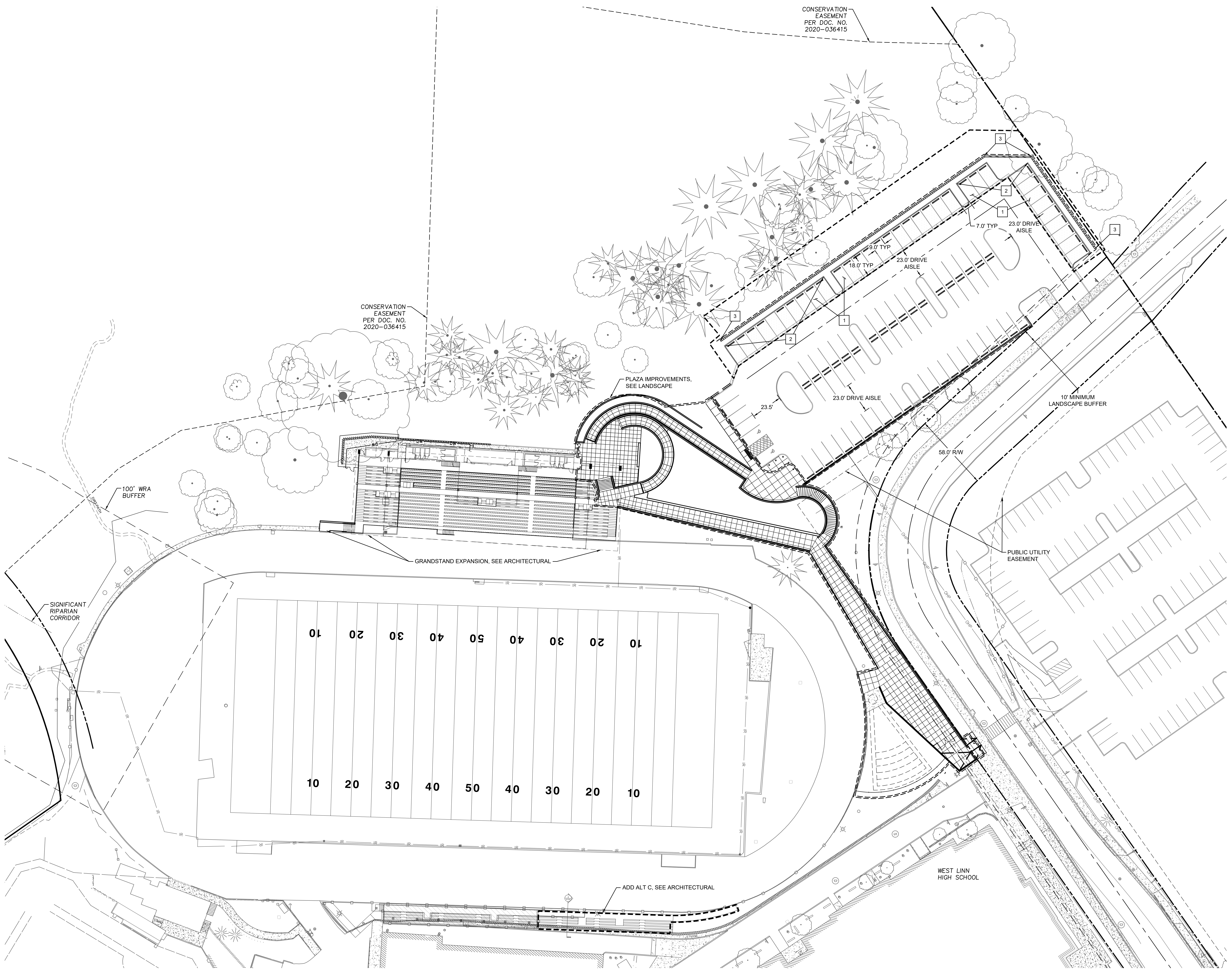

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LEGEND

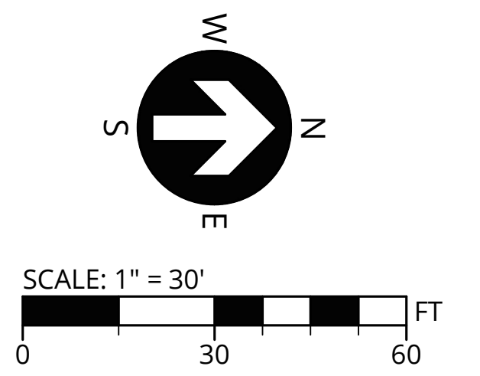
━━ ━ ━ ━━	PROPOSED RIGHT-OF-WAY LINE
- - - - - -	PROPOSED EASEMENT LINE
— — — —	PROPERTY SETBACK LINE
═══	PROPOSED CURB
▭	PROPOSED ASPHALT
▨	PROPOSED GRAVEL ACCESS PATH
▭	PROPOSED WHEEL STOP
▨	PROPOSED RETAINING WALL
──	PROPOSED WHITE PAVEMENT STRIPING
△	CLEAR VISION TRIANGLE AREA
*	RE-PAVED EXISTING PARKING STALL
═ ═ ═	SCOPE LIMIT: SEE LANDSCAPE PLANS

CONSTRUCTION KEY NOTES

1. CONSTRUCT ASPHALT PAVING WITHIN LIMITS SHOWN.
2. CONSTRUCT STANDARD CURB.
3. CONSTRUCT MODULAR BLOCK RETAINING WALL.

WLHS NEW PARKING SUMMARY

ALL PHASES	
STANDARD PARKING STALLS	114
ADA PARKING STALLS	2
BASE PROPOSAL (THIS SHEET)	
STANDARD PARKING STALLS	34



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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: TEG, JTE, ZMS	CHECKED BY: JDH
PROJECT MGR: JDH	APPROVED BY: JDH

SHEET TITLE
STADIUM PARKING SITE
PLAN - ADD ALT A

SHEET NUMBER
C202

ISSUE
1

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LEGEND

▬ ‒ ‒ ▬	PROPOSED RIGHT-OF-WAY LINE
‒ ‒ ‒ ‒ ‒	PROPOSED EASEMENT LINE
— — — —	PROPERTY SETBACK LINE
═	PROPOSED CURB
▭	PROPOSED ASPHALT
▒	PROPOSED GRAVEL ACCESS PATH
▭	PROPOSED WHEEL STOP
▨	PROPOSED RETAINING WALL
—	PROPOSED WHITE PAVEMENT STRIPING
◭	CLEAR VISION TRIANGLE AREA
*	RE-PAVED EXISTING PARKING STALL

CONSTRUCTION KEY NOTES

1 CONSTRUCT ASPHALT PAVING WITHIN LIMITS SHOWN.
2 CONSTRUCT STANDARD CURB.
3 CONSTRUCT MODULAR BLOCK RETAINING WALL.

WLHS NEW PARKING SUMMARY

ALL PHASES	
STANDARD PARKING STALLS	114
ADA PARKING STALLS	2
BASE PROPOSAL (THIS SHEET)	
STANDARD PARKING STALLS	18

N
W E
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SCALE: 1" = 30'
0 30 60 FT

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PROJECT NO: 124724	
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PROJECT MGR: JDH	APPROVED BY: JDH

SHEET TITLE
SOUTH PARKING LOT
SITE PLAN - ADD ALT B

SHEET NUMBER
C203

ISSUE
1

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SCALE CHECK
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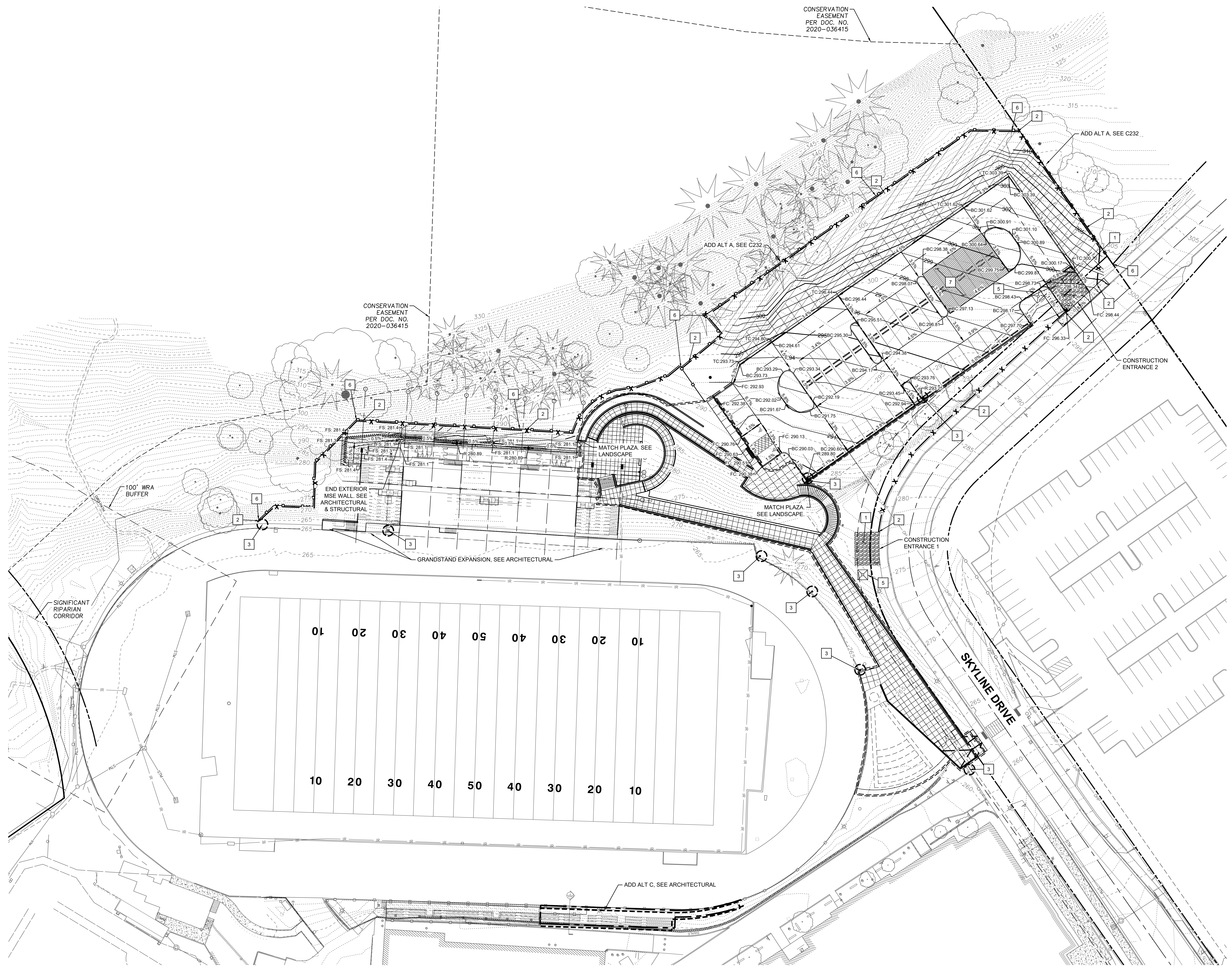

LEGEND

- - - 100 - - -	EXISTING MAJOR CONTOUR
······ 92 ······	EXISTING MINOR CONTOUR
—— 110 ——	PROPOSED MAJOR CONTOUR
—— 108 ——	PROPOSED MINOR CONTOUR
— — — —	PROPOSED LIMITS OF DISTURBANCE
- - - - - - - -	DITCH LINE
⇨	SURFACE RUN-OFF FLOW ARROW
▩	PROPOSED FILL AREA
▩	PROPOSED CONSTRUCTION ENTRANCE
▨	PROPOSED STOCKPILE AREA
—— X ——	PROPOSED SEDIMENT FENCING
—□—□—□—	PROPOSED TREE PROTECTING FENCING
◌	PROPOSED INLET PROTECTION
⊠	PROPOSED CONCRETE WASHOUT
═ ═ ═ ═	SCOPE LIMIT: SEE LANDSCAPE PLANS

EROSION & SEDIMENT CONTROL KEY NOTES

1 PROPOSED GRAVEL CONSTRUCTION ENTRANCE.
2 PROPOSED SEDIMENT FENCING.
3 PROPOSED INLET PROTECTION.
4 (RESERVED)
5 PROPOSED CONCRETE WASHOUT.
6 PROPOSED TREE PROTECTION FENCING.
7 PROPOSED MATERIALS STOCKPILE AREA.

SCALE: 1" = 30'
0 30 60 FT

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
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PROJECT MGR: **JDH**	APPROVED BY: **JDH**

SHEET TITLE
GRANDSTANDS &
STADIUM PARKING
GRADING PLAN - BASE
PROPOSAL

SHEET NUMBER C231

ISSUE 1

SCALE CHECK
10mm
1 in

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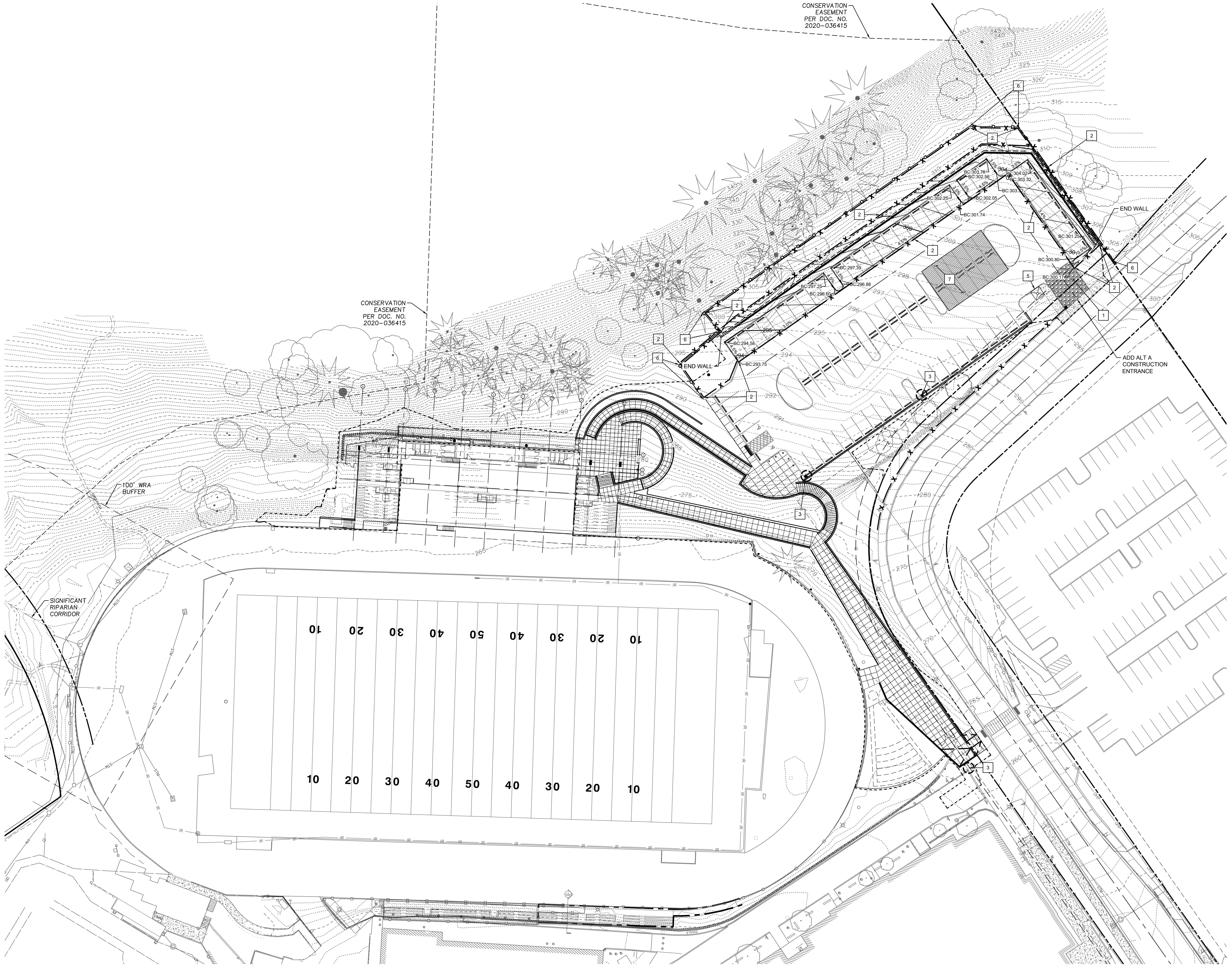

LEGEND

- - - 100 - - -	EXISTING MAJOR CONTOUR
····· 92 ·····	EXISTING MINOR CONTOUR
—— **110** ——	PROPOSED MAJOR CONTOUR
—— **108** ——	PROPOSED MINOR CONTOUR
— — — —	PROPOSED LIMITS OF DISTURBANCE
- - - - - - - -	DITCH LINE
⇨	SURFACE RUN-OFF FLOW ARROW
▩	PROPOSED FILL AREA
▦	PROPOSED CONSTRUCTION ENTRANCE
▨	PROPOSED STOCKPILE AREA
—— X ——	PROPOSED SEDIMENT FENCING
—□—□—□—	PROPOSED TREE PROTECTING FENCING
◌	PROPOSED INLET PROTECTION
⊠	PROPOSED CONCRETE WASHOUT

EROSION & SEDIMENT CONTROL KEY NOTES

1	PROPOSED GRAVEL CONSTRUCTION ENTRANCE.
2	PROPOSED SEDIMENT FENCING.
3	PROPOSED INLET PROTECTION.
4	(RESERVED)
5	PROPOSED CONCRETE WASHOUT.
6	PROPOSED TREE PROTECTION FENCING.
7	PROPOSED MATERIALS STOCKPILE AREA.

SCALE: 1" = 30'

0 30 60 FT

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PROJECT
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PROJECT NO: 124724	
DRAWN BY: **TEG, JTE, ZMS**	CHECKED BY: **JDH**
PROJECT MGR: **JDH**	APPROVED BY: **JDH**

SHEET TITLE
STADIUM PARKING
GRADING PLAN - ADD
ALT A

SHEET NUMBER	ISSUE
C232	1

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SCALE CHECK
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LEGEND

- - - 100 - - -	EXISTING MAJOR CONTOUR
······ 92 ······	EXISTING MINOR CONTOUR
—— **110** ——	PROPOSED MAJOR CONTOUR
—— **108** ——	PROPOSED MINOR CONTOUR
— — — —	PROPOSED LIMITS OF DISTURBANCE
- - - - - - -	DITCH LINE
⇨	SURFACE RUN-OFF FLOW ARROW
▇	PROPOSED FILL AREA
▩	PROPOSED CONSTRUCTION ENTRANCE
▨	PROPOSED STOCKPILE AREA
—— **X** ——	PROPOSED SEDIMENT FENCING
-○-○-○-○-	PROPOSED STRAW WATTLE
—□—□—□—	PROPOSED TREE PROTECTING FENCING
◌	PROPOSED INLET PROTECTION
⊠	PROPOSED CONCRETE WASHOUT

EROSION & SEDIMENT CONTROL KEY NOTES

2	PROPOSED SEDIMENT FENCING.
3	PROPOSED INLET PROTECTION.
4	(RESERVED)
5	PROPOSED CONCRETE WASHOUT.
6	PROPOSED TREE PROTECTION FENCING.
7	PROPOSED MATERIALS STOCKPILE AREA.

N
W E
S

SCALE: 1" = 30'
0 30 60 FT

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PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY:	CHECKED BY:
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PROJECT MGR:	APPROVED BY:
JDH	**JDH**

SHEET TITLE
SOUTH PARKING LOT
GRADING PLAN - ADD
ALT B

SHEET NUMBER
C233

ISSUE
1

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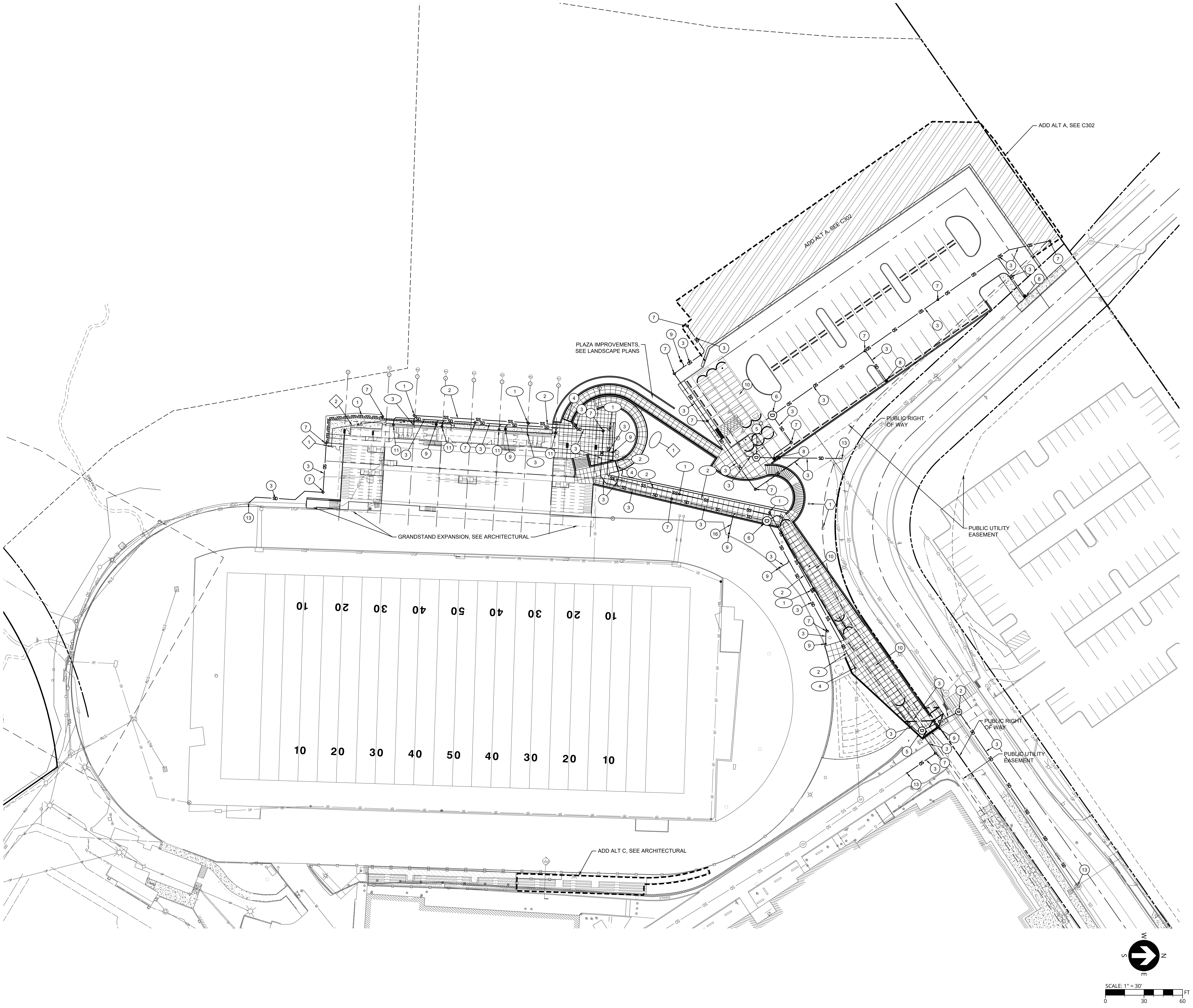

LEGEND

— SD —	EXISTING STORM DRAIN PIPE
— STM —	EXISTING STORM DRAIN PIPE
— · —	EXISTING STORM DRAIN DITCH
— SS —	EXISTING SANITARY SEWER PIPE
— SAN —	EXISTING SANITARY SEWER PIPE
— W —	EXISTING WATER PIPE
— C —	EXISTING CABLE LINE
— G —	EXISTING GAS LINE
— UGP —	EXISTING UNDERGROUND POWER LINE
— OP —	EXISTING OVERHEAD POWER LINE
Ⓓ	EXISTING STORM DRAIN MANHOLE
○	EXISTING STORM DRAIN CLEANOUT
■	EXISTING STORM DRAIN CATCH BASIN
Ⓢ	EXISTING SANITARY SEWER MANHOLE
○	EXISTING SANITARY SEWER CLEANOUT
✱	EXISTING FIRE HYDRANT
⊖	EXISTING WATER SERVICE VALVE
— SD —	PROPOSED STORM DRAIN PIPE
═ ═ ═	PROPOSED CURTAIN DRAIN WITH PERFORATED DRAIN PIPE
Ⓓ	PROPOSED STORM MANHOLE
○	PROPOSED STORM CLEANOUT
■	PROPOSED CATCH BASIN
● ■	PROPOSED AREA DRAIN
▨	PROPOSED STORM DETENTION FACILITY
— SS —	PROPOSED SANITARY SEWER PIPE
○	PROPOSED SANITARY SEWER CLEANOUT

STORM DRAIN KEY NOTES

①	CONSTRUCT 3' WIDE SLOPE CURTAIN DRAIN.
②	INSTALL STORM DRAIN MANHOLE
③	INSTALL STORM PIPE.
④	INSTALL TRENCH DRAIN.
⑤	INSTALL FLOW CONTROL MANHOLE.
⑥	INSTALL BAYFILTER STORM TREATMENT MANHOLE.
⑦	INSTALL STORM CLEANOUT.
⑧	INSTALL CATCH BASIN.
⑨	INSTALL AREA DRAIN.
⑩	INSTALL STORM DETENTION FACILITY.
⑪	INSTALL ROOF DRAIN.
⑫	INSTALL BAYFILTER STORM TREATMENT CATCH BASIN.
⑬	CONNECT TO EXISTING STORM SYSTEM.

SANITARY SEWER KEY NOTES

1	INSTALL SANITARY SEWER CLEANOUT.
2	INSTALL 4" SANITARY SEWER PIPE.
3	INSTALL 4" SANITARY SEWER LATERAL.
4	CONNECT TO EXISTING SANITARY SEWER SYSTEM.

WATER SYSTEM KEY NOTES

1	DETERMINE LOCATION OF EXISTING WATER SERVICE LINES.
2	INSTALL WATER SERVICE LINE

FRANCHISE UTILITY KEY NOTES

1	PROTECT EXISTING FIBER COMMUNICATIONS UTILITY STRUCTURES. RAISE RIMS TO MATCH FINISHED GRADES.

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY:	CHECKED BY:
TEG, JTE, ZMS	**JDH**
PROJECT MGR:	APPROVED BY:
JDH	**JDH**

SHEET TITLE
GRANDSTANDS &
STADIUM PARKING UTILITY
PLAN - BASE PROPOSAL

SHEET NUMBER
C301

ISSUE
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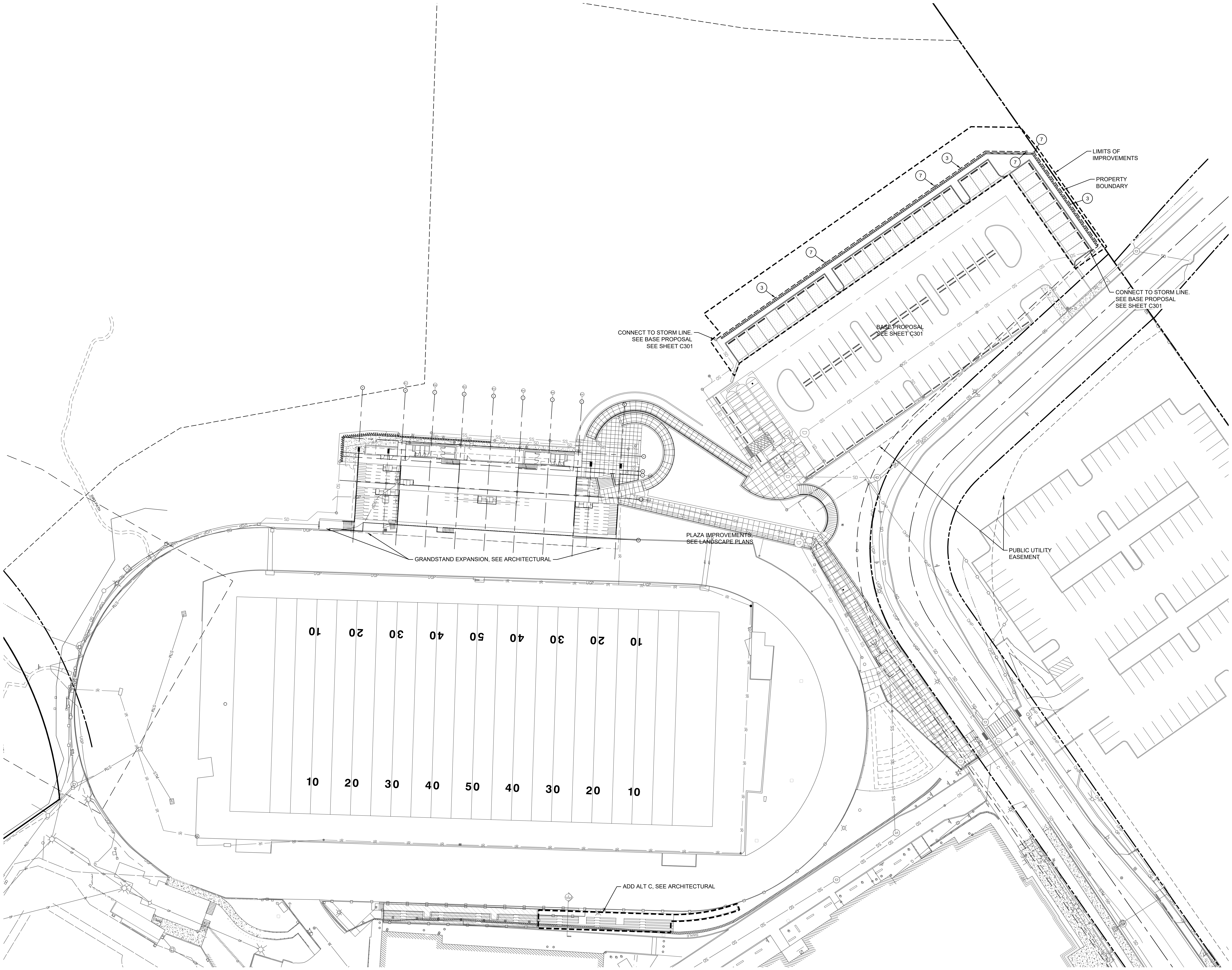

LEGEND

SD	EXISTING STORM DRAIN PIPE
STM	EXISTING STORM DRAIN PIPE
	EXISTING STORM DRAIN DITCH
SS	EXISTING SANITARY SEWER PIPE
SAN	EXISTING SANITARY SEWER PIPE
W	EXISTING WATER PIPE
C	EXISTING CABLE LINE
G	EXISTING GAS LINE
UGP	EXISTING UNDERGROUND POWER LINE
OP	EXISTING OVERHEAD POWER LINE
D	EXISTING STORM DRAIN MANHOLE
○	EXISTING STORM DRAIN CLEANOUT
■	EXISTING STORM DRAIN CATCH BASIN
S	EXISTING SANITARY SEWER MANHOLE
○	EXISTING SANITARY SEWER CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER SERVICE VALVE
SD	PROPOSED STORM DRAIN PIPE
	PROPOSED CURTAIN DRAIN WITH PERFORATED DRAIN PIPE
D	PROPOSED STORM MANHOLE
○	PROPOSED STORM CLEANOUT
■	PROPOSED CATCH BASIN
●■	PROPOSED AREA DRAIN
▨	PROPOSED STORM DETENTION FACILITY
SS	PROPOSED SANITARY SEWER PIPE
○	PROPOSED SANITARY SEWER CLEANOUT

STORM DRAIN KEY NOTES

③ INSTALL STORM PIPE.
⑦ INSTALL STORM CLEANOUT.

N
SCALE: 1" = 30'
0 30 60 FT

CLIENT

WEST LINN
WILSONVILLE SCHOOL
DISTRICT

2755 SW BORLAND ROAD
TUALATIN, OR 97062

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ISSUES

No.	DESCRIPTION	DATE
1	DESIGN DEVELOPMENT	10-07-2020

NOT FOR CONSTRUCTION

CONSULTANTS

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
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SEAL

PRELIMINARY
70657PE
JUNE 16, 20
JESSE T. EMERSON
EXPIRES: 12/31/21

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: **TEG, JTE, ZMS**
CHECKED BY: **JDH**
PROJECT MGR: **JDH**
APPROVED BY: **JDH**

SHEET TITLE
STADIUM PARKING
UTILITY PLAN - ADD ALT A

SHEET NUMBER
C302

ISSUE
1

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-UTILITY PLAN-ALT A.DWG
BIM 360://124724 - WLHS Stadium Seating and Parking R2020/12472 -WLHS-Stadium-A-R20.rvt

SCALE CHECK
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1 in

2020-12-16 3:43:34 PM

LEGEND

SD	EXISTING STORM DRAIN PIPE
STM	EXISTING STORM DRAIN PIPE
···	EXISTING STORM DRAIN DITCH
SS	EXISTING SANITARY SEWER PIPE
SAN	EXISTING SANITARY SEWER PIPE
W	EXISTING WATER PIPE
C	EXISTING CABLE LINE
G	EXISTING GAS LINE
UGP	EXISTING UNDERGROUND POWER LINE
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○	EXISTING STORM DRAIN CLEANOUT
■	EXISTING STORM DRAIN CATCH BASIN
Ⓢ	EXISTING SANITARY SEWER MANHOLE
○	EXISTING SANITARY SEWER CLEANOUT
●	EXISTING FIRE HYDRANT
●	EXISTING WATER SERVICE VALVE
SD	PROPOSED STORM DRAIN PIPE
– – –	PROPOSED CURTAIN DRAIN WITH PERFORATED DRAIN PIPE
Ⓓ	PROPOSED STORM MANHOLE
○	PROPOSED STORM CLEANOUT
■	PROPOSED CATCH BASIN
●■	PROPOSED AREA DRAIN
▨	PROPOSED STORM DETENTION FACILITY
SS	PROPOSED SANITARY SEWER PIPE
○	PROPOSED SANITARY SEWER CLEANOUT

STORM DRAIN KEY NOTES

① CONSTRUCT 3' WIDE SLOPE CURTAIN DRAIN.

② INSTALL STORM DRAIN MANHOLE

③ INSTALL STORM PIPE.

⑫ INSTALL BAYFILTER STORM TREATMENT CATCH BASIN.

⑬ CONNECT TO EXISTING STORM SYSTEM.

N
W E
S

SCALE: 1" = 30'
0 30 60 FT

CLIENT
WEST LINN
WILSONVILLE SCHOOL
DISTRICT

West Linn-Wilsonville
School District

2755 SW BORLAND ROAD
TUALATIN, OR 97062

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ISSUES

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WATER RESOURCES
COMMUNITY PLANNING
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SEAL

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: **TEG, JTE, ZMS**
CHECKED BY: **JDH**
PROJECT MGR: **JDH**
APPROVED BY: **JDH**

SHEET TITLE
SOUTH PARKING LOT
UTILITY PLAN - ADD ALT B

SHEET NUMBER
C303
ISSUE
1

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-UTILITY PLAN.DWG
BIM 360://124724 - WLHS Stadium Seating and Parking R2020/12472 -WLHS-Stadium-A-R20.rvt

SCALE CHECK
1 in
10mm

2020-12-16 3:43:34 PM

1 LANDSCAPE OVERALL CONTEXT PLAN
Scale: NTS

GENERAL NOTES

1. LANDSCAPE DOCUMENTS ARE BASED ON A SURVEY BY COMPASS LAND SURVEYORS DATED JANUARY 2020. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES IDENTIFIED ON SITE RELATED TO SURVEY INFORMATION PRIOR TO INSTALLATION.
2. REFERENCE CIVIL DRAWINGS FOR VEHICULAR AREAS, VEHICULAR PAVING, SITE UTILITIES, STORMWATER TREATMENT INFORMATION.
3. REFERENCE ELECTRICAL DRAWINGS FOR SITE LIGHTING INFORMATION.
4. REFERENCE ARCHITECTURAL DRAWINGS FOR BLEACHER AND GRANDSTAND IMPROVEMENT INFORMATION.
5. FOR TREE PROTECTION AND REMOVAL REFERENCE TREE PROTECTION AND REMOVAL PLANS.
6. FOR SITE REMOVALS REFERENCE CIVIL SITE DEMOLITION PLANS.

SITE NOTES

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School District

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ISSUES

No.	DESCRIPTION	DATE
1	LAND USE APPLICATION	10-07-2020

NOT FOR CONSTRUCTION

CONSULTANTS

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319 SW Washington St.
Suite 820
Portland, Oregon 97204
503.223.5953

SEAL

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ibigroup.com

PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
5464 W A Street
West Linn, OR 97068
United States

PROJECT NO:
124724

DRAWN BY: **EK / AC**
CHECKED BY: **RC / EK**
PROJECT MGR: **RC**
APPROVED BY: **CMR**

SHEET TITLE
LANDSCAPE OVERALL
CONTEXT PLAN

SHEET NUMBER
L000

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
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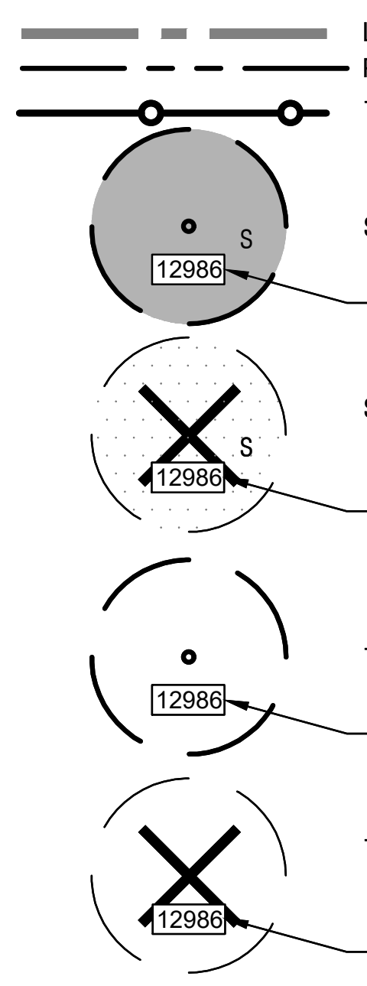
2020-06-XX X:XX:XX XX

TREE PROTECTION AND REMOVAL LEGEND



LIMIT OF GRADING
PROPERTY LINE
TREE PROTECTION FENCING, REF. DETAIL 1
SIGNIFICANT TREE TO BE PROTECTED
TREE ID #
SIGNIFICANT TREE TO BE REMOVED
TREE ID #
TREE TO BE PROTECTED
TREE ID #
TREE TO BE REMOVED
TREE ID #

TREE TABULATIONS

REFERENCE ARBORIST'S REPORT

GENERAL
- TOTAL PROPERTY AREA = 41.01 ACRES
- TOTAL PROJECT AREA = 3.33 ACRES
- TOTAL TREES IN PROJECT AREA = 258
- TOTAL TREES RETAINED IN PROJECT AREA = 92
- TOTAL TREES REMOVED IN PROJECT AREA = 166

SIGNIFICANT TREES
- SIGNIFICANT TREES IN PROJECT AREA = 58
- SIGNIFICANT TREES IN PROJECT AREA RETAINED = 33
- SIGNIFICANT TREES IN PROJECT AREA REMOVED = 25
- *TOTAL AREA OF SIGNIFICANT TREES IN PROJECT AREA = 180,687 SF
- *AREA OF SIGNIFICANT TREES RETAINED IN PROJECT AREA = 112,824 SF
- *AREA OF SIGNIFICANT TREES REMOVED IN PROJECT AREA = 67,863 SF
- PERCENT AREA OF SIGNIFICANT TREES RETAINED IN PROJECT AREA = 62.4%

*AREA OF TREE CROWN RADIUS / DRIP LINE PLUS 10 FEET OFFSET.

TREE REMOVAL NOTES

1. PROTECT ALL TREES INDICATED TO REMAIN, INCLUDING BARK AND ROOT ZONES. INSTALL PROTECTIVE FENCING WHERE INDICATED ON THE TREE PROTECTION PLAN. PROTECTIVE BARRIERS SHALL BE PLACED BEFORE PHYSICAL DEVELOPMENT STARTS AND SHALL STAY IN PLACE UNTIL AFTER PLANNING OFFICIAL AUTHORIZES THEIR REMOVAL OR A FINAL CERTIFICATE OF OCCUPANCY IS ISSUED, WHICHEVER OCCURS FIRST.

2. TREE PROTECTION FENCING SHALL BE CHAIN LINK, MINIMUM OF 6' HEIGHT, SECURED WITH STEEL POSTS, INSTALLED 5' BEYOND THE EDGE OF THE ROOT ZONE OR AS INDICATED ON THE TREE REMOVAL AND PROTECTION PLAN.

3. EXCAVATION WITHIN THE TREE PROTECTION ZONE WILL BE PERFORMED USING ONLY NON-MOTORIZED HANDHELD TOOLS AND SHALL BE THE MINIMUM NECESSARY TO ACCOMPLISH THE PURPOSE FOR THE EXCAVATION AND TO ENSURE LONG-TERM SURVIVAL OF THE TREE.

4. TREE PROTECTION FENCING SHALL BE FLUSH WITH THE INITIAL UNDISTURBED GRADE.

5. APPROVED SIGNS SHALL BE ATTACHED TO PROTECTION FENCING, AND VISIBLY STATING THAT INSIDE THE FENCING IS A TREE PROTECTION ZONE, NOT TO BE DISTURBED UNLESS PRIOR APPROVAL HAS BEEN OBTAINED FROM THE COUNTY MANAGER.

6. NO CONSTRUCTION ACTIVITY SHALL OCCUR WITHIN THE TREE PROTECTION ZONE, INCLUDING, BUT NOT LIMITED TO DUMPING OR STORAGE OF MATERIALS SUCH AS BUILDING SUPPLIES, SOIL, WASTE ITEMS, OR PARKED VEHICLES AND EQUIPMENT.

7. THE TREE PROTECTION ZONE SHALL REMAIN FREE OF CHEMICALLY INJURIOUS MATERIALS AND LIQUIDS SUCH AS PAINTS, THINNERS, CLEANING SOLUTIONS, PETROLEUM PRODUCTS, AND CONCRETE OR DRY WALL EXCESS, CONSTRUCTION DEBRIS, OR RUNOFF.

8. NO EXCAVATION, TRENCHING, GRADING, ROOT PRUNING OR OTHER ACTIVITY SHALL OCCUR WITHIN THE TREE PROTECTION ZONE UNLESS DIRECTED BY AN ARBORIST PRESENT ON SITE AND APPROVED BY THE CITY MANAGER.

9. NO FILL OR COMPACTION SHALL OCCUR WITHIN THE CRITICAL ROOT ZONES OF ANY OF THE TREES. IF COMPACTION IS UNAVOIDABLE, MEASURES SHALL BE TAKEN AS RECOMMENDED BY A CERTIFIED ARBORIST TO REDUCE OR MITIGATE THE IMPACT OF THE FILL OR COMPACTION.

10. CONTRACTOR TO GIVE OWNER 30 DAYS NOTICE PRIOR TO REMOVAL OF PLANTS TO BE RELOCATED.

GENERAL NOTES

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2. REFERENCE CIVIL DRAWINGS FOR VEHICULAR AREAS, VEHICULAR PAVING, SITE UTILITIES, STORMWATER TREATMENT INFORMATION.

3. REFERENCE ELECTRICAL DRAWINGS FOR SITE LIGHTING INFORMATION.

4. REFERENCE ARCHITECTURAL DRAWINGS FOR BLEACHER AND GRANDSTAND IMPROVEMENT INFORMATION.

5. FOR TREE PROTECTION AND REMOVAL REFERENCE TREE PROTECTION AND REMOVAL PLANS.

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SITE NOTES

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NOTE:
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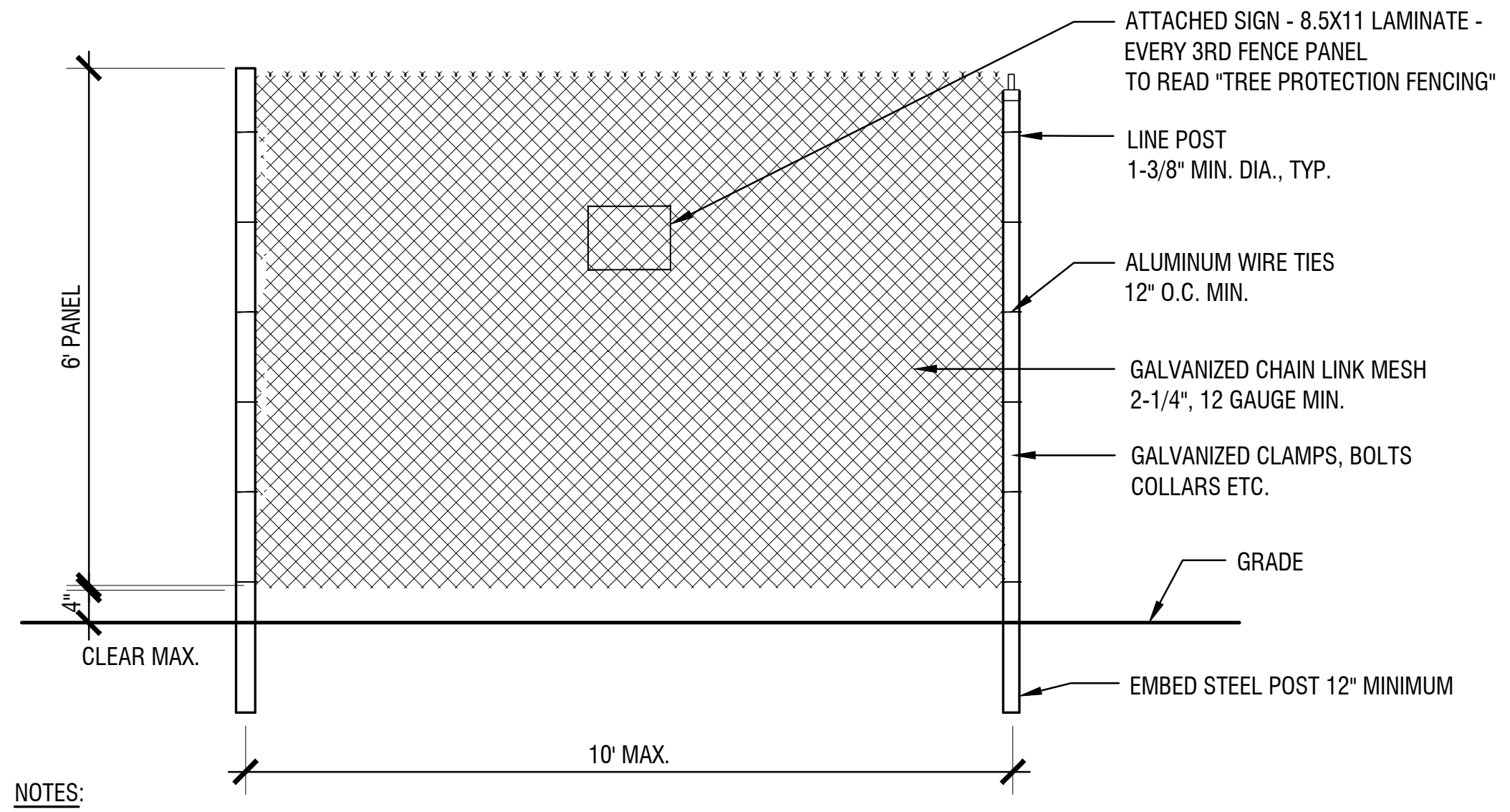
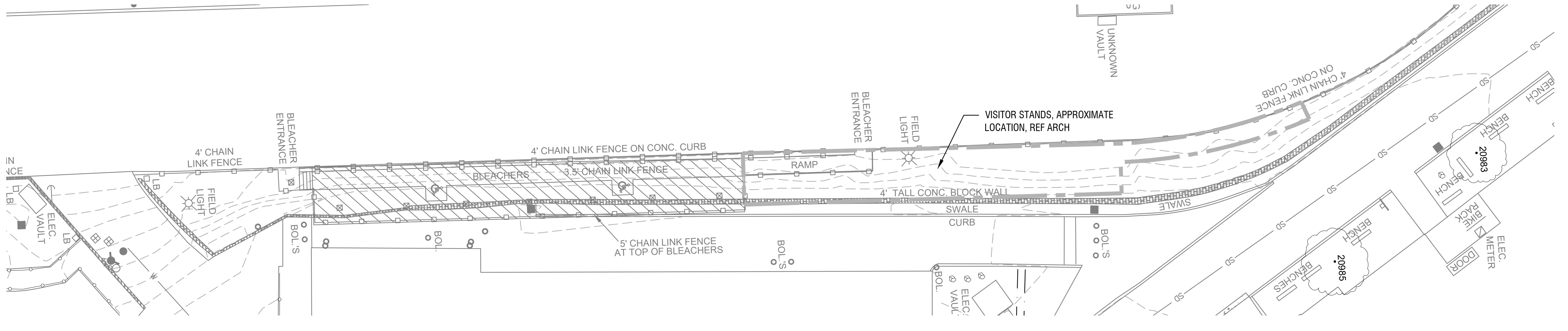


NOTES:

1. LOCATE FENCING PER TREE PROTECTION PLAN AND SPECIFICATIONS.
2. EXISTING FENCING OR CONSTRUCTION FENCING MAY BE USED IN-LIEU OF TREE PROTECTION FENCING WITH APPROVAL FROM OWNER.
3. TREE PROTECTION FENCING MUST BE IN PLACE THROUGHOUT CONSTRUCTION.
4. INSTALL BY FENCE TYPE IN LOCATIONS INDICATED ON TREE PROTECTION PLANS.

1 / - TEMPORARY TREE PROTECTION FENCE
Scale: 1/2" = 1'-0"



2 / - ADD ALT C TREE PROTECTION AND REMOVAL PLAN - VISITOR BLEACHERS
Scale: 1" = 20'-0"

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School District

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ISSUES

No.	DESCRIPTION	DATE
1	LAND USE APPLICATION	10-07-2020

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CONSULTANTS

Mayer/Reed

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319 SW Washington St.
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503.223.5953

SEAL

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
5464 W A Street
West Linn, OR 97068
United States

PROJECT NO:
124724

DRAWN BY: **EK / AC**
CHECKED BY: **RC / EK**
PROJECT MGR: **RC**
APPROVED BY: **CMR**

SHEET TITLE
TREE PROTECTION AND REMOVAL NOTES AND LEGEND

SHEET NUMBER
L001

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
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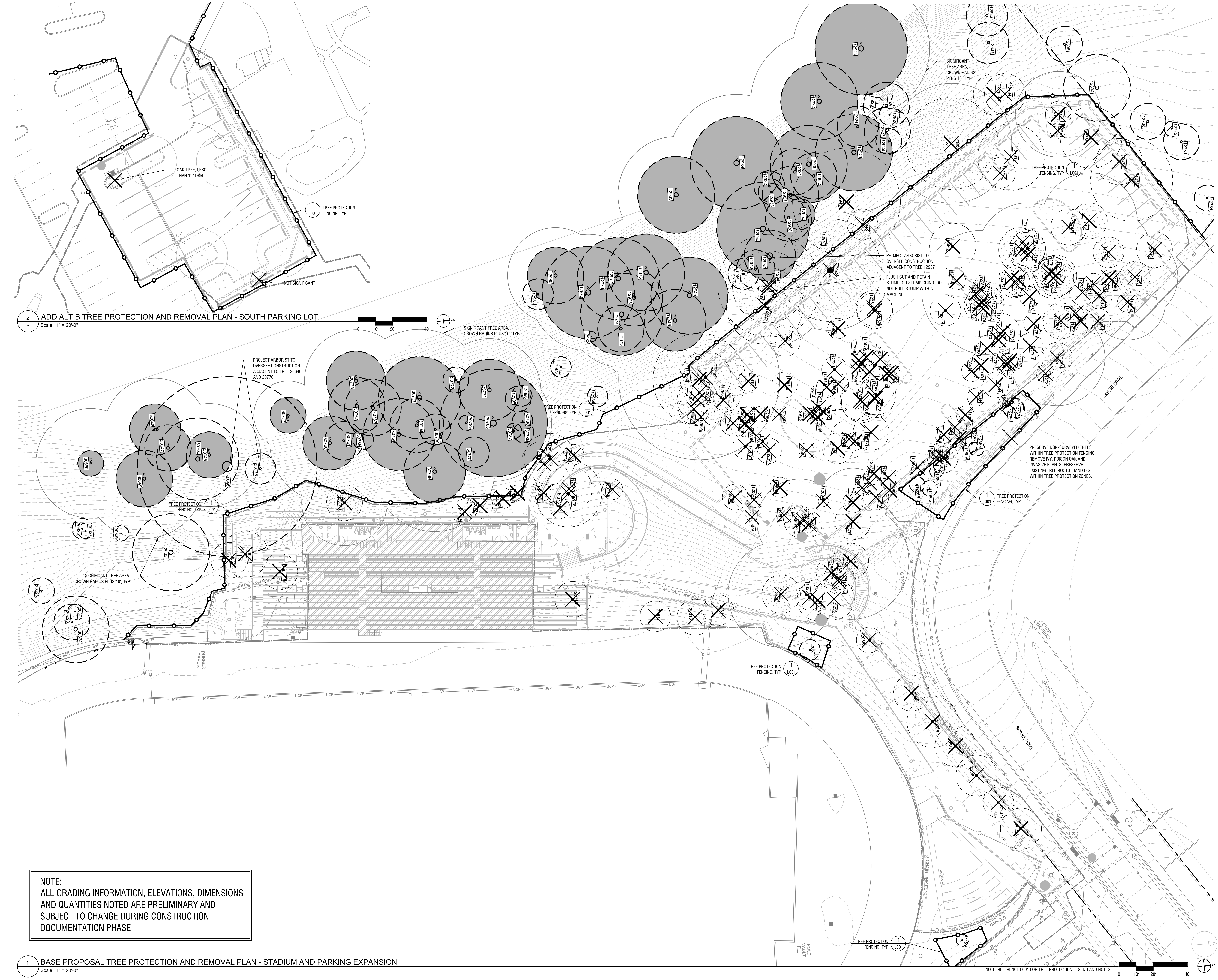
1 in

2020-06-XX X:XX:XX XX



2 ADD ALT B TREE PROTECTION AND REMOVAL PLAN - SOUTH PARKING LOT
Scale: 1" = 20'-0"

NOTE:
ALL GRADING INFORMATION, ELEVATIONS, DIMENSIONS AND QUANTITIES NOTED ARE PRELIMINARY AND SUBJECT TO CHANGE DURING CONSTRUCTION DOCUMENTATION PHASE.

1 BASE PROPOSAL TREE PROTECTION AND REMOVAL PLAN - STADIUM AND PARKING EXPANSION
Scale: 1" = 20'-0"

NOTE: REFERENCE L001 FOR TREE PROTECTION LEGEND AND NOTES

2020-06-XX X:XX:XX XX

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School District

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ISSUES

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5464 W A Street
West Linn, OR 97068
United States

PROJECT NO:
124724

DRAWN BY:	CHECKED BY:
EK / AC	**RC / EK**
PROJECT MGR:	APPROVED BY:
RC	**CMR**

SHEET TITLE
TREE PROTECTION AND
REMOVAL PLAN

SHEET NUMBER
L002

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
1 in
10mm

NOTE:
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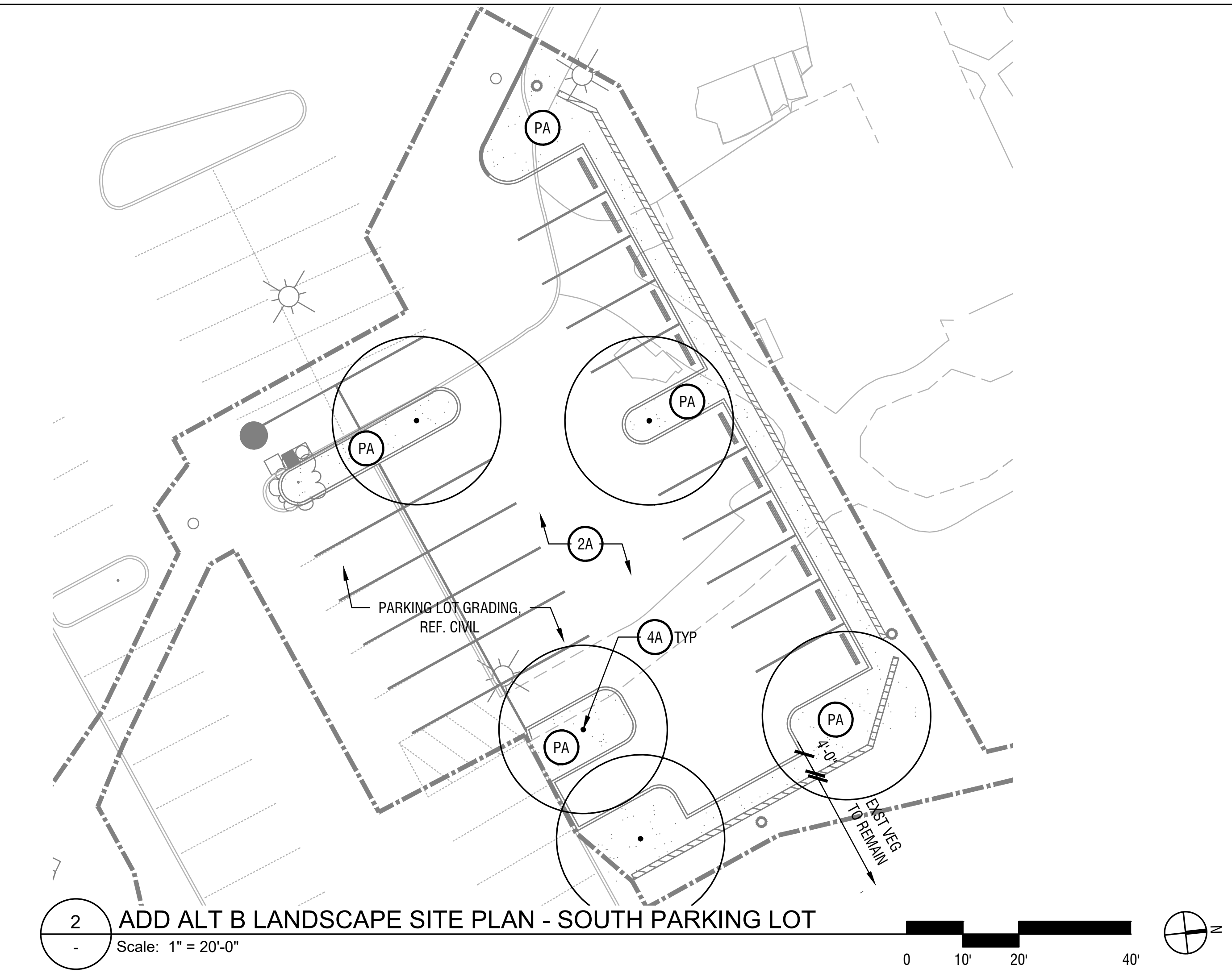
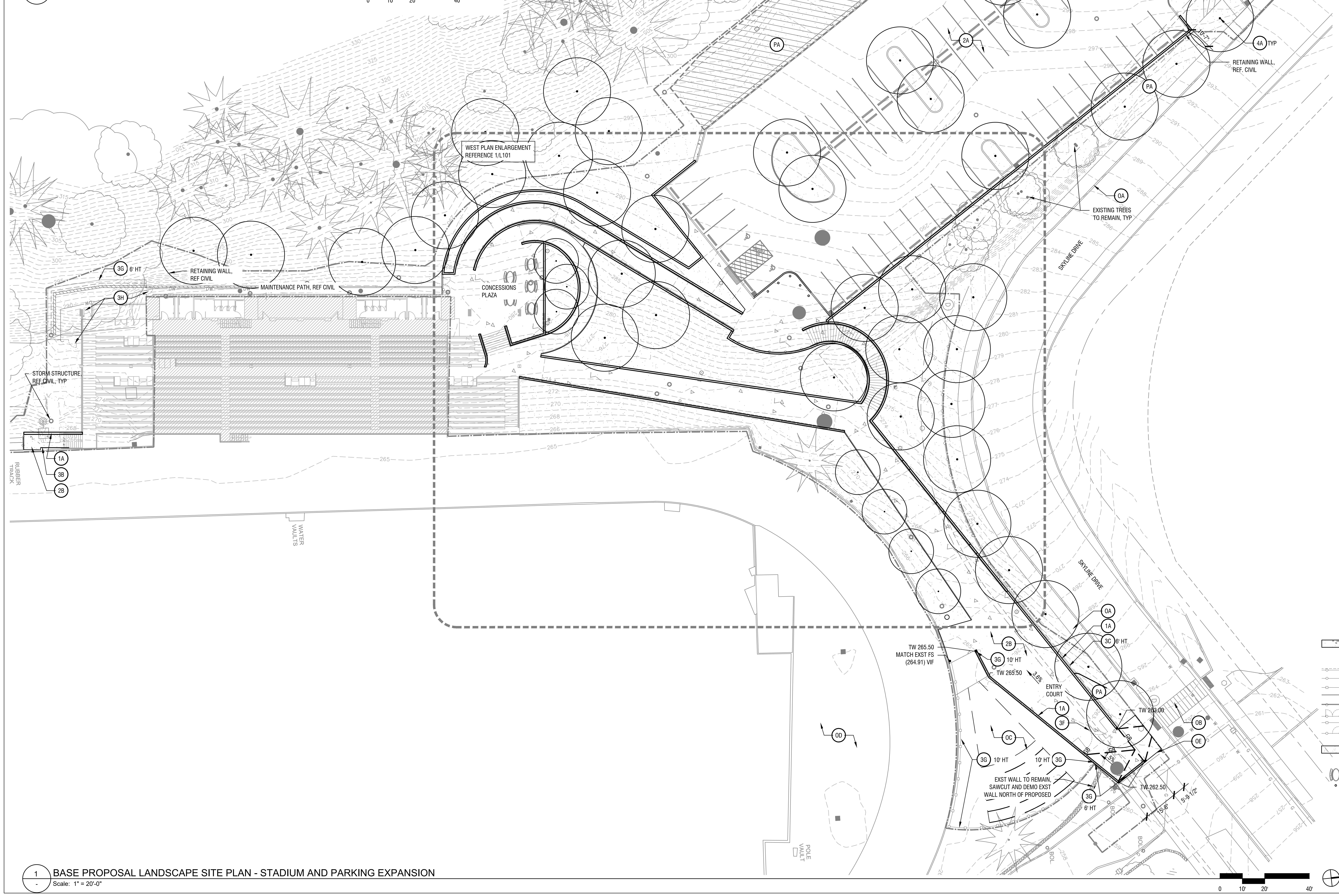
NOT FOR CONSTRUCTION



2 ADD ALT B LANDSCAPE SITE PLAN - SOUTH PARKING LOT
Scale: 1" = 20'-0"



1 BASE PROPOSAL LANDSCAPE SITE PLAN - STADIUM AND PARKING EXPANSION
Scale: 1" = 20'-0"

GENERAL LEGEND

▬ ▬ ▬	LIMIT OF GRADING
— — —	PROPERTY LINE
- - - -	EASEMENT LINE
GB	GRADE BREAK
(FS XXX.XX)	EXISTING SPOT ELEVATION
FS XXX.XX	SPOT ELEVATION
XX%	SLOPE PERCENT
FS FG	FINISH SURFACE ELEVATION (HARDSCAPE) FINISH GRADE ELEVATION (SOFTSCAPE)
TW	TOP OF WALL ELEVATION
TS BS	TOP OF STAIR ELEVATION BOTTOM OF STAIR ELEVATION
	EXISTING TREE TO REMAIN, PROTECT IN PLACE. REF TREE PROTECTION PLANS.
	SITE LIGHTING, REF ELEC

GENERAL ABBREVIATIONS

ARCH	ARCHITECTURAL/ARCHITECT
CAL	CALIPER
CONC	CONCRETE
DIA	DIAMETER
DBH	DIAMETER AT BREAST HEIGHT
DWG	DRAWINGS
EQ	EQUAL
EXST	EXISTING
HT	HEIGHT
L.A.	LANDSCAPE ARCHITECT
N/A	NOT APPLICABLE
NO.	NUMBER
O.C.	ON CENTER
PA	PLANTING AREA
R	RADIUS
REF	REFERENCE
SF	SQUARE FEET
SIM	SIMILAR

GENERAL NOTES

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SHEET NOTES - MATERIALS PLAN

TAG #	DETAIL TITLE
0	EXISTING CONDITIONS
0A	EXISTING SIDEWALK TO REMAIN
0B	EXISTING CROSSWALK TO REMAIN
0C	EXISTING SHOT PUT TO BE RENOVATED
0D	EXISTING TRACK AND FIELD TO REMAIN
0E	SAWCUT EXISTING CONC PAVING FOR CLEAN TRANSITION
0F	EXISTING TRACK CURBS AND WALLS TO REMAIN
0G	EXISTING FLAGPOLE TO REMAIN
1	RETAINING WALLS
1A	CONCRETE RETAINING WALLS, REF STRUCTURAL FOR FOOTINGS AND REINFORCEMENT
2	PAVING
2A	VEHICULAR ASPHALT PAVING, REF CIVIL
2B	4" THICK PEDESTRIAN CONCRETE PAVING
2C	REINFORCED CONCRETE STAIR, ±6" RISE, ±14" TREAD
3	FENCING, GATES AND RAILINGS
3A	42" HT. LEANING RAIL / GUARDRAIL
3B	42" HT. GUARDRAIL
3C	WELDED WIRE MESH FENCE, 6' HEIGHT, BLACK, REF 3/L103
3D	HANDRAIL, CONTINUOUS
3E	GUARDRAIL WITH HANDRAIL
3F	6' HT. PEDESTRIAN GATE, WELDED WIRE MESH, BLACK, REF 4/L103
3G	CHAINLINK FENCE, HEIGHT VARIES PER PLANS, BLACK, REF 1/L103
3H	6' HT. PEDESTRIAN GATE, CHAINLINK, BLACK, REF 2/L103
4	LANDSCAPE AREAS - ALL PLANTING AREAS TO RECEIVE FULLY AUTOMATIC IRRIGATION
PA	SHRUB AND GROUNDCOVER PLANTING AREA, REF L200 SERIES PLANTING PLANS
4A	TREE, REF L200 SERIES PLANTING PLANS
5	SITE FEATURES AND FURNISHINGS
5A	TABLE AND BENCH SEATS, OWNER PROVIDED
5B	REMOVABLE BOLLARD

CLIENT
West Linn Wilsonville
School District

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is a member of the IBI Group of companies

ISSUES

No.	DESCRIPTION	DATE
1	LAND USE APPLICATION	10-07-2020

CONSULTANTS

Mayer/Reed

Mayer/Reed, Inc.
319 SW Washington St.
Suite 820
Portland, Oregon 97204
503.223.5953

SEAL

IBI GROUP
907 SW Harvey Milk Street
Portland, OR 97205, USA
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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
5464 W A Street
West Linn, OR 97068
United States

PROJECT NO:
124724

DRAWN BY: **EK / AC**	CHECKED BY: **RC / EK**
PROJECT MGR: **RC**	APPROVED BY: **CMR**

SHEET TITLE
LANDSCAPE SITE PLAN

SHEET NUMBER
L100

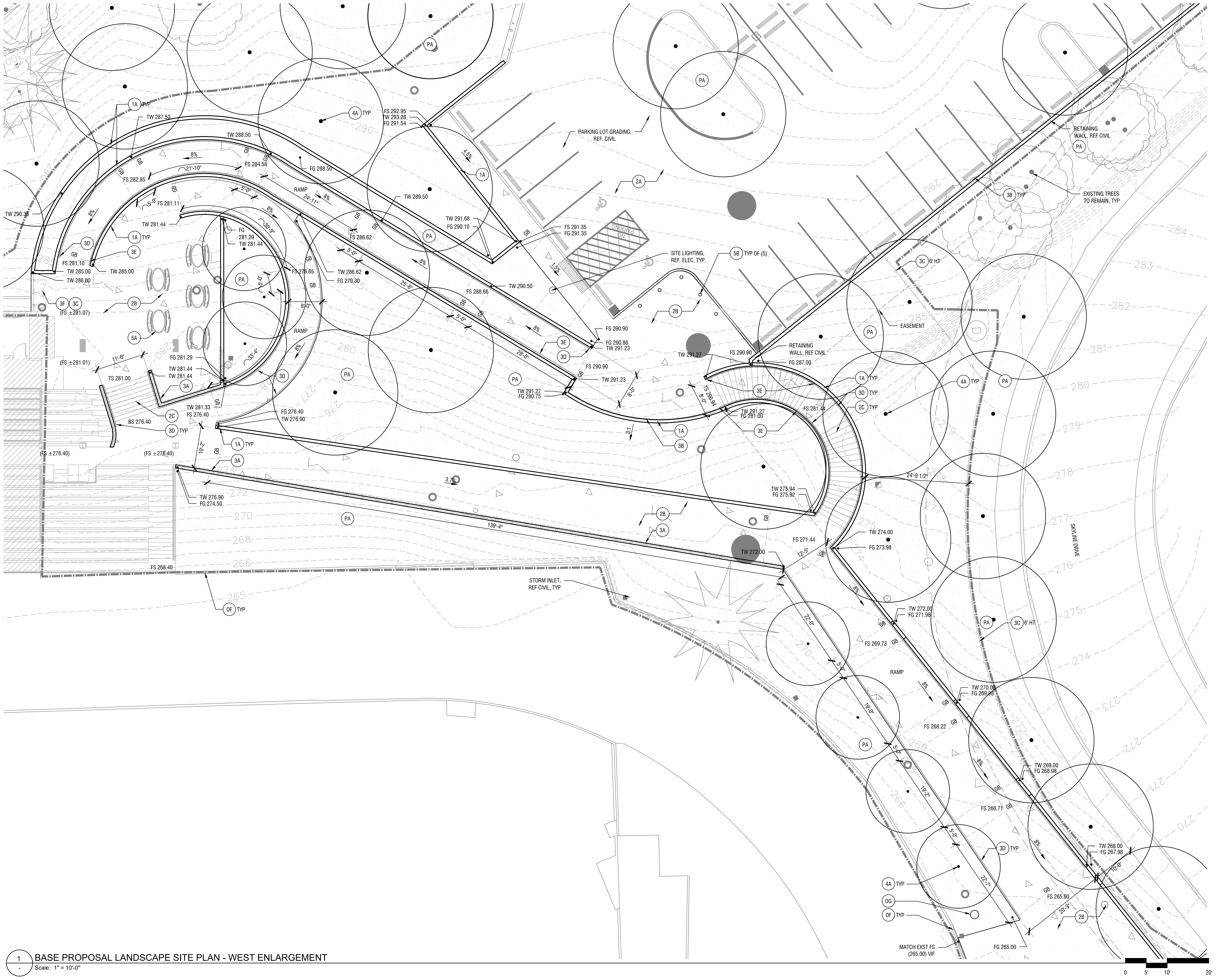
ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
10mm
1 in

2020-06-XX X:XX:XX XX

NOTE:
ALL GRADING INFORMATION, ELEVATIONS, DIMENSIONS AND QUANTITIES NOTED ARE PRELIMINARY AND SUBJECT TO CHANGE DURING CONSTRUCTION DOCUMENTATION PHASE.



1 BASE PROPOSAL LANDSCAPE SITE PLAN - WEST ENLARGEMENT
Scale: 1" = 10'-0"

0 5' 10' 20'

GENERAL LEGEND

	LIMIT OF GRADING
	PROPERTY LINE
	EASEMENT LINE
GB	GRADE BREAK
(FS XXX.XX)	EXISTING SPOT ELEVATION
FS XXX.XX	SPOT ELEVATION
XX%	SLOPE PERCENT
FS	FINISH SURFACE ELEVATION (HARDSCAPE)
FG	FINISH GRADE ELEVATION (SOFTSCAPE)
TW	TOP OF WALL ELEVATION
TS	TOP OF STAIR ELEVATION
BS	BOTTOM OF STAIR ELEVATION
	EXISTING TREE TO REMAIN, PROTECT IN PLACE. REF TREE PROTECTION PLANS.
	SITE LIGHTING, REF ELEC

GENERAL ABBREVIATIONS

ARCH	ARCHITECTURAL/ARCHITECT
CAL	CALIPER
CONC	CONCRETE
DIA	DIAMETER
DBH	DIAMETER AT BREAST HEIGHT
DWG	DRAWINGS
EQ	EQUAL
EXST	EXISTING
HT	HEIGHT
L.A.	LANDSCAPE ARCHITECT
N/A	NOT APPLICABLE
NO.	NUMBER
O.C.	ON CENTER
PA	PLANTING AREA
R	RADIUS
REF	REFERENCE
SF	SQUARE FEET
SIM	SIMILAR

GENERAL NOTES

1. LANDSCAPE DOCUMENTS ARE BASED ON A SURVEY BY COMPASS LAND SURVEYORS DATED JANUARY 2020. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES IDENTIFIED ON SITE RELATED TO SURVEY INFORMATION PRIOR TO INSTALLATION.
2. REFERENCE CIVIL DRAWINGS FOR VEHICULAR AREAS, VEHICULAR PAVING, SITE UTILITIES, STORMWATER TREATMENT INFORMATION.
3. REFERENCE ELECTRICAL DRAWINGS FOR SITE LIGHTING INFORMATION.
4. REFERENCE ARCHITECTURAL DRAWINGS FOR BLEACHER AND GRANDSTAND IMPROVEMENT INFORMATION.
5. FOR TREE PROTECTION AND REMOVAL REFERENCE TREE PROTECTION AND REMOVAL PLANS.
6. FOR SITE REMOVALS REFERENCE CIVIL SITE DEMOLITION PLANS.

SITE NOTES

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2. OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER. SO THAT UTILITIES MAY BE ACCURATELY LOCATED, EXCAVATORS MUST NOTIFY ALL PERTINENT COMPANIES OR AGENCIES WITH UNDERGROUND UTILITIES IN THE PROJECT AREA AT LEAST 48 BUSINESS-DAY HOURS BUT NOT MORE THAN 10 BUSINESS DAYS PRIOR TO COMMENCING AN EXCAVATION.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN ALL FACTS CONCERNING CONDITIONS TO BE FOUND AT THE LOCATION OF THE PROJECT INCLUDING PHYSICAL CHARACTERISTICS ABOVE AND BELOW THE SURFACE OF THE GROUND AND TO FULLY EXAMINE THE PLANS AND SPECIFICATIONS. ANY DISCREPANCIES IN DIMENSIONING OR LAYOUT SHALL BE BROUGHT TO THE ATTENTION OF THE AGENCY PRIOR TO THE ALTERATION OF PLANTING.
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SHEET NOTES - MATERIALS PLAN

TAG #	DETAIL TITLE
0	EXISTING CONDITIONS
0A	EXISTING SIDEWALK TO REMAIN
0B	EXISTING CROSSWALK TO REMAIN
0C	EXISTING SHOT PUT TO BE RENOVATED
0D	EXISTING TRACK AND FIELD TO REMAIN
0E	SAWCUT EXISTING CONC PAVING FOR CLEAN TRANSITION
0F	EXISTING TRACK CURBS AND WALLS TO REMAIN
0G	EXISTING FLAGPOLE TO REMAIN
1	RETAINING WALLS
1A	CONCRETE RETAINING WALLS, REF STRUCTURAL FOR FOOTINGS AND REINFORCEMENT
2	PAVING
2A	VEHICULAR ASPHALT PAVING, REF CIVIL
2B	4" THICK PEDESTRIAN CONCRETE PAVING
2C	REINFORCED CONCRETE STAIR, ±6" RISE, ±14" TREAD
3	FENCING, GATES AND RAILINGS
3A	42" HT. LEANING RAIL / GUARDRAIL
3B	42" HT. GUARDRAIL
3C	WELDED WIRE MESH FENCE, 6' HEIGHT, BLACK, REF 3/L103
3D	HANDRAIL, CONTINUOUS
3E	GUARDRAIL WITH HANDRAIL
3F	6' HT. PEDESTRIAN GATE, WELDED WIRE MESH, BLACK, REF 4/L103
3G	CHAINLINK FENCE, HEIGHT VARIES PER PLANS, BLACK, REF 1/L103
3H	6' HT. PEDESTRIAN GATE, CHAINLINK, BLACK, REF 2/L103
4	LANDSCAPE AREAS - ALL PLANTING AREAS TO RECEIVE FULLY AUTOMATIC IRRIGATION
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5A	TABLE AND BENCH SEATS, OWNER PROVIDED
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United States

PROJECT NO:
124724

DRAWN BY: **EK / AC**	CHECKED BY: **RC / EK**
PROJECT MGR: **RC**	APPROVED BY: **CMR**

SHEET TITLE
LANDSCAPE SITE PLAN -
WEST ENLARGEMENT

SHEET NUMBER
L101

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
10mm
1 in

2020-06-XX X:XX:XX XX

NOTE:
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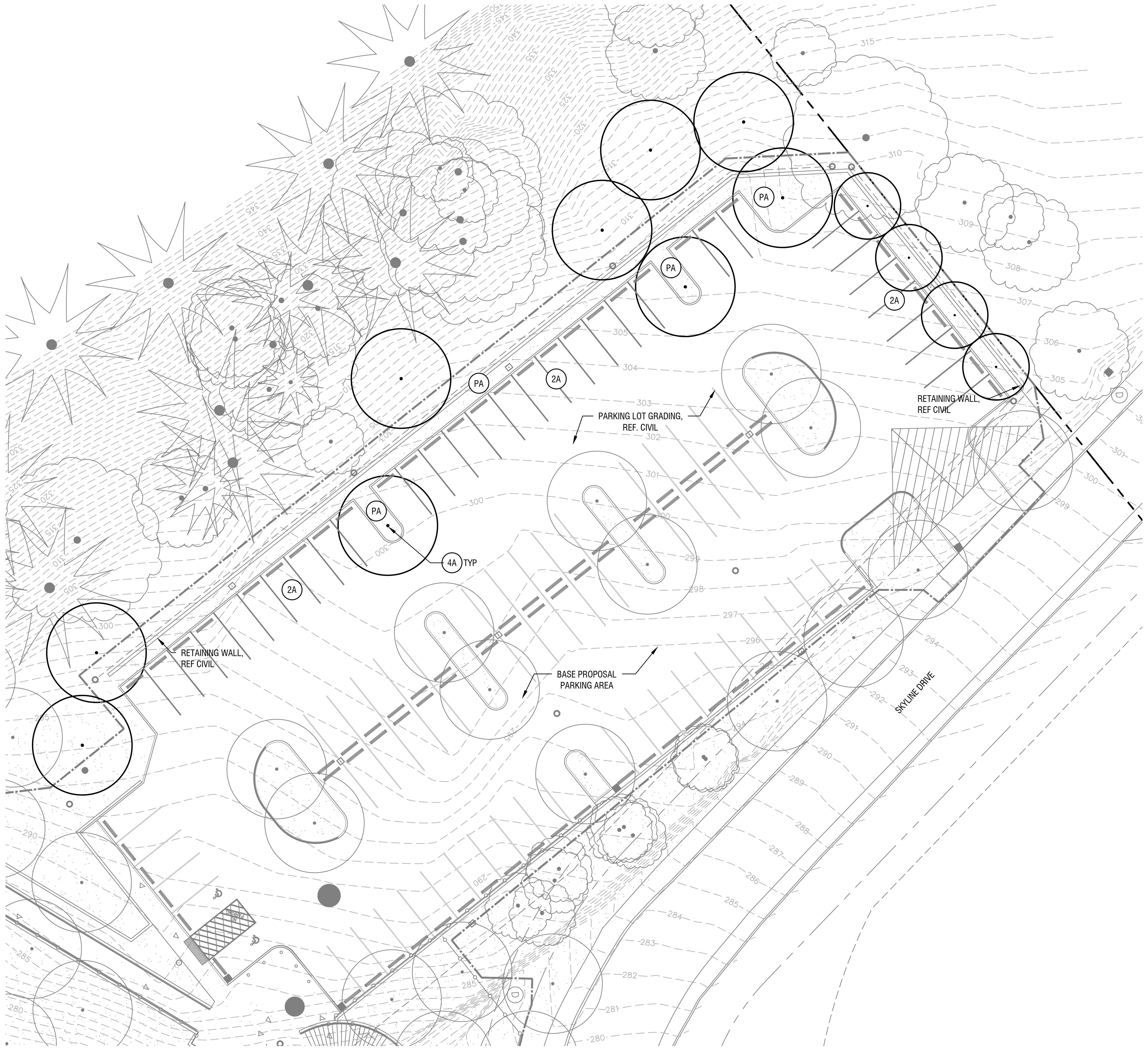

1
-
ADD ALT A LANDSCAPE SITE PLAN - NORTH PARKING EXPANSION FULL BUILD OUT
Scale: 1" = 20'-0"

0 10' 20' 40'

N

GENERAL LEGEND

	LIMIT OF GRADING
	PROPERTY LINE
	EASEMENT LINE
GB	GRADE BREAK
(FS XXX.XX)	EXISTING SPOT ELEVATION
FS XXX.XX	SPOT ELEVATION
XX%	SLOPE PERCENT
FS FG	FINISH SURFACE ELEVATION (HARDSCAPE) FINISH GRADE ELEVATION (SOFTSCAPE)
TW	TOP OF WALL ELEVATION
TS BS	TOP OF STAIR ELEVATION BOTTOM OF STAIR ELEVATION
	EXISTING TREE TO REMAIN, PROTECT IN PLACE. REF TREE PROTECTION PLANS.
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5	SITE FEATURES AND FURNISHINGS
5A	TABLE AND BENCH SEATS, OWNER PROVIDED
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True North

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School District

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1	LAND USE APPLICATION	10-07-2020

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PARKING/STADIUM ADDITIONS
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United States

PROJECT NO:
124724

DRAWN BY: **EK / AC**	CHECKED BY: **RC / EK**
PROJECT MGR: **RC**	APPROVED BY: **CMR**

SHEET TITLE
LANDSCAPE SITE PLAN -
ADD ALT A NORTH
PARKING EXPANSION

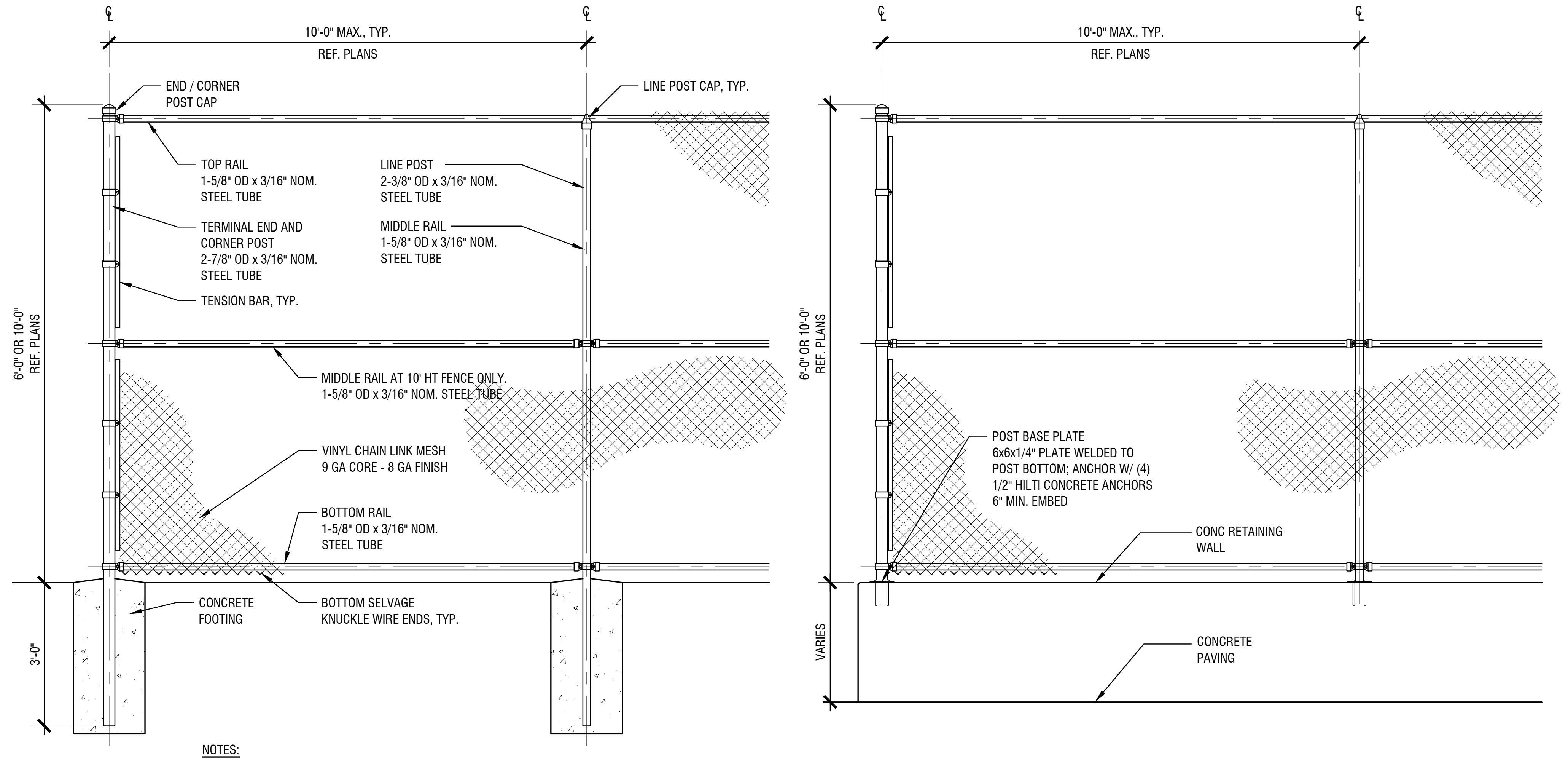
SHEET NUMBER
L102

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
10mm
1 in

2020-06-XX X:XX:XX XX



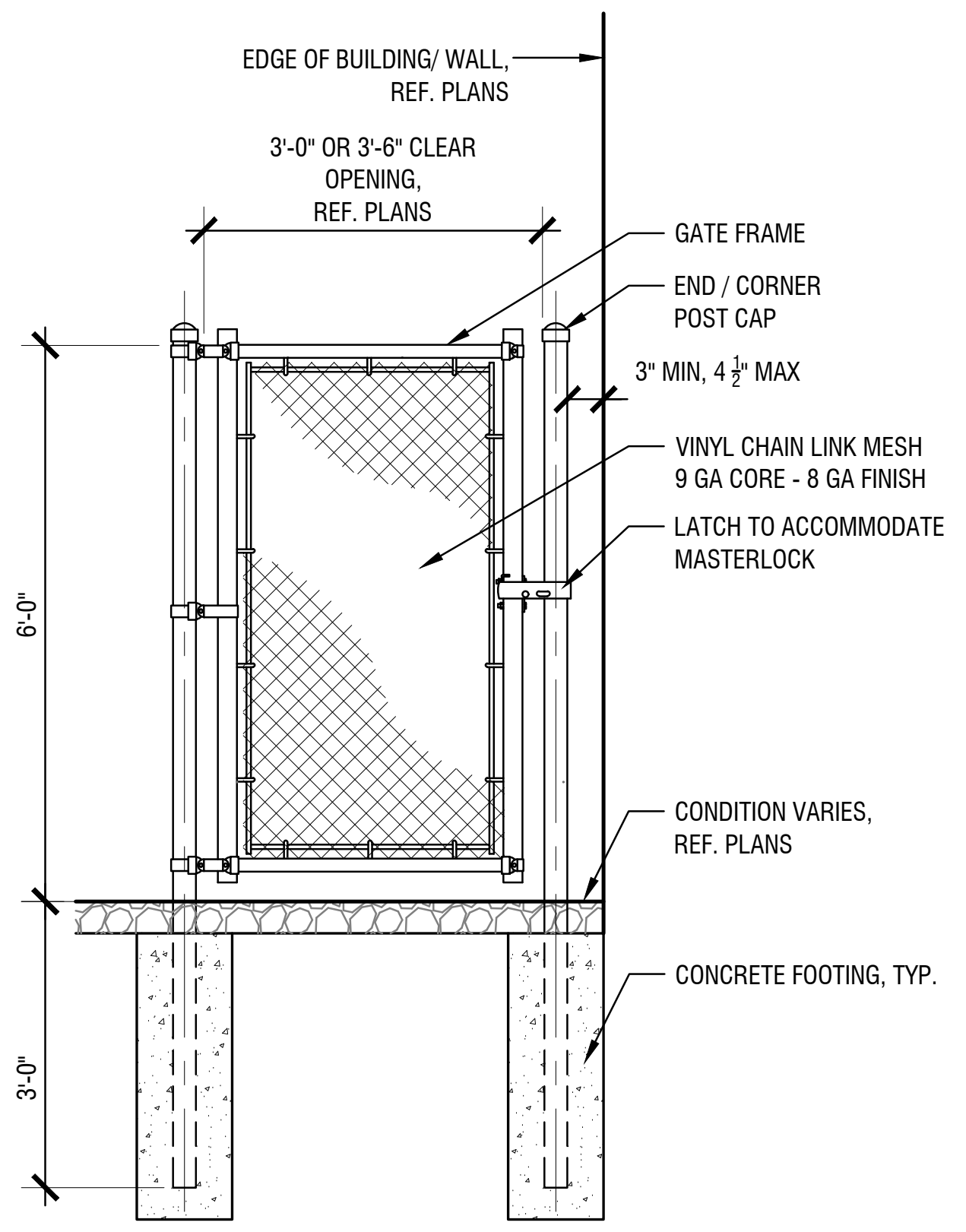
NOTES:
1. POWDER-COATED BLACK FRAMEWORK, FITTINGS, AND HARDWARE, COLOR: BLACK.
2. VINYL-COATED CHAINLINK MESH, COLOR: BLACK.

