CITY OF
West Linn
22500 Salamo Road
West Linn, OR 97068

STAFF REPORT
FOR THE PLANNING COMMISSION

FILE NUMBER: DR-18-08

HEARING DATE: March 6, 2019

REQUEST: Site Design Review to construct a new commercial building at 2180 8th Court

APPROVAL CRITERIA: Community Development Code (CDC) Chapter 55

STAFF REPORT PREPARED BY: Jennifer Arnold, Associate Planner

Planning Manager's Initials JRW Development Review Engineer's Initials: AP

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STAFF ANALYSIS AND RECOMMENDATION

EXHIBITS

GENERAL INFORMATION

OWNER:
Willamette Capital Investments
PO Box 2507
Wilsonville, OR 97070

APPLICANT:
Ed Bruin
2233 NW 23rd Avenue
Portland, OR 97210

CONSULTANT:
Chris Deslauries
6443 SW Beaverton-Hillsdale Hwy
Portland, OR 97221

SITE LOCATION: 2180 8th Court

LEGAL DESCRIPTION: Clackamas County Assessor's Map 2S-1E-35D, tax lot 0903

SITE SIZE: 45,491 square feet (1.04 acres)

ZONING: General Commercial (GC)

COMP PLAN DESIGNATION: Commercial

120-DAY PERIOD: This application became complete on January 10, 2019. The 120-day maximum application-processing period ends on May 9, 2019.

PUBLIC NOTICE: Public notice was mailed to the all neighborhood associations and affected property owners on February 14, 2019. The property was posted with a notice sign on February 21, 2019. The notice was published in the West Linn Tidings on February 21, 2019. The notice requirements of CDC Chapter 99 have been met. In addition, the staff report was posted on the City's website February 22, 2019.

EXECUTIVE SUMMARY

Site Conditions: The subject property has been approved for a two-parcel partition (Planning File MIP-18-04). The south parcel currently contains a vacant Shari's restaurant, parking, landscaping, and pedestrian access to the stairway that connects to the asphalt pathway along Willamette Falls Drive. The north parcel is currently a paved parking area. The south parcel is relatively flat and contains no environmental overlays. There is a 24-foot public access easement that is centered over the boundary of the two parcels and extends from 8th Court to the east end of the property. The easement provides access to both the north and south parcels, as well as providing the opportunity for a future connection from 8th Court to Willamette Falls Drive.

Project Description: The applicant proposes to remove the existing Shari's restaurant building and construct a new single-story commercial building. The new building has two tenant spaces with a total of 4,271 square feet. The proposal also includes new landscaping, lighting, and circulation for the property. The applicant has a dental office tenant for the 2,777 square foot space and proposes only office use in the remaining 1,494 square foot space. The north parcel is not part of this proposal and will remain in its current configuration as a parking area.

The land use permits include:

- Class II Design Review

Surrounding Land Use and Zoning: The subject property is zoned General Commercial (GC). Adjacent zoning and land uses include:

Direction From Site	Zoning	Land Use
North	I-205 (No zone) & OBC/R-10	I-205 is north of the property. North of I-205: White Oak Savanna Park and Single-Family Attached homes
East	GC	One Single-Family home
West	GC	Commercial Development
South	R-10	Single-family Residential homes

Applicable Community Development Code Approval Criteria:

- Chapter 19, General Commercial;
- Chapter 55, Design Review;

Public comments:

See Exhibit PC-4.

RECOMMENDATION

Staff recommends approval of application DR-18-08 based on: 1) the findings submitted by the applicant, which are incorporated by this reference, 2) supplementary staff findings included in the Addendum below, and 3) the addition of conditions of approval below. With these findings, the applicable approval criteria are met. The conditions are as follows:

1. **Site Plans. With the exception of modifications required by these conditions, the project shall substantially conform to all submitted drawings A1.0, A1.1, A2.1, A2.2, C1.0, C2.0, C2.1, C2.2, C2.3, C3.0, C3.1, C3.2, L1.01, L1.02, L1.03, E1.0 & SK-1.**

2. **Engineering Standards. All public improvements and facilities associated with the approved site design, including but not limited to street improvements, driveway approaches, curb cuts, utilities, grading, onsite and offsite storm water, street lighting, easements, easement locations, and connections for future extension of utilities are subject to conformance with the City Municipal Code and Community Development Code. All improvements must be designed, constructed, and completed prior to the issuance of occupancy permits. (See Staff Findings 31, 58, 59, &67)**

3. **23 Foot Drive Aisle. Prior to issuance of building permits, the applicant shall modify the site plan to redesign the curbs for the five east end parking spaces to create a minimum 23 foot drive aisle per Staff Finding 23**.

4. **Bicycle Parking. The applicant shall revise the site plan to show four secure bicycle parking spaces, including two that are covered per Staff Finding 22. All bicycle spaces shall be located within 50 feet from the entrance to the buildings, be well-lit, observable, and properly signed.**

ADDENDUM

PLANNING COMMISSION STAFF REPORT

March 6, 2019

STAFF EVALUATION OF THE PROPOSAL'S COMPLIANCE WITH APPLICABLE CODE CRITERIA

I. CHAPTER 19, GENERAL COMMERCIAL, GC

19.020 PROCEDURES AND APPROVAL PROCESS
C. A use permitted outright, CDC 19.030, is a use which requires no approval under the provisions of this code. If a use is not listed as a use permitted outright, it may be held to be a similar unlisted use under the provisions of Chapter 80 CDC.
(…)

Staff Finding 1: The applicant proposes a single-story office building with leasable space for professional services and a dental office which are permitted in the GC zone. This criterion is met.

11.030 PERMITTED USES
The following are uses permitted outright in this zoning district:
(…)
5. Utilities, minor
(…)

Staff Finding 2: The applicant proposes three stormwater facilities to meet water quality and quantity requirements of the West Linn Public Works Standards. Stormwater Planter 1 (546 square feet) will accommodate stormwater runoff from pavement, sidewalks, and the roof of tenant space two. Stormwater Planter 2 (179 square feet) will accommodate stormwater runoff from pavement and sidewalks on the east side of the new building. Stormwater Planter 3 (712 square feet) will accommodate stormwater runoff from the roof of the larger tenant space one. All facilities will be connected to the existing infrastructure. The proposed stormwater system has been designed and sized by an Oregon licensed engineer to accommodate the projected peak storm event. The facilities are required by City regulations and will serve the proposed redevelopment of the subject property. The Planning Commission has discussed the issue of major versus minor utility and the applicant was informed of the interpretation at the pre-application conference.

19.070 DIMENSIONAL REQUIREMENTS, USES PERMITTED OUTRIGHT AND USES PERMITTED UNDER PRESCRIBED CONDITIONS
A. Except as may be otherwise provided by the provisions of this code, the following are the requirements for uses within this zone:

1. The minimum front lot line length or the minimum lot width at the front lot line shall be 35 feet.
2. The average minimum lot width shall be 50 feet.
3. The average minimum lot depth shall not be less than 90 feet.

Staff Finding 3: The subject property is on an existing lot at the end of the 8th Court cul-de-sac. No proposed changes to the existing front lot line dimensions or average lot depth. These criteria are met.

4. Where the use abuts a residential district, except as provided in CDC 58.090(C)(1), the setback distance of the residential zone shall apply.
5. The maximum lot coverage shall be 50 percent, except as provided in CDC 58.090(C)(1)(d).

Staff Finding 4: The subject property is surrounded by the following development and zones:

Direction	**Zone**	**Development**
To the North	I-205 (no zone) & Single-Family Residential (R-10)	The White Oak Savanna Park
To the South	Single-Family Residential (R-10)	Single-Family homes
To the East	General Commercial (GC)	Used as residential
To the West	General Commercial (GC)	Commercial buildings

The applicant has proposed a 20 foot setback to the nearest single-family residentially zoned property to the south. These criteria are met.

6. The maximum building height shall be two and one-half stories or 35 feet for any structure located within 50 feet of a low or medium density residential zone, and three and one-half stories or 45 feet for any structure located 50 feet or more from a low or medium density residential zone.
(…)

Staff Finding 5: The applicant is proposing a single story mixed use commercial building. The applicant's proposed uses are office space and a dental office. The proposed height of this commercial building is 18 feet. This criterion is met.

II. CHAPTER 38, ADDITIONAL YARD AREA REQUIRED, EXCEPTIONS TO YARD REQUIREMENTS, STORAGE IN YARDS, PROJECTIONS INTO YARDS

38.030 SETBACK FROM STREET CENTERLINE REQUIRED
A. To assure improved light, air, and sight distance and to protect the public health, safety and welfare, a setback in addition to the yard requirements of the zone may be required where the right-of-way is inadequate. A determination shall be made based on the street standards contained in CDC 85.200(A).
B. The minimum yard requirement shall be increased to provide for street widening in the event a yard abuts a street having a right-of-way width less than required by its functional classification on the City's Comprehensive Plan Map, and in such case the setback shall be not

less than the setback required by the zone plus one-half of the projected road width as required under CDC 85.200(A); however
C. The minimum distance from the wall of any structure to the centerline of an abutting street shall not be less than 25 feet plus the yard required by the zone. This provision shall not apply to rights-of-way of 50 feet or greater in width.

Staff Finding 6: The subject property is bordered by Willamette Falls Drive, an arterial classification. The existing right-of-way width for Willamette Falls Drive is 120 feet. The required cross-section design for an arterial requires 102 feet of right-of-way. No additional right-of-way is needed adjacent to the subject property and the 25 foot minimum distance is not applicable as the right-of-way exceeds 50 feet in width. These criteria are met.

III. CHAPTER 41, BUILDING HEIGHT, STRUCTURES ON STEEP SLOPES, EXCEPTIONS

41.005 DETERMINING HEIGHT OF BUILDING
A. For all zoning districts, building height shall be (…)

Staff Finding 7: The subject property is not located within any historic or commercial design district. The applicant is proposing a single story commercial building which does not exceed the 35 foot height restriction. This criterion is met.

IV. CHAPTER 42, CLEAR VISION AREAS

42.030 EXCEPTIONS
The following described area in Willamette shall be exempt from the provisions of this chapter. The units of land zoned General Commercial which abut Willamette Falls Drive, located between 10th and 16th Streets. (…)

Staff Finding 8: The subject property is not located on a corner lot. This criteria does not apply.

V. CHAPTER 46, OFF-STREET PARKING, LOADING AND RESERVOIR AREAS

46.060 STORAGE IN PARKING AND LOADING AREAS PROHIBITED
Required parking spaces shall be available for the parking of passenger automobiles of residents, customers, patrons and employees only, and the required parking spaces shall not be used for storage of vehicles or materials or for the parking of trucks connected with the business or use with the exception of small (under one-ton) delivery trucks or cars.

Staff Finding 8: The applicant does not propose the storage of materials or vehicles in the parking lot that would occupy required parking spaces. This criteria is met.

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:
(…)
3. Employee parking areas for carpools and vanpools shall be located closer to the entryway to the building than general employee 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.

Staff Finding 9: The furthest standard parking space is a maximum 115 feet from the entryway to the new tenant spaces. Disabled parking spaces are proposed to be placed closest to all building entrances in relation to all other parking. The disabled parking space is proposed to be approximately 15 feed from the entryway. The proposal requires no carpool/vanpool spaces. These criteria are met.

46.080 COMPUTATION OF REQUIRED PARKING SPACES AND LOADING AREA
A. Where several uses occupy a single structure or unit of land...
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.
(…)

Staff Finding 10: The proposal is for one tenant space (2,777 square feet) to be occupied by a dental office and the other tenant space (1,494 square feet) to be occupied by general office use. The proposal does not include on-street parking to count towards minimum requirements and all fractional space calculations have been counted as a whole space. These criteria are met.

46.090 MINIMUM PARKING SPACE REQUIREMENTS
(…)
B. Commercial.
(…)

5. Professional offices...

- One space for every 370 square feet of gross area.

6. Medical/dental clinics/day surgery.

- One space for every 250 square feet of gross floor area.

Staff Finding 11: The applicant is proposing a mixed use commercial building with proposed uses as a dental office (2,777 square feet) and professional office space (1,494 square feet). The parking requirement for the professional office space is one space per 370 square feet of office area (5 total required spaces). The requirement for the dental office is one space per 250 square feet of floor area (12 total required spaces). The required number of parking spaces for the proposed mixed use commercial building is 17 spaces and the applicant is proposing 21 spaces. The criteria is satisfied.

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.

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.

(…)

Staff Finding 12: The applicant proposes 5 parking spaces of eight feet by 16 feet, 15 spaces of nine feet by 18 feet (75%), and one space that meet federal ADA standards and are located nearest to accessible building entryways and ramps. These criteria are 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.

Staff Finding 13: Wheel stops will be provided for all parking spaces. These criteria are 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.

Staff Finding 14: The applicant identifies all stormwater from off-street parking areas to be collected and conveyed to the stormwater facilities for treatment. This criterion 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.

Staff Finding 15: The applicant has proposed an illumination plan with on-site lighting that is deflected downward and away from surrounding residences and public rights-of-way. This criterion is met.

14. Directional arrows and traffic control devices which are placed on parking lots shall be identified.
(…)
16. Visitor or guest parking must be identified by painted "GUEST" or "VISITOR."
17. The parking area shall have less than a five percent grade. No drainage across adjacent sidewalks or walkways is allowed.

Staff Finding 16: No directional arrows or signage for the access drives are proposed. No visitor or guest parking spaces are proposed. The grade of the parking lot is less than 2.0 percent. The design does not propose drainage across adjacent sidewalks or walkways. These criteria 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.

Staff Finding 17: The applicant does not propose parking along the main lot frontage of 8th Court. This criterion is met.

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.
(…)

Staff Finding 18: The applicant proposal provides three parking areas that meet Criteria a. These criteria are 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…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, and/or landscaping. Walkways shall be six feet wide. The arrangement and layout of the paths shall depend on functional requirements.

Staff Finding 19: The applicant proposes walkways along the three sides of the new building where parking is located. The walkways will be a minimum 6.5 feet wide and be accommodated above a curb. This criterion is met.

(...)
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*	*–*

Staff Finding 20: The proposal is required to provide a minimum of 17 parking spaces, which then requires one accessible van space. The applicant has proposed one accessible van space. These criteria are met.

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

Staff Finding 21: The applicant proposal has located the accessible parking spot nearest the building entryway. All accessible spaces meet ADA standards. These criteria are met.

(…)
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*
Doctor, Dentist Offices	*2, or 0.5 spaces per 1,000 gross sq. ft., whichever is greater*	*25%*
Office	*2, or 0.5 spaces per 1,000 gross sq. ft., whichever is greater*	*10%*

Staff Finding 22: The subject property does not include any planned bicycle pathways. The applicant has provided a pedestrian walkway from 8th Court to the existing stairway that provides access to the asphalt path along Willamette Falls Drive. The applicant is required to provide four bicycle parking spaces (2 for the 2,777 sq. ft. dental office and 2 for the 1,494 sq. ft. general office) with two covered. The proposal shows 3 secure stationary racks. The applicant shall revise the site plan to show four secure bicycle parking spaces, including two that are covered per Condition of Approval 4. All bicycle spaces shall be located within 50 feet from the entrance to the buildings, be well-lit, observable, and properly signed. Subject to the Conditions of Approval, these criteria are met.

(…)

F. (See Figures 1 and 2 below.) Minimum Standards for Parking Lot Layout

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'*
(…)							
90°	*DRIVE-IN*	*23.0'*	*23.0'*	*18.0'*	*16.0'*	*9.0'*	*8.0'*
(…)							

Staff Finding 23: The proposal is for the parking spaces to be drive-in at a 90 degree angle, which requires a drive aisle width of 23 feet regardless of whether the space is standard or compact. The applicant proposes a minimum 23 foot drive aisle for all parking spaces except the five compact spaces at the east end of the new building that is only 20 feet wide. The applicant shall redesign the curbs to create a 23 foot drive aisle per Condition of Approval 3. Subject to the Conditions of Approval, this criterion is met.

VI. CHAPTER 48, ACCESS, EGRESS AND CIRCULATION

48.025 ACCESS CONTROL
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, Traffic Impact Analysis.)

Staff Finding 24: The applicant submitted a Revised Technical Memorandum dated January 3, 2019 prepared by Lancaster Engineering. The analysis found adequate access and circulation on site, as well as no impact to off-site transportation facilities. See Sheet SK-1 for the fire truck turnaround in response to TVFR comments. This criterion 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.

Staff Finding 25: The applicant proposes to utilize the existing access drive from 8th Court. The applicant was required to record a reciprocal access easement as a condition of approval during the partition of the property into the north and south parcels. The design has no parking areas that back onto a public street. This criterion 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" to the developer/subdivider.
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.

Staff Finding 26: The applicant proposes one access point to subject property via Option 3. The applicant has designed the access to meet all City standards or regulations that enhance safety and convenience for all travel modes. These criteria are met.

4. Subdivisions fronting onto an arterial street.
(…)
5. Double-frontage lots.
(…)

Staff Finding 27: The subject property has frontage on 8th Court (a local street) and Willamette Falls Drive (a minor arterial). The proposal is to only take access from the local street. The criteria are met.

6. Access spacing.
a. The access spacing standards found in Chapter 8 of the adopted Transportation System Plan (TSP) shall be applicable to all newly established public street intersections and non-traversable medians.
b. Private drives and other access ways are subject to the requirements of CDC 48.060.

Staff Finding 28: The proposal does not create any new intersections or non-traversable medians. CDC 48.060 is addressed in Staff Findings 17 and 18. These criteria are met.

7. Number of access points.

8. Shared driveways.

Staff Finding 29: The proposal includes one access point to be shared with the vacant parcel to the north. The applicant was required to record a reciprocal access easement as a condition of approval during the partition of the property into the north and south parcels. These criteria are met.

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:
1. Block length and perimeter. The maximum block length shall not exceed 800 feet or 1,800 feet along an arterial.

Staff Finding 30: The applicant's proposal does not create any new blocks. This criterion is met.

2. Street standards. Public and private streets shall also conform to Chapter 92 CDC, Required Improvements, and to any other applicable sections of the West Linn Community Development Code and approved TSP.

Staff Finding 31: The applicant is not required to make any improvements to Willamette Falls Drive. Willamette Falls Drive is consistent with the provisions of the West Linn Community Development Code and the West Linn Transportation System Plan. The applicant anticipates impacts to adjacent curbs and sidewalks during construction and installation of utilities on 8th Court. The applicant will mitigate any impacts to public right-of-way infrastructure through replacement per Condition of Approval 2. Subject to the Conditions of Approval, this criterion is met.

(…)
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.

Staff Finding 32: The applicant proposes a 24 foot, two-way, shared access drive from 8th Court that is improved with asphalt. The criteria 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.
C. All on-site maneuvering and/or access drives shall be maintained pursuant to CDC 46.130.
D. Gated accessways to non-residential uses are prohibited unless required for public safety or security.

Staff Finding 33: The subject property is not proposing any gated accessways or service drives. The Transportation Systems Plan indicates a required 24 foot wide easement through the center of the subject property. January of 2019 a partition was approved (MIP-18-04) to divide the property down the middle of this easement. The easement was maintained and will be paved to match the parking areas. The easement is shown on sheet C2.0 of the applicant's submittal. The final plat for this partition has not been recorded as of the publication of this staff report. Upon final recording of the partition plat for MIP-18-04, easements for public utilities, access and maintenance shall be recorded for the 24 foot ingress and egress easement. There is no proposed development on the north side of the easement at this time. These criteria are met.

(…)
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.
    (…)
    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.

Staff Finding 34: The applicant is not proposing any new curb cuts. These criteria does not apply.

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.

Staff Finding 35: The applicant is not proposing any new curb cuts. These criteria does not apply.

(…)
48.080 BICYCLE AND PEDESTRIAN CIRCULATION
(…)
c. Bicycle and pedestrian ways at commercial or industrial sites shall be provided according to the provisions of Chapter 55 CDC, Design Review.

Staff Finding 36: The applicant has proposed bicycle parking onsite and has maintained the existing stairs leading to Willamette Falls Drive on the west side of the building leading to a sidewalk. These criteria are met.

VII. CHAPTER 52, SIGNS

52.210 APPROVAL STANDARDS
All signs shall meet the following standards:
(…)

Staff Finding 37: The applicant is not proposing any signs at this time. Tenants will be responsible for securing appropriate sign permits. These criteria are met.

VIII. CHAPTER 54, LANDSCAPING

54.010 PURPOSE
The purpose of this chapter is to provide for the design, selection (…)
54.020 APPROVAL CRITERIA
(…)
E. Landscaping – By type, location and amount.
1. Residential uses (non0single-family). (…)
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. (…)

Staff Finding 38: The applicant has submitted a landscaping plan (see sheets L1.01, L1.02, and L1.03 of the applicant's supplemental submittal). This criteria is met.

CHAPTER 55, DESIGN REVIEW

55.100 APPROVAL STANDARDS – CLASS II DESIGN REVIEW
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.

Staff Finding 39: The subject site contains no heritage trees. This criteria does not apply.

2. All heritage trees…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…shall be protected pursuant to the criteria of subsections (B)(2)(a) through (f) of this section…
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 either the dedication of these areas or establishing tree conservation easements…

Staff Finding 40: There are no heritage trees or significant trees on the site. The criteria is met.

b. Non-residential and residential projects on non-Type I and II lands shall set aside up to 20 percent of the area to protect trees and tree clusters that are determined to be significant, plus any heritage trees…

Staff Finding 41: The applicant is proposing to remove the existing restaurant and replacing it with a single-story commercial building. Because this property was previously developed and paved, the property is mostly flat and does not contain any Type I or Type II lands. This criteria does not apply.

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

Staff Finding 42: Staff adopts the applicant's findings on page 40 (Exhibit PC-3 applicant's narrative). The applicant is not proposing any work within the Water Resource Protection Area associated with Bernert Creek to the north of the subject property. Staff finds that the criteria 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.

Staff Finding 43: Staff adopts the applicant's findings on page 40 (Exhibit PC-3 applicant's narrative). The criteria 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.

Staff Finding 44: The properties located on each side of the subject property are zoned general commercial. The property located to the south (across Willamette Falls Drive) is zoned R-10 (single-family residential) and the applicant has proposed to maintain the existing 20' setback as the existing restaurant. I-205 is north of the subject property, separating the property from residential development to the north. The criteria 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.

Staff Finding 45: Staff incorporates applicant findings found on page 40 (Exhibit PC-3 applicant's narrative). This criterion is met.

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.

Staff Finding 46: Staff incorporates applicant findings found on pages page 40 to 42 (Exhibit PC-3 applicant's narrative). These criteria are met.

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…

Staff Finding 47: Staff incorporates applicant findings on pages 40 to 42 (Exhibit PC-3 applicant's narrative).

These criteria are met.

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.

Staff Finding 48: Staff incorporates applicant findings on pages 40 to 42 (Exhibit PC-3 applicant's narrative).
These criteria are met.

7. Transportation Planning Rule (TPR) compliance. 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….facing the local street with highest traffic levels…
(…)
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…

Staff Finding 49: The proposed commercial building is located on the south side of the subject property. On the north side of proposed structure is an access easement required by the Transportation Systems Plan. The applicant has proposed sidewalks around the commercial building connecting to existing sidewalks along 8th Court. See Sheet C2.0 for details. These criteria are satisfied.

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…

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.

(…)

Staff Finding 50: Paths and accessways are provided with the proposed commercial building (see Applicant's submittal sheet C2.0); these criteria are met.

(…)

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.

Staff Finding 51: Staff incorporates applicant findings on page 45 (Exhibit PC-3 applicant's narrative). These criteria are met.

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.

Staff Finding 52: Staff incorporates the applicant's findings on page 45 (Exhibit PC-3 applicant's narrative). These criteria are met.

3. Rooftop air cooling and heating systems and other mechanical equipment shall be screened from view from adjoining properties.

Staff Finding 53: The applicant proposes to screen all HVAC rooftop equipment. These criteria are 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.

Staff Finding 54: The proposal does not include residential dwelling units so criteria 1-2, above, do not apply. Regarding noise, the properties on each side of the subject property are also zoned commercial. The property to the east is zoned commercial, however the use is still residential. Staff incorporates the applicant's findings on page 46 (Exhibit PC-3 applicant's submittal). The criteria is met.

(…)
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.

Staff Finding 55: Staff incorporates applicant findings- see applicant's submittal page 48 (Exhibit PC-3 applicant's submittal). These criteria are 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.
(….)

Staff Finding 56: The nearest public transit stop is located at 10th Street and 8th Court. This stop is approximately 450 feet from the subject property and there are no public transit stops down 8th Court. These criteria are met.

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…

Staff Finding 57: The applicant shall comply with the requirements and install improvements to meet the West Linn Public Works Standards. The City Engineer has reviewed the submitted Traffic Impact Analysis. See applicant submitted Traffic Impact Analysis (Attachment E); these criteria are 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.

Staff Finding 58: The applicant has submitted a Stormwater Management Report, prepared by a licensed engineer, which complies with the West Linn Public Works Design Standards, shows no adverse off-site impacts, and provides sufficient factual data to support the conclusions of the plan. The subject property does not contain any known landslide hazards. Any geotechnical hazards associated with on-site soil structure can be remediated per the GeoPacific Engineering report. The applicant shall comply with the requirements and install improvements to meet the West Linn Public Works Design Standards per Condition of Approval 2. Subject to the Conditions of Approval, these criteria are 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.

Staff Finding 59: The water system has sufficient water volume and pressure to serve the proposed building. The applicant shall complete and submit a fire flow test per Condition of Approval 2. These criteria are 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.

Staff Finding 60: The existing sanitary sewer line is sufficient to serve the proposed structure. The criteria 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.

Staff Finding 61: The applicant has proposed a solid waste and recycling storage area to the east of the commercial building. The storage area is also screened. The criteria 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.

Staff Finding 62: Staff incorporates applicant findings found on pages 50-51 (Exhibit PC-3 applicant's submittal). The criteria is met.

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.

Staff Finding 63: The applicant has provided a proposed lighting plan that illuminates all areas vulnerable to crime. The parking areas and primary pedestrian walkways will be fully lighted. The light fixtures will comply with bulb standards and be directed downward. See Sheet E1.0 of the applicant's submittal; these criteria are met.

7. Lines of sight shall be reasonably established so that the development site is visible to police and residents.

Staff Finding 64: See Staff Finding 9; this criterion 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.

Staff Finding 65: Staff incorporates applicant finding on pages 51-52 (Exhibit PC-3 applicant's submittal). These criteria are met.

L. Signs.
(…)

Staff Finding 66: The applicant is not proposing any signs with this application. Any future tenants of the commercial building are responsible for obtaining any necessary sign permits for future signs. This criteria 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.

Staff Finding 67: The applicant shall make necessary arrangements with appropriate utilities to place them underground per Condition of Approval 2. Subject to the Condition of Approval, these criteria are 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).

Staff Finding 68: See Staff Finding 9. This criteria is met.

55.170 EXCEPTIONS TO UNDERLYING ZONE, YARD, PARKING, SIGN PROVISIONS, AND LANDSCAPING PROVISIONS

A. The Planning Director may grant an exception to the dimensional building setback or yard requirements in the applicable zone based on findings that the approval will satisfy the following criteria:

1. A minor exception that is not greater than 20 percent of the required setback.

(….)

B. The Planning Director may grant an exception to the off-street parking dimensional and minimum number of space requirements in the applicable zone so long as the following criteria are met:

1. The minor exception is not greater than 10 percent of the required parking;

(….)

C. The Planning Director may grant an exception to the sign dimensional requirements in the applicable zone when the following criteria are met:

1. The minor exception is not greater than 10 percent of the required applicable dimensional standard for signs;

(….)

Staff Finding 69: The applicant is not requesting any setback, parking, sign or landscape exceptions under this section. Therefore the criteria does not apply.

PC-1 AFFIDAVIT AND NOTICE PACKET

AFFIDAVIT OF NOTICE

We, the undersigned do hereby certify that, in the interest of the party (parties) initiating a proposed land use, the following took place on the dates indicated below:

GENERAL

File No. DR-18-08 Applicant's Name Ed BRUIN

Development Name

Scheduled [✓ Meeting]/~~Decision~~ Date 3-6-19

NOTICE: Notices were sent at least 20 days prior to the scheduled hearing, meeting, or decision date per Section 99.080 of the Community Development Code. **(check below)**

TYPE A ✓

A. The applicant (date) 2-14-19 (signed) S.Shroyer

B. Affected property owners (date) 2-14-19 (signed) S.Shroyer

C. School District/Board (date) (signed)

D. Other affected gov't. agencies (date) 2-14-19 (signed) S.Shroyer

E. Affected neighborhood assns. (date) 2-14-19 (All) (signed) S.Shroyer

F. All parties to an appeal or review (date) (signed)

At least 10 days prior to the scheduled hearing or meeting, notice was published/posted:

Tidings (published date) 2-21-19 (signed) S.Shroyer

City's website (posted date) 2-14-19 (signed) S.Shroyer

SIGN

At least 10 days prior to the scheduled hearing, meeting or decision date, a sign was posted on the property per Section 99.080 of the Community Development Code.

(date) 2/21/19 (signed)

NOTICE: Notices were sent at least 14 days prior to the scheduled hearing, meeting, or decision date per Section 99.080 of the Community Development Code. **(check below)**

TYPE B

A. The applicant (date) (signed)

B. Affected property owners (date) (signed)

C. School District/Board (date) (signed)

D. Other affected gov't. agencies (date) (signed)

E. Affected neighborhood assns. (date) (signed)

Notice was posted on the City's website at least 10 days prior to the scheduled hearing or meeting.

Date: (signed)

STAFF REPORT mailed to applicant, City Council/Planning Commission and any other applicable parties 10 days prior to the scheduled hearing.

(date) (signed)

FINAL DECISION notice mailed to applicant, all other parties with standing, and, if zone change, the County surveyor's office.

(date) (signed)

p:\devrvw\forms\affidvt of notice-land use (9/09)

CITY OF WEST LINN PLANNING COMMISSION
PUBLIC HEARING NOTICE
FILE NO. DR-18-08

The West Linn Planning Commission will hold a public hearing, on **Wednesday, March 6, 2019, starting at 6:30 p.m.** in the Council Chambers of City Hall, 22500 Salamo Road, West Linn, to consider a request for a Class II Design Review to construct a new commercial building at 2180 8th Court.

Criteria applicable to the requested Class II Design Review are in Chapters 19, 55, and 99 of the Community Development Code (CDC). The decision by the Planning Commission to approve or deny this request will be based upon the applicable criteria. At the hearing, it is important that comments relate specifically to the applicable criteria.

You have been notified of this proposal because County records indicate that you own property within 500 feet of the subject property (Clackamas County Assessor's Map 2S-1E-35D, tax lot 0903), or as otherwise required by Chapter 99 of the CDC.

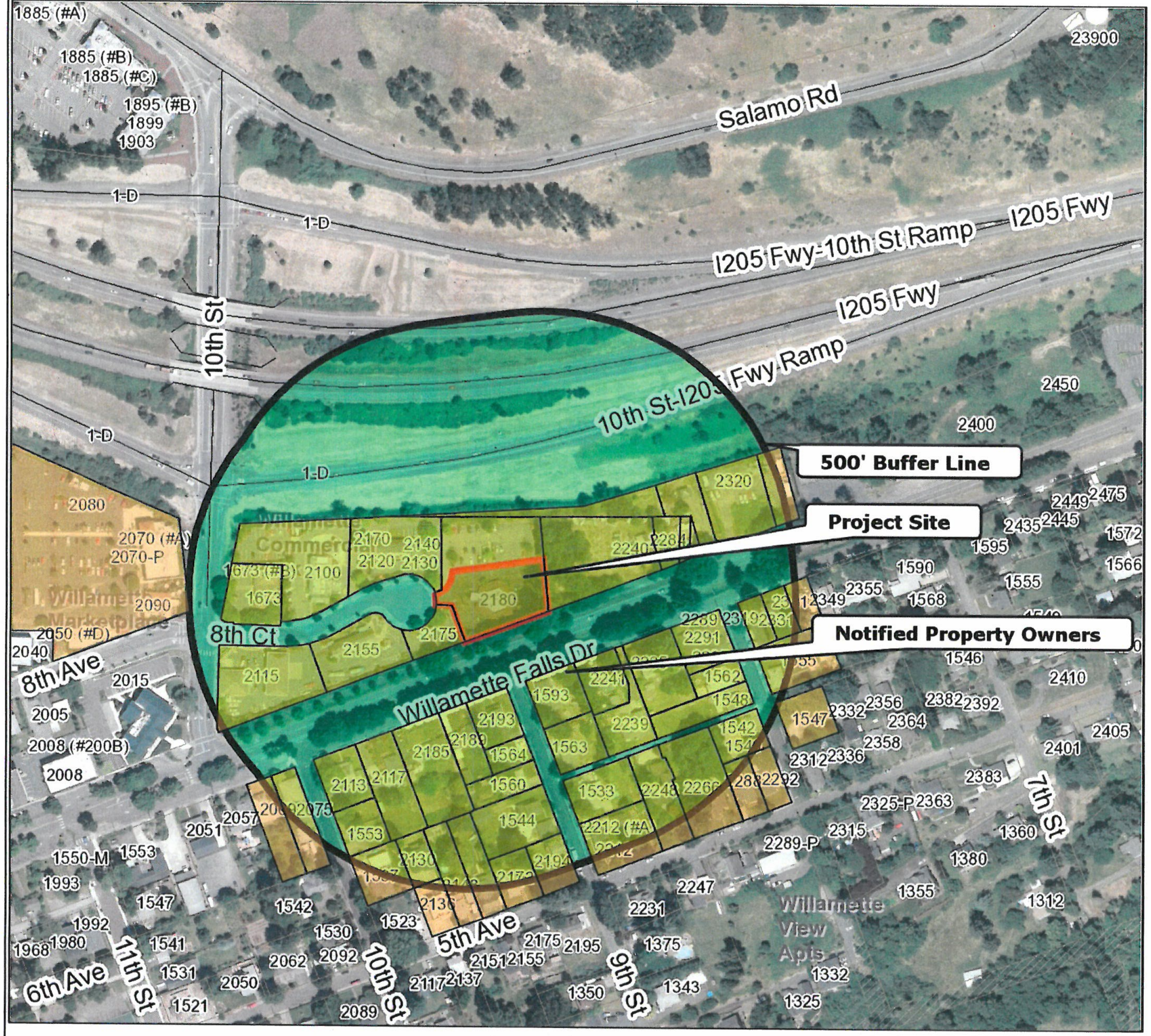
The complete application in the above noted file is available for inspection at no cost at City Hall or via the web site at https://westlinnoregon.gov/planning/2180-8th-court-class-ii-design-review-commercial-development or copies can be obtained for a minimal charge per page. At least ten days prior to the hearing, a copy of the staff report will be available for inspection. For further information, please contact Associate Planner Jennifer Arnold at jarnold@westlinnoregon.gov or 503-742-6057. Alternately, visit City Hall, 22500 Salamo Road, West Linn, OR 97068.

The hearing will be conducted in accordance with the rules of Section 99.170 of the CDC. Anyone wishing to present written testimony on this proposed action may do so in writing prior to, or at the public hearing. Oral testimony may be presented at the public hearing. At the public hearing, the Planning Commission will receive a staff presentation, and invite both oral and written testimony. The Planning Commission may continue the public hearing to another meeting to obtain additional information, leave the record open for additional evidence, arguments, or testimony, or close the public hearing and take action on the application as provided by state law. **In the event that the Planning Commission decision is appealed, City Council review of the appeal will be de novo.** Failure to raise an issue in person or by letter at some point prior to the close of the hearing, or failure to provide sufficient specificity to afford the decision maker an opportunity to respond to the issue, precludes an appeal to the Land Use Board of Appeals (LUBA) based on that issue.

Publish: West Linn Tidings, February 21, 2019

2180 8th Court Notification Map

City of West Linn



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Scale 1:3,600 - 1 in = 300 ft
Scale is based on 8-1/2 x 11 paper size

Map created by: SSHROYER
Date Created: 05-Feb-19 05:19 PM

WEST LINN GIS

DISCLAIMER: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Map scale is approximate. Source: West Linn GIS (Geographic Information System) MapOptix.

CITY OF
West Linn

CITY OF WEST LINN
NOTICE OF UPCOMING
PLANNING COMMISSION HEARING

PROJECT # DR-18-08
MAIL: 2/14/19   TIDINGS: 2/21/19

CITIZEN CONTACT INFORMATION

To lessen the bulk of agenda packets, land use application notice, and to address the worries of some City residents about testimony contact information and online application packets containing their names and addresses as a reflection of the mailing notice area, this sheet substitutes for the photocopy of the testimony forms and/or mailing labels. A copy is available upon request.

Citizen Contact Information Agenda Packets and Project Files

PC-2 COMPLETENESS LETTER

City of
West Linn

January 10, 2019

Ed Bruin
735 SW 20th Place, Suite 220
Portland, OR. 97205

SUBJECT: DR-18-08 application for Class II Design Review at 2180 8th Court.

Dear Mr. Bruin:

You submitted this application on November 28, 2018. The Planning and Engineering Departments found that this application was incomplete on December 27, 2018. All required information was subsequently provided on January 9, 2019 and the application has now been deemed **complete.** The city has 120 days to exhaust all local review; that period ends May 9, 2019.

Please be aware that a determination of a complete application does not guarantee a recommendation of approval from staff for your proposal as submitted – it signals that staff believes you have provided the necessary information for the Planning Commission to render a decision on your proposal.

A 20-day public notice will be prepared and mailed. This notice will identify the earliest potential hearing date by the Planning Commission.

Please contact me at 503-742-6057, or by email at jarnold@westlinnoregon.gov if you have any questions or comments.

Sincerely,

Jennifer Arnold

Associate Planner

PC-3 APPLICANT'S SUBMITTAL

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: Jennifer Arnold

PROJECT NO(S). DR-18-08

NON-REFUNDABLE FEE(S) 300-

REFUNDABLE DEPOSIT(S) 8000-

TOTAL 8300-

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:
2180 8th Court, West Linn, Oregon

Assessor's Map No.: 21E35D
Tax Lot(s): 903
Total Land Area: 1.044 Acre's (45,489 sf)

Brief Description of Proposal: COMMERCIAL DEVELOPMENT ON THE SOUTH LOT OF THE PARENT PARCEL, PENDING LOT PARTITION. PROPOSED BUILDING TO BE A SINGLE STORY DENTIST OFFICE WITH SPACE AVAILABLE FOR ANOTHER OFFICE TENANT.

Applicant Name: (please print) ED BRUIN
Address: 2233 NW 23RD AVE
City State Zip: PORTLAND, OR 97210
Phone: 503 292 7733
Email: ed@edgedevelop.com

Owner Name (required): (please print) WILLAMETTE CAPITAL INVESTMENTS
Address: PO BOX 2507
City State Zip: WILSONVILLE, OR 97070
Phone: 503 407 8957
Email: phanlin@msn.com

Consultant Name: (please print) Chris Deslauriers
Address: 6443 SW Beaverton-Hillsdale Hwy.
City State Zip: Portland, OR 97221
Phone: 503 203 8111
Email: chris@wdyi.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 denial or approval may be reversed on appeal. No permit will be in effect until the appeal period has expired.
4. **Three (3) complete hard-copy sets (single sided) of application materials must be submitted with this application. One (1) complete set of digital application materials must also be submitted on CD in PDF format. If large sets of plans are required in application please submit only two sets.**

* No CD required / ** Only one hard-copy set needed

RECEIVED
NOV 2 8 2018

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 11/28/18

Owner's signature ***(required)*** — Date 11/28/18

EDGE
DEVELOPMENT

September 17, 2018 **REV. 11/26/18**

DESIGN REVIEW NARRATIVE

8th COURT DEVELOPMENT

2180 8TH COURT, WEST LINN, OR

OVERVIEW:

The applicant proposes to construct a new commercial building on a site located at 2180 8th Court in West Linn. There currently is an empty restaurant facility on the south side of the lot with surface parking and landscaping occupying the rest of the lot. The applicant requests approval to reconfigure parking, relocate utilities, construct a new stormwater management facility, construct new sidewalks, plaza areas and a trash area to support the proposed business structure. Concurrent with this proposal is a lot partition application to divide the lot into north and south lots, with the proposed lot line located at the midpoint of the existing access easement.

The applicant has a local dentist interested in leasing / purchasing the larger portion of the proposed building structure, with approximately 1,400 s.f. of office space remaining to lease.

Attached are architectural renderings illustrating how the proposed building meets the Community Development Code standards. The north lot is under consideration for development but plans are preliminary pending the identification of an end user / tenant. This application is focused solely on the south lot.

Other related permits are, as mentioned, the Lot Partition permit (under review) and an Alternate Review application addressing the Water Resource Area bordering the north property line of the original property. The A.R. application has been granted, reference WAP-18-02.

Project Details:
Tax Lot No: 903 Assesor's Map 21E35D
Site Area: 1.044 Acre's (45,489 sf)
Neighborhood: Willamette
Comp Plan: Commercial
Zoning: General Commercial
Environmental Overlays: WRA

CHAPTER 19, GENERAL COMMERCIAL

19.030 PERMITTED USES

19.010 thru 19.040: ***The proposed development proposes uses within the guidelines of the allowed permitted uses. No accessory uses are proposed.***

19.050 thru 19.060: ***The proposed development proposes uses within the guidelines of the allowed permitted uses. No Prescribed or Conditional uses are proposed.***

The proposed use for the building is medical and dental services for the 2,800 space and either medical and dental services or professional services for the 1,400 sf space.

19.070 DIMENSIONAL REQUIREMENTS

A. Except as may be otherwise provided by the provisions of this code, the following are the requirements for uses within this zone:

1. The minimum front lot line length or the minimum lot width at the front lot line shall be 35 feet. **The proposed development is on an existing lot at the end of a cul-de-sac. No change is proposed for the existing lot frontage dimensional characteristics.**

2. The average minimum lot width shall be 50 feet. **The average minimum lot width is in excess of 50 feet.**

3. The average minimum lot depth shall not be less than 90 feet. **The average width is greater than 50 feet and the average depth is greater than 90 feet for both lots**

4. Where the use abuts a residential district, except as provided in CDC 58.090(C)(1), the setback distance of the residential zone shall apply. **The sites to the east and west are zoned GC and set back requirements are proposed to be met. The land north of the site is the I205 ODOT Right of Way corridor and the setback requirements are intended to be met. The zoning south of the project site is R10. The project proposes a 20 foot minimum building set back from the south property line abutting the R10 zoning and is therefore understood to be met assuming this will be interpreted as the rear yard set back.**

5. The maximum lot coverage shall be 50 percent, except as provided in CDC 58.090(C)(1)(d). **The proposed building is roughly 4,200 s.f. for the structure, which will have a lot area of 22,335 s.f. when the lot partition is approved. The proposed structure is roughly 19% of the lot area.**

6. The maximum building height shall be two and one-half stories or 35 feet for any structure located within 50 feet of a low or medium density residential zone, and three and one-half stories or 45 feet for any structure located 50 feet or more from a low or medium density residential zone. **The lot is abutted by the R10 zone. The R10 zone line follows the north side of the Willametter Falls Drive right of way which is the south lot line of the south Parcel. The south lot building is not proposed to exceed the 35 foot height limit.**

7. For lot lines that abut an arterial, there shall be no minimum yard dimensions or minimum building setback area, and the maximum building setback shall be 20 feet. The front setback area between the street and the building line shall consist of landscaping or a combination of non-vehicular hardscape areas (covered with impervious surfaces) and landscaped areas. If there are not street trees within the public right-of-way, the front setback area shall include such trees per the requirements of the City Arborist. **The lots do not abut an arterial.**

19.080: Conditional Uses are not being requested.

19.090: The provisions of the chapters 34,38,40,42,44,46,48,52,54 are addressed under the Chapter 55 Design Review section.

19.090.1: No Temporary structures are proposed

19.090.4: No prosed modifications to building height are being requested. There is a steep slope along the south property line but no structures are proposed on the steep slope. No other exceptions to building height are proposed.

55.070 SUBMITTAL REQUIREMENTS

Included in this application is:

A site plan (CDC 55.120); at the original scale and one copy reduced to 11 inches by 17. One copy of all other items must be submitted.

- A pdf of the complete application.
- A grading plan (CDC 55.130);
- Architectural drawings, indicating floor plan and elevation (CDC 55.140);
- A landscape plan
- A utility plan
- A light coverage plan with photometric data
- A material board showing images of exterior building materials and colors.

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.

No Accessory Structures, Accessory Dwelling Units, and Accessory Uses are proposed.

2. Chapter 38 CDC, Additional Yard Area Required; Exceptions to Yard Requirements; Storage in Yards; Projections into Yards.

Not applicable.

3. Chapter 40 CDC, Building Height Limitations, Exceptions.

The building design does not propose to exceed height limitations or pursue exceptions.

4. Chapter 42 CDC, Clear Vision Areas.

The lots will share a public access drive that accesses the dead end of the 8th Court Cul-De-Sac. There are not any observed obstructions within the Clear Vision Area requirements at the public right of way access.

5. Chapter 44 CDC, Fences.

There is an existing fence along the east property line that is not planned to be removed. If grading requires reinstallation it is planned to meet the maximum 6 foot height restriction.

An existing 4.5 foot to 2.5 foot tall rock wall the follows the south Toe of Slope of the River Road embankment that is planned to remain.

The trash collection and storage area is planned to meet the requirements of the code for screening and sight obscuring.

6. Chapter 46 CDC, Off-Street Parking, Loading and Reservoir Areas.

Off street parking will be provided. The south lot shall be provided with 21 parking stalls, which is 5 stalls per 1,000 s.f. of building area.

7. Chapter 48 CDC, Access, Egress and Circulation.

There exists an public access easement in benefit of the City across the site to accommodate future development potential east of this site. The site is at a dead end cul-de-sac and is accessed by a curb cut driveway. Onsite parking aisles accommodate the dimensional standards to for movement.

There is an exception request for one bank of parking along the east side of the proposed building. The dimensional requirement for 90 degree parking is to provide a 24 foot drive aisle. There are five spaces that are provided 18 foot deep stall depths with a sidewalk access to the building. This drive aisle is dimensioned at 20 feet wide which is sufficient in width to accommodate vehicle maneuvering for standard and compact vehicles. This drive aisle also accesses a trash enclosure that will be accessed by trash and recycling vendors and 20 feet is wide enough to accommodate the trash and recycling collection vehicles.

It is believed that all other onsite existing to remain or proposed new parking meets the parking standards and access and egress standards.

8. Chapter 52 CDC, Signs.

Signage to be permitted separately.

9. Chapter 54 CDC, Landscaping.

There are five existing trees located in existing parking lot landscape islands that will be removed. New trees will be planted. The existing perimeter trees along the site north, east and south boundaries are planned to remain.

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.

There are no heritage trees identified on the site.

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

The topography and natural drainage will be preserved to the maximum extent feasible in areas not used for parking and building structures. The existing site is mostly paved parking with a restaurant building. The new site design will propose to redevelop the south site for one building and leave the north site as existing parking. Site grading will be modified to provide for the redevelopment and new storm facilities.

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.

The structure is not proposed in an area subject to slumping and sliding.

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.

There is adequate distance between on-site building and off-site buildings on adjoining properties to provide for adequate light and air circulation and for fire protection

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.

The proposed structure is a single story, similar in scale with the other structures located on 8th Court. There is not a single architectural style or era to draw upon for the proposed buildings. The design intent is that the new building will relate in scale and complement the existing buildings while remaining architecturally distinct.

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.

> **The proposed structure is not directly adjacent to any building or structure and is separated by parking or landscaping. The roof line and massing is varied to break up the form, and situated at an angles from the nearest structures.**

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.

> **The proposed building is set at a distance from other buildings on a large site at the end of a cul-de-sac. The existing buildings in the proximity are not architecturally distinct nor appropriate for the proposed development.**

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.

> **The proposed building has two forms that are hinged around an entry courtyard wrapped with a wood trellis. The trellis creates a ceiling over the space accommodating a human scale. The courtyard is the first architectural feature noticed upon entering the site.**

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.

The access easement shall be considered for purposes of this evaluation as the street fronting the building. The elevation facing the easement and the elevation to the west facing the adjacent business shall be a minimum of 60% transparent, as demonstrated in the table on the architectural elevations. See architectural drawings for tabulations.

The building backside is facing south towards the wooded embankment up to Willamette Falls Drive. Windows are not included in the DR package but are assumed as the design progresses and the interior program for the spaces is defined.

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.

No walls proposed over 100'. A use of different siding materials helps with the appearance on all building sides.

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.

Awnings and wood trellises proposed at building entrances. Flashing will be provided to prevent rainwater drippage over building entrances.

h. The vision statement identified a strong commitment to developing safe and attractive pedestrian environments with broad sidewalks, canopied with trees and awnings.

Project includes sidewalks on parking area frontages and an entry plaza facing the 8th Court cul-de-sac.

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.

Benches are planned for the plaza area. All sidewalk widths will exceed 4 feet.

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.

For the purposes of this development the access easement is considered the street frontage. Accessible stalls are located in front of the building nearest the building entries. The streetscape is similar to a Main Street configuration with perpendicular parking stalls opposite the building walls.

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.

No residential buildings proposed.

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.

The building is located as close to the existing pedestrian circulation system as possible. Pedestrian easements are in place to facilitate circulation from Willamette Falls Drive to the 8th Court circle.

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.

Pedestrian circulation has been designed to meet criteria in 55.100.7.d

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.

There is an existing pedestrian easement connecting steps to Willamette Falls Drive with the proposed building and across to the end of the cul-de-sac. The easement shall be maintained for pedestrians.

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.

The commercial building main entry is facing the access easement and end of cul-de-sac.

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.

No transit service identified for this site.

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.

The site does not front the right of way in a typical city scape way. The proposed structure is a single story building fronting a parking area, more in keeping with a shopping center than a "main street" frontage. Eventually the north lot will be developed to create a streetscape.

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.

Not applicable

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.

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.

The site is located at the end of a cul-de-sac with natural screening in every direction except to the west which has adjacent commercial properties.

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.

The site is located at the end of a cul-de-sac with natural screening in every direction except to the west which has adjacent commercial properties.

3. Rooftop air cooling and heating systems and other mechanical equipment shall be screened from view from adjoining properties.

Rooftop HVAC equipment shall be screened.

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.

Not applicable

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.

Not applicable

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.

There is a full grown, mature line of trees buffering the site with the residential property to the east. No other residential lots bordering the property.

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).)

No excessive noise producers proposed.

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.

No excessive noise producers proposed.

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

1. In addition to the requirements of residential living, unit shall have an outdoor private area (patio, terrace, porch) of not less than 48 square feet in area;

2. The outdoor space shall be oriented towards the sun where possible; and

3. The area shall be screened or designed to provide privacy for the users of the space.

4. Where balconies are added to units, the balconies shall not be less than 48 square feet, if they are intended to be counted as private outdoor areas.

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.

1. In addition to the requirements of subsection E of this section, usable outdoor recreation space shall be provided in residential developments for the shared or common use of all the residents in the following amounts:

    a. Studio up to and including two-bedroom units: 200 square feet per unit.

    b. Three or more bedroom units: 300 square feet per unit.

2. The required recreation space may be provided as follows:

    a. It may be all outdoor space; or

    b. It may be part outdoor space and part indoor space; for example, an outdoor tennis court and indoor recreation room; and

    c. Where some or all of the required recreation area is indoor, such as an indoor recreation room, then these indoor areas must be readily accessible to all residents of the development subject to clearly posted restrictions as to hours of operation and such regulations necessary for the safety of minors.

    d. In considering the requirements of this subsection F, the emphasis shall be on usable recreation space. No single area of outdoor recreational space shall encompass an area of less than 250 square feet. All common outdoor recreational space shall be clearly delineated and readily identifiable as such. Small, marginal, and incidental lots or parcels of land are not usable recreation spaces. The location of outdoor recreation space should be integral to the overall design concept of the site and be free of hazards or constraints that would interfere with active recreation.

3. The shared space shall be readily observable to facilitate crime prevention and safety.

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.

Not applicable

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.

There is no public transit serving this location.

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.

No changes proposed to the public street system serving the property. The public access easement across the site will be regraded to accommodate 90 degree head in parking along both sides of the easement and to accommodate storm collection and building access.

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.

> **It is proposed to provide onsite vegetative storm planters and basin to meet both water quality and detention requirements. The site will discharge to it's current location reducing flows from the existing conditions with by meeting the detention requirement. The project is being redeveloped and those areas being redeveloped will be collected, treated and detained per the city storm drainage policy. It is understood that the onsite detention provision relieves the need for downstream analysis.**

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.

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.

It is understood that sufficient water supply from the existing public water mains is adequate to meet the demand of the proposed projects.

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.

It is understood that sufficient sanitary capacity from the existing public sanitary mains is adequate to meet the demand of the proposed projects.

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.

> **Waste collection areas are proposed for the ends of the east side parking drive aisles. Metro design standards shall be used to design these structures.**

J. Crime prevention and safety/defensible space.

1. Windows shall be located so that areas vulnerable to crime can be surveyed by the occupants.

> **Windows are oriented towards parking areas.**

2. Interior laundry and service areas shall be located in a way that they can be observed by others.

All amenities are 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.

Site lighting is designed for trash areas and pedestrian circulation.

4. The exterior lighting levels shall be selected and the angles shall be oriented towards areas vulnerable to crime.

Site lighting has been selected and angles have been 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.

Light fixtures are shown in areas of pedestrian and 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.

The design of the site lighting includes the selection dark sky compliant LED luminaires. The luminaires will be equipped with shields that minimize glare, reduces light trespass and skyglow. No light will be emitted about 180 degrees. The lighting has been laid out to provide overlapping vertical illumination at 7' above grade which will be sufficient to illuminate a person.

7. Lines of sight shall be reasonably established so that the development site is visible to police and residents.

Lines of sight have been established so that the development site is visible to police and occupants.

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.

Not applicable.

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.

Accessible routes are proposed between all buildings and accessible site facilities.

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.

The building units shall be numbered for emergency identification. A monument sign is proposed at the development entry landscaping to help with way-finding.

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.

Signs, graphics, and letter styles shall be designed to be compatible with surrounding development

3. The sign graphics and letter styles shall announce, inform, and designate particular areas or uses as simply and clearly as possible.

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.

The monument sign is not proposed in a location that would block site lines to vehicular circulation.

5. Signs indicating future use shall be installed on land dedicated for public facilities (e.g., parks, water reservoir, fire halls, etc.).

Not applicable.

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.

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.

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.

The project shall be designed to meet the CDC standards for utilities.

N. Wireless communication facilities (WCFs). (This section only applicable to WCFs.) WCFs as defined in Chapter 57 CDC may be required to go through Class I or Class II design review. The approval criteria for Class I design review is that the visual impact of the WCF shall be minimal to the extent allowed by Chapter 57 CDC. Stealth designs shall be sufficiently camouflaged so that they are not easily seen by passersby in the public right-of-way or from any adjoining residential unit. WCFs that are classified as Class II design review must respond to all of the approval criteria of this chapter.

The project shall be designed to meet the CDC standards for WCFs.

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.

The project shall be designed to meet the CDC standards for refuse and recycling. No modifications proposed.

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.

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.

The project shall be designed to meet the Recycling and solid waste standards.

a. Recycling receptacles shall be designed and located to serve the collection requirements for the specific type of material. **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. **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. **Recycling receptacles shall be shelted in the trash corral east of the building. The bins will have lids and the structure shall be covered. The maintenance of enclosures, receptacles and shelters will be 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. **Shall be reviewed during building permit submittal.**

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. **Recycling and solid waste service areas shall be at ground level.**

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. **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. **Recyclable material service areas shall be maintained in a clean and safe condition.**

4. Special wastes or recyclable materials.

The project shall be designed to meet the Special wastes or recyclable materials standards.

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. **No hazardous materials will be allowed to be stored, maintained, collected, transported, or disposed at this site.**

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.

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, or anywhere on site.

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.

See landscape plans.

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.

See landscape plans. Criteria met.

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.

Trash enclosures shall be constructed with concrete masonry units designed to be compatible with primary buildings.

6. Litter receptacles.

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

Litter receptacles shall 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.

Litter receptacles shall not be located within the ROW.

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.

21 parking stalls are proposed. 1 litter receptacles is proposed. See landscape plans.

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. **Included on Cover Sheet.**

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.

55.120 SITE PLAN

The submitted site plan is at the same scale as the site analysis and shows:

A. The 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. (Ord. 1442, 1999; Ord. 1613 § 14, 2013; Ord. 1622 § 28, 2014; Ord. 1636 § 39, 2014)

55.125 TRANSPORTATION ANALYSIS

Included in DR submittal.

55.130 GRADING AND DRAINAGE PLANS

A registered civil engineer has prepared a conceptual 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. **A geologic report is attached.**

F. Identification information, including the name and address of the owner, developer, project designer, and the project engineer. **Included on Cover Sheet**

55.140 ARCHITECTURAL DRAWINGS

Architectural drawings shall be submitted showing:

A. Building elevations and sections tied to curb elevation; **Shown schematically on plans. To be refined through design development.**

B. Building materials: color and type; **Shown on attached Material Board.**

C. The name of the architect or designer. **Included on Cover Sheet**

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; **Irrigation to be design-build.**

2. The location and height of fences and other buffering of screening materials, if proposed; **No fencing currently proposed.**

3. The location of terraces, decks, patios, shelters, and play areas, if proposed; **Shown on plans.**

4. The location, size, and species of the existing and proposed plant materials, if proposed; **Shown on plans.**

5. Building and pavement outlines. **Shown on plans.**

B. The landscape plan shall be accompanied by:

1. The erosion controls that will be used, if necessary; **See civil plans**

2. Planting list; **Shown on plans.**

3. Supplemental information as required by the Planning Director or City Arborist. **N/A**

WDY Structural • Civil Engineers

PRELIMINARY STORM DRAINAGE CALCULATIONS

FOR

8th Court Commercial

2180 8th CT
WEST LINN, OR 97068

September 13, 2018
Revised: November 29, 2018

Preliminary
11/29/2018 9:23:34 AM

80018PE
OREGON
JUNE 7, 2012
CHRIS J. DESLAURIERS
RENEWS: 12-31-2019

TABLE OF CONTENTS/INCLUSIONS:

Edge Development
735 SW 20th Place, Suite 220
Portland, OR 97205

September 13, 2018
Revised: November 28, 2018

RE: 8th Court Commercial Preliminary "Storm Drainage Narrative and Analysis Report"

Dear Mr. Bruin,

At your request, WDY, Inc. has completed the following storm drainage calculations for the 2180 8th Court project in West Linn, Oregon. The purpose of this report is to show the analysis and design of storm water, water quality and detention systems utilizing City of Portland style Storm Planters also known as "rain gardens" to provide detention and water quality for all new and redeveloped impervious areas. The storm drainage detention and water quality systems are designed per the City of West Linn's Design Standards for Storm Drain Requirements. The water quality standards meet the 2016 City of Portland's Stormwater Management Manual (SWMM) which the City of West Linn accepts for water quality design standards. Rain fall intensities were provided by the City of West Linn and utilized in a Performance Approach Engineered analysis for both detention and water quality for each planter.

Site Existing Conditions

The existing site is currently one tax lot that consists of one building, concrete walkways, asphalt paved parking and landscaping. The south property line abuts Willamette Falls Drive. The site slopes relatively steeply down from Willamette Falls Drive north right of way to the north to the top of an existing 3 foot to 4 foot tall rock retaining wall at the base of the slope. The north property line has a bank that slopes down to the north to the flow line of existing public regional drainage conveyance ditch that s within a sensitive area buffer zone. The remaining area of the lot is generally flat with the overall slopes less than 5% that drain runoff to existing catch basins which are connected to an existing public storm conveyance pipe that exists in a public easement. The entire 8th Court business park east of 10th street drains to this shared public storm main and discharges into the regional drainage ditch. The drainage ditch conveys storm runoff to an existing public water quality and retention basin that is adjacent to and east of the subject project site. The water quality and retention are presumed to be constructed with a liner with a perforated pipe below the surface growing media that ultiamtly collects all runoff and then discharges through a concrete ditch inlet into an existing public 12" diameter PVC pipe that out falls into Bernert Creek approximately 200 feet east of the subject project site. Bernert Creek collects and conveys over 100 acres of upstream and downstream storm water, is a major drainage way and eventually discharges directly into the Willamette River about 3,800 feet downs stream. Bernert Creek does not appear to have a history of flooding and is not a FEMA listed floodway.

Proposed New Site Development:

The proposed development will partition the one property into two separate tax lots. The proposed partition will split the existing 24 ft wide shared public access easement that runs through the middle of the site. The Parcel 1 north lot will remain a private parking lot with independent catch basins that connect to the existing public drainage system. No work is proposed on the north lot other than to cross the lot with new storm drainage conveyance pipe to discharge the Parcel 2 south lot storm runoff to the existing public conveyance system. The total area of the north lot is approximately 23,142 sf with 18,270 sf of impervious area and 4,872 sf of pervious area to remain undisturbed.

The Parcel 2 south lot proposes to construct and approximately 2,777 sf medical office building and 1,494 sf of retail space. The west existing parking area is proposed to remain undisturbed but new curb and sidewalk will be installed along the west building wall from the existing public pedestrian stair to the north edge of the proposed development. New paved parking along the north and east sides of the building is proposed along with sidewalks. All new or redeveloped impervious area will drain to one of the three new storm planters designed to provide water quality and detention to meet City of West Linn storm water policies.

Planter-1:
Planter 1 is a standard concrete wall flat bottom storm planter that is approximately 546 sf in area. The total storage depth will be 1.3 feet. Pavement and sidewalks will surface drain to the storm planter with curb cuts. Roof drains from the 1,494 sf building will discharge directly into the planter. See sheet STM-6 & STM-7 for a summary of the detention and water quality analysis and STM-9 thru STM-26 for the HydronCAD output analysis. This planter will be directly connected to the existing public storm main that crosses the west property line of the north Parcel 1 which ultimately discharges into the existing public conveyance ditch that conveys stormwater through the downstream existing water quality and retention facility. The planter is designed for water quality and detention.

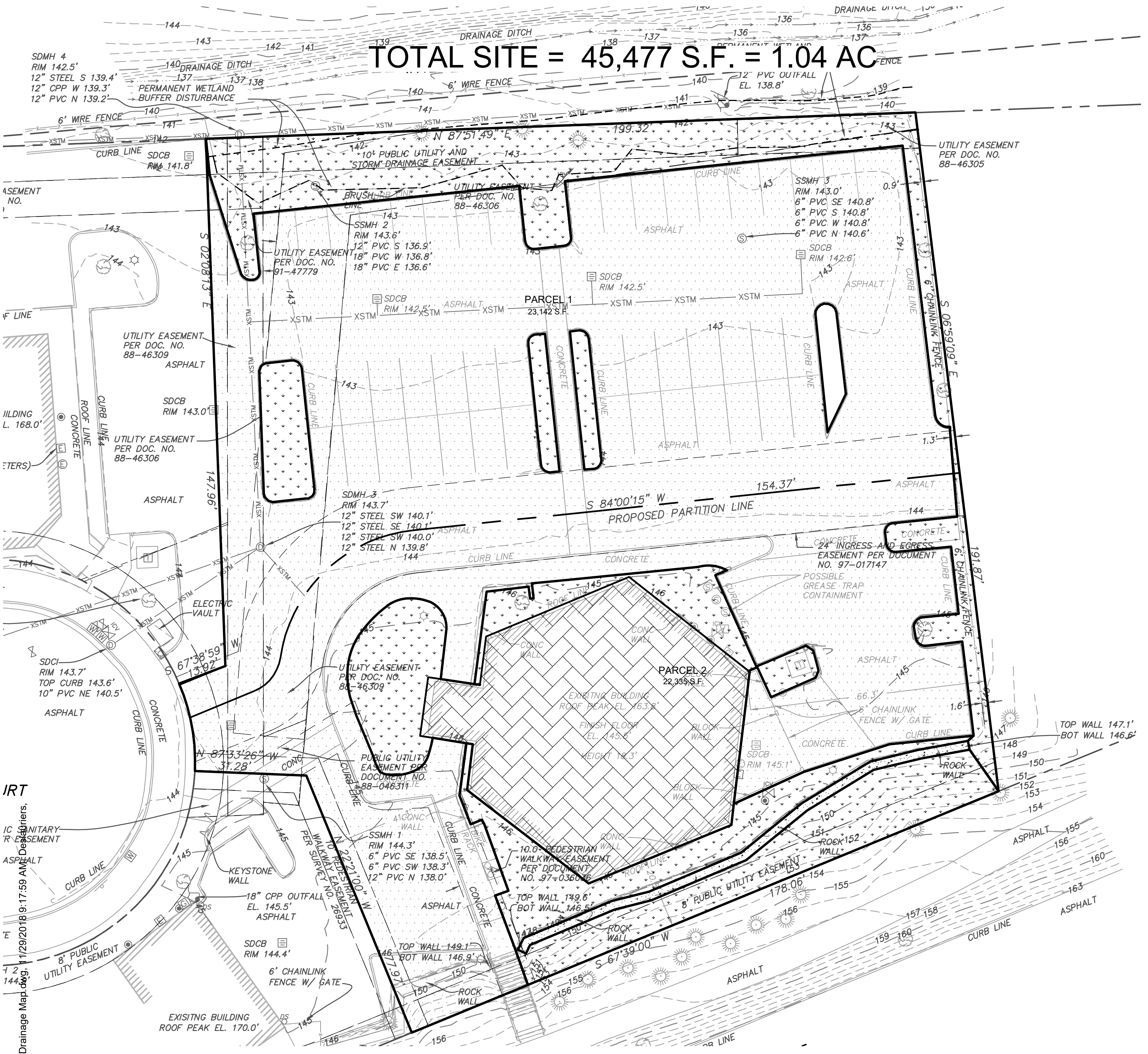
Planter-2:
Planter 2 is standard concrete flat bottom storm planter that is approximately 179 sf in area. The total storage depth is 1.6 feet. Pavement and sidewalks will surface drain to the storm planter with curb cuts. This planter is not proposed to receive any roof area. See sheet STM-6 & STM-7 for a summary of the detention and water quality analysis and STM-27 thru STM-44 for the HydronCAD output analysis. This planter proposes a new outfall conveyance pipe that crosses along the east property line of the north Parcel 1 lot and will discharge into the existing public conveyance ditch that conveys stormwater through the downstream existing water quality and retention facility. The planter is designed for water quality and detention.

Planter-3:
Planter 3 is a storm planter basin with 3H:1V side slopes. The total top of basin foot print is 552 sf and the bottom area is 160 sf. The total storage depth is 1.15 feet with the total depth of the planter being 1.5 feet. Roof water from the 2,777 sf building will directly discharge to this planter. See sheet STM-6 & STM-7 for a summary of the detention and water quality analysis and STM-45 thru STM-62 for the HydronCAD output analysis. This planter proposes a new outfall conveyance pipe that crosses along the east property line of the north Parcel 1 lot and will discharge into the existing public conveyance ditch that conveys stormwater through the downstream existing water quality and retention facility. The planter is designed for water quality and detention.

The stormwater detention design for each planter is per the City of West Linn and City of Portland’s stormwater standards and design guidelines. Each storm facility is a “Flow-Thru” type facility. The site is underlain by silty loam soil and does not percolate very well. The City of West Linn requires the 2, 5, 10 and 25-year post developed stormwater runoff rates to the be detained to their respective pre-developed runoff rates. The water quality requirement is per the City of Portland which is to treat 90 percent of the average annual runoff volume. This is achieved by treating the predetermined runoff rate from a 0.83 inch over 24-hour volume storm. The analysis for each storm planter was conducted using HydroCAD Version 10.00 with an engineered performance approach.

Sincerely,
Chris DesLauriers, PE

TOTAL SITE = 45,477 S.F. = 1.04 AC



⬚	EXISTING CONCRETE & PAVEMENT 40,011 SF CN=98
▨	EXISTING ROOF 5,106 SF CN=98
⬚	EXISTING LANDSCAPING 10,572 SF CN=86

N

EXISTING CONDITIONS MAP

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WDY
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Portland, Oregon 97221
ph:503.203.8111 fx:503.203.8122
www.wdyi.com

SCALE: 1" = 40'-0"

Job Name: 8TH COURT COMMERCIAL

Date: NOV 2018

Job No.: 18116

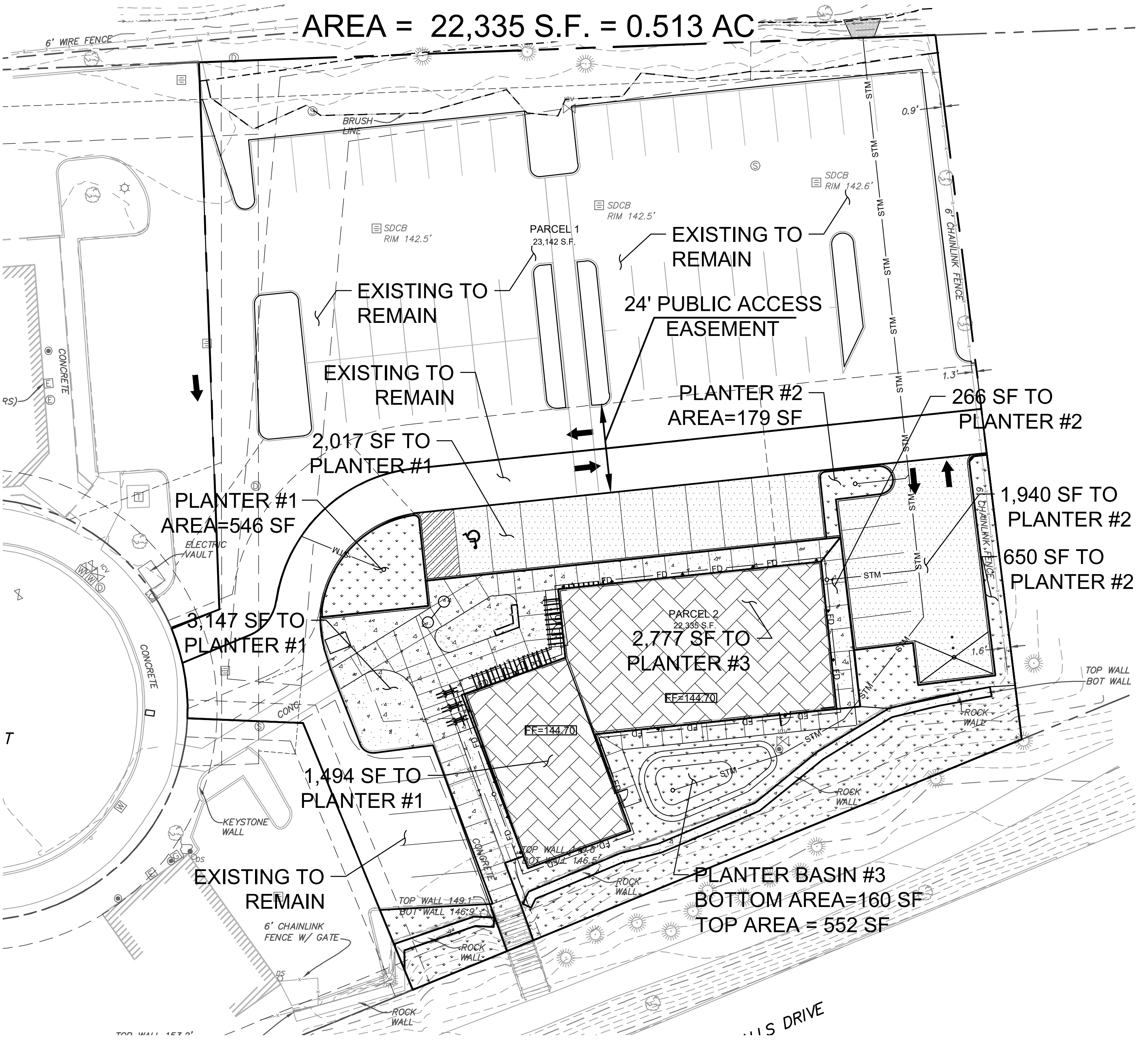
Drawn: RMK

Client: EDGE DEVELOPMENT

Sheet: STM-3

P:\2018\18116_8th Court Commercial\Documents\Storm Drainage\Preliminary\18116_Drainage Map.dwg, 11/29/2018 9:17:59 AM, Dedesigners, ANSI expand A (8.50 x 11.00 Inches), 1:1

TOTAL SOUTH PARCEL #2
AREA = 22,335 S.F. = 0.513 AC



▒ PROPOSED NEW PAVEMENT 3,957 SF CN=98

▨ PROPOSED NEW CONCRETE 3,413 SF CN=98

▨ PROPOSED NEW ROOF 4,271 SF CN=98

▒ PROPOSED LANDSCAPING 4,886 SF CN=86

PROPOSED PAVEMENT TO REMAIN = 5,828 SF

N

PROPOSED SOUTH PARCEL #2 AREA MAP

WDY

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www.wdyi.com

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SCALE: 1" = 40'-0"

Job Name: 8TH COURT COMMERCIAL

Date: NOV 2018

Job No.: 18116

Drawn: RMK

Client: EDGE DEVELOPMENT

Sheet: STM-4

P:\2018\18116_8th Court Commercial\Documents\Storm Drainage\Preliminary\18116_Drainage Map.dwg, 11/29/2018 9:18:17 AM, Deslauriers, ANSI expand A (8.50 x 11.00 Inches), 1:1

Job Name: **8th Court Commercial** Job No: **18116** Sheet No: STM-5

Client: **Edge Development** Date: **Sept. 2018** By: RMK

SITE STORM DRAINAGE DESIGN CRITERIA

- Design Manuals:
  - Water quality and detention designed per City of West Linn's Design Standards for Storm Drain Requirements.
  - The City of West Linn accepts the City of Portland's 2016 Stormwater Management Manual (SWMM) for water quality standards.
- Santa Barbara Unit Hydrograph Method NRCS Type 1A 24-hour storm distribution design. Rainfall Depths Provided By City of West Linn Engineering Deparment.

Storm Event	Rainfall Depth
2-yr	2.5 in
5-yr	3.0 in
10-yr	3.4 in
25-yr	3.9 in
100-yr	4.5 in
Water Quality	0.83 in

- Pre-developed Conditions:
  - USDA Web Soil Survey Existing Hydrologic Soil Group C Woodburn Silt Loam, Open Space, Assumed Poor Condition Grass Cover <50%; Curve Number (CN) = 86
- Proposed Conditions:
  - Impervious areas are analyzed with runoff CN = 98
  - Landscaping areas are analyzed with CN = 86
- Detention Design: the design for detention facilities per the City of West Linn's Design Standards are to detain flows as follows:
  - 2 year post-developed → 2 year pre-developed
  - 5 year post-developed → 5 year pre-developed
  - 10 year post-developed → 10 year pre-developed
  - 25 year post-developed → 25 year pre-developed
  - Convey the 100-yr storm safely without causing damage to downstream property.
  - See STM-8 for Tc calculations (5 minute minimum per City of West Linn Design Standards, Formula per City of Portland BES and 2016 City of Portland's SWMM)
- Water Quality Design: the design for water quality adheres to the 2016 City of Portland's SWMM:
  - Treat 90 percent of the average annual runoff volume
  - Predetermined water quality rainfall intensity of 0.83 inch over 24 hours to develop the maximum water quality flow.

Job Name: **8th Court Commercial** Job No: **18116** Sheet No: STM-6

Client: **Edge Development** Date: **Sept. 2018** By: RMK

TRIBUTARY AREAS

- Total Existing Parcel 1 and Parcel 2 lot Area = 45,477 sf = 1.04 sf
  - Existing Conditions
    - Impervious = 34,905 sf
      - AC & Concrete = 40,011 sf
      - Roof = 5,106 sf
      - Pervious Landscapin = 10,572 sf
- Parcel #1 Proposed Conditions: Total Area = 23,142 sf
  - Parcel #1 Existing Impervious Area = 18,270 sf, to remain
  - Parcel #1 Existing Pervious Area (Landscaping & Native) = 4,872 sf, to remain

- Parcel #2 Proposed Conditions: Total Area = 22,335 sf
  - Planter #1 = 546 sf
    - Pavement/Concrete = 5,146 sf
    - Roof = 1,494 sf
  - Planter #2 = 197 sf
    - Pavement/Concrete = 2,206 sf
    - Landscape = 650 sf
  - Planter Basin #3 = Bottom Area = 160sf; Top Area = 552 sf
    - Roof = 2,777 sf
    - Landscape = 3,811 sf
  - Existing Pavement Area to remain undisturbed = 5,508 sf.

Job Name: **8th Court Commercial** Job No: **18116** Sheet No: STM-7

Client: **Edge Development** Date: **Sept. 2018** By: RMK

SUMMARY OF STORM DESIGN

Planter #1: Summary of Detention Design Release Rates

Storm Even	Pre-Developed Runoff	Post-Developed Runoff	Target Rate	Discharge to Drainage Ditch*	Peak Elevation
WQ	0.001 cfs	0.02 cfs	0.02 cfs	0.001 cfs	143.40 ft
2-yr	0.04 cfs	0.09 cfs	0.04 cfs	0.01 cfs	144.31 ft
5-yr	0.06 cfs	0.11 cfs	0.06 cfs	0.02 cfs	144.32 ft
10-yr	0.07 cfs	0.12 cfs	0.07 cfs	0.04 cfs	144.33 ft
25-yr	0.09 cfs	0.14 cfs	0.09 cfs	0.08 cfs	144.35 ft
100-yr	0.11 cfs	0.16 cfs	N/A	0.15 cfs	144.38 ft

*The Discharge to Drainage Ditch is the rate at which water is being released into the existing drainage ditch.

- See HydroCAD print-outs for supporting information of storm design.

Planter #2: Summary of Detention Design Release Rates

Storm Even	Pre-Developed Runoff	Post-Developed Runoff	Target Rate	Discharge to Drainage Ditch*	Peak Elevation
WQ	0.001 cfs	0.02 cfs	0.02	0.0005 cfs	143.68 ft
2-yr	0.02 cfs	0.52 cfs	0.02 cfs	0.01 cfs	144.61 ft
5-yr	0.02 cfs	0.64 cfs	0.02 cfs	0.02 cfs	144.61 ft
10-yr	0.03 cfs	0.67 cfs	0.03 cfs	0.02 cfs	144.62 ft
25-yr	0.04 cfs	0.06 cfs	0.04 cfs	0.04 cfs	144.63 ft
100-yr	0.05 cfs	0.07 cfs	N/A	0.06 cfs	144.64 ft

*The Discharge to Drainage Ditch is the rate at which water is being released into the existing drainage ditch.

- See HydroCAD print-outs for supporting information of storm design.

Planter #3: Summary of Detention Design Release Rates

Storm Even	Pre-Developed Runoff	Post-Developed Runoff	Target Rate	Discharge to Drainage Ditch*	Peak Elevation
WQ	0.001 cfs	0.01 cfs	0.01 cfs	0.002 cfs	144.23 ft
2-yr	0.04 cfs	0.06 cfs	0.04 cfs	0.01 cfs	145.02 ft
5-yr	0.06 cfs	0.08 cfs	0.06 cfs	0.02 cfs	145.16 ft
10-yr	0.07 cfs	0.09 cfs	0.07 cfs	0.04 cfs	145.17 ft
25-yr	0.09 cfs	0.11 cfs	0.09 cfs	0.09 cfs	145.20 ft
100-yr	0.11 cfs	0.13 cfs	N/A	0.13 cfs	145.22 ft

*The Discharge to Drainage Ditch is the rate at which water is being released into the existing drainage ditch.

- See HydroCAD print-outs for supporting information of storm design.

CONVEYANCE CALCULATIONS

- Pipe Capacity Equation
  - $Q_{max} = \dfrac{1.486 \text{ x } A \text{ x } R^{2/3} \text{ x } S^{1/2}}{n}$
  - A = Area; R = Hydraulic Radius; S = Slope; n = Manning's Roughness Coefficient

- **Conveyance for Planter 2 & Planter 3 worst case Site Runoff**
  - 8" dia. where n = 0.013, A = 0.785 sf, R = 0.250 ft, S = 0.005
  - Q_{max} = 0.854 cfs > $Q_{100\text{-}yr}$= 0.13+0.07=0.20 cfs OK
  - 8" dia. pipe size (min) at 1.0% slope (min) for entire site stormwater runoff conveyance

TIME OF CONCENTRATION

- **Time of Concentration T_c for Pre-Developed Conditions:**

Pre-Developed Sheet Flow:

L = 100'

P = 1.58 in

S = 5%

n = 0.24

$$T_1 = \frac{0.42\ (0.24 \text{ x } 100)^{0.8}}{1.58 \text{ x } (0.05)^{0.4}} = 11.19 \text{ MIN}$$

Pre-Developed Tc = 11.19 = 11.2 min; Use 11.2 MIN

- **Time of Concentration T_c for Post-Developed Conditions:**

Post-Developed Sheet Flow:

L =100'

P = 1.58 in

S = 2.0%

n = 0.011

$$T_1 = \frac{0.42\ (0.011 \text{ x } 100)^{0.8}}{1.58 \text{ x } (0.02)^{0.4}} = 1.37 \text{ MIN}$$

Post-Developed Pipe Flow:

L = 126'

V = 4.05 fps

S = 2.0%

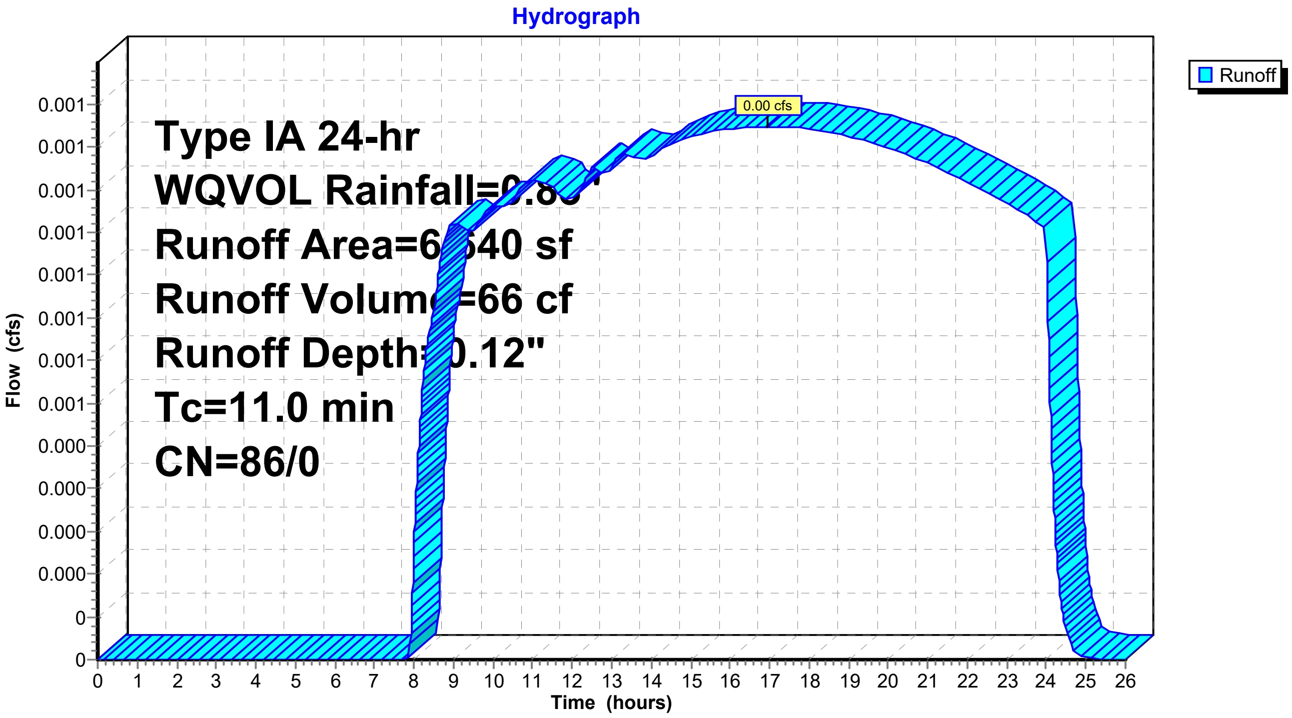
6" dia. pipe

n=0.013

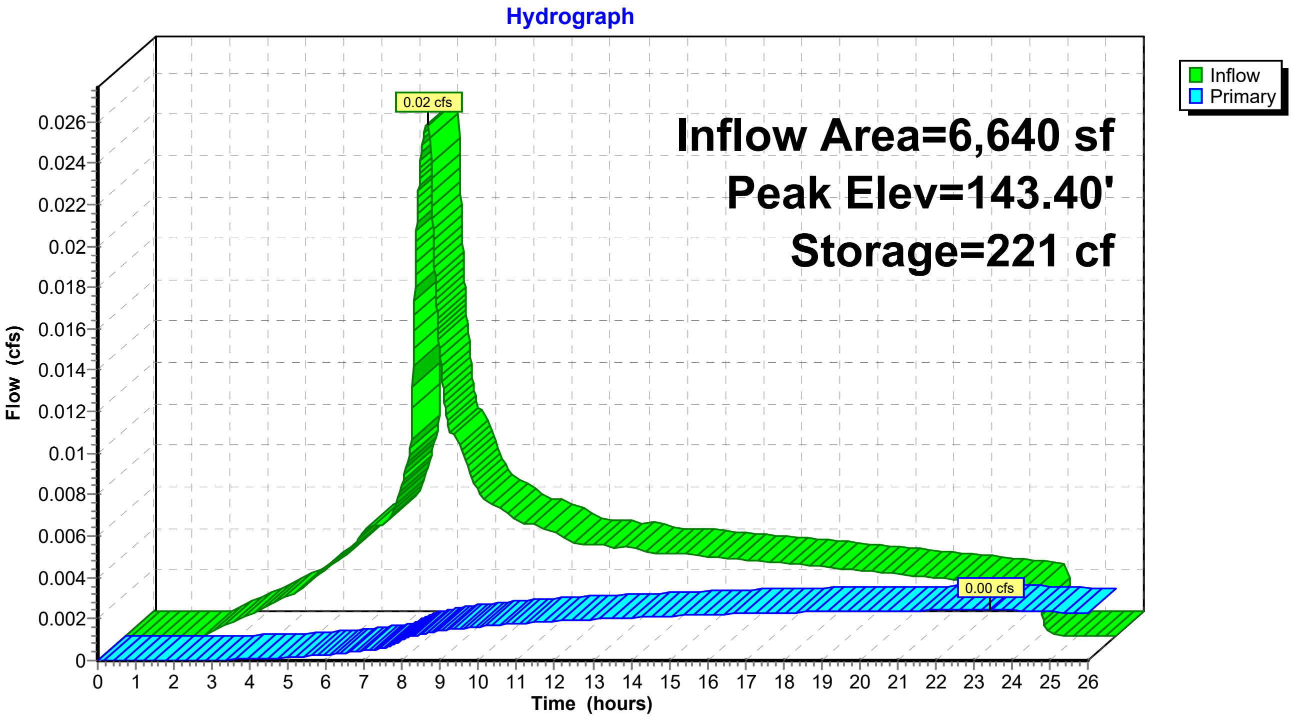
$$T_2 = \frac{126 \quad 518}{60 \text{ x } 4.05} \text{ MIN}$$

Post-Developed Tc = 1.37 + 0.518 = 1.888 min; Use 5 MIN

Subcatchment P-1: Pre-Developed



Pond 1P: Planter #1



Summary for Pond 1P: Planter #1

Inflow Area = 6,640 sf,100.00% Impervious, Inflow Depth = 0.63" for WQVOL event
Inflow = 0.02 cfs @ 7.91 hrs, Volume= 347 cf
Outflow = 0.00 cfs @ 23.41 hrs, Volume= 142 cf, Atten= 90%, Lag= 930.0 min
Primary = 0.00 cfs @ 23.41 hrs, Volume= 142 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 143.40' @ 23.41 hrs Surf.Area= 546 sf Storage= 221 cf

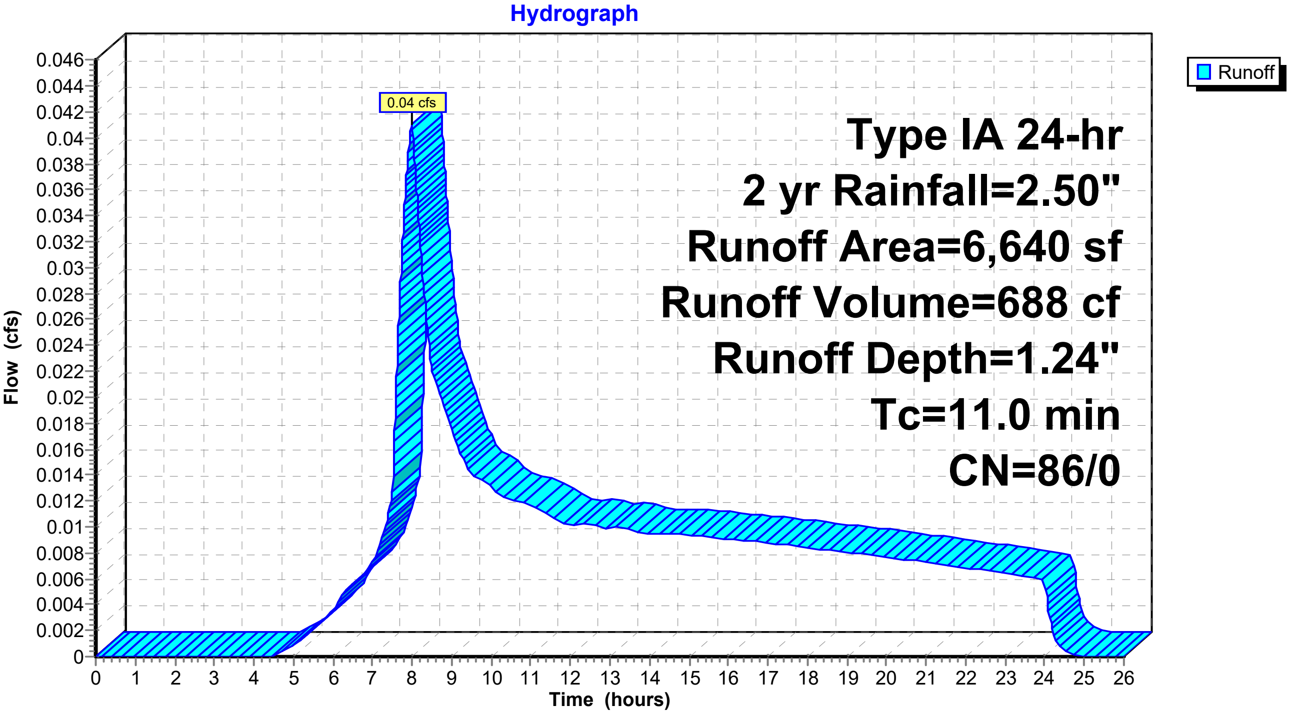
Plug-Flow detention time= 607.2 min calculated for 142 cf (41% of inflow)
Center-of-Mass det. time= 316.3 min (1,040.0 - 723.7)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	819 cf	**10.00'W x 54.60'L x 1.50'H Prismatoid**

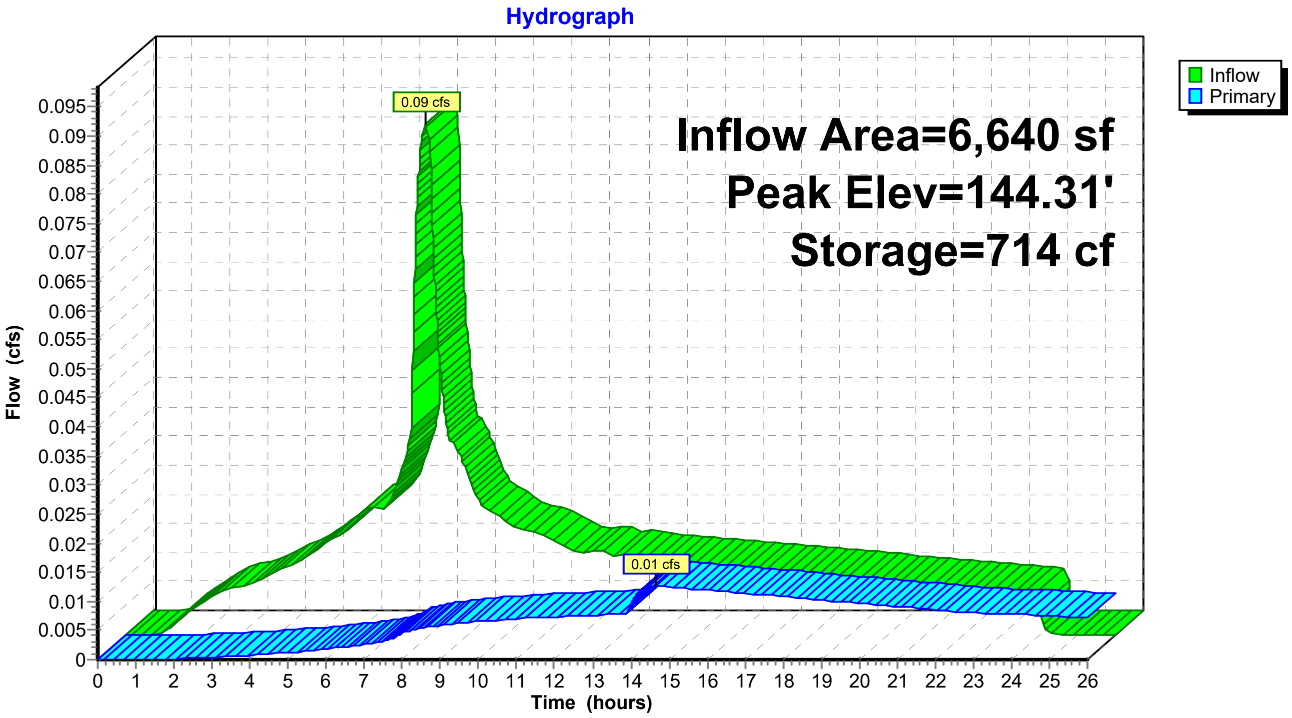
Device	Routing	Invert	Outlet Devices
#1	Primary	143.00'	**2.000 in/hr Exfiltration over Wetted area above 143.00'** Excluded Wetted area = 546 sf
#2	Primary	144.30'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 23.41 hrs HW=143.40' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)
└—**2=Overflow** (Controls 0.00 cfs)

Subcatchment P-1: Pre-Developed



Pond 1P: Planter #1



Summary for Pond 1P: Planter #1

Inflow Area = 6,640 sf,100.00% Impervious, Inflow Depth = 2.27" for 2 yr event
Inflow = 0.09 cfs @ 7.88 hrs, Volume= 1,256 cf
Outflow = 0.01 cfs @ 14.67 hrs, Volume= 599 cf, Atten= 86%, Lag= 407.5 min
Primary = 0.01 cfs @ 14.67 hrs, Volume= 599 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.31' @ 14.67 hrs Surf.Area= 546 sf Storage= 714 cf

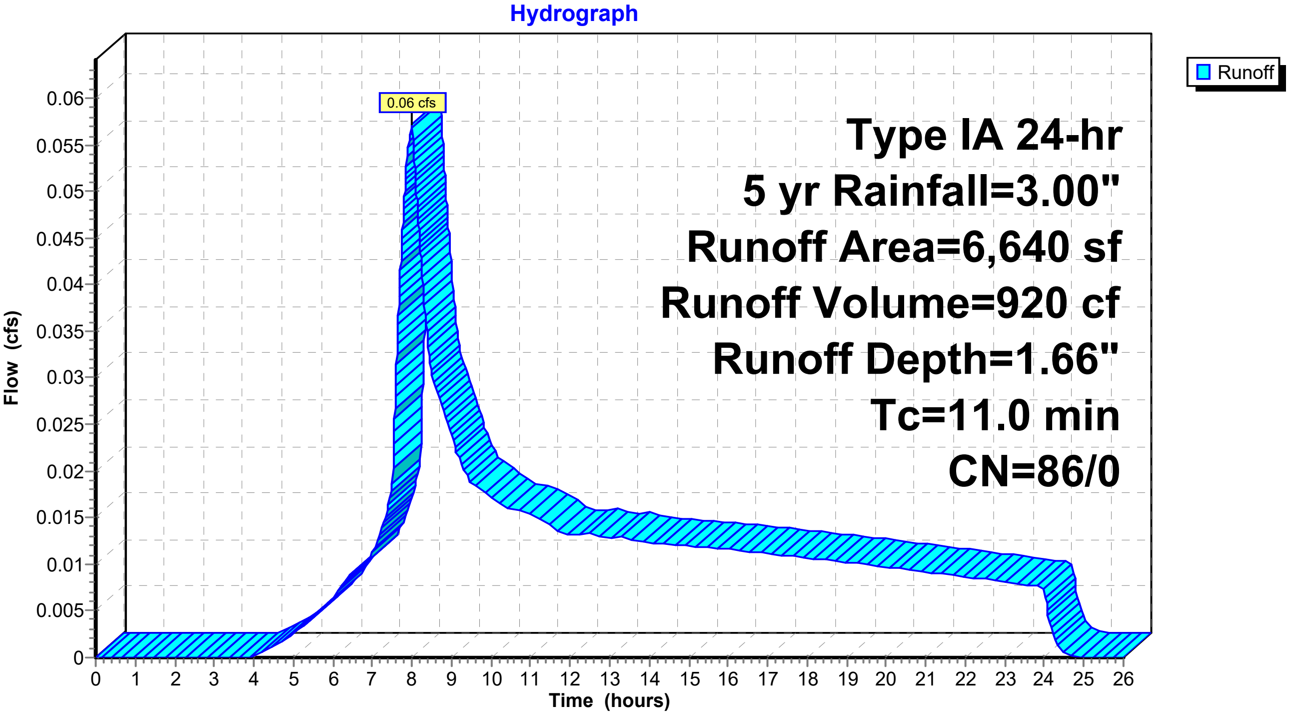
Plug-Flow detention time= 601.1 min calculated for 599 cf (48% of inflow)
Center-of-Mass det. time= 329.2 min (1,001.8 - 672.6)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	819 cf	**10.00'W x 54.60'L x 1.50'H Prismatoid**

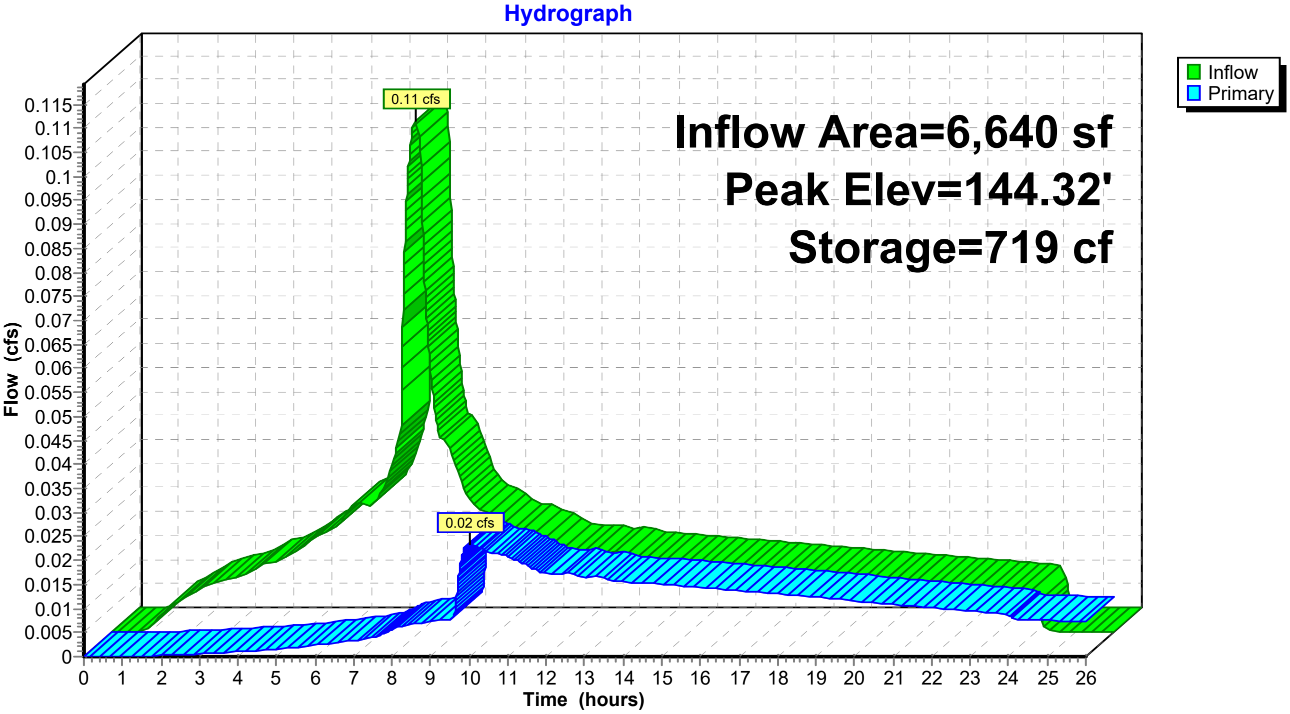
Device	Routing	Invert	Outlet Devices
#1	Primary	143.00'	**2.000 in/hr Exfiltration over Wetted area above 143.00'** Excluded Wetted area = 546 sf
#2	Primary	144.30'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 14.67 hrs HW=144.31' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.01 cfs)
2=Overflow (Weir Controls 0.00 cfs @ 0.29 fps)

Subcatchment P-1: Pre-Developed



Pond 1P: Planter #1



Summary for Pond 1P: Planter #1

Inflow Area = 6,640 sf,100.00% Impervious, Inflow Depth = 2.77" for 5 yr event
Inflow = 0.11 cfs @ 7.88 hrs, Volume= 1,532 cf
Outflow = 0.02 cfs @ 10.03 hrs, Volume= 872 cf, Atten= 78%, Lag= 129.2 min
Primary = 0.02 cfs @ 10.03 hrs, Volume= 872 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.32' @ 10.03 hrs Surf.Area= 546 sf Storage= 719 cf

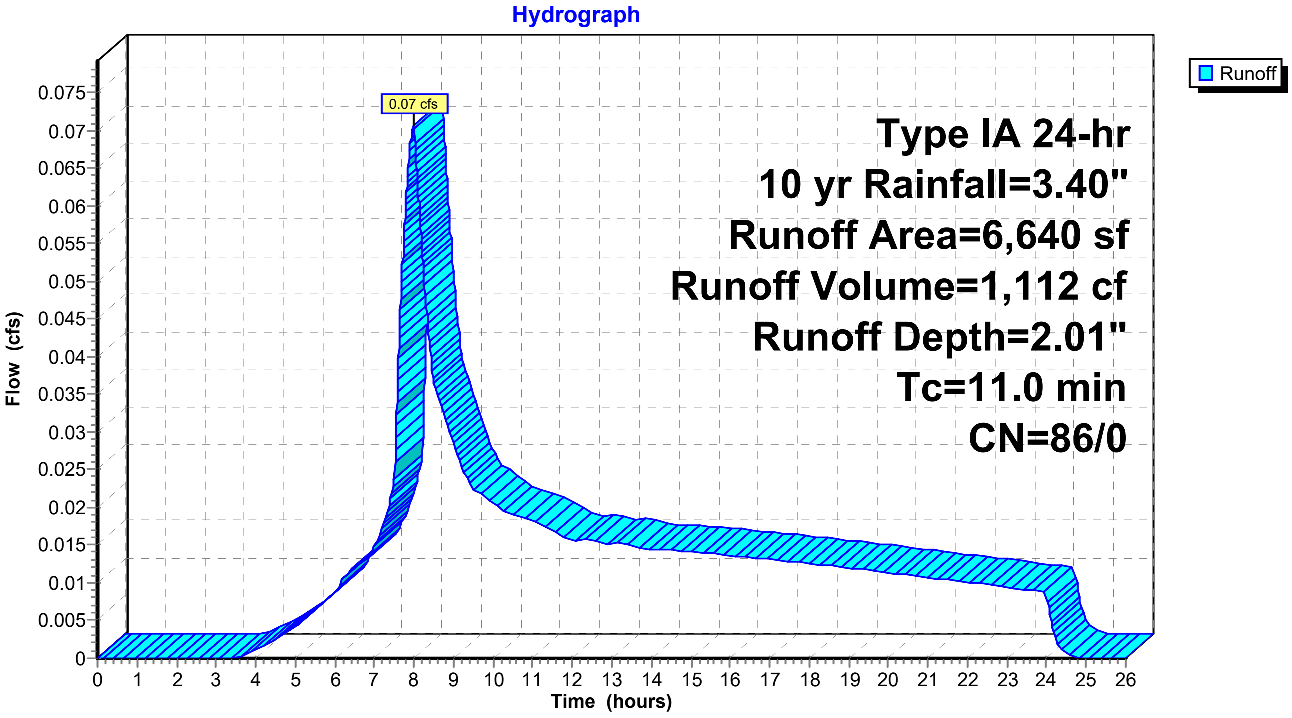
Plug-Flow detention time= 510.6 min calculated for 872 cf (57% of inflow)
Center-of-Mass det. time= 268.7 min (935.8 - 667.0)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	819 cf	**10.00'W x 54.60'L x 1.50'H Prismatoid**