A. ON GRADE

B. WALL-MOUNT

1 CHAINLINK FENCE - SECTION / ELEVATION

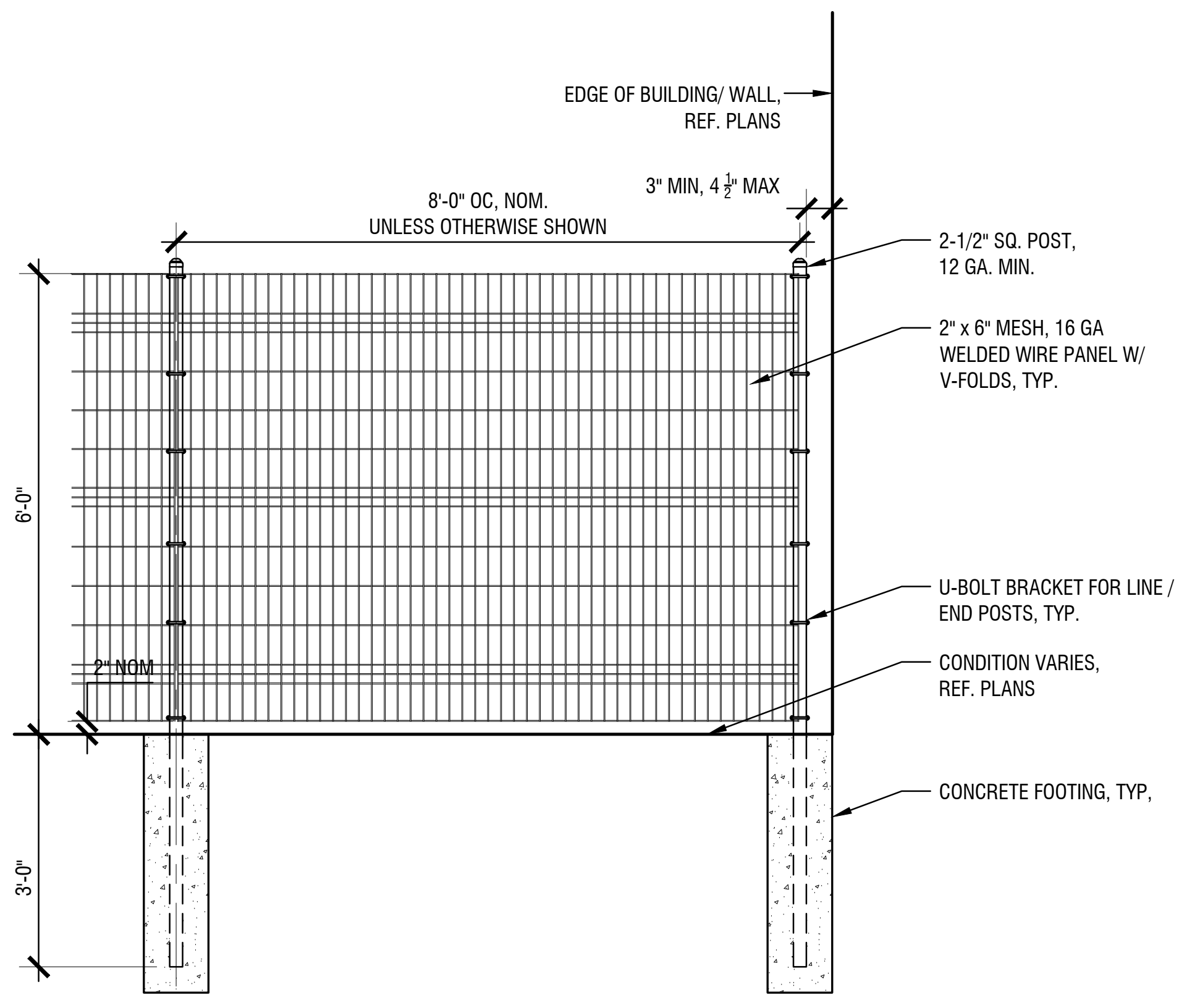
SCALE: 1/2"= 1'-0"



NOTES:
1. POWDER-COATED BLACK FRAMEWORK, FITTINGS, AND HARDWARE, COLOR: BLACK.
2. VINYL-COATED CHAINLINK MESH, COLOR: BLACK.

2 CHAINLINK GATE, 6' HT - SECTION

SCALE: 1/2"= 1'-0"

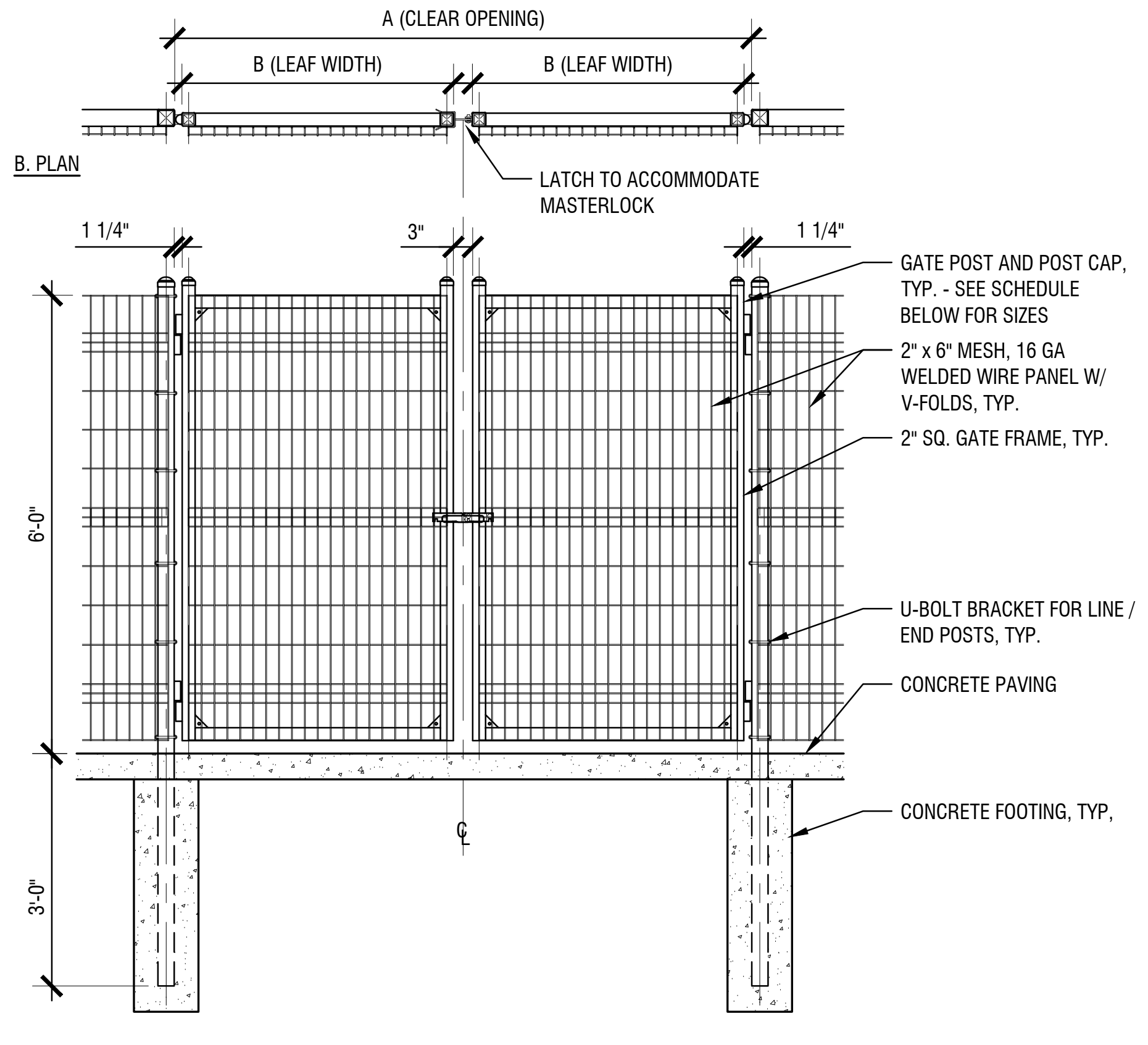


NOTE:
POWDER-COATED POSTS, BRACKETS, MESH PANELS, AND HARDWARE.
COLOR: BACK

3 WELDED WIRE MESH FENCE, 6' HT - SECTION / ELEVATION

SCALE: 1/2"= 1'-0"

LOCATION	A	B	GATE POST
CONCESSIONS	7'-5 1/2"	3'-5"	2-1/2" SQ. x 12GA
ENTRY COURT	12'-5 1/2"	6'-0"	3" SQ. x 12GA



B. PLAN

A. SECTION / ELEVATION

4 WELDED WIRE MESH GATE, 6' HT - SECTION / ELEVATION, PLAN

SCALE: 1/2"= 1'-0"

NOT FOR
CONSTRUCTION

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CHECKED BY:
RC / EK

PROJECT MGR:
RC

APPROVED BY:
CMR

SHEET TITLE
SITE DETAILS

SHEET NUMBER
L103

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
10mm
1 in

2020-06-XX X:XX:XX XX

NOTE:
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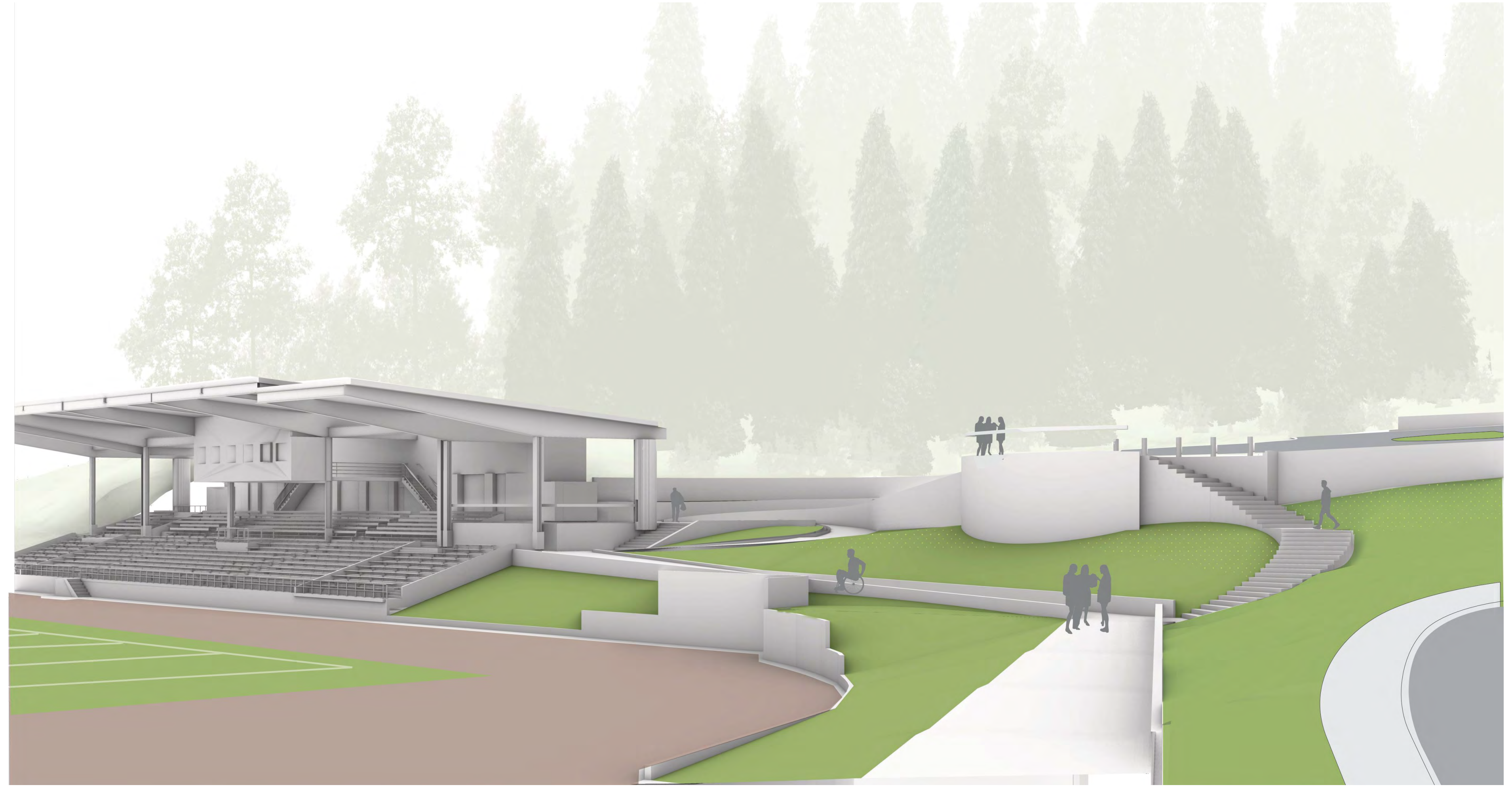
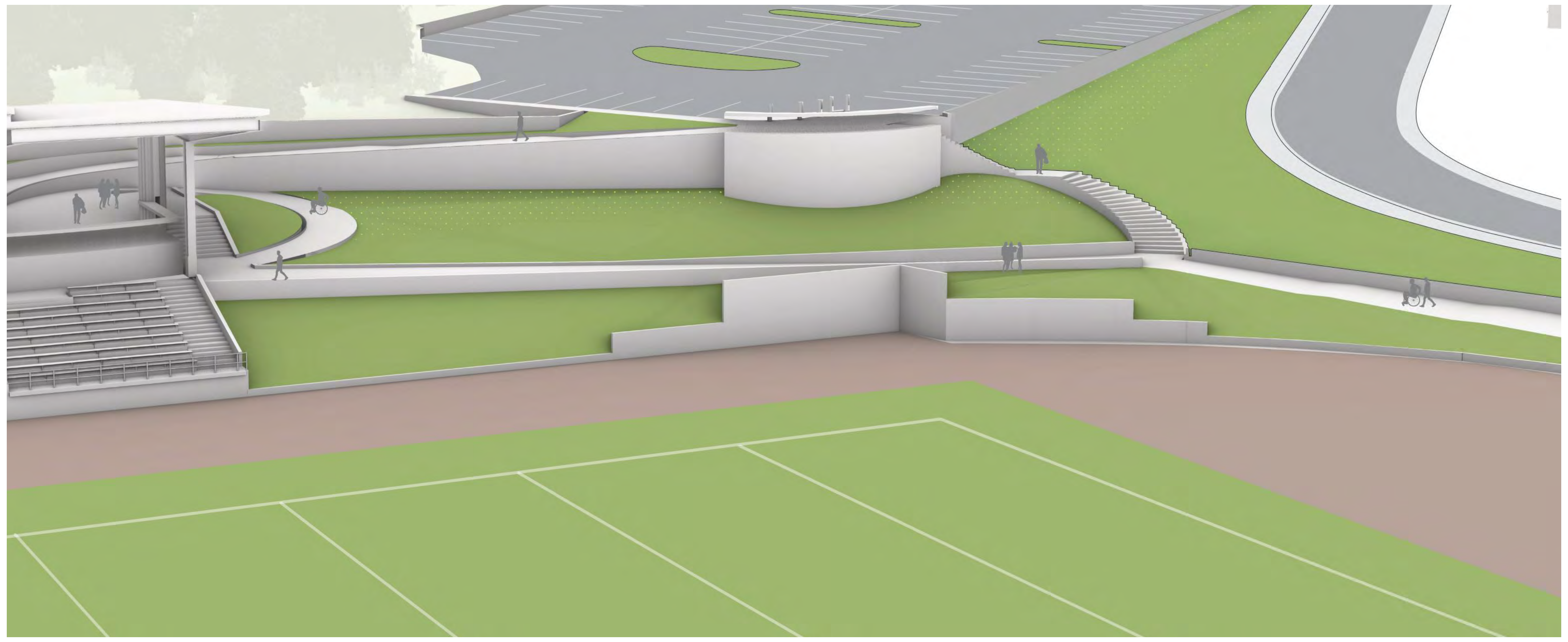
1 - AERIAL VIEW CONCEPT PLAN - FOR REFERENCE ONLY
Scale: NTS



2 - VIEW FROM ENTRY COURT CONCEPT PLAN - FOR REFERENCE ONLY
Scale: NTS



3 - VIEW FROM TRACK AND FIELD CONCEPT PLAN - FOR REFERENCE ONLY
Scale: NTS

NOTES:
1. THESE ILLUSTRATIONS REPRESENT CONCEPTUAL DESIGN INTENT AND ARE FOR REFERENCE ONLY. SEE PLANS FOR DETAILED INFORMATION.
2. HANDRAILS, GUARDRAILS AND VEGETATION HAVE NOT BEEN DEPICTED IN THESE ILLUSTRATIONS.
3. GRANDSTAND DEPICTION IS CONCEPTUAL. REFERENCE ARCHITECTURE FOR GRANDSTAND INFORMATION.

2020-06-XX X:XX:XX XX

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APPROVED BY:
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SHEET TITLE
LANDSCAPE SITE
3D VIEWS

SHEET NUMBER
L110

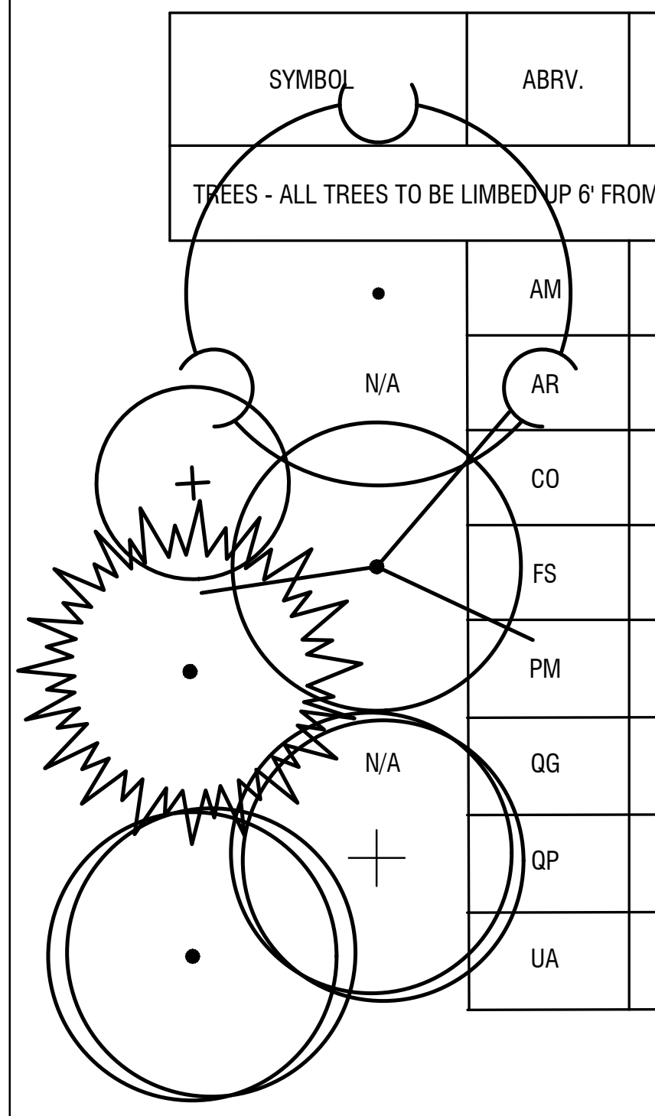
ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
10mm
1 in

PLANT SCHEDULE

NOTE: PLANT LISTS REPRESENT DESIGN INTENT. SPECIES AND CONTAINER SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE DURING CONSTRUCTION DOCUMENTATION AND BASED ON AVAILABILITY IN THE TRADE AT THE TIME OF PLANTING.



SYMBOL	ABRV.	LATIN NAME	COMMON NAME	CONT./SIZE	SPACING
TREES - ALL TREES TO BE LIMBED UP 6' FROM FINISH GRADE					
	AM	ACER MACROPHYLLUM	BIGLEAF MAPLE	2.5" CAL / B&B	AS SHOWN
N/A	AR	ARBUTUS MENZIESII	PACIFIC MADRONE	#1 CONT.	PLACE IN FIELD BY LANDSCAPE ARCH.
	CO	CORNUS 'EDDIE'S WHITE WONDER'	EDDIE'S WHITE WONDER DOGWOOD	2.5" CAL / B&B	AS SHOWN
	FS	FAGUS SYLVATICA 'ASPLENIFOLIA'	FERNLEAF EUROPEAN BEECH	2.5" CAL / B&B	AS SHOWN
	PM	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	12' HT / B&B	AS SHOWN
N/A	QG	QUERCUS GARRYANA	OREGON WHITE OAK	#1 CONT.	PLACE IN FIELD BY LANDSCAPE ARCH.
	QP	QUERCUS PHELLOS	WILLOW OAK	2.5" CAL / B&B	AS SHOWN
	UA	ULMUS 'ACCOLADE'	ACCOLADE ELM	2.5" CAL / B&B	AS SHOWN

SEED MIX				
▨	EROSION CONTROL SEED MIX	SUNMARK SEEDS STABILIZER EC MIX	10LBS/1000 SF	AS SHOWN

NOTE: ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITY TO BE FULLY RESTORED AND SEEDED.

SYMBOL	LATIN NAME	COMMON NAME	CONT./SIZE	SPACING
SHRUBS AND GROUNDCOVERS - ALL PLANTING AREAS TO RECEIVE FULLY AUTOMATIC IRRIGATION				
▨	ACER CIRCINATUM	VINE MAPLE	#10 CONT.	AS SHOWN
	ARCTOSTAPHYLOS X 'SUNSET'	SUNSET MANZANITA	#5 CONT.	48" O.C.
	ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	#1 CONT.	18" O.C.
	CEANOTHUS GLORIOSUS	POINT REYES CREEPER	#5 CONT.	36" O.C.
	COTONEASTER DAMMERI 'CORAL BEAUTY'	CORAL BEAUTY COTONEASTER	#1 CONT.	36" O.C.
	CORNUS SERICEA 'KELSEY'	KELSEY'S DWARF RED-OSIER DOGWOOD	#5 CONT.	36" O.C.
	FOTHERGILLA GARDENII	DWARF FOTHERGILLA	#5 CONT.	36" O.C.
	JUNIPERUS HORIZONTALIS 'YOUNGSTOWN'	CREEPING JUNIPER	#5 CONT.	48" O.C.
	LOINCERA PILEATA 'MOSS GREEN'	MOSS GREEN HONEYSUCKLE	#5 CONT.	48" O.C.
	MAHONIA NERVOSA	LOW OREGON GRAPE	#5 CONT.	18" O.C.
	MAHONIA X MEDIA 'WINTER SUN'	WINTER SUN MAHONIA	#5 CONT.	48" O.C.
	PARTHENOCISSUS TRICUSPIDATA 'VEITCHII'	BOSTON IVY	#5 CONT. / STAKED	AS SHOWN
	PINUS MUGO VAR. PUMILIO	DWARF MUGO PINE	#5 CONT.	60" O.C.
	POTENTILLA FRUTICOSA 'ABBOTSWOOD'	ABBOTSWOOD POTENTILLA	#5 CONT.	30" O.C.
	POLYSTICHUM MUNITUM	WESTERN SWORD FERN	#5 CONT.	24" O.C.
	RIBES SANGUINEUM 'ELK RIVER'	ELK RIVER RED-FLOWERING CURRANT	#5 CONT.	60" O.C.
	SPIRAEA BETULIFOLIA 'TOR'	TOR BIRCH LEAF SPIREA	#5 CONT.	24" O.C.
	SPIRAEA DOUGLASII	DOUGLAS SPIREA	#5 CONT.	60" O.C.
	SYMPHORICARPOS ALBUS	SNOWBERRY	#5 CONT.	60" O.C.
	THUJA OCCIDENTALIS 'BOBOZAM'	MR. BOWLING BALL ARBORVITAE	#5 CONT.	24" O.C.
	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	#5 CONT.	42" O.C.
	VIBURNUM DAVIDII	DAVID VIBURNUM	#5 CONT.	36" O.C.

NOTE:
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LANDSCAPE CALCULATIONS

GROSS SITE AREA LANDSCAPING

GROSS SITE AREA: 41.01 ACRES
LANDSCAPE AREA INCLUDING PARKING LANDSCAPING: 23.07 ACRES
LANDSCAPE AREA = 56% OF GROSS SITE AREA

LANDSCAPE CALCULATIONS BASE PROPOSAL

PARKING LOT AREA INTERIOR LANDSCAPING

STADIUM EXPANSION PARKING LOT AREA: 25,327 SF
INTERIOR PARKING LOT LANDSCAPING: 2,919 SF
INTERIOR PARKING LOT LANDSCAPING = 12% OF PARKING LOT AREA
NOT INCLUDING PERIMETER LANDSCAPING AREA

LANDSCAPE CALCULATIONS ADD ALT A

PARKING LOT AREA INTERIOR LANDSCAPING

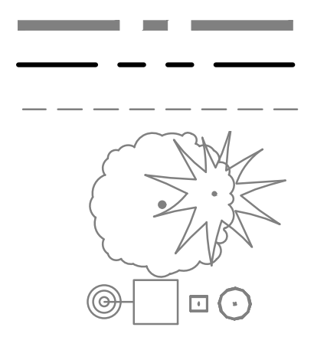
STADIUM EXPANSION PARKING LOT AREA: 5,513 SF
INTERIOR PARKING LOT LANDSCAPING: 530 SF
INTERIOR PARKING LOT LANDSCAPING = 10% OF PARKING LOT AREA
NOT INCLUDING PERIMETER LANDSCAPING AREA

LANDSCAPE CALCULATIONS ADD ALT B

PARKING LOT AREA INTERIOR LANDSCAPING

SOUTH EXPANSION PARKING LOT AREA: 8,180 SF
INTERIOR PARKING LOT LANDSCAPING: 978 SF
INTERIOR PARKING LOT LANDSCAPING = 12% OF PARKING LOT AREA
NOT INCLUDING PERIMETER LANDSCAPING AREA

GENERAL LEGEND



LIMIT OF GRADING
PROPERTY LINE
EASEMENT LINE
EXISTING TREE TO REMAIN, PROTECT IN PLACE. REF TREE PROTECTION PLANS.
SITE LIGHTING, REF ELEC

PLANTING NOTES

1. DO NOT BEGIN PLANTING UNTIL IRRIGATION SYSTEM IS INSTALLED, TESTED AND APPROVED.
2. DO NOT BEGIN PLANTING UNTIL SOIL PREPARATION IS COMPLETE AND APPROVED. TOPSOIL DEPTH WITHIN SHRUB AREAS IS 24 INCHES DEPTH WITH 2 INCHES MULCH TOP DRESSING. PLANTING SOIL AT EACH TREE IS 36 INCHES DEPTH IN A 3 X 3 SQUARE FOOT AREA.
3. LOCATE PLANTS AS DIMENSIONED ON THE PLANS AND AS SHOWN IN THE PLANT SCHEDULE. PLANT SPACING IS MEASURED CENTER TO CENTER. PLANT LOCATIONS MAY BE ADJUSTED BY THE LANDSCAPE ARCHITECT TO MEET FIELD CONDITIONS.
4. VERIFY ALL QUANTITIES AND VARIETIES SHOWN ON THE DRAWINGS PRIOR TO ORDERING. OWNER MUST APPROVE ANY NECESSARY SUBSTITUTIONS DURING SUBMITTALS PROCESS. REVIEW PROCESS TO BE ESTABLISHED AT PRE-CONSTRUCTION MEETING.
5. THOROUGHLY WATER IN ALL PLANTS WITHIN 6 HOURS OF PLANTING.
6. APPLY SPECIFIED MULCH OVER PLANTING AREAS WITHIN TWO DAYS OF INSTALLING PLANTS, UNLESS OTHERWISE NOTED.
7. ALL PLANTS ARE REQUIRED TO MEET AMERICAN STANDARD FOR NURSERY STOCK, ANSI Z60.1-2014.
8. TO CALCULATE THE QUANTITY OF PLANTS PER AREA, USE THE FOLLOWING SPACING MULTIPLIERS:

TRIANGULAR SPACING	9"	12"	15"	18"	24"	30"	36"	48"
SQUARE FT MULTIPLIER	2.027	1.156	0.513	0.322	0.288	0.184	0.128	0.072

IRRIGATION NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A FULLY FUNCTIONAL AUTOMATIC IRRIGATION SYSTEM PROVIDING FULL COVERAGE TO ALL PLANTING AREAS AND TREE WELLS AS DESCRIBED ON THE DRAWINGS AND IN THE SPECIFICATIONS. CONTRACTOR TO COORDINATE WITH OWNWER AS TO EXISTING CONDITIONS AND ALL SYSTEM REQUIREMENTS.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND/OR OWNER TO PROGRAM THE IRRIGATION CONTROLLERS TO SUSTAIN EXCELLENT PLANT HEALTH. THIS INCLUDES MAKING ADJUSTMENTS TO THE PROGRAM FOR SEASONAL WEATHER CHANGES, PLANT MATERIAL, WATER REQUIREMENTS, MOUNDS AND SLOPES, SUN, SHADE, AND WIND EXPOSURES.
3. THE CONTRACTOR SHOULD INVESTIGATE THE STRUCTURAL AND FINISHED CONDITIONS AFFECTING ALL OF THE CONTRACT WORK INCLUDING OBSTRUCTIONS, GRADE DIFFERENCES OR AREA DIMENSIONAL DIFFERENCES. IN THE EVENT OF FIELD DIFFERENCES, THE CONTRACTOR SHOULD TO PLAN THE INSTALLATION WORK ACCORDINGLY BY NOTIFICATION AND APPROVAL OF THE OWNER'S REPRESENTATIVE.
4. THE CONTRACTOR SHOULD NOTIFY AND COORDINATE IRRIGATION CONTRACT WORK WITH ALL APPLICABLE CONTRACTORS FOR THE LOCATION AND INSTALLATION OF POINT OF CONNECTION, BACKFLOW, PIPE, CONDUIT OR SLEEVES THROUGH OR UNDER WALLS, ROADWAYS, PAVING, STRUCTURE, ETC., BEFORE CONSTRUCTION. IN THE EVENT THESE NOTIFICATIONS ARE NOT PERFORMED, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL REQUIRED REVISIONS.
5. THESE IRRIGATION DRAWINGS ARE DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE INSTALLED,HOWEVER FOLLOW THE DRAWINGS AS CLOSELY AS IS REASONABLE. MODIFY LAYOUT AS REQUIRED TO ACCOMMODATE PLANT PLACEMENT, UTILITIES, AND UNDERGROUND OBSTRUCTIONS. REVIEW MODIFICATIONS WITH THE LANDSCAPE ARCHITECT PRIOR TO PROCEEDING. ALL PIPING, VALVES, ETC. SHOWN WITHIN PAVED AREAS IS FOR GRAPHIC CLARITY ONLY AND ARE TO BE INSTALLED WITHIN PLANTING AREAS WHERE POSSIBLE. KEEP VALVE BOXES OUT OF PLAIN SIGHT BY LOCATING THEM IN AND AROUND SHRUBS WHERE POSSIBLE. TO DUE TO THE SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, SLEEVES, ETC., WHICH MAY BE REQUIRED. SLEEVES ARE TO BE LOCATED AS SHOWN AND PIPE WORK IS TO BE ROUTED TO CROSS STREETS AND SIDEWALKS IN SLEEVES INDICATED. LOCATE MAINLINE, LATERAL LINES, AND VALVES IN PLANTING BEDS ALIGNED WITH PAVED SURFACES. GROUP VALVE LOCATIONS WHERE POSSIBLE. MODIFY EQUIPMENT LOCATIONS AS REQUIRED. REVIEW SIGNIFICANT MODIFICATIONS WITH OWNER'S REPRESENTATIVE BEFORE PROCEEDING.
6. PREVENT OVER SPRAY ONTO WALKS, ROADWAYS, AND/OR BUILDINGS AS MUCH AS POSSIBLE. THIS INCLUDES SELECTING THE BEST DEGREE OF ARC TO MATCH THE PROPOSED IRRIGATED AREA AND ADJUSTING THE FLOW CONTROL AT EACH VALVE TO OBTAIN THE OPTIMUM OPERATING PRESSURE FOR EACH SYSTEM.
7. DESIGN THE IRRIGATION SYSTEM DESIGN FROM ON SITE WATER PRESSURE.CONTRACTOR TO VERIFY AVAILABLE P.S.I. AT THE POINT OF CONNECTION BEFORE COMMENCEMENT OF INSTALLATION. NOTIFY OWNER'S REPRESENTATIVE OF MEASUREMENTS OF STATIC PRESSURE AT POINT OF CONNECTION.
8. THE CONTRACTOR SHALL FLUSH AND ADJUST ALL SPRAY HEADS FOR OPTIMUM PERFORMANCE. PROVIDE FULL AND EVEN COVERAGE OF DESIGNATED AREAS.
9. AS NECESSARY, AUGMENT THE AUTOMATIC IRRIGATION SYSTEM WITH TEMPORARY WATERING METHODS TO ENSURE PROPER PLANT ESTABLISHMENTIT IS THE IRRIGATION CONTRACTOR'S RESPONSIBILITY TO COORDINATE ANY REQUIRED IRRIGATION SLEEVING WITH RESPECTIVE SUBCONTRACTORS BEFORE CONSTRUCTION BEGINS.
10. SLEEVES SHALL BE INSTALLED 24 INCHES (MIN.) BELOW FINISHED PAVED SURFACE. ADJUST HEIGHT AS NEEDED TO ROUTE AROUND UTILITIES. EXTEND SLEEVES AT LEAST 12 INCHES INTO LAWN AND PLANTING AREAS, TYP.
11. INSTALL TRACE WIRE OVER ALL MAINLINE PIPE AND OVER CONTROL WIRE WHICH IS NOT INSTALLED IN TRENCH WITH PIPE. ROUTE FROM CONTROLLER TO ENDS OF PIPE. MAKE ALL CONNECTIONS WATER TIGHT.
12. CONTRACTOR TO SET FLAGS TO IDENTIFY PROPOSED VALVE AND VALVE BOX, QUICK COUPLER, ISOLATION VALVE, SPRINKLER LOCATIONS AND GENERAL LAYOUT OF MAIN LINES. OBTAIN LANDSCAPE ARCHITECT'S APPROVAL BEFORE EXCAVATION. PROVIDE 5 BUSINESS DAYS NOTICE TO L.A. PRIOR TO ANTICIPATED LAYOUT REVIEWS.
13. LOCATE VALVE BOXES SO AS TO BE HIDDEN FROM PEDESTRIAN VIEW. BROWN OR BLACK LIDS IN MULCH (PLANTING AREAS), GREEN LIDS IN LAWN AREAS.

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ISSUES

No.	DESCRIPTION	DATE
1	LAND USE APPLICATION	10-07-2020

CONSULTANTS

Mayer/Reed

Mayer/Reed, Inc.
319 SW Washington St.
Suite 820
Portland, Oregon 97204
503.223.5953

SEAL

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ibigroup.com

PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
5464 W A Street
West Linn, OR 97068
United States

PROJECT NO:
124724

DRAWN BY:
EK / AC

CHECKED BY:
RC / EK

PROJECT MGR:
RC

APPROVED BY:
CMR

SHEET TITLE
SITE PLANTING AND
IRRIGATION PLAN NOTES
AND LEGENDS

SHEET NUMBER
L200

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
10mm
1 in

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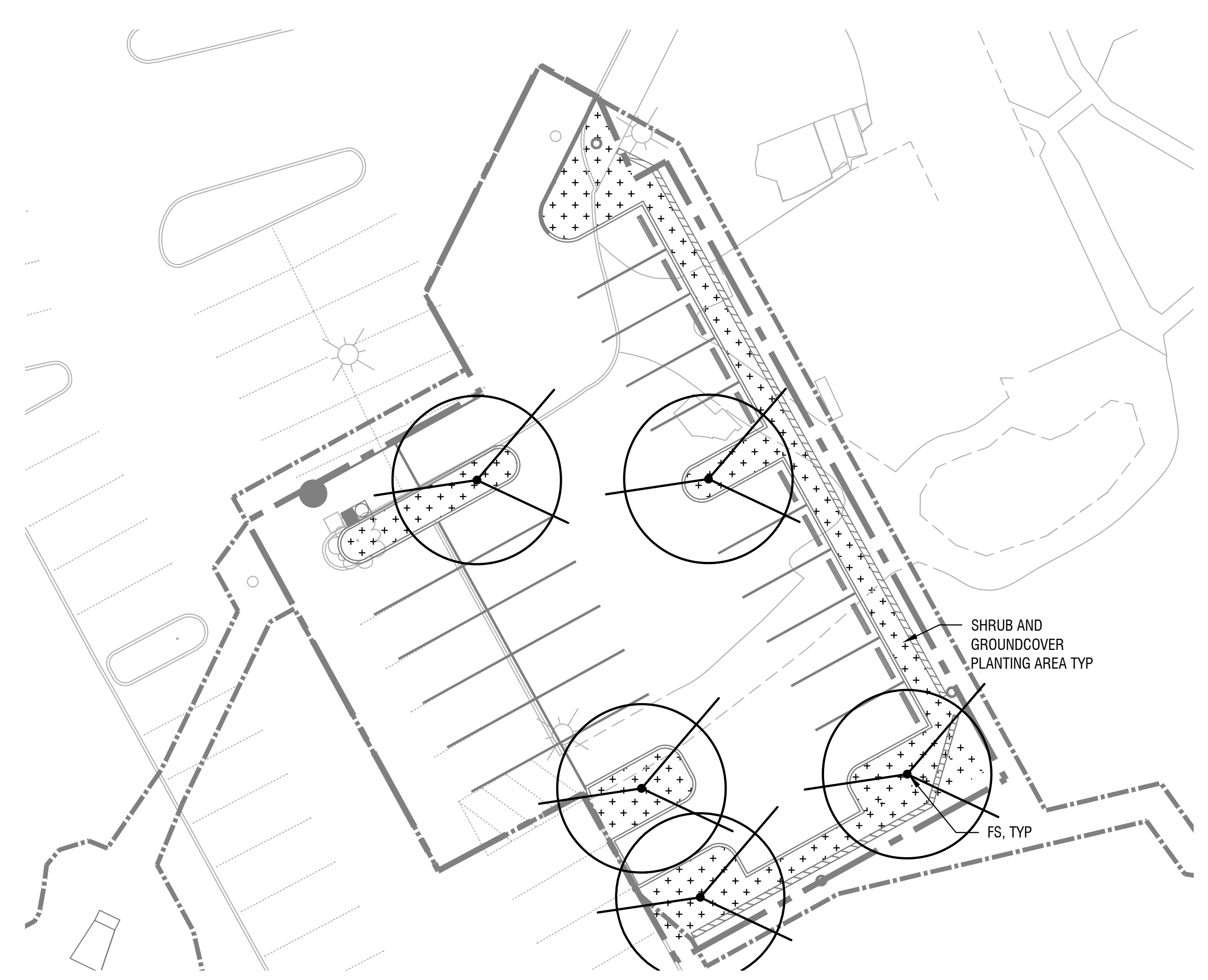
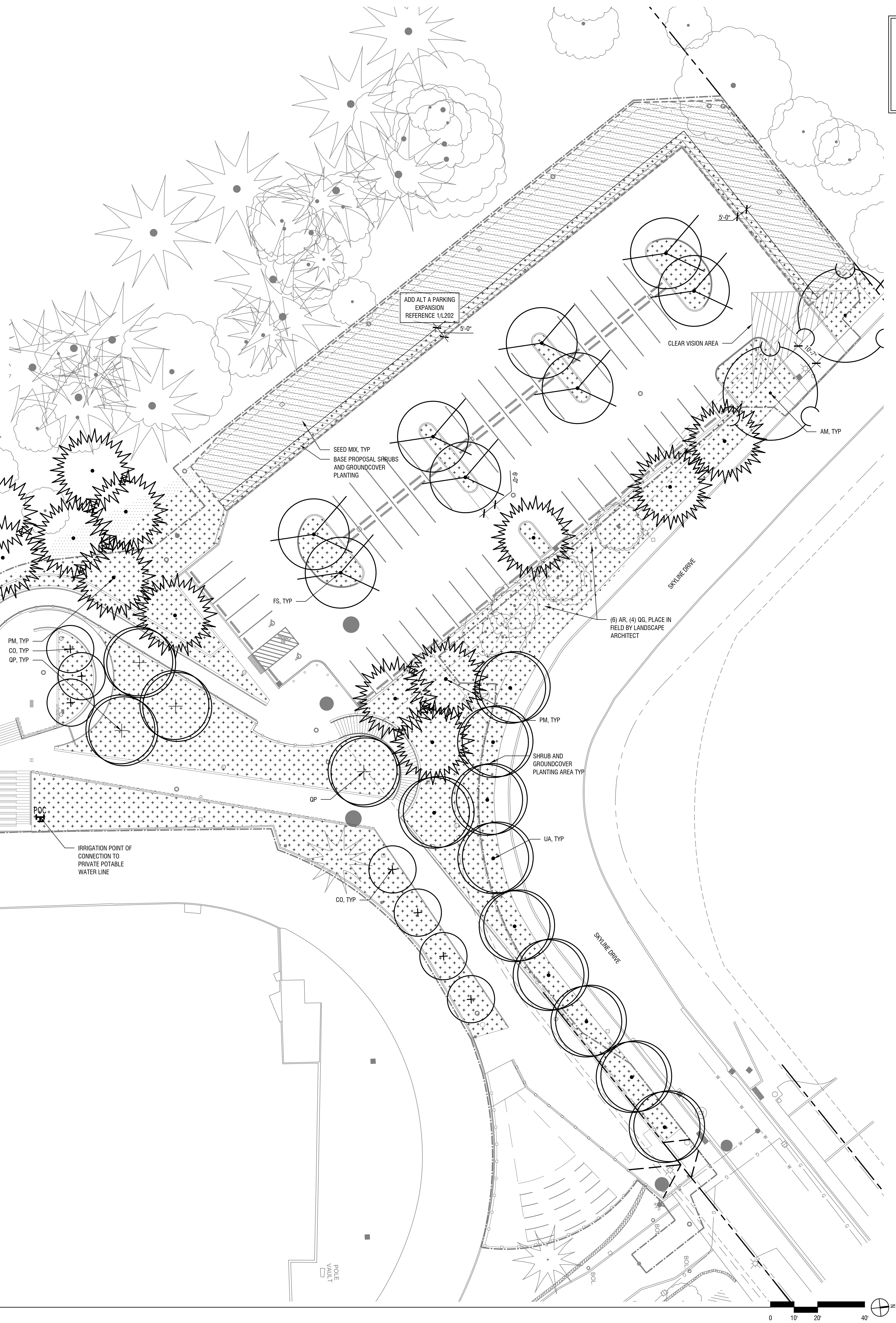


2 ADD ALT B PLANTING AND IRRIGATION PLAN - SOUTH PARKING
- Scale: 1" = 20'-0"



1 BASE PROPOSAL PLANTING AND IRRIGATION PLAN - STADIUM AND PARKING EXPANSION
- Scale: 1" = 20'-0"

NOTE: REF SHEET L200 FOR PLANTING AND IRRIGATION NOTES AND LEGENDS

2020-06-XX X:XX:XX XX

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PROJECT NO:
124724

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PROJECT MGR: **RC**	APPROVED BY: **CMR**

SHEET TITLE
SITE PLANTING AND
IRRIGATION PLAN

SHEET NUMBER
L201

ISSUE

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SCALE CHECK
10mm
1 in

NOTE:
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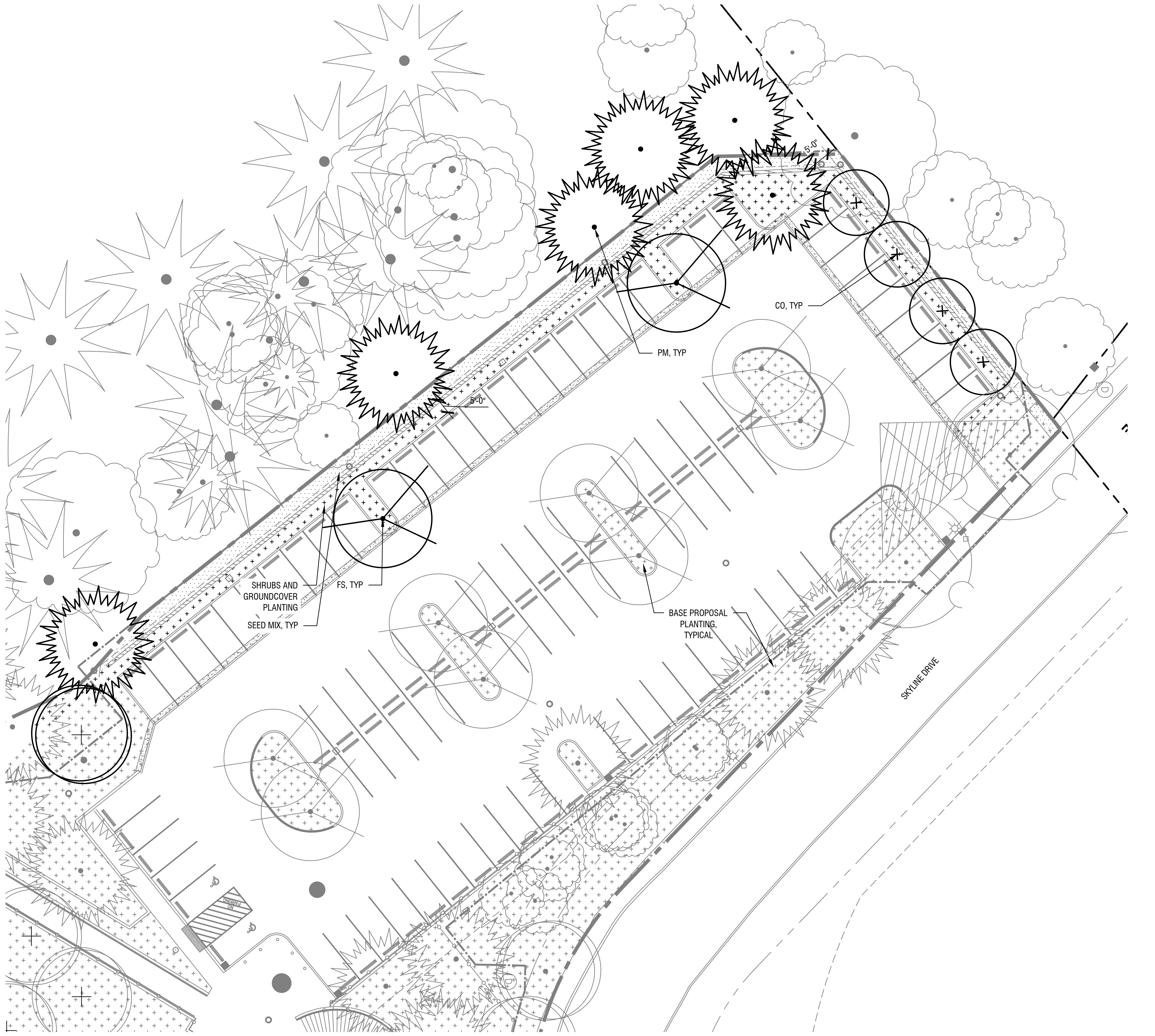

1 - ADD ALT A SITE PLANTING AND IRRIGATION PLAN - NORTH PARKING EXPANSION FULL BUILD OUT
Scale: 1" = 20'-0"

NOTE: REF SHEET L200 FOR PLANTING AND IRRIGATION NOTES AND LEGENDS

True North

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PROJECT MGR: **RC**
APPROVED BY: **CMR**

SHEET TITLE
ADD ALT A SITE PLANTING AND IRRIGATION PLAN - NORTH PARKING EXPANSION

SHEET NUMBER
L202

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

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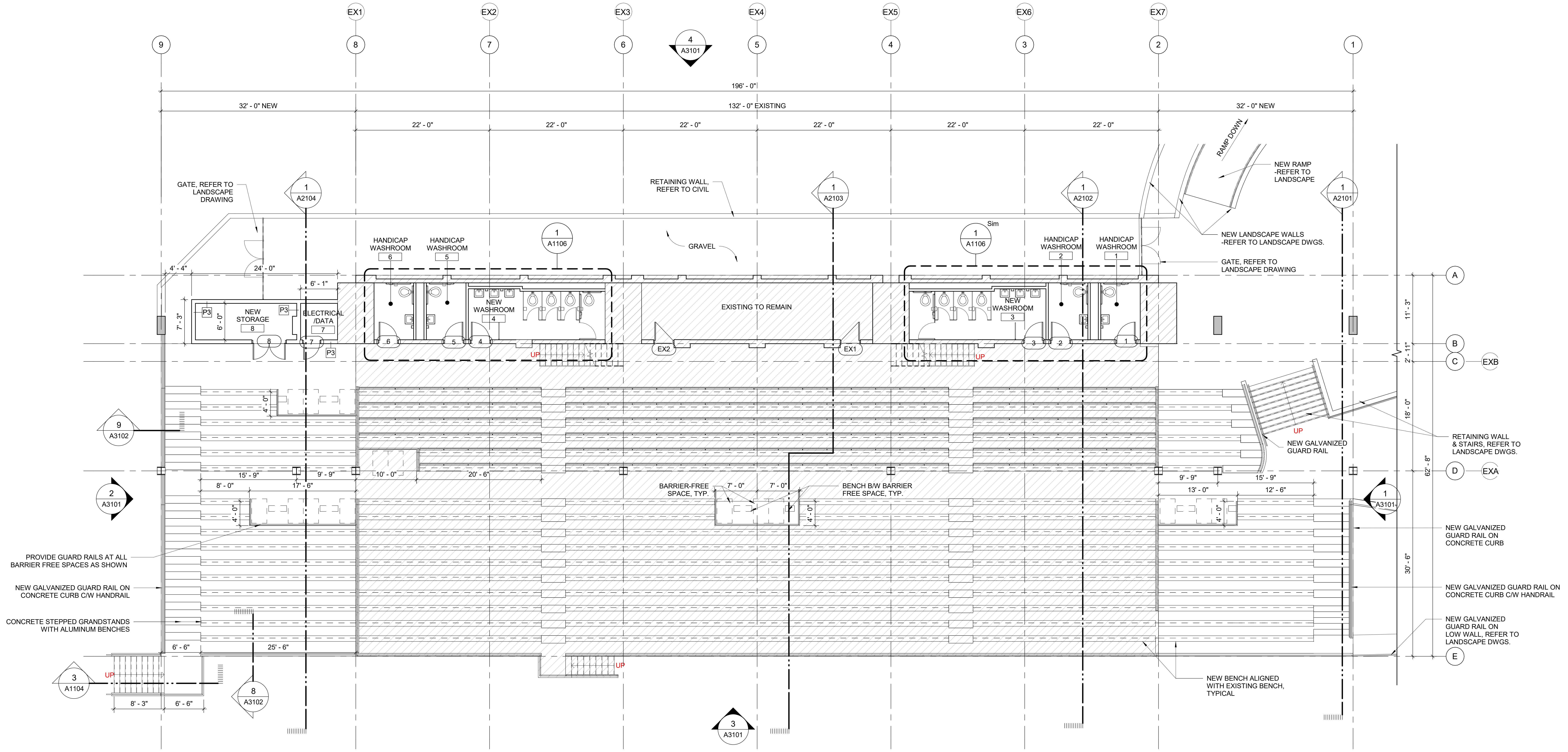

1
A1101
STADIUM PLAN
Scale: 1/8" = 1'-0"

MAIN GRANDSTAND SOUTH EXPANSION
345.0 LF BENCH SEATING
PLUS 14 SEATS IN SEATING AREA

MAIN GRANDSTAND EXISTING
1,920.2 LF BENCH SEATING
PLUS 10 SEATS IN SEATING AREA

MAIN GRANDSTAND NORTH EXPANSION
299.1 LF BENCH SEATING
PLUS 6 SEATS IN SEATING AREA

TOTAL MAIN GRANDSTAND
2,564.3 LF BENCH SEATING
PLUS 30 SEATS IN SEATING AREA

NOTE: ALL DIMENSIONS
ARE APPROXIMATE

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SHEET TITLE
PLAN

SHEET NUMBER
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2

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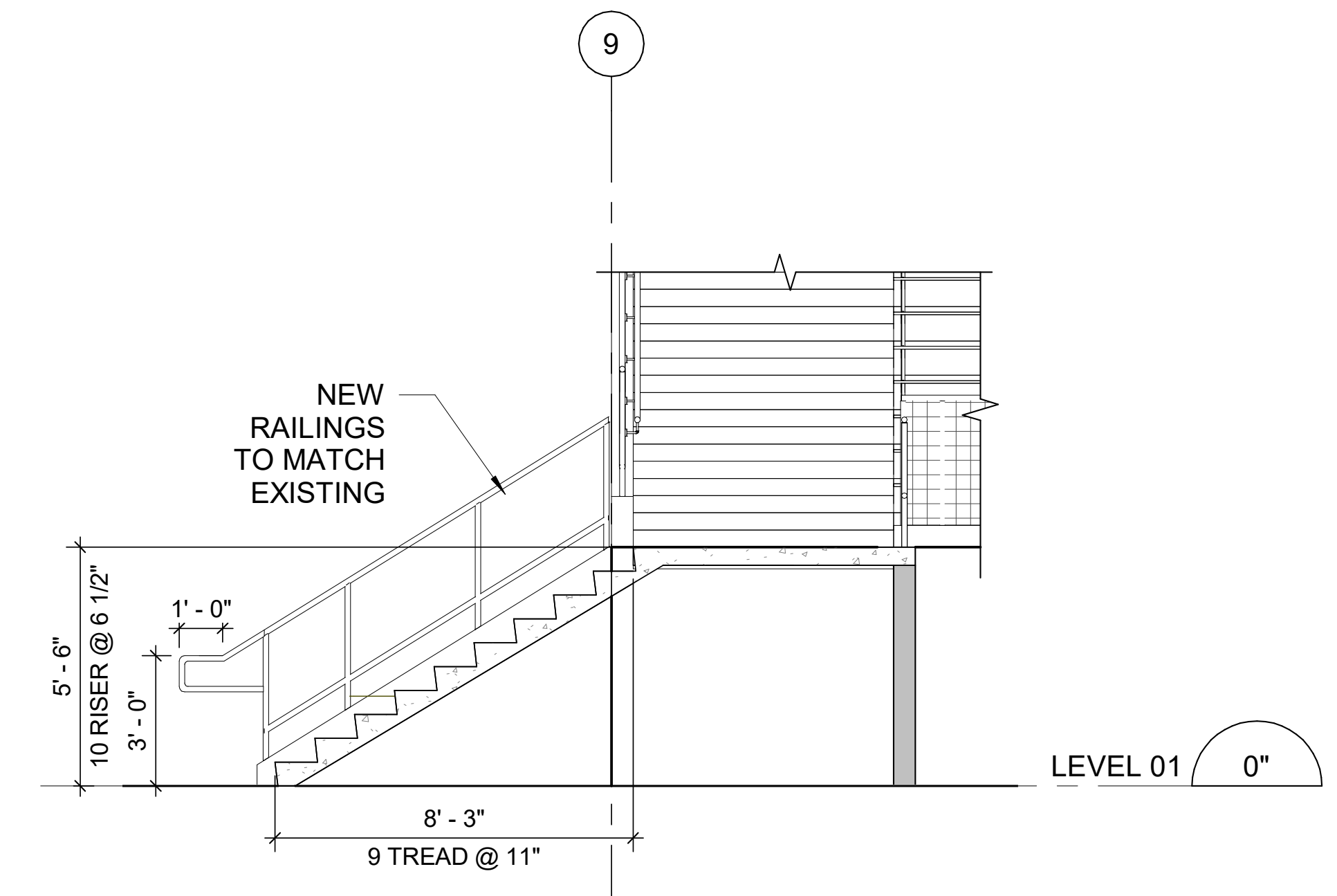

3 A1104 **SECTION - STADIUM BLEACHERS**
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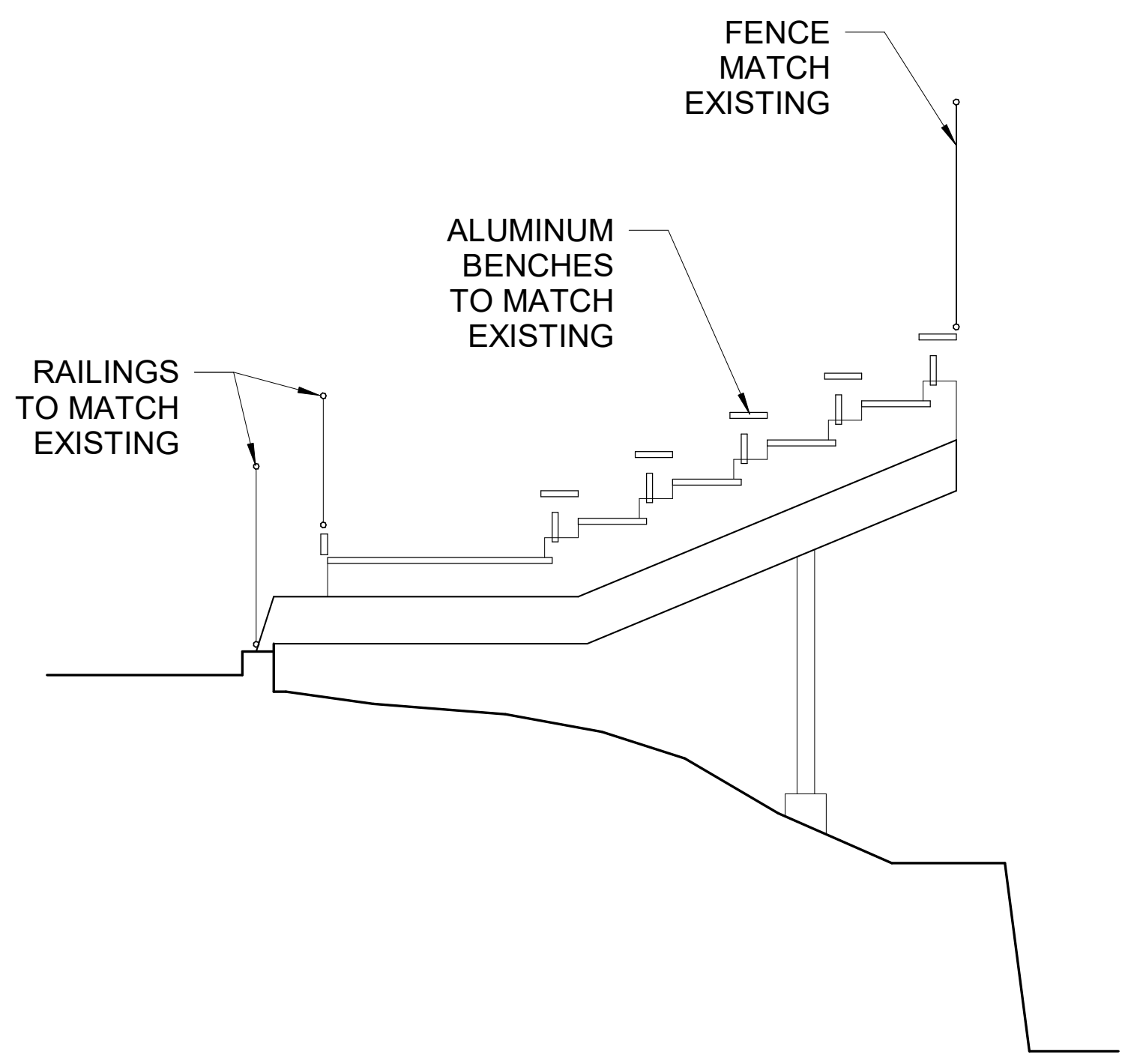

2 A1104 **SECTION - VISITORS BLEACHERS**
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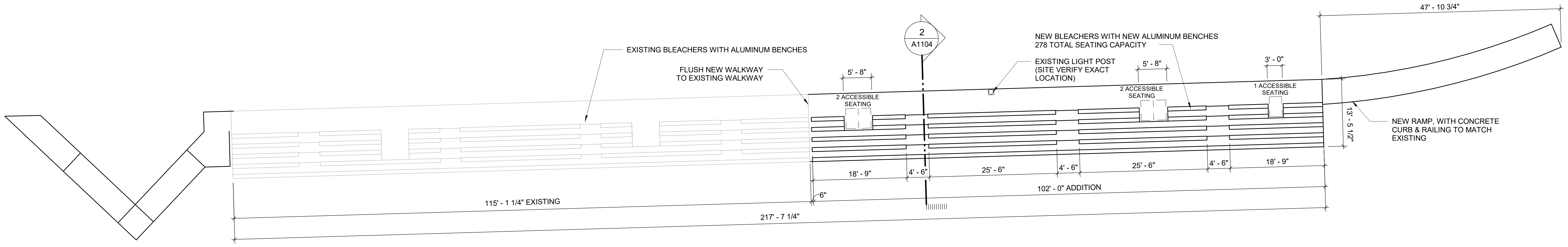

1 A1104 **PLAN - EAST STANDS**
Scale: 3/32" = 1'-0"

VISITOR BLEACHER EXISTING
477.5 LF BENCH SEATING
PLUS 4 SEATS IN SEATING AREA

VISITOR BLEACHER EXPANSION
424.0 LF BENCH SEATING
PLUS 4 SEATS IN SEATING AREA

TOTAL VISITOR BLEACHERS
901.5 LF BENCH SEATING
PLUS 8 SEATS IN SEATING AREA

NOTE: ALL DIMENSIONS
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DRAWN BY: **DB**	CHECKED BY: **SW**
PROJECT MGR: **SW**	APPROVED BY: **JF**

SHEET TITLE
EAST STANDS PLAN
AND SECTION

SHEET NUMBER
A1104

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2

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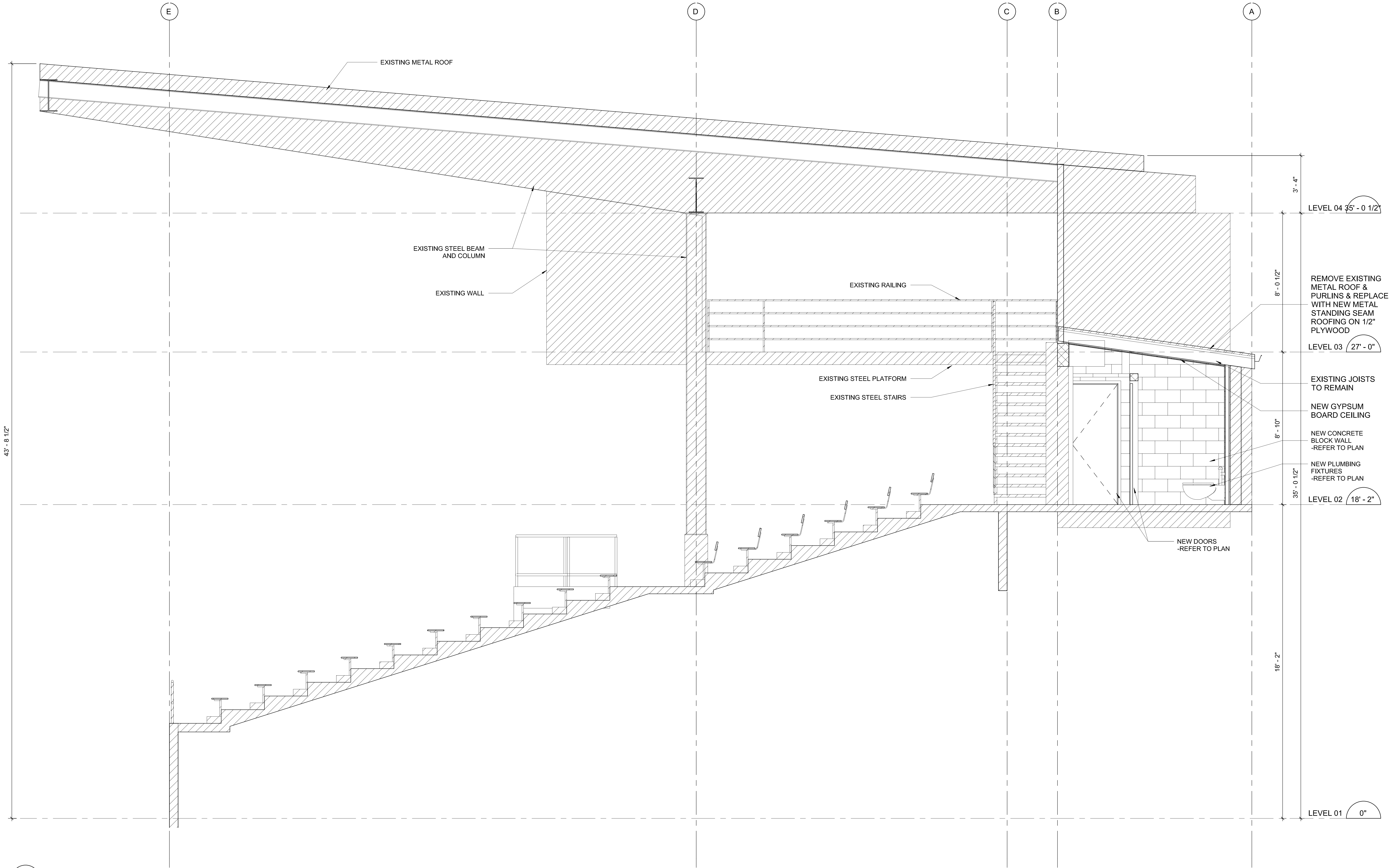

1 A2102 SECTION - THOUGH EXISTING ROOF, EXISTING BENCHES & NEW WASHROOM
Scale: 3/8" = 1'-0"

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PROJECT MGR: **SW**	APPROVED BY: **JF**

SHEET TITLE
SECTION THROUGH EXISTING
ROOF, EXISTING BENCHES &
NEW WASHROOM

SHEET NUMBER
A2102

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2

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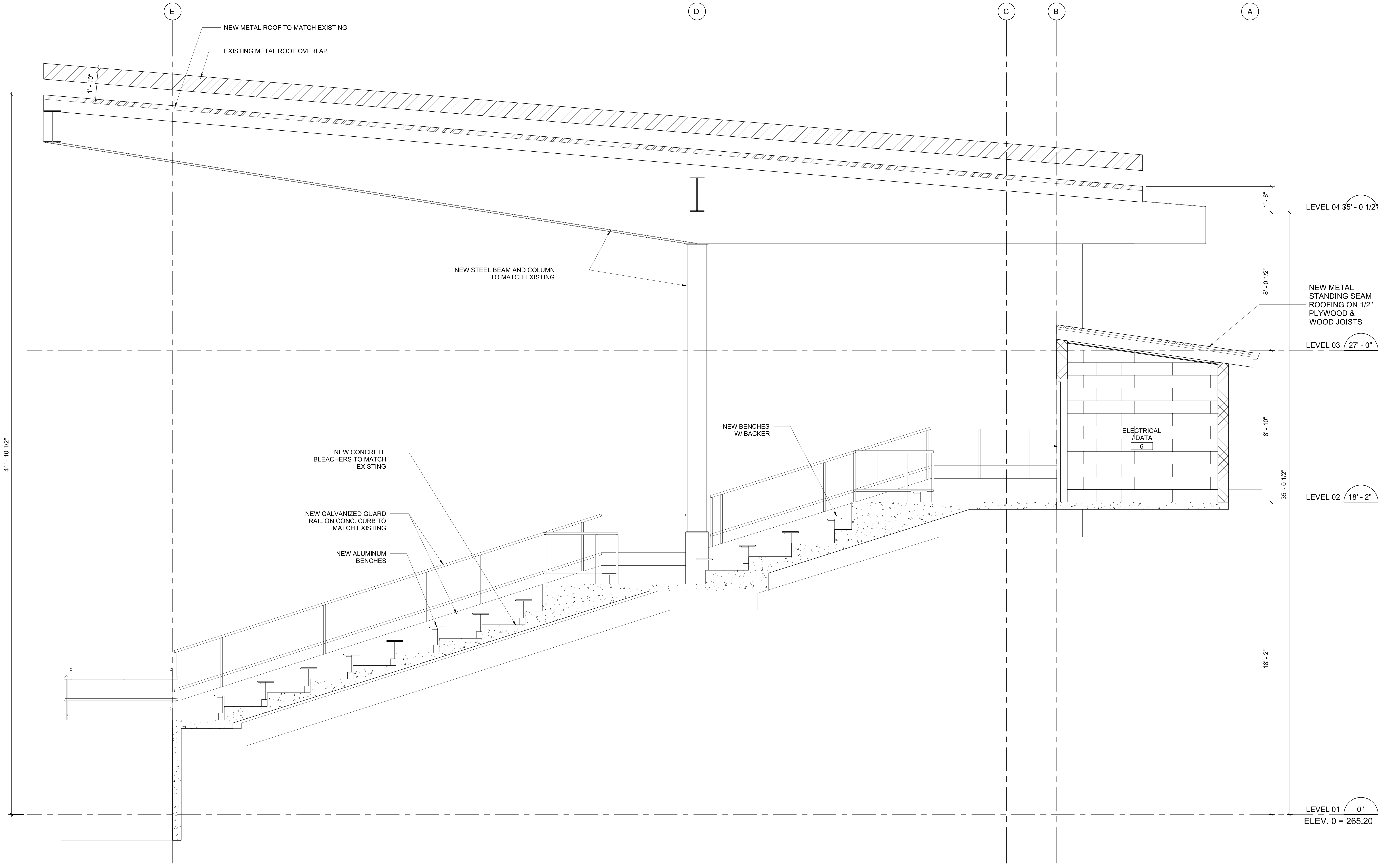

1 A2104 - NEW ROOF & NEW BENCHES ADDITION
Scale: 3/8" = 1'-0"

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PROJECT NO:
124724

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PROJECT MGR: **SW**	APPROVED BY: **JF**

SHEET TITLE
NEW ROOF & NEW BENCHES
ADDITION

SHEET NUMBER
A2104

ISSUE
2

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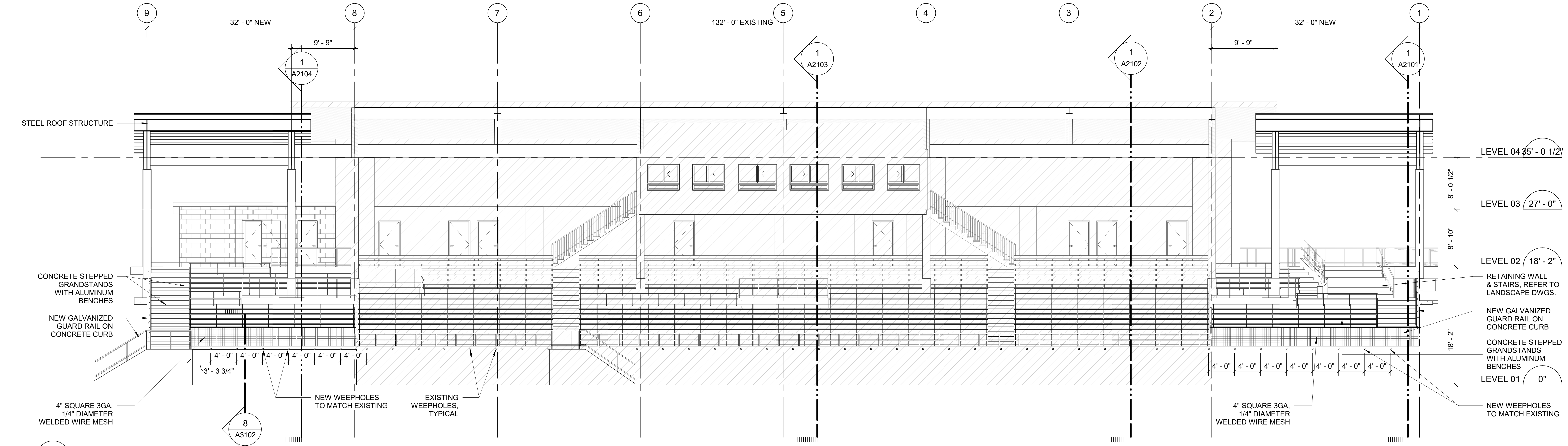

3 A3101 WEST ELEVATION
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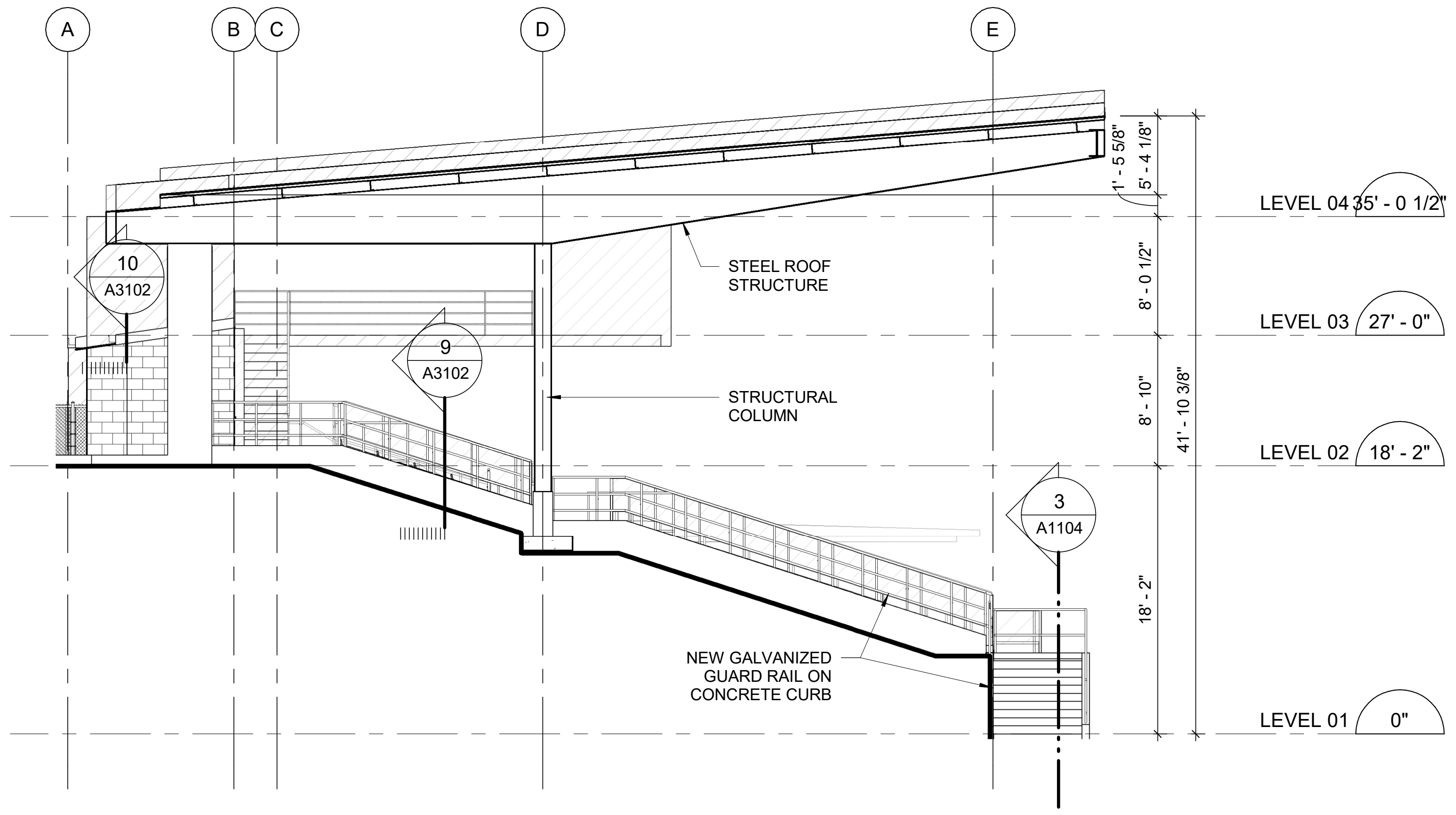

2 A3101 SOUTH ELEVATION
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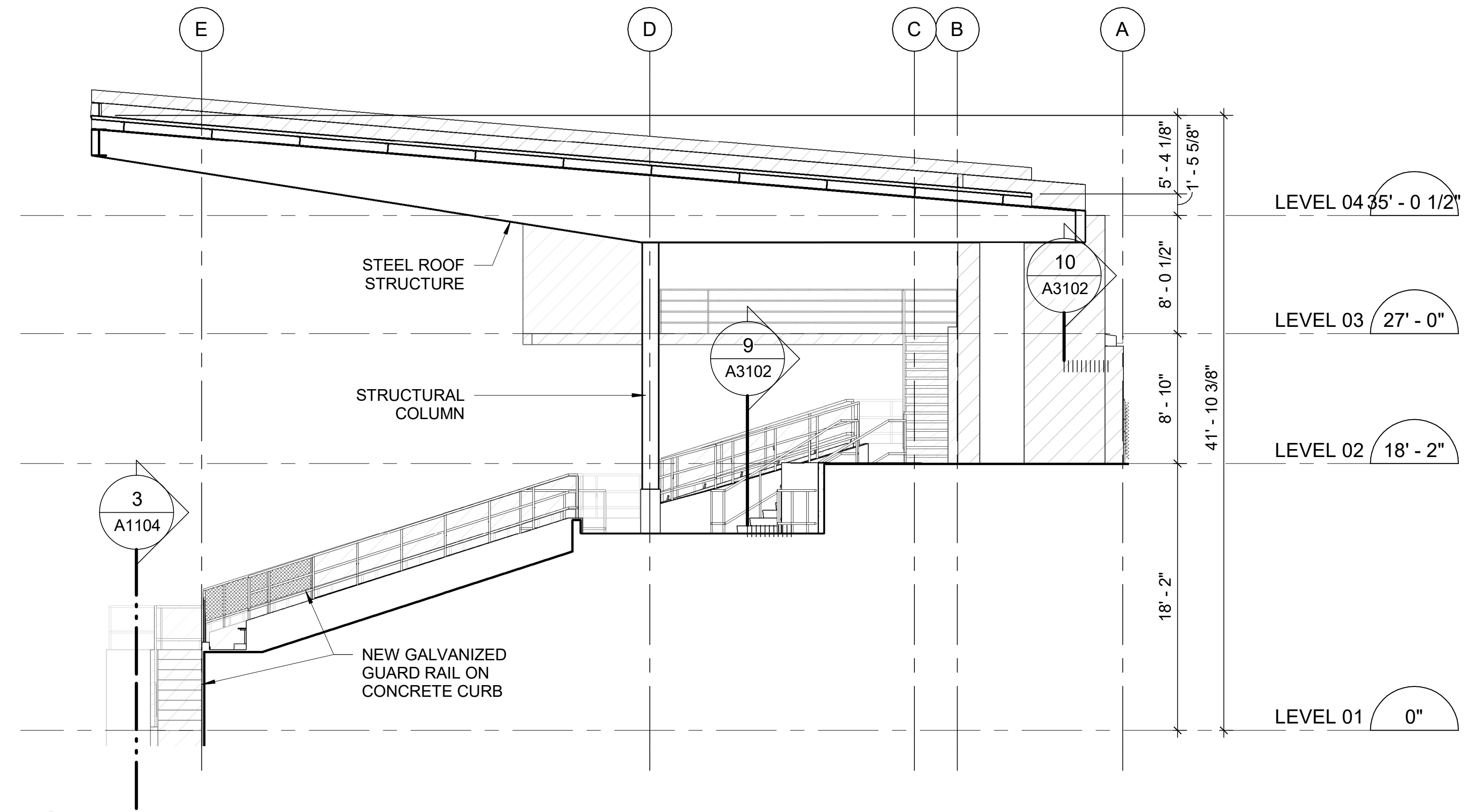

1 A3101 NORTH ELEVATION
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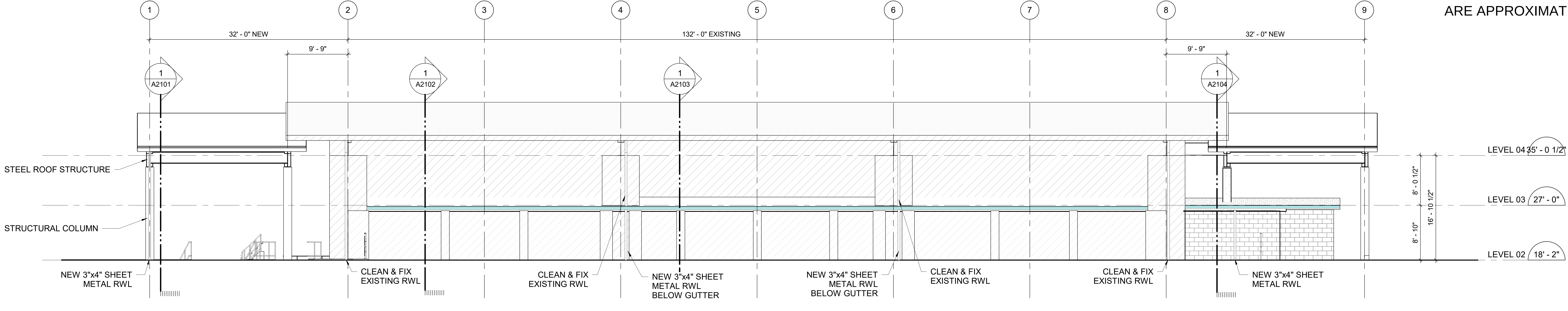
NOTE: ALL DIMENSIONS
ARE APPROXIMATE



4 A3101 EAST ELEVATION
Scale: 1/8" = 1'-0"

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PROJECT MGR:	APPROVED BY:
SW	**JF**

SHEET TITLE
ELEVATIONS

SHEET NUMBER
A3101

ISSUE
2

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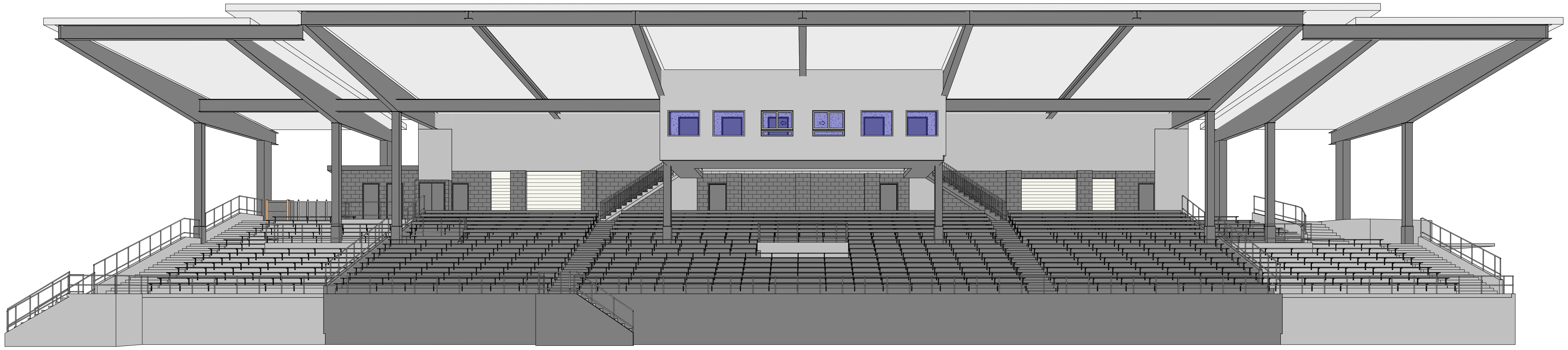
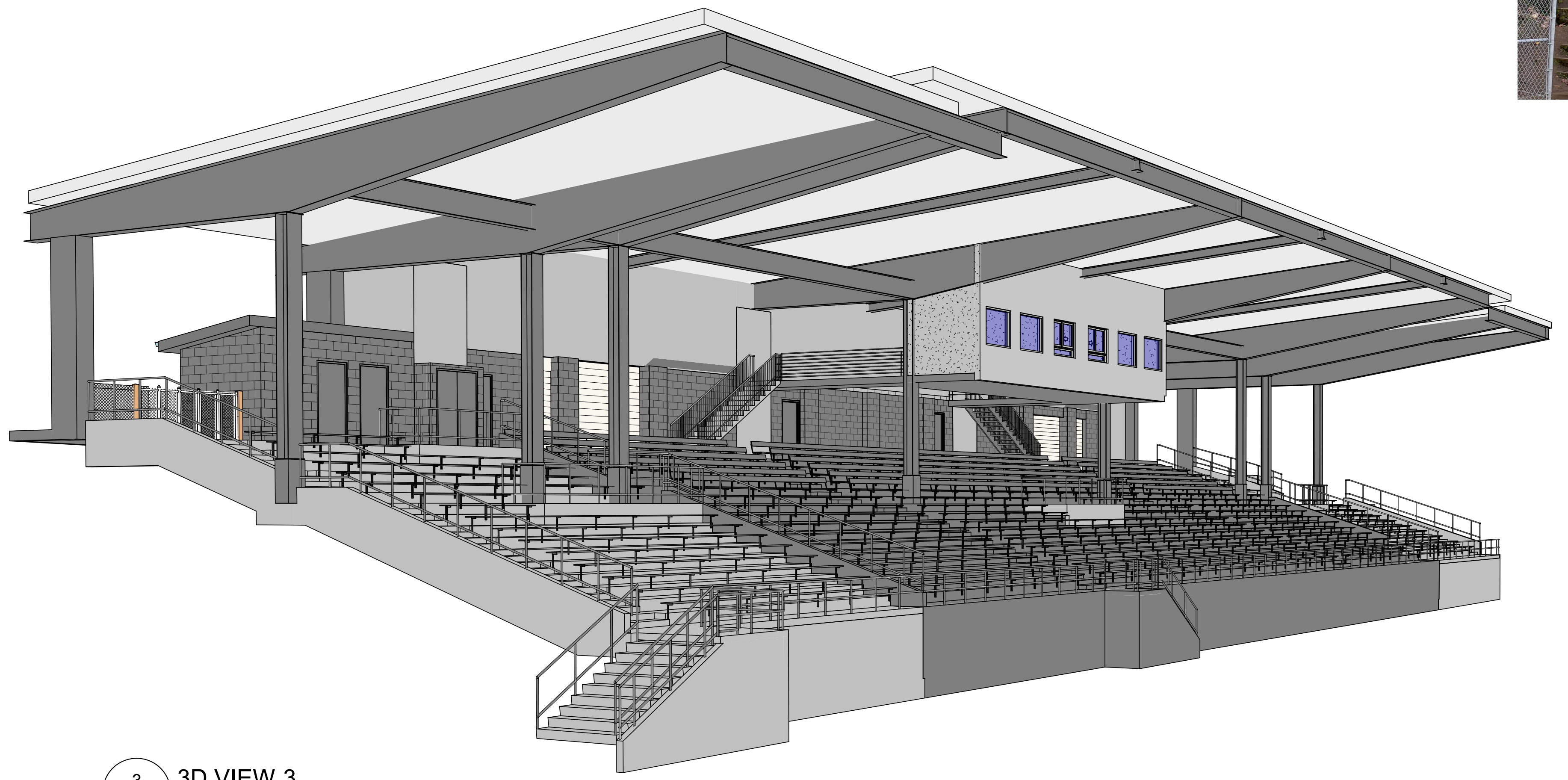


2 A4101 3D VIEW 2
Scale:

NEW ADDITION TO MATCH EXISTING MATERIALS AND COLORS



3 A4101 3D VIEW 3
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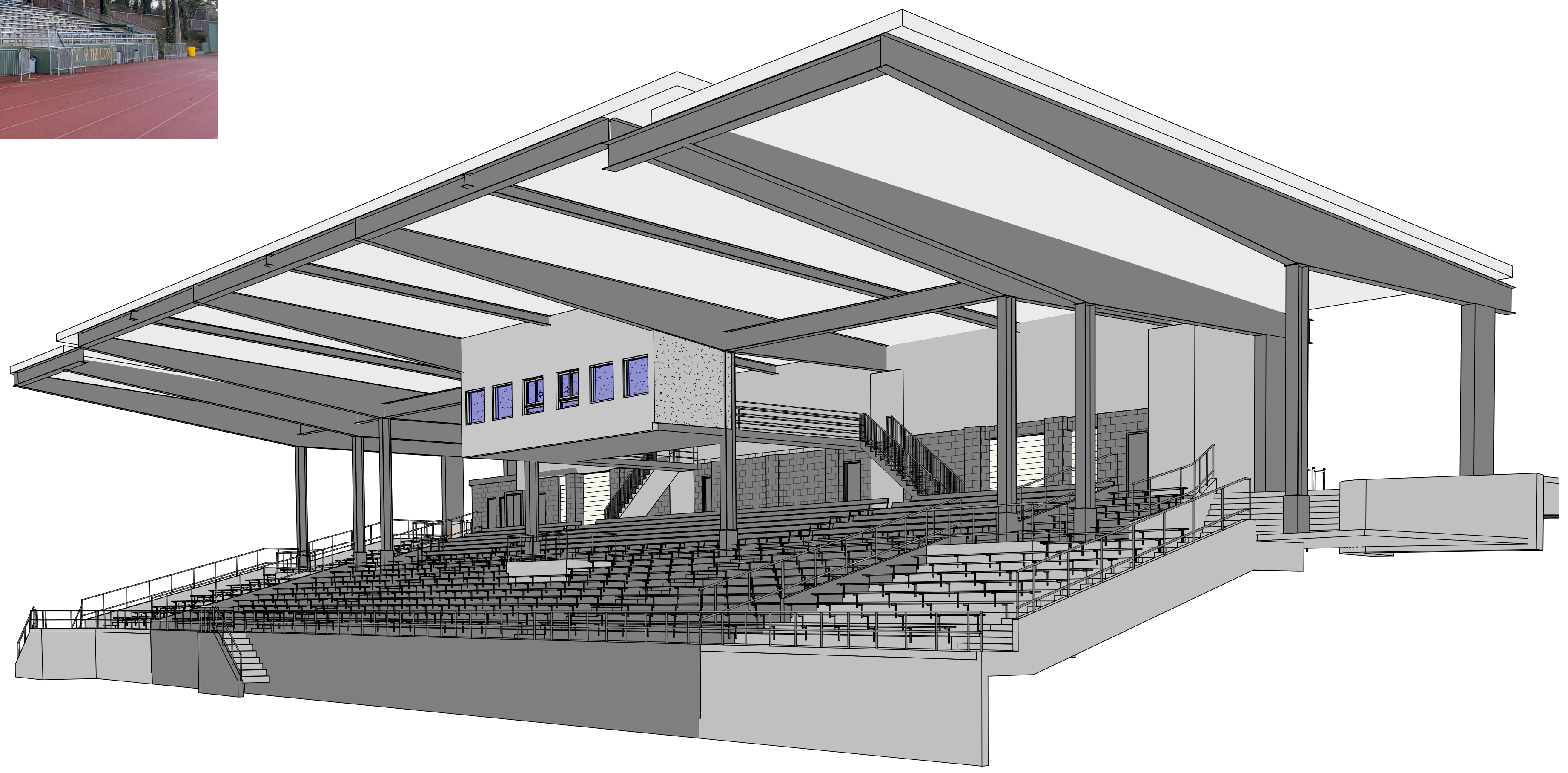

1 A4101 3D VIEW 1
Scale:

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ISSUES

No.	DESCRIPTION	DATE
1	LAND USE APPLICATION	10-07-2020

NOT FOR CONSTRUCTION

CONSULTANTS

SEAL

SELECT CONSULTANT TYPE

IBI GROUP
907 SW Harvey Milk Street
Portland, OR 97205, USA
tel 503 226 6950 fax 503 273 9192
ibigroup-edpnw.com

PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
5464 W A Street
West Linn, OR 97068
United States

PROJECT NO:
124724

DRAWN BY: **DB/FB**	CHECKED BY: **SW**
PROJECT MGR: **SW**	APPROVED BY: **JF**

SHEET TITLE
3D VIEWS

SHEET NUMBER
A4101

ISSUE
2

C:\Users\federico.butac\Documents\REVIT2020\12472 -WLHS-Stadium-A-2020_federico.butac.rvt

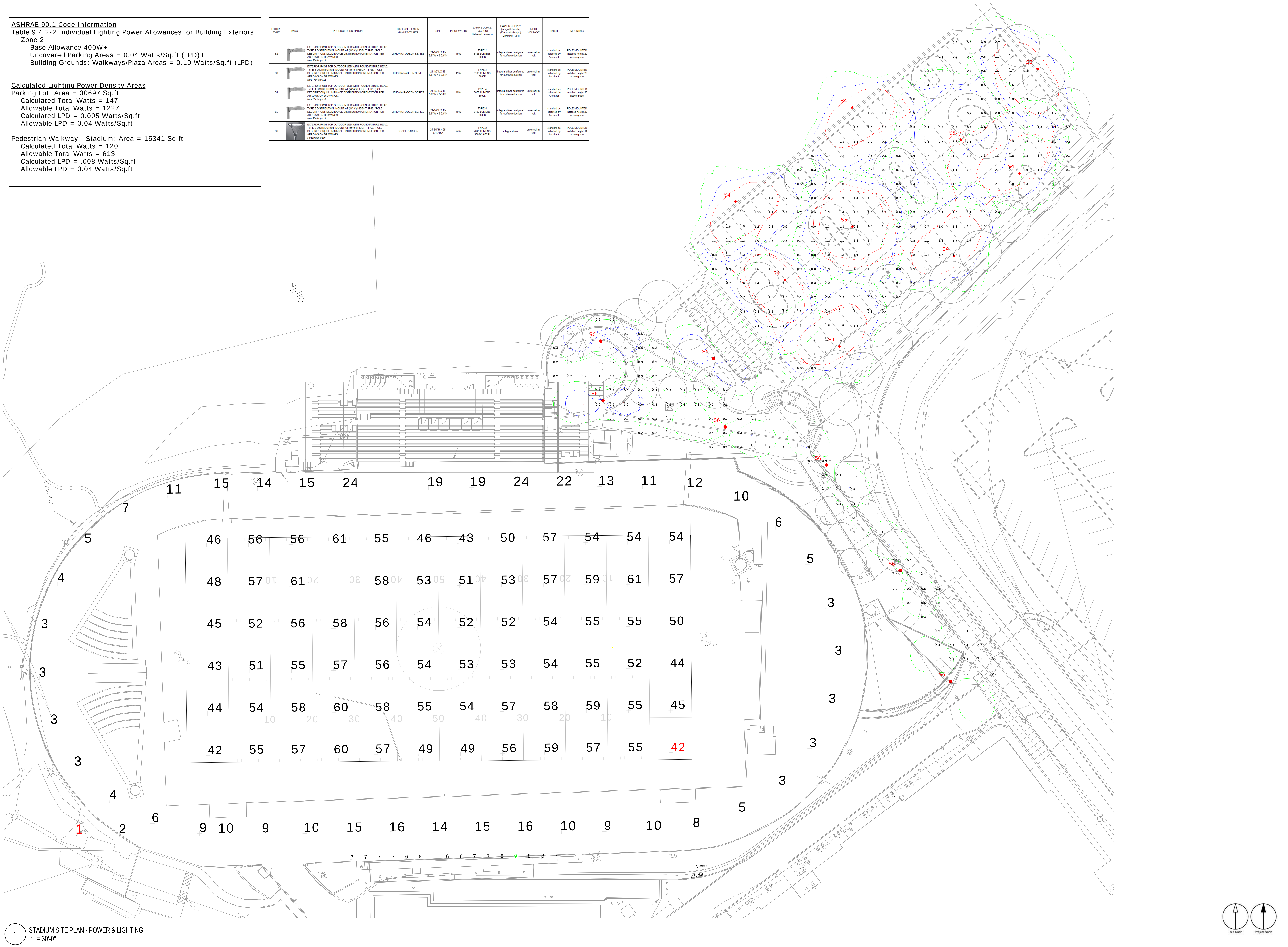
SCALE CHECK
1 in
10mm

ASHRAE 90.1 Code Information
Table 9.4.2-2 Individual Lighting Power Allowances for Building Exteriors
  Zone 2
    Base Allowance 400W+
    Uncovered Parking Areas = 0.04 Watts/Sq.ft (LPD)+
    Building Grounds: Walkways/Plaza Areas = 0.10 Watts/Sq.ft (LPD)

Calculated Lighting Power Density Areas
Parking Lot: Area = 30697 Sq.ft
  Calculated Total Watts = 147
  Allowable Total Watts = 1227
  Calculated LPD = 0.005 Watts/Sq.ft
  Allowable LPD = 0.04 Watts/Sq.ft

Pedestrian Walkway - Stadium: Area = 15341 Sq.ft
  Calculated Total Watts = 120
  Allowable Total Watts = 613
  Calculated LPD = .008 Watts/Sq.ft
  Allowable LPD = 0.04 Watts/Sq.ft

FIXTURE TYPE	IMAGE	PRODUCT DESCRIPTION	BASIS OF DESIGN MANUFACTURER	SIZE	INPUT WATTS	LAMP SOURCE (Type, CCT, Delivered Lumens)	POWER SUPPLY (Integral/Remote) (Electronic/Magn.) (Dimming Type)	INPUT VOLTAGE	FINISH	MOUNTING
S2		EXTERIOR POST TOP OUTDOOR LED WITH ROUND FIXTURE HEAD. TYPE 2 DISTRIBUTION. MOUNT AT (##'-#") HEIGHT. IP65. (POLE DESCRIPTION). ILLUMINANCE DISTRIBUTION ORIENTATION PER ARROWS ON DRAWINGS. *New Parking Lot*	LITHONIA RADEON SERIES	24-1/2"L X 18-5/8"W X 6-3/8"H	49W	TYPE 2 5128 LUMENS 3000K	integral driver configured for curfew reduction	universal m-volt	standard as selected by Architect	POLE MOUNTED installed height 20 above grade
S3		EXTERIOR POST TOP OUTDOOR LED WITH ROUND FIXTURE HEAD. TYPE 3 DISTRIBUTION. MOUNT AT (##'-#") HEIGHT. IP65. (POLE DESCRIPTION). ILLUMINANCE DISTRIBUTION ORIENTATION PER ARROWS ON DRAWINGS. *New Parking Lot*	LITHONIA RADEON SERIES	24-1/2"L X 18-5/8"W X 6-3/8"H	49W	TYPE 3 5109 LUMENS 3000K	integral driver configured for curfew reduction	universal m-volt	standard as selected by Architect	POLE MOUNTED installed height 20 above grade
S4		EXTERIOR POST TOP OUTDOOR LED WITH ROUND FIXTURE HEAD. TYPE 4 DISTRIBUTION. MOUNT AT (##'-#") HEIGHT. IP65. (POLE DESCRIPTION). ILLUMINANCE DISTRIBUTION ORIENTATION PER ARROWS ON DRAWINGS. *New Parking Lot*	LITHONIA RADEON SERIES	24-1/2"L X 18-5/8"W X 6-3/8"H	49W	TYPE 4 5075 LUMENS 3000K	integral driver configured for curfew reduction	universal m-volt	standard as selected by Architect	POLE MOUNTED installed height 20 above grade
S5		EXTERIOR POST TOP OUTDOOR LED WITH ROUND FIXTURE HEAD. TYPE 5 DISTRIBUTION. MOUNT AT (##'-#") HEIGHT. IP65. (POLE DESCRIPTION). ILLUMINANCE DISTRIBUTION ORIENTATION PER ARROWS ON DRAWINGS. *New Parking Lot*	LITHONIA RADEON SERIES	24-1/2"L X 18-5/8"W X 6-3/8"H	49W	TYPE 5 5403 LUMENS 3000K	integral driver configured for curfew reduction	universal m-volt	standard as selected by Architect	POLE MOUNTED installed height 20 above grade
S6		EXTERIOR POST TOP OUTDOOR LED WITH ROUND FIXTURE HEAD. TYPE 2 DISTRIBUTION. MOUNT AT (##'-#") HEIGHT. IP66. (POLE DESCRIPTION). ILLUMINANCE DISTRIBUTION ORIENTATION PER ARROWS ON DRAWINGS. *Pedestrian Path*	COOPER ARBOR	25-3/4"H X 25-5/16"DIA	24W	TYPE 2 2045 LUMENS 3000K, 80CRI	integral driver	universal m-volt	standard as selected by Architect	POLE MOUNTED installed height 14 above grade



1 STADIUM SITE PLAN - POWER & LIGHTING
1" = 30'-0"

12/14/2020 11:37:59 AM

CLIENT
West Linn Wilsonville District

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ISSUES

No.	DESCRIPTION	DATE

CONSULTANTS

SEAL

PRIME CONSULTANT

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Portland, OR 97205, USA
tel 503 226 6950 fax 503 273 9192
ibigroup.com

PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
5464 W A Street
West Linn, OR 97068
United States

PROJECT NO:
124724

DRAWN BY:
SJL

CHECKED BY:
MFS

PROJECT MGR:
MFS

APPROVED BY:
MFS

SHEET TITLE
PHOTOMETRICS PLAN

SHEET NUMBER
E100

ISSUE

BIM 360://124724 - WLHS Stadium Seating and Parking R2020/20-1401 MEP20 CENTRAL.rvt

SCALE CHECK
1 in
10mm

DKS
117 COMMERCIAL STREET NE, SUITE 310, SALEM, OR 97301 • 503.391.8773 • DKSASSOCIATES.COM

TECHNICAL MEMORANDUM NAME

DATE: October 12, 2020

TO: West Linn Wilsonville School District

FROM: Scott Mansur, P.E., PTOE | DKS Associates
Jenna Bogert, E.I. | DKS Associates

SUBJECT: West Linn High School – Stadium and Parking Expansion Traffic Analysis P20079-001

REGISTERED PROFESSIONAL ENGINEER
56,267
OREGON
JULY 9, 2002
SCOTT M. MANSUR
EXPIRES: DEC. 31, 2020

INTRODUCTION

This memorandum contains a site evaluation and operations analysis for the stadium and parking lot expansion at West Linn High School in West Linn, Oregon. The West Linn-Wilsonville School District desires to expand the current stadium seating and add an additional 116 parking stalls to the site. Of the 116 new stalls, 98 will make up the new parking lot and 18 will be added to the existing south parking lot. A map of the study area is shown in Figure 1 below. The following sections include the estimated project trip generation, intersection analysis, and a site plan review.

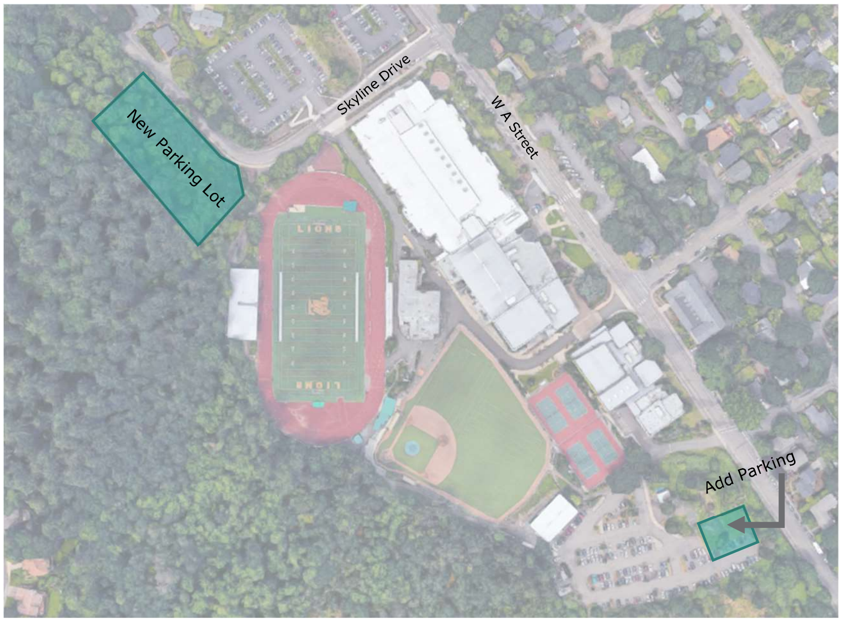


FIGURE 1: STUDY AREA

TRIP GENERATION

Trip generation is the method used to estimate the number of vehicles that are added to the roadway network by the proposed project during a specified period. The peak periods analyzed in this analysis are the a.m. peak hour and afternoon peak hour. The morning peak hour refers to the hour with the highest volume of vehicles between 7 and 9 a.m. The school afternoon peak hour refers to the hour with the highest volume of vehicles between 2 and 4 p.m.

It should be noted that the number of students attending the high school will not increase due to the project. However, the vehicle trip generation is expected to slightly increase due to the increase in parking on site that will be available to staff and students. It is anticipated that the parking addition will impact the site in two ways.

- Shift some of the existing on-street parking to off-street parking, and
- create new vehicle trips (existing students and staff choosing to drive to and from school instead of using other modes of travel like biking, walking, or bus).

To estimate the increase in trip generation for the a.m. and afternoon school peak hours, an assessment of the existing on-street parking was made. The number of on-street parking stalls on W. A Street (between the I-205 bridge and Skyline Drive) and McKillican Street (between W. A Street and 1st Court) is 62 stalls (see Figure 2). For this analysis, it was conservatively assumed that all 62 stalls are occupied by students and staff on a regular school day under existing conditions.

FIGURE 2: EXISITING ON-STREET PARKING

After the additional parking is added to the site (116 stalls), it is assumed that those 62 vehicles would instead park in the new on-site parking stalls. The remaining number of new parking stalls on site (54 stalls) would be filled with new vehicle trips by existing staff and students.

Therefore, there will be approximately 54 new a.m. peak hour trips and 54 new afternoon peak hour trips that are generated by the site due to the addition of 116 parking stalls. See Table 1 for the estimated trip generation.

TABLE 1: NEW VEHICLE TRIPS (TRIP GENERATION)

AM PEAK HOUR			AFTERNOON PEAK HOUR		
IN	OUT	TOTAL	IN	OUT	TOTAL
52	2	54	4	50	54

INTERSECTION ANALYSIS

This section contains the intersection analysis for the W. A Street/Skyline Drive intersection. The intersection of W. A Street/Skyline Drive provides access to two existing parking lots off Skyline Drive as well as the new proposed parking lot near the stadium. Intersection operations was analyzed at this intersection to determine if the intersection is still able to meet the City's standard for operations once the project has been built.

2020 VOLUME DEVELOPMENT

Due to the COVID-19 closures of businesses and schools, current traffic counts were not able to be collected for this project. Therefore, historical intersection turn movement volumes were utilized for this impact analysis and were factored to represent typical traffic conditions. The methodology for factoring the historical volumes is presented below.

Historical intersection traffic counts at the intersection from a previous West Linn High School project[1] were used in this analysis. The historical traffic counts for the a.m. and afternoon peak periods were collected in January 2014 and are provided in the appendix. A growth rate of 1% per year was applied to the through movements on W. A Street to account for background growth between 2014 and 2020.

Additionally, project trips associated with the high school's student growth between 2014 and 2020 were estimated and added to the historical traffic counts.[2] The trip generation generated by the high school between 2014 to 2020 was estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition.[3] These trips are shown in Table 2.

---

[1] West Linn High School Transportation Circulation Improvements, DKS Associates, May 2014.

[2] Student enrollment counts were provided by Amanda Blackburn via email on June 11, 2020.

[3] Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, 2017.

TABLE 2: HIGH SCHOOL TRIP GENERATION FROM 2014 TO 2020

SCENARIO	LAND USE (ITE CODE)	NUMBER OF STUDENTS	TRIP RATE	IN	OUT	TOTAL
AM PEAK HOUR						
2014	High School (530)	1,585	0.55	593	279	872
2020		1,881	0.55	703	332	1,035
GROWTH BETWEEN 2014 - 2020		**296**	**-**	**110**	**53**	**163**
AFTERNOON PEAK HOUR						
2014	High School (530)	1,585	0.33	167	356	523
2020		1,881	0.33	199	422	621
GROWTH BETWEEN 2014 - 2020		**296**	**-**	**32**	**66**	**98**

The growth from 2014 to 2020 was 163 trips in the a.m. peak hour and 98 trips in the afternoon peak hour for the high school site. Based on the location of on-site parking at the school, approximately 60% of these trips were assumed to travel through the intersection of W. A Street/Skyline Drive and are distributed amongst the intersection based on the 2014 turning movement counts.

The existing 2020 volumes that were developed for both the a.m. and afternoon school peak hour analysis are shown in Figure 4.

To estimate the Build volumes, the site trip in Table 1 were added to the existing 2020 volumes. The Build 2020 volumes for the study intersection are shown in Figure 4.

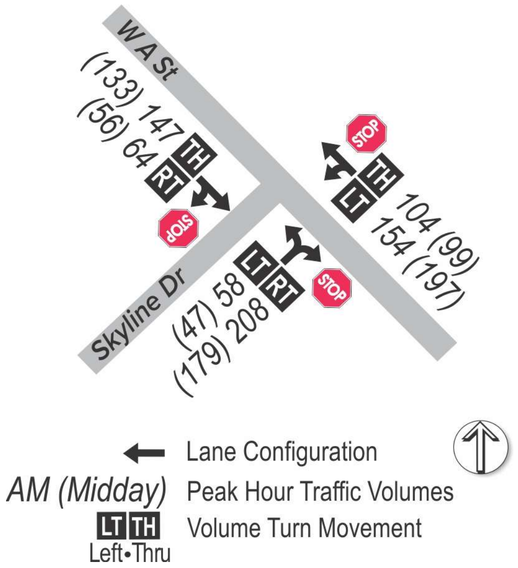


FIGURE 4: EXISTING 2020 VOLUMES

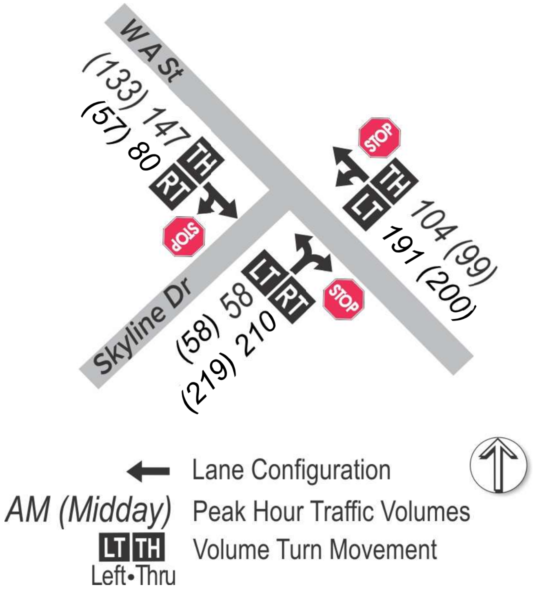


FIGURE 4: BUILD 2020 VOLUMES

INTERSECTION OPERATIONS

Traffic operations were analyzed for the a.m. and afternoon peak hours and were based on the Highway Capacity Manual, 6th Edition methodology for unsignalized intersections. Two scenarios were evaluated, Existing and Build. The Build scenario assumes that the stadium expansion and parking lot addition have been completed. The highway capacity reports are provided in the appendix.

The traffic operations were compared to the City of West Linn minimum operational standard. Specified in the City of West Linn Comprehensive Plan[4], the minimum operational standard is LOS "D".

TABLE 3: INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD	PEAK HOUR	EXISTING		BUILD	
			DELAY	LOS	DELAY	LOS
W A ST/ SKYLINE DR	LOS D	A.M.	19.4	C	25.5	D
		AFTERNOON	14.9	B	17.2	C

V/C = VOLUME-TO-CAPACITY RATIO OF TOTAL INTERSECTION
DELAY = AVERAGE APPROACH DELAY (SEC) OF TOTAL INTERSECTION
LOS = LEVEL OF SERVICE BASED ON TOTAL AVERAGE DELAY

The delay and LOS shown in the table represent the average delay (secs) per vehicle for all approaches of the intersection. As shown in the table, the intersection operations meet the City's standard in both the a.m. and afternoon school peak hours after the construction of the project.

SITE PLAN REVIEW

The proposed site plan was provided by the project sponsor and can be found in the appendix.

DRIVEWAY ACCESS AND SIGHT DISTANCE

The proposed site plan shows a full driveway access to the new 84-stall parking lot on Skyline Drive. With a posted speed of 25 miles per hour, the sight distance requirement along Skyline Drive is 280 feet for vehicles turning left from the driveway and 240 feet for vehicles turning right from the driveway.[5] A preliminary sight distance evaluation at the proposed driveway location indicates there is sufficient available sight distance to meet the stated requirements. Prior to occupancy, sight distance at any new or modified access points will need to be verified,

---

[4] Comprehensive Plan, Goal 12, Page T-8, City of West Linn, Updated July 2017.

[5] American Association of State Highway and Transportation Officials (AASHTO), 2018, Table 9-7 and 9-9.

documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon.

FRONTAGE IMPROVEMENTS

Frontage improvements to Skyline Drive should coordinated with the City's cross section standard for a collector. This includes upgraded facilities for vehicles, bicycles, and pedestrians as indicated in the City TSP roadway standards.[6] Per the TSP, collector roadways are required to have two 12-foot travel lanes, a 5-foot bicycle lanes on both sides, and a minimum of 6-foot sidewalks on both sides.

Currently, the width of the existing pavement along Skyline Drive is approximately 24 feet and there is sidewalk in front of the proposed project site with no striped bicycle facilities. The School District should work with the City of West Linn to construction frontage improvement that are consistent with existing street network but support implementation of the City's future street network.

PARKING IMPACTS

The site plan shows a total of 116 new vehicle parking stalls. The new stadium parking lot will be expected to have 98 parking stalls and the remaining 18 will be in the existing southern lot off W. A Street. Currently, students and staff park along W. A Street and McKillican Street, due to the lack of parking stalls on-site. It is expected that on-street parking in the adjacent neighborhood will be reduced with the addition of the new stadium parking stalls.

SUMMARY

The following are a list of the key findings from the traffic analysis for the West Linn High School stadium expansion and parking lot addition.

- The addition of 116 parking stalls to the high school is expected to shift 62 vehicles from the existing on-street parking in the adjacent neighborhood to the new parking lots, and generate a total of 54 new vehicle trips during the a.m. and afternoon peak hours.
- The intersection of W A Street/Skyline Drive is expected to meet the City's operating standard (LOS D) for both the a.m. and afternoon school peak hours after the buildout of the project.
- Based on preliminary sight distance evaluations, the driveway for the new parking lot meets AASHTO standards. Prior to occupancy, sight distance at any new or modified access points

---

[6] West Linn Transportation System Plan, March 28, 2016, Exhibit 7, and Table 28.

will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon.

APPENDIX

2014 TRAFFIC COUNTS (COLLECTED DATA)

EXISTING SCENARIO - HIGHWAY CAPACITY MANUAL REPORTS

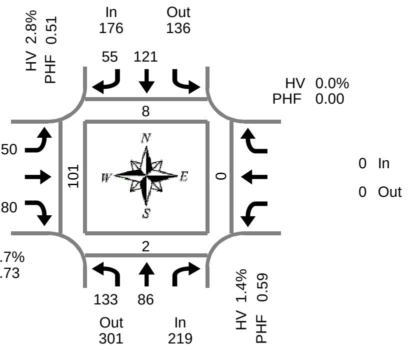
BUILD SCENARIO - HIGHWAY CAPACITY MANUAL REPORTS

SITE PLAN

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
7:35 AM to 8:35 AM

W A St & Skyline Dr

Tuesday, January 28, 2014
7:00 AM to 9:00 AM

5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval	**Northbound**				**Southbound**				**Eastbound**				**Westbound**				**Interval**	**Pedestrians**			
Start	W A St				W A St				Skyline Dr				Skyline Dr					Crosswalk			
Time	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes	**Total**	North	South	East	West
7:00 AM	3	5		0		4	2	0	4		5	0				0	23	0	0	0	20
7:05 AM	4	4		0		3	2	0	3		16	0				0	32	0	0	0	0
7:10 AM	5	7		1		8	1	0	4		16	0				0	41	0	0	0	2
7:15 AM	6	5		0		10	0	0	1		14	0				0	36	0	0	0	1
7:20 AM	8	8		0		8	2	0	1		18	0				0	45	0	0	0	2
7:25 AM	7	9		0		8	5	0	4		15	0				0	48	1	0	0	3
7:30 AM	4	7		0		5	4	0	2		10	0				0	32	0	0	0	3
7:35 AM	13	9		0		5	2	0	3		5	0				0	37	0	0	0	5
7:40 AM	3	8		0		10	2	0	3		10	0				0	36	0	0	0	0
7:45 AM	8	1		0		4	2	0	2		13	0				0	30	0	0	0	2
7:50 AM	5	6		0		7	0	0	0		12	0				0	30	1	1	0	3
7:55 AM	7	4		0		5	0	0	3		12	0				0	31	0	0	0	1
8:00 AM	7	4		0		10	1	0	4		15	0				0	41	0	0	0	4
8:05 AM	12	8		0		12	3	0	3		18	0				0	56	0	0	0	20
8:10 AM	14	8		0		14	5	0	6		20	0				0	67	2	0	0	12
8:15 AM	19	8		0		17	8	0	6		22	0				0	80	1	0	0	14
8:20 AM	18	16		0		16	16	0	6		16	0				0	88	2	0	0	16
8:25 AM	23	9		0		17	12	0	8		21	0				0	90	2	1	0	21
8:30 AM	4	5		0		4	4	0	6		16	0				0	39	0	0	0	3
8:35 AM	4	2		0		4	0	0	0		13	0				0	23	0	0	0	0
8:40 AM	7	1		0		1	4	0	0		9	0				0	22	0	0	0	0
8:45 AM	3	0		0		2	1	0	1		8	0				0	15	0	0	0	0
8:50 AM	6	0		0		4	1	0	0		5	0				0	16	0	0	0	0
8:55 AM	6	2		0		3	2	0	1		5	0				0	19	0	0	0	1
Total Survey	196	136		1		181	79	0	71		314	0				0	977	9	2	0	133

15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval	**Northbound**				**Southbound**				**Eastbound**				**Westbound**				**Interval**	**Pedestrians**			
Start	W A St				W A St				Skyline Dr				Skyline Dr					Crosswalk			
Time	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes	**Total**	North	South	East	West
7:00 AM	12	16		1		15	5	0	11		37	0				0	96	0	0	0	22
7:15 AM	21	22		0		26	7	0	6		47	0				0	129	1	0	0	6
7:30 AM	20	24		0		20	8	0	8		25	0				0	105	0	0	0	8
7:45 AM	20	11		0		16	2	0	5		37	0				0	91	1	1	0	6
8:00 AM	33	20		0		36	9	0	13		53	0				0	164	2	0	0	36
8:15 AM	60	33		0		50	36	0	20		59	0				0	258	5	1	0	51
8:30 AM	15	8		0		9	8	0	6		38	0				0	84	0	0	0	3
8:45 AM	15	2		0		9	4	0	2		18	0				0	50	0	0	0	1
Total Survey	196	136		1		181	79	0	71		314	0				0	977	9	2	0	133

Peak Hour Summary
7:35 AM to 8:35 AM

By Approach	**Northbound**				**Southbound**				**Eastbound**				**Westbound**				**Total**	**Pedestrians**			
	W A St				W A St				Skyline Dr				Skyline Dr					Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	219	301	520	0	176	136	312	0	230	188	418	0	0	0	0	0	625	8	2	0	101
%HV	1.4%				2.8%				8.7%				0.0%				4.5%				
PHF	0.59				0.51				0.73				0.00				0.61				

By Movement	**Northbound**				**Southbound**				**Eastbound**				**Westbound**				**Total**
	W A St				W A St				Skyline Dr				Skyline Dr				
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	133	86		219		121	55	176	50		180	230				0	625
%HV	0.0%	3.5%	NA	1.4%	NA	3.3%	1.8%	2.8%	4.0%	NA	10.0%	8.7%	NA	NA	NA	0.0%	4.5%
PHF	0.55	0.65		0.59		0.61	0.38	0.51	0.63		0.75	0.73				0.00	0.61

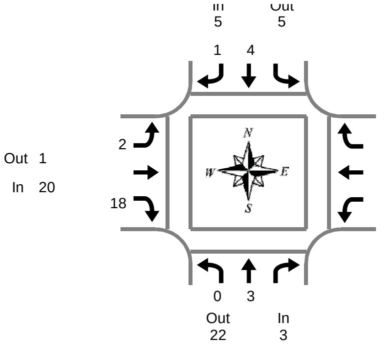
Rolling Hour Summary
7:00 AM to 9:00 AM

Interval	**Northbound**				**Southbound**				**Eastbound**				**Westbound**				**Interval**	**Pedestrians**			
Start	W A St				W A St				Skyline Dr				Skyline Dr					Crosswalk			
Time	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes	**Total**	North	South	East	West
7:00 AM	73	73		1		77	22	0	30		146	0				0	421	2	1	0	42
7:15 AM	94	77		0		98	26	0	32		162	0				0	489	4	1	0	56
7:30 AM	133	88		0		122	55	0	46		174	0				0	618	8	2	0	101
7:45 AM	128	72		0		111	55	0	44		187	0				0	597	8	2	0	96
8:00 AM	123	63		0		104	57	0	41		168	0				0	556	7	1	0	91

Heavy Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
7:35 AM to 8:35 AM

W A St & Skyline Dr

Tuesday, January 28, 2014
7:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary
7:00 AM to 9:00 AM

Interval	Northbound				Southbound				Eastbound				Westbound				
Start	W A St				W A St				Skyline Dr				Skyline Dr				Interval
Time	L	T		Total		T	R	Total	L		R	Total				Total	Total
7:00 AM	0	1		1		0	0	0	0		0	0				0	1
7:05 AM	0	0		0		0	0	0	0		0	0				0	0
7:10 AM	1	1		2		0	0	0	0		0	0				0	2
7:15 AM	0	0		0		0	0	0	0		1	1				0	1
7:20 AM	0	1		1		1	0	1	0		0	0				0	2
7:25 AM	0	1		1		0	0	0	0		0	0				0	1
7:30 AM	0	0		0		1	0	1	0		0	0				0	1
7:35 AM	0	2		2		0	0	0	0		0	0				0	2
7:40 AM	0	0		0		0	0	0	0		0	0				0	0
7:45 AM	0	0		0		0	0	0	0		0	0				0	0
7:50 AM	0	1		1		0	0	0	0		0	0				0	1
7:55 AM	0	0		0		0	0	0	0		0	0				0	0
8:00 AM	0	0		0		1	0	1	0		0	0				0	1
8:05 AM	0	0		0		0	0	0	1		1	2				0	2
8:10 AM	0	0		0		1	0	1	0		3	3				0	4
8:15 AM	0	0		0		2	0	2	1		4	5				0	7
8:20 AM	0	0		0		0	1	1	0		4	4				0	5
8:25 AM	0	0		0		0	0	0	0		3	3				0	3
8:30 AM	0	0		0		0	0	0	0		3	3				0	3
8:35 AM	0	0		0		1	0	1	0		0	0				0	1
8:40 AM	0	0		0		0	0	0	0		0	0				0	0
8:45 AM	0	0		0		0	0	0	0		0	0				0	0
8:50 AM	2	0		2		0	0	0	0		0	0				0	2
8:55 AM	0	0		0		0	0	0	0		0	0				0	0
Total Survey	3	7		10		7	1	8	2		19	21				0	39

Heavy Vehicle 15-Minute Interval Summary
7:00 AM to 9:00 AM

Interval	Northbound				Southbound				Eastbound				Westbound				
Start	W A St				W A St				Skyline Dr				Skyline Dr				Interval
Time	L	T		Total		T	R	Total	L		R	Total				Total	Total
7:00 AM	1	2		3		0	0	0	0		0	0				0	3
7:15 AM	0	2		2		1	0	1	0		1	1				0	4
7:30 AM	0	2		2		1	0	1	0		0	0				0	3
7:45 AM	0	1		1		0	0	0	0		0	0				0	1
8:00 AM	0	0		0		2	0	2	1		4	5				0	7
8:15 AM	0	0		0		2	1	3	1		11	12				0	15
8:30 AM	0	0		0		1	0	1	0		3	3				0	4
8:45 AM	2	0		2		0	0	0	0		0	0				0	2
Total Survey	3	7		10		7	1	8	2		19	21				0	39

Heavy Vehicle Peak Hour Summary
7:35 AM to 8:35 AM

By Approach	Northbound				Southbound				Eastbound				Westbound				Total
	W A St				W A St				Skyline Dr				Skyline Dr				
	In	Out	Total		In	Out	Total		In	Out	Total		In	Out	Total		
Volume	3	22	25		5	5	10		20	1	21		0	0	0		28
PHF	0.38				0.31				0.42				0.00				0.44

By Movement	Northbound				Southbound				Eastbound				Westbound				Total
	W A St				W A St				Skyline Dr				Skyline Dr				
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	0	3		3		4	1	5	2		18	20				0	28
PHF	0.00	0.38		0.38		0.33	0.25	0.31	0.25		0.41	0.42				0.00	0.44

Heavy Vehicle Rolling Hour Summary
7:00 AM to 9:00 AM

Interval	Northbound				Southbound				Eastbound				Westbound				
Start	W A St				W A St				Skyline Dr				Skyline Dr				Interval
Time	L	T		Total		T	R	Total	L		R	Total				Total	Total
7:00 AM	1	7		8		2	0	2	0		1	1				0	11
7:15 AM	0	5		5		4	0	4	1		5	6				0	15
7:30 AM	0	3		3		5	1	6	2		15	17				0	26
7:45 AM	0	1		1		5	1	6	2		18	20				0	27
8:00 AM	2	0		2		5	1	6	2		18	20				0	28

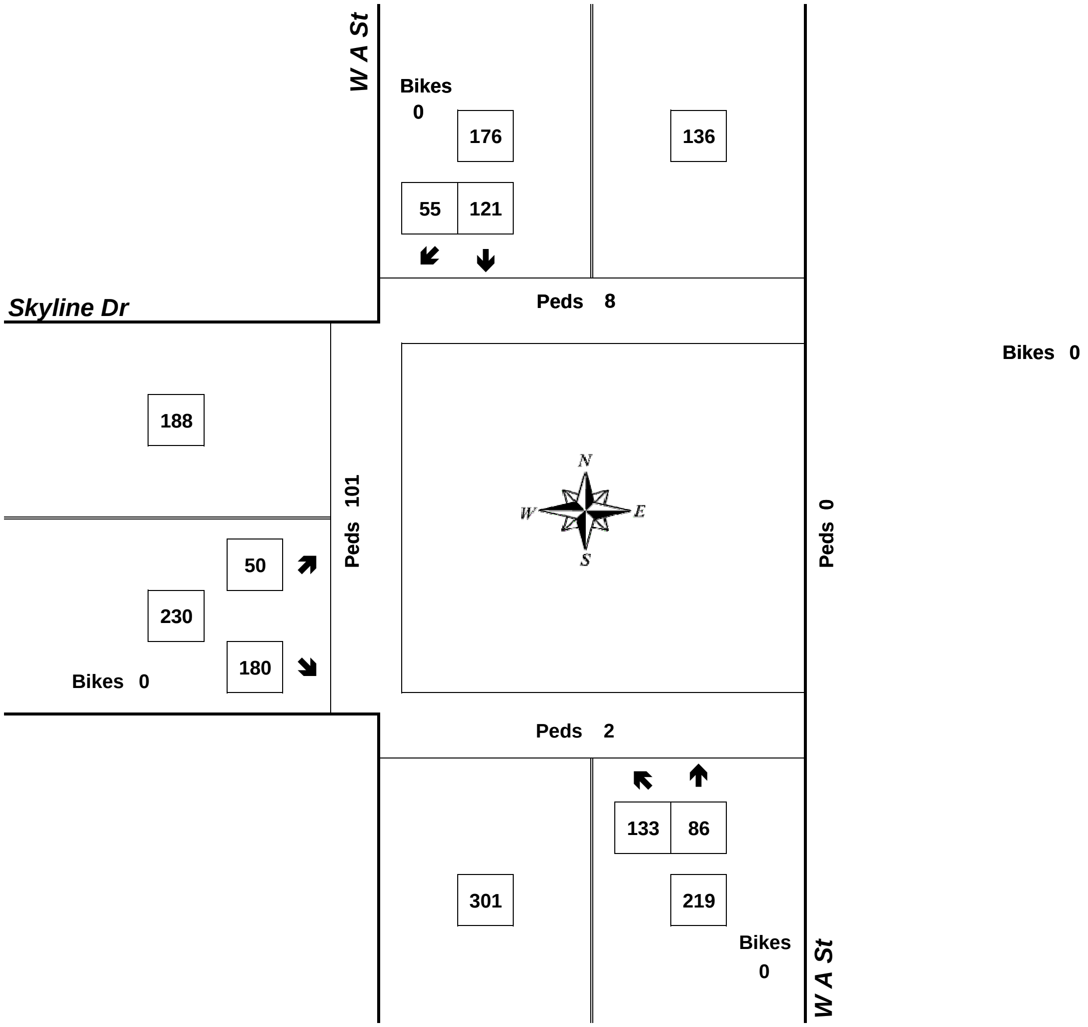
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

W A St & Skyline Dr

7:35 AM to 8:35 AM
Tuesday, January 28, 2014

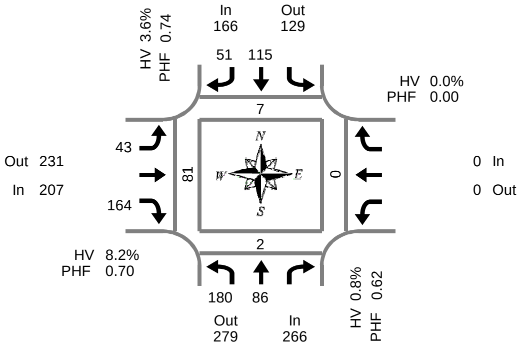


Approach	PHF	HV%	Volume
EB	0.73	8.7%	230
WB	0.00	0.0%	0
NB	0.59	1.4%	219
SB	0.51	2.8%	176
Intersection	0.61	4.5%	625

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
3:00 PM to 4:00 PM

W A St & Skyline Dr

Tuesday, January 28, 2014
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval	**Northbound**				**Southbound**				**Eastbound**				**Westbound**					**Pedestrians**			
Start	W A St				W A St				Skyline Dr				Skyline Dr				**Interval**	Crosswalk			
Time	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes	**Total**	North	South	East	West
2:00 PM	8	2		0		1	0	0	3		7	0				0	21	0	0	0	0
2:05 PM	4	5		0		4	2	0	2		13	0				0	30	0	0	0	0
2:10 PM	11	2		0		3	2	0	2		11	0				0	31	0	0	0	1
2:15 PM	10	7		0		5	0	0	3		6	0				0	31	0	1	0	0
2:20 PM	11	2		0		2	2	0	2		4	0				0	23	0	0	0	0
2:25 PM	7	2		0		0	0	0	1		7	0				0	17	0	0	0	0
2:30 PM	7	0		0		1	2	0	3		3	0				0	16	0	0	0	1
2:35 PM	4	3		0		2	0	0	3		5	0				0	17	0	0	0	1
2:40 PM	8	5		0		2	1	0	0		7	0				0	23	0	0	0	1
2:45 PM	9	3		0		1	0	0	3		8	0				0	24	0	0	0	0
2:50 PM	5	2		0		4	4	0	2		8	0				0	25	0	0	0	0
2:55 PM	5	3		0		10	3	0	3		9	0				0	33	0	0	0	0
3:00 PM	6	2		0		6	2	0	6		19	0				0	41	0	0	0	1
3:05 PM	10	6		0		8	1	0	4		17	0				0	46	0	0	0	0
3:10 PM	7	9		0		17	2	0	5		8	0				0	48	5	2	0	38
3:15 PM	24	15		0		13	9	0	4		19	0				0	84	1	0	0	16
3:20 PM	24	15		0		8	7	0	5		25	0				0	84	1	0	0	10
3:25 PM	22	8		0		5	5	0	6		15	0				0	61	0	0	0	6
3:30 PM	25	3		0		9	4	0	5		7	0				0	53	0	0	0	2
3:35 PM	12	7		0		13	6	0	3		9	0				0	50	0	0	0	3
3:40 PM	16	6		0		11	6	0	0		17	1				0	56	0	0	0	2
3:45 PM	11	7		0		7	3	0	1		9	0				0	38	0	0	0	3
3:50 PM	11	4		0		11	6	0	1		8	0				0	41	0	0	0	0
3:55 PM	12	4		0		7	0	0	3		11	0				0	37	0	0	0	0
Total Survey	269	122		0		150	67	0	70		252	1				0	930	7	3	0	85

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval	**Northbound**				**Southbound**				**Eastbound**				**Westbound**					**Pedestrians**			
Start	W A St				W A St				Skyline Dr				Skyline Dr				**Interval**	Crosswalk			
Time	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes	**Total**	North	South	East	West
2:00 PM	23	9		0		8	4	0	7		31	0				0	82	0	0	0	1
2:15 PM	28	11		0		7	2	0	6		17	0				0	71	0	1	0	0
2:30 PM	19	8		0		5	3	0	6		15	0				0	56	0	0	0	3
2:45 PM	19	8		0		15	7	0	8		25	0				0	82	0	0	0	0
3:00 PM	23	17		0		31	5	0	15		44	0				0	135	5	2	0	39
3:15 PM	70	38		0		26	21	0	15		59	0				0	229	2	0	0	32
3:30 PM	53	16		0		33	16	0	8		33	1				0	159	0	0	0	7
3:45 PM	34	15		0		25	9	0	5		28	0				0	116	0	0	0	3
Total Survey	269	122		0		150	67	0	70		252	1				0	930	7	3	0	85

Peak Hour Summary
3:00 PM to 4:00 PM

By Approach	**Northbound**				**Southbound**				**Eastbound**				**Westbound**				**Total**	**Pedestrians**			
	W A St				W A St				Skyline Dr				Skyline Dr					Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	266	279	545	0	166	129	295	0	207	231	438	1	0	0	0	0	639	7	2	0	81
%HV	0.8%				3.6%				8.2%				0.0%				3.9%				
PHF	0.62				0.74				0.70				0.00				0.70				

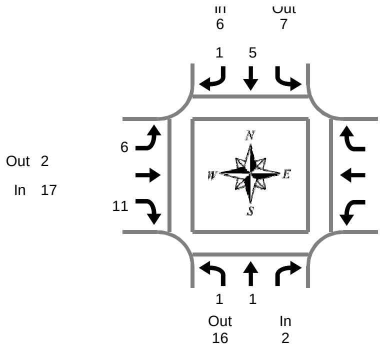
By Movement	**Northbound**				**Southbound**				**Eastbound**				**Westbound**				**Total**
	W A St				W A St				Skyline Dr				Skyline Dr				
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	180	86		266		115	51	166	43		164	207				0	639
%HV	0.6%	1.2%	NA	0.8%	NA	4.3%	2.0%	3.6%	14.0%	NA	6.7%	8.2%	NA	NA	NA	0.0%	3.9%
PHF	0.63	0.55		0.62		0.76	0.61	0.74	0.67		0.69	0.70				0.00	0.70

Rolling Hour Summary
2:00 PM to 4:00 PM

Interval	**Northbound**				**Southbound**				**Eastbound**				**Westbound**					**Pedestrians**			
Start	W A St				W A St				Skyline Dr				Skyline Dr				**Interval**	Crosswalk			
Time	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes	**Total**	North	South	East	West
2:00 PM	89	36		0		35	16	0	27		88	0				0	291	0	1	0	4
2:15 PM	89	44		0		58	17	0	35		101	0				0	344	5	3	0	42
2:30 PM	131	71		0		77	36	0	44		143	0				0	502	7	2	0	74
2:45 PM	165	79		0		105	49	0	46		161	1				0	605	7	2	0	78
3:00 PM	180	86		0		115	51	0	43		164	1				0	639	7	2	0	81

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
3:00 PM to 4:00 PM

W A St & Skyline Dr

Tuesday, January 28, 2014
2:00 PM to 4:00 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval	Northbound				Southbound				Eastbound				Westbound				
Start	W A St				W A St				Skyline Dr				Skyline Dr				Interval
Time	L	T		Total		T	R	Total	L		R	Total				Total	Total
2:00 PM	1	0		1		0	0	0	0		0	0				0	1
2:05 PM	0	0		0		0	0	0	0		0	0				0	0
2:10 PM	0	0		0		0	0	0	0		0	0				0	0
2:15 PM	0	0		0		0	0	0	0		1	1				0	1
2:20 PM	0	0		0		0	0	0	0		0	0				0	0
2:25 PM	0	0		0		0	0	0	0		1	1				0	1
2:30 PM	0	0		0		0	0	0	0		0	0				0	0
2:35 PM	0	0		0		0	0	0	2		0	2				0	2
2:40 PM	0	0		0		0	0	0	0		0	0				0	0
2:45 PM	0	1		1		0	0	0	0		1	1				0	2
2:50 PM	0	0		0		0	1	1	0		0	0				0	1
2:55 PM	0	0		0		0	0	0	0		1	1				0	1
3:00 PM	0	0		0		1	0	1	0		1	1				0	2
3:05 PM	0	1		1		1	0	1	0		0	0				0	2
3:10 PM	0	0		0		0	0	0	1		0	1				0	1
3:15 PM	1	0		1		2	0	2	0		2	2				0	5
3:20 PM	0	0		0		1	0	1	1		5	6				0	7
3:25 PM	0	0		0		0	0	0	2		1	3				0	3
3:30 PM	0	0		0		0	0	0	1		1	2				0	2
3:35 PM	0	0		0		0	0	0	1		0	1				0	1
3:40 PM	0	0		0		0	1	1	0		1	1				0	2
3:45 PM	0	0		0		0	0	0	0		0	0				0	0
3:50 PM	0	0		0		0	0	0	0		0	0				0	0
3:55 PM	0	0		0		0	0	0	0		0	0				0	0
Total Survey	2	2		4		5	2	7	8		15	23				0	34

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval	Northbound				Southbound				Eastbound				Westbound				
Start	W A St				W A St				Skyline Dr				Skyline Dr				Interval
Time	L	T		Total		T	R	Total	L		R	Total				Total	Total
2:00 PM	1	0		1		0	0	0	0		0	0				0	1
2:15 PM	0	0		0		0	0	0	0		2	2				0	2
2:30 PM	0	0		0		0	0	0	2		0	2				0	2
2:45 PM	0	1		1		0	1	1	0		2	2				0	4
3:00 PM	0	1		1		2	0	2	1		1	2				0	5
3:15 PM	1	0		1		3	0	3	3		8	11				0	15
3:30 PM	0	0		0		0	1	1	2		2	4				0	5
3:45 PM	0	0		0		0	0	0	0		0	0				0	0
Total Survey	2	2		4		5	2	7	8		15	23				0	34

Heavy Vehicle Peak Hour Summary
3:00 PM to 4:00 PM

By Approach	Northbound				Southbound				Eastbound				Westbound				Total
	W A St				W A St				Skyline Dr				Skyline Dr				
	In	Out	Total		In	Out	Total		In	Out	Total		In	Out	Total		
Volume	2	16	18		6	7	13		17	2	19		0	0	0		25
PHF	0.25				0.50				0.39				0.00				0.42

By Movement	Northbound				Southbound				Eastbound				Westbound				Total
	W A St				W A St				Skyline Dr				Skyline Dr				
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	1	1		2		5	1	6	6		11	17				0	25
PHF	0.25	0.25		0.25		0.42	0.25	0.50	0.38		0.34	0.39				0.00	0.42

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

Interval	Northbound				Southbound				Eastbound				Westbound				
Start	W A St				W A St				Skyline Dr				Skyline Dr				Interval
Time	L	T		Total		T	R	Total	L		R	Total				Total	Total
2:00 PM	1	1		2		0	1	1	2		4	6				0	9
2:15 PM	0	2		2		2	1	3	3		5	8				0	13
2:30 PM	1	2		3		5	1	6	6		11	17				0	26
2:45 PM	1	2		3		5	2	7	6		13	19				0	29
3:00 PM	1	1		2		5	1	6	6		11	17				0	25

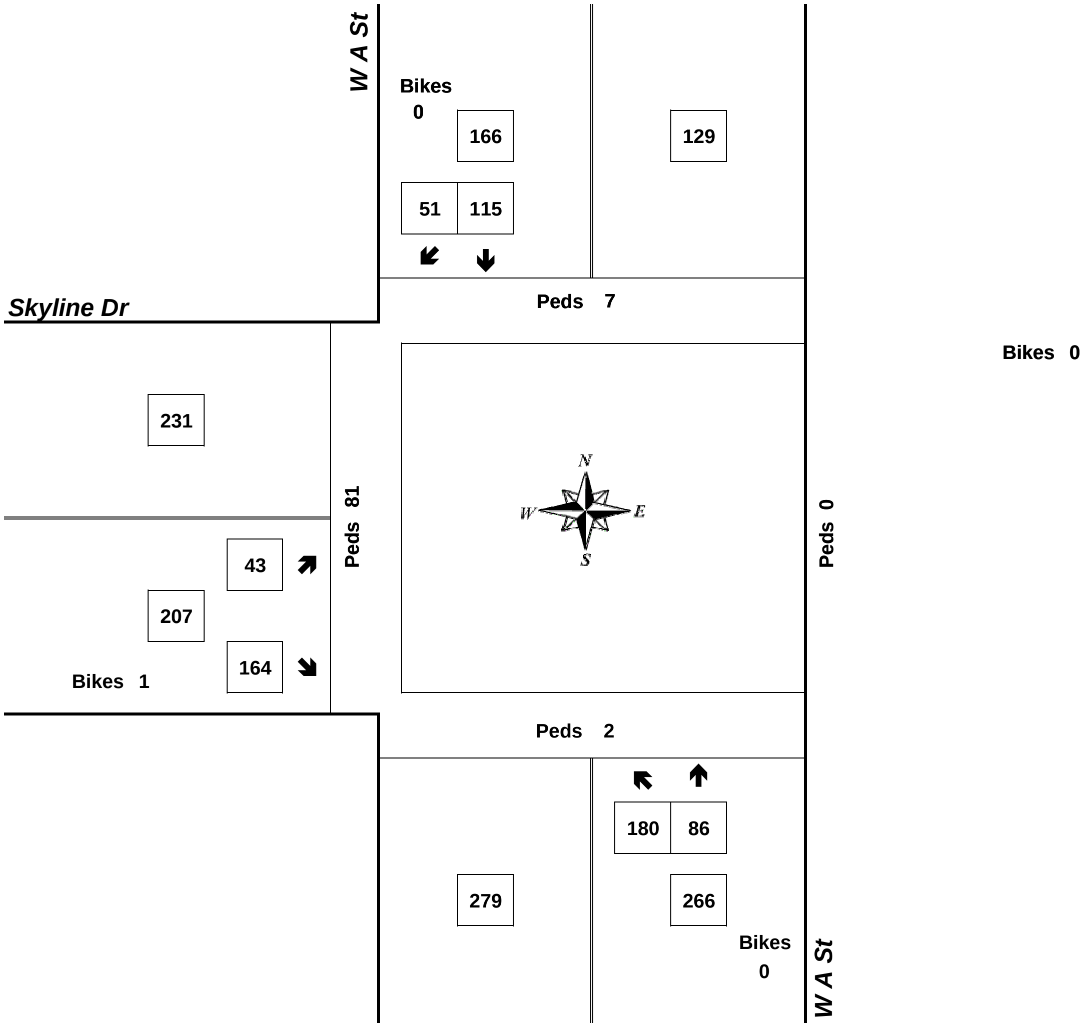
Peak Hour Summary

All Traffic Data
Services Inc.

Clay Carney
(503) 833-2740

W A St & Skyline Dr

3:00 PM to 4:00 PM
Tuesday, January 28, 2014



Approach	PHF	HV%	Volume
EB	0.70	8.2%	207
WB	0.00	0.0%	0
NB	0.62	0.8%	266
SB	0.74	3.6%	166
Intersection	0.70	3.9%	639

Count Period: 2:00 PM to 4:00 PM

1: A St & Skyline Dr

Intersection	
Intersection Delay, s/veh	19.4
Intersection LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	⋎			↰	↱	
Traffic Vol, veh/h	58	208	154	104	147	64
Future Vol, veh/h	58	208	154	104	147	64
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61
Heavy Vehicles, %	4	10	0	3	3	2
Mvmt Flow	95	341	252	170	241	105
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	20.1	21.5	16.1
HCM LOS	C	C	C

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	60%	22%	0%
Vol Thru, %	40%	0%	70%
Vol Right, %	0%	78%	30%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	258	266	211
LT Vol	154	58	0
Through Vol	104	0	147
RT Vol	0	208	64
Lane Flow Rate	423	436	346
Geometry Grp	1	1	1
Degree of Util (X)	0.695	0.683	0.558
Departure Headway (Hd)	5.914	5.638	5.807
Convergence, Y/N	Yes	Yes	Yes
Cap	605	637	616
Service Time	3.996	3.718	3.894
HCM Lane V/C Ratio	0.699	0.684	0.562
HCM Control Delay	21.5	20.1	16.1
HCM Lane LOS	C	C	C
HCM 95th-tile Q	5.5	5.3	3.4

Intersection	
Intersection Delay, s/veh	14.9
Intersection LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	47	179	197	99	133	56
Future Vol, veh/h	47	179	197	99	133	56
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	14	7	1	1	4	2
Mvmt Flow	67	256	281	141	190	80
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	13.9	17.4	12
HCM LOS	B	C	B

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	67%	21%	0%
Vol Thru, %	33%	0%	70%
Vol Right, %	0%	79%	30%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	296	226	189
LT Vol	197	47	0
Through Vol	99	0	133
RT Vol	0	179	56
Lane Flow Rate	423	323	270
Geometry Grp	1	1	1
Degree of Util (X)	0.635	0.494	0.403
Departure Headway (Hd)	5.408	5.51	5.379
Convergence, Y/N	Yes	Yes	Yes
Cap	668	652	667
Service Time	3.447	3.554	3.425
HCM Lane V/C Ratio	0.633	0.495	0.405
HCM Control Delay	17.4	13.9	12
HCM Lane LOS	C	B	B
HCM 95th-tile Q	4.5	2.7	1.9

Intersection	
Intersection Delay, s/veh	25.5
Intersection LOS	D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱			↰	↱	
Traffic Vol, veh/h	58	210	191	104	147	80
Future Vol, veh/h	58	210	191	104	147	80
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61
Heavy Vehicles, %	4	10	0	3	3	2
Mvmt Flow	95	344	313	170	241	131
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	23.8	32	18.9
HCM LOS	C	D	C

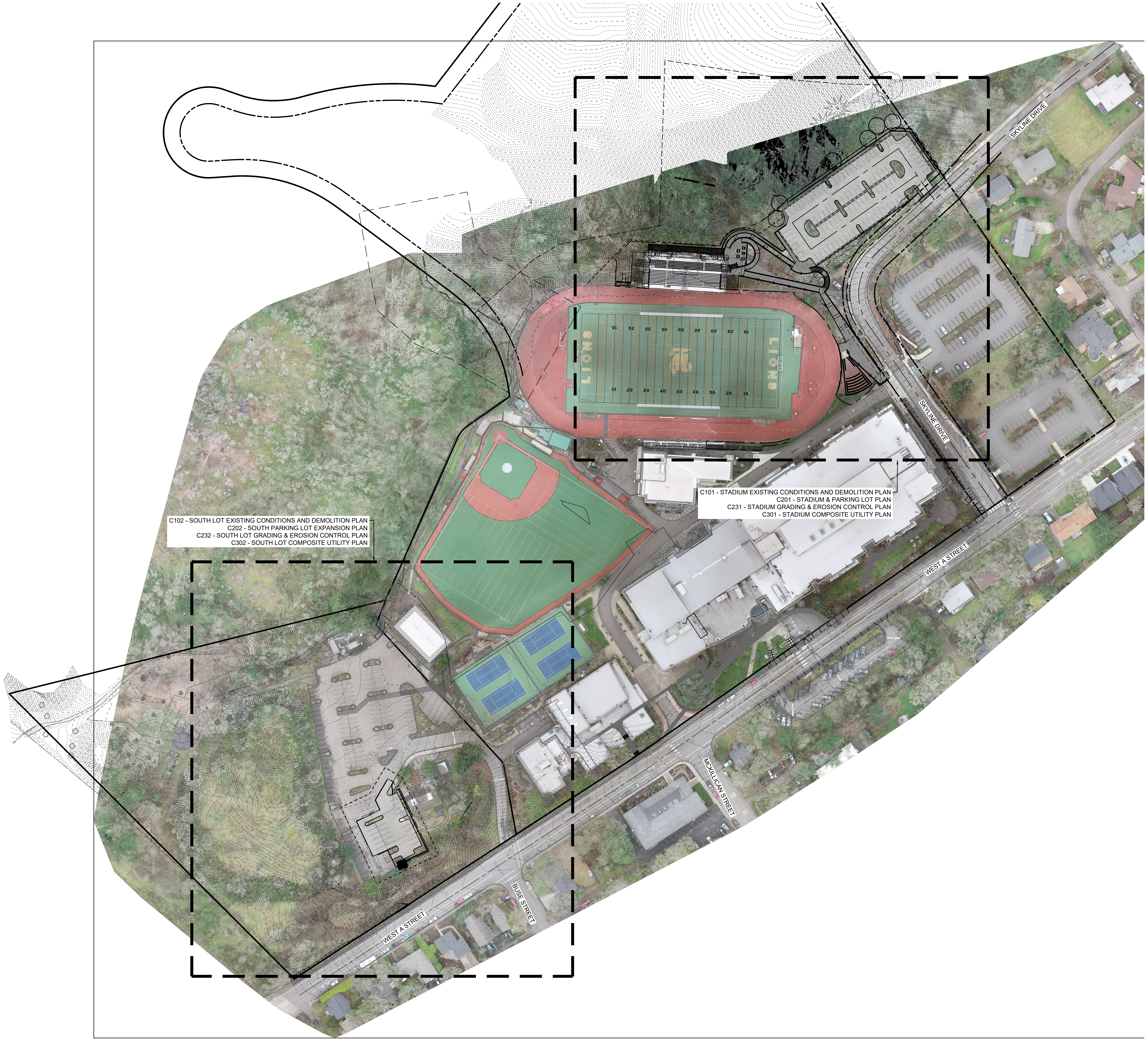
Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	65%	22%	0%
Vol Thru, %	35%	0%	65%
Vol Right, %	0%	78%	35%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	295	268	227
LT Vol	191	58	0
Through Vol	104	0	147
RT Vol	0	210	80
Lane Flow Rate	484	439	372
Geometry Grp	1	1	1
Degree of Util (X)	0.826	0.734	0.628
Departure Headway (Hd)	6.151	6.018	6.078
Convergence, Y/N	Yes	Yes	Yes
Cap	590	606	592
Service Time	4.2	4.018	4.13
HCM Lane V/C Ratio	0.82	0.724	0.628
HCM Control Delay	32	23.8	18.9
HCM Lane LOS	D	C	C
HCM 95th-tile Q	8.5	6.3	4.4

Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Vol, veh/h	58	219	200	99	133	57
Future Vol, veh/h	58	219	200	99	133	57
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	14	7	1	1	4	2
Mvmt Flow	83	313	286	141	190	81
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	17.3	19.8	13
HCM LOS	C	C	B

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	67%	21%	0%
Vol Thru, %	33%	0%	70%
Vol Right, %	0%	79%	30%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	299	277	190
LT Vol	200	58	0
Through Vol	99	0	133
RT Vol	0	219	57
Lane Flow Rate	427	396	271
Geometry Grp	1	1	1
Degree of Util (X)	0.674	0.615	0.428
Departure Headway (Hd)	5.677	5.597	5.67
Convergence, Y/N	Yes	Yes	Yes
Cap	632	641	632
Service Time	3.735	3.657	3.737
HCM Lane V/C Ratio	0.676	0.618	0.429
HCM Control Delay	19.8	17.3	13
HCM Lane LOS	C	C	B
HCM 95th-tile Q	5.2	4.2	2.1



LEGEND

EXISTING LOT LINE
EXISTING RIGHT OF WAY LINE
EXISTING CONSERVATION EASEMENT LINE
EXISTING FENCE LINE
EXISTING WALL
EXISTING WHITE STRIPING
EXISTING DRAINAGE DITCH
WATER RESOURCE AREA (WRA) BUFFER
EXISTING CONCRETE
110 EXISTING MAJOR CONTOUR
108 EXISTING MINOR CONTOUR
LIMITS OF GRADING
PROPOSED RIGHT OF WAY LINE
PROPERTY SETBACK LINE
PROPOSED EASEMENT
PROPOSED CURB
PROPOSED ASPHALT
PROPOSED RETAINING WALL
PROPOSED WHITE PAVEMENT STRIPING

W N S E

SCALE: 1" = 80
0 80 160 FT

CLIENT
WEST LINN
WILSONVILLE SCHOOL
DISTRICT

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ISSUES

No.	DESCRIPTION	DATE
1	LAND USE APPLICATION	08-19-2020
2	DESIGN DEVELOPMENT	10-07-2020

NOT FOR CONSTRUCTION

CONSULTANTS

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
9600 SW NIMBUS AVE., SUITE 100; BEAVERTON, OR 97008

SEAL

70657PE
JUNE 16, 2011
JESSE T. EMERSON
EXPIRES: 12/31/21

IBI GROUP
907 SW Harvey Milk Street
Portland, OR 97205, USA
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ibigroup-edpnw.com

PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
5464 W A Street
West Linn, OR 97068
United States

PROJECT NO:
124724

DRAWN BY: **TEG, JTE**
CHECKED BY: **JDH**
PROJECT MGR: **JDH**
APPROVED BY: **JDH**

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
C100

ISSUE
2

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-OVERALL SITE PLAN.DWG

SCALE CHECK
10mm
1 in

ATTACHMENT D:
TECHNICAL
REPORTS

TERAGAN
& ASSOCIATES, INC.
ARBORICULTURAL CONSULTANTS

Teragan & Associates, Inc
3145 Westview Circle
Lake Oswego, OR 97034
971-295-4835
teragan.com

September 22, 2020

Planning and Building
City of West Linn
22500 Salamo Road #1000
West Linn, Oregon 97068

Re: Arborist Report and Tree Preservation Plan for West Linn High School Parking/Stadium Additions

Please find enclosed the Arborist Report and Tree Preservation Plan for the West Linn High School Parking/Stadium Additions project located at 5464 W A Street in West Linn, Oregon.

Do not hesitate to contact me if you have any questions, concerns, or need any additional information.

Sincerely,

Todd Prager

Todd Prager
ASCA Registered Consulting Arborist #597
ISA Board Certified Master Arborist, WE-6723B
ISA Qualified Tree Risk Assessor
AICP, American Planning Association

Encl.

TERAGAN
& ASSOCIATES, INC.
ARBORICULTURAL CONSULTANTS

Arborist Report and Tree Preservation Plan

For West Linn High School Parking/Stadium Additions in West Linn, Oregon

Prepared by:
Todd Prager, RCA #597, ISA Board Certified Master Arborist, AICP, Teragan & Associates, Inc.

9/22/2020

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TERAGAN
& ASSOCIATES, INC.
ARBORICULTURAL CONSULTANTS

West Linn High School Parking/Stadium Additions
West Linn, Oregon
Arborist Report and Tree Preservation Plan
September 22, 2020

Purpose

This Arborist Report and Tree Preservation Plan for the West Linn High School Parking/Stadium Additions project in West Linn, Oregon, is provided pursuant to City of West Linn Community Development Code Chapter 55 and the West Linn Tree Technical Manual. This report describes the existing trees located on the project site, as well as recommendations for tree removal, retention and protection. This report is based on observations made by Registered Consulting Arborist (RCA #597), Board Certified Master Arborist (WE-6723B), and Qualified Tree Risk Assessor Todd Prager during a site visit conducted on June 5, 2020, a subsequent site meeting with City Arborists Mike Perkins and Ron Jones June 17, 2020, and site plan coordination with the project team including West Linn Wilsonville School District and Mayer Reed, Inc.

Scope of Work and Limitations

Teragan & Associates, Inc. was contracted by West Linn Wilsonville School District to collect tree inventory data for individual trees measuring 12 inches and larger in diameter and to develop an arborist report and tree preservation plan for the project. The proposed improvements include additional parking and stadium upgrades for the existing stadium at West Linn High School. Site plans were provided by Mayer Reed illustrating the location of existing trees and potential construction impacts.

Visual Tree Assessment (VTA) was performed on individual trees located throughout the site. The enclosed tree inventory data sheet in Attachment 1 demonstrates that all trees within and near the proposed improvements were physically identified. VTA is the standard process whereby the inspector visually assesses the tree from a distance and up close, looking for defect symptoms and evaluating overall condition and vitality of individual trees. Trees were evaluated in terms of general condition and potential construction impacts. Following the inventory fieldwork, I coordinated with West Linn Wilsonville School District and Mayer Reed to discuss tree protection recommendations.

The client may choose to accept or disregard the recommendations contained herein, or seek additional advice. Neither this author nor Teragan & Associates, Inc. have assumed any responsibility for liability associated with the trees on or adjacent to this site.

General Description

The West Linn High School Parking/Stadium Additions project site is located at West Linn High School in West Linn, Oregon. The site consists of an existing stadium, track, field, and walkways along the northern and eastern portions of the site, a Douglas-fir (*Pseudotsuga menziesii*) dominated stand of trees on a steep slope along the western portion of the site, an area of Oregon ash (*Fraxinum latifolia*) at the base of the slope, and a stand of Oregon white oak (*Quercus garryana*) along the northwest portion of the site adjacent to Skyline Drive. A row of seven relatively small non-native Norway maples (*Acer platanoides*) line the walkway at the stadium entrance.

The Douglas-fir stand on the hillside includes the highest quality trees at the site. The trees are undergoing natural stand dynamics, whereby trees are competing with one another; over time, some trees become dominant or codominant while others are suppressed beneath the dominant overstory. The stand is generally in good condition as an intact and undisturbed group. The understory of the grove includes primarily native vegetation. Most of the trees in the grove are well spaced without excessive competition, and are in fair to good health and structural condition.

The Oregon white oak stand is secondary in quality with relatively smaller diameter trees with closer spacing and greater competition between trees. The understory includes extensive poison oak (*Toxicodendron diversilobum*).

The area of Oregon ash at the base of the slope includes the lowest quality trees.

The topographic survey in Attachment 2 includes the locations of existing trees at the site. The proposed site plan sheet L002 in Attachment 3 by Mayer Reed includes the proposed tree impacts for the parking and stadium upgrades. The tree numbers in Attachments 2 and 3 correspond to the tree numbers in the inventory in Attachment 1. The trees were also tagged with their corresponding numbers in the field.

Tree Inventory

On June 5, 2020, I completed an assessment of all existing trees over 12-inches in trunk diameter (DBH) at the West Linn High School Parking/Stadium Additions project site. A spreadsheet of the inventoried trees is provided in Attachment 1. The inventory lists the tree number, species (common and scientific names), DBH, crown radius, health condition, structural condition, whether the tree is significant as defined in the City of West Linn Community Development Code, pertinent comments, and treatment (remove/retain).

The tree numbers in the inventory in Attachment 1 correspond to the tree numbers in the tree exhibits in Attachments 2 and 3. Significant trees are denoted with an "s" on plan sheet L002 in Attachment 3.

Note that Mayer Reed has created additional plan sheets as part of their land use plan set to demonstrate compliance with applicable Development Code and Tree Technical Manual requirements.

Tree Preservation Plan

I coordinated with the project team to discuss trees suitable for preservation in terms of potential construction impacts. Table 1 provides a summary of the number of non-significant and significant trees by treatment recommendation.

Table 1. Number of Inventoried Trees by Treatment and Significance.

Treatment	**Remove**	**Retain**	**Total**
Non-Significant Trees (Onsite)	141	52	**193**
Significant Trees (Onsite)	25	33 (56.9%)	**58**
Offsite	0	7	**7**
Total	166	92	258

Onsite Trees

Of the onsite trees, 85 trees are planned for retention and 166 trees are planned for removal to accommodate the proposed development. The following is a discussion of the proposed significant and non-significant tree retention and removal.

Significant Tree Retention

The 85 trees planned for retention include 33 significant onsite trees. These trees are part of the Douglas-fir dominated stand of trees on a steep slope along the western portion of the site.

During the tree inventory fieldwork and again during the on-site meeting with the City’s Arborists, we evaluated these trees in terms of potential impacts from adjacent tree removal. The Douglas-firs on the western slope can be viewed as a distinct stand of trees that are separate from the trees to be removed on the flat portion of the site. Therefore, we strived to protect the edge of the stand from development to the extent practicable.

The biggest impacts to the stand of Douglas-firs will be from the removal of trees 12793, 12908, 12939, and 12943 since these are larger trees at the edge of the stand. However, based on my assessment of the health and structural conditions of the adjacent trees to retained, I anticipate the new edge trees will adapt to the changes from the proposed removals.

While the trees selected for preservation are anticipated to be viable for the foreseeable future, it is important to note that the removal of edge trees from a stand inherently increases the risk of adjacent tree failure. Therefore, I recommend re-evaluating the trees at the time of site clearing and periodically during construction to verify that they are suitable for preservation and do not present unacceptable risks to people or property.

Non-Significant Tree Retention

The other 52 onsite trees planned for retention are not significant. The retention of non-significant trees interior and adjacent to the stand of significant trees will help to minimize stand disturbance and provide additional habitat and screening values.

In addition, the retention of non-significant trees along Skyline Drive and to the east of the track will maintain some screening benefits.

Onsite Tree Removal (Significant and Non-Significant)

The 166 onsite trees planned for removal include 25 significant trees and 141 non-significant trees. The reasons for the proposed removals are for construction of parking lot and stadium improvements. Trees 12794 and 12795 are red alders (*Alnus rubra*) that will be newly exposed adjacent to the parking lot. In my experience, red alders do not adapt well to changes from adjacent tree removals, and I proposed the removal of these two trees for risk reduction purposes. In addition, I proposed the removal of tree 12949 because it had extensive *Porodaedalea pini* conks along its trunk and will also be adjacent to the parking lot. I also proposed the removal of this tree for risk reduction purposes.

Offsite Trees

Of the 258 inventoried trees, 7 are located off-site. All of these trees will be retained and protected with development. It will be important for the project arborist to be onsite during construction adjacent to tree 12804 to oversee the proper protection and pruning of roots as needed.

Significant Tree Preservation Standards

The proposed significant tree preservation at this site exceeds the preservation requirements in Section 55.100.B.2 of the West Linn Development Code.

Table 2 includes a summary of the proposed significant tree preservation by number and protected area. The protected area of significant trees is determined by square feet beneath the dripline of each significant tree plus 10 feet.

Table 2. Significant Tree Preservation.

Treatment	Remove	Retain	% Retain	Total
Significant Trees (Number)	25	33	56.9%	58
Significant Trees (Area, sq. ft.)	67,863	112,824	62.4%	180,687

As shown in Table 2, 56.9 percent of the significant trees and 62.4 percent of the protected significant tree area is proposed to be retained. Section 55.100.B.2 of the West Linn Development Code requires "up to 20 percent" of the protected tree area to be retained.

Therefore, the proposed significant tree preservation at the site exceeds the requirements in the West Linn Development Code. Note that additional non-significant trees are also proposed for preservation where possible.

Tree Protection Standards

This section of the report includes tree protection recommendations in accordance with the City of West Linn Code and Tree Technical Manual.

Site Specific Tree Protection Recommendations

The following site specific tree protection standards apply to this project:

- **Tree Protection Fencing**: The trees to be retained should be protected with tree protection fencing as shown on sheet L002 in Attachment 3.
- **Directional Felling**: Fell the trees to be removed away from the trees to be retained so they do not contact or otherwise damage the trunks or branches of the trees to be retained. No vehicles or heavy equipment should be permitted within the tree protection zones during tree removal operations.
- **Stump Removal** - Stumps of trees removed within the tree protection zones shall be retained in place or carefully stump ground to protect the root systems of the trees to be retained unless otherwise approved by the project arborist.
- **Sediment Fence**: Ensure sediment fence is placed outside the tree protection zones to protect the root systems of the trees to be retained.
- **Periodic Risk Assessments**: The trees to be retained that were part of a larger grove will be at increased risk of failure after adjacent tree removal. These trees should be monitored periodically and after storm events by the project arborist following site clearing to determine if any pose unreasonable risks.
- **Tree Protection Oversight by Project Arborist**: In some cases, the proposed development will encroach within the standard tree protection zones of the trees to be retained. In these cases, the onsite supervision of the project arborist will be needed to oversee the proper protection and pruning of roots. In particular, trees 12804, 12937, 30646, 30769, and 30776 will require the onsite supervision of the project arborist. The contractor should coordinate with the project arborist to monitor the excavation and document the root impacts. If critical structural roots are encountered during excavation, modifications may be required to protect the roots. If modifications are not possible, additional trees may need to be requested for removal.

General Tree Protection Standards

The following general tree protection standards are consistent with the City of West Linn Code and Tree Technical Manual.

<u>Before Construction</u>

1. **Tree Protection Zone.** The project arborist shall designate the Tree Protection Zone (TPZ) for each tree to be protected. Where feasible, the size of the TPZ shall be established at the dripline of the tree plus 10-feet for

significant trees. For non-significant trees, the TPZ shall be established at a minimum radius from the trunks of .5 feet per inch of DBH. Where improvements (driveways, buildings, and utilities) must be installed closer to the tree(s), the TPZ may be established within the standard setbacks if the project arborist, in coordination with the City Arborists, determines that the tree(s) will not be unduly damaged. The location of TPZs shall be shown on construction drawings.

2. **Protection Fencing.** Protection fencing shall serve as the tree protection zone and shall be erected before demolition, grubbing, grading, or construction begins. All trees to be retained shall be protected by six-foot-high chain link fences installed at the edge of the TPZ. Protection fencing shall be secured to two-inch diameter galvanized iron posts, driven to a depth of a least two feet, placed no further than 10-feet apart. If fencing is located on pavement, posts may be supported by an appropriate grade level concrete base. Protection fencing shall remain in place until final inspection of the project permit, or in consultation with the project arborist.
3. **Signage.** An 8.5x11 –inch sign stating, “WARNING: Tree Protection Zone,” shall be displayed on each protection fence at all times.
4. **Designation of Cut Trees.** Trees to be removed shall be clearly marked with construction flagging, tree-marking paint, or other methods approved in advance by the project arborist. Trees shall be carefully removed so as to avoid either above or below ground damage to those trees to be preserved.
5. **Preconstruction Conference.** The project arborist shall be on site to discuss methods of tree removal and tree protection prior to any construction.
6. **Verification of Tree Protection Measures.** Prior to commencement of construction, the project arborist shall verify in writing to the City Arborists that tree protection fencing has been satisfactorily installed.

<u>During Construction</u>

7. **Tree Protection Zone Maintenance.** The protection fencing shall not be moved, removed, or entered by equipment except under direction of the project arborist, in coordination with the City Arborists.
8. **Storage of Material or Equipment.** The contractor shall not store materials or equipment within the TPZ.
9. **Excavation within the TPZ.** Excavation with the TPZ shall be avoided if alternatives are available. If excavation within the TPZ is unavoidable, the project arborist shall evaluate the proposed excavation to determine methods to minimize impacts to trees. This can include tunneling, hand digging or other approaches. All construction within the TPZ shall be under the on-site technical supervision of the project arborist, in coordination with the City Arborists.
10. **Tree Protection Zone.** The project arborist shall monitor construction activities and progress, and provide written reports to the developer and the City at regular intervals. Tree protection inspections shall occur monthly or more frequently if needed.
11. **Quality Assurance.** The project arborist shall supervise proper execution of this plan during construction activities that could encroach on retained trees.

Tree protection site inspection monitoring reports shall be provided to the Client and City on a regular basis throughout construction.

Post Construction

12. **Final Report.** After the project has been completed, the project arborist shall provide a final report to the developer and the City. The final report shall include concerns about any trees negatively impacted during construction, and describe the measures needed to maintain and protect the remaining trees for a minimum of two years after project completion.

Conclusion

The recommendations in this report meet the applicable requirements in the City of West Linn Code and Tree Technical Manual for the West Linn High School Parking/Stadium Additions project.

Please contact me if you have questions, concerns, or need any additional information.