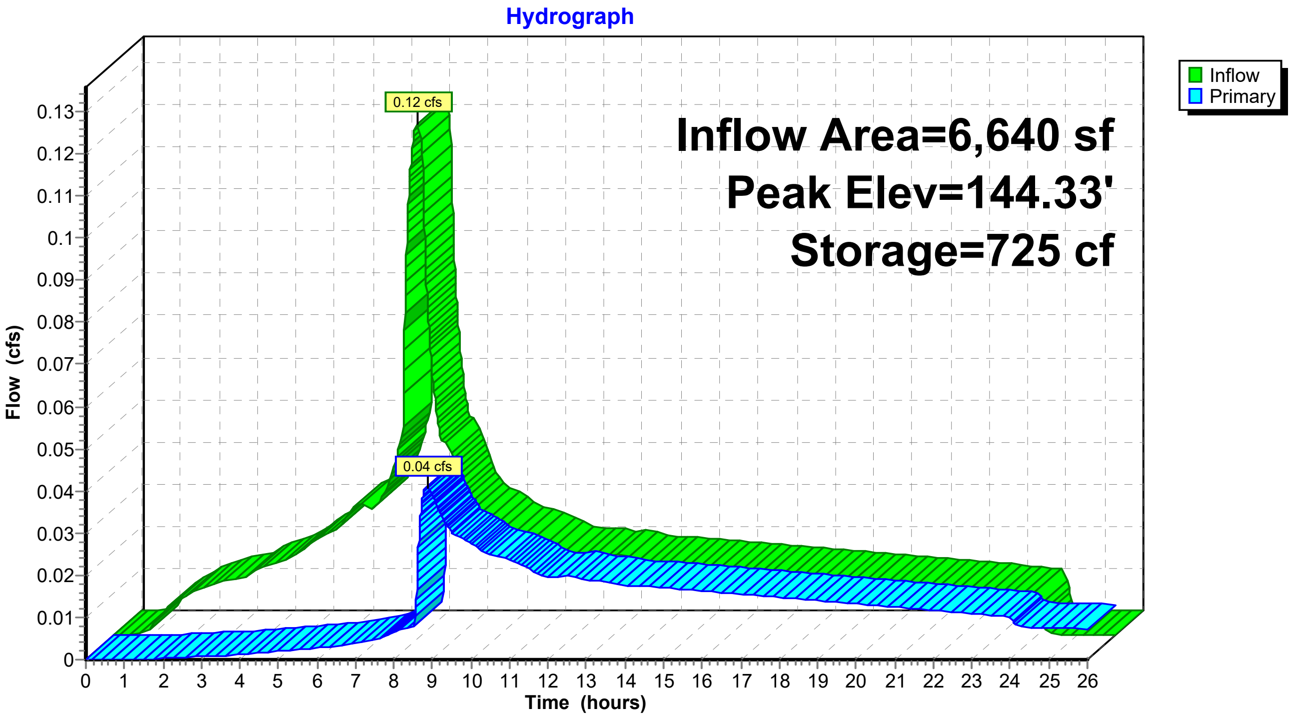
Device	Routing	Invert	Outlet Devices
#1	Primary	143.00'	**2.000 in/hr Exfiltration over Wetted area above 143.00'** Excluded Wetted area = 546 sf
#2	Primary	144.30'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 10.03 hrs HW=144.32' (Free Discharge)
├─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)
└─**2=Overflow** (Weir Controls 0.02 cfs @ 0.43 fps)

Subcatchment P-1: Pre-Developed



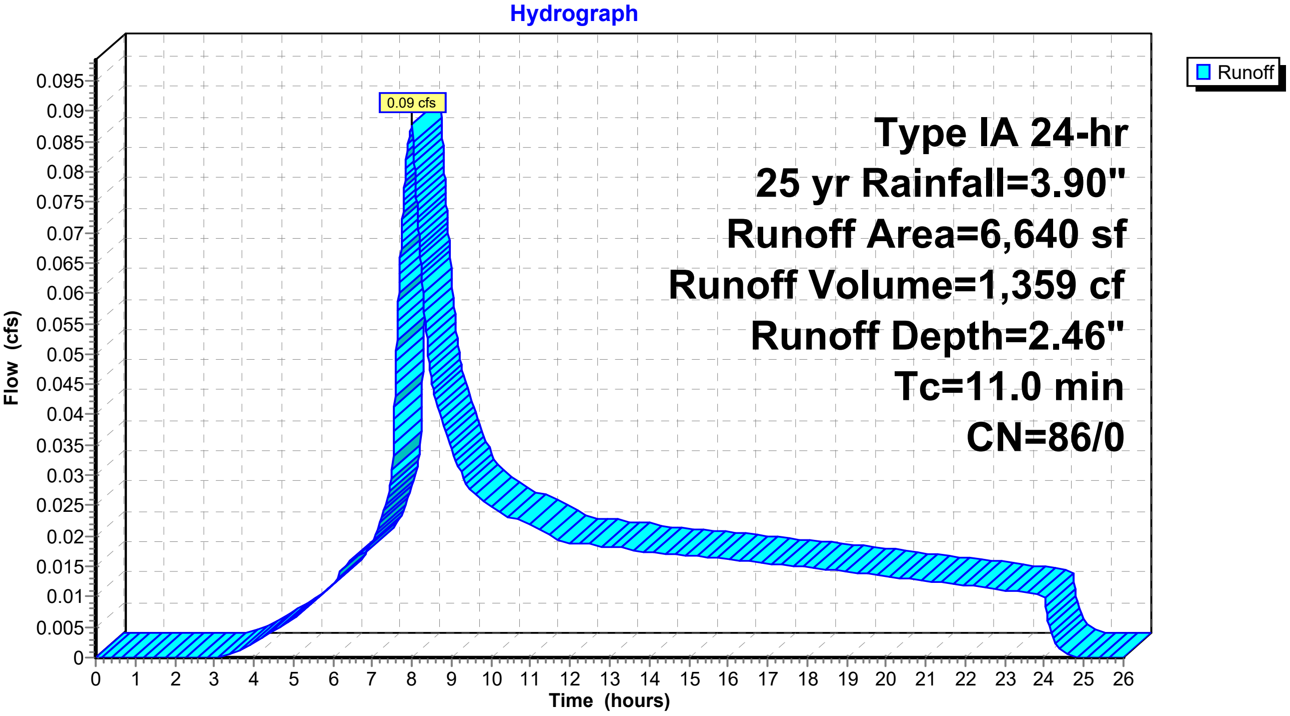
Pond 1P: Planter #1



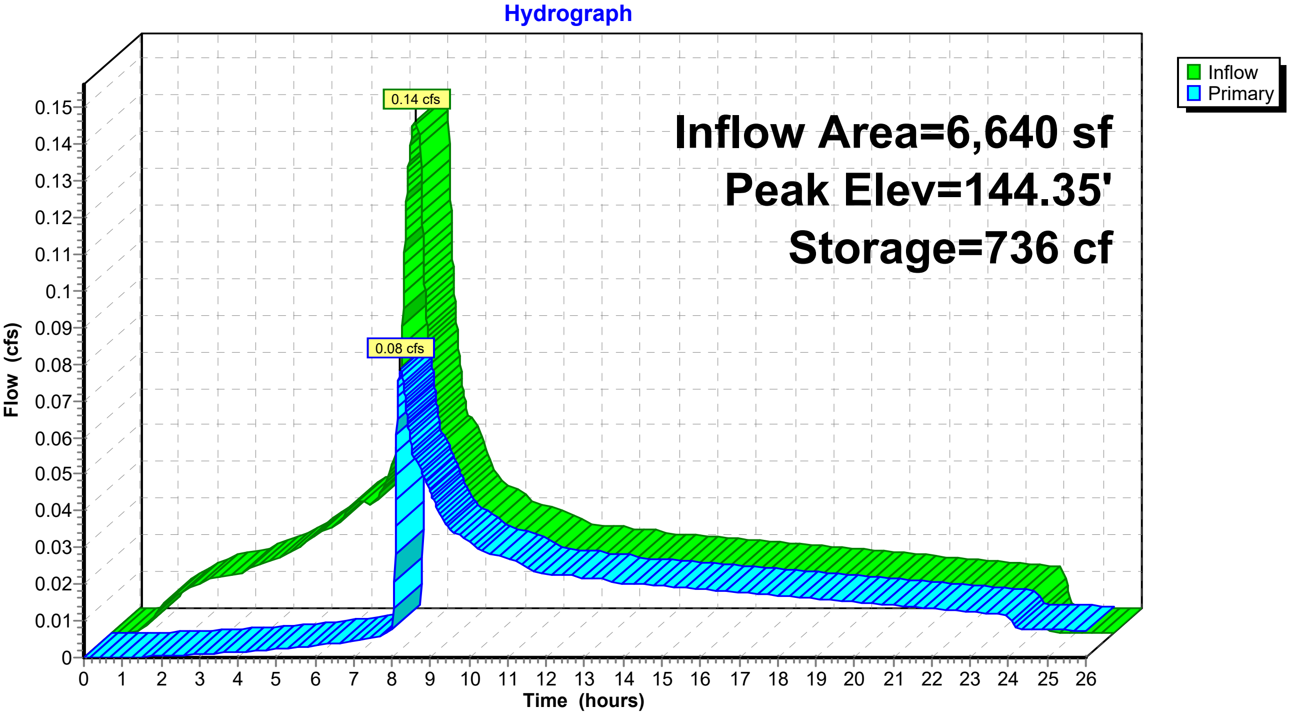
Summary for Pond 1P: Planter #1

```
Inflow Area =          6,640 sf,100.00% Impervious,  Inflow Depth =   3.17"    for  10 yr event
Inflow      =       0.12 cfs @     7.88 hrs,  Volume=              1,752 cf
Outflow     =       0.04 cfs @     8.85 hrs,  Volume=              1,092 cf,  Atten= 66%,  Lag= 58.3 min
Primary     =       0.04 cfs @     8.85 hrs,  Volume=              1,092 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.33' @ 8.85 hrs   Surf.Area= 546 sf   Storage= 725 cf

Plug-Flow detention time= 450.6 min calculated for 1,092 cf (62% of inflow)
Center-of-Mass det. time= 229.1 min ( 892.7 - 663.6 )

Volume        Invert    Avail.Storage   Storage Description
   #1        143.00'           819 cf   10.00'W x 54.60'L x 1.50'H Prismatoid

Device   Routing            Invert   Outlet Devices
   #1    Primary           143.00'   2.000 in/hr Exfiltration over Wetted area above 143.00'
                                     Excluded Wetted area = 546 sf
   #2    Primary           144.30'   8.0" Horiz. Overflow    C= 0.600   Limited to weir flow at low heads

Primary OutFlow Max=0.04 cfs @ 8.85 hrs  HW=144.33'   (Free Discharge)
 ├─1=Exfiltration  (Exfiltration Controls 0.01 cfs)
 └─2=Overflow  (Weir Controls 0.03 cfs @ 0.55 fps)
```

Subcatchment P-1: Pre-Developed



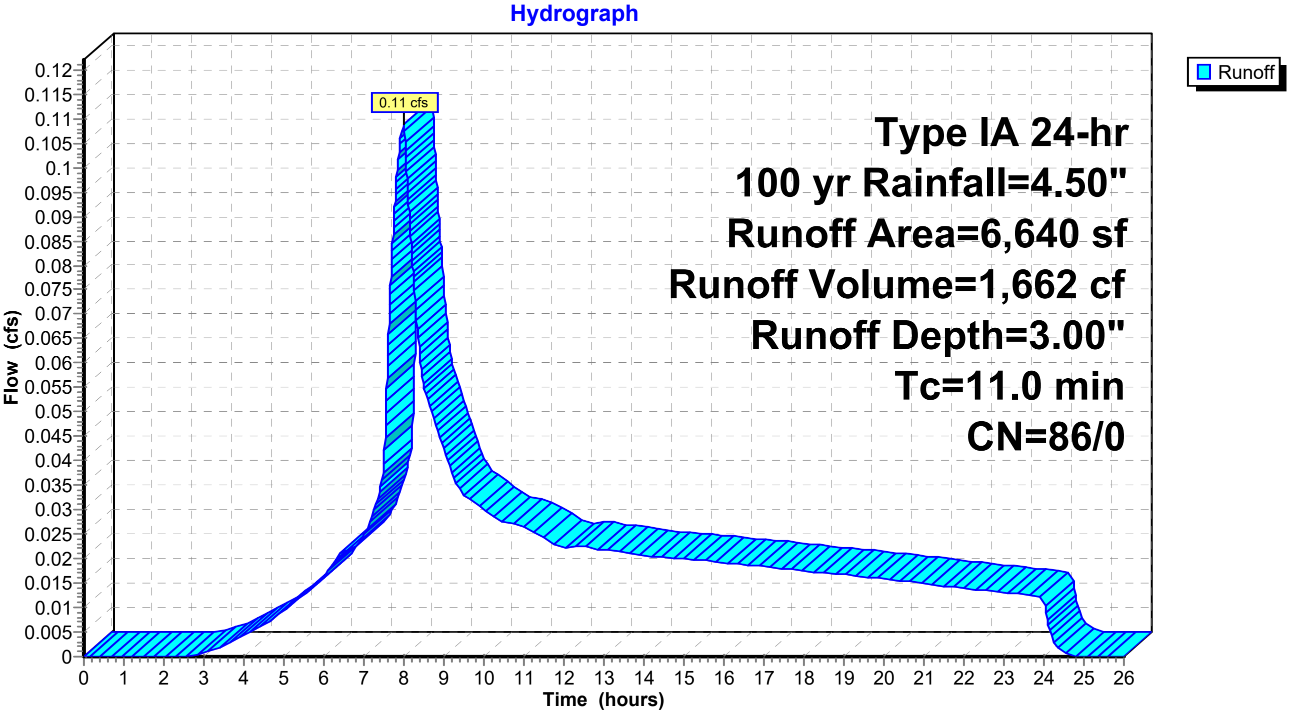
Pond 1P: Planter #1



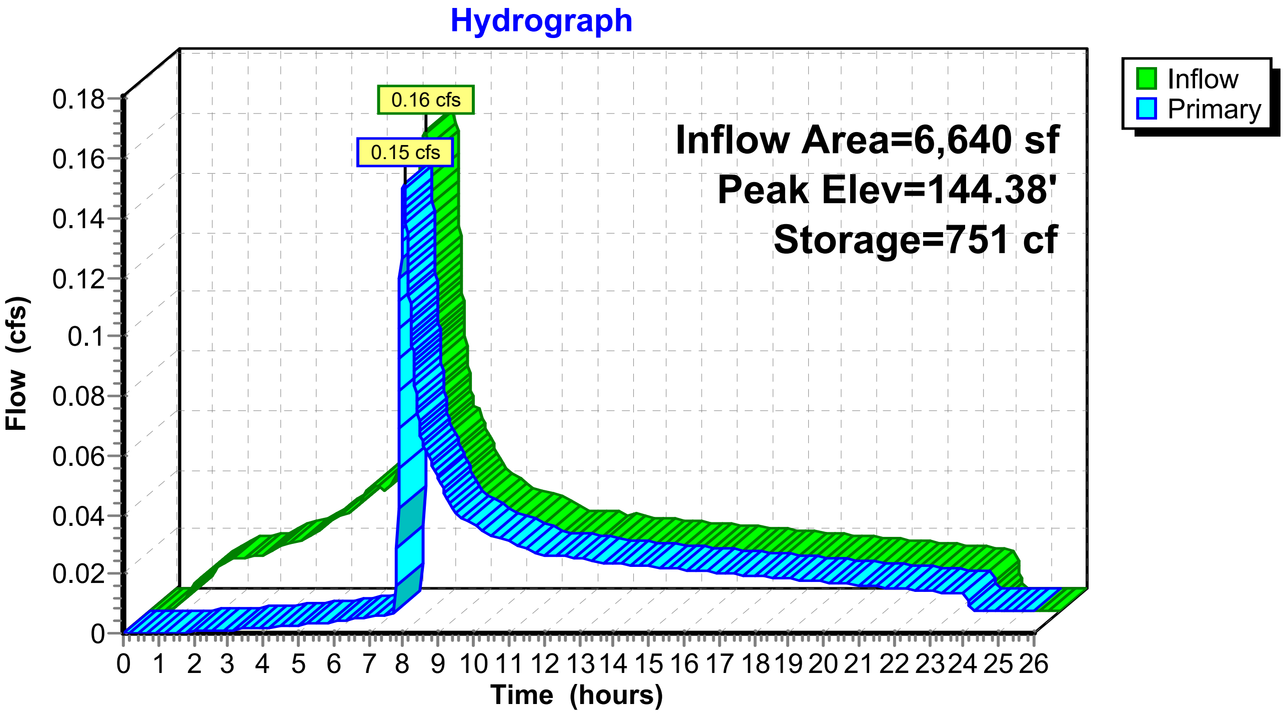
Summary for Pond 1P: Planter #1

```
Inflow Area =          6,640 sf,100.00% Impervious,  Inflow Depth =   3.67"    for  25 yr event
Inflow      =       0.14 cfs @    7.88 hrs,  Volume=           2,028 cf
Outflow     =       0.08 cfs @    8.22 hrs,  Volume=           1,367 cf,  Atten= 44%,  Lag= 20.4 min
Primary     =       0.08 cfs @    8.22 hrs,  Volume=           1,367 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.35' @ 8.22 hrs   Surf.Area= 546 sf   Storage= 736 cf

Plug-Flow detention time= 393.6 min calculated for 1,366 cf (67% of inflow)
Center-of-Mass det. time= 194.1 min ( 854.2 - 660.1 )

Volume      Invert    Avail.Storage   Storage Description
   #1       143.00'          819 cf   10.00'W x 54.60'L x 1.50'H Prismatoid

Device   Routing          Invert   Outlet Devices
   #1    Primary          143.00'  2.000 in/hr Exfiltration over Wetted area above 143.00'
                                   Excluded Wetted area = 546 sf
   #2    Primary          144.30'  8.0" Horiz. Overflow   C= 0.600   Limited to weir flow at low heads

Primary OutFlow Max=0.08 cfs @ 8.22 hrs  HW=144.35'   (Free Discharge)
↑—1=Exfiltration  (Exfiltration Controls 0.01 cfs)
└—2=Overflow  (Weir Controls 0.07 cfs @ 0.71 fps)
```

Subcatchment P-1: Pre-Developed



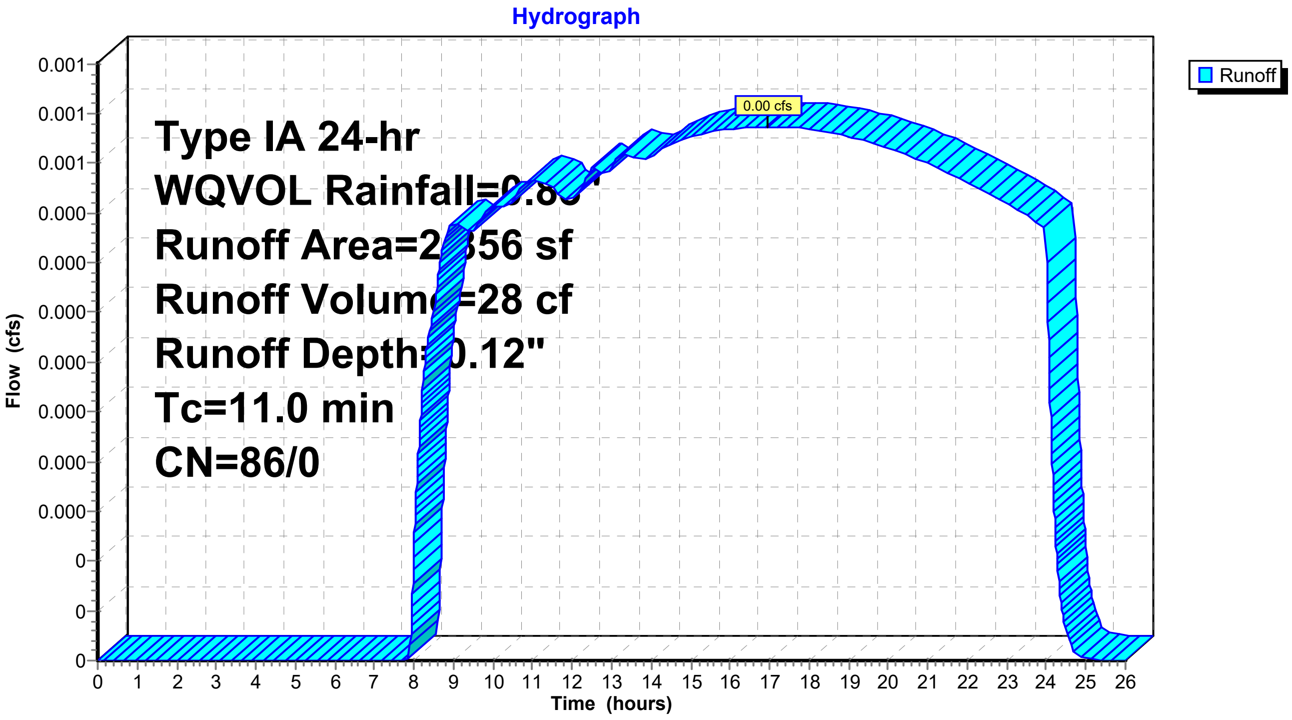
Pond 1P: Planter #1



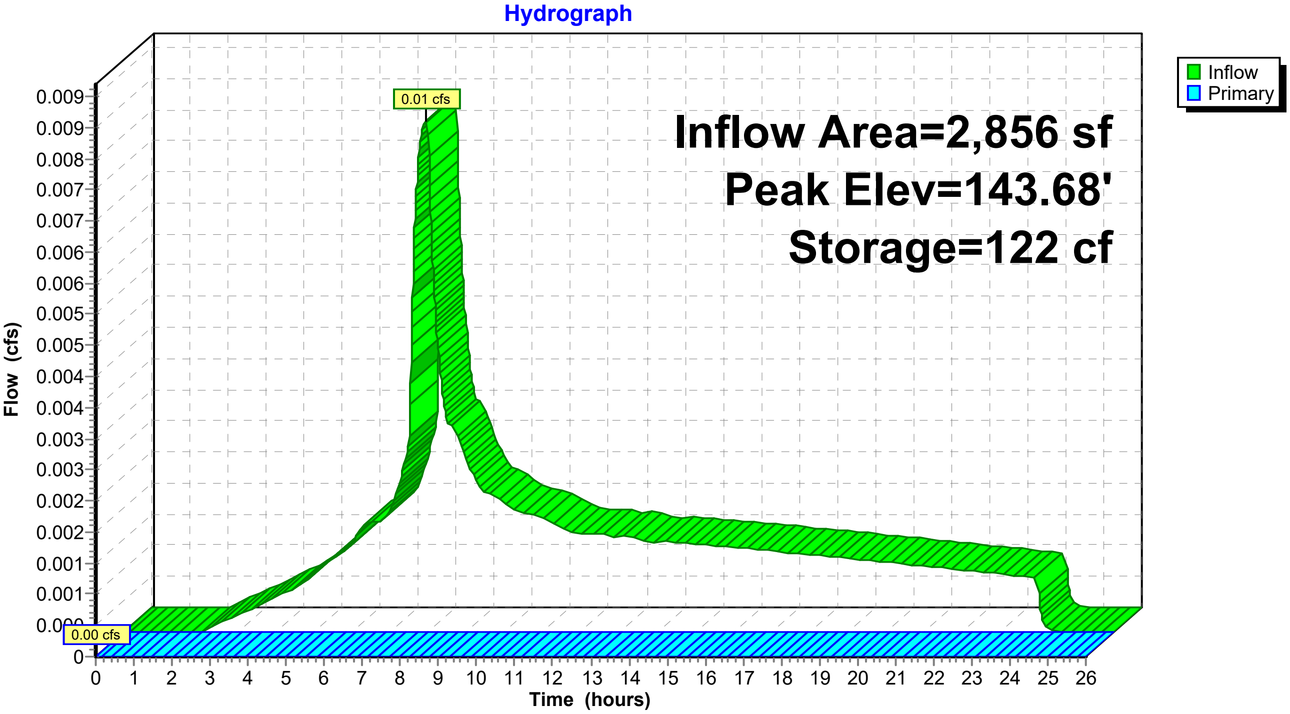
Summary for Pond 1P: Planter #1

```
Inflow Area =          6,640 sf,100.00% Impervious,  Inflow Depth =   4.26"    for  100 yr event
Inflow      =       0.16 cfs @    7.88 hrs,  Volume=           2,359 cf
Outflow     =       0.15 cfs @    8.01 hrs,  Volume=           1,697 cf,  Atten= 6%,  Lag= 8.2 min
Primary     =       0.15 cfs @    8.01 hrs,  Volume=           1,697 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.38' @ 8.01 hrs   Surf.Area= 546 sf   Storage= 751 cf

Plug-Flow detention time= 344.1 min calculated for 1,697 cf (72% of inflow)
Center-of-Mass det. time= 166.0 min ( 822.9 - 656.9 )

Volume        Invert    Avail.Storage   Storage Description
  #1          143.00'          819 cf   10.00'W x 54.60'L x 1.50'H Prismatoid

Device   Routing          Invert   Outlet Devices
   #1    Primary         143.00'   2.000 in/hr Exfiltration over Wetted area above 143.00'
                                   Excluded Wetted area = 546 sf
   #2    Primary         144.30'   8.0" Horiz. Overflow   C= 0.600   Limited to weir flow at low heads

Primary OutFlow Max=0.15 cfs @ 8.01 hrs  HW=144.38'   (Free Discharge)
├─1=Exfiltration  (Exfiltration Controls 0.01 cfs)
└─2=Overflow  (Weir Controls 0.14 cfs @ 0.90 fps)
```

Subcatchment P-2: Pre-Developed



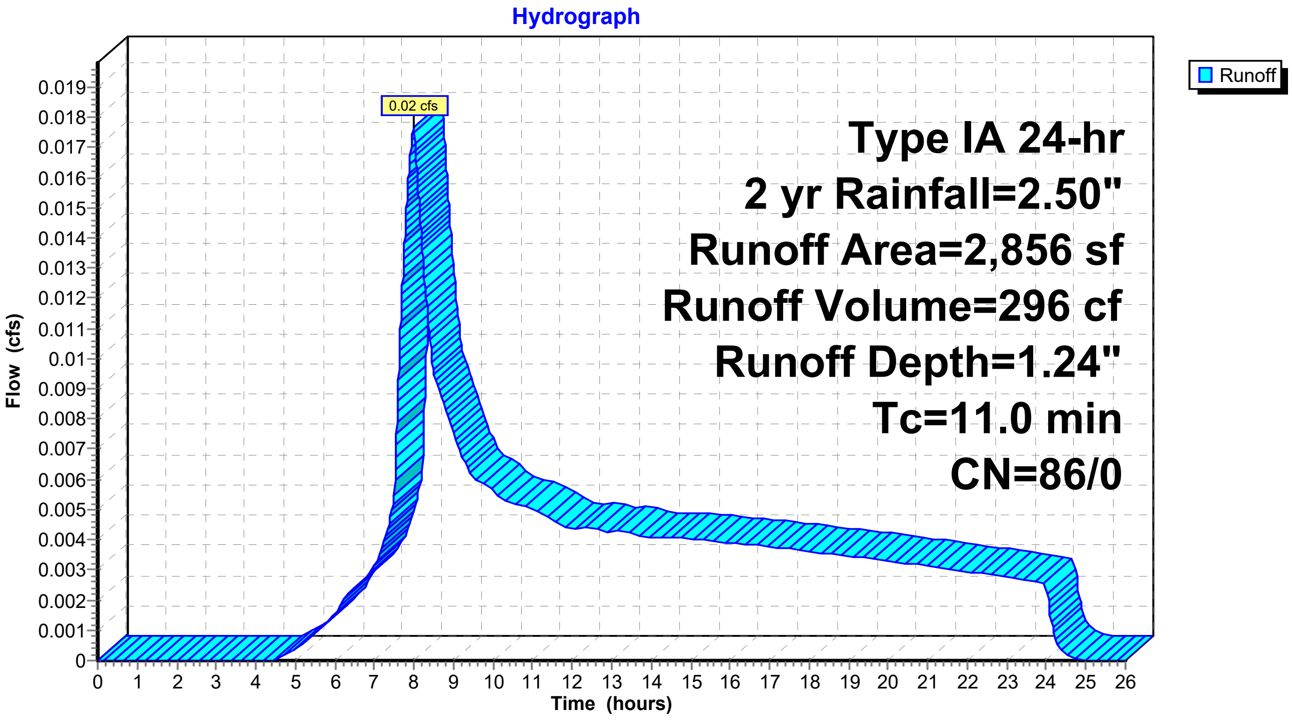
Pond 2P: Planter #2



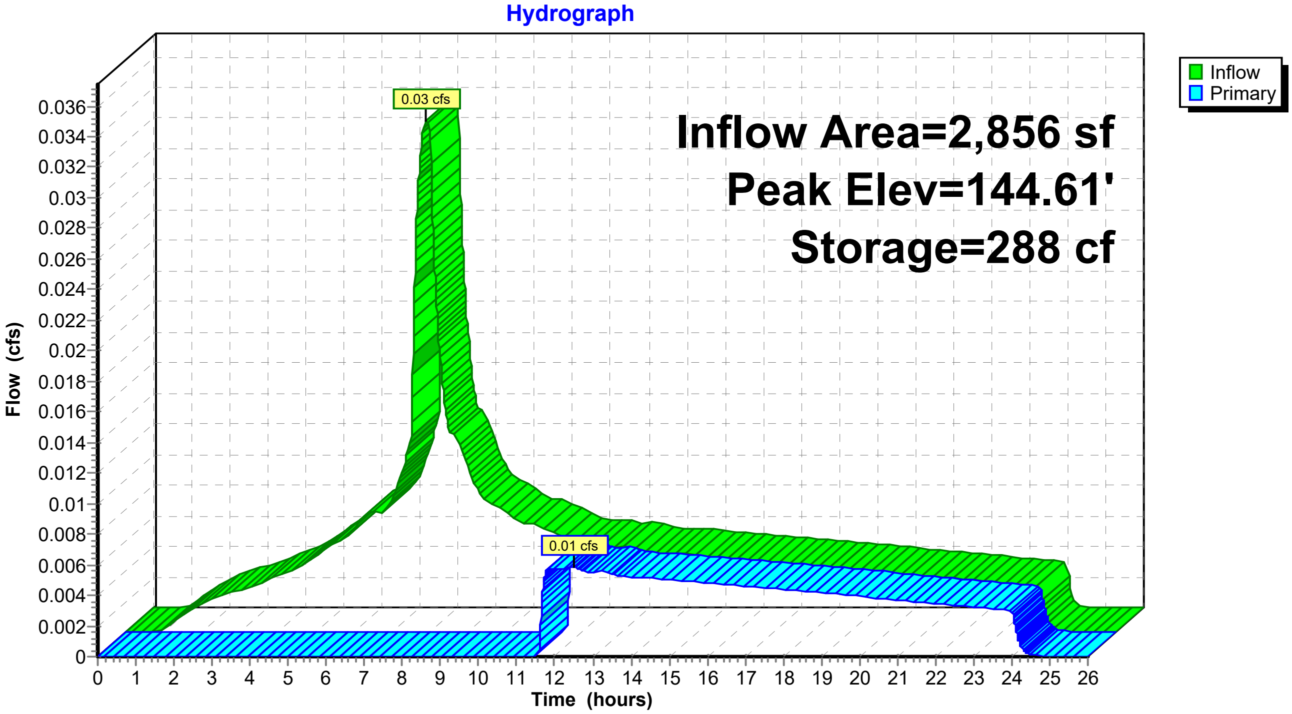
Summary for Pond 2P: Planter #2

```
Inflow Area =          2,856 sf,  77.24% Impervious,  Inflow Depth =   0.51"    for  WQVOL event
Inflow      =       0.01 cfs @    7.92 hrs,  Volume=              122 cf
Outflow     =       0.00 cfs @    0.00 hrs,  Volume=                0 cf,  Atten= 100%,  Lag= 0.0 min
Primary     =       0.00 cfs @    0.00 hrs,  Volume=                0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 143.68' @ 26.00 hrs   Surf.Area= 179 sf   Storage= 122 cf

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume        Invert    Avail.Storage   Storage Description
   #1        143.00'           322 cf   5.00'W x 35.80'L x 1.80'H Prismatoid

Device   Routing            Invert   Outlet Devices
   #1    Primary           143.00'   2.000 in/hr Exfiltration over Surface area above 143.00'
                                     Excluded Surface area = 179 sf
   #2    Primary           144.60'   8.0" Horiz. Overflow   C= 0.600   Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs  HW=143.00'   (Free Discharge)
 ├─1=Exfiltration  ( Controls 0.00 cfs)
 └─2=Overflow  ( Controls 0.00 cfs)
```

Subcatchment P-2: Pre-Developed



Pond 2P: Planter #2



Summary for Pond 2P: Planter #2

Inflow Area = 2,856 sf, 77.24% Impervious, Inflow Depth = 2.04" for 2 yr event
Inflow = 0.03 cfs @ 7.89 hrs, Volume= 485 cf
Outflow = 0.01 cfs @ 12.52 hrs, Volume= 198 cf, Atten= 82%, Lag= 277.6 min
Primary = 0.01 cfs @ 12.52 hrs, Volume= 198 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.61' @ 12.52 hrs Surf.Area= 179 sf Storage= 288 cf

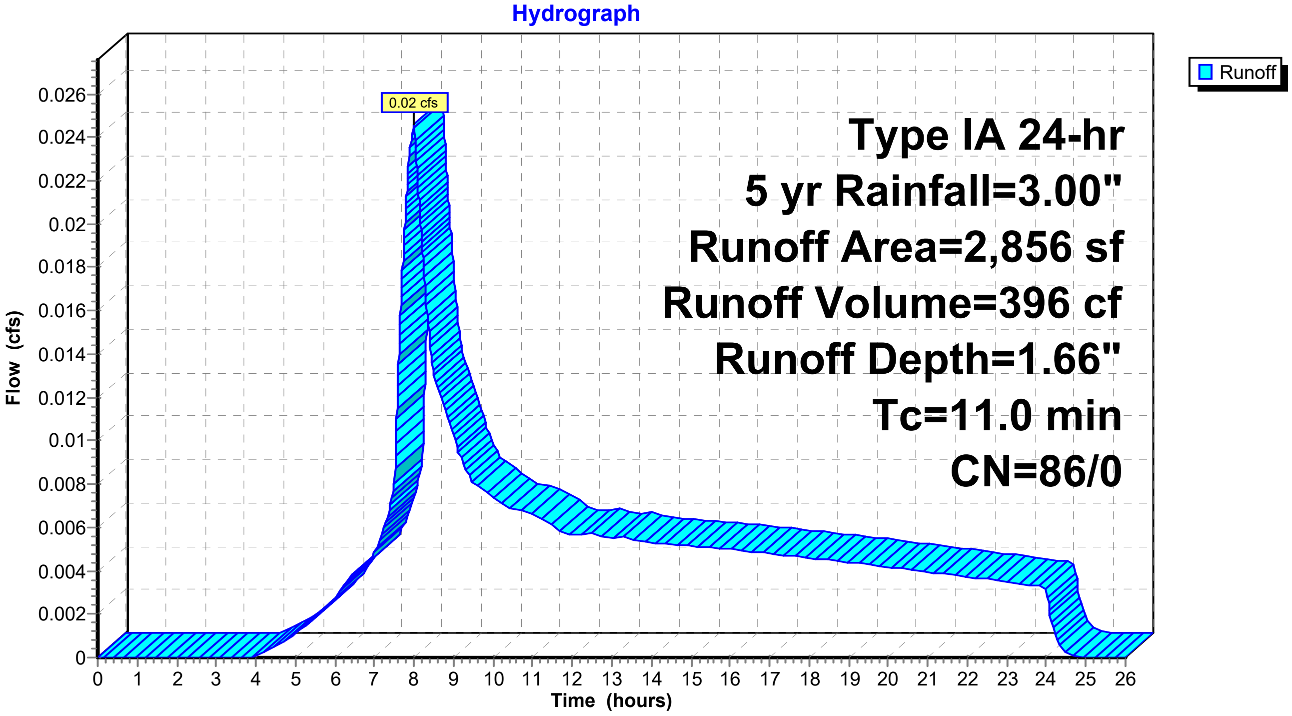
Plug-Flow detention time= 640.4 min calculated for 198 cf (41% of inflow)
Center-of-Mass det. time= 343.9 min (1,034.4 - 690.5)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	322 cf	**5.00'W x 35.80'L x 1.80'H Prismatoid**

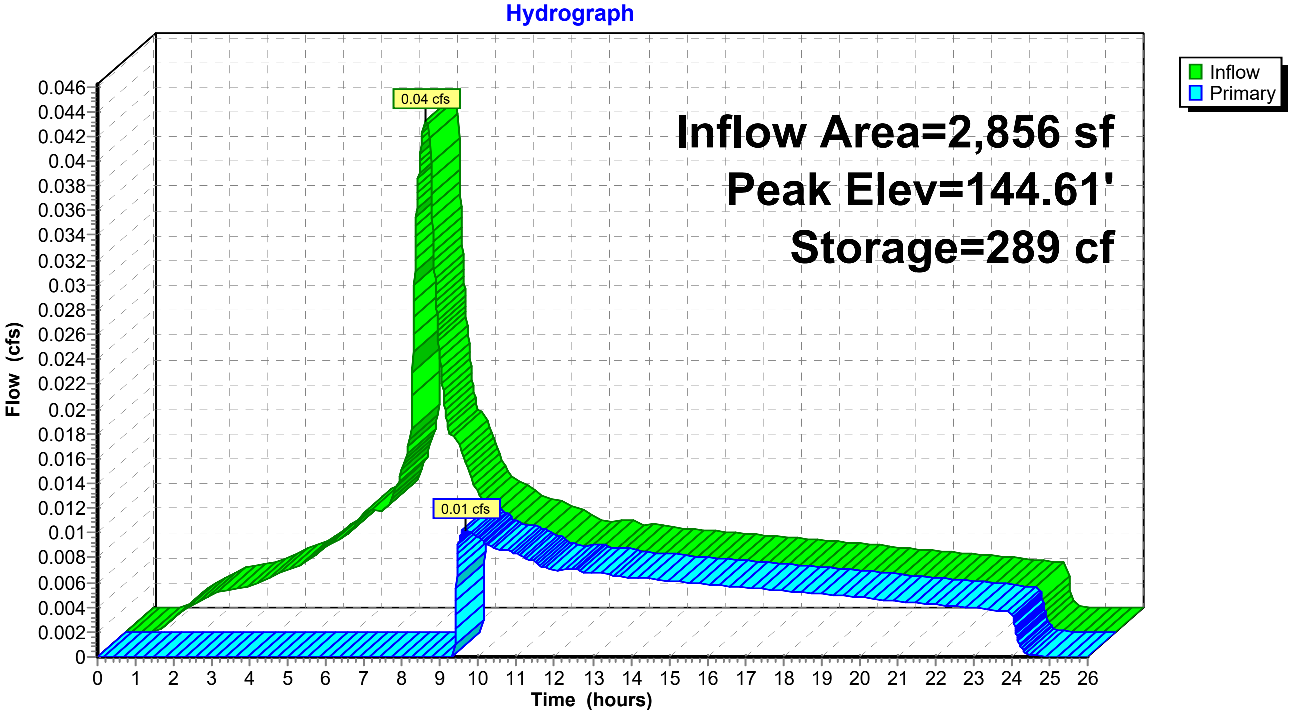
Device	Routing	Invert	Outlet Devices
#1	Primary	143.00'	**2.000 in/hr Exfiltration over Surface area above 143.00'** Excluded Surface area = 179 sf
#2	Primary	144.60'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 12.52 hrs HW=144.61' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)
└—**2=Overflow** (Weir Controls 0.01 cfs @ 0.31 fps)

Subcatchment P-2: Pre-Developed



Pond 2P: Planter #2



Summary for Pond 2P: Planter #2

```
Inflow Area =          2,856 sf,  77.24% Impervious,  Inflow Depth =   2.52"    for  5 yr event
Inflow      =       0.04 cfs @    7.89 hrs,  Volume=             599 cf
Outflow     =       0.01 cfs @    9.64 hrs,  Volume=             313 cf,  Atten= 75%,  Lag= 105.0 min
Primary     =       0.01 cfs @    9.64 hrs,  Volume=             313 cf
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.61' @ 9.64 hrs Surf.Area= 179 sf Storage= 289 cf

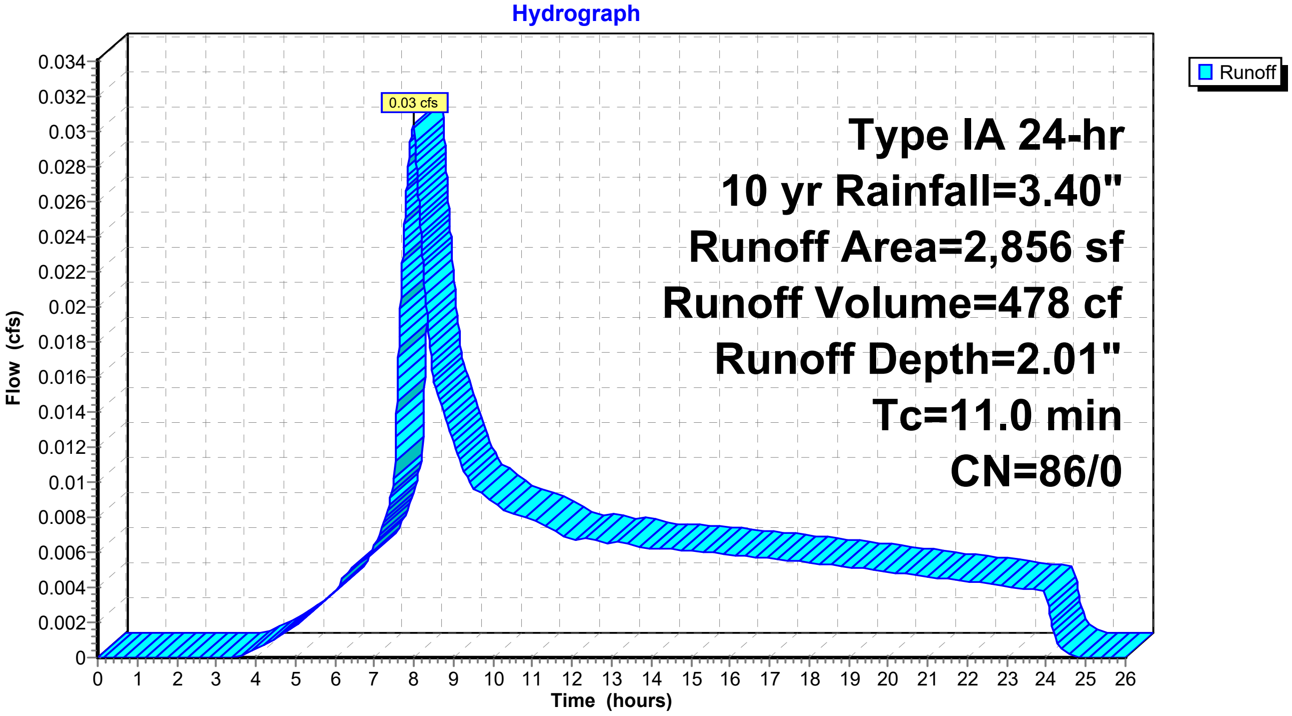
Plug-Flow detention time= 517.5 min calculated for 312 cf (52% of inflow)
Center-of-Mass det. time= 256.9 min (941.5 - 684.6)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	322 cf	**5.00'W x 35.80'L x 1.80'H Prismatoid**

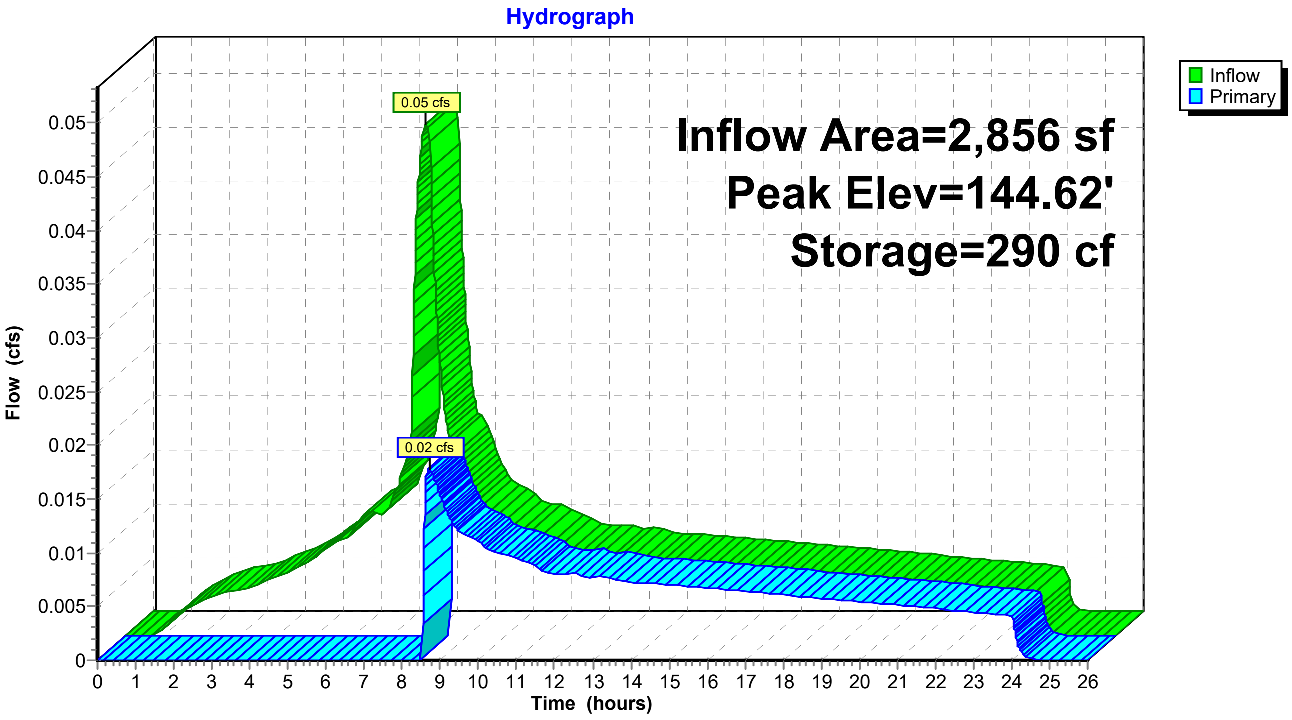
Device	Routing	Invert	Outlet Devices
#1	Primary	143.00'	**2.000 in/hr Exfiltration over Surface area above 143.00'** Excluded Surface area = 179 sf
#2	Primary	144.60'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 9.64 hrs HW=144.61' (Free Discharge)
├─**1=Exfiltration** (Exfiltration Controls 0.00 cfs)
└─**2=Overflow** (Weir Controls 0.01 cfs @ 0.37 fps)

Subcatchment P-2: Pre-Developed



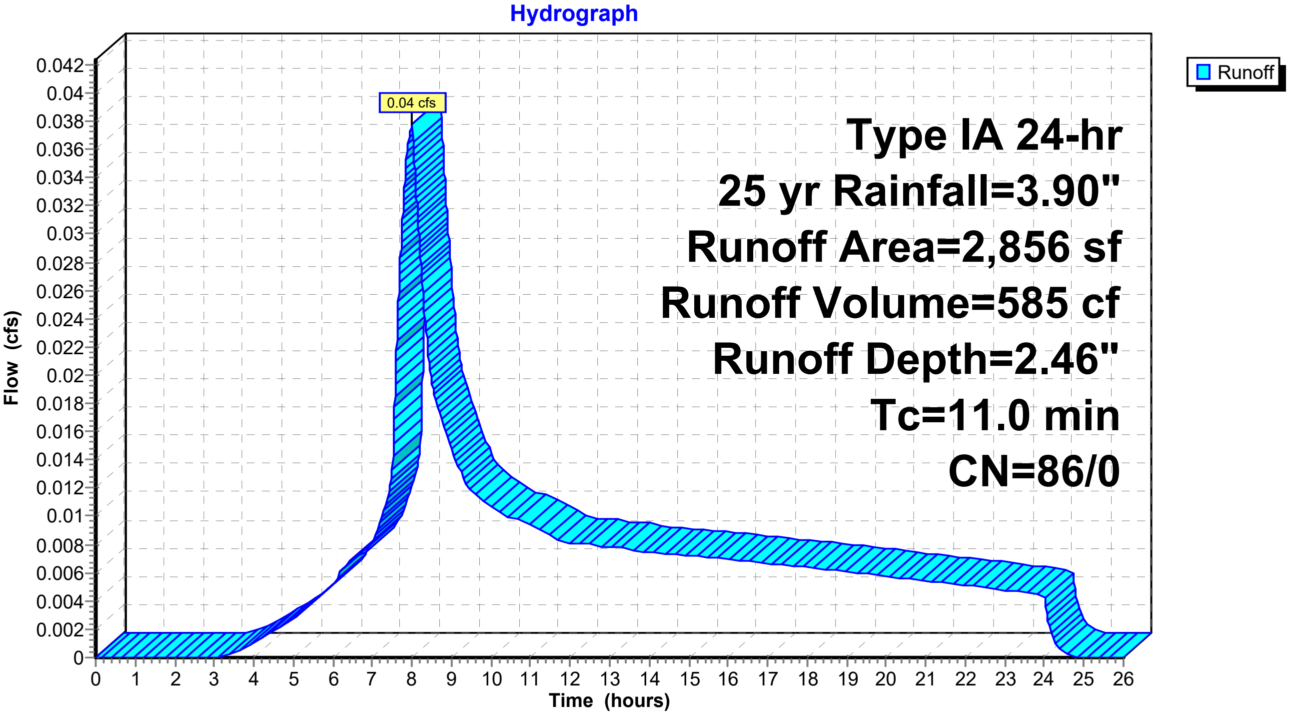
Pond 2P: Planter #2



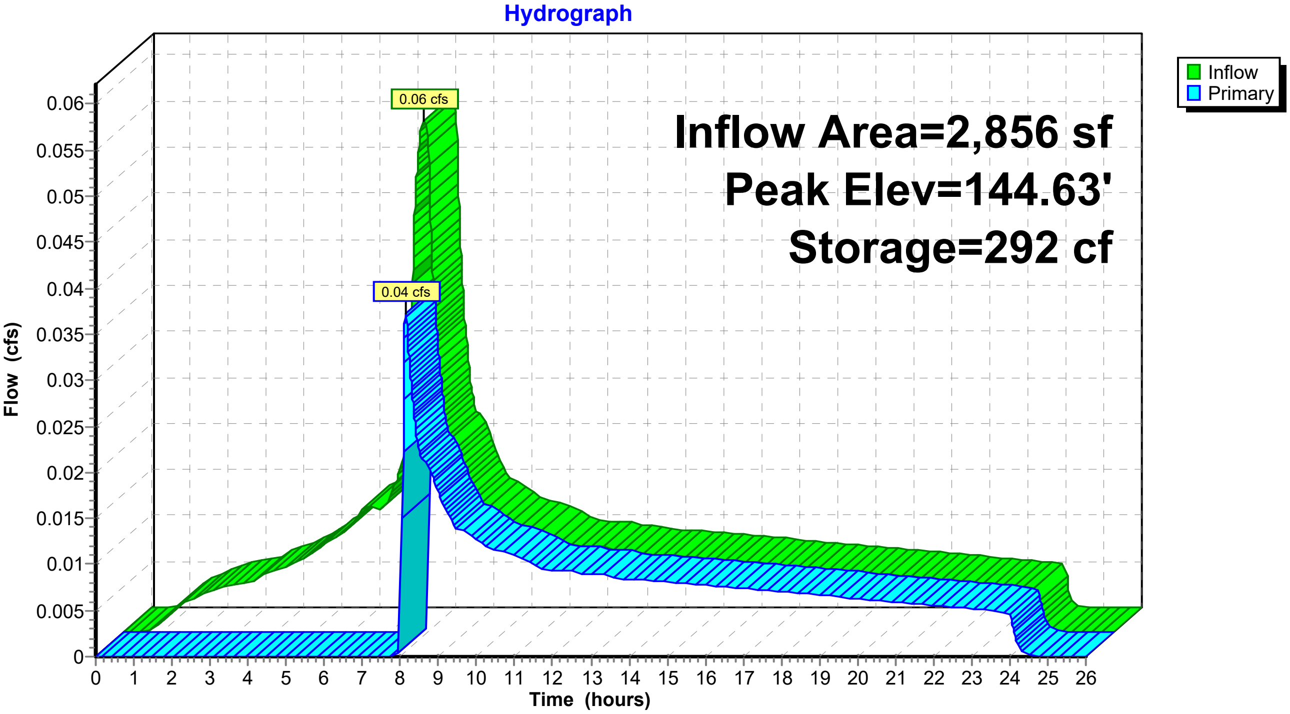
Summary for Pond 2P: Planter #2

```
Inflow Area =          2,856 sf,  77.24% Impervious,  Inflow Depth =   2.90"    for  10 yr event
Inflow      =      0.05 cfs @     7.89 hrs,  Volume=              691 cf
Outflow     =      0.02 cfs @     8.70 hrs,  Volume=              405 cf,  Atten= 63%,  Lag= 48.5 min
Primary     =      0.02 cfs @     8.70 hrs,  Volume=              405 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.62' @ 8.70 hrs   Surf.Area= 179 sf   Storage= 290 cf

Plug-Flow detention time= 450.1 min calculated for 405 cf (59% of inflow)
Center-of-Mass det. time= 213.0 min ( 893.8 - 680.8 )

Volume         Invert    Avail.Storage   Storage Description
   #1         143.00'          322 cf   5.00'W x 35.80'L x 1.80'H Prismatoid

Device    Routing          Invert   Outlet Devices
   #1     Primary         143.00'   2.000 in/hr Exfiltration over Surface area above 143.00'
                                    Excluded Surface area = 179 sf
   #2     Primary         144.60'   8.0" Horiz. Overflow   C= 0.600   Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 8.70 hrs  HW=144.62'   (Free Discharge)
├─1=Exfiltration  (Exfiltration Controls 0.00 cfs)
└─2=Overflow  (Weir Controls 0.02 cfs @ 0.45 fps)
```

Subcatchment P-2: Pre-Developed



Pond 2P: Planter #2



Summary for Pond 2P: Planter #2

Inflow Area = 2,856 sf, 77.24% Impervious, Inflow Depth = 3.39" for 25 yr event
Inflow = 0.06 cfs @ 7.89 hrs, Volume= 807 cf
Outflow = 0.04 cfs @ 8.13 hrs, Volume= 520 cf, Atten= 33%, Lag= 14.8 min
Primary = 0.04 cfs @ 8.13 hrs, Volume= 520 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.63' @ 8.13 hrs Surf.Area= 179 sf Storage= 292 cf

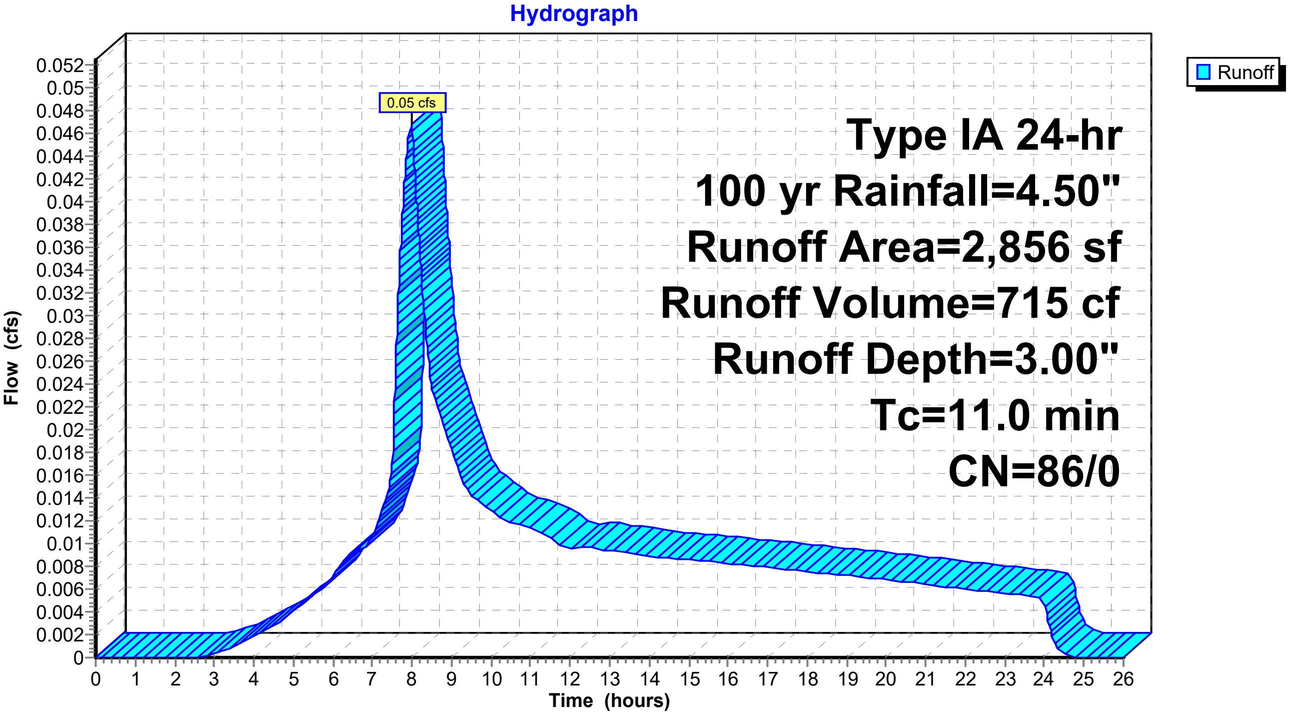
Plug-Flow detention time= 388.7 min calculated for 520 cf (64% of inflow)
Center-of-Mass det. time= 176.5 min (853.3 - 676.8)

Volume	Invert	Avail.Storage	Storage Description
#1	143.00'	322 cf	**5.00'W x 35.80'L x 1.80'H Prismatoid**

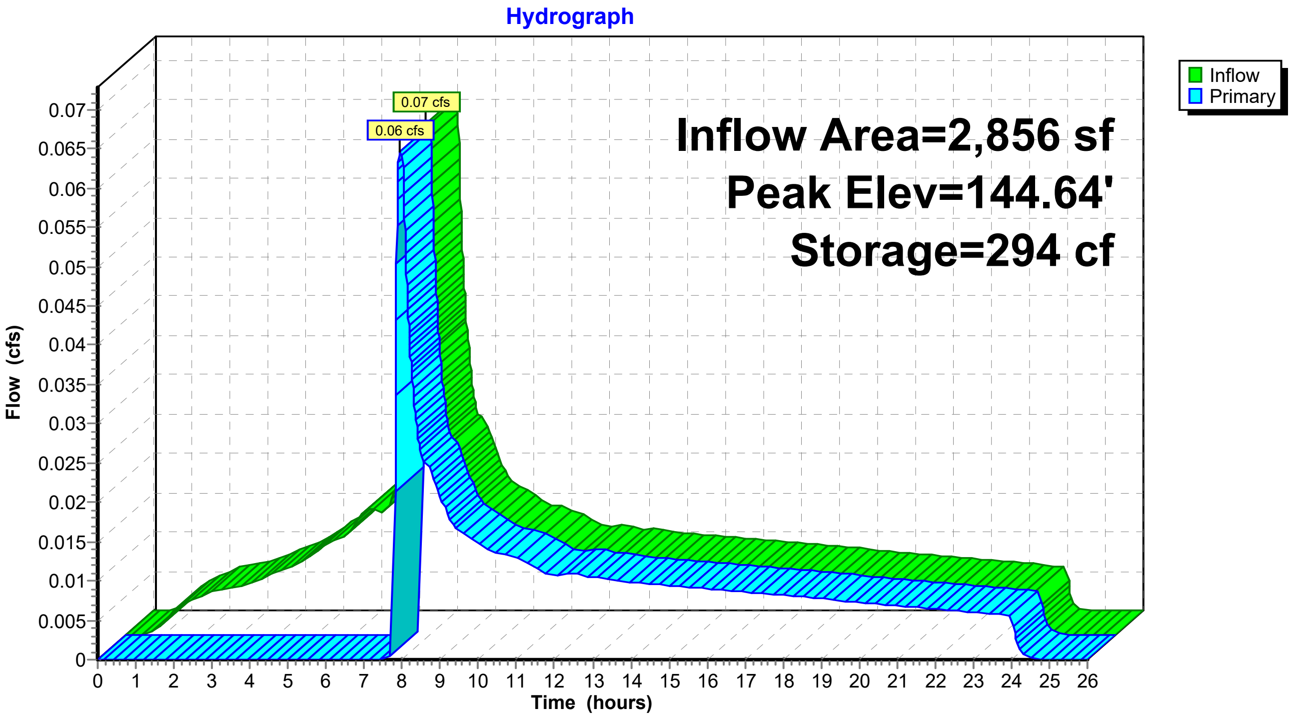
Device	Routing	Invert	Outlet Devices
#1	Primary	143.00'	**2.000 in/hr Exfiltration over Surface area above 143.00'** Excluded Surface area = 179 sf
#2	Primary	144.60'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.04 cfs @ 8.13 hrs HW=144.63' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)
└—**2=Overflow** (Weir Controls 0.04 cfs @ 0.57 fps)

Subcatchment P-2: Pre-Developed



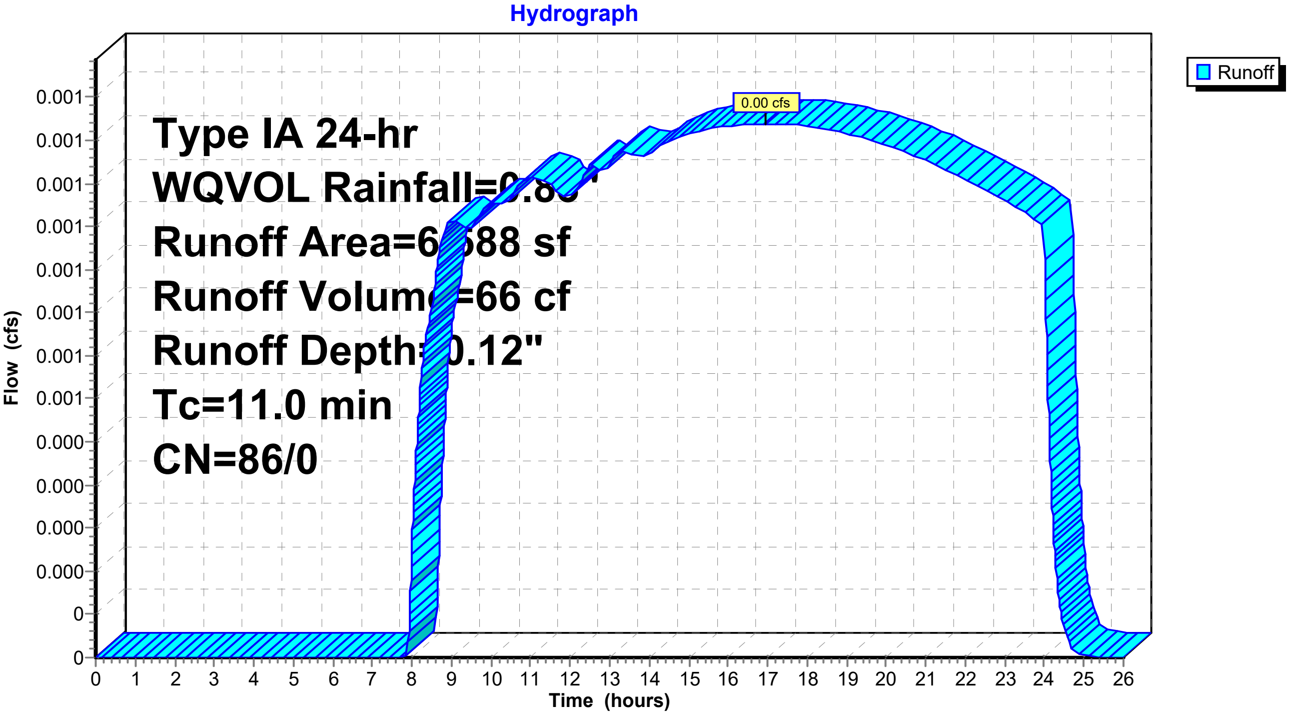
Pond 2P: Planter #2



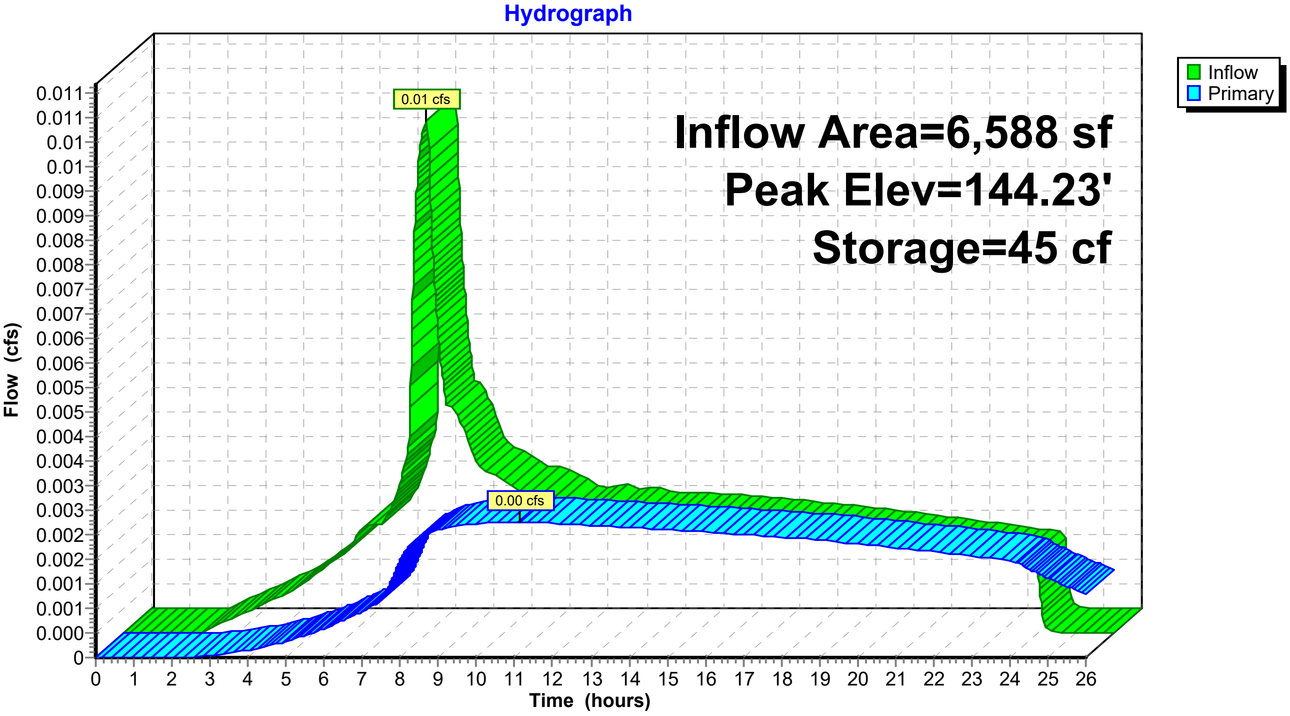
Summary for Pond 2P: Planter #2

```
Inflow Area =          2,856 sf,  77.24% Impervious,  Inflow Depth =   3.98"    for  100 yr event
Inflow      =       0.07 cfs @     7.88 hrs,  Volume=              947 cf
Outflow     =       0.06 cfs @     7.94 hrs,  Volume=              660 cf,  Atten= 1%,  Lag= 3.5 min
Primary     =       0.06 cfs @     7.94 hrs,  Volume=              660 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.64' @ 7.94 hrs   Surf.Area= 179 sf   Storage= 294 cf

Plug-Flow detention time= 336.6 min calculated for 660 cf (70% of inflow)
Center-of-Mass det. time= 148.5 min ( 821.4 - 672.9 )

Volume        Invert    Avail.Storage   Storage Description
  #1         143.00'           322 cf   5.00'W x 35.80'L x 1.80'H Prismatoid

Device   Routing          Invert   Outlet Devices
   #1    Primary         143.00'   2.000 in/hr Exfiltration over Surface area above 143.00'
                                   Excluded Surface area = 179 sf
   #2    Primary         144.60'   8.0" Horiz. Overflow   C= 0.600   Limited to weir flow at low heads

Primary OutFlow Max=0.06 cfs @ 7.94 hrs  HW=144.64'   (Free Discharge)
├──1=Exfiltration  (Exfiltration Controls 0.00 cfs)
└──2=Overflow  (Weir Controls 0.06 cfs @ 0.69 fps)
```

Subcatchment P-3: Pre-Developed



Pond 3P: Planter #3



STM-47

Summary for Pond 3P: Planter #3

Inflow Area = 6,588 sf, 42.15% Impervious, Inflow Depth = 0.33" for WQVOL event
Inflow = 0.01 cfs @ 7.96 hrs, Volume= 183 cf
Outflow = 0.00 cfs @ 11.16 hrs, Volume= 164 cf, Atten= 74%, Lag= 192.3 min
Primary = 0.00 cfs @ 11.16 hrs, Volume= 164 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 144.23' @ 11.16 hrs Surf.Area= 220 sf Storage= 45 cf

Plug-Flow detention time= 236.1 min calculated for 164 cf (90% of inflow)
Center-of-Mass det. time= 170.1 min (944.9 - 774.7)

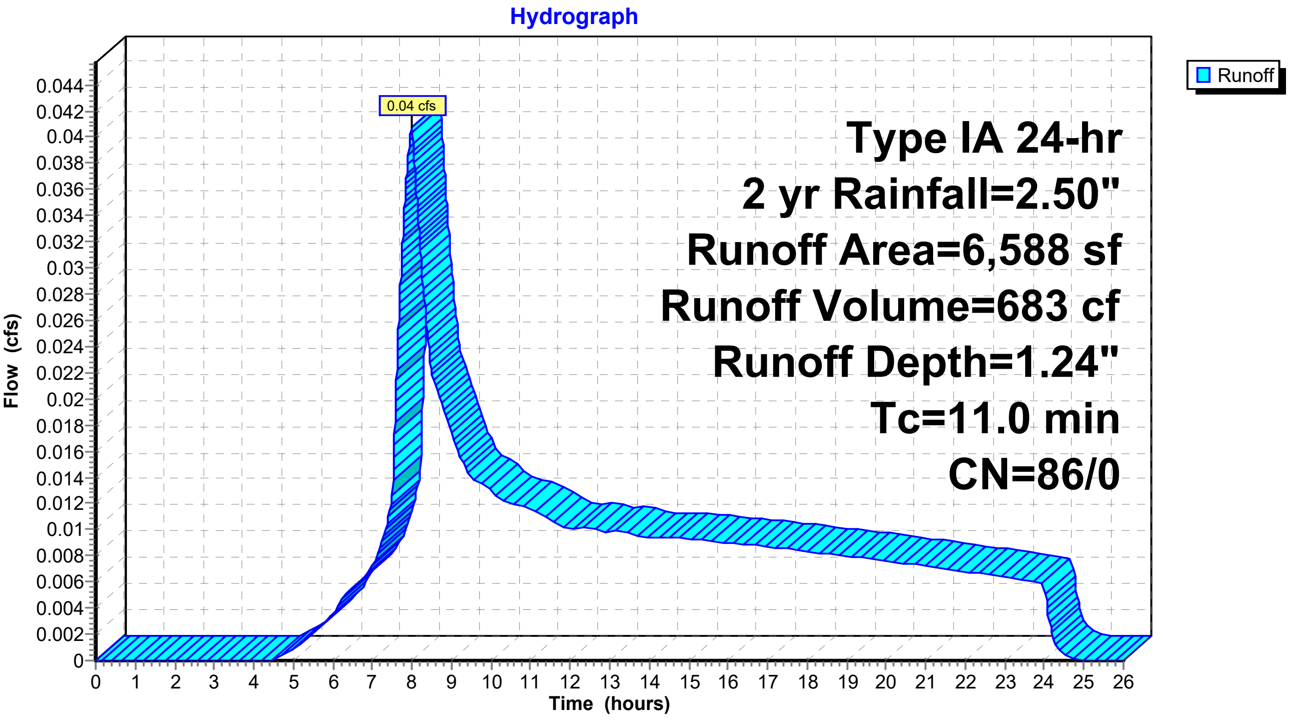
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	528 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	161	52.5	0	0	161
144.10	187	57.6	17	17	206
144.20	213	62.4	20	37	252
144.30	236	65.5	22	60	284
144.40	260	68.6	25	85	318
144.50	285	71.7	27	112	354
144.60	311	74.9	30	142	392
144.70	337	78.0	32	174	430
144.80	365	81.1	35	209	470
144.90	391	83.5	38	247	503
145.00	417	85.5	40	287	531
145.10	443	87.4	43	330	558
145.20	469	89.3	46	376	586
145.30	496	91.2	48	424	615
145.40	524	93.1	51	475	645
145.50	532	94.9	53	528	673

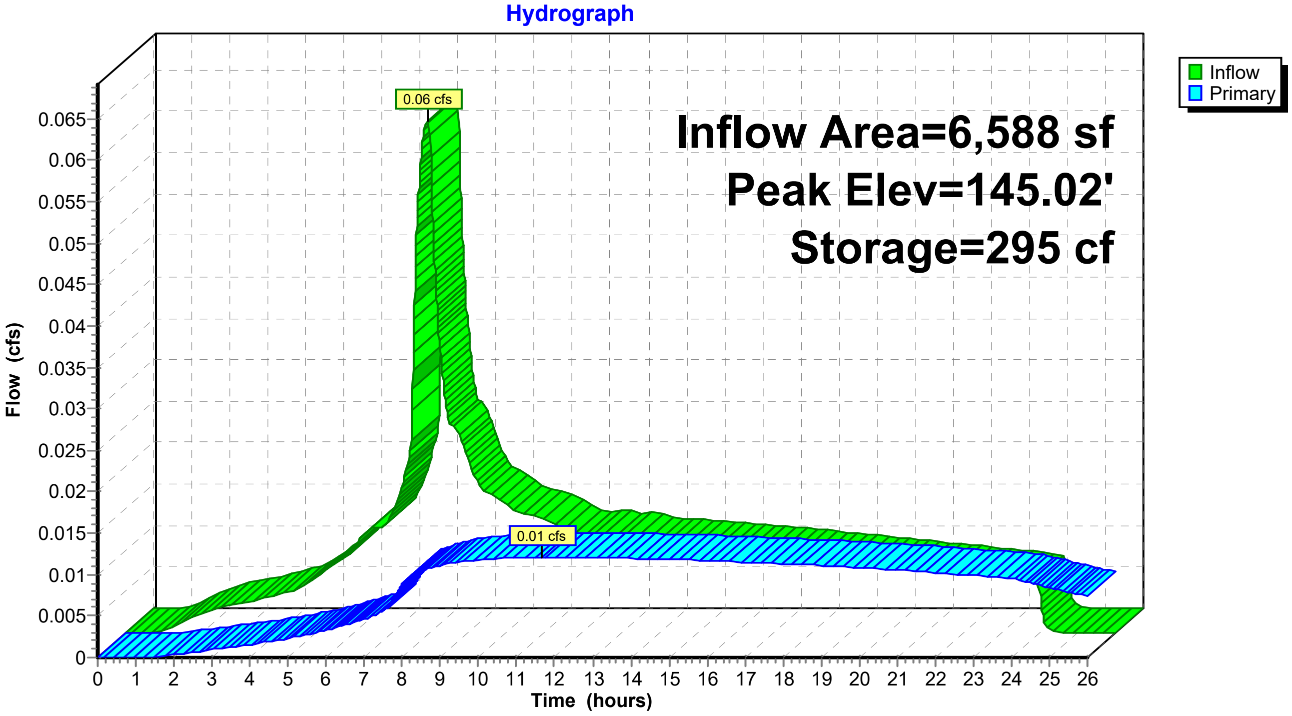
Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	**2.000 in/hr Exfiltration over Surface area above 144.00'** Excluded Surface area = 161 sf
#2	Primary	145.15'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 11.16 hrs HW=144.23' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)
└—**2=Overflow** (Controls 0.00 cfs)

Subcatchment P-3: Pre-Developed



Pond 3P: Planter #3



Summary for Pond 3P: Planter #3

```
Inflow Area =          6,588 sf,  42.15% Impervious,  Inflow Depth =   1.68"    for  2 yr event
Inflow      =      0.06 cfs @    7.92 hrs,  Volume=             920 cf
Outflow     =      0.01 cfs @   11.67 hrs,  Volume=             767 cf,  Atten= 80%,  Lag= 224.7 min
Primary     =      0.01 cfs @   11.67 hrs,  Volume=             767 cf
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 145.02' @ 11.67 hrs Surf.Area= 422 sf Storage= 295 cf

Plug-Flow detention time= 326.9 min calculated for 767 cf (83% of inflow)
Center-of-Mass det. time= 218.6 min (946.5 - 727.9)

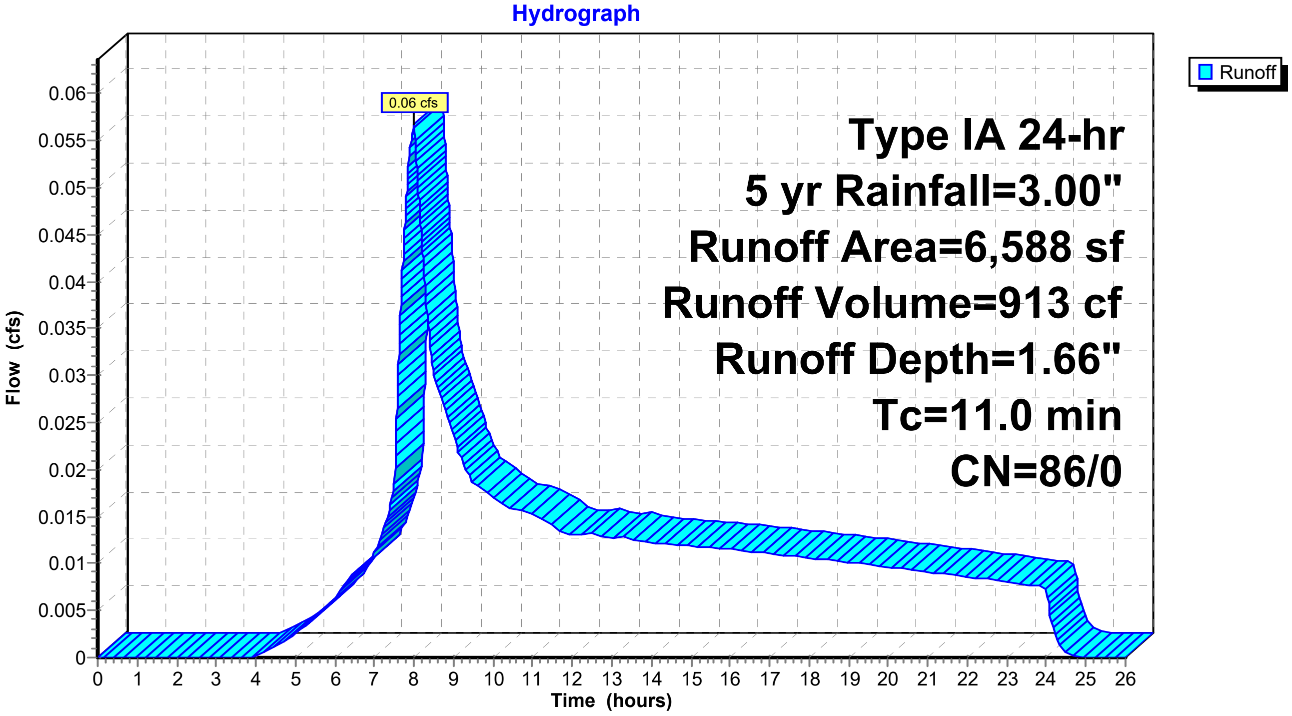
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	528 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	161	52.5	0	0	161
144.10	187	57.6	17	17	206
144.20	213	62.4	20	37	252
144.30	236	65.5	22	60	284
144.40	260	68.6	25	85	318
144.50	285	71.7	27	112	354
144.60	311	74.9	30	142	392
144.70	337	78.0	32	174	430
144.80	365	81.1	35	209	470
144.90	391	83.5	38	247	503
145.00	417	85.5	40	287	531
145.10	443	87.4	43	330	558
145.20	469	89.3	46	376	586
145.30	496	91.2	48	424	615
145.40	524	93.1	51	475	645
145.50	532	94.9	53	528	673

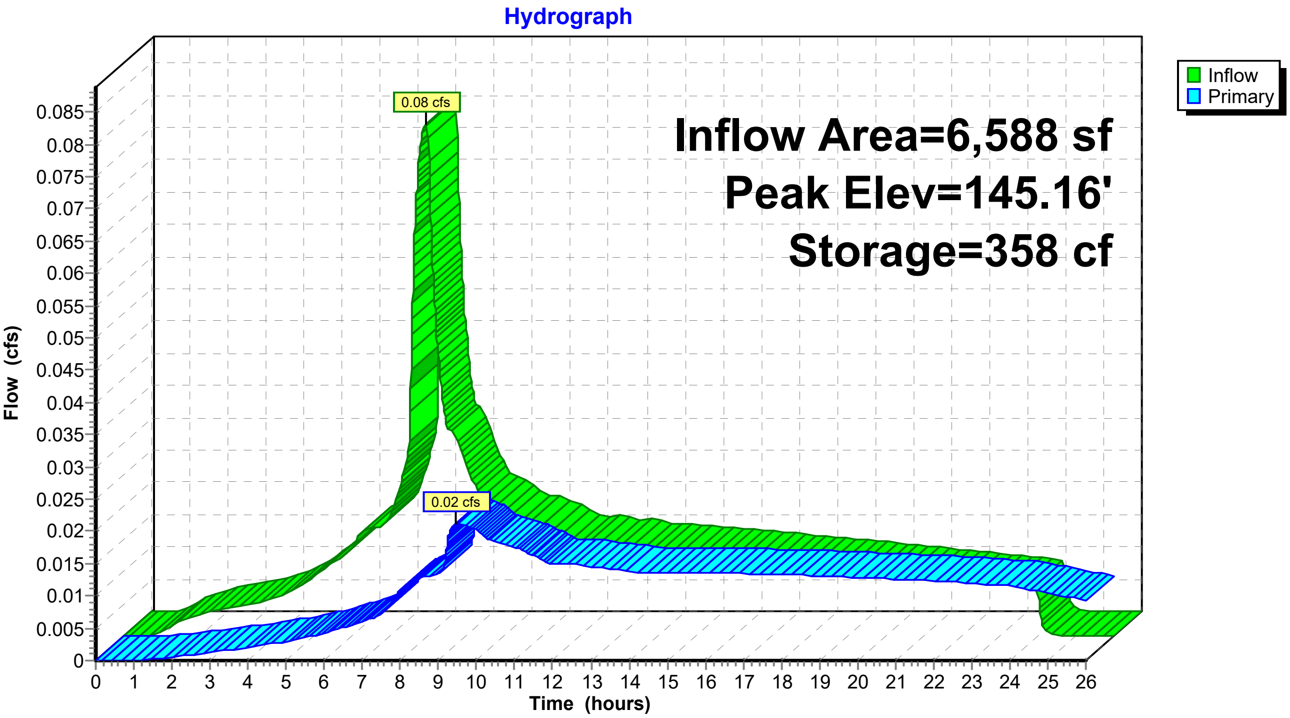
Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	**2.000 in/hr Exfiltration over Surface area above 144.00'** Excluded Surface area = 161 sf
#2	Primary	145.15'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 11.67 hrs HW=145.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)
└—**2=Overflow** (Controls 0.00 cfs)

Subcatchment P-3: Pre-Developed



Pond 3P: Planter #3



Summary for Pond 3P: Planter #3

```
Inflow Area =        6,588 sf,  42.15% Impervious,  Inflow Depth =  2.13"   for  5 yr event
Inflow      =     0.08 cfs @    7.91 hrs,  Volume=            1,169 cf
Outflow     =     0.02 cfs @    9.46 hrs,  Volume=              963 cf,  Atten= 73%,  Lag= 92.7 min
Primary     =     0.02 cfs @    9.46 hrs,  Volume=              963 cf
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 145.16' @ 9.46 hrs   Surf.Area= 459 sf   Storage= 358 cf

Plug-Flow detention time= 324.1 min calculated for 963 cf (82% of inflow)
Center-of-Mass det. time= 209.5 min (929.3 - 719.8)

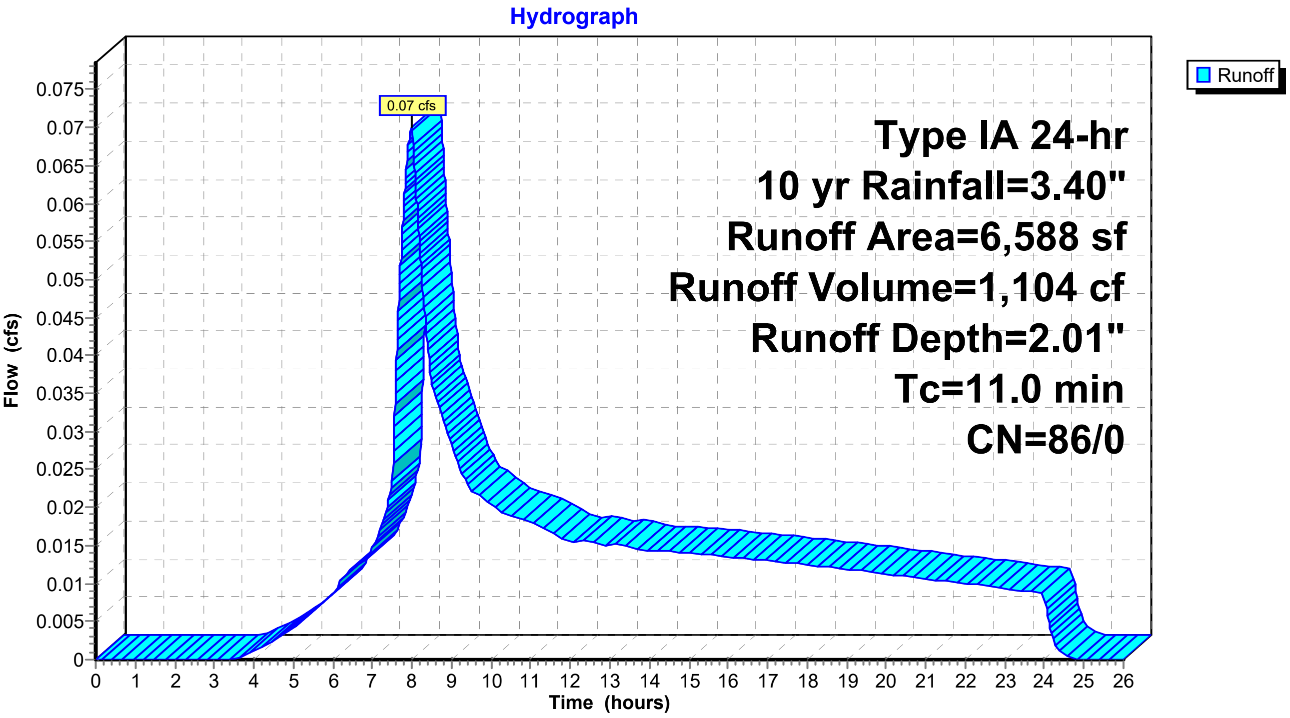
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	528 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	161	52.5	0	0	161
144.10	187	57.6	17	17	206
144.20	213	62.4	20	37	252
144.30	236	65.5	22	60	284
144.40	260	68.6	25	85	318
144.50	285	71.7	27	112	354
144.60	311	74.9	30	142	392
144.70	337	78.0	32	174	430
144.80	365	81.1	35	209	470
144.90	391	83.5	38	247	503
145.00	417	85.5	40	287	531
145.10	443	87.4	43	330	558
145.20	469	89.3	46	376	586
145.30	496	91.2	48	424	615
145.40	524	93.1	51	475	645
145.50	532	94.9	53	528	673

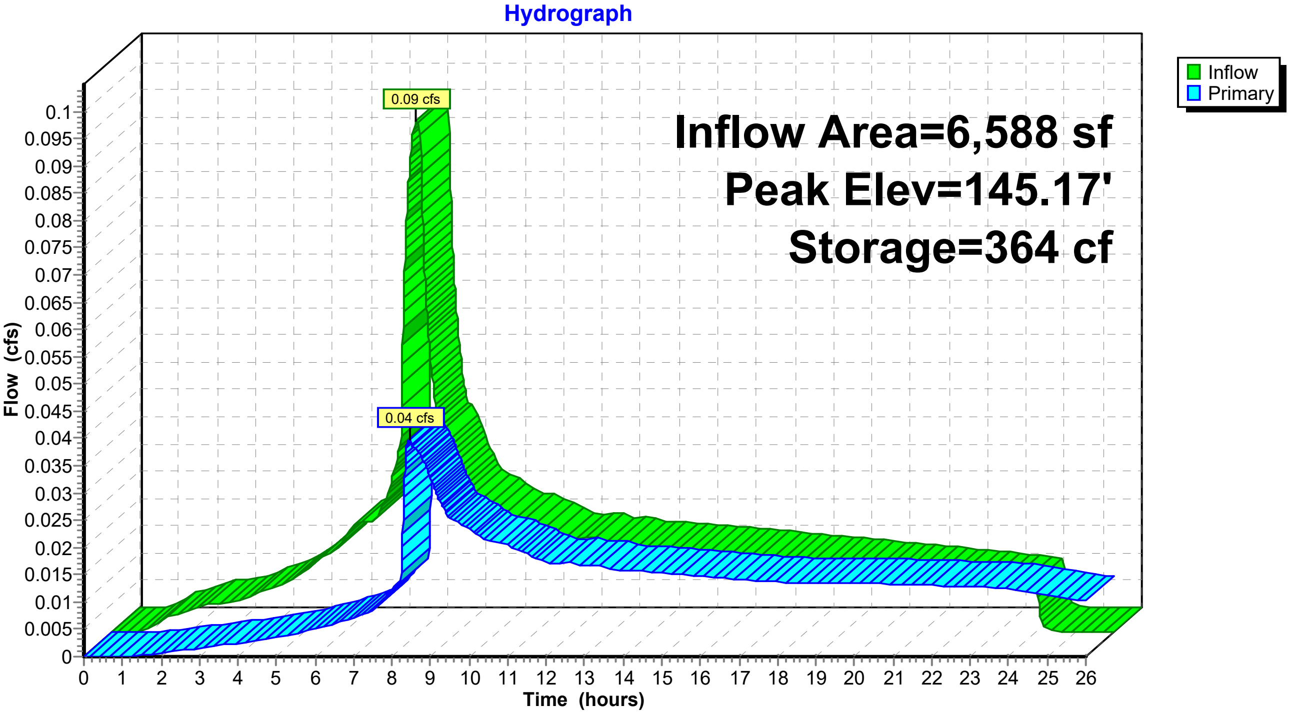
Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	**2.000 in/hr Exfiltration over Surface area above 144.00'** Excluded Surface area = 161 sf
#2	Primary	145.15'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

```
Primary OutFlow Max=0.02 cfs @ 9.46 hrs  HW=145.16'   (Free Discharge)
├─1=Exfiltration  (Exfiltration Controls 0.01 cfs)
└─2=Overflow  (Weir Controls 0.01 cfs @ 0.34 fps)
```

Subcatchment P-3: Pre-Developed



Pond 3P: Planter #3



Summary for Pond 3P: Planter #3

```
Inflow Area =        6,588 sf,  42.15% Impervious,  Inflow Depth =   2.50"    for  10 yr event
Inflow      =     0.09 cfs @    7.91 hrs,  Volume=            1,371 cf
Outflow     =     0.04 cfs @    8.43 hrs,  Volume=            1,141 cf,  Atten= 57%,  Lag= 31.5 min
Primary     =     0.04 cfs @    8.43 hrs,  Volume=            1,141 cf
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 145.17' @ 8.43 hrs Surf.Area= 462 sf Storage= 364 cf

Plug-Flow detention time= 287.3 min calculated for 1,140 cf (83% of inflow)
Center-of-Mass det. time= 176.7 min (891.2 - 714.4)

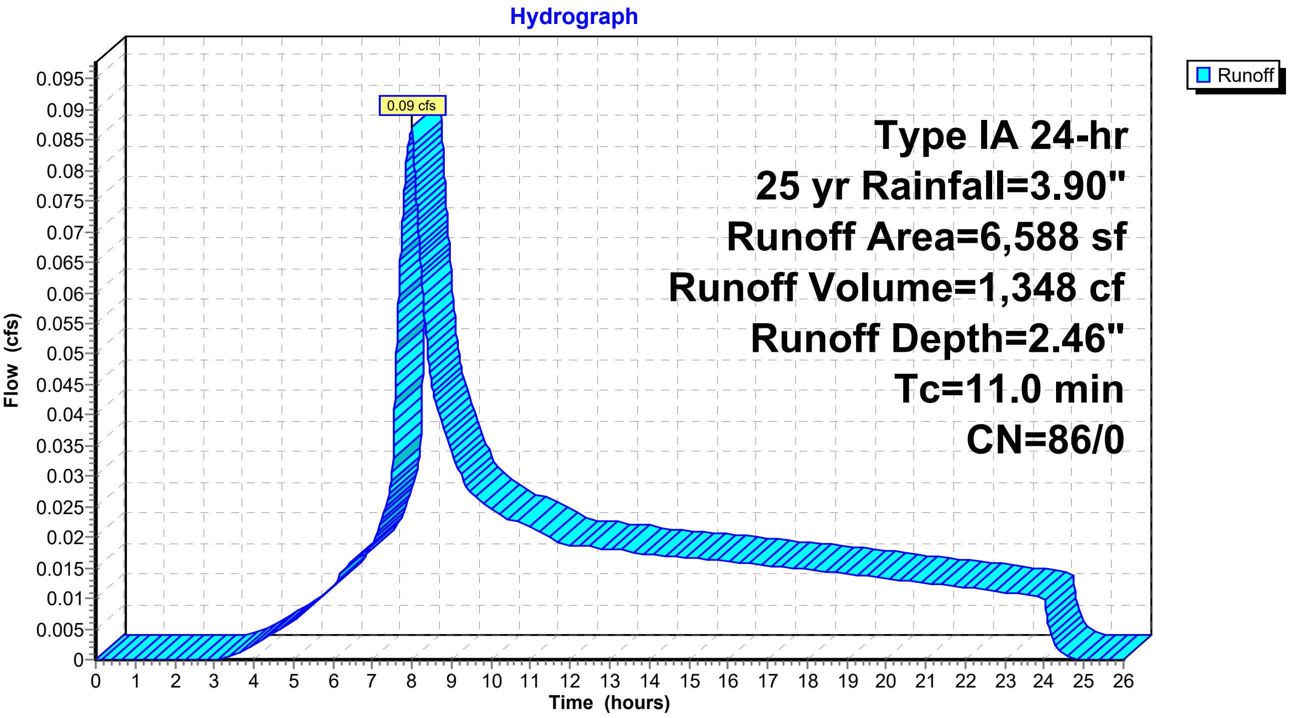
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	528 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	161	52.5	0	0	161
144.10	187	57.6	17	17	206
144.20	213	62.4	20	37	252
144.30	236	65.5	22	60	284
144.40	260	68.6	25	85	318
144.50	285	71.7	27	112	354
144.60	311	74.9	30	142	392
144.70	337	78.0	32	174	430
144.80	365	81.1	35	209	470
144.90	391	83.5	38	247	503
145.00	417	85.5	40	287	531
145.10	443	87.4	43	330	558
145.20	469	89.3	46	376	586
145.30	496	91.2	48	424	615
145.40	524	93.1	51	475	645
145.50	532	94.9	53	528	673

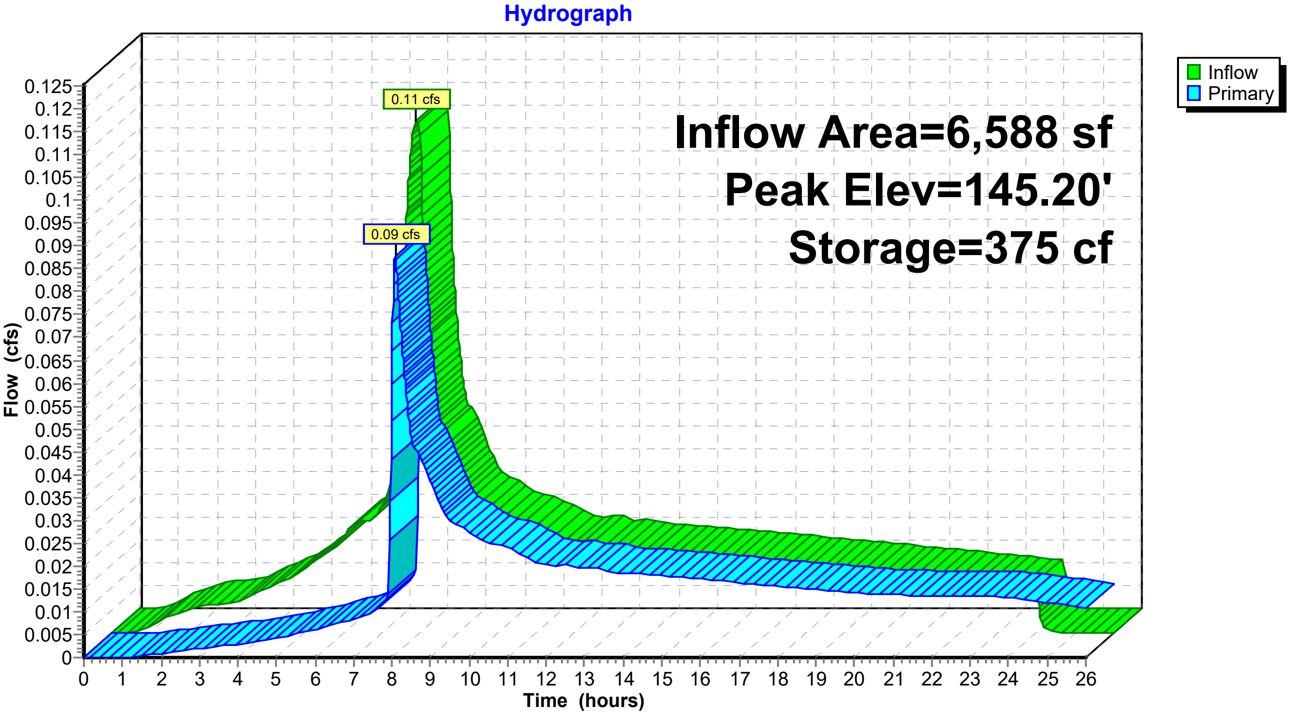
Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	**2.000 in/hr Exfiltration over Surface area above 144.00'** Excluded Surface area = 161 sf
#2	Primary	145.15'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

```
Primary OutFlow Max=0.04 cfs @ 8.43 hrs  HW=145.17'   (Free Discharge)
├─1=Exfiltration  (Exfiltration Controls 0.01 cfs)
└─2=Overflow  (Weir Controls 0.03 cfs @ 0.51 fps)
```

Subcatchment P-3: Pre-Developed



Pond 3P: Planter #3



Summary for Pond 3P: Planter #3

```
Inflow Area =         6,588 sf,  42.15% Impervious,  Inflow Depth =   2.97"    for  25 yr event
Inflow       =      0.11 cfs @     7.91 hrs,  Volume=              1,628 cf
Outflow      =      0.09 cfs @     8.08 hrs,  Volume=              1,377 cf,  Atten= 22%,  Lag= 10.1 min
Primary      =      0.09 cfs @     8.08 hrs,  Volume=              1,377 cf
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 145.20' @ 8.08 hrs   Surf.Area= 469 sf   Storage= 375 cf

Plug-Flow detention time= 247.6 min calculated for 1,377 cf (85% of inflow)
Center-of-Mass det. time= 144.6 min (853.2 - 708.6)

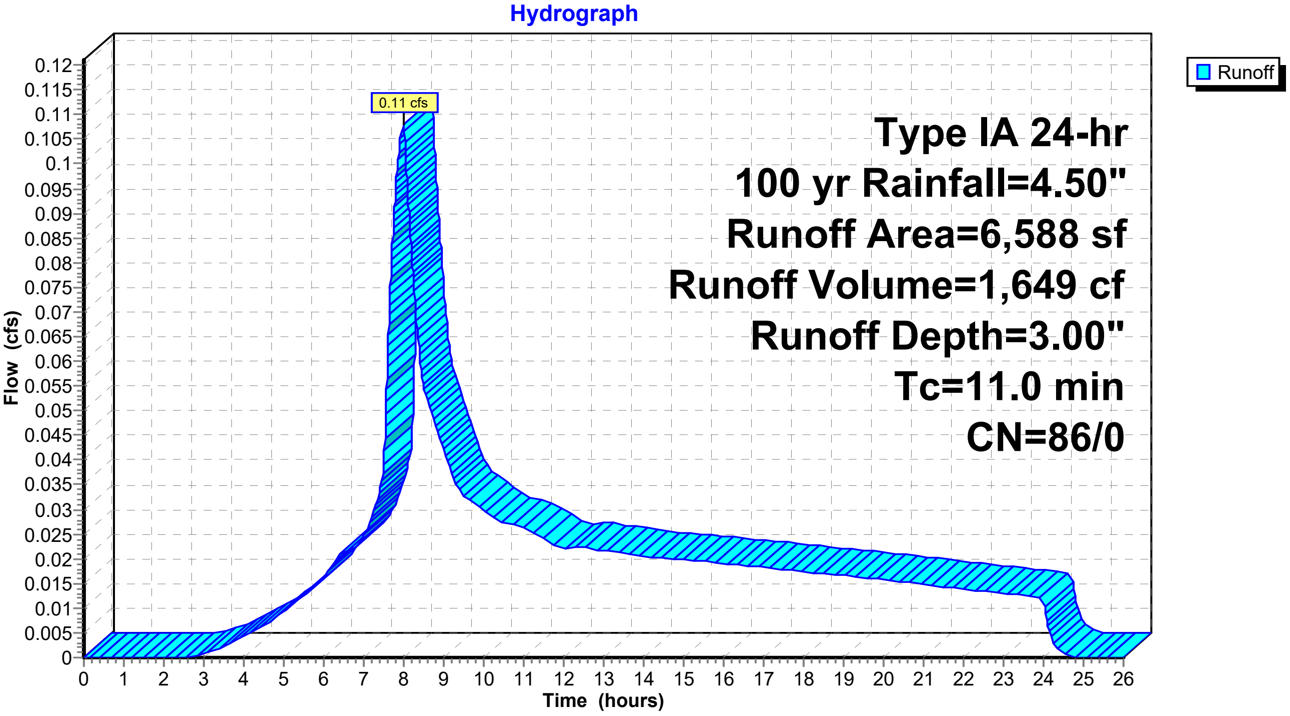
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	528 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	161	52.5	0	0	161
144.10	187	57.6	17	17	206
144.20	213	62.4	20	37	252
144.30	236	65.5	22	60	284
144.40	260	68.6	25	85	318
144.50	285	71.7	27	112	354
144.60	311	74.9	30	142	392
144.70	337	78.0	32	174	430
144.80	365	81.1	35	209	470
144.90	391	83.5	38	247	503
145.00	417	85.5	40	287	531
145.10	443	87.4	43	330	558
145.20	469	89.3	46	376	586
145.30	496	91.2	48	424	615
145.40	524	93.1	51	475	645
145.50	532	94.9	53	528	673

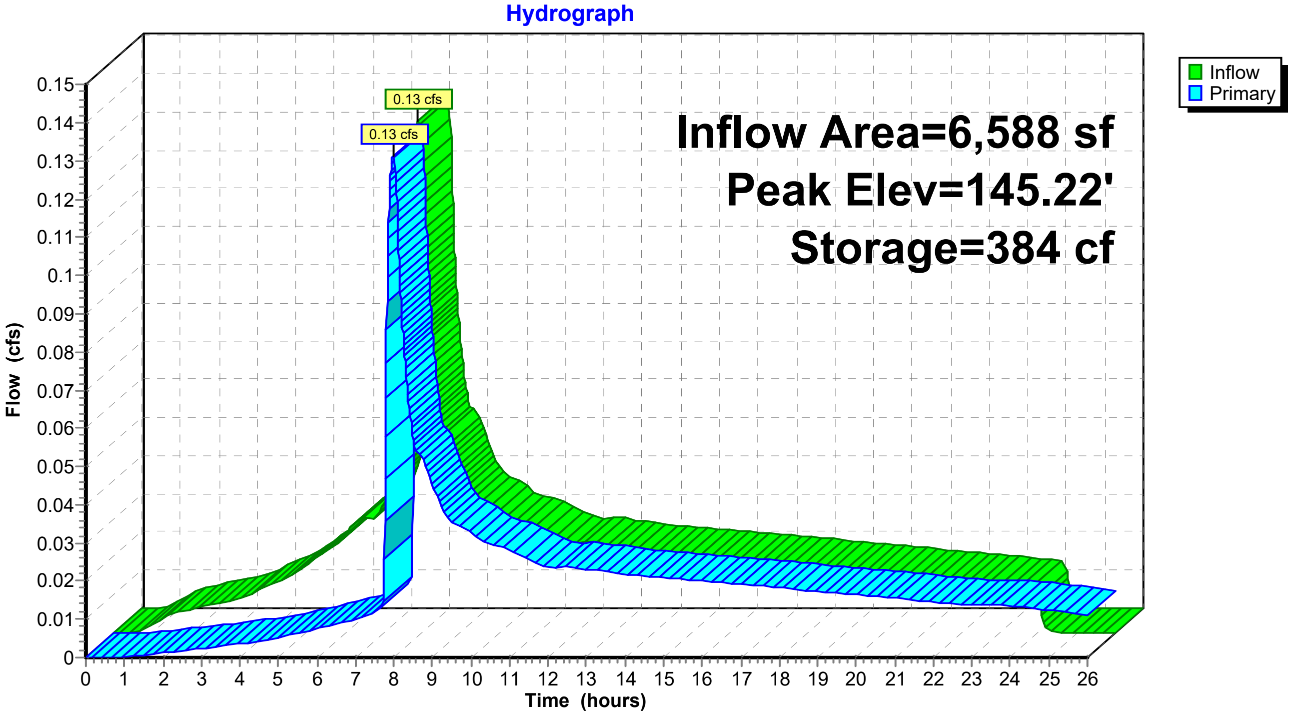
Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	**2.000 in/hr Exfiltration over Surface area above 144.00'** Excluded Surface area = 161 sf
#2	Primary	145.15'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.09 cfs @ 8.08 hrs HW=145.20' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)
└**2=Overflow** (Weir Controls 0.07 cfs @ 0.72 fps)

Subcatchment P-3: Pre-Developed



Pond 3P: Planter #3



Summary for Pond 3P: Planter #3