Sincerely,

Todd Prager

Todd Prager
ASCA Registered Consulting Arborist #597
ISA Board Certified Master Arborist, WE-6723B
ISA Qualified Tree Risk Assessor
AICP, American Planning Association

Attachment 1:	Tree Inventory
Attachment 2:	Existing Conditions Map
Attachment 3:	Tree Removal and Protection Exhibit
Attachment 4:	Assumptions and Limiting Conditions

Attachment 1

Tree No.	Svy. Description	Common Name	Scientific Name	DBH[1]	Single DBH[2]	C-Rad[3]	C-Rad + 10'	Condition[4]	Structure	Sig.?[5]	Sig. Tree Area[6]	Comments	Treatment
12731	TREE 7.0"OAK	Oregon white oak	*Quercus garryana*	12	12	8	18	good	fair	Yes	1018	one sided	remove
12732	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	10,8	12	18	28	good	fair	Yes	2463	multiple leaders at ground level	remove
12733	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	15	15	10	20	good	fair	Yes	1257	33% live crown ratio	remove
12734	TREE 6.0"ALDER												remove
12735	TREE 10.0"OAK												remove
12736	TREE 10.0"OAK	Oregon ash	*Fraxinus latifolia*	15	15	25		fair	poor	No		history of branch failure	remove
12738	TREE 8.0"OAK	Oregon white oak	*Quercus garryana*	8,8,8	13	12	22	good	fair	Yes	1520	multiple leaders at ground level	remove
12739	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	18,10	20	15	25	good	fair	Yes	1963	codominant at ground level	remove
12740	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	12	12	10		fair	fair	No		extensive ivy	remove
12742	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	14	14	15	25	good	fair	Yes	1963	past scaffold failure, significant ivy	remove
12743	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	14	14	18	28	good	fair	Yes	2463	past scaffold failure, significant ivy	remove
12744	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	14	14	0		very poor	very poor	No		dead 15' snag	remove
12745	TREE 6.0"DECIDUOUS												remove
12746	TREE 6.0"DECIDUOUS												remove
12747	TREE 8.0"OAK												remove
12748	TREE 10.0"OAK												remove
12749	TREE 10.0"OAK												remove
12750	TREE 16.0"OAK	Oregon white oak	*Quercus garryana*	12	12	25	35	good	fair	Yes	3848	extreme lean, overtopped by adjacent trees	remove
12751	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	15	15	20	30	good	fair	Yes	2827	extreme lean	remove
12752	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	14	14	15	25	good	fair	Yes	1963	one sided	remove
12753	TREE 16.0"OAK	Oregon white oak	*Quercus garryana*	20	20	20	30	good	fair	Yes	2827	moderately one sided	remove
12754	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	21	21	20	30	good	fair	Yes	2827	one sided	remove
12755	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	13	13	0		very poor	very poor	No		dead 8' snag	remove
12756	TREE 8.0"DECIDUOUS												remove
12757	TREE 18.0"OAK	Oregon white oak	*Quercus garryana*	15	15	15	25	good	fair	Yes	1963	one sided	remove
12758	TREE 8.0"OAK												remove
12759	TREE 8.0"OAK	Oregon white oak	*Quercus garryana*	14,10	17	10		fair	fair	No		codominant at ground level, moderately suppressed, significant lean	remove
12760	TREE 10.0"OAK												remove
12761	TREE 8.0"OAK												remove
12762	TREE 6.0"OAK												remove
12763	TREE 6.0"OAK	Oregon white oak	*Quercus garryana*	12	12	8		fair	fair	No		one sided, extensive ivy	remove
12764	TREE 10.0"OAK	Oregon white oak	*Quercus garryana*	12,10	15	10		very poor	very poor	No		smothered by ivy, not tagged because of poison oak	remove
12765	TREE 8.0"OAK												remove
12766	TREE 8.0"OAK												retain
12767	TREE 8.0"OAK												retain
12768	TREE 10.0"DECIDUOUS												remove
12769	TREE 10.0"OAK												remove
12770	TREE 6.0"OAK												remove

Attachment 1

Tree No.	Svy. Description	Common Name	Scientific Name	DBH[1]	Single DBH[2]	C-Rad[3]	C-Rad + 10'	Condition[4]	Structure	Sig.?[5]	Sig. Tree Area[6]	Comments	Treatment
12771	TREE 16.0"OAK	Oregon white oak	*Quercus garryana*	12	12	12		fair	fair	No		one sided, extensive ivy	remove
12772	TREE 5.0"OAK												remove
12773	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	15	15	20	30	good	fair	Yes	2827	moderately one sided	remove
12774	TREE 10.0"OAK	Oregon white oak	*Quercus garryana*	10	10	20		good	fair	No		one sided	remove
12775	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	13	13	25	35	good	fair	Yes	3848	one sided, significant lean	remove
12776	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	11	11	20		good	fair	No		one sided, significant lean	remove
12777	TREE 10.0"OAK												remove
12778	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	14,12	18	18		fair	fair	No		extensive ivy, codominant at ground level	remove
12779	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	12	12	20		fair	fair	No		extreme lean, moderately suppressed	remove
12780	TREE 8.0"OAK												remove
12781	TREE 6.0"OAK												remove
12782	TREE 32.0"COTTONWOOD	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		not present, appears to have failed	n/a
12783	TREE 14.0"COTTONWOOD	Oregon ash	*Fraxinus latifolia*	14	14	18		good	good	No			retain
12784	TREE 10.0"COTTONWOOD	Oregon ash	*Fraxinus latifolia*	10,10, 8	16	20		good	fair	No		multiple leaders at ground level	retain
12785	TREE 6.0"OAK												retain
12786	TREE 14.0"COTTONWOOD	Oregon ash	*Fraxinus latifolia*	14	14	15		good	fair	No		damaged root crown	retain
12787	TREE 18.0"COTTONWOOD	Oregon ash	*Fraxinus latifolia*	22	22	25		fair	poor	No		extensive heart rot	remove
12788	TREE 24.0"COTTONWOOD	Oregon ash	*Fraxinus latifolia*	30	30	25		fair	fair	No		large decay pocket at lower trunk	remove
12789	TREE 6.0"OAK												remove
12790	TREE 10.0"OAK	Oregon white oak	*Quercus garryana*	12	12	15	25	good	fair	Yes	1963	one sided	remove
12791	TREE 26.0"MAPLE	bigleaf maple	*Acer macrophyllum*	36	36	35		good	fair	No		epicormic growth and swelling at lower trunk indicative of decay	remove
12792	TREE 12.0"MAPLE											less than 12-inch DBH	remove
12793	TREE 36.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	45	45	25	35	good	good	Yes	3848		remove
12794	TREE 16.0"COTTONWOOD	red alder	*Alnus rubra*	24	24	20		poor	poor	No		dead top	remove
12795	TREE 16.0"COTTONWOOD	red alder	*Alnus rubra*	18	18	22		good	good	No			remove
12804	TREE 26.0"COTTONWOOD	Oregon ash	*Fraxinus latifolia*	28	28	25		good	good	No			retain
12805	TREE 14.0"ALDER	red alder	*Alnus rubra*	20	20	25		poor	poor	No		top failed	retain
12817	TREE 24.0"MAPLE	bigleaf maple	*Acer macrophyllum*	32,30, 22	49	50		fair	poor	No		multiple leaders at ground level, significant decay at root crown	retain
12826	TREE 16.0"DECIDUOUS	bigleaf maple	*Acer macrophyllum*	25	25	25		good	fair	No		epicormic growth and swelling at lower trunk indicative of decay	retain
12831	TREE 16.0"MAPLE	bigleaf maple	*Acer macrophyllum*	24	24	20		very poor	very poor	No		extensive decay and past failures	retain

Attachment 1

Tree No.	Svy. Description	Common Name	Scientific Name	DBH[1]	Single DBH[2]	C-Rad[3]	C-Rad + 10'	Condition[4]	Structure	Sig.?[5]	Sig. Tree Area[6]	Comments	Treatment
12844	TREE 8.0"OAK												remove
12845	TREE 7.0"OAK												remove
12847	TREE 12.0"ALDER	Oregon ash	*Fraxinus latifolia*	14	14	21		fair	fair	No		history of branch failure	remove
12848	TREE 7.0"ALDER												remove
12849	TREE 18.0"ALDER	Oregon ash	*Fraxinus latifolia*	20,18	26	25		fair	fair	No		codominant at ground level, history of branch failure	remove
12851	TREE 14.0"ALDER	Oregon ash	*Fraxinus latifolia*	10,10	14	12		poor	poor	No		50% dead	remove
12852	TREE 14.0"ALDER	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		same as tree 12851	n/a
12853	TREE 7.0"OAK												remove
12854	TREE 9.0"COTTONWOOD	Oregon ash	*Fraxinus latifolia*	12	12	15		fair	fair	No		moderate branch dieback	remove
12855	TREE 7.0"OAK												remove
12856	TREE 7.0"OAK												remove
12857	TREE 6.0"OAK												retain
12858	TREE 6.0"OAK												retain
12859	TREE 6.0"OAK												retain
12860	TREE 12.0"ALDER	Oregon ash	*Fraxinus latifolia*	13	13	7		fair	fair	No		thin crown	remove
12861	TREE 8.0"ALDER												remove
12862	TREE 6.0"OAK												remove
12863	TREE 4.0"OAK												retain
12864	TREE 5.0"OAK												retain
12865	TREE 6.0"OAK												retain
12866	TREE 6.0"OAK												retain
12867	TREE 6.0"OAK												remove
12868	TREE 6.0"OAK	Oregon white oak	*Quercus garryana*	12	12	10		fair	poor	No		extensive poison oak, high crown	remove
12869	TREE 8.0"OAK												remove
12870	TREE 10.0"OAK	Oregon white oak	*Quercus garryana*	10,10, 10	17	15		fair	fair	No		extensive poison oak, codominant at ground level, high crown	remove
12871	TREE 6.0"OAK												remove
12872	TREE 8.0"OAK	Oregon white oak	*Quercus garryana*	9,9	12	11		fair	fair	No		codominant at ground level, moderately suppressed	remove
12873	TREE 6.0"OAK												remove
12874	TREE 8.0"OAK	Oregon white oak	*Quercus garryana*	12	12	10	20	good	fair	Yes	1257	multiple leaders at ground level, one sided	remove
12875	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	12	12	12		poor	poor	No		suppressed, history of branch failure	remove
12876	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	22	22	24	34	good	good	Yes	3632		remove
12877	TREE 14.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		may have failed, not present	n/a
12878	TREE 15.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		may have failed, not present	n/a
12879	TREE 15.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		may have failed, not present	n/a
12880	TREE 16.0"ALDER	Oregon ash	*Fraxinus latifolia*	17	17	15		good	fair	No		one sided	remove
12881	TREE 16.0"ALDER	Oregon ash	*Fraxinus latifolia*	17	17	15		good	fair	No		one sided, extensive ivy	remove
12882	TREE 15.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		may have failed, not present	n/a

Attachment 1

Tree No.	Svy. Description	Common Name	Scientific Name	DBH[1]	Single DBH[2]	C-Rad[3]	C-Rad + 10'	Condition[4]	Structure	Sig.?[5]	Sig. Tree Area[6]	Comments	Treatment
12883	TREE 7.0"MAPLE												remove
12884	TREE 12.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		may have failed, not present	n/a
12885	TREE 8.0"CHERRY												remove
12887	TREE 6.0"DECIDUOUS												remove
12888	TREE 10.0"DECIDUOUS												remove
12889	TREE 4.0"DECIDUOUS												remove
12890	TREE 6.0"OAK												remove
12891	TREE 4.0"OAK												remove
12892	TREE 10.0"OAK												remove
12893	TREE 12.0"OAK	Oregon white oak	*Quercus garryana*	12	12	15	25	good	fair	Yes	1963	extensive poison oak	remove
12894	TREE 4.0"OAK												remove
12895	TREE 6.0"ALDER												remove
12896	TREE 10.0"ALDER												remove
12897	TREE 10.0"ALDER												remove
12898	TREE 4.0"ALDER												remove
12899	TREE 4.0"ALDER												remove
12900	TREE 6.0"ALDER												remove
12901	TREE 6.0"ALDER												remove
12902	TREE 10.0"ALDER												remove
12903	TREE 8.0"ALDER												remove
12904	TREE 4.0"ALDER												remove
12905	TREE 12.0"ALDER												remove
12906	TREE 16.0"MAPLE												remove
12907	TREE 10.0"MAPLE												remove
12908	TREE 36.0"MAPLE	bigleaf maple	*Acer macrophyllum*	32	32	37	47	good	fair	Yes	6940	one sided	remove
12909	TREE 20.0"MAPLE	bigleaf maple	*Acer macrophyllum*	18,16, 10	26	30		fair	fair	No		multiple leaders at ground level, significant epicormic growth, past leader failures	remove
12910	TREE 8.0"ALDER												remove
12911	TREE 10.0"MAPLE												remove
12912	TREE 12.0"ALDER											not 12-inch DBH	remove
12913	TREE 4.0"ALDER												remove
12914	TREE 4.0"ALDER												remove
12915	TREE 4.0"ALDER												remove
12916	TREE 4.0"ALDER												remove
12917	TREE 4.0"ALDER												remove
12918	TREE 8.0"ALDER												remove
12919	TREE 8.0"ALDER												remove
12920	TREE 10.0"MAPLE												remove
12921	TREE 36.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	60	60	30	40	good	good	Yes	5026		retain
12922	TREE 30.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	39	39	30	40	good	fair	Yes	5026	moderately one sided	retain
12923	TREE 5.0"MAPLE												retain
12924	TREE 16.0"MAPLE	Oregon ash	*Fraxinus latifolia*	19	19	15		fair	fair	No		moderately thin crown	retain

Attachment 1

Tree No.	Svy. Description	Common Name	Scientific Name	DBH[1]	Single DBH[2]	C-Rad[3]	C-Rad + 10'	Condition[4]	Structure	Sig.?[5]	Sig. Tree Area[6]	Comments	Treatment
12925	TREE 18.0"MAPLE	bigleaf maple	*Acer macrophyllum*	19,16,13,8	29	30		fair	fair	No		extensive epicormic growth at lower trunk, extensive ivy, fallen stem with multiple leaders	retain
12926	TREE 8.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		connected to tree 12925	n/a
12927	TREE 18.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		connected to tree 12926	n/a
12928	TREE 10.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		connected to tree 12927	n/a
12929	TREE 30.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	40	40	25	35	good	fair	Yes	3848	one sided	retain
12930	TREE 30.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	33	33	25	35	good	good	Yes	3848		retain
12931	TREE 18.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	24	24	20	30	good	fair	Yes	2827	bowed trunk with marginal taper	retain
12932	TREE 12.0"MAPLE	bigleaf maple	*Acer macrophyllum*	14	14	20		fair	fair	No		one sided, decay at root crown	retain
12933	TREE 10.0"MAPLE												retain
12934	TREE 36.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	38	38	30	40	good	good	Yes	5026		retain
12935	TREE 30.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	39	39	24	34	good	fair	Yes	3632	one sided	retain
12936	TREE 36.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	37	37	20	30	good	fair	Yes	2827	one sided	retain
12937	TREE 40.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	45	45	30	40	good	fair	Yes	5026	one sided	retain
12938	TREE 18.0"MAPLE	bigleaf maple	*Acer macrophyllum*	17	17	30		fair	fair	No		fallen over, extends approximately 30' downhill	retain
12939	TREE 28.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	35	35	25	35	good	fair	Yes	3848	one sided	remove
12940	TREE 15.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	17	17	15		fair	fair	No		moderately suppressed	retain
12941	TREE 12.0"MAPLE	bigleaf maple	*Acer macrophyllum*	12	12	20		good	fair	No		one sided	retain
12942	TREE 40.0"FIR	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		same as tree 12939	n/a
12943	TREE 40.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	44	44	25	35	good	fair	Yes	3848	one sided	remove
12944	TREE 30.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		not located	n/a
12945	TREE 30.0"MAPLE	Douglas-fir	*Pseudotsuga menziesii*	38	38	23	33	good	fair	Yes	3421	one sided	retain
12946	TREE 24.0"FIR	bigleaf maple	*Acer macrophyllum*	30,25	39	36	46	good	fair	Yes	6647	one sided	retain
12947	TREE 4.0"MAPLE												retain
12948	TREE 12.0"MAPLE	bigleaf maple	*Acer macrophyllum*	13,10,9,8	20	25		good	fair	No		previously uprooted but stable, multiple leaders at ground level	remove
12949	TREE 42.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	45	45	30		fair	fair	No		extensive *Porodaedalea pini* along trunk	remove
12950	TREE 12.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	13	13	13		good	fair	No		one sided, overtopped by adjacent trees	retain
12951	TREE 22.0"MAPLE	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		not located	n/a
12952	TREE 18.0"MAPLE	bigleaf maple	*Acer macrophyllum*	17	17	20		fair	fair	No		fallen over but stable, extends approximately 100' downhill	retain
12954	TREE 4.0"ALDER												remove
12955	TREE 6.0"ALDER												remove
12956	TREE 6.0"ALDER												remove
12957	TREE 4.0"OAK												remove
12958	TREE 8.0"ALDER												remove
12959	TREE 7.0"ALDER												remove
12960	TREE 7.0"ALDER												remove
12961	TREE 7.0"ALDER												remove
12962	TREE 7.0"ALDER												remove

Attachment 1

Tree No.	Svy. Description	Common Name	Scientific Name	DBH[1]	Single DBH[2]	C-Rad[3]	C-Rad + 10'	Condition[4]	Structure	Sig.?[5]	Sig. Tree Area[6]	Comments	Treatment
12963	TREE 4.0"ALDER												remove
12965	TREE 8.0"ALDER	Oregon ash	*Fraxinus latifolia*	12,10	15	15		fair	poor	No		thin crown, significant decay at ground level	remove
12973	TREE 18.0"MAPLE	bigleaf maple	*Acer macrophyllum*	23,14	26	20		good	fair	No		one sided, overtopped by adjacent trees, codominant at ground level	retain
12974	TREE 32.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	35	35	21	31	good	fair	Yes	3019	one sided	retain
12975	TREE 22.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	28	28	16	26	good	fair	Yes	2124	one sided	retain
12976	TREE 30.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	35	35	24	34	good	fair	Yes	3632	one sided	retain
12977	TREE 32.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	31	31	15	25	good	fair	Yes	1963	crown extensive suppressed by adjacent trees	retain
12978	TREE 36.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	39	39	24	34	good	fair	Yes	3632	one sided	retain
12979	TREE 5.0"MAPLE												retain
12980	TREE 22.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	24	24	18	28	good	fair	Yes	2463	moderately one sided	retain
12981	TREE 12.0"ALDER	bigleaf maple	*Acer macrophyllum*	12	12	21		good	fair	No		one sided	retain
12982	TREE 4.0"MAPLE												retain
12983	TREE 8.0"MAPLE	bigleaf maple	*Acer macrophyllum*	12	12	15		fair	fair	No		one sided, undersized leaves, extensive ivy	retain
12984	TREE 8.0"MAPLE												retain
12985	TREE 8.0"ALDER												remove
12986	TREE 20.0"ALDER	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		appears to be same as 30784	n/a
12987	TREE 18.0"ALDER	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		appears to be same as 30788	n/a
12995	TREE 10.0"ALDER												retain
12996	TREE 8.0"MAPLE												retain
13253	TREE 12.0"ALDER	Scouler's willow	*Salix scouleriana*	15	15	10		very poor	very poor	No		extensive decay throughout trunk	remove
13254	TREE 12.0"ALDER	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		not located	n/a
13255	TREE 6.0"MAPLE												remove
13256	TREE 16.0"MAPLE	bigleaf maple	*Acer macrophyllum*	17	17	18		fair	fair	No		one sided, stump sprout, codominant at 3' with included bark	remove
13257	TREE 16.0"MAPLE	bigleaf maple	*Acer macrophyllum*	15	15	17		good	fair	No		multiple leaders with included bark	remove
13258	TREE 10.0"MAPLE												remove
13260	TREE 15.0"OAK	Oregon white oak	*Quercus garryana*	20	20	21	31	good	fair	Yes	3019	one sided, significant ivy	remove
20236	OAK 16"	Norway maple	*Acer platanoides*	18	18	22		good	fair	No		multiple leaders at 6' with included bark, decay pocket at 5'	remove
20237	OAK 12"	Norway maple	*Acer platanoides*	13	13	15		good	fair	No		multiple leaders at 6' with included bark	remove
20238	OAK 16"	Norway maple	*Acer platanoides*	15	15	20		good	fair	No		multiple leaders at 6' with included bark	remove
20568	MAPLE 10"	Norway maple	*Acer platanoides*	9,8,7	13	13		good	fair	No		multiple leaders at ground level with included bark	remove
20572	FIR 8"												retain

Attachment 1

Tree No.	Svy. Description	Common Name	Scientific Name	DBH[1]	Single DBH[2]	C-Rad[3]	C-Rad + 10'	Condition[4]	Structure	Sig.?[5]	Sig. Tree Area[6]	Comments	Treatment
20585	MAPLE 14"	Norway maple	*Acer platanoides*	16	16	16		good	fair	No		multiple leaders at 7' with included bark	remove
20586	MAPLE 20"	Norway maple	*Acer platanoides*	21	21	27		fair	fair	No		large leader failure with wound at 5'	remove
20587	MAPLE 16"	Norway maple	*Acer platanoides*	17	17	17		good	fair	No		multiple leaders at 7' with included bark	remove
20615	MAPLE 12"	bigleaf maple	*Acer macrophyllum*	13	13	13		good	fair	No		moderately one sided	remove
20616	MAPLE 14"	bigleaf maple	*Acer macrophyllum*	15	15	19		good	fair	No		moderately one sided with included bark	remove
20617	MAPLE 12"	bigleaf maple	*Acer macrophyllum*	25	25	17		fair	fair	No		moderately one sided, codominant at 3', significant ivy at lower trunk	remove
20618	MAPLE 14"	bigleaf maple	*Acer macrophyllum*	17	17	17		good	fair	No		codominant at 10' with included bark	remove
20983	TREE DECIDUOUS												retain
20985	TREE DECIDUOUS												retain
21120	TREE CONIFER												remove
30621	TREE 30.0"DECIDUOUS	black cottonwood	*Populus trichocarpa*	30	30	22		fair	fair	No		thin upper crown	retain
30622	TREE 14.0"DECIDUOUS	black cottonwood	*Populus trichocarpa*	16	16	15		good	fair	No		one sided	remove
30623	TREE 14.0"DECIDUOUS	black cottonwood	*Populus trichocarpa*	16	16	0		very poor	very poor	No		15' tall snag	retain
30624	TREE 26.0"DECIDUOUS	black cottonwood	*Populus trichocarpa*	21	21	21		fair	good	No		moderately thin crown	retain
30625	TREE 6.0"DECIDUOUS												retain
30626	TREE 10.0"DECIDUOUS												retain
30627	TREE 6.0"DECIDUOUS												retain
30628	TREE 8.0"DECIDUOUS												retain
30629	TREE 6.0"DECIDUOUS												retain
30645	TREE 18.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	24	24	20	30	good	fair	Yes	2827	50% live crown ratio	retain
30646	TREE 72.0"MAPLE	bigleaf maple	*Acer macrophyllum*	51,49	70	50		fair	fair	No		multiple leaders at or near ground level, decay at root crown	retain
30647	TREE 18.0"OAK	Oregon white oak	*Quercus garryana*	18	18	15	25	good	fair	Yes	1963	lower branch failures	retain
30648	TREE 20.0"OAK	Oregon white oak	*Quercus garryana*	19	19	20	30	good	fair	Yes	2827	one sided	retain
30649	TREE 22.0"MAPLE	Oregon white oak	*Quercus garryana*	30	30	25	35	good	good	Yes	3848		retain
30650	TREE 10.0"OAK	Oregon white oak	*Quercus garryana*	18	18	22	32	good	good	Yes	3217		retain
30651	TREE 18.0"DECIDUOUS	black cottonwood	*Populus trichocarpa*	19	19	12		fair	fair	No		thin crown	remove
30651.1		bigleaf maple	*Acer macrophyllum*	11,11	15	22		good	fair	No		codominant at ground level, added to approximate location on survey by arborist	remove
30759	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	36	36	15	25	good	fair	Yes	1963	codominant at 1', one sided	remove
30760	TREE 21.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	28	28	25	35	good	fair	Yes	3848	one sided	retain
30761	TREE 15.0"MAPLE	bigleaf maple	*Acer macrophyllum*	28,16	32	35		fair	poor	No		codominant at ground level, significant decay at 28" stem	retain
30762	TREE 22.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	28	28	15	25	good	fair	Yes	1963	one sided	retain
30763	TREE 22.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	32	32	18	28	good	fair	Yes	2463	moderately one sided	retain
30764	TREE 28.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	39	39	24	34	good	fair	Yes	3632	one sided	retain

Attachment 1

Tree No.	Svy. Description	Common Name	Scientific Name	DBH[1]	Single DBH[2]	C-Rad[3]	C-Rad + 10'	Condition[4]	Structure	Sig.?[5]	Sig. Tree Area[6]	Comments	Treatment
30765	TREE 8.0"MAPLE												retain
30766	TREE 32.0"FIR	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a		appears to be same as 30645	n/a
30767	TREE 32.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	40	40	30	40	good	fair	Yes	5026	one sided	retain
30768	TREE 21.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	28	28	20	30	good	fair	Yes	2827	one sided	retain
30769	TREE 24.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	31	31	25	35	good	fair	Yes	3848	one sided	retain
30770	TREE 12.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	17	17	15		good	fair	No		kinked lower trunk, one sided	retain
30771	TREE 24.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	29	29	20	30	good	good	Yes	2827		retain
30772	TREE 10.0"MAPLE												retain
30773	TREE 10.0"DECIDUOUS	black cottonwood	*Populus trichocarpa*	14	14	18		good	good	No			remove
30774	TREE 10.0"ALDER												remove
30775	TREE 23.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	27	27	20	30	good	fair	Yes	2827	moderately one sided	retain
30776	TREE 0.0"DECIDUOUS	Oregon myrtle	*Umbellularia californica*	12	12	20		good	good	No			retain
30777	TREE 14.0"OAK	Oregon white oak	*Quercus garryana*	15	15	10	20	good	fair	Yes	1257	one sided, moderately suppressed	retain
30778	TREE 26.0"DECIDUOUS	black cottonwood	*Populus trichocarpa*	24	24	24		good	fair	No		moderately one sided	remove
30779	TREE 8.0"DECIDUOUS	Oregon ash	*Fraxinus latifolia*	8,7,7,6	14	12		fair	fair	No		multiple leaders at ground level, branch dieback	remove
30780	TREE 8.0"DECIDUOUS												remove
30781	TREE 6.0"DECIDUOUS												remove
30782	TREE 6.0"DECIDUOUS												remove
30783	TREE 8.0"DECIDUOUS												remove
30784	TREE 18.0"MAPLE	bigleaf maple	*Acer macrophyllum*	17,9,9, 8,8,7	25	25		fair	fair	No		multiple leaders at ground level, significant decay at root crown	remove
30785	TREE 8.0"FIR												retain
30786	TREE 8.0"FIR												retain
30787	TREE 6.0"MAPLE												retain
30788	TREE 42.0"FIR	Douglas-fir	*Pseudotsuga menziesii*	34	34	24	34	good	good	Yes	3632		retain
30789	TREE 12.0"DECIDUOUS											less than 12-inch DBH	retain
30790	TREE 12.0"OAK												retain

[1] **DBH** is the trunk diameter in inches measured per International Society of Arboriculture (ISA) standards.

[2] **Single** DBH is the trunk diameter of a multi-stem tree converted to a single number according to the following formula: square root of the sum of squared DBH of each stem.

[3] **C-Rad** is the approximate crown radius in feet.

[4] **Condition and Structure** ratings range from very poor, poor, fair, to good.

[5] **Significant tree** is a tree is determined to be significant by the City Arborist based on its size, health, species, location, proximity to other significant trees, and other characteristics.

[6] **Significant tree area** is the area in square feet of the significant tree dripline plus 10 feet.

Note: Trees are defined by the City as having a minimum 6 inch DBH for Oregon White Oak, Pacific Madrone, and Pacific Dogwood, and 12 inch DBH for all other species.

Attachment 2

CONTINUED ON SHEET 2

CONTINUED ON SHEET 3

N
W E
S

Scale: 1" = 20'

20' 0' 20' 40' 60'
SCALE: 1" = 20'

Legend:

▭	CURB
—	EDGE OF PAVEMENT
—G—	GAS LINE
—SS—	SANITARY SEWER LINE
—SD—	STORM SEWER LINE
—C—	UNDERGROUND COMMUNICATION
—UGP—	UNDERGROUND POWER LINE
—W—	WATER LINE
DL	DRIP LINE
☋	FIRE HYDRANT
LB □	LIGHT BOX
☼	LIGHT POLE
JB □	JUNCTION BOX
-○-	POWER POLE
RD	ROOF DRAIN
SDCO	STORM DRAIN CLEANOUT
⊥	TRAFFIC SIGN
⊞	WATER METER
⊗	WATER VALVE
⬚	CONCRETE
▨	ASPHALT

Notes:

1. UTILITY INFORMATION SHOWN ON THIS MAP IS BASED UPON OBSERVED FEATURES, RECORD DATA AND TONE MARKS PROVIDED BY PUBLIC UTILITY LOCATION SERVICES. NO WARRANTIES ARE MADE REGARDING THE ACCURACY OR COMPLETENESS OF THE UTILITY INFORMATION SHOWN. ADDITIONAL UTILITIES MAY EXIST. INTERESTED PARTIES ARE HEREBY ADVISED THAT UTILITY LOCATIONS SHOULD BE VERIFIED PRIOR TO DESIGN OR CONSTRUCTION OF ANY CRITICAL ITEMS.

2. VERTICAL DATUM: NAVD '88, OREGON NORTH STATE PLANE

3. CONTOUR INTERVAL IS ONE-FOOT.

4. TOPOGRAPHIC FEATURES SHOWN ON THIS MAP WERE LOCATED USING STANDARD PRECISION TOPOGRAPHIC MAPPING PROCEDURES. THIRD PARTY USERS OF DATA FROM THIS MAP PROVIDED VIA AUTOCAD DRAWING FILES OR DATA EXCHANGE FILES SHOULD NOT RELY ON ANY AUTOCAD GENERATED INFORMATION WHICH IS BEYOND THE LIMITS OF PRECISION OF THIS MAP. THIRD PARTIES USING DATA FROM THIS MAP IN AN AUTOCAD FORMAT SHOULD VERIFY ANY ELEMENTS REQUIRING PRECISE LOCATIONS PRIOR TO COMMENCEMENT OF ANY CRITICAL DESIGN OR CONSTRUCTION. CONTACT COMPASS LAND SURVEYORS FOR FURTHER INFORMATION. FURTHERMORE, COMPASS LAND SURVEYORS WILL NOT BE RESPONSIBLE NOR HELD LIABLE FOR ANY DESIGN OR CONSTRUCTION RELATED PROBLEMS THAT ARISE OUT OF THIRD PARTY USAGE OF THIS MAP (IN AUTOCAD OR OTHER FORMAT) FOR ANY PURPOSE OTHER THAN SPECIFICALLY STATED HEREIN. THIS STATEMENT IS AN OFFICIAL PART OF THIS MAP.

5. UNDERGROUND PIPE SIZES AND MATERIAL TYPES ARE BASED UPON RECORD DRAWINGS, INFORMATION PROVIDED BY UTILITY LOCATORS AND FIELD OBSERVATIONS AT MANHOLES AND CATCH BASIN RIMS AND SHOULD BE VERIFIED.

6. THIS DOES NOT CONSTITUTE A BOUNDARY SURVEY AND SHOULD NOT BE CONSTRUED AS SUCH. PROPERTY LINES ARE BASED ON RECORDED SURVEYS.

7. SEE SHEET 4 FOR TREE LIST.

TOPOGRAPHIC SITE MAP

DATE	NO.	REVISION

DRAWN	MMM	CHECK	JMC
SCALE	1" = 20'	DATE	JAN., 2020
PLAN	5358 Topo 2019.dwg		

N
W E
S

COMPASS Land Surveyors
4107 SE International Way, Suite 705
Milwaukie, Oregon 97222 503-653-9093

WEST LINN-WILSONVILLE SCHOOL DISTRICT
22210 SW STAFFORD ROAD
TUALATIN, OREGON 97062

A PORTION OF WEST LINN HIGH SCHOOL
5464 WEST "A" STREET
WEST LINN, OREGON 97068

1
4

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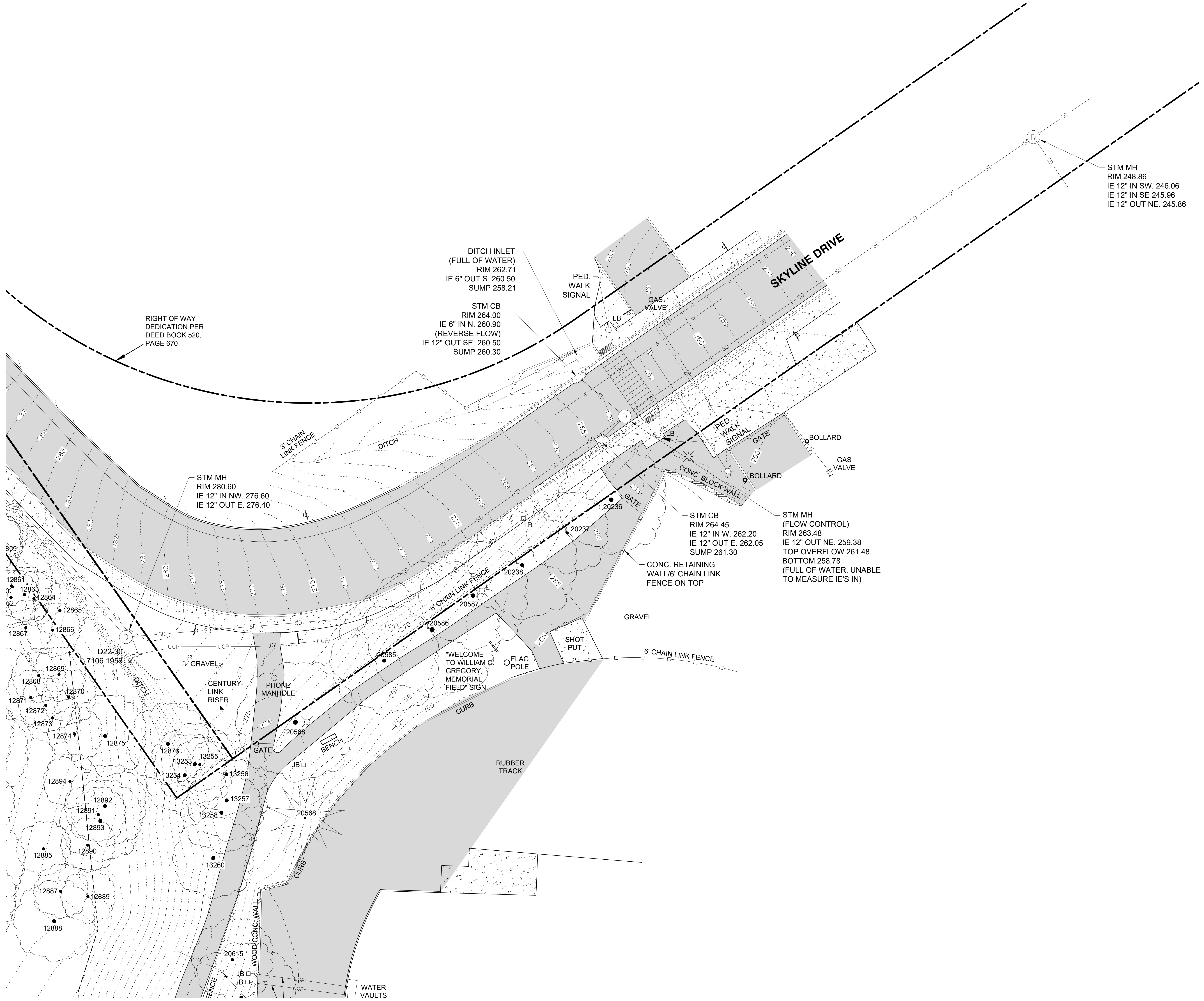
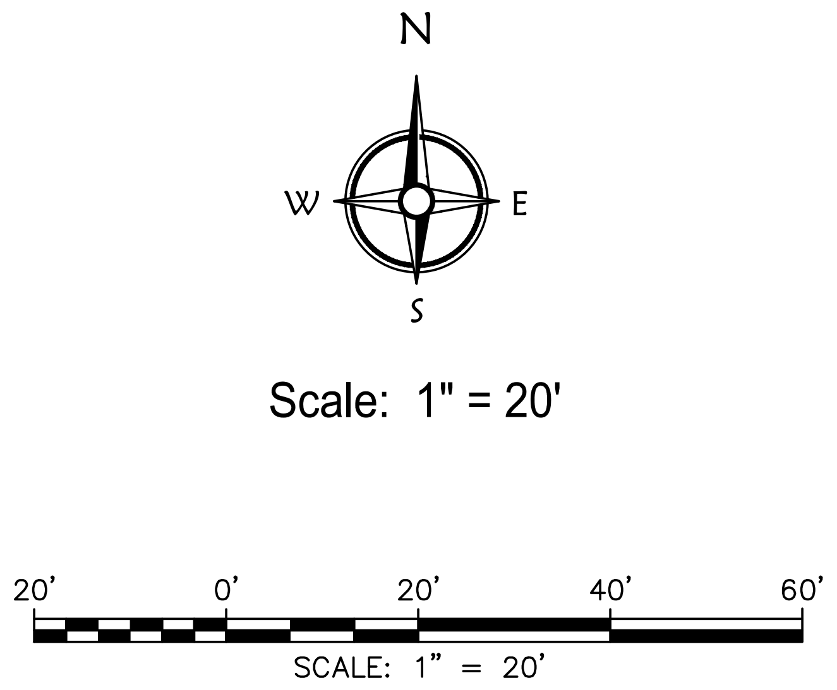
Attachment 2

CONTINUED ON SHEET 1



CONTINUED ON SHEET 3



Scale: 1" = 20'

Legend:

CURB
EDGE OF PAVEMENT
G — G GAS LINE
SS — SS SANITARY SEWER LINE
SD — SD STORM SEWER LINE
C — C UNDERGROUND COMMUNICATION
UGP — UGP UNDERGROUND POWER LINE
W — W WATER LINE
DL DRIP LINE
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TOPOGRAPHIC SITE MAP

DATE	NO.	REVISION

DRAWN MMM
CHECK JMC
SCALE 1" = 20'
DATE JAN., 2020
PLAN 5358 Topo 2019.dwg

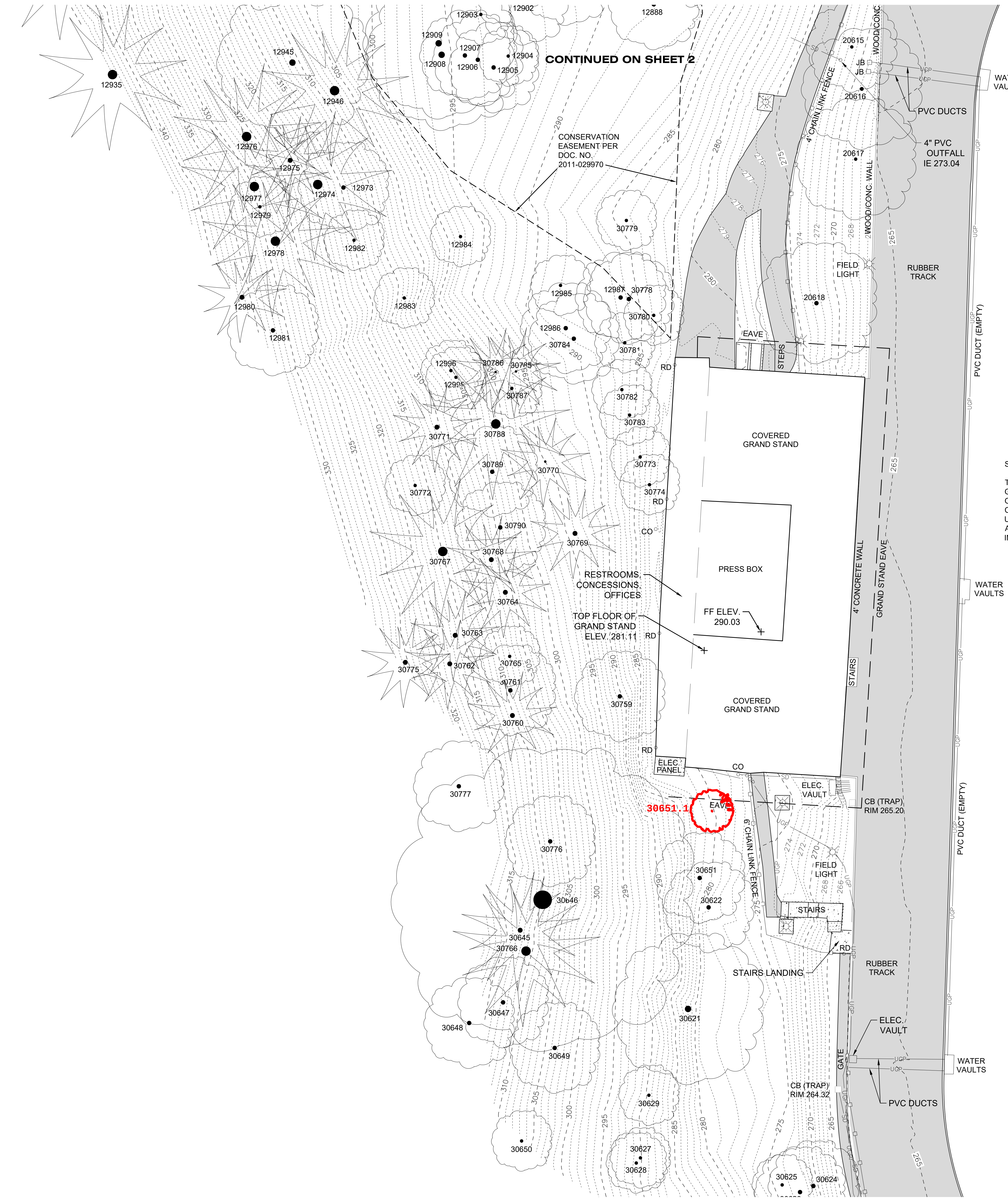
COMPASS Land Surveyors
4107 SE International Way, Suite 705
Milwaukie, Oregon 97222 503-653-9093

WEST LINN-WILSONVILLE SCHOOL DISTRICT
22210 SW STAFFORD ROAD
TUALATIN, OREGON 97062

A PORTION OF WEST LINN HIGH SCHOOL
5464 WEST "A" STREET
WEST LINN, OREGON 97068

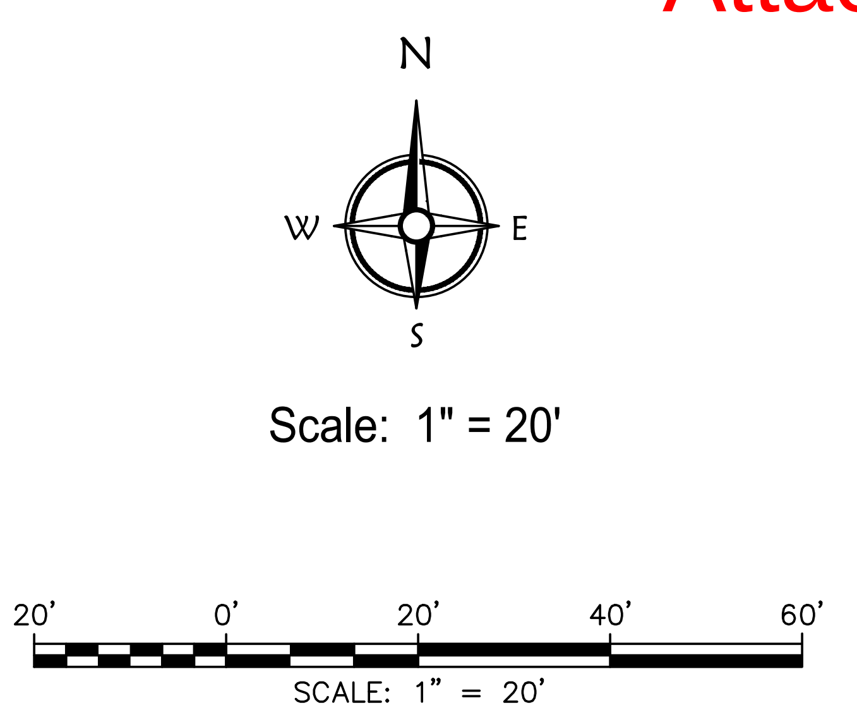
2
4

Attachment 2



SPECIAL NOTE REGARDING STORM LINE INFORMATION:

THIS MAP SHOWS THE STORM LINE FEATURES WEST OF THE GRAND STAND BASED UPON OBSERVATIONS IN THE FIELD ONLY. THE ROOF DRAINS SHOWN ARE PRESUMABLY CONNECTED TO UNDERGROUND PIPING. NO ASBUILTS OR UNDERGROUND UTILITY LOCATION SERVICES WERE UTILIZED AS OF THE DATE OF THIS SURVEY TO PROVIDE FURTHER INFORMATION REGARDING THE STORM DRAINAGE FEATURES.



Legend:

━━	CURB
──	EDGE OF PAVEMENT
—G—	GAS LINE
—SS—	SANITARY SEWER LINE
—SD—	STORM SEWER LINE
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TOPOGRAPHIC SITE MAP

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SCALE	1" = 20'	DATE	JAN., 2020
PLAN	5358 Topo 2019.dwg		

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A PORTION OF WEST LINN HIGH SCHOOL
5464 WEST "A" STREET
WEST LINN, OREGON 97068

3 / 4

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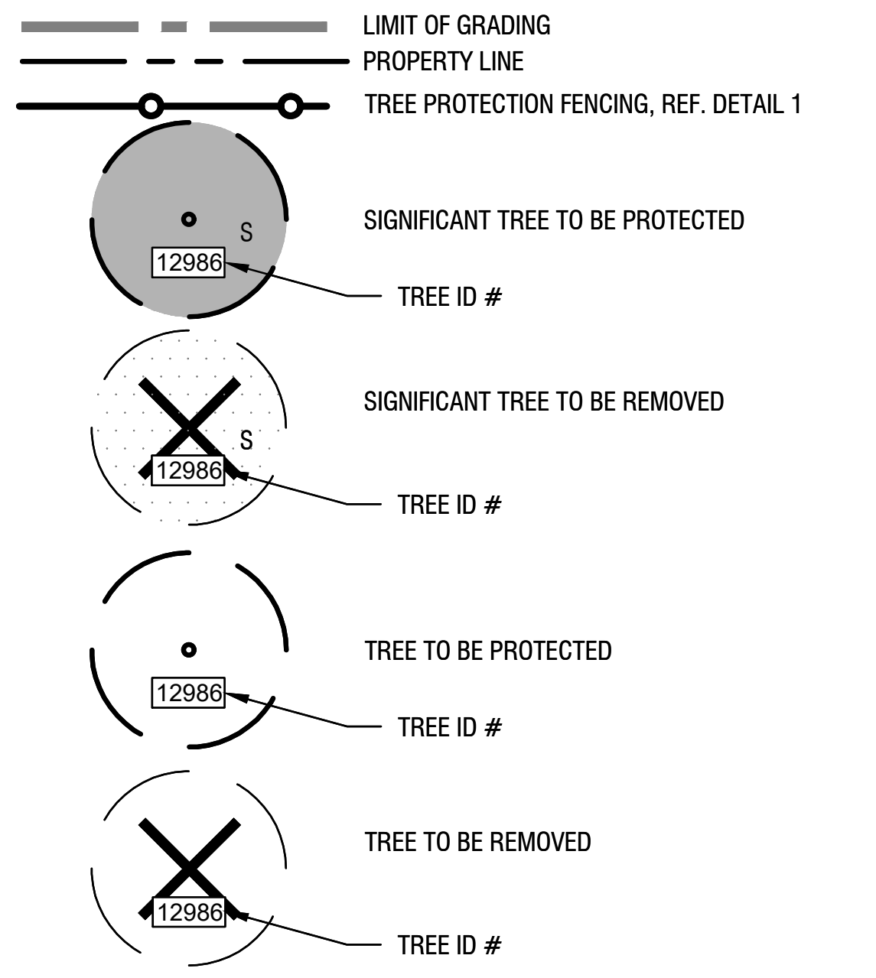
Attachment 3

TREE PROTECTION AND REMOVAL LEGEND



- LIMIT OF GRADING
- PROPERTY LINE
- TREE PROTECTION FENCING, REF. DETAIL 1
- SIGNIFICANT TREE TO BE PROTECTED
  - TREE ID #
- SIGNIFICANT TREE TO BE REMOVED
  - TREE ID #
- TREE TO BE PROTECTED
  - TREE ID #
- TREE TO BE REMOVED
  - TREE ID #

TREE TABULATIONS

REFERENCE ARBORIST'S REPORT

GENERAL
- TOTAL PROPERTY AREA = 41.01 ACRES
- TOTAL PROJECT AREA = 3.33 ACRES
- TOTAL TREES IN PROJECT AREA = 258
- TOTAL TREES RETAINED IN PROJECT AREA = 92
- TOTAL TREES REMOVED IN PROJECT AREA = 166

SIGNIFICANT TREES
- SIGNIFICANT TREES IN PROJECT AREA = 58
- SIGNIFICANT TREES IN PROJECT AREA RETAINED = 33
- SIGNIFICANT TREES IN PROJECT AREA REMOVED = 25
- *TOTAL AREA OF SIGNIFICANT TREES IN PROJECT AREA = 180,687 SF
- *AREA OF SIGNIFICANT TREES RETAINED IN PROJECT AREA = 112,824 SF
- *AREA OF SIGNIFICANT TREES REMOVED IN PROJECT AREA = 67,863 SF
- PERCENT AREA OF SIGNIFICANT TREES RETAINED IN PROJECT AREA = 62.4%

*AREA OF TREE CROWN RADIUS / DRIP LINE PLUS 10 FEET OFFSET.

TREE REMOVAL NOTES

1. PROTECT ALL TREES INDICATED TO REMAIN, INCLUDING BARK AND ROOT ZONES. INSTALL PROTECTIVE FENCING WHERE INDICATED ON THE TREE PROTECTION PLAN. PROTECTIVE BARRIERS SHALL BE PLACED BEFORE PHYSICAL DEVELOPMENT STARTS AND SHALL STAY IN PLACE UNTIL AFTER PLANNING OFFICIAL AUTHORIZES THEIR REMOVAL OR A FINAL CERTIFICATE OF OCCUPANCY IS ISSUED, WHICHEVER OCCURS FIRST.
2. TREE PROTECTION FENCING SHALL BE CHAIN LINK, MINIMUM OF 6' HEIGHT, SECURED WITH STEEL POSTS, INSTALLED 5' BEYOND THE EDGE OF THE ROOT ZONE OR AS INDICATED ON THE TREE REMOVAL AND PROTECTION PLAN.
3. EXCAVATION WITHIN THE TREE PROTECTION ZONE WILL BE PERFORMED USING ONLY NON-MOTORIZED HANDHELD TOOLS AND SHALL BE THE MINIMUM NECESSARY TO ACCOMPLISH THE PURPOSE FOR THE EXCAVATION AND TO ENSURE LONG-TERM SURVIVAL OF THE TREE.
4. TREE PROTECTION FENCING SHALL BE FLUSH WITH THE INITIAL UNDISTURBED GRADE.
5. APPROVED SIGNS SHALL BE ATTACHED TO PROTECTION FENCING, AND VISIBLY STATING THAT INSIDE THE FENCING IS A TREE PROTECTION ZONE, NOT TO BE DISTURBED UNLESS PRIOR APPROVAL HAS BEEN OBTAINED FROM THE COUNTY MANAGER.
6. NO CONSTRUCTION ACTIVITY SHALL OCCUR WITHIN THE TREE PROTECTION ZONE, INCLUDING, BUT NOT LIMITED TO DUMPING OR STORAGE OF MATERIALS SUCH AS BUILDING SUPPLIES, SOIL, WASTE ITEMS, OR PARKED VEHICLES AND EQUIPMENT.
7. THE TREE PROTECTION ZONE SHALL REMAIN FREE OF CHEMICALLY INJURIOUS MATERIALS AND LIQUIDS SUCH AS PAINTS, THINNERS, CLEANING SOLUTIONS, PETROLEUM PRODUCTS, AND CONCRETE OR DRY WALL EXCESS, CONSTRUCTION DEBRIS, OR RUNOFF.
8. NO EXCAVATION, TRENCHING, GRADING, ROOT PRUNING OR OTHER ACTIVITY SHALL OCCUR WITHIN THE TREE PROTECTION ZONE UNLESS DIRECTED BY AN ARBORIST PRESENT ON SITE AND APPROVED BY THE CITY MANAGER.
9. NO FILL OR COMPACTION SHALL OCCUR WITHIN THE CRITICAL ROOT ZONES OF ANY OF THE TREES. IF COMPACTION IS UNAVOIDABLE, MEASURES SHALL BE TAKEN AS RECOMMENDED BY A CERTIFIED ARBORIST TO REDUCE OR MITIGATE THE IMPACT OF THE FILL OR COMPACTION.
10. CONTRACTOR TO GIVE OWNER 30 DAYS NOTICE PRIOR TO REMOVAL OF PLANTS TO BE RELOCATED.

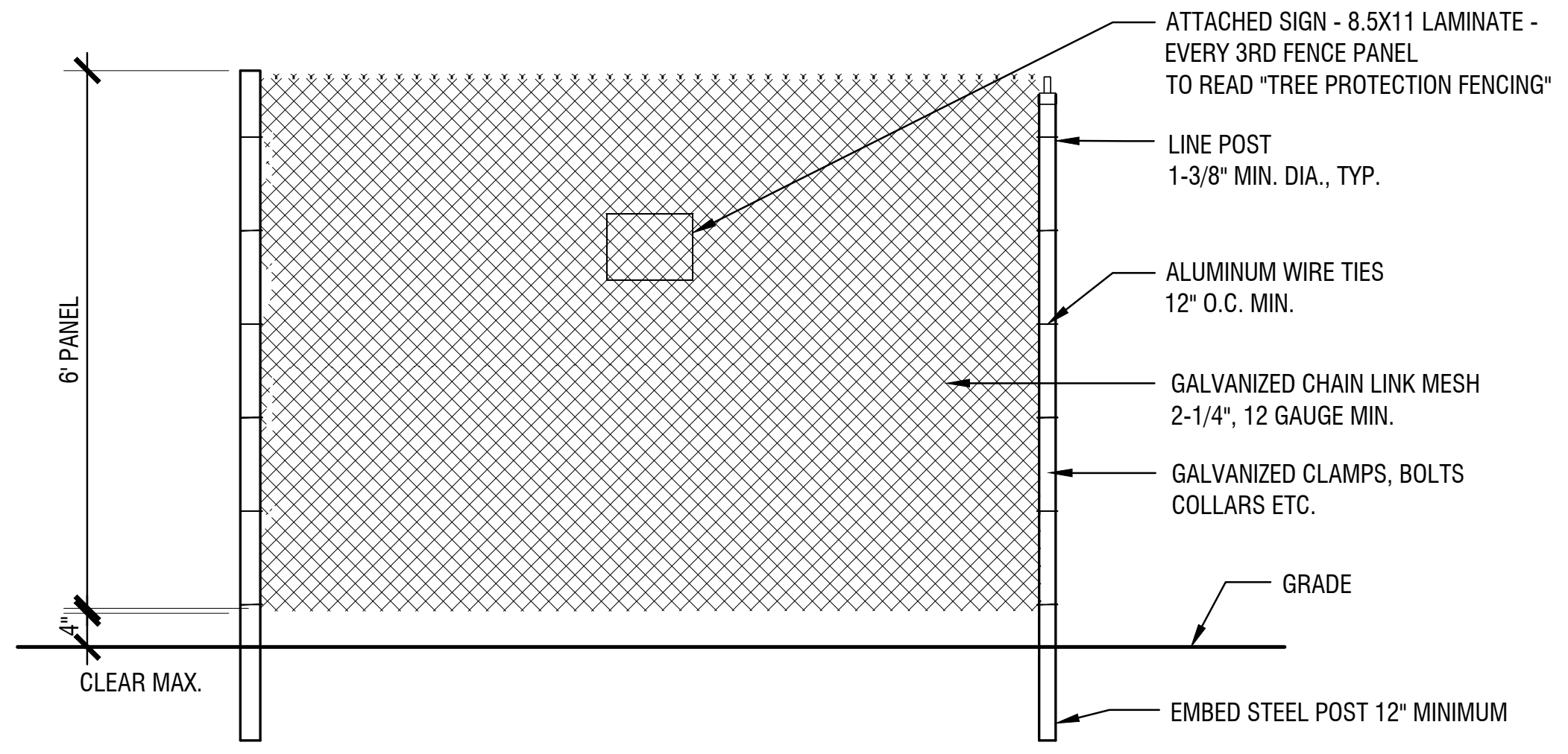
GENERAL NOTES

1. LANDSCAPE DOCUMENTS ARE BASED ON A SURVEY BY COMPASS LAND SURVEYORS DATED JANUARY 2020. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES IDENTIFIED ON SITE RELATED TO SURVEY INFORMATION PRIOR TO INSTALLATION.
2. REFERENCE CIVIL DRAWINGS FOR VEHICULAR AREAS, VEHICULAR PAVING, SITE UTILITIES, STORMWATER TREATMENT INFORMATION.
3. REFERENCE ELECTRICAL DRAWINGS FOR SITE LIGHTING INFORMATION.
4. REFERENCE ARCHITECTURAL DRAWINGS FOR BLEACHER AND GRANDSTAND IMPROVEMENT INFORMATION.
5. FOR TREE PROTECTION AND REMOVAL REFERENCE TREE PROTECTION AND REMOVAL PLANS.
6. FOR SITE REMOVALS REFERENCE SITE DEMOLITION PLANS.

SITE NOTES

1. LOCATE ALL UNDERGROUND, SURFACE AND OVERHEAD UTILITIES PRIOR TO ANY WORK.
2. OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER. SO THAT UTILITIES MAY BE ACCURATELY LOCATED, EXCAVATORS MUST NOTIFY ALL PERTINENT COMPANIES OR AGENCIES WITH UNDERGROUND UTILITIES IN THE PROJECT AREA AT LEAST 48 BUSINESS-DAY HOURS BUT NOT MORE THAN 10 BUSINESS DAYS PRIOR TO COMMENCING AN EXCAVATION.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN ALL FACTS CONCERNING CONDITIONS TO BE FOUND AT THE LOCATION OF THE PROJECT INCLUDING PHYSICAL CHARACTERISTICS ABOVE AND BELOW THE SURFACE OF THE GROUND AND TO FULLY EXAMINE THE PLANS AND SPECIFICATIONS. ANY DISCREPANCIES IN DIMENSIONING OR LAYOUT SHALL BE BROUGHT TO THE ATTENTION OF THE AGENCY PRIOR TO THE ALTERATION OF PLANTING.
4. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO EACH PHASE OF CONSTRUCTION, NOTIFY OWNER'S REPRESENTATIVE PRIOR TO PROCEEDING WITH WORK. WHERE CONFLICT IS IDENTIFIED, COST OF PROCEEDING WITHOUT OWNER'S REPRESENTATIVE WRITTEN CLARIFICATION AND AUTHORIZATION TO PROCEED SHALL BE AT THE CONTRACTOR'S EXPENSE.

NOTE:
ALL GRADING INFORMATION, ELEVATIONS, DIMENSIONS AND QUANTITIES NOTED ARE PRELIMINARY AND SUBJECT TO CHANGE DURING CONSTRUCTION DOCUMENTATION PHASE.

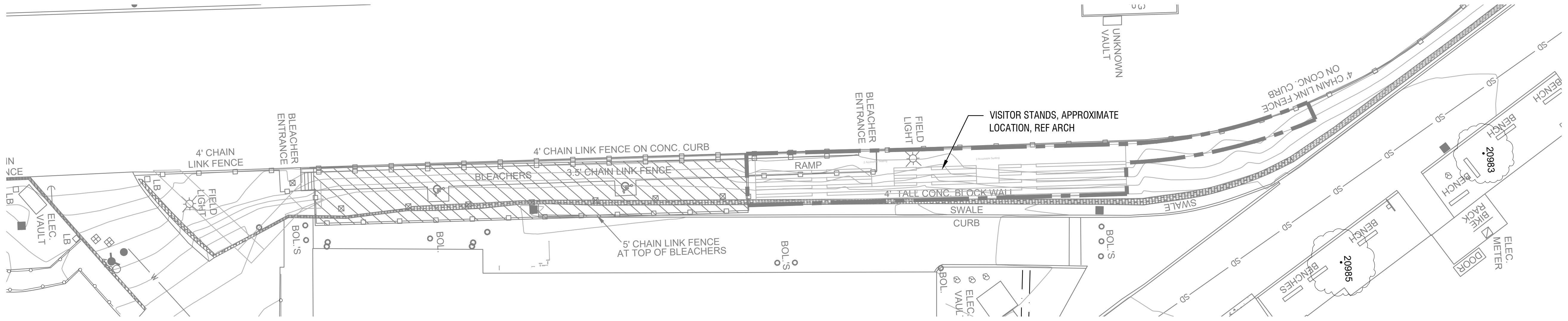


NOTES:

1. LOCATE FENCING PER TREE PROTECTION PLAN AND SPECIFICATIONS.
2. EXISTING FENCING OR CONSTRUCTION FENCING MAY BE USED IN-LIEU OF TREE PROTECTION FENCING WITH APPROVAL FROM OWNER.
3. TREE PROTECTION FENCING MUST BE IN PLACE THROUGHOUT CONSTRUCTION.
4. INSTALL BY FENCE TYPE IN LOCATIONS INDICATED ON TREE PROTECTION PLANS.

1 - TEMPORARY TREE PROTECTION FENCE

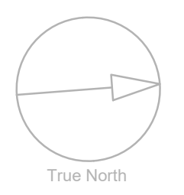
Scale: 1/2" = 1'-0"



2 - STADIUM AND PARKING EXPANSION TREE PROTECTION AND REMOVAL PLAN

Scale: 1" = 20'-0"

0 10' 20' 40'



CLIENT

WEST LINN
WILSONVILLE SCHOOL
DISTRICT

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is a member of the IBI Group of companies

ISSUES

No.	DESCRIPTION	DATE
1	LAND USE APPLICATION	10-07-2020

CONSULTANTS

Mayer/Reed

Mayer/Reed, Inc.
319 SW Washington St.
Suite 820
Portland, Oregon 97204
503.223.5953

SEAL

IBI GROUP
907 SW Harvey Milk Street
Portland, OR 97205, USA
tel 503 226 6950 fax 503 273 9192
ibigroup-edpnw.com

PROJECT

WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
5464 W A Street
West Linn, OR 97068

PROJECT NO:
124724

DRAWN BY: **EK**	CHECKED BY: **RC**
PROJECT MGR: **RC**	APPROVED BY: **CMR**

SHEET TITLE
TREE PROTECTION AND REMOVAL NOTES AND LEGEND

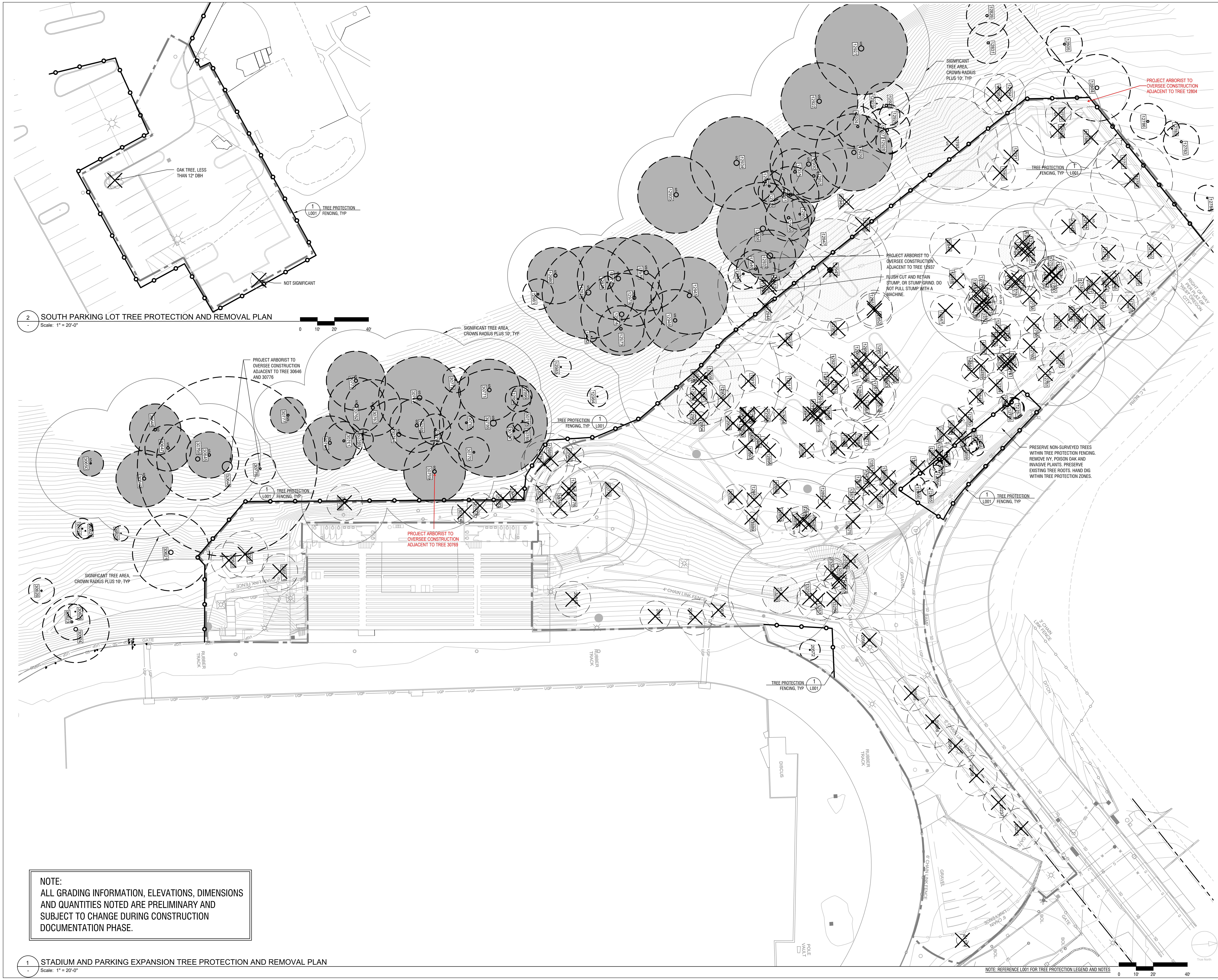
SHEET NUMBER
L001

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
10mm
1 in

2020-06-XX X:XX:XX XX



2 SOUTH PARKING LOT TREE PROTECTION AND REMOVAL PLAN
Scale: 1" = 20'-0"

NOTE:
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1 STADIUM AND PARKING EXPANSION TREE PROTECTION AND REMOVAL PLAN
Scale: 1" = 20'-0"

NOTE: REFERENCE L001 FOR TREE PROTECTION LEGEND AND NOTES

2020-06-XX X:XX:XX XX

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WILSONVILLE SCHOOL
DISTRICT

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ISSUES

No.	DESCRIPTION	DATE
1	LAND USE APPLICATION	10-07-2020

CONSULTANTS

Mayer/Reed

Mayer/Reed, Inc.
319 SW Washington St.
Suite 820
Portland, Oregon 97204
503.223.5953

Attachment 3

SEAL

IBI GROUP
907 SW Harvey Milk Street
Portland, OR 97205, USA
tel 503 226 6950 fax 503 273 9192
ibigroup-edpnw.com

PROJECT

WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS
5464 W A Street
West Linn, OR 97068

PROJECT NO:
124724

DRAWN BY: **EK**
CHECKED BY: **RC**
PROJECT MGR: **RC**
APPROVED BY: **CMR**

SHEET TITLE
TREE PROTECTION AND REMOVAL PLAN

SHEET NUMBER
L002

ISSUE

BIM 360://124724 - WLHS Stadium/Parking Improvements

SCALE CHECK
10mm
1 in

Attachment 4
Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. The information provided by West Linn Wilsonville School District and their consultants was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. The purpose of this report is to provide tree removal, preservation, and protection recommendations in accordance with the City of West Linn Code and Tree Technical Manual.

REPORT OF GEOTECHNICAL ENGINEERING SERVICES

West Linn Stadium Expansion
5464 West A Street
West Linn, Oregon

For
West Linn-Wilsonville School District
c/o CBRE Heery, Inc.
July 14, 2020

GeoDesign Project: WLWSchDist-2-01

GeoDesign Inc
AN NV5 COMPANY

July 14, 2020

West Linn-Wilsonville School District
c/o CBRE Heery, Inc.
2 Centerpointe Drive, Suite 250
Lake Oswego, OR 97035

Attention: Amanda Blackburn

Report of Geotechnical Engineering Services
West Linn Stadium Expansion
5464 West A Street
West Linn, Oregon
GeoDesign Project: WLWSchDist-2-01

GeoDesign, Inc. is pleased to submit this report of geotechnical engineering services for the proposed stadium expansion project at West Linn High School located at 5464 West A Street in West Linn, Oregon. Our services for this project were conducted in accordance with our proposal dated April 29, 2020.

We appreciate the opportunity to be of service to you. Please contact us if you have questions regarding this report.

Sincerely,

GeoDesign, Inc.

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EXECUTIVE SUMMARY

This section provides a summary of the main geotechnical considerations associated with the stadium expansion project at West Linn High School in West Linn, Oregon. Our conclusions are based on the proposed site development information provided by the design team. This summary is an overview and the report should be referenced for a more thorough discussion of the subsurface conditions and geotechnical recommendations for the project.

- Foundations for the stadium expansion can be founded on dense gravel or basalt present within a few feet of the existing ground surface. If silt, clay, or sand is present at the base of foundations, it should be removed to dense gravel or basalt and backfilled with compacted crushed rock to limit differential settlement.

- The proposed cuts in the parking area will extend into dense gravel and basalt. Based on the results of seismic refraction testing completed in the parking lot, the majority of the basalt should be rippable with a Caterpillar D-9 bulldozer with a single shank to depths of approximately 4 to 5 feet BGS. We noted that boulders should be expected within the rippable material within 4 to 5 feet of the ground surface. Chipping or blasting is likely necessary to excavate the basalt below 4 to 5 feet BGS.

- Undocumented fill was encountered in one of test pit explorations in the parking area. If not removed by site grading, the fill should be evaluated by GeoDesign to determine if it is suitable to support the parking area. Fill deemed unsuitable should be removed and replaced with structural fill.

- The on-site fine-grained soil will require moisture conditioning (drying) to be used as structural fill.

- The fine-grained soil present on this site is easily disturbed. Planned grading will remove portions of the fine-grained soil and expose dense gravel or basalt; however, areas of fine-grained soil will likely be present at finished grades within the project boundaries. If not carefully executed, site preparation, utility trench work, and roadway excavation can create extensive soft areas and significant repair costs can result. Earthwork planning, regardless of the time of year, should include considerations for minimizing subgrade disturbance.

- Cut off drains should be installed at the base of the slopes along the proposed parking lot limits to capture groundwater and slope seepage and direct away it away from the planned improvements.

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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AC	asphalt concrete
ACP	asphalt concrete pavement
ADT	average daily traffic
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
BGS	below ground surface
CSZ	Cascadia subduction zone
g	gravitational acceleration (32.2 feet/second^2)
H:V	horizontal to vertical
km	kilometers
MCE	maximum considered earthquake
mm/yr	millimeters per year
OSHA	Occupational Safety and Health Administration
OSSC	Oregon Standard Specifications for Construction (2018)
pcf	pounds per cubic foot
pci	pounds per cubic inch
PG	performance grade
psf	pounds per square foot
psi	pounds per square inch
SOSSC	State of Oregon Structural Specialty Code
SPT	standard penetration test
USGS	U.S. Geological Survey

1.0 INTRODUCTION

GeoDesign, Inc. is pleased to submit this report of geotechnical engineering services for the stadium expansion project at West Linn High School located at 5464 West A Street in West Linn, Oregon. Figure 1 shows the site relative to existing topographic and physical features.

The project includes expanding seating on the north and south sides of the existing stadium and a new parking lot northwest of the stadium. Maximum compressive loads for the stadium expansion will be less than 150 kips and uplift will be less than 60 kips. The area beneath the expanded seating will be slab on grade to match the existing stadium grandstand area.

Based on the grading plan provided by 3J Consulting, Inc., the parking lot will be located at the base of the slope northwest of the stadium. Cuts required for the parking lot will be up to approximately 5 feet. Utilities are expected to be at least a few feet below the parking lot.

Figure 2 shows the existing and proposed site layout (overlay) and the approximate locations of our explorations. Logs from our explorations and laboratory test results are presented in Appendix A. Acronyms and abbreviations used herein are defined above, immediately following the Table of Contents.

2.0 SCOPE OF SERVICES

The purpose of our geotechnical services was to explore the site subsurface conditions and provide geotechnical engineering recommendations for use in design and construction of the project. The specific scope of our services is summarized as follows:

- Reviewed readily available, published geologic data and our in-house files for existing information on subsurface conditions in the site vicinity.
- Coordinated and managed the field explorations, including locating utilities and scheduling subcontractors and GeoDesign staff.
- Conducted a geologic site reconnaissance.
- Completed the following explorations:
  - One drilled boring beneath the north stadium expansion areas to refusal at a depth of 2.6 feet BGS
  - One hand auger boring beneath the south stadium expansion to practical refusal at a depth of 1 foot BGS
  - Four drilled borings in the proposed parking lot to refusal at depths between 2.3 and 4.5 feet BGS
  - Excavated four test pits across in the parking lot to refusal on basalt at depths between 2 and 4.5 feet BGS
- Completed infiltration testing in the location requested by the design team.
- Maintained continuous logs of the explorations and collected samples at representative intervals.
- Completed seismic refraction testing to evaluate rippability of the shallow basalt in parking areas. The results of the seismic refraction testing are presented in Appendix B.

- Performed a laboratory testing program consisting of the following:
  - Seven moisture content determinations in accordance with ASTM D2216
  - One particle-size analysis in accordance with ASTM D1140
  - Two Atterberg limits tests in general accordance with ASTM D4318
- Prepared this geotechnical report for the project that includes recommendations and discussion related to the following:
  - Soil, rock, and groundwater conditions
  - Results of seismic refraction testing and basalt rippability
  - Site preparation, grading and drainage, compaction criteria for both on-site and imported material, fill type for imported material, procedures for use of on-site soil, and wet weather earthwork procedures
  - Construction dewatering
  - Foundation support for the stadium expansion, including allowable bearing capacity, settlement estimates, and lateral resistance parameters
  - Floor slab recommendations
  - Conventional retaining walls, including backfill and drainage requirements and lateral earth pressures
  - Drainage
  - AC pavement for on-site access roads and parking areas, including subbase, base course, and AC paving thickness
  - Seismic design coefficients as prescribed by ASCE 7-16 and the 2019 SOSSC
  - Site-specific seismic report as required by the 2019 SOSSC for essential buildings

3.0 SITE CONDITIONS

3.1 GEOLOGIC SETTING

The near-surface geology at the stadium and proposed parking lot are mapped as the Miocene aged Sentinel Bluffs basalt member consisting of basaltic andesite from lava flows. Just above the stadium and on the steep slopes west of the proposed parking area is Miocene aged Gingko basalt. The Gingko basalt is also derived from lava flows and consists of basaltic andesite (Madin, 2009).

An approximately 1.35-acre landslide is mapped approximately 700 feet southwest of the site in the Gingko basalt and a large, 22-acre landside is mapped approximately 1,000 feet northwest of the site at the interface of the Sentinel Bluffs and Gingko basalt (SLIDO, 2020). Landslide potential at the site is discussed in the "Geologic Reconnaissance" section and Appendix C.

3.2 GEOLOGIC RECONNAISSANCE

A reconnaissance was completed at the site on May 21, 2020 by a member of our geology staff. The proposed parking lot is heavily vegetated with trees and underbrush and slopes gently upward from southeast to northwest. An approximately 70 percent slope is present at the west edge of the proposed parking area near the conservation easement boundary. The ground surface within the parking area was wet during the reconnaissance; however, seepage or springs were not observed in the area. Conifer trees on the 70 percent slope were mature and appeared straight with no significant bowing or pistol butting. Bowing of deciduous trees was observed but was likely a result of competition for sunlight within the canopy. Other signs of instability such as scarps or hummocky topography were not observed along the lower portion of the slope adjacent to the parking area.

The stadium expansion areas are on the west side of the football field/track and located at the base of an approximately 50 percent slope. The slope is densely covered by trees and brush. An outcrop of the Sentinel Bluffs member basalt was observed near the south expansion area. Above the outcrop and near the southwest corner of the existing stadium was a possible interflow boundary between the Sentinel Bluffs and Gingko basalt. Water seepage was observed near the south expansion area and was flowing to the northeast toward a drainage collection system. Conifer trees on the slope adjacent to the stadium expansion areas were straight and signs of instability such as scarps or hummocky topography were not observed along the slope.

3.3 SUBSURFACE CONDITIONS

3.3.1 General

Subsurface conditions were explored by drilling five borings (B-1 through B-5), advancing one hand auger boring (HA-1), and excavating four test pits (TP-1 through TP-4). All explorations were extended to practical refusal between 1 foot and 4.5 feet BGS. The approximate exploration locations are shown on Figure 2. Descriptions of our field exploration and laboratory testing programs, the exploration logs, and results of laboratory testing are presented in Appendix A. Explorations at the site generally encountered up to 4.5 feet of silt, clay, and gravel underlain by basalt. The following sections summarize the subsurface units encountered.

3.3.2 Root Zone

An approximately 3- to 6-inch-thick root zone from grasses and short vegetation was observed in the explorations at the site. Larger roots, up to approximately 3 inches in diameter, from trees and brush were observed up to 3.5 feet BGS.

3.3.3 Undocumented Fill

Undocumented fill was encountered in test pit TP-4 to 2 feet BGS. The fill consists of medium stiff silt with concrete debris and organics. Concrete debris ranged from 6 to 18 inches in diameter and the organics consist of roots up to 2.5 inches in diameter.

3.3.4 Silt and Clay

All of the explorations encountered silt or clay directly below the ground surface or below the fill materials, with the exception of B-1 that transitions to silty sand decomposed material. The silt and clay are gray-brown and medium stiff to stiff with low to medium plasticity. The silt and clay are moist to wet with trace organics. The silt and clay extend to depths between 1 foot and 4.5 feet BGS. Laboratory testing indicates the silt and clay had moisture contents ranging from 21 to 33 percent at the time of our explorations.

3.3.5 Sand and Gravel (Decomposed Basalt)

Sand and gravel is present below the silt and clay or directly below the ground surface in boring B-1. The sand and gravel are medium dense to very dense with variable proportions of silt, sand, clay, and cobbles. The sand and gravel are decomposed basalt near the interface with competent basalt. The sand and gravel extend to depths between 2 and 4.5 feet BGS.

3.3.6 Basalt

Based on explorations and the geophysical testing described below, basalt is within 2 to 4.5 feet of the existing ground surface. Based on geophysical testing, the upper few feet of the basalt is very soft to soft to depths of 4 to 5 feet BGS and transitions to medium hard to hard below. The basalt is expected to extend at least 50 feet BGS.

3.3.7 Groundwater

Moist to wet soil and groundwater were observed in the several of the explorations at the site as shallow as 1.5 feet BGS. The groundwater and moist soil are perched on top of the dense decomposed basalt and competent basalt, and static groundwater is likely more than 20 feet BGS. The depth of perched groundwater will fluctuate in response to seasonal changes and prolonged rainfall.

3.4 INFILTRATION TESTING

An infiltration test was performed in the location requested by the design team. Testing was completed in silt or clay soil above the dense gravel or basalt. The results of the infiltration testing are provided in Table 1.

Table 1. Infiltration and Laboratory Testing Summary

Location	Depth (feet BGS)	Observed Infiltration Rate[1] (inches per hour)	Soil Type at Test Depth
B-2	2	~0	Silt
B-2	4	~0	Clay

1. In situ infiltration rate observed in the field
2. Fines content - material passing the U.S. Standard No. 200 sieve

Recommendations for on-site infiltration systems are provided in the "Drainage" section.

3.5 GEOPHYSICAL TESTING

Geophysical testing consisting of three seismic P-wave refraction traverses were completed in the proposed parking area by Atlas. The purpose of the testing was to determine subsurface velocity profiles that could be used to assess the depth and rippability of shallow basalt at the site. The test report is presented in Appendix B. The locations of the refraction traverses are shown on Figure 2. A discussion regarding rippability of the subsurface soil is present in the "Excavation" section.

4.0 SEISMIC HAZARDS

We conducted a site-specific seismic evaluation that addresses seismic hazards. The results of the evaluation are presented in Appendix C.

5.0 DESIGN

5.1 GENERAL

The following sections provide our design recommendations for the project. All site preparation and structural fill should be prepared as recommended in the "Construction" section.

5.2 FOUNDATIONS

5.2.1 General

Foundations for the stadium expansion can be supported on conventional spread footings bearing on dense gravel or basalt at the site. Based on explorations, dense gravel or basalt will be encountered approximately 1 foot to 2 feet below existing grades. We recommend that silt or clay at the base of footings be excavated to gravel or basalt and replaced with imported granular material to limit differential settlement potential. Over-excavation of silt and clay is expected to be minimal.

Over-excavations should extend 6 inches beyond the margins of the foundations for every foot excavated below the base grade of the foundation and should consist of imported granular material as described in the "Structural Fill" section. The imported granular material should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557, or until well keyed, as determined by one of our geotechnical staff.

5.2.2 Dimensions and Capacities

Continuous wall and isolated spread footings should be at least 18 and 24 inches wide, respectively. The bottom of exterior footings should be at least 18 inches below the lowest adjacent exterior grade. The bottom of interior footings should be established at least 12 inches below base of slabs.

Footings bearing on dense gravel should be sized based on an allowable bearing pressure of 6,000 psf. Spread footings on competent basalt can be designed using an allowable bearing pressure of 18,000 psf. These are net bearing pressures; the weight of the footing and overlying backfill can be ignored in calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads and may be doubled for short-term loads, such as those resulting from wind or seismic forces.

Settlement of foundations bearing on dense gravel or basalt prepared as recommended will be negligible.

5.2.3 Resistance to Sliding

Lateral loads on footings can be resisted by passive earth pressure on the sides of the structure and by friction on the base of the footings. Our analysis indicates that the available passive earth pressure for footings confined by dense gravel or basalt is at least 400 pcf modeled as an equivalent fluid pressure. Typically, the movement required to develop the available passive resistance may be relatively large. Therefore, we recommend using a reduced passive equivalent fluid pressure of 300 pcf. Adjacent floor slabs, pavement, or the upper 12-inch depth of adjacent, unpaved areas should not be considered when calculating passive resistance. In addition, in order to rely on passive resistance, a minimum of 10 feet of horizontal clearance must exist between the face of the footings and any adjacent down slopes.

An ultimate coefficient of friction equal to 0.55 may be used when calculating resistance to sliding for footings in contact with gravel, basalt, or imported granular fill.

5.2.4 Subgrade Observation

All footing and floor subgrades should be evaluated by a representative of GeoDesign to evaluate the bearing conditions. Observations should also confirm that all loose or soft material, organic material, unsuitable fill, prior topsoil zones, and softened subgrades (if present) have been removed. Localized deepening of footing excavations may be required to penetrate any deleterious material.

5.3 SEISMIC DESIGN PARAMETERS

Seismic design criteria for this project will be based on the 2019 SOSSC and ASCE 7-16. Based on the subsurface conditions encountered in explorations and geophysical testing at the site, a seismic site class of B is appropriate. Due to the occupancy classification of the stadium, a site-specific study is required by the 2019 SOSSC. The study is presented in Appendix C. Table 2 provides the seismic design parameters that can be used for the project.

Table 2. Seismic Design Parameters

Seismic Design Parameter	Short Period (T_s = 0.2 second)	1 Second Period (T_1 = 1.0 second)
MCE Spectral Acceleration	S_s = 0.840 g	S_1 = 0.376 g
Site Class	B	
Site Coefficient	F_a = 0.9	F_v = 0.8
Adjusted Spectral Acceleration	S_{MS} = 0.756 g	S_{M1} = 0.301 g
Design Spectral Response Acceleration Parameters	S_{DS} = 0.504 g	S_{D1} = 0.201 g

5.4 FLOOR SLABS

Slabs on grade beneath the stadium expansion areas can be supported by the existing subgrade prepared as described in the “Construction” section. Dense gravel or basalt is present at shallow depths and rock excavation should be anticipated for cuts that extend more than a foot below current grade. To help reduce moisture transmission and slab shifting, we recommend a minimum 6-inch-thick layer of floor slab base rock be placed and compacted over a subgrade that has been prepared in conformance with the “Site Preparation” section.

Slabs should be reinforced according to their proposed use and per the structural engineer’s recommendations. Load-bearing concrete slabs may be designed assuming a modulus of subgrade reaction, k, of 150 pci.

The design parameters provided above assume the floor slabs are underlain by native soil, compacted structural fill, or improved topsoil subgrade (by the means of scarification and compaction or by cement amendment). If encountered, deleterious material and debris should be removed prior to compaction.

5.5 RETAINING STRUCTURES

5.5.1 Assumptions

Our retaining wall design recommendations are based on the following assumptions: (1) the walls are cantilevered walls, (2) the walls are less than 8 feet in height, (3) drainage is provided behind walls, (4) the retained soil has a slope flatter than 4H:1V, and (5) the ground surface at the toe of the wall has an inclination of flatter than 5H:1V. Re-evaluation of our recommendations will be required if the retaining wall design criteria for the project varies from these assumptions.

5.5.2 Wall Design Parameters

Permanent retaining structures supporting soil that is free to rotate slightly around the base should be designed for active earth pressures using an equivalent fluid unit pressure of 35 pcf. If retaining walls are restrained against rotation during backfilling, they should be designed for an at-rest earth pressure of 55 pcf.

Seismic lateral forces can be calculated using a dynamic force equal to $7H^2$ pounds per linear foot of wall, where H is the wall height. The seismic force should be applied as a distributed load with the centroid located at 0.6H from the wall base. Footings for retaining walls should be designed as recommended for shallow foundations.

The design equivalent fluid pressure should be increased for walls that retain sloping soil. We recommend the above lateral earth pressures be increased using the factors provided in Table 3 when designing walls that retain sloping soil.

Table 3. Lateral Earth Pressure Increase Factors for Sloping Soil

Slope of Retained Soil (degrees)	Lateral Earth Pressure Increase Factor
0	1.00
5	1.06
10	1.12
20	1.33
25	1.52
30	2.27

If other surcharges (i.e., slopes steeper than 2H:1V, foundations, vehicles, etc.) are located within a horizontal distance of twice the height of the wall from the back of the wall, additional pressures will need to be accounted for in the wall design. Our office should be contacted for appropriate wall surcharges based on the actual magnitude and configuration of the applied loads.

5.5.3 Wall Drainage and Backfill

The above design parameters have been provided assuming drains will be installed behind walls to prevent hydrostatic pressures from developing. If a drainage system is not installed, our office should be contacted for revised design forces.

Backfill material placed behind the walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of retaining wall select backfill placed and compacted in conformance with the "Structural Fill" section.

A minimum 6-inch-diameter, perforated collector pipe should be placed at the base of the walls. The pipe should be embedded in a minimum 2-foot-wide zone of angular drain rock that is wrapped in a drainage geotextile fabric and extends up the back of the wall to within 1 foot of the finished grade. The drain rock and drainage geotextile fabric should meet specifications provided in the "Materials" section. The perforated collector pipes should discharge at an appropriate location away from the base of the wall. The discharge pipe(s) should not be tied directly into stormwater drain systems, unless measures are taken to prevent backflow into the wall's drainage system.

Settlement of up to 1 percent of the wall height commonly occurs immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures. Consequently, we recommend construction of flatwork adjacent to retaining walls be postponed at least four weeks after backfilling of the wall, unless survey data indicates that settlement is complete prior to that time.

5.6 PAVEMENT

Pavement should be installed on native subgrade or new engineered fill prepared in conformance with the "Site Preparation" and "Structural Fill" sections. Our pavement recommendations are based on the following assumptions:

- The top 12 inches of soil subgrade is compacted to at least 92 percent of its maximum dry density, as determined by ASTM D1557, or until proof rolling with heavy equipment indicates that is it firm and unyielding.
- Resilient moduli of 4,500 psi and 20,000 psi were assumed for the subgrade and base rock, respectively.
- The design manual provided for the project specifies pavement recommendations based on a design life of 20 years.
- Initial and terminal serviceability indices of 4.2 and 2.5, respectively.
- Reliability of 85 percent and standard deviation of 0.45.
- Fire access will consist of an imposed fire apparatus load of 75,000 pounds on an infrequent basis.

Traffic at the new parking area is expected to consist primarily of passenger vehicles and an occasional larger vehicle (garbage truck or similar).

Our pavement design recommendations for the assumptions and loadings provided above are provided in Table 4.

Table 4. Recommended Standard Pavement Sections for Existing Subgrade

Pavement Use	AC Thickness[1] (inches)	Aggregate Base Thickness[1] (inches)
Automobile Parking	2.5	6.0
Drive Aisle	3.0	8.0

1. All thicknesses are intended to be the minimum acceptable values.

Design of the recommended pavement section is based on the assumption that construction will be completed during an extended period of dry weather. Wet weather construction could require an increased thickness of aggregate base. The AC, aggregate base, and cement amendment should meet the requirements outlined in the "Materials" section.

Construction traffic should not be allowed on new pavement. If construction traffic is to be allowed on newly constructed road sections, an allowance for this additional traffic will need to be made in the design pavement section. The aggregate base and cement-amended thicknesses (if installed) do not account for construction traffic, and haul roads and staging areas should be used as described in the "Construction" section.

5.7 DRAINAGE

5.7.1 Surface

Where possible, the finished ground surface around improvements should be sloped away from the structure at a minimum 2 percent gradient for a distance of at least 5 feet. Downspouts or roof scuppers should discharge into a storm drain system that carries the collected water to an appropriate stormwater system.

5.7.2 Cut Off Drains

We recommend cut off drains are installed at the toe of the slopes adjacent to the proposed parking area and stadium expansion to collect groundwater seepage. The drain should consist of a 2-foot-wide trench filled with drain rock and wrapped in geotextile fabric that extends at least 3 feet below final grade. The drain rock and geotextile should extend to within a foot of the ground surface. A 6-inch-diameter, perforated pipe should be installed at the base of the drain rock. The cut-off drains should be constructed at a minimum slope of approximately ½ percent and pumped or drained by gravity to a suitable discharge. The perforated drainpipe should not be tied to a stormwater drainage system without backflow provisions

The drain rock and geotextile should meet the requirements specified in the "Materials" section.

5.8 INFILTRATION SYSTEMS

Stormwater infiltration systems are being considered for the project. Infiltration testing was completed in boring B-2 as requested by 3J Consulting. The results of the testing are provided in Table 1.

The subsurface conditions at the site generally consist of 1 foot to 4.5 feet of silt and clay underlain by basalt. Measured infiltration rates in the silt and clay were negligible and infiltration is not possible in basalt. In addition, perched water is possible on top of the basalt. Based on soil and groundwater conditions and testing, infiltration systems are not feasible at the site.

6.0 CONSTRUCTION

6.1 SITE PREPARATION

6.1.1 Demolition

Demolition includes complete removal of structures, concrete slabs, footings, utilities, and other structural features. Abandoned foundations and utilities, if present, will need to be removed and the resulting excavations backfilled. Utility lines should be completely removed or, with prior approval, grouted full if left in place. In general, demolished material should be transported off site for disposal. Excavations left from demolition and removal of existing structures should be backfilled with compacted structural fill in accordance with recommendations in the “Structural Fill” section.

6.1.2 Grubbing and Stripping

The proposed parking lot is heavily vegetated with trees and underbrush, and considerable grubbing and stripping will be required. Trees and shrubs should be removed from improvement areas. In addition, root balls should be grubbed out to the depth of the roots, which could exceed 3 feet BGS. Depending on the methods used to remove the root balls, considerable disturbance and loosening of the subgrade could occur during site grubbing. We recommend soil disturbed during grubbing operations be removed to expose firm, undisturbed subgrade. The resulting excavations should be backfilled with structural fill.

The existing topsoil zone and root zones should be stripped and removed from all fill areas. Based on our explorations, the average depth of stripping will be approximately 3 to 6 inches in lightly vegetated areas and likely greater than 12 inches in shrub areas. Greater stripping depths should be anticipated in areas with thicker trees and shrubs. The actual stripping depth should be based on field observations at the time of construction. Stripped material should be transported off site for disposal or used in landscaped areas.

6.1.3 Undocumented Fill

Undocumented fill was encountered in test pit TP-4 in the proposed parking area to a depth of 2 feet BGS. The fill consists of medium stiff silt with concrete debris and organics. Concrete debris ranged from 6 to 18 inches in diameter and the organics consist of roots up to 2.5 inches in diameter. Existing fill not removed by site grading should be evaluated by a member of our staff as described in the “Subgrade Evaluation” section. Unsuitable soil should be removed and replaced with structural fill.

All undocumented fill encountered below foundation elements should be completely removed and replaced with structural fill.

6.1.4 Subgrade Evaluation

Upon completion of stripping and prior to the placement of fill, improvements, or pavement, the exposed subgrade should be evaluated by proof rolling. The subgrade should be proof rolled with a fully loaded dump truck or similarly heavy, rubber tire construction equipment to identify soft, loose, or unsuitable areas. A member of our geotechnical staff should observe the proof rolling to evaluate yielding of the ground surface. During wet weather, subgrade evaluation should be performed by probing with a foundation probe rather than proof rolling. Areas that appear soft or loose should be improved in accordance with subsequent sections of this report.

6.2 SUBGRADE CONSIDERATIONS

The fine-grained soil present on this site is easily disturbed. Planned grading will remove portions of the fine-grained soil and expose dense gravel or basalt; however, areas of fine-grained soil will likely be present at finished grades. If not carefully executed, site preparation, utility trench work, and roadway excavation can create extensive soft areas and significant repair costs can result. Earthwork planning, regardless of the time of year, should include considerations for minimizing subgrade disturbance.

If construction occurs during or extends into the wet season, or if the moisture content of the surficial soil is more than a couple percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Likewise, the use of granular haul roads and staging areas will be necessary for support of construction traffic during the rainy season or when the moisture content of the surficial soil is more than a few percentage points above optimum. The base rock thickness for pavement areas is intended to support post-construction design traffic loads. This design base rock thickness will likely not support construction traffic or pavement construction. Moreover, if construction is planned for periods when the subgrade soil is wet, staging and haul roads with increased thicknesses of base rock will be required. The amount of staging and haul road areas, as well as the required thickness of granular material, will vary with the contractor's sequencing of a project and type/frequency of construction equipment and should, therefore, be the responsibility of the contractor. Based on our experience, between 12 and 18 inches of imported granular material is generally required in staging areas and between 18 and 24 inches in haul roads areas. The contractor should also be responsible for selecting the type of material or construction of haul roads and staging areas. A geotextile fabric can be placed as a barrier between the subgrade and imported granular material in areas of repeated construction traffic to help prevent silt migration into the base rock. The imported granular material, stabilization material, and geotextile fabric should meet the specifications in the "Materials" section.

An alternative to thickened crushed rock sections is cement amending. Based on the size of the project and current grading plan, we anticipate that cement amending will not be cost effective. GeoDesign can provide cement amending recommendations for budgeting purposes if requested.

6.3 PERMANENT SLOPES

Permanent cut and fill slopes in soil should not exceed 2H:1V. We should be contacted to provide recommendations if permanent rock slopes are required. Excavations should not be completed in the existing slopes surrounding the site without notifying GeoDesign.

Access roads and pavement should be located at least 5 feet from the top of cut and fill slopes. The setback should be increased to 10 feet for buildings. The slopes should be planted with appropriate vegetation to provide protection against erosion as soon as possible after grading. Surface water runoff should be collected and directed away from slopes to prevent water from running down the face of the slope.

6.4 EXCAVATION

6.4.1 Soil Excavation

Perched groundwater was encountered in several explorations and should be anticipated near the interface of soil and basalt. Excavation into silt, clay, and sand should be readily accomplished with conventional earthwork equipment. Excavations into gravel and decomposed basalt are likely to encounter cobbles and boulders. Caving and sloughing will likely occur where cobbles and boulders are present and trench backfill volumes will exceed neat quantities. Where sand, gravel, cobbles, and boulders are present below groundwater, running conditions should be anticipated. Increased backfill volumes should be expected where deeper excavations are needed.

Temporary excavation sidewalls in silt and clay should stand vertical to a depth of approximately 4 feet, provided groundwater seepage does not occur in the sidewalls. Open excavation techniques may be used to excavate trenches with depths between 4 and 8 feet, provided the walls of the excavation are cut at a slope of 1H:1V or flatter and groundwater seepage does not occur. Excavations should be flattened to 1½H:1V or flatter if excessive sloughing occurs.

Use of approved temporary shoring is recommended where the slopes cannot be cut back, within the influence area of structural elements, and for cuts below the water table. The influence area can be defined as a 1H:1V slope extending down from a 5-foot setback from the edge of a foundation element. A wide variety of shoring and dewatering systems are available. Consequently, we recommend the contractor be responsible for selecting the appropriate shoring and dewatering systems.

If box shoring is used, it should be understood that box shoring is a safety feature used to protect workers and does not prevent caving. If the excavations are left open for extended periods of time, caving of the sidewalls may occur. The presence of caved material will limit the ability to properly backfill and compact the trenches. The contractor should be prepared to fill voids between the box shoring and the sidewalls of the trenches with sand or gravel before caving occurs.

If shoring is used, we recommend the type and design of the shoring system be the responsibility of the contractor, who is in the best position to choose a system that fits the overall plan of operation. All excavations should be made in accordance with applicable OSHA and state regulations.

6.4.2 Rock Excavation

Shallow basalt is present within a few feet of the ground surface at the site. Our scope of services included geophysical testing that consisted of three seismic P-wave refraction traverses in the proposed parking area. The purpose of the testing was to determine subsurface velocity profiles that could be used to assess the depth and rippability of the basalt. The results of testing are presented in Appendix B.

Basalt rock is considered as potentially rippable by a Caterpillar model D-9 bulldozer with a single shank when the P-wave velocity is less than approximately 7,000 feet per second. This relationship is only appropriate if the bulldozer is operating in an open, unrestrained area where boulders that are too hard to rip can be isolated and removed by other means.

P-wave velocity relationships are typically not valid for other types of equipment and situations, such as an excavator digging a utility trench. For trenching operations, the rippability values should be scaled downward. For example, velocities as low as 3,500 feet per second may indicate difficult ripping during trenching operations. In addition, the presence of boulders, which can be troublesome in narrow trenching operations, should be anticipated.

Based on the results seismic refraction testing completed in the parking lot, the majority of the basalt should be rippable with a Caterpillar D-9 bulldozer with a single shank to depths of approximately 4 to 5 feet BGS. Chipping or blasting may be required below 4 to 5 feet BGS. Boulders and over-size material will also be encountered. Based on the shallow cuts required and because blasting typically requires a minimum of 8 feet of rock (or heavy matting), we anticipate blasting may not be feasible at the site.

Based on testing, trench excavation will likely be very difficult throughout the entire basalt zone and blasting, sawing, or hydraulic chipping should be assumed. We recommend that the excavation contractor be responsible for determining the appropriate method of rock excavation as they are in the best position to choose a system that fits the overall plan of operation.

6.4.3 Safety

All excavations should be made in accordance with applicable OSHA requirements and regulations of the state, county, and local jurisdiction. While this report describes certain approaches to excavation and dewatering, the contract documents should specify that the contractor is responsible for selecting excavation and dewatering methods, monitoring the excavations for safety, and providing shoring (as required) to protect personnel and adjacent structural elements.

6.5 DEWATERING

6.5.1 Construction Dewatering

Perched groundwater and groundwater seepage from adjacent slopes should be expected during construction. The contractor should be responsible for temporary drainage of surface water, perched water, and groundwater as necessary to prevent standing water and/or erosion at the working surface. Sloughing conditions can occur if the excavation extends below groundwater seepage levels. Positive control of groundwater will be required to maintain stable trench sides and base.

Trench dewatering will be required to maintain dry working conditions if the invert elevations of the proposed utilities encounter groundwater. If groundwater is present at the base of utility excavations, we recommend placing 1.5 to 2 feet of stabilization material at the base of the excavation. The use of a subgrade geotextile fabric may reduce the amount of stabilization material required. The actual thickness should be based on field observations during construction. Trench stabilization material and the subgrade geotextile fabric should meet the requirements described in the "Materials" section. Trench stabilization material should be placed in one lift and compacted until well keyed.

While we have described certain approaches to the excavation dewatering, it is the contractor's responsibility to select the dewatering methods.

6.5.2 Permanent Dewatering

Cut off drains are recommended at the base of slopes in the development area to capture potential groundwater seepage. Further details regarding permanent dewatering systems are provided in the "Drainage" section.

6.6 MATERIALS

6.6.1 Structural Fill

6.6.1.1 General

Fill should be placed on subgrade that has been prepared in conformance with the "Site Preparation" section. A variety of materials may be used as structural fill at the site. However, all material used as structural fill should be free of organic material or other unsuitable materials. A brief characterization of some of the acceptable materials and our recommendations for their use as structural fill are provided below.

6.6.1.2 On-Site Soil

The material at the site should be suitable for use as general structural fill, provided it is properly moisture conditioned and free of debris, organic material, and particles over 6 inches in diameter.

The near-surface silt and clay soil is above the optimum moisture content for compaction and moisture conditioning (drying) will be required to use on-site soil for structural fill. Accordingly, extended dry weather will be required to adequately condition and place the soil as structural fill. It will be difficult, if not impossible, to adequately compact on-site soil during the rainy season or during prolonged periods of rainfall.

When used as structural fill, the on-site soil should be placed in lifts with a maximum uncompacted thickness of 8 inches and compacted to not less than 92 percent of the maximum dry density, as determined by ASTM D1557.

If boulders or basalt rock is processed for use as structural fill, we recommend a maximum particle size of 6 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557

6.6.1.3 Imported Granular Material

Imported granular material used as structural fill should be pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The imported granular material should also be durable, angular, and fairly well graded between coarse and fine material; should have less than 5 percent fines (material passing the U.S. Standard No. 200 sieve) by dry weight; and should have at least two mechanically fractured faces.

Imported granular material should be placed in lifts with a maximum uncompacted thickness of 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557. During the wet season or when wet subgrade conditions exists, the initial lift should be approximately 18 inches in uncompacted thickness and should be compacted by rolling with a smooth-drum roller without using vibratory action.

6.6.1.4 Stabilization Material

Stabilization material used in staging or haul road areas or in trenches should consist of durable, 4- or 6-inch-minus pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The material should have a maximum particle size of 6 inches, should have less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve, and should have at least two mechanically fractured faces. The material should be free of organic material and other deleterious materials. Stabilization material should be placed in lifts between 12 and 24 inches thick and compacted to a firm condition.

6.6.1.5 Trench Backfill

Trench backfill placed beneath, adjacent to, and for at least 12 inches above utility lines (i.e., the pipe zone) should consist of durable, well-graded granular material with a maximum particle size of 1½ inches, should have less than 7 percent fines by dry weight, and should have at least two mechanically fractured faces. The pipe zone backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

Within roadway alignments, the remainder of the trench backfill up to the subgrade elevation should consist of durable, well-graded granular material with a maximum particle size of 2½ inches, should have less than 7 percent fines by dry weight, and should have at least two mechanically fractured faces. This material should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department. The upper 3 feet of the trench backfill should be compacted to at least 95 percent of the maximum dry density, as determined by ASTM D1557.

Outside of structural improvement areas (e.g., roadway alignments or building pads) trench backfill placed above the pipe zone may consist of general fill material that is free of organic material and material over 6 inches in diameter. This general trench backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

6.6.1.6 Floor Slab Aggregate Base

Imported granular material used as base rock for building floor slabs should consist of ¾- or 1½-inch-minus material (depending on the application). In addition, the aggregate should have less than 5 percent fines by dry weight and should have at least two mechanically fractured faces. The aggregate base should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

6.6.1.7 Pavement Aggregate Base

Imported granular material used as base rock for pavement should consist of ¾- or 1½-inch-minus material (depending on the application). In addition, the aggregate should have less than 5 percent fines by dry weight and should have at least two mechanically fractured faces. The aggregate base should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

6.6.1.8 Retaining Wall Select Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of imported granular material as described above and should have less than 7 percent fines by dry weight. We recommend the wall backfill be separated from general fill, native soil, and/or topsoil using a geotextile fabric that meets the specifications provided below for drainage geotextiles.

The wall backfill should be compacted to a minimum of 95 percent of the maximum dry density, as determined by ASTM D1557. However, backfill located within a horizontal distance of 3 feet from a retaining wall should only be compacted to approximately 90 percent of the maximum dry density, as determined by ASTM D1557. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (such as a jumping jack or vibratory plate compactor). If flatwork (sidewalks or pavement) will be placed atop the wall backfill, we recommend that the upper 2 feet of material be compacted to 95 percent of the maximum dry density, as determined by ASTM D1557.

6.6.1.9 Drain Rock Material

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches. The material should be free of roots, organic material, and other unsuitable materials; should have less than 2 percent by dry weight passing the U.S. Standard No. 200 sieve (washed analysis); and should have at least two mechanically fractured faces. Drain rock should be compacted to a well-keyed, firm condition.

6.6.1.10 Retaining Wall Leveling Pad

Imported granular material placed at the base of retaining wall footings should consist of select granular material. The granular material should be 1”-0 to ¾”-0 aggregate size and have at least two mechanically fractured faces. The leveling pad material should be placed in a 6- to 12-inch lift and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

6.6.2 Geotextile Fabric

6.6.2.1 Subgrade Geotextile

Subgrade geotextile should conform to OSSC Table 02320-4 and OSSC 00350 (Geosynthetic Installation). A minimum initial aggregate base lift of 6 inches is required over geotextiles. All drainage aggregate and stabilization material should be underlain by a subgrade geotextile.

6.6.2.2 Drainage Geotextile

Drainage geotextile should conform to Type 2 material of OSSC Table 02320-1 and OSSC 00350 (Geosynthetic Installation). A minimum initial aggregate base lift of 6 inches is required over geotextiles.

6.6.4 AC

6.6.4.1 ACP

The AC should be Level 2, ½-inch, dense ACP according to OSSC 00744 (Asphalt Concrete Pavement) and compacted to 91 percent of the theoretical maximum density of the mix, as determined by AASHTO T 209. The minimum and maximum lift thicknesses are 2 and 3 inches, respectively, for ½-inch ACP. Asphalt binder should be performance graded and conform to PG 64-22 or better. The binder grade should be adjusted depending on the aggregate gradation and amount of recycled asphalt pavement and/or recycled asphalt shingles in the contractor's mix design submittal.

6.6.4.2 Cold Weather Paving Considerations

In general, AC paving is not recommended during the cold weather (temperatures less than 40 degrees Fahrenheit). Compacting under these conditions can result in low compaction and premature pavement distress.

Each AC mix design has a recommended compaction temperature range that is specific for the particular AC binder used. In colder temperatures, it is more difficult to maintain the temperature of the AC mix as it can lose heat while stored in the delivery truck, as it is placed, and in the time between placement and compaction. In Oregon, the AC surface temperature during paving should be at least 40 degrees Fahrenheit for lift thickness greater than 2.5 inches and at least 50 degrees Fahrenheit for lift thickness between 2 and 2.5 inches.

If paving activities must take place during cold-weather construction as defined above, the project team should be consulted and a site meeting should be held to discuss ways to lessen low compaction risks.

6.7 EROSION CONTROL

The site soil is susceptible to erosion; therefore, erosion control measures should be carefully planned and in place before construction begins. Surface water runoff should be collected and directed away from slopes to prevent water from running down the slope face. Erosion control measures (such as straw bales, sediment fences, and temporary detention and settling basins) should be used in accordance with local and state ordinances.

7.0 OBSERVATION OF CONSTRUCTION

Satisfactory foundation and earthwork performance depends to a large degree on quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during the subsurface exploration. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect if subsurface conditions change significantly from those anticipated.

We recommend GeoDesign be retained to observe earthwork activities, including stripping, proof rolling of the subgrade and repair of soft areas, footing subgrade preparation, final proof rolling of the pavement subgrade and base rock, and AC placement and compaction, and performing laboratory compaction and field moisture-density tests.

8.0 LIMITATIONS

We have prepared this report for use by West Linn-Wilsonville School District and members of the design and construction teams for the proposed project. The data and report can be used for bidding or estimating purposes, but our report, conclusions, and interpretations should not be construed as warranty of the subsurface conditions and are not applicable to other nearby building sites.

Exploration observations indicate soil conditions only at specific locations and only to the depths penetrated. They do not necessarily reflect soil strata or water level variations that may exist between exploration locations. If subsurface conditions differing from those described are noted during the course of excavation and construction, re-evaluation will be necessary.

The site development plans and design details were preliminary at the time this report was prepared. When the design has been finalized and if there are changes in the site grades or location, configuration, design loads, or type of construction, the conclusions and recommendations presented may not be applicable. If design changes are made, we request that we be retained to review our conclusions and recommendations and to provide a written modification or verification.

The scope does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in this report for consideration in design.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in this area at the time this report was prepared. No warranty, express or implied, should be understood.

◆ ◆ ◆

We appreciate the opportunity to be of service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

GeoDesign, Inc.

Nick Paveglio, P.E.
Senior Associate Engineer

George Saunders, P.E., G.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
86690
OREGON
May 8, 2012
NICHOLAS N. PAVEGLIO
EXPIRES: 12/31/20

REFERENCES

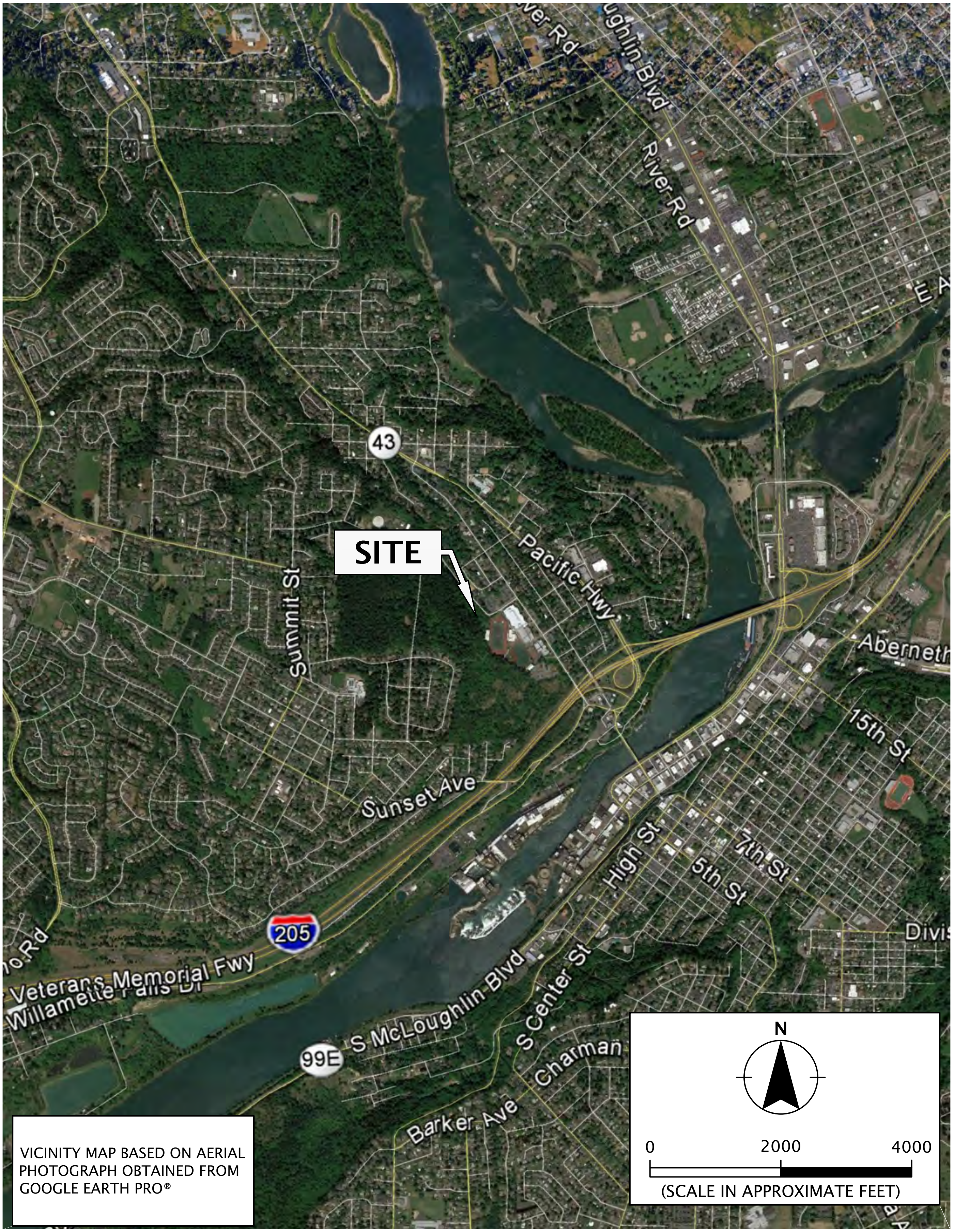
ASCE Standard ASCE/SEI 7-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures, January 2017, American Society of Civil Engineers.

Madin, Ian P., 1990. Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon. Oregon Department of Transportation. GMS119.

SLIDO, 2020. Statewide Landslide Information Database for Oregon. Oregon Department of Geology and Mineral Industries. Version 3.0. https://www.oregongeology.org/slido/.

State of Oregon 2019 Structural Specialty Code.

FIGURES



VICINITY MAP BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®

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WLWSCHDIST-2-01

JULY 2020

VICINITY MAP

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE 1

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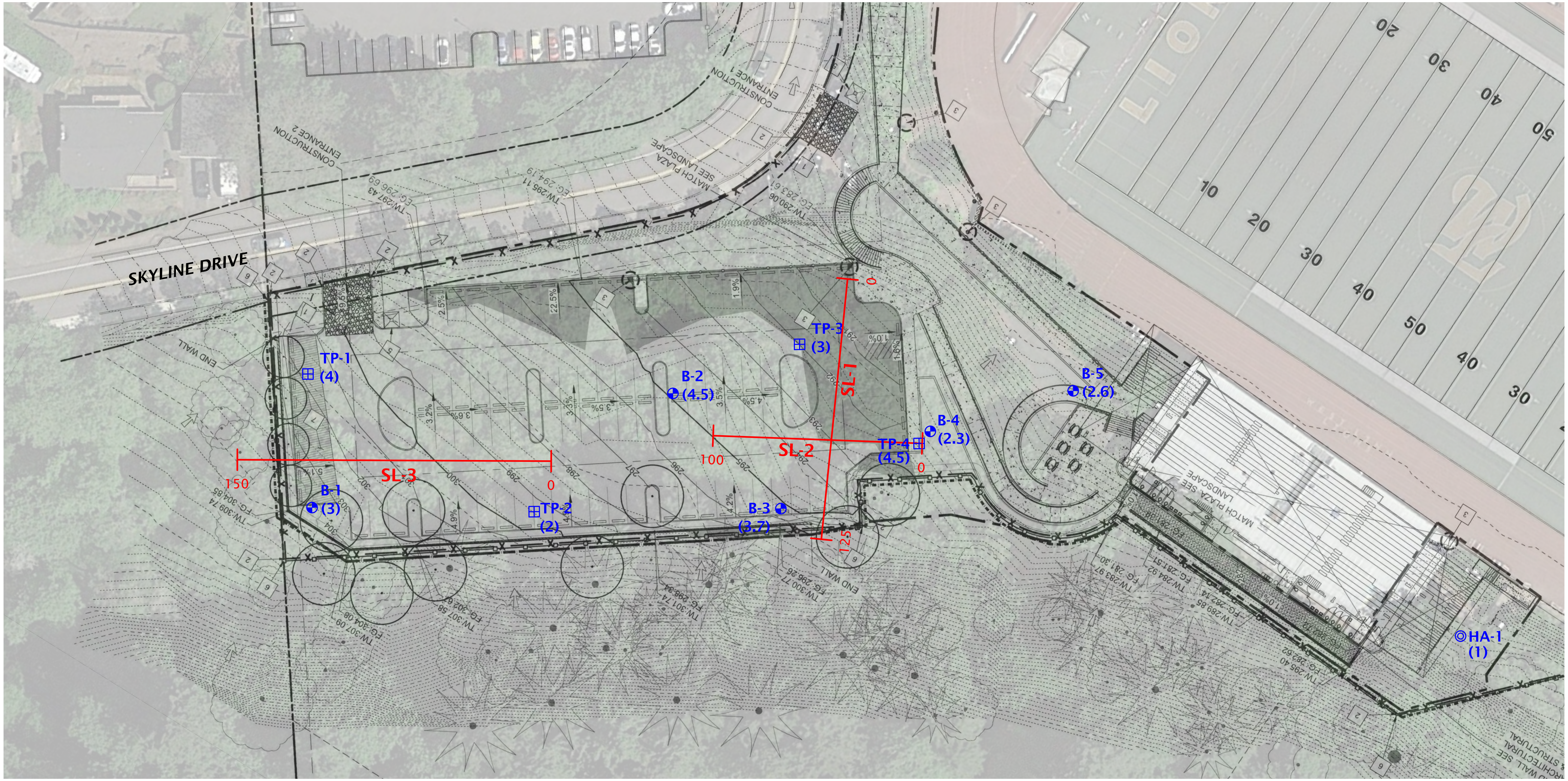
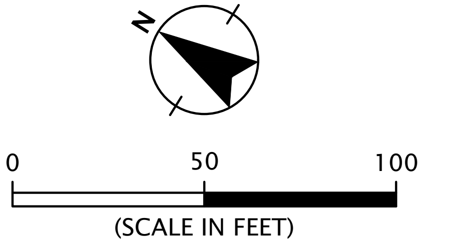


LEGEND:

B-1 ◕	BORING
TP-1 ⊞	TEST PIT
HA-1 ◎	HAND AUGER BORING
(3)	DEPTH TO REFUSAL (FEET BGS)
SL-1 ├─┤	SEISMIC LINE



NOTES:

1. SITE PLAN BASED ON IMAGE OF SHEET C231 STADIUM GRADING & EROSION CONTROL PLAN DATED OCTOBER 7, 2020 PREPARED BY 3J CONSULTING.
2. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO JUNE 9, 2020.

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File Name: J:\S-Z\WLWSchDist\WLWSchDist-2\WLWSchDist-2-01\Figures\CAD\WLWSchDist-2-01-SP03.dwg | Layout: FIGURE 2

FIGURE 2

SITE PLAN

WEST LINN STADIUM EXPANSION
WEST LINN, OR

WLWSCHDIST-2-01

JULY 2020

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APPENDIX A

APPENDIX A

FIELD EXPLORATIONS

GENERAL

Subsurface conditions were explored by drilling five borings (B-1 through B-5), advancing one hand auger boring (HA-1), and excavating four test pits (TP-1 through TP-4). All explorations were extended to practical refusal on dense soil or basalt at depths between 1 foot and 4.5 feet BGS. Approximate locations of all explorations are shown on Figure 2. The drilled borings and test pits were completed by Dan J. Fisher Excavating, Inc. of Forest Grove, Oregon, using a trailer-mounted drill rig with solid stem-auger techniques and a mini-excavator, respectively. The exploration logs are presented in this appendix. A member of our geology staff observed the explorations.

SOIL SAMPLING

Samples were collected from the borings using 1½-inch-inner diameter SPT split-barrel sampler in general accordance with ASTM D 1586. The sampler was driven into the soil with a 140-pound hammer free-falling 30 inches. The sampler was driven a total distance of 18 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the exploration logs, unless otherwise noted. The hammer used to conduct the SPTs was lifted using a rope and cathead. The SPTs were conducted using two wraps of the rope around the cathead.

Representative disturbed samples of soil observed in the test pit explorations were collected from the test pit walls and base using the excavator bucket.

Representative grab samples of the soil observed in the hand augers were collected from the tip of the hand auger.

Sampling intervals are shown on the exploration logs.

SOIL CLASSIFICATION

We collected samples of the soil encountered at representative intervals. The soil samples were classified in accordance with the “Explorations Key” (Table A-1) and “Soil Classification System” (Table A-2), which are presented in this appendix. The exploration logs indicate the depths at which the soils or their characteristics change, although the change could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

LABORATORY TESTING

We visually examined soil samples collected from the explorations to confirm field classifications. We also performed the following laboratory testing.

ATTERBERG LIMITS TESTING

Atterberg limits (plastic and liquid limits) testing was performed on select soil samples in general accordance with ASTM D4318. The plastic limit is defined as the moisture content where the soil becomes brittle. The liquid limit is defined as the moisture content where the soil begins to act similar to a liquid. The plasticity index is the difference between the liquid and plastic limits. The test results are presented in this appendix.

MOISTURE CONTENT

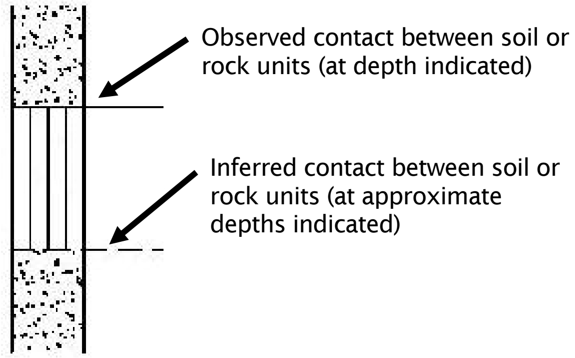
The natural moisture content of select soil samples was determined in general accordance with ASTM D2216. The natural moisture content is a ratio of the weight of the water to dry soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

PARTICLE-SIZE ANALYSIS

Particle-size analysis was performed on a select soil sample in general accordance with ASTM D1140. This test is a quantitative determination of the amount of material finer than the U.S. Standard No. 200 sieve expressed as a percentage of dry soil weight. The test results are presented in this appendix.

SYMBOL	SAMPLING DESCRIPTION
◨	Location of sample collected in general accordance with ASTM D1586 using Standard Penetration Test with recovery
▮	Location of sample collected using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D1587 with recovery
▤	Location of sample collected using Dames & Moore sampler and 300-pound hammer or pushed with recovery
▦	Location of sample collected using Dames & Moore sampler and 140-pound hammer or pushed with recovery
⧗	Location of sample collected using 3-inch-O.D. California split-spoon sampler and 140-pound hammer with recovery
⊠	Location of grab sample
▒	Rock coring interval
▽	Water level during drilling
▼	Water level taken on date shown

Graphic Log of Soil and Rock Types



Observed contact between soil or rock units (at depth indicated)

Inferred contact between soil or rock units (at approximate depths indicated)

GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	P	Pushed Sample
CBR	California Bearing Ratio	PP	Pocket Penetrometer
CON	Consolidation	P200	Percent Passing U.S. Standard No. 200 Sieve
DD	Dry Density		
DS	Direct Shear	RES	Resilient Modulus
HYD	Hydrometer Gradation	SIEV	Sieve Gradation
MC	Moisture Content	TOR	Torvane
MD	Moisture-Density Relationship	UC	Unconfined Compressive Strength
NP	Non-Plastic	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

RELATIVE DENSITY - COARSE-GRAINED SOIL

Relative Density	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very Loose	0 – 4	0 – 11	0 – 4
Loose	4 – 10	11 – 26	4 – 10
Medium Dense	10 – 30	26 – 74	10 – 30
Dense	30 – 50	74 – 120	30 – 47
Very Dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOIL

Consistency	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very Soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 – 4	3 – 6	2 – 5	0.25 – 0.50
Medium Stiff	4 – 8	6 – 12	5 – 9	0.50 – 1.0
Stiff	8 – 15	12 – 25	9 – 19	1.0 – 2.0
Very Stiff	15 – 30	25 – 65	19 – 31	2.0 – 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOIL (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVEL WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SAND (<5% fines)	SW or SP	SAND
		SAND WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SAND WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOIL (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOIL			PT	PEAT

MOISTURE CLASSIFICATION

Term	Field Test
dry	very low moisture, dry to touch
moist	damp, without visible moisture
wet	visible free water, usually saturated

ADDITIONAL CONSTITUENTS

Secondary granular components or other materials such as organics, man-made debris, etc.					
Percent	Silt and Clay In:		Percent	Sand and Gravel In:	
	Fine-Grained Soil	Coarse-Grained Soil		Fine-Grained Soil	Coarse-Grained Soil
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	Indicate %

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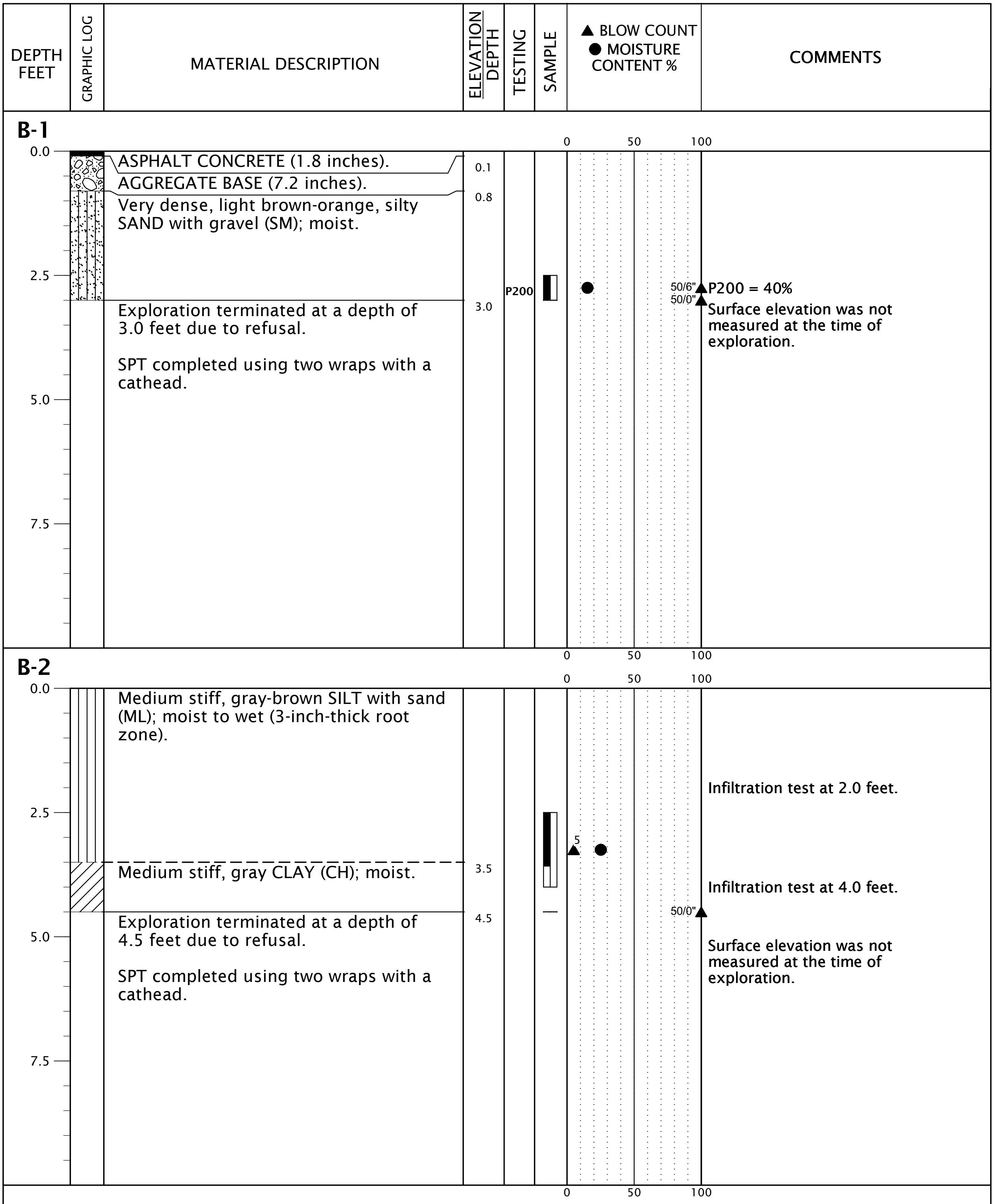
SOIL CLASSIFICATION SYSTEM

TABLE A-2



B-1

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	COMMENTS
0.0	ASPHALT CONCRETE (1.8 inches).	0.1		
	AGGREGATE BASE (7.2 inches).	0.8		
	Very dense, light brown-orange, silty SAND with gravel (SM); moist.		P200	P200 = 40%
	Exploration terminated at a depth of 3.0 feet due to refusal. SPT completed using two wraps with a cathead.	3.0		Surface elevation was not measured at the time of exploration.

B-2

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	COMMENTS
0.0	Medium stiff, gray-brown SILT with sand (ML); moist to wet (3-inch-thick root zone).			Infiltration test at 2.0 feet.
	Medium stiff, gray CLAY (CH); moist.	3.5		Infiltration test at 4.0 feet.
	Exploration terminated at a depth of 4.5 feet due to refusal. SPT completed using two wraps with a cathead.	4.5		Surface elevation was not measured at the time of exploration.

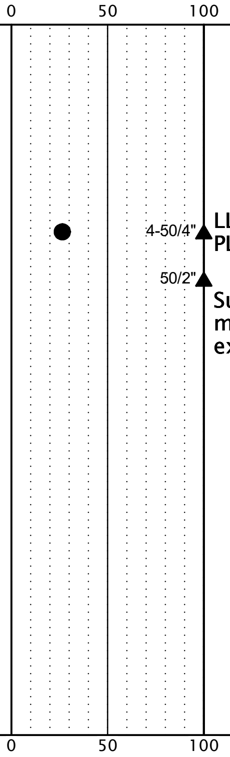
DRILLED BY: Dan J. Fischer Excavating, Inc.   LOGGED BY: J. Heidgerken   COMPLETED: 06/04/20

BORING METHOD: solid-stem auger (see document text)   BORING BIT DIAMETER: 4 inches

GEODESIGN INC AN NV5 COMPANY	WLWSCHDIST-2-01	BORING	
	JULY 2020	WEST LINN STADIUM EXPANSION WEST LINN, OR	FIGURE A-1

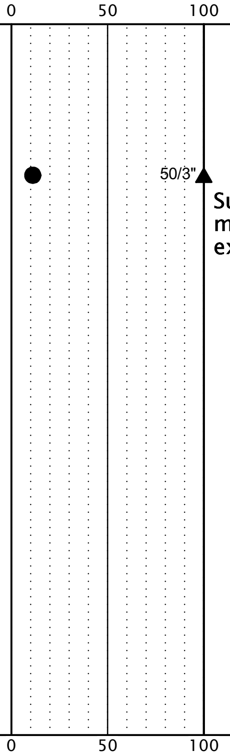
B-3

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT %	COMMENTS
0.0	Medium stiff to stiff, light brown-light gray CLAY (CL/CH), trace organics (roots, woody debris); moist, organics are 1/4-inch diameter (3.5-inch-thick root zone).					
2.5						
	Very dense, gray GRAVEL (GP); moist.	3.0	ATT	▮	4-50/4"	LL = 54% PL = 24%
	Exploration terminated at a depth of 3.7 feet due to refusal. SPT completed using two wraps with a cathead.	3.7		◫	50/2"	Surface elevation was not measured at the time of exploration.
5.0						
7.5						



B-4

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT %	COMMENTS
0.0	Soft to medium, dark gray CLAY (CL/CH), trace organics (roots); moist to wet, organics are <1/4-inch diameter (3-inch-thick root zone).					
	Very dense, gray GRAVEL with clay (GP-GC); moist.	1.5		◧	50/3"	
2.5	Exploration terminated at a depth of 2.3 feet due to refusal. SPT completed using two wraps with a cathead.	2.3				Surface elevation was not measured at the time of exploration.
5.0						
7.5						



DRILLED BY: Dan J. Fischer Excavating, Inc.
LOGGED BY: J. Heidgerken
COMPLETED: 06/04/20

BORING METHOD: solid-stem auger (see document text)
BORING BIT DIAMETER: 4 inches

GEODESIGN INC AN NV5 COMPANY	WLWSCHDIST-2-01	**BORING** (continued)	
	JULY 2020	WEST LINN STADIUM EXPANSION WEST LINN, OR	**FIGURE A-2**

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % (0 50 100)	COMMENTS
B-5							
0.0	▨	Medium stiff, dark gray CLAY (CL/CH), trace silt and organics (roots); moist, organics are up to 1-inch diameter (3-inch-thick root zone).					
		Very dense gray GRAVEL (GP), trace sand and clay; moist.	2.0				
2.5					◧	50/1" ▲	Surface elevation was not measured at the time of exploration.
		Exploration terminated at a depth of 2.6 feet due to refusal. SPT completed using two wraps with a cathead.	2.6				
5.0							
7.5							

DRILLED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: J. Heidgerken COMPLETED: 06/04/20

BORING METHOD: solid-stem auger (see document text) BORING BIT DIAMETER: 4 inches

GEODESIGN INC
AN NV5 COMPANY

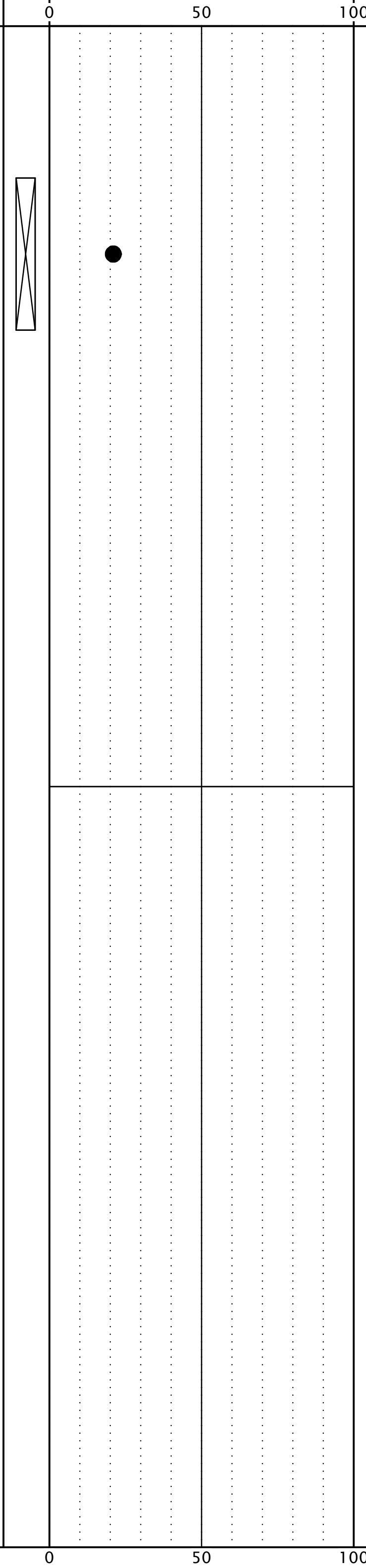
WLWSCHDIST-2-01

JULY 2020

BORING
(continued)

WEST LINN STADIUM EXPANSION
WEST LINN, OR

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % ▥ RQD% ▨ CORE REC%	INSTALLATION AND COMMENTS
0.0		Medium stiff, brown SILT with gravel and sand (ML); moist.					
		Exploration terminated at a depth of 1.0 foot due to refusal.	1.0				Surface elevation was not measured at the time of exploration.
2.5							
5.0							



DRILLED BY: GeoDesign, Inc. staff

LOGGED BY: J. Heidgerken

COMPLETED: 06/05/20

BORING METHOD: hand auger (see document text)

BORING BIT DIAMETER: 3 1/2 inches

GEODESIGN INC
AN NV5 COMPANY

WLWSCHDIST-2-01

JULY 2020

BORING HA-1

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-4

TP-1

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT (%) 0 50 100	COMMENTS
0.0	Medium stiff, brown-dark gray SILT with organics (carbonized wood, roots) (ML), minor gravel and sand; moist, organics are up to 2-inch diameter (6-inch-thick root zone).					Minor caving observed from 0.0 to 3.5 feet.
2.5			ATT	☒	●	LL = 38% PL = 24%
	Medium dense, gray GRAVEL with cobbles (GP), trace silt and sand; moist.	3.5		☒		Thick roots to 3.5 feet.
	Exploration terminated at a depth of 4.0 feet due to refusal.	4.0				No groundwater seepage observed to the depth explored.
5.0						Surface elevation was not measured at the time of exploration.
7.5						

TP-2

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT (%) 0 50 100	COMMENTS
0.0	Medium stiff, dark brown SILT (ML), trace organics (roots) and gravel; moist (topsoil, 5-inch-thick root zone).	0.4				
	Medium stiff, gray-brown CLAY with cobbles (CL), minor gravel; moist to wet, blocky.	1.5		☒ ☒	●	Slow groundwater seepage observed at 1.5 feet.
2.5	Very dense, gray-brown GRAVEL with cobbles (GP); moist.	2.0				No caving observed to the depth explored.
	Exploration terminated at a depth of 2.0 feet due to refusal.					Surface elevation was not measured at the time of exploration.
5.0						
7.5						

EXCAVATED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: J. Heidgerken COMPLETED: 06/05/20

EXCAVATION METHOD: trackhoe (see document text)

GEODESIGN INC
AN NV5 COMPANY

WLWSCHDIST-2-01

JULY 2020

TEST PIT

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-5

TP-3

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT (%) 0 50 100	COMMENTS
0.0		Medium stiff, gray-brown SILT with cobbles and organics (roots) (ML), trace sand; moist, organics are thick and up to 2 1/2-inch diameter (topsoil, 3.5-inch-thick root zone).	1.5		☒		Minor caving observed from 0.0 to 2.5 feet. Thick roots from 1.3 to 1.5 feet.
		Medium stiff, gray-light gray CLAY (CH); moist.	2.5		☒		
2.5		Very dense, gray-brown GRAVEL with cobbles and boulders (GP); moist.	3.0		☒		No groundwater seepage observed to the depth explored.
		Exploration terminated at a depth of 3.0 feet due to refusal.					Surface elevation was not measured at the time of exploration.
5.0							
7.5							

TP-4

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT (%) 0 50 100	COMMENTS
0.0		Medium stiff, brown SILT with debris (concrete fragments) and organics (roots) (ML), minor gravel and sand; moist, debris is 6- to 18-inch diameter, organics are thick and up to 2 1/2-inch diameter (3-inch-thick root zone) - **FILL**.	2.0				Minor caving observed from 0.0 to 4.0 feet.
2.5		Medium stiff, gray-brown SILT with sand and boulders (ML), trace organics (roots); moist to wet, organics are 1/8- to 1/4-inch diameter.	3.5				
		Medium stiff, gray CLAY (CH); moist.	4.0				
		Very dense, gray-brown GRAVEL with cobbles (GP); moist.	4.5				No groundwater seepage observed to the depth explored.
5.0		Exploration terminated at a depth of 4.5 feet due to refusal.					Surface elevation was not measured at the time of exploration.
7.5							

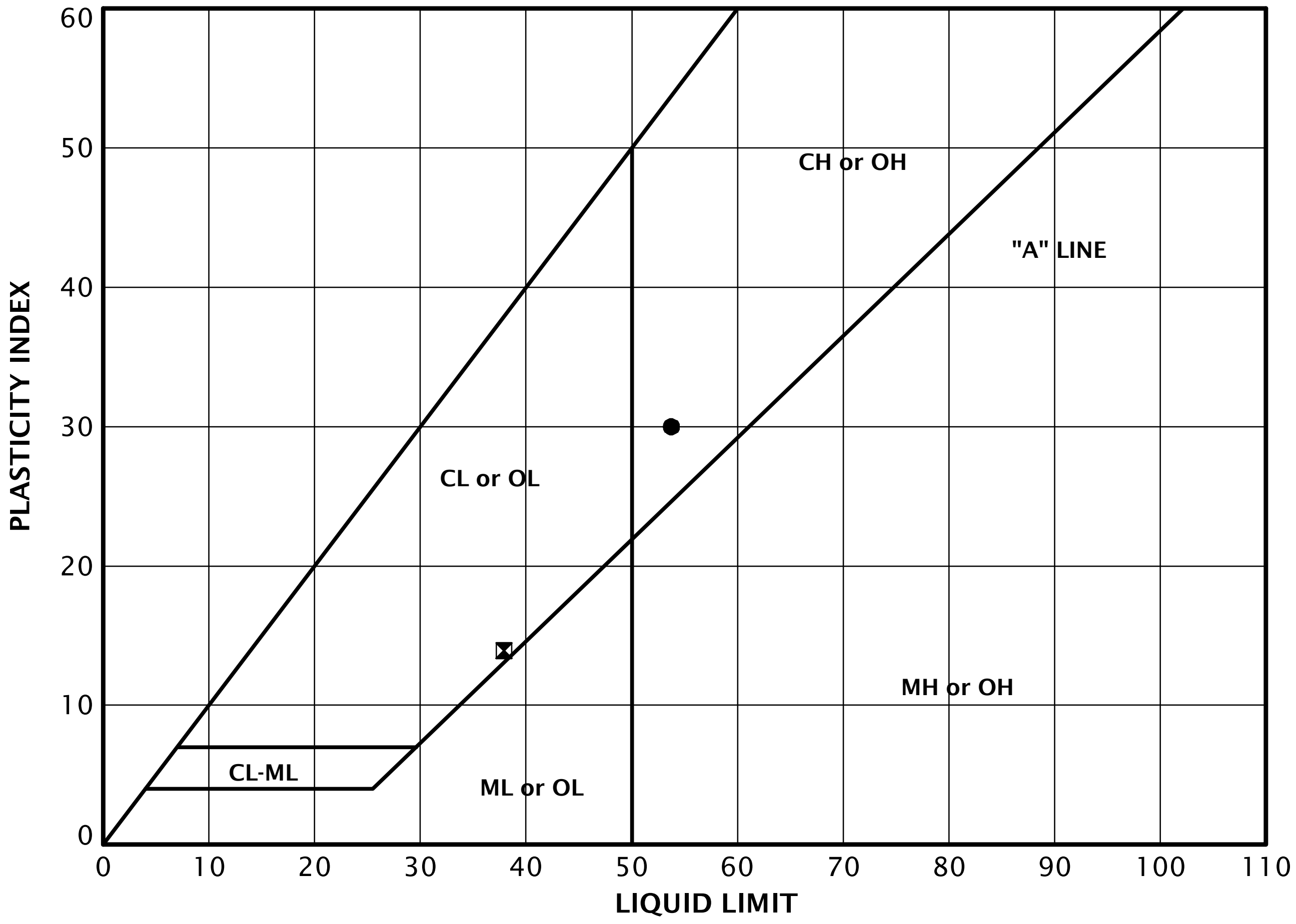
EXCAVATED BY: Dan J. Fischer Excavating, Inc.

LOGGED BY: J. Heidgerken

COMPLETED: 06/05/20

EXCAVATION METHOD: trackhoe (see document text)

GEODESIGN INC AN NV5 COMPANY	WLWSCHDIST-2-01	TEST PIT	
	JULY 2020	WEST LINN STADIUM EXPANSION WEST LINN, OR	FIGURE A-6



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
●	B-3	2.5	25	54	24	30
☒	TP-1	2.0	25	38	24	14

GEODESIGN INC
AN NV5 COMPANY

WLWSCHDIST-2-01

JULY 2020

ATTERBERG LIMITS TEST RESULTS

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-7

ATTERBERG_LIMITS 7 WLWSCHDIST-2-01-B1_5-HA1-TP1_4.GPJ GEODESIGN.GDT PRINT DATE: 7/7/20:SN

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-1	2.5		15				40			
B-2	2.5		25							
B-3	2.5		26					54	24	30
B-4	2.0		11							
HA-1	0.5		21							
TP-1	2.0		25					38	24	14
TP-2	1.0		33							

GEODESIGN INC
AN NV5 COMPANY

WLWSCHDIST-2-01

JULY 2020

SUMMARY OF LABORATORY DATA

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-8

LAB SUMMARY - GDI-NV5 WLWSCHDIST-2-01-B1_5-HA1-TP1_4.GPJ GDI_NV5.GDT PRINT DATE: 7/7/20:SN

APPENDIX B

APPENDIX B

GEOPHYSICAL TESTING

The seismic refraction testing report by Atlas is presented in this appendix. The results of testing are discussed in the main report. Locations of testing are shown on Figure 2 and in the Atlas report.

GEOPHYSICAL EVALUATION

WEST LINN HIGH SCHOOL

West Linn, Oregon

PREPARED FOR:
GeoDesign, Inc.
703 Broadway Street, Suite 650
Vancouver, WA 98660

PREPARED BY:
Atlas Technical Consultants
15115 SW Sequoia Parkway, Suite 130
Portland, OR 97224

July 1, 2020

ATLAS

15115 SW Sequoia Parkway, Suite 130
Portland, Oregon 97224
503.836.7022 | oneatlas.com

July 1, 2020

Project No. 420012SWG
Report No. 1

MR. NICK PAVEGLIO, P.E.
GEODESIGN, INC.
703 Broadway Street, Suite 650
Vancouver, WA 98660

Subject: **Geophysical Evaluation**
West Linn High School
West Linn, Oregon

Dear Mr. Paveglio:

In accordance with your authorization, Atlas (formerly Southwest Geophysics) has performed a geophysical evaluation for the project site located at West Linn High School located in West Linn, Oregon. Specifically, our evaluation consisted of performing three seismic P-wave refraction traverses at the project site. The purpose of our study was to develop subsurface velocity profiles of the areas studied, and to assess the depth to bedrock and apparent rippability of the subsurface materials. Our field services were conducted on June 18, 2020. This data report presents our methodology, equipment used, analysis, and results.

If you have any questions, please call us at 503.836.7022.

Respectfully submitted,

Andrew Baird

Andrew S. Baird
Project Geophysicist

Hans van de Vrugt

Hans van de Vrugt, P.Gp (CA).
Principal Geologist/Geophysicist

ASB :HV :ds

Distribution: npaveglio@geodesigninc.com

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2. SCOPE OF SERVICES 1
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4. STUDY METHODOLOGY 1
5. RESULTS AND CONCLUSIONS 2
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Figure 2 – Line Location Map
Figure 3 – Site Photographs
Figure 4a – P-Wave Profile, SL-1
Figure 4b – P-Wave Profile, SL-2
Figure 4c – P-Wave Profile, SL-3

1. INTRODUCTION

In accordance with your authorization, Atlas (formerly Southwest Geophysics) has performed a geophysical evaluation for the project site located at West Linn High School located in West Linn, Oregon (Figure 1). Specifically, our evaluation consisted of performing three seismic P-wave refraction traverses at the project site. The purpose of our study was to develop subsurface velocity profiles of the areas studied, and to assess the depth to bedrock and apparent rippability of the subsurface materials. Our field services were conducted on June 18, 2020. This data report presents our methodology, equipment used, analysis, and results.

2. SCOPE OF SERVICES

Our scope of services included:

- Performance of three seismic P-wave refraction traverses at the project site.
- Compilation and analysis of the data collected.
- Preparation of this data report presenting our results and conclusions.

3. SITE AND PROJECT DESCRIPTION

The project site is generally located west of Skyline Drive, on the northwest side of West Linn High School in West Linn, Oregon (Figure 1). The study area is located in a cleared patch of dense forest. Wet soil and mud limited access in portions of the site. Figures 2 and 3 present the general site conditions in the areas of the seismic traverses.

4. STUDY METHODOLOGY

A seismic P-wave (compression wave) refraction study was conducted at a portion of the project site to evaluate the rippability characteristics of the subsurface materials and to develop subsurface velocity profiles of the areas studied. The seismic refraction method uses first-arrival times of refracted seismic waves to estimate the thicknesses and seismic velocities of subsurface layers. Seismic P-waves generated at the surface, using a hammer and plate, are refracted at boundaries separating materials of contrasting velocities. These refracted seismic waves are then detected by a series of surface vertical component 30-Hz geophones and recorded with a 24-channel Geometrics Geode seismograph. The travel times of the seismic P-waves are used in conjunction with the shot-to-geophone distances to obtain thickness and velocity information on the subsurface materials.

Three seismic lines (SL-1 through SL-3) were conducted in the study area. The general locations and lengths of the lines were selected by you and your office. The lines were 100, 125 and 150 feet in length. Shot points (signal generation locations) were conducted along the lines at the ends, midpoint, and intermediate points between the ends and the midpoint.

The seismic refraction theory requires that subsurface velocities increase with depth. A layer having a velocity lower than that of the layer above will not generally be detectable by the seismic refraction method and, therefore, could lead to errors in the depth calculations of subsequent layers. In addition, lateral variations in velocity, such as those caused by core stones, intrusions or boulders can also result in the misinterpretation of the subsurface conditions. In general, the effective depth of evaluation for a seismic refraction traverse is approximately one-third to one-fifth the length of the spread.

The seismic P-wave velocity of a material can be correlated to rippability (see Table 1 below), or to some degree "hardness." Table 1 is based on published information from the Caterpillar Performance Handbook (Caterpillar, 2018), as well as our experience with similar materials, and assumes that a Caterpillar D-9 dozer ripping with a single shank is used. We emphasize that the cutoffs in this classification scheme are approximate and that rock characteristics, such as fracture spacing and orientation, play a significant role in determining rock quality or rippability. The rippability of a mass is also dependent on the excavation equipment used and the skill and experience of the equipment operator.

Table 1 – Rippability Classification

Seismic P-wave Velocity	Rippability
0 to 2,000 feet/second	Easy
2,000 to 4,000 feet/second	Moderate
4,000 to 5,500 feet/second	Difficult, Possible Blasting
5,500 to 7,000 feet/second	Very Difficult, Probable Blasting
Greater than 7,000 feet/second	Blasting Generally Required

For trenching operations, the rippability values should be scaled downward. For example, velocities as low as 3,500 feet/second may indicate difficult ripping during trenching operations. In addition, the presence of boulders, which can be troublesome in narrow trenching operations, should be anticipated.

It should be noted that the rippability cutoffs presented in Table 1 are slightly more conservative than those published in the Caterpillar Performance Handbook. Accordingly, the above classification scheme should be used with discretion, and contractors should not be relieved of making their own independent evaluation of the rippability of the on-site materials prior to submitting their bids.

5. RESULTS AND CONCLUSIONS

As previously indicated, three seismic traverses were conducted as part of our study. Figures 4a through 4c present the velocity models generated from our analysis. Based on the results it appears that the project site is underlain by low velocity materials (i.e., topsoil, fill, etc.) in the near surface and higher velocity materials, likely bedrock, at shallow depths. Distinct vertical and lateral velocity variations are evident in the models. Moreover, the degree of weathering and the depth to possible bedrock appears to be variable across the study area.

Based on the refraction results, variability in the excavatability (including depth of rippability) of the subsurface materials should be expected across the project area. Furthermore, blasting may be required depending on the excavation depth, location, equipment used, and desired rate of production. In addition, oversized materials should be expected. A contractor with excavation experience in similar difficult conditions should be consulted for expert advice on excavation methodology, equipment and production rate.

6. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Atlas should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

7. SELECTED REFERENCES

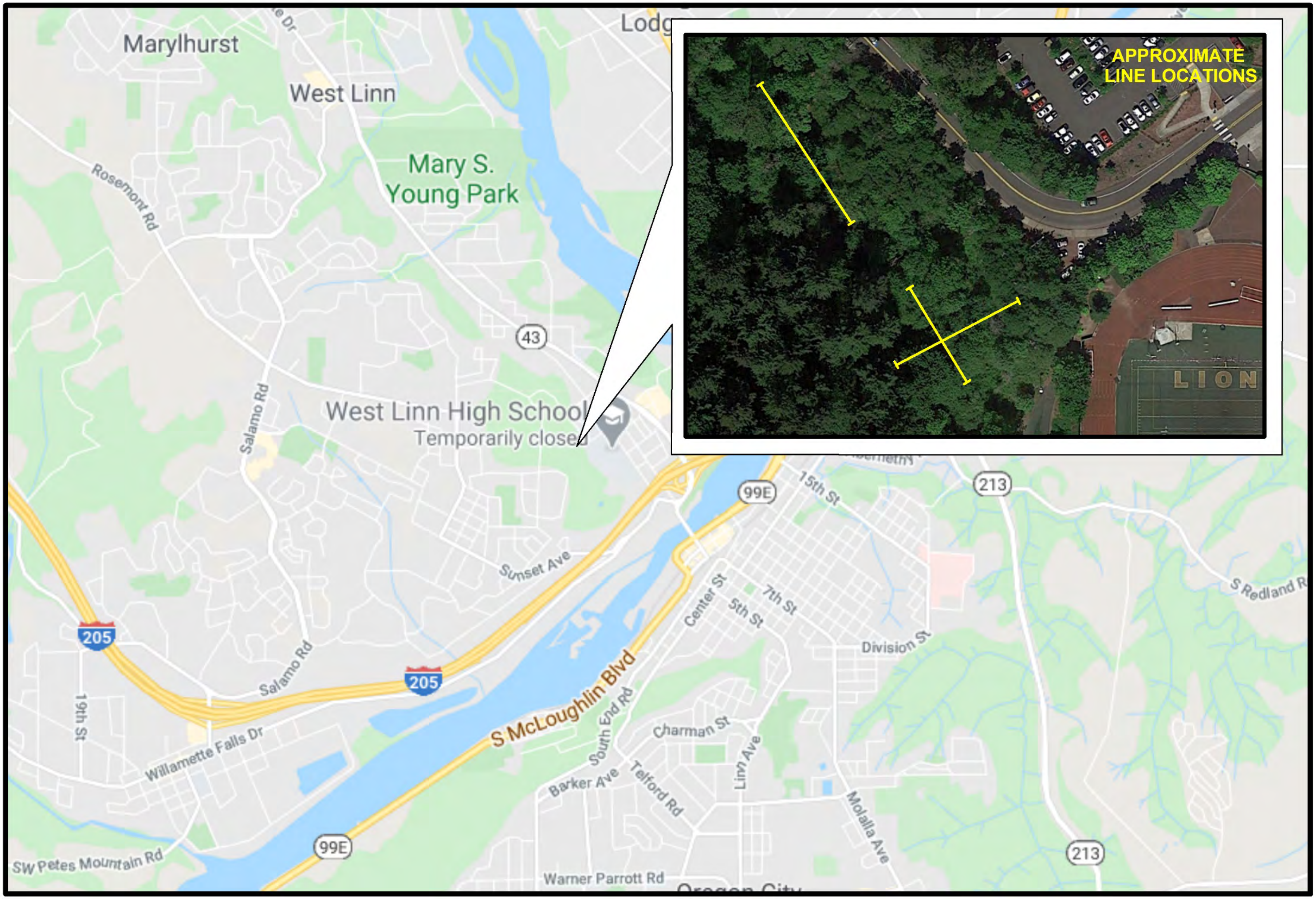
Caterpillar, Inc., 2018, Caterpillar Performance Handbook, Edition 48, Caterpillar, Inc., Peoria, Illinois.

Mooney, H.M., 1976, Handbook of Engineering Geophysics, dated February.

Optim, Inc., 2008, SeisOpt Pro, V-5.0.

Rimrock Geophysics, 2003, Seismic Refraction Interpretation Program (SIPwin), V-2.76.

Telford, W.M., Geldart, L.P., Sheriff, R.E., and Keys, D.A., 1976, Applied Geophysics, Cambridge University Press.



SITE LOCATION MAP

N

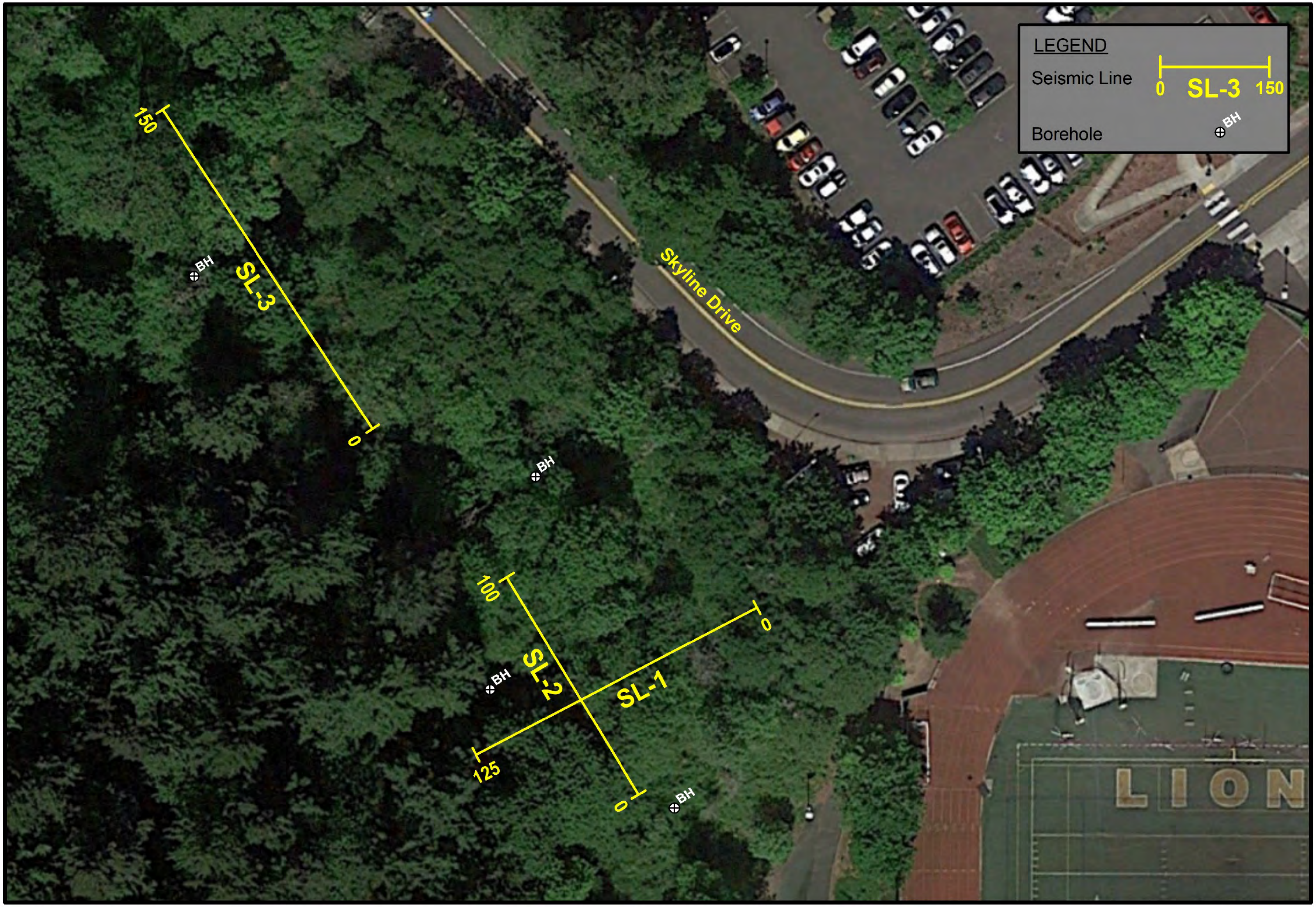
West Linn High School
West Linn, Oregon

Project No.: 420012SWG

Date: 07/20

ATLAS

Figure 1



LINE LOCATION MAP

N

West Linn High School
West Linn, Oregon

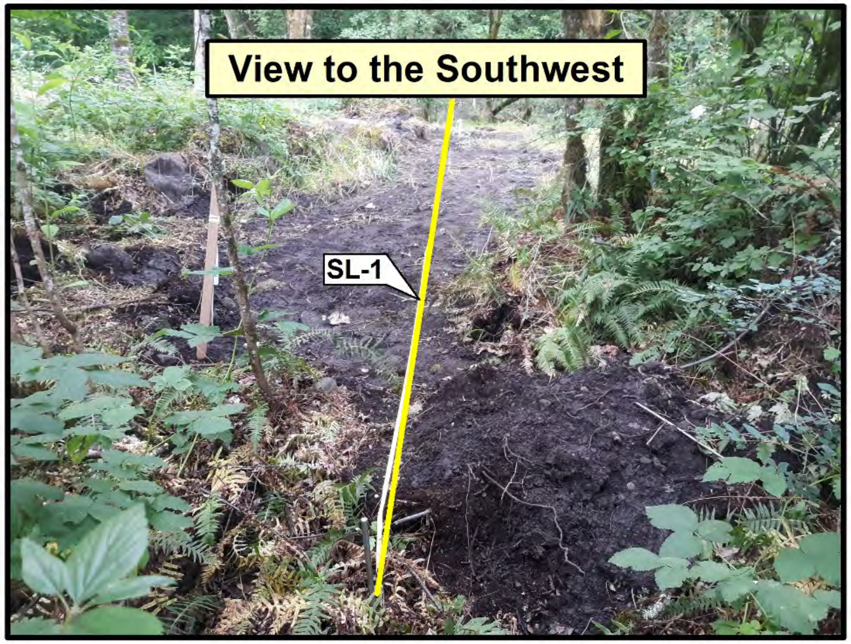
Project No.: 420012SWG

Date: 07/20

ATLAS

Figure 2

approximate scale in feet



SITE PHOTOGRAPHS

West Linn High School
West Linn, Oregon

Project No.: 420012SWG

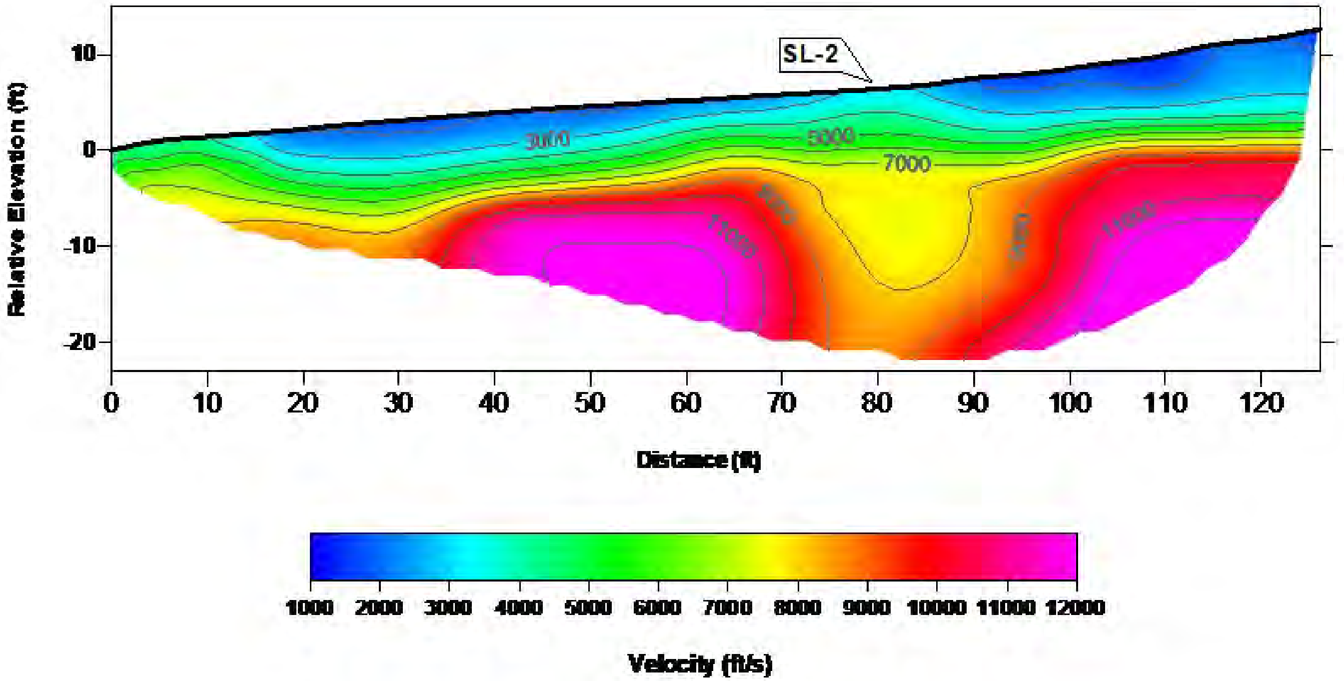
Date: 07/20

ATLAS

Figure 3

TOMOGRAPHY MODEL

SL-1



SEISMIC PROFILE

West Linn High School
West Linn, Oregon

Project No.: 420012SWG | Date: 07/20

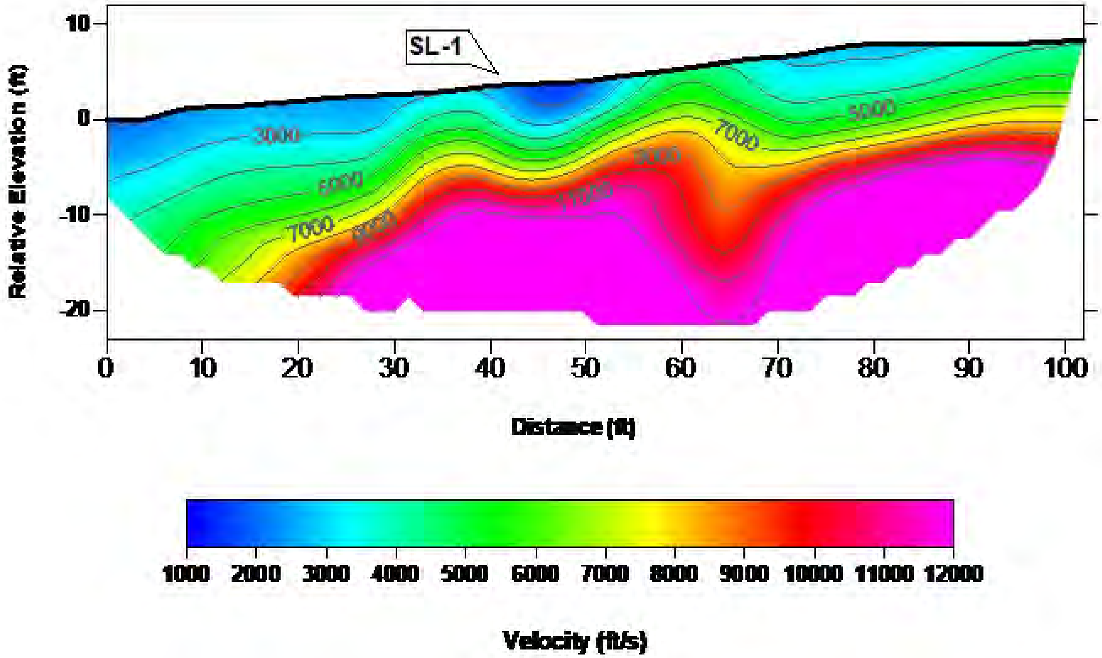
ATLAS

Figure 4a

Note: Contour Interval = 1,000 feet per second

TOMOGRAPHY MODEL

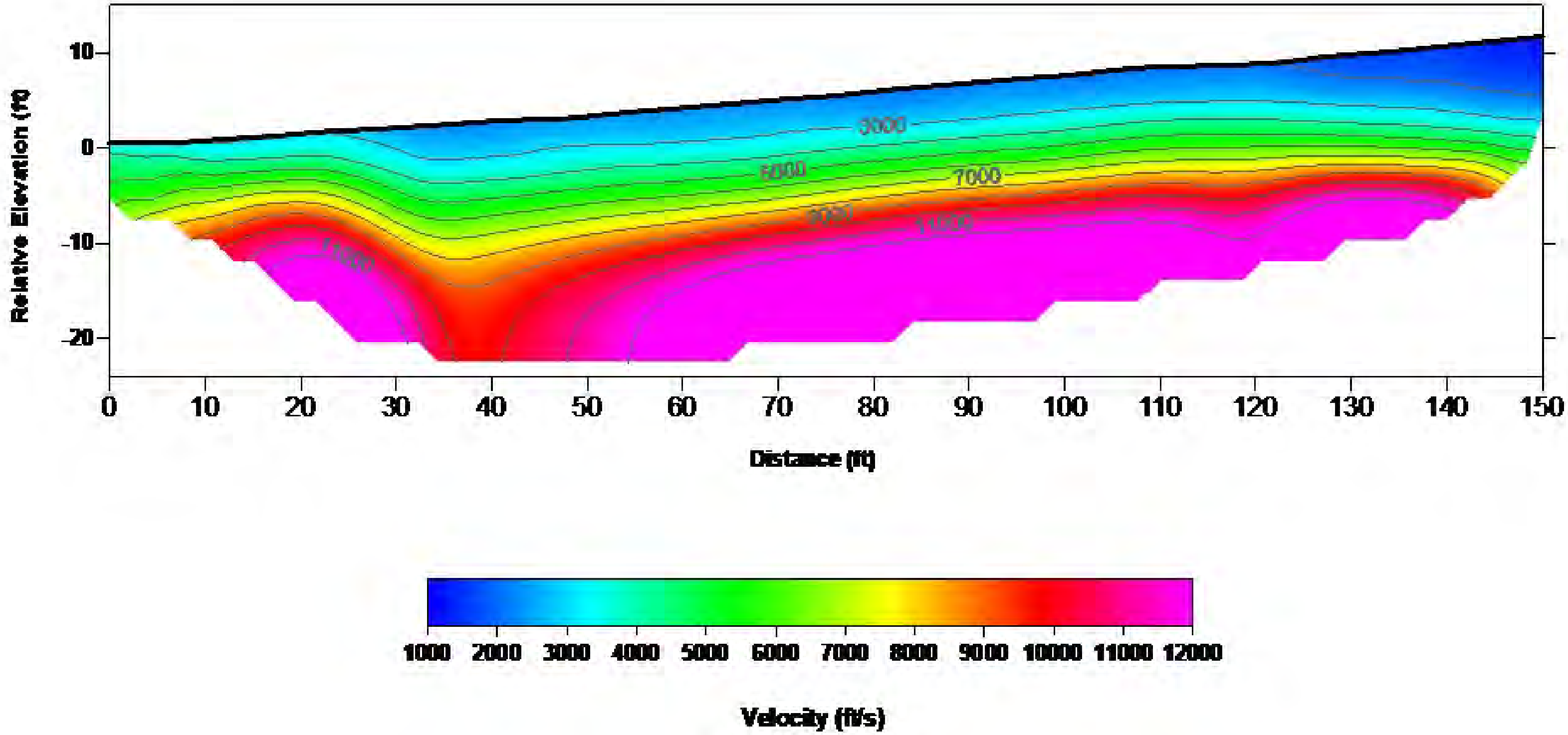
SL-2



SEISMIC PROFILE	West Linn High School West Linn, Oregon Project No.: 420012SWG Date: 07/20	ATLAS Figure 4b	**Note: Contour Interval = 1,000 feet per second**

TOMOGRAPHY MODEL

SL-3



SEISMIC PROFILE

West Linn High School
West Linn, Oregon

Project No.: 420012SWG

Date: 07/20

ATLAS

Figure 4c

Note: Contour Interval = 1,000 feet per second

APPENDIX C

APPENDIX C

SITE-SPECIFIC SEISMIC HAZARD EVALUATION

INTRODUCTION

The information in this appendix summarizes the results of a site-specific seismic hazard study for the proposed stadium expansion project at West Linn High School located at 5464 West A Street in West Linn, Oregon. This seismic hazard evaluation was performed in accordance with the requirements of the 2019 SOSSC (Section 1803.6.1).

SITE CONDITIONS

REGIONAL GEOLOGY

The site is located west of the Willamette River and east of the Tualatin Mountains (or Portland Hills) in the Portland Basin. The Tualatin Mountains form the physiographic boundary between the Portland Basin to the east and the Tualatin Basin to the west. These basins are part of the larger Puget Sound-Willamette Valley physiographic province, a tectonically active lowland situated between the Coast Ranges to the west and the Cascade Mountains to the east (Orr and Orr, 1999).

The Portland Basin is described as a fault-bounded, pull-apart basin that was formed by two northwest-trending fault zones (Pratt et al., 2001). The Portland Hills fault zone trends along the west side of the basin and the Frontal fault zone trends along the east side of the basin near Lacamas Lake, east of Vancouver, Washington. The Portland Basin is underlain by volcanic bedrock and contains a thick sequence of sedimentary deposits that lap onto the uplifted bedrock highlands at the basin margins.

The near-surface geology at the stadium and proposed parking lot are mapped as the Miocene aged Sentinel Bluffs basalt member consisting of basaltic andesite from lava flows. Just above the stadium and on the steep slopes west of the proposed parking area is Miocene aged Gingko basalt. The Gingko basalt is also derived from lava flows and consists of basaltic andesite.

SUBSURFACE CONDITIONS

The subsurface conditions at the site consist of less than 5 feet of silt, clay, or gravel on top of basalt. A detailed description of site subsurface conditions is presented in the main report.

SEISMIC SETTING

Earthquake Source Zones

Three scenario earthquakes were considered for this study consistent with the local seismic setting. Two of the possible earthquake sources are associated with the CSZ, and the third event is a shallow, local crustal earthquake that could occur in the North American Plate. The three earthquake scenarios are discussed below.

Regional Events

The CSZ is the region where the Juan de Fuca Plate is being subducted beneath the North American Plate. This subduction is occurring in the coastal region between Vancouver Island and northern California. Evidence has accumulated suggesting that this subduction zone has generated eight great earthquakes in the last 4,000 years, with the most recent event occurring approximately 300 years ago (Weaver and Shedlock, 1991). The fault trace is mapped approximately 50 to 120 km off the Washington Coast.

Two types of subduction zone earthquakes are possible and considered in this study:

1. An interface event earthquake on the seismogenic part of the interface between the Juan de Fuca Plate and the North American Plate on the CSZ. This source is reportedly capable of generating earthquakes with a moment magnitude of between 8.5 and 9.0.
2. A deep intraplate earthquake on the seismogenic part of the subducting Juan de Fuca Plate. These events typically occur at depths of between 30 and 60 km. This source is capable of generating an event with a moment magnitude of up to 7.5.

Local Events

A significant earthquake could occur on a local fault near the site within the design life of the facility. Such an event would cause ground shaking at the site that could be more intense than the CSZ events, although the duration would be shorter. Figure C-1 shows the locations of faults with potential Quaternary movement within a 40-km radius of the site. Figure C-2 shows the interpreted locations of seismic events that occurred between 1904 and 2020.

Table C-1 presents the relative distance, displacement, and estimated age of the crustal faults that may present a hazard to the site. The most significant faults in the site vicinity are the Bolton, Oatfield, Portland Hills, and Canby-Molalla. The mapped distance and discussion of these faults is provided below.

Table C-1. Nearest Mapped Crustal Faults

Source	Closest Mapped Distance[1] (km)	Mapped Length[1] (km)	Estimated Displacement Description	Estimate Age	Estimated Slip Rate (mm/yr)
Bolton	0.45	9	Prominent northeast-facing escarpment in volcanic rocks of the Miocene Columbia River Basalt	Undifferentiated Quaternary (1.6 million years before present)	<0.2
Oatfield	3.2	29	Offsets Columbia River Basalt flows and overlying fluvial and lacustrine deposits. (Does not offset Missoula flood deposits)	Quaternary (< 1.6 million years before present)	<0.2
Portland Hills	5.1	49	Potential offset of Missoula flood deposits by means of geophysical techniques and trench excavation.	Late Quaternary (< 15,000 years before present)	<0.2
Canby-Molalla	6.7	50	Potential offset of the Eocene basement and volcanic rocks of the Miocene Columbia River Basalt	Late Quaternary (< 15,000 years before present)	<0.2

1. Reported by USGS
2. Slip rates of all faults are less than 1 mm/yr and the site is not considered near-fault per ASCE-7-16 – 11.4.1.

DESIGN EARTHQUAKE

We anticipate that the fundamental period of the stadium expansion structure will be between 0.25 and 0.5 second. Deaggregation in the anticipated fundamental building period range using the USGS Unified Hazard tool (https://earthquake.usgs.gov/hazards/interactive/ [latitude = 45.363579, longitude = -122.-122.618317]) indicates the CSZ comprises approximately one-third to one-half of the seismic hazard at the site. The remaining hazard is comprised local events and the deep intraplate events. The Portland Hills fault is the largest contributor to the seismic hazard of the remaining sources.

SEISMIC DESIGN PARAMETERS

Based on geologic mapping and explorations, the site is underlain by shallow basalt. It is our opinion that the amplification factors prescribed by ASCE 7-16 for a seismic Site Class of B are appropriate for design and a site-response analysis is not required. The parameters in Table C-2 can be used for design of the building.

Table C-2. Seismic Design Parameters per ASCE 7-16

Seismic Design Parameter	Short Period (T_s = 0.2 second)	1 Second Period (T_1 = 1.0 second)
MCE Spectral Acceleration	S_s = 0.840 g	S_1 = 0.376 g
Site Class	B	
Site Coefficient	F_a = 0.9	F_v = 0.8
Adjusted Spectral Acceleration	S_{MS} = 0.756 g	S_{M1} = 0.301 g
Design Spectral Response Acceleration Parameters	S_{DS} = 0.504 g	S_{D1} = 0.201 g

Table C-2 and Table 2 in the main report are the same.

GEOLOGIC HAZARDS

The following sections provide additional discussion regarding potential seismic hazards that could affect the site.

SURFACE FAULT RUPTURE

The closest mapped fault to the site is the Bolton fault. Consequently, it is our opinion that the probability of surface fault rupture beneath the site is low.

LIQUEFACTION AND LATERAL SPREAD

Liquefaction is caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles to near zero. Granular soil, which relies on interparticle friction for strength, is susceptible to liquefaction until the excess pore pressure can dissipate. In general, loose, saturated sand soil with low silt and clay content is the most susceptible to liquefaction.

Lateral spreading is a liquefaction-related seismic hazard and occurs on gently sloping or flat sites underlain by liquefiable sediment adjacent to an open face, such as a riverbank. Liquefied soil adjacent to an open face can flow toward the open face, resulting in lateral ground displacement. The primary difference between a conventional slope stability failure and lateral spreading is that no distinct failure plane is formed during a lateral spreading event. Liquefied soil flows downslope or to an exposed bank like the behavior of a viscous fluid. As described in the main report, lateral spreading is not a design consideration at the site.

Based on the soil and groundwater conditions at the site, liquefaction and lateral spreading are not design considerations.

GROUND MOTION AMPLIFICATION

Soil capable of significantly amplifying ground motions beyond the levels determined by our site-specific seismic response analysis were not encountered during the subsurface investigation program. The main report provides a detailed description of the subsurface conditions encountered. We conclude that the level of amplification associated with a seismic Site Class B and amplification based on ASCE 7-16 is appropriate for the site.