```
Inflow Area =          6,588 sf,  42.15% Impervious,  Inflow Depth =   3.53"    for  100 yr event
Inflow       =      0.13 cfs @     7.90 hrs,  Volume=              1,941 cf
Outflow      =      0.13 cfs @     7.99 hrs,  Volume=              1,676 cf,  Atten= 2%,  Lag= 5.2 min
Primary      =      0.13 cfs @     7.99 hrs,  Volume=              1,676 cf
```

```
Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 9
Peak Elev= 145.22' @ 7.99 hrs   Surf.Area= 473 sf   Storage= 384 cf
```

```
Plug-Flow detention time= 211.8 min calculated for 1,676 cf (86% of inflow)
Center-of-Mass det. time= 119.5 min ( 822.2 - 702.7 )
```

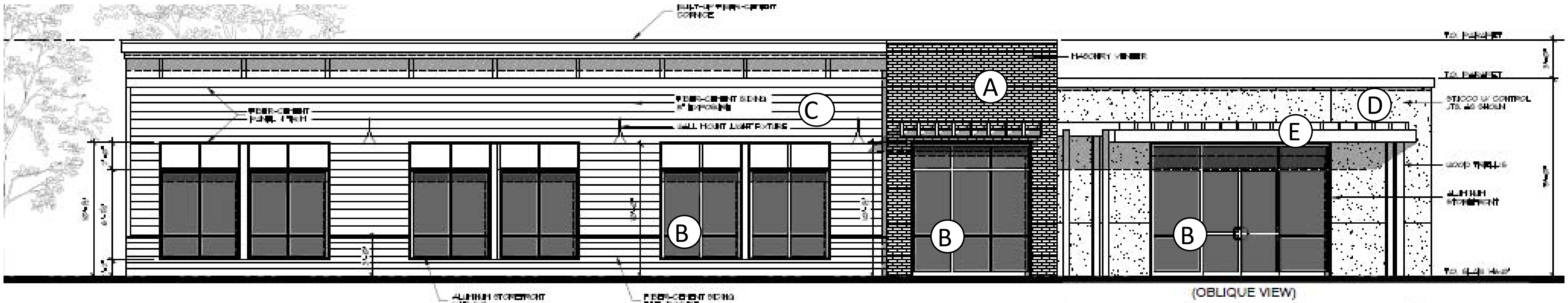
Volume	Invert	Avail.Storage	Storage Description
#1	144.00'	528 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
144.00	161	52.5	0	0	161
144.10	187	57.6	17	17	206
144.20	213	62.4	20	37	252
144.30	236	65.5	22	60	284
144.40	260	68.6	25	85	318
144.50	285	71.7	27	112	354
144.60	311	74.9	30	142	392
144.70	337	78.0	32	174	430
144.80	365	81.1	35	209	470
144.90	391	83.5	38	247	503
145.00	417	85.5	40	287	531
145.10	443	87.4	43	330	558
145.20	469	89.3	46	376	586
145.30	496	91.2	48	424	615
145.40	524	93.1	51	475	645
145.50	532	94.9	53	528	673

Device	Routing	Invert	Outlet Devices
#1	Primary	144.00'	**2.000 in/hr Exfiltration over Surface area above 144.00'** Excluded Surface area = 161 sf
#2	Primary	145.15'	**8.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.13 cfs @ 7.99 hrs HW=145.22' (Free Discharge)
↑
├─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)
└─**2=Overflow** (Weir Controls 0.12 cfs @ 0.84 fps)

8th COURT DEVELOPMENT 2180 8TH COURT, WEST LINN, OR



SOUTH BUILDING ELEVATION (View facing North)

NORTH ELEVATION

Ⓐ COUNTRY LEDGESTONE.
MUTUAL MATERIALS OR SIMILAR

Ⓑ CLEAR GLASS STOREFRONT GLAZING WITH ANODIZED ALUMINUM FRAMING. FINISH COLOR T.B.D.

Ⓒ ARTISAN LAP SIDING.
JAMES HARDIE OR SIMILAR

Ⓒ ARTISAN LAP SIDING.
JAMES HARDIE OR SIMILAR

EDGE
DEVELOPMENT

ISELIN
ARCHITECTS
P.C.

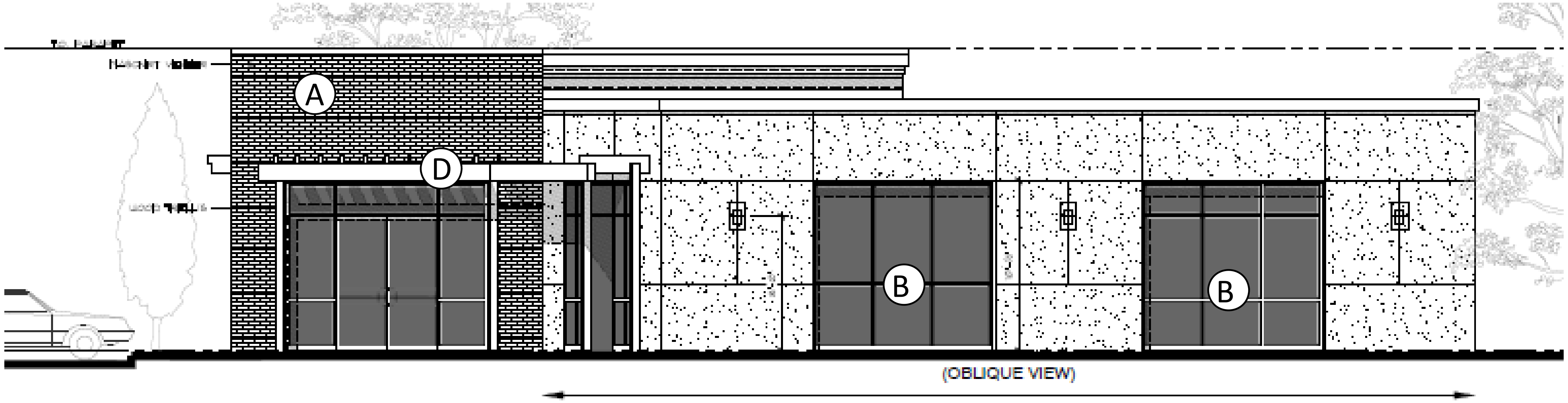
MATERIAL BOARD 1

Willamette Capital Investments, LLC

DESIGN REVIEW PACKAGE
SEPTEMBER 2018

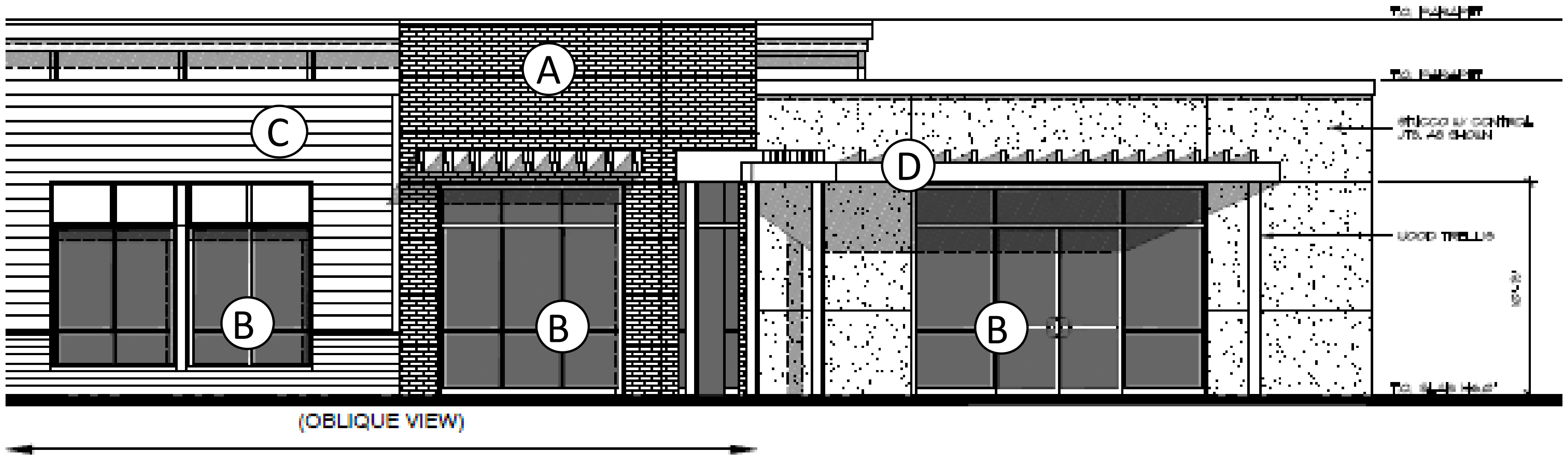
8th COURT DEVELOPMENT

2180 8TH COURT, WEST LINN, OR



WEST ELEVATION

Ⓓ WOOD TRELLIS.
(Concept image)



PARTIAL NORTHWEST ELEVATION

MATERIAL BOARD 2

EDGE
DEVELOPMENT

ISELIN
ARCHITECTS
P.C.

Willamette Capital Investments, LLC

DESIGN REVIEW PACKAGE
SEPTEMBER 2018

8th COURT BUILDING SHELL

West Linn, OR

PROJECT INFORMATION

PROJECT DESCRIPTION	NEW COMMERCIAL OFFICE/RETAIL BUILDING SHELL (INTERIOR IMPROVEMENTS UNDER SEPARATE PERMIT)
PROPERTY LOCATION	2180 8th COURT WEST LINN, OR 97068 PARCEL 2
COUNTY	CLACKAMAS
SITE AREA	22,335 SF
BUILDING AREA	TENANT 1 2,777 SF TENANT 2 1,494 SF TOTAL 4,271 SF
ZONING	GC, GENERAL COMMERCIAL
BUILDING OCCUPANCY	B, OFFICE M, MERCANTILE
CONSTRUCTION TYPE	V-B, NON-SPRINKLERED

PROJECT TEAM

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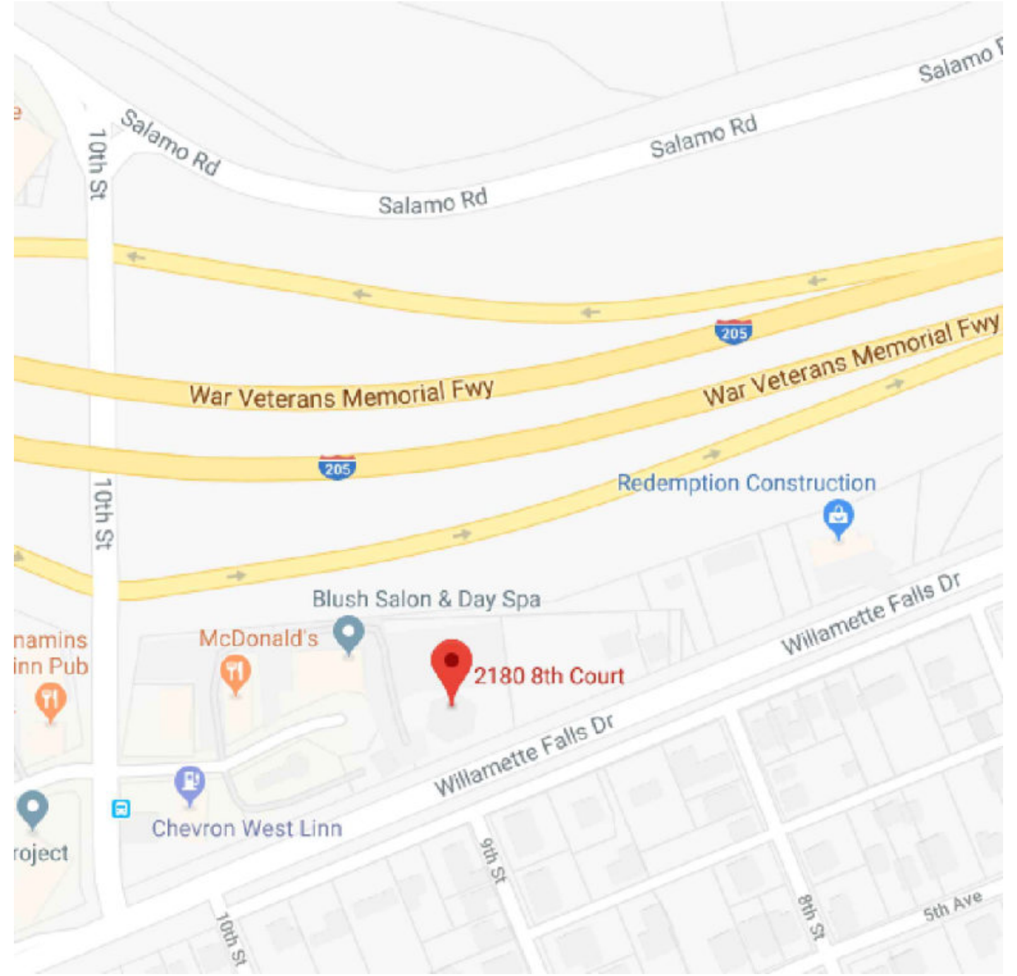
DRAWING INDEX



VICINITY MAP
NTS

ISELIN
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NOT FOR
PRELIMINARY
CONSTRUCTION

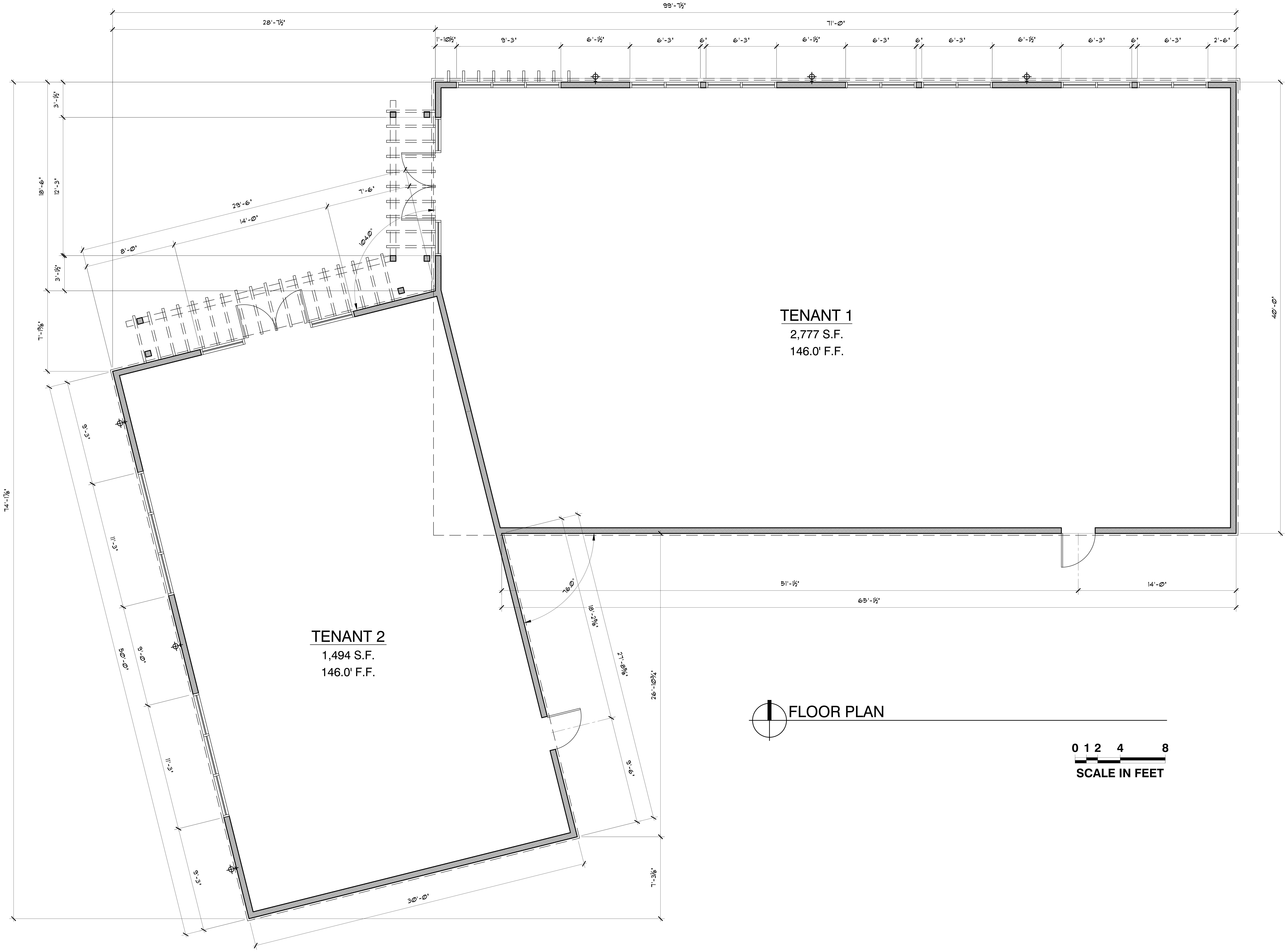
DESIGN
REVIEW

8th Court Building Shell
2180 8th Court - South Lot
West Linn, OR 97068

PROJ. NO. :	1861
FILE :	A-COV
DATE :	09/17/18

SHEET #
A1.0

COVER SHEET



FLOOR PLAN

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8th Court Building Shell

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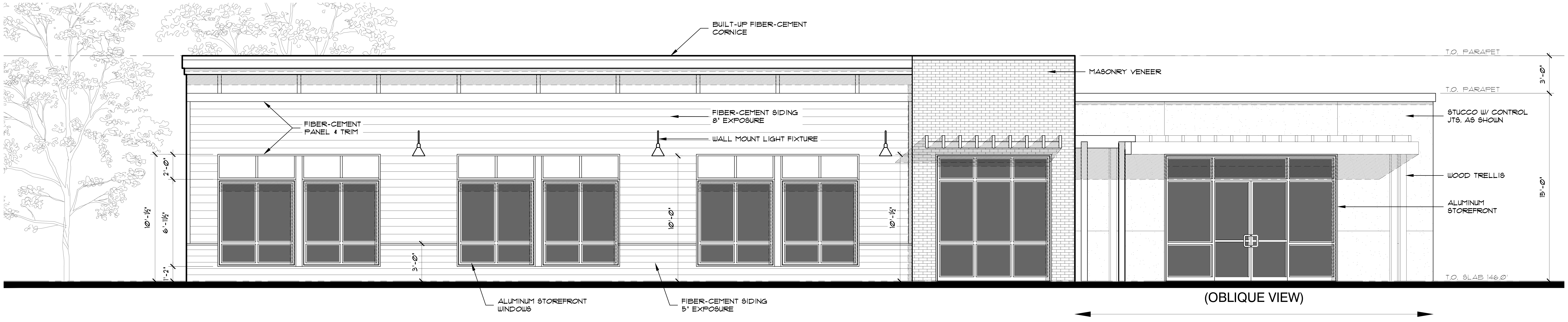
SHEET #

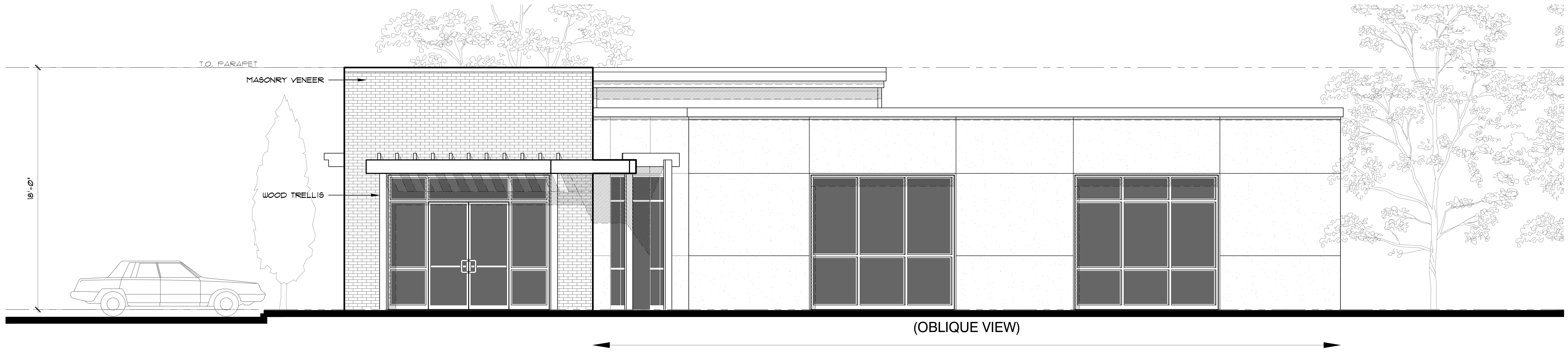
A1.1

FLOOR PLAN



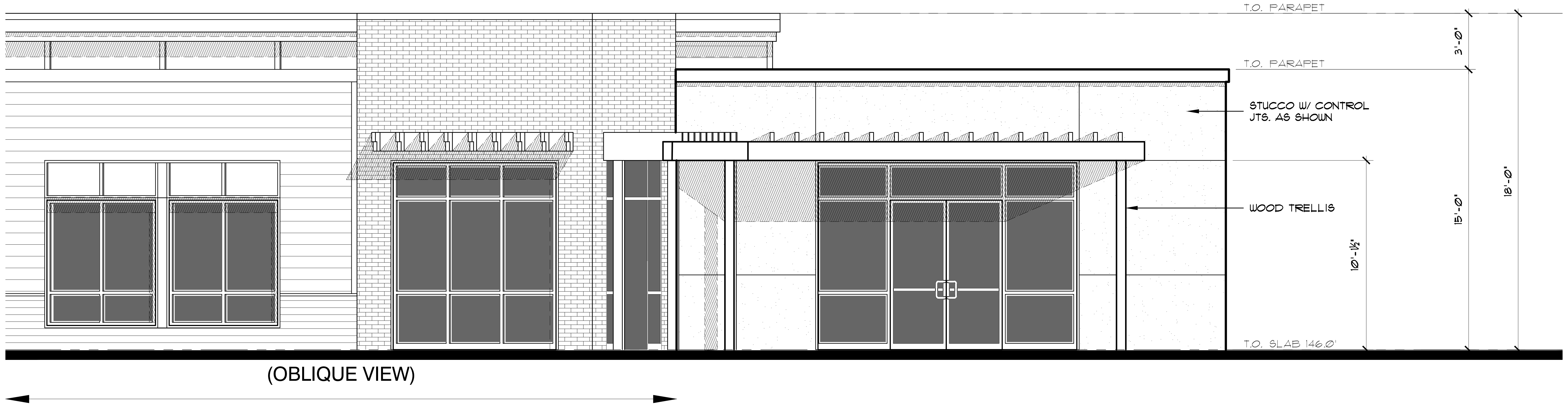
NORTH ELEVATION

1/4" = 1'-0"



WEST ELEVATION

1/4" = 1'-0"



PARTIAL NORTHWEST ELEVATION

1/4" = 1'-0"

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DESIGN REVIEW

8th Court Building Shell

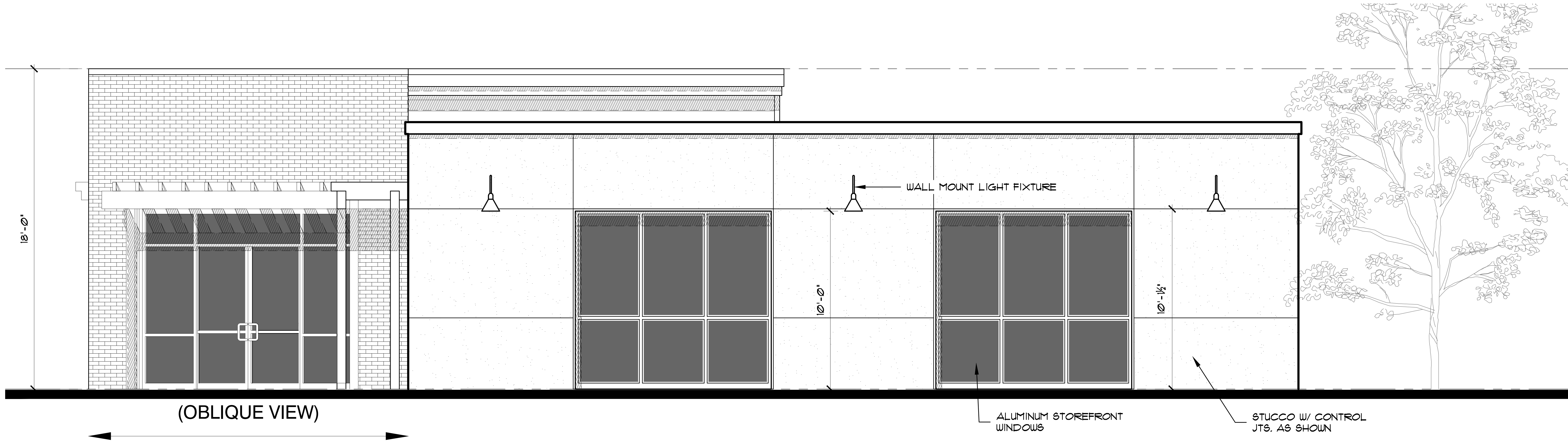
2180 8th Court - South Lot
West Linn, OR 97068

PROJ. NO. :	1861
FILE :	A-ELV
DATE :	09/17/18

SHEET #

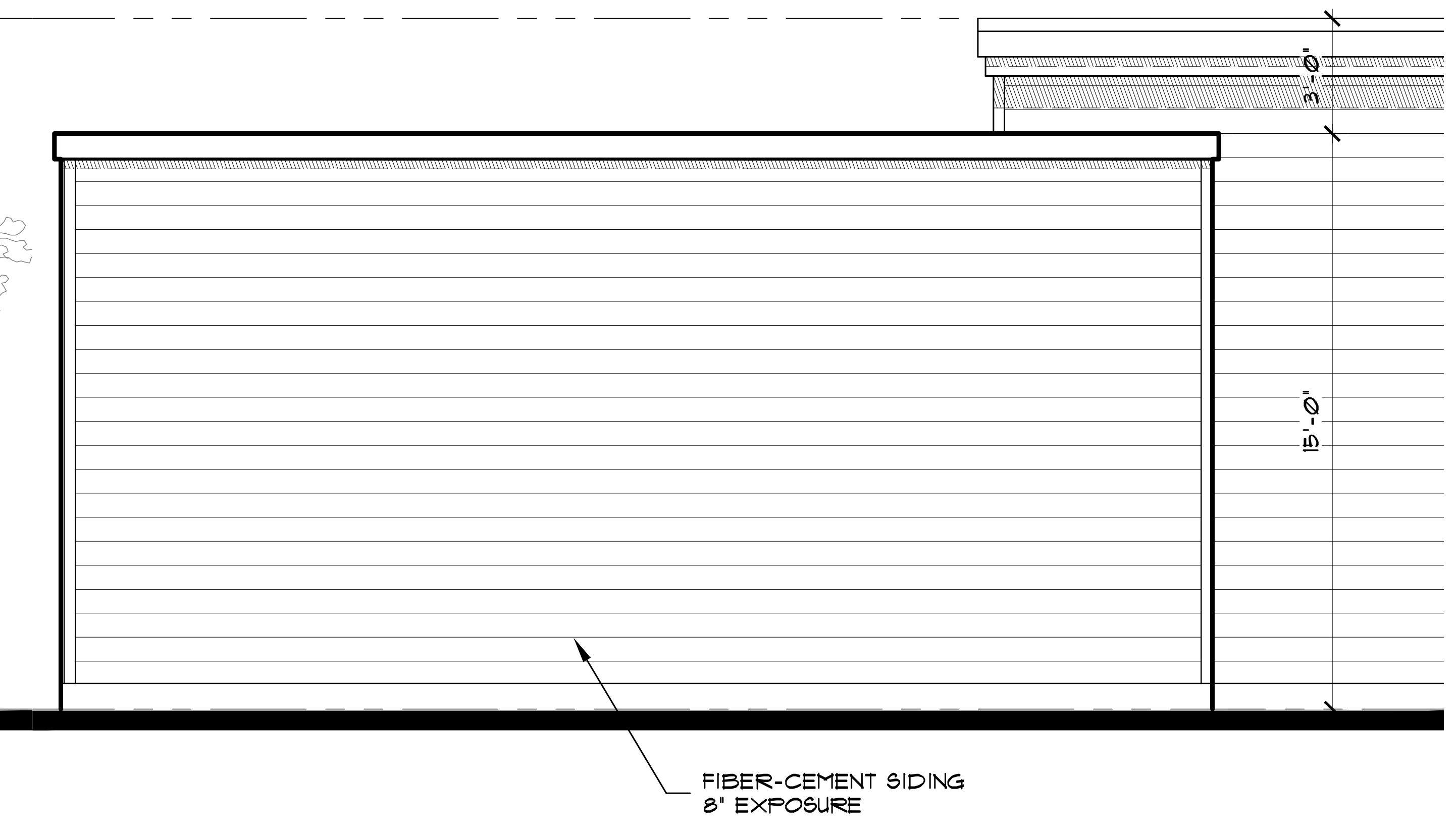
A2.1

BUILDING ELEVATIONS



SOUTHWEST ELEVATION

1/4" = 1'-0"



PARTIAL SOUTHEAST ELEVATION

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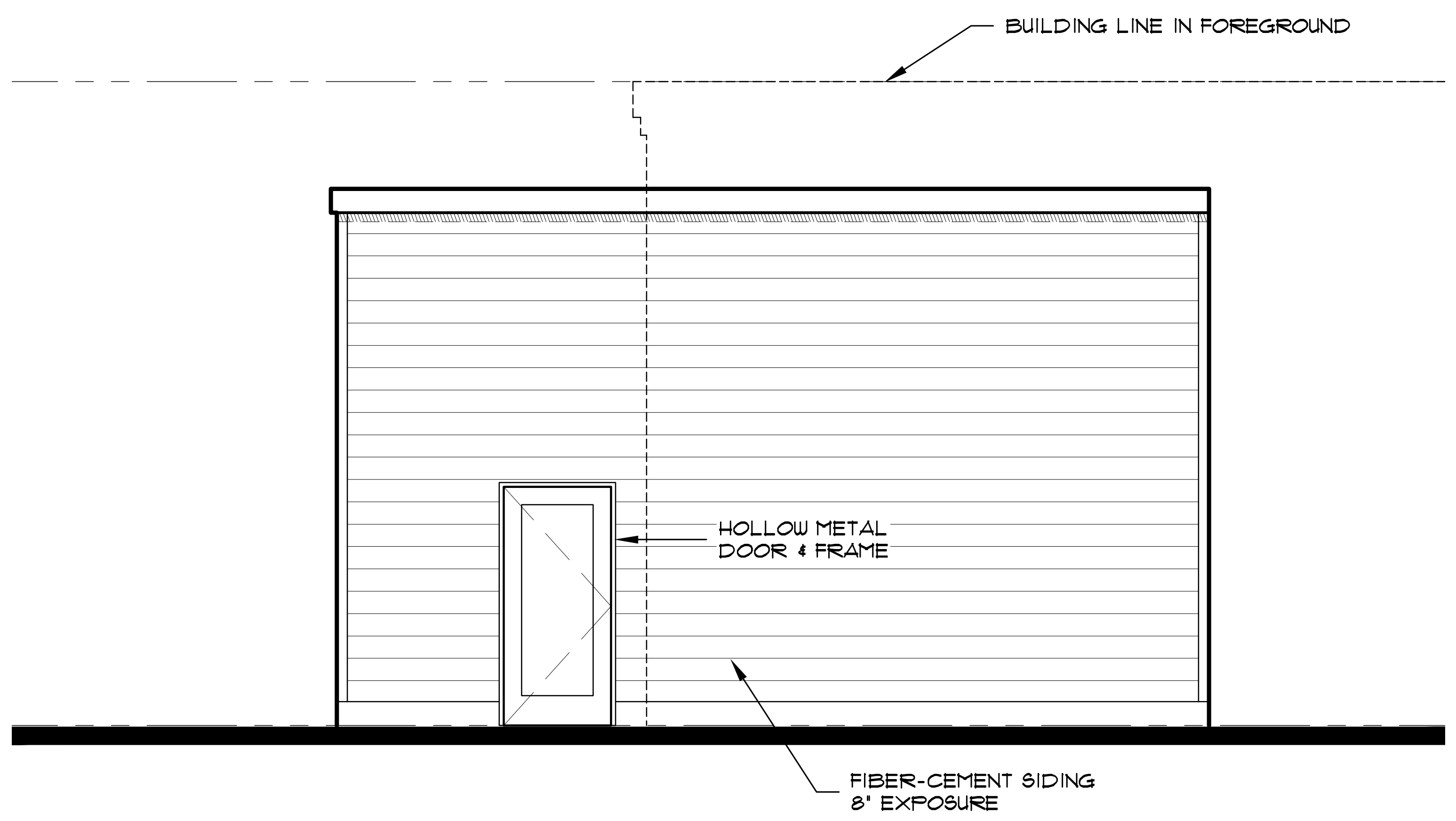
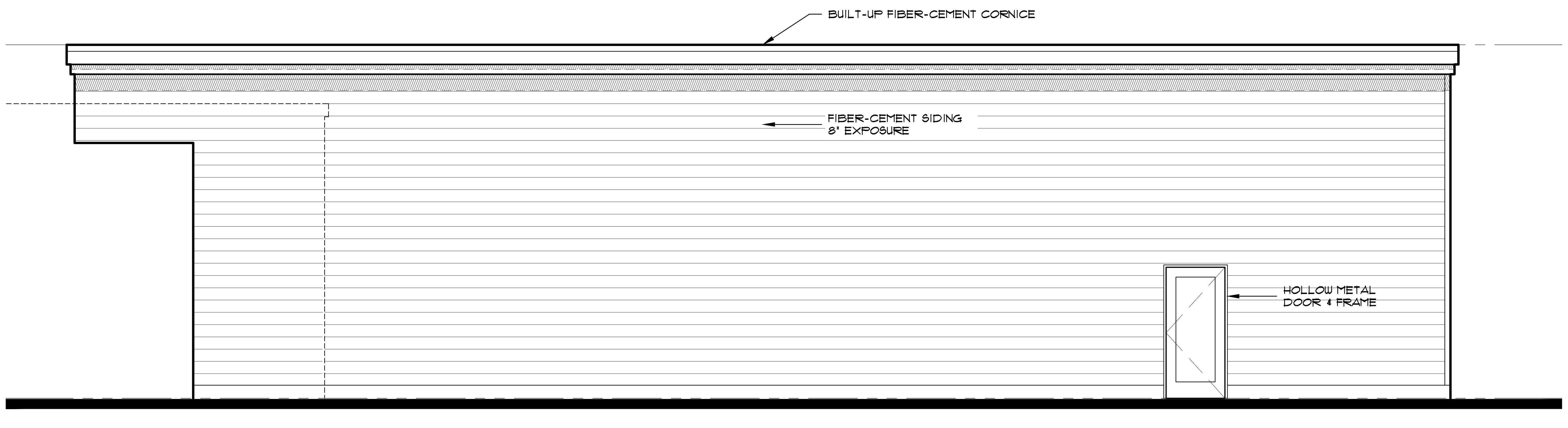


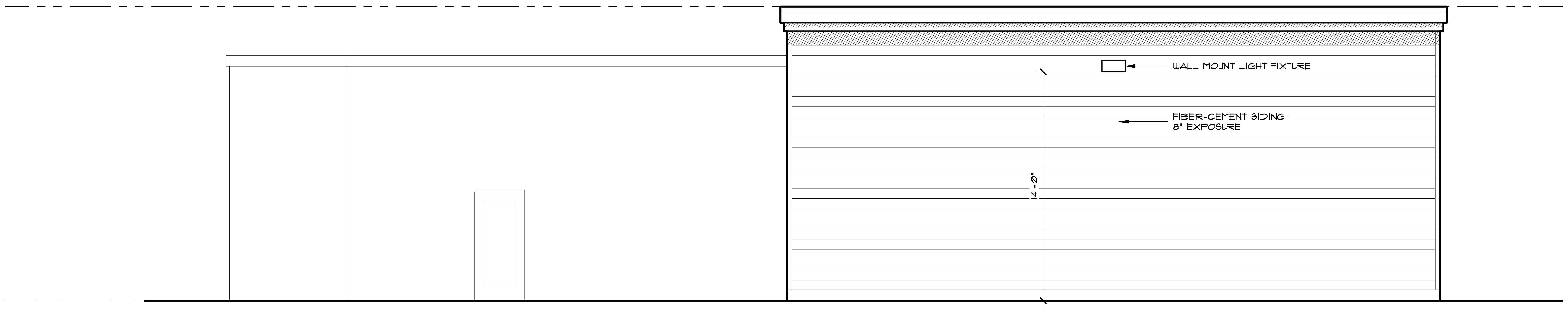
NORTHEAST ELEVATION

1/4" = 1'-0"



SOUTH ELEVATION

1/4" = 1'-0"



EAST ELEVATION

1/4" = 1'-0"

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8th Court Building Shell

2180 8th Court - South Lot
West Linn, OR 97068

PROJ. NO. : 1861
FILE : A-ELV
DATE : 09/17/18

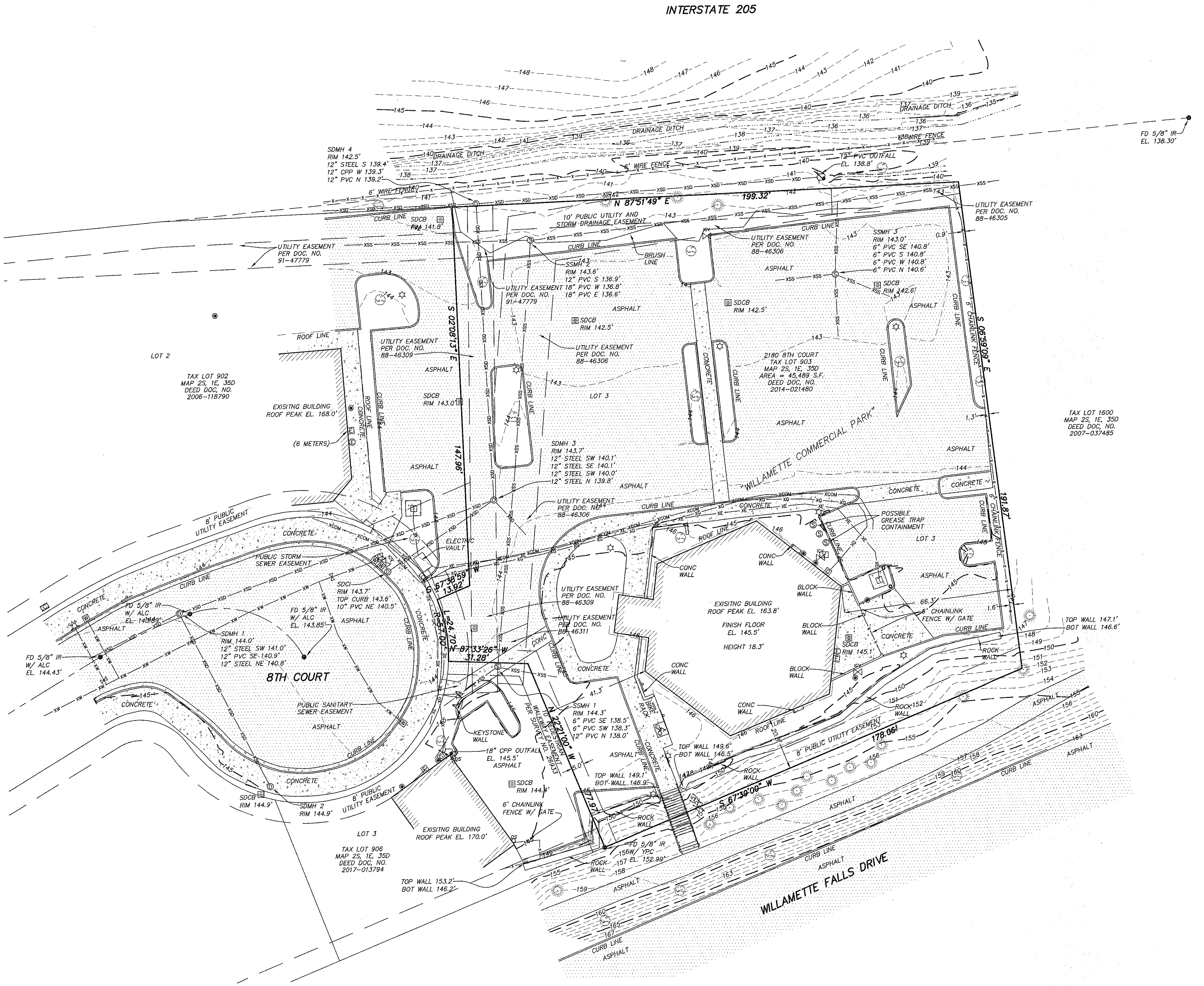
SHEET #

A2.2

BUILDING ELEVATIONS

EXISTING CONDITIONS MAP

TAX LOT 903, MAP 2S, 1E, 35D
LOCATED IN THE S.E. 1/4 SECTION 35, T.2S., R.1E., W.M.,
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON
MARCH 7, 2018 SCALE 1"=20'



SURVEY NOTES:

THE DATUM FOR THIS SURVEY IS BASED UPON A STATIC GPS OBSERVATION OF LOCAL CONTROL POINTS, PROCESSED THROUGH OPUS. DATUM IS NAVD 88.

A TRIMBLE S6-SERIES ROBOTIC INSTRUMENT WAS USED TO COMPLETE A CLOSED LOOP FIELD TRAVERSE.

THE BASIS OF BEARINGS FOR THIS SURVEY IS PER MONUMENTS FOUND AND HELD PER THE PLAT OF "WILLAMETTE COMMERCIAL PARK", RECORDS OF CLACKAMAS COUNTY.

THE PURPOSE OF THIS SURVEY IS TO RESOLVE AND DETERMINE THE PERIMETER BOUNDARY OF THE SUBJECT PROPERTY, TO SHOW ALL PERTINENT BOUNDARY ISSUES AND ENCROACHMENTS. NO PROPERTY CORNERS WERE SET IN THIS SURVEY.

NO WARRANTIES ARE MADE AS TO MATTERS OF UNWRITTEN TITLE, SUCH AS ADVERSE POSSESSION, ESTOPPEL, ACQUIESCENCE, ETC.

NO TITLE REPORT WAS SUPPLIED OR USED IN THE PREPARATION OF THIS MAP.

THE UNDERGROUND UTILITIES AS SHOWN ON THIS MAP HAVE BEEN LOCATED FROM FIELD SURVEY OF ABOVE GROUND STRUCTURES AND AS MARKED BY OTHERS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS A PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY SURVEYOR.

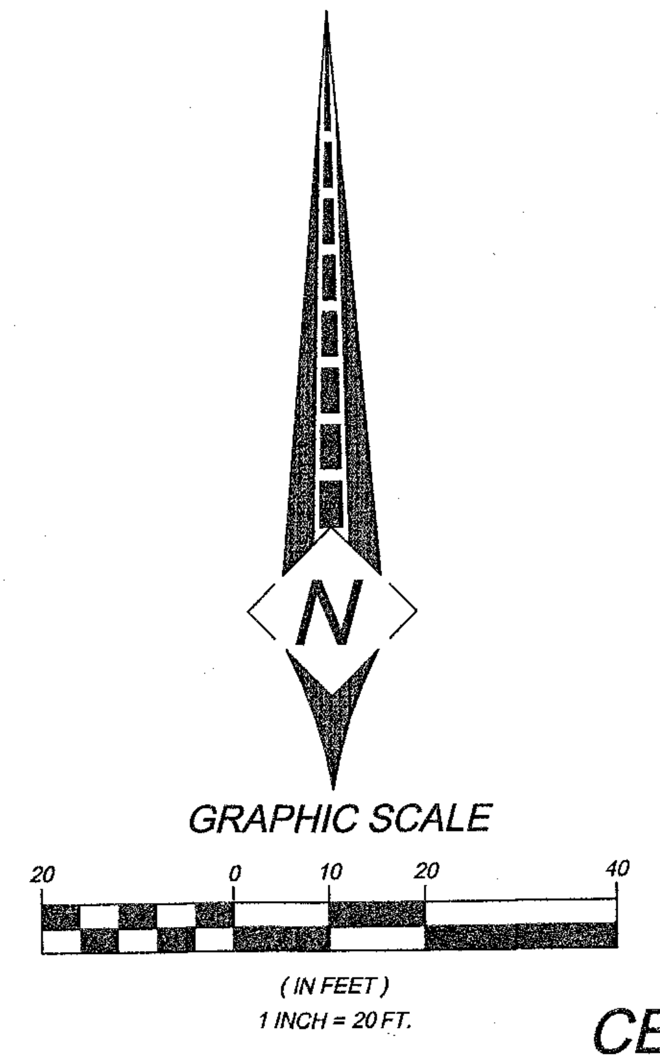
EASEMENTS SHOWN WITHOUT DOCUMENT NUMBER ARE PER THE PLAT OF "WILLAMETTE COMMERCIAL PARK"

LEGEND:

Some Symbols shown may not be used on map

DECIDUOUS TREE W/ TREE TAG
EVERGREEN TREE W/ TREE TAG
Ⓓ STORM SEWER MANHOLE
CATCH BASIN
◉ SANITARY SEWER CLEANOUT
Ⓢ SANITARY SEWER MANHOLE
⋈ WATER VALVE
W WATER METER
FIRE HYDRANT
GV ⋈ GAS VALVE
G GAS METER
○ BOLLARD
SIGN
MAILBOX
C COMMUNICATIONS PEDESTAL
Ⓣ COMMUNICATIONS MANHOLE
COMMUNICATIONS BOX
STORM OUTFALL
● FOUND MONUMENT
DS DOWN SPOUT TO STORM SYSTEM
ICV ⋈ IRRIGATION CONTROL VALVE
FI = FIR TREE
PI = PINE TREE
CE = CEDAR TREE
DE = DECIDUOUS TREE

UTILITY AND LIGHT POLE
UTILITY POLE
LIGHT POLE
→ GUY WIRE
ELECTRIC BOX
E ELECTRIC METER
P ELECTRICAL POWER PEDESTAL
Ⓔ ELECTRIC CONNECTION
HEAT PUMP
——XOH—— OVERHEAD LINE
——XG—— GAS LINE
——XE—— ELECTRICAL LINE
——XCOM—— COMMUNICATIONS LINE
——XSS—— SANITARY SEWER LINE
——XSD—— STORM DRAIN LINE
——XW—— WATER LINE
——x——x—— FENCELINE
Ⓤ UTILITY RISER
T ELECTRIC TRANSFORMER
3' X 7' BIKE LOCKER
V UNKNOWN UTILITY VAULT
FD = FOUND
IR = IRON ROD
YPC = YELLOW PLASTIC CAP
ALC = ALUMINUM CAP



SIGNED ON: 15Mar18

REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JULY 13, 2004
TOBY G. BOLDEN
60377LS

RENEWS: DECEMBER 31, 2019

CENTERLINE CONCEPTS
LAND SURVEYING, INC.
19376 MOLALLA AVE., SUITE 120
OREGON CITY, OREGON 97045
PHONE 503.650.0188 FAX 503.650.0189

Plotted: M: \PROJECTS\EDGE DEV-8TH CT-2180\dwg\ECM.dwg

CIVIL NOTES

01.0 GENERAL

1. THESE NOTES SET MINIMUM STANDARDS FOR CONSTRUCTION. THE DRAWINGS GOVERN OVER THE GENERAL NOTES TO THE EXTENT SHOWN.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS ON DRAWINGS AND IN FIELD. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH WORK.
3. CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO PROVIDE FOR ALL NECESSARY TRAFFIC CONTROL PLANS, TEMPORARY SHORING AND OTHER INCIDENTAL WORK NEEDED FOR THE COMPLETION OF THE WORK.
4. WHERE REFERENCE IS MADE TO IBC, ASTM, AISC, ACI OR OTHER STANDARDS, THE LATEST ISSUE AT THE BUILDING PERMIT DATE SHALL APPLY.
5. ALL WORK AND MATERIALS SHALL BE IN COMPLIANCE WITH THE PROJECT SPECIFICATIONS, THE "INTERNATIONAL BUILDING CODE" (IBC), THE INTERNATIONAL PLUMBING CODE (IPC) AND THE PROVISIONS OF "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION", 2018 EDITION, OREGON STATE HIGHWAY DIVISION (OSHD), AS AMENDED BY ALL OTHER STATE AND LOCAL CODES, JURISDICTIONS, PERMITS, AND BUILDING REQUIREMENTS THAT APPLY. THE CONTRACTOR SHALL OBTAIN ALL APPLICABLE CONSTRUCTION PERMITS AND SUBMIT TRAFFIC CONTROL PLANS PRIOR TO PROCEEDING WITH WORK.
6. EXISTING UTILITIES , SITE AND TOPOGRAPHIC INFORMATION SHOWN HEREON ARE BASED ON RECORD DRAWINGS PROVIDED BY OR MADE AVAILABLE BY THE OWNER. THE CONTRACTOR IS REQUIRED TO FIELD VERIFY THE LOCATION OF EXISTING FEATURES AND UTILITIES PRIOR TO CONSTRUCTION, AND SHALL ARRANGE FOR THE RELOCATION OF ANY IN CONFLICT WITH THE PROPOSED WORK. MINOR ADJUSTMENTS BASED ON FIELD CONDITIONS SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. LOCAL COUNTY AND CITY RECORD DRAWINGS SHOULD BE REVIEWED BY THE CONTRACTOR FOR THIS PURPOSE. THE EXISTENCE AND LOCATION OF EXISTING FEATURES ARE NOT GUARANTEED. ADDITIONAL UNDERGROUND UTILITIES MAY EXIST. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF INFORMATION OBTAINED FROM RECORD DRAWINGS OR INFORMATION PROVIDED BY OTHERS, IMPLIED OR OTHERWISE.
7. ATTENTION EXCAVATORS: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH BY OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THESE RULES FROM THE CENTER BY CALLING (503) 232-1987. IF YOU HAVE ANY QUESTIONS ABOUT THE RULES, YOU MAY CONTACT THE CALL CENTER. YOU MUST NOTIFY THE CENTER AT LEAST 2 BUSINESS DAYS, BUT NOT MORE THAN 10 BUSINESS DAYS, BEFORE COMMENCING AN EXCAVATION. CALL (800) 332-2344.
8. CONTRACTOR SHALL CAREFULLY MAINTAIN BENCHMARKS, PROPERTY CORNERS, MONUMENTS, AND OTHER REFERENCE POINTS. IF SUCH POINTS ARE DISTURBED OR DESTROYED BY CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL PAY FOR THEIR REPLACEMENT BY EMPLOYING A PROFESSIONAL LAND SURVEYOR TO RESET PROPERTY CORNERS AND OTHER SUCH MONUMENTS.
9. CONTRACTOR TO COORDINATE AND PROVIDE INSTALLATION AS NECESSARY OF ALL PUBLIC AND PRIVATE UTILITIES FOR THIS PROJECT INCLUDING WATER SERVICE, SANITARY SEWER SERVICE, STORM DRAIN, ELECTRIC POWER, COMMUNICATIONS, CABLE TV, NATURAL GAS, STREET LIGHTS, ETC.
10. CONTRACTOR TO MAINTAIN ONE COMPLETE SET OF APPROVED DRAWINGS ON SITE FOR THE SOLE PURPOSE OF CONTRACTOR RECORDING AS-BUILT INSTALLATION OF IMPROVEMENTS. SUBMIT AS-BUILT PLANS TO OWNER.
11. ALL CONSTRUCTION ACTIVITY SHALL BE DONE IN A SAFE AND NEAT MANNER AND UNDER OBSERVATION BY CITY FORCES.
12. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL CONSTRUCTION SAFETY, HEALTH AND OTHER RULES AND REGULATIONS FROM OSHA, DEQ, STATE, AND LOCAL REGULATING AGENCIES FOR SAFETY AND INSTALLATION OF THE WORK INCLUDING BUT NOT LIMITED TO SHORING, BRACING, ERECTION / INSTALLATION, FALL PROTECTION, GUARDRAILS, ETC.
13. ALL SEWER TRENCH LINES AND EXCAVATIONS SHALL BE PROPERLY SHORED AND BRACED TO PREVENT CAVING. UNUSUALLY DEEP EXCAVATIONS MAY REQUIRE EXTRA SHORING AND BRACING. ALL SHEETING, SHORING, AND BRACING OF TRENCHES SHALL CONFORM TO OREGON OCCUPATIONAL SAFETY AND HEALTH DIVISION (OSHA) REGULATIONS AND THE CITY OR COUNTY STANDARD CONSTRUCTION SPECIFICATIONS.
14. ALL UNDERGROUND UTILITIES SHALL BE INSTALLED PRIOR TO CONSTRUCTION OF CURBS, RETAINING WALLS, OR PAVEMENT.
15. ALL WATER AND SEWERAGE APPURTENANCES SHALL CONFORM TO APWA, OREGON CHAPTER, "STANDARDS SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION"; THE APPROVED CONSTRUCTION DRAWINGS; AND CITY OF WEST LINN REQUIREMENTS.
17. EXISTING TOPOGRAPHY, UTILITIES, AND ELEVATION DATUM ARE BASED ON THE OWNER'S TOPOGRAPHIC SURVEY PROVIDED BY THE OWNER/DEVELOPER. THE EXISTENCE AND LOCATION OF EXISTING FEATURES ARE NOT GUARANTEED. ADDITIONAL UNDERGROUND UTILITIES MAY EXIST. THE ENGINEER/WDY ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF INFORMATION PROVIDED BY OTHERS, IMPLIED OR OTHERWISE.
18. DETAILS SHOWN ON THE DRAWINGS ARE INTENDED TO APPLY AT ALL SIMILAR CONDITIONS AND LOCATIONS.
19. DO NOT SCALE INFORMATION FROM DRAWINGS.
20. CONTRACTOR TO REMOVE FROM SITE EXCESS SOIL OR OTHER MATERIALS NOT REUSABLE FOR THIS PROJECT, AND COMPLY WITH ALL RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL REPORT.
21. APPROPRIATE BENCHING OF FILLS IS REQUIRED FOR FILLS OVER 5 FEET IN HEIGHT ON SLOPES IN EXCESS OF 5 HORIZONTAL TO 1 VERTICAL. THE GEOTECHNICAL ENGINEER SHALL INSPECT BENCHES PRIOR TO FILL PLACEMENT.
22. CUT AND FILL SLOPES SHALL BE PROTECTED FROM EROSION. SUCH CONTROL MAY CONSIST OF APPROPRIATE REVEGETATION OR OTHER ACCEPTABLE MEANS AND METHODS. EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO EARTHWORK OR SITE STRIPPING.
23. MATERIAL IN SOFT SPOTS WITHIN 5 FEET OF RIGHT-OF-WAYS, PAVEMENTS OR BUILDINGS SHALL BE REMOVED TO THE DEPTH REQUIRED TO PROVIDE A FIRM SUBGRADE AND SHALL BE REPLACED WITH 1-1/2" - 0" CRUSHED ROCK COMPACTED TO 95% PER ASTM D1557.
24. THE NATIVE SUBGRADE SURFACE SHALL BE APPROVED BEFORE SCARIFYING OR PLACING ANY FILL OR BASE ROCK BY THE SOILS ENGINEER. THE UPPER 8 INCHES OF NATIVE SUBGRADE IS TO BE SCARIFIED, DRIED AND RECOMPACTED TO 90% MAXIMUM DRY DENSITY PER ASTM D698. PLACE GEOTEXTILE FABRIC (MIRAFI 500X, PROPEX GEOTEX 200ST, CONTECH C200 OR EQUAL) BELOW ALL VEHICULAR PAVEMENT. FOR WET WEATHER CONSTRUCTION (AS DETERMINED BY THE GEOTECHNICAL ENGINEER) A WORKING BLANKET OF PIT RUN OR CRUSHED ROCK IS TO BE LAID OVER GEOTEXTILE FABRIC. ON-SITE COMPACTION TESTS AND DEFLECTION TEST(S) PERFORMED WITH A 50,000 LB. VEHICLE MUST BE PERFORMED AND WITNESSED BY THE GEOTECHNICAL ENGINEER. NO DEFLECTION IS ALLOWED AND ALL BUILDING AND PAVEMENT AREAS MUST BE PROOF-ROLLED. DURING WET WEATHER CONSTRUCTION (AS DETERMINED BY THE SOILS ENGINEER), PROVIDE THE PROOF-ROLL TEST OVER THE BASE ROCK SURFACES PRIOR TO PLACEMENT OF ANY PAVEMENT.
25. CRUSHED ROCK BASE MATERIAL AND PIPE ZONE MATERIAL SHALL BE CRUSHED ROCK CONFORMING TO OREGON DEPARTMENT OF TRANSPORTATION (ODOT) SECTION 00640 AND 00641 AND BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D1557.
26. 3/4 " - 0" CRUSHED ROCK PIPE ZONE AND BACKFILL MATERIAL IS REQUIRED FOR ALL UTILITY LINES, CONDUITS AND LEVELING COURSES. REFER TO THE TYPICAL UTILITY CONDUIT TRENCH AND PAVEMENT DETAILS.
27. ASPHALTIC CONCRETE (A.C.) PAVEMENT SHALL BE A LEVEL 4 HMAC SUPER PAVE WITH AN ASPHALT CONTENT PER OREGON DOT CLASSIFICATION AND APPRVED JMFM FOR ALL LIFTS. PAVEMENT SHALL BE PLACED ONLY ON DRY, CLEAN AND PROPERLY PREPARED SURFACES, AND WHEN CONDITIONS MEET THE SPECIFICATIONS AS SET FORTH IN THE MOST RECENT EDITION OF THE OREGON DOT SPECIFICATIONS. ALL NEW PAVEMENT AREAS SHALL CONFORM TO THE TYPICAL PAVEMENT SECTION DETAIL. ALL A.C. PAVEMENT TO BE COMPACTED TO 91% OF MAXIMUM DENSITY PER ASTM D2041 FOR FIRST LIFTS LESS THAN 3-INCHES AND 92% COMPACTION SHALL BE REQUIRED FOR SUBSEQUENT LIFTS.
28. PERVIOUS ASPHALTIC CONCRETE PAVEMENT SHALL HAVE AGGREGATE AND ASPHALTIC MATERIALS IN ACCORDANCE WITH APPLICABLE STATE OF OREGON DOT SPECIFICATIONS FOR AN OPEN GRADED, 12.5MM GRADED MIX. PROVIDE 5.5% TO 5.7% ASPHALT CONTENT.
29. ALL JOINTS BETWEEN A.C AND CONCRETE STRUCTURES MUST BE TACKED WITH BITUMASTIC. NO EXCEPTIONS ALLOWED.
30. ALL PORTLAND CEMENT CONCRETE PAVEMENT SHALL HAVE A 28 DAY MINIMUM ULTIMATE STRENGTH OF 4000 PSI. PROVIDE A MINIMUM OF (4) TEST CYLINDERS IN ACCORDANCE WITH CURRENT IBC AT EACH POUR.
    A. MINIMUM MIX REQUIREMENTS:
        I. CEMENT CONTENT PER YARD: 5 SACKS.
        II. MAXIMUM WATER/CEMENT RATIO: 0.45. FLY ASH MEETING ASTM C618 AND WITH LOSS ON IGNITION LESS THAN 3% MAY BE ADDED TO THE CEMENT, BUT NOT MORE THAN 15% BY WEIGHT.
        III. SLUMP: 3 INCH TO 4 INCH. DEVIATING FROM DESIGN SLUMP +1/2 INCH TO -1 INCH. WHEN CONCRETE IS TO BE PUMPED, ADD PLASTICIZERS MEETING ASTM C494 AND PROVIDE A NEW MIX DESIGN. DO NOT ADD WATER.
        IV. ADMIX: PROVIDE WATER REDUCING ADMIX (MASTER BUILDERS) AND REDUCE WATER USED BY 10% MINIMUM FOR ALL SLABS.
        V. AIR ENTRAINMENT: PER ACI 301 AND 306 AT ALL EXTERIOR SLABS AND FLAT WORK, 5.5% AIR MINIMUM.
        VI. ALL ADMIXTURES TO BE COMPATIBLE FROM SAME MANUFACTURER.
    B. PLACE AND CURE ALL CONCRETE PER ACI CODES AND STANDARDS.
    C. SLEEVES, PIPES OR CONDUITS OF ALUMINUM SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE UNLESS EFFECTIVELY COATED.
    D. PROVIDE CONTROL JOINTS IN ALL SLABS ON GRADE AS SHOWN ON PLANS. IN AREAS WHERE JOINTS ARE NOT SHOWN, INSTALL IN SQUARE PATTERN AT 15' ON CENTER EACH WAY MAXIMUM. INSTALL JOINTS AT ALL RE-ENTRANT CORNERS.
    E. PROVIDE 1/4" PREMOLDED EXPANSION JOINT MATERIAL BETWEEN SLABS AND WALLS THAT ARE NOT DOWELED TOGETHER, AND AROUND COLUMNS THAT DO NOT HAVE SLAB BLOCKOUTS.
31. ON-SITE HANDICAP/DISABILITY ACCESS ROUTES SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT (ADA), STATE AND LOCAL REGULATIONS. NOTIFY ARCHITECT AND ENGINEER PRIOR TO INSTALLING FINISH PAVEMENT IN CONFLICT WITH ADA REQUIREMENTS. IN GENERAL:
    A. MAXIMUM CROSS SLOPE OF ANY PAVEMENT PERPENDICULAR TO DIRECTION OF TRAVEL IS 2.0%.
    B. MAXIMUM SLOPE OF WALKWAYS IN DIRECTION OF TRAVEL IS 5.0%.
    C. FOR RAMPS, THE MAXIMUM SLOPE IS 8.33% AND MAXIMUM RISE BETWEEN LANDINGS IS 30 INCHES, HANDRAILS ARE REQUIRED EACH SIDE OF ALL RAMPS WITH SLOPE GREATER THAN 5%.
    D. MAXIMUM SLOPE OF CURB RAMPS AND WINGS OF CURB RAMPS IS 8.33%. THE MAXIMUM LENGTH OF A CURB RAMP IS 6 FEET.
    E. PROVIDE FINISH PAVEMENT SURFACE TEXTURES IN ACCORDANCE WITH ADA.
    F. STRAIGHT GRADE FINISH PAVEMENT AND TOP OF CURB ELEVATIONS BETWEEN GIVEN ELEVATION POINTS. BLEND FINISH GRADES AT GRADE BREAKS.
32. PAVEMENT MARKINGS ON AC PAVEMENT SHALL BE MPI #32 ALKYD PAINT. INSTALL PER MANUFACTURERS RECOMMENDATIONS. VERIFY PAINT LOCATIONS, COLORS AND STENCILS WITH ARCHITECT.
33. ADA STALL PAVEMENT STENCILS SHALL BE THERMOPLASTIC STENCIL INSTALLED PER MANUFACTURES RECOMMENDATIONS.

02.0 CLEARING AND GRUBBING

1. ALL CONSTRUCTION AND MATERIALS WITHIN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO THESE PLANS AND THE APPLICABLE REQUIREMENTS OF CITY OF , STATE OF OREGON AND "EROSION PREVENTION AND SEDIMENTATION CONTROL MANUAL", DECEMBER 2000 EDITION, WASHINGTON COUNTY R+O #00-7.
2. NOTIFY ARCHITECT 2 BUSINESS DAYS BEFORE COMMENCING WORK.
3. CONTRACTOR SHALL REMOVE ALL TREES, SHRUBS, RUBBISH, AND MAN-MADE STRUCTURES INCLUDING BUT NOT LIMITED TO CONCRETE SLABS, WALLS, VAULTS, FOOTINGS, ASPHALTIC PAVED SURFACES, GRAVELED AREAS, SHED OR OTHER FREE-STANDING BUILDINGS (CONSTRUCTED OF WOOD, CONCRETE, METAL, ETC.) FOUNDATIONS, FENCES, RAILINGS, MACHINERY, ETC. WITHIN THE CLEARING LIMITS. THE ITEMS LISTED ABOVE SHALL BE DISPOSED OF OFF-SITE. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONFIRM THE NUMBER AND TYPE OF STRUCTURES TO BE REMOVED. CONTRACTOR SHALL OBTAIN ALL NECESSARY DEMOLITION AND WORK PERMITS.
4. ALL BURIED STRUCTURES (I.E. TANKS, LEACH LINES, DRAIN TILE, AND PIPES) NOT DESIGNATED TO REMAIN ON THE SITE, SHALL BE REMOVED AND THE RESULTING EXCAVATIONS SHALL BE PROPERLY INSPECTED, BACKFILLED AND COMPACTED PRIOR TO ANY GRADING OR FILLING OPERATIONS. THIS IS TO INCLUDE STUMPS AND ROOTBALLS OF TREES TO BE REMOVED FROM THE SITE. NOTIFY CITY FOR INSPECTIONS AS REQUIRED.
5. THE AREA OF THE SITE DESIGNATED ON THE PLAN TO BE REGRADED OR PAVED SHALL BE STRIPPED TO REMOVE ALL ORGANIC MATERIAL DOWN TO FIRM SUBGRADE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING SUBGRADE SOILS FROM OVERWORKING AND PROVIDE REPAIR TO DAMAGED SUBGRADE AT NO ADDITIONAL COST TO THE OWNER.
6. ALL UNSUITABLE MATERIAL (SOIL AND VEGETATION) REMOVED DURING THE CLEARING AND GRUBBING OPERATIONS SHALL BE REMOVED BY THE CONTRACTOR AND LEGALLY DISPOSED OF IN A SUITABLE LOCATION.
7. EXCAVATORS MUST COMPLY WITH ALL PROVISIONS OF ORS 757.541 TO 757.571 INCLUDING NOTIFICATION OF ALL OWNERS OF UNDERGROUND FACILITIES AT USA LOCATES (681-7044), AT LEAST 48 BUSINESS HOURS, BUT NOT MORE THAN 10 BUSINESS DAYS BEFORE COMMENCING AN EXCAVATION.
8. ALL EMBANKMENTS REQUIRED SHALL BE STRUCTURAL FILL MEETING THE REQUIREMENTS AND SPECIFICATIONS OF IBC CHAPTER 18.
9. ALL EXCESS MATERIAL NOT UTILIZED ON-SITE SHALL BE LEGALLY DISPOSED OF BY THE CONTRACTOR.
10. TREES NOT DESIGNATED TO BE REMOVED BY THE ARCHITECT SHALL BE PROTECTED AT ALL TIMES.
11. SAWCUT STRAIGHT LINES TO MATCH EXISTING PAVEMENT WITH THE NEW PAVEMENT.
12. CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE TRAFFIC CONTROL ALONG THE EXISTING ROADS AS REQUIRED BY THE CITY OF .

03.0 PRIVATE UTILITIES

1. CONTRACTOR TO PROVIDE UTILITY SUBMITTALS FOR REVIEW PRIOR TO INSTALLATION OF ALL PROPOSED UTILITY PIPES, CONDUITS, MANHOLES, BENDS/FITTINGS AND ALL OTHER SYSTEM APPURTENANCES.
2. SANITARY SEWER, STORM DRAIN AND WATER LINES IN PRIVATE PROPERTY SHALL BE PRIVATELY OWNED, MAINTAINED AND OPERATED. PROVIDE TRACER WIRE AND WARNING TAPE FOR ALL PLASTIC UTILITY LINES.
3. ALL PRIVATE CATCH BASINS, AREA DRAINS, STORM DRAIN PIPE, SANITARY SEWER PIPE AND WATER PIPE AND APPURTENANCES SHALL MEET THE REQUIREMENTS OF THE LATEST INTERNATIONAL PLUMBING CODE AS APPLICABLE.
4. ALL CONNECTIONS TO EXISTING PUBLIC STORM SEWER, SANITARY SEWER AND WATER MAINS REQUIRE ISSUANCE OF A PUBLIC WORKS PERMIT AND INSPECTION BY THE CITY OF .... AND THE .... WATER DISTRICT AS APPLICABLE.
5. PRIVATE SANITARY SEWER LATERALS SHALL COMPLY WITH THE REFERENCED PUBLIC STANDARDS AND DRAWINGS FOR PUBLIC SANITARY SEWER. LAY THE 'T' AT A 2% SLOPE.
6. CAST IRON SANITARY OR STORM DRAIN PIPE AND JOINTS SHALL BE HUBLESS, SERVICE WEIGHT, AND MEET THE REQUIREMENTS OF CISPI 301. JOINTS SHALL BE MECHANICAL CLAMP RING TYPE, STAINLESS STEEL EXPANDING AND CONTRACTING SLEEVES WITH FULL CIRCLE NEOPRENE RIBBED GASKETS FOR POSITIVE SEAL. COUPLINGS AND SHIELDS TO BEAR THE MANUFACTURER'S REGISTERED INSIGNIA. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
7. PVC SANITARY SEWER OR STORM DRAIN PIPE SHALL BE ASTM D3034, SDR-35. COMPATIBLE ASTM D3034 FITTINGS MUST BE USED WITH ASTM D3034 PIPE. ALL ASTM D3034 PIPE USED MUST BE OF WATER-TIGHT JOINTS AND TESTED FOR ROUNDNESS AFTER BACKFILL. PROVIDE PRESSURE TEST. PROVIDE TV VIDEO TAPE IF SO REQUIRED BY THE JURISDCITION HAVING AUTHORITY.
8. PERFORATED PVC SEPTIC DRAINFIELD PIPE SHALL BE PER ASTM D2729 WITH SOLVENT WELD JOINTS.
9. PVC SANITARY SEWER PRESSURE (FORCE MAIN) PIPE SHALL BE SCHEDULE 40 PER ASTM D1784 WITH SOLVENT WELD JOINTS PER ASTM D1785.
10. HIGH DENSITY POLYETHYLENE (HDPE) STORM DRAIN PIPE AND ASSOCIATED HDPE FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM D 3350 OR ASTM 1248, TYPE III, CLASS C, CATEGORY 4, GRADE P33. 4 INCH TO 10 INCH PIPE SHALL MEET AASHTO M252 TYPE S; 12 INCH TO 36 INCH PIPE SHALL MEET AASHTO M294 TYPE S; 42 INCH TO 48 INCH SHALL MEET AASHTO MP6-95, TYPE S; AND 54 INCH TO 60 INCH SHALL MEET AASHTO M294, TYPE S. JOINTS SHALL BE BELL AND SPIGOT COUPLINGS, OR EQUIVALENT, AND CONFORM TO ASTM D3212. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 WITH EXCEPTION THAT MINIMUM COVER IN TRAFFIC AREAS SHALL BE 18 INCHES.
11. ABS SCHEDULE 40 SOLID WALL PLASTIC PIPE AND FITTINGS MEETING REQUIREMENTS OF ASTM D 2661 JOINED WITH PIPE CEMENT MEETING REQUIREMENTS OF ASTM 2235.
12. DUCTILE IRON PIPE: AWWA C-151, CLASS 52, WITH GASKETED BELL & SPIGOT JOINTS, SEAL COATED PER AWWA C-104.
13. GALVANIZED STEEL PIPE SHALL BE OF SCHEDULE 40 CONFORMING TO ASTM A120 AND AWWA C800 ZINC-COATED INSIDE AND OUTSIDE BY THE HOT-DIP PROCESS CONFORMING TO ASTM B6 AND ASTM A120.
14. REINFORCED CONCRETE STORM DRAIN PIPE AND FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C76, CLASS IV. PROVIDE WATER TIGHT JOINTS USING RUBBER RING GASKETS.
15. BURIED EXTERIOR PERFORATED FOUNDATION DRAIN PIPE WITH CONTINUOUS FILTER FABRIC SOCK SHALL BE "ADS DRAINGUARD" OR PVC SCHED 40 PERFORATED PIPE WITH SOLVENT WELD JOINTS. INSTALL DRAIN PIPE AT 0.5% SLOPE UP FROM BOTTOM OF FOOTING IN EACH DIRECTION AROUND THE BLDG FROM THE BACKWATER VALVE(S) CONNECTION LOCATION(S) TO THE SITE STORM DRAINAGE SYSTEM. PROVIDE FILTER FABRIC WRAP AROUND A 24 INCH WIDE X 24 INCH HIGH (MIN.) CLEAN DRAIN ROCK BACKFILL SECTION AT PERIMETER OF BUILDING FOUNDATION. LAP FILTER FABRIC 12 INCHES OVER TOP OF DRAIN ROCK SECTION. TOP OF DRAIN ROCK TO BE 9 INCHES BELOW FINISH GRADE BESIDE BUILDING. SEE DWGS FOR TYPICAL FNDN DRAIN INSTALLATION DETAIL.
16. ABS OR PVC FOUNDATION DRAIN BACKWATER VALVES SHALL BE HORIZONTAL TYPE SIMILAR TO ASME A112.14.1, WITH REMOVABLE COVER AND SWING CHECK VALVE WITH GASKET. SEE DWGS FOR INSTALLATION DETAIL.
17. PERFORATED DRAIN PIPE LOCATED UNDER BUILDING SLAB SHALL BE PVC, SCHED 40 PERFORATED DRAIN PIPE PER ASTM D2729 WITH SOLVENT WELD JOINTS AND CONTINUOUS FILTER FABRIC SOCK COVER.
18. GEOCOMPOSITE DRAINAGE FABRIC SHALL BE "AQUADRAIN 15X, "MIRADRAIN 6200XL", OR ENGINEER PRE-APPROVED EQUAL.
19. AREA DRAINS IN LANDSCAPE AREAS SHALL BE 15"X15" TURF & LANDSCAPE AREA DRAINS MANUFACTURED BY THE 'LYNCH CO." WITH 4 INCH DIAMETER TRAPPED NO-HUB CONNECTION OUTLETS, EXTENSIONS AND GRATES WITH BARS AT 1 -1/4 INCH ON CENTER FOR COMPLETE ASSEMBLY.
20. EXTERIOR AREA DRAINS IN CONCRETE PAVEMENT AREAS SHALL BE "SMITH" FLOOR DRAINS WITH 12 INCH DIAMETER TOPS, DEEP BODY SEDIMENT BUCKETS, 4 INCH DIAMETER TRAPPED NO-HUB CONNECTION OUTLETS, EXTENSIONS AND GRATES FOR COMPLETE ASSEMBLY.
21. EXTERIOR CLEANOUTS IN WALKWAYS SHALL BE J.R. SMITH 4023-U WITH HEAVY DUTY NICKEL BRONZE TOP, TAPER HEAD, ABS PLUG AND TOP SECURED WITH VANDAL PROOF SCREWS, FLUSH AT FINISH GRADE.
22. ALL SEWER LINES SHALL BE LAID IN A STRAIGHT ALIGNMENT AND IN A UNIFORM GRADE BETWEEN MANHOLES, CLEANOUTS OR OTHER STRUCTURES.
23. DUCTILE IRON WATER PIPE SHALL BE AWWA C-151, CLASS 52 WITH CEMENT MORTAR LINING AND SEAL COATED PER AWWA C-104. FITTINGS SHALL BE PER AWWA C-110 AND GASKETS PER AWWA C-111; JOINT RESTRAINING DEVICES PER EBAA IRON, INC.
24. PVC WATER PIPE (4" TO 12" DIAMETER) SHALL BE AWWA C900, CLASS 150. ELASTOMERIC JOINTS SHALL BE PER ASTM D3139, RUBBER GASKETS PER ASTM F477 AND ASTM D1869. INSTALLATION SHALL BE PER AWWA C605 AND PIPE MANUFACTURER'S PRINTED RECOMMENDATIONS AND INSTRUCTIONS. JOINT RESTRAINING DEVICES PER EBAA IRON, INC.
25. PVC WATER PIPE (3/4" TO 2-1/2" DIAMETER) SHALL CONFORM WITH ASTM D2241, 160 PSI PIPE. JOINTS SHALL BE SOLVENT CEMENT WELDED CONFORMING WITH ASTM D2672 OR ASTM 03036. SOLVENT CEMENT SHALL CONFORM TO ASTM D 2564.
26. COPPER WATER PIPE (3/4 INCH TO 2-1/2 INCH DIAMETER) SHALL BE TYPE 'K' HARD TEMPERED COPPER PER ANSI H23.1 WITH WROUGHT COPPER SOLDER JOINT FITTINGS PER ANSI B16.22.
27. INSTALL ALL PLASTIC PIPE AND FITTINGS IN ACCORDANCE WITH ASTM D2321.
28. PROVIDE A DOUBLE CHECK VALVE ASSEMBLY IN AN ACCESSIBLE ROOM, CONCRETE BOX OR VAULT WITH OPENABLE LID(S) FOR ALL WATER SERVICE LINES 1 INCH AND LARGER. PROVIDE DETECTOR CHECK PLUMBING AND METER AT DOUBLE CHECK ASSEMBLIES FOR FIRE SERVICE LINES.
29. PROVIDE A PRESSURE REDUCING VALVE ASSEMBLY (INCLUDING GATE VALVES IMMEDIATELY UP AND DOWNSTREAM) IN AN ACCESSIBLE ROOM, CONCRETE BOX OR VAULT WITH OPENABLE LID(S) FOR ALL WATER SERVICE LINES WHERE MAXIMUM STATIC PRESSURE IS OR EXCEEDS EIGHTY (80) PSI. VALVES SHALL BE SET TO SUSTAIN A MAXIMUM PRESSURE OF 60 PSI AND SHALL BE OF A PRESSURE RATING TO ACCOMMODATE THE UPSTREAM PRESSURE INCLUDING AN ALLOWANCE OF 100 PSI FOR SURGE. VALVE SHALL BE CLAYTON 90-01 SERIES AS MANUFACTURED BY CAL-VAL CO., NEWPORT BEACH, CA OR WATER DISTRICT PRE-APPROVED.
30. ALL ELBOWS, BENDS, TEES, CROSSES AND DEAD ENDS ON WATER PIPES 3 INCHES AND LARGER IN SIZE SHALL BE PROVIDED WITH CONCRETE THRUST BLOCKS.
31. A MINIMUM DEPTH OF 30 INCHES IN PRIVATE LANDSCAPE AREAS AND 36 INCHES IN PRIVATE STREETS FROM FINISHED GRADE TO THE TOP OF WATER PIPE IS REQUIRED.
32. BLOW-OFF ASSEMBLIES ARE REQUIRED AT ALL DEAD-END PRIVATE WATER LINES.
33. ALL PRIVATE WATER LINES SHALL BE FLUSHED, PRESSURE TESTED AND DISINFECTED PER AWWA C600, SECTION 4 AND AWWA C601.
34. ALL WATER LINE CROSSINGS WITH SANITARY SEWER SHALL COMPLY WITH APPLICABLE DEQ AND OREGON STATE HEALTH DIVISION RULES AND REGULATIONS RELATING TO VERTICAL AND HORIZONTAL SEPARATION.
35. ALL NEW AND EXISTING MANHOLE RIMS, CATCH BASIN RIMS, CLEAN-OUTS AND OTHER INCIDENTAL STRUCTURES SHALL BE LOCATED AND ADJUSTED TO FINISH GRADE OR AS OTHERWISE INDICATED ON THE DRAWINGS.
36. PRECAST CONCRETE UTILITY VAULTS:
    A. REINFORCED PRECAST CONCRETE UTILITY VAULTS SHALL BE APPROVED BY THE OREGON STATE PLUMBING BOARD. PROVIDE COMPLETE ASSEMBLIES FOR INSTALLATION INCLUDING INLET AND OUTLET PIPING.
    B. GRADE RINGS: PROVIDE MANUFACTURER'S STANDARD PRECAST CONCRETE GRADE RINGS FOR ADJUSTING VAULT LIDS TO FINISH GRADE.
    C. MINIMUM STRUCTURAL REQUIREMENTS:
        I. CONCRETE: 28 DAY COMPRESSIVE STRENGTH FC = 4500 PSI
        II. REBAR: ASTM A-615 GRADE 60.
        III. MESH: ASTM A185 GRADE 65.
        IV. STEEL: ASTM A36 GRADE 36.
        V. GALVANIZING: ASTM A-123-89 AND A-153-87 (HOT DIPPED).
        VI. STEEL DESIGN: AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION.
        VII. CONCRETE DESIGN: ACI-318-89 BUILDING CODE.
            - ASTM C-857 MINIMUM STRUCTURAL DESIGN.
            - LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.
        VIII. LOADS: AASHTO H-20 16 KIP WHEEL LOAD WITH 30% IMPACT (10"X20" FOOTPRINT)
            - AASHTO LIVE LOAD SURCHARGE (2' SOIL) 8' DEPTH
            - EFFECTIVE SOIL PRESSURE ABOVE WATER TABLE - 80 P.C.F.
            - EFFECTIVE SOIL PRESSURE ABOVE WATER TABLE - 45 P.C.F.
        IX. SOIL COVER: 1'-6" MINIMUM WITH WATER TABLE 3'-0" BELOW FINISHED GRADE.
            - 5'0" MAXIMUM WITH WATER TABLE 3'-0" BELOW FINISHED GRADE
            - 0' MINIMUM WITH WATER TABLE BELOW BOTTOM OF VAULT.
            - 5'-0" MAXIMUM WITH WATER TABLE BELOW BOTTOM OF VAULT.
    D. ACCEPTABLE MANUFACTURERS:
        I. UTILITY VAULT COMPANY, WILSONVILLE, OREGON
        II. ENGINEER PRE-APPROVED EQUAL MEETING SAME OR BETTER REQUIREMENTS.

12.0 CONSTRUCTION OBSERVATION, INSPECTION AND TESTING

12.1 GENERAL

1. INDEPENDENT TESTING LAB TO BE RETAINED BY OWNER TO PROVIDE INSPECTIONS AND SPECIAL INSPECTIONS AS DESCRIBED HEREIN.
2. CONTRACTOR IS RESPONSIBLE TO COORDINATE AND PROVIDE ON SITE ACCESS TO ALL REQUIRED INSPECTIONS AND NOTIFY GEOTECHNICAL ENGINEER AND TESTING LABS IN TIME TO MAKE SUCH INSPECTIONS AND ALL NECESSARY REINSPECTIONS.
3. CONTRACTOR: DO NOT COVER WORK REQUIRED TO BE INSPECTED OR REINSPECTED PRIOR TO INSPECTION BEING MADE. IF WORK IS COVERED, UNCOVER AS NECESSARY.
4. INSPECTORS SHALL PROMPTLY NOTIFY THE CONTRACTOR PRIOR TO LEAVING THE SITE AND OWNER'S REPRESENTATIVE OF SUBSTANDARD WORK AND PROVIDE A COPY OF ALL REPORTS TO THE OWNER, ARCHITECT, ENGINEER, CONTRACTOR, AND BUILDING OFFICIAL.
5. CONTRACTOR TO NOTIFY CIVIL ENGINEER WHEN UTILITY WORK BEGINS AND FOR OBSERVATION OF BASE ROCK PRIOR TO PLACING FINISH CURBS OR PAVEMENTS.

12.2 SPECIAL INSPECTIONS

1. REQUIRED SPECIAL INSPECTIONS SHALL BE PERFORMED BY AN INDEPENDENT SPECIAL INSPECTOR PER SECTION 1701 OF THE INTERNATIONAL BUILDING CODE (IBC) FOR THE FOLLOWING:
    A. SOILS:
        I. FOUNDATION EXCAVATION TO BE OBSERVED BY OWNER'S GEOTECHNICAL ENGINEER FOR FIELD VERIFYING FOUNDATION DRAINAGE AND DEWATERING RECOMMENDATIONS.
        II. NATIVE SUBGRADE SURFACE TO BE PROOF-ROLLED AND OBSERVED BY THE OWNER'S GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE PRIOR TO PLACEMENT OF ALL FILL OR BASE ROCK MATERIALS UNDER OR WITHIN 5 FEET OF ALL PAVEMENT AND BUILDING AREAS. DURING WET WEATHER CONSTRUCTION WHEN PROOF-ROLL OF NATIVE SUBGRADE MAY NOT BE APPROPRIATE (AS DETERMINED BY GEOTECHNICAL ENGINEER), PROVIDE PROOF-ROLL OF ALL BASE ROCK SURFACES PRIOR TO PLACEMENT OF ANY FINISH PAVEMENTS.
        III. DURING THE PLACEMENT OF ALL FILL, INCLUDING TRENCH BACKFILL AND BASE BELOW PAVEMENTS AND BUILDINGS, GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE TO VERIFY THAT MINIMUM COMPACTION REQUIREMENTS ARE MET. PROVIDE TEST FOR EACH 40 CUBIC YARDS PLACED.
        IV. GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE TO OBSERVE ALL PROOF ROLLS.

CONTACT: **GEOPACIFIC ENGINEERING, INC.**
14835 SW 72ND AVE
PORTLAND, OREGON 97224
(503) 598-8445

    B. PAVEMENTS:
        I. VERIFY COMPACTION OF ASPHALT PAVEMENTS.
        II. VERIFY ULTIMATE STRENGTH, REINFORCEMENT SIZE, PLACEMENT AND GRADE OF CONCRETE PAVEMENTS.
    C. STORM DRAIN AND SANITARY PIPE:
        I. CONTRACTOR TO PROVIDE HYDROSTATIC OR AIR TESTING OF ALL PIPES, JOINTS, MANHOLES, ETC. AS REQUIRED BY LOCAL AND STATE JURISDICTIONS.
        II. OBSERVE DEFLECTION TEST PERFORMED BY CONTRACTOR FOR ALL FLEXIBLE STORM AND SANITARY PIPE. DEFLECTION TEST TO BE IN ACCORDANCE WITH OREGON CHAPTER APWA 303.9.
    D. STORM PLANTERS:
        I. VERIFICATION OF ROCK LAYER DEPTH AND PERF-PIPE INSTALLATION.
        II. VERIFICATION OF SOIL MEDIA SUPPLIER AND TRANSMISIVITY OF THE SOIL GROWING MEDIA AND THE INSTALLAITON DEPTH OF THE MEDIA.
        III. VERIFICATION OF THE BASIN LINER INSTALLATION FOR THE STORM FLOW-THRU BASIN.
        IV. VERIFICATION OF THE STORAGE DEPTH RELATIVE TO THE OVERFLOW.

CIVIL DRAWINGS

Sheet No.	TITLE
C1.0	CIVIL NOTES
C2.0	DIMENSIONED SITE PLAN
C2.1	ESC PLAN
C2.2	UTILITY PLAN
C2.3	GRADING PLAN
C3.0	CIVIL DETAILS
C3.1	CIVIL DETAILS
C3.2	CIVIL DETAILS

PRELIMINARY
NOT FOR
CONSTRUCTION
11/28/18

REGISTERED PROFESSIONAL ENGINEER
80058PE
OREGON
JUNE 7, 2002
CHRIS J. DESLAURIERS

RENEWS: 12-31-2019

WDY
Structural · Civil Engineers
6443 SW Beaverton-Hillsdale Hwy, suite 210 Portland, OR 97221
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8TH COURT COMMERCIAL

2180 8TH COURT
WEST LINN, OR 97068

CIVIL NOTES

REVISIONS

REV1 2018-11-28

DATE: 09-13-2018
DRAWN: RMK
JOB NUMBER: 18116
CHECKED: CJD

SHEET

C1.0

1 OF 8

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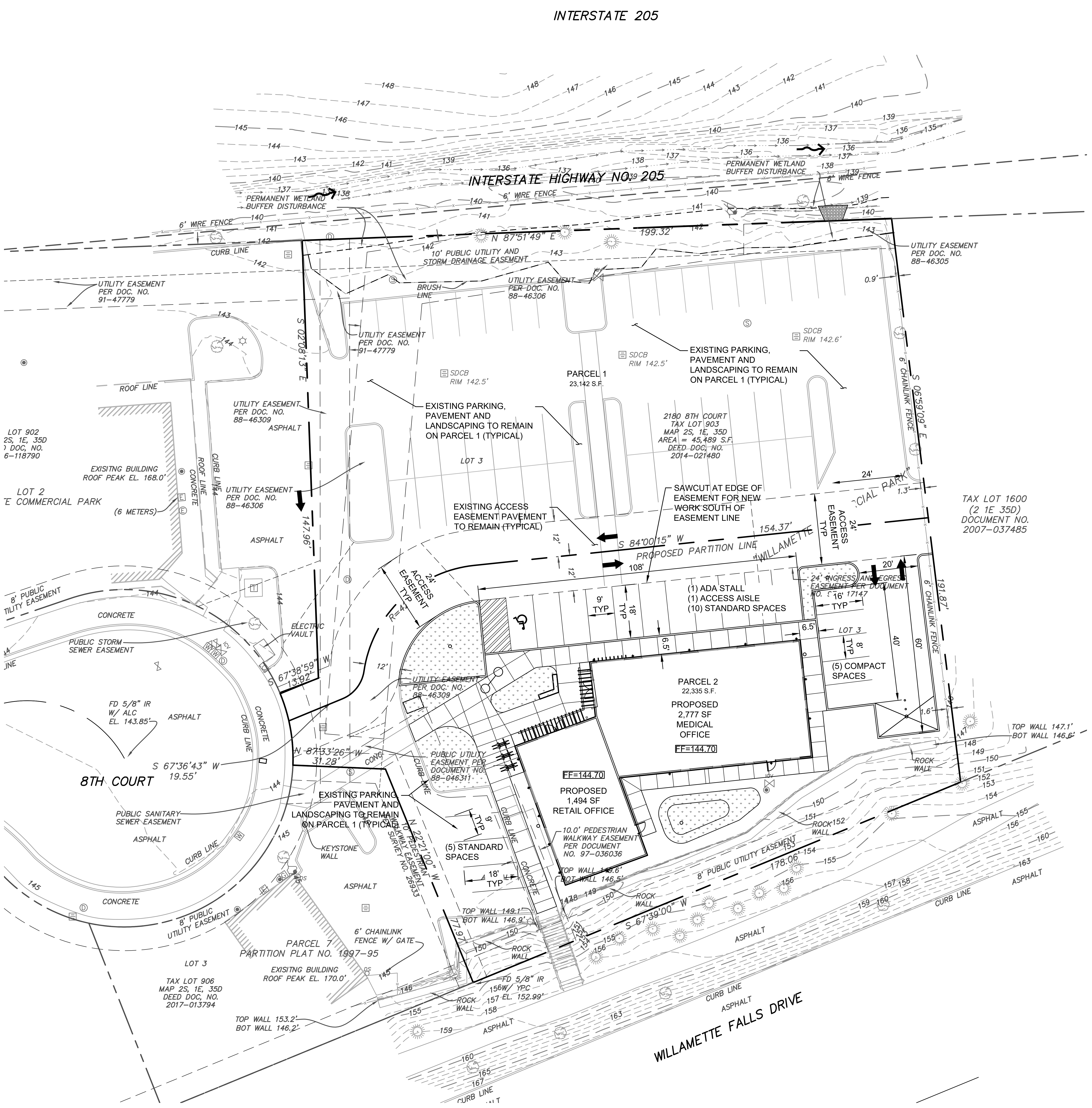

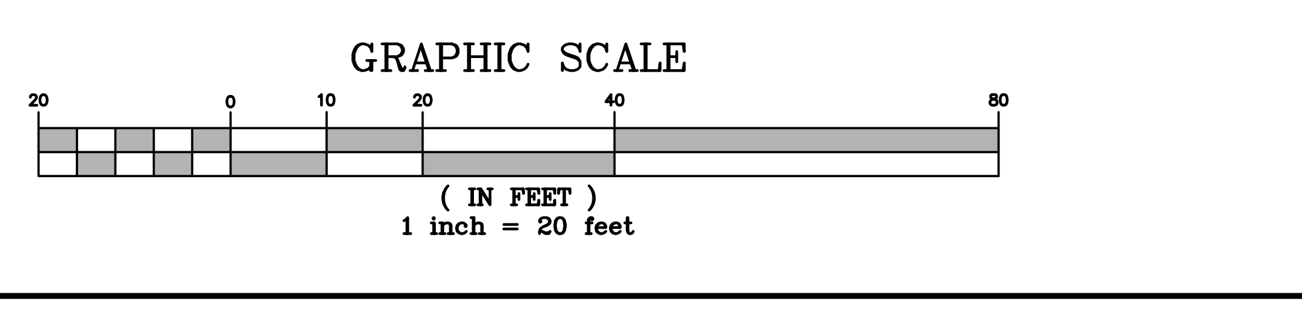

1
C2.0

DIMENSIONED SITE PLAN

SCALE: 1" = 20'

PRELIMINARY
NOT FOR
CONSTRUCTION
11/28/18

CHRIS J. DESLAURIERS

RENEWS: 12-31-2019

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DIMENSIONED SITE PLAN

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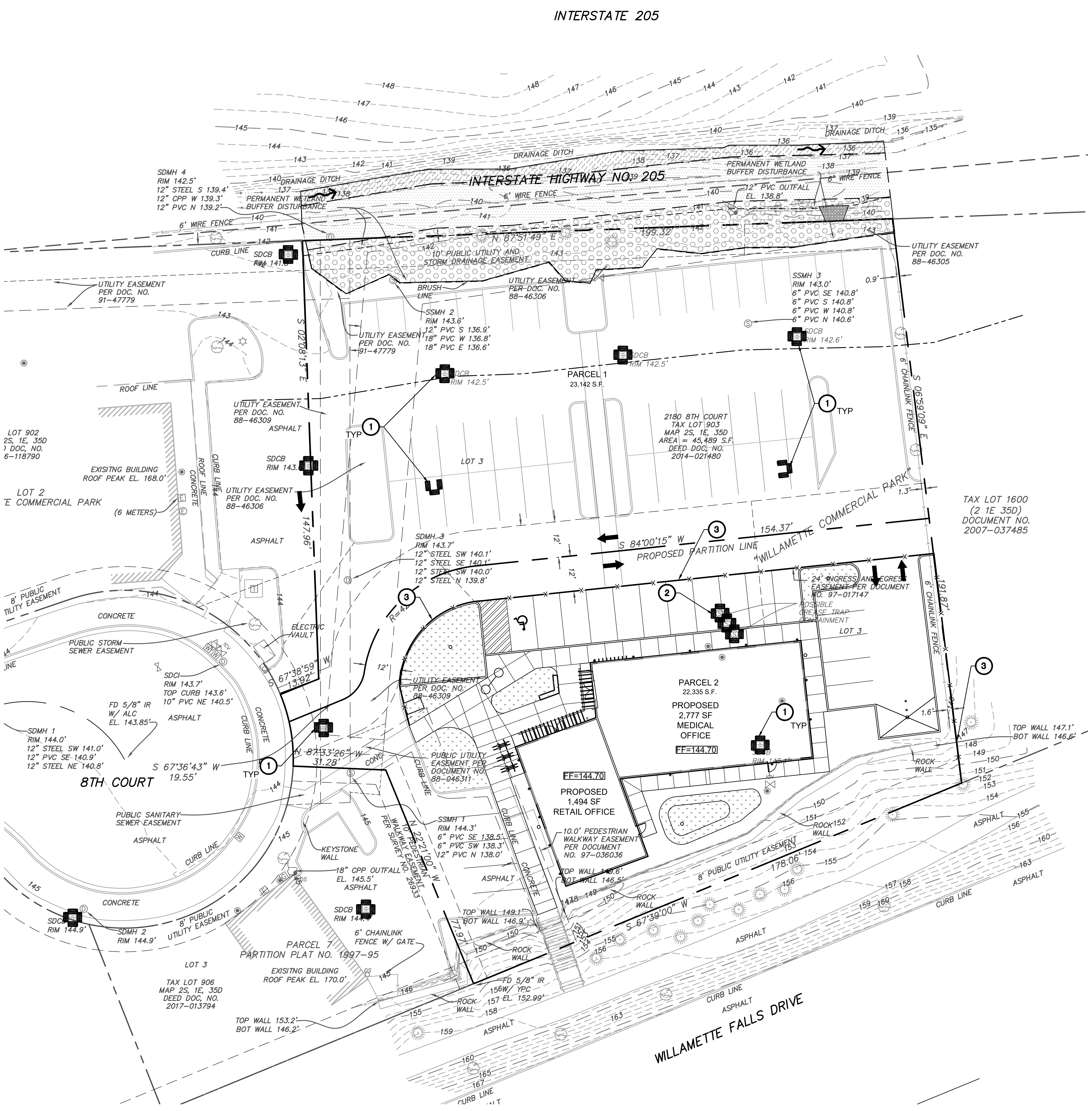


1 ESC PLAN
C2.1

SCALE: 1" = 20'

KEYNOTES FOR THIS SHEET

MARK - DESCRIPTION

① NEW BIOBAGS AND SILT SACKS IN NEW AND EXISTING CATCH BASINS, TYP.

② NEW BIOBAGS IN POSSIBLE GREASE TRAPS.

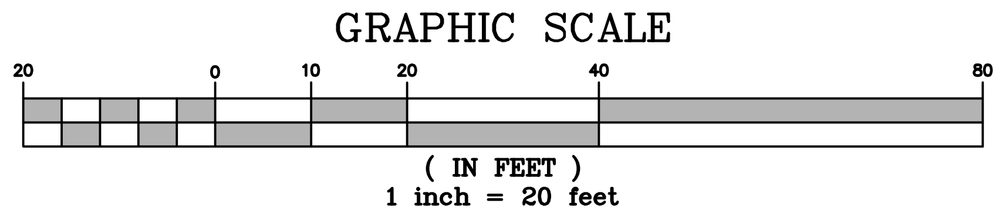
③ NEW SEDIMENT FENCE.

GENERAL NOTE:

THIS ESC PLAN IS SHOWN FOR CLARITY. A 1200-C APPLICATION AND DRAWINGS WILL BE SUBMITTED PER DEQ REQUIREMENTS.

LEGEND

— - - —	STUDY AREA BOUNDARY
▨	WATERS OF THE STATE/US
⤳	DIRECTION OF CREEK FLOW
⬚	PROPOSED WATER RESOURCE AREA - 15 ' WIDE (3,000 SF)
— - - —	REQUIRED WATER RESOURCE AREA (65')
▨	PROPOSED PERMANENT DISTURBANCE AREA (2,710 SF)



PRELIMINARY NOT FOR CONSTRUCTION

80058PE
CHRIS J. DESLAURIERS
11/28/18

RENEWS: 12-31-2019

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ESC PLAN

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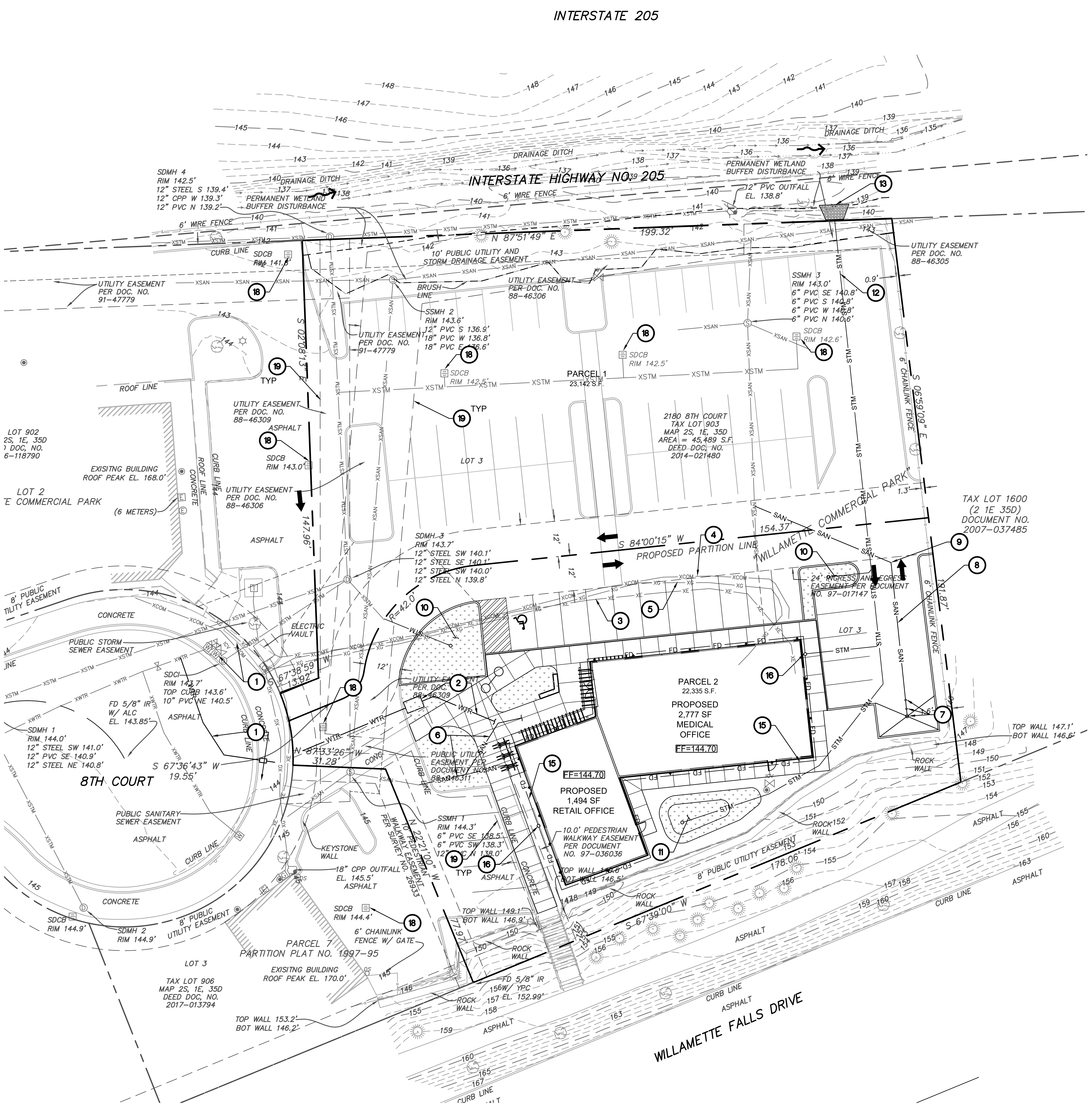
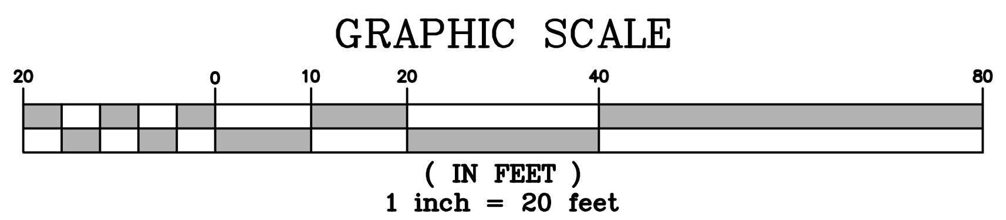


1 UTILITY PLAN
C2.2

SCALE: 1" = 20'

KEYNOTES FOR THIS SHEET	
MARK - DESCRIPTION	
①	NEW OR EXISTING DOMESTIC WATER METER AND LATERAL.
②	NEW DCVA AND DOMESTIC WATER LATERAL TO BUILDING.
③	NEW OR EXISTING ELECTRICAL SERVICE TO BUILDING.
④	NEW OR EXISTING DATA/COMM SERVICES TO BUILDING.
⑤	NEW OR EXISTING GAS SERVICE TO BUILDING.
⑥	EXTEND EXISTING 6" PVC ASTM C-3034 SDR-35 SANITARY SEWER LATERAL.
⑦	NEW SANITARY SEWER FLOOR DRAIN, CLEANOUT AND B.W.V. AT TRASH ENCLOSURE.
⑧	NEW 4" PVC ASTM C-3034 SDR-35 SANITARY SEWER PIPE AT 2.0% (MIN) SLOPE.
⑨	NEW STANDARD SANITARY SEWER CLEANOUT.
⑩	NEW VEGETATIVE STORM PLANTER FOR WATER QUALITY AND DETENTION.
⑪	NEW VEGETATIVE STORM PLANTER FOR WATER QUALITY AND DETENTION.
⑫	NEW 8" STORM AT 0.5% SLOPE
⑬	NEW RIP-RAP AT OUT FALL TO EXISTING DRAINAGE DITCH.
⑭	NEW STANDARD STORM CLEANOUT.
⑮	NEW FOUNDATION DRAIN.
⑯	NEW FOUNDATION DRAIN CLEANOUT WITH RECTOR-SEAL BACKWATER VALVE ASSEMBLY.
⑰	NEW STM DOWNSPOUT CONNECTIONS TO 30" DIA. HDPE DETENTION PIPE.
⑱	EXISTING CATCH BASIN TO REMAIN.
⑲	EXISTING UTILITY, DRAINAGE AND WALKWAY EASEMENTS TO REMAIN, TYP.



REGISTERED PROFESSIONAL ENGINEER
80058PE
OREGON
JUNE 7, 2002
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UTILITY PLAN

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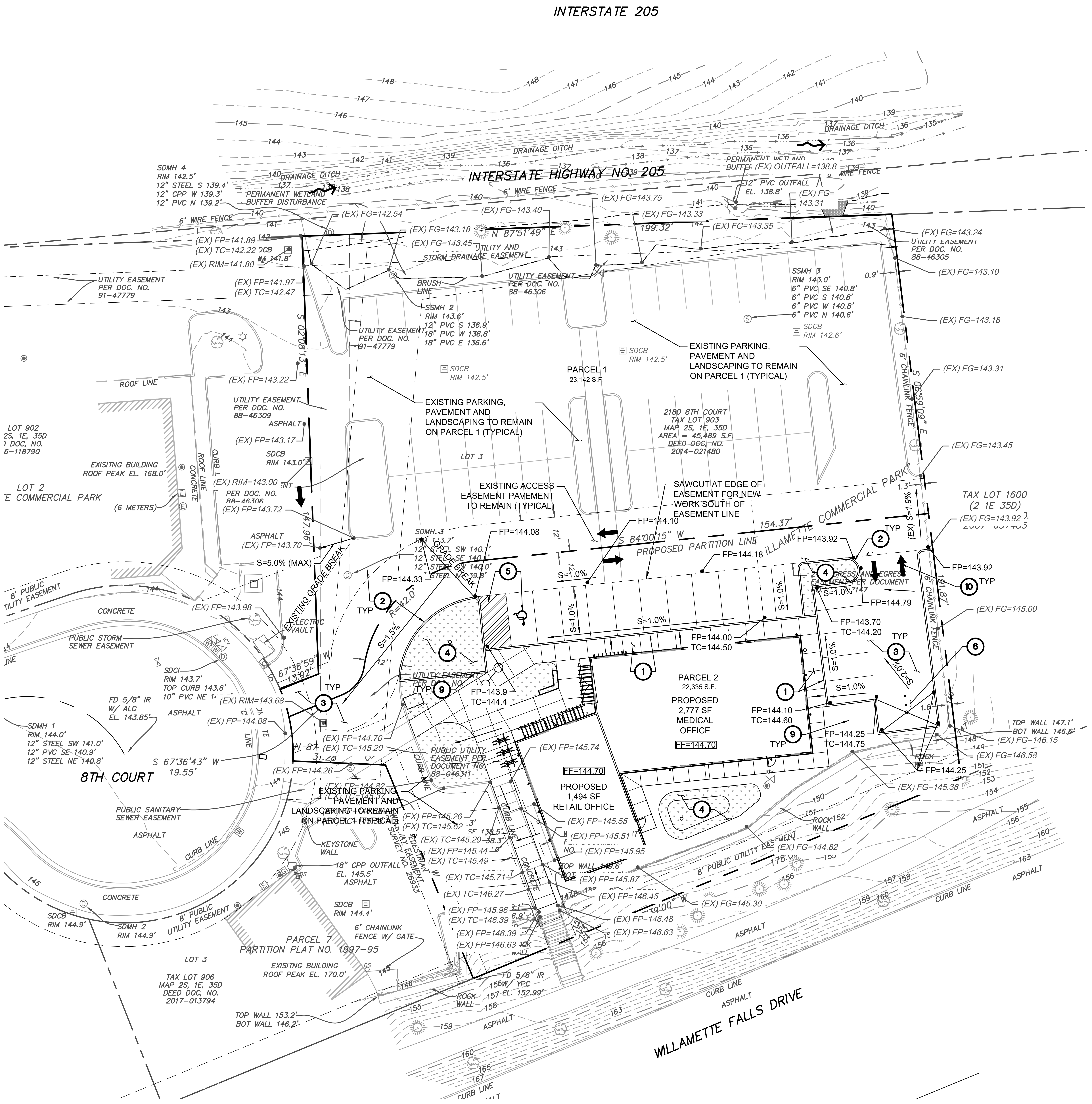

GRADING PLAN

1 / C2.3

SCALE: 1" = 20'

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

KEYNOTES FOR THIS SHEET
MARK - DESCRIPTION
① NEW CONCRETE SIDEWALK AND CURB.
② NEW 6" CONCRETE CURB, TYP.
③ NEW A.C. PAVEMENT, TYP.
④ NEW VEGETATIVE STORM PLANTER OR STORM BASIN.
⑤ NEW ADA PARKING.
⑥ NEW TRASH ENCLOSURE.
⑦ NEW STAIRS.
⑧ NEW LANDSCAPING, TYP.
⑨ NEW LIGHT, TYP.
⑩ NEW STRIPING, TYP.

PRELIMINARY NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
CHRIS J. DESLAURIERS
11/28/18

RENEWS: 12-31-2019

WDY Structural · Civil Engineers
6443 SW Beaverton-Hillsdale Hwy, suite 210 Portland, OR 97221
ph:503.203.8111 fx:503.203.8122 www.wdyi.com

8TH COURT COMMERCIAL

2180 8TH COURT
WEST LINN, OR 97068

GRADING PLAN

REVISIONS

REV1	2018-11-28		RMK
DATE:	09-13-2018	DRAWN:	
JOB NUMBER:	18116	CHECKED:	CJD

SHEET

C2.3

5 OF 8

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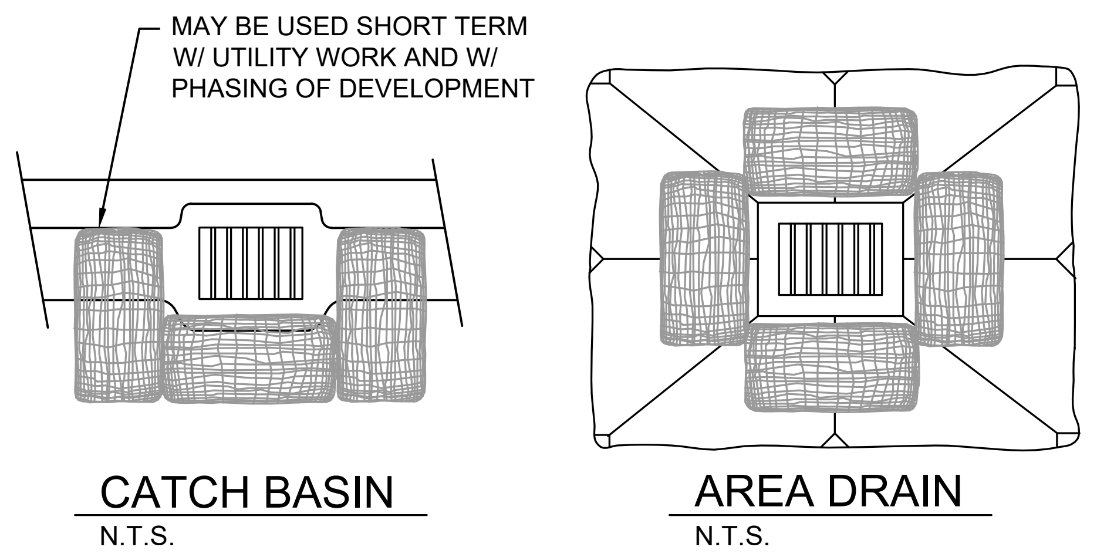
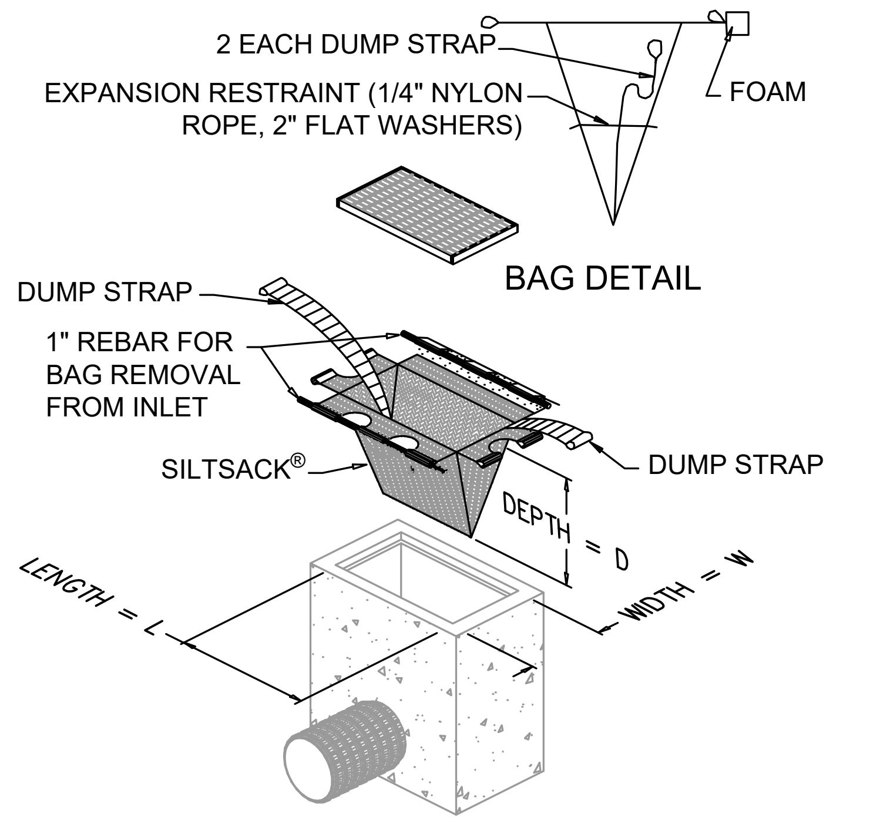
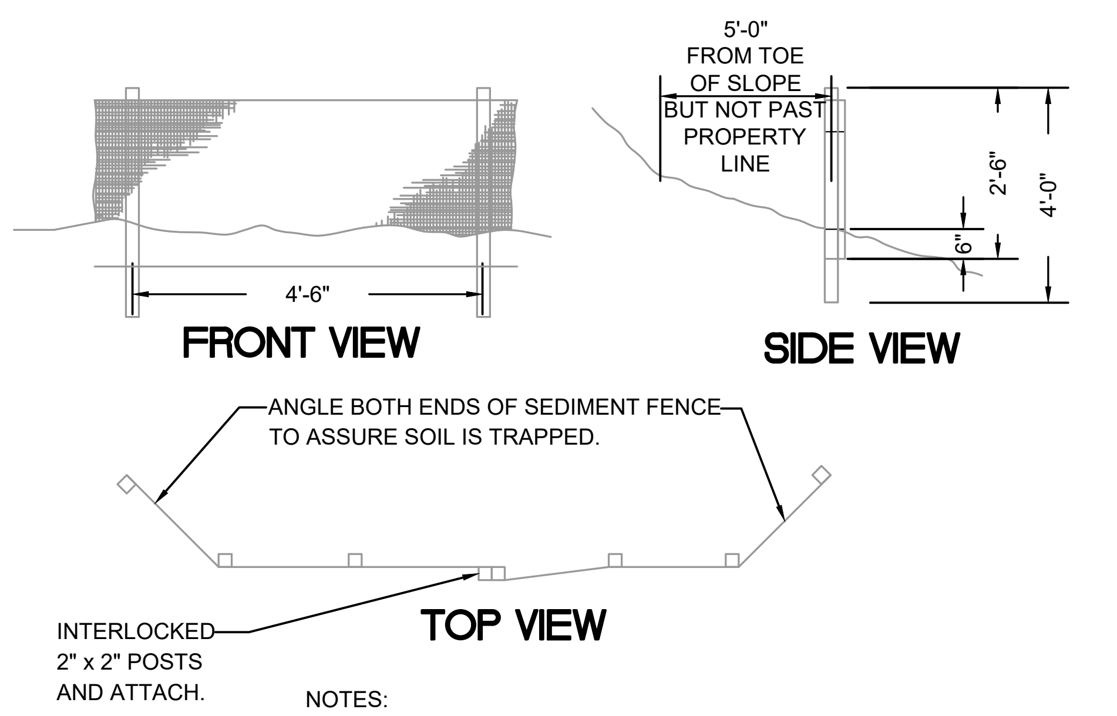


1 C3.0 BIOFILTER BAGS - TEMPORARY
N.T.S.



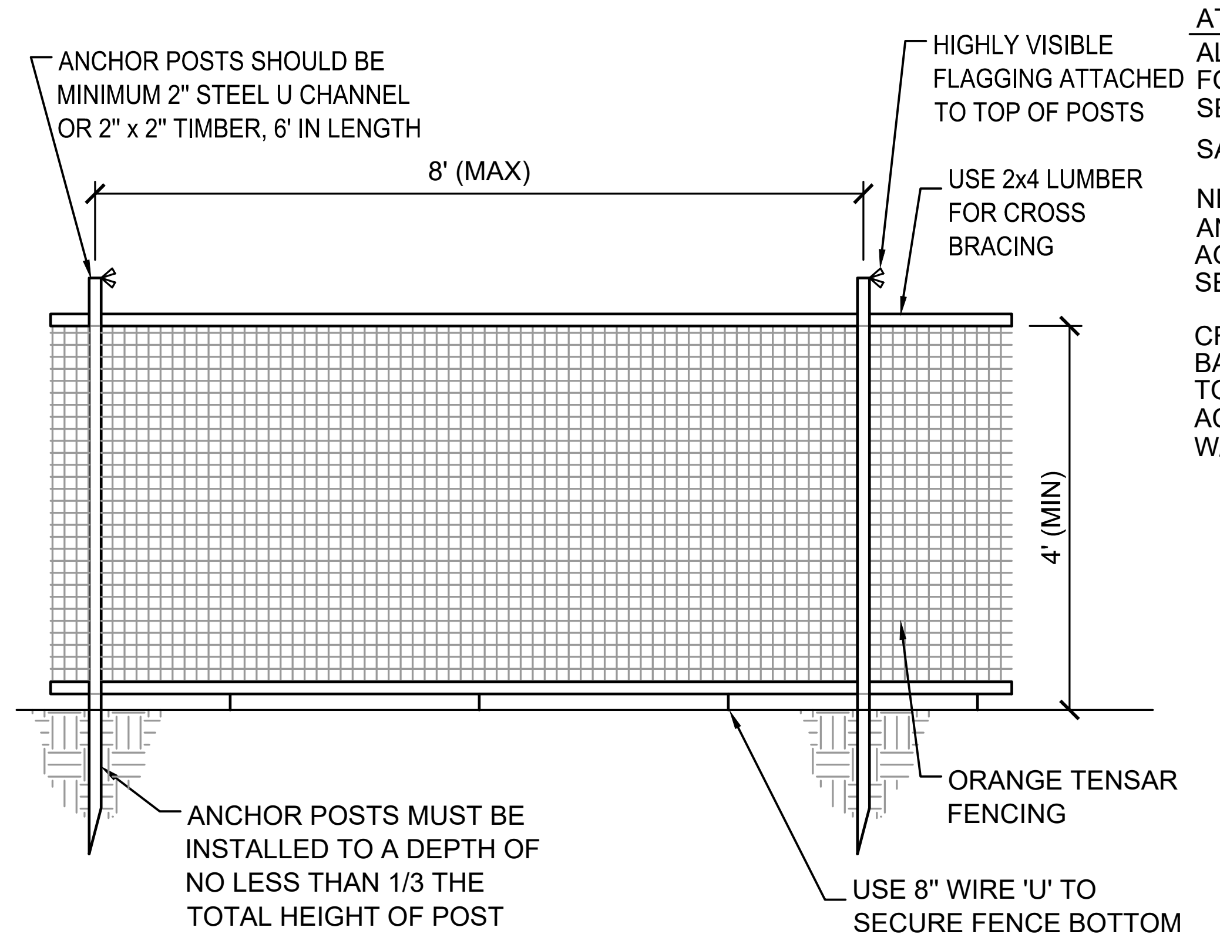
Regular Flow Only
Do not use High Flow Insert Bags.

2 C3.0 FILTER BAG INLET
N.T.S.

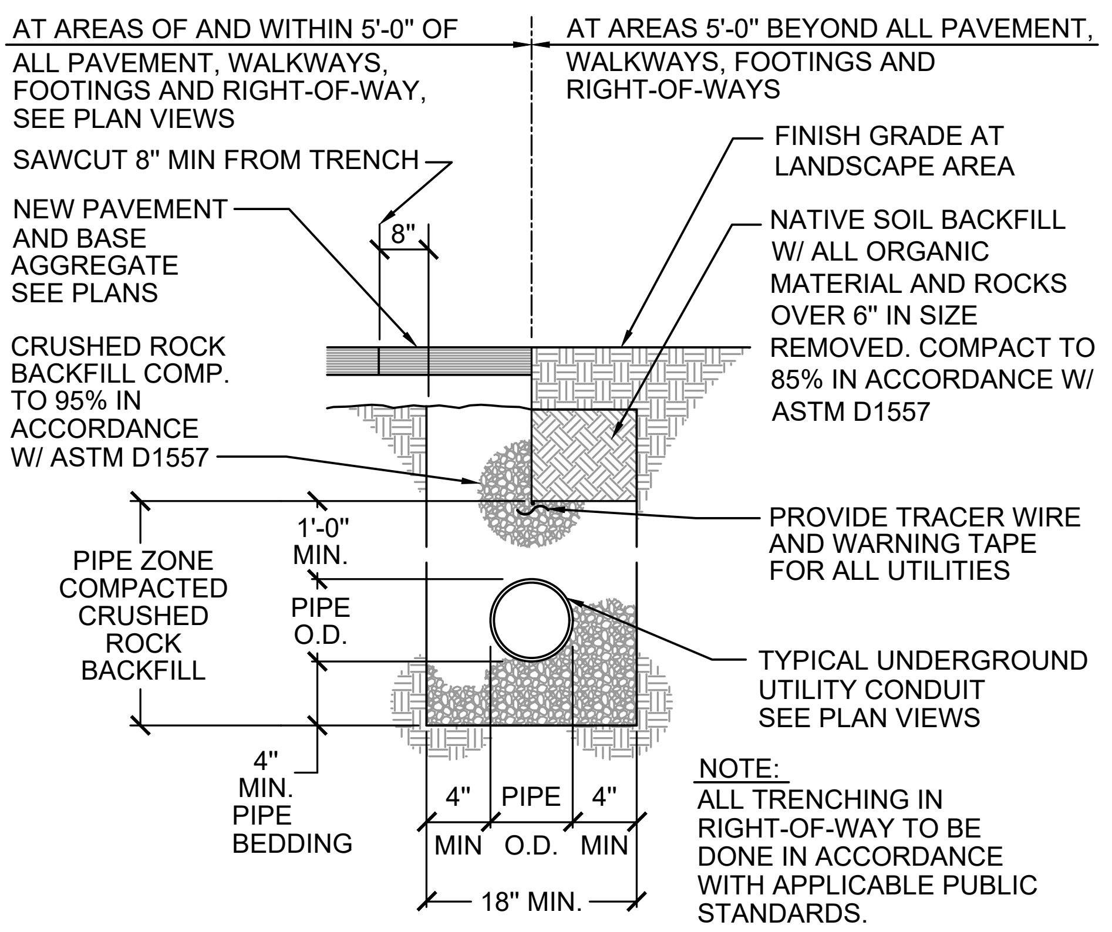


NOTES:
1. BURY BOTTOM OF FILTER FABRIC 6" MIN. VERTICALLY BELOW GRADE.
2. 2" x 2" FIR, PINE, OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED UPHILL SIDE OF SLOPE.
4. COMPACT NATIVE FILL IN ON BOTH SIDES OF FILTER FABRIC TRENCH.

3 C3.0 SEDIMENT FENCE
N.T.S.

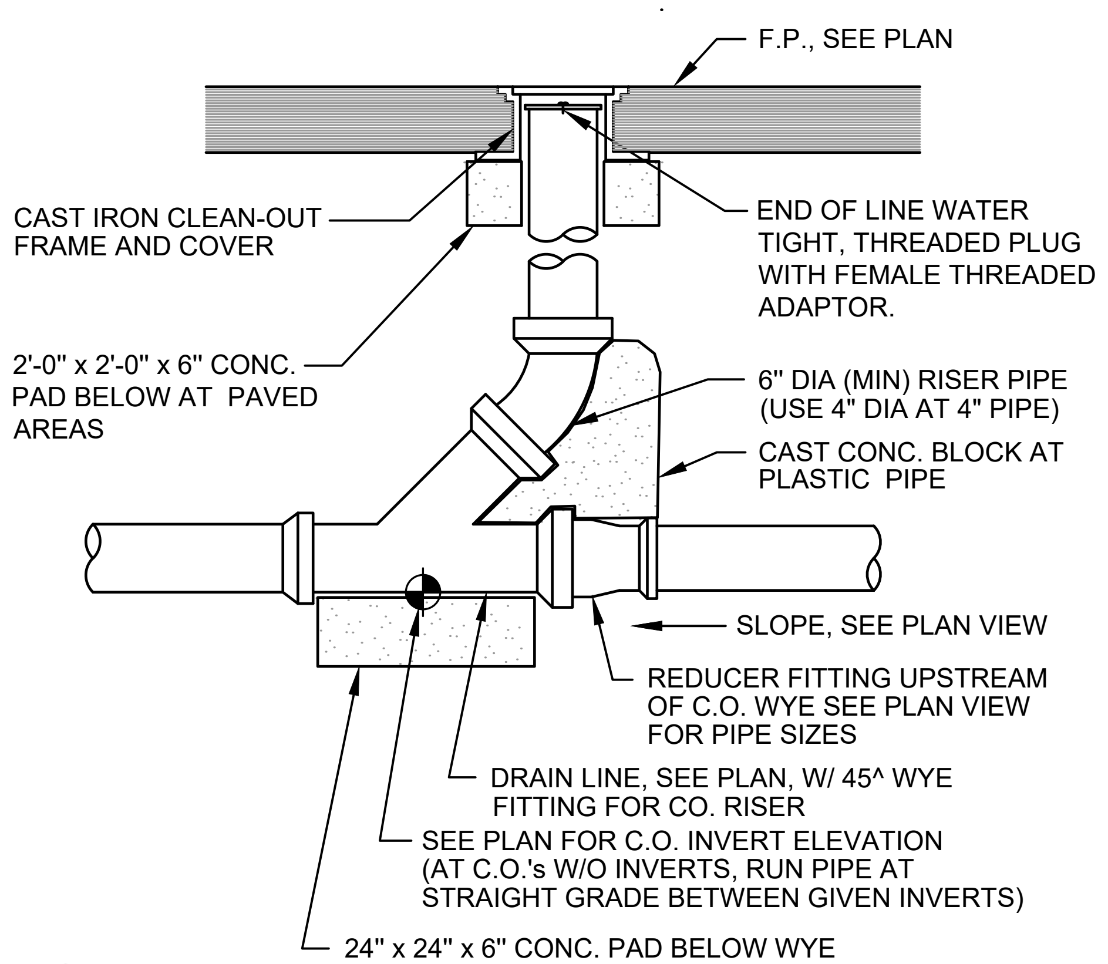


4 C3.0 TREE PROTECTION FENCE
N.T.S.

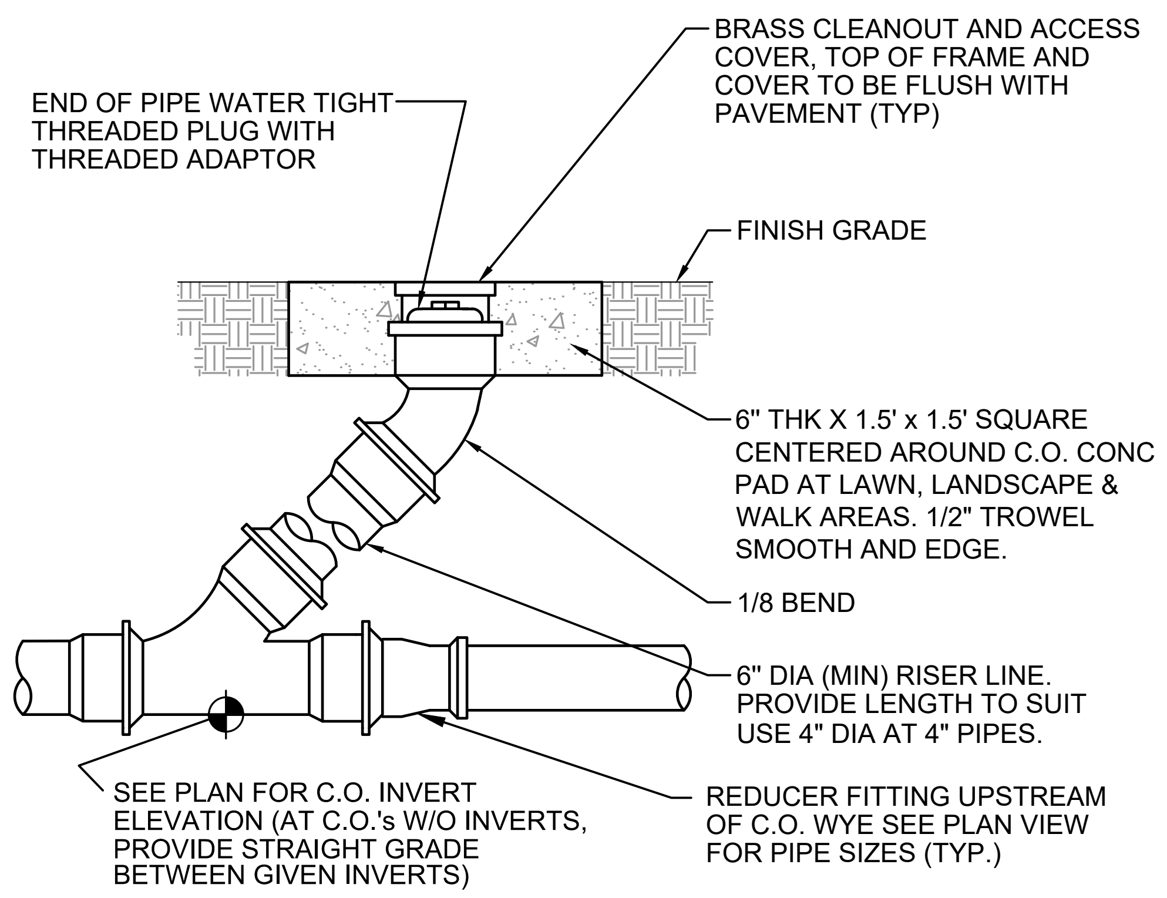


NOTE:
ALL TRENCHING IN RIGHT-OF-WAY TO BE DONE IN ACCORDANCE WITH APPLICABLE PUBLIC STANDARDS.

5 C3.0 TYPICAL UTILITY TRENCH SECTION
1" = 1'-0"

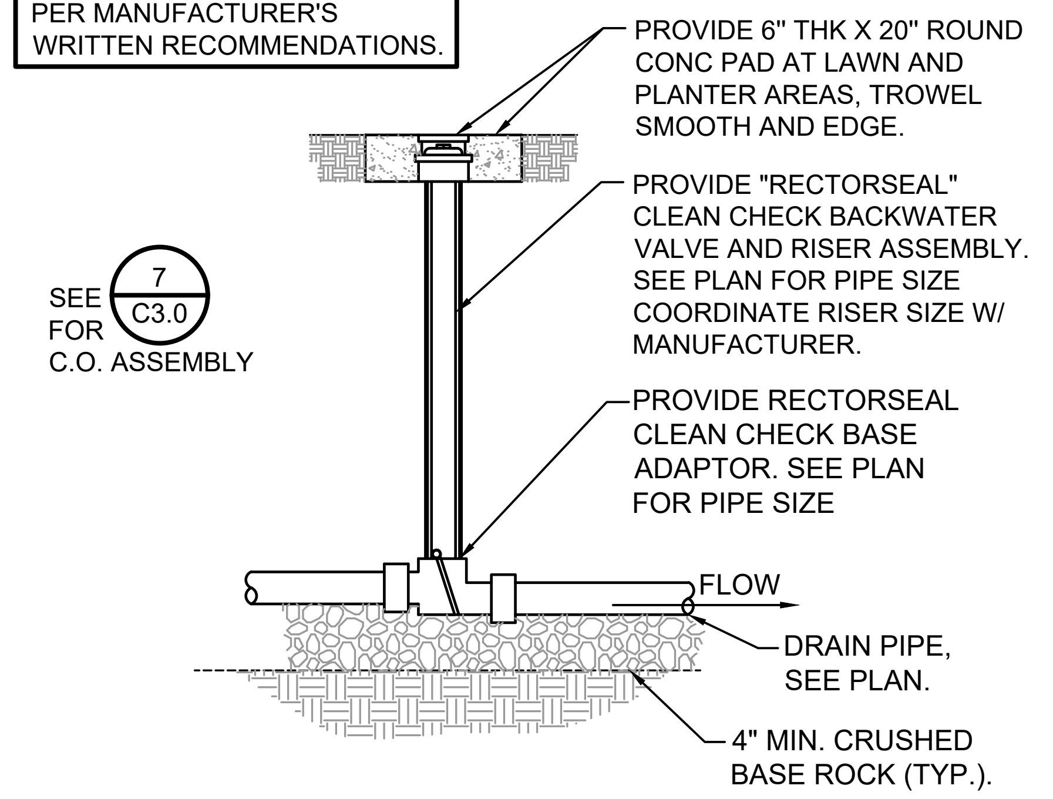


6 C3.0 TYP. CLEAN OUT AT VEHICLE PAVEMENT AREAS
N.T.S.

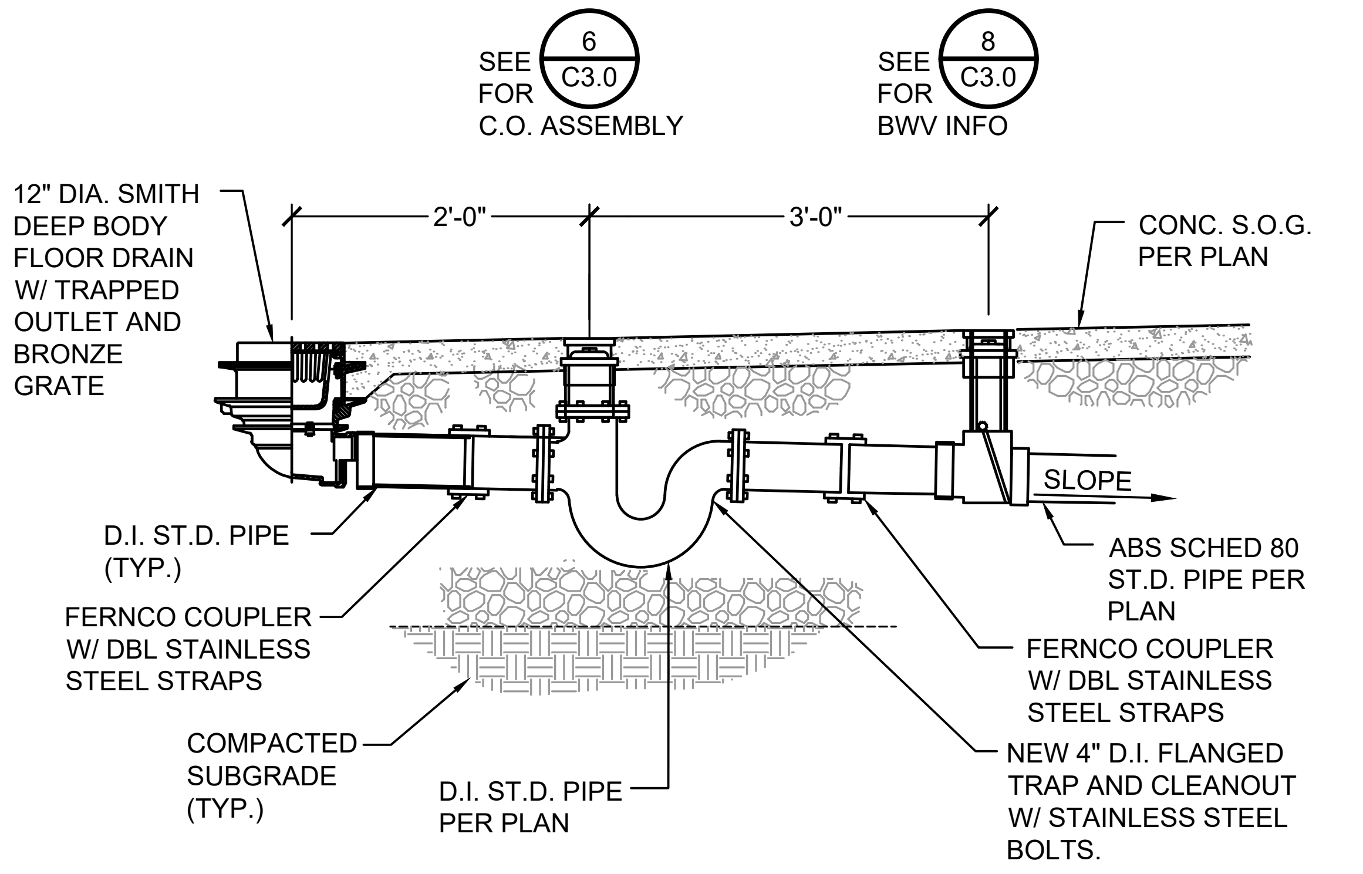


7 C3.0 CLEANOUT AT WALKS, SLABS AND PLANTERS
1" = 1'-0"

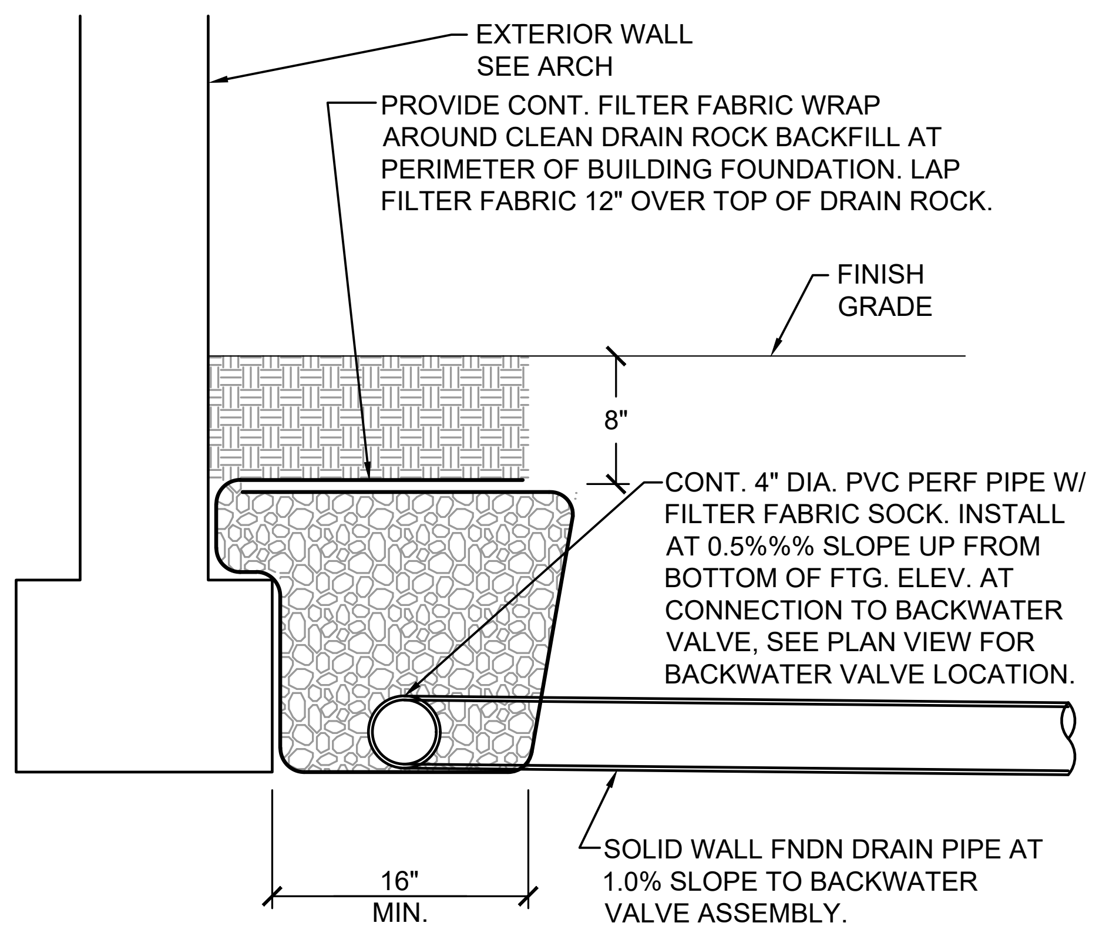
PROVIDE SUBMITTAL.
INSTALL VALVE ASSEMBLY
PER MANUFACTURER'S
WRITTEN RECOMMENDATIONS.



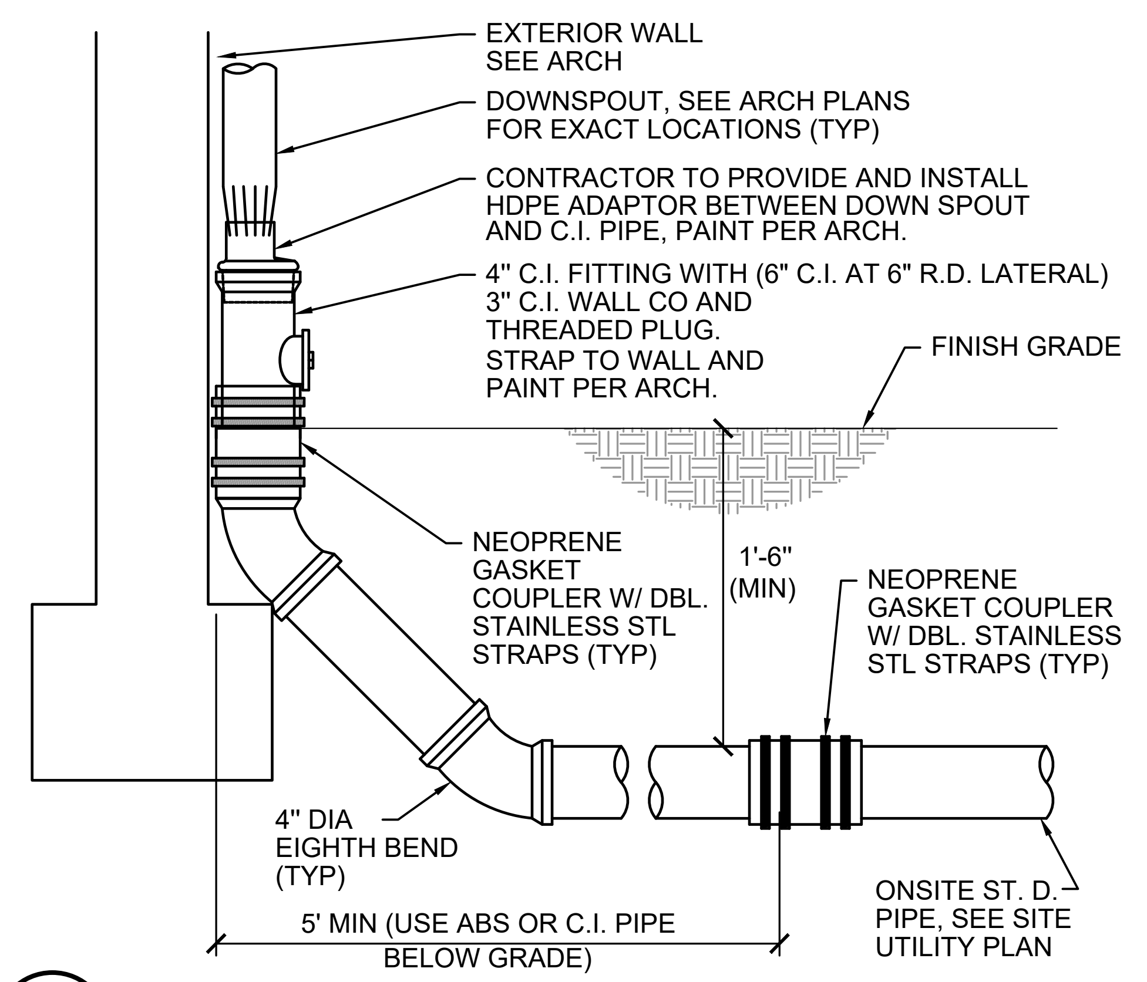
8 C3.0 RECTORSEAL "CLEAN CHECK" BACKWATER VALVE ASSEMBLY FOR FOUNDATION DRAIN (TYP)
1/2" = 1'-0"



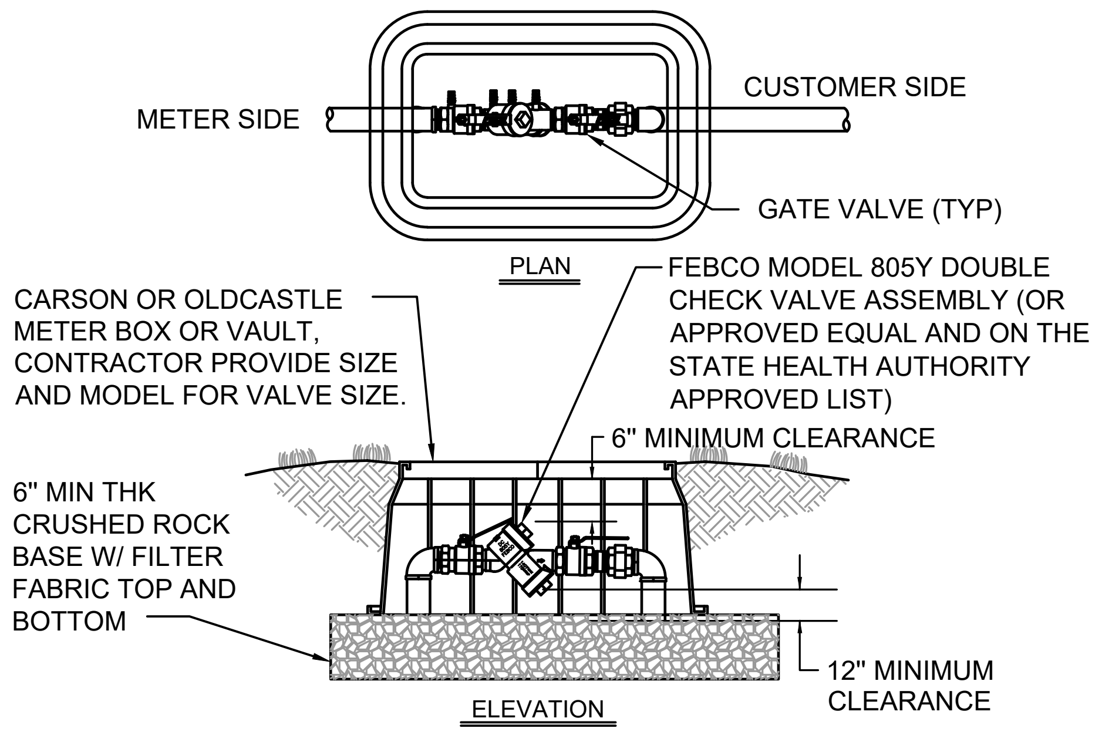
9 C3.0 BACKWATER VALVE AND S.S. TRAP ASSEMBLY
1/2" = 1'-0"



10 C3.0 TYPICAL EXTERIOR FOUNDATION DRAIN
1" = 1'-0"



11 C3.0 TYPICAL EXTERIOR DOWN SPOUT CONNECTION
N.T.S.



INSTALLATION SHOWN IS ONLY A SUGGESTION. THE DISTANCE FROM BOTTOM OF DEVICE TO FINISH GRADE, FREEZE PROTECTION AND CLEARANCE FOR TESTING AND REPAIR ARE THE MAJOR CONSIDERATIONS FOR INSTALLATION. VERIFY ALL INSTALLATION REQUIREMENTS W/ WATER DISTRICT JURISDICTION. BRASS PLUGS TO BE INSTALLED IN TEST COCKS OF BELOW GROUND INSTALLATIONS.

12 C3.0 1", 1 1/2" & 2" DOUBLE CHECK INSTALLATION
N.T.S.

PRELIMINARY
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11/28/18

80058PE
CHRIS J. DESLAURIERS
RENEWS: 12-31-2019

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8TH COURT COMMERCIAL
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CIVIL DETAILS

REVISIONS

REV1	2018-11-28
DATE: 09-13-2018	DRAWN: RMK
JOB NUMBER: 18116	CHECKED: CJD

SHEET
C3.0
6 OF 8

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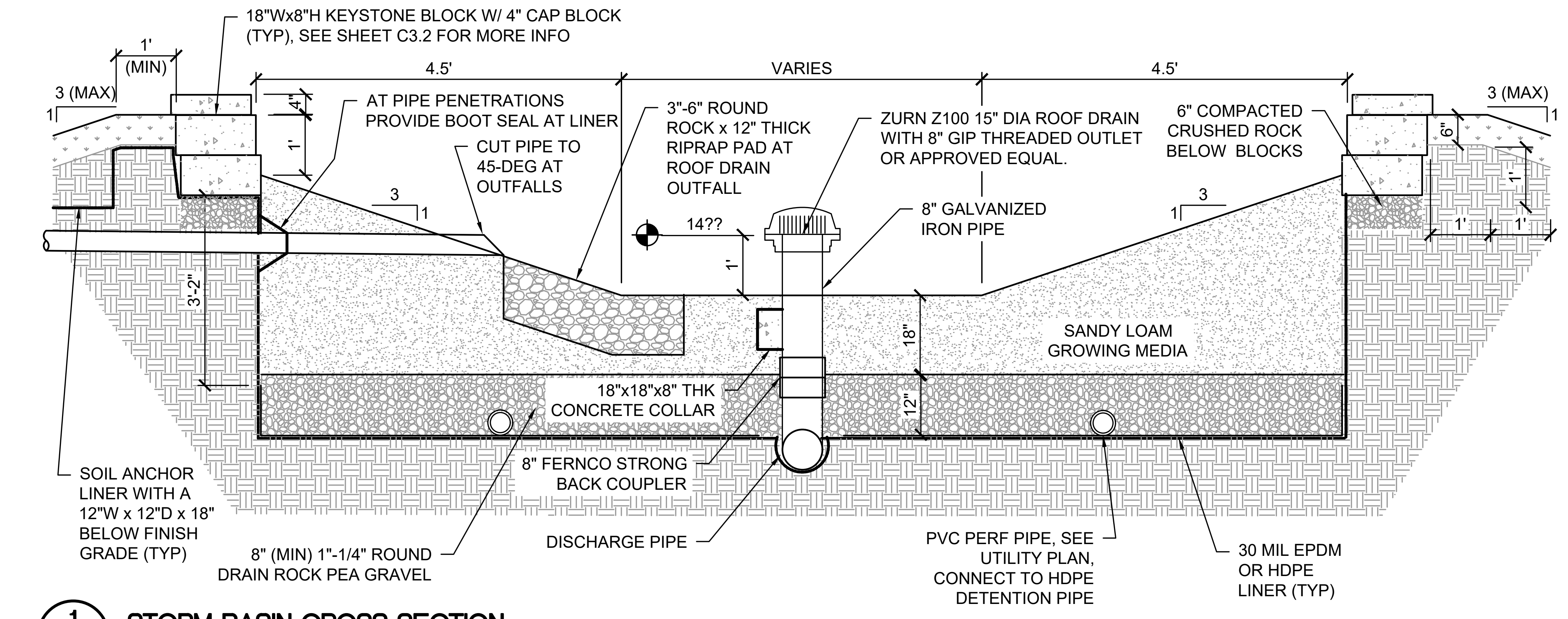
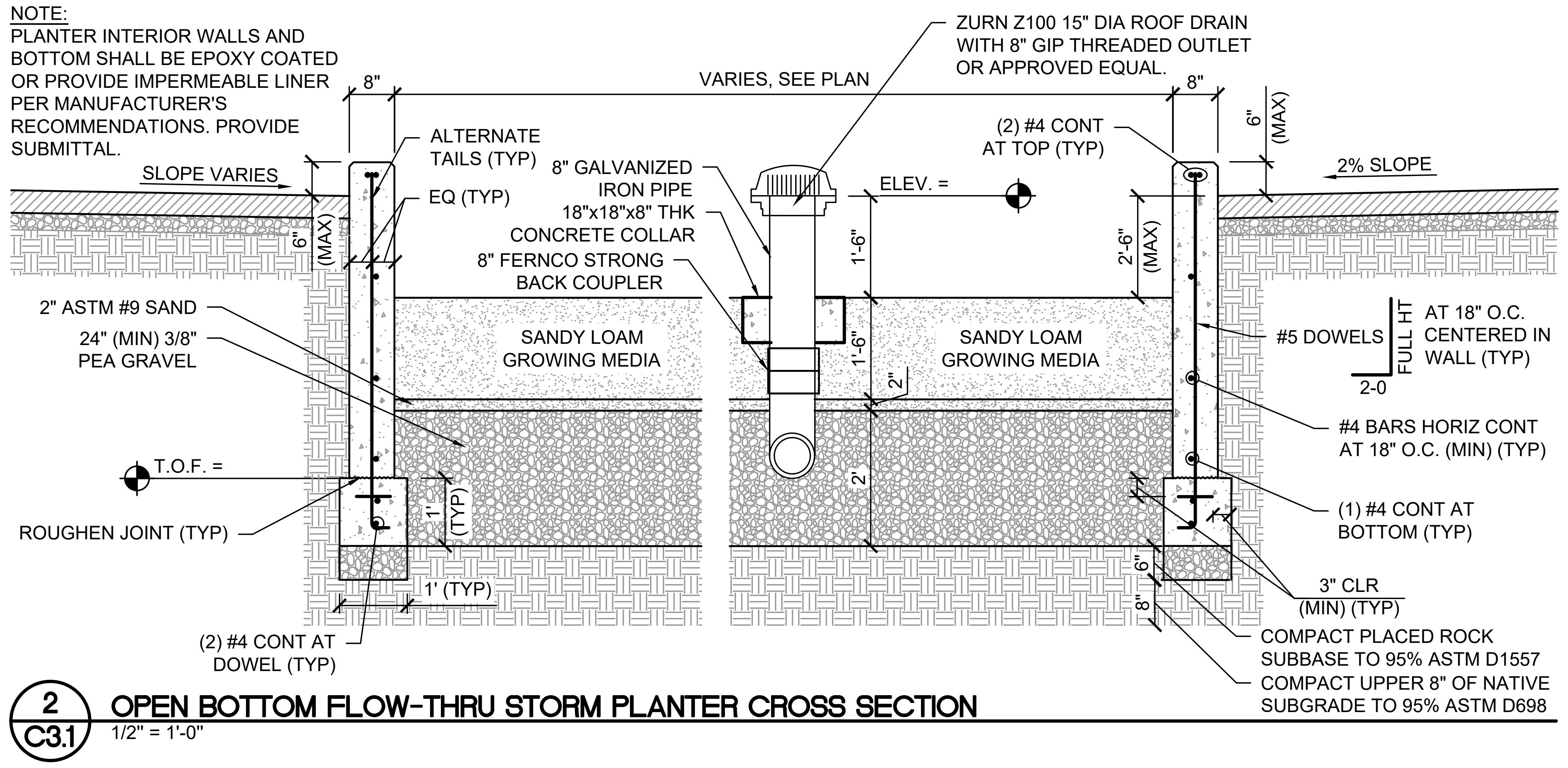


1 C3.1 **STORM BASIN CROSS SECTION**
NTS



NOTE:
PLANTER INTERIOR WALLS AND BOTTOM SHALL BE EPOXY COATED OR PROVIDE IMPERMEABLE LINER PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE SUBMITTAL.

2 C3.1 **OPEN BOTTOM FLOW-THRU STORM PLANTER CROSS SECTION**
1/2" = 1'-0"

PRELIMINARY
NOT FOR
CONSTRUCTION
11/28/18

CHRIS J. DESLAURIERS
80058PE

RENEWS: 12-31-2019

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C3.1
7 OF 8

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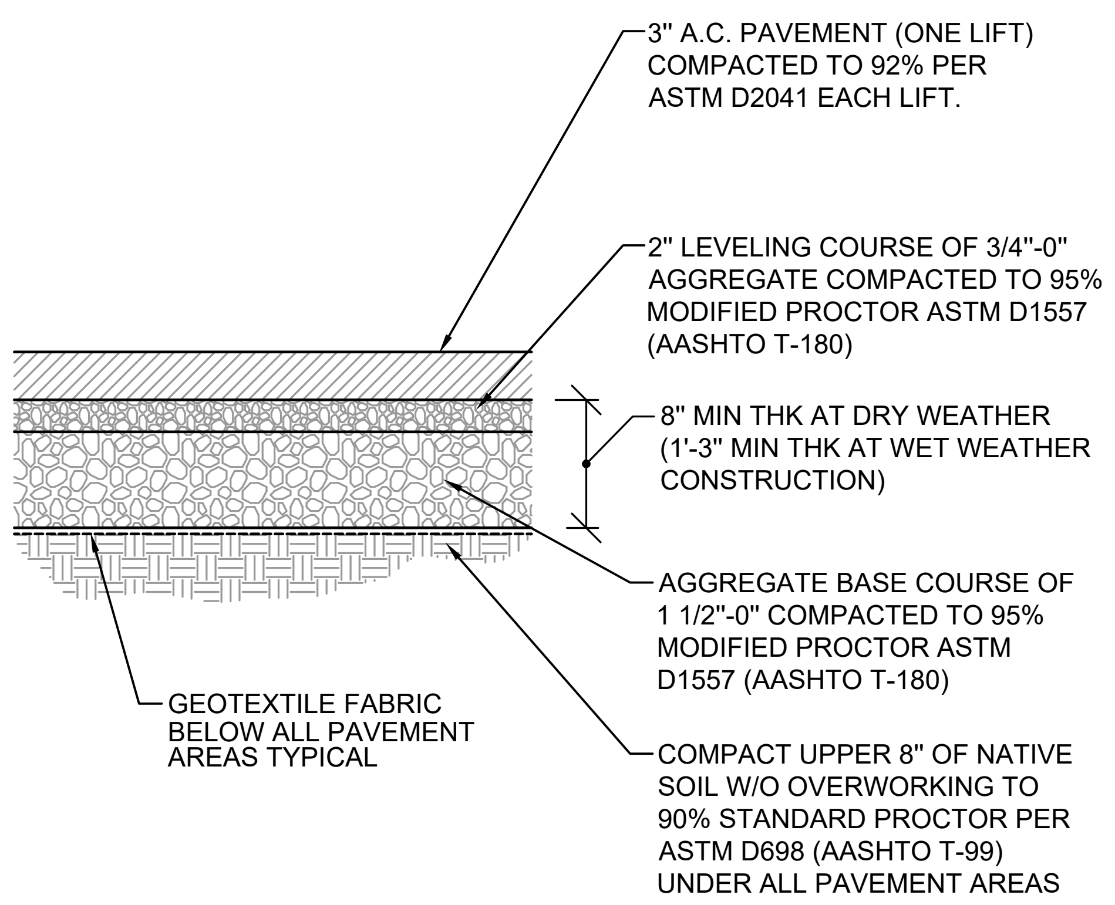
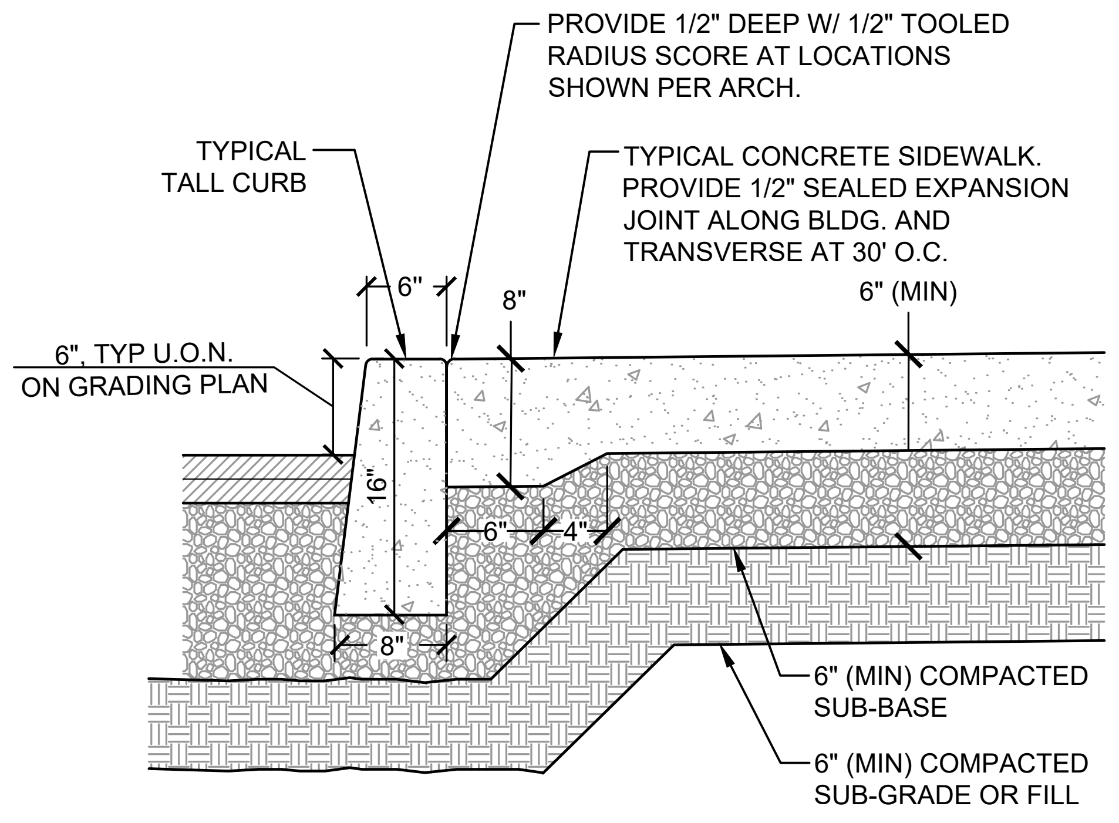
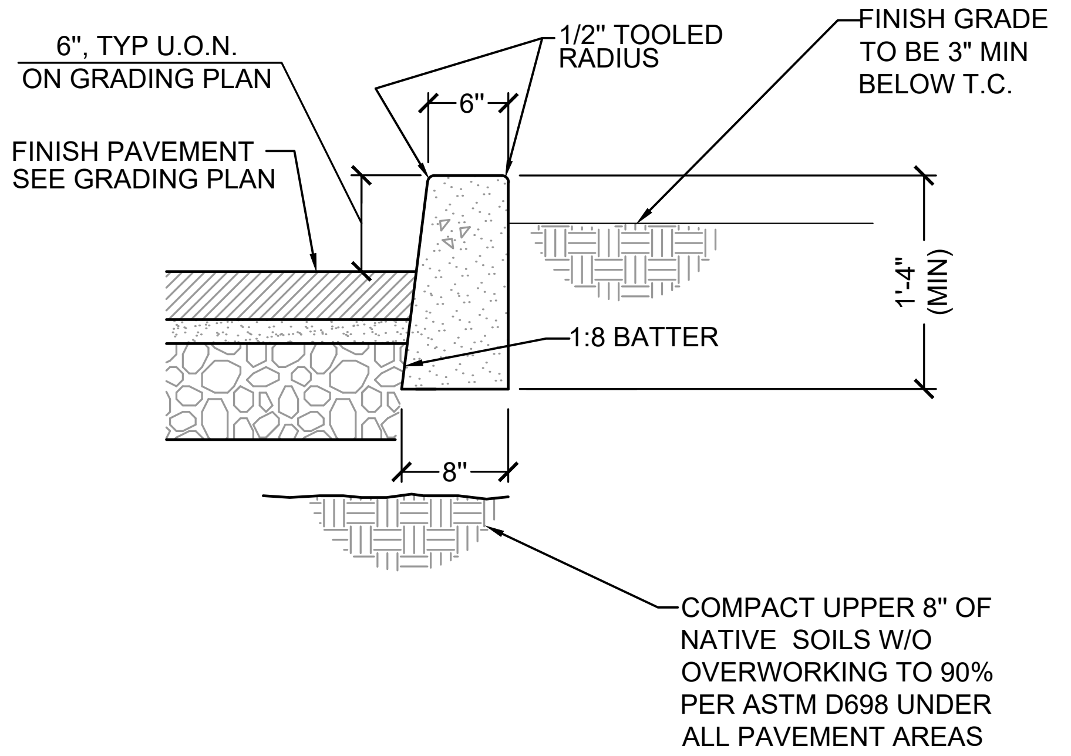


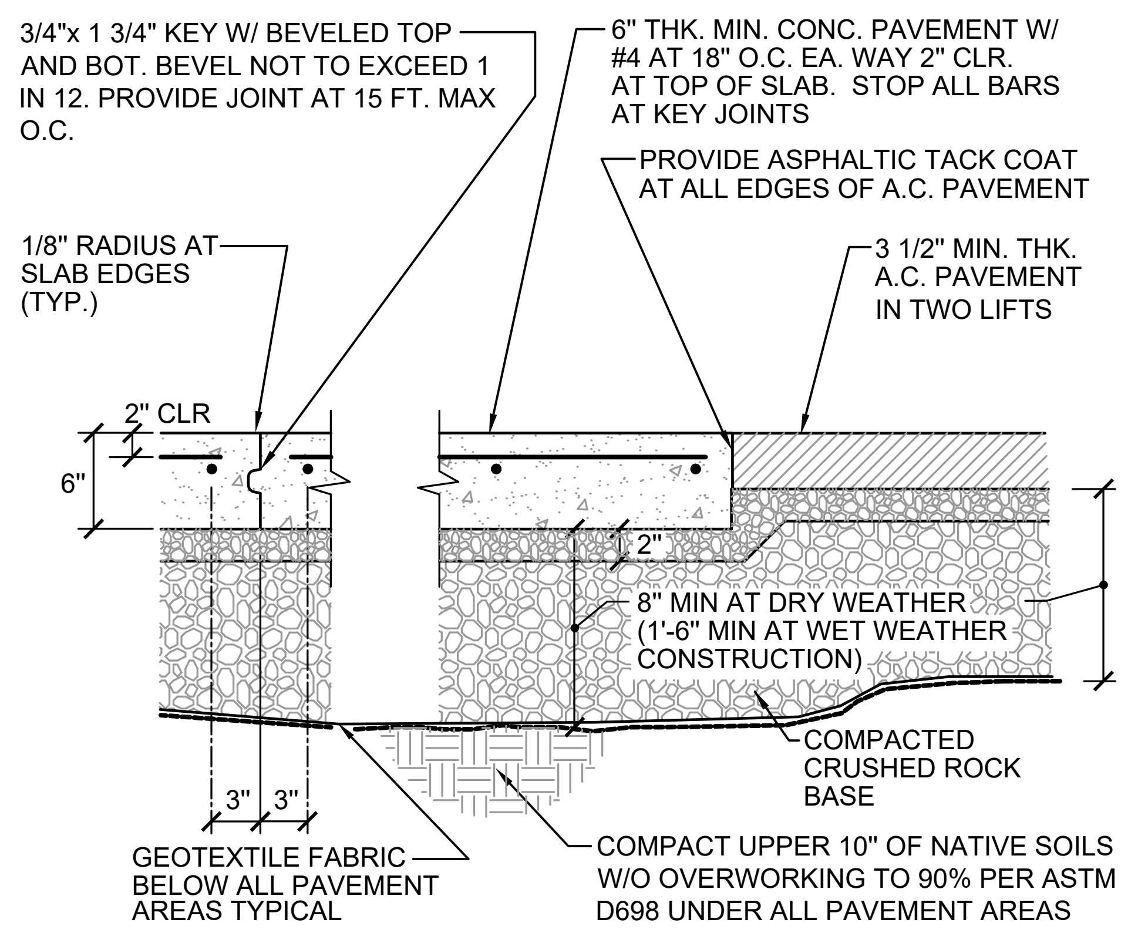
1 / C3.2 TYPICAL ASPHALTIC PAVEMENT SECTION
1" = 1'-0"



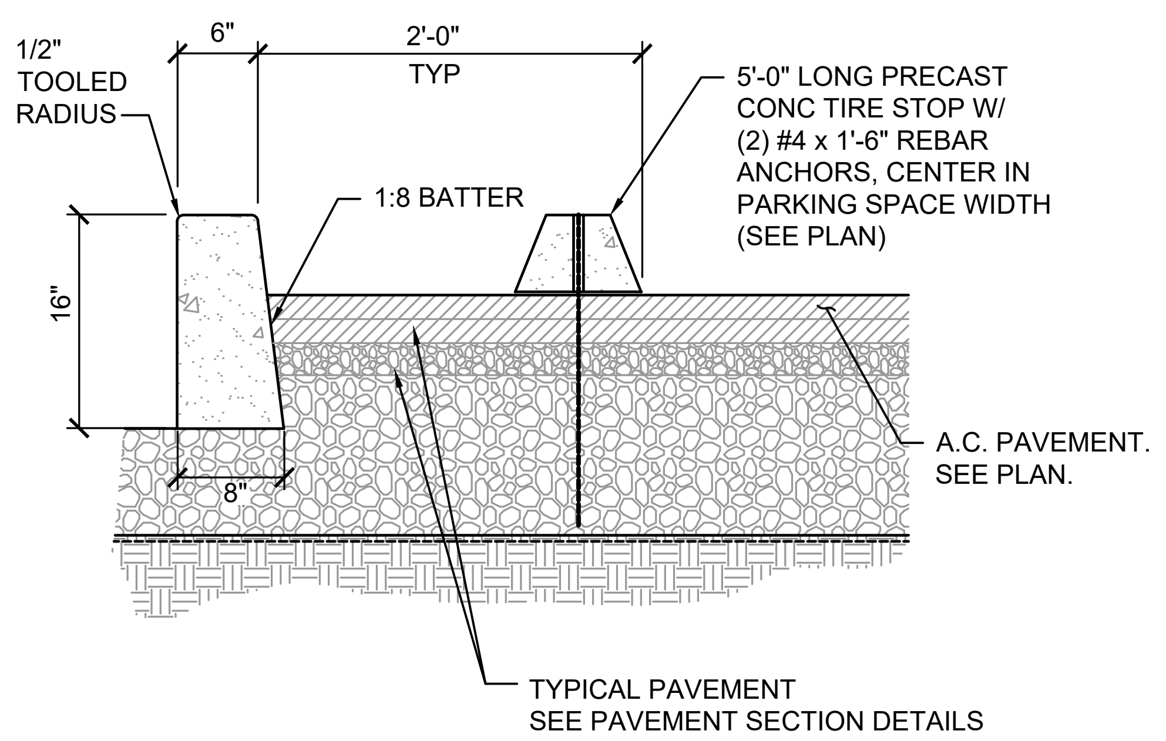
2 / C3.2 TYPICAL CONCRETE WALK
N.T.S.



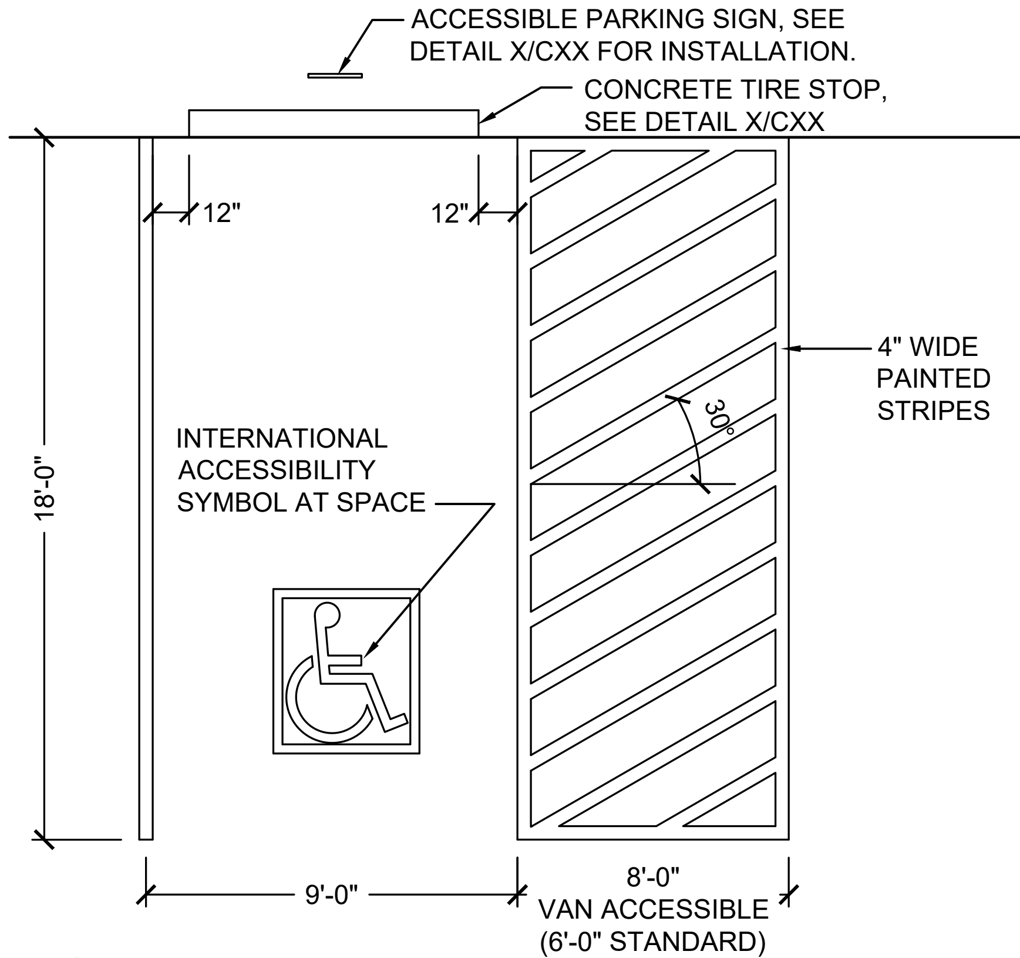
3 / C3.2 TYPICAL FULL DEPTH CONCRETE CURB
N.T.S.



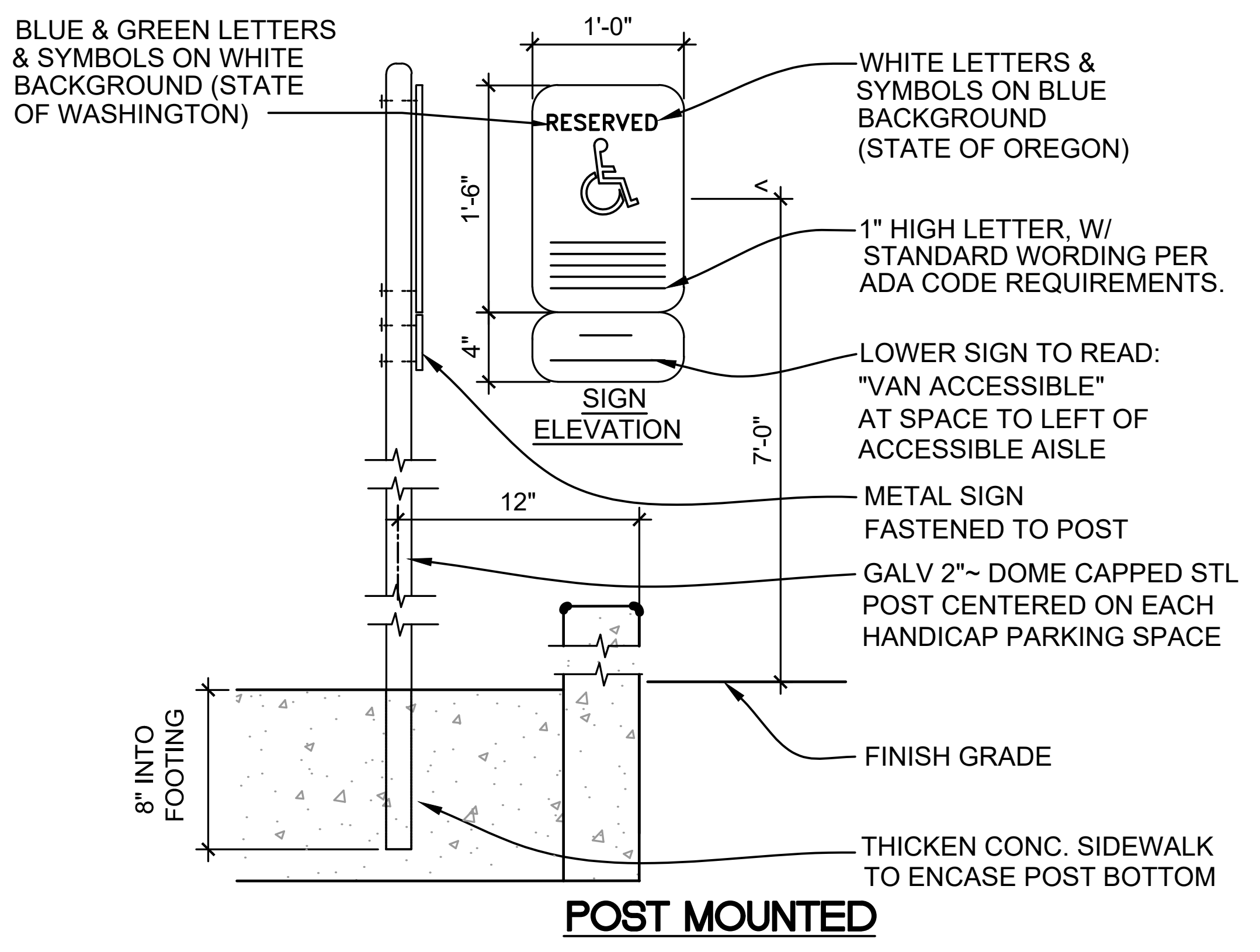
4 / C3.2 TYP. CONCRETE / ASPHALTIC PAVEMENT SECTION
1" = 1'-0"



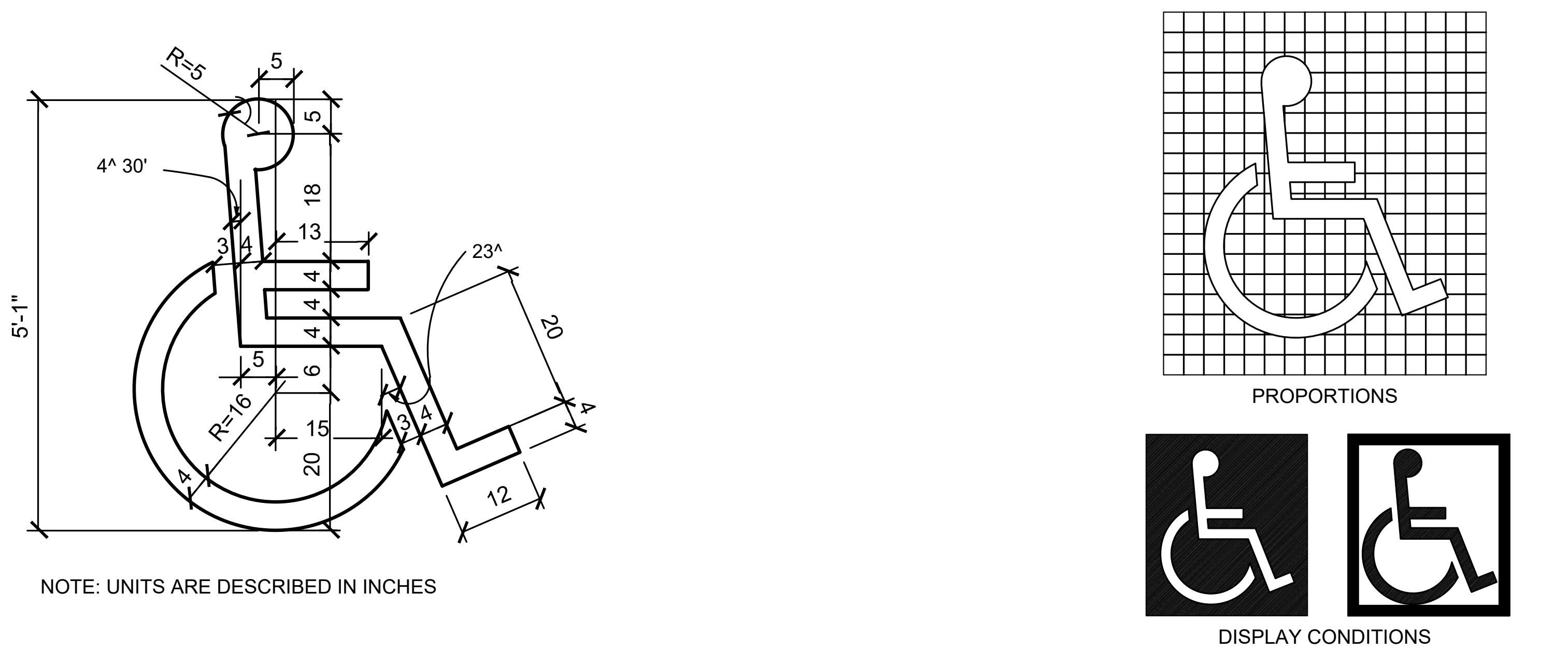
5 / C3.2 CONCRETE TIRE STOP
1" = 1'-0"



6 / C3.2 ADA PARKING STALL
N.T.S.



7 / C3.2 ADA ACCESSIBLE PARKING SIGNS
N.T.S.



NOTE: UNITS ARE DESCRIBED IN INCHES

NOTE: CHARACTERS SHALL CONTRAST WITH THEIR BACKGROUNDS: LIGHT ON DARK SURFACES AND DARK ON LIGHT BACKGROUND PER ANSI STANDARD A117.1 1998

8 / C3.2 ADA ACCESSIBLE SYMBOLS
N.T.S.

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80058PE
CHRIS J. DESLAURIERS
RENEWS: 12-31-2019

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CIVIL DETAILS

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REV1 2018-11-28

DATE:	09-13-2018	DRAWN:	RMK
JOB NUMBER:	18116	CHECKED:	CJD

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C3.2

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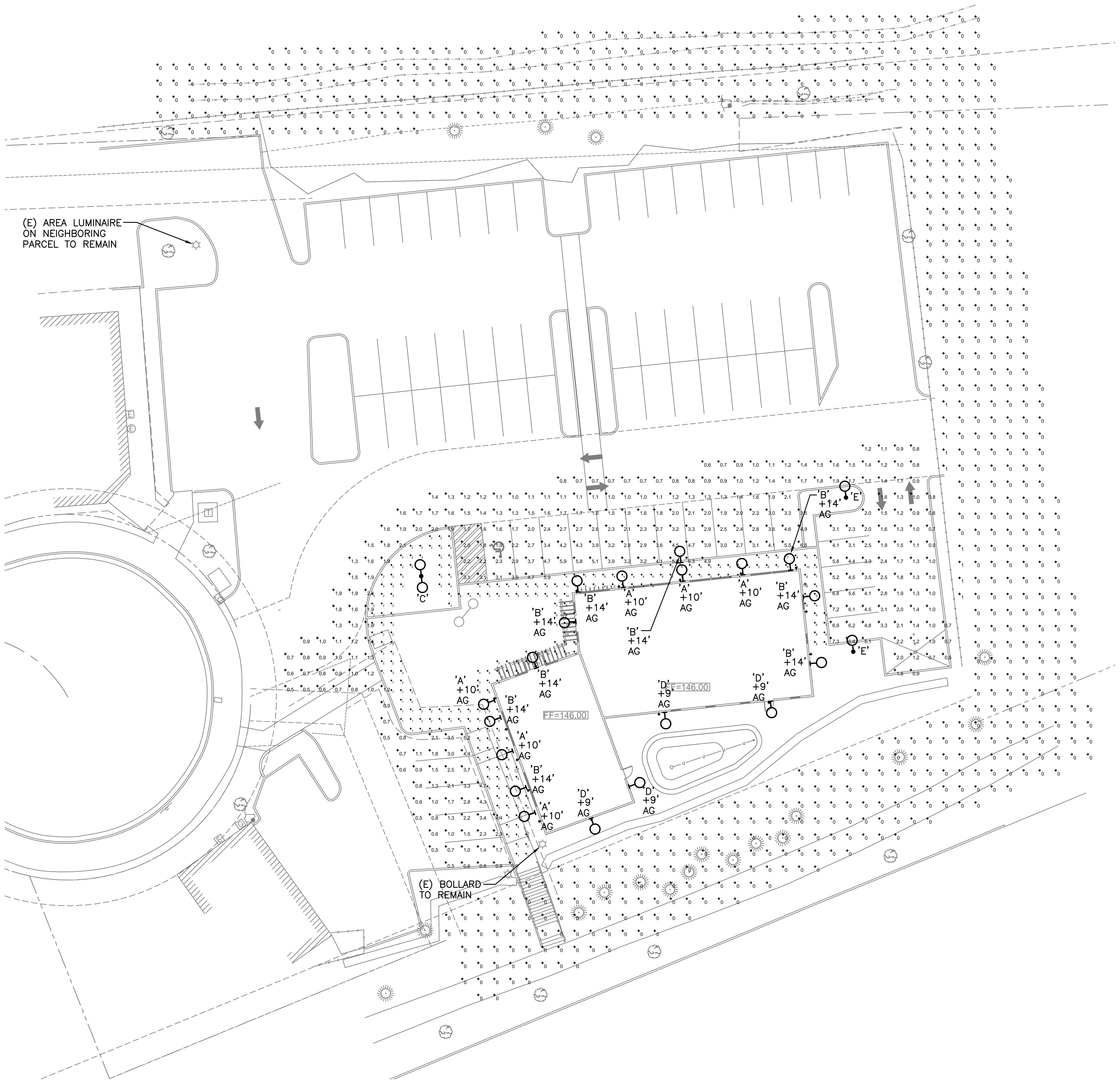
8 OF 8



1 E1.0 SITE PLAN - PHOTOMETRIC
SCALE: 1" = 20'

PHOTOMETRIC TABLE

STATISTICS	DESIGN VALUES				
DESCRIPTION	SYMBOL	AVG	MAX	MIN	AVG/MIN
PARKING LOT	+	2.1 fc	7.3 fc	0.5 fc	4.2:1
WALKWAY SOUTH BLDG	+	5.0 fc	11.0 fc	1.0 fc	5.0:1
BEYOND PROP BOUNDARY	+	0.0 fc	1.0 fc	0.0 fc	N/A

SYMBOL LEGEND

○-●	POLE MOUNTED TYPE 'A' LUMINIARE TO BE INSTALLED
○-●-○	POLE MOUNTED TYPE 'B' LUMINIARE TO BE INSTALLED
○-|	WALL MOUNTED LUMINAIRE TO BE INSTALLED
A.G.	ABOVE GRADE
(E)	EXISTING
FC	FOOT CANDLE

LUMINAIRE SCHEDULE

LUMINAIRE TYPE	DESCRIPTION	LAMP TYPE	INPUT WATTS	DRIVER/ BALLAST	COLOR TEMP	MANUFACTURER AND MODEL SERIES
'A'	12" DIAMETER ARM MOUNTED LED ANGLE REFLECTOR. ALL ALUMINUM HOUSING, 90CRI, 120V AND BRONZE FINISH.	LED 1,860 LUMENS	15W	STANDARD	4,000K	TROY RLM LIGHTING: ANGLE REFLECTOR SERIES OR APPROVED.
'B'	SURFACE MOUNTED LED WALL SCONCE. ALUMINUM HOUSING, 70CRI, VISUAL COMFORT FORWARD THROW DISTRIBUTION, MVOLT AND DARK BRONZE FINISH.	LED 3,469 LUMENS	25W	STANDARD	4,000K	LITHONIA LIGHTING: WST LED SERIES OR APPROVED.
'C'	POLE MOUNTED LED LUMINAIRE. FORWARD OPTICS, TYPE 2 MEDIUM DISTRIBUTION, MVOLT, SQUARE POLE MOUNTING, TWO HEADS MOUNTED AT 180 DEGREES AND DARK BRONZE FINISH.	LED 5,593 LUMENS	49W	STANDARD	4,000K	LITHONIA LIGHTING: DSX0 SERIES OR APPROVED.
'D'	WALL MOUNT LED LUMINAIRE. MVOLT, STANDARD DISTRIBUTION AND DARK BRONZE FINISH.	LED 1,271 LUMENS	13W	STANDARD	4,000K	LITHONIA LIGHTING: OLWX1 SERIES OR APPROVED.
'E'	POLE MOUNTED LED LUMINAIRE. FORWARD OPTICS, TYPE 2 MEDIUM DISTRIBUTION, MVOLT, SQUARE POLE MOUNTING, SINGLE HEAD MOUNTING,GLARE SHIELD, HOUSE SIDE SHIELD AND DARK BRONZE FINISH.	LED 5,593 LUMENS	49W	STANDARD	4,000K	LITHONIA LIGHTING: DSX0 SERIES OR APPROVED.

NOTES:

1. ALL POLE MOUNTED LUMINAIRES HAVE A MOUNTING HEIGHT OF 20'.
2. CONTRACTOR TO RELOCATE/REUSE EXISTING 20' SQUARE POLES. CONTRACTOR TO VERIFY LUMINAIRE MOUNTING IS CONFIGURED TO PROPERLY ATTACH TO EXISTING POLE.

**ISELIN
ARCHITECTS
P.C.**

1307 Seventh Street
Oregon City, OR 97045
503-656-1942
www.iselinarchitects.com

88445PE
JONATHAN PATRICK LILLY
NOV 12, 2013
Jonathan Lilly
RENEWAL DATE: 12-31-2018

**DESIGN
REVIEW**

8th Court Building Shell
2180 8th Court - South Lot
West Linn, OR 97068

PROJ. NO. : 1861
FILE :
DATE : 11/28/18

R&W ENGINEERING, INC.
"Engineering Integrated Solutions"
9615 S.W. Allen Boulevard
Suite 107
Beaverton, Oregon 97005
Phone: (503) 726-3321
Fax: (503) 726-3326
E-mail: rweng@rweng.com
Project No.: 1407.002.001 Contact: HEATHER HARRIS

SHEET #
E1.0

SITE PLAN - PHOTOMETRIC

ANGLE REFLECTOR

Aluminum Shade
with Glass and Guard Options

Catalog #:
Project:
Type: A
Date:
Notes:

Electrical

- 120V input (277V available in arm and post option only)
- Integrated power supply allows the fixture to be connected directly into line voltage
- Pre-wired and ready for install
- LED is dimmable with Incandescent/Triac dimmers

Mounting

- 1/2" or 3/4" IP for arms. Flush mount and post available only in 1/2"

Finishes

- Shade and mounting finish options
- Available in 21 standard and 2 specialty finishes with optional coastal coating to protect finish in coastal environments (add "-C" to the finish)
- Inner shade is painted gloss white
- Consult factory for custom finish options

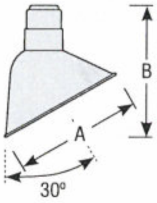
Optional Accessories

- Glass, Cast Guard, Wire Cage or Wire Guard options available

Listing

UL listed to US and Canadian standards for wet locations

c UL us LISTED
WET LOCATION



	A	B
RA8	8"	9"
RA10	10"	11"
RA12	12"	12-1/2"

Angle Reflector Order Matrix (Example: RA10LED1127GA-2)

Diameter	Lamp / LED	Finish	Coastal Coating Option	Accessories	Mounting Type
☐ **RA8** (8")	☐ **M** (Medium Base, 100W max.)	☐ **ABL** (Aegean Blue)	● (blank) (No coating)	☐ (blank) (No Accessories)	☐ **-2** (1/2" IP)
☐ **RA10** (10")	☐ **GU2413**[1] (13W GU24 / 2700K)	☐ **BB** (Burnished Bronze)	☐ **-C**[4] (Coating)	☐ **-CG** (Clear Glass)	☐ **-3** (3/4" IP)
● **RA12** (12")	☐ **GU2418**[1] (18W GU24 / 2700K)	☐ **BK** (Gloss Black)		● **-FG** (Frosted Glass)	● **-F** (Flush Mount)
	☐ **GU2426**[1] (26W GU24 / 2700K)	☐ **BLU** (Blue)		☐ **-OG** (Opal Glass)	
	☐ **GU2432**[1,2] (32W GU24 / 2700K)	☐ **DVG** (Dove Gray)		☐ **-CGG** (Clear Glass w/ Cast Guard)	
	☐ **GU2442**[1,2] (42W GU24 / 2700K)	☐ **FLG** (Flannel Gray)		☐ **-FGG** (Frosted Glass w/ Cast Guard)	
	☐ **LED1127**[1,3] (11W LED / 2700K / 90 CRI / 1188lm)	☐ **GA** (Galvanized)		☐ **-OGG** (Opal Glass w/ Cast Guard)	
	☐ **LED1130**[1,3] (11W LED / 3000K / 90 CRI / 1265lm)	☐ **LG** (Lime Green)		☐ **-CGWC** (Clear Glass w/ Wire Cage)	
	☐ **LED1135**[1,3] (11W LED / 3500K / 90 CRI / 1305lm)	● **MB** (Matte Black)		☐ **-FGWC** (Frosted Glass w/ Wire Cage)	
	☐ **LED1140**[1,3] (11W LED / 4000K / 90 CRI / 1364lm)	☐ **MBL** (Midnight Blue)		☐ **-OGWC** (Opal Glass w/ Wire Cage)	
	☐ **LED1527**[1,3] (15W LED / 2700K / 90 CRI / 1620lm)	☐ **PNA** (Painted Natural Aluminum)		☐ **-WG** (Wire Guard)	
	☐ **LED1530**[1,3] (15W LED / 3000K / 90 CRI / 1725lm)	☐ **PNC** (Painted Natural Copper)			
	☐ **LED1535**[1,3] (15W LED / 3500K / 90 CRI / 1780lm)	☐ **RD** (Red)			
	● **LED1540**[1,3] (15W LED / 4000K / 90 CRI / 1860lm)	☐ **SA** (Satin Aluminum)			
		☐ **SGR** (Sage Green)			
		☐ **SGW** (Semi Gloss White)			
		☐ **SND** (Sand)			
		☐ **SS** (Satin Silver)			
		☐ **TBZ** (Textured Bronze)			
		☐ **TGP** (Textured Graphite)			
		☐ **TNG** (Tangerine)			
		☐ **TTL** (Tahitian Teal)			
		☐ **WT** (Gloss White)			

1. Lamp/LED included
2. Not for use in glass/cast guard/wire cage
3. Glass enclosure must be specified

4. Satin aluminum cannot be coated

KEY: Standard Finishes

- ■ **ABL** (Aegean Blue)
- ■ **BB** (Burnished Bronze)
- ■ **BK** (Gloss Black)
- ■ **BLU** (Blue)
- ■ **DVG** (Dove Gray)
- ■ **FLG** (Flannel Gray)
- ■ **LG** (Lime Green)
- ■ **MB** (Matte Black)
- ■ **MBL** (Midnight Blue)
- ■ **PNA** (Painted Natural Aluminum)
- ■ **PNC** (Painted Natural Copper)
- ■ **RD** (Red)
- ■ **SGR** (Sage Green)
- □ **SGW** (Semi Gloss White)
- ■ **SND** (Sand)
- ■ **SS** (Satin Silver)
- ■ **TBZ** (Textured Bronze)
- ■ **TGP** (Textured Graphite)
- ■ **TNG** (Tangerine)
- ■ **TTL** (Tahitian Teal)
- □ **WT** (Gloss White)

Specialty Finishes

- ■ **GA** (Galvanized)
- ■ **SA** (Satin Aluminum)

Revised 06/01/2018

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ANGLE REFLECTOR

Aluminum Shade
with Glass and Guard Options

Catalog #:
Project:
Type: A
Date:
Notes:

Glass Enclosure

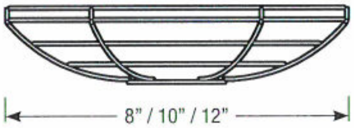
- Glass is available in clear (-CG), frosted (-FG) or opal (-OG)

Cast Guard with Glass Enclosure

- Cast guard can be specified in all standard and specialized finishes, and will match shade finish unless otherwise specified
  (Note: For galvanized shade finishes, cast guard is unfinished Raw Aluminum)
- Glass is available in clear (-CGG), frosted (-FGG) or opal (-OGG)

Wire Cage with Glass Enclosure

- Wire cage can be specified in all standard and specialized finishes, and will match shade finish unless otherwise specified
  (Note: For galvanized shade finishes, wire cage is finished in Painted Natural Aluminum)
- Glass is available in clear (-CGWC), frosted (-FGWC) or opal (-OGWC)



Wire Guard (-WG)

- Wire cage can be specified in all standard and specialized finishes, and will match shade finish unless otherwise specified
  (Note: For galvanized shade finishes, wire guard is finished in Painted Natural Aluminum)

Revised 06/01/2018

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ANGLE REFLECTOR

Aluminum Shade
with Glass and Guard Options

Catalog #:
Project:
Type: A