LANDSLIDES

An approximately 1.35-acre landslide is mapped approximately 700 feet southwest of the site in the Gingko basalt and a large, 22-acre landside is mapped approximately 1,000 feet northwest of the site at the interface of the Sentinel Bluffs and Gingko basalt. Based on geologic mapping, the interface of the Sentinel Bluff and Gingko basalt is present just west of the project area. As part of our work, a geologic reconnaissance was completed on the lower portions of the slopes adjacent to the project to identify landscape features. A summary of the reconnaissance is described in the "Geologic Reconnaissance" section.

Based on the results of the reconnaissance, landslide features are not present in the lower portion of the adjacent slopes and the potential for shallow landslides near the project area is low. Due to vegetative cover and steepness, our scope of services did not include a study of the upper portions of the slopes surrounding the site. Based on the mapped landslides in the area, there is a potential for large, deep-seeded landslides to affect the area.

SETTLEMENT

Settlement due to earthquakes is most prevalent in relatively deep deposits of dry, clean sand. We do not anticipate that significant settlement in addition to liquefaction-induced settlement will occur during design levels of ground shaking.

SUBSIDENCE/UPLIFT

Subduction zone earthquakes can cause vertical tectonic movements. The movements reflect coseismic strain release accumulation associated with interplate coupling in the subduction zone. Based on our review of the literature, the locked zone of the CSZ is located in excess of 60 miles from the site. Consequently, we do not anticipate that subsidence or uplift is a significant design concern.

LURCHING

Lurching is a phenomenon generally associated with very high levels of ground shaking, which cause localized failures and distortion of the soil. Lurching of the soil is not a design consideration for the project based the subsurface conditions at the site.

SEICHE AND TSUNAMI

The site is inland and elevated away from tsunami inundation zones and away from large bodies of water that may develop seiches. Seiches and tsunamis are not considered a hazard in the site vicinity.

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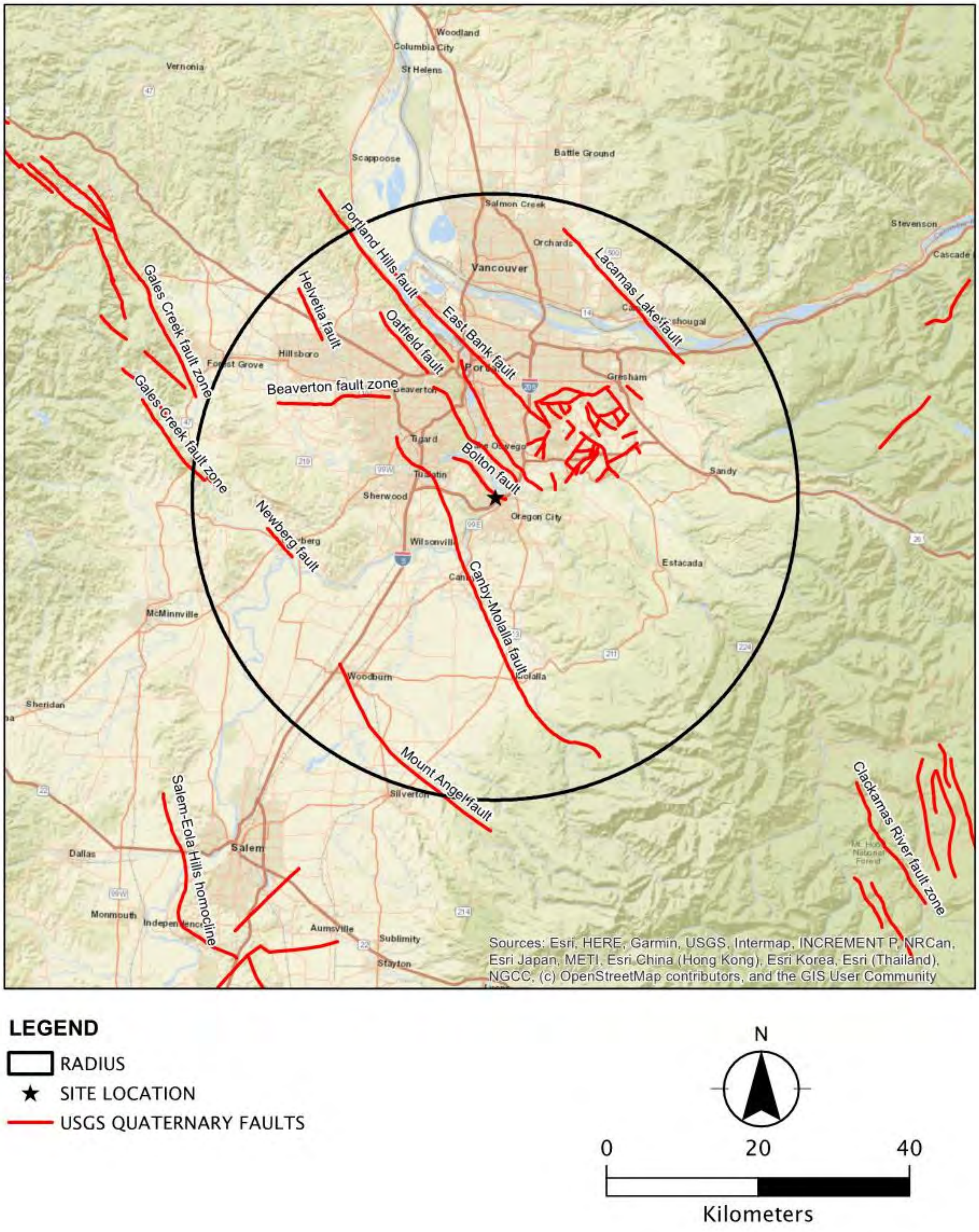

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GEODESIGN INC
AN NV5 COMPANY

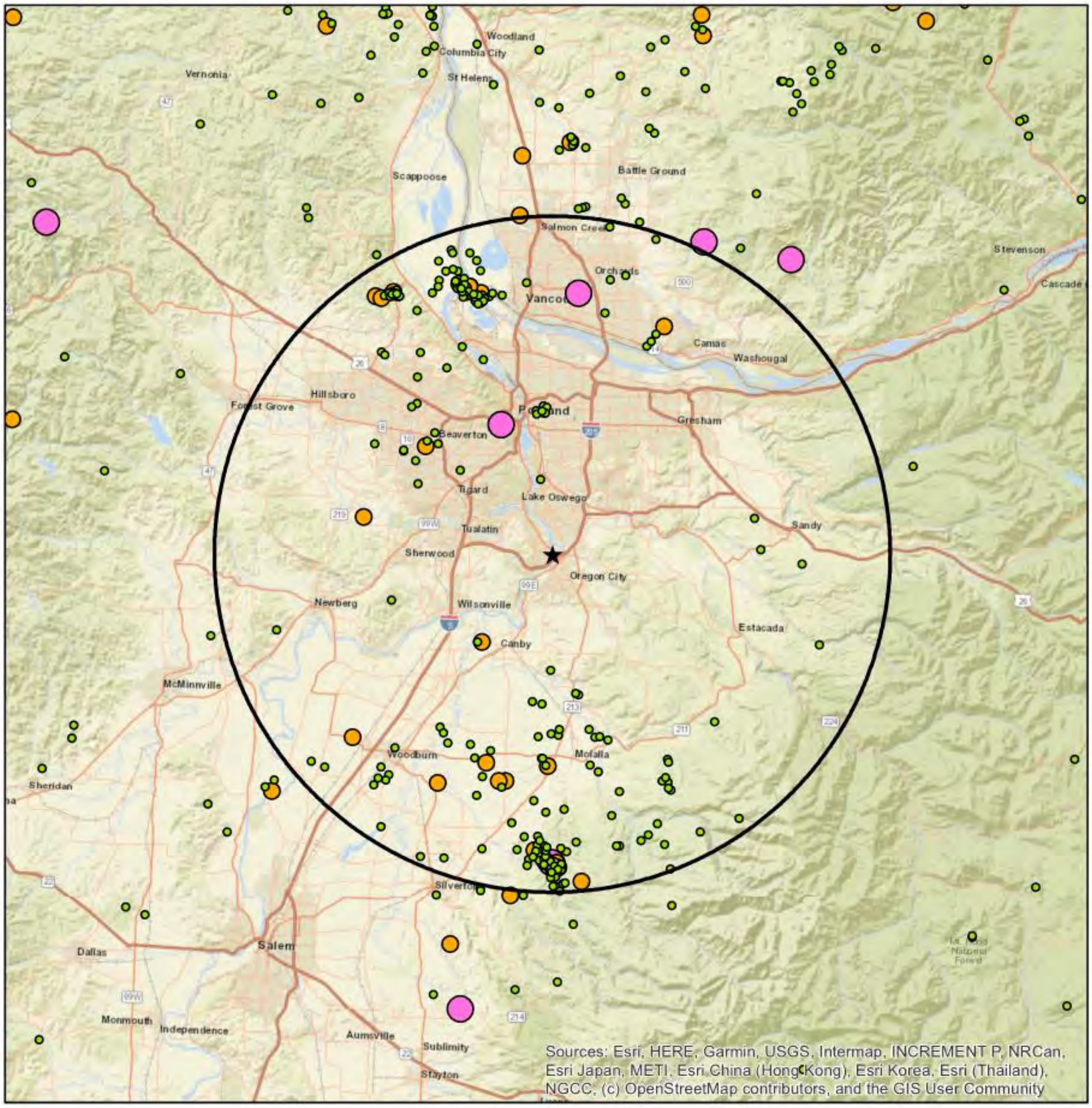
WLWSCHDIST-2-01

JULY 2020

QUATERNARY FAULT MAP

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE C-1



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

LEGEND

▭ RADIUS

★ SITE LOCATION

INSTRUMENTAL EARTHQUAKE MAGNITUDE

- ● 2.0 - 3.0
- ● 3.0 - 4.0
- ● 4.0 - 6.0
- ● > 6.0

N

0 20 40

Kilometers

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Earthquakes in figure are from 1904-2020.

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GEODESIGN INC AN NV5 COMPANY	WLWSCHDIST-2-01	**HISTORICAL SEISMICITY MAP**	
	JULY 2020	WEST LINN STADIUM EXPANSION WEST LINN, OR	**FIGURE C-2**

PRELIMINARY STORM WATER REPORT

WEST LINN HIGH SCHOOL
STADIUM AND PARKING ADDITIONS
WEST LINN, OR

January 26, 2021
Revised from October 7, 2020

Applicant:

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I hereby certify that this Stormwater Management Report for the West Linn High School Stadium and Parking Additions has been prepared by me or under my supervision and meets minimum standards of West Linn, OR and normal standards of engineering practice. I hereby acknowledge and agree that the jurisdiction does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities designed by me.

EXECUTIVE SUMMARY

The existing site is located on private property at 5464 West A St in West Linn, Oregon and consists of seven tax lots; 22E3000800, 22E39CA10300, 22E30CA10100, 22E30CA10200, 22E30CD04500, 22E30CD04501 and 22E30CD04502 (See Figure 2). The total area of the school is 40.58 acres, but the proposed project will disturb a total area of 2.329 acres, 0.954 acres for the north parking lot, 1.094 for the stadium improvements and 0.281 acres for the south parking lot.

The proposed project will consist of constructing a new parking lot (north parking lot), explanding the existing stadium and making improvements to an existing parking lot (south parking lot). Due to the nature of the project, the site has been split into 3 separate basins: North Parking Lot, Stadium and South Parking Lot.

Each basin will have its own water quality treatment and detention facility. Water quality will be provided using BayFilter Cartridges and detention for the North Parking Lot and Stadium will be provided in ADS StormTech Chambers and the South Parking Lot will detain in an existing pond to the south. The existing pond will be modified to account for the increased runoff from the south parking lot. Mechanical treatment and underground detention were determined to be the best option for the proposed site based on preservation of the natural environment, slope stability that could be an issue for larger systems, and the cost of excavation into rocky areas.

The new water quality facilities have been sized to comply with the following requirements:

- Per chapter 1 of the City of Portland Stormwater Management Manual, pollution reduction facilities using a flow-based design approach shall use the rational method to size it. Per table 1-2 of the Portland SWMM, a rainfall intensity of 0.19 in/hr will be used to size the pollution reduction facilities.

Additionally, the detention facilities are sized to comply with the following requirements:

- Per section 2.0013 of the West Linn Public Works Design Standards, post-developed discharge rates for the 2, 10, and 25-year storm events shall not exceed the predeveloped discharge rates.

In accordance with section 2.0013 of the West Linn Public Works Design Standards, all stormwater conveyance pipes are designed to convey up to the 10-year storm event. Additionally, conveyance will be modeled up to the 100-year storm event to ensure no out of system flooding occurred.

A geotechnical investigation was completed in July of 2020. Based on the infiltration testing done by the Geotechnical Engineer, infiltration is not feasible for the site.

The purpose of this preliminary stormwater report is to show that the new impervious area will be treated and detained per the requirements of the City of West Linn.

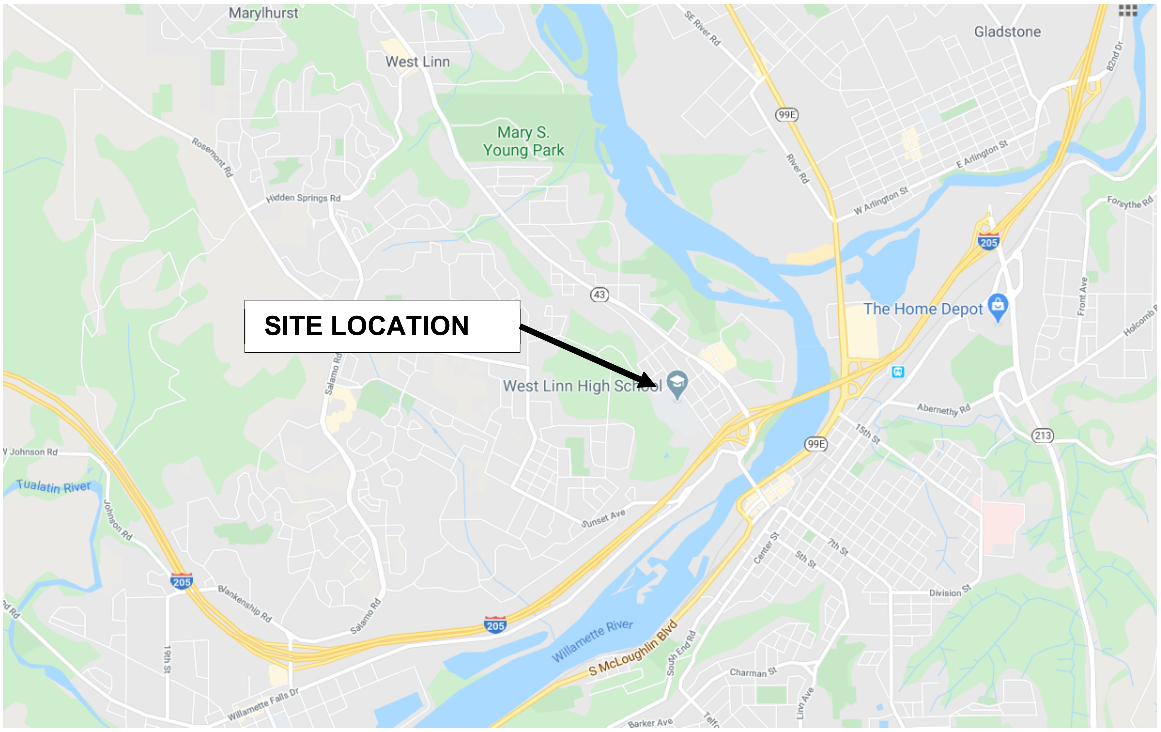


Figure 1 - Vicinity Map

Figure 2 - Site Location

EXISTING CONDITIONS

Site

The existing site currently contains an existing stadium and parking lot. Elevations onsite range from 310' to 275' for the North Parking Lot, 295' to 263' for the Stadium and 251' to 240' for the South Parking Lot. The site currently contains an existing stadium and parking lot. The basin for the North Parking Lot is undeveloped and heavily vegetated.

Climate

The site is located in Clackamas County approximately 12 miles south of downtown Portland in the West Linn foothills. Average annual rainfall recorded in this area is 45 inches.

Flood Map

The flood plain map shows that the site resides in Zone X (unshaded). FEMA's definition of Zone X (unshaded is an area of minimal flood hazard (See Technical Appendix: Exhibits – National Flood Hazard Layer FIRMette).

Site Geology

The soil types as classified by the United States Department of Agriculture Soil Survey of Clackamas County are presented in Table 1, 2 and 3.

Soil Classification	Hydrologic Soils Group	Percent of AOI
Witzel Very Stony Silt Loam	D	1.1
Xerochrepts and Haploxerolls	B	98.9

Table 1 – Hydrologic Soils Group (North Parking Lot)

Soil Classification	Hydrologic Soils Group	Percent of AOI
Witzel Very Stony Silt Loam	D	32.4
Xerochrepts and Haploxerolls	B	67.6

Table 2 – Hydrologic Soils Group (Stadium)

Soil Classification	Hydrologic Soils Group	Percent of AOI
Witzel Very Stony Silt Loam	D	100

Table 3 – Hydrologic Soils Group (South Parking Lot)

A geotechnical investigation was completed in July of 2020. Infiltration rates were calculated at two different test pits, one 2 ft BGS and one 4 ft BGS. The measured infiltration rate for each test pit was ~0 in/hour. Based on the infiltration testing done by the Geotechnical Engineer, infiltration is not feasible for the site.

Existing Drainage

The existing condition for the site location of the north parking lot is undeveloped. There are no existing drainage systems onsite. There is an existing drainage system in the right of way, along Skyline Dr.

The existing conditions in the location of the stadium is developed and is currently the location of an existing stadium. Currently runoff from the stadium and track are conveyed to the south.

The existing conditions in the location of the south parking lot is currently developed and the location of an existing parking lot. Runoff is currently conveyed to a pond south of the proposed south parking lot renovations.

Basin Areas

Tables 4, 5 and 6 show the existing basin areas for the North Parking Lot, Stadium and South Parking Lot, respectively.

Existing Onsite Basin Area	ft^2	Acres
Impervious Area	278	0.007
Pervious Area	40,992	0.940
Total Existing Onsite Basin Area	**41,270**	**0.954**

Table 4 – Existing Basin Areas (North Parking Lot)

Existing Onsite Basin Area	ft^2	Acres
Impervious Area	17,189	0.394
Pervious Area	30,226	0.694
Total Existing Onsite Basin Area	**47,215**	**1.088**

Table 5 – Existing Basin Areas (Stadium)

Existing Onsite Basin Area	ft^2	Acres
Impervious Area	4,970	0.114
Pervious Area	5,758	0.132
Total Existing Onsite Basin Area	**10,728**	**0.246**

Table 6 – Existing Basin Areas (South Parking Lot)

Curve Number

The major factors for determining the CN values are hydrologic soil group, cover type, treatment, hydrologic condition, and antecedent runoff condition. The curve number represents runoff potential from the ground. Table 2-2a in the TR-55 manual was used to determine the appropriate curve numbers (See Technical Appendix: Exhibits – Table 2-2a Runoff Curve Numbers).

The predeveloped site is assumed to be woods in good condition. The corresponding CN for predeveloped conditions is 55 and 77 for hydrologic soils group B and D, respectively. The post-developed site is assumed to be primarily open space in fair condition. The corresponding CN for Post-developed conditions is 69 and 84 for hydrologic soils group B and D. All impervious area has a CN of 98.

Time of Concentration

The time of concentration was calculated for the existing site in the location of the north parking lot using the TR-55 Method, the existing contours and assuming the site was woods with dense grass. A time of concentration was calculated to be 41 minutes (See Technical Appendix: Calculations – Time of Concentration). Due to the size and flow path of all other basins, a time of concentration of 5 minutes were assumed for the stadium basin and south parking lot. A time of concentration for the post-developed site was assumed to be 5 minutes.

POST-DEVELOPED CONDITIONS

Post-Developed Site

The proposed project will construct a new parking lot north of the existing stadium, expand the existing stadium, and expand the existing south parking lot.

Runoff from the north parking lot will be conveyed to a BayFilter Manhole, located in the southeast corner of the parking lot to be treated. After treatment water will be detained in a MC4500 ADS StormTech Chamber and then discharged to the existing drainage system in Skyline Dr. Due to the existing grading of the site, some area within the project limits cannot be conveyed to the proposed drainage system (See Technical Appendix: Exhibits – Post Construction Conditions – Parking Lot and Stadium-Basin 12). As per existing conditions, the offsite basin will drain to the existing storm system in Skyline Dr.

Runoff from the stadium and walkways will be convey to a BayFilter Manhole in the north side of the basin to be treated. After treatment water will be detained in an MC4500 StormTech Chamber and discharged to the existing drainage system in Skyline Dr. Due to the existing grading of the site, some area within the project limits cannot be conveyed to the proposed drainage system (See Technical Appendix: Exhibits – Post Construction Conditions – Parking Lot and Stadium-Basin 13). Basin 13 is split between two separate basins. As per existing conditions, part of this basin will drain to the existing drainage system for the school and part of it will go to the system south of the stadium.

Runoff from the south parking lot will sheet flow to an ADS StreamFilter Catch Basin, where it will be treated. Water will then be detained in an existing pond to the south and then discharged to an existing drainage system to the east. The existing pond and flow control structure will be modified to accommodate the proposed south parking lot improvements.

Basin Areas

Tables 7, 8 and 9 show the post-developed impervious and pervious areas for the North Parking Lot, Stadium and South parking Lot, respectively (See Technical Appendix: Exhibits – Post-Developed Site Conditions).

Post-Developed Basin Area	ft^2	Acres
Impervious Area	32,069	0.736
Pervious Area	9,201	0.211
Total Post-Developed Basin Area	**41,270**	**0.947**

Table 7 – Post-Developed Basin Areas (North Parking Lot)

Post-Developed Basin Area	ft^2	Acres
Impervious Area	27,442	0.630
Pervious Area	19,973	0.458
Total Post-Developed Basin Area	**47,415**	**1.088**

Table 8 – Post-Developed Basin Areas (Stadium)

Post-Developed Basin Area	ft^2	Acres
Impervious Area	8,849	0.203
Pervious Area	1,879	0.043
Total Post-Developed Basin Area	**10,738**	**0.246**

Table 9 – Post-Developed Basin Areas (South Parking Lot)

HYDROLOGIC ANALYSIS DESIGN GUIDELINES

Design Guidelines

The site is located within the jurisdiction of the City of West Linn, which follows the City of Portland's Stormwater Management Manual for the design of water quality facilities. Each of the proposed basins will be treated and detained separately. Stormwater runoff from the north parking lot will be conveyed to a BayFilter Manhole to be treated and detained in an MC4500 StormTech Chamber. Stormwater runoff from the stadium and walkways will be conveyed to a BayFilter Manhole for treatment and detained in an MC4500 StormTech Chamber. Stormwater Runoff from the south parking lot will sheet flow to a StreamFilter Catch Basin to be treated and detained in the existing pond located south of the parking lot. All facilities have been sized to comply with the following requirements:

- Per chapter 1 of the City of Portland Stormwater Management Manual, pollution reduction facilities using a flow-based design approach shall use the rational method to size it. Per table 1-2 of the Portland SWMM, a rainfall intensity of 0.19 in/hr will be used to size the pollution reduction facilities;
- Per section 2.0013 of the West Linn Public Works Design Standards, post-developed discharge rates for the 2, 10, and 25-year storm events shall not exceed the predeveloped discharge rates.
- Per section 2.0013 of the West Linn Public Works Design Standards, conveyance pipes shall be designed to convey up to the 10-year event.

Hydrograph Method

Naturally occurring rainstorms dissipate over long periods of time. An effective way of estimating storm rainfall is by using the hydrograph method. The Santa Barbara Urban Hydrograph (SBUH) method was used to develop runoff rates. The computer software XPSTORM was used to compute runoff rates and volumes to size the water quality facility and design the proposed flow control structure for the existing regional pond.

Design Storm

The rainfall distribution to be used for this area is the design storm of 24-hour duration based on the standard Type 1A rainfall distribution. Table 10 shows the design storms used to design all proposed stormwater facilities onsite.

Recurrence Interval (years)	Precipitation Depth (inches)
2	2.50
10	3.40
25	3.90
100	4.50

Table 10 - Design Storms

Basin Runoff

Tables 11, 12 and 13 below show the predeveloped and post-developed runoff rates for the north parking lot basin, stadium basin and south parking lot basin (See Technical Appendix: Hydrographs – Predeveloped and Post-Developed Runoff hydrographs).

Recurrence Interval (years)	Predeveloped Runoff (cfs)	Post-Developed Runoff (cfs)	Allowable Release Rate (cfs)
2	0.009	0.428	0.009
10	0.023	0.612	0.023
25	0.033	0.718	0.033
100	0.047	0.846	-

Table 11 - Basin Runoff Rates (North Parking Lot)

Recurrence Interval (years)	Predeveloped Runoff (cfs)	Post-Developed Runoff (cfs)	Allowable Release Rate (cfs)
2	0.019	0.398	0.019
10	0.042	0.600	0.042
25	0.104	0.718	0.104
100	0.191	0.863	-

Table 12 - Basin Runoff Rates (Stadium)

Recurrence Interval (years)	Predeveloped Runoff (cfs)	Post-Developed Runoff (cfs)	Allowable Release Rate (cfs)
2	0.032	0.117	0.032
10	0.071	0.161	0.071
25	0.095	0.186	0.095
100	0.126	0.215	-

Table 13 - Basin Runoff Rates (South Parking Lot)

System Capacity

The stormwater conveyance system will be sized in the final design phase of the project.

WATER QUALITY/QUANTITY

Water Quality

The stormwater facility design follows West Linn's design standards and the City of Portland's Stormwater Management Manual guidelines for performance-based facilities using the flow-rate based pollution reduction standards. Each of the proposed basins will treat runoff in their own water quality facility. The north parking lot will treat runoff in a proposed BayFilter Manhole, the stadium will treat runoff in another proposed BayFilter Manhole and the south parking lot will treat runoff in a proposed StreamFilter Catch Basin. The water quality flow rate used to design all pollution reduction facilities was determined using the Rational Method and a rainfall intensity of 0.19 in/hr. Table 14 shows the water quality flow rates used to design the pollution reduction facilities (See Technical Appendix: Calculations – City of Portland Rational Method Calculations).

Basin	Water Quality Flow (cfs)
North Parking Lot	0.14
Stadium	0.12
[1]South Parking Lot	0.04
[2]South Parking Lot	0.08

[1] Water Quality Flow Rate for New Impervious Area Only

[2] Water Quality Flow Rate for All Contributing Impervious Area to Catch Basin (see description below)

Table 14 – Water Quality Flow

The StreamFilter Catch Basin in the south parking lot is collecting runoff from the proposed improvements and a large area of existing impervious surface to the west. An existing basin delineation performed for the basin draining to the existing pond (See Technical Appendix: Exhibits – Post-Construction Conditions-South Parking Lot Basin Delineation) the total area draining to the StreamFilter Catch Basin is 0.488 acres (89% impervious). The total water quality flow for this basin is 0.08 cfs, which will require a 2 cartridge unit. Although the City of West Linn does not specify that proposed water quality facilities need to treat all contributing impervious area, it is strongly recommended that the facility be sized to treat all runoff draining to it. Undersized water quality facilities require more frequent maintenance and poses a higher risk of failure.

Table 15 below shows the details for each water quality facility onsite. See Technical Appendix: Calculations – Filter Design Tool v1.0 for calculation.

Basin	Type of Facility	Type of Cartridges	Number of Cartridges
North Parking Lot	BayFilter Manhole	545	2
Stadium	BayFilter Manhole	545	2
[1]South Parking Lot	StreamFilter Catch Basin	522	1
[2]South Parking Lot	StreamFilter Catch Basin	522	2

[1]New Impervious Area Only

[2]All Contributing Impervious Area to Catch Basin

Table 15 – Water Quality Facilities

Table 16 shows the total impervious area treated in each water quality facility and the required impervious area to treat.

Basin	Impervious Area Treated (cfs)	Required Impervious Area (cfs)	Difference Between Treated vs Required (sf)
North Parking Lot	31,668	32,069	-401
Stadium	24,306	27,442	-3,136
South Parking Lot	[1]18,919	8,849	+10,070
Total	**74,893**	**68,360**	**+6,533**

[1]The impervious area treated in the south parking lot assumes the 2 cartridge StreamFilter unit is used.

Table 16 – Water Quality Facility Treatment Areas

Due to existing constraints onsite, not all impervious area in the north parking lot and stadium can be conveyed to the appropriate treatment facility. As shown in Table 16, the south parking lot is treating in excess and the overall treatment requirements for the site are exceeded. Therefore, it is concluded that the water quality requirements for the project are being met.

Water Quantity

Each detention facility is designed in accordance with section 2.0013 of the City of West Linn Public Works Design Standards. Runoff from the north parking lot and stadium will detain runoff in ADS StormTech Chambers and the south parking lot will be detained in an existing pond located to the south. The pond shall be modified to accommodate the proposed improvements to the south parking lot. Table 17 below shows the type of chamber used, area of the system and total volume of detention in the StormTech Chambers. The volume listed for the south parking lot will be achieved by regrading a portion of the existing pond.

Basin	Type of Chamber	Area (sf)	Volume (cf)
North Parking Lot	MC4500	2,173	8,788
Stadium	MC4500	1,903	7,767
South Parking Lot	Existing Pond		989

Table 17 – Water Quantity Facilities

Following each detention facility will be a flow control manhole designed to release the post-developed release rate at the predeveloped runoff rate for the 2, 10 and 25-year design storms. The flow control manholes will be designed in the final design phase of the project.

DOWNSTREAM ANALYSIS

The existing downstream system was analyzed to ensure that there are no known downstream deficiencies. All information concerning the existing downstream conveyance was acquired from the West Linn Maps online portal. The downstream system for the south parking lot was not analyzed because the post-construction release rate does not exceed the existing runoff rate.

The proposed north parking lot and stadium improvements will discharge runoff to the public drainage system in Skyline Dr. From there runoff is conveyed approximately 300' via a 12" pipe to the northeast. At the intersection of Skyline Dr and West A St, water is then routed to the northwest approximately 222'. The pipe is the upsized to 18" and water is conveyed to the east for approximately 300'. At the intersection of Broadway St and Willson St, the pipe is downsized to 15" for approximately 270'. At the intersection of Willson St and Willamette Dr the pipe is upsized to 24". Water is conveyed for another 660 ft and discharged to the creek north of the West Linn Public Library (See Technical Appendix – Exhibits: West Linn GIS Stormwater Map).

SUMMARY

The stormwater design for the proposed West Linn High School Stadium and Parking Additions will meet the City of West Linn's requirements to the maximum extent feasible. Due to the existing grades of the road and surrounding areas, some impervious area in the north parking lot basin and stadium basin cannot be conveyed to the appropriate water quality facility. Due to the existing grading of the south parking lot, the south parking lot is treating excess impervious area from the west. The total impervious area being treated in the north parking lot, stadium and south parking lot exceeds the required treatment area. Flow control facilities will be design in the final stage of design.

TECHNICAL APPENDIX

Exhibits

- National Flood Hazard Layer FIRMette
- Hydrologic Soil Group-Clackamas County Area, Oregon (North Parking Lot, Stadium and South Parking Lot)
- Table 2-2a Runoff Curve Numbers
- Existing Site Conditions
- Post-Developed Site Conditions

Drawings

- Sheet C101 “Stadium Existing Conditions and Demolition Plan”
- Sheet C102 “South Lot Existing Conditions and Demolition Plan”
- Sheet C201 “Grandstands & Stadium Parking Site Plan – Base Proposal”
- Sheet C202 “Stadium Parking Site Plan – Add Alt A”
- Sheet C203 “Stadium Parking Site Plan – Add Alt B”
- Sheet C301 “Grandstands & Stadium Parking Utility Plan – Base Proposal”
- Sheet C302 “South Lot Composite Utility Plan – Add Alt A”
- Sheet C303 “South Lot Composite Utility Plan – Add Alt B”

Hydrographs

- Predeveloped Runoff Hydrograph
- Post Developed Runoff Hydrograph

Calculations

- Time of Concentration
- Filter Design tool v1.0

Geotechnical Report

- Geotechnical Report, GeoDesign, Inc., July 14, 2020 (Excerpts Only)

Operations and Maintenance

- To be included in Final Stormwater Report

REFERENCES

1. City of West Linn’s Public Works Design Standards Issued in 2010

2. City of Portland’s Stormwater Management Manual Issued in January 2014

3. Soil Survey of Clackamas County Area. National Resource Conservation Service

4. Urban Hydrology for Small Watersheds – TR-55 Issued in June 1986 – U.S. Department of Agriculture, Natural Resources Conservation Service, Conservation Engineering Division

5. http://westlinnoregon.gov/publicworks/stormwater-fact-sheet

EXHIBITS

National Flood Hazard Layer FIRMette

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	🟦	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR*
	▨	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	🟧	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	▨	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	▨	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	▨	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard *Zone X*
	▭	Effective LOMRs
	▭	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	— — —	Channel, Culvert, or Storm Sewer
	IIIIIII	Levee, Dike, or Floodwall
OTHER FEATURES	Ⓑ 20.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	⑧ — —	Coastal Transect
	~~ 513 ~~~	Base Flood Elevation Line (BFE)
	━━	Limit of Study
	━━	Jurisdiction Boundary
	--- ---	Coastal Transect Baseline
	- ——	Profile Baseline
	——	Hydrographic Feature
MAP PANELS	☐	Digital Data Available
	☐	No Digital Data Available
	☒	Unmapped

N

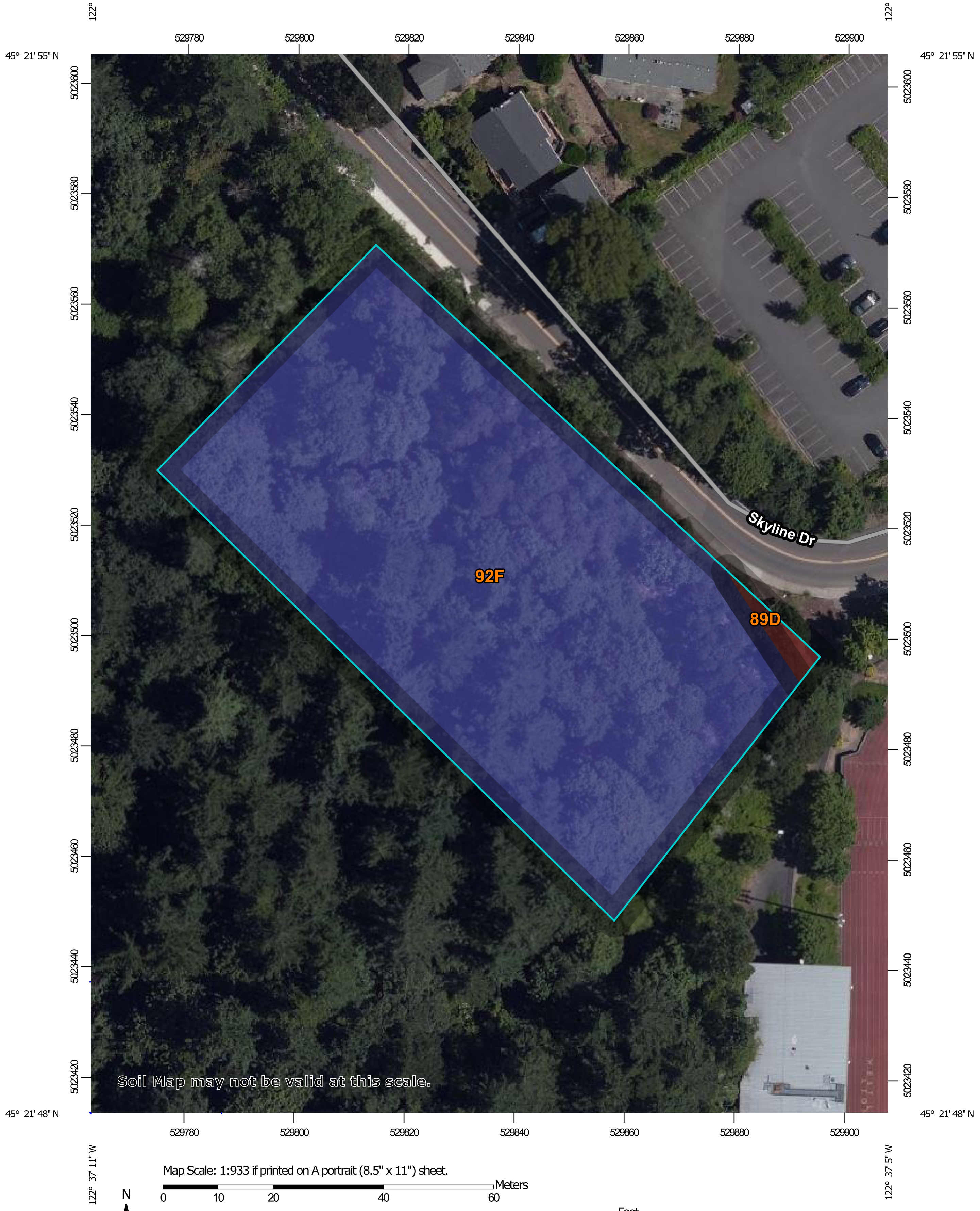
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/6/2020 at 7:49 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Hydrologic Soil Group—Clackamas County Area, Oregon
(North Parking Lot)



Map Scale: 1:933 if printed on A portrait (8.5" x 11") sheet.

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

▭ Area of Interest (AOI)

Soils

Soil Rating Polygons

- ■ A
- ■ A/D
- ■ B
- ■ B/D
- ■ C
- ■ C/D
- ■ D
- □ Not rated or not available

Soil Rating Lines

- 〰 A
- 〰 A/D
- 〰 B
- 〰 B/D
- 〰 C
- 〰 C/D
- 〰 D
- 〰 Not rated or not available

Soil Rating Points

- ■ A
- ■ A/D
- ■ B
- ■ B/D
- ■ C
- ■ C/D
- ■ D
- □ Not rated or not available

Water Features

- 〰 Streams and Canals

Transportation

- ┼┼┼ Rails
- 〰 Interstate Highways
- 〰 US Routes
- 〰 Major Roads
- 〰 Local Roads

Background

- ■ Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2019—Jul 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
89D	Witzel very stony silt loam, 3 to 40 percent slopes	D	0.0	1.1%
92F	Xerochrepts and Haploxerolls, very steep	B	1.6	98.9%
Totals for Area of Interest			**1.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group—Clackamas County Area, Oregon
(STADIUM)

Map Scale: 1:912 if printed on A portrait (8.5" x 11") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- ▭ Area of Interest (AOI)

Soils

Soil Rating Polygons

- 🟪 A
- 🟩 A/D
- 🟦 B
- 🟫 B/D
- 🟦 C
- 🟨 C/D
- 🟥 D
- ⬜ Not rated or not available

Soil Rating Lines

- 〰 A
- 〰 A/D
- 〰 B
- 〰 B/D
- 〰 C
- 〰 C/D
- 〰 D
- 〰 Not rated or not available

Soil Rating Points

- ■ A
- ■ A/D
- ■ B
- ■ B/D
- ■ C
- ■ C/D
- ■ D
- ■ Not rated or not available

Water Features

- 〰 Streams and Canals

Transportation

- ┼┼┼ Rails
- 〰 Interstate Highways
- 〰 US Routes
- 〰 Major Roads
- 〰 Local Roads

Background

- ▨ Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2019—Jul 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
89D	Witzel very stony silt loam, 3 to 40 percent slopes	D	0.4	32.4%
92F	Xerochrepts and Haploxerolls, very steep	B	0.8	67.6%
Totals for Area of Interest			**1.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group—Clackamas County Area, Oregon

(South Parking Lot)

MAP LEGEND

Area of Interest (AOI)

▭ Area of Interest (AOI)

Soils

Soil Rating Polygons

- ■ A
- ■ A/D
- ■ B
- ■ B/D
- ■ C
- ■ C/D
- ■ D
- □ Not rated or not available

Soil Rating Lines

- 〰 A
- 〰 A/D
- 〰 B
- 〰 B/D
- 〰 C
- 〰 C/D
- 〰 D
- 〰 Not rated or not available

Soil Rating Points

- ▣ A
- ▣ A/D
- ▣ B
- ▣ B/D
- ▣ C
- ▣ C/D
- ▣ D
- ▣ Not rated or not available

Water Features

〰 Streams and Canals

Transportation

- ┼┼┼ Rails
- 〰 Interstate Highways
- 〰 US Routes
- 〰 Major Roads
- 〰 Local Roads

Background

■ Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 15, Sep 10, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2019—Jul 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
89D	Witzel very stony silt loam, 3 to 40 percent slopes	D	3.2	100.0%
Totals for Area of Interest			**3.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area [2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

---

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2c Runoff curve numbers for other agricultural lands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4]	48	65	73
Woods—grass combination (orchard or tree farm). [5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

---

[1] Average runoff condition, and $I_a = 0.2S$.

[2] *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

[3] *Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

[4] Actual curve number is less than 30; use CN = 30 for runoff computations.

[5] CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

[6] *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

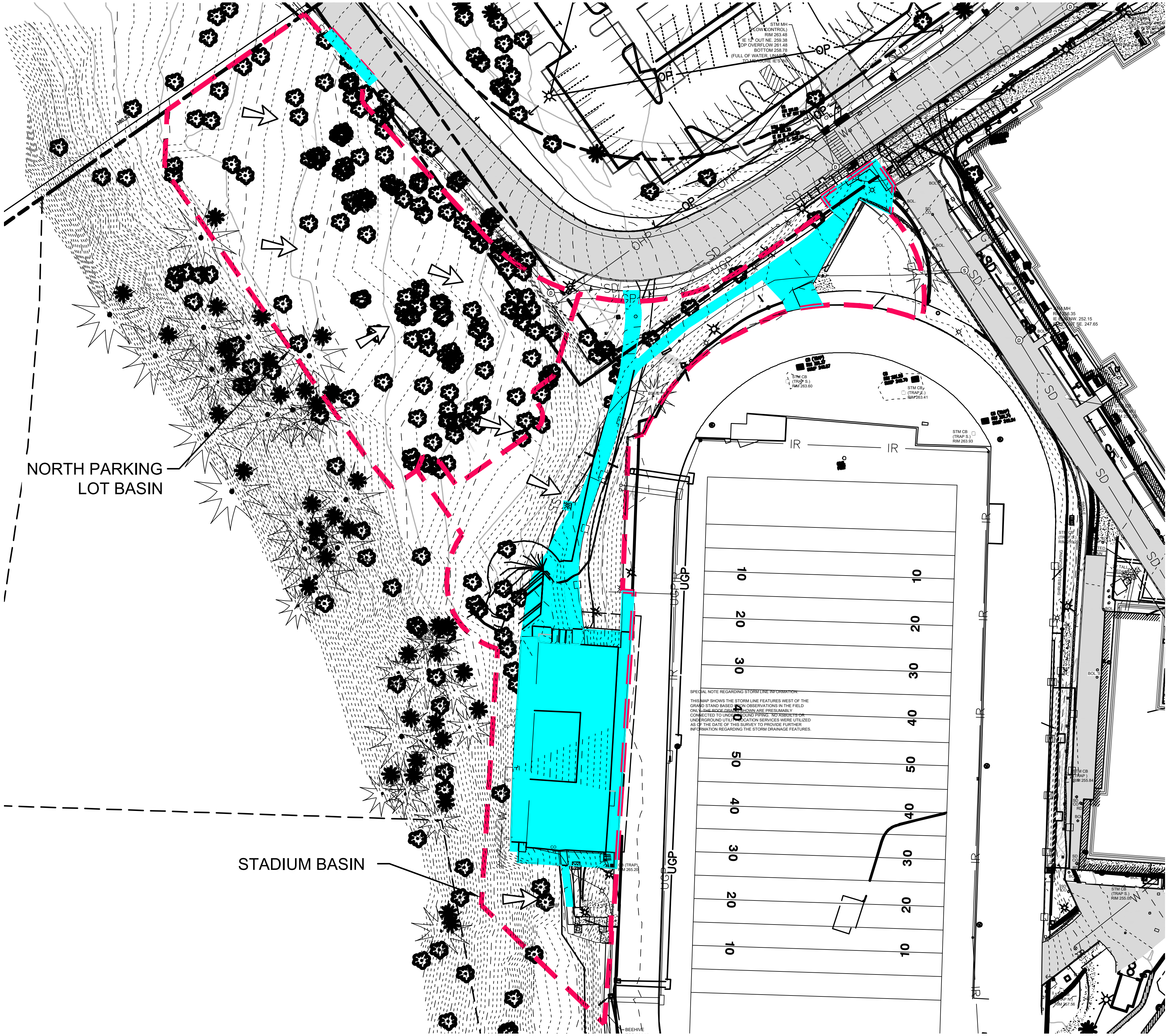
Table 2-2d Runoff curve numbers for arid and semiarid rangelands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition [2]	A [3]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

[1] Average runoff condition, and I_a, = 0.2S. For range in humid regions, use table 2-2c.

[2] Poor: <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: > 70% ground cover.

[3] Curve numbers for group A have been developed only for desert shrub.



LEGEND

🟦	EXISTING IMPERVIOUS AREA
▭	BASIN AREA
⇨	SURFACE RUN-OFF FLOW ARROW

NORTH PARKING LOT	TOTAL AREA = 41,270 SF = 0.947 AC IMPERVIOUS AREA = 278 SF = 0.007 AC PERVIOUS AREA = 40,992 SF = 0.940 AC
STADIUM	TOTAL AREA = 47,415 SF = 1.088 AC IMPERVIOUS AREA = 17,189 SF = 0.394 AC PERVIOUS AREA = 30,226 SF = 0.694 AC

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SCALE: 1" = 75'
0 75 FT

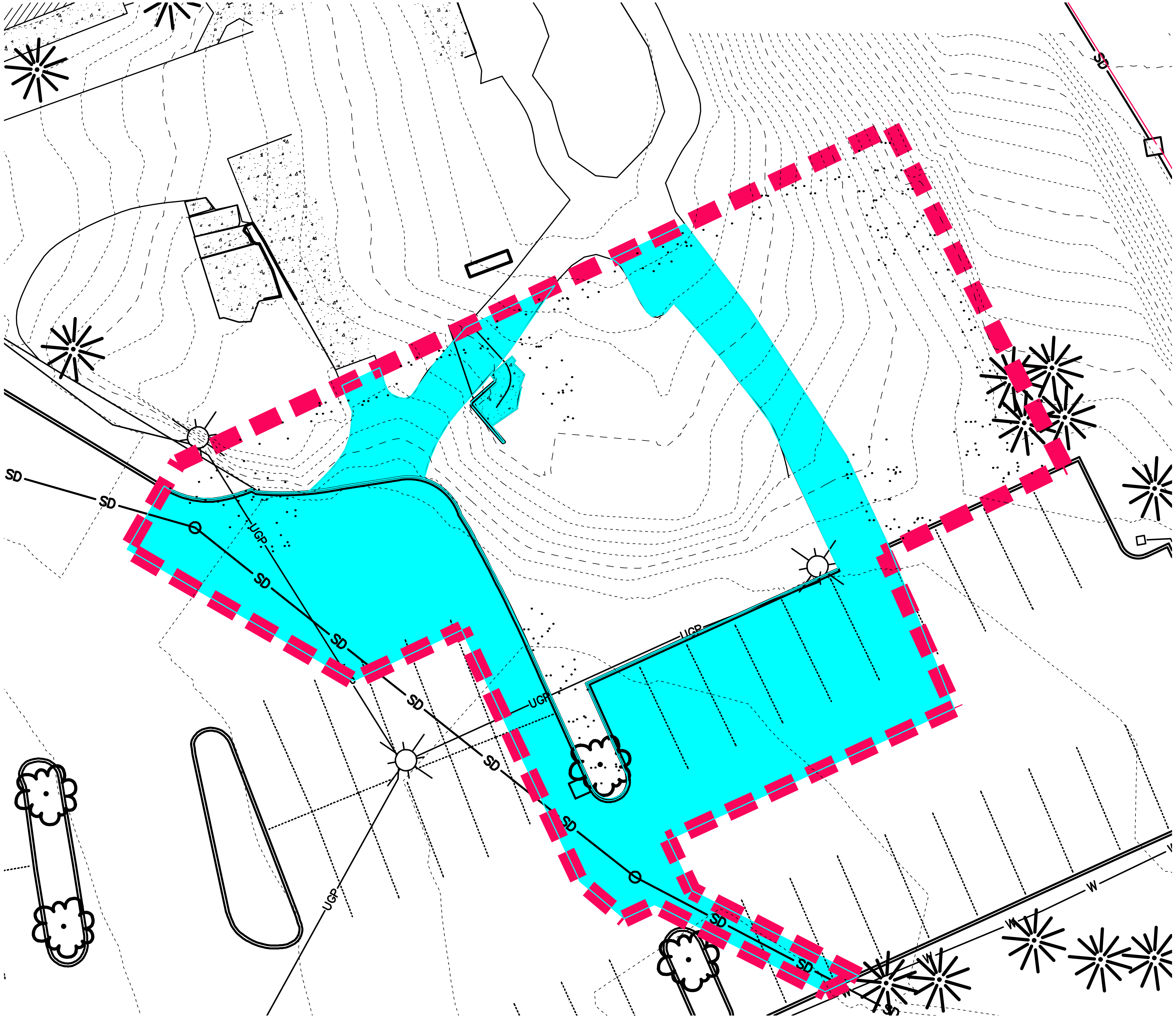
WEST LINN HIGH SCHOOL STADIUM AND PARKING ADDITIONS

01/26/2021

WEST LINN WILSONVILLE SCHOOL DISTRICT

EXISTING CONDITIONS-NORTH PARKING LOT AND STADIUM

3J CONSULTING
CIVIL ENGINEERING . WATER RESOURCES . COMMUNITY PLANNING



LEGEND

🟦	EXISTING IMPERVIOUS AREA
▭	BASIN AREA
⇨	SURFACE RUN-OFF FLOW ARROW

SOUTH PARKING LOT	TOTAL AREA = 10,728 SF = 0.246 AC IMPERVIOUS AREA = 4,970 SF = 0.114 AC PERVIOUS AREA = 5,758 SF = 0.132 AC

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W E
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SCALE: 1" = 20'
FT
0 20

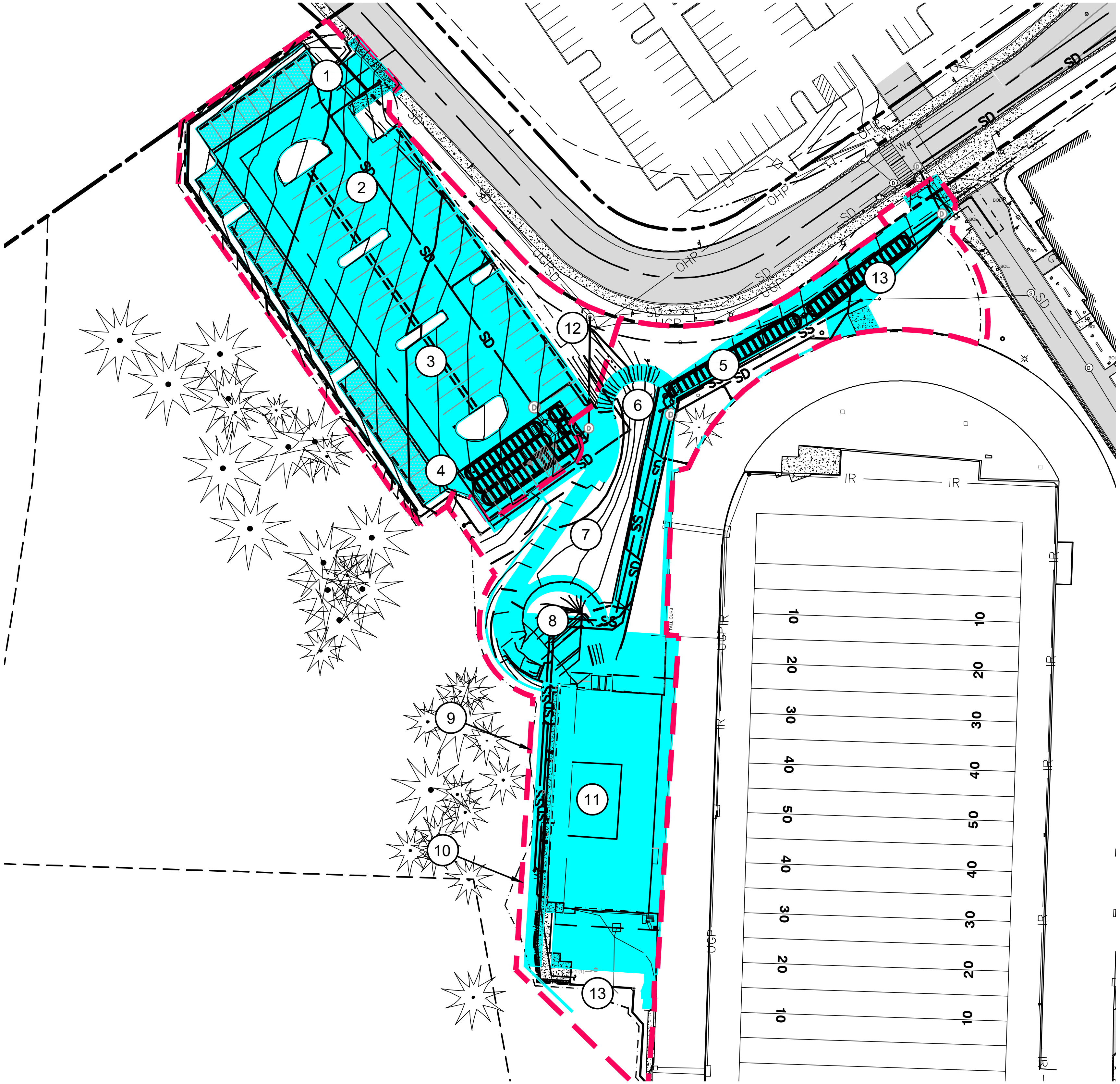
WEST LINN HIGH SCHOOL STADIUM AND PARKING ADDITIONS

01/26/2021

WEST LINN WILSONVILLE SCHOOL DISTRICT

EXISTING CONDITIONS-SOUTH PARKING LOT

3J CONSULTING
CIVIL ENGINEERING . WATER RESOURCES . COMMUNITY PLANNING



LEGEND

🟦 IMPERVIOUS AREA

▭ BASIN AREA

NORTH PARKING LOT	TOTAL AREA = 41,270 SF = 0.947 AC IMPERVIOUS AREA = 32,069 SF = 0.736 AC PERVIOUS AREA = 9,201 SF = 0.211 AC
STADIUM	TOTAL AREA = 47,415 SF = 1.088 AC IMPERVIOUS AREA = 27,442 SF = 0.630 AC PERVIOUS AREA = 19,973 SF = 0.458 AC

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SCALE: 1" = 75'
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WEST LINN HIGH SCHOOL STADIUM AND PARKING ADDITIONS

01/26/2020

WEST LINN WILSONVILLE SCHOOL DISTRICT

POST-CONSTRUCTION CONDITIONS - NORTH PARKING LOT AND STADIUM

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LEGEND

🟦 EXISTING IMPERVIOUS AREA

▭ BASIN AREA

⇨ SURFACE RUN-OFF FLOW ARROW

SOUTH PARKING LOT	TOTAL AREA = 10,728 SF = 0.246 AC IMPERVIOUS AREA = 8,849 SF = 0.203 AC PERVIOUS AREA = 1,879 SF = 0.043 AC

WEST LINN HIGH SCHOOL STADIUM AND PARKING ADDITIONS

01/26/2021

WEST LINN WILSONVILLE SCHOOL DISTRICT

POST-CONSTRUCTION CONDITIONS-SOUTH PARKING LOT

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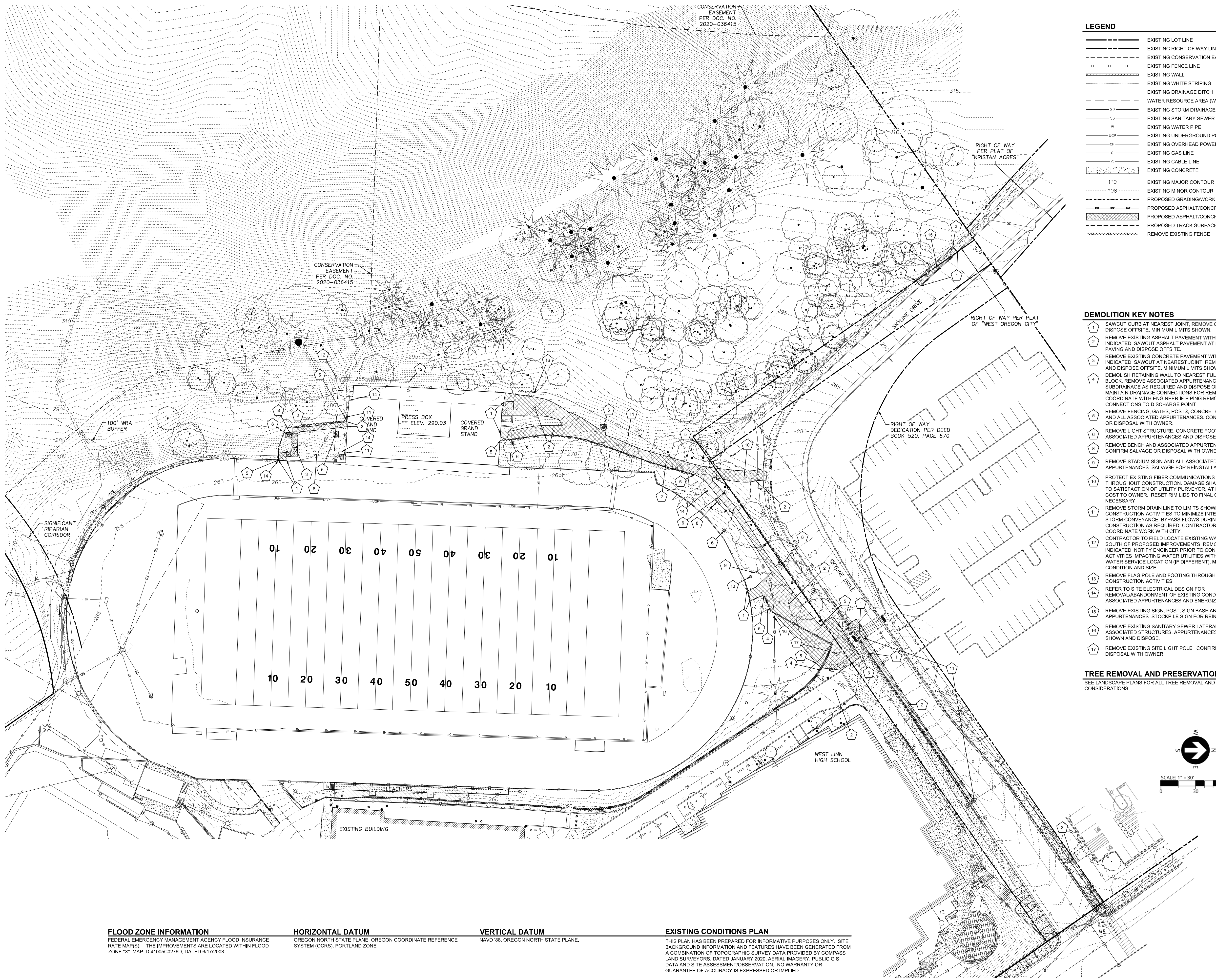
DRAWINGS



LEGEND

▬ ‒ ‒ ▬	EXISTING LOT LINE
▬ ‒ ‒ ▬	EXISTING RIGHT OF WAY LINE
– – – –	EXISTING CONSERVATION EASEMENT LINE
—□—□—	EXISTING FENCE LINE
▨	EXISTING WALL
········	EXISTING WHITE STRIPING
—···—	EXISTING DRAINAGE DITCH
— — —	WATER RESOURCE AREA (WRA) BUFFER
— SD —	EXISTING STORM DRAINAGE PIPE
— SS —	EXISTING SANITARY SEWER PIPE
— W —	EXISTING WATER PIPE
— UGP —	EXISTING UNDERGROUND POWER LINE
— OP —	EXISTING OVERHEAD POWER LINE
— G —	EXISTING GAS LINE
— C —	EXISTING CABLE LINE
▒	EXISTING CONCRETE
- - - 110 - - -	EXISTING MAJOR CONTOUR
····· 108 ·····	EXISTING MINOR CONTOUR
▬·▬·▬	PROPOSED GRADING/WORK LIMITS
—SAW—SAW—	PROPOSED ASPHALT/CONCRETE SAWCUT LIMIT
▩	PROPOSED ASPHALT/CONCRETE REMOVAL
– – – –	PROPOSED TRACK SURFACE REMOVAL LIMIT
~□~□~	REMOVE EXISTING FENCE

DEMOLITION KEY NOTES

1	SAWCUT CURB AT NEAREST JOINT, REMOVE CURB AND DISPOSE OFFSITE. MINIMUM LIMITS SHOWN.
2	REMOVE EXISTING ASPHALT PAVEMENT WITHIN AREA INDICATED. SAWCUT ASPHALT PAVEMENT AT LIMITS. REMOVE PAVING AND DISPOSE OFFSITE.
3	REMOVE EXISTING CONCRETE PAVEMENT WITHIN AREA INDICATED. SAWCUT AT NEAREST JOINT, REMOVE CONCRETE AND DISPOSE OFFSITE. MINIMUM LIMITS SHOWN.
4	DEMOLISH RETAINING WALL TO NEAREST FULL JOINT OR BLOCK, REMOVE ASSOCIATED APPURTENANCES AND SUBDRAINAGE AS REQUIRED AND DISPOSE OFFSITE. MAINTAIN DRAINAGE CONNECTIONS FOR REMAINING WALL. COORDINATE WITH ENGINEER IF PIPING REMOVED IMPACTS CONNECTIONS TO DISCHARGE POINT.
5	REMOVE FENCING, GATES, POSTS, CONCRETE FOOTINGS AND ALL ASSOCIATED APPURTENANCES. CONFIRM SALVAGE OR DISPOSAL WITH OWNER.
6	REMOVE LIGHT STRUCTURE, CONCRETE FOOTINGS, ALL ASSOCIATED APPURTENANCES AND DISPOSE.
8	REMOVE BENCH AND ASSOCIATED APPURTENANCES. CONFIRM SALVAGE OR DISPOSAL WITH OWNER.
9	REMOVE STADIUM SIGN AND ALL ASSOCIATED APPURTENANCES. SALVAGE FOR REINSTALLATION.
10	PROTECT EXISTING FIBER COMMUNICATIONS UTILITIES THROUGHOUT CONSTRUCTION. DAMAGE SHALL BE REPAIRED TO SATISFACTION OF UTILITY PURVEYOR, AT NO ADDITIONAL COST TO OWNER. RESET RIM LIDS TO FINAL GRADE AS NECESSARY.
11	REMOVE STORM DRAIN LINE TO LIMITS SHOWN. STAGE CONSTRUCTION ACTIVITIES TO MINIMIZE INTERRUPTION OF STORM CONVEYANCE. BYPASS FLOWS DURING CONSTRUCTION AS REQUIRED. CONTRACTOR TO COORDINATE WORK WITH CITY.
12	CONTRACTOR TO FIELD LOCATE EXISTING WATER SERVICE SOUTH OF PROPOSED IMPROVEMENTS. REMOVE TO LIMITS INDICATED. NOTIFY ENGINEER PRIOR TO CONSTRUCTION ACTIVITIES IMPACTING WATER UTILITIES WITH EXISTING WATER SERVICE LOCATION (IF DIFFERENT), MATERIAL, CONDITION AND SIZE.
13	REMOVE FLAG POLE AND FOOTING THROUGHOUT CONSTRUCTION ACTIVITIES.
14	REFER TO SITE ELECTRICAL DESIGN FOR REMOVAL/ABANDONMENT OF EXISTING CONDUITS, VAULTS, ASSOCIATED APPURTENANCES AND ENERGIZING MATERIALS.
15	REMOVE EXISTING SIGN, POST, SIGN BASE AND ASSOCIATED APPURTENANCES. STOCKPILE SIGN FOR REINSTALLATION.
16	REMOVE EXISTING SANITARY SEWER LATERAL AND ALL ASSOCIATED STRUCTURES, APPURTENANCES TO LIMITS SHOWN AND DISPOSE.
17	REMOVE EXISTING SITE LIGHT POLE. CONFIRM SALVAGE OR DISPOSAL WITH OWNER.

TREE REMOVAL AND PRESERVATION:

SEE LANDSCAPE PLANS FOR ALL TREE REMOVAL AND PRESERVATION CONSIDERATIONS.

FLOOD ZONE INFORMATION

FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP(S): THE IMPROVEMENTS ARE LOCATED WITHIN FLOOD ZONE "X". MAP ID 41005C0276D, DATED 6/17/2008.

HORIZONTAL DATUM

OREGON NORTH STATE PLANE, OREGON COORDINATE REFERENCE SYSTEM (OCRS), PORTLAND ZONE

VERTICAL DATUM

NAVD '88, OREGON NORTH STATE PLANE.

EXISTING CONDITIONS PLAN

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ISSUES

No.	DESCRIPTION	DATE
1	DESIGN DEVELOPMENT	10-07-2020

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REGISTERED PROFESSIONAL ENGINEER
70657PE
OREGON
JUNE 16, 2011
JESSE T. EMERSON
EXPIRES: 12/31/21

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY:	CHECKED BY:
TEG, JTE, ZMS	JDH
PROJECT MGR:	**APPROVED BY:**
JDH	JDH

SHEET TITLE
STADIUM EXISTING
CONDITIONS AND
DEMOLITION PLAN

SHEET NUMBER
C101

ISSUE
1

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LEGEND

EXISTING LOT LINE
EXISTING RIGHT OF WAY LINE
EXISTING CONSERVATION EASEMENT LINE
EXISTING FENCE LINE
EXISTING WALL
EXISTING WHITE STRIPING
EXISTING DRAINAGE DITCH
WATER RESOURCE AREA (WRA) BUFFER
SD EXISTING STORM DRAINAGE PIPE
SS EXISTING SANITARY SEWER PIPE
W EXISTING WATER PIPE
UGP EXISTING UNDERGROUND POWER LINE
OP EXISTING OVERHEAD POWER LINE
G EXISTING GAS LINE
C EXISTING CABLE LINE
EXISTING CONCRETE
110 EXISTING MAJOR CONTOUR
108 EXISTING MINOR CONTOUR
PROPOSED WORK LIMITS
SAW PROPOSED ASPHALT/CONCRETE SAWCUT LIMIT
PROPOSED ASPHALT/CONCRETE REMOVAL
PROPOSED TRACK SURFACE REMOVAL LIMIT
REMOVE EXISTING FENCE

DEMOLITION KEY NOTES

1. SAWCUT CONCRETE PAVEMENT AT NEAREST JOINT TO FULL SLAB DEPTH AND/OR SAWCUT ASPHALT PAVEMENT AT LOCATION SHOWN TO FULL EXISTING PAVEMENT DEPTH. PROTECT ALL ADJACENT SURFACES FROM DAMAGE.
2. REMOVE AND DISPOSE OFFSITE OF EXISTING ASPHALT/CONCRETE WITHIN LIMITS SHOWN.
3. REMOVE AND DISPOSE OFFSITE OF EXISTING CONCRETE CURB.
6. REMOVE LIGHT STRUCTURE, CONCRETE FOOTINGS AND ALL ASSOCIATED APPURTENANCES. SALVAGE FOR REINSTALLATION.
7. REMOVE EXISTING STORM DRAIN CATCH BASIN. CAP AND ABANDON EXISTING LATERAL STORM LINE.
13. (RESERVED)

TREE REMOVAL AND PRESERVATION:

SEE LANDSCAPE PLANS FOR ALL TREE REMOVAL AND PRESERVATION CONSIDERATIONS.

FLOOD ZONE INFORMATION

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OREGON NORTH STATE PLANE, OREGON COORDINATE REFERENCE SYSTEM (OCRS), PORTLAND ZONE

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EXISTING CONDITIONS PLAN

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W E
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SCALE: 1" = 30'
0 30 60 FT

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1	DESIGN DEVELOPMENT	10-07-2020

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: TEG, JTE, ZMS
CHECKED BY: JDH
PROJECT MGR: JDH
APPROVED BY: JDH

SHEET TITLE
SOUTH LOT EXISTING
CONDITIONS AND
DEMOLITION PLAN

SHEET NUMBER
C102

ISSUE
1

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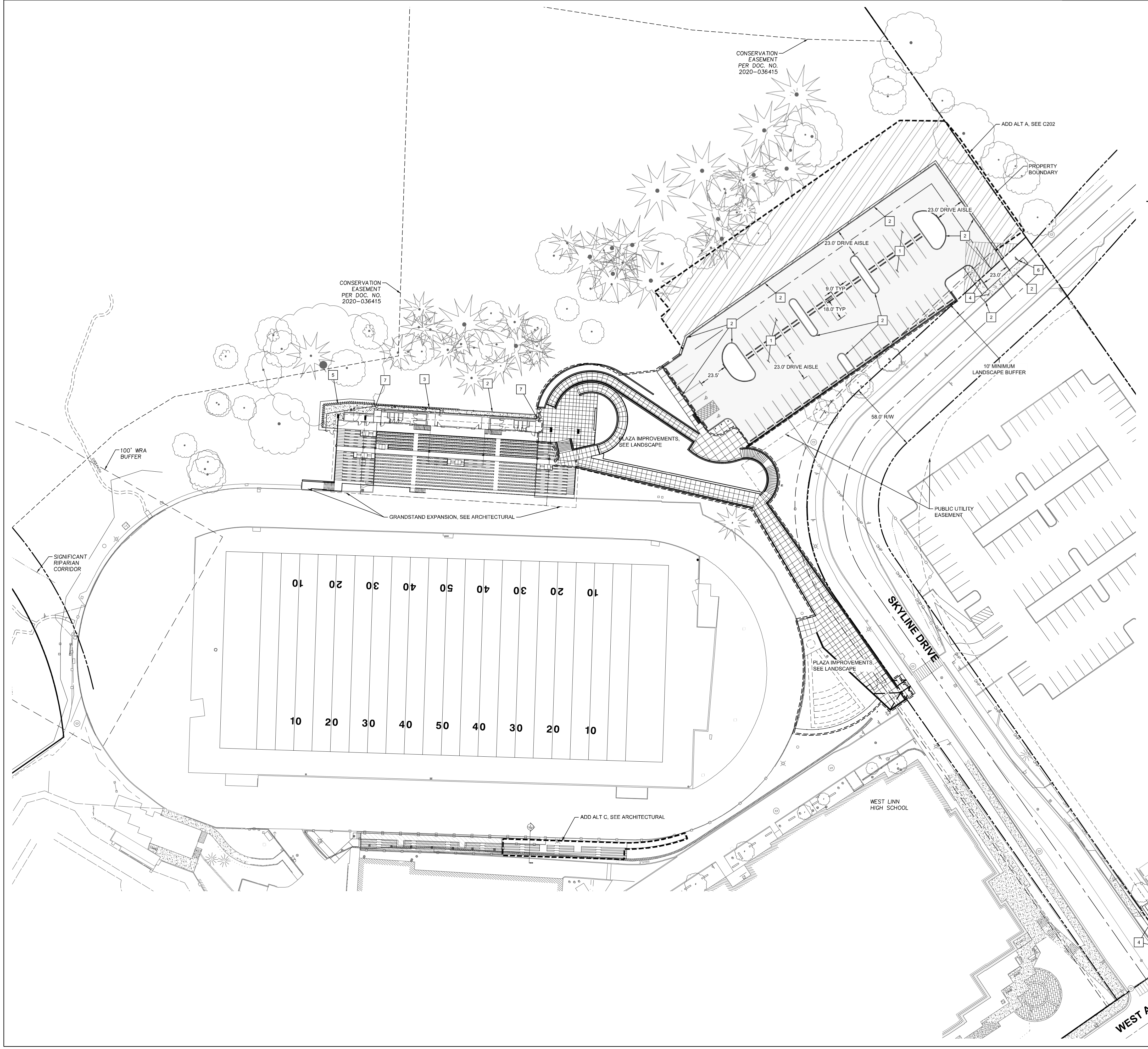

LEGEND

— - - —	PROPOSED RIGHT-OF-WAY LINE
- - - - -	PROPOSED EASEMENT LINE
— — —	PROPERTY SETBACK LINE
═	PROPOSED CURB
▭	PROPOSED ASPHALT
▨	PROPOSED GRAVEL ACCESS PATH
▭	PROPOSED WHEEL STOP
▨	PROPOSED RETAINING WALL
—	PROPOSED WHITE PAVEMENT STRIPING
△	CLEAR VISION TRIANGLE AREA
*	RE-PAVED EXISTING PARKING STALL
= = =	SCOPE LIMIT: SEE LANDSCAPE PLANS

CONSTRUCTION KEY NOTES

1	CONSTRUCT ASPHALT PAVING WITHIN LIMITS SHOWN.
2	CONSTRUCT STANDARD CURB.
3	CONSTRUCT CAST IN PLACE RETAINING WALL.
4	CONSTRUCT CONCRETE SIDEWALK.
5	CONSTRUCT SOIL NAIL WALL.
6	INSTALL RELOCATED SHARP TURN AHEAD WARNING SIGN.
7	CONSTRUCT 3' WIDE CONCRETE VALLEY GUTTER WITHIN LIMITS SHOWN.

WLHS NEW PARKING SUMMARY

ALL PHASES	
STANDARD PARKING STALLS	114
ADA PARKING STALLS	2
BASE PROPOSAL (THIS SHEET)	
STANDARD PARKING STALLS	62
ADA PARKING STALLS	2

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EXPIRES: 12/31/21

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: TEG, JTE, ZMS
CHECKED BY: JDH
PROJECT MGR: JDH
APPROVED BY: JDH

SHEET TITLE
GRANDSTANDS &
STADIUM PARKING SITE
PLAN - BASE PROPOSAL

SHEET NUMBER
C201

ISSUE
1

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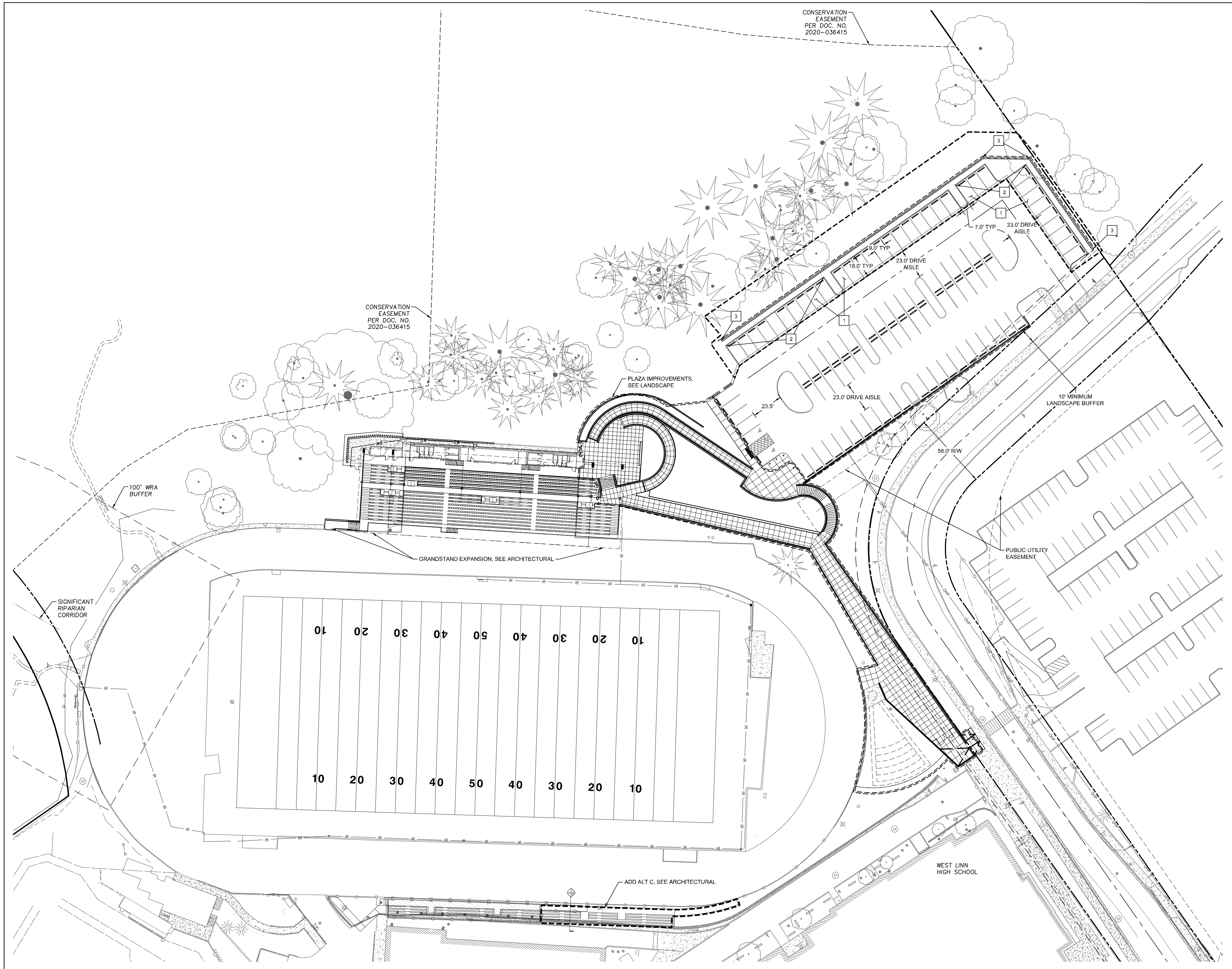

LEGEND

▬ ‒ ‒ ▬	PROPOSED RIGHT-OF-WAY LINE
- - - - -	PROPOSED EASEMENT LINE
— — — —	PROPERTY SETBACK LINE
═	PROPOSED CURB
▭	PROPOSED ASPHALT
▨	PROPOSED GRAVEL ACCESS PATH
▭	PROPOSED WHEEL STOP
▨	PROPOSED RETAINING WALL
—	PROPOSED WHITE PAVEMENT STRIPING
△	CLEAR VISION TRIANGLE AREA
*	RE-PAVED EXISTING PARKING STALL
═ ═ ═	SCOPE LIMIT: SEE LANDSCAPE PLANS

CONSTRUCTION KEY NOTES

1	CONSTRUCT ASPHALT PAVING WITHIN LIMITS SHOWN.
2	CONSTRUCT STANDARD CURB.
3	CONSTRUCT MODULAR BLOCK RETAINING WALL.

WLHS NEW PARKING SUMMARY

ALL PHASES	
STANDARD PARKING STALLS	114
ADA PARKING STALLS	2
BASE PROPOSAL (THIS SHEET)	
STANDARD PARKING STALLS	34

SCALE: 1" = 30'
0 30 60 FT

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: TEG, JTE, ZMS	CHECKED BY: JDH
PROJECT MGR: JDH	APPROVED BY: JDH

SHEET TITLE
STADIUM PARKING SITE
PLAN - ADD ALT A

SHEET NUMBER
C202

ISSUE
1

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SCALE CHECK
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LEGEND

- PROPOSED RIGHT-OF-WAY LINE
- PROPOSED EASEMENT LINE
- PROPERTY SETBACK LINE
- PROPOSED CURB
- PROPOSED ASPHALT
- PROPOSED GRAVEL ACCESS PATH
- PROPOSED WHEEL STOP
- PROPOSED RETAINING WALL
- PROPOSED WHITE PAVEMENT STRIPING
- CLEAR VISION TRIANGLE AREA
- * RE-PAVED EXISTING PARKING STALL

CONSTRUCTION KEY NOTES

1. CONSTRUCT ASPHALT PAVING WITHIN LIMITS SHOWN.
2. CONSTRUCT STANDARD CURB.
3. CONSTRUCT MODULAR BLOCK RETAINING WALL.

WLHS NEW PARKING SUMMARY

ALL PHASES	
STANDARD PARKING STALLS	114
ADA PARKING STALLS	2
BASE PROPOSAL (THIS SHEET)	
STANDARD PARKING STALLS	18

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SCALE: 1" = 30'
0 30 60 FT

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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: TEG, JTE, ZMS	CHECKED BY: JDH
PROJECT MGR: JDH	APPROVED BY: JDH

SHEET TITLE
SOUTH PARKING LOT
SITE PLAN - ADD ALT B

SHEET NUMBER
C203

ISSUE
1

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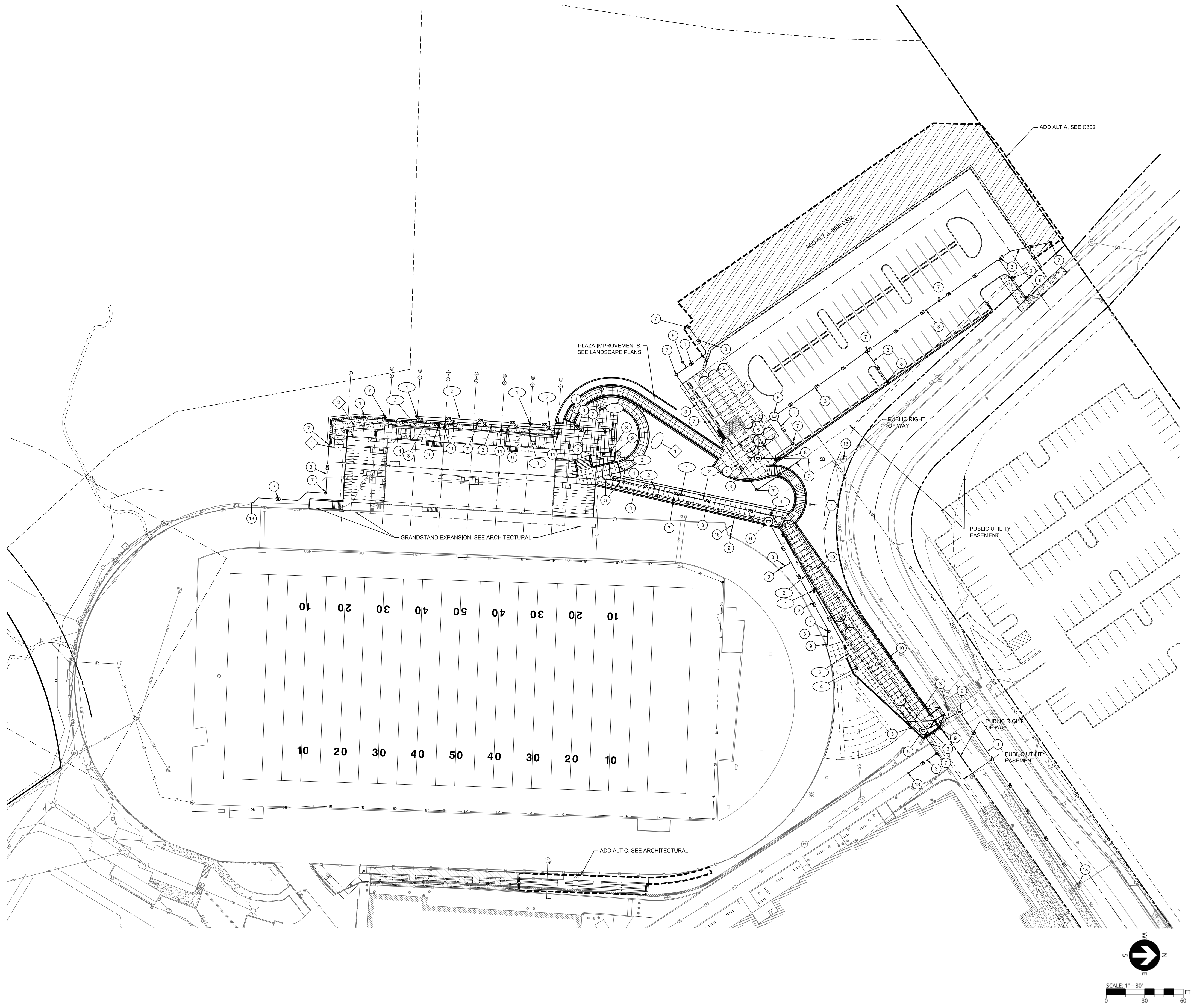

LEGEND

SD	EXISTING STORM DRAIN PIPE
STM	EXISTING STORM DRAIN PIPE
— · · · —	EXISTING STORM DRAIN DITCH
SS	EXISTING SANITARY SEWER PIPE
SAN	EXISTING SANITARY SEWER PIPE
W	EXISTING WATER PIPE
C	EXISTING CABLE LINE
G	EXISTING GAS LINE
UGP	EXISTING UNDERGROUND POWER LINE
OP	EXISTING OVERHEAD POWER LINE
Ⓓ	EXISTING STORM DRAIN MANHOLE
○	EXISTING STORM DRAIN CLEANOUT
▤	EXISTING STORM DRAIN CATCH BASIN
Ⓢ	EXISTING SANITARY SEWER MANHOLE
○	EXISTING SANITARY SEWER CLEANOUT
✱	EXISTING FIRE HYDRANT
⊗	EXISTING WATER SERVICE VALVE
SD	PROPOSED STORM DRAIN PIPE
— — —	PROPOSED CURTAIN DRAIN WITH PERFORATED DRAIN PIPE
Ⓓ	PROPOSED STORM MANHOLE
○	PROPOSED STORM CLEANOUT
■	PROPOSED CATCH BASIN
● ■	PROPOSED AREA DRAIN
▨	PROPOSED STORM DETENTION FACILITY
SS	PROPOSED SANITARY SEWER PIPE
○	PROPOSED SANITARY SEWER CLEANOUT

STORM DRAIN KEY NOTES

1	CONSTRUCT 3' WIDE SLOPE CURTAIN DRAIN.
2	INSTALL STORM DRAIN MANHOLE
3	INSTALL STORM PIPE.
4	INSTALL TRENCH DRAIN.
5	INSTALL FLOW CONTROL MANHOLE.
6	INSTALL BAYFILTER STORM TREATMENT MANHOLE.
7	INSTALL STORM CLEANOUT.
8	INSTALL CATCH BASIN.
9	INSTALL AREA DRAIN.
10	INSTALL STORM DETENTION FACILITY.
11	INSTALL ROOF DRAIN.
12	INSTALL BAYFILTER STORM TREATMENT CATCH BASIN.
13	CONNECT TO EXISTING STORM SYSTEM.

SANITARY SEWER KEY NOTES

1	INSTALL SANITARY SEWER CLEANOUT.
2	INSTALL 4" SANITARY SEWER PIPE.
3	INSTALL 4" SANITARY SEWER LATERAL.
4	CONNECT TO EXISTING SANITARY SEWER SYSTEM.

WATER SYSTEM KEY NOTES

1	DETERMINE LOCATION OF EXISTING WATER SERVICE LINES.
2	INSTALL WATER SERVICE LINE

FRANCHISE UTILITY KEY NOTES

1	PROTECT EXISTING FIBER COMMUNICATIONS UTILITY STRUCTURES. RAISE RIMS TO MATCH FINISHED GRADES.

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No.	DESCRIPTION	DATE
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PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: TEG, JTE, ZMS
CHECKED BY: JDH
PROJECT MGR: JDH
APPROVED BY: JDH

SHEET TITLE
GRANDSTANDS &
STADIUM PARKING UTILITY
PLAN - BASE PROPOSAL

SHEET NUMBER
C301

ISSUE
1

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-UTILITY PLAN.DWG
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SCALE CHECK
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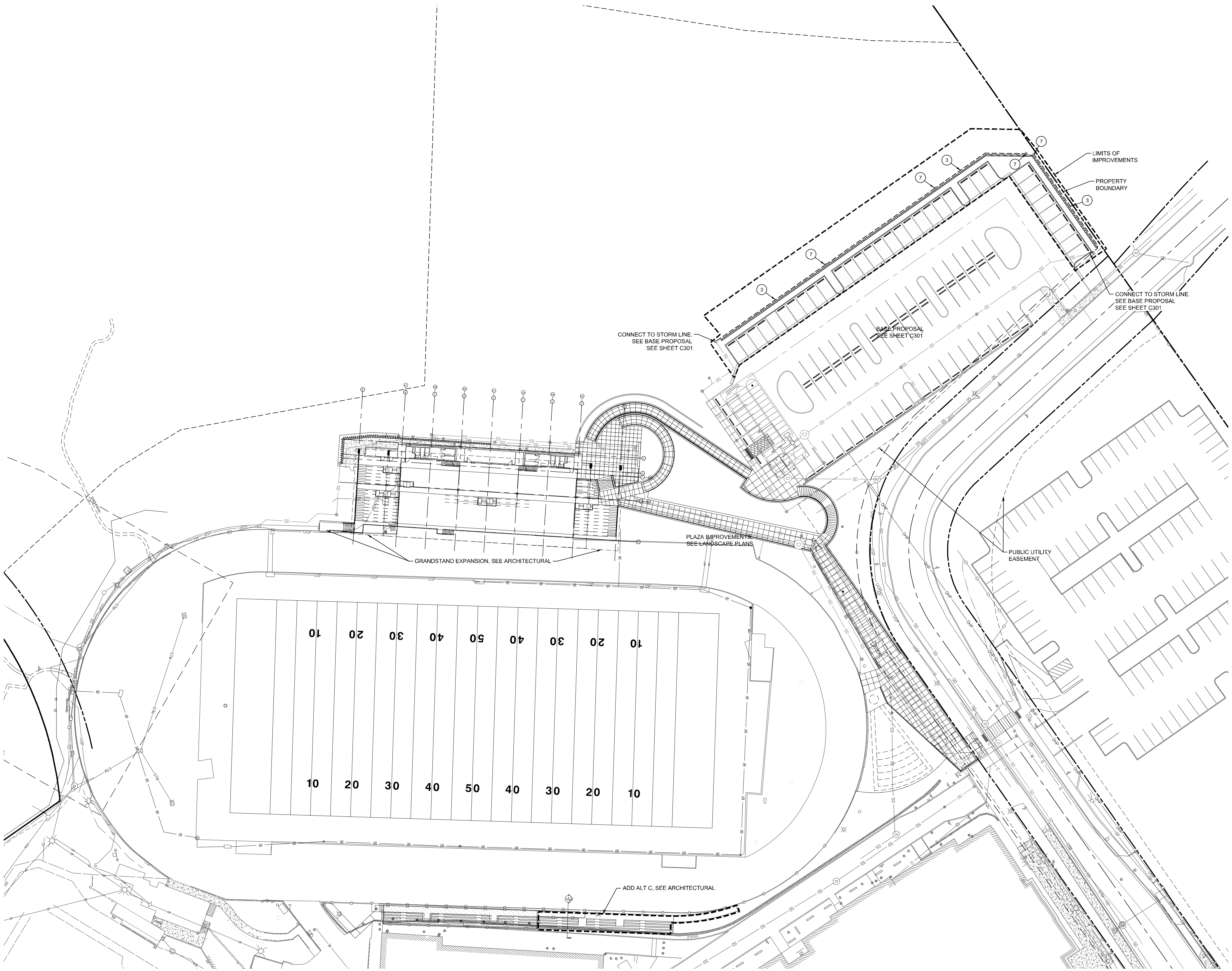

LEGEND

SD	EXISTING STORM DRAIN PIPE
STM	EXISTING STORM DRAIN PIPE
— · · · —	EXISTING STORM DRAIN DITCH
SS	EXISTING SANITARY SEWER PIPE
SAN	EXISTING SANITARY SEWER PIPE
W	EXISTING WATER PIPE
C	EXISTING CABLE LINE
G	EXISTING GAS LINE
UGP	EXISTING UNDERGROUND POWER LINE
OP	EXISTING OVERHEAD POWER LINE
Ⓓ	EXISTING STORM DRAIN MANHOLE
○	EXISTING STORM DRAIN CLEANOUT
■	EXISTING STORM DRAIN CATCH BASIN
Ⓢ	EXISTING SANITARY SEWER MANHOLE
○	EXISTING SANITARY SEWER CLEANOUT
●	EXISTING FIRE HYDRANT
●	EXISTING WATER SERVICE VALVE
SD	PROPOSED STORM DRAIN PIPE
— — — —	PROPOSED CURTAIN DRAIN WITH PERFORATED DRAIN PIPE
Ⓓ	PROPOSED STORM MANHOLE
○	PROPOSED STORM CLEANOUT
■	PROPOSED CATCH BASIN
● ■	PROPOSED AREA DRAIN
▨	PROPOSED STORM DETENTION FACILITY
SS	PROPOSED SANITARY SEWER PIPE
○	PROPOSED SANITARY SEWER CLEANOUT

STORM DRAIN KEY NOTES

③ INSTALL STORM PIPE.
⑦ INSTALL STORM CLEANOUT.

SCALE: 1" = 30'
0 30 60 FT

CLIENT
WEST LINN
WILSONVILLE SCHOOL
DISTRICT
West Linn-Wilsonville School District
2755 SW BORLAND ROAD
TUALATIN, OR 97062

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ISSUES

No.	DESCRIPTION	DATE
1	DESIGN DEVELOPMENT	10-07-2020

NOT FOR CONSTRUCTION

CONSULTANTS
3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
9600 SW NIMBUS AVE., SUITE 100; BEAVERTON, OR 97008

SEAL
70657PE
JUNE 16, 2011
JESSE T. EMERSON
EXPIRES: 12/31/21

IBI GROUP
907 SW Harvey Milk Street
Portland, OR 97205, USA
tel 503 226 6950 fax 503 273 9192
ibigroup-edpnw.com

PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: **TEG, JTE, ZMS**	CHECKED BY: **JDH**
PROJECT MGR: **JDH**	APPROVED BY: **JDH**

SHEET TITLE
STADIUM PARKING
UTILITY PLAN - ADD ALT A

SHEET NUMBER
C302

ISSUE
1

P:\19579-WLHS STADIUM EXPANSION\CAD\DD\19579-UTILITY PLAN-ALT A.DWG
BIM 360://124724 - WLHS Stadium Seating and Parking R2020/12472 -WLHS-Stadium-A-R20.rvt

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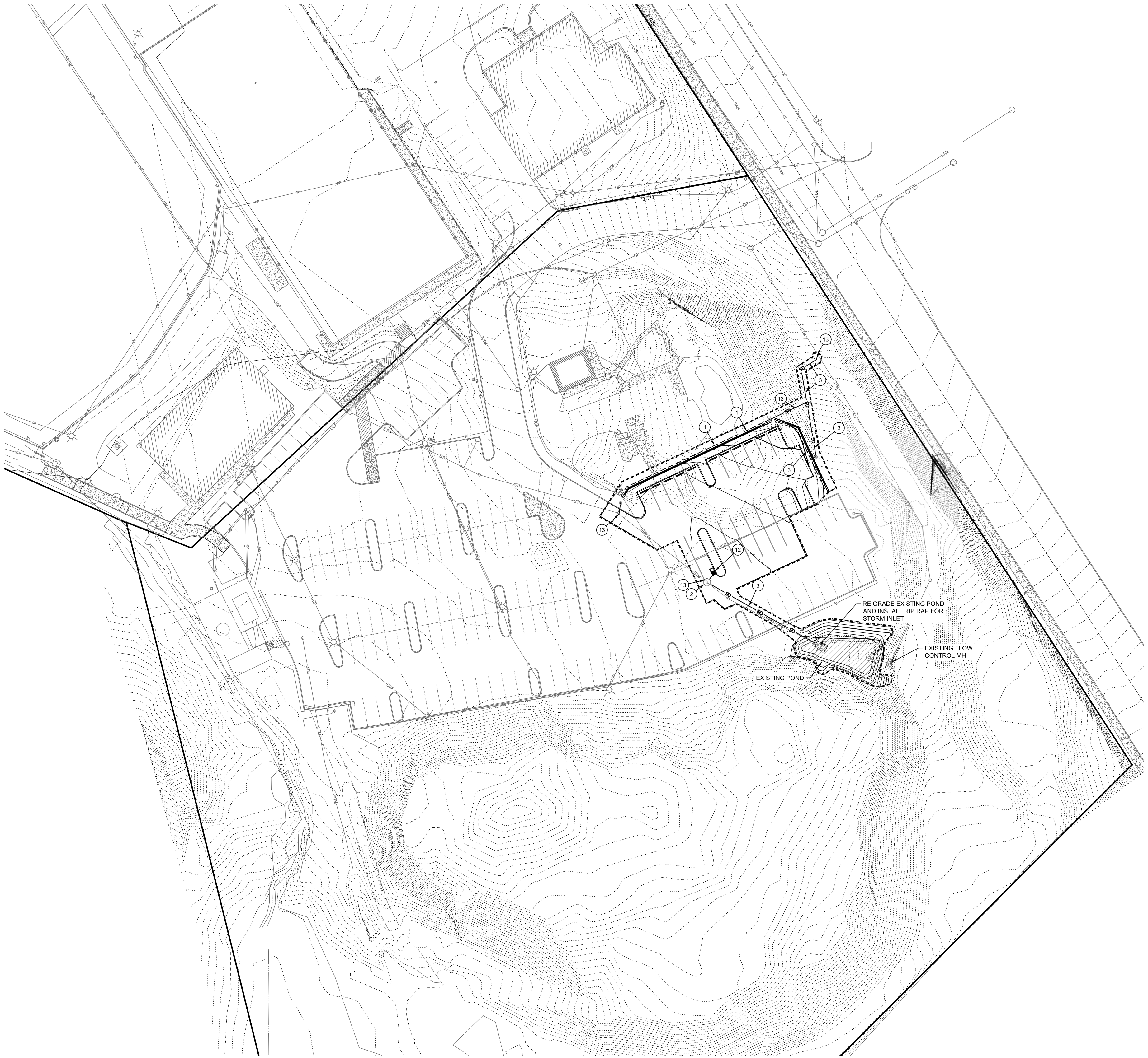

LEGEND

SD	EXISTING STORM DRAIN PIPE
STM	EXISTING STORM DRAIN PIPE
···	EXISTING STORM DRAIN DITCH
SS	EXISTING SANITARY SEWER PIPE
SAN	EXISTING SANITARY SEWER PIPE
W	EXISTING WATER PIPE
C	EXISTING CABLE LINE
G	EXISTING GAS LINE
UGP	EXISTING UNDERGROUND POWER LINE
OP	EXISTING OVERHEAD POWER LINE
Ⓓ	EXISTING STORM DRAIN MANHOLE
○	EXISTING STORM DRAIN CLEANOUT
▤	EXISTING STORM DRAIN CATCH BASIN
Ⓢ	EXISTING SANITARY SEWER MANHOLE
○	EXISTING SANITARY SEWER CLEANOUT
✳	EXISTING FIRE HYDRANT
⊗	EXISTING WATER SERVICE VALVE
SD	PROPOSED STORM DRAIN PIPE
- - -	PROPOSED CURTAIN DRAIN WITH PERFORATED DRAIN PIPE
Ⓓ	PROPOSED STORM MANHOLE
○	PROPOSED STORM CLEANOUT
■	PROPOSED CATCH BASIN
● ■	PROPOSED AREA DRAIN
▨	PROPOSED STORM DETENTION FACILITY
SS	PROPOSED SANITARY SEWER PIPE
○	PROPOSED SANITARY SEWER CLEANOUT

STORM DRAIN KEY NOTES

① CONSTRUCT 3' WIDE SLOPE CURTAIN DRAIN.
② INSTALL STORM DRAIN MANHOLE
③ INSTALL STORM PIPE.
⑫ INSTALL BAYFILTER STORM TREATMENT CATCH BASIN.
⑬ CONNECT TO EXISTING STORM SYSTEM.

N
W E
S

SCALE: 1" = 30'
0 30 60 FT

CLIENT

WEST LINN
WILSONVILLE SCHOOL
DISTRICT

West Linn-Wilsonville
School District

2755 SW BORLAND ROAD
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1	DESIGN DEVELOPMENT	10-07-2020

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SEAL

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IBI GROUP
907 SW Harvey Milk Street
Portland, OR 97205, USA
tel 503 226 6950 fax 503 273 9192
ibigroup-edpnw.com

PROJECT
WEST LINN HIGH SCHOOL
PARKING/STADIUM ADDITIONS

PROJECT NO:
124724

DRAWN BY: TEG, JTE, ZMS	CHECKED BY: JDH
PROJECT MGR: JDH	APPROVED BY: JDH

SHEET TITLE
SOUTH PARKING LOT
UTILITY PLAN - ADD ALT B

SHEET NUMBER
C303

ISSUE
1

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SCALE CHECK
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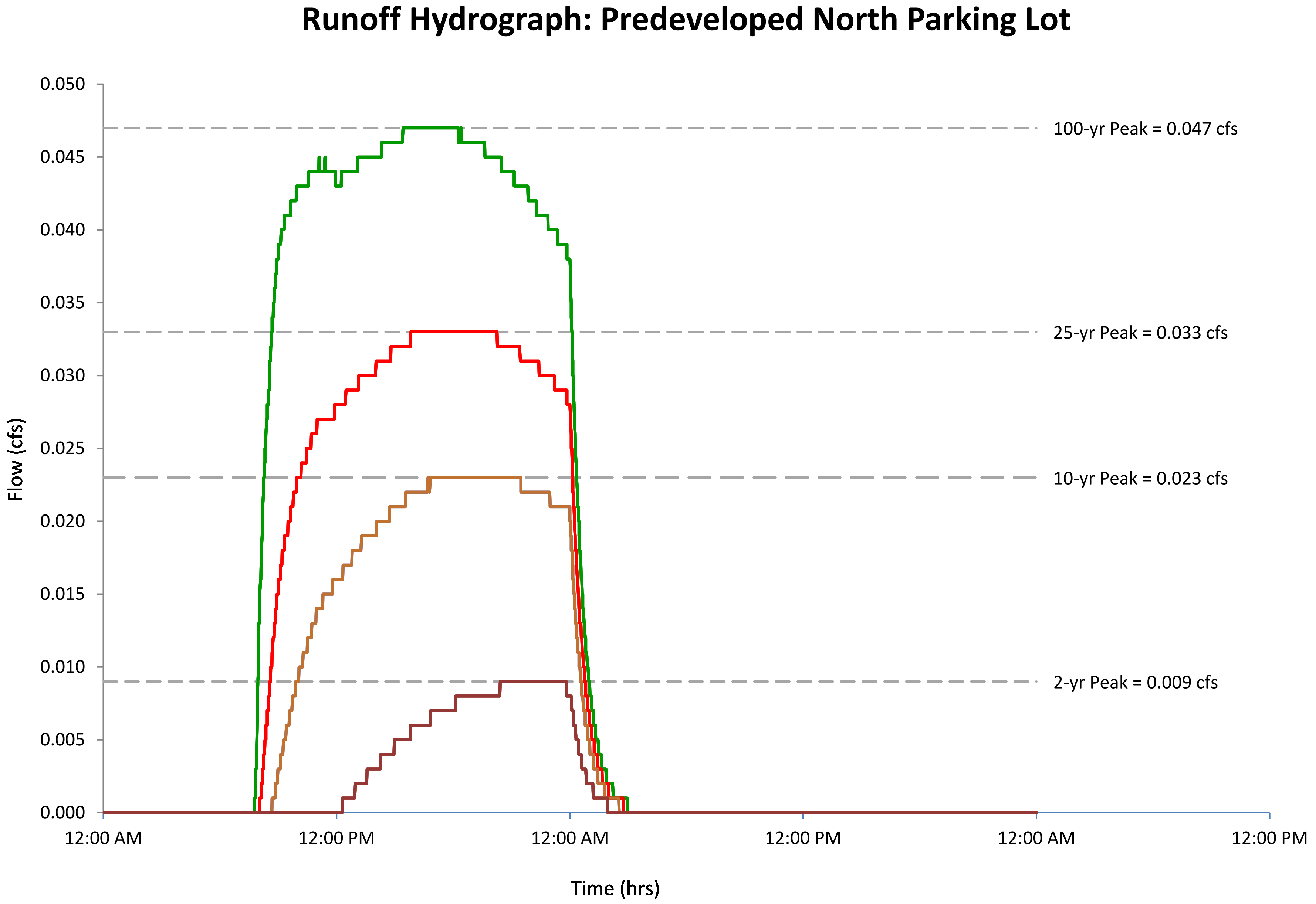
1 in

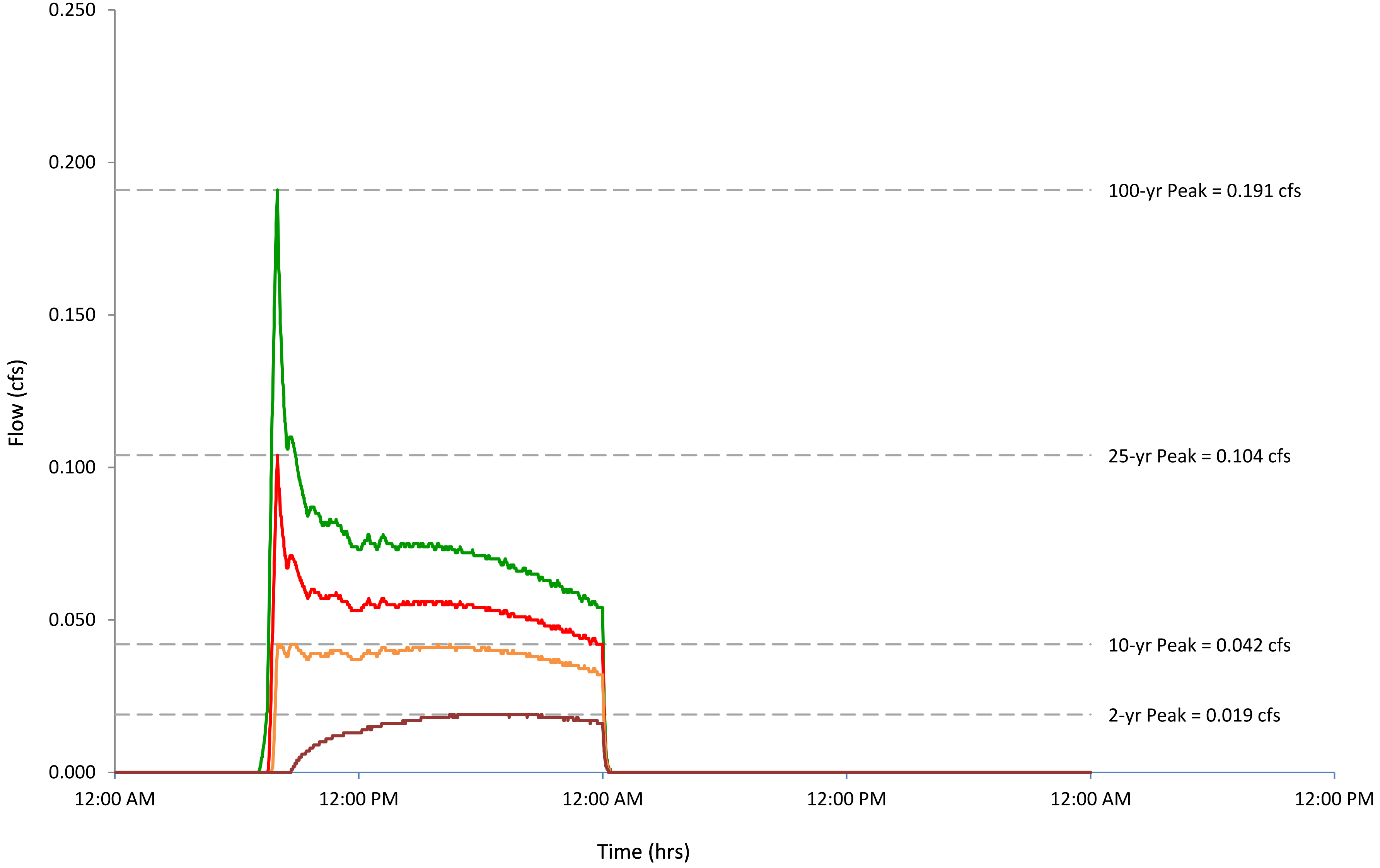
2020-12-16 3:43:34 PM

HYDROGRAPHS

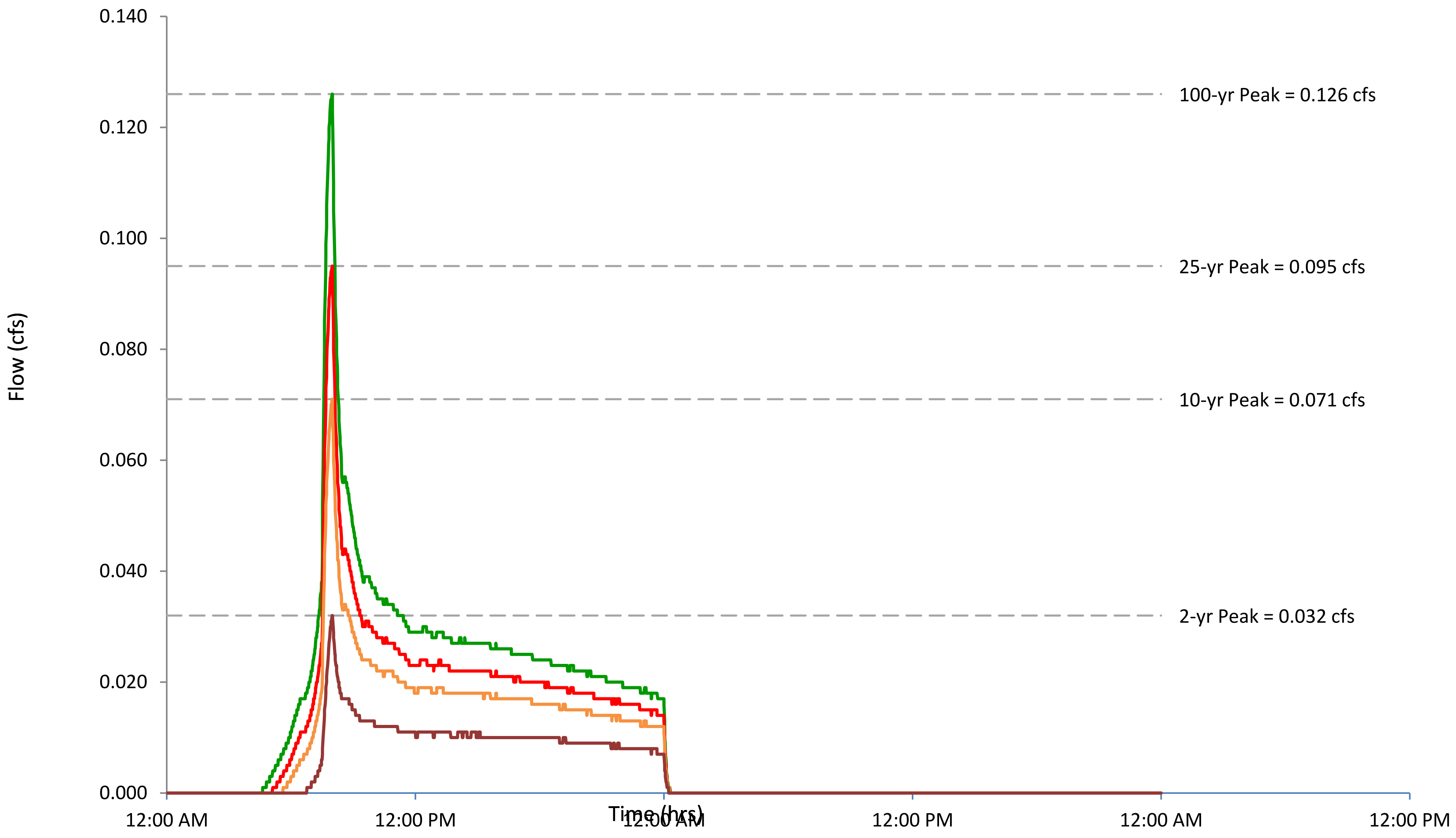


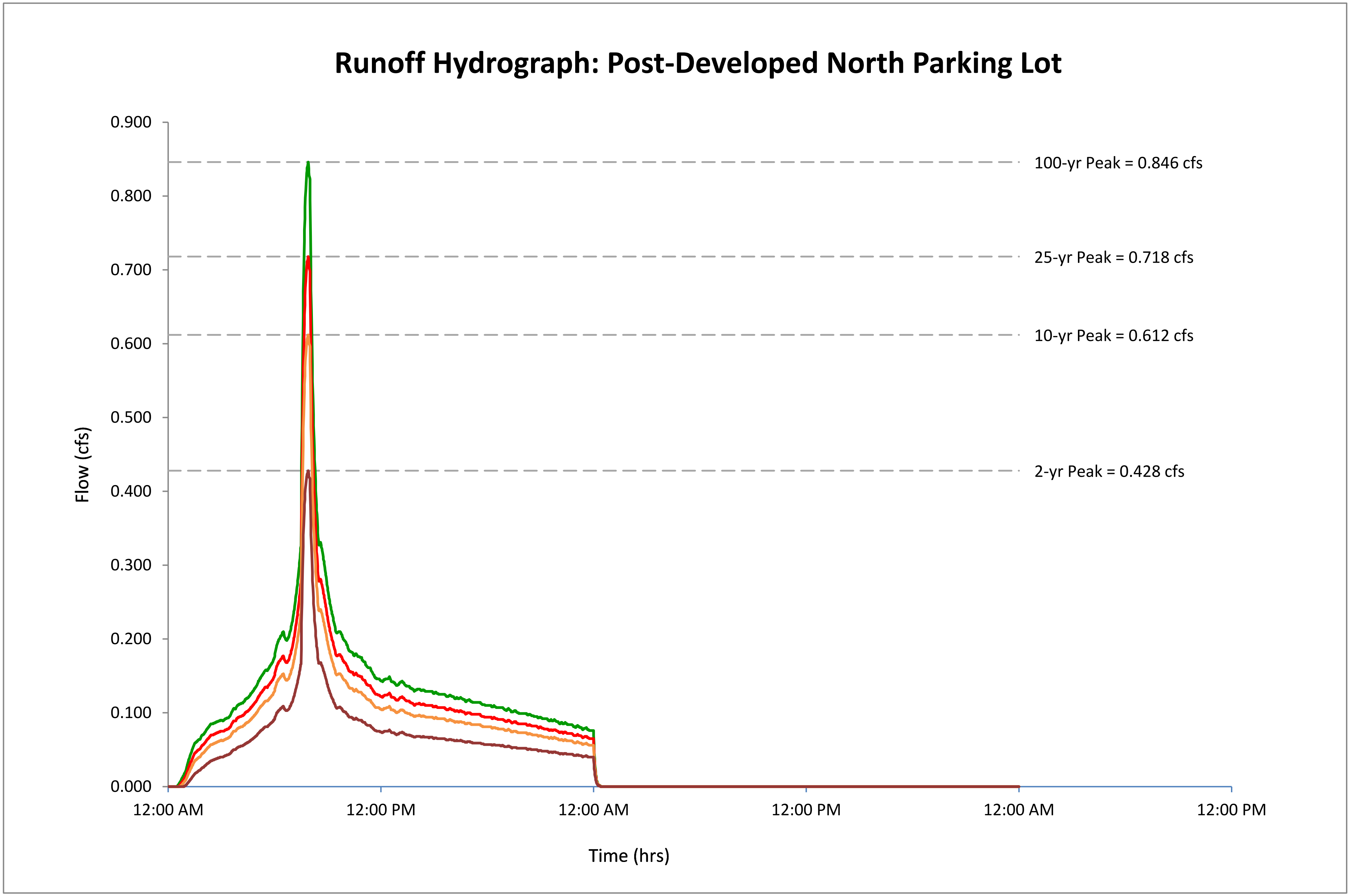
Runoff Hydrograph: Predeveloped North Parking Lot
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Flow (cfs)
100-yr Peak = 0.047 cfs
25-yr Peak = 0.033 cfs
10-yr Peak = 0.023 cfs
2-yr Peak = 0.009 cfs
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
Time (hrs)

Runoff Hydrograph: Predeveloped Stadium

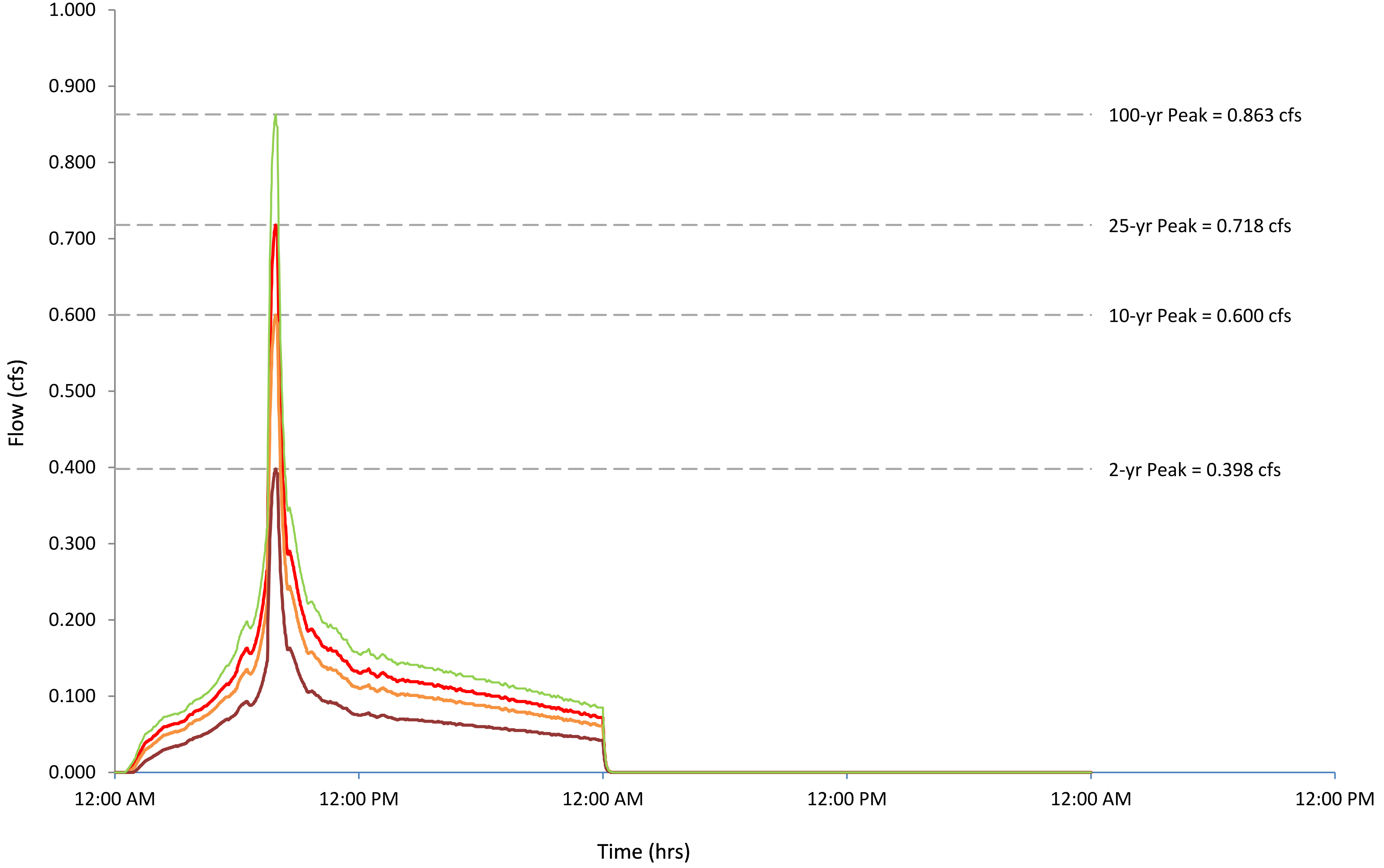


Runoff Hydrograph: Predeveloped South Parking Lot

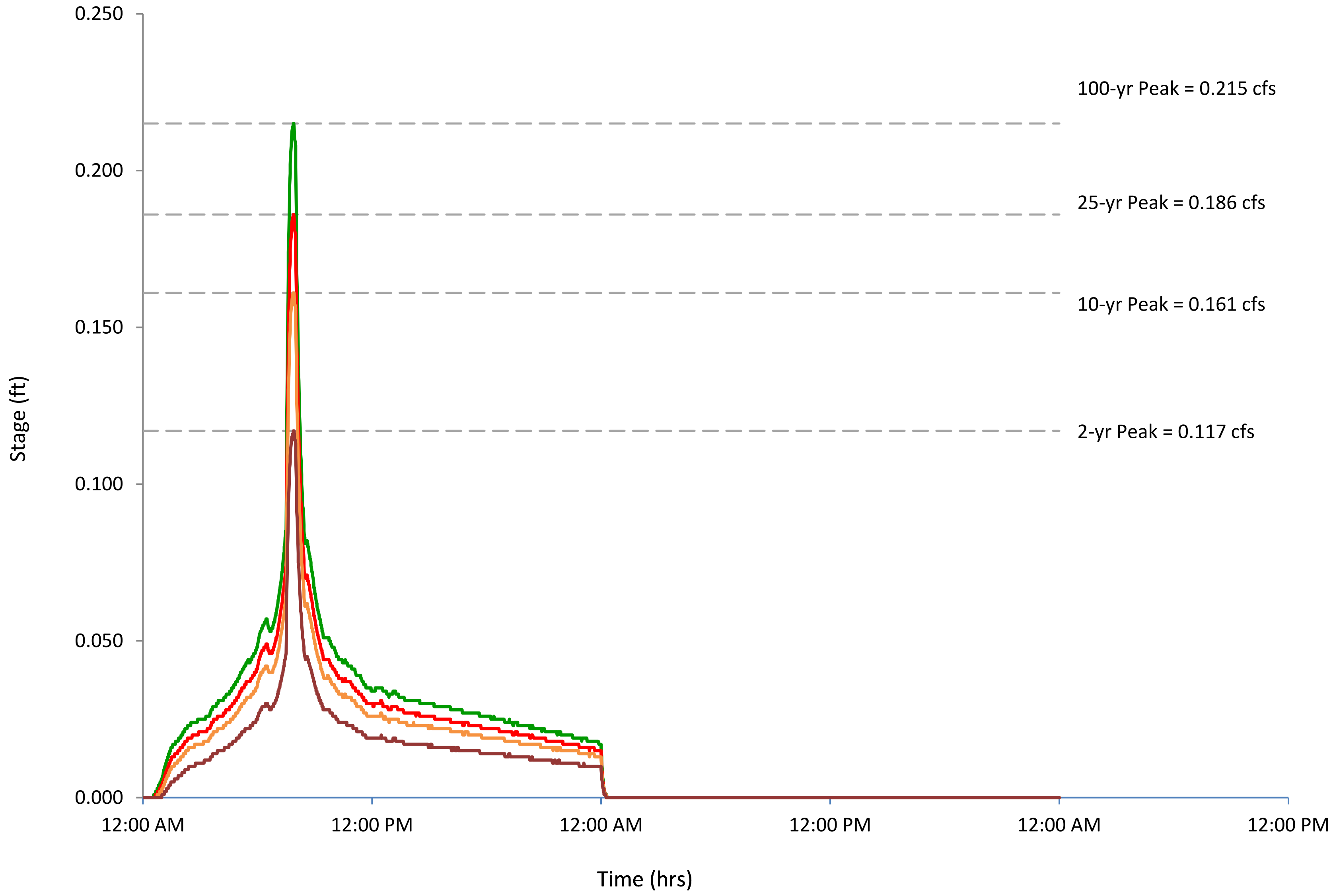



Runoff Hydrograph: Post-Developed North Parking Lot
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
Flow (cfs)
100-yr Peak = 0.846 cfs
25-yr Peak = 0.718 cfs
10-yr Peak = 0.612 cfs
2-yr Peak = 0.428 cfs
12:00 AM
12:00 PM
12:00 AM
12:00 PM
12:00 AM
12:00 PM
Time (hrs)

Runoff Hydrograph: Post-Developed Stadium



Runoff Hydrograph: Post-Developed South Parking Lot



CALCULATIONS

TIME OF CONCENTRATION

PROJECT NO. 19579	**BY** JBC	**DATE** 10/6/2020

SHEET FLOW			
INPUT	**PREDEVELOPED**		
Surface Description	**Type 10** **Woods (Dense_underbrus**	**Type 5** **Grass (short prairie)**	**Type 5** **Grass (short prairie)**
Manning's "n"	**0.8**	**0.15**	**0.15**
Flow Length, L	**234** ft	**0** ft	**0** ft
2-Yr 24 Hour Rainfall, P_2	**2.5** in	**2.5** in	**2.5** in
Land Slope, s	**0.1212** ft/ft	**0.0000** ft/ft	**0.0000** ft/ft
OUTPUT			
Travel Time	0.68 hr	0.00 hr	0.00 hr
SHALLOW CONCENTRATED FLOW			
INPUT	**VALUE**	**VALUE**	**VALUE**
Surface Description	**Unpaved**	**Unpaved**	**Unpaved**
Flow Length, L	**0** ft	**0** ft	**0** ft
Watercourse Slope*, s	**0.23** ft/ft	**0** ft/ft	**0** ft/ft
OUTPUT			
Average Velocity, V	7.74 ft/s	0.00 ft/s	0.00 ft/s
Travel Time	0.000 hr	0.000 hr	0.000 hr
CHANNEL FLOW			
INPUT	**VALUE**	**VALUE**	**VALUE**
Cross Sectional Flow Area, a	**0** ft^2	**0** ft^2	**0** ft^2
Wetted Perimeter, P_w	**0** ft	**0** ft	**0** ft
Channel Slope, s	**0** ft/ft	**0** ft/ft	**0** ft/ft
Manning's "n"	**0.24**	**0.24**	**0.24**
Flow Length, L	**0** ft	**0** ft	**0** ft
OUTPUT			
Average Velocity	0.00 ft/s	0.00 ft/s	0.00 ft/s
Hydraulic Radius, $r = a / P_w$	1.00 ft	1.00 ft	1.00 ft
Travel Time	0.00 hr	0.00 hr	0.00 hr
Watershed or Subarea T_c =	**0.68 hr**	**0.00 hr**	**0.00 hr**
Watershed or Subarea T_c =	**41 minutes**	**0 minutes**	**0 minutes**

1-800-BAYSAVER (1-800-229-7283)

Filter Design Tool v1.0

Project Name: WLHS Stadium and Parking Additions
Designer: Joe Conner
ADS Sales:
Date: 10/6/2020

Basin: North Parking Lot
Location: West Linn, OR
ADS EPM:

System Elevations

Rim Elevation: 262.45 ft
Inlet Elevation: 252.50 ft
Outlet Elevation: 249.67 ft
Drop from Inlet to Outlet: 34 in

Is there a storage system upstream? No

0.00

Design Method

Select the Design Parameter:

● Flow Rate

Treatment Flow, Q_{TRT} 0.124 cfs

$$\# \, Cartridges = \frac{Q_{TRT}(cfs) * 448.8 \frac{gpm}{cfs}}{Q_{BayFilter}}$$

○ Volume

Treatment Volume, V_{TRT} 0 cf

$$\# \, Cartridges = \frac{V_{TRT}(cf)}{V_{BayFilter}}$$

BayFilter Series 500

TSS and Phosphorous removal with EMC media

Recommended Model Type: 545

Recommended filter based on largest filter to meet recommended drop without a weir

Select Filter for Design:

Model	QBayFilter *gpm/sf*	# of Cartridges
545	45	2

Structure & Bypass

○ StreamFilter Catch Basin

☐ Use Curb Inlet

● Manhole w/ External Bypass

Minimum headwater depth achieved

Manhole Diameter is 60in
Structure height is 6ft

○ Vault w/ External Bypass

○ Vault w/ Internal Bypass

Sediment Load Check *(optional)*

Avg Annual Precipitation, P 0 in
Area of Site, A 0 acres
Runoff Coefficient, c 0
Percent Capture 0%

Default is 90% unless otherwise specified

Annual Treated Runoff Volume, V_{TRT} 0 ft^3

$$V_{TRT}(ft^3) = P * A * c * \frac{ft}{12in} * \frac{43{,}450ft^2}{acre} * \frac{\% \, Capture}{100}$$

Influent TSS Concentration, TSS_{IN} 0 mg/l

Default is 60mg/l unless otherwise specified; reduce if pretreatment used

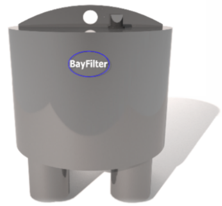
Annual Mass of Sediment, L 0.0 lbs

$$L(lbs) = V_{TRT} * TSS_{IN} * \frac{28.3l}{ft^3} * \frac{kg}{10^6 mg} \frac{2.2lbs}{kg}$$

Number of Cartridges for Sediment Load: 0

Sediment load can be managed with current cartridges

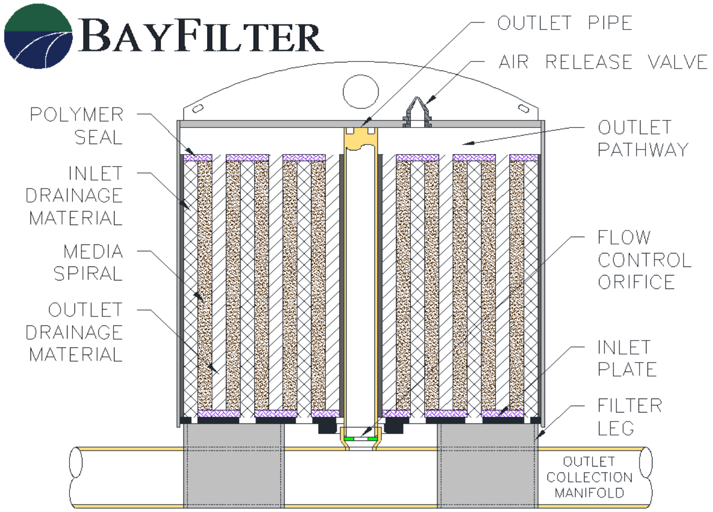
Show Filter Drawings



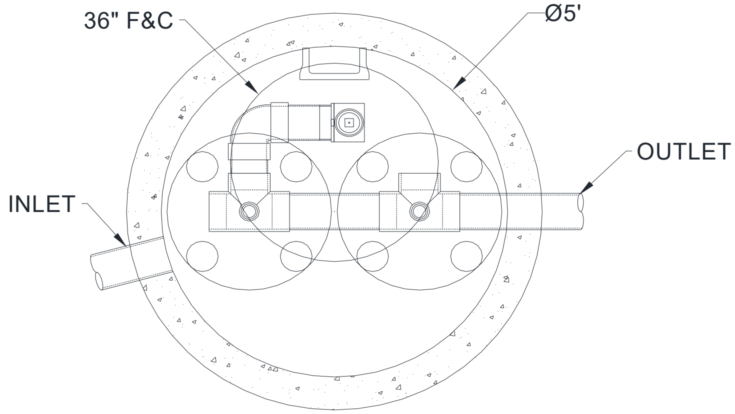
Project:	WLHS Stadium and Parking Additions
Location:	West Linn, OR
Designer:	Joe Conner
ADS Sales:	0
ADS EPM:	0
Date:	44110

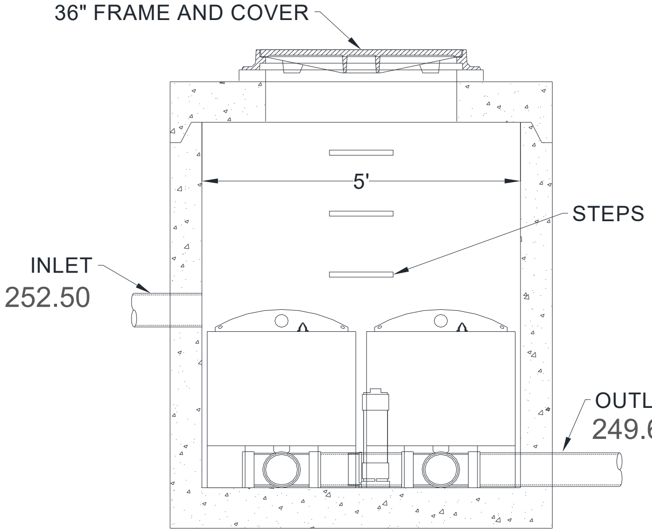
Treatment Flow:	0.124	cfs
Cartridge Type:	545	
Number of Cartiridges:	2	
Rim Elevation:	262.45	ft
Inlet Elevation:	252.50	ft
Outlet Elevation:	249.67	ft
Drop:	34	in
Top of Weir Elevation:	N/A	ft

BAYFILTER



60" Manhole





BAYSAVER TECHNOLOGIES

ADS

BAYSAVER TECHNOLOGIES

1-800-BAYSAVER (1-800-229-7283)

ADS

Filter Design Tool v1.0

Project Name: WLHS Stadium and Parking Additions
Designer: Joe Conner
ADS Sales:
Date: 10/6/2020

Basin: Stadium
Location: West Linn, OR
ADS EPM:

System Elevations

Rim Elevation: 262.45 ft
Inlet Elevation: 252.50 ft
Outlet Elevation: 249.67 ft
Drop from Inlet to Outlet: 34 in

Is there a storage system upstream? No

0.00

Design Method

Select the Design Parameter:

● Flow Rate

Treatment Flow, Q_{TRT} 0.106 cfs

$$\# Cartridges = \frac{Q_{TRT}(cfs) * 448.8\frac{gpm}{cfs}}{Q_{BayFilter}}$$

○ Volume

Treatment Volume, V_{TRT} 0 cf

$$\# Cartridges = \frac{V_{TRT}(cf)}{V_{BayFilter}}$$

BayFilter Series 500

TSS and Phosphorous removal with EMC media

Recommended Model Type: 545

Recommended filter based on largest filter to meet recommended drop without a weir

Select Filter for Design:

Model	QBayFilter *gpm/sf*	# of Cartridges
545	45	2

Structure & Bypass

○ StreamFilter Catch Basin

☐ Use Curb Inlet

● Manhole w/ External Bypass

Minimum headwater depth achieved

Manhole Diameter is 60in
Structure height is 6ft

○ Vault w/ External Bypass

○ Vault w/ Internal Bypass

Sediment Load Check *(optional)*

Avg Annual Precipitation, P 0 in
Area of Site, A 0 acres
Runoff Coefficient, c 0
Percent Capture 0%

Default is 90% unless otherwise specified

Annual Treated Runoff Volume, V_{TRT} 0 ft^3

$$V_{TRT}(ft^3) = P * A * c * \frac{ft}{12in} * \frac{43{,}450ft^2}{acre} * \frac{\% Capture}{100}$$

Influent TSS Concentration, TSS_{IN} 0 mg/l

Default is 60mg/l unless otherwise specified; reduce if pretreatment used

Annual Mass of Sediment, L 0.0 lbs

$$L(lbs) = V_{TRT} * TSS_{IN} * \frac{28.3l}{ft^3} * \frac{kg}{10^6mg} * \frac{2.2lbs}{kg}$$

Number of Cartridges for Sediment Load: 0

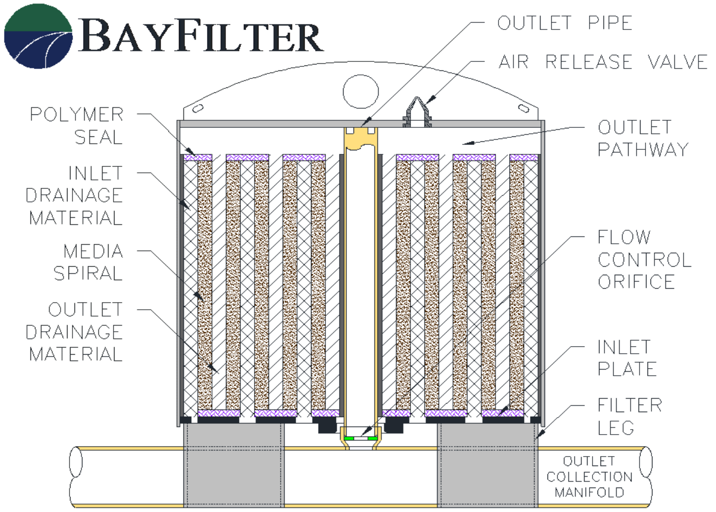
Sediment load can be managed with current cartridges

Show Filter Drawings

Project:	WLHS Stadium and Parking Additions
Location:	West Linn, OR
Designer:	Joe Conner
ADS Sales:	0
ADS EPM:	0
Date:	44110

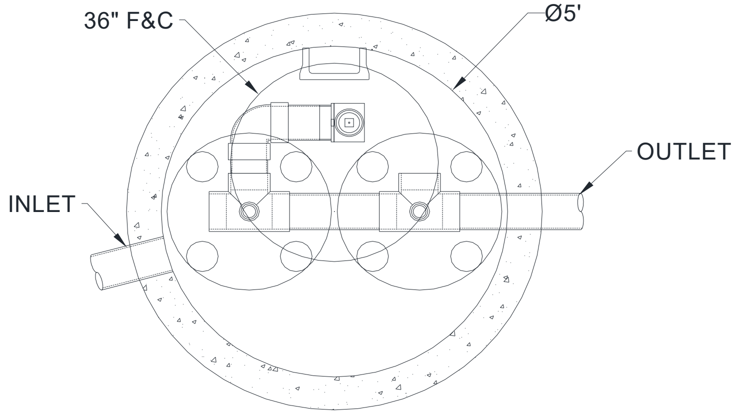
Treatment Flow:	0.106	cfs
Cartridge Type:	545	
Number of Cartiridges:	2	
Rim Elevation:	262.45	ft
Inlet Elevation:	252.50	ft
Outlet Elevation:	249.67	ft
Drop:	34	in
Top of Weir Elevation:	N/A	ft

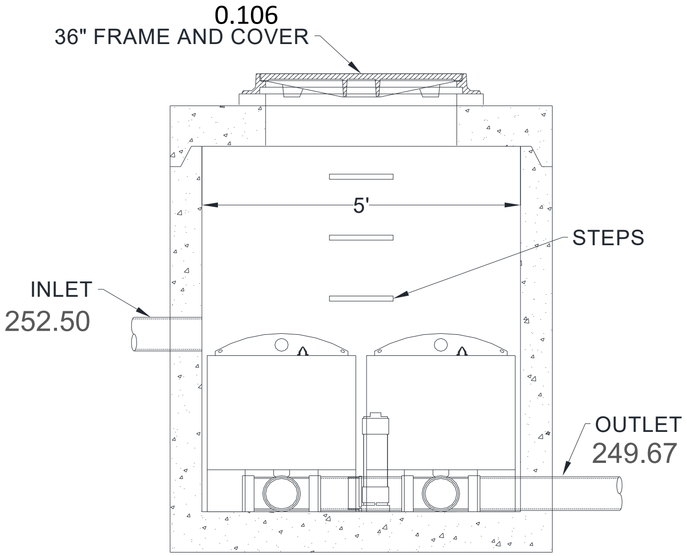
BAYFILTER



60" Manhole

Stadium





BAYSAVER TECHNOLOGIES

ADS

BAYSAVER TECHNOLOGIES

1-800-BAYSAVER (1-800-229-7283)

Filter Design Tool v1.0

Project Name: WLHS Stadium and Parking Additions
Designer: Joe Conner
ADS Sales:
Date: 10/6/2020

Basin: South Parking Lot
Location: West Linn, OR
ADS EPM:

System Elevations

Rim Elevation: 265.00 ft
Inlet Elevation: 252.50 ft
Outlet Elevation: 249.67 ft
Drop from Inlet to Outlet: 34 in

Is there a storage system upstream? No

0.00

Design Method

Select the Design Parameter:

● Flow Rate

Treatment Flow, Q_{TRT} 0.039 cfs

$$\# Cartridges = \frac{Q_{TRT}(cfs) * 448.8 \frac{gpm}{cfs}}{Q_{BayFilter}}$$

○ Volume

Treatment Volume, V_{TRT} 0 cf

$$\# Cartridges = \frac{V_{TRT}(cf)}{V_{BayFilter}}$$

BayFilter Series 500

TSS and Phosphorous removal with EMC media

Recommended Model Type: 545

Recommended filter based on largest filter to meet recommended drop without a weir

Select Filter for Design:

Model	**QBayFilter** *gpm/sf*	**# of Cartridges**
522	22.5	1

Structure & Bypass

● StreamFilter Catch Basin

☐ Use Curb Inlet

Minimum headwater depth achieved

Catch Basin Size is 32"x58.25"
Basin height is 4ft

○ Manhole w/ External Bypass

○ Vault w/ External Bypass

○ Vault w/ Internal Bypass

Sediment Load Check *(optional)*

Avg Annual Precipitation, P 0 in
Area of Site, A 0 acres
Runoff Coefficient, c 0
Percent Capture 0%

Default is 90% unless otherwise specified

Annual Treated Runoff Volume, V_{TRT} 0 ft^3

$$V_{TRT}(ft^3) = P * A * c * \frac{ft}{12in} * \frac{43{,}450ft^2}{acre} * \frac{\% Capture}{100}$$

Influent TSS Concentration, TSS_{IN} 0 mg/l

Default is 60mg/l unless otherwise specified; reduce if pretreatment used

Annual Mass of Sediment, L 0.0 lbs

$$L(lbs) = V_{TRT} * TSS_{IN} * \frac{28.3l}{ft^3} * \frac{kg}{10^6 mg} * \frac{2.2lbs}{kg}$$

Number of Cartridges for Sediment Load: 0

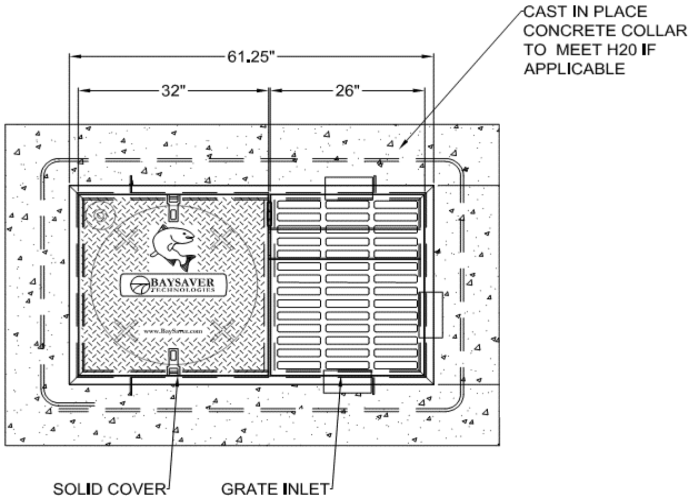
Sediment load can be managed with current cartridges

Show Filter Drawings

Project:	WLHS Stadium and Parking Additions
Location:	West Linn, OR
Designer:	Joe Conner
ADS Sales:	0
ADS EPM:	0
Date:	44110

Treatment Flow:	0.039	cfs
Cartridge Type:	545	
Number of Cartiridges:	1	
Rim Elevation:	265.00	ft
Inlet Elevation:	252.50	ft
Outlet Elevation:	249.67	ft
Drop:	34	in
Top of Weir Elevation:	N/A	ft

StreamFilter



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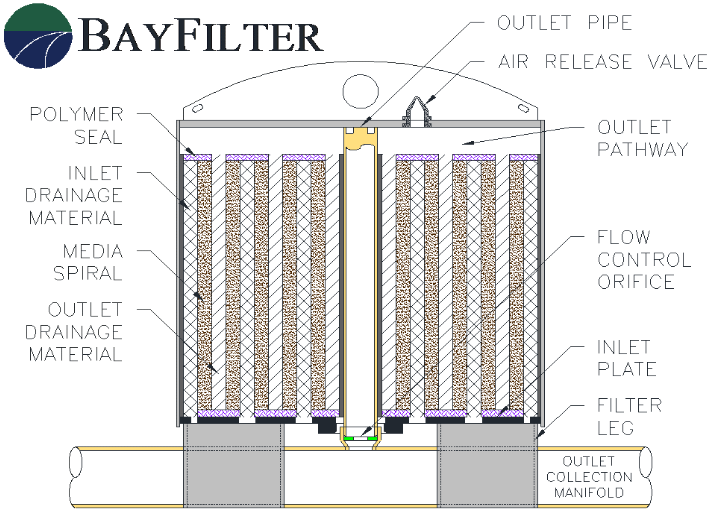
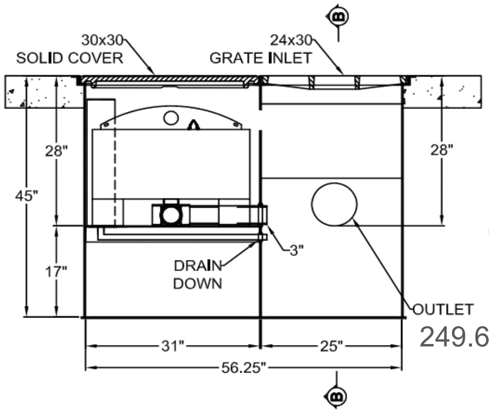
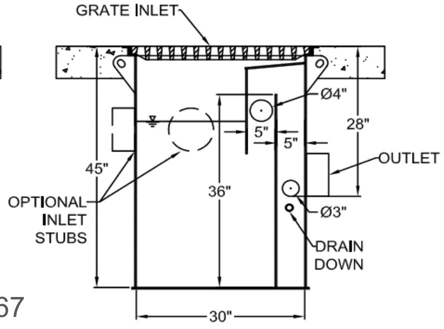




SECTION A-A



SECTION B-B

BAYSAVER TECHNOLOGIES

ADS

GEOTECHNICAL REPORT

REPORT OF GEOTECHNICAL ENGINEERING SERVICES

West Linn Stadium Expansion
5464 West A Street
West Linn, Oregon

For
West Linn-Wilsonville School District
c/o CBRE Heery, Inc.
July 14, 2020

GeoDesign Project: WLWSchDist-2-01

GEODESIGN INC
AN NV5 COMPANY

July 14, 2020

West Linn-Wilsonville School District
c/o CBRE Heery, Inc.
2 Centerpointe Drive, Suite 250
Lake Oswego, OR 97035

Attention: Amanda Blackburn

Report of Geotechnical Engineering Services
West Linn Stadium Expansion
5464 West A Street
West Linn, Oregon
GeoDesign Project: WLWSchDist-2-01

GeoDesign, Inc. is pleased to submit this report of geotechnical engineering services for the proposed stadium expansion project at West Linn High School located at 5464 West A Street in West Linn, Oregon. Our services for this project were conducted in accordance with our proposal dated April 29, 2020.

We appreciate the opportunity to be of service to you. Please contact us if you have questions regarding this report.

Sincerely,

GeoDesign, Inc.

Nick Paveglio, P.E.
Senior Associate Engineer

George Saunders, P.E., G.E.
Principal Engineer

cc: Peder Goldberg, JG Pierson, Inc. (via email only)
John Howorth, 3J Consulting, Inc. (via email only)

NNP:GPS:kt
Attachments
One copy submitted (via email only)
Document ID: WLWSchDist-2-01-071420-geor.docx

EXECUTIVE SUMMARY

This section provides a summary of the main geotechnical considerations associated with the stadium expansion project at West Linn High School in West Linn, Oregon. Our conclusions are based on the proposed site development information provided by the design team. This summary is an overview and the report should be referenced for a more thorough discussion of the subsurface conditions and geotechnical recommendations for the project.

- Foundations for the stadium expansion can be founded on dense gravel or basalt present within a few feet of the existing ground surface. If silt, clay, or sand is present at the base of foundations, it should be removed to dense gravel or basalt and backfilled with compacted crushed rock to limit differential settlement.

- The proposed cuts in the parking area will extend into dense gravel and basalt. Based on the results of seismic refraction testing completed in the parking lot, the majority of the basalt should be rippable with a Caterpillar D-9 bulldozer with a single shank to depths of approximately 4 to 5 feet BGS. We noted that boulders should be expected within the rippable material within 4 to 5 feet of the ground surface. Chipping or blasting is likely necessary to excavate the basalt below 4 to 5 feet BGS.

- Undocumented fill was encountered in one of test pit explorations in the parking area. If not removed by site grading, the fill should be evaluated by GeoDesign to determine if it is suitable to support the parking area. Fill deemed unsuitable should be removed and replaced with structural fill.

- The on-site fine-grained soil will require moisture conditioning (drying) to be used as structural fill.

- The fine-grained soil present on this site is easily disturbed. Planned grading will remove portions of the fine-grained soil and expose dense gravel or basalt; however, areas of fine-grained soil will likely be present at finished grades within the project boundaries. If not carefully executed, site preparation, utility trench work, and roadway excavation can create extensive soft areas and significant repair costs can result. Earthwork planning, regardless of the time of year, should include considerations for minimizing subgrade disturbance.

- Cut off drains should be installed at the base of the slopes along the proposed parking lot limits to capture groundwater and slope seepage and direct away it away from the planned improvements.

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2.0 SCOPE OF SERVICES 1
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  3.1 Geologic Setting 2
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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AC	asphalt concrete
ACP	asphalt concrete pavement
ADT	average daily traffic
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
BGS	below ground surface
CSZ	Cascadia subduction zone
g	gravitational acceleration (32.2 feet/second^2)
H:V	horizontal to vertical
km	kilometers
MCE	maximum considered earthquake
mm/yr	millimeters per year
OSHA	Occupational Safety and Health Administration
OSSC	Oregon Standard Specifications for Construction (2018)
pcf	pounds per cubic foot
pci	pounds per cubic inch
PG	performance grade
psf	pounds per square foot
psi	pounds per square inch
SOSSC	State of Oregon Structural Specialty Code
SPT	standard penetration test
USGS	U.S. Geological Survey

1.0 INTRODUCTION

GeoDesign, Inc. is pleased to submit this report of geotechnical engineering services for the stadium expansion project at West Linn High School located at 5464 West A Street in West Linn, Oregon. Figure 1 shows the site relative to existing topographic and physical features.

The project includes expanding seating on the north and south sides of the existing stadium and a new parking lot northwest of the stadium. Maximum compressive loads for the stadium expansion will be less than 150 kips and uplift will be less than 60 kips. The area beneath the expanded seating will be slab on grade to match the existing stadium grandstand area.

Based on the grading plan provided by 3J Consulting, Inc., the parking lot will be located at the base of the slope northwest of the stadium. Cuts required for the parking lot will be up to approximately 5 feet. Utilities are expected to be at least a few feet below the parking lot.

Figure 2 shows the existing and proposed site layout (overlay) and the approximate locations of our explorations. Logs from our explorations and laboratory test results are presented in Appendix A. Acronyms and abbreviations used herein are defined above, immediately following the Table of Contents.

2.0 SCOPE OF SERVICES

The purpose of our geotechnical services was to explore the site subsurface conditions and provide geotechnical engineering recommendations for use in design and construction of the project. The specific scope of our services is summarized as follows:

- Reviewed readily available, published geologic data and our in-house files for existing information on subsurface conditions in the site vicinity.
- Coordinated and managed the field explorations, including locating utilities and scheduling subcontractors and GeoDesign staff.
- Conducted a geologic site reconnaissance.
- Completed the following explorations:
  - One drilled boring beneath the north stadium expansion areas to refusal at a depth of 2.6 feet BGS
  - One hand auger boring beneath the south stadium expansion to practical refusal at a depth of 1 foot BGS
  - Four drilled borings in the proposed parking lot to refusal at depths between 2.3 and 4.5 feet BGS
  - Excavated four test pits across in the parking lot to refusal on basalt at depths between 2 and 4.5 feet BGS
- Completed infiltration testing in the location requested by the design team.
- Maintained continuous logs of the explorations and collected samples at representative intervals.
- Completed seismic refraction testing to evaluate rippability of the shallow basalt in parking areas. The results of the seismic refraction testing are presented in Appendix B.

- Performed a laboratory testing program consisting of the following:
    - Seven moisture content determinations in accordance with ASTM D2216
    - One particle-size analysis in accordance with ASTM D1140
    - Two Atterberg limits tests in general accordance with ASTM D4318
- Prepared this geotechnical report for the project that includes recommendations and discussion related to the following:
    - Soil, rock, and groundwater conditions
    - Results of seismic refraction testing and basalt rippability
    - Site preparation, grading and drainage, compaction criteria for both on-site and imported material, fill type for imported material, procedures for use of on-site soil, and wet weather earthwork procedures
    - Construction dewatering
    - Foundation support for the stadium expansion, including allowable bearing capacity, settlement estimates, and lateral resistance parameters
    - Floor slab recommendations
    - Conventional retaining walls, including backfill and drainage requirements and lateral earth pressures
    - Drainage
    - AC pavement for on-site access roads and parking areas, including subbase, base course, and AC paving thickness
    - Seismic design coefficients as prescribed by ASCE 7-16 and the 2019 SOSSC
    - Site-specific seismic report as required by the 2019 SOSSC for essential buildings

3.0 SITE CONDITIONS

3.1 GEOLOGIC SETTING

The near-surface geology at the stadium and proposed parking lot are mapped as the Miocene aged Sentinel Bluffs basalt member consisting of basaltic andesite from lava flows. Just above the stadium and on the steep slopes west of the proposed parking area is Miocene aged Gingko basalt. The Gingko basalt is also derived from lava flows and consists of basaltic andesite (Madin, 2009).

An approximately 1.35-acre landslide is mapped approximately 700 feet southwest of the site in the Gingko basalt and a large, 22-acre landside is mapped approximately 1,000 feet northwest of the site at the interface of the Sentinel Bluffs and Gingko basalt (SLIDO, 2020). Landslide potential at the site is discussed in the "Geologic Reconnaissance" section and Appendix C.

3.2 GEOLOGIC RECONNAISSANCE

A reconnaissance was completed at the site on May 21, 2020 by a member of our geology staff. The proposed parking lot is heavily vegetated with trees and underbrush and slopes gently upward from southeast to northwest. An approximately 70 percent slope is present at the west edge of the proposed parking area near the conservation easement boundary. The ground surface within the parking area was wet during the reconnaissance; however, seepage or springs were not observed in the area. Conifer trees on the 70 percent slope were mature and appeared straight with no significant bowing or pistol butting. Bowing of deciduous trees was observed but was likely a result of competition for sunlight within the canopy. Other signs of instability such as scarps or hummocky topography were not observed along the lower portion of the slope adjacent to the parking area.

The stadium expansion areas are on the west side of the football field/track and located at the base of an approximately 50 percent slope. The slope is densely covered by trees and brush. An outcrop of the Sentinel Bluffs member basalt was observed near the south expansion area. Above the outcrop and near the southwest corner of the existing stadium was a possible interflow boundary between the Sentinel Bluffs and Gingko basalt. Water seepage was observed near the south expansion area and was flowing to the northeast toward a drainage collection system. Conifer trees on the slope adjacent to the stadium expansion areas were straight and signs of instability such as scarps or hummocky topography were not observed along the slope.

3.3 SUBSURFACE CONDITIONS

3.3.1 General

Subsurface conditions were explored by drilling five borings (B-1 through B-5), advancing one hand auger boring (HA-1), and excavating four test pits (TP-1 through TP-4). All explorations were extended to practical refusal between 1 foot and 4.5 feet BGS. The approximate exploration locations are shown on Figure 2. Descriptions of our field exploration and laboratory testing programs, the exploration logs, and results of laboratory testing are presented in Appendix A. Explorations at the site generally encountered up to 4.5 feet of silt, clay, and gravel underlain by basalt. The following sections summarize the subsurface units encountered.

3.3.2 Root Zone

An approximately 3- to 6-inch-thick root zone from grasses and short vegetation was observed in the explorations at the site. Larger roots, up to approximately 3 inches in diameter, from trees and brush were observed up to 3.5 feet BGS.

3.3.3 Undocumented Fill

Undocumented fill was encountered in test pit TP-4 to 2 feet BGS. The fill consists of medium stiff silt with concrete debris and organics. Concrete debris ranged from 6 to 18 inches in diameter and the organics consist of roots up to 2.5 inches in diameter.

3.3.4 Silt and Clay

All of the explorations encountered silt or clay directly below the ground surface or below the fill materials, with the exception of B-1 that transitions to silty sand decomposed material. The silt and clay are gray-brown and medium stiff to stiff with low to medium plasticity. The silt and clay are moist to wet with trace organics. The silt and clay extend to depths between 1 foot and 4.5 feet BGS. Laboratory testing indicates the silt and clay had moisture contents ranging from 21 to 33 percent at the time of our explorations.

3.3.5 Sand and Gravel (Decomposed Basalt)

Sand and gravel is present below the silt and clay or directly below the ground surface in boring B-1. The sand and gravel are medium dense to very dense with variable proportions of silt, sand, clay, and cobbles. The sand and gravel are decomposed basalt near the interface with competent basalt. The sand and gravel extend to depths between 2 and 4.5 feet BGS.

3.3.6 Basalt

Based on explorations and the geophysical testing described below, basalt is within 2 to 4.5 feet of the existing ground surface. Based on geophysical testing, the upper few feet of the basalt is very soft to soft to depths of 4 to 5 feet BGS and transitions to medium hard to hard below. The basalt is expected to extend at least 50 feet BGS.

3.3.7 Groundwater

Moist to wet soil and groundwater were observed in the several of the explorations at the site as shallow as 1.5 feet BGS. The groundwater and moist soil are perched on top of the dense decomposed basalt and competent basalt, and static groundwater is likely more than 20 feet BGS. The depth of perched groundwater will fluctuate in response to seasonal changes and prolonged rainfall.

3.4 INFILTRATION TESTING

An infiltration test was performed in the location requested by the design team. Testing was completed in silt or clay soil above the dense gravel or basalt. The results of the infiltration testing are provided in Table 1.

Table 1. Infiltration and Laboratory Testing Summary

Location	Depth (feet BGS)	Observed Infiltration Rate[1] (inches per hour)	Soil Type at Test Depth
B-2	2	~0	Silt
B-2	4	~0	Clay

1. In situ infiltration rate observed in the field
2. Fines content - material passing the U.S. Standard No. 200 sieve

Recommendations for on-site infiltration systems are provided in the "Drainage" section.

3.5 GEOPHYSICAL TESTING

Geophysical testing consisting of three seismic P-wave refraction traverses were completed in the proposed parking area by Atlas. The purpose of the testing was to determine subsurface velocity profiles that could be used to assess the depth and rippability of shallow basalt at the site. The test report is presented in Appendix B. The locations of the refraction traverses are shown on Figure 2. A discussion regarding rippability of the subsurface soil is present in the "Excavation" section.

4.0 SEISMIC HAZARDS

We conducted a site-specific seismic evaluation that addresses seismic hazards. The results of the evaluation are presented in Appendix C.

5.0 DESIGN

5.1 GENERAL

The following sections provide our design recommendations for the project. All site preparation and structural fill should be prepared as recommended in the "Construction" section.

5.2 FOUNDATIONS

5.2.1 General

Foundations for the stadium expansion can be supported on conventional spread footings bearing on dense gravel or basalt at the site. Based on explorations, dense gravel or basalt will be encountered approximately 1 foot to 2 feet below existing grades. We recommend that silt or clay at the base of footings be excavated to gravel or basalt and replaced with imported granular material to limit differential settlement potential. Over-excavation of silt and clay is expected to be minimal.

Over-excavations should extend 6 inches beyond the margins of the foundations for every foot excavated below the base grade of the foundation and should consist of imported granular material as described in the "Structural Fill" section. The imported granular material should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557, or until well keyed, as determined by one of our geotechnical staff.

5.2.2 Dimensions and Capacities

Continuous wall and isolated spread footings should be at least 18 and 24 inches wide, respectively. The bottom of exterior footings should be at least 18 inches below the lowest adjacent exterior grade. The bottom of interior footings should be established at least 12 inches below base of slabs.

Footings bearing on dense gravel should be sized based on an allowable bearing pressure of 6,000 psf. Spread footings on competent basalt can be designed using an allowable bearing pressure of 18,000 psf. These are net bearing pressures; the weight of the footing and overlying backfill can be ignored in calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads and may be doubled for short-term loads, such as those resulting from wind or seismic forces.

Settlement of foundations bearing on dense gravel or basalt prepared as recommended will be negligible.

5.2.3 Resistance to Sliding

Lateral loads on footings can be resisted by passive earth pressure on the sides of the structure and by friction on the base of the footings. Our analysis indicates that the available passive earth pressure for footings confined by dense gravel or basalt is at least 400 pcf modeled as an equivalent fluid pressure. Typically, the movement required to develop the available passive resistance may be relatively large. Therefore, we recommend using a reduced passive equivalent fluid pressure of 300 pcf. Adjacent floor slabs, pavement, or the upper 12-inch depth of adjacent, unpaved areas should not be considered when calculating passive resistance. In addition, in order to rely on passive resistance, a minimum of 10 feet of horizontal clearance must exist between the face of the footings and any adjacent down slopes.

An ultimate coefficient of friction equal to 0.55 may be used when calculating resistance to sliding for footings in contact with gravel, basalt, or imported granular fill.

5.2.4 Subgrade Observation

All footing and floor subgrades should be evaluated by a representative of GeoDesign to evaluate the bearing conditions. Observations should also confirm that all loose or soft material, organic material, unsuitable fill, prior topsoil zones, and softened subgrades (if present) have been removed. Localized deepening of footing excavations may be required to penetrate any deleterious material.

5.3 SEISMIC DESIGN PARAMETERS

Seismic design criteria for this project will be based on the 2019 SOSSC and ASCE 7-16. Based on the subsurface conditions encountered in explorations and geophysical testing at the site, a seismic site class of B is appropriate. Due to the occupancy classification of the stadium, a site-specific study is required by the 2019 SOSSC. The study is presented in Appendix C. Table 2 provides the seismic design parameters that can be used for the project.

Table 2. Seismic Design Parameters

Seismic Design Parameter	Short Period (T_s = 0.2 second)	1 Second Period (T_1 = 1.0 second)
MCE Spectral Acceleration	S_s = 0.840 g	S_1 = 0.376 g
Site Class	B	
Site Coefficient	F_a = 0.9	F_v = 0.8
Adjusted Spectral Acceleration	S_{MS} = 0.756 g	S_{M1} = 0.301 g
Design Spectral Response Acceleration Parameters	S_{DS} = 0.504 g	S_{D1} = 0.201 g

5.4 FLOOR SLABS

Slabs on grade beneath the stadium expansion areas can be supported by the existing subgrade prepared as described in the “Construction” section. Dense gravel or basalt is present at shallow depths and rock excavation should be anticipated for cuts that extend more than a foot below current grade. To help reduce moisture transmission and slab shifting, we recommend a minimum 6-inch-thick layer of floor slab base rock be placed and compacted over a subgrade that has been prepared in conformance with the “Site Preparation” section.

Slabs should be reinforced according to their proposed use and per the structural engineer’s recommendations. Load-bearing concrete slabs may be designed assuming a modulus of subgrade reaction, k, of 150 pci.

The design parameters provided above assume the floor slabs are underlain by native soil, compacted structural fill, or improved topsoil subgrade (by the means of scarification and compaction or by cement amendment). If encountered, deleterious material and debris should be removed prior to compaction.

5.5 RETAINING STRUCTURES

5.5.1 Assumptions

Our retaining wall design recommendations are based on the following assumptions: (1) the walls are cantilevered walls, (2) the walls are less than 8 feet in height, (3) drainage is provided behind walls, (4) the retained soil has a slope flatter than 4H:1V, and (5) the ground surface at the toe of the wall has an inclination of flatter than 5H:1V. Re-evaluation of our recommendations will be required if the retaining wall design criteria for the project varies from these assumptions.

5.5.2 Wall Design Parameters

Permanent retaining structures supporting soil that is free to rotate slightly around the base should be designed for active earth pressures using an equivalent fluid unit pressure of 35 pcf. If retaining walls are restrained against rotation during backfilling, they should be designed for an at-rest earth pressure of 55 pcf.

Seismic lateral forces can be calculated using a dynamic force equal to $7H^2$ pounds per linear foot of wall, where H is the wall height. The seismic force should be applied as a distributed load with the centroid located at 0.6H from the wall base. Footings for retaining walls should be designed as recommended for shallow foundations.

The design equivalent fluid pressure should be increased for walls that retain sloping soil. We recommend the above lateral earth pressures be increased using the factors provided in Table 3 when designing walls that retain sloping soil.

Table 3. Lateral Earth Pressure Increase Factors for Sloping Soil

Slope of Retained Soil (degrees)	Lateral Earth Pressure Increase Factor
0	1.00
5	1.06
10	1.12
20	1.33
25	1.52
30	2.27

If other surcharges (i.e., slopes steeper than 2H:1V, foundations, vehicles, etc.) are located within a horizontal distance of twice the height of the wall from the back of the wall, additional pressures will need to be accounted for in the wall design. Our office should be contacted for appropriate wall surcharges based on the actual magnitude and configuration of the applied loads.

5.5.3 Wall Drainage and Backfill

The above design parameters have been provided assuming drains will be installed behind walls to prevent hydrostatic pressures from developing. If a drainage system is not installed, our office should be contacted for revised design forces.

Backfill material placed behind the walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of retaining wall select backfill placed and compacted in conformance with the "Structural Fill" section.

A minimum 6-inch-diameter, perforated collector pipe should be placed at the base of the walls. The pipe should be embedded in a minimum 2-foot-wide zone of angular drain rock that is wrapped in a drainage geotextile fabric and extends up the back of the wall to within 1 foot of the finished grade. The drain rock and drainage geotextile fabric should meet specifications provided in the "Materials" section. The perforated collector pipes should discharge at an appropriate location away from the base of the wall. The discharge pipe(s) should not be tied directly into stormwater drain systems, unless measures are taken to prevent backflow into the wall's drainage system.

Settlement of up to 1 percent of the wall height commonly occurs immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures. Consequently, we recommend construction of flatwork adjacent to retaining walls be postponed at least four weeks after backfilling of the wall, unless survey data indicates that settlement is complete prior to that time.

5.6 PAVEMENT

Pavement should be installed on native subgrade or new engineered fill prepared in conformance with the "Site Preparation" and "Structural Fill" sections. Our pavement recommendations are based on the following assumptions:

- The top 12 inches of soil subgrade is compacted to at least 92 percent of its maximum dry density, as determined by ASTM D1557, or until proof rolling with heavy equipment indicates that is it firm and unyielding.
- Resilient moduli of 4,500 psi and 20,000 psi were assumed for the subgrade and base rock, respectively.
- The design manual provided for the project specifies pavement recommendations based on a design life of 20 years.
- Initial and terminal serviceability indices of 4.2 and 2.5, respectively.
- Reliability of 85 percent and standard deviation of 0.45.
- Fire access will consist of an imposed fire apparatus load of 75,000 pounds on an infrequent basis.

Traffic at the new parking area is expected to consist primarily of passenger vehicles and an occasional larger vehicle (garbage truck or similar).

Our pavement design recommendations for the assumptions and loadings provided above are provided in Table 4.

Table 4. Recommended Standard Pavement Sections for Existing Subgrade

Pavement Use	AC Thickness[1] (inches)	Aggregate Base Thickness[1] (inches)
Automobile Parking	2.5	6.0
Drive Aisle	3.0	8.0

1. All thicknesses are intended to be the minimum acceptable values.

Design of the recommended pavement section is based on the assumption that construction will be completed during an extended period of dry weather. Wet weather construction could require an increased thickness of aggregate base. The AC, aggregate base, and cement amendment should meet the requirements outlined in the "Materials" section.

Construction traffic should not be allowed on new pavement. If construction traffic is to be allowed on newly constructed road sections, an allowance for this additional traffic will need to be made in the design pavement section. The aggregate base and cement-amended thicknesses (if installed) do not account for construction traffic, and haul roads and staging areas should be used as described in the "Construction" section.

5.7 DRAINAGE

5.7.1 Surface

Where possible, the finished ground surface around improvements should be sloped away from the structure at a minimum 2 percent gradient for a distance of at least 5 feet. Downspouts or roof scuppers should discharge into a storm drain system that carries the collected water to an appropriate stormwater system.

5.7.2 Cut Off Drains

We recommend cut off drains are installed at the toe of the slopes adjacent to the proposed parking area and stadium expansion to collect groundwater seepage. The drain should consist of a 2-foot-wide trench filled with drain rock and wrapped in geotextile fabric that extends at least 3 feet below final grade. The drain rock and geotextile should extend to within a foot of the ground surface. A 6-inch-diameter, perforated pipe should be installed at the base of the drain rock. The cut-off drains should be constructed at a minimum slope of approximately ½ percent and pumped or drained by gravity to a suitable discharge. The perforated drainpipe should not be tied to a stormwater drainage system without backflow provisions

The drain rock and geotextile should meet the requirements specified in the "Materials" section.

5.8 INFILTRATION SYSTEMS

Stormwater infiltration systems are being considered for the project. Infiltration testing was completed in boring B-2 as requested by 3J Consulting. The results of the testing are provided in Table 1.

The subsurface conditions at the site generally consist of 1 foot to 4.5 feet of silt and clay underlain by basalt. Measured infiltration rates in the silt and clay were negligible and infiltration is not possible in basalt. In addition, perched water is possible on top of the basalt. Based on soil and groundwater conditions and testing, infiltration systems are not feasible at the site.

6.0 CONSTRUCTION

6.1 SITE PREPARATION

6.1.1 Demolition

Demolition includes complete removal of structures, concrete slabs, footings, utilities, and other structural features. Abandoned foundations and utilities, if present, will need to be removed and the resulting excavations backfilled. Utility lines should be completely removed or, with prior approval, grouted full if left in place. In general, demolished material should be transported off site for disposal. Excavations left from demolition and removal of existing structures should be backfilled with compacted structural fill in accordance with recommendations in the "Structural Fill" section.

6.1.2 Grubbing and Stripping

The proposed parking lot is heavily vegetated with trees and underbrush, and considerable grubbing and stripping will be required. Trees and shrubs should be removed from improvement areas. In addition, root balls should be grubbed out to the depth of the roots, which could exceed 3 feet BGS. Depending on the methods used to remove the root balls, considerable disturbance and loosening of the subgrade could occur during site grubbing. We recommend soil disturbed during grubbing operations be removed to expose firm, undisturbed subgrade. The resulting excavations should be backfilled with structural fill.

The existing topsoil zone and root zones should be stripped and removed from all fill areas. Based on our explorations, the average depth of stripping will be approximately 3 to 6 inches in lightly vegetated areas and likely greater than 12 inches in shrub areas. Greater stripping depths should be anticipated in areas with thicker trees and shrubs. The actual stripping depth should be based on field observations at the time of construction. Stripped material should be transported off site for disposal or used in landscaped areas.

6.1.3 Undocumented Fill

Undocumented fill was encountered in test pit TP-4 in the proposed parking area to a depth of 2 feet BGS. The fill consists of medium stiff silt with concrete debris and organics. Concrete debris ranged from 6 to 18 inches in diameter and the organics consist of roots up to 2.5 inches in diameter. Existing fill not removed by site grading should be evaluated by a member of our staff as described in the "Subgrade Evaluation" section. Unsuitable soil should be removed and replaced with structural fill.

All undocumented fill encountered below foundation elements should be completely removed and replaced with structural fill.

6.1.4 Subgrade Evaluation

Upon completion of stripping and prior to the placement of fill, improvements, or pavement, the exposed subgrade should be evaluated by proof rolling. The subgrade should be proof rolled with a fully loaded dump truck or similarly heavy, rubber tire construction equipment to identify soft, loose, or unsuitable areas. A member of our geotechnical staff should observe the proof rolling to evaluate yielding of the ground surface. During wet weather, subgrade evaluation should be performed by probing with a foundation probe rather than proof rolling. Areas that appear soft or loose should be improved in accordance with subsequent sections of this report.

6.2 SUBGRADE CONSIDERATIONS

The fine-grained soil present on this site is easily disturbed. Planned grading will remove portions of the fine-grained soil and expose dense gravel or basalt; however, areas of fine-grained soil will likely be present at finished grades. If not carefully executed, site preparation, utility trench work, and roadway excavation can create extensive soft areas and significant repair costs can result. Earthwork planning, regardless of the time of year, should include considerations for minimizing subgrade disturbance.

If construction occurs during or extends into the wet season, or if the moisture content of the surficial soil is more than a couple percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Likewise, the use of granular haul roads and staging areas will be necessary for support of construction traffic during the rainy season or when the moisture content of the surficial soil is more than a few percentage points above optimum. The base rock thickness for pavement areas is intended to support post-construction design traffic loads. This design base rock thickness will likely not support construction traffic or pavement construction. Moreover, if construction is planned for periods when the subgrade soil is wet, staging and haul roads with increased thicknesses of base rock will be required. The amount of staging and haul road areas, as well as the required thickness of granular material, will vary with the contractor's sequencing of a project and type/frequency of construction equipment and should, therefore, be the responsibility of the contractor. Based on our experience, between 12 and 18 inches of imported granular material is generally required in staging areas and between 18 and 24 inches in haul roads areas. The contractor should also be responsible for selecting the type of material or construction of haul roads and staging areas. A geotextile fabric can be placed as a barrier between the subgrade and imported granular material in areas of repeated construction traffic to help prevent silt migration into the base rock. The imported granular material, stabilization material, and geotextile fabric should meet the specifications in the "Materials" section.

An alternative to thickened crushed rock sections is cement amending. Based on the size of the project and current grading plan, we anticipate that cement amending will not be cost effective. GeoDesign can provide cement amending recommendations for budgeting purposes if requested.

6.3 PERMANENT SLOPES

Permanent cut and fill slopes in soil should not exceed 2H:1V. We should be contacted to provide recommendations if permanent rock slopes are required. Excavations should not be completed in the existing slopes surrounding the site without notifying GeoDesign.

Access roads and pavement should be located at least 5 feet from the top of cut and fill slopes. The setback should be increased to 10 feet for buildings. The slopes should be planted with appropriate vegetation to provide protection against erosion as soon as possible after grading. Surface water runoff should be collected and directed away from slopes to prevent water from running down the face of the slope.

6.4 EXCAVATION

6.4.1 Soil Excavation

Perched groundwater was encountered in several explorations and should be anticipated near the interface of soil and basalt. Excavation into silt, clay, and sand should be readily accomplished with conventional earthwork equipment. Excavations into gravel and decomposed basalt are likely to encounter cobbles and boulders. Caving and sloughing will likely occur where cobbles and boulders are present and trench backfill volumes will exceed neat quantities. Where sand, gravel, cobbles, and boulders are present below groundwater, running conditions should be anticipated. Increased backfill volumes should be expected where deeper excavations are needed.

Temporary excavation sidewalls in silt and clay should stand vertical to a depth of approximately 4 feet, provided groundwater seepage does not occur in the sidewalls. Open excavation techniques may be used to excavate trenches with depths between 4 and 8 feet, provided the walls of the excavation are cut at a slope of 1H:1V or flatter and groundwater seepage does not occur. Excavations should be flattened to 1½H:1V or flatter if excessive sloughing occurs.