Date:
Notes:

Arm Mount Order Matrix (Example: 2SL30RD)

Pipe	Arm Type	Finish	Coastal Coating Option	Input Voltage
☐ **2** (1/2" IP)	☐ **SL23** (Small Loop- 23")	☐ **ABL** (Aegean Blue)	☐ (blank) (No coating)	☐ (blank) (120V)
☐ **3** (3/4" IP)	☐ **SL30** (Small Loop- 30")	☐ **BB** (Burnished Bronze)	☐ **-C**[4] (Coating)	☐ **-27** (277V)
	☐ **LL23** (Large Loop - 23")	☐ **BK** (Gloss Black)		
	☐ **LL30** (Large Loop - 30")	☐ **BLU** (Blue)		
	☐ **LC18** (Curve Arm - 18")	☐ **DVG** (Dove Gray)		
	☐ **LC24** (Curve Arm - 24")	☐ **FLG** (Flannel Gray)		
	☐ **LC30** (Curve Arm - 30")	☐ **GA** (Galvanized)		
	☐ **LM18** (Miter Arm - 18")	☐ **LG** (Lime Green)		
	☐ **LM24** (Miter Arm - 24")	☐ **MB** (Matte Black)		
	☐ **LM30** (Miter Arm - 30")	☐ **MBL** (Midnight Blue)		
	☐ **SA18** (Sign Arm - 18")	☐ **PNA** (Painted Natural Aluminum)		
	☐ **SA23** (Sign Arm - 23")	☐ **PNC** (Painted Natural Copper)		
	☐ **LSA23** (Large Loop Sign Arm - 23")	☐ **RD** (Red)		
	☐ **LSA30** (Large Loop Sign Arm - 30")	☐ **SA** (Satin Aluminum)		
	☐ **A6** (Straight Arm - 6")	☐ **SGR** (Sage Green)		
	☐ **A12** (Straight Arm - 12")	☐ **SGW** (Semi Gloss White)		
	☐ **A18** (Straight Arm - 18")	☐ **SND** (Sand)		
	☐ **A24** (Straight Arm - 24")	☐ **SS** (Satin Silver)		
	☐ **A30** (Straight Arm - 30")	☐ **TBZ** (Textured Bronze)		
	☐ **MA18** (Modern Arm - 18")	☐ **TGP** (Textured Graphite)		
	☐ **MA24** (Modern Arm - 24")	☐ **TNG** (Tangerine)		
	☐ **MA30** (Modern Arm - 30")	☐ **TTL** (Tahitian Teal)		
		☐ **WT** (Gloss White)		

[4] Satin aluminum cannot be coated

Standard Finishes

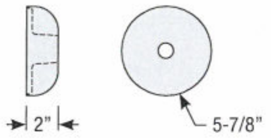
- ■ **ABL** (Aegean Blue)
- ■ **BB** (Burnished Bronze)
- ■ **BK** (Gloss Black)
- ■ **BLU** (Blue)
- □ **DVG** (Dove Gray)
- ■ **FLG** (Flannel Gray)
- ■ **LG** (Lime Green)
- ■ **MB** (Matte Black)
- ■ **MBL** (Midnight Blue)
- □ **PNA** (Painted Natural Aluminum)
- ■ **PNC** (Painted Natural Copper)
- ■ **RD** (Red)
- ■ **SGR** (Sage Green)
- □ **SGW** (Semi Gloss White)
- □ **SND** (Sand)
- ■ **SS** (Satin Silver)
- ■ **TBZ** (Textured Bronze)
- ■ **TGP** (Textured Graphite)
- ■ **TNG** (Tangerine)
- ■ **TTL** (Tahitian Teal)
- □ **WT** (Gloss White)

Specialty Finishes

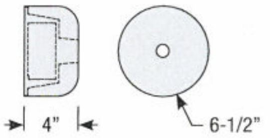
- ■ **GA** (Galvanized)
- ■ **SA** (Satin Aluminum)

Note: All arm mounts include canopy

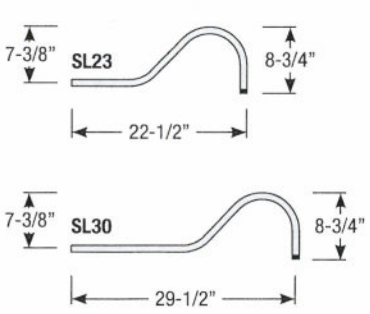
120V Canopy



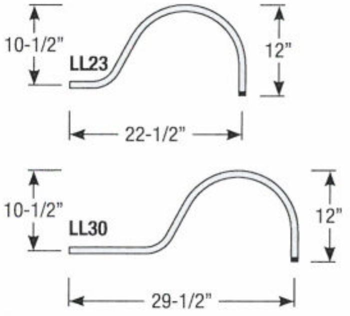
277V Canopy



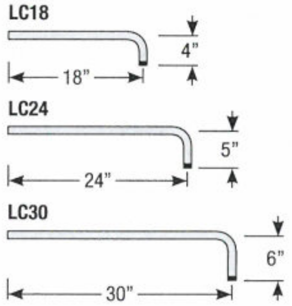
Small Loop Arm



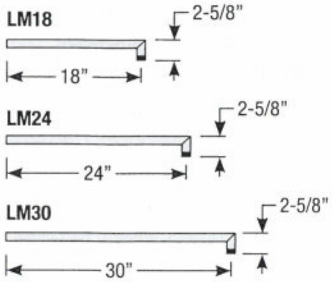
Large Loop Arm



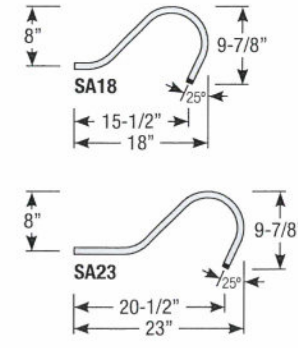
Curve Arm



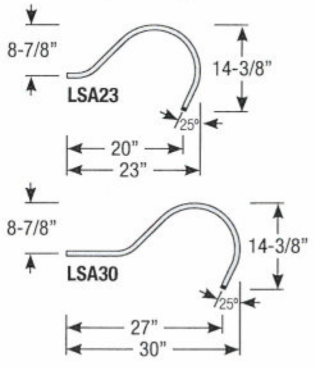
Miter Arm



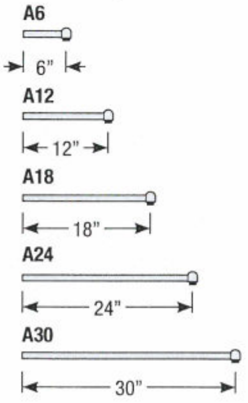
Sign Arm



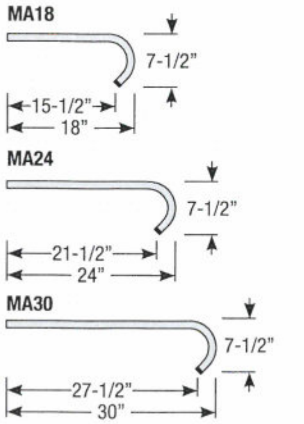
Large Loop Sign Arm



Straight Arm



Modern Arm



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ANGLE REFLECTOR

Aluminum Shade
with Glass and Guard Options

Catalog #:

Project:

Type: A

Date:

Notes:

Knuckle Accessory Order Matrix (Example: 2KNLRD)

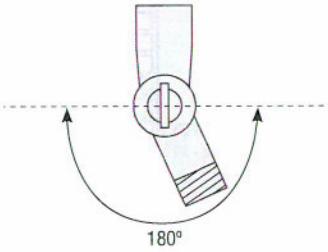
Pipe	Finish	Finish	Coastal Coating Option
☐ **2** (1/2" IP)	**KNL** (Adjustable 180° Knuckle for Arm Mounts)	☐ **ABL** (Aegean Blue)	☐ (blank) (No coating)
☐ **3** (3/4" IP)		☐ **BB** (Burnished Bronze)	☐ **-C**[4] (Coating)
		☐ **BK** (Gloss Black)	
		☐ **BLU** (Blue)	
		☐ **DVG** (Dove Gray)	
		☐ **FLG** (Flannel Gray)	
		☐ **GA** (Galvanized)	
		☐ **LG** (Lime Green)	
		☐ **MB** (Matte Black)	
		☐ **MBL** (Midnight Blue)	
		☐ **PNA** (Painted Natural Aluminum)	
		☐ **PNC** (Painted Natural Copper)	
		☐ **RD** (Red)	
		☐ **SA** (Satin Aluminum)	
		☐ **SGR** (Sage Green)	
		☐ **SGW** (Semi Gloss White)	
		☐ **SND** (Sand)	
		☐ **SS** (Satin Silver)	
		☐ **TBZ** (Textured Bronze)	
		☐ **TGP** (Textured Graphite)	
		☐ **TNG** (Tangerine)	
		☐ **TTL** (Tahitian Teal)	
		☐ **WT** (Gloss White)	

[4] Satin aluminum cannot be coated

Description

Adjustable knuckle for arm mounts that allow luminaire to be rotated up to 180°.

Knuckle Accessory



Standard Finishes

🟦	**ABL**	(Aegean Blue)	🟫	**PNC**	(Painted Natural Copper)
⬛	**BB**	(Burnished Bronze)	🟥	**RD**	(Red)
⬛	**BK**	(Gloss Black)	🟩	**SGR**	(Sage Green)
🟦	**BLU**	(Blue)	⬜	**SGW**	(Semi Gloss White)
⬜	**DVG**	(Dove Gray)	⬜	**SND**	(Sand)
⬜	**FLG**	(Flannel Gray)	⬜	**SS**	(Satin Silver)
🟩	**LG**	(Lime Green)	⬛	**TBZ**	(Textured Bronze)
⬛	**MB**	(Matte Black)	⬛	**TGP**	(Textured Graphite)
⬛	**MBL**	(Midnight Blue)	🟧	**TNG**	(Tangerine)
⬜	**PNA**	(Painted Natural Aluminum)	🟦	**TTL**	(Tahitian Teal)
			⬜	**WT**	(Gloss White)

Specialty Finishes

⬜	**GA**	(Galvanized)	⬜	**SA**	(Satin Aluminum)

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ANGLE REFLECTOR
Aluminum Shade
with Glass and Guard Options

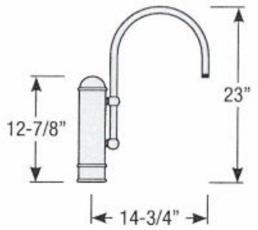
Catalog #:
Project: Type: A
Date: Notes:

Post / Wall Mount Order Matrix (Example: 2W1RD)

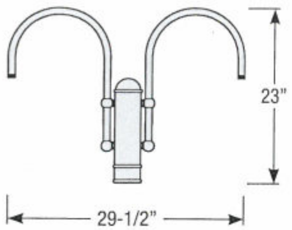
Pipe	Mount Type	Finish	Input Voltage
☐ **2** (1/2" IP)	☐ **P1** (Single Post Mount)	☐ **ABL** (Aegean Blue)	☐ (blank) (120V)
	☐ **P2** (Double Post Mount)	☐ **BB** (Burnished Bronze)	☐ **-27**[5] (277V)
	☐ **W1** (Traditional Wall Mount)	☐ **BK** (Gloss Black)	
		☐ **BLU** (Blue)	
		☐ **DVG** (Dove Gray)	
		☐ **FLG** (Flannel Gray)	
		☐ **GA** (Galvanized)	
		☐ **LG** (Lime Green)	
		☐ **MB** (Matte Black)	
		☐ **MBL** (Midnight Blue)	
		☐ **PNA** (Painted Natural Aluminum)	
		☐ **PNC** (Painted Natural Copper)	
		☐ **RD** (Red)	
		☐ **SA** (Satin Aluminum)	
		☐ **SGR** (Sage Green)	
		☐ **SGW** (Semi Gloss White)	
		☐ **SND** (Sand)	
		☐ **SS** (Satin Silver)	
		☐ **TBZ** (Textured Bronze)	
		☐ **TGP** (Textured Graphite)	
		☐ **TNG** (Tangerine)	
		☐ **TTL** (Tahitian Teal)	
		☐ **WT** (Gloss White)	

5. Post mount only

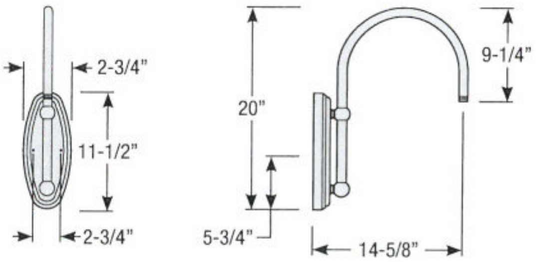
Single Post Mount



Double Post Mount



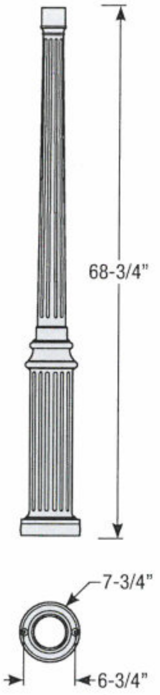
Traditional Wall Mount



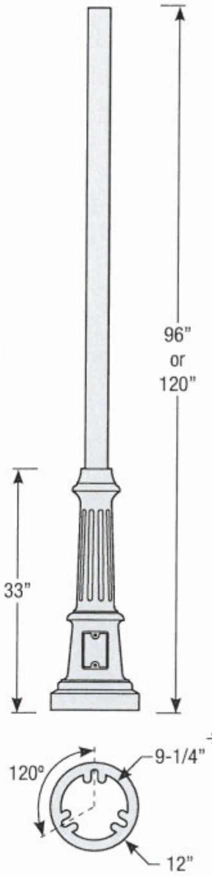
Post Type Order Matrix (Example: P8683-96RD)

Post Type	Finish
☐ **PM4946** (Cast Aluminum Post)	☐ **ABL** (Aegean Blue)
☐ **P8683-96** (Cast Aluminum Base w/ 96" Aluminum Post)	☐ **BB** (Burnished Bronze)
☐ **P8683-120** (Cast Aluminum Base w/ 120" Aluminum Post)	☐ **BK** (Gloss Black)
☐ **P8684-96** (96" Straight Aluminum Post)	☐ **BLU** (Blue)
☐ **P8684-120** (120" Straight Aluminum Post)	☐ **DVG** (Dove Gray)
☐ **PM8685** (Cast Aluminum Pier Mount - must be used with straight aluminum post, P8683)	☐ **FLG** (Flannel Gray)
	☐ **GA** (Galvanized)
	☐ **LG** (Lime Green)
	☐ **MB** (Matte Black)
	☐ **MBL** (Midnight Blue)
	☐ **PNA** (Painted Natural Aluminum)
	☐ **PNC** (Painted Natural Copper)
	☐ **RD** (Red)
	☐ **SA** (Satin Aluminum)
	☐ **SGR** (Sage Green)
	☐ **SGW** (Semi Gloss White)
	☐ **SND** (Sand)
	☐ **SS** (Satin Silver)
	☐ **TBZ** (Textured Bronze)
	☐ **TGP** (Textured Graphite)
	☐ **TNG** (Tangerine)
	☐ **TTL** (Tahitian Teal)
	☐ **WT** (Gloss White)

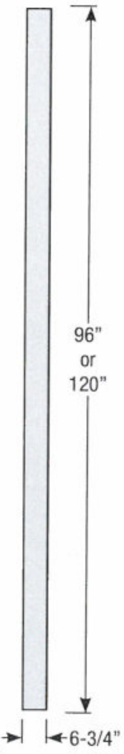
PM4946



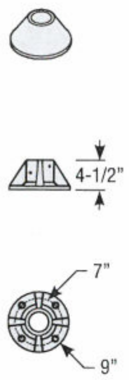
P8683



P8684



P8685



Note: Must be used with aluminum post (P8684)

Standard Finishes

- ■ **ABL** (Aegean Blue)
- ■ **BB** (Burnished Bronze)
- ■ **BK** (Gloss Black)
- ■ **BLU** (Blue)
- ■ **DVG** (Dove Gray)
- ■ **FLG** (Flannel Gray)
- ■ **LG** (Lime Green)
- ■ **MB** (Matte Black)
- ■ **MBL** (Midnight Blue)
- ■ **PNA** (Painted Natural Aluminum)
- ■ **PNC** (Painted Natural Copper)
- ■ **RD** (Red)
- ■ **SGR** (Sage Green)
- □ **SGW** (Semi Gloss White)
- ■ **SND** (Sand)
- ■ **SS** (Satin Silver)
- ■ **TBZ** (Textured Bronze)
- ■ **TGP** (Textured Graphite)
- ■ **TNG** (Tangerine)
- ■ **TTL** (Tahitian Teal)
- □ **WT** (Gloss White)

Specialty Finishes

- ■ **GA** (Galvanized)
- ■ **SA** (Satin Aluminum)

Revised 06/01/2018

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WST LED

Architectural Wall Sconce

Catalog Number

Notes

Type TYPE B

Hit the Tab key or mouse over the page to see all interactive elements.

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+,
visit www.acuitybrands.com/aplus.

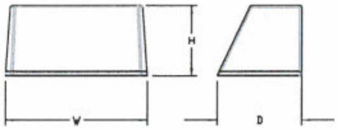
See ordering tree for details.

A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

Specifications

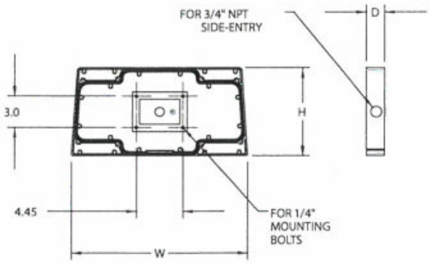
Luminaire

Height:	8-1/2″ *(21.59 cm)*
Width:	17″ *(43.18 cm)*
Depth:	10-3/16″ *(25.9 cm)*
Weight:	20 lbs *(9.1 kg)*



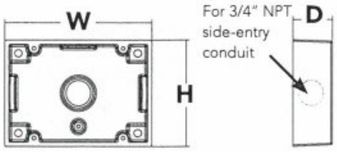
Optional Back Box (PBBW)

Height:	8.49″ *(21.56 cm)*
Width:	17.01″ *(43.21 cm)*
Depth:	1.70″ *(4.32 cm)*



Optional Back Box (BBW)

Height:	4″ *(10.2 cm)*
Width:	5-1/2″ *(14.0 cm)*
Depth:	1-1/2″ *(3.8 cm)*



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A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: WST LED P1 40K VF MVOLT DDBTXD

WST LED P2 40K VF MVOLT SURFACE MTG BRACKET

Series	Performance Package	Color temperature	Distribution	Voltage		Mounting
WST LED	P1 1,500 Lumen package P2 3,000 Lumen package P3 6,000 Lumen package	27K 2700 K 30K 3000 K 40K 4000 K 50K 5000 K	VF Visual comfort forward throw VW Visual comfort wide	MVOLT[1] 120[2] 208[2] 240[2]	277[2] 347 [2] 480 [2]	**Shipped included** (blank) Surface mounting bracket **Shipped separately** BBW Surface-mounted back box[3] PBBW Premium surface-mounted back box[3,4]

DDBXD

Options				Finish *(required)*	
PE	Photoelectric cell, button type [5]	E7WC	Emergency battery backup, Non CEC compliant (cold, 7W)[10,11]	DDBXD	Dark bronze
PER	NEMA twist-lock receptacle only (controls ordered separate) [6]	E7WHR	Remote emergency battery backup, Non CEC compliant (remote 7W)[10,12]	DBLXD	Black
PER5	Five-wire receptacle only (controls ordered separate) [6]	E20WH	Emergency battery pack 18W constant power, CEC compliant[10]	DNAXD	Natural aluminum
PER7	Seven-wire receptacle only (controls ordered separate) [6]	E20WC	Emergency battery pack -20°C 18W constant power, CEC compliant[10,11]	DWHXD	White
PIR	Motion/Ambient Light Sensor, 8-15' mounting height[7,8]	E23WHR	Remote emergency battery backup, Non CEC compliant (remote 20W)[10,11,13]	DSSXD	Sandstone
PIR1FC3V	Motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[7,8]	LCE	Left side conduit entry[14]	DDBTXD	Textured dark bronze
PIRH	180° motion/ambient light sensor, 15-30' mounting height[7,8]	RCE	Right side conduit entry[14]	DBLBXD	Textured black
PIRH1FC3V	Motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[7,8]	**Shipped separately**		DNATXD	Textured natural aluminum
SF	Single fuse (120, 277, 347V)[2]	RBPW	Retrofit back plate[3]	DWHGXD	Textured white
DF	Double fuse (208, 240, 480V)[2]	VG	Vandal guard[15]	DSSTXD	Textured sandstone
DS	Dual switching[9]	WG	Wire guard[15]		
E7WH	Emergency battery backup, Non CEC compliant (7W)[10]				

Accessories

Ordered and shipped separately.

WSTVCPBBW DDBXD U	Premium Surface - mounted back box
WSBBW DDBTX U	Surface - mounted back box
RBPW DDBXD U	Retrofit back plate

NOTES

1 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
2 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
3 Also available as a separate accessory; see accessories information.
4 Top conduit entry standard.
5 Need to specify 120, 208, 240 or 277 voltage.
6 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. Shorting Cap included.
7 Not available with VG or WG. See PER Table.
8 Reference Motion Sensor table.
9 Not available with Emergency options, PE or PER options.
10 Not available with 347/480V.
11 Battery pack rated for -20° to 40°C.
12 Comes with PBBW.
13 Warranty period is 3-years.
14 Not available with BBW.
15 Must order with fixture; not an accessory.

Emergency Battery Operation

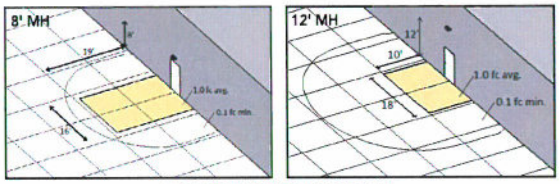
The emergency battery backup is integral to the luminaire — no external housing required! This design provides reliable emergency operation while maintaining the aesthetics of the product.

All emergency backup configurations include an independent secondary driver with an integral relay to immediately detect AC power loss, meeting interpretations of NFPA 70/NEC 2008 - 700.16

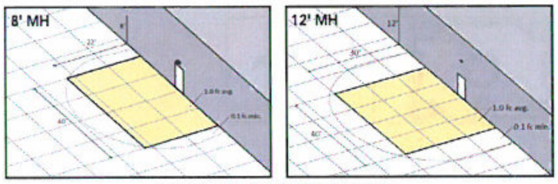
The emergency battery will power the luminaire for a minimum duration of 90 minutes (maximum duration of three hours) from the time supply power is lost, per International Building Code Section 1006 and NFPA 101 Life Safety Code Section 7.9, provided luminaires are mounted at an appropriate height and illuminate an open space with no major obstructions.

The examples below show illuminance of 1 fc average and 0.1 fc minimum of the P1 power package and VF distribution product in emergency mode.

10' x 10' Gridlines
8' and 12' Mounting Height



WST LED P1 27K VF MVOLT E7WH



WST LED P2 40K VF MVOLT E20WH

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Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.03
10°C	50°F	1.02
20°C	68°F	1.01
25°C	**77°F**	**1.00**
30°C	86°F	0.99
40°C	104°F	0.98

Projected LED Lumen Maintenance

Values calculated according to IESNA TM-21-11 methodology and valid up to 40°C.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	1.0	>0.95	>0.92	>0.87

Electrical Load

		Current (A)					
Performance package	System Watts	120	208	240	277	347	480
P1	11	0.1	0.06	0.05	0.04	—	—
	14	—	—	—	—	0.04	0.03
P1 DS	14	0.12	0.07	0.06	0.06	—	—
P2	25	0.21	0.13	0.11	0.1	—	—
	30	—	—	—	—	0.09	0.06
P2 DS	25	0.21	0.13	0.11	0.1	—	—
P3	50	0.42	0.24	0.21	0.19	—	—
	56	—	—	—	—	0.16	0.12
P3 DS	52	0.43	0.26	0.23	0.21	—	—

Motion Sensor Default Settings

Option	Dimmed State	High Level (when triggered)	Photocell Operation	Ramp-up Time	Dwell Time	Ramp-down Time
*PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	3 sec	5 min	5 min
PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	3 sec	5 min	5 min

*for use with centrilize Dusk to Dawn

PER Table

Control	PER (3 wire)	PER5 (5 wire)		PER7 (7 wire)		
			Wire 4/Wire5		Wire 4/Wire5	Wire 6/Wire7
Photocontrol Only (On/Off)	✓	⚠	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM	🚫	✓	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM with Motion	🚫	⚠	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
Futureproof*	🚫	⚠	Wired to dimming leads on driver	✓	Wired to dimming leads on driver	Wires Capped inside fixture
Futureproof* with Motion	🚫	⚠	Wired to dimming leads on driver	✓	Wired to dimming leads on driver	Wires Capped inside fixture

✓	Recommended
🚫	Will not work
⚠	Alternate

*Futureproof means: Ability to change controls in the future.

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts.

Performance Package	System Watts (MVOLT^1)	Dist. Type	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	12W	VF	1,494	0	0	0	125	1,529	0	0	0	127	1,639	0	0	0	137	1,639	0	0	0	137
		VW	1,513	0	0	0	126	1,548	0	0	0	129	1,659	0	0	0	138	1,660	0	0	0	138
P2	25W	VF	3,163	1	0	1	127	3,237	1	0	1	129	3,469	1	0	1	139	3,468	1	0	1	139
		VW	3,201	1	0	0	128	3,276	1	0	0	131	3,512	1	0	0	140	3,512	1	0	0	140
P3	50W	VF	6,025	1	0	1	121	6,165	1	0	1	123	6,609	1	0	1	132	6,607	1	0	1	132
		VW	6,098	1	0	1	122	6,240	1	0	1	125	6,689	1	0	1	134	6,691	1	0	1	134

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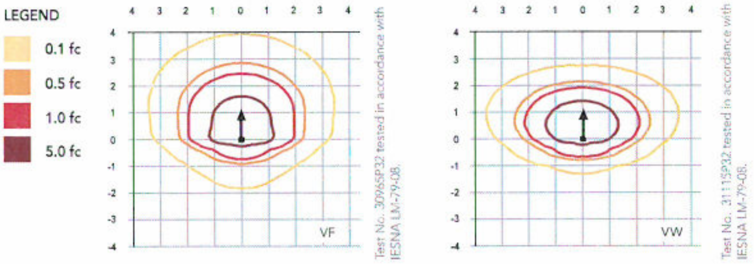
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's WST LED homepage.

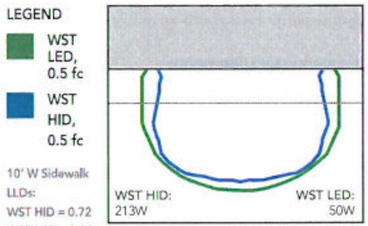
Isofootcandle plots for the WST LED P3 40K VF and VW. Distances are in units of mounting height (10').



Test No. 30965P32 tested in accordance with IESNA LM-79-08.

Test No. 31115P32 tested in accordance with IESNA LM-79-08.

Distribution overlay comparison to 175W metal halide.



10' W Sidewalk
LLDs:
WST HID = 0.72
WST LED = 0.95

WST LED P3 40K VF,
WST 175M FT Probe, 12' Mounting Ht

FEATURES & SPECIFICATIONS

INTENDED USE

The classic architectural shape of the WST LED was designed for applications such as hospitals, schools, malls, restaurants, and commercial buildings. The long life LEDs and driver make this luminaire nearly maintenance-free.

CONSTRUCTION

The single-piece die-cast aluminum housing integrates secondary heat sinks to optimize thermal transfer from the internal light engine heat sinks and promote long life. The driver is mounted in direct contact with the casting for a low operating temperature and long life. The die-cast door frame is fully gasketed with a one-piece solid silicone gasket to keep out moisture and dust, providing an IP65 rating for the luminaire.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Standard Super Durable colors include dark bronze, black, natural aluminum, sandstone and white. Available in textured and non-textured finishes.

OPTICS

Well crafted reflector optics allow the light engine to be recessed within the luminaire, providing visual comfort, superior distribution, uniformity, and spacing in wall-mount applications. The WST LED has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) consist of 98 high-efficacy LEDs mounted to a metal core circuit board and integral aluminum heat sinks to maximize heat dissipation and promote long life (100,000 hrs at 40°C, L87). Class 2 electronic driver has a power factor >90%, THD <20%. Easily-serviceable surge protection device meets a minimum Category B (per ANSI/IEEE C62.41.2).

INSTALLATION

A universal mounting plate with integral mounting support arms allows the fixture to hinge down for easy access while making wiring connections.

LISTINGS

CSA certified to U.S. and Canadian standards. Luminaire is IP65 rated. PIR and back box options are rated for wet location. Rated for -30°C to 40°C ambient.

DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY

5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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D-Series Size 0
LED Area Luminaire

Catalog Number

Notes

Type TYPE C

Hit the Tab key or mouse over the page to see all interactive elements.

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

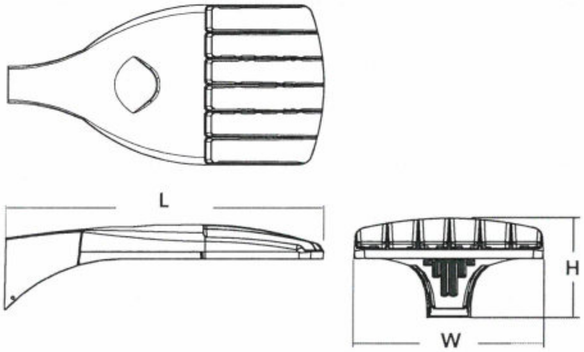
- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+,
visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

Specifications

EPA:	0.95 ft² (.09 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height:	7" (17.8 cm)
Weight (max):	16 lbs (7.25 kg)



A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX0 LED P6 40K T3M MVOLT SPA DDBXD

DSX0 LED	P2	40K	T2M	MVOLT	SPA
Series	**LEDs**	**Color temperature**	**Distribution**	**Voltage**	**Mounting**
DSX0 LED	**Forward optics** P1 P4 P7 P2 P5 P3 P6 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	30K 3000 K 40K 4000 K 50K 5000 K AMBPC Amber phosphor converted[2]	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide BLC Backlight control[2,3] LCCO Left corner cutoff[2,3] RCCO Right corner cutoff[2,3]	MVOLT[4,5] 120[6] 208[5,6] 240[5,6] 277[6] 347[5,6,7] 480[5,6,7]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[8] RPUMBA Round pole universal mounting adaptor[8] **Shipped separately** KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[9]

					DDBXD
Control options				**Other options**	**Finish** *(required)*
Shipped installed		PIRH1FC3V	Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[5,13,14]	**Shipped installed**	DDBXD Dark bronze
NLTAIR2	nLight AIR generation 2 enabled[10]			HS House-side shield[20]	DBLXD Black
PER	NEMA twist-lock receptacle only (control ordered separate)[11]	BL30	Bi-level switched dimming, 30%[5,16,17]	SF Single fuse (120, 277, 347V)[6]	DNAXD Natural aluminum
PER5	Five-wire receptacle only (control ordered separate)[11,12]	BL50	Bi-level switched dimming, 50%[5,16,17]	DF Double fuse (208, 240, 480V)[6]	DWHXD White
PER7	Seven-wire receptacle only (control ordered separate)[11,12]	PNMTDD3	Part night, dim till dawn[5,18]	L90 Left rotated optics[1]	DDBTXD Textured dark bronze
DMG	0-10V dimming extend out back of housing for external control (control ordered separate)	PNMT5D3	Part night, dim 5 hrs[5,18]	R90 Right rotated optics[1]	DBLBXD Textured black
PIR	Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[5,13,14]	PNMT6D3	Part night, dim 6 hrs[5,18]	DDL Diffused drop lens[20]	DNATXD Textured natural aluminum
PIRH	Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[5,13,14]	PNMT7D3	Part night, dim 7 hrs[5,18]	**Shipped separately**	DWHGXD Textured white
PIRHN	Network, Bi-Level motion/ambient sensor[15]	FAO	Field adjustable output[19]	BS Bird spikes[21]	
PIR1FC3V	Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[5,13,14]			EGS External glare shield[21]	

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Ordering Information

Accessories

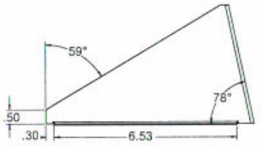
Ordered and shipped separately.

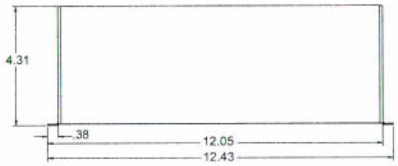
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [22]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [22]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [22]
DSHORT SBK U	Shorting cap [22]
DSX0HS 20C U	House-side shield for 20 LED unit [20]
DSX0HS 30C U	House-side shield for 30 LED unit [20]
DSX0HS 40C U	House-side shield for 40 LED unit [20]
DSX0DDL U	Diffused drop lens (polycarbonate) [20]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish) [23]
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish) [8]

For more control options, visit DTL and ROAM online.

NOTES
1 P10, P11, P12 and P13 and rotated options (L90 or R90) only available together.
2 AMBPC is not available with BLC, LCCO, RCCO, P4, P7 or P13.
3 Not available with HS or DDL.
4 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
5 Any PIRx with BL30, BL50 or PNMT, is not available with 208V, 240V, 347V, 480V or MVOLT. It is only available in 120V or 277V specified.
6 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
7 Not available in P4, P7 or P13. Not available with BL30, BL50 or PNMT options.
8 Existing drilled pole only. Available as a separate combination accessory; for retrofit use only: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
9 Must order fixture with SPA mounting. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
10 Must be ordered with PIRHN.
11 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
12 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Shorting Cap included.
13 Reference Motion Sensor table on page 3.
14 Reference PER Table on page 3 to see functionality.
15 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link.
16 Requires (2) separately switched circuits.
17 Not available with 347V, 480V or PNMT. For PER5 or PER7 see PER Table on page 3. Requires isolated neutral.
18 Not available with 347V, 480V, BL30 and BL50. For PER5 or PER7 see PER Table on page 3. Separate Dusk to Dawn required.
19 Not available with other dimming controls options.
20 Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
21 Must be ordered with fixture for factory pre-drilling.
22 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
23 For retrofit use only.

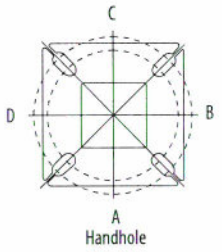
External Glare Shield

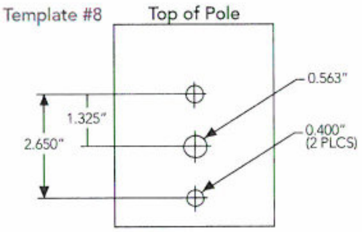




Drilling

HANDHOLE ORIENTATION





Tenon Mounting Slipfitter **

Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Pole drilling nomenclature: # of heads at degree from handhole (default side A)

DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS
1 @ 90°	2 @ 280°	2 @ 90°	3 @ 120°	3 @ 90°	4 @ 90°
Side B	Side B & D	Side B & C	Round pole only	Side B, C, & D	Sides A, B, C, D

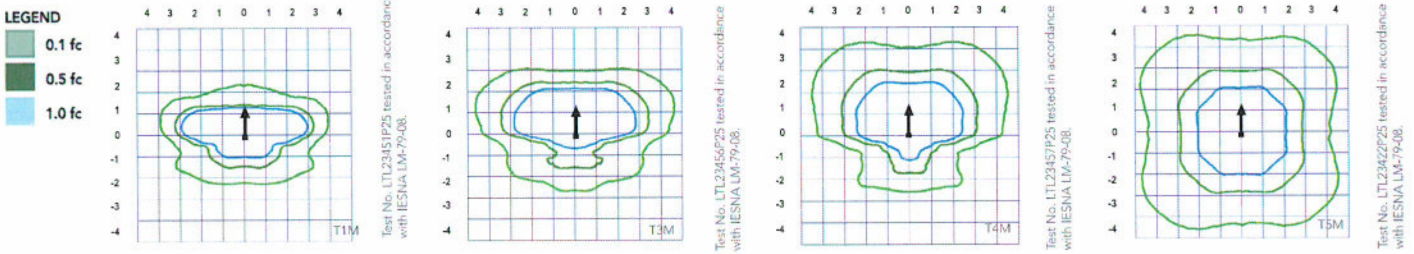
Note: Review luminaire spec sheet for specific nomenclature

Pole top or tenon O.D.	4.5" @ 90°	4" @ 90°	3.5" @ 90°	3" @ 90°	4.5" @ 120°	4" @ 120°	3.5" @ 120°	3" @ 120°
DSX SPA	Y	Y	Y	N	-	-	-	-
DSX RPA	Y	Y	N	N	Y	Y	Y	Y
DSX SPUMBA	Y	N	N	N	-	-	-	-
DSX RPUMBA	N	N	N	N	Y	Y	Y	N
					*3 fixtures @120 require round pole top/tenon.			

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 0 homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



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Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	50°F	1.02
20°C	68°F	1.01
25°C	**77°F**	**1.00**
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	25000	50000	100000
Lumen Maintenance Factor	0.96	0.92	0.85

Electrical Load

	Performance Package	LED Count	Drive Current	Wattage	Current (A)					
					120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	20	530	38	0.32	0.18	0.15	0.15	0.10	0.08
	P2	20	700	49	0.41	0.23	0.20	0.19	0.14	0.11
	P3	20	1050	71	0.60	0.37	0.32	0.27	0.21	0.15
	P4	20	1400	92	0.77	0.45	0.39	0.35	0.28	0.20
	P5	40	700	89	0.74	0.43	0.38	0.34	0.26	0.20
	P6	40	1050	134	1.13	0.65	0.55	0.48	0.39	0.29
	P7	40	1300	166	1.38	0.80	0.69	0.60	0.50	0.37
Rotated Optics (Requires L90 or R90)	P10	30	530	53	0.45	0.26	0.23	0.21	0.16	0.12
	P11	30	700	72	0.60	0.35	0.30	0.27	0.20	0.16
	P12	30	1050	104	0.88	0.50	0.44	0.39	0.31	0.23
	P13	30	1300	128	1.08	0.62	0.54	0.48	0.37	0.27

Motion Sensor Default Settings

Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min

*for use with Inline Dusk to Dawn or timer.

PER Table

Control	PER (3 wire)	PER5 (5 wire)		PER7 (7 wire)		
			Wire 4/Wire5		Wire 4/Wire5	Wire 6/Wire7
Photocontrol Only (On/Off)	✓	⚠	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM	⊘	✓	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM with Motion (ROAM on/off only)	⊘	⚠	Wires Capped inside fixture	⚠	Wires Capped inside fixture	Wires Capped inside fixture
Future-proof*	⊘	⚠	Wired to dimming leads on driver	✓	Wired to dimming leads on driver	Wires Capped inside fixture
Future-proof* with Motion	⊘	⚠	Wires Capped inside fixture	✓	Wires Capped inside fixture	Wires Capped inside fixture

✓ Recommended
⊘ Will not work
⚠ Alternate

*Future-proof means: Ability to change controls in the future.

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20	530	**P1**	38W	T1S	4,369	1	0	1	115	4,706	1	0	1	124	4,766	1	0	1	125	2,541	1	0	1	73
				T2S	4,364	1	0	1	115	4,701	1	0	1	124	4,761	1	0	1	125	2,589	1	0	1	74
				T2M	4,387	1	0	1	115	4,726	1	0	1	124	4,785	1	0	1	126	2,539	1	0	1	73
				T3S	4,248	1	0	1	112	4,577	1	0	1	120	4,634	1	0	1	122	2,558	1	0	1	73
				T3M	4,376	1	0	1	115	4,714	1	0	1	124	4,774	1	0	1	126	2,583	1	0	1	74
				T4M	4,281	1	0	1	113	4,612	1	0	2	121	4,670	1	0	2	123	2,570	1	0	1	73
				TFTM	4,373	1	0	1	115	4,711	1	0	2	124	4,771	1	0	2	126	2,540	1	0	1	73
				T5VS	4,548	2	0	0	120	4,900	2	0	0	129	4,962	2	0	0	131	2,650	1	0	0	76
				T5S	4,552	2	0	0	120	4,904	2	0	0	129	4,966	2	0	0	131	2,690	1	0	0	77
				T5M	4,541	3	0	1	120	4,891	3	0	1	129	4,953	3	0	1	130	2,658	2	0	0	76
				T5W	4,576	3	0	2	120	4,929	3	0	2	130	4,992	3	0	2	131	2,663	2	0	1	73
				BLC	3,586	1	0	1	94	3,863	1	0	1	102	3,912	1	0	1	103					
				LCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77					
				RCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77					
20	700	**P2**	49W	T1S	5,570	1	0	1	114	6,001	1	0	1	122	6,077	2	0	2	124	3,144	1	0	1	70
				T2S	5,564	1	0	2	114	5,994	1	0	2	122	6,070	2	0	2	124	3,203	1	0	1	71
				T2M	5,593	1	0	1	114	6,025	1	0	1	123	6,102	1	0	1	125	3,141	1	0	1	70
				T3S	5,417	1	0	2	111	5,835	1	0	2	119	5,909	2	0	2	121	3,165	1	0	1	70
				T3M	5,580	1	0	2	114	6,011	1	0	2	123	6,087	1	0	2	124	3,196	1	0	1	71
				T4M	5,458	1	0	2	111	5,880	1	0	2	120	5,955	1	0	2	122	3,179	1	0	1	71
				TFTM	5,576	1	0	2	114	6,007	1	0	2	123	6,083	1	0	2	124	3,143	1	0	1	70
				T5VS	5,799	2	0	0	118	6,247	2	0	0	127	6,327	2	0	0	129	3,278	2	0	0	73
				T5S	5,804	2	0	0	118	6,252	2	0	0	128	6,332	2	0	1	129	3,328	2	0	0	74
				T5M	5,789	3	0	1	118	6,237	3	0	1	127	6,316	3	0	1	129	3,288	2	0	1	73
				T5W	5,834	3	0	2	119	6,285	3	0	2	128	6,364	3	0	2	130	3,295	2	0	1	73
				BLC	4,572	1	0	1	93	4,925	1	0	1	101	4,987	1	0	1	102					
				LCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76					
				RCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76					
20	1050	**P3**	71W	T1S	7,833	2	0	2	110	8,438	2	0	2	119	8,545	2	0	2	120					
				T2S	7,825	2	0	2	110	8,429	2	0	2	119	8,536	2	0	2	120					
				T2M	7,865	2	0	2	111	8,473	2	0	2	119	8,580	2	0	2	121					
				T3S	7,617	2	0	2	107	8,205	2	0	2	116	8,309	2	0	2	117					
				T3M	7,846	2	0	2	111	8,452	2	0	2	119	8,559	2	0	2	121					
				T4M	7,675	2	0	2	108	8,269	2	0	2	116	8,373	2	0	2	118					
				TFTM	7,841	2	0	2	110	8,447	2	0	2	119	8,554	2	0	2	120					
				T5VS	8,155	3	0	0	115	8,785	3	0	0	124	8,896	3	0	0	125					
				T5S	8,162	3	0	1	115	8,792	3	0	1	124	8,904	3	0	1	125					
				T5M	8,141	3	0	2	115	8,770	3	0	2	124	8,881	3	0	2	125					
				T5W	8,204	3	0	2	116	8,838	4	0	2	124	8,950	4	0	2	126					
				BLC	6,429	1	0	2	91	6,926	1	0	2	98	7,013	1	0	2	99					
				LCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73					
				RCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73					
20	1400	**P4**	92W	T1S	9,791	2	0	2	106	10,547	2	0	2	115	10,681	2	0	2	116					
				T2S	9,780	2	0	2	106	10,536	2	0	2	115	10,669	2	0	2	116					
				T2M	9,831	2	0	2	107	10,590	2	0	2	115	10,724	2	0	2	117					
				T3S	9,521	2	0	2	103	10,256	2	0	2	111	10,386	2	0	2	113					
				T3M	9,807	2	0	2	107	10,565	2	0	2	115	10,698	2	0	2	116					
				T4M	9,594	2	0	2	104	10,335	2	0	3	112	10,466	2	0	3	114					
				TFTM	9,801	2	0	2	107	10,558	2	0	2	115	10,692	2	0	2	116					
				T5VS	10,193	3	0	1	111	10,981	3	0	1	119	11,120	3	0	1	121					
				T5S	10,201	3	0	1	111	10,990	3	0	1	119	11,129	3	0	1	121					
				T5M	10,176	4	0	2	111	10,962	4	0	2	119	11,101	4	0	2	121					
				T5W	10,254	4	0	3	111	11,047	4	0	3	120	11,186	4	0	3	122					
				BLC	8,036	1	0	2	87	8,656	1	0	2	94	8,766	1	0	2	95					
				LCCO	5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71					
					5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71					

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
40	700	**P5**	89W	T1S	10,831	2	0	2	122	11,668	2	0	2	131	11,816	2	0	2	133					
				T2S	10,820	2	0	2	122	11,656	2	0	2	131	11,803	2	0	2	133					
				T2M	10,876	2	0	2	122	11,716	2	0	2	132	11,864	2	0	2	133					
				T3S	10,532	2	0	2	118	11,346	2	0	2	127	11,490	2	0	2	129					
				T3M	10,849	2	0	2	122	11,687	2	0	2	131	11,835	2	0	2	133					
				T4M	10,613	2	0	3	119	11,434	2	0	3	128	11,578	2	0	3	130					
				TFTM	10,842	2	0	2	122	11,680	2	0	2	131	11,828	2	0	2	133					
				T5VS	11,276	3	0	1	127	12,148	3	0	1	136	12,302	3	0	1	138					
				T5S	11,286	3	0	1	127	12,158	3	0	1	137	12,312	3	0	1	138					
				T5M	11,257	4	0	2	126	12,127	4	0	2	136	12,280	4	0	2	138					
				T5W	11,344	4	0	3	127	12,221	4	0	3	137	12,375	4	0	3	139					
				BLC	8,890	1	0	2	100	9,576	1	0	2	108	9,698	1	0	2	109					
				LCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81					
				RCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81					
40	1050	**P6**	134W	T1S	14,805	3	0	3	110	15,949	3	0	3	119	16,151	3	0	3	121	6,206	2	0	2	68
				T2S	14,789	3	0	3	110	15,932	3	0	3	119	16,134	3	0	3	120	6,322	2	0	2	69
				T2M	14,865	3	0	3	111	16,014	3	0	3	120	16,217	3	0	3	121	6,201	2	0	2	68
				T3S	14,396	3	0	3	107	15,509	3	0	3	116	15,705	3	0	3	117	6,247	1	0	2	69
				T3M	14,829	2	0	3	111	15,975	3	0	3	119	16,177	3	0	3	121	6,308	2	0	2	69
				T4M	14,507	2	0	3	108	15,628	3	0	3	117	15,826	3	0	3	118	6,275	1	0	2	69
				TFTM	14,820	2	0	3	111	15,965	3	0	3	119	16,167	3	0	3	121	6,203	1	0	2	68
				T5VS	15,413	4	0	1	115	16,604	4	0	1	124	16,815	4	0	1	125	6,671	2	0	0	73
				T5S	15,426	3	0	1	115	16,618	4	0	1	124	16,828	4	0	1	126	6,569	2	0	0	72
				T5M	15,387	4	0	2	115	16,576	4	0	2	124	16,786	4	0	2	125	6,491	3	0	1	71
				T5W	15,506	4	0	3	116	16,704	4	0	3	125	16,915	4	0	3	126	6,504	3	0	2	71
				BLC	12,151	1	0	2	91	13,090	1	0	2	98	13,255	1	0	2	99					
				LCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74					
				RCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74					
40	1300	**P7**	166W	T1S	17,023	3	0	3	103	18,338	3	0	3	110	18,570	3	0	3	112					
				T2S	17,005	3	0	3	102	18,319	3	0	3	110	18,551	3	0	3	112					
				T2M	17,092	3	0	3	103	18,413	3	0	3	111	18,646	3	0	3	112					
				T3S	16,553	3	0	3	100	17,832	3	0	3	107	18,058	3	0	3	109					
				T3M	17,051	3	0	3	103	18,369	3	0	3	111	18,601	3	0	3	112					
				T4M	16,681	3	0	3	100	17,969	3	0	3	108	18,197	3	0	3	110					
				TFTM	17,040	3	0	3	103	18,357	3	0	4	111	18,590	3	0	4	112					
				T5VS	17,723	4	0	1	107	19,092	4	0	1	115	19,334	4	0	1	116					
				T5S	17,737	4	0	2	107	19,108	4	0	2	115	19,349	4	0	2	117					
				T5M	17,692	4	0	2	107	19,059	4	0	2	115	19,301	4	0	2	116					
				T5W	17,829	5	0	3	107	19,207	5	0	3	116	19,450	5	0	3	117					
				BLC	13,971	2	0	2	84	15,051	2	0	2	91	15,241	2	0	2	92					
				LCCO	10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68					
					10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68					

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Rotated Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30	530	**P10**	53W	T1S	6,727	2	0	2	127	7,247	3	0	3	137	7,339	3	0	3	138					
				T2S	6,689	3	0	3	126	7,205	3	0	3	136	7,297	3	0	3	138					
				T2M	6,809	3	0	3	128	7,336	3	0	3	138	7,428	3	0	3	140					
				T3S	6,585	3	0	3	124	7,094	3	0	3	134	7,183	3	0	3	136					
				T3M	6,805	3	0	3	128	7,331	3	0	3	138	7,424	3	0	3	140					
				T4M	6,677	3	0	3	126	7,193	3	0	3	136	7,284	3	0	3	137					
				TFTM	6,850	3	0	3	129	7,379	3	0	3	139	7,472	3	0	3	141					
				T5VS	6,898	3	0	0	130	7,431	3	0	0	140	7,525	3	0	0	142					
				T5S	6,840	2	0	1	129	7,368	2	0	1	139	7,461	2	0	1	141					
				T5M	6,838	3	0	1	129	7,366	3	0	2	139	7,460	3	0	2	141					
				T5W	6,777	3	0	2	128	7,300	3	0	2	138	7,393	3	0	2	139					
				BLC	5,626	2	0	2	106	6,060	2	0	2	114	6,137	2	0	2	116					
				LCCO	4,018	1	0	2	76	4,328	1	0	2	82	4,383	1	0	2	83					
				RCCO	4,013	3	0	3	76	4,323	3	0	3	82	4,377	3	0	3	83					
30	700	**P11**	72W	T1S	8,594	3	0	3	119	9,258	3	0	3	129	9,376	3	0	3	130					
				T2S	8,545	3	0	3	119	9,205	3	0	3	128	9,322	3	0	3	129					
				T2M	8,699	3	0	3	121	9,371	3	0	3	130	9,490	3	0	3	132					
				T3S	8,412	3	0	3	117	9,062	3	0	3	126	9,177	3	0	3	127					
				T3M	8,694	3	0	3	121	9,366	3	0	3	130	9,484	3	0	3	132					
				T4M	8,530	3	0	3	118	9,189	3	0	3	128	9,305	3	0	3	129					
				TFTM	8,750	3	0	3	122	9,427	3	0	3	131	9,546	3	0	3	133					
				T5VS	8,812	3	0	0	122	9,493	3	0	0	132	9,613	3	0	0	134					
				T5S	8,738	3	0	1	121	9,413	3	0	1	131	9,532	3	0	1	132					
				T5M	8,736	3	0	2	121	9,411	3	0	2	131	9,530	3	0	2	132					
				T5W	8,657	4	0	2	120	9,326	4	0	2	130	9,444	4	0	2	131					
				BLC	7,187	3	0	3	100	7,742	3	0	3	108	7,840	3	0	3	109					
				LCCO	5,133	1	0	2	71	5,529	1	0	2	77	5,599	1	0	2	78					
				RCCO	5,126	3	0	3	71	5,522	3	0	3	77	5,592	3	0	3	78					
30	1050	**P12**	104W	T1S	12,149	3	0	3	117	13,088	3	0	3	126	13,253	3	0	3	127					
				T2S	12,079	4	0	4	116	13,012	4	0	4	125	13,177	4	0	4	127					
				T2M	12,297	3	0	3	118	13,247	3	0	3	127	13,415	3	0	3	129					
				T3S	11,891	4	0	4	114	12,810	4	0	4	123	12,972	4	0	4	125					
				T3M	12,290	3	0	3	118	13,239	4	0	4	127	13,407	4	0	4	129					
				T4M	12,058	4	0	4	116	12,990	4	0	4	125	13,154	4	0	4	126					
				TFTM	12,369	4	0	4	119	13,325	4	0	4	128	13,494	4	0	4	130					
				T5VS	12,456	3	0	1	120	13,419	3	0	1	129	13,589	4	0	1	131					
				T5S	12,351	3	0	1	119	13,306	3	0	1	128	13,474	3	0	1	130					
				T5M	12,349	4	0	2	119	13,303	4	0	2	128	13,471	4	0	2	130					
				T5W	12,238	4	0	3	118	13,183	4	0	3	127	13,350	4	0	3	128					
				BLC	10,159	3	0	3	98	10,944	3	0	3	105	11,083	3	0	3	107					
				LCCO	7,256	1	0	3	70	7,816	1	0	3	75	7,915	1	0	3	76					
				RCCO	7,246	3	0	3	70	7,806	4	0	4	75	7,905	4	0	4	76					
30	1300	**P13**	128W	T1S	14,438	3	0	3	113	15,554	3	0	3	122	15,751	3	0	3	123					
				T2S	14,355	4	0	4	112	15,465	4	0	4	121	15,660	4	0	4	122					
				T2M	14,614	3	0	3	114	15,744	4	0	4	123	15,943	4	0	4	125					
				T3S	14,132	4	0	4	110	15,224	4	0	4	119	15,417	4	0	4	120					
				T3M	14,606	4	0	4	114	15,735	4	0	4	123	15,934	4	0	4	124					
				T4M	14,330	4	0	4	112	15,438	4	0	4	121	15,633	4	0	4	122					
				TFTM	14,701	4	0	4	115	15,836	4	0	4	124	16,037	4	0	4	125					
				T5VS	14,804	4	0	1	116	15,948	4	0	1	125	16,150	4	0	1	126					
				T5S	14,679	3	0	1	115	15,814	3	0	1	124	16,014	3	0	1	125					
				T5M	14,676	4	0	2	115	15,810	4	0	2	124	16,010	4	0	2	125					
				T5W	14,544	4	0	3	114	15,668	4	0	3	122	15,866	4	0	3	124					
				BLC	7919	3	0	3	62	8531	3	0	3	67	8639	3	0	3	67					
				LCCO	5145	1	0	2	40	5543	1	0	2	43	5613	1	0	2	44					
					5139	3	0	3	40	5536	3	0	3	43	5606	3	0	3	44					

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FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and pedestrian areas.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.95 ft²) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in 3000 K, 4000 K or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

LISTINGS

UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

WARRANTY

5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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OLWX1 LED
LED Wall Luminaire

Catalog Number	
Notes	
Type	D

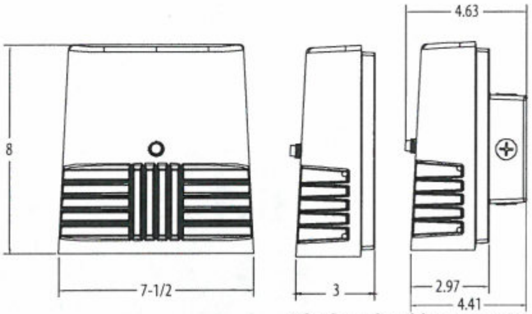
Hit the Tab key or mouse over the page to see all interactive elements.

Introduction

The OLWX1 is versatile and energy efficient. It is designed to replace up to 250W metal halide while saving over 87% in energy costs. Whether you are mounting it to a recessed junction box, conduit/through wiring, as an up light, as a down light, or as a flood light – the OLWX1 has all applications covered.

Specifications

Width:	7-1/2" *(19 cm)*
Height:	8" *(20.3 cm)*
Depth:	3" *(7.62 cm)*
Weight:	5 lbs *(2.27kg)*



Flush or backbox mount

Ordering Information

EXAMPLE: OLWX1 LED 20W 50K

OLWX1 LED	13W		40K		MVOLT				DARK BRONZE	
Series	**Performance Package**		**Color Temperature**		**Voltage**		**Controls**		**Finish**	
OLWX1 LED	13W	13 watts	40K	4000 K [1]	(blank)	MVOLT [2]	(blank)	None	(blank)	Dark bronze
	20W	20 watts	50K	5000 K	120	120V [3]	PE	120V button photocell [1,3]		
	40W	40 watts			347	347V				

Accessories

Ordered and shipped separately.

OLWX1TS	Slipfitter – size 1
OLWX1YK	Yoke – size 1
OLWX1THK	Knuckle – size 1

NOTES

1 Not available with 347V option.
2 MVOLT driver operates on any line voltage from 120-277V (50/60Hz).
3 Specify 120V when ordering with photocell (PE option).

FEATURES & SPECIFICATIONS

INTENDED USE

The versatility of the OLWX1 LED combines a sleek, low-profile wall pack design with energy efficient, low maintenance LEDs for replacing up to 250W metal halide fixtures. Mounting accessories are available to convert the OLWX1 LED into an energy efficient flood light.

OLWX1 LED is ideal for outdoor applications such as building perimeters, loading areas, driveways and sign and building flood lighting.

CONSTRUCTION

Cast-aluminum housing with textured dark bronze polyester powder paint for durability. Integral heat sinks optimize thermal management through conductive and convective cooling. LEDs are protected behind a glass lens. Housing is sealed against moisture and environmental contaminants (IP65 rated). See Lighting Facts label and photometry reports for details.

ELECTRICAL

Light engine consists of 1 high-efficiency Chip On Board (COB) LED with integrated circuit board mounted directly to the housing to maximize heat dissipation and promote long life (L73/100,000 hours at 25°C). Electronic drivers have a power factor >90% and THD <20% and a minimum 2.5kV surge rating. Flood light mounting accessories include an additional 6kV surge protection device. LEDs are available in 4000K and 5000K CCTs.

INSTALLATION

Easily mounts to recessed junction boxes with the included wall mount bracket, or for surface mounting and conduit entry - with the included junction box with five 1/2" threaded conduit entry hubs. Flood light mounting accessories (sold separately) include knuckle, integral slipfitter and yoke mounting options. Each flood mount accessory comes with a top visor and vandal guard. Luminaire may be wall or ground mounted in downward or upward orientation.

LISTINGS

UL Listed to U.S. and Canadian safety standards for wet locations. Rated for -40° C minimum ambient. Tested in accordance with IESNA LM-79 and LM-80 standards. DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY

5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25°C. Specifications subject to change without notice.

LITHONIA LIGHTING
One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • www.lithonia.com
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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts.

Fixture Model Number	CCT	System Watts	Lumens	LPW	B	U	G	CRI
OLWX1 LED 13W 40K	4000 K	14 W	1,271	91	1	0	0	>70
OLWX1 LED 13W 50K	5000 K	14 W	1,289	92	1	0	0	>80
OLWX1 LED 20W 40K	4000 K	20 W	2,697	135	1	0	0	>70
OLWX1 LED 20W 50K	5000 K	19 W	2,663	140	1	0	0	>70
OLWX1 LED 40W 40K	4000 K	39 W	4,027	101	2	0	0	>70
OLWX1 LED 40W 50K	5000 K	37 W	4,079	110	2	0	0	>70

Electrical Load

Fixture Model Number	Rated Power (watts)	Input current at given input voltage (amps)				
		120V	208V	240V	277V	347V
OLWX1 LED 13W 40K	14 W	0.12	0.07	0.06	0.06	0.04
OLWX1 LED 13W 50K	14 W	0.12	0.07	0.06	0.06	0.04
OLWX1 LED 20W 40K	20 W	0.20	0.12	0.10	0.09	0.06
OLWX1 LED 20W 50K	19 W	0.20	0.12	0.10	0.09	0.06
OLWX1 LED 40W 40K	39 W	0.37	0.21	0.19	0.16	0.11
OLWX1 LED 40W 50K	37 W	0.37	0.21	0.19	0.16	0.11

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

	0°C	10°C	20°C	25°C	30°C	40°C
13W	1.06	1.03	1.01	1.00	0.99	0.96
20W	1.06	1.04	1.01	1.00	0.99	0.96
40W	1.07	1.04	1.01	1.00	0.99	0.96

Projected LED Lumen Maintenance

Data references the extrapolated performance projections in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
OLWX1 LED 13W	1.00	0.92	0.85	0.73
OLWX1 LED 20W	1.00	0.92	0.85	0.73
OLWX1 LED 40W	1.00	0.94	0.88	0.79

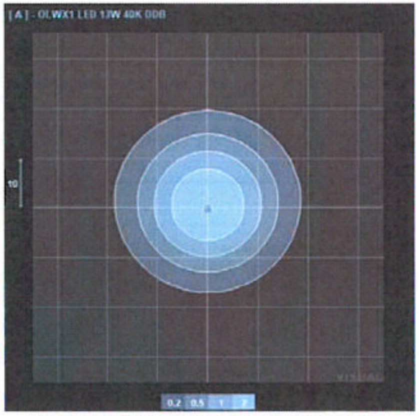
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit the Lithonia Lighting OLWX1 LED homepage. Tested in accordance with IESNA LM-79 and LM-80 standards

LEGEND

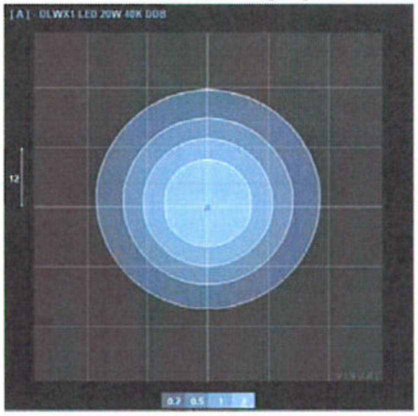
▨ 0.2 fc
▨ 0.5 fc
▨ 1.0 fc
▨ 2.0 fc

OLWX1 LED 13W 40K, Mounting height = 10'



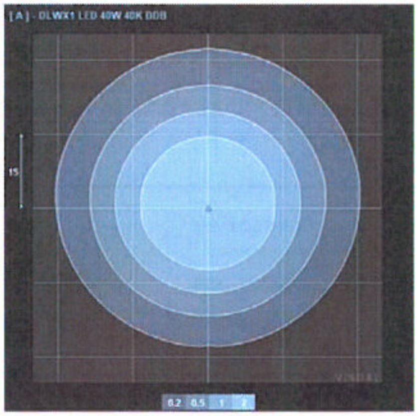
Test No. LTL22697 tested in accordance with IESNA LM-79-08.

OLWX1 LED 20W 40K, Mounting height = 12'



Test No. LTL22696 tested in accordance with IESNA LM-79-08.

OLWX1 LED 40W 40K, Mounting height = 15'



Test No. LTL22695 tested in accordance with IESNA LM-79-08.

Accessories

OLWX1TS
Slipfitter – size 1

Standard size tenon is 2 1/8".
The slip fitter has a range of 2" to 2 3/8".

OLWX1YK
Yoke – size 1

OLWX1THK
Knuckle – size 1

Top Visor and Vandal Guard
included with accessories

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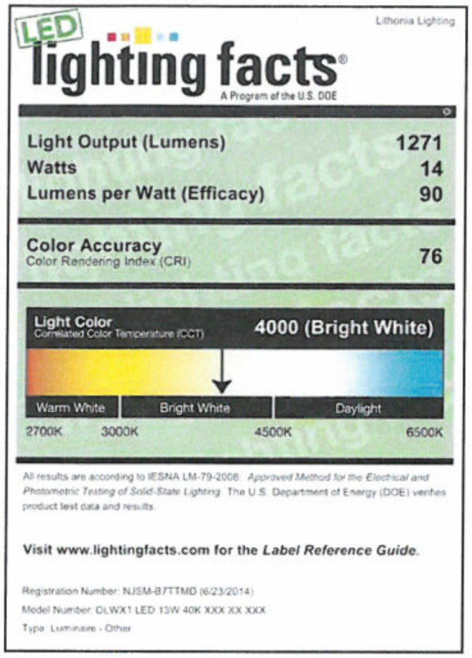
Lighting Facts Labels

OLWX1 LED 13W 40K XXX XX XXX



LED lighting facts®
A Program of the U.S. DOE
Lithonia Lighting

Light Output (Lumens)	1271
Watts	14
Lumens per Watt (Efficacy)	90
Color Accuracy Color Rendering Index (CRI)	76
Light Color Correlated Color Temperature (CCT)	4000 (Bright White)

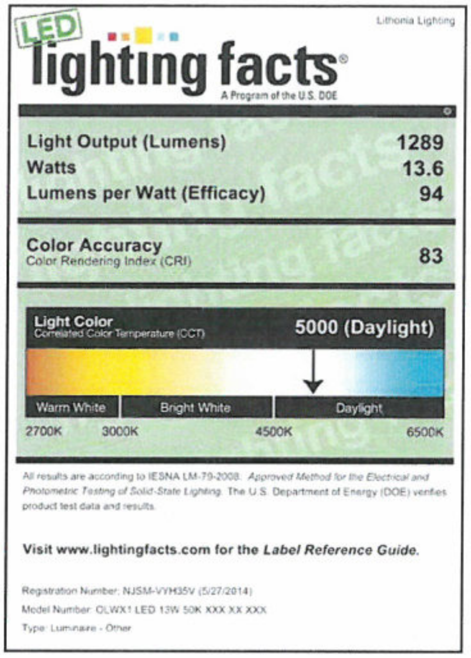
Warm White Bright White Daylight
2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: NJSM-B7TTMD (6/23/2014)
Model Number: OLWX1 LED 13W 40K XXX XX XXX
Type: Luminaire - Other

OLWX1 LED 13W 50K XXX XX XXX



LED lighting facts®
A Program of the U.S. DOE
Lithonia Lighting

Light Output (Lumens)	1289
Watts	13.6
Lumens per Watt (Efficacy)	94
Color Accuracy Color Rendering Index (CRI)	83
Light Color Correlated Color Temperature (CCT)	5000 (Daylight)

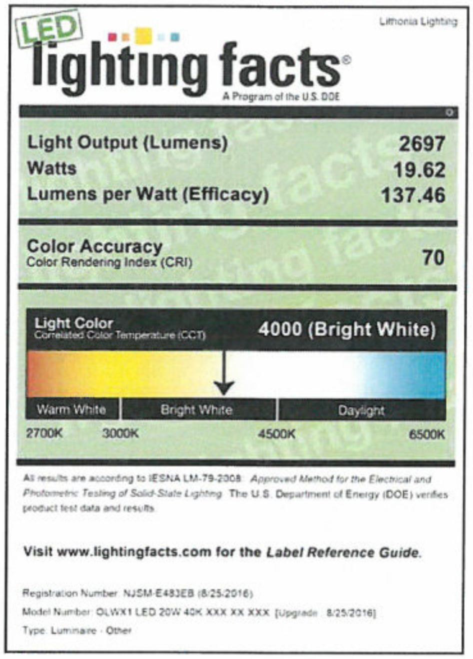
Warm White Bright White Daylight
2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: NJSM-VYH35V (5/27/2014)
Model Number: OLWX1 LED 13W 50K XXX XX XXX
Type: Luminaire - Other

OLWX1 LED 20W 40K XXX XX XXX



LED lighting facts®
A Program of the U.S. DOE
Lithonia Lighting

Light Output (Lumens)	2697
Watts	19.62
Lumens per Watt (Efficacy)	137.46
Color Accuracy Color Rendering Index (CRI)	70
Light Color Correlated Color Temperature (CCT)	4000 (Bright White)

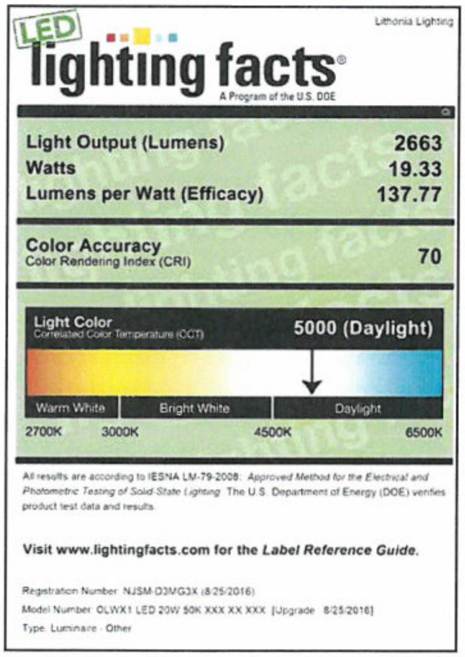
Warm White Bright White Daylight
2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: NJSM-E483EB (8/25/2016)
Model Number: OLWX1 LED 20W 40K XXX XX XXX [Upgrade : 8/25/2016]
Type: Luminaire - Other

OLWX1 LED 20W 50K XXX XX XXX



LED lighting facts®
A Program of the U.S. DOE
Lithonia Lighting

Light Output (Lumens)	2663
Watts	19.33
Lumens per Watt (Efficacy)	137.77
Color Accuracy Color Rendering Index (CRI)	70
Light Color Correlated Color Temperature (CCT)	5000 (Daylight)

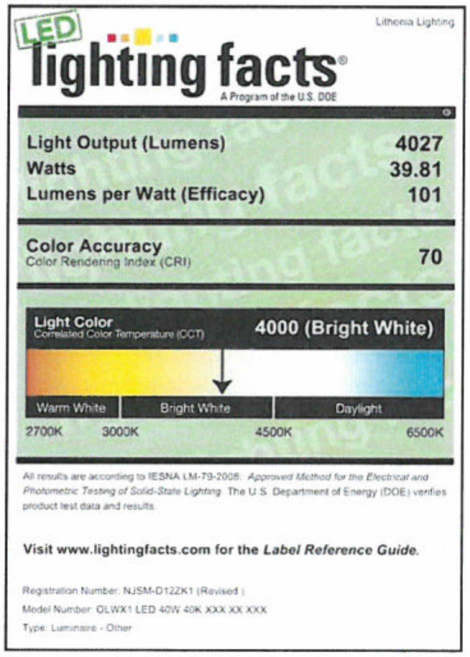
Warm White Bright White Daylight
2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: NJSM-D3MG3X (8/25/2016)
Model Number: OLWX1 LED 20W 50K XXX XX XXX [Upgrade : 8/25/2016]
Type: Luminaire - Other

OLWX1 LED 40W 40K XXX XX XXX



LED lighting facts®
A Program of the U.S. DOE
Lithonia Lighting

Light Output (Lumens)	4027
Watts	39.81
Lumens per Watt (Efficacy)	101
Color Accuracy Color Rendering Index (CRI)	70
Light Color Correlated Color Temperature (CCT)	4000 (Bright White)

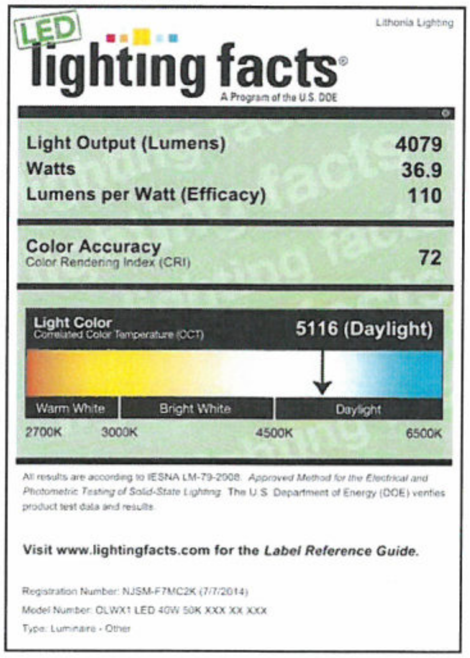
Warm White Bright White Daylight
2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: NJSM-D12ZK1 (Revised)
Model Number: OLWX1 LED 40W 40K XXX XX XXX
Type: Luminaire - Other

OLWX1 LED 40W 50K XXX XX XXX



LED lighting facts®
A Program of the U.S. DOE
Lithonia Lighting

Light Output (Lumens)	4079
Watts	36.9
Lumens per Watt (Efficacy)	110
Color Accuracy Color Rendering Index (CRI)	72
Light Color Correlated Color Temperature (CCT)	5116 (Daylight)

Warm White Bright White Daylight
2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: NJSM-F7MC2K (7/7/2014)
Model Number: OLWX1 LED 40W 50K XXX XX XXX
Type: Luminaire - Other

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D-Series Size 0

LED Area Luminaire

Catalog Number

Notes

Type TYPE E

Hit the Tab key or mouse over the page to see all interactive elements.

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

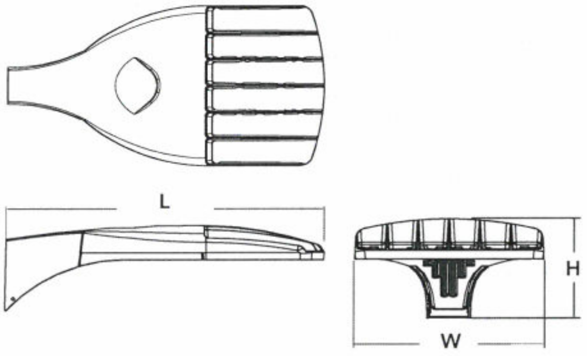
- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+,
visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

Specifications

EPA:	0.95 ft² (.09 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height:	7" (17.8 cm)
Weight (max):	16 lbs (7.25 kg)



A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX0 LED P6 40K T3M MVOLT SPA DDBXD

Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	P2	40K	T2M	MVOLT	SPA
DSX0 LED	**Forward optics** P1 P4 P7 P2 P5 P3 P6 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	30K 3000 K 40K 4000 K 50K 5000 K AMBPC Amber phosphor converted[2]	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide BLC Backlight control[2,3] LCCO Left corner cutoff[2,3] RCCO Right corner cutoff[2,3]	MVOLT[4,5] 120[6] 208[5,6] 240[5,6] 277[6] 347[5,6,7] 480[5,6,7]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[8] RPUMBA Round pole universal mounting adaptor[8] **Shipped separately** KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[9]

Control options	Other options	Finish *(required)*
	EGS HS	DDBXD

Control options

Shipped installed

NLTAIR2	nLight AIR generation 2 enabled[10]
PER	NEMA twist-lock receptacle only (control ordered separate)[11]
PER5	Five-wire receptacle only (control ordered separate)[11,12]
PER7	Seven-wire receptacle only (control ordered separate)[11,12]
DMG	0-10V dimming extend out back of housing for external control (control ordered separate)
PIR	Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[5,13,14]
PIRH	Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[5,13,14]
PIRHN	Network, Bi-Level motion/ambient sensor[15]
PIR1FC3V	Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[5,13,14]
PIRH1FC3V	Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[5,13,14]
BL30	Bi-level switched dimming, 30%[5,16,17]
BL50	Bi-level switched dimming, 50%[5,16,17]
PNMTDD3	Part night, dim till dawn[5,18]
PNMT5D3	Part night, dim 5 hrs[5,18]
PNMT6D3	Part night, dim 6 hrs[5,18]
PNMT7D3	Part night, dim 7 hrs[5,18]
FAO	Field adjustable output[19]

Other options

Shipped installed

HS	House-side shield[20]
SF	Single fuse (120, 277, 347V)[6]
DF	Double fuse (208, 240, 480V)[6]
L90	Left rotated optics[1]
R90	Right rotated optics[1]
DDL	Diffused drop lens[20]

Shipped separately

BS	Bird spikes[21]
EGS	External glare shield[21]

Finish *(required)*

DDBXD	Dark bronze
DBLXD	Black
DNAXD	Natural aluminum
DWHXD	White
DDBTXD	Textured dark bronze
DBLBXD	Textured black
DNATXD	Textured natural aluminum
DWHGXD	Textured white

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Ordering Information

Accessories

Ordered and shipped separately.

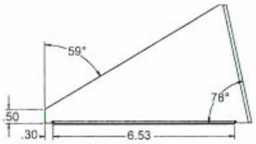
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [22]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [22]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [22]
DSHORT SBK U	Shorting cap [22]
DSX0HS 20C U	House-side shield for 20 LED unit [20]
DSX0HS 30C U	House-side shield for 30 LED unit [20]
DSX0HS 40C U	House-side shield for 40 LED unit [20]
DSX0DDL U	Diffused drop lens (polycarbonate) [20]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish) [23]
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish) [8]

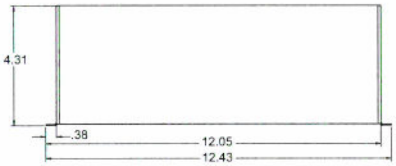
For more control options, visit DTL and ROAM online.

NOTES

1 P10, P11, P12 and P13 and rotated options (L90 or R90) only available together.
2 AMBPC is not available with BLC, LCCO, RCCO, P4, P7 or P13.
3 Not available with HS or DDL.
4 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
5 Any PIRx with BL30, BL50 or PNMT, is not available with 208V, 240V, 347V, 480V or MVOLT. It is only available in 120V or 277V specified.
6 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
7 Not available in P4, P7 or P13. Not available with BL30, BL50 or PNMT options.
8 Existing drilled pole only. Available as a separate combination accessory; for retrofit use only: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
9 Must order fixture with SPA mounting. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
10 Must be ordered with PIRHN.
11 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
12 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Shorting Cap included.
13 Reference Motion Sensor table on page 3.
14 Reference PER Table on page 3 to see functionality.
15 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link.
16 Requires (2) separately switched circuits.
17 Not available with 347V, 480V or PNMT. For PER5 or PER7 see PER Table on page 3. Requires isolated neutral.
18 Not available with 347V, 480V, BL30 and BL50. For PER5 or PER7 see PER Table on page 3. Separate Dusk to Dawn required.
19 Not available with other dimming controls options.
20 Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
21 Must be ordered with fixture for factory pre-drilling.
22 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
23 For retrofit use only.

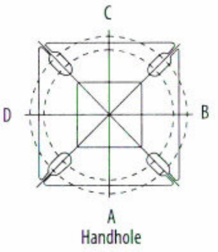
External Glare Shield

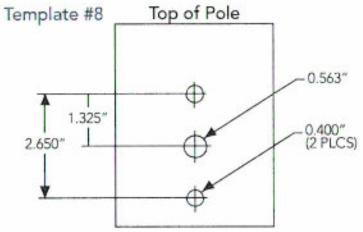




Drilling

HANDHOLE ORIENTATION





Tenon Mounting Slipfitter **

Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

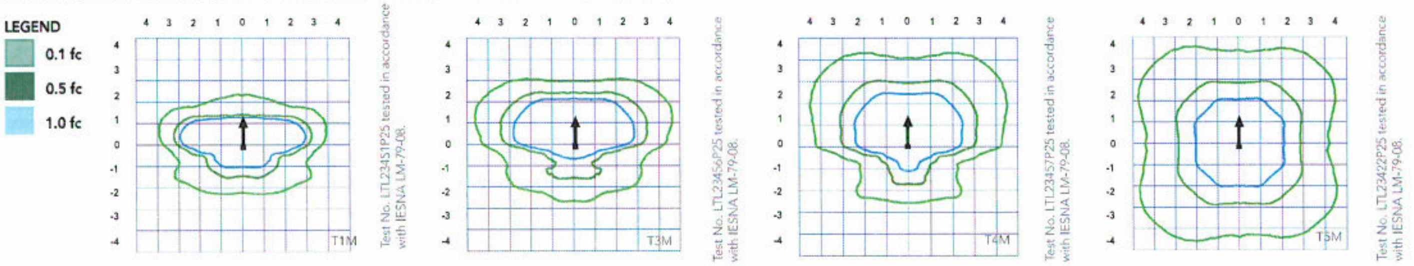
Pole drilling nomenclature: # of heads at degree from handhole (default side A)					
DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS
1 @ 90°	2 @ 280°	2 @ 90°	3 @ 120°	3 @ 90°	4 @ 90°
Side B	Side B & D	Side B & C	Round pole only	Side B, C, & D	Sides A, B, C, D
Note: Review luminaire spec sheet for specific nomenclature					

Pole top or tenon O.D.	4.5" @ 90°	4" @ 90°	3.5" @ 90°	3" @ 90°	4.5" @ 120°	4" @ 120°	3.5" @ 120°	3" @ 120°
DSX SPA	Y	Y	Y	N	-	-	-	-
DSX RPA	Y	Y	N	N	Y	Y	Y	Y
DSX SPUMBA	Y	N	N	N	-	-	-	-
DSX RPUMBA	N	N	N	N	Y	Y	Y	N
					*3 fixtures @120 require round pole top/tenon.			

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 0 homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



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Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	50°F	1.02
20°C	68°F	1.01
25°C	**77°F**	**1.00**
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	25000	50000	100000
Lumen Maintenance Factor	0.96	0.92	0.85

Electrical Load

	Performance Package	LED Count	Drive Current	Wattage	Current (A) 120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	20	530	38	0.32	0.18	0.15	0.15	0.10	0.08
	P2	20	700	49	0.41	0.23	0.20	0.19	0.14	0.11
	P3	20	1050	71	0.60	0.37	0.32	0.27	0.21	0.15
	P4	20	1400	92	0.77	0.45	0.39	0.35	0.28	0.20
	P5	40	700	89	0.74	0.43	0.38	0.34	0.26	0.20
	P6	40	1050	134	1.13	0.65	0.55	0.48	0.39	0.29
	P7	40	1300	166	1.38	0.80	0.69	0.60	0.50	0.37
Rotated Optics (Requires L90 or R90)	P10	30	530	53	0.45	0.26	0.23	0.21	0.16	0.12
	P11	30	700	72	0.60	0.35	0.30	0.27	0.20	0.16
	P12	30	1050	104	0.88	0.50	0.44	0.39	0.31	0.23
	P13	30	1300	128	1.08	0.62	0.54	0.48	0.37	0.27

Motion Sensor Default Settings						
Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min

*for use with Inline Dusk to Dawn or timer.

PER Table						
Control	PER (3 wire)	PER5 (5 wire)		PER7 (7 wire)		
			Wire 4/Wire5		Wire 4/Wire5	Wire 6/Wire7
Photocontrol Only (On/Off)	✓	⚠	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM	⊘	✓	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM with Motion (ROAM on/off only)	⊘	⚠	Wires Capped inside fixture	⚠	Wires Capped inside fixture	Wires Capped inside fixture
Future-proof*	⊘	⚠	Wired to dimming leads on driver	✓	Wired to dimming leads on driver	Wires Capped inside fixture
Future-proof* with Motion	⊘	⚠	Wires Capped inside fixture	✓	Wires Capped inside fixture	Wires Capped inside fixture

✓ Recommended
⊘ Will not work
⚠ Alternate

*Future-proof means: Ability to change controls in the future.

LITHONIA LIGHTING

One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • www.lithonia.com

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Performance Data

Lumen Output

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Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20	530	**P1**	38W	T1S	4,369	1	0	1	115	4,706	1	0	1	124	4,766	1	0	1	125	2,541	1	0	1	73
				T2S	4,364	1	0	1	115	4,701	1	0	1	124	4,761	1	0	1	125	2,589	1	0	1	74
				T2M	4,387	1	0	1	115	4,726	1	0	1	124	4,785	1	0	1	126	2,539	1	0	1	73
				T3S	4,248	1	0	1	112	4,577	1	0	1	120	4,634	1	0	1	122	2,558	1	0	1	73
				T3M	4,376	1	0	1	115	4,714	1	0	1	124	4,774	1	0	1	126	2,583	1	0	1	74
				T4M	4,281	1	0	1	113	4,612	1	0	2	121	4,670	1	0	2	123	2,570	1	0	1	73
				TFTM	4,373	1	0	1	115	4,711	1	0	2	124	4,771	1	0	2	126	2,540	1	0	1	73
				T5VS	4,548	2	0	0	120	4,900	2	0	0	129	4,962	2	0	0	131	2,650	1	0	0	76
				T5S	4,552	2	0	0	120	4,904	2	0	0	129	4,966	2	0	0	131	2,690	1	0	0	77
				T5M	4,541	3	0	1	120	4,891	3	0	1	129	4,953	3	0	1	130	2,658	2	0	0	76
				T5W	4,576	3	0	2	120	4,929	3	0	2	130	4,992	3	0	2	131	2,663	2	0	1	73
				BLC	3,586	1	0	1	94	3,863	1	0	1	102	3,912	1	0	1	103					
				LCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77					
				RCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77					
20	700	**P2**	49W	T1S	5,570	1	0	1	114	6,001	1	0	1	122	6,077	2	0	2	124	3,144	1	0	1	70
				T2S	5,564	1	0	2	114	5,994	1	0	2	122	6,070	2	0	2	124	3,203	1	0	1	71
				T2M	5,593	1	0	1	114	6,025	1	0	1	123	6,102	1	0	1	125	3,141	1	0	1	70
				T3S	5,417	1	0	2	111	5,835	1	0	2	119	5,909	2	0	2	121	3,165	1	0	1	70
				T3M	5,580	1	0	2	114	6,011	1	0	2	123	6,087	1	0	2	124	3,196	1	0	1	71
				T4M	5,458	1	0	2	111	5,880	1	0	2	120	5,955	1	0	2	122	3,179	1	0	1	71
				TFTM	5,576	1	0	2	114	6,007	1	0	2	123	6,083	1	0	2	124	3,143	1	0	1	70
				T5VS	5,799	2	0	0	118	6,247	2	0	0	127	6,327	2	0	0	129	3,278	2	0	0	73
				T5S	5,804	2	0	0	118	6,252	2	0	0	128	6,332	2	0	1	129	3,328	2	0	0	74
				T5M	5,789	3	0	1	118	6,237	3	0	1	127	6,316	3	0	1	129	3,288	2	0	1	73
				T5W	5,834	3	0	2	119	6,285	3	0	2	128	6,364	3	0	2	130	3,295	2	0	1	73
				BLC	4,572	1	0	1	93	4,925	1	0	1	101	4,987	1	0	1	102					
				LCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76					
				RCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76					
20	1050	**P3**	71W	T1S	7,833	2	0	2	110	8,438	2	0	2	119	8,545	2	0	2	120					
				T2S	7,825	2	0	2	110	8,429	2	0	2	119	8,536	2	0	2	120					
				T2M	7,865	2	0	2	111	8,473	2	0	2	119	8,580	2	0	2	121					
				T3S	7,617	2	0	2	107	8,205	2	0	2	116	8,309	2	0	2	117					
				T3M	7,846	2	0	2	111	8,452	2	0	2	119	8,559	2	0	2	121					
				T4M	7,675	2	0	2	108	8,269	2	0	2	116	8,373	2	0	2	118					
				TFTM	7,841	2	0	2	110	8,447	2	0	2	119	8,554	2	0	2	120					
				T5VS	8,155	3	0	0	115	8,785	3	0	0	124	8,896	3	0	0	125					
				T5S	8,162	3	0	1	115	8,792	3	0	1	124	8,904	3	0	1	125					
				T5M	8,141	3	0	2	115	8,770	3	0	2	124	8,881	3	0	2	125					
				T5W	8,204	3	0	2	116	8,838	4	0	2	124	8,950	4	0	2	126					
				BLC	6,429	1	0	2	91	6,926	1	0	2	98	7,013	1	0	2	99					
				LCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73					
				RCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73					
20	1400	**P4**	92W	T1S	9,791	2	0	2	106	10,547	2	0	2	115	10,681	2	0	2	116					
				T2S	9,780	2	0	2	106	10,536	2	0	2	115	10,669	2	0	2	116					
				T2M	9,831	2	0	2	107	10,590	2	0	2	115	10,724	2	0	2	117					
				T3S	9,521	2	0	2	103	10,256	2	0	2	111	10,386	2	0	2	113					
				T3M	9,807	2	0	2	107	10,565	2	0	2	115	10,698	2	0	2	116					
				T4M	9,594	2	0	2	104	10,335	2	0	3	112	10,466	2	0	3	114					
				TFTM	9,801	2	0	2	107	10,558	2	0	2	115	10,692	2	0	2	116					
				T5VS	10,193	3	0	1	111	10,981	3	0	1	119	11,120	3	0	1	121					
				T5S	10,201	3	0	1	111	10,990	3	0	1	119	11,129	3	0	1	121					
				T5M	10,176	4	0	2	111	10,962	4	0	2	119	11,101	4	0	2	121					
				T5W	10,254	4	0	3	111	11,047	4	0	3	120	11,186	4	0	3	122					
				BLC	8,036	1	0	2	87	8,656	1	0	2	94	8,766	1	0	2	95					
				LCCO	5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71					
					5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71					

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Performance Data

Lumen Output

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Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
40	700	**P5**	89W	T1S	10,831	2	0	2	122	11,668	2	0	2	131	11,816	2	0	2	133					
				T2S	10,820	2	0	2	122	11,656	2	0	2	131	11,803	2	0	2	133					
				T2M	10,876	2	0	2	122	11,716	2	0	2	132	11,864	2	0	2	133					
				T3S	10,532	2	0	2	118	11,346	2	0	2	127	11,490	2	0	2	129					
				T3M	10,849	2	0	2	122	11,687	2	0	2	131	11,835	2	0	2	133					
				T4M	10,613	2	0	3	119	11,434	2	0	3	128	11,578	2	0	3	130					
				TFTM	10,842	2	0	2	122	11,680	2	0	2	131	11,828	2	0	2	133					
				T5VS	11,276	3	0	1	127	12,148	3	0	1	136	12,302	3	0	1	138					
				T5S	11,286	3	0	1	127	12,158	3	0	1	137	12,312	3	0	1	138					
				T5M	11,257	4	0	2	126	12,127	4	0	2	136	12,280	4	0	2	138					
				T5W	11,344	4	0	3	127	12,221	4	0	3	137	12,375	4	0	3	139					
				BLC	8,890	1	0	2	100	9,576	1	0	2	108	9,698	1	0	2	109					
				LCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81					
				RCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81					
40	1050	**P6**	134W	T1S	14,805	3	0	3	110	15,949	3	0	3	119	16,151	3	0	3	121	6,206	2	0	2	68
				T2S	14,789	3	0	3	110	15,932	3	0	3	119	16,134	3	0	3	120	6,322	2	0	2	69
				T2M	14,865	3	0	3	111	16,014	3	0	3	120	16,217	3	0	3	121	6,201	2	0	2	68
				T3S	14,396	3	0	3	107	15,509	3	0	3	116	15,705	3	0	3	117	6,247	1	0	2	69
				T3M	14,829	2	0	3	111	15,975	3	0	3	119	16,177	3	0	3	121	6,308	2	0	2	69
				T4M	14,507	2	0	3	108	15,628	3	0	3	117	15,826	3	0	3	118	6,275	1	0	2	69
				TFTM	14,820	2	0	3	111	15,965	3	0	3	119	16,167	3	0	3	121	6,203	1	0	2	68
				T5VS	15,413	4	0	1	115	16,604	4	0	1	124	16,815	4	0	1	125	6,671	2	0	0	73
				T5S	15,426	3	0	1	115	16,618	4	0	1	124	16,828	4	0	1	126	6,569	2	0	0	72
				T5M	15,387	4	0	2	115	16,576	4	0	2	124	16,786	4	0	2	125	6,491	3	0	1	71
				T5W	15,506	4	0	3	116	16,704	4	0	3	125	16,915	4	0	3	126	6,504	3	0	2	71
				BLC	12,151	1	0	2	91	13,090	1	0	2	98	13,255	1	0	2	99					
				LCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74					
				RCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74					
40	1300	**P7**	166W	T1S	17,023	3	0	3	103	18,338	3	0	3	110	18,570	3	0	3	112					
				T2S	17,005	3	0	3	102	18,319	3	0	3	110	18,551	3	0	3	112					
				T2M	17,092	3	0	3	103	18,413	3	0	3	111	18,646	3	0	3	112					
				T3S	16,553	3	0	3	100	17,832	3	0	3	107	18,058	3	0	3	109					
				T3M	17,051	3	0	3	103	18,369	3	0	3	111	18,601	3	0	3	112					
				T4M	16,681	3	0	3	100	17,969	3	0	3	108	18,197	3	0	3	110					
				TFTM	17,040	3	0	3	103	18,357	3	0	4	111	18,590	3	0	4	112					
				T5VS	17,723	4	0	1	107	19,092	4	0	1	115	19,334	4	0	1	116					
				T5S	17,737	4	0	2	107	19,108	4	0	2	115	19,349	4	0	2	117					
				T5M	17,692	4	0	2	107	19,059	4	0	2	115	19,301	4	0	2	116					
				T5W	17,829	5	0	3	107	19,207	5	0	3	116	19,450	5	0	3	117					
				BLC	13,971	2	0	2	84	15,051	2	0	2	91	15,241	2	0	2	92					
				LCCO	10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68					
					10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68					

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Performance Data

Lumen Output

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Rotated Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30	530	**P10**	53W	T1S	6,727	2	0	2	127	7,247	3	0	3	137	7,339	3	0	3	138					
				T2S	6,689	3	0	3	126	7,205	3	0	3	136	7,297	3	0	3	138					
				T2M	6,809	3	0	3	128	7,336	3	0	3	138	7,428	3	0	3	140					
				T3S	6,585	3	0	3	124	7,094	3	0	3	134	7,183	3	0	3	136					
				T3M	6,805	3	0	3	128	7,331	3	0	3	138	7,424	3	0	3	140					
				T4M	6,677	3	0	3	126	7,193	3	0	3	136	7,284	3	0	3	137					
				TFTM	6,850	3	0	3	129	7,379	3	0	3	139	7,472	3	0	3	141					
				T5VS	6,898	3	0	0	130	7,431	3	0	0	140	7,525	3	0	0	142					
				T5S	6,840	2	0	1	129	7,368	2	0	1	139	7,461	2	0	1	141					
				T5M	6,838	3	0	1	129	7,366	3	0	2	139	7,460	3	0	2	141					
				T5W	6,777	3	0	2	128	7,300	3	0	2	138	7,393	3	0	2	139					
				BLC	5,626	2	0	2	106	6,060	2	0	2	114	6,137	2	0	2	116					
				LCCO	4,018	1	0	2	76	4,328	1	0	2	82	4,383	1	0	2	83					
				RCCO	4,013	3	0	3	76	4,323	3	0	3	82	4,377	3	0	3	83					
30	700	**P11**	72W	T1S	8,594	3	0	3	119	9,258	3	0	3	129	9,376	3	0	3	130					
				T2S	8,545	3	0	3	119	9,205	3	0	3	128	9,322	3	0	3	129					
				T2M	8,699	3	0	3	121	9,371	3	0	3	130	9,490	3	0	3	132					
				T3S	8,412	3	0	3	117	9,062	3	0	3	126	9,177	3	0	3	127					
				T3M	8,694	3	0	3	121	9,366	3	0	3	130	9,484	3	0	3	132					
				T4M	8,530	3	0	3	118	9,189	3	0	3	128	9,305	3	0	3	129					
				TFTM	8,750	3	0	3	122	9,427	3	0	3	131	9,546	3	0	3	133					
				T5VS	8,812	3	0	0	122	9,493	3	0	0	132	9,613	3	0	0	134					
				T5S	8,738	3	0	1	121	9,413	3	0	1	131	9,532	3	0	1	132					
				T5M	8,736	3	0	2	121	9,411	3	0	2	131	9,530	3	0	2	132					
				T5W	8,657	4	0	2	120	9,326	4	0	2	130	9,444	4	0	2	131					
				BLC	7,187	3	0	3	100	7,742	3	0	3	108	7,840	3	0	3	109					
				LCCO	5,133	1	0	2	71	5,529	1	0	2	77	5,599	1	0	2	78					
				RCCO	5,126	3	0	3	71	5,522	3	0	3	77	5,592	3	0	3	78					
30	1050	**P12**	104W	T1S	12,149	3	0	3	117	13,088	3	0	3	126	13,253	3	0	3	127					
				T2S	12,079	4	0	4	116	13,012	4	0	4	125	13,177	4	0	4	127					
				T2M	12,297	3	0	3	118	13,247	3	0	3	127	13,415	3	0	3	129					
				T3S	11,891	4	0	4	114	12,810	4	0	4	123	12,972	4	0	4	125					
				T3M	12,290	3	0	3	118	13,239	4	0	4	127	13,407	4	0	4	129					
				T4M	12,058	4	0	4	116	12,990	4	0	4	125	13,154	4	0	4	126					
				TFTM	12,369	4	0	4	119	13,325	4	0	4	128	13,494	4	0	4	130					
				T5VS	12,456	3	0	1	120	13,419	3	0	1	129	13,589	4	0	1	131					
				T5S	12,351	3	0	1	119	13,306	3	0	1	128	13,474	3	0	1	130					
				T5M	12,349	4	0	2	119	13,303	4	0	2	128	13,471	4	0	2	130					
				T5W	12,238	4	0	3	118	13,183	4	0	3	127	13,350	4	0	3	128					
				BLC	10,159	3	0	3	98	10,944	3	0	3	105	11,083	3	0	3	107					
				LCCO	7,256	1	0	3	70	7,816	1	0	3	75	7,915	1	0	3	76					
				RCCO	7,246	3	0	3	70	7,806	4	0	4	75	7,905	4	0	4	76					
30	1300	**P13**	128W	T1S	14,438	3	0	3	113	15,554	3	0	3	122	15,751	3	0	3	123					
				T2S	14,355	4	0	4	112	15,465	4	0	4	121	15,660	4	0	4	122					
				T2M	14,614	3	0	3	114	15,744	4	0	4	123	15,943	4	0	4	125					
				T3S	14,132	4	0	4	110	15,224	4	0	4	119	15,417	4	0	4	120					
				T3M	14,606	4	0	4	114	15,735	4	0	4	123	15,934	4	0	4	124					
				T4M	14,330	4	0	4	112	15,438	4	0	4	121	15,633	4	0	4	122					
				TFTM	14,701	4	0	4	115	15,836	4	0	4	124	16,037	4	0	4	125					
				T5VS	14,804	4	0	1	116	15,948	4	0	1	125	16,150	4	0	1	126					
				T5S	14,679	3	0	1	115	15,814	3	0	1	124	16,014	3	0	1	125					
				T5M	14,676	4	0	2	115	15,810	4	0	2	124	16,010	4	0	2	125					
				T5W	14,544	4	0	3	114	15,668	4	0	3	122	15,866	4	0	3	124					
				BLC	7919	3	0	3	62	8531	3	0	3	67	8639	3	0	3	67					
				LCCO	5145	1	0	2	40	5543	1	0	2	43	5613	1	0	2	44					
					5139	3	0	3	40	5536	3	0	3	43	5606	3	0	3	44					

LITHONIA LIGHTING

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FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and pedestrian areas.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.95 ft²) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in 3000 K, 4000 K or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

LISTINGS

UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

WARRANTY

5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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Real-World Geotechnical Solutions
Investigation • Design • Construction Support

Geotechnical Engineering Report

8th Court Redevelopment
2180 8th Court
West Linn, Oregon 97068

GeoPacific Engineering, Inc. Job No. 18-4970
August 22, 2018

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Real-World Geotechnical Solutions
Investigation • Design • Construction Support

August 16, 2018
Project No. 18-4970

Edge Development
Mr. Ed Bruin
735 SW 20th Place, Suite 220
Portland, Oregon 97205
Phone: (503) 292-7733

SUBJECT: **GEOTECHNICAL ENGINEERING REPORT**
8TH COURT REDEVELOPMENT
8120 8TH COURT
WEST LINN, OREGON 97068

1.0 PROJECT INFORMATION

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced projects. The purpose of our investigation was to evaluate subsurface conditions at the site, and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific Proposal No. P-6617, dated May 31, 2018, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

Site Location:	8120 8th Court West Linn, Oregon 97068 (see Figures 1 through 3)
Developer:	Edge Development 735 SW 20th Place, Suite 220 Portland, Oregon 97205
Jurisdictional Agency:	West Linn, Oregon
Geotechnical Engineer:	GeoPacific Engineering, Inc 14835 SW 72nd Avenue Portland, Oregon 97224 Tel (503) 598-8445 Fax (503) 941-9281

2.0 SITE AND PROJECT DESCRIPTION

The subject site is located at 8120 8th Court in West Linn, Oregon, as indicated on Figures 1 through 3. The site consists of Clackamas County Property No. 1680363, totaling approximately 1.04-acres in size. The site is bordered by Interstate 205 to the north, single family residences to the east, Willamette Falls Drive to the south, and 8th Court and commercial businesses to the west. Currently, the site is occupied by a vacant restaurant building on the southern portion of the site with parking and drive areas throughout the rest of the property. The site is vegetated with landscaping, shrubs, and medium to large trees around the perimeter of the site. Topography at the site slopes down gently to the north with site elevations ranging from approximately 141 to 147 feet above mean sea level (amsl). Along the northern property boundary, the ground surface moderately slopes down to a shallow drainage which runs to the northeast.

Based upon communication with the client, GeoPacific understands that the proposed development at the site will consist of construction of a medical facility on the southern portion of the site, and a commercial retail building on the northern portion of the site with stormwater disposal facilities, parking areas, and associated underground utility improvements.

3.0 REGIONAL GEOLOGIC SETTING

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

According to the *Geologic framework of the Willamette lowland aquifer system, Oregon and Washington, (United States Geological Survey, Gannett, M.W., and Caldwell, R.R. 1998*), the site is underlain by Quaternary-aged (last 1.6 million years) lacustrine deposits consisting of unconsolidated gravel, sand, and silt (Qs), generally referred to as the Willamette Formation, a catastrophic flood deposit associated with repeated glacial outburst flooding of the Willamette Valley (Yeats et al., 1996). The last of these outburst floods occurred about 10,000 years ago. This material is poorly to moderately sorted (Madin, 1990).

Underlying the Willamette Formation are Miocene-aged (approximately 23 to 5 million years ago) Columbia River basalt flows, which consist of phyric basalt and basaltic-andesite flows erupted eastern Oregon, Washington, and Idaho, (Tcr). The basalts are generally composed of dense, finely crystalline rock that is commonly fractured along blocky and columnar vertical joints. The *Web Soil Survey (United States Department of Agriculture, Natural Resource Conservation Service (USDA NRCS 2018 Website)*, indicates that near-surface soils consist of the Willamette and Woodburn Silt Loam soil series. Willamette and Woodburn series soils generally consist of moderately well-drained glaciolacustrine deposits.

4.0 REGIONAL SEISMIC SETTING

At least three major fault zones capable of generating damaging earthquakes are thought to exist in the vicinity of the subject site. These include the Portland Hills Fault Zone, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone.

4.1 Portland Hills Fault Zone

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults reportedly vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills, and is located approximately 4.85 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills, and is located approximately 3.86 miles northeast of the site. The East Bank Fault occurs along the eastern margin of the Willamette River, and is located approximately 11.67 miles northeast of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000).

According to the USGS Earthquake Hazards Program, the fault was originally mapped as a down-to-the-northeast normal fault, but has also been mapped as part of a regional-scale zone of right-lateral, oblique slip faults, and as a steep escarpment caused by asymmetrical folding above a south-west dipping, blind thrust fault. The Portland Hills fault offsets Miocene Columbia River Basalts, and Miocene to Pliocene sedimentary rocks of the Troutdale Formation. No fault scarps on surficial Quaternary deposits have been described along the fault trace, and the fault is mapped as buried by the Pleistocene aged Missoula flood deposits. No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

4.2 Gales Creek-Newberg-Mt. Angel Structural Zone

The Gales Creek-Newberg-Mt. Angel Structural Zone is a 50-mile-long zone of discontinuous, NW-trending faults that lies about 16.36 miles southwest of the subject site. These faults are recognized in the subsurface by vertical separation of the Columbia River Basalt and offset seismic reflectors in the overlying basin sediment (Yeats et al., 1996; Werner et al., 1992). A geologic reconnaissance and photogeologic analysis study conducted for the Scoggins Dam site in the Tualatin Basin revealed no evidence of deformed geomorphic surfaces along the structural zone (Unruh et al., 1994). No seismicity has been recorded on the Gales Creek Fault or Newberg Fault (the fault closest to the subject site); however, these faults are considered to be potentially active because they may connect with the seismically active Mount Angel Fault and the rupture plane of the 1993 M5.6 Scotts Mills earthquake (Werner et al. 1992; Geomatrix Consultants, 1995).

According to the USGS Earthquake Hazards Program, the Mount Angel fault is mapped as a high-angle, reverse-oblique fault, which offsets Miocene rocks of the Columbia River Basalts, and

Miocene and Pliocene sedimentary rocks. The fault appears to have controlled emplacement of the Frenchman Spring Member of the Wanapum Basalts, and thus must have a history that predates the Miocene age of these rocks. No unequivocal evidence of deformation of Quaternary deposits has been described, but a thick sequence of sediments deposited by the Missoula floods covers much of the southern part of the fault trace.

4.3 Cascadia Subduction Zone

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies approximately along the Oregon Coast at depths of between 20 and 40 kilometers below the surface.

5.0 FIELD EXPLORATION AND SUBSURFACE CONDITIONS

Our site-specific explorations for this report were conducted on July 3, 2018, and July 20, 2018. On July 3, 2018, four exploratory borings (designated B-1 through B-4) were drilled to a maximum depth of 45.6 feet below the ground surface, and one exploratory hand auger boring (designated HA-1) was advanced to a depth of 8.5 feet below the ground surface using hand equipment. On July 20, 2018, one Cone Penetration Test (CPT) was advanced to a depth of 54 feet below the ground surface.

The boreholes were drilled using a trailer-mounted drill rig using solid stem auger methods. Boring B-1 was left open for 6 hours to observe groundwater conditions with a water meter. During the drilling of borings B-1 through B-4, SPT (Standard Penetration Test) sampling was performed in general accordance with ASTM D1586 using a 2-inch outside diameter split-spoon sampler and a 140-pound automatic hammer mechanism. During the test, a sample is obtained by driving the sampler 18 inches into the soil with the hammer free-falling 30 inches. The number of blows for each 6 inches of penetration is recorded. The Standard Penetration Resistance (“N-value”) of the soil is calculated as the number of blows required for the final 12 inches of penetration. If 50 or more blows are recorded within a single 6-inch interval, the test is terminated, and the blow count is recorded as 50 blows for the number of inches driven. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils.

Explorations were conducted under the full-time observation of a GeoPacific engineer. During the explorations, pertinent information including soil sample depths, stratigraphy, soil engineering characteristics, and groundwater occurrence was recorded. Soils were classified in accordance with the Unified Soil Classification System (USCS). Rock hardness was classified in accordance with Table 1, modified from the ODOT Rock Hardness Classification Chart. Soil samples obtained from the explorations were placed in relatively air-tight plastic bags. At the completion of the site investigation, the borings and CPT sounding were filled with bentonite chips and the hand auger boring was loosely backfilled with onsite soils. At the ground surface, the borings B-1 through B-4 and CPT exploration CPT-1 were patched with asphaltic concrete.

Table 1 - Rock Hardness Classification Chart

ODOT Rock Hardness Rating	Field Criteria	Unconfined Compressive Strength	Typical Equipment Needed for Excavation
Extremely Soft (R0)	Indented by thumbnail	<100 psi	Small excavator
Very Soft (R1)	Scratched by thumbnail, crumbled by rock hammer	100-1,000 psi	Small excavator
Soft (R2)	Not scratched by thumbnail, indented by rock hammer	1,000-4,000 psi	Medium excavator (slow digging with small excavator)
Medium Hard (R3)	Scratched or fractured by rock hammer	4,000-8,000 psi	Medium to large excavator (slow to very slow digging), typically requires chipping with hydraulic hammer or mass excavation)
Hard (R4)	Scratched or fractured w/ difficulty	8,000-16,000 psi	Slow chipping with hydraulic hammer and/or blasting
Very Hard (R5)	Not scratched or fractured after many hammer blows	>16,000 psi	Blasting

The approximate locations of our explorations are indicated on Figures 2 and 3. It should be noted that exploration locations were located in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate. Summary exploration logs are attached. The stratigraphic contacts shown on the individual exploration logs represent the approximate boundaries between soil types. The actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific dates and locations reported, and therefore, are not necessarily representative of other locations and times. Soil and groundwater conditions encountered in the explorations are summarized below.

5.1 Soil Descriptions

Existing Pavement Section: At the locations of borings B-1 through B-4, the ground surface was underlain by an existing pavement section consisting of approximately 3 to 5 inches of asphaltic concrete underlain by 6 to 8 inches of base rock.

Undocumented Fill: Underlying the existing pavement section at the location of borings B-1 through B-4 and hand auger boring HA-1, we encountered undocumented fill soils. The undocumented fill soils generally consisted of dark brown, medium stiff, moist, moderately organic, SILT (ML). The fill material contained angular gravel, organic debris, brick and concrete debris. The undocumented fill soils observed in our explorations extended to depths ranging from approximately 2.5 to 8 feet below the ground surface in borings B-1 through B-4, and hand auger boring HA-1 (See Figures 2 and 3). Undocumented fill depths encountered within our explorations are summarized on the attached exploration logs and below in Table 2.

Table 2 - Undocumented Fill Depths Encountered Within Explorations

Exploration Designation	Depth of Undocumented Fill (ft)
B-1	6.3
B-2	3.3
B-3	8.0
B-4	<2.5
HA-1	7.5

Laboratory soils testing of a representative sample taken at 5 feet below the ground surface in boring B-3 indicate that the organic content was 3.6 percent by weight at the location tested.

Willamette Formation: Underlying the undocumented fill material in borings B-1, B-2, and B-4 and hand auger boring HA-1, we encountered soils belonging to the Willamette Formation. The upper few feet of Willamette Formation soils consisted of brown, medium stiff to very stiff, elastic SILT (MH). The elastic silt was micaceous, exhibited orange and grey mottling, and extended to depths ranging from 5 to 10 feet below the ground surface in borings B-1, B-2, and B-4, and beyond the maximum observed depth of 8.5 feet in hand auger boring HA-1. Underlying the elastic silt in borings B-1, B-2, B-4, and the undocumented fill observed in boring B-3, soils consisted of light brown, moist, medium stiff to very stiff, sandy SILT (ML). This soil layer extended to depths ranging between 20 to 31 feet below ground surface in borings B-1, B-2, and B-3, and beyond the maximum observed depth of 11.5 feet in boring B-4. Underlying the sandy silt in borings B-1, and B-3, soils consisted of brown and gray, medium dense, moist to very moist silty SAND (SM). The sand was generally fine to medium grained with lenses of coarse grained sand. The silty sand extended to a depth of 40 feet in boring B-3, and beyond the maximum observed depth of 41.5 feet in boring B-1. Underlying the silty sand in boring B-3, soils consisted of light brown, very stiff sandy SILT (ML). The silt contained fine-grained sand, and extended to an observed depth of 45 feet in boring B-3.

At the location of cone penetration test CPT-1, soil properties were observed to a depth up to 54 feet using correlative methods and the CPT data obtained on July 20, 2018. Cone resistance observed throughout the CPT explorations generally ranged from 15 to 150 tsf, gradually increasing with depth. Utilizing Robertson (1990) methodology, CPT exploration tip resistance and skin friction ratio data correlates to silty CLAY to a depth of 10 feet below the ground surface, primarily of interchanging layers of silty SAND and very stiff fine-grained material from 10 to 20 feet below the ground surface, interchanging layers of silty SAND, sandy SILT, clayey Silt, and very stiff fine-grained material from 20 to 50 feet bgs, primarily SAND and silty Sand from 50 to 52 feet bgs, and sandy SILT which extends to an approximate depth of 53 feet bgs.

Columbia River Basalt: Underlying the Willamette Formation at the location of borings B-2, and B-3, and cone penetration test CPT-1, we encountered a zone of weathered rock which sharply graded into very dense, in-tact basalt. Borings B-2 and B-3 were terminated at depths of 20.9 and

45.6 feet below the ground surface respectively due to practical refusal of hard bedrock. Cone penetration test CPT-1 reached refusal at a depth of 54 feet on dense material which we assume to be weathered rock. The basalt was light to dark gray and displayed extremely soft (R1) to hard consistency (R4) in boring B-2, and soft (R2) to hard (R4) consistency in boring B-3 (See Table 2 for rock hardness classification). Depths to refusal encountered within our explorations are summarized on the attached exploration logs and below in Table 3.

Table 3 - Depths to Refusal Encountered Within Explorations

Exploration Designation	Depth of Refusal on Bedrock (ft)
B-2	20.9
B-3	45.6
CPT-1	54

5.2 Groundwater and Soil Moisture

On July 3, 2018, observed soil moisture conditions were generally moist in the upper 40 feet below ground surface and very moist to wet below 40 feet. Static groundwater was encountered within boring B-3 at an approximate depth of 40 feet below the ground surface. On July 20, 2018, static groundwater was observed in cone penetrometer test CPT-1 at an approximate depth of 46 feet below the ground surface. According to the Estimated Depth to Groundwater in the Portland, Oregon Area, (United States Geological Survey, Snyder, 2018 website), groundwater is present at an approximate depth of 35 to 45 feet below the ground surface. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors. Perched groundwater may be encountered in localized areas. Seeps and springs may exist in areas not explored, and may become evident during site grading.

6.0 CONCLUSIONS AND DESIGN RECOMMENDATIONS

Our site investigation indicates that the proposed construction appears to be geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project.

The primary geotechnical concerns associated with development at the site are the presence of up to 8 feet of undocumented fill throughout the site. Due to the extent of undocumented fill observed onsite, we recommend that areas proposed for construction of building foundations be over-excavated to expose underlying competent native soil and either refilled structurally with engineered fill, or the foundation elements extended to depths necessary to bear directly on competent native soil. In areas where parking and drive areas are proposed and undocumented fill is present, it may be feasible to allow some of the undocumented fill soils to remain in place provided they can pass specifications for engineered fill compaction and proofrolls with fully loaded haul trucks. At a minimum, the upper portion of existing undocumented fill soils in parking and drive areas will likely need to be ripped and recompacted.

Our secondary geotechnical concern is the potential for liquefaction on the northern portion of the site. In the design earthquake event, without ground improvement, the building proposed on the northern portion of the site may experience post-liquefaction settlement and lateral spreading. At a minimum, the building needs to be able to tolerate the estimated magnitudes of total and differential settlement without collapsing. The foundation of the building also needs to be strong enough to remain intact should the building move towards the river. If the estimated magnitudes of total and differential post-liquefaction settlement are not considered tolerable, the incorporation of ground improvement technologies, such as engineered aggregate piers, may be utilized to reduce the estimated magnitude of total vertical post-liquefaction settlement.

The following report sections provide recommendations for site development and construction in accordance with the current applicable codes and local standards of practice.

6.1 Site Preparation and Undocumented Fill Removal

The areas of proposed structures should be cleared of debris. If encountered, undocumented fill within influence zones of the proposed building footprints or other settlement-sensitive improvements, should be completely removed and replaced with engineered fill. Undocumented fill was encountered to depths ranging from 2.5 to 8 feet during our site exploration. We anticipate that areas of undocumented fill may exist throughout the site.

As mentioned above, we encountered up to 8 feet of undocumented fill within our site specific explorations. In-situ soils containing debris, trash, etc, are considered unsuitable for placement of structures and roadways, and should be removed where buildings and roadways are proposed. Some of the existing undocumented fill soils appeared to be suitable to re-use as engineered fill provided the organic and inorganic debris is thoroughly removed prior to replacement.

In areas proposed for construction of buildings, existing undocumented fill soils within the influence zones of proposed structures should be over-excavated to expose underlying native soils. The excavations should either be refilled structurally with engineered fill, or the foundations extended to depths necessary to bear directly on the native soils. Recommendations for placement of engineered fill are presented below in Section 6.2, *Engineered Fill*.

It may be feasible for undocumented fill material to remain in place below proposed parking areas, driving lanes, and other areas which are not sensitive to settlement, with the understanding that some settlement may occur as the organic material in the fill material breaks down over time. Exposed subgrade soils, including undocumented fills in the future parking lot, should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck and potholing with an excavator to evaluate the buried layers of undocumented fill. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below) or stabilized with rock prior to placement of engineered fill. The depth of over-excavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Areas proposed for construction of roadways should be ripped and tilled to a minimum depth of 12 inches bgs, then moisture conditioned to within 2 percent of optimum moisture. Following adequate tilling, removal of any debris, and moisture conditioning, the soils should be recompacted using standard compaction equipment. We recommend that engineered fill be compacted to project specifications for engineered fill, to at least 95 percent of the maximum dry density determined by ASTM D1557 (Modified Proctor) or equivalent.

The final depth of soil removal should be determined by the geotechnical engineer or designated representative during site inspection while stripping/excavation is being performed. Stripped topsoil and moderately to highly organic fill should be removed from areas proposed for placement of engineered fill. Any remaining topsoil and organic debris should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

If encountered, undocumented fills and any subsurface structures (dry wells, basements, driveway and landscaping fill, old utility lines, septic leach fields, etc.) should be completely removed and the excavations backfilled with engineered fill.

Site earthwork may be impacted by shallow groundwater and wet weather conditions. Stabilization of subgrade soils will require aeration and recompaction. If subgrade soils are found to be difficult to stabilize, over-excavation, placement of granular soils, or cement treatment of subgrade soils may be feasible options. GeoPacific should be onsite to observe preparation of subgrade soil conditions prior to placement of engineered fill.

6.2 Engineered Fill

All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at the time of construction with the exceptions and additions noted herein. Areas proposed for fill placement should be prepared as described in the Site Preparation Recommendations section. Surface soils should then be scarified and recompacted prior to placement of structural fill. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95 percent of the maximum dry density determined by ASTM D1557 (Modified Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd3, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency. During periods of wet-weather site earthwork may be impacted by soil moisture.

6.3 Excavating Conditions and Utility Trench Backfill

We anticipate that on-site soils can generally be excavated using conventional heavy equipment to a depth of 20 feet below the ground surface. Bedrock was encountered at a depth of 20.9 feet below the ground surface in boring B-2. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions. All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926), or be shored. The existing native silt soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V. The existing native silty sand soils classify as Type C soil and temporary excavation side slope as steep as 1.5H:1V may be assumed for planning purposes. These cut slope inclinations are applicable to excavations above the water table only.

Shallow, perched groundwater may be encountered during the wet weather season and should be anticipated in excavations and utility trenches. Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321 and City of West Linn standards. We recommend that structural trench backfill be compacted to at least 95 percent of the maximum dry density obtained by the Modified Proctor (ASTM D1557) or equivalent. Initial backfill lift thicknesses for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, at least one density test is taken for every 4 vertical feet of backfill on each 100-lineal-foot section of trench.

6.4 Erosion Control Considerations

During our field exploration program, we did not observe soil conditions that may be considered highly susceptible to erosion. In our opinion, the primary concern regarding erosion potential will occur during construction in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw wattles, fiber rolls, and silt fences. If used, these erosion control devices should remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

6.5 Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and will be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will require expensive measures such as cement treatment or imported granular material to compact areas where fill may be proposed to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications:

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent passing the No. 200 sieve. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed, and suitable compaction and site drainage is achieved; and
- Geotextile silt fences, straw wattles, and fiber rolls should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

6.6 Structural Foundations

As discussed in section 7 of this report titled *Seismic Design*, without ground improvement, we estimate that in the event of the design earthquake, approximately 0.4 inches of post-liquefaction settlement will occur on the northern portion of the site. We estimate that differential settlement of 0.2 inches may occur between adjacent foundation elements, or over a horizontal distance of 20 feet, whichever is less. Some lateral spreading may also occur in the northern portion of the site.

If the current estimates of total and/or differential post-liquefaction settlement and lateral spreading are determined to be tolerable by the project structural engineer, then no further study is required, and the proposed structures may be supported on shallow foundations near existing grade. If the current estimates of total and/or differential seismically induced settlement displacements are not tolerable, then the design team may consider utilizing ground improvements to lower the estimates of total and differential settlement to within tolerable limits.

During our site investigation, we observed up to 8 feet of undocumented fill underlying the ground surface on the northern portion of the site (See Figures 2 and 3), and potentially liquefiable layers between the depths of 40 to 45 feet below the ground surface at the location of cone penetrometer test CPT-1.

Due to the extent of undocumented fill observed onsite, we recommend that areas proposed for construction of building foundations be over-excavated to expose underlying competent native soil and either refilled structurally with engineered fill, or the foundation elements extended to depths necessary to bear directly on competent native soil. However, if leaving the existing undocumented fill in place is desired at the locations of the proposed structures, GeoPacific may be consulted to provide recommendations for deep foundations such as engineered aggregate piers or piles.

If the current estimates of total and/or differential post-liquefaction settlement are acceptable, the proposed structures may be supported on shallow foundations bearing on stiff, native soils and/or engineered fill, appropriately designed and constructed as recommended in this report. Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 18 inches below exterior grade. If soft soil conditions are encountered at footing subgrade elevation, they should be removed and replaced with compacted crushed aggregate.

Foundation excavations should be observed by the geotechnical engineer or his designated representative during construction. Final foundation subgrade recommendations and over-excavation limits should be determined during construction when the foundation subgrade soil conditions are exposed.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft^2 for footings bearing on competent, native soil and/or engineered fill. The anticipated allowable soil bearing pressure is 2,000 lbs/ft^2 for footings bearing on a minimum of 6 inches of 1.5”-0 crushed aggregate compacted to at least 95 percent of the maximum dry density determined by ASTM D1557 (Modified Proctor) or equivalent. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For loads heavier than 75 kips, the geotechnical engineer should be consulted. If heavier loads than described above are proposed, it may be necessary to over-excavate point load areas and replace with additional compacted crushed aggregate. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.42, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require overexcavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for construction incorporating conventional spread footing foundations. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

6.7 Concrete Slab-on-Grade Floors

As described above, up to 8 feet of undocumented fill was encountered on the northern portion of the site. Undocumented fill soils encountered within our explorations will likely not be considered to be suitable to provide bearing support for the proposed structures. Areas proposed for construction of buildings should be over-excavated to expose underlying native soils and either refilled structurally with engineered fill, or the foundations extended to depths necessary to bear directly on competent native soil.

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation Recommendations* and *Spread Foundations* sections. Care should be taken during excavation for foundations and floor slabs, to avoid disturbing subgrade soils. If subgrade soils have been adversely impacted by wet weather or otherwise disturbed, the surficial soils should be scarified to a minimum depth of 8 inches, moisture conditioned to within about 3 percent of optimum moisture content, and compacted to engineered fill specifications. Alternatively, disturbed soils may be removed, and the removal zone backfilled with additional crushed rock.

For evaluation of the concrete slab-on-grade floors using the beam on elastic foundation method, a modulus of subgrade reaction of 150 kcf (87 pci) should be assumed for the medium stiff, fine-grained soils anticipated to be present at foundation subgrade elevation following adequate site preparation as described above. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of 8 inches of 1½"-0 crushed aggregate beneath the slab. The total thickness of crushed aggregate will be dependent on the subgrade conditions at the time of construction, and should be verified visually by proof-rolling. Under-slab aggregate should be compacted to at least 95 percent of its maximum dry density as determined by ASTM D698 (Standard Proctor) or equivalent.

In areas where moisture will be detrimental to floor coverings or equipment inside the proposed structure, appropriate vapor barrier and damp-proofing measures should be implemented. Appropriate design professionals should be consulted regarding vapor barrier and damp proofing systems, ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

6.8 Perimeter Footing and Roof Drains

The upslope edge of perimeter footings may be provided with a drainage system consisting of 3 or 4-inch diameter, perforated, plastic pipe embedded in a minimum of 1 ft^3 per lineal foot of clean, free-draining gravel or uncompacted 3/4" - 0 rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. Water collected from the footing drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. The footing drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

Perimeter footing drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Footing drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Down spouts and roof drains should collect roof water in a system separate from the footing drains to reduce the potential for clogging. Roof drain water should be directed to an appropriate discharge point and storm system well away from structural foundations. Grades should be sloped downward and away from buildings to reduce the potential for ponded water near structures.

6.9 Permanent Below-Grade Walls

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that the recommended drainage provisions are incorporated, and hydrostatic pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude 6.5H, where H is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 320 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), depending on anticipated traffic loads.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12 to 18-inch wide zone of sand and gravel containing less than 5 percent passing the No. 200 sieve against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