Use of approved temporary shoring is recommended where the slopes cannot be cut back, within the influence area of structural elements, and for cuts below the water table. The influence area can be defined as a 1H:1V slope extending down from a 5-foot setback from the edge of a foundation element. A wide variety of shoring and dewatering systems are available. Consequently, we recommend the contractor be responsible for selecting the appropriate shoring and dewatering systems.

If box shoring is used, it should be understood that box shoring is a safety feature used to protect workers and does not prevent caving. If the excavations are left open for extended periods of time, caving of the sidewalls may occur. The presence of caved material will limit the ability to properly backfill and compact the trenches. The contractor should be prepared to fill voids between the box shoring and the sidewalls of the trenches with sand or gravel before caving occurs.

If shoring is used, we recommend the type and design of the shoring system be the responsibility of the contractor, who is in the best position to choose a system that fits the overall plan of operation. All excavations should be made in accordance with applicable OSHA and state regulations.

6.4.2 Rock Excavation

Shallow basalt is present within a few feet of the ground surface at the site. Our scope of services included geophysical testing that consisted of three seismic P-wave refraction traverses in the proposed parking area. The purpose of the testing was to determine subsurface velocity profiles that could be used to assess the depth and rippability of the basalt. The results of testing are presented in Appendix B.

Basalt rock is considered as potentially rippable by a Caterpillar model D-9 bulldozer with a single shank when the P-wave velocity is less than approximately 7,000 feet per second. This relationship is only appropriate if the bulldozer is operating in an open, unrestrained area where boulders that are too hard to rip can be isolated and removed by other means.

P-wave velocity relationships are typically not valid for other types of equipment and situations, such as an excavator digging a utility trench. For trenching operations, the rippability values should be scaled downward. For example, velocities as low as 3,500 feet per second may indicate difficult ripping during trenching operations. In addition, the presence of boulders, which can be troublesome in narrow trenching operations, should be anticipated.

Based on the results seismic refraction testing completed in the parking lot, the majority of the basalt should be rippable with a Caterpillar D-9 bulldozer with a single shank to depths of approximately 4 to 5 feet BGS. Chipping or blasting may be required below 4 to 5 feet BGS. Boulders and over-size material will also be encountered. Based on the shallow cuts required and because blasting typically requires a minimum of 8 feet of rock (or heavy matting), we anticipate blasting may not be feasible at the site.

Based on testing, trench excavation will likely be very difficult throughout the entire basalt zone and blasting, sawing, or hydraulic chipping should be assumed. We recommend that the excavation contractor be responsible for determining the appropriate method of rock excavation as they are in the best position to choose a system that fits the overall plan of operation.

6.4.3 Safety

All excavations should be made in accordance with applicable OSHA requirements and regulations of the state, county, and local jurisdiction. While this report describes certain approaches to excavation and dewatering, the contract documents should specify that the contractor is responsible for selecting excavation and dewatering methods, monitoring the excavations for safety, and providing shoring (as required) to protect personnel and adjacent structural elements.

6.5 DEWATERING

6.5.1 Construction Dewatering

Perched groundwater and groundwater seepage from adjacent slopes should be expected during construction. The contractor should be responsible for temporary drainage of surface water, perched water, and groundwater as necessary to prevent standing water and/or erosion at the working surface. Sloughing conditions can occur if the excavation extends below groundwater seepage levels. Positive control of groundwater will be required to maintain stable trench sides and base.

Trench dewatering will be required to maintain dry working conditions if the invert elevations of the proposed utilities encounter groundwater. If groundwater is present at the base of utility excavations, we recommend placing 1.5 to 2 feet of stabilization material at the base of the excavation. The use of a subgrade geotextile fabric may reduce the amount of stabilization material required. The actual thickness should be based on field observations during construction. Trench stabilization material and the subgrade geotextile fabric should meet the requirements described in the "Materials" section. Trench stabilization material should be placed in one lift and compacted until well keyed.

While we have described certain approaches to the excavation dewatering, it is the contractor's responsibility to select the dewatering methods.

6.5.2 Permanent Dewatering

Cut off drains are recommended at the base of slopes in the development area to capture potential groundwater seepage. Further details regarding permanent dewatering systems are provided in the "Drainage" section.

6.6 MATERIALS

6.6.1 Structural Fill

6.6.1.1 General

Fill should be placed on subgrade that has been prepared in conformance with the "Site Preparation" section. A variety of materials may be used as structural fill at the site. However, all material used as structural fill should be free of organic material or other unsuitable materials. A brief characterization of some of the acceptable materials and our recommendations for their use as structural fill are provided below.

6.6.1.2 On-Site Soil

The material at the site should be suitable for use as general structural fill, provided it is properly moisture conditioned and free of debris, organic material, and particles over 6 inches in diameter.

The near-surface silt and clay soil is above the optimum moisture content for compaction and moisture conditioning (drying) will be required to use on-site soil for structural fill. Accordingly, extended dry weather will be required to adequately condition and place the soil as structural fill. It will be difficult, if not impossible, to adequately compact on-site soil during the rainy season or during prolonged periods of rainfall.

When used as structural fill, the on-site soil should be placed in lifts with a maximum uncompacted thickness of 8 inches and compacted to not less than 92 percent of the maximum dry density, as determined by ASTM D1557.

If boulders or basalt rock is processed for use as structural fill, we recommend a maximum particle size of 6 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557

6.6.1.3 Imported Granular Material

Imported granular material used as structural fill should be pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The imported granular material should also be durable, angular, and fairly well graded between coarse and fine material; should have less than 5 percent fines (material passing the U.S. Standard No. 200 sieve) by dry weight; and should have at least two mechanically fractured faces.

Imported granular material should be placed in lifts with a maximum uncompacted thickness of 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557. During the wet season or when wet subgrade conditions exists, the initial lift should be approximately 18 inches in uncompacted thickness and should be compacted by rolling with a smooth-drum roller without using vibratory action.

6.6.1.4 Stabilization Material

Stabilization material used in staging or haul road areas or in trenches should consist of durable, 4- or 6-inch-minus pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The material should have a maximum particle size of 6 inches, should have less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve, and should have at least two mechanically fractured faces. The material should be free of organic material and other deleterious materials. Stabilization material should be placed in lifts between 12 and 24 inches thick and compacted to a firm condition.

6.6.1.5 Trench Backfill

Trench backfill placed beneath, adjacent to, and for at least 12 inches above utility lines (i.e., the pipe zone) should consist of durable, well-graded granular material with a maximum particle size of 1½ inches, should have less than 7 percent fines by dry weight, and should have at least two mechanically fractured faces. The pipe zone backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

Within roadway alignments, the remainder of the trench backfill up to the subgrade elevation should consist of durable, well-graded granular material with a maximum particle size of 2½ inches, should have less than 7 percent fines by dry weight, and should have at least two mechanically fractured faces. This material should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department. The upper 3 feet of the trench backfill should be compacted to at least 95 percent of the maximum dry density, as determined by ASTM D1557.

Outside of structural improvement areas (e.g., roadway alignments or building pads) trench backfill placed above the pipe zone may consist of general fill material that is free of organic material and material over 6 inches in diameter. This general trench backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

6.6.1.6 Floor Slab Aggregate Base

Imported granular material used as base rock for building floor slabs should consist of ¾- or 1½-inch-minus material (depending on the application). In addition, the aggregate should have less than 5 percent fines by dry weight and should have at least two mechanically fractured faces. The aggregate base should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

6.6.1.7 Pavement Aggregate Base

Imported granular material used as base rock for pavement should consist of ¾- or 1½-inch-minus material (depending on the application). In addition, the aggregate should have less than 5 percent fines by dry weight and should have at least two mechanically fractured faces. The aggregate base should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

6.6.1.8 Retaining Wall Select Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of imported granular material as described above and should have less than 7 percent fines by dry weight. We recommend the wall backfill be separated from general fill, native soil, and/or topsoil using a geotextile fabric that meets the specifications provided below for drainage geotextiles.

The wall backfill should be compacted to a minimum of 95 percent of the maximum dry density, as determined by ASTM D1557. However, backfill located within a horizontal distance of 3 feet from a retaining wall should only be compacted to approximately 90 percent of the maximum dry density, as determined by ASTM D1557. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (such as a jumping jack or vibratory plate compactor). If flatwork (sidewalks or pavement) will be placed atop the wall backfill, we recommend that the upper 2 feet of material be compacted to 95 percent of the maximum dry density, as determined by ASTM D1557.

6.6.1.9 Drain Rock Material

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches. The material should be free of roots, organic material, and other unsuitable materials; should have less than 2 percent by dry weight passing the U.S. Standard No. 200 sieve (washed analysis); and should have at least two mechanically fractured faces. Drain rock should be compacted to a well-keyed, firm condition.

6.6.1.10 Retaining Wall Leveling Pad

Imported granular material placed at the base of retaining wall footings should consist of select granular material. The granular material should be 1”-0 to ¾”-0 aggregate size and have at least two mechanically fractured faces. The leveling pad material should be placed in a 6- to 12-inch lift and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

6.6.2 Geotextile Fabric

6.6.2.1 Subgrade Geotextile

Subgrade geotextile should conform to OSSC Table 02320-4 and OSSC 00350 (Geosynthetic Installation). A minimum initial aggregate base lift of 6 inches is required over geotextiles. All drainage aggregate and stabilization material should be underlain by a subgrade geotextile.

6.6.2.2 Drainage Geotextile

Drainage geotextile should conform to Type 2 material of OSSC Table 02320-1 and OSSC 00350 (Geosynthetic Installation). A minimum initial aggregate base lift of 6 inches is required over geotextiles.

6.6.4 AC

6.6.4.1 ACP

The AC should be Level 2, ½-inch, dense ACP according to OSSC 00744 (Asphalt Concrete Pavement) and compacted to 91 percent of the theoretical maximum density of the mix, as determined by AASHTO T 209. The minimum and maximum lift thicknesses are 2 and 3 inches, respectively, for ½-inch ACP. Asphalt binder should be performance graded and conform to PG 64-22 or better. The binder grade should be adjusted depending on the aggregate gradation and amount of recycled asphalt pavement and/or recycled asphalt shingles in the contractor's mix design submittal.

6.6.4.2 Cold Weather Paving Considerations

In general, AC paving is not recommended during the cold weather (temperatures less than 40 degrees Fahrenheit). Compacting under these conditions can result in low compaction and premature pavement distress.

Each AC mix design has a recommended compaction temperature range that is specific for the particular AC binder used. In colder temperatures, it is more difficult to maintain the temperature of the AC mix as it can lose heat while stored in the delivery truck, as it is placed, and in the time between placement and compaction. In Oregon, the AC surface temperature during paving should be at least 40 degrees Fahrenheit for lift thickness greater than 2.5 inches and at least 50 degrees Fahrenheit for lift thickness between 2 and 2.5 inches.

If paving activities must take place during cold-weather construction as defined above, the project team should be consulted and a site meeting should be held to discuss ways to lessen low compaction risks.

6.7 EROSION CONTROL

The site soil is susceptible to erosion; therefore, erosion control measures should be carefully planned and in place before construction begins. Surface water runoff should be collected and directed away from slopes to prevent water from running down the slope face. Erosion control measures (such as straw bales, sediment fences, and temporary detention and settling basins) should be used in accordance with local and state ordinances.

7.0 OBSERVATION OF CONSTRUCTION

Satisfactory foundation and earthwork performance depends to a large degree on quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during the subsurface exploration. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect if subsurface conditions change significantly from those anticipated.

We recommend GeoDesign be retained to observe earthwork activities, including stripping, proof rolling of the subgrade and repair of soft areas, footing subgrade preparation, final proof rolling of the pavement subgrade and base rock, and AC placement and compaction, and performing laboratory compaction and field moisture-density tests.

8.0 LIMITATIONS

We have prepared this report for use by West Linn-Wilsonville School District and members of the design and construction teams for the proposed project. The data and report can be used for bidding or estimating purposes, but our report, conclusions, and interpretations should not be construed as warranty of the subsurface conditions and are not applicable to other nearby building sites.

Exploration observations indicate soil conditions only at specific locations and only to the depths penetrated. They do not necessarily reflect soil strata or water level variations that may exist between exploration locations. If subsurface conditions differing from those described are noted during the course of excavation and construction, re-evaluation will be necessary.

The site development plans and design details were preliminary at the time this report was prepared. When the design has been finalized and if there are changes in the site grades or location, configuration, design loads, or type of construction, the conclusions and recommendations presented may not be applicable. If design changes are made, we request that we be retained to review our conclusions and recommendations and to provide a written modification or verification.

The scope does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in this report for consideration in design.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in this area at the time this report was prepared. No warranty, express or implied, should be understood.

◆ ◆ ◆

We appreciate the opportunity to be of service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

GeoDesign, Inc.

Nick Paveglio, P.E.
Senior Associate Engineer

George Saunders, P.E., G.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
86690
OREGON
May 8, 2012
NICHOLAS N. PAVEGLIO
EXPIRES: 12/31/20

REFERENCES

ASCE Standard ASCE/SEI 7-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures, January 2017, American Society of Civil Engineers.

Madin, Ian P., 1990. Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon. Oregon Department of Transportation. GMS119.

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State of Oregon 2019 Structural Specialty Code.

FIGURES

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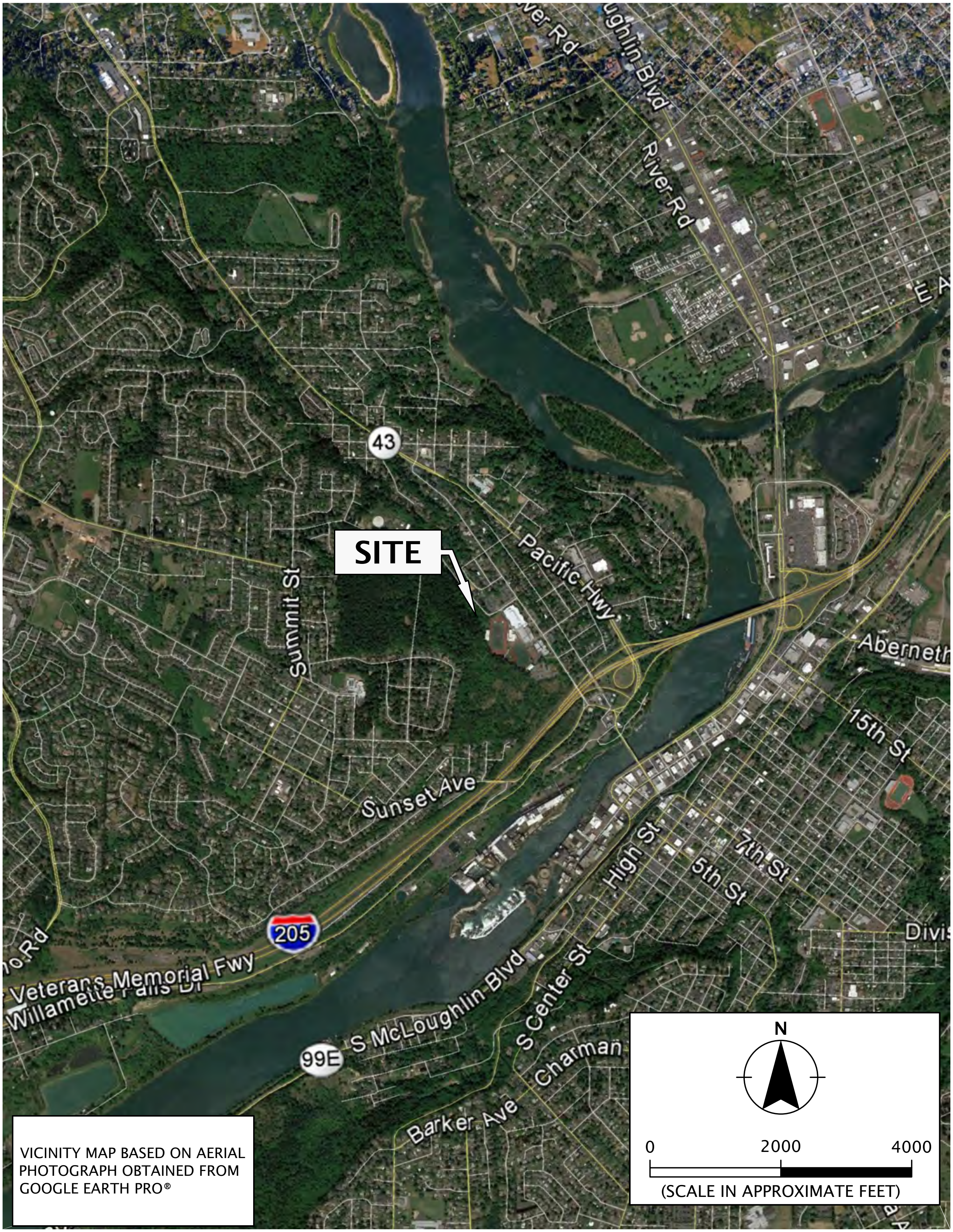
File Name: J:\S-Z\WLWSchDist\WLWSchDist-2\WLWSchDist-2-01\Figures\CAD\WLWSchDist-2-01-VM01.dwg | Layout: FIGURE 1



VICINITY MAP BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®

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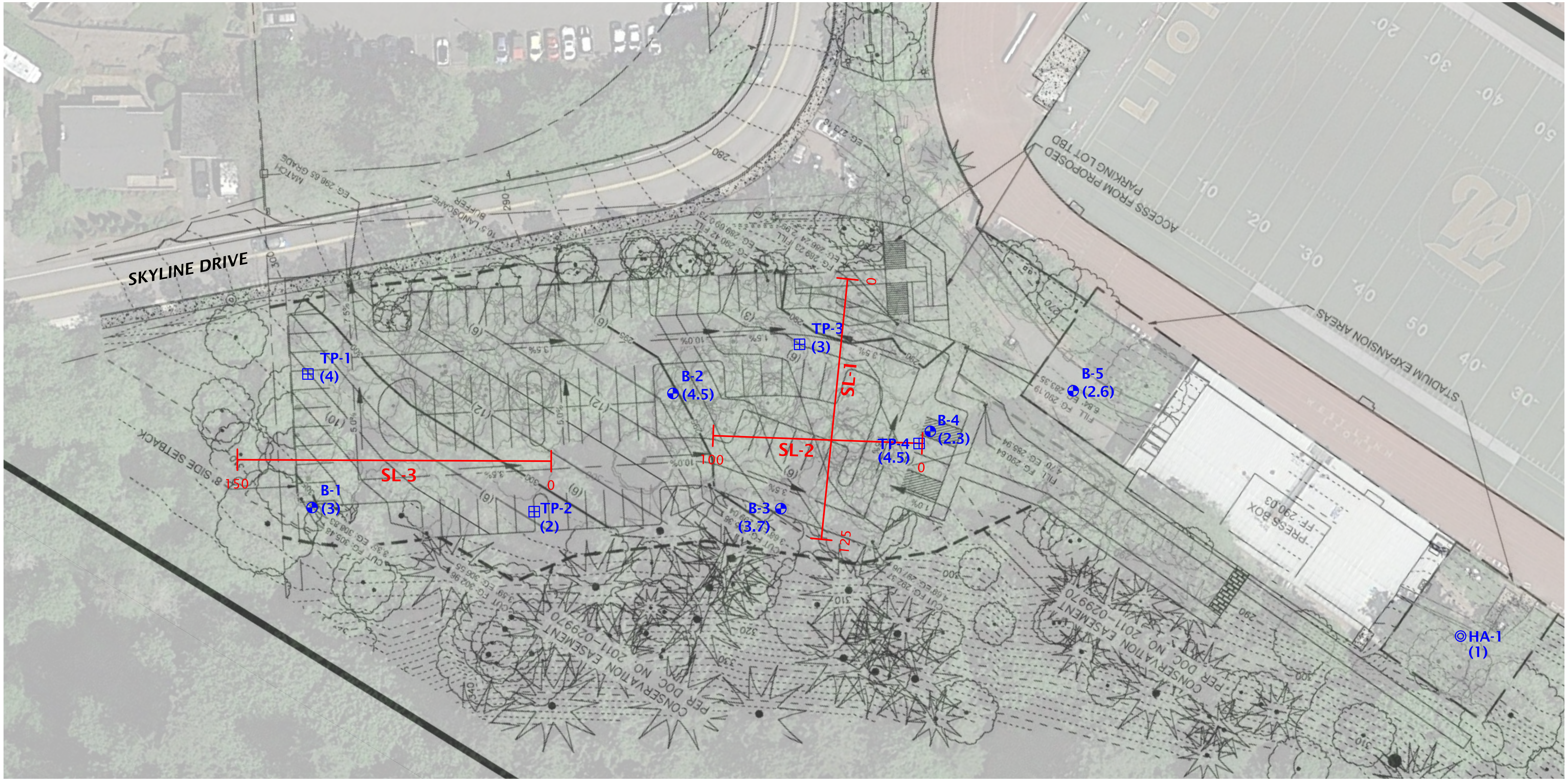
VICINITY MAP

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE 1



LEGEND:

B-1 ◕	BORING
TP-1 ⊞	TEST PIT
HA-1 ◎	HAND AUGER BORING
(3)	DEPTH TO REFUSAL (FEET BGS)
SL-1 ├─┤	SEISMIC LINE

N

0 50 100

(SCALE IN FEET)

NOTES:

1. SITE PLAN BASED ON IMAGE OF FIG.2B MAXIMIZED PARKING SITE PLAN DATED FEBRUARY 26, 2020 PREPARED BY 3J CONSULTING.
2. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO JUNE 9, 2020.

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SITE PLAN

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE 2

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APPENDIX A

APPENDIX A

FIELD EXPLORATIONS

GENERAL

Subsurface conditions were explored by drilling five borings (B-1 through B-5), advancing one hand auger boring (HA-1), and excavating four test pits (TP-1 through TP-4). All explorations were extended to practical refusal on dense soil or basalt at depths between 1 foot and 4.5 feet BGS. Approximate locations of all explorations are shown on Figure 2. The drilled borings and test pits were completed by Dan J. Fisher Excavating, Inc. of Forest Grove, Oregon, using a trailer-mounted drill rig with solid stem-auger techniques and a mini-excavator, respectively. The exploration logs are presented in this appendix. A member of our geology staff observed the explorations.

SOIL SAMPLING

Samples were collected from the borings using 1½-inch-inner diameter SPT split-barrel sampler in general accordance with ASTM D 1586. The sampler was driven into the soil with a 140-pound hammer free-falling 30 inches. The sampler was driven a total distance of 18 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the exploration logs, unless otherwise noted. The hammer used to conduct the SPTs was lifted using a rope and cathead. The SPTs were conducted using two wraps of the rope around the cathead.

Representative disturbed samples of soil observed in the test pit explorations were collected from the test pit walls and base using the excavator bucket.

Representative grab samples of the soil observed in the hand augers were collected from the tip of the hand auger.

Sampling intervals are shown on the exploration logs.

SOIL CLASSIFICATION

We collected samples of the soil encountered at representative intervals. The soil samples were classified in accordance with the “Explorations Key” (Table A-1) and “Soil Classification System” (Table A-2), which are presented in this appendix. The exploration logs indicate the depths at which the soils or their characteristics change, although the change could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

LABORATORY TESTING

We visually examined soil samples collected from the explorations to confirm field classifications. We also performed the following laboratory testing.

ATTERBERG LIMITS TESTING

Atterberg limits (plastic and liquid limits) testing was performed on select soil samples in general accordance with ASTM D4318. The plastic limit is defined as the moisture content where the soil becomes brittle. The liquid limit is defined as the moisture content where the soil begins to act similar to a liquid. The plasticity index is the difference between the liquid and plastic limits. The test results are presented in this appendix.

MOISTURE CONTENT

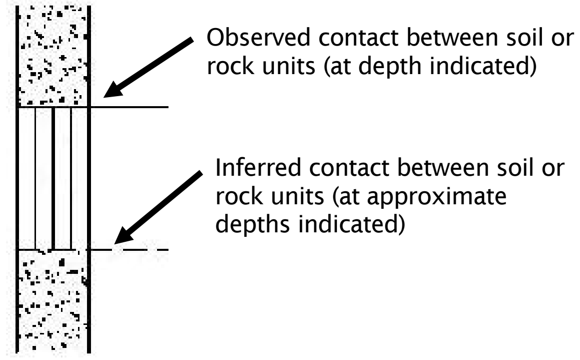
The natural moisture content of select soil samples was determined in general accordance with ASTM D2216. The natural moisture content is a ratio of the weight of the water to dry soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

PARTICLE-SIZE ANALYSIS

Particle-size analysis was performed on a select soil sample in general accordance with ASTM D1140. This test is a quantitative determination of the amount of material finer than the U.S. Standard No. 200 sieve expressed as a percentage of dry soil weight. The test results are presented in this appendix.

SYMBOL	SAMPLING DESCRIPTION
▯	Location of sample collected in general accordance with ASTM D1586 using Standard Penetration Test with recovery
▮	Location of sample collected using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D1587 with recovery
▤	Location of sample collected using Dames & Moore sampler and 300-pound hammer or pushed with recovery
▥	Location of sample collected using Dames & Moore sampler and 140-pound hammer or pushed with recovery
⧗	Location of sample collected using 3-inch-O.D. California split-spoon sampler and 140-pound hammer with recovery
☒	Location of grab sample
▩	Rock coring interval
▽	Water level during drilling
▼	Water level taken on date shown

Graphic Log of Soil and Rock Types



GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	P	Pushed Sample
CBR	California Bearing Ratio	PP	Pocket Penetrometer
CON	Consolidation	P200	Percent Passing U.S. Standard No. 200 Sieve
DD	Dry Density		
DS	Direct Shear	RES	Resilient Modulus
HYD	Hydrometer Gradation	SIEV	Sieve Gradation
MC	Moisture Content	TOR	Torvane
MD	Moisture-Density Relationship	UC	Unconfined Compressive Strength
NP	Non-Plastic	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

GEODESIGN INC AN NV5 COMPANY	**EXPLORATION KEY**	**TABLE A-1**

RELATIVE DENSITY - COARSE-GRAINED SOIL

Relative Density	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very Loose	0 – 4	0 – 11	0 – 4
Loose	4 – 10	11 – 26	4 – 10
Medium Dense	10 – 30	26 – 74	10 – 30
Dense	30 – 50	74 – 120	30 – 47
Very Dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOIL

Consistency	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very Soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 – 4	3 – 6	2 – 5	0.25 – 0.50
Medium Stiff	4 – 8	6 – 12	5 – 9	0.50 – 1.0
Stiff	8 – 15	12 – 25	9 – 19	1.0 – 2.0
Very Stiff	15 – 30	25 – 65	19 – 31	2.0 – 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOIL (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVEL WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SAND (<5% fines)	SW or SP	SAND
		SAND WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SAND WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOIL (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOIL			PT	PEAT

MOISTURE CLASSIFICATION

Term	Field Test
dry	very low moisture, dry to touch
moist	damp, without visible moisture
wet	visible free water, usually saturated

ADDITIONAL CONSTITUENTS

Secondary granular components or other materials such as organics, man-made debris, etc.

Percent	Silt and Clay In:		Percent	Sand and Gravel In:	
	Fine-Grained Soil	Coarse-Grained Soil		Fine-Grained Soil	Coarse-Grained Soil
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	Indicate %

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SOIL CLASSIFICATION SYSTEM

TABLE A-2

B-1

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % (0 50 100)	COMMENTS
0.0	ASPHALT CONCRETE (1.8 inches).	0.1				
	AGGREGATE BASE (7.2 inches).	0.8				
	Very dense, light brown-orange, silty SAND with gravel (SM); moist.					
2.5			P200	▮	● 50/6" ▲	P200 = 40%
	Exploration terminated at a depth of 3.0 feet due to refusal. SPT completed using two wraps with a cathead.	3.0			50/0" ▲	Surface elevation was not measured at the time of exploration.
5.0						
7.5						

B-2

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % (0 50 100)	COMMENTS
0.0	Medium stiff, gray-brown SILT with sand (ML); moist to wet (3-inch-thick root zone).					
						Infiltration test at 2.0 feet.
2.5				▮	5 ▲ ●	
	Medium stiff, gray CLAY (CH); moist.	3.5				Infiltration test at 4.0 feet.
	Exploration terminated at a depth of 4.5 feet due to refusal. SPT completed using two wraps with a cathead.	4.5		—	50/0" ▲	Surface elevation was not measured at the time of exploration.
5.0						
7.5						

DRILLED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: J. Heidgerken COMPLETED: 06/04/20

BORING METHOD: solid-stem auger (see document text) BORING BIT DIAMETER: 4 inches

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BORING

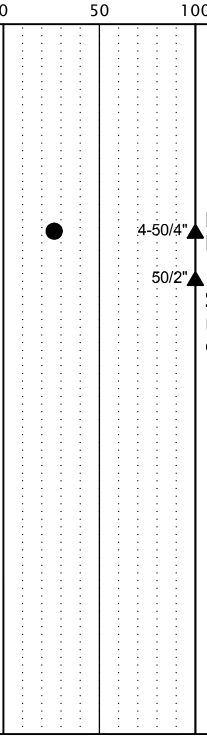
WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-1

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT %	COMMENTS

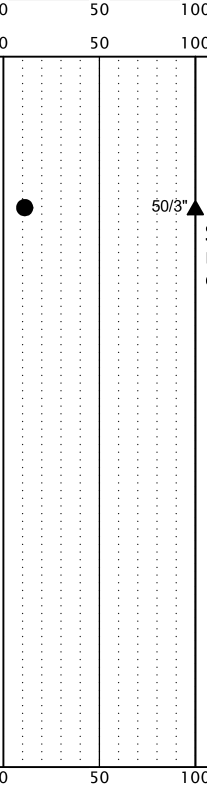
B-3

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	COMMENTS
0.0	Medium stiff to stiff, light brown-light gray CLAY (CL/CH), trace organics (roots, woody debris); moist, organics are 1/4-inch diameter (3.5-inch-thick root zone).			
2.5	Very dense, gray GRAVEL (GP); moist.	3.0	ATT	LL = 54% PL = 24%
	Exploration terminated at a depth of 3.7 feet due to refusal. SPT completed using two wraps with a cathead.	3.7		Surface elevation was not measured at the time of exploration.
5.0				
7.5				



B-4

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	COMMENTS
0.0	Soft to medium, dark gray CLAY (CL/CH), trace organics (roots); moist to wet, organics are <1/4-inch diameter (3-inch-thick root zone).			
	Very dense, gray GRAVEL with clay (GP-GC); moist.	1.5		
2.5	Exploration terminated at a depth of 2.3 feet due to refusal. SPT completed using two wraps with a cathead.	2.3		Surface elevation was not measured at the time of exploration.
5.0				
7.5				



DRILLED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: J. Heidgerken COMPLETED: 06/04/20

BORING METHOD: solid-stem auger (see document text) BORING BIT DIAMETER: 4 inches

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BORING
(continued)

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-2

B-5

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % (0 50 100)	COMMENTS
0.0	▨	Medium stiff, dark gray CLAY (CL/CH), trace silt and organics (roots); moist, organics are up to 1-inch diameter (3-inch-thick root zone).					
2.5		Very dense gray GRAVEL (GP), trace sand and clay; moist.	2.0		▬	50/1" ▲	Surface elevation was not measured at the time of exploration.
		Exploration terminated at a depth of 2.6 feet due to refusal. SPT completed using two wraps with a cathead.	2.6				
5.0							
7.5							

0 50 100

DRILLED BY: Dan J. Fischer Excavating, Inc. LOGGED BY: J. Heidgerken COMPLETED: 06/04/20

BORING METHOD: solid-stem auger (see document text) BORING BIT DIAMETER: 4 inches

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WLWSCHDIST-2-01

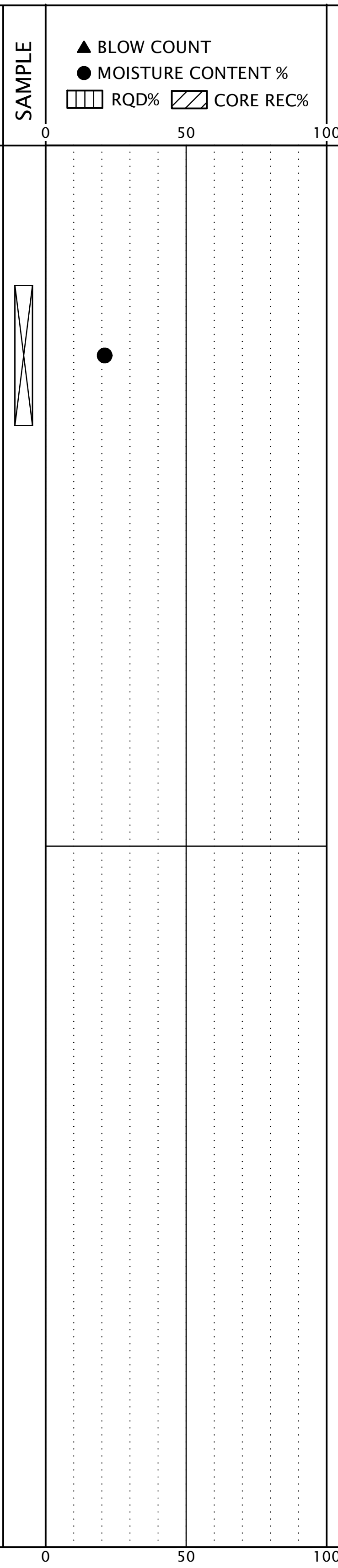
JULY 2020

BORING
(continued)

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-3

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	INSTALLATION AND COMMENTS
0.0		Medium stiff, brown SILT with gravel and sand (ML); moist.				
		Exploration terminated at a depth of 1.0 foot due to refusal.	1.0			Surface elevation was not measured at the time of exploration.
2.5						
5.0						



DRILLED BY: GeoDesign, Inc. staff

LOGGED BY: J. Heidgerken

COMPLETED: 06/05/20

BORING METHOD: hand auger (see document text)

BORING BIT DIAMETER: 3 1/2 inches

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JULY 2020

BORING HA-1

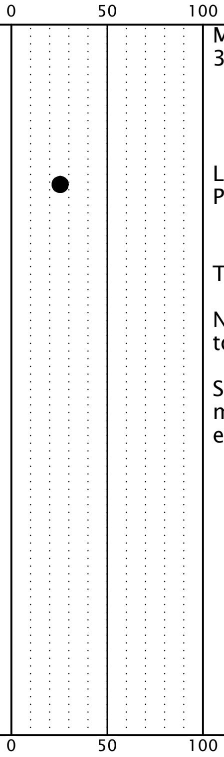
WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-4

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT (%)	COMMENTS

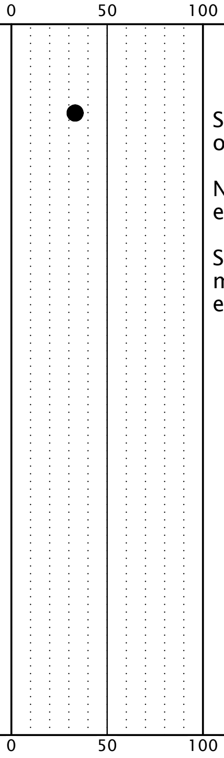
TP-1

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	COMMENTS
0.0	Medium stiff, brown-dark gray SILT with organics (carbonized wood, roots) (ML), minor gravel and sand; moist, organics are up to 2-inch diameter (6-inch-thick root zone).				Minor caving observed from 0.0 to 3.5 feet.
2.5			ATT	☒	LL = 38% PL = 24%
	Medium dense, gray GRAVEL with cobbles (GP), trace silt and sand; moist.	3.5		☒	Thick roots to 3.5 feet.
	Exploration terminated at a depth of 4.0 feet due to refusal.	4.0			No groundwater seepage observed to the depth explored. Surface elevation was not measured at the time of exploration.
5.0					
7.5					



TP-2

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	COMMENTS
0.0	Medium stiff, dark brown SILT (ML), trace organics (roots) and gravel; moist (topsoil, 5-inch-thick root zone).	0.4			
	Medium stiff, gray-brown CLAY with cobbles (CL), minor gravel; moist to wet, blocky.	1.5		☒ ☒	Slow groundwater seepage observed at 1.5 feet.
2.5	Very dense, gray-brown GRAVEL with cobbles (GP); moist.	2.0			No caving observed to the depth explored.
	Exploration terminated at a depth of 2.0 feet due to refusal.				Surface elevation was not measured at the time of exploration.
5.0					
7.5					



EXCAVATED BY: Dan J. Fischer Excavating, Inc.

LOGGED BY: J. Heidgerken

COMPLETED: 06/05/20

EXCAVATION METHOD: trackhoe (see document text)

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JULY 2020

TEST PIT

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-5

TP-3

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT (%) 0 50 100	COMMENTS
0.0	Medium stiff, gray-brown SILT with cobbles and organics (roots) (ML), trace sand; moist, organics are thick and up to 2 1/2-inch diameter (topsoil, 3.5-inch-thick root zone).	1.5		☒		Minor caving observed from 0.0 to 2.5 feet. Thick roots from 1.3 to 1.5 feet.
	Medium stiff, gray-light gray CLAY (CH); moist.	2.5		☒		
2.5	Very dense, gray-brown GRAVEL with cobbles and boulders (GP); moist.	3.0		☒		No groundwater seepage observed to the depth explored. Surface elevation was not measured at the time of exploration.
	Exploration terminated at a depth of 3.0 feet due to refusal.					
5.0						
7.5						

TP-4

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT (%) 0 50 100	COMMENTS
0.0	Medium stiff, brown SILT with debris (concrete fragments) and organics (roots) (ML), minor gravel and sand; moist, debris is 6- to 18-inch diameter, organics are thick and up to 2 1/2-inch diameter (3-inch-thick root zone) - **FILL**.	2.0				Minor caving observed from 0.0 to 4.0 feet.
2.5	Medium stiff, gray-brown SILT with sand and boulders (ML), trace organics (roots); moist to wet, organics are 1/8- to 1/4-inch diameter.	3.5				
	Medium stiff, gray CLAY (CH); moist.	4.0				
	Very dense, gray-brown GRAVEL with cobbles (GP); moist.	4.5				No groundwater seepage observed to the depth explored. Surface elevation was not measured at the time of exploration.
5.0	Exploration terminated at a depth of 4.5 feet due to refusal.					
7.5						

EXCAVATED BY: Dan J. Fischer Excavating, Inc.

LOGGED BY: J. Heidgerken

COMPLETED: 06/05/20

EXCAVATION METHOD: trackhoe (see document text)

GEODESIGN INC
AN NV5 COMPANY

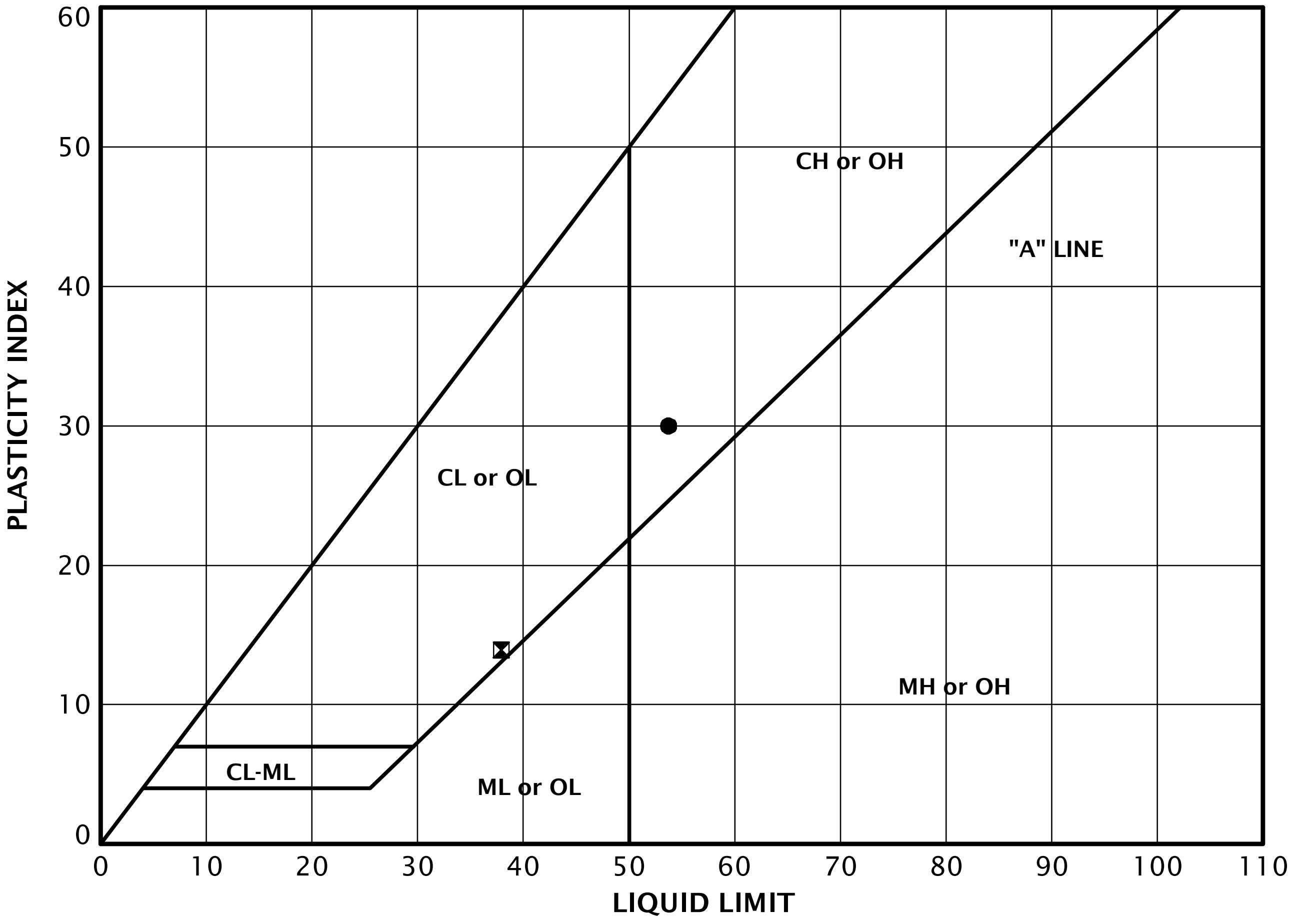
WLWSCHDIST-2-01

JULY 2020

TEST PIT

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-6



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
●	B-3	2.5	25	54	24	30
☒	TP-1	2.0	25	38	24	14

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JULY 2020

ATTERBERG LIMITS TEST RESULTS

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-7

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-1	2.5		15				40			
B-2	2.5		25							
B-3	2.5		26					54	24	30
B-4	2.0		11							
HA-1	0.5		21							
TP-1	2.0		25					38	24	14
TP-2	1.0		33							

GEODESIGN INC
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WLWSCHDIST-2-01

JULY 2020

SUMMARY OF LABORATORY DATA

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE A-8

APPENDIX B

APPENDIX B

GEOPHYSICAL TESTING

The seismic refraction testing report by Atlas is presented in this appendix. The results of testing are discussed in the main report. Locations of testing are shown on Figure 2 and in the Atlas report.

GEOPHYSICAL EVALUATION

WEST LINN HIGH SCHOOL

West Linn, Oregon

PREPARED FOR:
GeoDesign, Inc.
703 Broadway Street, Suite 650
Vancouver, WA 98660

PREPARED BY:
Atlas Technical Consultants
15115 SW Sequoia Parkway, Suite 130
Portland, OR 97224

July 1, 2020

ATLAS

15115 SW Sequoia Parkway, Suite 130
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July 1, 2020

Project No. 420012SWG
Report No. 1

MR. NICK PAVEGLIO, P.E.
GEODESIGN, INC.
703 Broadway Street, Suite 650
Vancouver, WA 98660

Subject: Geophysical Evaluation
West Linn High School
West Linn, Oregon

Dear Mr. Paveglio:

In accordance with your authorization, Atlas (formerly Southwest Geophysics) has performed a geophysical evaluation for the project site located at West Linn High School located in West Linn, Oregon. Specifically, our evaluation consisted of performing three seismic P-wave refraction traverses at the project site. The purpose of our study was to develop subsurface velocity profiles of the areas studied, and to assess the depth to bedrock and apparent rippability of the subsurface materials. Our field services were conducted on June 18, 2020. This data report presents our methodology, equipment used, analysis, and results.

If you have any questions, please call us at 503.836.7022.

Respectfully submitted,

Andrew Baird
Andrew S. Baird
Project Geophysicist

Hans van de Vrugt
Hans van de Vrugt, P.Gp (CA).
Principal Geologist/Geophysicist

ASB :HV :ds

Distribution: npaveglio@geodesigninc.com

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4. STUDY METHODOLOGY 1
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Figure 2 – Line Location Map
Figure 3 – Site Photographs
Figure 4a – P-Wave Profile, SL-1
Figure 4b – P-Wave Profile, SL-2
Figure 4c – P-Wave Profile, SL-3

1. INTRODUCTION

In accordance with your authorization, Atlas (formerly Southwest Geophysics) has performed a geophysical evaluation for the project site located at West Linn High School located in West Linn, Oregon (Figure 1). Specifically, our evaluation consisted of performing three seismic P-wave refraction traverses at the project site. The purpose of our study was to develop subsurface velocity profiles of the areas studied, and to assess the depth to bedrock and apparent rippability of the subsurface materials. Our field services were conducted on June 18, 2020. This data report presents our methodology, equipment used, analysis, and results.

2. SCOPE OF SERVICES

Our scope of services included:

- Performance of three seismic P-wave refraction traverses at the project site.
- Compilation and analysis of the data collected.
- Preparation of this data report presenting our results and conclusions.

3. SITE AND PROJECT DESCRIPTION

The project site is generally located west of Skyline Drive, on the northwest side of West Linn High School in West Linn, Oregon (Figure 1). The study area is located in a cleared patch of dense forest. Wet soil and mud limited access in portions of the site. Figures 2 and 3 present the general site conditions in the areas of the seismic traverses.

4. STUDY METHODOLOGY

A seismic P-wave (compression wave) refraction study was conducted at a portion of the project site to evaluate the rippability characteristics of the subsurface materials and to develop subsurface velocity profiles of the areas studied. The seismic refraction method uses first-arrival times of refracted seismic waves to estimate the thicknesses and seismic velocities of subsurface layers. Seismic P-waves generated at the surface, using a hammer and plate, are refracted at boundaries separating materials of contrasting velocities. These refracted seismic waves are then detected by a series of surface vertical component 30-Hz geophones and recorded with a 24-channel Geometrics Geode seismograph. The travel times of the seismic P-waves are used in conjunction with the shot-to-geophone distances to obtain thickness and velocity information on the subsurface materials.

Three seismic lines (SL-1 through SL-3) were conducted in the study area. The general locations and lengths of the lines were selected by you and your office. The lines were 100, 125 and 150 feet in length. Shot points (signal generation locations) were conducted along the lines at the ends, midpoint, and intermediate points between the ends and the midpoint.

The seismic refraction theory requires that subsurface velocities increase with depth. A layer having a velocity lower than that of the layer above will not generally be detectable by the seismic refraction method and, therefore, could lead to errors in the depth calculations of subsequent layers. In addition, lateral variations in velocity, such as those caused by core stones, intrusions or boulders can also result in the misinterpretation of the subsurface conditions. In general, the effective depth of evaluation for a seismic refraction traverse is approximately one-third to one-fifth the length of the spread.

The seismic P-wave velocity of a material can be correlated to rippability (see Table 1 below), or to some degree "hardness." Table 1 is based on published information from the Caterpillar Performance Handbook (Caterpillar, 2018), as well as our experience with similar materials, and assumes that a Caterpillar D-9 dozer ripping with a single shank is used. We emphasize that the cutoffs in this classification scheme are approximate and that rock characteristics, such as fracture spacing and orientation, play a significant role in determining rock quality or rippability. The rippability of a mass is also dependent on the excavation equipment used and the skill and experience of the equipment operator.

Table 1 – Rippability Classification

Seismic P-wave Velocity	Rippability
0 to 2,000 feet/second	Easy
2,000 to 4,000 feet/second	Moderate
4,000 to 5,500 feet/second	Difficult, Possible Blasting
5,500 to 7,000 feet/second	Very Difficult, Probable Blasting
Greater than 7,000 feet/second	Blasting Generally Required

For trenching operations**,** the rippability values should be scaled downward. For example, velocities as low as 3,500 feet/second may indicate difficult ripping during trenching operations. In addition, the presence of boulders, which can be troublesome in narrow trenching operations, should be anticipated.

It should be noted that the rippability cutoffs presented in Table 1 are slightly more conservative than those published in the Caterpillar Performance Handbook. Accordingly, the above classification scheme should be used with discretion, and contractors should not be relieved of making their own independent evaluation of the rippability of the on-site materials prior to submitting their bids.

5. RESULTS AND CONCLUSIONS

As previously indicated, three seismic traverses were conducted as part of our study. Figures 4a through 4c present the velocity models generated from our analysis. Based on the results it appears that the project site is underlain by low velocity materials (i.e., topsoil, fill, etc.) in the near surface and higher velocity materials, likely bedrock, at shallow depths. Distinct vertical and lateral velocity variations are evident in the models. Moreover, the degree of weathering and the depth to possible bedrock appears to be variable across the study area.

Based on the refraction results, variability in the excavatability (including depth of rippability) of the subsurface materials should be expected across the project area. Furthermore, blasting may be required depending on the excavation depth, location, equipment used, and desired rate of production. In addition, oversized materials should be expected. A contractor with excavation experience in similar difficult conditions should be consulted for expert advice on excavation methodology, equipment and production rate.

6. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface surveying will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Atlas should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

7. SELECTED REFERENCES

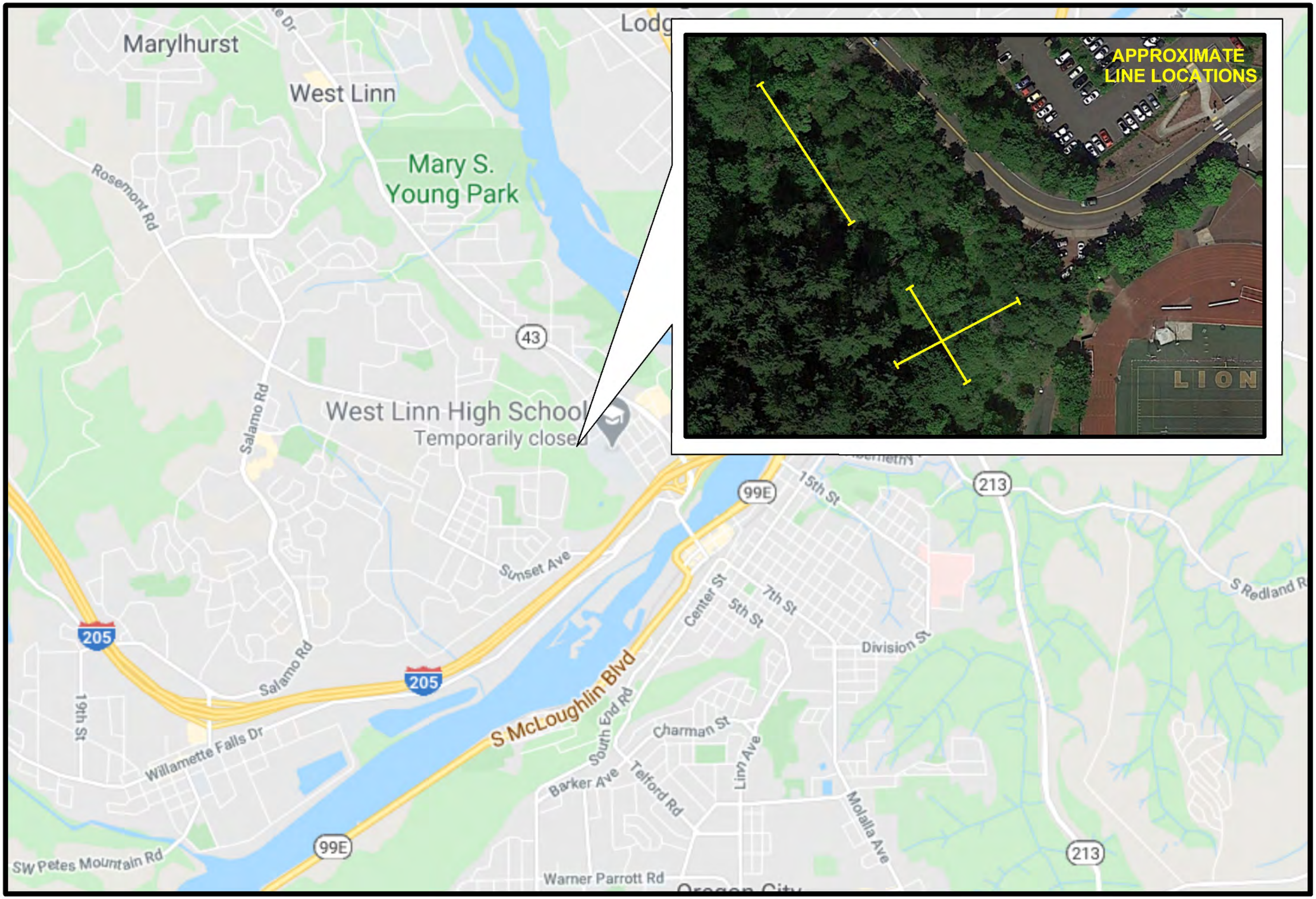
Caterpillar, Inc., 2018, Caterpillar Performance Handbook, Edition 48, Caterpillar, Inc., Peoria, Illinois.

Mooney, H.M., 1976, Handbook of Engineering Geophysics, dated February.

Optim, Inc., 2008, SeisOpt Pro, V-5.0.

Rimrock Geophysics, 2003, Seismic Refraction Interpretation Program (SIPwin), V-2.76.

Telford, W.M., Geldart, L.P., Sheriff, R.E., and Keys, D.A., 1976, Applied Geophysics, Cambridge University Press.



SITE LOCATION MAP

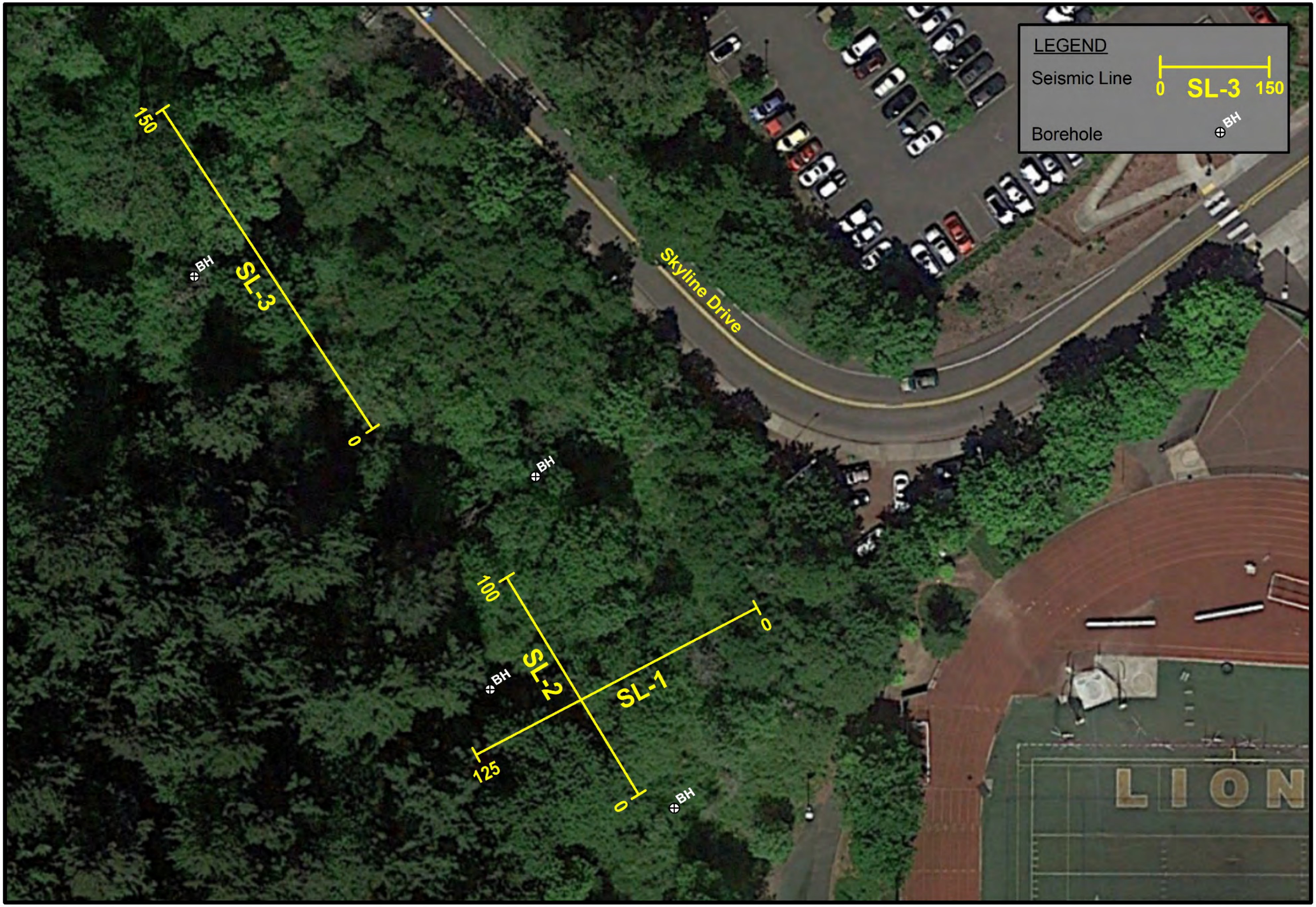
N

West Linn High School
West Linn, Oregon

Project No.: 420012SWG
Date: 07/20

ATLAS

Figure 1



LINE LOCATION MAP

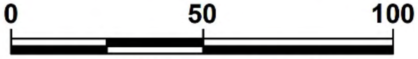
West Linn High School
West Linn, Oregon

Project No.: 420012SWG

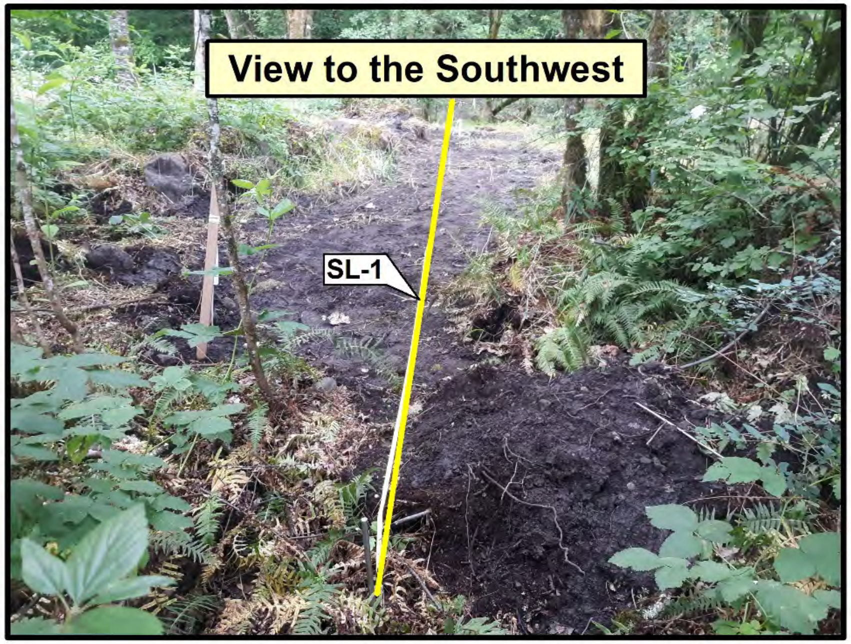
Date: 07/20

ATLAS

Figure 2



approximate scale in feet



SITE PHOTOGRAPHS

West Linn High School
West Linn, Oregon

Project No.: 420012SWG

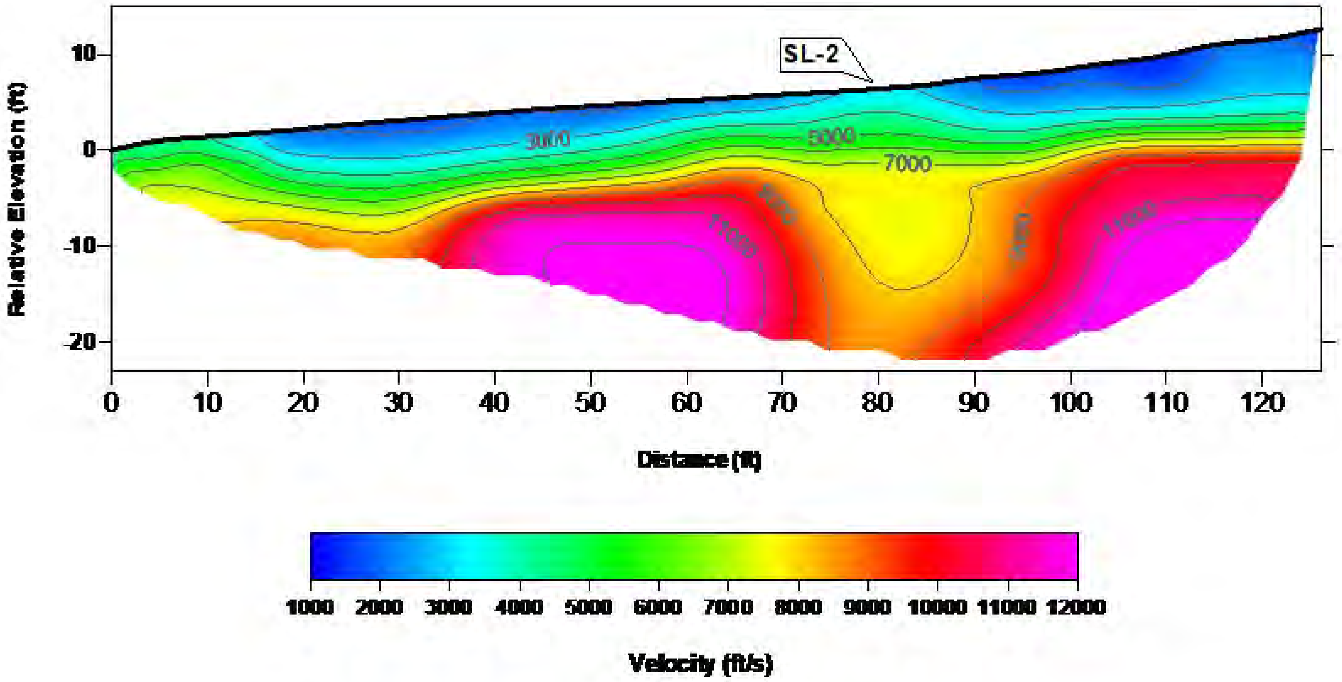
Date: 07/20

ATLAS

Figure 3

TOMOGRAPHY MODEL

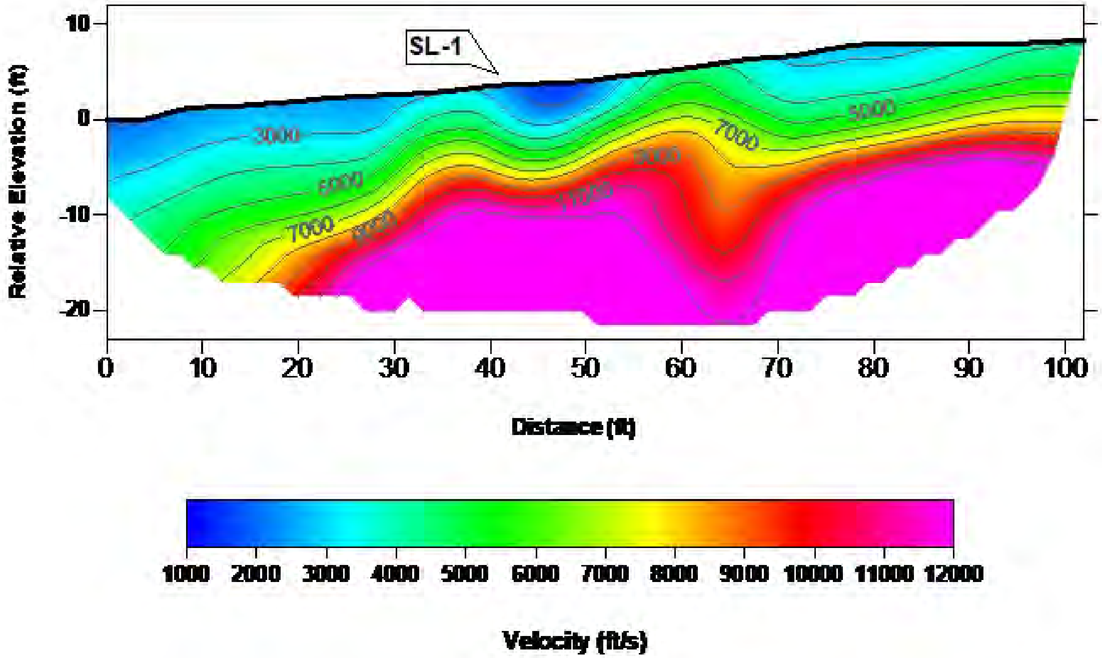
SL-1



SEISMIC PROFILE	West Linn High School West Linn, Oregon	ATLAS Figure 4a	**Note: Contour Interval = 1,000 feet per second**
	Project No.: 420012SWG Date: 07/20		

TOMOGRAPHY MODEL

SL-2



SEISMIC PROFILE

West Linn High School
West Linn, Oregon

Project No.: 420012SWG

Date: 07/20

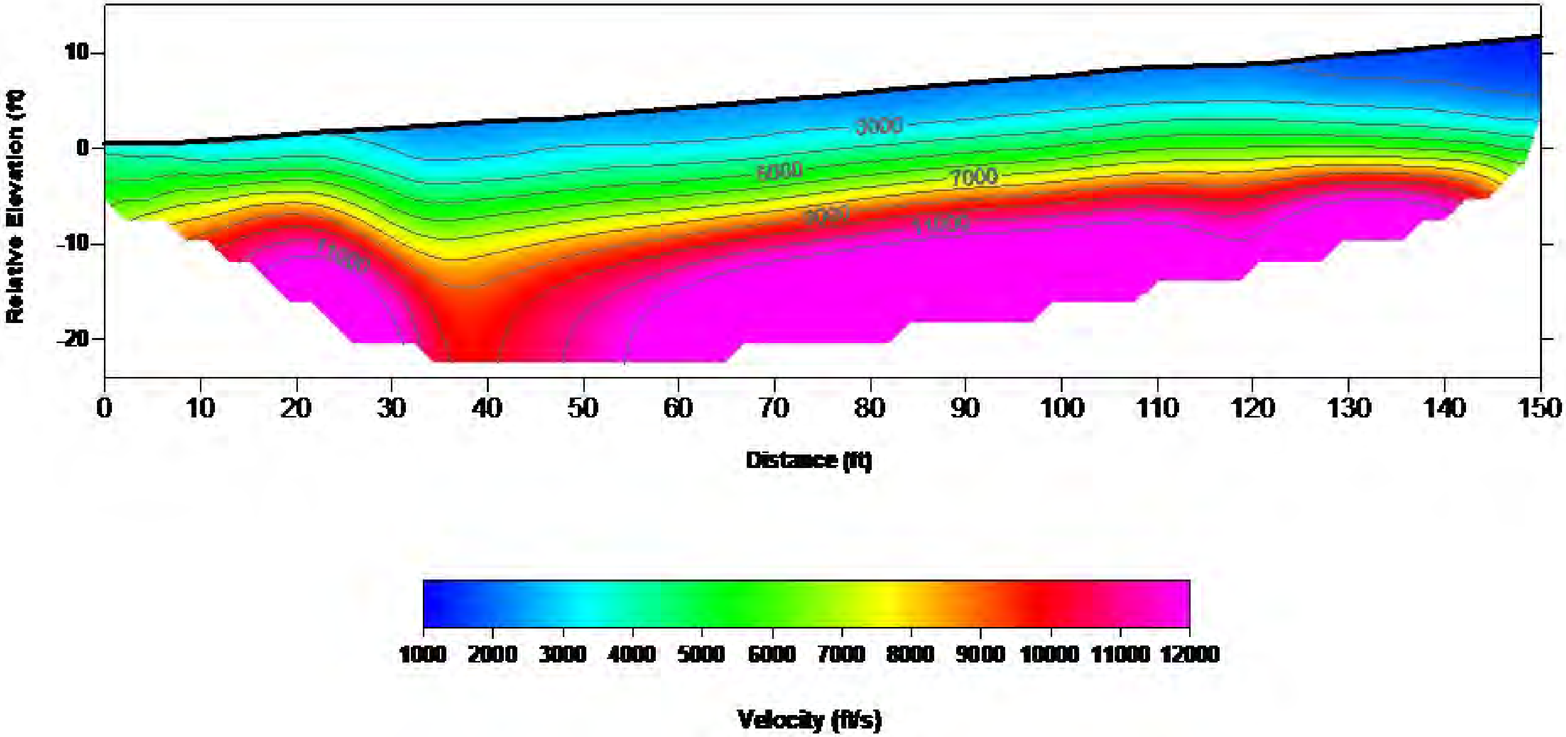
ATLAS

Figure 4b

Note: Contour Interval = 1,000 feet per second

TOMOGRAPHY MODEL

SL-3



SEISMIC PROFILE	West Linn High School West Linn, Oregon **Project No.: 420012SWG** **Date: 07/20**	ATLAS Figure 4c	**Note: Contour Interval = 1,000 feet per second**

APPENDIX C

APPENDIX C

SITE-SPECIFIC SEISMIC HAZARD EVALUATION

INTRODUCTION

The information in this appendix summarizes the results of a site-specific seismic hazard study for the proposed stadium expansion project at West Linn High School located at 5464 West A Street in West Linn, Oregon. This seismic hazard evaluation was performed in accordance with the requirements of the 2019 SOSSC (Section 1803.6.1).

SITE CONDITIONS

REGIONAL GEOLOGY

The site is located west of the Willamette River and east of the Tualatin Mountains (or Portland Hills) in the Portland Basin. The Tualatin Mountains form the physiographic boundary between the Portland Basin to the east and the Tualatin Basin to the west. These basins are part of the larger Puget Sound-Willamette Valley physiographic province, a tectonically active lowland situated between the Coast Ranges to the west and the Cascade Mountains to the east (Orr and Orr, 1999).

The Portland Basin is described as a fault-bounded, pull-apart basin that was formed by two northwest-trending fault zones (Pratt et al., 2001). The Portland Hills fault zone trends along the west side of the basin and the Frontal fault zone trends along the east side of the basin near Lacamas Lake, east of Vancouver, Washington. The Portland Basin is underlain by volcanic bedrock and contains a thick sequence of sedimentary deposits that lap onto the uplifted bedrock highlands at the basin margins.

The near-surface geology at the stadium and proposed parking lot are mapped as the Miocene aged Sentinel Bluffs basalt member consisting of basaltic andesite from lava flows. Just above the stadium and on the steep slopes west of the proposed parking area is Miocene aged Gingko basalt. The Gingko basalt is also derived from lava flows and consists of basaltic andesite.

SUBSURFACE CONDITIONS

The subsurface conditions at the site consist of less than 5 feet of silt, clay, or gravel on top of basalt. A detailed description of site subsurface conditions is presented in the main report.

SEISMIC SETTING

Earthquake Source Zones

Three scenario earthquakes were considered for this study consistent with the local seismic setting. Two of the possible earthquake sources are associated with the CSZ, and the third event is a shallow, local crustal earthquake that could occur in the North American Plate. The three earthquake scenarios are discussed below.

Regional Events

The CSZ is the region where the Juan de Fuca Plate is being subducted beneath the North American Plate. This subduction is occurring in the coastal region between Vancouver Island and northern California. Evidence has accumulated suggesting that this subduction zone has generated eight great earthquakes in the last 4,000 years, with the most recent event occurring approximately 300 years ago (Weaver and Shedlock, 1991). The fault trace is mapped approximately 50 to 120 km off the Washington Coast.

Two types of subduction zone earthquakes are possible and considered in this study:

1. An interface event earthquake on the seismogenic part of the interface between the Juan de Fuca Plate and the North American Plate on the CSZ. This source is reportedly capable of generating earthquakes with a moment magnitude of between 8.5 and 9.0.
2. A deep intraplate earthquake on the seismogenic part of the subducting Juan de Fuca Plate. These events typically occur at depths of between 30 and 60 km. This source is capable of generating an event with a moment magnitude of up to 7.5.

Local Events

A significant earthquake could occur on a local fault near the site within the design life of the facility. Such an event would cause ground shaking at the site that could be more intense than the CSZ events, although the duration would be shorter. Figure C-1 shows the locations of faults with potential Quaternary movement within a 40-km radius of the site. Figure C-2 shows the interpreted locations of seismic events that occurred between 1904 and 2020.

Table C-1 presents the relative distance, displacement, and estimated age of the crustal faults that may present a hazard to the site. The most significant faults in the site vicinity are the Bolton, Oatfield, Portland Hills, and Canby-Molalla. The mapped distance and discussion of these faults is provided below.

Table C-1. Nearest Mapped Crustal Faults

Source	Closest Mapped Distance[1] (km)	Mapped Length[1] (km)	Estimated Displacement Description	Estimate Age	Estimated Slip Rate (mm/yr)
Bolton	0.45	9	Prominent northeast-facing escarpment in volcanic rocks of the Miocene Columbia River Basalt	Undifferentiated Quaternary (1.6 million years before present)	<0.2
Oatfield	3.2	29	Offsets Columbia River Basalt flows and overlying fluvial and lacustrine deposits. (Does not offset Missoula flood deposits)	Quaternary (< 1.6 million years before present)	<0.2
Portland Hills	5.1	49	Potential offset of Missoula flood deposits by means of geophysical techniques and trench excavation.	Late Quaternary (< 15,000 years before present)	<0.2
Canby-Molalla	6.7	50	Potential offset of the Eocene basement and volcanic rocks of the Miocene Columbia River Basalt	Late Quaternary (< 15,000 years before present)	<0.2

1. Reported by USGS
2. Slip rates of all faults are less than 1 mm/yr and the site is not considered near-fault per ASCE-7-16 – 11.4.1.

DESIGN EARTHQUAKE

We anticipate that the fundamental period of the stadium expansion structure will be between 0.25 and 0.5 second. Deaggregation in the anticipated fundamental building period range using the USGS Unified Hazard tool (https://earthquake.usgs.gov/hazards/interactive/ [latitude = 45.363579, longitude = -122.-122.618317]) indicates the CSZ comprises approximately one-third to one-half of the seismic hazard at the site. The remaining hazard is comprised local events and the deep intraplate events. The Portland Hills fault is the largest contributor to the seismic hazard of the remaining sources.

SEISMIC DESIGN PARAMETERS

Based on geologic mapping and explorations, the site is underlain by shallow basalt. It is our opinion that the amplification factors prescribed by ASCE 7-16 for a seismic Site Class of B are appropriate for design and a site-response analysis is not required. The parameters in Table C-2 can be used for design of the building.

Table C-2. Seismic Design Parameters per ASCE 7-16

Seismic Design Parameter	Short Period (T_s = 0.2 second)	1 Second Period (T_1 = 1.0 second)
MCE Spectral Acceleration	S_s = 0.840 g	S_1 = 0.376 g
Site Class	B	
Site Coefficient	F_a = 0.9	F_v = 0.8
Adjusted Spectral Acceleration	S_{MS} = 0.756 g	S_{M1} = 0.301 g
Design Spectral Response Acceleration Parameters	S_{DS} = 0.504 g	S_{D1} = 0.201 g

Table C-2 and Table 2 in the main report are the same.

GEOLOGIC HAZARDS

The following sections provide additional discussion regarding potential seismic hazards that could affect the site.

SURFACE FAULT RUPTURE

The closest mapped fault to the site is the Bolton fault. Consequently, it is our opinion that the probability of surface fault rupture beneath the site is low.

LIQUEFACTION AND LATERAL SPREAD

Liquefaction is caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles to near zero. Granular soil, which relies on interparticle friction for strength, is susceptible to liquefaction until the excess pore pressure can dissipate. In general, loose, saturated sand soil with low silt and clay content is the most susceptible to liquefaction.

Lateral spreading is a liquefaction-related seismic hazard and occurs on gently sloping or flat sites underlain by liquefiable sediment adjacent to an open face, such as a riverbank. Liquefied soil adjacent to an open face can flow toward the open face, resulting in lateral ground displacement. The primary difference between a conventional slope stability failure and lateral spreading is that no distinct failure plane is formed during a lateral spreading event. Liquefied soil flows downslope or to an exposed bank like the behavior of a viscous fluid. As described in the main report, lateral spreading is not a design consideration at the site.

Based on the soil and groundwater conditions at the site, liquefaction and lateral spreading are not design considerations.

GROUND MOTION AMPLIFICATION

Soil capable of significantly amplifying ground motions beyond the levels determined by our site-specific seismic response analysis were not encountered during the subsurface investigation program. The main report provides a detailed description of the subsurface conditions encountered. We conclude that the level of amplification associated with a seismic Site Class B and amplification based on ASCE 7-16 is appropriate for the site.

LANDSLIDES

An approximately 1.35-acre landslide is mapped approximately 700 feet southwest of the site in the Gingko basalt and a large, 22-acre landside is mapped approximately 1,000 feet northwest of the site at the interface of the Sentinel Bluffs and Gingko basalt. Based on geologic mapping, the interface of the Sentinel Bluff and Gingko basalt is present just west of the project area. As part of our work, a geologic reconnaissance was completed on the lower portions of the slopes adjacent to the project to identify landscape features. A summary of the reconnaissance is described in the "Geologic Reconnaissance" section.

Based on the results of the reconnaissance, landslide features are not present in the lower portion of the adjacent slopes and the potential for shallow landslides near the project area is low. Due to vegetative cover and steepness, our scope of services did not include a study of the upper portions of the slopes surrounding the site. Based on the mapped landslides in the area, there is a potential for large, deep-seeded landslides to affect the area.

SETTLEMENT

Settlement due to earthquakes is most prevalent in relatively deep deposits of dry, clean sand. We do not anticipate that significant settlement in addition to liquefaction-induced settlement will occur during design levels of ground shaking.

SUBSIDENCE/UPLIFT

Subduction zone earthquakes can cause vertical tectonic movements. The movements reflect coseismic strain release accumulation associated with interplate coupling in the subduction zone. Based on our review of the literature, the locked zone of the CSZ is located in excess of 60 miles from the site. Consequently, we do not anticipate that subsidence or uplift is a significant design concern.

LURCHING

Lurching is a phenomenon generally associated with very high levels of ground shaking, which cause localized failures and distortion of the soil. Lurching of the soil is not a design consideration for the project based the subsurface conditions at the site.

SEICHE AND TSUNAMI

The site is inland and elevated away from tsunami inundation zones and away from large bodies of water that may develop seiches. Seiches and tsunamis are not considered a hazard in the site vicinity.

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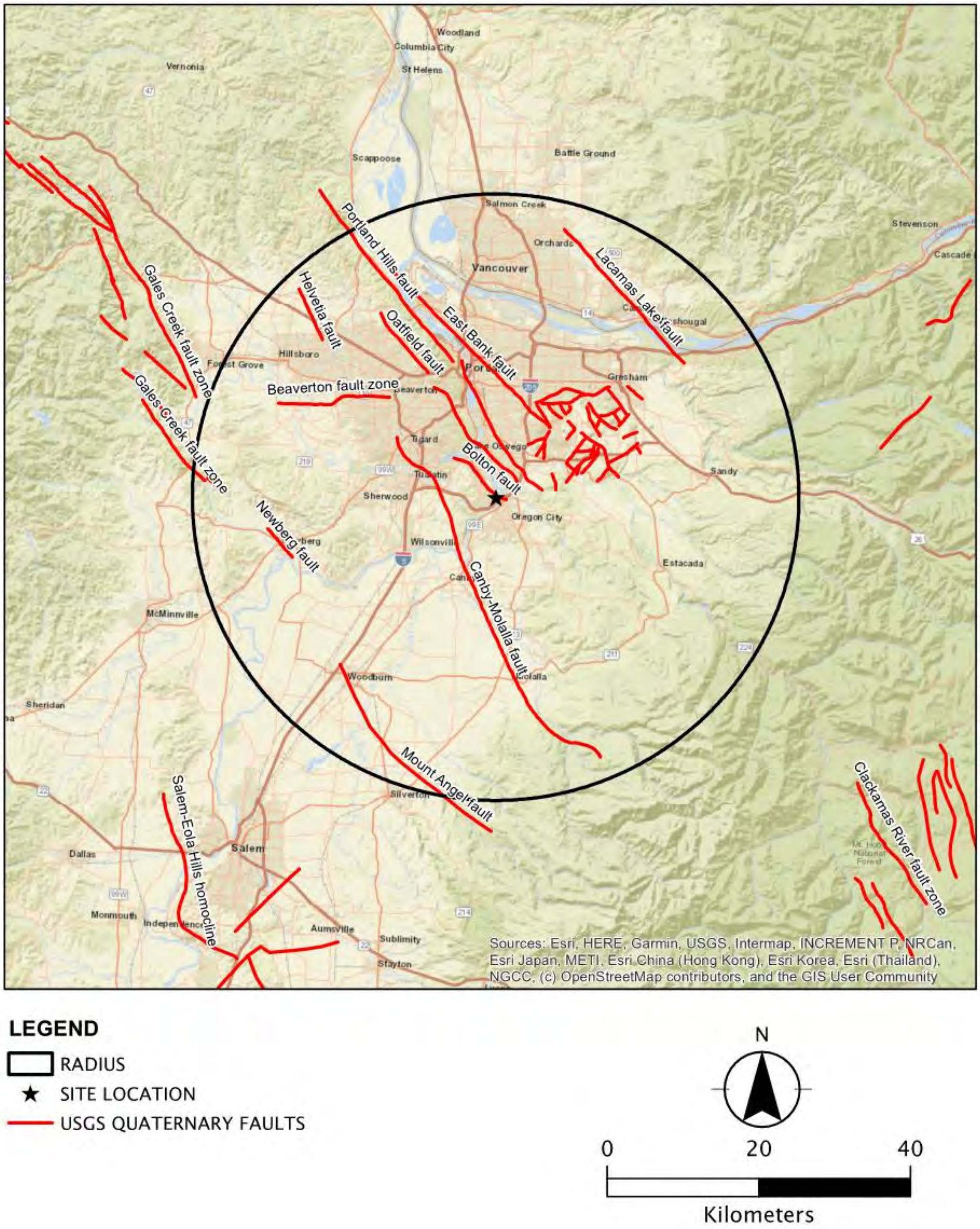

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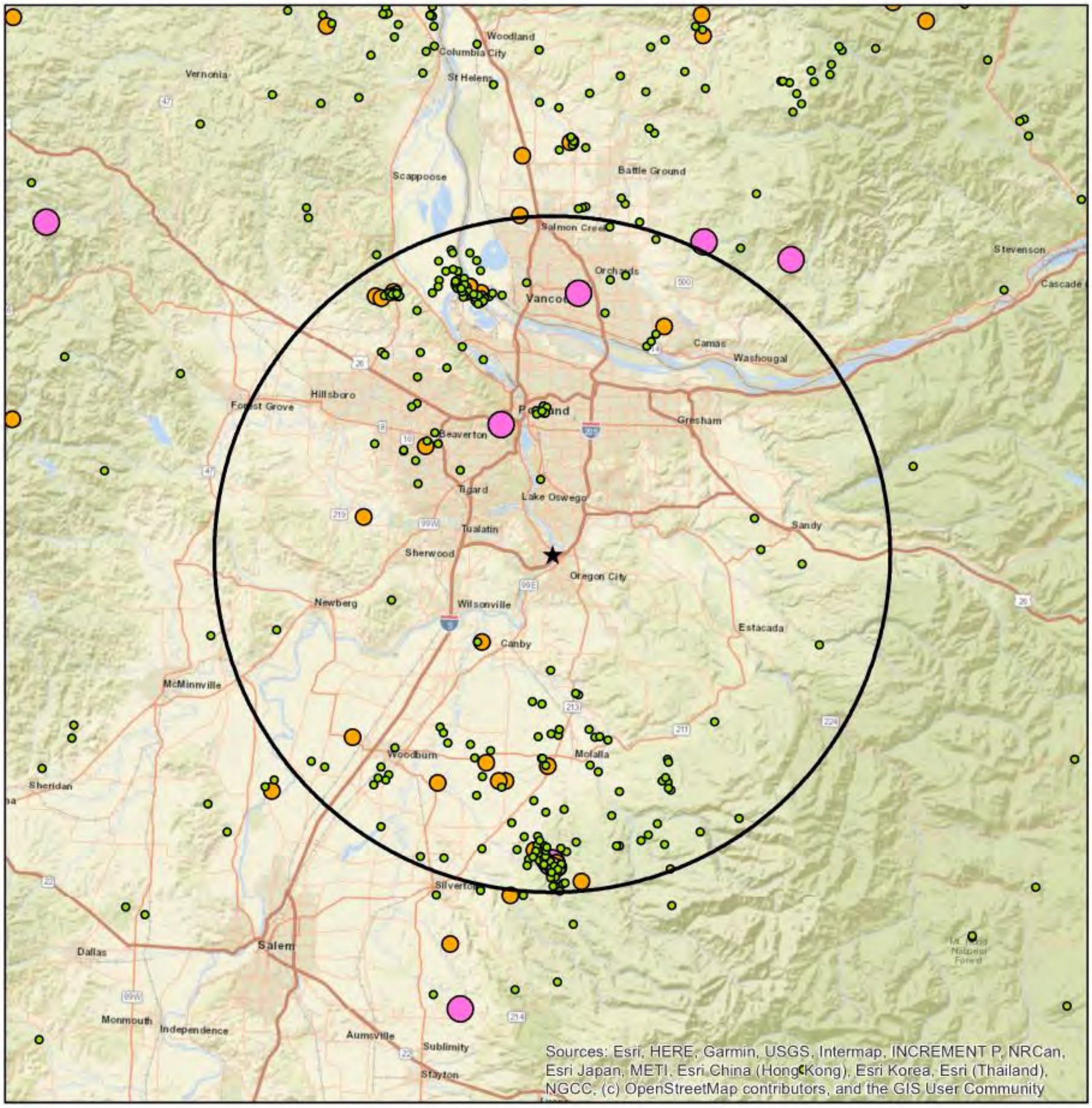
WLWSCHDIST-2-01	**QUATERNARY FAULT MAP**	
JULY 2020	WEST LINN STADIUM EXPANSION WEST LINN, OR	**FIGURE C-1**



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

LEGEND

▭ RADIUS

★ SITE LOCATION

INSTRUMENTAL EARTHQUAKE MAGNITUDE

- ● 2.0 - 3.0
- ● 3.0 - 4.0
- ● 4.0 - 6.0
- ● > 6.0

N

0 20 40

Kilometers

USGS, accessed January 2020, Earthquake Hazards Program, US Earthquake Information by State, U.S. Geological Survey, Available: http://earthquake.usgs.gov/earthquakes/search

Earthquakes in figure are from 1904-2020.

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JULY 2020

HISTORICAL SEISMICITY MAP

WEST LINN STADIUM EXPANSION
WEST LINN, OR

FIGURE C-2

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OPERATIONS AND MAINTENANCE

TO BE INCLUDED IN FINAL STORMWATER REPORT