Wall drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Water collected from the wall drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the wall drains in order to reduce the potential for clogging. The drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least 1.5H away from the back of the retaining wall, where H is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than 1.5H to the top of any wall.

6.10 Flexible Pavement Design

We understand that development at the site will include construction of private parking and drive areas. For the new private pavement section, we conservatively assume that the subgrade will exhibit a resilient modulus of at least 6,000, which correlates to a CBR value of 4. Based upon our understanding of the anticipated traffic which includes light-duty passenger vehicles, deliveries, and occasional fire trucks weighing up to 75,000 lbs. For design of the automobile driving lanes, we assumed an anticipated 18-kip ESAL count of approximately 60,000 over 20 years. Table 2 presents our recommended minimum dry-weather pavement section for the proposed pavement section, supporting 20 years of vehicle traffic.

Table 2 - Recommended Minimum Dry-Weather Pavement Section

Material Layer	Section Thickness (in)		Compaction Standard
	Driving Lanes	Parking Areas	
Asphaltic Concrete (AC)	3	3	91%/ 92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2	2	95% of Modified Proctor ASTM D1557
Crushed Aggregate Base 1½"-0	10	8	95% of Modified Proctor ASTM D1557
Subgrade	12	12	95% of Modified Proctor ASTM D1557 or Approved Native

Any pockets of organic debris or loose fill encountered during subgrade preparation should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

6.11 Wet Weather Construction Pavement Section

This section presents our recommendations for wet weather pavement section and construction for new pavement sections at the project. These wet weather pavement section recommendations are intended for use in situations where it is not feasible to compact the subgrade soils to project requirements, due to wet subgrade soil conditions, and/or construction during wet weather. Based on our site review, we recommend a wet weather section with a minimum subgrade deepening of 6 to 12 inches to accommodate a working subbase of additional 1½”-0 crushed rock. Geotextile fabric, Mirafi 500x or equivalent, should be placed on subgrade soils prior to placement of base rock.

In some instances, it may be preferable to use a subbase material in combination with over-excavation and increasing the thickness of the rock section. GeoPacific should be consulted for additional recommendations regarding use of additional subbase in wet weather pavement sections if it is desired to pursue this alternative. Cement treatment of the subgrade may also be considered instead of over-excavation. However, mixing and tilling of the soil may be difficult due to the shallow observed depth of cobbles and boulders throughout the site. For planning purposes, we anticipate that treatment of the onsite soils would involve mixing cement powder to approximately 6-8 percent cement content and a mixing depth on the order of 12 to 18 inches. The mixing depth and cement content will depend upon site conditions and moisture content of the subgrade during construction.

With implementation of the above recommendations, it is our opinion that the resulting pavement section will provide equivalent or greater structural strength than the dry weather pavement section currently planned. However, it should be noted that construction in wet weather is risky and the performance of pavement subgrades depend on a number of factors including the weather conditions, the contractor’s methods, and the amount of traffic the road is subjected to. There is a potential that soft spots may develop even with implementation of the wet weather provisions recommended in this letter. If soft spots in the subgrade are identified during roadway excavation, or develop prior to paving, the soft spots should be over-excavated and backfilled with additional crushed rock.

During subgrade excavation, care should be taken to avoid disturbing the subgrade soils. Removals should be performed using an excavator with a smooth-bladed bucket. Truck traffic should be limited until an adequate working surface has been established. We suggest that the crushed rock be spread using bulldozer equipment rather than dump trucks, to reduce the amount of traffic and potential disturbance of subgrade soils. Care should be taken to avoid over-compaction of the base course materials, which could create pumping, unstable subgrade soil conditions. Heavy and/or vibratory compaction efforts should be applied with caution. Following placement and compaction of the crushed rock to project specifications (95 percent of Modified Proctor), a finish proof-roll should be performed before paving.

The above recommendations are subject to field verification. GeoPacific should be on-site during construction to verify subgrade strength and to take density tests on the engineered fill, base rock and asphaltic pavement materials.

7.0 SEISMIC DESIGN

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2018 Statewide GeoHazards Viewer indicates that the site is in an area where *severe* ground shaking is anticipated during an earthquake. Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2015 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2014). We recommend Site Class D be used for design per the OSSC, Table 1613.5.2 and as defined in ASCE 7, Chapter 20, Table 20.3-1. Design values determined for the site using the USGS (United States Geological Survey) 2018 Seismic Design Maps Summary Report are summarized in Table 3, and are based upon existing soil conditions.

Table 3 - Recommended Earthquake Ground Motion Parameters (USGS 2018)

Parameter	**Value**
Location (Lat, Long), degrees	45.346, -122.651
Probabilistic Ground Motion Values, 2% Probability of Exceedance in 50 yrs	
Peak Ground Acceleration PGA_M	0.447 g
Short Period, S_s	0.942 g
1.0 Sec Period, S_1	0.407 g
Soil Factors for Site Class D:	
F_a	1.123
F_v	1.593
$SD_s = 2/3 \times F_a \times S_s$	0.706 g
$SD_1 = 2/3 \times F_v \times S_1$	0.432 g
Seismic Design Category	D

7.1 Soil Liquefaction Potential

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. Primary factors controlling the development of liquefaction include intensity and duration of strong ground motion, characteristics of subsurface soil, in-situ stress conditions, and the depth to groundwater.

During our site investigation, we observed silty sand and sandy silt below the water table at the location of borings B-1 and B-3 at a depth of 40 to 45 feet below the ground surface. These layers are considered susceptible to liquefaction. At the location of boring B-2, we encountered bedrock at a depth of 20.9 feet below the ground surface, indicating that the soil profile in the vicinity of boring B-2 is not considered susceptible to liquefaction.

According to the Oregon HazVu: Statewide Geohazards Viewer, the subject site is regionally characterized as having moderate to high risk of soil liquefaction (DOGAMI:HazVu, 2018). We estimated soil liquefaction potential using CTP sounding, CPT-1 on the northern portion of the site. For the purposes of liquefaction analyses, we assumed groundwater at 40 feet bgs.

For the soil liquefaction analysis, we assumed seismicity parameters appropriate for the MCE design event. This level of earthquake shaking has a probability of exceedance of 2 percent in 50 years (i.e. a “2500-year” event). The commercial computer code CLiq was used for our liquefaction analysis under the assumed conditions using the Idriss and Boulanger 2014 methodology. Results of the liquefaction potential evaluations are attached. Based on the analysis performed, potentially liquefiable zones occur predominantly in a silty sand to sandy silt layer between about 40 and 45 feet below the ground surface (see attached liquefaction analysis results).

7.2 Post-Liquefaction Settlements

Settlement of the ground surface may occur as a result of earthquake shaking, particularly in conjunction with the occurrence of soil liquefaction. We estimated seismically induced settlements using the Cliq computer program and the Idriss and Boulanger 2014 methodology. Based upon our analysis of the existing soil profile and using a site-adjusted mapped MCE geometric mean peak horizontal ground acceleration of 0.46g from the USGS Seismic Design Map tool, total vertical dynamic settlement expected due to soil liquefaction at the location of cone penetration test CPT-1 is estimated to be 0.4 inches. Our estimate of post-liquefaction settlement is summarized on Table 6.

Table 4 – Estimates of Total Vertical Settlement

CPT Designation	Estimated Total Vertical Settlement (in)
CPT-1	0.4

During our site investigation, we observed a bedrock contour sloping down to the north. We encountered bedrock at a depth of 20.9 feet at the location of boring B-2 at a depth of 54 feet at the location of cone penetrometer test CPT-1. We expect 0.4 inches of post-liquefaction settlement at the location of CPT-1, and no post-liquefaction settlement on the southern portion of the site where the depth to bedrock is less than the depth to groundwater.

Based on this evaluation, it is our opinion that the proposed building on the northern portion of the site should be designed to resist total post-liquefaction settlements up to 0.4 inches under the design earthquake scenarios. Without ground improvement, we estimate that differential settlement of 0.2 inches may occur between adjacent foundation elements or over a distance of 20 feet, whichever is less. If mat foundations are utilized, differential settlements of up to 0.4 inches are anticipated from one side of the slab to the other.

7.3 Lateral Spreading

Lateral spreads involve down-slope movement of large volumes of liquefied soil. Often, layers of non-liquefied soils overlying the liquefied material are also translated down-slope. Lateral spreads generally develop on moderate to gentle slopes and move toward a free face such as a riverbank. The site is located a horizontal distance of approximately 0.6 miles west of the Willamette River at an average slope gradient of approximately 1 percent. Seismically induced lateral spreading was calculated using the Cliq computer program and the Idriss and Boulanger 2014 methodology. Based on the results of our calculations, we anticipate that up to 8 inches of lateral spreading could occur in the northern portion of the site. We anticipate that lateral spreading will not occur in the southern portion of the site, since we did not observe any potentially liquefiable layers in boring B-2.

Since the liquefiable layers in CPT-1 were observed at depths ranging from 40 to 45 feet below the ground surface, the expression of lateral spreading on the ground surface will likely be diminished. Due to the depth of the potentially liquefiable layer, bedrock contour sloping perpendicular to the anticipated direction of lateral spreading, and unknown factors such as the extent of liquefiable layers downslope of the subject site, a high level of uncertainty exists regarding the expression of lateral spreading which may occur in the northern portion of the subject site. Based on information obtained from Oregon Hazvu: Statewide Geohazards Viewer, risk of soil liquefaction decreases in all directions around the site. Therefore, our estimate of the magnitude of lateral spreading may be conservative.

In the northern portion of the site, lateral displacement may occur differentially across the building. For design purposes, we recommend assuming that the differential lateral displacement across the length of the building would be about one-half the total estimated lateral displacement.

The client and design team should work together to determine the maximum allowable total and differential settlements and lateral spreading that are considered to be tolerable to the proposed structure during the design seismic event. If determined necessary, the magnitudes of total and differential post-liquefaction settlement and lateral spreading may potentially be reduced to within tolerable limits with ground improvements such as deep foundations, engineered aggregate piers, or deep soil mixing. If desired, ground improvement recommendations can be provided by GeoPacific on a time and expense basis.

7.4 Other Secondary Seismic Impacts

Other potential seismic impacts include fault rupture potential, and other hazards as discussed below:

> **Fault Rupture Potential** – Based on our review of available geologic literature, we are not aware of any mapped active (demonstrating movement in the last 10,000 years) faults on the site. During our field investigation, we did not observe any evidence of surface rupture or recent faulting. Therefore, we conclude that the potential for fault rupture on site is very low.
>
> **Seismic Induced Landslide** – Site grades are generally flat to moderately sloping. The potential for slope instability and seismic induced landslide to impact the proposed building is considered low. Lateral spreading potential has been considered separately, as discussed above.
>
> **Effects of Local Geology and Topography** – In our opinion, no additional seismic hazard will occur due to local geology or topography. The site is expected to have no greater seismic hazard than surrounding properties and the West Linn area in general.

8.0 UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

GEOPACIFIC ENGINEERING, INC.

Tom Torkelson

90013PE
MAY 22, 2015
BENJAMIN G. ANDERSON
Expires: 12/31/19

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CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION

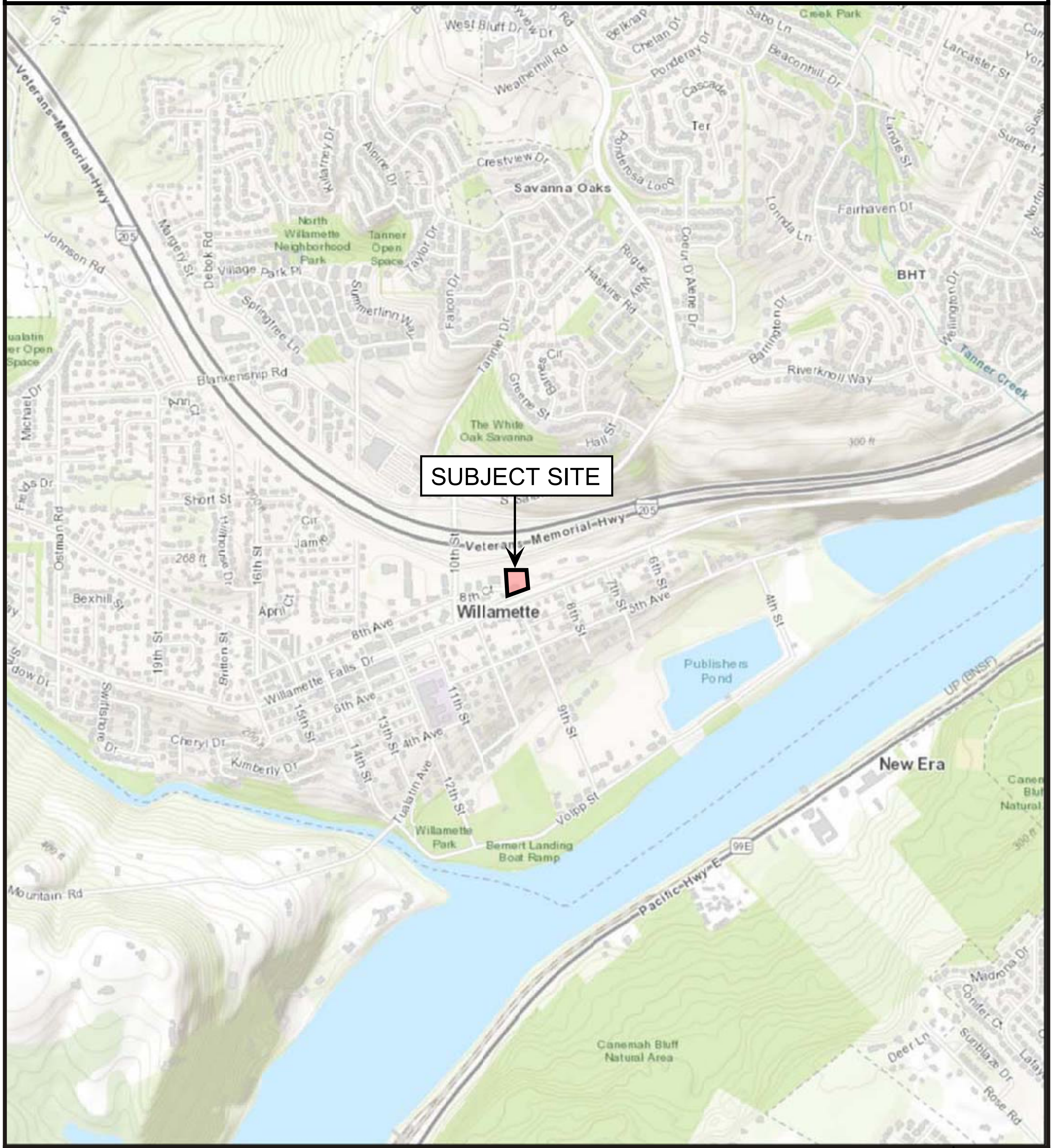
Item No.	Procedure	Timing	By Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Fill removal from site and/or sorting and stockpiling	Prior to mass stripping	Soil Technician/ Geotechnical Engineer	
3	Compaction testing of engineered fill (90% of Modified Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
4	Compaction testing of trench backfill (95% of Standard Proctor)	During backfilling, tested every 4 vertical feet for every 200 linear feet	Soil Technician	
5	Street Subgrade Inspection (95% of Standard Proctor)	Prior to placing base course	Soil Technician	
6	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 linear feet	Soil Technician	
7	Asphalt Compaction (92% Rice Value)	During paving, tested every 100 linear feet	Soil Technician	
8	Final Geotechnical Engineer's Report	Completion of project	Geotechnical Engineer	

FIGURES

GeoPacific
Engineering, Inc.

14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

SITE VICINITY MAP



Base map: DOGAMI HAZVU Maps 2018
Date: 7/23/2018
Drawn by: TJT

1:24,000
0 0.13 0.25 0.5 mi
0 0.23 0.45 0.9 km

North

Project: 8th Court Redevelopment
West Linn, Oregon

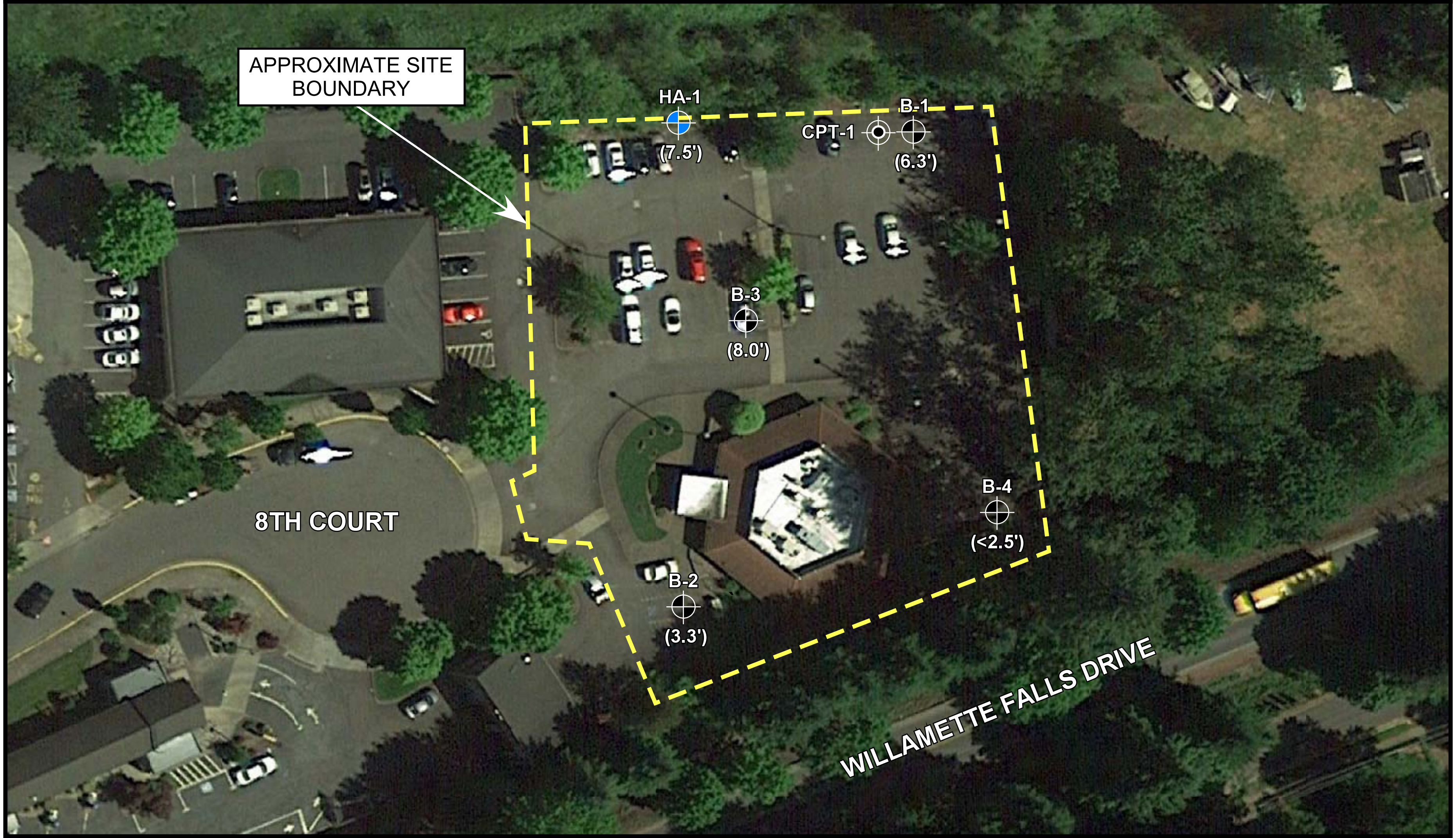
Project No. 18-4970

FIGURE 1

GeoPacific Engineering, Inc.

14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

SITE AERIAL AND EXPLORATION LOCATIONS



Legend: Base Map Obtained From Google Earth 2018

CPT-1 CPT Designation and Approximate Location

B-1 Boring Designation and Approximate Location

HA-1 Hand Auger Designation and Approximate Location

(8.0') Observed Depth of Undocumented Fill, Feet

APPROXIMATE SCALE (FEET)
30 0 30 60

Drawn by: TJT
Date: 7/23/2018

North

Project: 8th Court Redevelopment
2180 8th Court
West Linn, Oregon

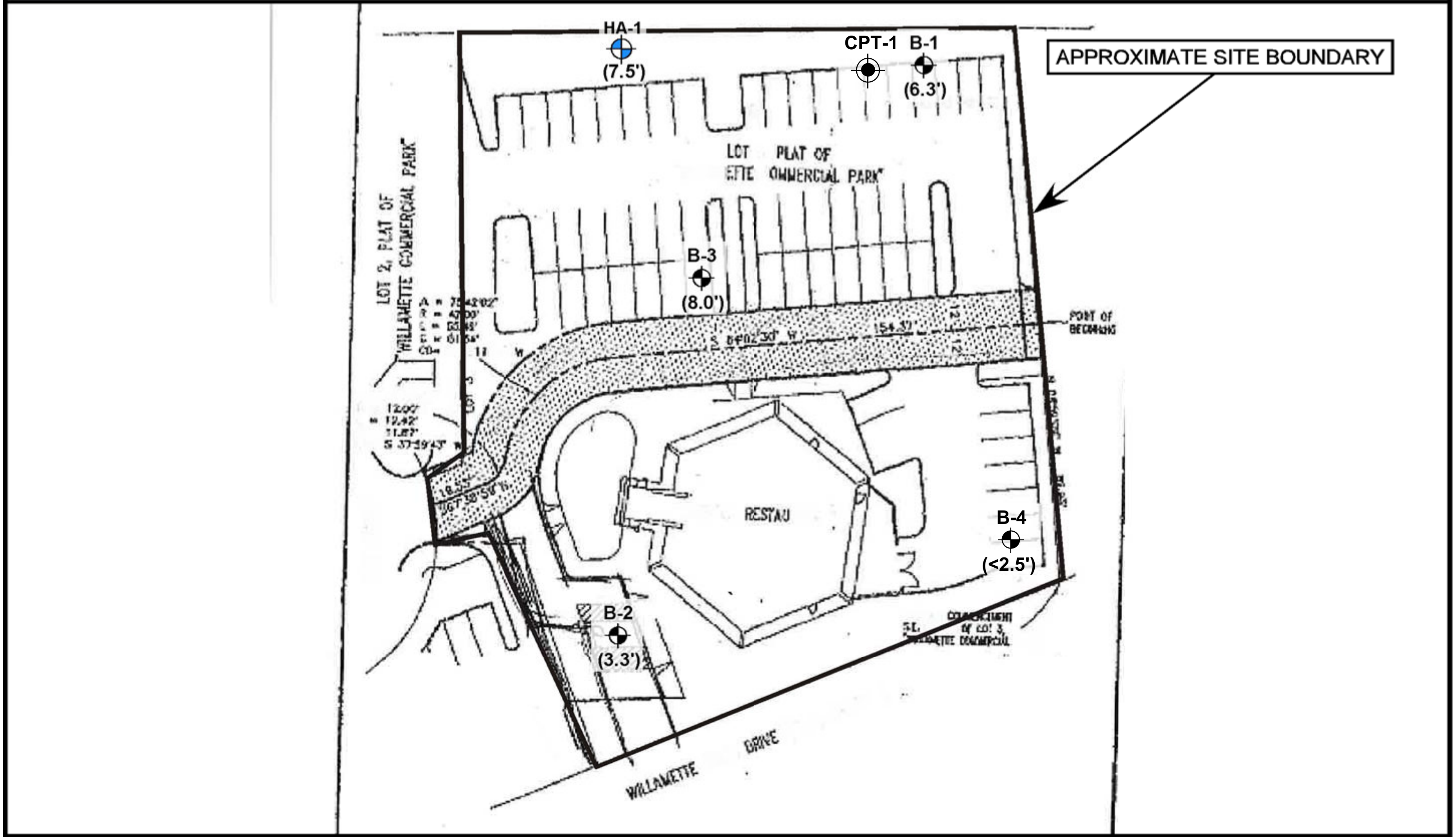
Project No. 18-4970

FIGURE 2

GeoPacific Engineering, Inc.

14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

SITE PLAN AND EXPLORATION LOCATIONS



Legend:

CPT-1 CPT Designation and Approximate Location

B-1 Boring Designation and Approximate Location

HA-1 Hand Auger Designation and Approximate Location

(8.0') Observed Depth of Undocumented Fill, Feet

APPROXIMATE SCALE
(FEET)
25 0 25 50

Drawn by: TJT
Date: 7/23/2018

North

Project: 8th Court Redevelopment
2180 8th Court
West Linn, Oregon

Project No. 18-4970

FIGURE 3

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

EXPLORATION LOGS

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

BORING LOG

Project: 8th Court Redevelopment
2180 8th Court
West Linn, Oregon 97068

Project No. 18-4970

Boring No. **B-1**

Depth (ft)	Sample Type	N-Value	Passing No. 200 Sieve (%)	Moisture Content (%)	Water Bearing Zone	Material Description
						3" Asphaltic Concrete underlain by 8" of Base Rock. (Existing Pavement).
	▯	5				SILT (ML), dark brown, medium stiff, moderately organic, with trace angular gravel, bluish gray staining, moist. (Undocumented Fill).
	▯	5				
5	▯	5				
	▯	16				Elastic SILT (MH), brown, very stiff, moderate plasticity, with orange and gray mottling, micaceous, moist. (Willamette Formation).
10	▯	27	64.9	17.9		Sandy SILT (ML), light brown, very stiff, low plasticity to non-plastic, micaceous, sand is fine grained, moist. (Willamette Formation). AASHTO Classification= A-4(1), Liquid Limit=30.2, Plasticity Index=3.1
15	▯	18				Grades to with more sand at 15 feet bgs. Sand is inter layered, some observed cementation.
20	▯	16				
25	▯	12				Grades to stiff. 6 inch thick lense of silty SAND (SP) at 25 feet bgs. Sand is medium to coarse grained.
30	▯	20				Grades to very stiff.
						Silty SAND (SM), brown and gray, medium dense, sand is fine to medium grained with thin lenses of coarse grained sand, very moist. (Willamette Formation).
35	▯	22		26.4		
40	▯	32	41.4	32.7	💧	Grades to dense, wet at and light groundwater seepage at 40 feet bgs.
45						Boring Terminated at 41.5 Feet bgs. No Static Groundwater Encountered. Light Groundwater Seepage Encountered at 40 Feet bgs. Solid Stem Auger Drilling Methods. Hole Remained Open for 4 Hours After Drilling. No Caving was Observed During this Period.
50						

LEGEND

100 to 1,000 g	▯	▯	▼	10-20-99 ▽	▨
Bag Sample	Split-Spoon	Shelby Tube Sample	Static Water Table at Drilling	Static Water Table	Water Bearing Zone

Date Drilled: 07/03/2018
Logged By: T. Torkelson
Surface Elevation:

14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

BORING LOG

Project: 8th Court Redevelopment
2180 8th Court
West Linn, Oregon 97068

Project No. 18-4970

Boring No. **B-2**

Depth (ft)	Sample Type	N-Value	Passing No. 200 Sieve (%)	Moisture Content (%)	Water Bearing Zone	Material Description
	▯	20				5" Asphaltic Concrete underlain by 6" of Base Rock. (Existing Pavement). SILT (ML), dark brown, very stiff, moderately organic, with trace angular gravel, bluish gray staining, moist. (Undocumented Fill).
	▯	16				
5	▯	9				Elastic SILT (MH), brown, very stiff, moderate plasticity, with orange and gray mottling, micaceous, moist. (Willamette Formation).
	▯	8				Sandy SILT (ML), light brown, medium stiff, low plasticity to non-plastic, micaceous, sand is fine grained, moist. (Willamette Formation).
10	▯	11				Grades to stiff and with more sand at 10 feet bgs.
15	▯	9				4-inch thick silt layer containing coarse grained sand and gravel encountered at 15 feet bgs.
20	▯	50 For 5"				Basaltic Bedrock, light to dark gray, R1 to R4, weathered basalt becoming hard at 20.5 feet bgs, moist, (Columbia River Basalt).
25						Boring Terminated at 20.9 Feet bgs Due to Practical Refusal on Basaltic Bedrock. No Static Groundwater or Seepage Encountered. Solid Stem Auger Drilling Methods. No Caving was Observed after Augers were Removed.
30						
35						
40						
45						
50						

LEGEND

100 to 1,000 g	▯	▯	▼	10-20-99 ▽	▨
Bag Sample	Split-Spoon	Shelby Tube Sample	Static Water Table at Drilling	Static Water Table	Water Bearing Zone

Date Drilled: 07/03/2018
Logged By: T. Torkelson
Surface Elevation:

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

BORING LOG

Project: 8th Court Redevelopment
2180 8th Court
West Linn, Oregon 97068

Project No. 18-4970

Boring No. **B-3**

Depth (ft)	Sample Type	N-Value	Passing No. 200 Sieve (%)	Moisture Content (%)	Water Bearing Zone	Material Description
						3" Asphaltic Concrete underlain by 6" of Base Rock. (Existing Pavement).
	▯	17				SILT (ML), dark brown, medium stiff, moderately organic, with trace angular gravel and brick debris, with bluish gray staining, damp to moist. (Undocumented Fill).
	▯	13				
5	▯	8		26.2		Organic content measured at 3.6 percent from sample taken at 5-6 feet bgs.
	▯	15				Sandy SILT (ML), light brown, very stiff, low plasticity to non-plastic, micaceous, sand is fine grained, moist. (Willamette Formation).
10	▯	16	64.2	14.6		
15	▯	26				Grades to with more sand at 15 feet bgs. Some layering and cementation observed.
20	▯	17				
25	▯	22				6 inch thick lens of silty SAND (SP) at 25 feet bgs. Sand is medium to coarse grained.
30	▯	16				Silty SAND (SM), brown and gray, medium dense, non-plastic, sand is fine to medium grained with thin lenses of coarse grained sand, very moist (Willamette Formation).
35	▯	20	32.7	13.4		
40	▯	15	67.3	32.9	▨	Sandy SILT (ML), light brown, very stiff, non-plastic, micaceous, sand is fine grained, wet. (Willamette Formation).
					▨	Basaltic Bedrock, light to dark gray, R2 to R4, weathered basalt sharply grades to hard at 45.5 feet bgs, moist, (Columbia River Basalt).
45	▯	50 For 1"			▨	
50						Boring Terminated at 45.6 Feet bgs. Static Groundwater Encountered at 40 Feet bgs.. Solid Stem Auger Drilling Methods. No Caving was Observed after Augers were Removed.

LEGEND

100 to 1,000 g	▯	▯	▼	10-20-99 ▽	▨
Bag Sample	Split-Spoon	Shelby Tube Sample	Static Water Table at Drilling	Static Water Table	Water Bearing Zone

Date Drilled: 07/03/2018
Logged By: T. Torkelson
Surface Elevation:

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

BORING LOG

Project: 8th Court Redevelopment
2180 8th Court
West Linn, Oregon 97068

Project No. 18-4970

Boring No. **B-4**

Depth (ft)	Sample Type	N-Value	Passing No. 200 Sieve (%)	Moisture Content (%)	Water Bearing Zone	Material Description
	▯	3				3" Asphaltic Concrete underlain by 6" of Base Rock. (Existing Pavement).
	▯	6				SILT (ML), dark brown, medium stiff, moderately organic, with trace angular gravel, bluish gray staining, moist. (Undocumented Fill).
5	▯	6				Elastic SILT (MH), brown, medium stiff, moderate plasticity, with orange and gray mottling, micaceous, moist. (Willamette Formation).
	▯	8				Sandy SILT (ML), light brown, medium stiff, low plasticity to non-plastic, micaceous, sand is fine grained, moist. (Willamette Formation).
10	▯	8				Grades to with more sand at 11 feet bgs.
						Boring Terminated at 11.5 Feet bgs. No Static Groundwater or Seepage Encountered. Solid Stem Auger Drilling Methods. No Caving was Observed after Augers were Removed.
15						
20						
25						
30						
35						
40						
45						
50						

LEGEND

- 100 to 1,000 g Bag Sample
- ▯ Split-Spoon
- ▯ Shelby Tube Sample
- ▼ Static Water Table at Drilling
- 10-20-99 ▽ Static Water Table
- ▨ Water Bearing Zone

Date Drilled: 07/03/2018
Logged By: T. Torkelson
Surface Elevation:

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

HAND AUGER LOG

Project: 8th Court Redevelopment
2180 8th Court
West Linn, Oregon 97068

Project No. 18-4970

Hand Auger No. **HA-1**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	Passing No. 200 Sieve (%)	Moisture Content (%)	Water Bearing Zone	Material Description
0						SILT (ML), dark brown, soft, moderately organic, with angular gravel, brick, concrete and wood, debris, bluish gray staining, moist, organic odor, (Undocumented Fill).
3.5						Grades to with higher organic content and less concrete and brick debris at 3.5 feet bgs.
4						Grades to medium stiff at 4 feet bgs.
7.5						Elastic SILT (MH), brown, stiff, moderate plasticity, with orange and gray mottling, micaceous, moist to very moist. (Willamette Formation).
8		100 to 1,000 g	95.0	32.0		AASHTO Classification= A-7-5, Liquid Limit=52.7, Plasticity Index=22.4
8.5						Hand auger terminated at 8.5 feet bgs. No seepage or groundwater encountered. No caving observed

LEGEND

100 to 1,000 g	5 Gal. Bucket			▨	
Bag Sample	Bucket Sample	Shelby Tube Sample	Seepage	Water Bearing Zone	Water Level at Abandonment

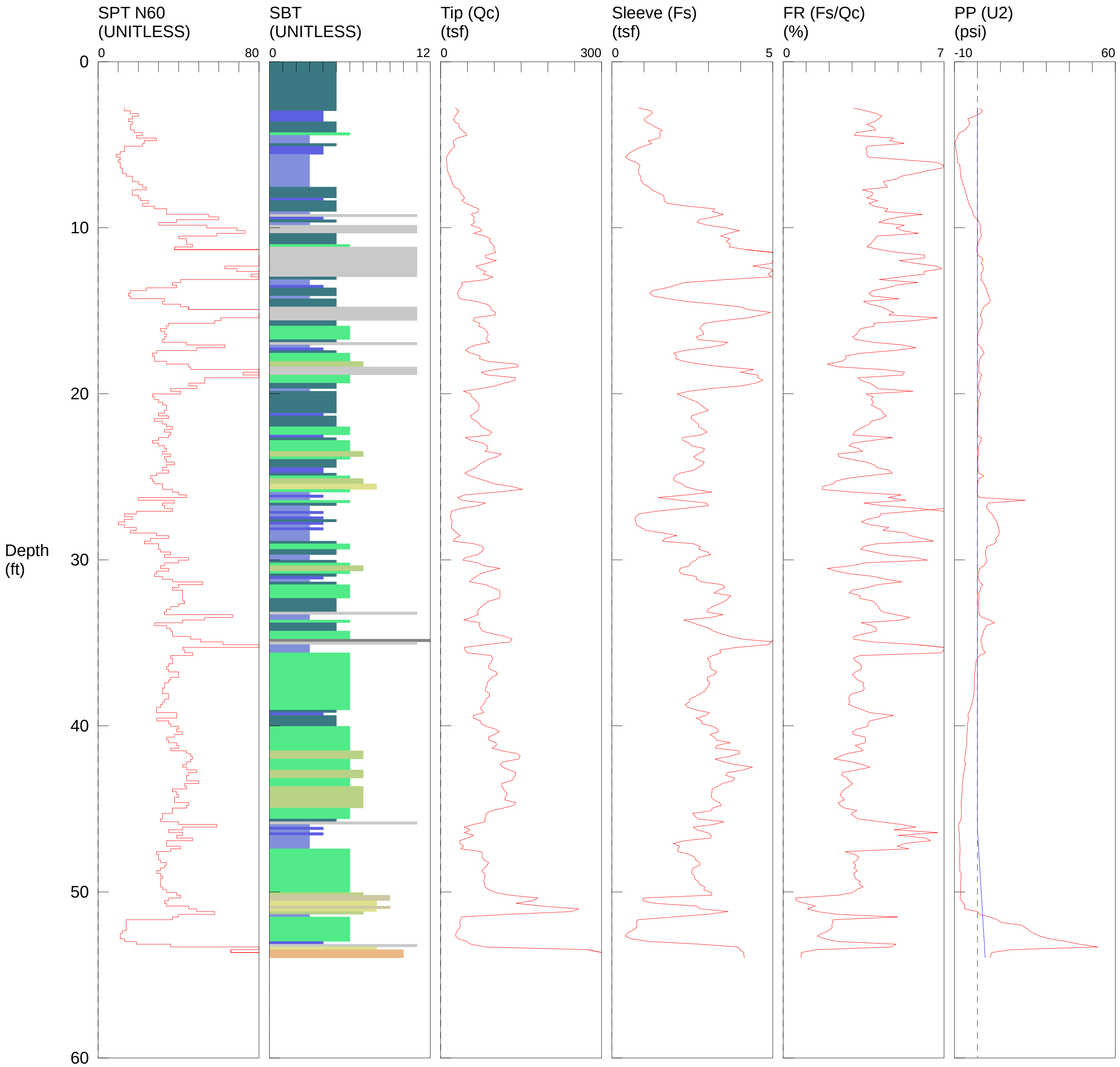
Date Excavated: 07/24/2018

Logged By: TJT

Surface Elevation:

GeoPacific / CPT-1 / 2180 8th Ct West Linn

OPERATOR: OGE BB
CONE ID: DPG1323
HOLE NUMBER: CPT-1
TEST DATE: 7/20/2018 9:17:55 AM
TOTAL DEPTH: 53.970 ft

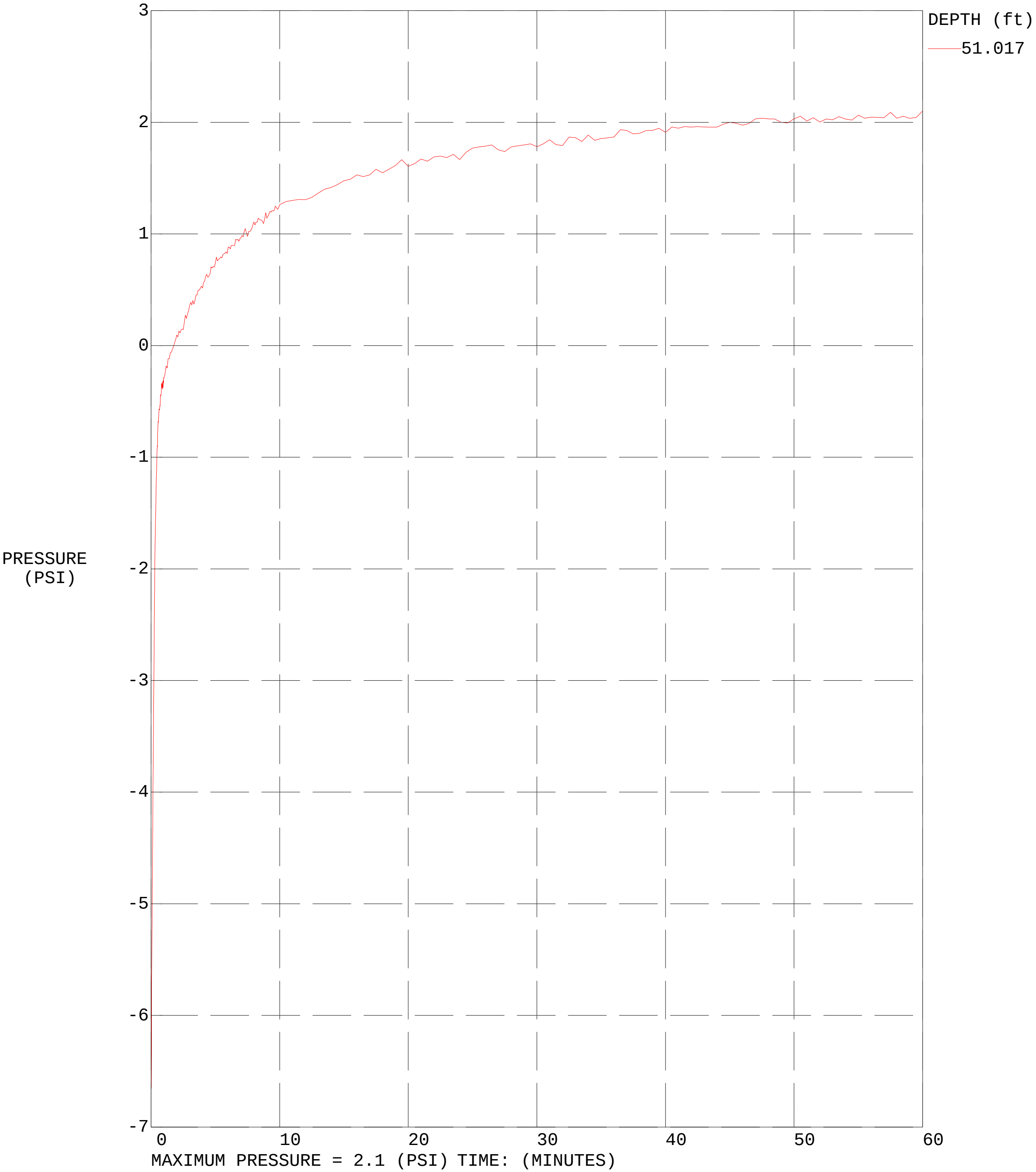


- 🟥 1 sensitive fine grained
- 🟥 2 organic material
- 🟦 3 clay
- 🟦 4 silty clay to clay
- 🟩 5 clayey silt to silty clay
- 🟩 6 sandy silt to clayey silt
- 🟩 7 silty sand to sandy silt
- 🟨 8 sand to silty sand
- 🟫 9 sand
- 🟧 10 gravelly sand to sand
- ⬜ 11 very stiff fine grained (*)
- ⬛ 12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

COMMENT: GeoPacific / CPT-1 / 2180 8th Ct West Linn

TEST DATE: 7/20/2018 9:17:55 AM



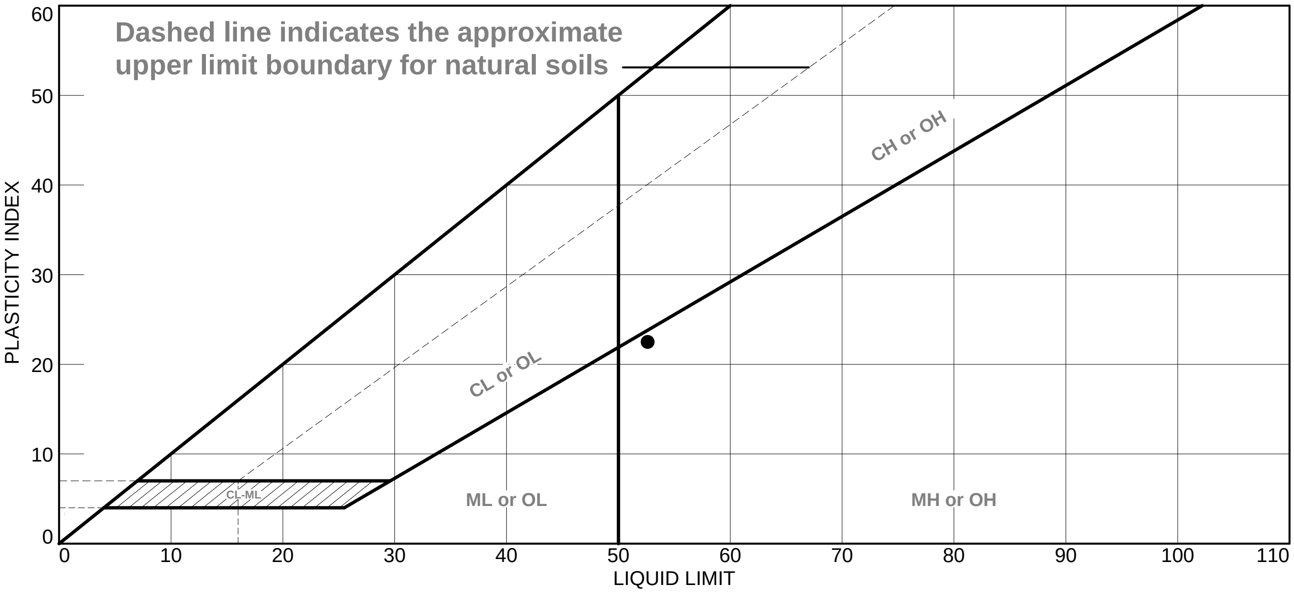
MAXIMUM PRESSURE = 2.1 (PSI) TIME: (MINUTES)

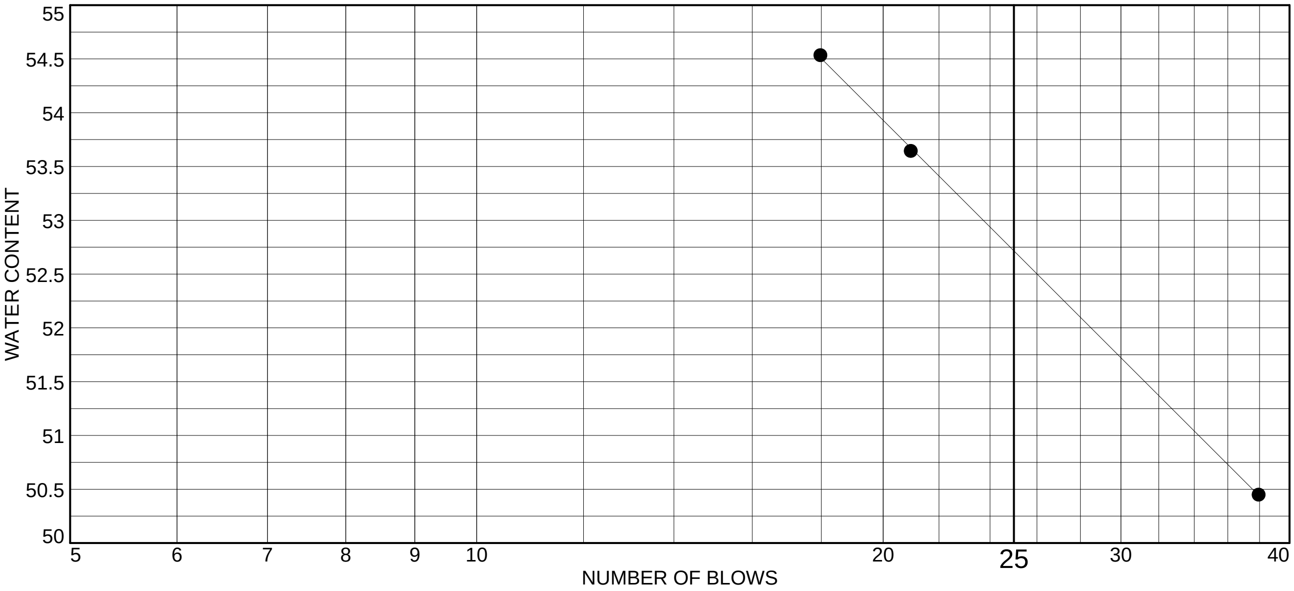
HYDROSTATIC PRESSURE = 2.097 (PSI), WATER TABLE: 46.18 ft

GeoPacific Engineering, Inc.
Real-World Geotechnical Solutions
Investigation • Design • Construction Support

LABORATORY TESTING RESULTS

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Elastic Silt	52.7	30.3	22.4	99.0	95.0	MH

Project No. 18-4970 **Client:** Edge Development

Project: 8th Court Redevelopment

Location: HA-1
Sample Number: S18-201 **Depth:** 8.5'

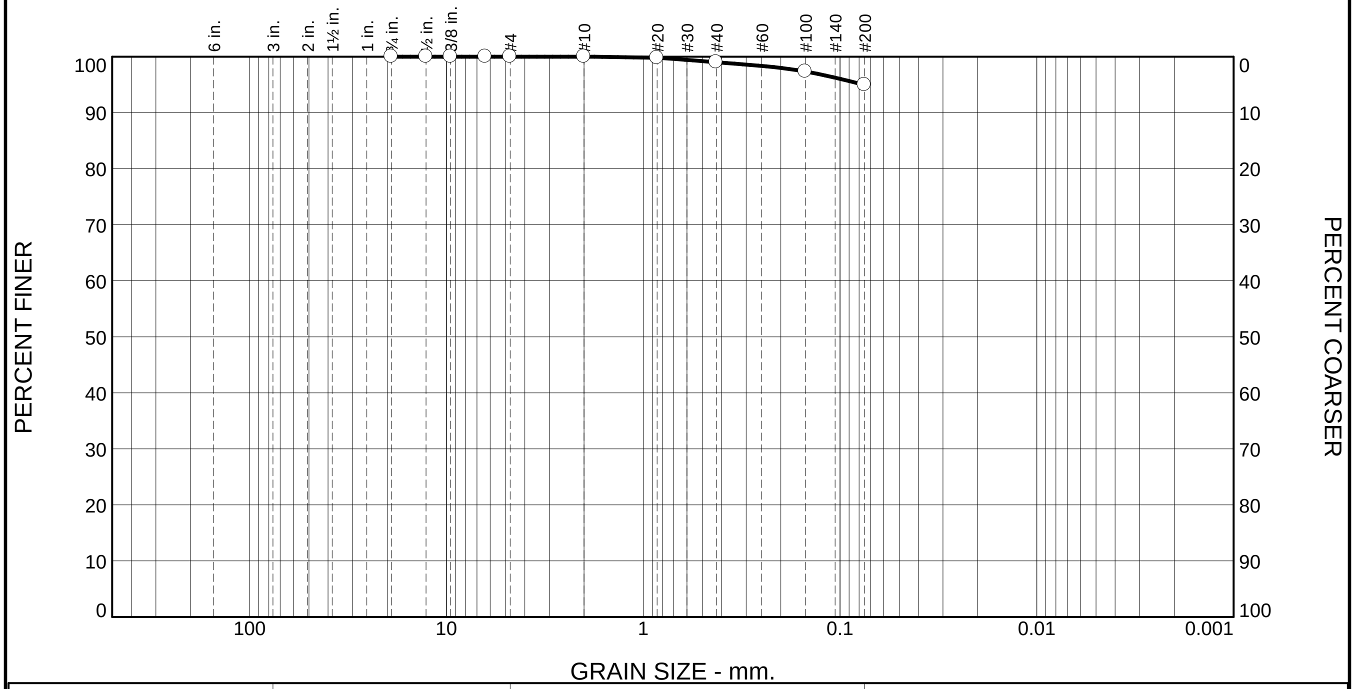
Remarks:

GEOPACIFIC ENGINEERING, INC.

Figure

Tested By: SJC

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.0	4.0	95.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#10	100.0		
#20	99.8		
#40	99.0		
#100	97.3		
#200	95.0		

* (no specification provided)

Material Description

Elastic Silt

Atterberg Limits (ASTM D 4318)

PL= 30.3 **LL=** 52.7 **PI=** 22.4

Classification

USCS (D 2487)= MH **AASHTO (M 145)=** A-7-5(26)

Coefficients

D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Moisture 32.0%

Date Received: **Date Tested:** 7/5/2018

Tested By: SJC

Checked By:

Title:

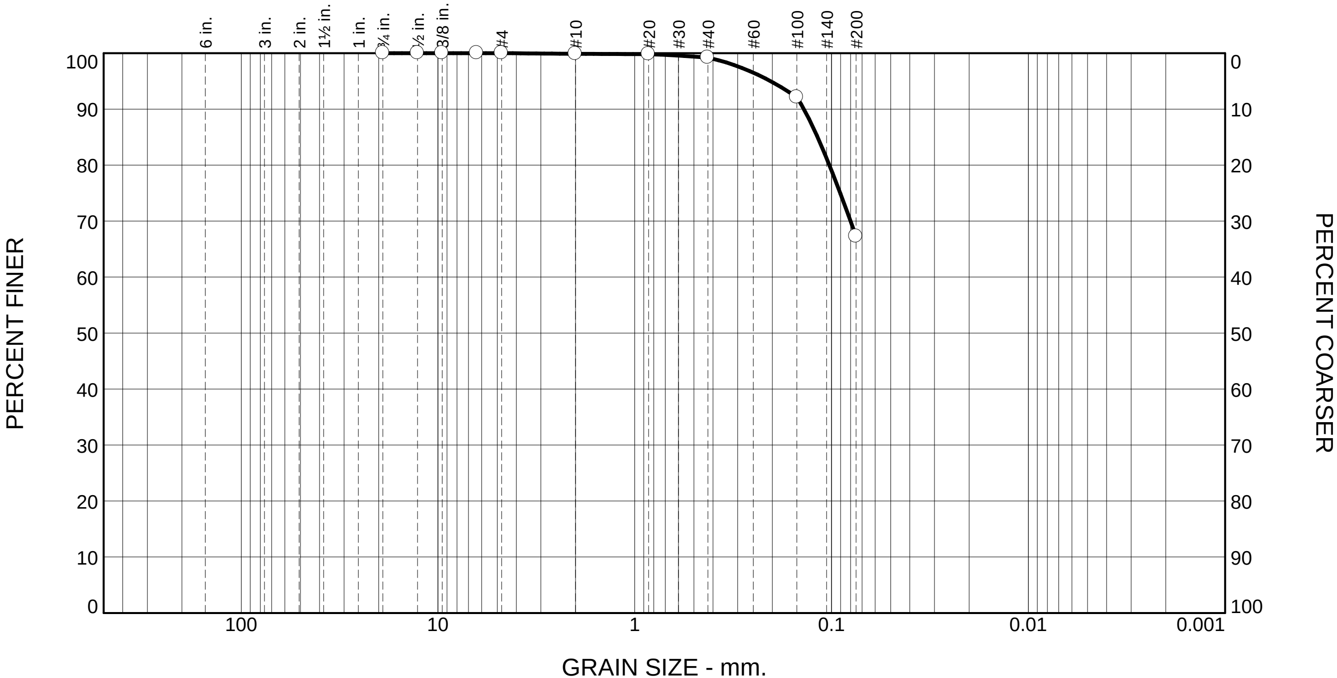
Location: HA-1
Sample Number: S18-201 **Depth:** 8.5' **Date Sampled:** 7/3/2018 TJT

GEOPACIFIC ENGINEERING, INC.

Client: Edge Development
Project: 8th Court Redevelopment

Project No: 18-4970 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.7	31.9	67.3	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#10	99.9		
#20	99.8		
#40	99.2		
#100	92.1		
#200	67.3		

* (no specification provided)

Material Description

Sandy Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= ML **AASHTO (M 145)=** A-4(0)

Coefficients

D_{90}=	0.1381	D_{85}=	0.1177	D_{60}=	
D_{50}=		D_{30}=		D_{15}=	
D_{10}=		C_u=		C_c=	

Remarks

Moisture 32.9%

Date Received: **Date Tested:** 7/5/2018

Tested By: SJC

Checked By:

Title:

Location: B-3

Sample Number: S18-202 **Depth:** 40'

Date Sampled: 7/3/2018 TJT

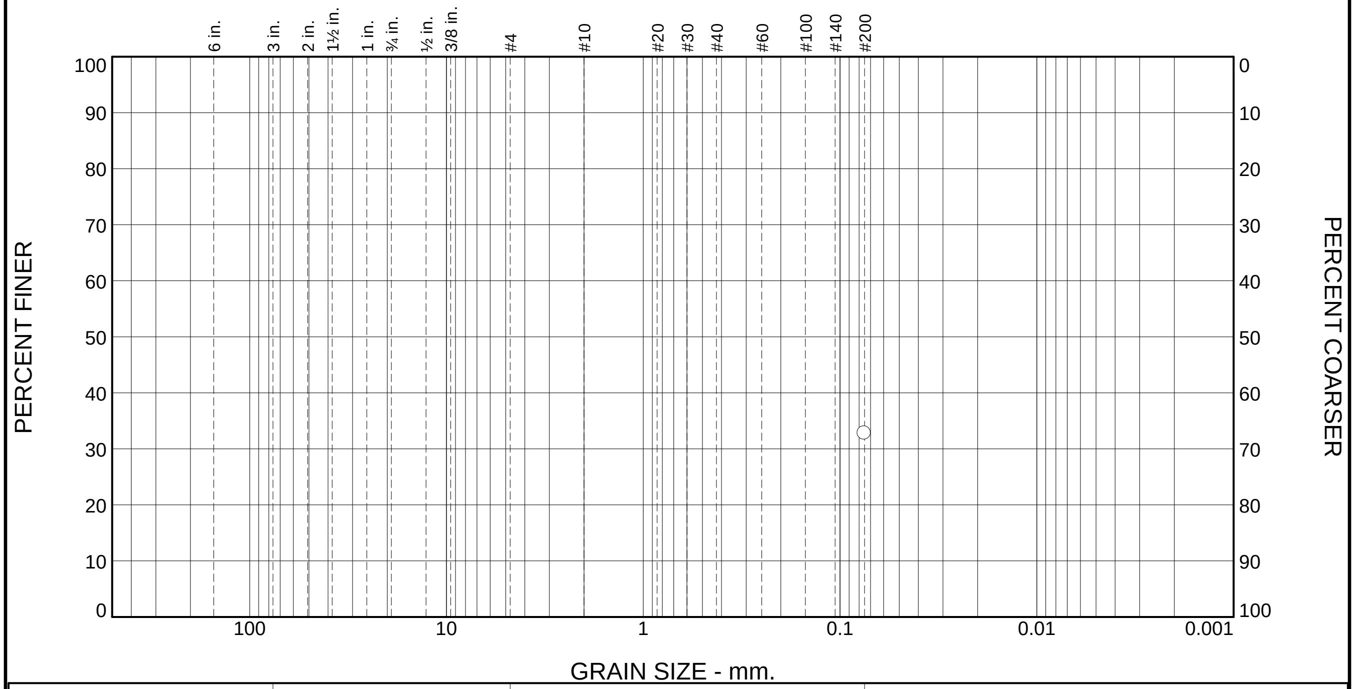
GEOPACIFIC ENGINEERING, INC.

Client: Edge Development

Project: 8th Court Redevelopment

Project No: 18-4970 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
						32.7	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#200	32.7		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= D_{85}= D_{60}=

D_{50}= D_{30}= D_{15}=

D_{10}= C_u= C_c=

Remarks

Moisture 13.4%

Date Received: **Date Tested:** 7/5/2018

Tested By: SJC

Checked By:

Title:

Location: B-3

Sample Number: S18-203 **Depth:** 35'

Date Sampled: 7/3/2018 TJT

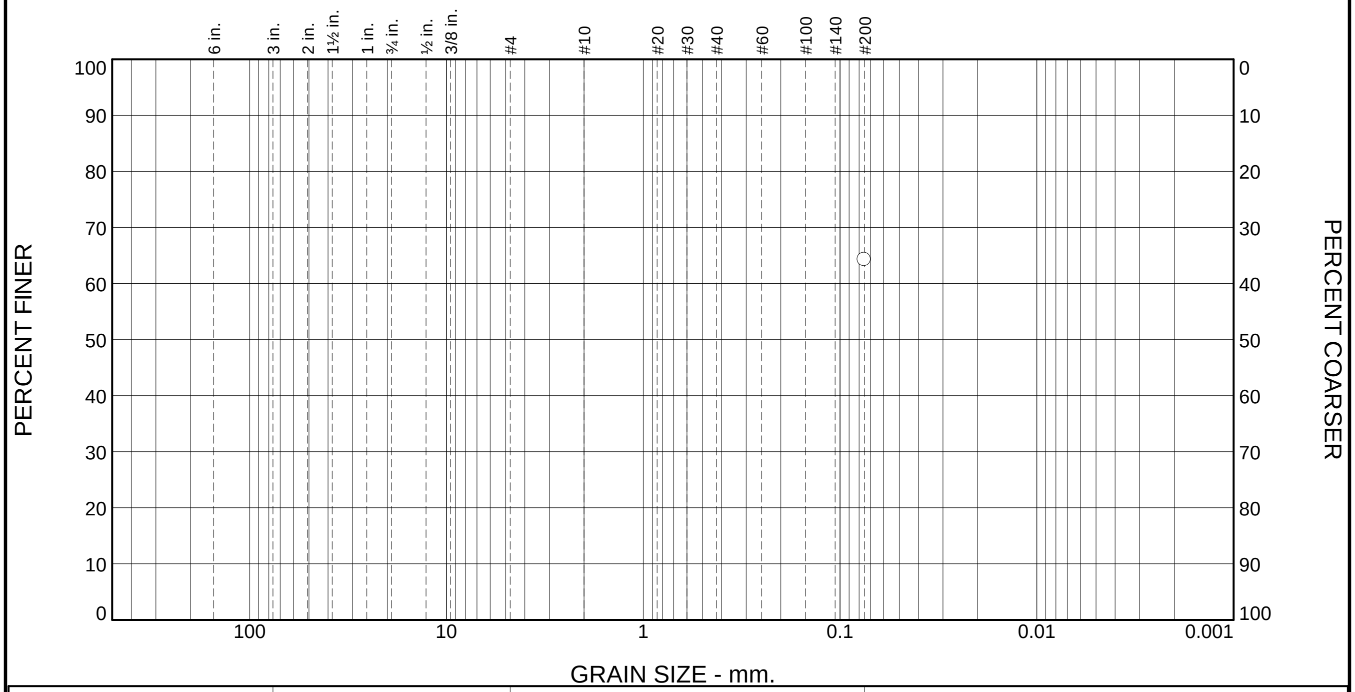
GEOPACIFIC ENGINEERING, INC.

Client: Edge Development

Project: 8th Court Redevelopment

Project No: 18-4970 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
Silty						64.2	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#200	64.2		

* (no specification provided)

Material Description

Sandy Silt

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}=	D_{85}=	D_{60}=
D_{50}=	D_{30}=	D_{15}=
D_{10}=	C_u=	C_c=

Remarks

Moisture 14.6%

Date Received: **Date Tested:** 7/5/2018

Tested By: SJC

Checked By:

Title:

Location: B-3

Sample Number: S18-204 **Depth:** 10'

Date Sampled: 7/3/2048 TJT

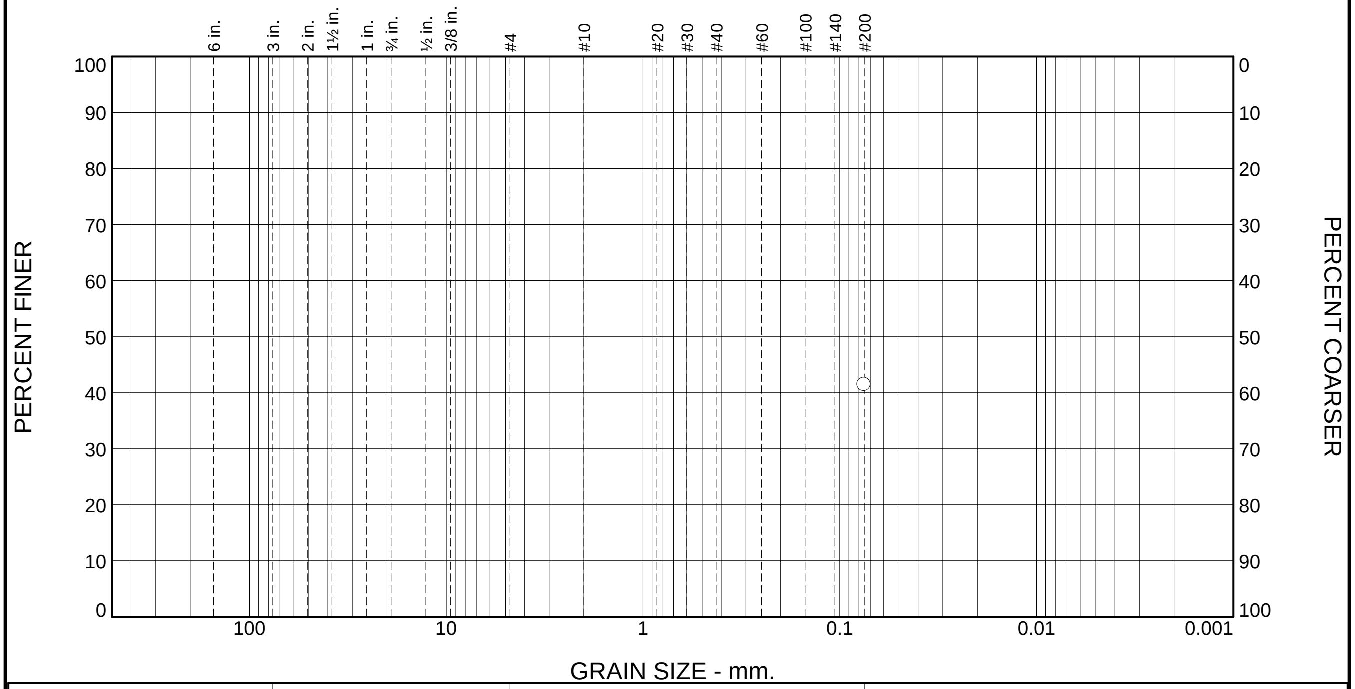
GEOPACIFIC ENGINEERING, INC.

Client: Edge Development

Project: 8th Court Redevelopment

Project No: 18-4970 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
						41.4	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#200	41.4		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Moisture 32.7%

Date Received: **Date Tested:** 7/5/2018
Tested By: SJC
Checked By:
Title:

Location: B-1
Sample Number: S18-205 **Depth:** 40'
Date Sampled: 7/3/2018 TJT

GEOPACIFIC ENGINEERING, INC.

Client: Edge Development
Project: 8th Court Redevelopment
Project No: 18-4970 **Figure**

GeoPacific Engineering, Inc.

Project Name: 8th Court Redevelopment
Project No.: 18-4970
Sampled By: TJT
Sample ID: S18-206 35'
Sample Date: 7/3/2018
Location: B-1
Tested By: SJC
Material Type: Silt
Tested Date: 7/5/2018

Moisture

Tare Number: 41
Tare Wt.: 517.4
Tare + Wet Soil: 843.1
Tare + Dry Soil: 775
Percent Moisture: 26.4

Organic Content

ASTM D 2974 at 440°F

Tare Number:
Tare Wt.:
Tare + Pre-Oven:
Tare + Post-Oven:
Percent Organic:

No. 200 Wash Data

Tare Number
Tare Wt:
Tare+Pre-Wash:
Tare+Post-Wash:
-#200 From Wash:
Pre-Wash Mass:
% Passing No. 200

Grain Size Data

Sieve Size /(max wt individually retained)	Individual Weight Retained	Individual Weight Retained
3"		
1.5"		
1"		
3/4 / 900		
1/2 / 570		
3/8 / 550		
1/4		
#4 / 325		
#8		
#10 / 180		
#16		
#30		
#40 / 75		
#50		
#100 / 40		
#200 / 20		
Pan		

Atterberg Analysis Ll

Atterberg Analysis PI

	Point 1	Point 2	Point 3	Point 4	Point 5	Point 1	Point 2	Point 3
Tare #								
Tare Wt.								
Wet Wt								
Dry Wt								
# of Blows								

Project Name: 8th Court Redevelopment
Project No.: 18-4970
Sampled By: TJT
Sample ID: S18-207 5'
Sample Date: 7/3/2018
Location: B-3
Tested By: SJC
Material Type: Fill Material
Tested Date: 7/9/2018

Moisture

Tare Number: 1
Tare Wt.: 261.7
Tare + Wet Soil: 655.5
Tare + Dry Soil: 573.8
Percent Moisture: 26.2

Organic Content ASTM D 2974 at 440°F

Tare Number:	5	7
Tare Wt.:	25.81	24.98
Tare + Pre-Oven:	69.65	68.55
Tare + Post-Oven:	67.98	67.01
Percent Organic:	3.8	3.5
Average:	3.6	

No. 200 Wash Data

Tare Number
Tare Wt:
Tare+Pre-Wash:
Tare+Post-Wash:
-#200 From Wash:
Pre-Wash Mass:
% Passing No. 200

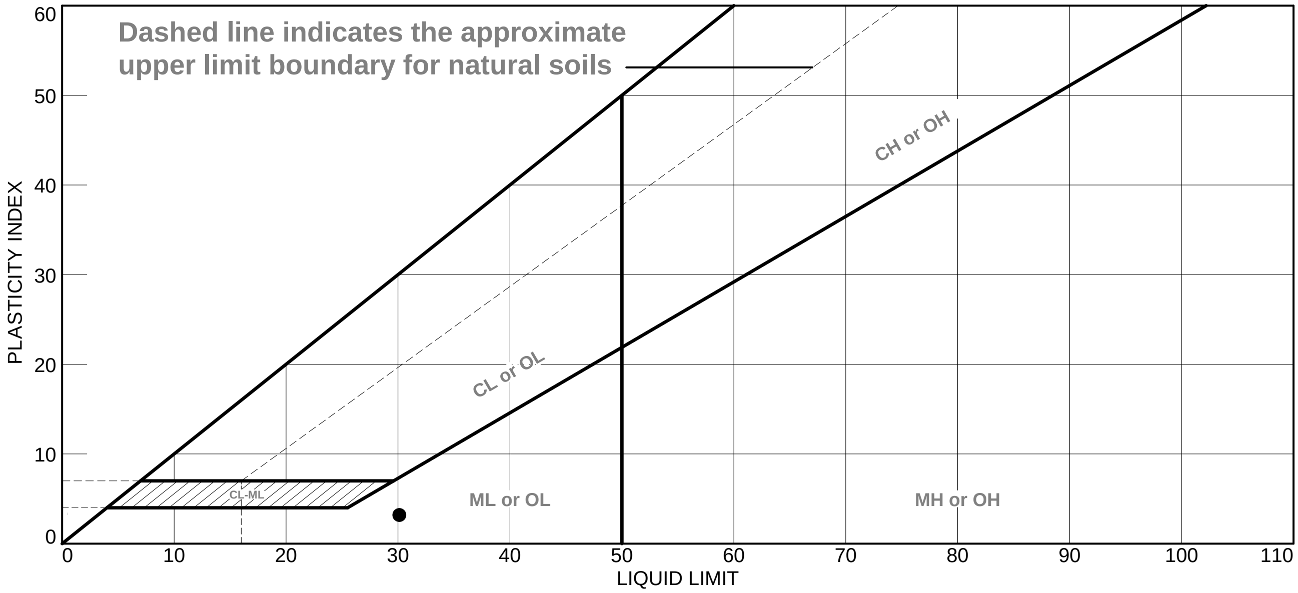
Grain Size Data

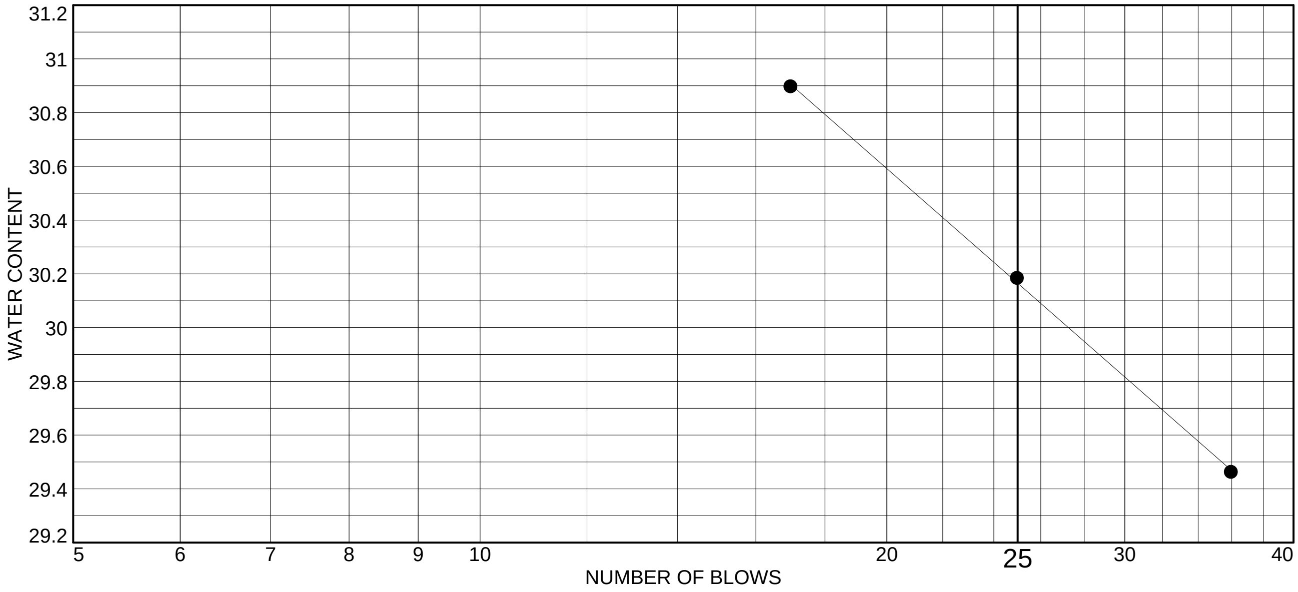
Sieve Size /(max wt individually retained)	Individual Weight Retained	Individual Weight Retained
3"		
1.5"		
1"		
3/4 / 900		
1/2 / 570		
3/8 / 550		
1/4		
#4 / 325		
#8		
#10 / 180		
#16		
#30		
#40 / 75		
#50		
#100 / 40		
#200 / 20		
Pan		

Atterberg Analysis Ll **Atterberg Analysis PI**

	Atterberg Analysis Ll					Atterberg Analysis PI		
	Point 1	Point 2	Point 3	Point 4	Point 5	Point 1	Point 2	Point 3
Tare #								
Tare Wt.								
Wet Wt								
Dry Wt								
# of Blows								

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Silt	30.2	27.1	3.1	99.7	64.9	ML

Project No. 18-4970 **Client:** Edge Development

Project: 8th Court Redevelopment

Location: B-1
Sample Number: S18-208 **Depth:** 10'

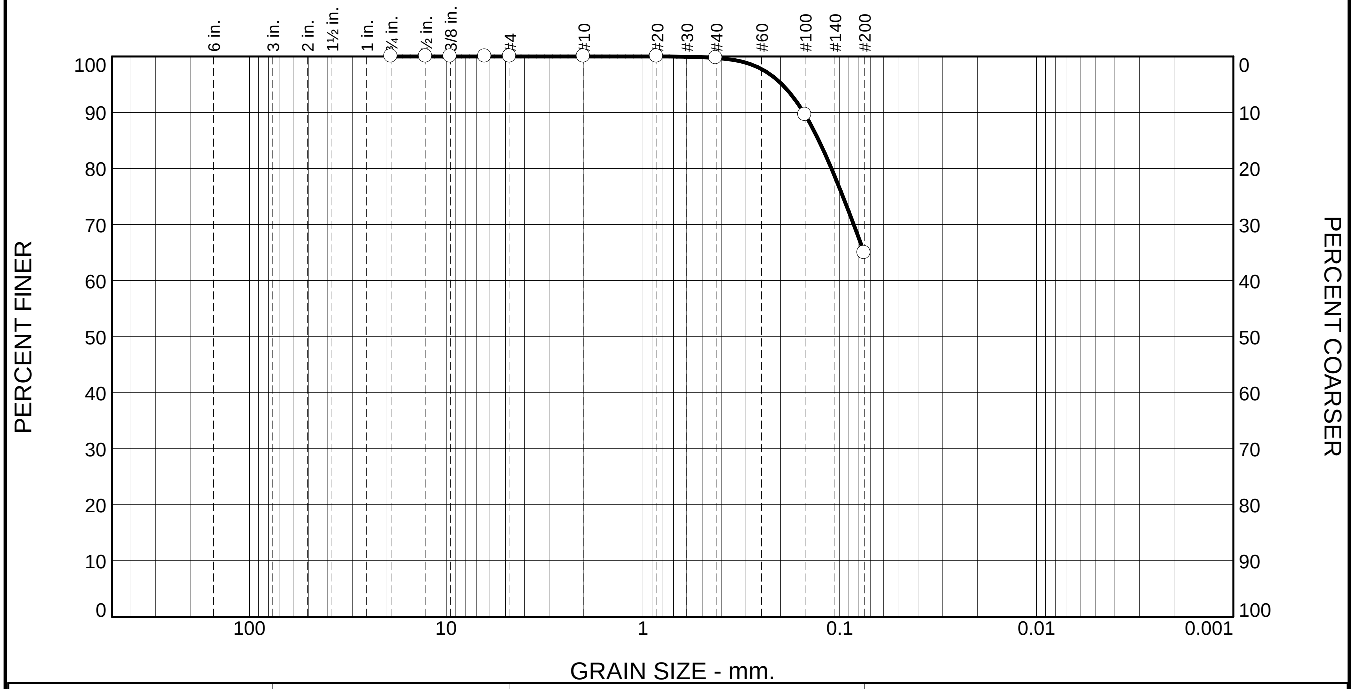
Remarks:

GEOPACIFIC ENGINEERING, INC.

Figure

Tested By: SJC

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	34.8	64.9	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100.0		
.5	100.0		
.375	100.0		
.25	100.0		
#4	100.0		
#10	100.0		
#20	100.0		
#40	99.7		
#100	89.6		
#200	64.9		

* (no specification provided)

Material Description

Sandy Silt

Atterberg Limits (ASTM D 4318)

PL= 27.1 **LL=** 30.2 **PI=** 3.1

Classification

USCS (D 2487)= ML **AASHTO (M 145)=** A-4(1)

Coefficients

$D_{90}=$ 0.1524 $D_{85}=$ 0.1278 $D_{60}=$
$D_{50}=$ $D_{30}=$ $D_{15}=$
$D_{10}=$ $C_u=$ $C_c=$

Remarks

Moisture 17.9%

Date Received: ____________ **Date Tested:** 7/5/2018

Tested By: SJC

Checked By: ____________

Title: ____________

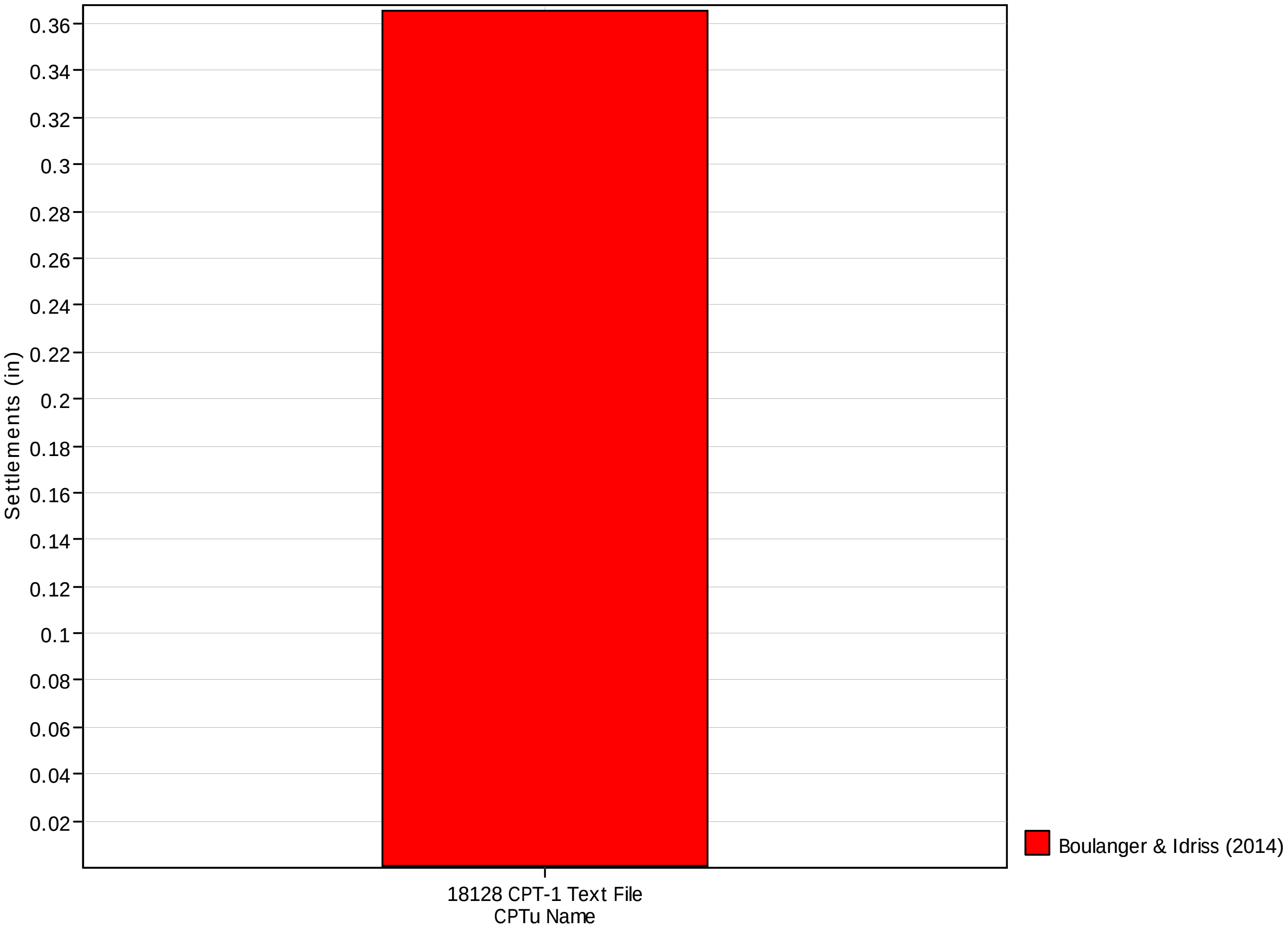
Location: B-1
Sample Number: S18-208 **Depth:** 10'
Date Sampled: 7/3/2018 TJT

GEOPACIFIC ENGINEERING, INC.

Client: Edge Development
Project: 8th Court Redevelopment
Project No: 18-4970 **Figure**

LIQUEFACTION ASSESSMENT

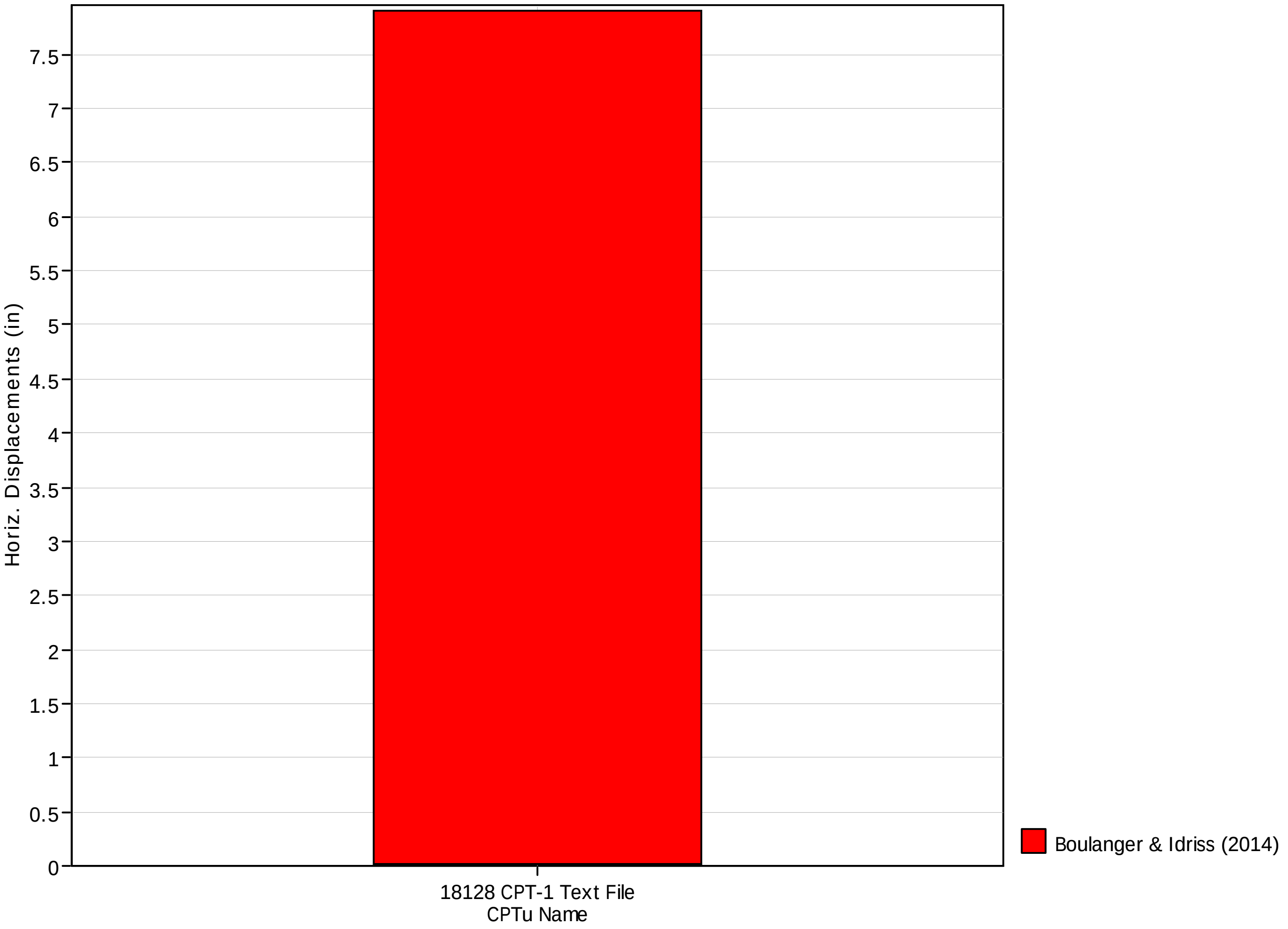
Overall Parametric Assessment Method



:: CPT main liquefaction parameters details ::

CPT Name	Earthquake Mag.	Earthquake Accel.	GWT in situ (ft)	GWT earthq. (ft)
18128 CPT-1 Text Fil	9.11	0.46	40.00	40.00

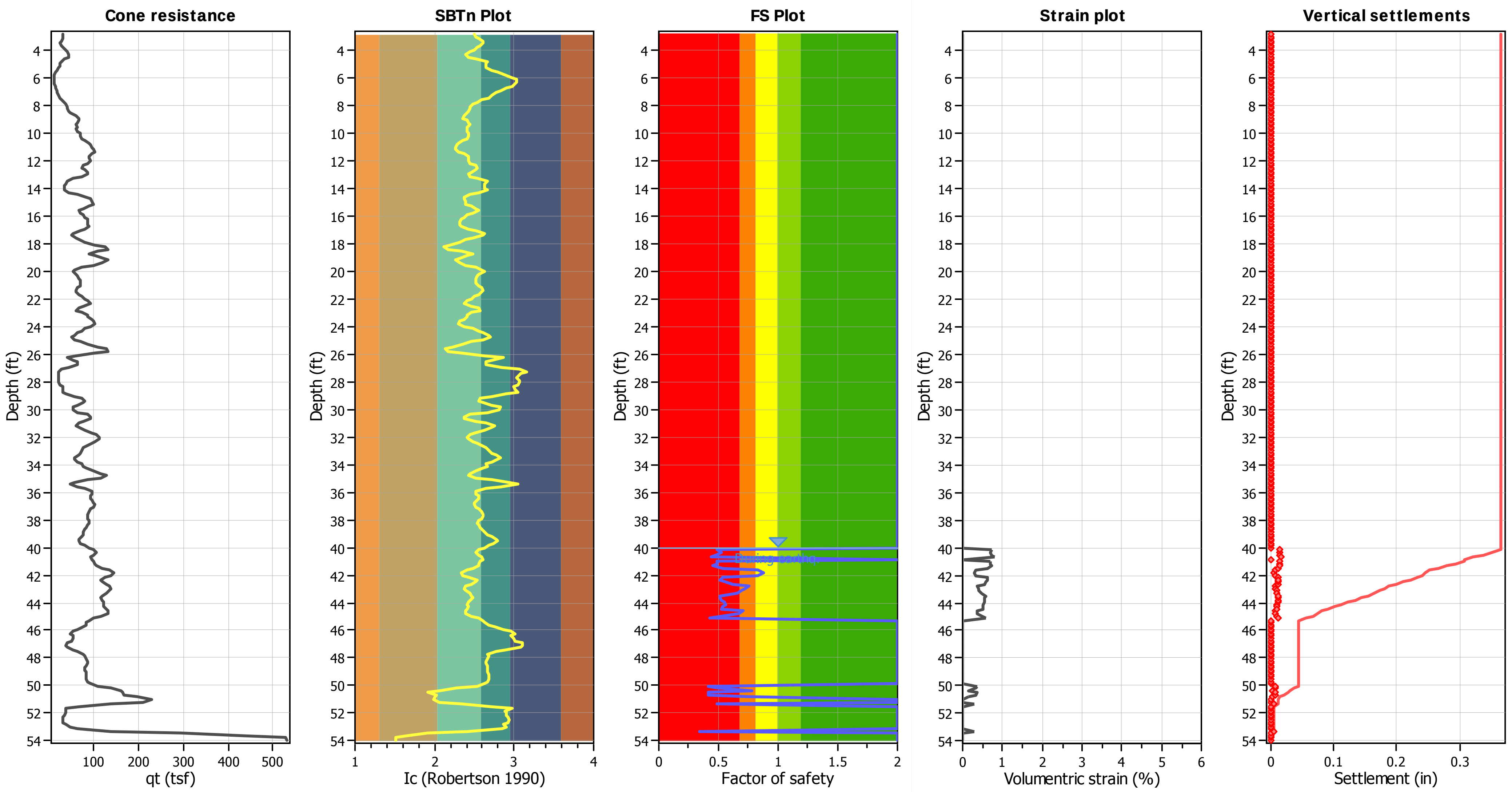
Overall Parametric Assessment Method



:: CPT main liquefaction parameters details ::

CPT Name	Earthquake Mag.	Earthquake Accel.	GWT in situ (ft)	GWT earthq. (ft)
18128 CPT-1 Text Fil	9.11	0.46	40.00	40.00

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
40.03	53.73	2.00	0.00	0.32	0.00	40.19	135.65	0.49	0.74	0.32	0.01
40.35	142.04	0.53	0.70	0.32	0.01	40.52	133.71	0.48	0.74	0.31	0.01
40.68	123.97	0.43	0.80	0.31	0.02	40.85	57.79	2.00	0.00	0.31	0.00
41.01	136.65	0.49	0.70	0.30	0.01	41.17	137.24	0.49	0.69	0.30	0.01
41.34	128.60	0.45	0.74	0.30	0.01	41.50	145.09	0.54	0.64	0.30	0.01
41.67	171.25	0.83	0.32	0.29	0.01	41.83	173.69	0.87	0.29	0.29	0.01
41.99	171.16	0.82	0.32	0.29	0.01	42.16	145.15	0.53	0.61	0.29	0.01
42.32	142.67	0.52	0.62	0.28	0.01	42.49	147.28	0.55	0.59	0.28	0.01
42.65	156.76	0.63	0.53	0.28	0.01	42.81	167.55	0.76	0.36	0.27	0.01
42.98	164.93	0.72	0.40	0.27	0.01	43.14	163.48	0.70	0.41	0.27	0.01
43.31	159.80	0.65	0.46	0.27	0.01	43.47	142.36	0.51	0.58	0.26	0.01
43.63	143.80	0.51	0.57	0.26	0.01	43.80	145.33	0.52	0.55	0.26	0.01
43.96	148.34	0.54	0.54	0.25	0.01	44.13	151.07	0.56	0.52	0.25	0.01
44.29	147.64	0.54	0.53	0.25	0.01	44.45	145.91	0.52	0.53	0.25	0.01
44.62	165.33	0.71	0.35	0.24	0.01	44.78	162.35	0.67	0.38	0.24	0.01
44.95	144.87	0.51	0.51	0.24	0.01	45.11	127.11	0.42	0.59	0.24	0.01
45.28	51.97	2.00	0.00	0.23	0.00	45.44	51.59	2.00	0.00	0.23	0.00
45.60	50.18	2.00	0.00	0.23	0.00	45.77	50.84	2.00	0.00	0.22	0.00
45.93	36.45	2.00	0.00	0.22	0.00	46.10	25.16	2.00	0.00	0.22	0.00
46.26	31.84	2.00	0.00	0.22	0.00	46.42	25.10	2.00	0.00	0.21	0.00
46.59	36.28	2.00	0.00	0.21	0.00	46.75	28.54	2.00	0.00	0.21	0.00
46.92	19.77	2.00	0.00	0.20	0.00	47.08	20.18	2.00	0.00	0.20	0.00
47.24	24.08	2.00	0.00	0.20	0.00	47.41	20.99	2.00	0.00	0.20	0.00
47.57	45.35	2.00	0.00	0.19	0.00	47.74	46.64	2.00	0.00	0.19	0.00
47.90	46.39	2.00	0.00	0.19	0.00	48.06	48.38	2.00	0.00	0.19	0.00
48.23	54.61	2.00	0.00	0.18	0.00	48.39	52.17	2.00	0.00	0.18	0.00
48.56	49.26	2.00	0.00	0.18	0.00	48.72	45.62	2.00	0.00	0.17	0.00
48.88	48.47	2.00	0.00	0.17	0.00	49.05	49.47	2.00	0.00	0.17	0.00
49.21	48.67	2.00	0.00	0.17	0.00	49.38	47.70	2.00	0.00	0.16	0.00
49.54	48.90	2.00	0.00	0.16	0.00	49.70	49.38	2.00	0.00	0.16	0.00
49.87	53.95	2.00	0.00	0.15	0.00	50.03	130.49	0.41	0.37	0.15	0.01
50.20	145.80	0.49	0.32	0.15	0.01	50.36	173.79	0.78	0.16	0.15	0.00
50.52	130.55	0.41	0.35	0.14	0.01	50.69	130.34	0.41	0.34	0.14	0.01
50.85	171.28	0.74	0.16	0.14	0.00	51.02	235.69	2.00	0.00	0.14	0.00
51.18	240.78	2.00	0.00	0.13	0.00	51.34	145.86	0.48	0.28	0.13	0.01
51.51	21.02	2.00	0.00	0.13	0.00	51.67	20.36	2.00	0.00	0.12	0.00
51.84	19.16	2.00	0.00	0.12	0.00	52.00	19.92	2.00	0.00	0.12	0.00
52.16	19.13	2.00	0.00	0.12	0.00	52.33	16.66	2.00	0.00	0.11	0.00
52.49	15.07	2.00	0.00	0.11	0.00	52.66	14.77	2.00	0.00	0.11	0.00
52.82	17.90	2.00	0.00	0.10	0.00	52.99	26.94	2.00	0.00	0.10	0.00
53.15	31.15	2.00	0.00	0.10	0.00	53.31	109.05	0.34	0.28	0.10	0.01
53.48	229.35	2.00	0.00	0.09	0.00	53.64	254.00	2.00	0.00	0.09	0.00
53.81	254.00	2.00	0.00	0.09	0.00	53.97	254.00	2.00	0.00	0.09	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

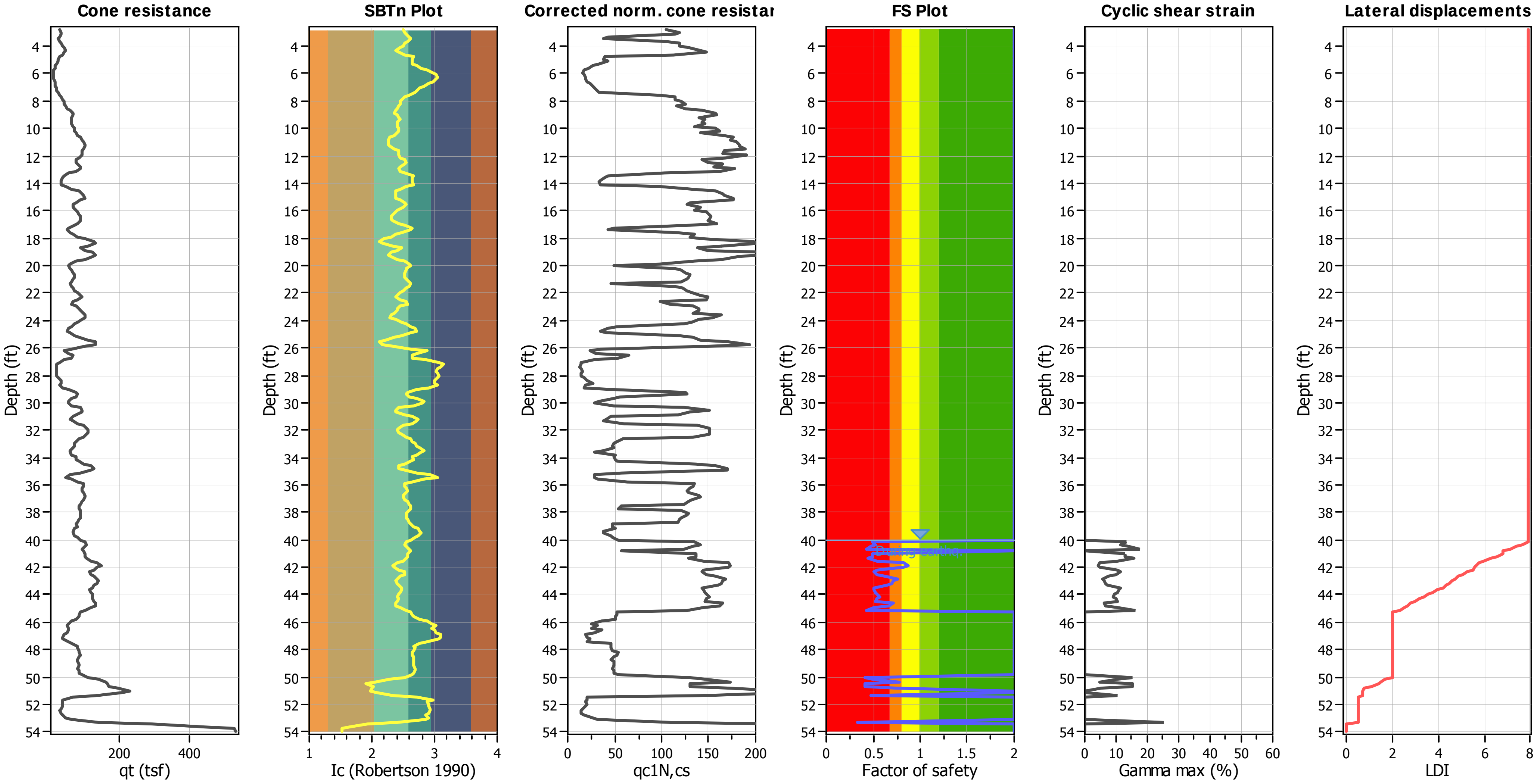
Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)

Total estimated settlement: 0.37

Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

Estimation of post-earthquake lateral Displacements



Abbreviations

q_t: Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c: Soil Behaviour Type Index
$q_{c1N,cs}$: Equivalent clean sand normalized CPT total cone resistance

F.S.: Factor of safety
γ_{max}: Maximum cyclic shear strain
LDI: Lateral displacement index

:: Lateral displacement index calculation ::

Depth (ft)	$q_{c1N,cs}$	$Gamma_{lim}$ (%)	FS	Fa	$Gamma_{max}$ (%)	LDI
40.03	53.73	0.00	2.00	0.00	0.00	0.00
40.19	135.65	0.13	0.49	0.43	0.13	0.26
40.35	142.04	0.11	0.53	0.35	0.11	0.22
40.52	133.71	0.14	0.48	0.45	0.14	0.28
40.68	123.97	0.18	0.43	0.56	0.18	0.35
40.85	57.79	0.00	2.00	0.00	0.00	0.00
41.01	136.65	0.13	0.49	0.41	0.13	0.26
41.17	137.24	0.13	0.49	0.41	0.13	0.25
41.34	128.60	0.16	0.45	0.51	0.16	0.31
41.50	145.09	0.11	0.54	0.31	0.11	0.21
41.67	171.25	0.05	0.83	-0.04	0.05	0.10
41.83	173.69	0.05	0.87	-0.07	0.04	0.09
41.99	171.16	0.05	0.82	-0.04	0.05	0.10
42.16	145.15	0.11	0.53	0.31	0.11	0.21
42.32	142.67	0.11	0.52	0.34	0.11	0.22
42.49	147.28	0.10	0.55	0.28	0.10	0.20
42.65	156.76	0.08	0.63	0.16	0.08	0.15
42.81	167.55	0.06	0.76	0.01	0.06	0.11
42.98	164.93	0.06	0.72	0.05	0.06	0.12
43.14	163.48	0.07	0.70	0.07	0.07	0.13
43.31	159.80	0.07	0.65	0.12	0.07	0.14
43.47	142.36	0.11	0.51	0.34	0.11	0.22
43.63	143.80	0.11	0.51	0.33	0.11	0.21
43.80	145.33	0.10	0.52	0.31	0.10	0.21
43.96	148.34	0.10	0.54	0.27	0.10	0.19
44.13	151.07	0.09	0.56	0.23	0.09	0.18
44.29	147.64	0.10	0.54	0.28	0.10	0.19
44.45	145.91	0.10	0.52	0.30	0.10	0.20
44.62	165.33	0.06	0.71	0.04	0.06	0.12
44.78	162.35	0.07	0.67	0.08	0.07	0.13
44.95	144.87	0.11	0.51	0.31	0.11	0.21
45.11	127.11	0.16	0.42	0.53	0.16	0.32
45.28	51.97	0.00	2.00	0.00	0.00	0.00
45.44	51.59	0.00	2.00	0.00	0.00	0.00
45.60	50.18	0.00	2.00	0.00	0.00	0.00
45.77	50.84	0.00	2.00	0.00	0.00	0.00
45.93	36.45	0.00	2.00	0.00	0.00	0.00
46.10	25.16	0.00	2.00	0.00	0.00	0.00
46.26	31.84	0.00	2.00	0.00	0.00	0.00
46.42	25.10	0.00	2.00	0.00	0.00	0.00
46.59	36.28	0.00	2.00	0.00	0.00	0.00
46.75	28.54	0.00	2.00	0.00	0.00	0.00
46.92	19.77	0.00	2.00	0.00	0.00	0.00
47.08	20.18	0.00	2.00	0.00	0.00	0.00
47.24	24.08	0.00	2.00	0.00	0.00	0.00
47.41	20.99	0.00	2.00	0.00	0.00	0.00
47.57	45.35	0.00	2.00	0.00	0.00	0.00
47.74	46.64	0.00	2.00	0.00	0.00	0.00

:: Estimation of post-earthquake lateral Displacements :: (continued)

Depth (ft)	$q_{c1N,cs}$	$Gamma_{lim}$ (%)	FS	Fa	$Gamma_{max}$ (%)	LDI
47.90	46.39	0.00	2.00	0.00	0.00	0.00
48.06	48.38	0.00	2.00	0.00	0.00	0.00
48.23	54.61	0.00	2.00	0.00	0.00	0.00
48.39	52.17	0.00	2.00	0.00	0.00	0.00
48.56	49.26	0.00	2.00	0.00	0.00	0.00
48.72	45.62	0.00	2.00	0.00	0.00	0.00
48.88	48.47	0.00	2.00	0.00	0.00	0.00
49.05	49.47	0.00	2.00	0.00	0.00	0.00
49.21	48.67	0.00	2.00	0.00	0.00	0.00
49.38	47.70	0.00	2.00	0.00	0.00	0.00
49.54	48.90	0.00	2.00	0.00	0.00	0.00
49.70	49.38	0.00	2.00	0.00	0.00	0.00
49.87	53.95	0.00	2.00	0.00	0.00	0.00
50.03	130.49	0.15	0.41	0.49	0.15	0.30
50.20	145.80	0.10	0.49	0.30	0.10	0.20
50.36	173.79	0.05	0.78	-0.07	0.05	0.10
50.52	130.55	0.15	0.41	0.49	0.15	0.30
50.69	130.34	0.15	0.41	0.49	0.15	0.30
50.85	171.28	0.05	0.74	-0.04	0.05	0.10
51.02	235.69	0.01	2.00	-0.99	0.00	0.00
51.18	240.78	0.00	2.00	-1.07	0.00	0.00
51.34	145.86	0.10	0.48	0.30	0.10	0.20
51.51	21.02	0.00	2.00	0.00	0.00	0.00
51.67	20.36	0.00	2.00	0.00	0.00	0.00
51.84	19.16	0.00	2.00	0.00	0.00	0.00
52.00	19.92	0.00	2.00	0.00	0.00	0.00
52.16	19.13	0.00	2.00	0.00	0.00	0.00
52.33	16.66	0.00	2.00	0.00	0.00	0.00
52.49	15.07	0.00	2.00	0.00	0.00	0.00
52.66	14.77	0.00	2.00	0.00	0.00	0.00
52.82	17.90	0.00	2.00	0.00	0.00	0.00
52.99	26.94	0.00	2.00	0.00	0.00	0.00
53.15	31.15	0.00	2.00	0.00	0.00	0.00
53.31	109.05	0.25	0.34	0.71	0.25	0.50
53.48	229.35	0.01	2.00	-0.89	0.00	0.00
53.64	254.00	0.00	2.00	-1.28	0.00	0.00
53.81	254.00	0.00	2.00	-1.28	0.00	0.00
53.97	254.00	0.00	2.00	-1.28	0.00	0.00

Total estimated displacement: 7.90

Abbreviations

Depth:	Depth of test point
$q_{c1N,cs}$:	Adjusted and corrected cone resistance due to fines
$Gamma_{lim}$:	Limiting shear strain
FS:	Calculated factor of safety against liquefaction
Fa:	
$Gamma_{max}$:	Maximum cyclic shear strain
Lat. disp.:	Lateral displacement

:: Strength loss calculation Idriss & Boulanger (2008) ::

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
2.79	29.51	47.14	2.76	130.15	2.50	N/A	N/A
2.95	30.65	48.96	2.85	139.50	2.52	N/A	N/A
3.12	30.36	48.48	3.03	146.75	2.55	N/A	N/A
3.28	27.04	43.14	3.33	143.66	2.60	N/A	N/A
3.44	25.48	40.61	3.44	139.69	2.62	N/A	N/A
3.61	27.89	44.46	3.15	140.12	2.57	N/A	N/A
3.77	31.23	49.82	2.93	146.05	2.53	N/A	N/A
3.94	35.41	56.52	2.75	155.32	2.50	N/A	N/A
4.10	39.58	63.20	2.51	158.77	2.45	N/A	N/A
4.26	44.46	71.03	2.26	160.56	2.39	N/A	N/A
4.43	41.82	66.77	2.39	159.80	2.42	N/A	N/A
4.59	34.55	55.08	2.83	155.90	2.51	N/A	N/A
4.76	26.08	41.44	3.75	155.34	2.66	N/A	N/A
4.92	24.83	39.42	3.67	144.78	2.65	N/A	N/A
5.08	23.73	37.64	3.62	136.40	2.65	N/A	N/A
5.25	21.51	34.06	3.57	121.57	2.64	N/A	N/A
5.41	17.14	27.02	4.09	110.60	2.71	N/A	N/A
5.58	13.86	21.74	4.69	102.07	2.79	N/A	N/A
5.74	11.73	18.29	5.53	101.12	2.88	N/A	N/A
5.91	10.87	16.91	6.47	109.49	2.98	N/A	N/A
6.07	11.08	17.23	7.11	122.48	3.03	N/A	N/A
6.23	11.71	18.22	7.16	130.35	3.04	N/A	N/A
6.40	12.27	19.11	6.90	131.90	3.01	N/A	N/A
6.56	13.10	20.42	6.39	130.56	2.97	N/A	N/A
6.73	14.81	23.15	5.66	131.09	2.90	N/A	N/A
6.89	16.50	25.86	5.11	132.17	2.84	N/A	N/A
7.05	18.73	29.42	4.52	132.96	2.77	N/A	N/A
7.22	20.48	32.22	4.17	134.50	2.72	N/A	N/A
7.38	22.96	36.19	3.85	139.35	2.68	N/A	N/A
7.55	27.82	43.98	3.26	143.53	2.59	N/A	N/A
7.71	32.38	51.30	2.93	150.18	2.53	N/A	N/A
7.87	37.53	59.55	2.63	156.83	2.47	N/A	N/A
8.04	40.58	64.43	2.54	163.64	2.45	N/A	N/A
8.20	41.67	66.16	2.53	167.43	2.45	N/A	N/A
8.37	43.43	68.98	2.46	169.39	2.43	N/A	N/A
8.53	48.25	76.71	2.37	181.44	2.41	N/A	N/A
8.69	58.51	93.18	2.21	206.23	2.38	N/A	N/A
8.86	66.67	106.27	2.14	227.13	2.35	N/A	N/A
9.02	65.98	105.14	2.32	244.45	2.40	N/A	N/A
9.19	63.36	100.70	2.43	244.46	2.43	N/A	N/A
9.35	60.17	94.62	2.52	238.03	2.45	N/A	N/A
9.51	62.34	95.57	2.32	221.43	2.40	N/A	N/A
9.68	60.40	91.57	2.38	217.91	2.42	N/A	N/A
9.84	64.21	95.98	2.38	227.98	2.42	N/A	N/A
10.01	68.55	101.30	2.41	244.51	2.42	N/A	N/A
10.17	70.29	102.64	2.45	251.64	2.43	N/A	N/A
10.34	73.70	105.51	2.33	245.45	2.40	N/A	N/A
10.50	78.77	110.37	2.15	237.68	2.36	N/A	N/A

:: Strength loss calculation (Idriss & Boulanger (2008) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
10.66	88.57	121.03	1.92	232.61	2.29	N/A	N/A
10.83	93.39	125.67	1.86	234.31	2.27	N/A	N/A
10.99	96.15	127.53	1.82	232.27	2.26	N/A	N/A
11.15	98.72	129.57	1.84	238.46	2.26	N/A	N/A
11.32	100.72	131.33	1.93	253.95	2.30	N/A	N/A
11.48	95.40	124.33	2.19	271.73	2.37	N/A	N/A
11.65	90.30	117.23	2.42	283.31	2.42	N/A	N/A
11.81	90.43	116.05	2.44	282.99	2.43	N/A	N/A
11.97	91.15	115.46	2.41	278.37	2.42	N/A	N/A
12.14	85.27	107.04	2.52	269.89	2.45	N/A	N/A
12.30	74.62	93.36	2.89	269.83	2.52	N/A	N/A
12.47	73.92	91.51	2.96	271.04	2.54	N/A	N/A
12.63	78.32	95.61	2.85	272.73	2.52	N/A	N/A
12.79	86.83	104.17	2.57	267.51	2.46	N/A	N/A
12.96	87.03	102.82	2.40	246.96	2.42	N/A	N/A
13.12	73.58	86.14	2.54	218.90	2.45	N/A	N/A
13.29	54.66	63.56	2.93	186.00	2.53	N/A	N/A
13.45	38.83	44.92	3.69	165.70	2.66	N/A	N/A
13.62	36.91	42.11	3.55	149.60	2.64	N/A	N/A
13.78	33.95	38.23	3.56	135.94	2.64	N/A	N/A
13.94	32.61	36.30	3.54	128.61	2.63	N/A	N/A
14.11	33.22	36.67	3.72	136.46	2.66	N/A	N/A
14.27	44.93	49.04	3.04	149.19	2.55	N/A	N/A
14.44	62.45	67.36	2.53	170.09	2.45	N/A	N/A
14.60	81.93	87.38	2.20	192.22	2.37	N/A	N/A
14.76	91.09	96.33	2.19	211.43	2.37	N/A	N/A
14.93	96.68	101.40	2.24	227.60	2.38	N/A	N/A
15.09	99.41	103.32	2.26	233.13	2.39	N/A	N/A
15.26	89.13	91.96	2.55	234.63	2.46	N/A	N/A
15.42	75.10	76.81	2.89	222.32	2.52	N/A	N/A
15.58	65.69	66.49	3.08	204.68	2.56	N/A	N/A
15.75	67.97	68.04	2.72	185.13	2.49	N/A	N/A
15.91	74.98	74.29	2.34	173.62	2.41	N/A	N/A
16.08	79.31	77.88	2.20	171.33	2.37	N/A	N/A
16.24	85.44	83.20	2.05	170.72	2.33	N/A	N/A
16.40	87.17	84.17	2.00	168.67	2.32	N/A	N/A
16.57	86.71	83.04	2.00	166.42	2.32	N/A	N/A
16.73	87.57	83.22	2.09	173.90	2.34	N/A	N/A
16.90	80.74	76.05	2.41	183.17	2.42	N/A	N/A
17.06	69.65	64.92	2.91	188.86	2.53	N/A	N/A
17.22	54.67	50.29	3.54	177.90	2.63	N/A	N/A
17.39	51.19	46.61	3.43	159.68	2.62	N/A	N/A
17.55	58.64	53.14	2.70	143.74	2.49	N/A	N/A
17.72	67.36	60.78	2.27	137.86	2.39	N/A	N/A
17.88	78.00	70.08	2.00	140.15	2.32	N/A	N/A
18.05	100.78	90.40	1.65	149.08	2.19	N/A	N/A
18.21	124.84	111.62	1.50	167.26	2.12	N/A	N/A
18.37	129.64	114.98	1.61	185.46	2.18	N/A	N/A

:: Strength loss calculation (Idriss & Boulanger (2008) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
18.54	107.47	94.00	2.06	193.82	2.33	N/A	N/A
18.70	88.36	76.11	2.71	205.95	2.49	N/A	N/A
18.86	100.82	86.54	2.36	203.94	2.41	N/A	N/A
19.03	121.78	104.37	1.99	207.67	2.31	N/A	N/A
19.19	132.24	112.85	1.83	206.58	2.26	N/A	N/A
19.36	119.66	101.03	1.99	201.21	2.31	N/A	N/A
19.52	98.38	81.93	2.29	187.46	2.39	N/A	N/A
19.68	72.99	59.66	2.87	171.25	2.52	N/A	N/A
19.85	57.81	46.48	3.29	152.83	2.59	N/A	N/A
20.01	52.07	41.35	3.49	144.40	2.63	N/A	N/A
20.18	59.15	46.99	3.03	142.34	2.55	N/A	N/A
20.34	63.00	49.77	2.98	148.26	2.54	N/A	N/A
20.50	67.76	53.30	2.85	152.17	2.52	N/A	N/A
20.67	70.23	54.89	2.84	155.77	2.51	N/A	N/A
20.83	70.83	54.92	2.89	158.54	2.52	N/A	N/A
21.00	67.95	52.14	3.04	158.53	2.55	N/A	N/A
21.16	62.62	47.47	3.27	155.16	2.59	N/A	N/A
21.32	58.76	44.07	3.40	150.04	2.61	N/A	N/A
21.49	59.98	44.74	3.30	147.41	2.59	N/A	N/A
21.65	65.58	48.86	3.03	147.91	2.55	N/A	N/A
21.82	71.74	53.41	2.78	148.45	2.50	N/A	N/A
21.98	78.22	58.18	2.57	149.53	2.46	N/A	N/A
22.15	85.95	63.91	2.36	150.63	2.41	N/A	N/A
22.31	90.84	67.37	2.23	150.45	2.38	N/A	N/A
22.47	77.51	56.48	2.57	145.32	2.46	N/A	N/A
22.64	64.64	46.17	3.02	139.41	2.55	N/A	N/A
22.80	60.69	42.86	3.17	135.89	2.57	N/A	N/A
22.97	74.18	52.97	2.57	135.92	2.46	N/A	N/A
23.13	84.61	60.56	2.33	141.05	2.40	N/A	N/A
23.29	85.69	60.87	2.38	144.84	2.42	N/A	N/A
23.46	94.45	67.21	2.17	145.72	2.36	N/A	N/A
23.62	100.08	71.28	2.00	142.33	2.31	N/A	N/A
23.79	102.24	72.60	1.93	140.18	2.29	N/A	N/A
23.95	90.97	63.38	2.23	141.43	2.38	N/A	N/A
24.11	79.70	54.33	2.66	144.62	2.48	N/A	N/A
24.28	71.98	48.19	3.03	145.85	2.55	N/A	N/A
24.44	63.98	42.05	3.42	143.79	2.61	N/A	N/A
24.61	55.30	35.61	3.89	138.38	2.68	N/A	N/A
24.77	51.16	32.55	4.04	131.43	2.71	N/A	N/A
24.93	55.91	35.89	3.44	123.50	2.62	N/A	N/A
25.10	69.76	45.79	2.60	119.03	2.47	N/A	N/A
25.26	85.33	56.92	2.11	120.00	2.35	N/A	N/A
25.43	106.84	72.58	1.72	124.52	2.22	N/A	N/A
25.59	128.94	88.63	1.51	133.56	2.13	N/A	N/A
25.75	130.15	88.51	1.58	139.89	2.16	N/A	N/A
25.92	100.75	66.01	2.07	136.44	2.34	N/A	N/A
26.08	60.28	37.01	3.50	129.49	2.63	N/A	N/A
26.25	38.97	22.69	5.41	122.82	2.87	N/A	N/A

:: Strength loss calculation (Idriss & Boulanger (2008) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
26.41	51.57	30.66	4.12	126.21	2.72	N/A	N/A
26.57	64.43	38.82	3.57	138.67	2.64	N/A	N/A
26.74	63.86	38.15	3.66	139.52	2.65	N/A	N/A
26.90	42.53	24.22	5.29	128.06	2.86	N/A	N/A
27.07	25.89	14.26	7.50	106.92	3.07	N/A	N/A
27.23	19.12	10.21	8.63	88.09	3.15	N/A	N/A
27.39	19.14	10.16	7.78	79.09	3.09	N/A	N/A
27.56	19.76	10.46	7.41	77.47	3.06	N/A	N/A
27.72	20.56	10.86	7.15	77.61	3.04	N/A	N/A
27.89	20.57	10.79	7.42	80.08	3.06	N/A	N/A
28.05	21.48	11.25	7.50	84.39	3.07	N/A	N/A
28.21	24.74	13.03	7.28	94.80	3.05	N/A	N/A
28.38	30.40	16.15	6.64	107.15	2.99	N/A	N/A
28.54	31.41	16.61	6.81	113.06	3.01	N/A	N/A
28.71	29.43	15.41	7.30	112.47	3.05	N/A	N/A
28.87	38.04	20.10	5.81	116.75	2.91	N/A	N/A
29.04	55.03	29.76	4.17	124.10	2.72	N/A	N/A
29.20	73.65	41.16	3.19	131.32	2.58	N/A	N/A
29.36	77.96	43.56	3.08	134.12	2.56	N/A	N/A
29.53	74.46	40.93	3.35	136.96	2.60	N/A	N/A
29.69	63.32	33.65	4.10	137.84	2.71	N/A	N/A
29.86	52.03	26.88	5.06	136.15	2.83	N/A	N/A
30.02	52.46	26.95	4.83	130.26	2.81	N/A	N/A
30.18	63.86	33.72	3.75	126.28	2.66	N/A	N/A
30.35	86.80	48.31	2.47	119.30	2.44	N/A	N/A
30.51	93.68	52.75	2.20	115.93	2.37	N/A	N/A
30.68	91.55	51.21	2.21	113.41	2.38	N/A	N/A
30.84	76.75	41.14	2.87	118.27	2.52	N/A	N/A
31.00	66.33	34.23	3.61	123.71	2.64	N/A	N/A
31.17	59.56	29.75	4.35	129.49	2.75	N/A	N/A
31.33	65.42	32.82	4.11	135.03	2.72	N/A	N/A
31.50	77.79	39.78	3.53	140.27	2.63	N/A	N/A
31.66	96.40	50.78	2.80	141.97	2.51	N/A	N/A
31.82	105.40	56.22	2.48	139.23	2.44	N/A	N/A
31.99	110.26	58.88	2.38	139.99	2.42	N/A	N/A
32.15	110.08	58.31	2.43	141.79	2.43	N/A	N/A
32.32	103.50	53.76	2.68	144.23	2.48	N/A	N/A
32.48	94.30	47.99	2.96	142.02	2.54	N/A	N/A
32.64	83.15	41.23	3.38	139.26	2.61	N/A	N/A
32.81	76.49	37.26	3.64	135.51	2.65	N/A	N/A
32.97	71.68	34.38	3.86	132.80	2.68	N/A	N/A
33.14	69.85	33.03	4.09	134.96	2.71	N/A	N/A
33.30	64.84	30.05	4.52	135.82	2.77	N/A	N/A
33.47	56.55	25.94	5.07	131.64	2.83	N/A	N/A
33.63	57.63	26.32	4.69	123.47	2.79	N/A	N/A
33.79	62.93	28.96	4.14	120.00	2.72	N/A	N/A
33.96	73.30	34.36	3.64	124.94	2.65	N/A	N/A
34.12	74.62	34.69	3.73	129.40	2.66	N/A	N/A

:: Strength loss calculation (Idriss & Boulanger (2008) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
34.28	82.76	38.87	3.42	132.96	2.62	N/A	N/A
34.45	97.81	47.04	2.89	136.06	2.52	N/A	N/A
34.61	116.31	57.21	2.47	141.06	2.44	N/A	N/A
34.78	127.49	62.75	2.40	150.87	2.42	N/A	N/A
34.94	115.57	54.98	2.88	158.27	2.52	N/A	N/A
35.10	85.87	38.17	4.16	158.66	2.72	N/A	N/A
35.27	57.77	25.07	6.06	151.87	2.94	N/A	N/A
35.43	46.19	19.74	7.21	142.36	3.04	N/A	N/A
35.60	62.83	27.09	4.99	135.08	2.82	N/A	N/A
35.76	80.08	35.51	3.66	129.83	2.65	N/A	N/A
35.92	95.59	44.03	2.86	125.86	2.52	N/A	N/A
36.09	94.81	43.40	2.88	125.08	2.52	N/A	N/A
36.25	92.14	41.65	3.01	125.46	2.55	N/A	N/A
36.42	90.66	40.58	3.10	125.83	2.56	N/A	N/A
36.58	94.66	42.47	2.98	126.73	2.54	N/A	N/A
36.74	100.20	45.24	2.81	127.13	2.51	N/A	N/A
36.91	101.42	45.74	2.75	125.88	2.50	N/A	N/A
37.07	97.12	43.28	2.86	123.79	2.52	N/A	N/A
37.24	90.77	39.66	3.10	122.98	2.56	N/A	N/A
37.40	87.98	37.94	3.25	123.18	2.59	N/A	N/A
37.57	85.47	36.42	3.38	122.93	2.61	N/A	N/A
37.73	84.45	35.75	3.40	121.69	2.61	N/A	N/A
37.89	86.13	36.55	3.27	119.52	2.59	N/A	N/A
38.06	88.59	37.81	3.09	116.73	2.56	N/A	N/A
38.22	89.05	38.08	2.97	113.13	2.54	N/A	N/A
38.39	86.05	36.47	3.03	110.64	2.55	N/A	N/A
38.55	82.42	34.53	3.13	108.16	2.57	N/A	N/A
38.71	79.01	32.62	3.30	107.62	2.60	N/A	N/A
38.88	76.73	31.18	3.50	109.20	2.63	N/A	N/A
39.04	76.99	30.83	3.71	114.42	2.66	N/A	N/A
39.21	72.28	28.27	4.19	118.52	2.73	N/A	N/A
39.37	67.41	26.18	4.55	119.12	2.77	N/A	N/A
39.53	65.23	25.19	4.67	117.57	2.79	N/A	N/A
39.70	70.29	27.10	4.26	115.49	2.74	N/A	N/A
39.86	78.04	30.26	3.89	117.80	2.69	N/A	N/A
40.03	87.31	34.52	3.49	120.41	2.63	0.13	2.40
40.19	98.52	39.84	3.09	123.01	2.56	0.15	0.71
40.35	103.78	42.46	2.88	122.17	2.52	0.16	0.71
40.52	99.52	40.22	3.02	121.56	2.55	0.15	0.71
40.68	93.23	36.97	3.28	121.37	2.59	0.14	0.70
40.85	94.15	37.06	3.38	125.14	2.61	0.14	2.57
41.01	99.11	39.40	3.18	125.19	2.58	0.16	0.70
41.17	100.70	40.10	3.11	124.83	2.56	0.16	0.71
41.34	104.36	41.71	3.03	126.25	2.55	0.14	0.71
41.50	117.32	47.85	2.72	129.95	2.49	0.17	0.73
41.67	135.02	56.74	2.33	132.40	2.41	0.23	0.75
41.83	145.27	62.52	2.06	128.59	2.33	0.23	0.76
41.99	136.38	57.91	2.16	125.21	2.36	0.23	0.75

:: Strength loss calculation (Idriss & Boulanger (2008) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
42.16	123.91	51.06	2.46	125.58	2.43	0.17	0.74
42.32	114.30	45.45	2.91	132.35	2.53	0.17	0.72
42.49	118.01	46.92	2.89	135.58	2.52	0.18	0.73
42.65	127.78	51.84	2.58	133.98	2.46	0.19	0.74
42.81	135.40	56.15	2.30	129.30	2.40	0.22	0.75
42.98	138.51	57.80	2.21	127.81	2.37	0.21	0.75
43.14	135.58	56.02	2.29	128.47	2.40	0.21	0.75
43.31	127.03	51.47	2.48	127.53	2.44	0.20	0.74
43.47	119.62	47.85	2.60	124.39	2.47	0.16	0.73
43.63	114.75	45.60	2.64	120.54	2.47	0.17	0.72
43.80	117.35	46.98	2.52	118.52	2.45	0.17	0.73
43.96	120.58	48.67	2.41	117.22	2.42	0.17	0.73
44.13	121.78	49.18	2.38	116.92	2.42	0.18	0.73
44.29	121.32	48.79	2.40	117.18	2.42	0.17	0.73
44.45	126.61	51.22	2.32	118.62	2.40	0.17	0.74
44.62	132.10	53.73	2.24	120.43	2.38	0.21	0.74
44.78	131.14	53.13	2.26	119.95	2.39	0.20	0.74
44.95	116.42	45.64	2.59	118.10	2.46	0.17	0.72
45.11	99.00	37.43	3.02	112.94	2.55	0.14	0.70
45.28	88.15	32.40	3.39	109.80	2.61	0.13	2.26
45.44	83.58	30.35	3.53	107.26	2.63	0.13	2.13
45.60	83.01	29.59	3.83	113.36	2.68	0.13	2.11
45.77	75.49	26.72	4.43	118.40	2.76	0.13	1.91
45.93	62.75	21.98	5.43	119.27	2.87	0.10	1.57
46.10	53.25	18.45	6.21	114.56	2.95	0.08	1.32
46.26	47.33	16.25	6.97	113.29	3.02	0.09	1.16
46.42	53.21	18.36	6.35	116.61	2.96	0.08	1.31
46.59	51.55	17.71	6.74	119.36	3.00	0.09	1.26
46.75	48.67	16.63	6.91	114.93	3.02	0.08	1.19
46.92	40.16	13.50	7.91	106.80	3.10	0.07	0.96
47.08	37.81	12.62	7.92	99.96	3.10	0.07	0.90
47.24	38.55	12.86	7.65	98.42	3.08	0.08	0.92
47.41	51.80	17.62	5.61	98.89	2.89	0.08	1.26
47.57	63.61	21.84	4.56	99.53	2.77	0.12	1.56
47.74	76.99	26.61	3.80	101.10	2.67	0.12	1.90
47.90	78.62	27.13	3.86	104.73	2.68	0.12	1.94
48.06	82.58	28.60	3.72	106.38	2.66	0.12	2.04
48.23	85.50	29.75	3.61	107.27	2.64	0.13	2.11
48.39	86.00	29.96	3.56	106.77	2.64	0.13	2.11
48.56	81.68	28.04	3.75	105.18	2.67	0.12	2.00
48.72	79.93	27.32	3.79	103.59	2.67	0.12	1.95
48.88	80.11	27.33	3.80	103.74	2.67	0.12	1.95
49.05	81.69	27.88	3.73	104.12	2.66	0.13	1.99
49.21	81.37	27.66	3.81	105.43	2.67	0.12	1.98
49.38	81.14	27.52	3.87	106.46	2.68	0.12	1.97
49.54	81.56	27.62	3.93	108.49	2.69	0.12	1.97
49.70	84.72	28.67	3.80	109.03	2.67	0.13	2.05
49.87	91.55	31.38	3.53	110.90	2.63	0.13	2.21

:: Strength loss calculation (Idriss & Boulanger (2008) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
50.03	106.94	38.20	2.92	111.71	2.53	0.15	0.70
50.20	137.39	54.34	1.87	101.58	2.27	0.16	0.74
50.36	160.24	68.99	1.38	95.05	2.05	0.23	0.78
50.52	164.24	74.58	1.20	89.44	1.91	0.16	0.79
50.69	166.99	72.66	1.33	96.40	2.02	0.14	0.78
50.85	195.76	85.84	1.30	111.90	2.00	0.24	0.81
51.02	230.06	101.66	1.28	130.13	1.98	0.83	0.83
51.18	209.08	89.31	1.39	124.51	2.06	0.81	0.81
51.34	136.24	51.81	2.09	108.10	2.34	0.17	0.74
51.51	67.47	22.11	4.11	90.95	2.72	0.08	1.58
51.67	37.25	11.68	6.48	75.63	2.98	0.07	0.83
51.84	36.67	11.46	5.58	63.98	2.89	0.08	0.82
52.00	36.07	11.23	5.64	63.31	2.89	0.08	0.80
52.16	34.70	10.74	5.74	61.69	2.90	0.08	0.77
52.33	31.92	9.77	5.96	58.22	2.93	0.07	0.70
52.49	29.43	8.91	6.05	53.85	2.93	0.07	0.64
52.66	30.24	9.17	5.86	53.70	2.92	0.07	0.65
52.82	37.12	11.49	5.35	61.50	2.86	0.08	0.82
52.99	46.50	14.65	5.69	83.31	2.90	0.09	1.05
53.15	63.23	20.29	5.23	106.13	2.85	0.09	1.45
53.31	138.52	50.23	2.36	118.45	2.41	0.11	0.73
53.48	293.06	130.23	1.21	157.32	1.92	0.87	0.87
53.64	440.53	219.05	1.00	219.05	1.64	0.94	0.94
53.81	526.63	274.43	1.00	274.43	1.52	0.98	0.98
53.97	531.14	276.91	1.00	276.91	1.51	0.98	0.98

Abbreviations

q_t:	Total cone resistance
K_c:	Cone resistance correction factor due to fines
$Q_{tn,cs}$:	Adjusted and corrected cone resistance due to fines
I_c:	Soil behavior type index
$S_{u(liq)}/\sigma'_v$:	Calculated liquefied undrained strength ratio
$S_{u(peak)}/\sigma'_v$:	Calculated peak undrained strength ratio

SITE RESEARCH

USGS Design Maps Summary Report

User–Specified Input

Report Title	18-4970 Wed July 25, 2018 22:28:38 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	45.34592°N, 122.65094°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

USGS–Provided Output

$S_S =$ 0.942 g

$S_{MS} =$ 1.058 g

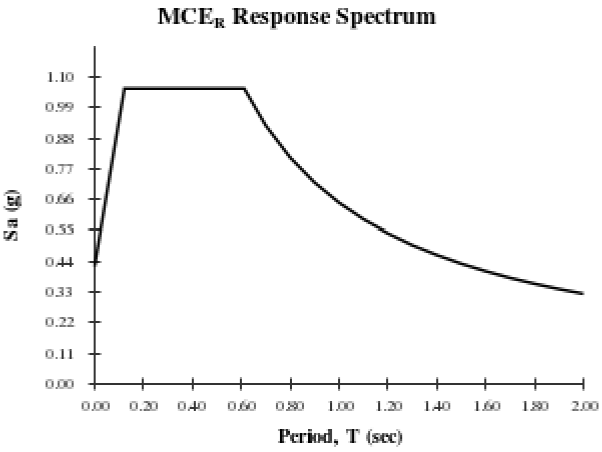
$S_{DS} =$ 0.706 g

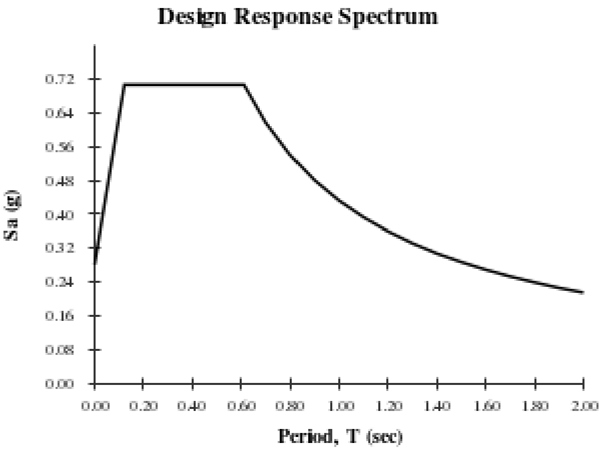
$S_1 =$ 0.407 g

$S_{M1} =$ 0.648 g

$S_{D1} =$ 0.432 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA$_M$, T$_L$, C$_{RS}$, and C$_{R1}$ values, please view the detailed report.

Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.

Design Maps Detailed Report

ASCE 7-10 Standard (45.34592°N, 122.65094°W)

Site Class D – “Stiff Soil”, Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1]	$S_S = 0.942$ g
From Figure 22-2 [2]	$S_1 = 0.407$ g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ **or** $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index *PI* > 20, • Moisture content *w* ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_S = 0.942 g, F_a = 1.123

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE $_R$ Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.407 g, F_v = 1.593

Equation (11.4–1): $S_{MS} = F_aS_S = 1.123 \text{ x } 0.942 = 1.058$ g

---

Equation (11.4–2): $S_{M1} = F_vS_1 = 1.593 \text{ x } 0.407 = 0.648$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

Equation (11.4–3): $S_{DS} = ⅔\ S_{MS} = ⅔ \text{ x } 1.058 = 0.706$ g

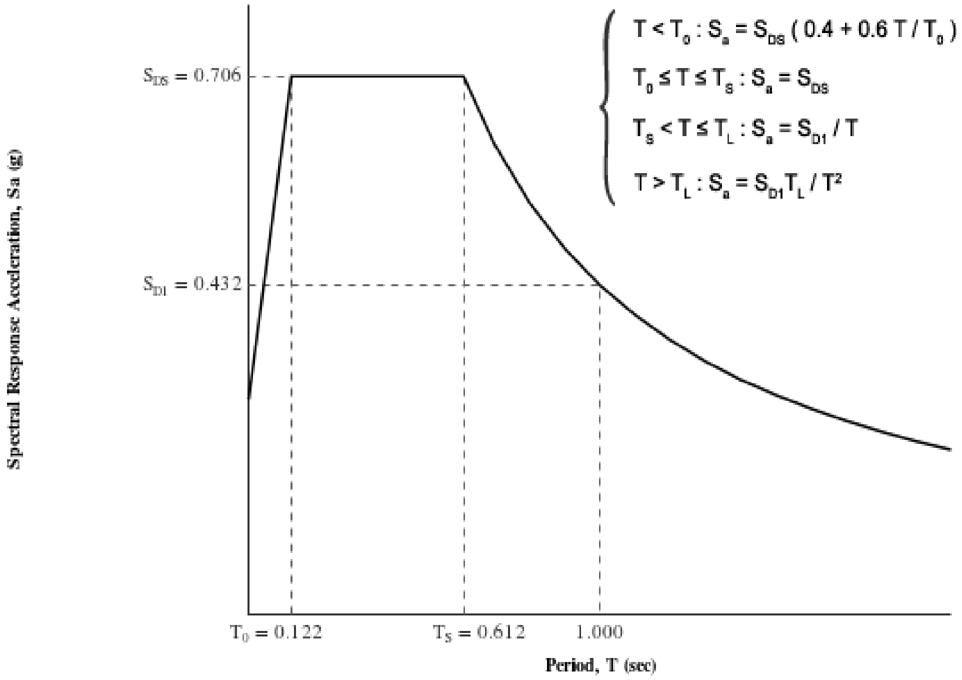
---

Equation (11.4–4): $S_{D1} = ⅔\ S_{M1} = ⅔ \text{ x } 0.648 = 0.432$ g

Section 11.4.5 — Design Response Spectrum

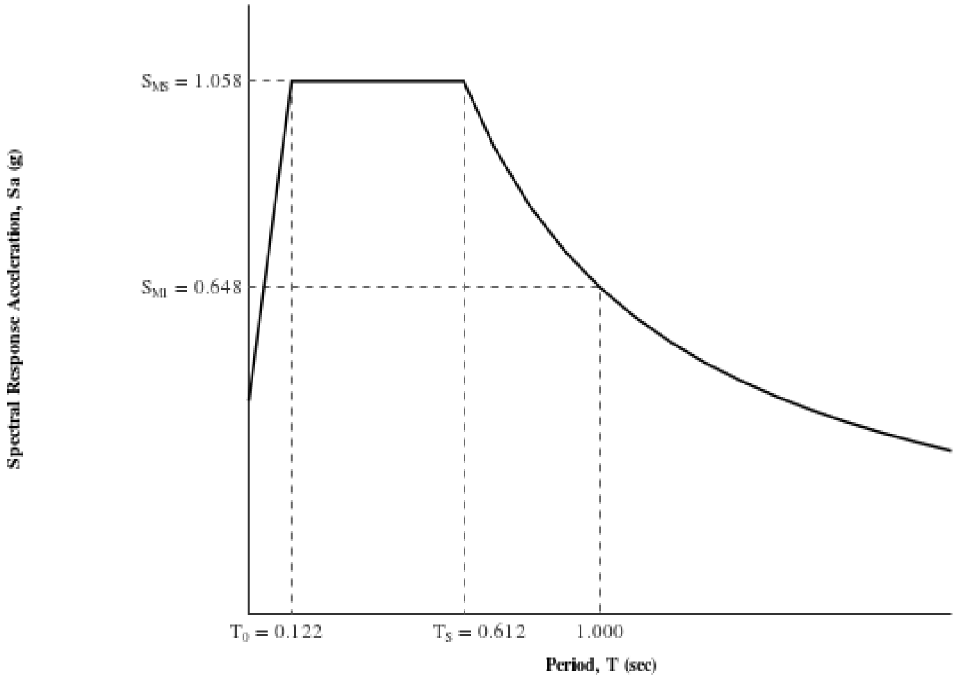
From Figure 22-12 [3] T_L = 16 seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE$_R$) Response Spectrum

The MCE$_R$ Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.411

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.089 \times 0.411 = 0.447$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.411 g, F_{PGA} = 1.089

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.903

From Figure 22-18 [6] C_{R1} = 0.872

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	**RISK CATEGORY**		
	I or II	**III**	**IV**
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 0.706 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	**RISK CATEGORY**		
	I or II	**III**	**IV**
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.432 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

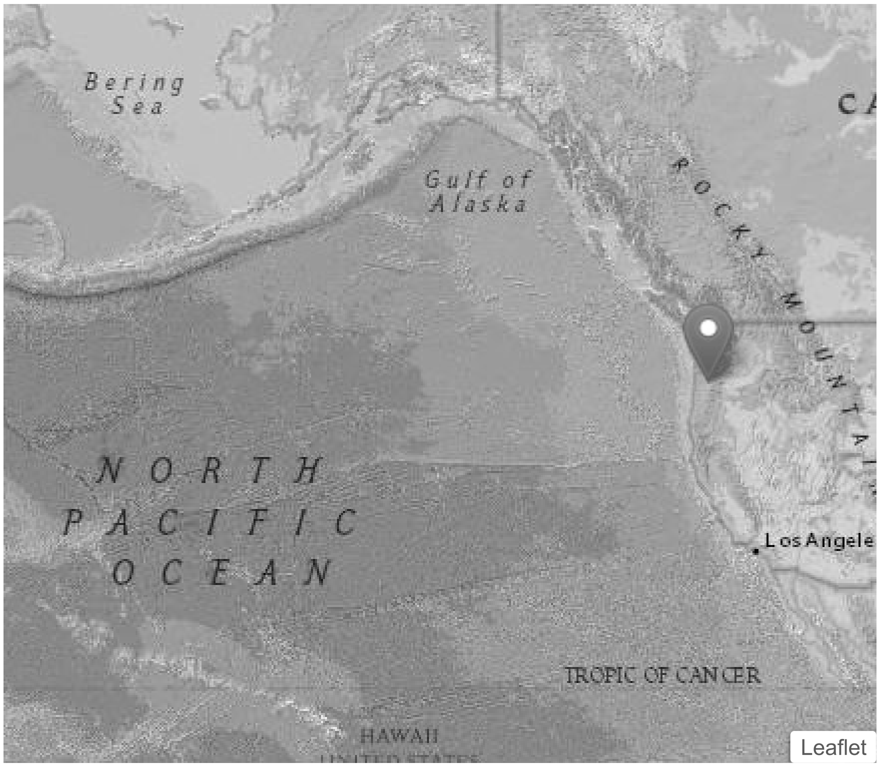
U.S. Geological Survey - Earthquake Hazards Program

Due to insufficient resources and the recent development of similar web tools by third parties, this spring the USGS will be streamlining the two U.S. Seismic Design Maps web applications, including the one below. Whereas the current applications each interact with users through a graphical user interface (GUI), the new web services will receive the inputs (e.g. latitude and longitude) in the form of a web address and return the outputs (e.g. S_{DS} and S_{D1}) in text form, without supplementary graphics. Though designed primarily to be read by the aforementioned third-party web GUIs, the text outputs are also human-readable. To preview the new web services, please click here. Step-by-step instructions for using one of these web services, namely that for the recently published 2016 ASCE 7 Standard, are posted here.

18-4970 8TH Court

Latitude = 45.346°N, Longitude = 122.650°W

Location



Reference Document

2015 NEHRP Provisions

Site Class

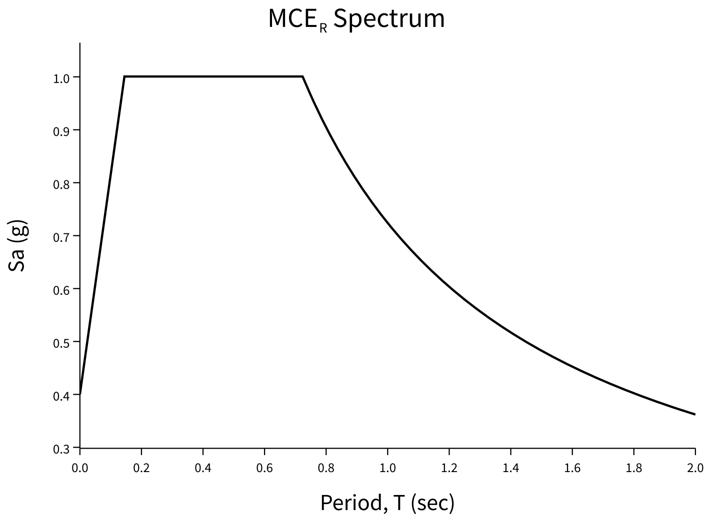
D (default): Stiff Soil

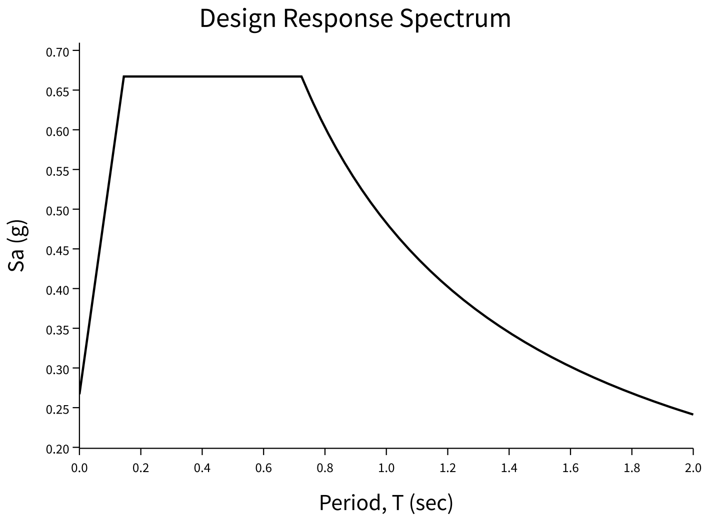
Risk Category

I or II or III

S_S = 0.834 g
S_{MS} = 1.001 g
S_{DS} = 0.667 g
S_1 = 0.376 g
S_{M1} = 0.724 g[1]
S_{D1} = 0.483 g[1]

[1] Since the Site Class is D and $S_1 \geq 0.2$ g, site-specific ground motions might be required. See Section 11.4.7 of the 2015 NEHRP Provisions.


MCE$_R$ Spectrum
Sa (g)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
Period, T (sec)


Design Response Spectrum
Sa (g)
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
Period, T (sec)

Mapped Acceleration Parameters, Long-Period Transition Periods, and Risk Coefficients

Note: The S_S and S_1 ground motion maps provided below are for the direction of maximmum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) 1.3 (to obtain S_1).

- FIGURE 22-1 S_S Risk-Targeted Maximum Considered Earthquake (MCE_R) Ground Motion Parameter for the Conterminous United States for 0.2 s Spectral Response Acceleration (5% of Critical Damping), Site Class B
- FIGURE 22-2 S_1 Risk-Targeted Maximum Considered Earthquake (MCE_R) Ground Motion Parameter for the Conterminous United States for 1.0 s Spectral Response Acceleration (5% of Critical Damping), Site Class B
- FIGURE 22-9 Maximum Considered Earthquake Geometric Mean (MCE_G) PGA, %g, Site Class B for the Conterminous United States
- FIGURE 22-14 Mapped Long-Period Transition Period, T_L (s), for the Conterminous United States
- FIGURE 22-18 Mapped Risk Coefficient at 0.2 s Spectral Response Period, C_{RS}
- FIGURE 22-19 Mapped Risk Coefficient at 1.0 s Spectral Response Period, C_{R1}

Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site class as Site Class , based on the site soil properties in accordance with Chapter 20.

Table 20.3-1 Site Classification

Site Class	$\bar{v}_S$	$\bar{N}$ **or** $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20 • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		
For SI: 1ft/s = 0.3048 m/s 1lb/ft^2 = 0.0479 kN/m^2			

Site Coefficients and Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Risk-targeted Ground Motion (0.2 s)

$C_{RS}S_{SUH} = 0.891 \times 0.936 = 0.834$ g

Deterministic Ground Motion (0.2 s)

$S_{SD} = 1.500$ g

$S_S \equiv$ "Lesser of $C_{RS}S_{SUH}$ and S_{SD}" = 0.834 g

Risk-targeted Ground Motion (1.0 s)

$C_{R1}S_{1UH} = 0.865 \times 0.435 = 0.376$ g

Deterministic Ground Motion (1.0 s)

$S_{1D} = 0.600$ g

$S_1 \equiv$ "Lesser of $C_{R1}S_{1UH}$ and S_{1D}" = 0.376 g

Table 11.4-1: Site Coefficient F_a

Site Class	Spectral Reponse Acceleration Parameter at Short Period					
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S = 1.25$	$S_S \geq 1.50$
A	0.8	0.8	0.8	0.8	0.8	0.8
B (measured)	0.9	0.9	0.9	0.9	0.9	0.9
B (unmeasured)	1.0	1.0	1.0	1.0	1.0	1.0
C	1.3	1.3	1.2	1.2	1.2	1.2
D (determined)	1.6	1.4	1.2	1.1	1.0	1.0
D (default)	1.6	1.4	1.2	1.2	1.2	1.2
E	2.4	1.7	1.3	1.2 *	1.2 *	1.2 *
F	See Section 11.4.7					

* For Site Class E and $S_S \geq 1.0$ g, see the requirements for site-specific ground motions in Section 11.4.7 of the 2015 NEHRP Provisions. Here the exception to those requirements allowing F_a to be taken as equal to that of Site Class C has been invoked.

Note: Use straight-line interpolation for intermediate values of S_S.

Note: Where Site Class B is selected, but site-specific velocity measurements are not made, the value of F_a shall be taken as 1.0 per Section 11.4.2.

Note: Where Site Class D is selected as the default site class per Section 11.4.2, the value of F_a shall not be less than 1.2 per Section 11.4.3.

For Site Class = D (default) and S_S = 0.834 g, F_a = 1.200

Table 11.4-2: Site Coefficient F_v

	Spectral Response Acceleration Parameter at 1-Second Period					
Site Class	$S_1 \le 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 = 0.50$	$S_1 \ge 0.60$
A	0.8	0.8	0.8	0.8	0.8	0.8
B (measured)	0.8	0.8	0.8	0.8	0.8	0.8
B (unmeasured)	1.0	1.0	1.0	1.0	1.0	1.0
C	1.5	1.5	1.5	1.5	1.5	1.4
D (determined)	2.4	2.2[1]	2.0[1]	1.9[1]	1.8[1]	1.7[1]
D (default)	2.4	2.2[1]	2.0[1]	1.9[1]	1.8[1]	1.7[1]
E	4.2	3.3[1]	2.8[1]	2.4[1]	2.2[1]	2.0[1]
F	See Section 11.4.7					

[1] For Site Class D or E and $S_1 \ge 0.2$ g, site-specific ground motions might be required. See Section 11.4.7 of the 2015 NEHRP Provisions.

Note: Use straight-line interpolation for intermediate values of S_1.

Note: Where Site Class B is selected, but site-specific velocity measurements are not made, the value of F_v shall be taken as 1.0 per Section 11.4.2.

For Site Class = D (default) and S_1 = 0.376 g, F_v = 1.924

Site-adjusted MCE$_R$ (0.2 s)

$S_{MS} = F_a S_S = 1.200 \times 0.834 = 1.001$ g

Site-adjusted MCE$_R$ (1.0 s)

$S_{M1} = F_v S_1 = 1.924 \times 0.376 = 0.724$ g

Design Spectral Acceleration Parameters

Design Ground Motion (0.2 s)

$S_{DS} = ⅔ S_{MS} = ⅔ \times 1.001 = 0.667$ g

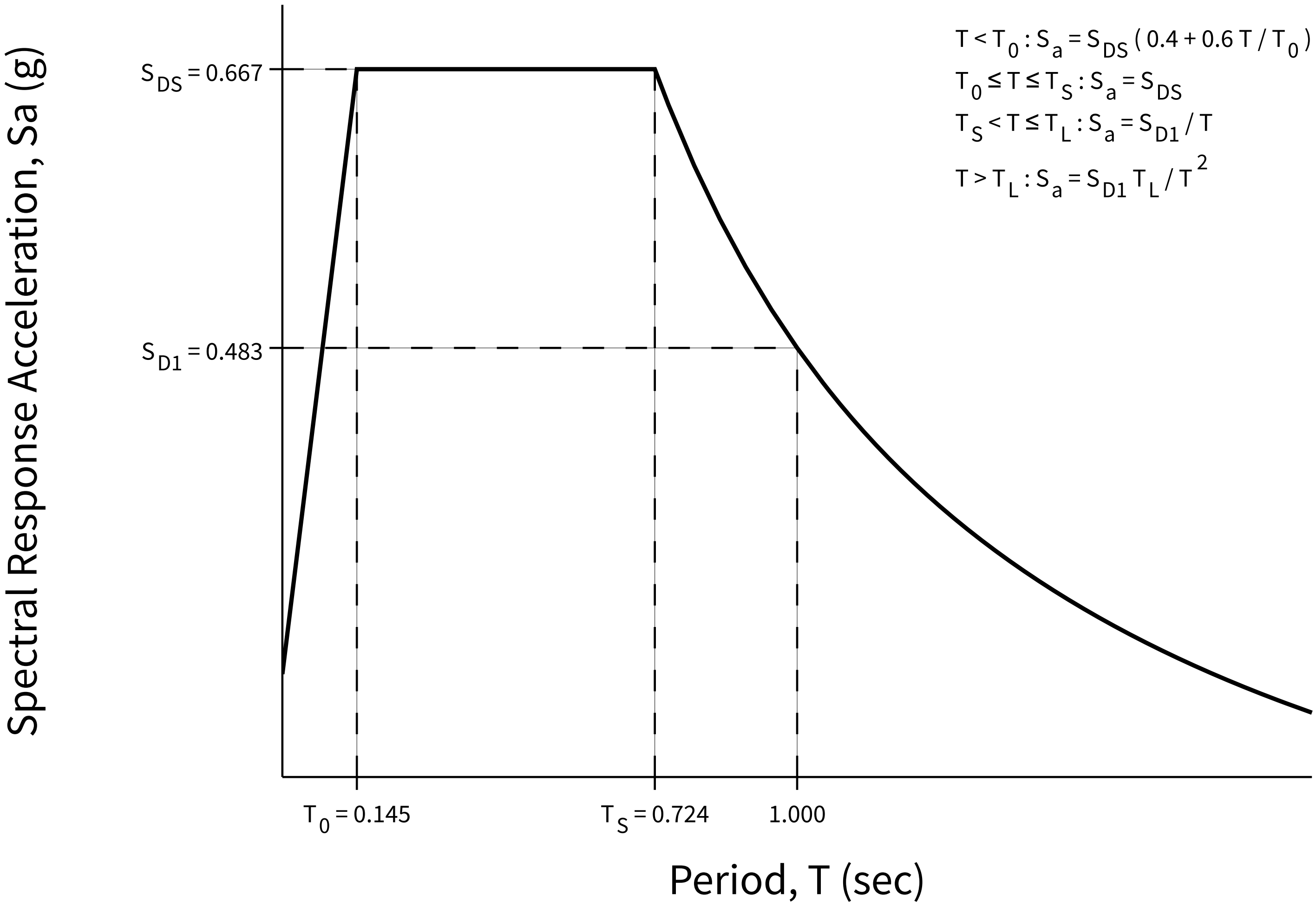
Design Ground Motion (1.0 s)

$S_{D1} = ⅔ S_{M1} = ⅔ \times 0.724 = 0.483$ g

Design Response Spectrum

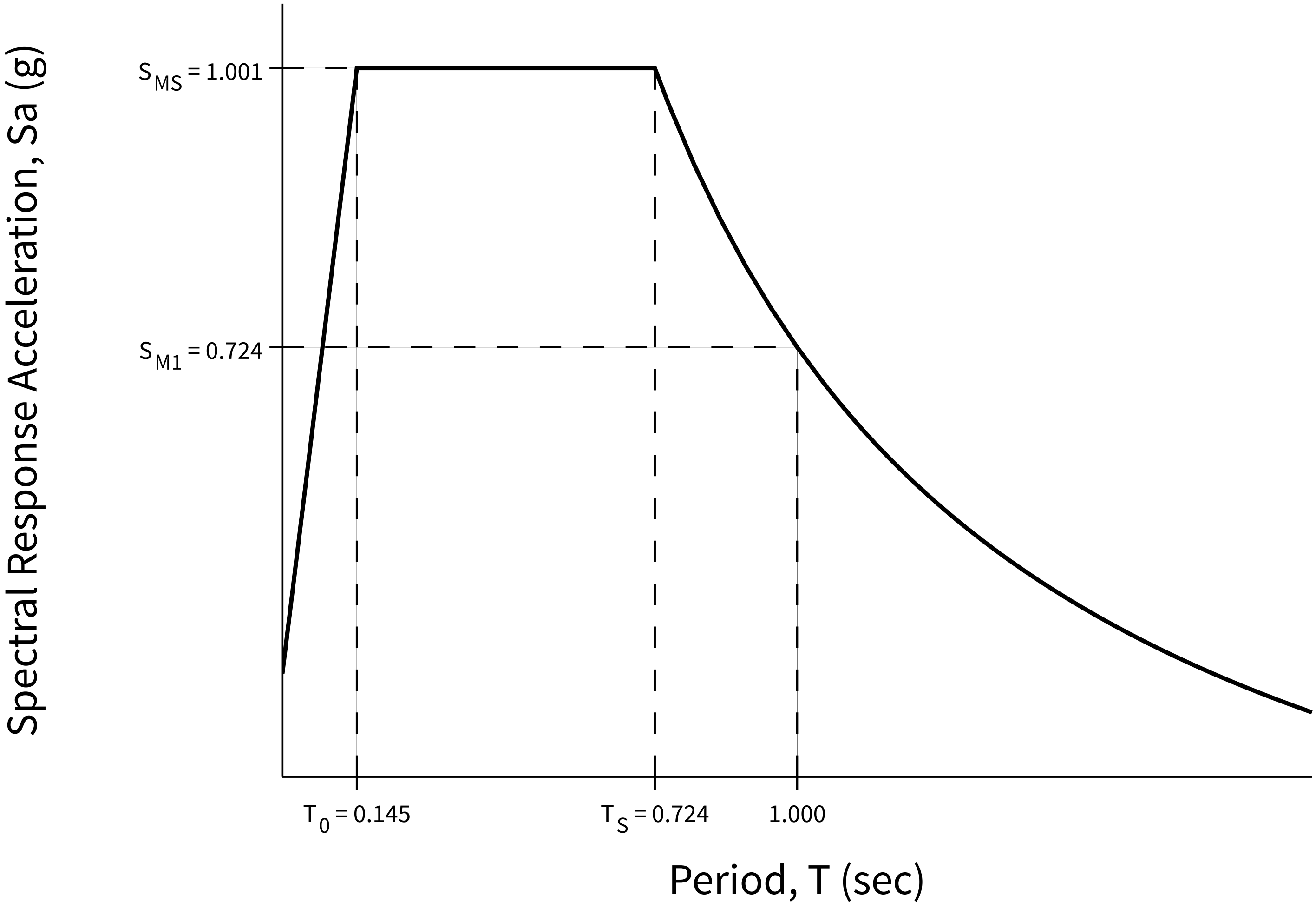
Long-Period Transition Period = T_L = 16 s

Figure 11.4-1: Design Response Spectrum


$S_{DS} = 0.667$
$S_{D1} = 0.483$
$T < T_0 : S_a = S_{DS} (0.4 + 0.6\, T / T_0)$
$T_0 \leq T \leq T_S : S_a = S_{DS}$
$T_S < T \leq T_L : S_a = S_{D1} / T$
$T > T_L : S_a = S_{D1}\, T_L / T^2$
$T_0 = 0.145$
$T_S = 0.724$
1.000
Spectral Response Acceleration, Sa (g)
Period, T (sec)

MCE_R Response Spectrum

The MCE_R response spectrum is determined by multiplying the design response spectrum above by 1.5.



Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

Table 11.8-1: Site Coefficient for F_{PGA}

	Mapped MCE Geometric Mean (MCE_G) Peak Ground Acceleration					
Site Class	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA = 0.50	PGA ≥ 0.60
A	0.8	0.8	0.8	0.8	0.8	0.8
B (measured)	0.9	0.9	0.9	0.9	0.9	0.9
B (unmeasured)	1.0	1.0	1.0	1.0	1.0	1.0
C	1.3	1.2	1.2	1.2	1.2	1.2
D (determined)	1.6	1.4	1.3	1.2	1.1	1.1
D (default)	1.6	1.4	1.3	1.2	1.2	1.2
E	2.4	1.9	1.6	1.4	1.2	1.1
F	See Section 11.4.7					

Note: Use straight-line interpolation for intermediate values of PGA

Note: Where Site Class D is selected as the default site class per Section 11.4.2, the value of F_{pga} shall not be less than 1.2.

For Site Class = D (default) and PGA = 0.376 g, F_{PGA} = 1.224

Mapped MCE_G

PGA = 0.376 g

Site-adjusted MCE_G

$PGA_M = F_{PGA} PGA = 1.224 \times 0.376 = 0.460$ g

Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.38787598 g

Recovered targets

Return period: 2503.542 yrs
Exceedance rate: 0.00039943409 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.61 %

Mean (for all sources)

r: 54.65 km
m: 7.55
ε_0: 0.87 σ

Mode (largest r-m bin)

r: 83.56 km
m: 9.34
ε_0: 0.65 σ
Contribution: 10.11 %

Mode (largest ε_0 bin)

r: 83.53 km
m: 9.01
ε_0: 0.72 σ
Contribution: 7.05 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
sub0_ch_bot.in	Interface							23.94
Cascadia Megathrust - whole CSZ Characteristic		83.56	9.11	0.78	123.599°W	45.501°N	283.46	23.94
sub0_ch_mid.in	Interface							9.24
Cascadia Megathrust - whole CSZ Characteristic		134.01	8.93	1.52	124.330°W	45.489°N	277.52	9.24
coastalOR_deep.in	Slab							7.24
Geologic Model Partial Rupture	Fault							6.63
Portland Hills		8.67	6.77	0.03	122.566°W	45.386°N	55.75	6.28
Geologic Model Full Rupture	Fault							5.03
Portland Hills		6.89	7.00	-0.44	122.566°W	45.386°N	55.75	4.73
Geologic Model Small Mag	Fault							4.74
Bolton		2.85	6.15	-0.19	122.616°W	45.365°N	50.61	3.76
WUSmap_2014_fixSm.ch.in (opt)	Grid							4.69
PointSourceFinite: -122.649, 45.404		7.73	5.99	0.77	122.649°W	45.404°N	0.00	1.47
PointSourceFinite: -122.649, 45.413		8.68	5.81	1.05	122.649°W	45.413°N	0.00	1.06
noPuget_2014_fixSm.ch.in (opt)	Grid							4.69
PointSourceFinite: -122.649, 45.404		7.73	5.99	0.77	122.649°W	45.404°N	0.00	1.47
PointSourceFinite: -122.649, 45.413		8.68	5.81	1.05	122.649°W	45.413°N	0.00	1.06
WUSmap_2014_fixSm.gr.in (opt)	Grid							4.40
PointSourceFinite: -122.649, 45.404		7.73	5.99	0.77	122.649°W	45.404°N	0.00	1.47
noPuget_2014_fixSm.gr.in (opt)	Grid							4.40
PointSourceFinite: -122.649, 45.404		7.73	5.99	0.77	122.649°W	45.404°N	0.00	1.47
sub0_ch_top.in	Interface							2.05
Cascadia Megathrust - whole CSZ Characteristic		149.89	8.83	1.78	124.549°W	45.485°N	276.61	2.05
coastalOR_deep.in	Slab							1.77
sub2_ch_bot.in	Interface							1.48
Cascadia Megathrust - Goldfinger Case C Characteristic		95.79	8.74	1.16	123.702°W	45.000°N	245.39	1.48
WUSmap_2014_fixSm_M8.in (opt)	Grid							1.37
noPuget_2014_fixSm_M8.in (opt)	Grid							1.37
Zeng Model Partial Rupture	Fault							1.22
Portland Hills		8.67	6.77	0.03	122.566°W	45.386°N	55.75	1.16
Zeng Model Small Mag	Fault							1.09

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
sub1_ch_bot.in	Interface							1.06
Cascadia Megathrust - Goldfinger Case B Characteristic		82.93	8.86	0.90	123.599°W	45.501°N	283.46	1.06

PHOTOGRAPHIC LOG

GeoPacific Engineering, Inc.
Real-World Geotechnical Solutions
Investigation • Design • Construction Support

8TH COURT REDEVELOPMENT
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

View of Site from 8TH Court, Facing East

Boring B-1, Facing West

8TH COURT REDEVELOPMENT
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

Boring B-1, Contact to Native Soil at 6.3 feet bgs.

Boring B-1, Potentially Liquefiable Soil at 40 Feet bgs

8TH COURT REDEVELOPMENT
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

Boring B-2, Bedrock Encountered at 20.9 Feet bgs

Boring B-3, Contact to Native Soil at 8.0 Feet bgs

8^{TH} COURT REDEVELOPMENT
GEOTECHNICAL SITE INVESTIGATION
PHOTOGRAPHIC LOG

Boring B-3, Potentially Liquefiable Soil at 40 Feet bgs

Technical Memorandum

To: Ed Bruin

From: William R. Farley, PE

Date: September 14, 2018

Subject: 2180 8th Court
Transportation Analysis Letter

83582PE
WILLIAM R. FARLEY
DEC. 17, 2014
RENEWS: 12/31/2019

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Introduction

This memorandum evaluates the transportation impacts related to the partitioning and redevelopment of approximately 1.4 acres located at 2180 8th Court in West Linn, Oregon. The partition will divide the site into a 0.53-acre northern property and a 0.51-acre southern property and remove an existing building that was previously a Shari's restaurant. The northern property will then be developed with a 5,000 square-foot retail/office building while the southern property will be developed with a 2,800 square-foot medical office and a 1,400 square-foot retail/office building.

The purpose of this report is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses. Detailed information regarding trip generation calculations and safety analyses is included within the technical appendix.

Location Description

The subject site is located at the eastern end of the cul-de-sac for 8th Court in West Linn, Oregon. The site is bounded by Interstate 205 to the north, Willamette Falls Drive to the south, retail land uses to the west, and residential property to the east. Upon partitioning, an easement will be provided along the shared property line that extends from the cul-de-sac on 8th Court to the eastern property line.

10th Street is classified as a Minor Arterial by the City of West Linn. It is a three-four lane roadway that connects between Willamette Falls Drive to the south and Salamo Road/Blankenship Road to the north, while providing access to Interstate 205. Curbs and sidewalks are provided on both sides of the street.

8th Court is classified as a Local street by the City of West Linn. It is a two-lane roadway with one lane in each direction that extends from 10th Street approximately 425 feet before ending in a cul-de-sac. Curbs and sidewalks are provided on both sides of the street. On-street parking is not permitted on either side.

The intersection of 10th Street at 8th Street/8th Court is a four-legged intersection under two-way stop control for the eastbound and westbound approaches. The northbound approach on 10th Street has a single, shared lane for all turning movements; however, a left-turn restriction is signed for the hours between 4:00 PM and

6:00 PM. The southbound approach on 10th and the eastbound approach on 8th Street each have a shared through/right-turn lane and a dedicated left-turn lane. The westbound approach on 8th Court has a dedicated right-turn lane and a shared through/left-turn lane. Crosswalks are marked across the eastern, western, and southern legs of the intersection.

Figure 1 below provides an aerial image of the nearby vicinity with the project site outlined in yellow (image from PortlandMaps).

Figure 1: Aerial photo of site vicinity.

Trip Generation

Following the partitioning of the subject property, the 3,600 square-foot restaurant previously occupied by Shari's will be replaced with a 2,800 square-foot medical office, a 1,400 square-foot retail/office building, and a 5,000 square-foot retail/office building. While it is currently known that the medical office space will be leased by a dentist, tenants for the retail/office space have not been identified.

To estimate the number of trips that will be generated by the existing restaurant and the proposed medical office, trip rates from *Trip Generation Manual*[1] were used. Data from land-use code 932, *High-Turnover (Sit-Down) Restaurant*, was used to estimate the trip generation of the existing restaurant building while land-use code 720, *Medical-Dental Office Building*, was used to estimate the trip generation of the proposed medical office. Both trip generation estimates were calculated based on rates corresponding to the gross-floor area of the land use.

Typically land uses such as restaurants attract pass-by and diverted-link trips. Pass-by trips are those that leave an adjacent roadway to patronize a land use and then continue in their original direction of travel. Similar to pass-by trips, diverted-link trips are trips that divert from a nearby roadway not adjacent to the site to patronize the land use before continuing to their original destination. Pass-by trips do not add additional vehicles to the surrounding transportation system; however, they do impact turning movements at site access intersections. Diverted-link trips may add turning movements at both site accesses and other nearby intersections.

Since the subject site is at the end of a cul-de-sac on 8th Court, the existing restaurant would not have been able to attract a significant number of pass-by trips. Therefore, it is expected that any non-primary trips were attracted from 10th Street or other nearby roadway, which added turning movements at the intersection of 10th Street and 8th Court. Accordingly, no reductions in trip generation were accounted for in the calculations for the existing restaurant.

The trip generation calculations show that replacing the existing 3,600 square-foot restaurant building with a 2,800 square-foot medical office will reduce the site's trip generation by 28 trips during the morning peak hour, 25 trips during the evening peak hour, and 306 daily trips.

Based on the trip generation calculations, the occupancy of a dental office is projected to generate less trips than the Shari's restaurant. Accordingly, no traffic impacts are anticipated with the construction of the 2,800 square-foot medical office.

Table 1 on the following page offers a summary of the trip generation calculations. Detailed trip generation worksheets are included in the technical appendix to this report.

---

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.

Table 1: Trip Generation Summary

	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday
			Enter	Exit	Total	Enter	Exit	Total	Total
Existing									
Restaurant	932	3,600 SF	20	16	36	22	13	35	404
Proposed									
Medical Office	720	2,800 SF	6	2	8	3	7	10	98
Net Change in Trips			**-14**	**-14**	**-28**	**-19**	**-6**	**-25**	**-306**

Although the tenants of the retail/office space are currently unknown, the trip generation of the remaining 6,400 square-foot of retail/office space was estimated assuming it will be leased as offices. To estimate the possible trip generation, data from land-use code 710, *General Office Building*, was referenced based on gross-floor area.

With 2,800 square-feet of medical office and 6,400 square-feet of general office, the site is expected to generate a total of 16 trips during the morning peak hour, 18 trips during the evening peak hour, and 160 daily trips. When compared to the existing restaurant, the site will still generate 20 less trips during the morning peak hour, 17 less trips during the evening peak hour, and 244 less daily trips. Accordingly, no traffic impacts are anticipated with the development if the site is leased to office and medical/dental office uses.

Table 2 on the following page summarizes the trip generation calculations assuming the retail/office space is leased by office uses.

Table 2: Trip Generation Summary

	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday
			Enter	Exit	Total	Enter	Exit	Total	Total
Existing									
Restaurant	932	3,600 SF	20	16	36	22	13	35	404
Proposed									
Medical Office	720	2,800 SF	6	2	8	3	7	10	98
Office Building (South)	710	1,400 SF	2	0	2	0	2	2	14
Office Building (North)	710	5,000 SF	5	1	6	1	5	6	48
Net Change in Trips			**-7**	**-13**	**-20**	**-18**	**1**	**-17**	**-244**

Since it is difficult to estimate the trip generation of the site with the varying number of retail uses that could occupy the space, it is recommended that, if a retail use is to occupy the site, additional analysis be conducted to evaluate the site's impacts on the local transportation system.

Site Circulation & Parking

With the partitioning of the subject site, a 24-foot access easement will be provided from the cul-de-sac on 8th Court to the eastern property line. This easement will provide access to a shared parking aisle with adjacent properties to the west as well as 90-degree parking along the face of each building and 90-degree parking in an eastern lot on each property.

Vehicles entering the site are anticipated to slow as they transition from 8th Court into the parking lot and remain slow as they round a "S" curve into the parking aisle. Both properties will provide 11 parking stalls and 1 accessible stall along this parking aisle. If the driver chooses, or if these spaces are full, the vehicle can travel to the eastern part of either site and enter into a parking area on the side of either building. Additional parking spaces are available along the aisles shared with adjacent properties at the entrance to the site.

Figure 2 shows the circulation of a "P" design vehicle through the site into the parking area on the eastern side of the southern property prior to backing into a space. It should be noted that circulation with the "P" design vehicle is a conservative analysis and that most late-model vehicles are significantly smaller in size and have improve maneuverability.

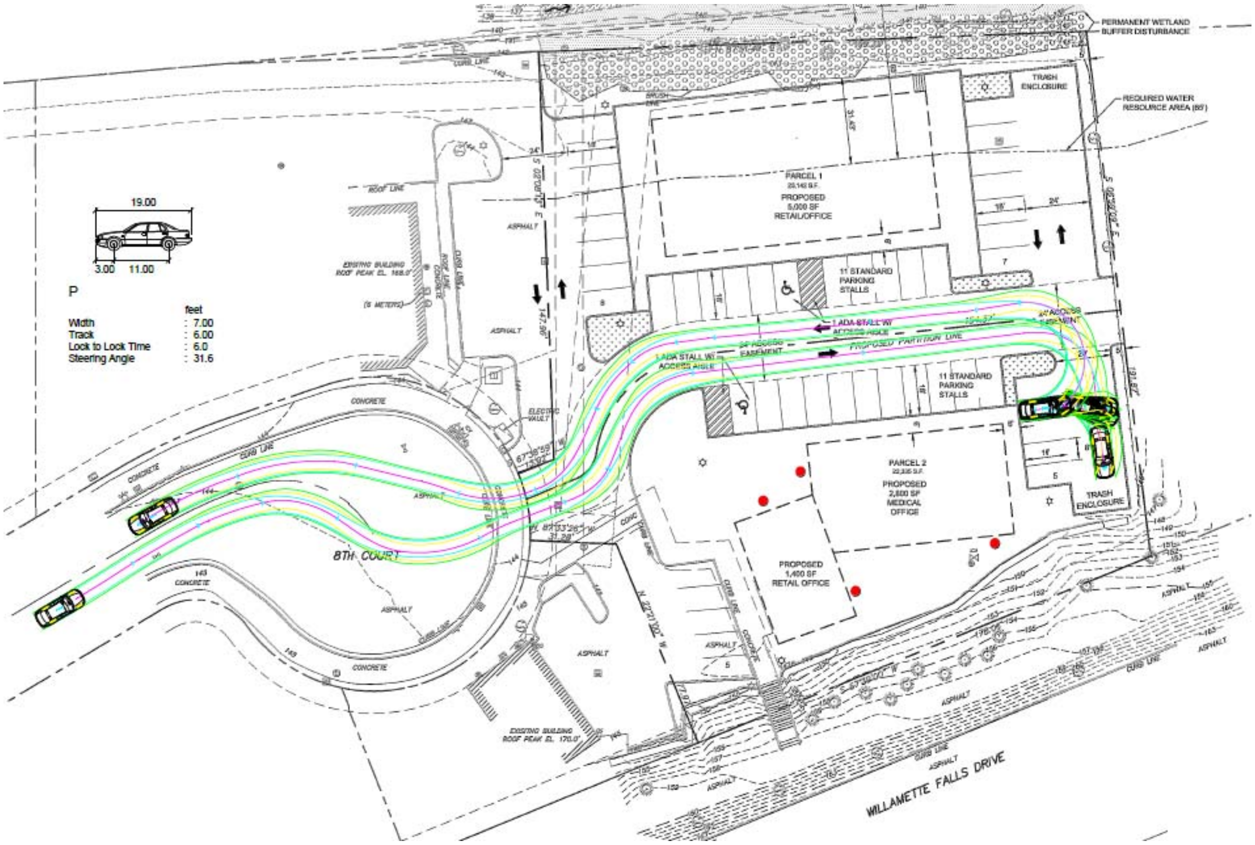


Figure 2: Circulation of "P" design vehicle on the site.

Due to the configuration of the site's access, it is anticipated that vehicles traveling along the parking on the face of each building will be traveling at a slow speeds. If visibility along the inside of the "S" corner and entering the parking areas on the eastern side of the property are maintained, it is anticipated that a vehicle exiting a parking stall will be able to see oncoming traffic for sufficient distance in order to ensure they can safely back into the drive aisle; or that an entering vehicle will be able to observe a backing vehicle with enough time to slow or come to a stop.

Because the site is located at the eastern end of cul-de-sac without a through path to another street, it is anticipated that the property will serve minimal pedestrian and bicycle traffic. Regardless, pedestrians and bicyclists who travel from the street to the site and pedestrians who travel from within the parking area itself should be considered in the design.

The proposed site plan shows a concrete path being maintained from the previous restaurant use that connects the sidewalk on 8th Court and the southern building. This feature, in addition to slow vehicular travel speeds at the site access, are anticipated to allow pedestrians to safely navigate the site. The slow vehicular speeds also allow bicyclists to safely share the drive aisle with motor vehicles.

Traffic Impact Analysis Requirements

Per Section 85.170.B.2.c.1) of the City's Development Code, a Traffic Impact Analysis is required under the following conditions:

(A) When the development application proposes a change in zoning or an amendment to the Comprehensive Plan; or

(B) When the Oregon Department of Transportation states the development action may have operation or safety concerns along a State highway; and

(C) The development causes one or more of the following effects:

  (1) Increases site traffic volumes by at least 250 average daily trips; or

  (2) Increases the use of adjacent streets by vehicles exceeding the 20,000-pound gros vehicle weights by 10 vehicles or more per day; or

  (3) Has an access that does not meet minimum intersection sight distance requirements, or is located where vehicles entering/leaving the property are restricted; or

  (4) Has an access that does not meet the access spacing standard of the roadway; or

  (5) A change in internal traffic patterns that may cause safety problems.

The proposed development is an allowed use under the existing zoning and does not alter the zoning designation or amend the Comprehensive Plan. Criteria (A) is not triggered.

Although located near the Interstate 205 ramps onto 10th Street, the proposed development of the 2,800 square-foot of medical office is projected to have less of an impact on the system than the existing restaurant use. If the additoinal retail/office space is used for office uses, the subject property is anticipated to generate less trips than the existing use of the site. Also, additional truck traffic is not expected for any of the uses on the site.

Access to the site is located at the end of the cul-de-sac on 8th Court. Based on the location of the access, the visibility of oncoming traffic is expected to be adequate with no obstructions and traffic entering/exiting the site will remain unrestricted so not to create queuing issues onto the public street. The access is located at least 50 feet from the adjacent access in the cul-de-sac meeting the City's standards for Local Commercial

Streets. The parking layout of the site is similar to the existing use on the site and is not expected to cause safety problems.

Per the requirements in the City's Development Code, a Traffic Impact Analysis is not required for the partition of the property, removal of the restaurant, and development of 2,800 square feet of medical office and 6,400 square feet of office space. If retail uses are proposed to occupy any of the retail/office space, it is recommended that trip generation be evaluated to ensure a Traffic Impact Analysis is not required.

Conclusions

The proposed partition and development of a 2,800 square-foot medical office at 2180 8th Court is projected to have less traffic impacts than the previous restaurant use on the subject site. If used for office, the 1,400 square-foot building on the southern lot and the 5,000 square-foot building on the northern lot will not contribute more traffic than what the site previously generated. If either space is considered for a retail use, it is recommended that additional analysis be conducted to evaluate whether occupancy will have any off-site impacts.

Based on the proposed parking configuration, it is anticipated that vehicles will be able to circulate the site in an efficient manner. Speeds of entering traffic are anticipated to be slow enough for pedestrians and bicyclists to safely utilize the parking area to reach destinations within the site. The provided site plan also shows the maintaining of a pedestrian walkway from the sidewalk to the southern building.

Per the City of West Linn's Development Code, a Traffic Impact Analysis is not required for the partitioning of the property, removal of the existing restaurant, and development of 2,800 square feet of medical office and 6,400 square feet of office space. If retail uses are proposed to occupy any of the retail/office space, it is recommended that the site's trip generation be evaluated to ensure a Traffic Impact Analysis is not required.

If you have any questions or concerns regarding this memorandum, please don't hesitate in contacting us.

Appendix

TRIP GENERATION CALCULATIONS

Land Use: High-Turnover (Sit-Down) Restaurant
Land Use Code: 932
Setting/Location General Urban/Suburban
Variable: 1,000 Sq. Ft. Gross Floor Area
Variable Quantity: 3.6

AM PEAK HOUR

Trip Rate: 9.94

	Enter	Exit	Total
Directional Distribution	55%	45%	
Trip Ends	**20**	**16**	**36**

PM PEAK HOUR

Trip Rate: 9.77

	Enter	Exit	Total
Directional Distribution	62%	38%	
Trip Ends	**22**	**13**	**35**

WEEKDAY

Trip Rate: 112.18

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**202**	**202**	**404**

SATURDAY

Trip Rate: 122.40

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**220**	**220**	**440**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Medical-Dental Office Building
Land Use Code: 720
Setting/Location General Urban/Suburban
Variable: 1,000 Sq Ft Gross Floor Area
Variable Quantity: 2.8

AM PEAK HOUR

Trip Rate: 2.78

	Enter	Exit	Total
Directional Distribution	78%	22%	
Trip Ends	**6**	**2**	**8**

PM PEAK HOUR

Trip Rate: 3.46

	Enter	Exit	Total
Directional Distribution	28%	72%	
Trip Ends	**3**	**7**	**10**

WEEKDAY

Trip Rate: 34.80

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**49**	**49**	**98**

SATURDAY

Trip Rate: 8.57

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**12**	**12**	**24**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: General Office Building
Land Use Code: 710
Setting/Location General Urban/Suburban
Variable: 1000 Sq Ft Gross Floor Area
Variable Value: 1.4

AM PEAK HOUR

Trip Rate: 1.16

	Enter	Exit	Total
Directional Distribution	86%	14%	
Trip Ends	**2**	**0**	**2**

PM PEAK HOUR

Trip Rate: 1.15

	Enter	Exit	Total
Directional Distribution	16%	84%	
Trip Ends	**0**	**2**	**2**

WEEKDAY

Trip Rate: 9.74

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**7**	**7**	**14**

SATURDAY

Trip Rate: 2.21

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**2**	**2**	**4**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use:	General Office Building
Land Use Code:	710
Setting/Location	General Urban/Suburban
Variable:	1000 Sq Ft Gross Floor Area
Variable Value:	5.0

AM PEAK HOUR

Trip Rate: 1.16

	Enter	Exit	Total
Directional Distribution	86%	14%	
Trip Ends	**5**	**1**	**6**

PM PEAK HOUR

Trip Rate: 1.15

	Enter	Exit	Total
Directional Distribution	16%	84%	
Trip Ends	**1**	**5**	**6**

WEEKDAY

Trip Rate: 9.74

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**24**	**24**	**48**

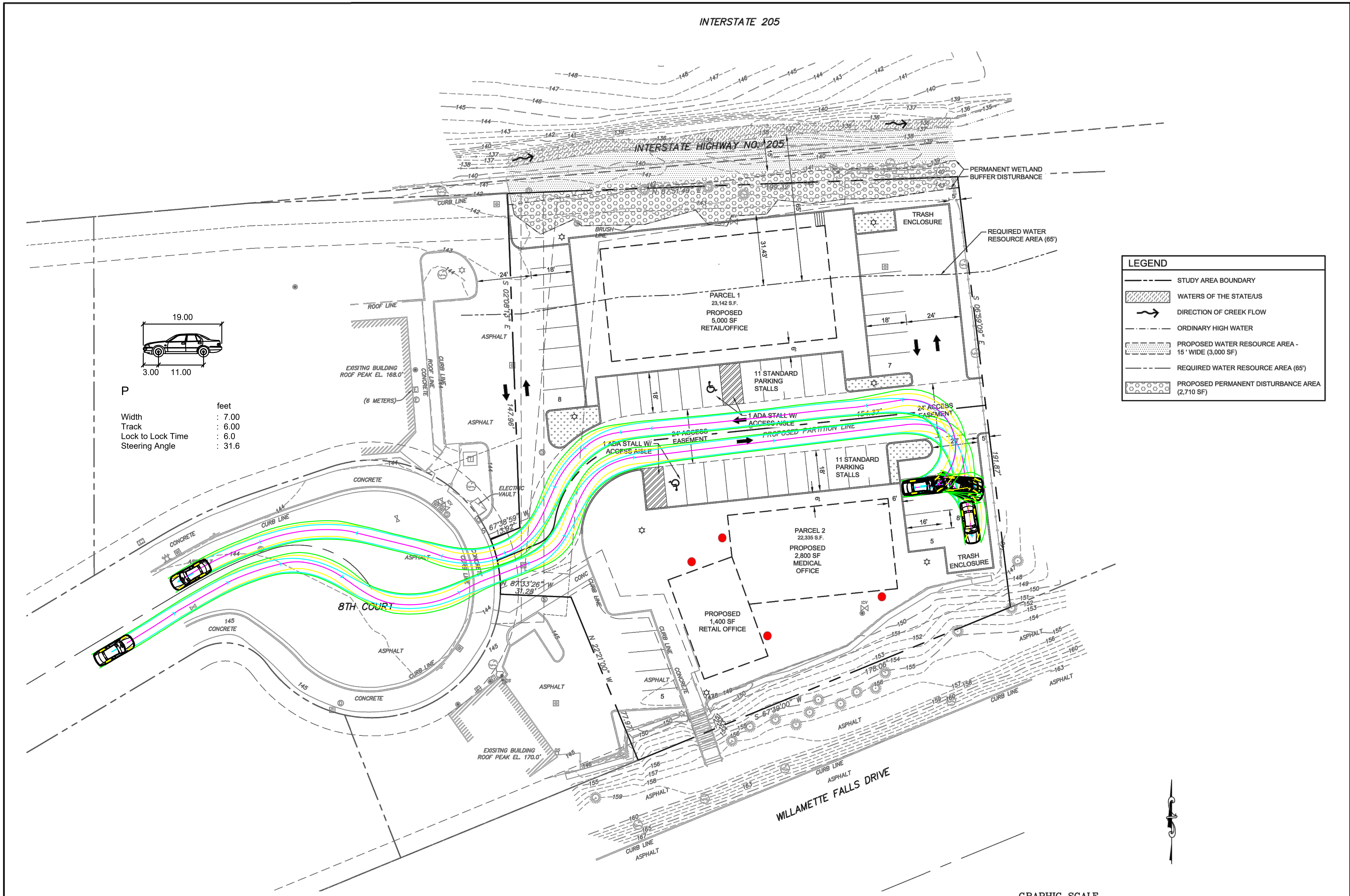
SATURDAY

Trip Rate: 2.21

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**6**	**6**	**12**

Source: TRIP GENERATION, Tenth Edition

P:\2018\18116_8th Court Commercial\Cad\Plot\Minor Partition\C1.0 - Site Plan\18116_C1.0.dwg, 9/5/2018 10:36:24 AM, koenig



1 C1.0 PROPOSED SITE PLAN

SCALE: 1" = 20'

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

PRELIMINARY NOT FOR CONSTRUCTION 09/05/18

REGISTERED PROFESSIONAL ENGINEER OREGON CHRIS J. DESLAURIERS

RENEWS: 12-31-2019

WDY Structural · Civil Engineers
6443 SW Beaverton-Hillsdale Hwy, suite 210 Portland, OR 97221
ph:503.203.8111 fx:503.203.8122 www.wdyi.com

8TH COURT COMMERCIAL

2180 8TH COURT
WEST LINN, OR 97068

MINOR PARTITION

REVISIONS

DATE:	08-10-2018	DRAWN:	JAM
JOB NUMBER:	18116	CHECKED:	CJD

SHEET

C1.0

1 OF 1

©2018 WDY, INC.

SHΛPIRO / DIDWΛY
1204 SE Water Ave
Portland, Oregon 97214
t. 503.232.0520
www.shapirodidway.com

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	CONCRETE PLAZA WITH PLANTINGS
2	SEAT WALL
3	MONUMENT SIGN PER ARCHITECT
4	FLAGPOLE
5	TRELLIS
6	BIKE RACK
7	12" MAINTENANCE EDGE
8	LIGHTPOLE PER ELECTRICAL (TYP)
9	6` CEDAR FENCE
10	PLANT BED (TYP)
11	TRASH RECEPTACLE (TYP)
12	EXISTING TREE TO REMAIN (TYP)

CONCRETE PLAZA WITH PLANTINGS

SEAT WALL

BIKE RACK

MAINTENANCE EDGE

TRASH RECEPTACLE

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ARCHITECTS
P.C.

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Oregon City, OR 97045
503-656-1942
www.iselinarchitects.com

NOT FOR
PRELIMINARY
CONSTRUCTION

DESIGN
REVIEW

8th Court Building Shell
2180 8th Court - South Lot
West Linn, OR 97068

PROJ. NO. : 1861
FILE :
DATE : 09/17/18

SHEET #
L1.01

LANDSCAPE SITE PLAN

SHAPIRO / DIDWAY
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Portland, Oregon 97214
t. 503.232.0520
www.shapirodidway.com

1 PLANTING PLAN

PLANT SCHEDULE

TREES	CODE	BOTANICAL / COMMON NAME	CONT
●	CF	CARPINUS BETULUS `FRANZ FONTAINE` FRANZ FONTAINE HORNBEAM	15 GAL
●	GT	GLEDITSIA TRIACANTHOS HONEY LOCUST	15 GAL
●	ZG	ZELKOVA SERRATA `GREEN VASE` SAWLEAF ZELKOVA	15 GAL

SHRUBS	CODE	BOTANICAL / COMMON NAME	SIZE
●	APA	ACER CIRCINATUM `PACIFIC FIRE` VINE MAPLE	24"BOX
●	CKA	CALAMAGROSTIS X ACUTIFLORA `KARL FOERSTER` FEATHER REED GRASS	5 GAL
●	DOD	DAPHNE ODORA WINTER DAPHNE	5 GAL
●	HYQ	HYDRANGEA QUERCIFOLIA `RUBY SLIPPERS` RUBY SLIPPERS HYDRANGEA	5 GAL
●	ICA	ILEX X MESERVEAE `CASTLE WALL` CASTLE WALL HOLLY	5 GAL

SHRUB AREAS	CODE	BOTANICAL / COMMON NAME	CONT	SPACING
▨	MAAQ	MAHONIA AQUIFOLIUM OREGON GRAPE	2 GAL	36" o.c.
▨	MRE	MAHONIA REPENS CREEPING MAHONIA	2 GAL	18" o.c.
▨	RSA2	RIBES SANGUINEUM RED FLOWERING CURRANT	5 GAL	48" o.c.
▨	SAHO	SARCOCOCCA HOOKERIANA HUMILIS SWEET BOX	2 GAL	36" o.c.
▨	SYAL	SYMPHORICARPOS ALBUS COMMON WHITE SNOWBERRY	1 GAL	48" o.c.

GROUND COVERS	CODE	BOTANICAL / COMMON NAME	CONT	SPACING
▨	CAMO	CAREX MORROWII `AUREA-VARIEGATA` VARIEGATED JAPANESE SEDGE	1 GAL	30" o.c.
▨	LIMU	LIRIOPE MUSCARI LILY TURF	1 GAL	18" o.c.
▨	NATE	NASSELLA TENUISSIMA TEXAS NEEDLE GRASS	1 GAL	30" o.c.
▨	POMU	POLYSTICHUM MUNITUM WESTERN SWORD FERN	2 GAL	36" o.c.

▨ WATER RESOURCE MITIGATION PLANTING
3,000 SQ FT. SEE PLANTING TYPICAL & PLANT SCHEDULE (L3.02)
-

▨ CLEAN WATER SERVICES STORMWATER FACILITY
-

▨ MITIGATION SEED MIX
BROMUS CARINATUS / CALIFORNIA BROME-GRASS
ELYMUS GLAUCUS / BLUE WILDRYE
HORDEUM BRACHYANTHERUM / MEADOW BARLEY

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503-656-1942
www.iselinarchitects.com

NOT FOR CONSTRUCTION
PRELIMINARY

DESIGN REVIEW

8th Court Building Shell
2180 8th Court - South Lot
West Linn, OR 97068

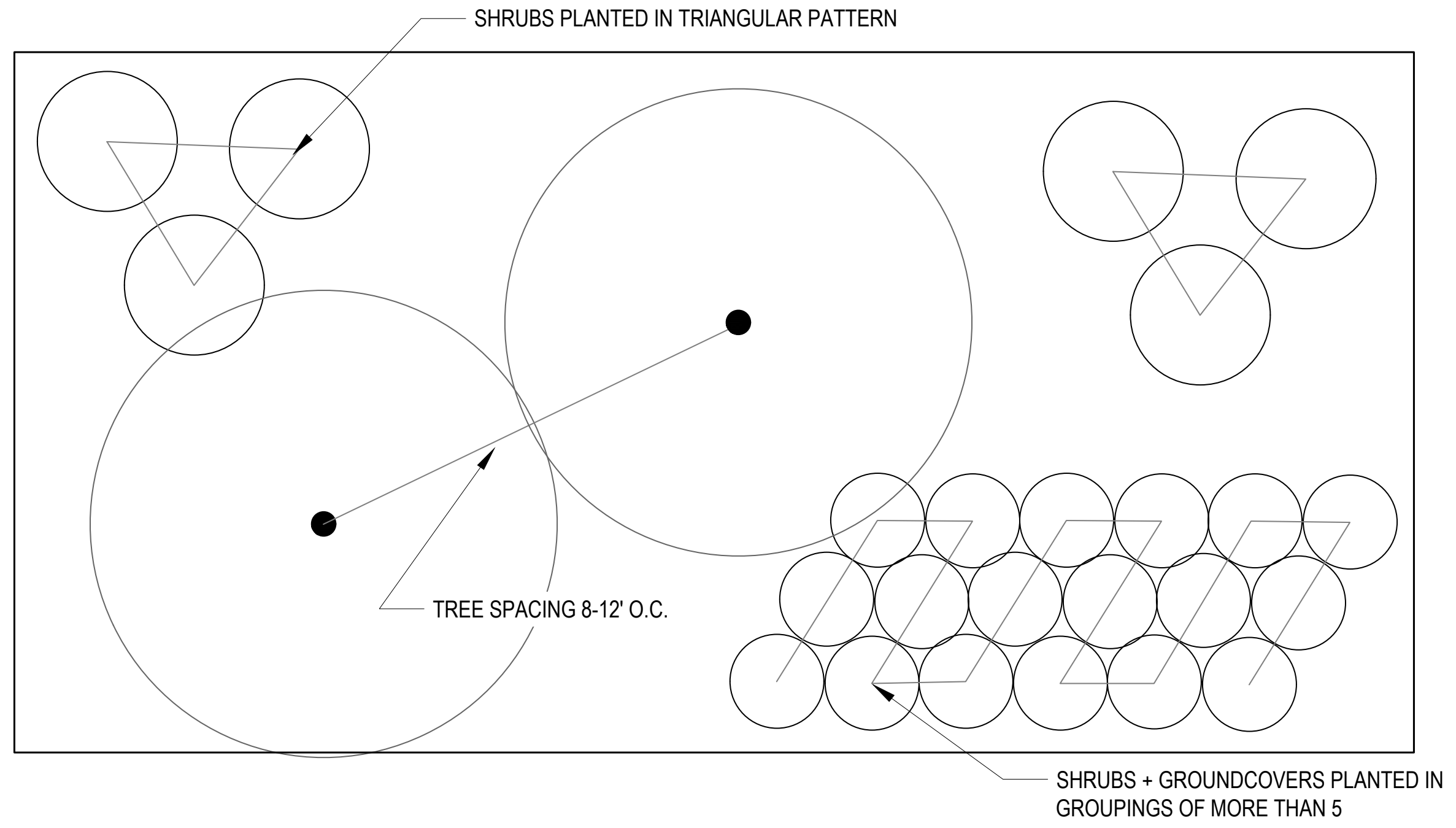
PROJ. NO. : 1861
FILE :
DATE : 09/17/18

SHEET #
L1.02

PLANTING PLAN

SHAPIRO / DIDWAY
1204 SE Water Ave
Portland, Oregon 97214
t. 503.232.0520
www.shapirodidway.com

1 PLAZA ENLARGEMENT



2 WATER RESOURCE AREA* MITIGATION PLANTING, TYPICAL

* WATER RESOURCE AREA (WRA) ENHANCEMENTS ARE BASED ON CRITERIA LISTED IN 'WETLAND REPORT' (5/30/2018) PRELIMINARY A`SSESSMENT OF THE SITE CONDUCTED BY PACIFIC HABITAT SERVICES (PHS) TO COMPLY WITH THE PROVISIONS IN THE ALTERNATE REVIEW PROCESS (CDC 32.070). ALL ENHANCEMENTS TO MEET MINIMUM APPROVED CRITERIA.

Plant List for Retained WRA (3,000 square feet);

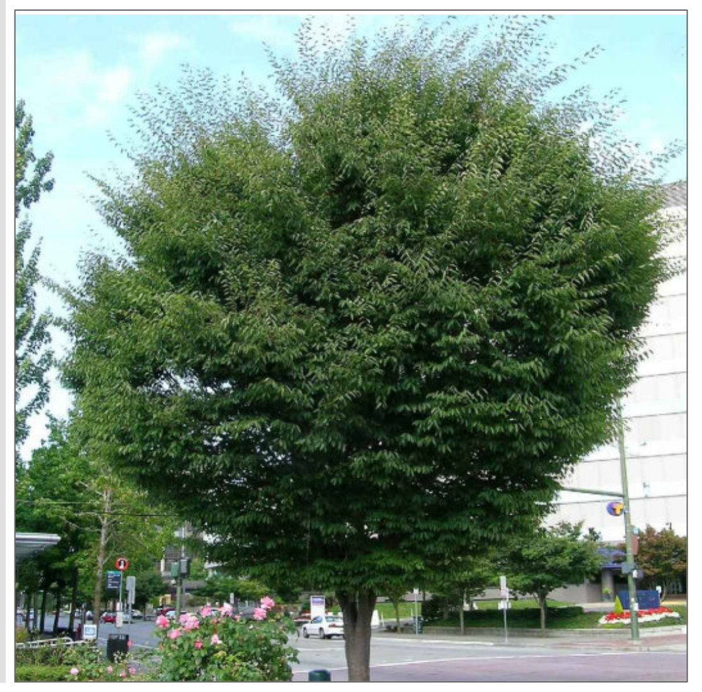
Botanical Name	**Common Name**	**Sizes (Height or gallon)**	**Planting density (on center)**	**Quantity**
Trees				
Acer macrophyllum	Big leaf maple	≥0.5" inch caliper	8-12'	5
Pseudotsuga menziesii	Douglas fir	≥0.5" inch caliper	8-12'	5
Quercus garryana	Oregon white oak	1 gal	8-12'	5
Thuja plicata	Western red cedar	≥0.5" inch caliper	8-12'	5
			Total	**20**
Shrubs/Groundcover				
Amelanchier alnifolia	serviceberry	≥1 gallon	5'	20
Mahonia aquifolium	Oregon grape	≥1 gallon	5'	20
Polystichum munitum	Sword fern	≥1 gallon	5'	20
Sambucus racemosa	Red elderberry	≥1 gallon	5'	20
Symphoricarpos albus	Snowberry	≥1 gallon	5'	20
			Total	**100**

Grass seed mix to be applied at the rate of 1 pound per 1000 square feet;

- Hobbs and Hopkins 'PT 400 Native Upland mix' (or equivalent):
  Blue Wildrye (*Elymus glaucus*)
  Meadow Barley (*Hordeum brachyantherum*)
  California Brome (*Bromus carinatus*)

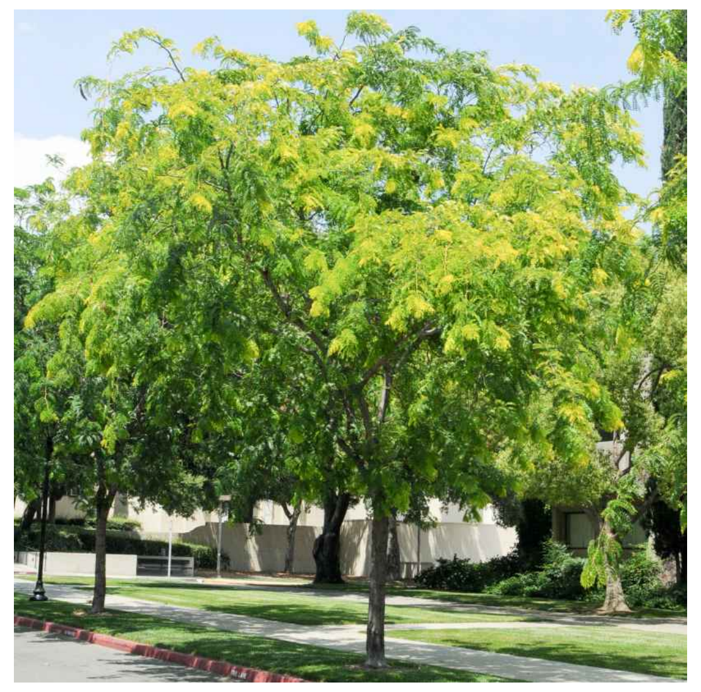
3 WATER RESOURCE AREA MITIGATION PLANTING LIST

TREES

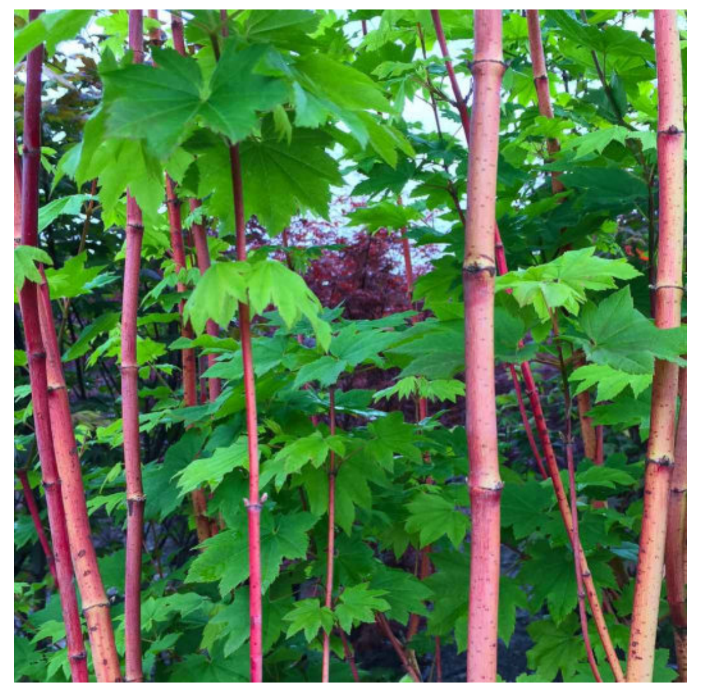


GREEN VASE ZELKOVA

FF - FRANZ FONTAINE HORNBEAM



HONEY LOCUST



VINE MAPLE

SHRUBS & GROUNDCOVERS

VARIEGATED JAPANESE SEDGE

RED FLOWERING CURRANT

WINTER DAPHNE

WESTERN SWORDFERN

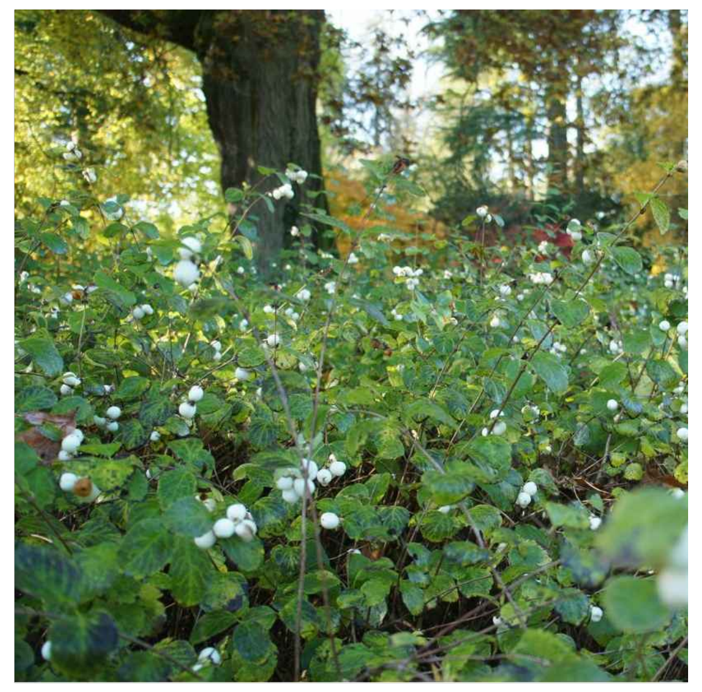
CASTLE WALL HOLLY

OREGON GRAPE

LILY TURF

CREEPING MAHONIA

KARL FOERSTER FEATHER REED GRASS



COMMON SNOWBERRY

RUBY SLIPPERS OAKLEAF HYDRANGEA

FRAGRANT SWEETBOX

MEXICAN FEATHER GRASS

IVORY PRINCE HELLEBORE

4 PLANT PALETTE

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DESIGN
REVIEW

8th Court Building Shell

2180 8th Court - South Lot
West Linn, OR 97068

PROJ. NO. : 1861
FILE :
DATE : 09/17/18

SHEET #
L1.03

ENLARGEMENTS & PLANT PALETTE

EDGE DEV.
2233 NW 23RD AVE
PORTLAND, OR
97210

7018 1830 0002 0958 8635

U.S. POSTAGE PAID
FCM LETTER
PORTLAND, OR
97210
OCT 26, 18
AMOUNT
$3.95
R2303S102713-18

UNITED STATES POSTAL SERVICE
1021
97068

KATHIE HALICKI
2307 FALCON DR.
WEST LINN
97068

970683418S C010

---

which will be demolished as part of this proposal.

The development proposal at this time is limited to the south side of the main drive aisle (access easement) on the site. The proposed use for the building will be Office, and a tenant has been identified. Expected traffic trip counts for an Office use are significantly lower than those of the original restaurant use so no impact is expected for the neighborhood.

The proposed site plan also shows a building pad on the north side of the main drive aisle. No building design has been initiated for this building. At this time the developer does not know if they will move forward with developing this area.

We request an opportunity to share our ideas with the Willamette Neighborhood Association and to solicit your input. We encourage your community to contact your association president, or their association designee, with any questions that they may want to relay to our team.

We understand that the November neighborhood meeting is available to us on your schedule. We are writing to express our desire to attend this meeting.

Sincerely,

Ed Bruin

Development Services

Willamette Neighborhood Association

November 14, 2018

2nd Wednesday of the Month

7:00 PM at the WL Police Station, Community Rm., Side Entrance

1800 8th Avenue

7:00 PM Welcome.

7:15 PM Mayor Axelrod, "A Conversation with Willamette", come and bring your questions on the happenings in West Linn, (30 minutes).

7:45 PM Presentation by Edge Development, project in the cul-de-sac at 8th Ct., (30 minutes).

8:15 PM Future Projects (Pre-applications) Report: (10 minutes)

- Dutch Brothers
- Killarney lot partition
- Blankenship lot partition

8:25 PM Budget Items (10 minutes).

8:35 PM Historic Main Street updates (5 minutes).

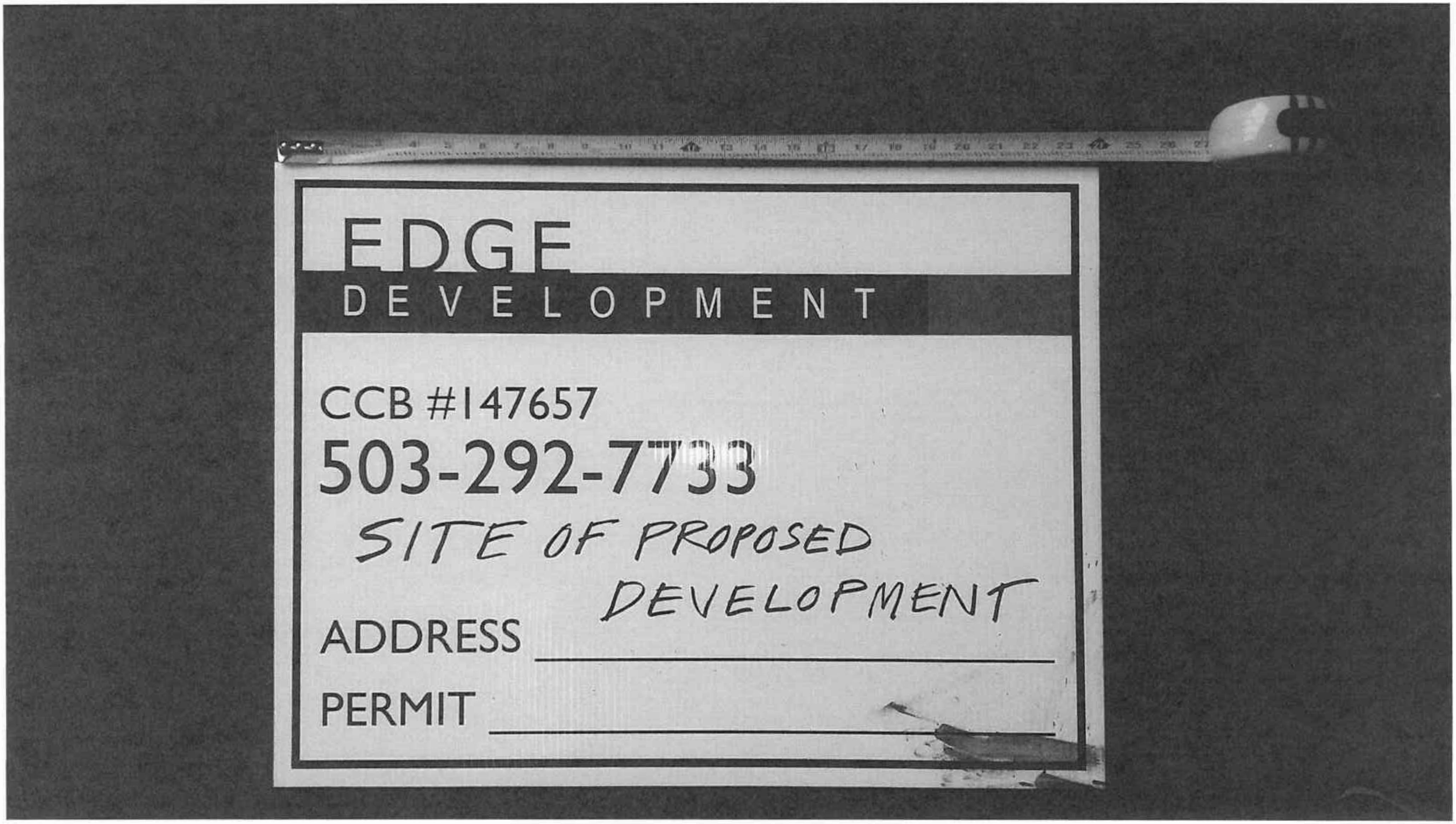
8:40 PM Announcements:

- City Events
- Chamber
- Residents & Businesses

AFFIDAVIT OF POSTING
ON 10/26/18

ED BRUIN - EDGE DEVELOPMENT

2180 8TH COURT
WEST LINN


EDGE
DEVELOPMENT
CCB #147657
503-292-7733
SITE OF PROPOSED DEVELOPMENT
ADDRESS
PERMIT

EDGE
DEVELOPMENT

October 22, 2018

Willamette Neighborhood Association

Re: 8th COURT DEVELOPMENT

2180 8TH COURT, WEST LINN, OR

To whom it may concern-

We are in the process of redeveloping the commercial site located at the end of 8th Court in West Linn. The site currently has a vacant restaurant (Sheri's) which will be demolished as part of the proposal.

The scope of work at this time is limited to the south side of the main drive aisle (access easement). The site plan shows a building pad on the north side of the lot but no building design is included in the current proposal.

The proposed use for the south building is "office", with a tenant identified. Traffic trip counts for "office" use are significantly under those of the original restaurant use.

We would welcome the opportunity to share with your group our thoughts on this development and to solicit your input. Please let us know when an appropriate time would be to meet with you and present our project.

Sincerely,

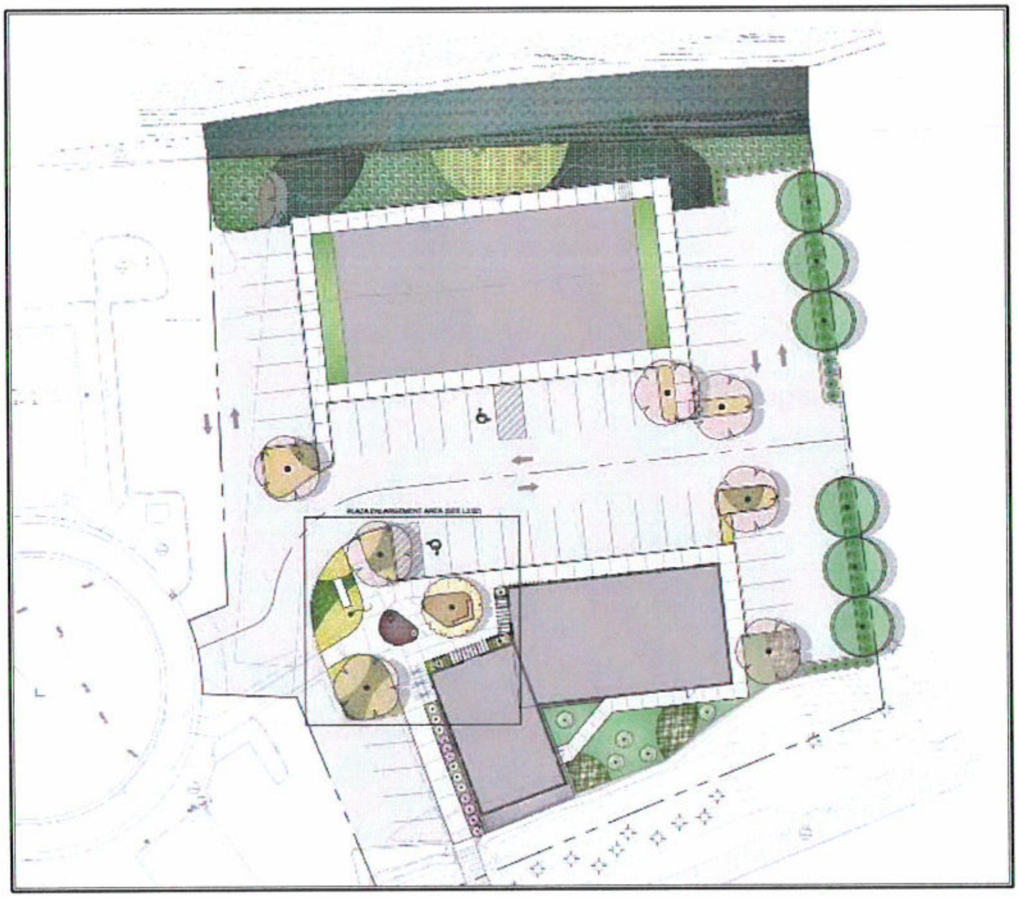
Ed Bruin

Development Services Manager

2233 NW 23rd Avenue, Suite 100

Portland, OR 97210

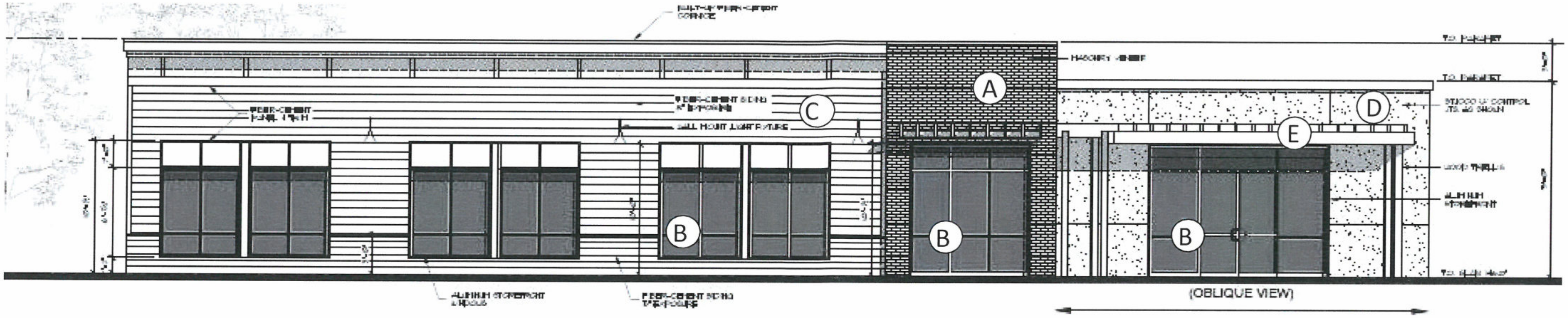
EXISTING SITE PLAN



PROPOSED SITE PLAN

8th COURT DEVELOPMENT

2180 8TH COURT, WEST LINN, OR

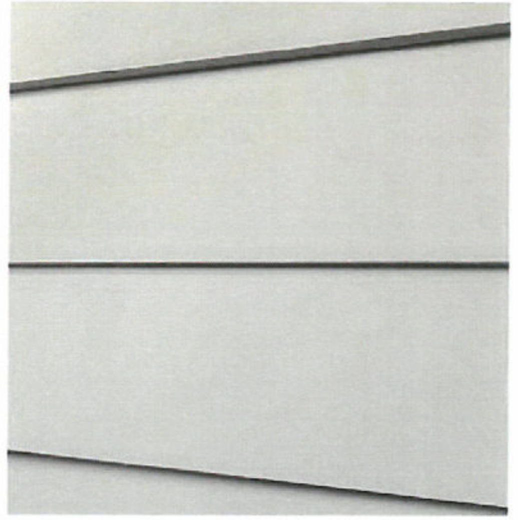


SOUTH BUILDING ELEVATION (View facing North)

NORTH ELEVATION

Ⓐ COUNTRY LEDGESTONE.
MUTUAL MATERIALS OR SIMILAR

Ⓑ CLEAR GLASS STOREFRONT GLAZING WITH ANODIZED ALUMINUM FRAMING. FINISH COLOR T.B.D.

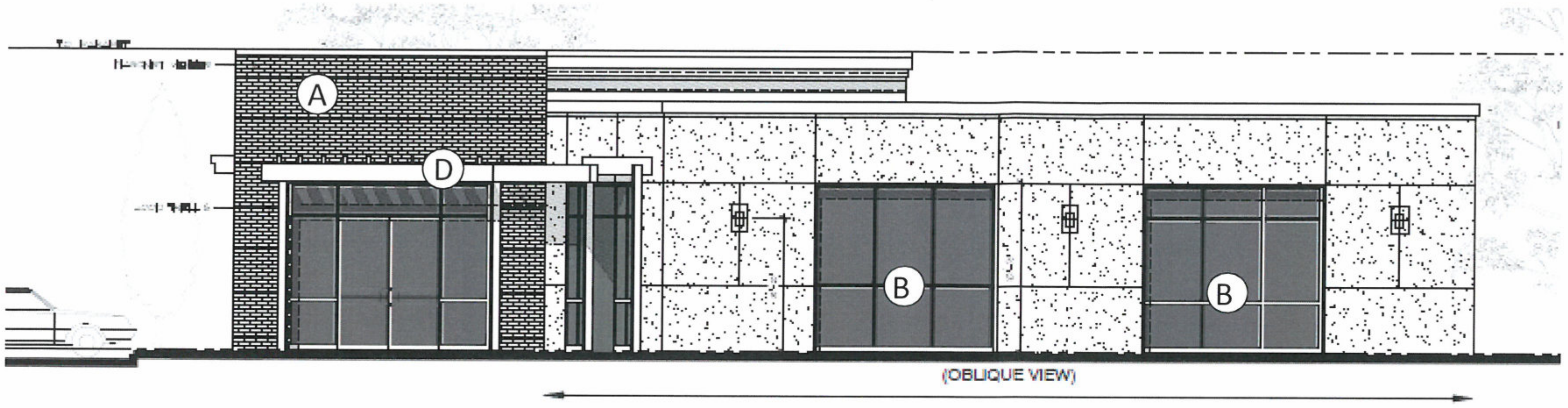


Ⓒ ARTISAN LAP SIDING.
JAMES HARDIE OR SIMILAR

Ⓒ ARTISAN LAP SIDING.
JAMES HARDIE OR SIMILAR

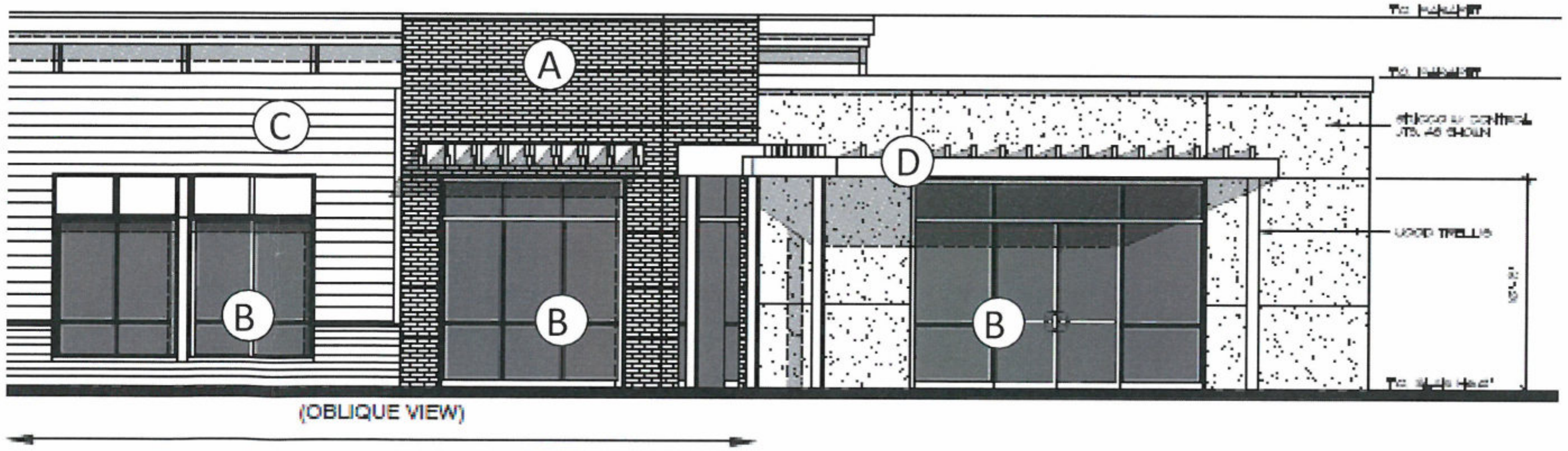
8th COURT DEVELOPMENT

2180 8TH COURT, WEST LINN, OR



WEST ELEVATION

(D) WOOD TRELLIS.
(Concept image)



PARTIAL NORTHWEST ELEVATION

EDGE DEVELOPMENT

ISELIN ARCHITECTS P.C.

MATERIAL BOARD 2

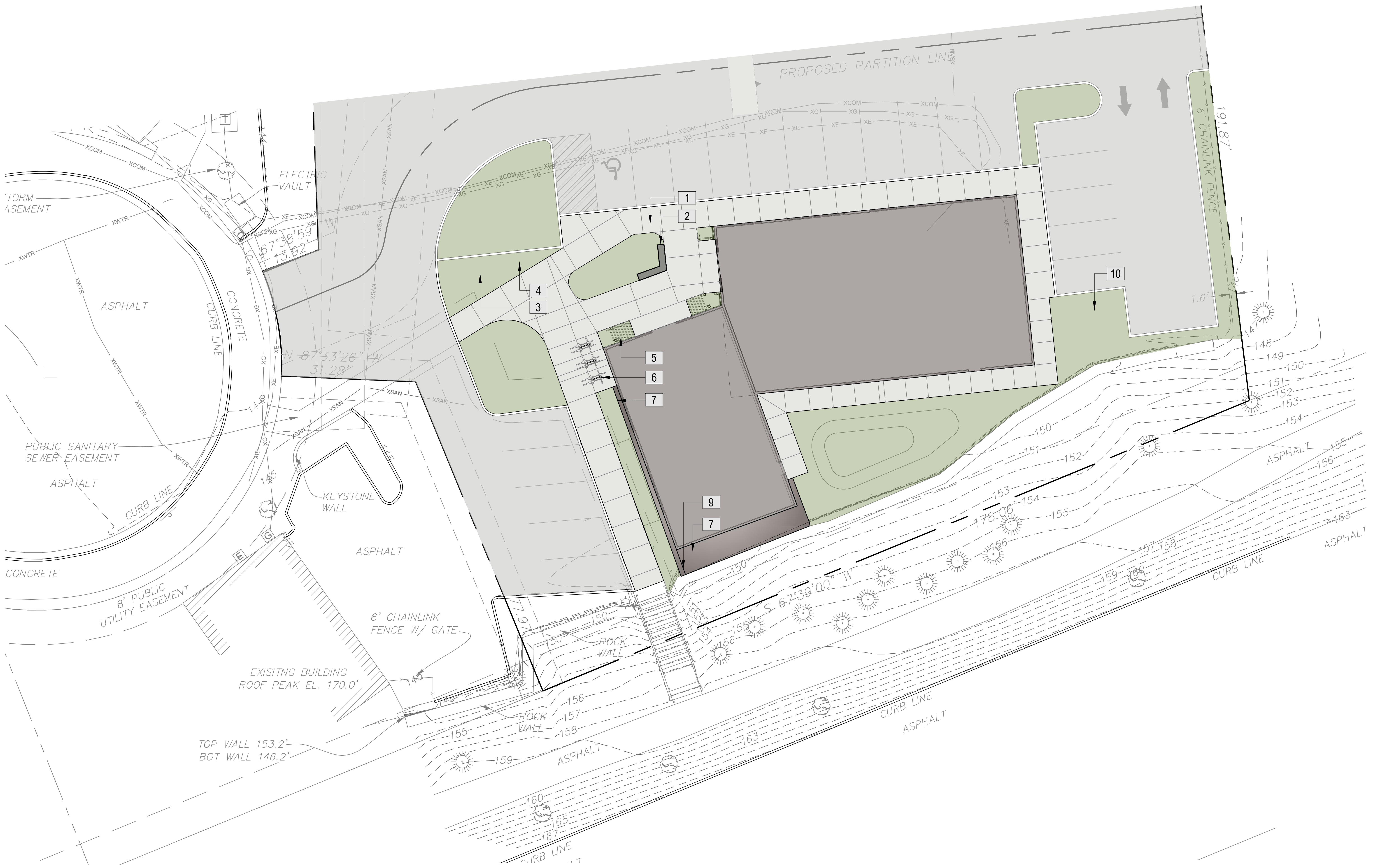
Willamette Capital Investments, LLC

DESIGN REVIEW PACKAGE
SEPTEMBER 2018

SHAPIRO / DIDWAY
1204 SE Water Ave
Portland, Oregon 97214
t. 503.232.0520
www.shapirodidway.com

REFERENCE NOTES SCHEDULE PARCEL 2

SYMBOL	DESCRIPTION
1	CONCRETE PLAZA WITH PLANTINGS
2	SEAT WALL
3	MONUMENT SIGN PER ARCHITECT
4	FLAGPOLE
5	TRELLIS
6	BIKE RACK
7	12" MAINTENANCE EDGE
9	6` CEDAR FENCE
10	PLANT BED (TYP)

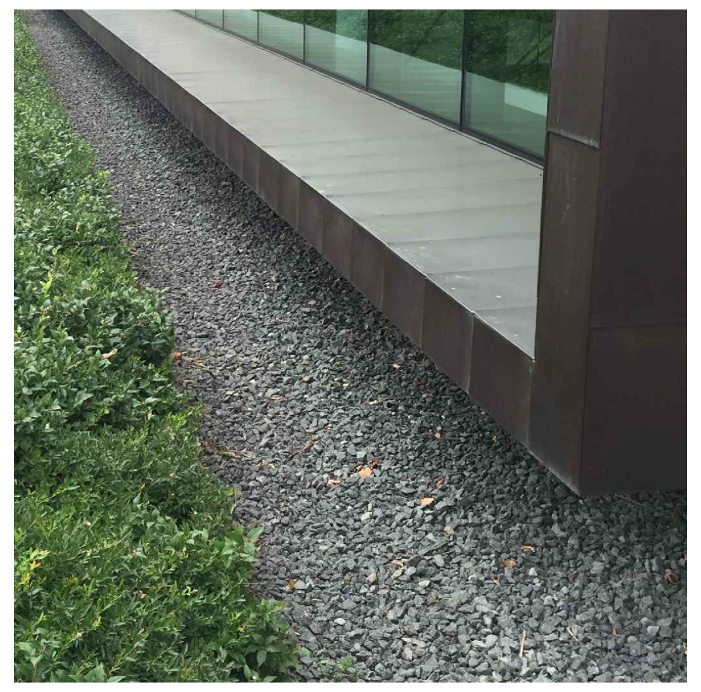


1 LANDSCAPE SITE PLAN

CONCRETE PLAZA WITH PLANTINGS

SEAT WALL

BIKE RACK



MAINTENANCE EDGE

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Oregon City, OR 97045
503-656-1942
www.iselinarchitects.com

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CONSTRUCTION

DESIGN
REVIEW

8th Court Building Shell
2180 8th Court - South Lot
West Linn, OR 97068

PROJ. NO. : 1861
FILE :
DATE : 11/29/18

SHEET #
L1.01

LANDSCAPE SITE PLAN

SHΛPIRO / DIDWΛY
1204 SE Water Ave
Portland, Oregon 97214
t. 503.232.0520
www.shapirodidway.com

① PLANTING PLAN

PLANT SCHEDULE PARCEL 2

TREES	CODE	BOTANICAL / COMMON NAME	CONT	CAL	SPACING	QTY
●	CF	CARPINUS BETULUS `FRANZ FONTAINE` FRANZ FONTAINE HORNBEAM	-	2"CAL		3
●	GT	GLEDITSIA TRIACANTHOS HONEY LOCUST	-	2"CAL		1
●	ZG	ZELKOVA SERRATA `GREEN VASE` SAWLEAF ZELKOVA	-	2"CAL		3
SHRUBS	CODE	BOTANICAL / COMMON NAME	SIZE	HT.		QTY
●	APA	ACER CIRCINATUM `PACIFIC FIRE` VINE MAPLE	B & B	4-6 FT		5
●	CKA	CALAMAGROSTIS X ACUTIFLORA `KARL FOERSTER` FEATHER REED GRASS	5 GAL			6
●	DOD	DAPHNE ODORA WINTER DAPHNE	5 GAL			3
●	HYQ	HYDRANGEA QUERCIFOLIA `RUBY SLIPPERS` RUBY SLIPPERS HYDRANGEA	5 GAL			7
●	ICA	ILEX X MESERVEAE `CASTLE WALL` CASTLE WALL HOLLY	5 GAL			26
SHRUB AREAS	CODE	BOTANICAL / COMMON NAME	CONT		SPACING	QTY
🟩		CLEAN WATER SERVICES STORMWATER FACILITY				1,141 SF
		-				1,141 SF
🟥	MRE	MAHONIA REPENS CREEPING MAHONIA	1 GAL		18" o.c.	97
🟩	SAHO	SARCOCOCCA HOOKERIANA HUMILIS SWEET BOX	5 GAL		36" o.c.	47
GROUND COVERS	CODE	BOTANICAL / COMMON NAME	CONT		SPACING	QTY
🟨	CAMO	CAREX MORROWII `AUREA-VARIEGATA` VARIEGATED JAPANESE SEDGE	1 GAL		30" o.c.	47
🟩	LIMU	LIRIOPE MUSCARI LILY TURF	1 GAL		18" o.c.	40
🟩	NATE	NASSELLA TENUISSIMA TEXAS NEEDLE GRASS	1 GAL		30" o.c.	63
🟩	POMU	POLYSTICHUM MUNITUM WESTERN SWORD FERN	1 GAL		36" o.c.	61

NORTH

0 16 32 48 feet
SCALE: 1/16" = 1'-0"

ISELIN ARCHITECTS P.C.

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503-656-1942
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PRELIMINARY

DESIGN REVIEW

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FILE :
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SHEET #
L1.02

PLANTING PLAN

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.

> **No changes are proposed to the public street system or public access easement serving the property. The public access easement across the site is planned to remain. It is proposed to provide onsite vegetative storm planters and basin to meet both the City's water quality and detention requirements. The north parcel will discharge to it's current location as no redevelopment is proposed for the north parcel. The south parcel project is being redeveloped and those areas being redeveloped will be collected, treated and detained per the city storm drainage policy as shown in the preliminary storm drainage report.**

LANCASTER
ENGINEERING

321 SW 4th Ave., Suite 400
Portland, OR 97204
phone: 503.248.0313
fax: 503.248.9251
lancasterengineering.com

83582PE
OREGON
C. 17, 2014
WILLIAM R. FARLEY
RENEWS: 12/31/2019

Technical Memorandum

To: Ed Bruin
From: William R. Farley, PE
Date: January 3, 2019
Subject: 2180 8th Court
Transportation Analysis Letter

Introduction

This memorandum evaluates the transportation impacts related to the partitioning and redevelopment of approximately 1.4 acres located at 2180 8th Court in West Linn, Oregon. The partition will divide the site into a 0.53-acre northern property and a 0.51-acre southern property and remove an existing building that was previously a Shari's restaurant. Following the partition, the southern property will be developed with a 2,797 square-foot medical office and a 1,470 square-foot general office building.

The purpose of this report is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses. Detailed information regarding trip generation calculations and safety analyses is included within the technical appendix.

Location Description

The subject site is located at the eastern end of the cul-de-sac for 8th Court in West Linn, Oregon. The site is bounded by Interstate 205 to the north, Willamette Falls Drive to the south, retail land uses to the west, and residential property to the east. Upon partitioning, an easement will be provided along the shared property line that extends from the cul-de-sac on 8th Court to the eastern property line.

10th Street is classified as a Minor Arterial by the City of West Linn. It is a three-four lane roadway that connects between Willamette Falls Drive to the south and Salamo Road/Blankenship Road to the north, while providing access to Interstate 205. Curbs and sidewalks are provided on both sides of the street.

8th Court is classified as a Local street by the City of West Linn. It is a two-lane roadway with one lane in each direction that extends from 10th Street approximately 425 feet before ending in a cul-de-sac. Curbs and sidewalks are provided on both sides of the street. On-street parking is not permitted on either side.

The intersection of 10th Street at 8th Street/8th Court is a four-legged intersection under two-way stop control for the eastbound and westbound approaches. The northbound approach on 10th Street has a single, shared lane for all turning movements; however, a left-turn restriction is signed for the hours between 4:00 PM and 6:00 PM. The southbound approach on 10th and the eastbound approach on 8th Street each have a shared through/right-turn lane and a dedicated left-turn lane. The westbound approach on 8th Court has a dedicated right-turn lane and a shared through/left-turn lane. Crosswalks are marked across the eastern, western, and southern legs of the intersection.

Figure 1 below provides an aerial image of the nearby vicinity with the project site outlined in yellow (image from PortlandMaps).

Figure 1: Aerial photo of site vicinity.

Trip Generation

Following the partitioning of the subject property, the southern lot previously occupied by the 3,600 square-foot restaurant Shari's restaurant will be replaced with a 2,797 square-foot medical office, a 1,470 square-foot general office building.

To estimate the number of trips that will be generated by the existing restaurant and the proposed offices, trip rates from *Trip Generation Manual*[1] were used. Data from land-use code 932, *High-Turnover (Sit-Down) Restaurant*, was used to estimate the trip generation of the existing restaurant building. Land-use code 710, *General Office Building*, and land-use code 720, *Medical-Dental Office Building*, were used to estimate the trip generation of the proposed general offices and medical office. Trip generation estimates were calculated based on rates corresponding to the gross-floor area of each land use.

Typically land uses such as restaurants attract pass-by and diverted-link trips. Pass-by trips are those that leave an adjacent roadway to patronize a land use and then continue in their original direction of travel. Similar to pass-by trips, diverted-link trips are trips that divert from a nearby roadway not adjacent to the site to patronize the land use before continuing to their original destination. Pass-by trips do not add additional vehicles to the surrounding transportation system; however, they do impact turning movements at site access intersections. Diverted-link trips may add turning movements at both site accesses and other nearby intersections.

Since the subject site is at the end of a cul-de-sac on 8th Court, the existing restaurant would not have been able to attract a significant number of pass-by trips. Therefore, it is expected that any non-primary trips were attracted from 10th Street or other nearby roadways, which added turning movements at the intersection of 10th Street and 8th Court. Accordingly, no reductions in trip generation were accounted for in the calculations for the existing restaurant.

With 2,797 square feet of medical office and 1,470 square feet of general office, the site is expected to generate a total of 10 trips during the morning peak hour, 12 trips during the evening peak hour, and 112 daily trips. When compared to the existing restaurant, the site will still generate 26 less trips during the morning peak hour, 23 less trips during the evening peak hour, and 292 less daily trips. Accordingly, no traffic impacts are anticipated with the development of the southern site.

Based on the trip generation calculations, the occupancy of the general offices and dental office is projected to generate less trips than the Shari's restaurant. Accordingly, no traffic impacts are anticipated with the construction of 2,797 square feet of medical office and 1,470 square feet of general office.

Table 1 on the following page offers a summary of the trip generation calculations. Detailed trip generation worksheets are included in the technical appendix to this report.

---

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.

Table 1: Trip Generation Summary

	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday
			Enter	Exit	Total	Enter	Exit	Total	Total
Existing									
Restaurant	932	3,600 SF	20	16	36	22	13	35	404
Proposed									
Medical Office	720	2,797 SF	6	2	8	3	7	10	98
Office Building	710	1,470 SF	2	0	2	0	2	2	14
Net Change in Trips			**-12**	**-14**	**-26**	**-19**	**-4**	**-23**	**-292**

Site Circulation & Parking

With the partitioning of the subject site, a 24-foot access easement will be provided from the cul-de-sac on 8th Court to the eastern property line. This easement will provide access to a shared parking aisle with adjacent properties to the west as well as 90-degree parking along the face of each building and 90-degree parking in an eastern lot on each property.

Vehicles entering the site are anticipated to slow as they transition from 8th Court into the parking lot and remain slow as they round a "S" curve into the parking aisle. Both properties will provide 11 parking stalls and 1 accessible stall along this parking aisle. If the driver chooses, or if these spaces are full, the vehicle can travel to the eastern part of either site and enter into a parking area on the side of either building. Additional parking spaces are available along the aisles shared with adjacent properties at the entrance to the site.

Figure 2 shows the circulation of a "P" design vehicle through the site into the parking area on the eastern side of the southern property prior to backing into a space. It should be noted that circulation with the "P" design vehicle is a conservative analysis and that most late-model vehicles are significantly smaller in size and have improve maneuverability.

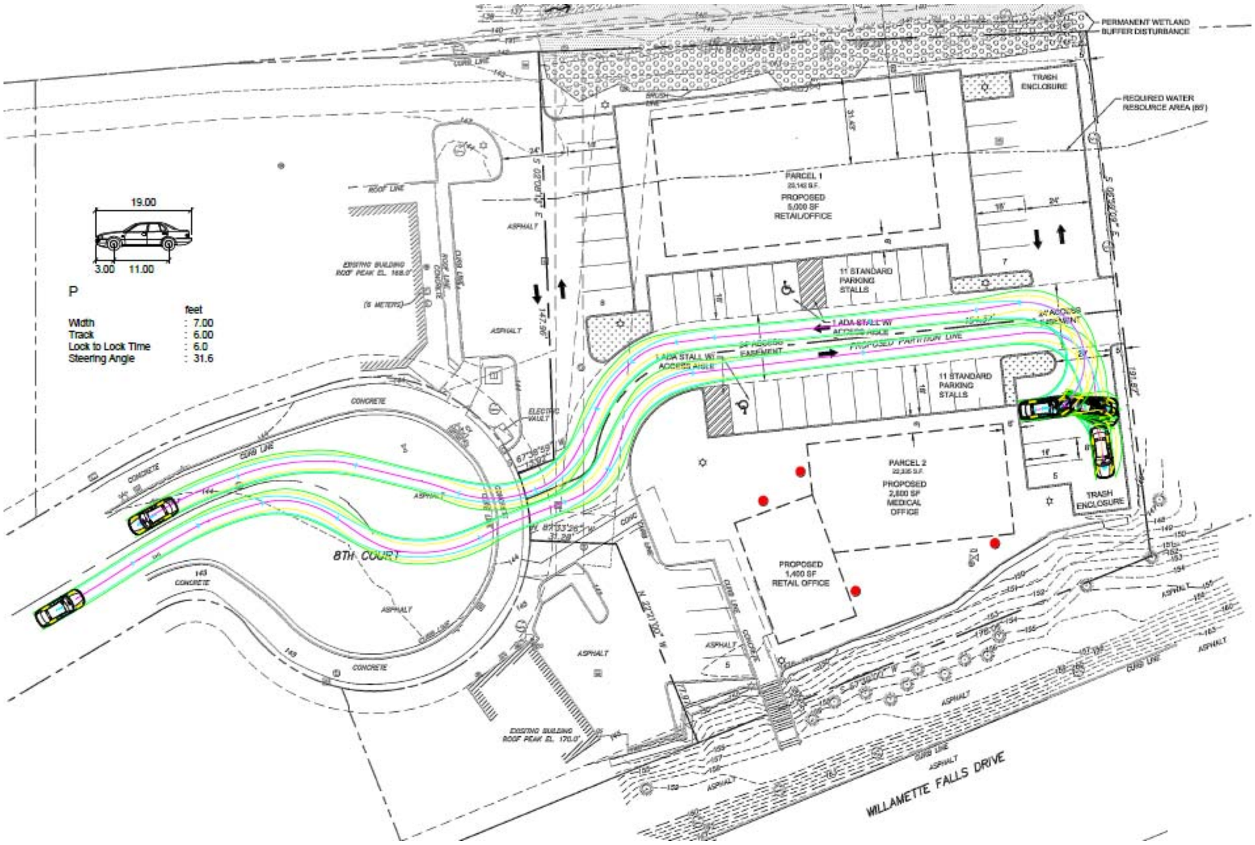


Figure 2: Circulation of "P" design vehicle on the site.

Due to the configuration of the site's access, it is anticipated that vehicles traveling along the parking on the face of each building will be traveling at a slow speeds. If visibility along the inside of the "S" corner and entering the parking areas on the eastern side of the property are maintained, it is anticipated that a vehicle exiting a parking stall will be able to see oncoming traffic for sufficient distance in order to ensure they can safely back into the drive aisle; or that an entering vehicle will be able to observe a backing vehicle with enough time to slow or come to a stop.

Because the site is located at the eastern end of cul-de-sac without a through path to another street, it is anticipated that the property will serve minimal pedestrian and bicycle traffic. Regardless, pedestrians and bicyclists who travel from the street to the site and pedestrians who travel from within the parking area itself should be considered in the design.

The proposed site plan shows a concrete path being maintained from the previous restaurant use that connects the sidewalk on 8th Court and the southern building. This feature, in addition to slow vehicular travel speeds at the site access, are anticipated to allow pedestrians to safely navigate the site. The slow vehicular speeds also allow bicyclists to safely share the drive aisle with motor vehicles.

Traffic Impact Analysis Requirements

Per Section 85.170.B.2.c.1) of the City's Development Code, a Traffic Impact Analysis is required under the following conditions:

(A) When the development application proposes a change in zoning or an amendment to the Comprehensive Plan; or

(B) When the Oregon Department of Transportation states the development action may have operation or safety concerns along a State highway; and

(C) The development causes one or more of the following effects:

  (1) Increases site traffic volumes by at least 250 average daily trips; or

  (2) Increases the use of adjacent streets by vehicles exceeding the 20,000-pound gros vehicle weights by 10 vehicles or more per day; or

  (3) Has an access that does not meet minimum intersection sight distance requirements, or is located where vehicles entering/leaving the property are restricted; or

  (4) Has an access that does not meet the access spacing standard of the roadway; or

  (5) A change in internal traffic patterns that may cause safety problems.

The proposed development is an allowed use under the existing zoning and does not alter the zoning designation or amend the Comprehensive Plan. Criteria (A) is not triggered.

Although located near the Interstate 205 ramps onto 10th Street, the proposed development of the 2,797 square feet of medical office and 1,470 square feet of general office space is projected to have less of an impact on the system than the existing restaurant use. Additional truck traffic is not expected for any of the uses on the site.

Access to the site is located at the end of the cul-de-sac on 8th Court. Based on the location of the access, the visibility of oncoming traffic is expected to be adequate with no obstructions and traffic entering/exiting the site will remain unrestricted so not to create queuing issues onto the public street. The access is located at least 50 feet from the adjacent access in the cul-de-sac meeting the City's standards for Local Commercial Streets. The parking layout of the site is similar to the existing use on the site and is not expected to cause safety problems.

Per the requirements in the City's Development Code, a Traffic Impact Analysis is not required for the partition of the property, removal of the restaurant, and development of 2,797 square feet of medical office and 1,470 square feet of office space.

Conclusions

The proposed partition and development of a 2,797 square-foot medical office and 1,470 square feet of general office space at 2180 8th Court is projected to have less traffic impacts than the previous restaurant use on the subject site.

Based on the proposed parking configuration, it is anticipated that vehicles will be able to circulate the site in an efficient manner. Speeds of entering traffic are anticipated to be slow enough for pedestrians and bicyclists to safely utilize the parking area to reach destinations within the site. The provided site plan also shows the maintaining of a pedestrian walkway from the sidewalk to the southern building.

Per the City of West Linn's Development Code, a Traffic Impact Analysis is not required for the partitioning of the property, removal of the existing restaurant, and development of 2,797 square feet of medical office and 1,470 square feet of office space.

If you have any questions or concerns regarding this memorandum, please don't hesitate in contacting us.

Appendix

TRIP GENERATION CALCULATIONS

Land Use: High-Turnover (Sit-Down) Restaurant
Land Use Code: 932
Setting/Location General Urban/Suburban
Variable: 1,000 Sq. Ft. Gross Floor Area
Variable Quantity: 3.6

AM PEAK HOUR

Trip Rate: 9.94

	Enter	Exit	Total
Directional Distribution	55%	45%	
Trip Ends	**20**	**16**	**36**

PM PEAK HOUR

Trip Rate: 9.77

	Enter	Exit	Total
Directional Distribution	62%	38%	
Trip Ends	**22**	**13**	**35**

WEEKDAY

Trip Rate: 112.18

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**202**	**202**	**404**

SATURDAY

Trip Rate: 122.40

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**220**	**220**	**440**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Medical-Dental Office Building
Land Use Code: 720
Setting/Location General Urban/Suburban
Variable: 1,000 Sq Ft Gross Floor Area
Variable Quantity: 2.8

AM PEAK HOUR

Trip Rate: 2.78

	Enter	Exit	Total
Directional Distribution	78%	22%	
Trip Ends	**6**	**2**	**8**

PM PEAK HOUR

Trip Rate: 3.46

	Enter	Exit	Total
Directional Distribution	28%	72%	
Trip Ends	**3**	**7**	**10**

WEEKDAY

Trip Rate: 34.80

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**49**	**49**	**98**

SATURDAY

Trip Rate: 8.57

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**12**	**12**	**24**

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: General Office Building
Land Use Code: 710
Setting/Location General Urban/Suburban
Variable: 1000 Sq Ft Gross Floor Area
Variable Value: 1.5

AM PEAK HOUR

Trip Rate: 1.16

	Enter	Exit	Total
Directional Distribution	86%	14%	
Trip Ends	**2**	**0**	**2**

PM PEAK HOUR

Trip Rate: 1.15

	Enter	Exit	Total
Directional Distribution	16%	84%	
Trip Ends	**0**	**2**	**2**

WEEKDAY

Trip Rate: 9.74

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**7**	**7**	**14**

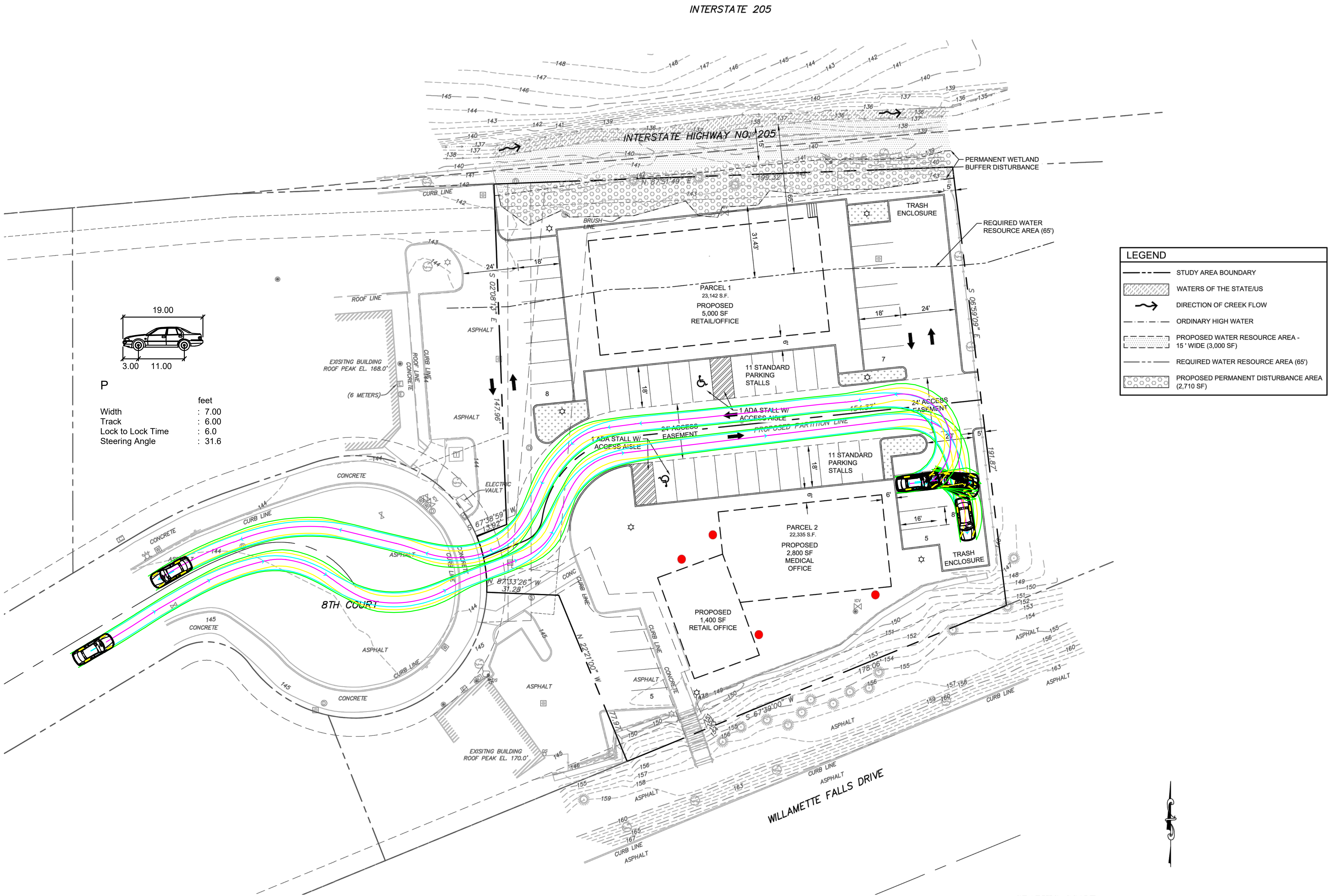
SATURDAY

Trip Rate: 2.21

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**2**	**2**	**4**

Source: TRIP GENERATION, Tenth Edition

P:\2018\18116_5 8th Court Commercial\Cad\Plot\Minor Partition\C1.0 - Site Plan\18116_C1.0.dwg, 9/5/2018 10:36:24 AM, koenig



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

1
C1.0

PROPOSED SITE PLAN

SCALE: 1" = 20'

PRELIMINARY
NOT FOR
CONSTRUCTION
09/05/18

80058PE
OREGON
CHRIS J. DESLAURIERS

RENEWS: 12-31-2019

WDY
Structural · Civil Engineers
6443 SW Beaverton-Hillsdale Hwy, suite 210 Portland, OR 97221
ph:503.203.8111 fx:503.203.8122 www.wdyi.com

8TH COURT COMMERCIAL

2180 8TH COURT
WEST LINN, OR 97068

MINOR PARTITION

REVISIONS

DATE: 08-10-2018
JOB NUMBER: 18116
DRAWN: JAM
CHECKED: CJD

SHEET
C1.0
1 OF 1

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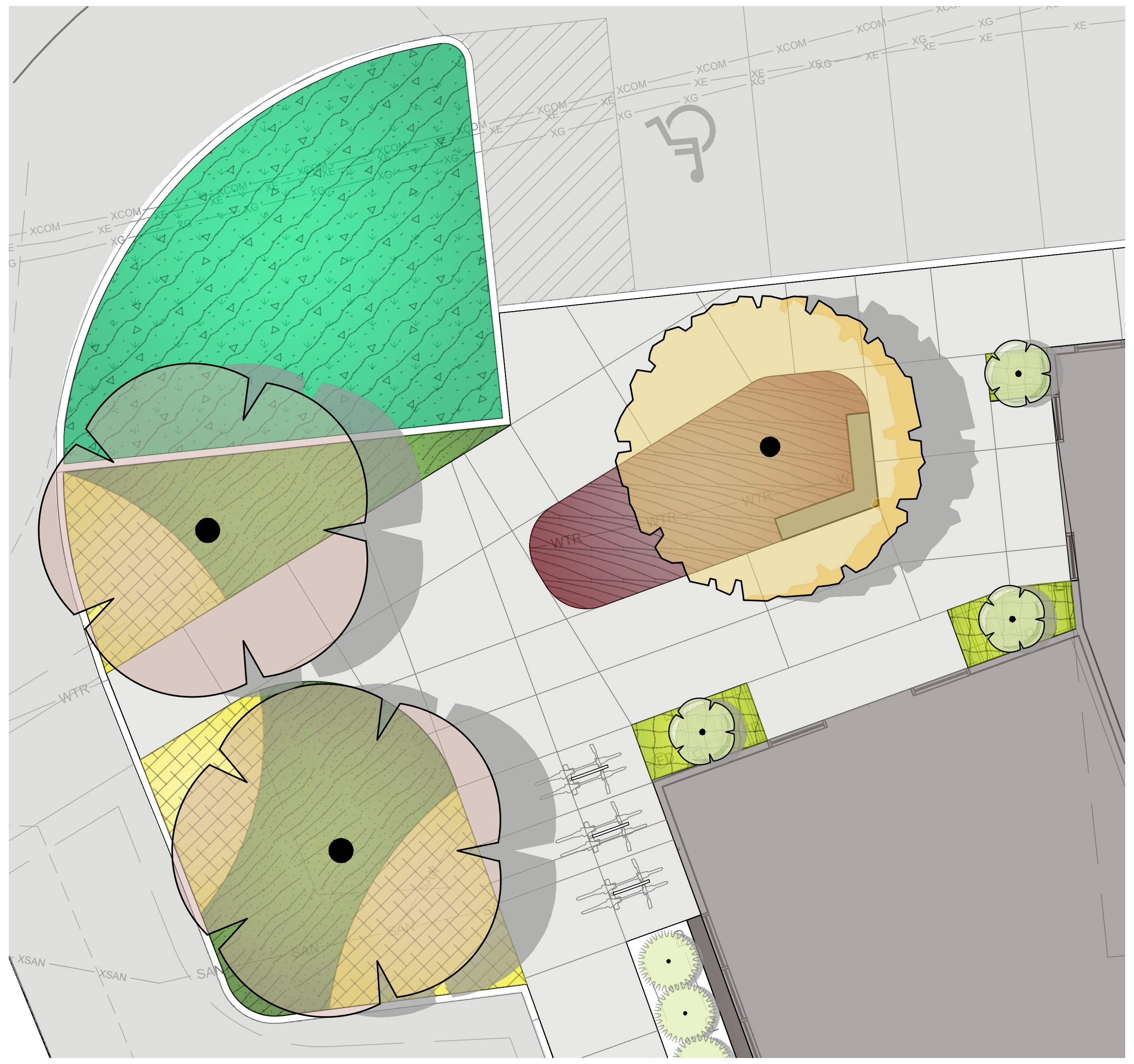
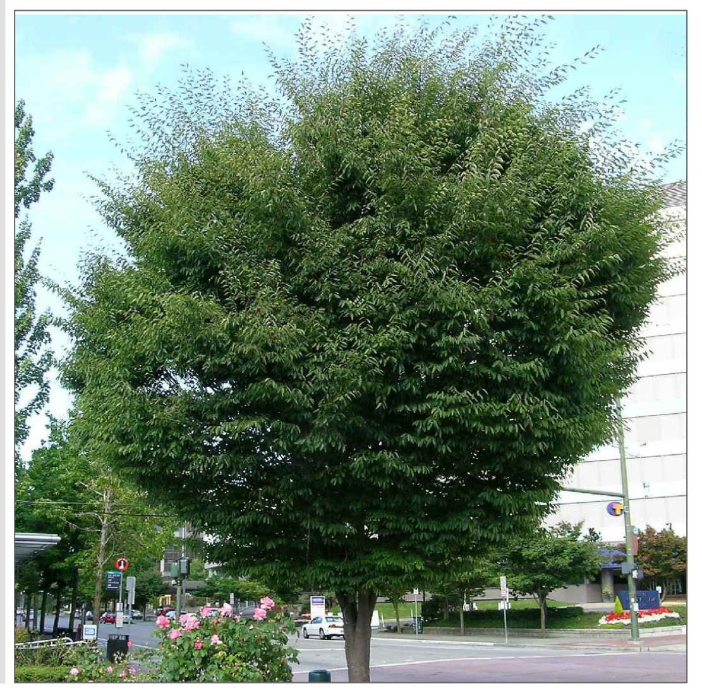
SHAPIRO / DIDWAY
1204 SE Water Ave
Portland, Oregon 97214
t. 503.232.0520
www.shapirodidway.com



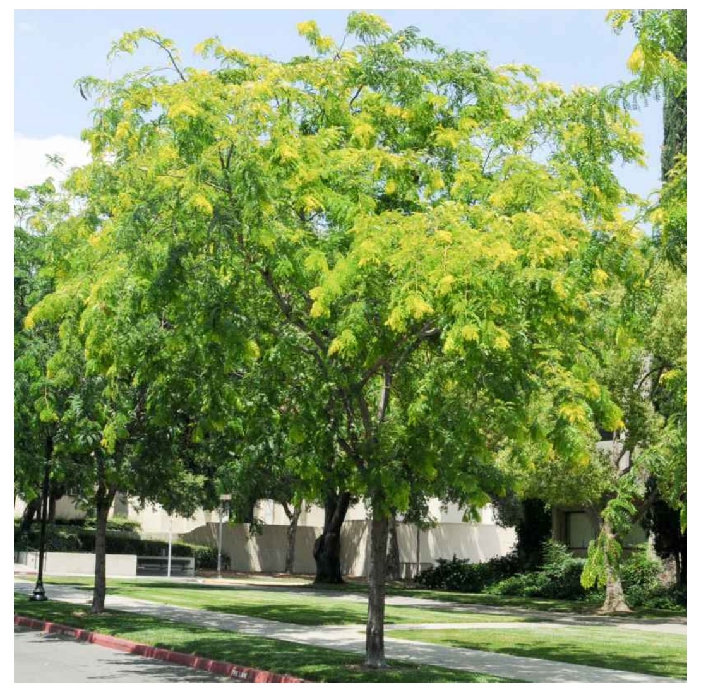
① PLAZA ENLARGEMENT

TREES



GREEN VASE ZELKOVA

FRANZ FONTAINE HORNBEAM



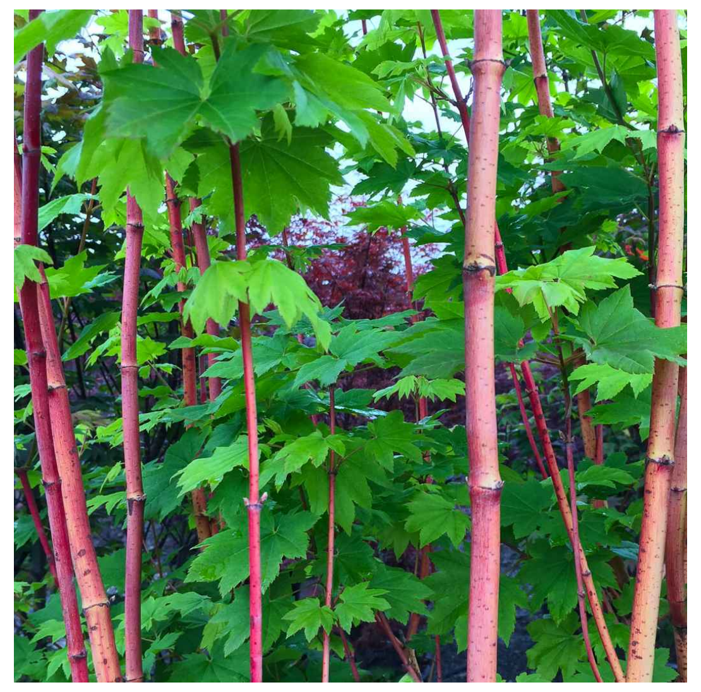
HONEY LOCUST

SHRUBS & GROUNDCOVERS

VARIEGATED JAPANESE SEDGE

WINTER DAPHNE

WESTERN SWORDFERN



VINE MAPLE

RUBY SLIPPERS OAKLEAF HYDRANGEA

CREEPING MAHONIA

KARL FOERSTER FEATHER REED GRASS

MEXICAN FEATHER GRASS

CASTLE WALL HOLLY

LILY TURF

FRAGRANT SWEETBOX

② PLANT PALETTE

ISELIN
ARCHITECTS
P.C.

1307 Seventh Street
Oregon City, OR 97045
503-656-1942
www.iselinarchitects.com

NOT FOR
PRELIMINARY
CONSTRUCTION

DESIGN
REVIEW

8th Court Building Shell

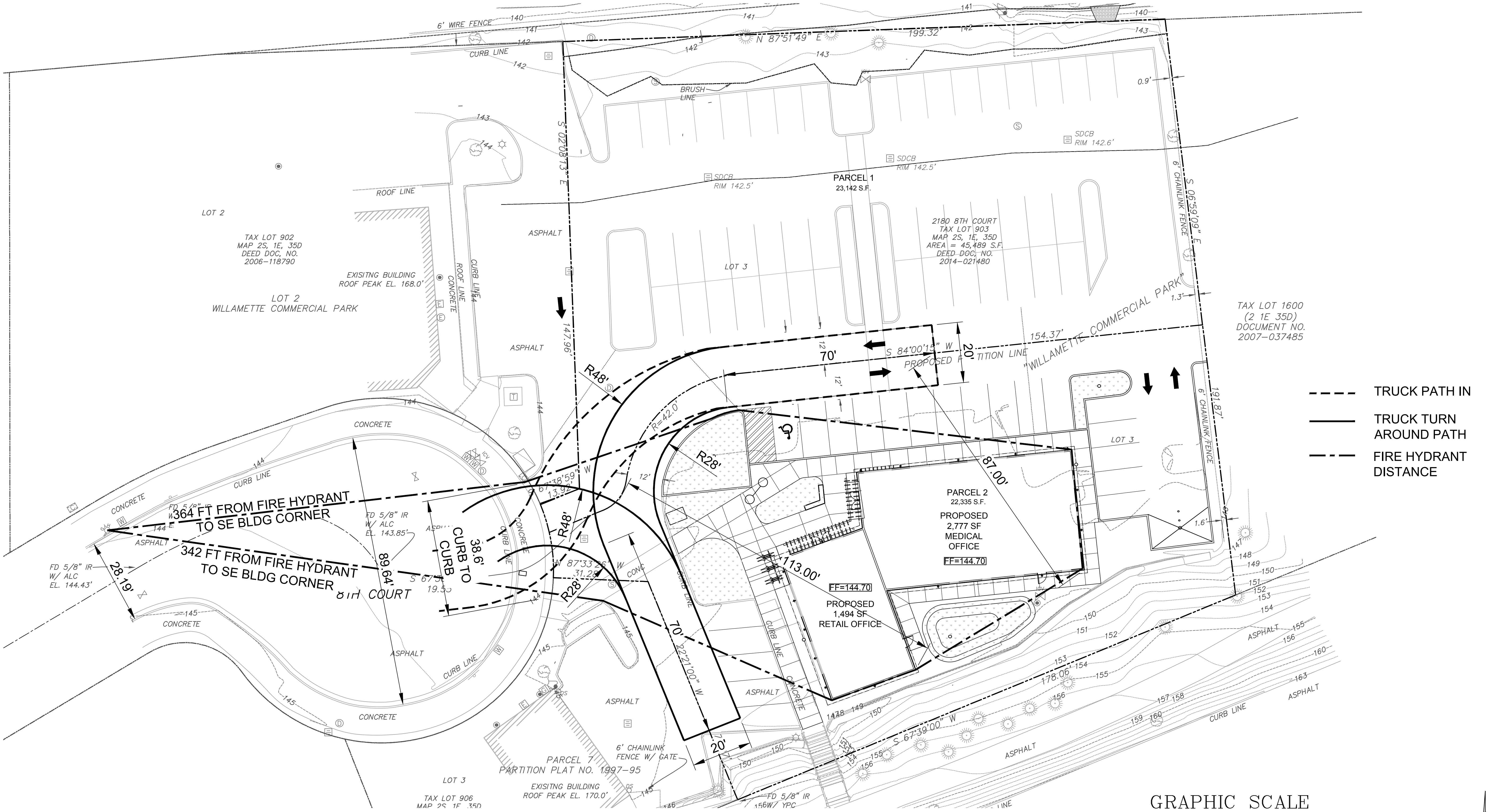
2180 8th Court - South Lot
West Linn, OR 97068

PROJ. NO. : 1861
FILE :
DATE : 11/29/18

SHEET #

L1.03

ENLARGEMENTS & PLANT PALETTE



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 feet

FIRE TRUCK TURN - 120' HAMMER HEAD ALTERNATIVE

SCALE: 1":30'-0"

Job Name: 8TH CT COMMERCIAL; 2180 8TH CT WEST LINN, OREGON 97068

Date: 12/19/2018

Job No.: 18116.71

Drawn: GBB

Client:

Sheet: SK-1

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WDY Structural · Civil Engineers

6443 SW Beaverton-Hillsdale Hwy, suite 210 Portland, OR 97221
ph:503.203.8111 fx:503.203.8122 www.wdyi.com

PC-4 PUBLIC COMMENTS

From: Lena Davidson <davidsonlena@gmail.com>
Sent: Wednesday, February 20, 2019 3:51 PM
To: Arnold, Jennifer
Cc: Wayne Rask
Subject: File No. DR-18-08
Attachments: plat 3202.pdf; 2180 8th ct.pdf; 1995 56837.pdf

Jennifer

Per our phone conversation today, attached are the easement documents that were provided to us from the title company.

Thank you,

Lena Davidson
Accountant
Tamer Willamette, LLC

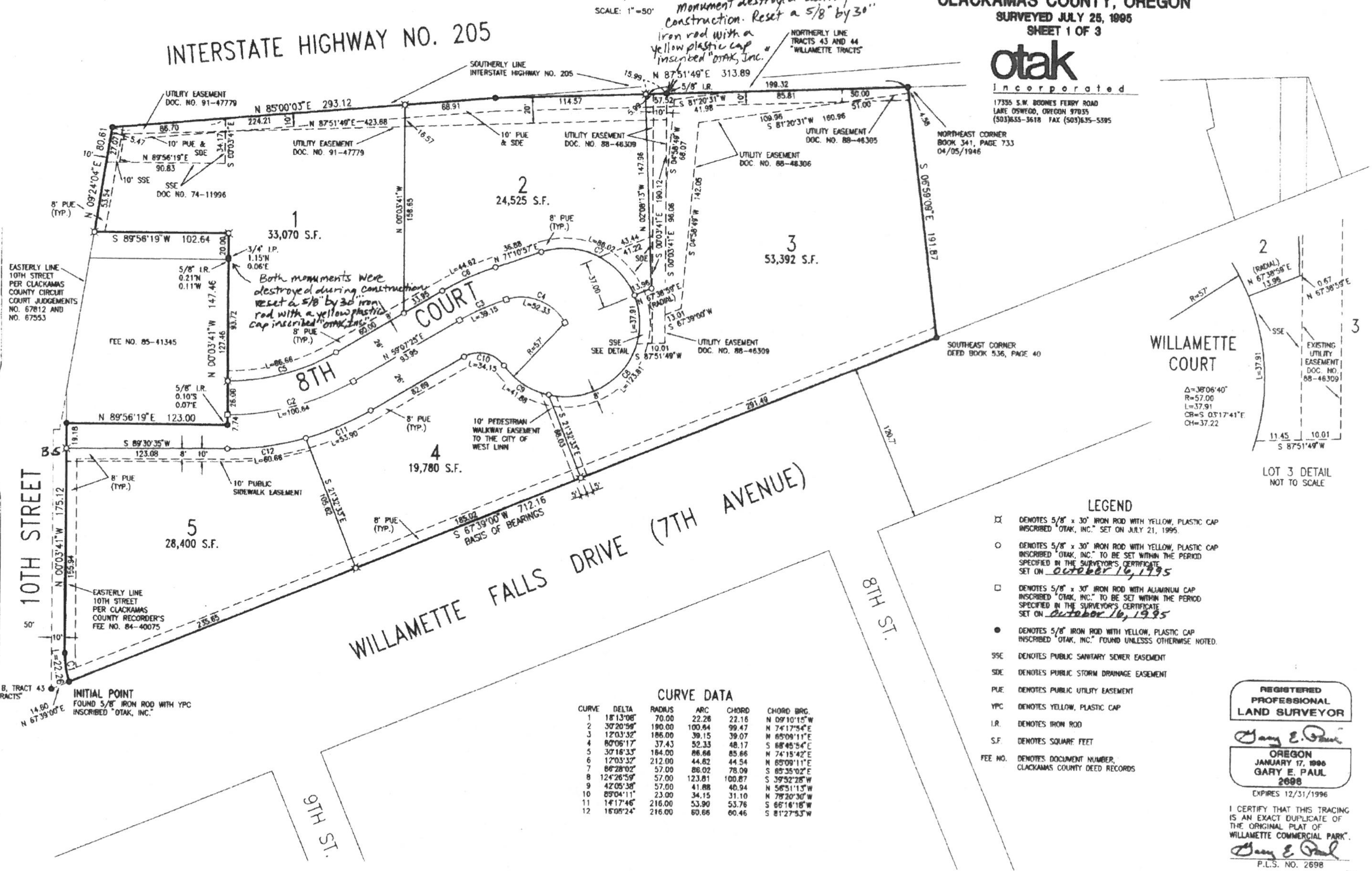
104/24

WILLAMETTE COMMERCIAL PARK

(A REPLAT OF PORTIONS OF TRACTS 43 AND 44, "WILLAMETTE TRACTS")
IN THE LEMUEL A. SPARKS D.L.C. NO. 50
AND THE WILLIAM CLINTON D.L.C. NO. 66
SE1/4 SECTION 35, T.2S., R.1E., W.M.
NE1/4 SECTION 2, T.3S., R.1E., W.M.
CITY OF WEST LINN
CLACKAMAS COUNTY, OREGON
SURVEYED JULY 25, 1995
SHEET 1 OF 3

otak
Incorporated
17355 S.W. BOONES FERRY ROAD
LAKE OSWEGO, OREGON 97035
(503)635-3618 FAX (503)635-5395

TABLE OF CONTENTS



LEGEND

⌑	DENOTES 5/8" x 30" IRON ROD WITH YELLOW, PLASTIC CAP INSCRIBED "OTAK, INC." SET ON JULY 21, 1995.
○	DENOTES 5/8" x 30" IRON ROD WITH YELLOW, PLASTIC CAP INSCRIBED "OTAK, INC." TO BE SET WITHIN THE PERIOD SPECIFIED IN THE SURVEYOR'S CERTIFICATE SET ON October 16, 1995
□	DENOTES 5/8" x 30" IRON ROD WITH ALUMINUM CAP INSCRIBED "OTAK, INC." TO BE SET WITHIN THE PERIOD SPECIFIED IN THE SURVEYOR'S CERTIFICATE SET ON October 16, 1995
●	DENOTES 5/8" IRON ROD WITH YELLOW, PLASTIC CAP INSCRIBED "OTAK, INC." FOUND UNLESSS OTHERWISE NOTED.
SSE	DENOTES PUBLIC SANITARY SEWER EASEMENT
SDE	DENOTES PUBLIC STORM DRAINAGE EASEMENT
PUE	DENOTES PUBLIC UTILITY EASEMENT
YPC	DENOTES YELLOW, PLASTIC CAP
I.R.	DENOTES IRON ROD
S.F.	DENOTES SQUARE FEET
FEE NO.	DENOTES DOCUMENT NUMBER, CLACKAMAS COUNTY DEED RECORDS

CURVE DATA

CURVE	DELTA	RADIUS	ARC	CHORD	CHORD BRG.
1	18°13'08"	70.00	22.26	22.16	N 09°10'15"W
2	30°20'59"	190.00	100.64	99.47	N 74°17'54"E
3	12°03'32"	186.00	39.15	39.07	N 65°09'11"E
4	80°06'17"	37.43	52.33	48.17	S 68°45'54"E
5	30°16'33"	164.00	86.66	85.66	N 74°15'42"E
6	12°03'32"	212.00	44.62	44.54	N 65°09'11"E
7	86°28'02"	57.00	86.02	78.09	S 65°35'02"E
8	124°26'59"	57.00	123.81	100.87	S 39°52'28"W
9	42°05'38"	57.00	41.88	40.94	N 56°51'13"W
10	85°04'11"	23.00	34.15	31.10	N 78°20'30"W
11	14°17'46"	216.00	53.90	53.76	S 66°16'18"W
12	16°05'24"	216.00	60.66	60.46	S 81°27'53"W

REGISTERED
PROFESSIONAL
LAND SURVEYOR
Gary E. Paul
OREGON
JANUARY 17, 1995
GARY E. PAUL
2698
EXPIRES 12/31/1996

I CERTIFY THAT THIS TRACING IS AN EXACT DUPLICATE OF THE ORIGINAL PLAT OF WILLAMETTE COMMERCIAL PARK".
Gary E. Paul
P.L.S. NO. 2698

(~~SHEET~~ 1 OF 3)
3202

104/24

WILLAMETTE COMMERCIAL PARK

(A REPLAT OF PORTIONS OF TRACTS 43 AND 44, "WILLAMETTE TRACTS")

IN THE LEMUEL A. SPARKS D.L.C. NO. 50
AND THE WILLIAM CLINTON D.L.C. NO. 66
SE1/4 SECTION 35, T.2S., R.1E., W.M.
NE1/4 SECTION 2, T.3S., R.1E., W.M.
CITY OF WEST LINN
CLACKAMAS COUNTY, OREGON
SURVEYED JULY 25, 1995
SHEET 2 OF 3

otak
incorporated
17355 S.W. BOONES FERRY ROAD
LAKE OSWEGO, OREGON 97035
(503)635-3618 FAX (503)635-5395

NOTES

1. NARRATIVE: THE PURPOSE OF THIS SURVEY IS TO SUBDIVIDE THAT TRACT OF LAND AS DESCRIBED IN THE ACCOMPANYING SURVEYOR'S CERTIFICATE AND AS SHOWN. FOR BASIS OF BEARINGS AND BOUNDARY DETERMINATION, SEE P.S. 26540, CLACKAMAS COUNTY SURVEY RECORDS. INSTRUMENTATION USED INCLUDED ONE AND FIVE SECOND ELECTRONIC THEODOLITES. THIS SURVEY CONFORMS TO THIRD ORDER CLASS II FEDERAL GEODETIC CONTROL COMMITTEE GUIDELINES. THIS SURVEY WAS PERFORMED FOR THE DECLARANTS TO THIS PLAT.
2. GEODETIC CONTROL MONUMENT "WILLAMETTE, 1946", MARKED BY A 3-1/4 INCH BRONZE DISK IN CONCRETE, BEARS S 26°54'40"W, 866.95 FEET FROM THE INITIAL POINT OF THIS PLAT.
3. SUBJECT TO COVENANTS, CONDITIONS AND RESTRICTIONS RECORDED AS DOCUMENT NO. ________________, CLACKAMAS COUNTY DEED RECORDS.
4. SUBJECT TO CONDITIONS IN THE NOTICE OF FINAL DECISION, CITY OF WEST LINN FILE SUB-94-03.

SURVEYOR'S CERTIFICATE

I, GARY E. PAUL, HEREBY SAY THAT I HAVE CORRECTLY SURVEYED AND MARKED WITH PROPER MONUMENTS THE LANDS REPRESENTED ON THE ANNEXED MAP OF "WILLAMETTE COMMERCIAL PARK," THAT AT THE INITIAL POINT OF SAID SURVEY I FOUND A 5/8-INCH IRON ROD WITH A YELLOW, PLASTIC CAP INSCRIBED "OTAK, INC.," SAID INITIAL POINT BEING THE INTERSECTION OF THE NORTHERLY LINE OF WILLAMETTE FALLS DRIVE WITH THE EASTERLY LINE OF 10TH STREET, WHICH INITIAL POINT BEARS N.67°39'00"E., 74.60 FEET FROM THE SOUTHWEST CORNER OF LOT B OF TRACT 43, "WILLAMETTE TRACTS". FROM SAID INITIAL POINT I RAN NORTHWESTERLY ALONG THE EASTERLY LINE OF 10TH STREET ON THE ARC OF A 70.00-FOOT RADIUS NONTANGENT CURVE RIGHT (THE RADIUS POINT OF WHICH BEARS N.71°43'11"E.) THROUGH A CENTRAL ANGLE OF 18°13'08", 22.26 FEET (CHORD BEARS N.09°10'15"W., 22.16 FEET); THENCE CONTINUING ALONG SAID EASTERLY LINE, N.00°03'41"W., 175.12 FEET TO THE SOUTHWEST CORNER OF THAT TRACT OF LAND DESCRIBED IN FEE NUMBER 85-41345, CLACKAMAS COUNTY DEED RECORDS; THENCE N.89°56'19"E. ALONG THE SOUTHERLY LINE OF SAID TRACT, 123.00 FEET TO THE SOUTHEAST CORNER OF SAID FEE NUMBER 85-41345 TRACT; THENCE N.00°03'41"W. ALONG THE EASTERLY LINE AND EASTERLY LINE EXTENDED OF SAID FEE NUMBER 85-41345 TRACT, 147.46 FEET; THENCE S.89°56'19"W., 102.64 FEET TO THE EASTERLY LINE OF 10TH STREET; THENCE N.09°24'04"E. ALONG SAID EASTERLY LINE, 80.61 FEET TO THE SOUTHERLY LINE OF INTERSTATE HIGHWAY NO. 205; THENCE N.85°00'03"E. ALONG SAID SOUTHERLY LINE, 293.12 FEET TO THE NORTHERLY LINE OF TRACTS 43 AND 44, "WILLAMETTE TRACTS"; THENCE N.87°51'49"E. ALONG SAID NORTHERLY LINE, 313.89 FEET TO THE NORTHEAST CORNER OF THAT CERTAIN TRACT OF LAND DESCRIBED IN BOOK 341, PAGE 733, CLACKAMAS COUNTY DEED RECORDS; THENCE S.06°59'09"E., ALONG THE EASTERLY LINE OF THAT TRACT OF LAND DESCRIBED IN BOOK 536, PAGE 40, CLACKAMAS COUNTY DEED RECORDS, 191.87 FEET TO THE SOUTHEAST CORNER THEREOF, WHICH CORNER IS ON THE NORTHERLY LINE OF WILLAMETTE FALLS DRIVE; THENCE S.67°39'00"W. ALONG SAID NORTHERLY LINE, 712.16 FEET TO THE INITIAL POINT. CONTAINS 4.21 ACRES MORE OR LESS.

AS PER O.R.S. 92.070(2), I HEREBY CERTIFY THAT THE POSTMONUMENTATION OF THE INTERIOR MONUMENTS WITHIN THIS SUBDIVISION WILL BE ACCOMPLISHED WITHIN 90 CALENDAR DAYS FOLLOWING COMPLETION OF PAVING OF THE IMPROVEMENTS, OR WITHIN ONE YEAR FOLLOWING ORIGINAL PLAT RECORDATION, WHICHEVER COMES FIRST, IN ACCORDANCE WITH O.R.S. 92.060.

Gary E Paul
REGISTERED PROFESSIONAL LAND SURVEYOR NO. 2698

DECLARATION

KNOWN ALL PERSONS BY THESE PRESENTS: THAT KBG INVESTMENT COMPANY, INC., AN OREGON CORPORATION, DOES HEREBY MAKE, ESTABLISH AND DECLARE THE ANNEXED MAP OF "WILLAMETTE COMMERCIAL PARK" AS DESCRIBED IN THE ACCOMPANYING SURVEYOR'S CERTIFICATE TO BE A TRUE AND CORRECT MAP AND PLAT THEREOF, ALL LOTS BEING OF THE DIMENSIONS SHOWN AND ALL STREETS AND EASEMENTS OF THE WIDTHS THEREON SET FORTH; AND WE DO HEREBY DEDICATE TO THE PUBLIC AS PUBLIC WAYS ALL STREETS AS SHOWN ON SAID MAP; AND WE DO HEREBY GRANT ALL EASEMENTS NOT PREVIOUSLY GRANTED OR CONVEYED AS SHOWN OR NOTED ON SAID PLAT. THERE ARE NO WATER RIGHTS APPURTENANT TO THIS PLAT. THIS PLAT CONFORMS TO THE PROVISIONS OF CHAPTER 92, OREGON REVISED STATUTES, REQUIREMENTS, AND IS SUBJECT TO ALL RESTRICTIONS NOTED ELSEWHERE ON THIS PLAT.

KBG INVESTMENT COMPANY, INC.

HERB D. KOSS
PRESIDENT

ACKNOWLEDGEMENT

STATE OF OREGON)
)SS
COUNTY OF Clackamas)

THIS IS TO CERTIFY: THAT ON THIS 21ST DAY OF August, 1995, BEFORE ME, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, PERSONALLY APPEARED HERB D. KOSS, WHO BEING FIRST DULY SWORN DID SAY THAT HE IS THE PRESIDENT OF SAID KBG INVESTMENT COMPANY, INC., AND THAT SAID INSTRUMENT WAS SIGNED ON BEHALF OF SAID CORPORATION BY THE AUTHORITY AND APPROVAL OF ITS BOARD OF DIRECTORS, AND HE DOES HEREBY ACKNOWLEDGE SAID INSTRUMENT TO BE BY HIS OWN FREE ACT AND DEED.

Tracy Guy 8/18/95
NOTARY PUBLIC IN AND FOR
SAID COUNTY AND STATE

OFFICIAL SEAL
TRACY GUY
NOTARY PUBLIC-OREGON
COMMISSION NO. 037133
MY COMMISSION EXPIRES AUG. 18, 1998

CONSENT AFFIDAVIT

A SUBDIVISION PLAT CONSENT AFFIDAVIT FROM GEORGIA F. COONS HAS BEEN RECORDED AS DOCUMENT NUMBER 95-053801, CLACKAMAS COUNTY DEED RECORDS.

A SUBDIVISION PLAT CONSENT AFFIDAVIT FROM VERLA B. EMERSON HAS BEEN RECORDED AS DOCUMENT NUMBER 95-053800, CLACKAMAS COUNTY DEED RECORDS.

A SUBDIVISION PLAT CONSENT AFFIDAVIT FROM HENRY D. AND DOROTHY J. WAGENMAN, HAS BEEN RECORDED AS DOCUMENT NUMBER 95-053799, CLACKAMAS COUNTY DEED RECORDS.

REGISTERED
PROFESSIONAL
LAND SURVEYOR
Gary E. Paul
OREGON
JANUARY 17, 1995
GARY E. PAUL
2698
EXPIRES 12/31/1996

I CERTIFY THAT THIS TRACING IS AN EXACT DUPLICATE OF THE ORIGINAL PLAT OF WILLAMETTE COMMERCIAL PARK".

Gary E. Paul
P.L.S. NO. 2698

(SHEET 2 OF 3)
3202

104/24

WILLAMETTE COMMERCIAL PARK

(A REPLAT OF PORTIONS OF TRACTS 43 AND 44, "WILLAMETTE TRACTS")
IN THE LEMUEL A. SPARKS D.L.C. NO. 50
AND THE WILLIAM CLINTON D.L.C. NO. 66
SE1/4 SECTION 35, T.2S., R.1E., W.M.
NE1/4 SECTION 2, T.3S., R.1E., W.M.
CITY OF WEST LINN
CLACKAMAS COUNTY, OREGON

SURVEYED JULY 25, 1995
SHEET 3 OF 3

otak
incorporated
17355 S.W. BOONES FERRY ROAD
LAKE OSWEGO, OREGON 97035
(503)635-3618 FAX (503)635-5395

APPROVALS

APPROVED THIS 24TH DAY OF AUGUST, 1995
CITY OF WEST LINN PLANNING DIRECTOR
BY Michael V. Butts

APPROVED THIS 30th DAY OF August, 1995
CITY OF WEST LINN CITY ENGINEER
BY David Monson P.E.

APPROVED THIS 23rd DAY OF August, 1995
DEHAAS AND ASSOCIATES, INC.
CITY OF WEST LINN CITY SURVEYOR
BY Malcolm M. Clark P.L.S

APPROVED THIS 1ST DAY OF September, 1995
BOARD OF CLACKAMAS COUNTY COMMISSIONERS
BY
BY Darlene Hooley
BY

ALL TAXES, FEES, ASSESSMENTS OR OTHER CHARGES AS PROVIDED BY ORS 92.095 HAVE BEEN PAID THROUGH June 30, 1996

APPROVED THIS 5th DAY OF September, 1995
CLACKAMAS COUNTY ASSESSOR AND TAX COLLECTOR Ray Erland
BY Carol Maier
DEPUTY

BY Carol Williams
DEPUTY

APPROVED THIS 31th DAY OF August, 1995
CLACKAMAS COUNTY SURVEYOR, Thomas A. Milne
(FOR COMPLIANCE WITH ORS 209.250 ONLY)
BY Malcolm M. Clark
DEPUTY

INTERIOR CORNER MONUMENTATION

IN ACCORDANCE WITH O.R.S. 92.070, THE INTERIOR CORNERS OF THIS SUBDIVISION HAVE BEEN CORRECTLY SET WITH PROPER MONUMENTS AS APPROVED BY THE CITY OF WEST LINN. AN AFFIDAVIT HAS BEEN PREPARED REGARDING THE SETTING OF SAID MONUMENTS AND IS RECORDED IN DOCUMENT NO. 2001-000767, CLACKAMAS COUNTY DEED RECORDS.

THIS 4 DAY OF January, ~~19~~ 2001.

CLACKAMAS COUNTY SURVEYOR, —
BY Carl R. Clinton
DEPUTY

STATE OF OREGON)
)SS
COUNTY OF CLACKAMAS)

I DO HEREBY CERTIFY THAT THIS SUBDIVISION PLAT WAS RECEIVED FOR RECORD ON THE 5 DAY OF September, 1995 AT 1:51 O'CLOCK P.M.
John Kauffman
CLACKAMAS COUNTY CLERK
BY Melissa Taylor
DEPUTY

REGISTERED
PROFESSIONAL
LAND SURVEYOR
Gary E. Paul
OREGON
JANUARY 17, 1995
GARY E. PAUL
2698
EXPIRES 12/31/1996

I CERTIFY THAT THIS TRACING IS AN EXACT DUPLICATE OF THE ORIGINAL PLAT OF WILLAMETTE COMMERCIAL PARK".
Gary E. Paul
P.L.S. NO. 2698

(SHEET 3 OF 3)
3202

Property Detail Report

2180 8th Ct, West Linn, OR 97068-4365

APN: 01680363

Clackamas County Data as of: 11/20/2018

Owner Information

Owner Name:	Willamette Capital Invs LLC				
Vesting:	Corporation				
Mailing Address:	576 Glatt Cir, Woodburn, OR 97071-9675			Occupancy:	Absentee Owner

Location Information

Legal Description:	3202 Willamette Commercial Park Pt Lt 3			County:	Clackamas, OR
APN:	01680363	Alternate APN:	21E35D 00903	Census Tract / Block:	020700 / 1001
Munic / Twnshp:		Twnshp-Rng-Sec:	2S-1E-35	Legal Lot / Block:	3 /
Subdivision:	Willamette Commercial Park	Tract #:		Legal Book / Page:	
Neighborhood:	West Lynn	School District:	West Linn-Wilsonville School District 3J		
Elementary School:	Willamette Primary...	Middle School:	Athey Creek Middle...	High School:	West Linn High Sch...

Last Transfer / Conveyance - Current Owner

Transfer / Rec Date:	05/07/2014 / 05/07/2014	Price:	$1,025,000	Transfer Doc #:	2014.21480
Buyer Name:	Willamette Capital Invs LLC	Seller Name:	H & H WL 7 LLC	Deed Type:	Special Warranty Deed

Last Market Sale

Sale / Rec Date:	10/16/2009 / 10/22/2009	Sale Price / Type:	$825,000 / Confirmed	Deed Type:	Warranty Deed
Multi / Split Sale:		Price / Sq. Ft.:		New Construction:	
1st Mtg Amt / Type:		1st Mtg Rate / Type:		1st Mtg Doc #:	N/A
2nd Mtg Amt / Type:		2nd Mtg Rate / Type:		Sale Doc #:	2009.74444
Seller Name:	Pegasus Ents Trust				
Lender:					
Title Company:	First American Title				

Prior Sale Information

Sale / Rec Date:		Sale Price / Type:		Prior Deed Type:	
1st Mtg Amt / Type:		1st Mtg Rate / Type:		Prior Sale Doc #:	N/A
Prior Lender:					

Property Characteristics

Gross Living Area:		Total Rooms:		Year Built / Eff:	1996
Living Area:		Bedrooms:		Stories:	
Total Adj. Area:		Baths (F / H):		Parking Type:	
Above Grade:		Pool:		Garage #:	
Basement Area:		Fireplace:		Garage Area:	
Style:		Cooling:		Porch Type:	
Foundation:		Heating:		Patio Type:	
Quality:	Excellent	Exterior Wall:		Roof Type:	
Condition:		Construction Type:		Roof Material:	

Site Information

Land Use:	Office Building	Lot Area:	45,491 Sq. Ft.	Zoning:	GC
State Use:		Lot Width / Depth:		# of Buildings:	1
County Use:	201 - Commercial Property Improved	Usable Lot:		Res / Comm Units:	
Site Influence:		Acres:	1.04	Water / Sewer Type:	
Flood Zone Code:	X	Flood Map #:	41005C0257D	Flood Map Date:	06/17/2008
Community Name:	City Of West Linn	Flood Panel #:	0257D	Inside SFHA:	False

Tax Information

Assessed Year:	2018	Assessed Value:	$1,776,128	Market Total Value:	$2,739,859
Tax Year:	2018	Land Value:		Market Land Value:	$1,631,229
Tax Area:	003-002	Improvement Value:		Market Imprv Value:	$1,108,630
Property Tax:	$33,300.98	Improved %:		Market Imprv %:	40.46%
Exemption:		Delinquent Year:			

First American Title™ NATIONAL COMMERCIAL SERVICES

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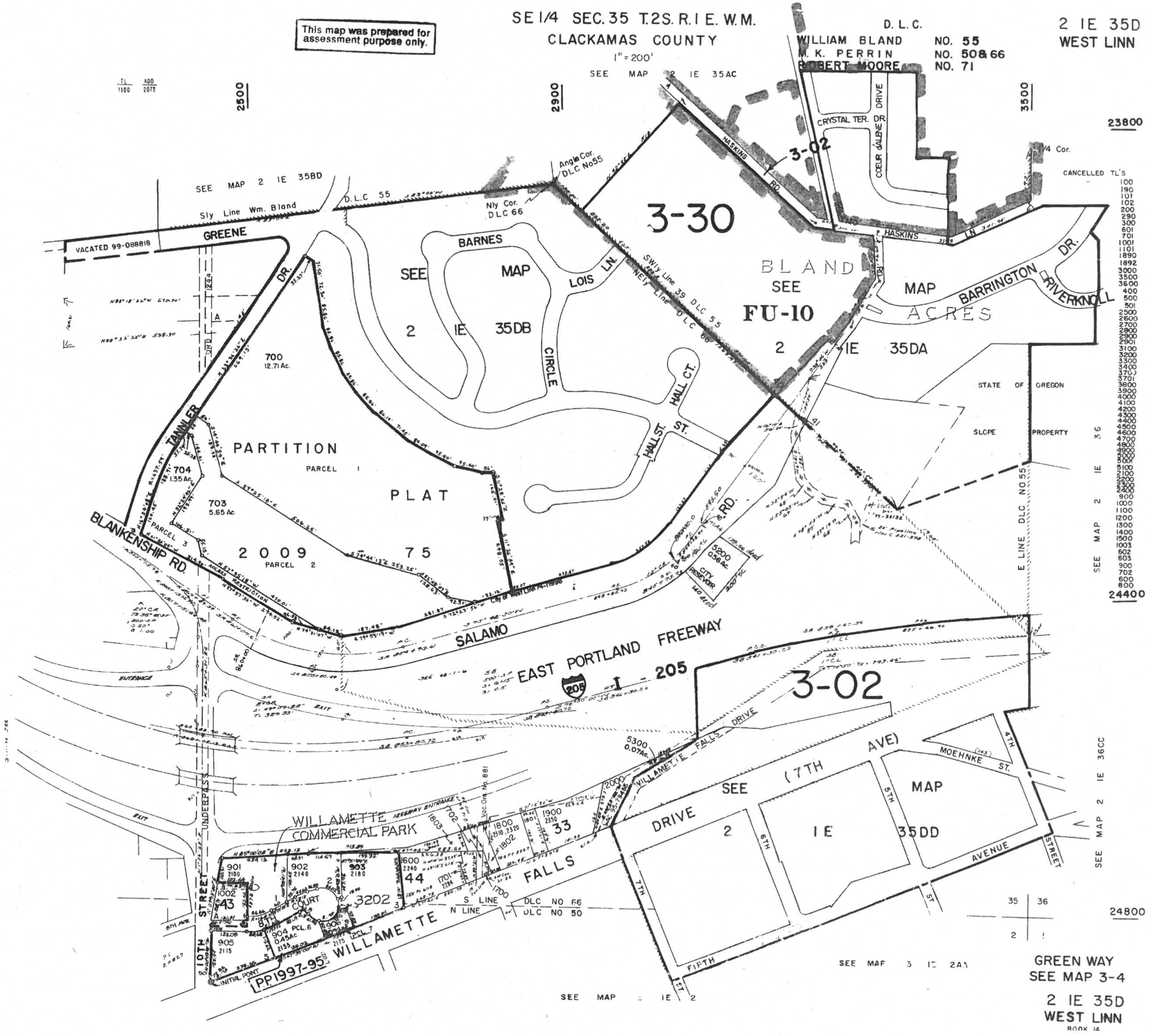
Disclaimer: This report is not an insured product or service or a representation of the condition of title to real property. It is not an abstract, legal opinion, opinion of title, title insurance, commitment or preliminary report, or any form of title insurance or guaranty. Estimated property values are: (i) based on available data; (ii) are not guaranteed or warranted; (iii) do not constitute an appraisal; and (iv) should not be relied upon in lieu of an appraisal. This report is issued exclusively for the benefit of the applicant therefor, and may not be used or relied upon by any other person. This report may not be reproduced in any manner without the issuing party's prior written consent. The issuing party does not represent or warrant that the information herein is complete or free from error, and the information herein is provided without any warranties of any kind, as-is, and with all faults. As a material part of the consideration given in exchange for the issuance of this report, recipient agrees that the issuing party's sole liability for any loss or damage caused by an error or omission due to inaccurate information or negligence in preparing this report shall be limited to the fee charged for the report. Recipient accepts this report with this limitation and agrees that the issuing party would not have issued this report but for the limitation of liability described above. The issuing party makes no representation or warranty as to the legality or propriety of recipient's use of the information herein.


SE 1/4 SEC. 35 T.2S. R.1 E. W.M.
CLACKAMAS COUNTY
1" = 200'
This map was prepared for assessment purpose only.
D. L. C.
WILLIAM BLAND NO. 55
M. K. PERRIN NO. 50 & 66
ROBERT MOORE NO. 71
2 IE 35D
WEST LINN
SEE MAP 2 IE 35AC
2500
2900
3500
23800
24400
24800
CANCELLED TL'S
100
190
101
102
200
290
300
601
701
1001
1101
1890
1892
3000
3500
3600
400
500
501
2500
2600
2700
2800
2900
2901
3100
3200
3300
3400
3701
3800
3900
4000
4100
4200
4300
4400
4500
4600
4700
4800
4900
5000
5001
5100
2100
2200
2300
2400
900
1000
1100
1200
1300
1400
1500
1003
602
603
900
702
600
800
HASKINS RD.
HASKINS LN.
CRYSTAL TER. DR.
COEUR D'ALENE DRIVE
1/4 Cor.
3-02
3-30
BLAND
SEE FU-10 2
MAP BARRINGTON ACRES 2 IE 35DA
BARRINGTON DR.
RIVERKNOLL
STATE OF OREGON SLOPE PROPERTY
E LINE DLC NO 55
SEE MAP 2 IE 36
SEE MAP 2 IE 36CC
Angle Cor. DLC No55
Nly Cor. DLC 66
SWly Line 39 DLC 55
NEly Line DLC 66
SEE MAP 2 IE 35BD
Sly Line Wm. Bland
D.L.C 55
VACATED 99-088818
GREENE
BARNES
SEE MAP 2 IE 35DB
LOIS LN.
CIRCLE
HALL CT.
HALL ST.
ST.
TANNLER DR.
PARTITION PLAT 2009 75
PARCEL 1
PARCEL 2
PARCEL 3
700 12.71 Ac.
703 5.65 Ac.
704 1.35 Ac.
BLANKENSHIP RD.
RD.
5200 0.56 Ac.
CITY RESERVOIR
41
SALAMO
EAST PORTLAND FREEWAY
I - 205
205
3-02
5300 0.07Ac.
WILLAMETTE FALLS DRIVE
(7TH AVE)
MOEHNKE ST.
4TH
5TH
6TH
7TH
FIFTH
AVENUE
STREET
SEE MAP 2 IE 35DD
2000
WILLAMETTE COMMERCIAL PARK
Voc. Ord. No. 881
1800 2310, 2320
1802
1803
1900 2350
33
702
1600 2240
44
1701 2284
1700
3202
901 2100
902 2140
903 2180
1002
43
904 0.45Ac. 2155
905 2115
PCL 6
PCL 7
COURT
PP1997-95
INITIAL POINT
10TH STREET
UNDERPASS
8TH AVE
S LINE
N LINE
DLC NO 66
DLC NO 50
FALLS
WILLAMETTE
EXIT
ENTRANCE
35 36
2 1
SEE MAP 3 IE 2A1
SEE MAP 3 IE 2
GREEN WAY SEE MAP 3-4
2 IE 35D
WEST LINN
BOOK 14
TL 1100
ADD 2072

43
20T

City, State: West Linn, Oregon
Address: W. 10th Street and Willamette Court
L/C: 036-0182 File: 12588

WHEN RECORDED, RETURN TO:
McDonald's Corporation
Development Legal Team
One McDonald's Plaza
Oakbrook, IL 60524

(Space reserved for recorder's use)

C134632 CHICAGO TITLE INSURANCE COMPANY

DECLARATION OF
RECIPROCAL EASEMENT AGREEMENT AND RESTRICTIONS

DATED: Sept. 18, 1995

BETWEEN:
KBG INVESTMENT COMPANY, INC.,
an Oregon corporation
21920 Willamette Drive
West Linn, Oregon 97068
Developer

AND:
McDONALD'S CORPORATION,
a Delaware corporation
One McDonald's Plaza
Oak Brook, Illinois 60521
Attention: Director, Real Estate
Legal Department
McDonald's

Developer is the owner of certain parcels of land in Clackamas County, Oregon described as Lots 1 through 5, WILLAMETTE COMMERCIAL PARK, City of West Linn, Clackamas County, Oregon (filed in the Plat Records of Clackamas County, Oregon as No. 3202 on Sept. 15, 1995) (the "Development"). Each platted Lot within the Development is individually a "Lot" or collectively, the "Lots."

Developer owns and is selling to McDonald's the real property described as Lot 1, WILLAMETTE COMMERCIAL PARK, City of West Linn, Clackamas County, Oregon ("Lot 1").

As used herein, the "Owner" is the owner(s) from time to time of one or more of the Lots.

NOW, THEREFORE, for value received, and in consideration of the mutual agreements of the parties set forth in this Declaration of Reciprocal Easement Agreement and Restrictions (the "Agreement"), the parties agree as follows:

1. **Easement for Reciprocal Parking and Ingress and Egress**. Each Owner will have a perpetual nonexclusive reciprocal ingress and egress easement and right-of-way for the purpose of vehicular parking and vehicular and pedestrian ingress and egress to and from its own Lot, and appurtenant to its Lot, over, upon and across the parking areas and spaces, driveways and access ways, sidewalks and walkways, exits and entrances, as such areas shall, from time to time be developed, altered or

modified on the Lots within the Development, subject to the provisions and restrictions set forth in this Agreement.

2. **Easement for Utilities**. Each Owner will have a perpetual, nonexclusive reciprocal easement for purposes of installing, operating, maintaining, repairing, replacing and renewing any and all utility lines and related utility facilities within the Utility Easement areas designated in the recorded Plat of the Development. No trees, permanent buildings or other structures shall be placed in or allowed to encroach upon the Utility Easement areas designated on such Plat. There will be no change of grade elevation or any excavation made upon such Utility Easement areas, without the prior written approval of the Owner of the Lot on which the Utility Easement area is located. Each Owner agrees to cause any utility lines and/or utility facilities within the Utility Easement area on its Lot to be maintained in good condition and repair and will not make within such Utility Easement area any change of grade elevation or excavation (other than for purposes of installing, operating, maintaining, repairing, replacing or renewing utility lines and/or utility facilities), without approval of the Owner(s) of Lot(s) utilizing such Utility Easement areas.

3. **Easements for Storm Sewer**. Each Owner will have a perpetual nonexclusive easement for purposes of tapping into and using storm sewer lines and storm water retention facilities and basin (collectively, "Storm Sewer Facilities") servicing the Development. The storm sewer lines will be located within the Storm Sewer Easement areas designated on the recorded Plat. The storm water retention facilities and basin will be located within an area to be developed by Developer near the northeast corner of Lot 3 of the Plat and may include a portion of Lot 3 (which may be replatted as a separate lot of such Plat, and combined with an adjoining parcel being acquired by Developer for purposes of constructing such storm water basin).

In consideration of the right to tap into and use the Storm Sewer Facilities, each Owner will bear, commencing upon completion of the Storm Sewer Facilities, its proportionate share of the necessary costs, if any, incurred in any calendar year for the operation, maintenance, insurance, taxes, repair, replacement and renewing (the "Operating Expenses") of the Storm Sewer Facilities. Such share of Operating Expenses will be paid within twenty (20) days after submission of invoice therefor, including reasonable back-up documentation concerning the actual Operating Expenses incurred. The operator of the Storm Sewer Facilities may elect, in its discretion, to bill Operating Expenses on a monthly or quarterly basis, based on estimated costs, subject to an annual reconciliation and adjustment. In the event the operator of the Storm Sewer Facilities dedicates them to the City of West Linn or other governmental or other public authority for public operation and maintenance, the the charges to Owners for such Storm Sewer Facilities will be made in accordance with the regulations of such public body.

4. **Access Easement for Adjoining Parcel**. Pursuant to the terms of the Conditions of Approval of the Commercial Site at 10th Street, West Linn. Developer, as Owner of Lot 3 of the Development, hereby creates an ingress and egress easement and right of way across Lot 3 of the Development, for the purpose of vehicular and pedestrian traffic (but not for parking purposes) to, from and between Willamette Falls Drive and the property that is adjacent to and situated immediately east of Lot 3 of the Development. The exact location of such access easement on Lot 3 of the Development will be as Developer may subsequently designate by written and ackowledged instrument, executed by Developer (or subsequent Owner of Lot 3), or as shown on the final site plan for the development of Lot 3 that may be submitted to and approved by the City of West Linn. Such easement shall be a perpetual mutual access easement, pursuant to which the owner of such adjoining property will have an access to and from Willamette Falls Drive and the Owners of Lots in the Development will be granted access across the accessways of such adjoining property to any public street to which such accessways connect.

5. **Owner's Responsibilities Generally.** Each Owner covenants and agrees to maintain in good condition and repair, or cause to be maintained and kept in repair, the parking, driveways and other easement areas situated on its respective Lot(s). The obligation of Owner to maintain, repair and keep in repair the parking, driveways and other easement areas shall, without limiting the generality thereof, include the following:

(A) Maintaining the surfaces at such grades and levels that they may be used and enjoyed as contiguous and homogeneous properties and maintaining the surfaces in a level, smooth and evenly covered condition with suitable ground cover, landscaping or one-inch asphalt dust cap, from and after the date of initial development of the Lot.

(B) Removing all papers, debris, snow, ice, filth and refuse and thoroughly sweeping the areas to the extent reasonably necessary to keep these areas in a neat, clean and orderly condition.

(C) Placing, keeping in repair and replacing any necessary appropriate directional signs, striping markers and lines, and operating, keeping in repair and replacing, when necessary, artificial lighting facilities as shall be reasonably required.

(D) Maintaining any perimeter walls in good condition and state of repair.

(E) Maintaining all landscaped areas, making such replacements of shrubs and other landscaping as is necessary, and keeping these areas at all times adequately weeded, fertilized and watered.

6. **Barriers.** No fences, walls or barriers to access will be erected on the common boundary lines between the Lots that would unreasonably interfere with the free flow and passage of vehicular and pedestrian traffic and parking area, to, from and between the Lots or the use of the Easement Areas, without the prior consent of each Owner having rights of use of such Easement Areas.

Notwithstanding the foregoing restriction on barriers, an Owner may install curbs, fences and landscaping on its Lot in order to define the Lot boundaries, provided such installations will be made in a manner that does not unreasonably interfere with such free flow and passage of traffic and parking.

7. **Parking; Limitation on Use of Off-Site Parking by Employees.** Each Owner will maintain parking spaces sufficient to satisfy applicable code, zoning and other legal requirements with respect to the development of improvements on its Lot. No Owner will have the right to use any parking spaces outside of its own Lot for purposes of parking by employees of such Owner or of the tenant(s), subtenant(s) and occupant(s) of its Lot.

8. **Rules and Regulations.** Each Owner shall have the right to enact reasonable rules concerning the conduct and operation of the parking areas and spaces, driveways and other easement areas situated on its Lot.

9. **Compliance with Laws and Regulations - Indemnification.** Each Owner covenants and agrees, with respect to its own Lot(s), to comply with all laws, rules, regulations and requirements of all public authorities and to indemnify, defend and hold each other Owner harmless against all claims, demands, losses, damages, liabilities and expenses and all suits, actions and judgments (including, but not limited to, costs and attorneys' fees) arising out of, or in any way related to, its failure to

maintain its Lot in a safe condition. Each Owner shall give prompt and timely notice of any claim made, or suit or action commenced, against the other Owner(s) which would in any way result in indemnification under this Agreement.

10. **Maintenance Expense**. Each Owner further covenants and agrees to pay the expense of maintaining and repairing the parking, ingress, egress and other easement areas situated on its Lot(s), including the payment of all real estate taxes and assessments, subject only to the right to defer payment in a manner provided by law and/or in connection with a bona fide contest of such taxes or assessments, so long as the rights of the other Owner(s) shall not be jeopardized by the deferring of payment.

11. Restrictions on Use.

11.1 **Restriction Benefitting Lot 1**. No Lot (or any portion thereof) within the Development, other than Lot 1, and no other property owned by Developer within one mile thereof, will be used for restaurant or food service purposes for a period of twenty (20) years from the date of recordation of this Agreement. The term "restaurant" as used in this clause shall apply to any type of food service establishment which serves any amount of any of the following products: (i) Hamburgers or any other type of beef products served in sandwich form; or (ii) Ground meat or meat substitute, or a combination of ground meat and meat substitute, or any other type of meat products, any of which are served in sandwich form; or (iii) Tacos, Burritos, Tamales, Enchiladas, Fajitas, or Nachos; provided, that (a) there shall be excluded from the restrictions of this Section 11.1 the operation of a Macheezmo Mouse Restaurants, Inc. restaurant facilities; (b) any food service establishment which offers as the primary method of service, for all meal times, food and drink orders taken by and served by a waiter or waitress at the customer's table is excluded from the term "restaurant" and from the restrictions in this Section 11.1; and (c) a convenience store is excluded from such restrictions, so long as it shall not sell hamburgers or ground meat substitutes served in sandwich form, or tacos burritos, tamales, enchiladas, fajitas or nachos.

In addition, and not by way of example, the following restaurants operating under the listed trade names, or operating under any successor trade names, are prohibited within the areas, and for the time period specified in this Section 11.1.

A & W Hamburgers
Arby's
Artic Circle
Big Boy
Bob Evans
Bob's Hamburgers
Burger Chef
Burger King
Burgerville USA
Carl's Jr.
Checkers
Dairy Queen
Del Taco
El Pollo Loco
Friendly's
Fuddrucker's
Hardee's
Hot-N-Now
In and Out Burgers
JB's
Jack-In-the Box
Rally's
Rax
Roy Rogers
Spunky's
Taco Bell
Taco Time
Wendy's
White Castle

11.2 **Restriction Benefitting Lot 5**. No Lot (or any portion thereof) within the Development, other than Lot 5, will be used as an automotive vehicle service station or gasoline product service station (but this Section 11.2 will not be construed to apply to or restrict the operation of any car wash, oilery, or tire sale facility and/or automobile repair facility on any Lot in the Development).

11.3 **Acceptance of Restrictions**. Any lease or occupancy agreement subsequently entered into with respect to a Lot will require that the tenant's use (and any changes to the original use by the tenant) must comply with applicable laws and recorded easements and restrictions affecting the property (including this Agreement), or contain a specific reference to the need to comply with the restrictions in Sections 11.1 and 11.2. By execution of this Agreement or by acceptance of a deed to the Lot, each Owner acknowledges that this Section 11 is an essential part of this Agreement and, further, that the restrictions set forth in Section 11 are fair and reasonable to assure each Owner of its expected benefits under this Agreement and orderly and beneficial development of the Development, but not to control competition.

12. **Maintenance of Lot.** Each Owner (and its tenants and subtenants of the Lot) will maintain the Lot (including, without limitation, the general cleanliness, operation, and preservation of such Lot) in good condition. This Agreement will not be construed as requiring an Owner to develop the Lot. Prior to such development, an Owner will maintain the Lot free of rubbish and debris and in a safe and sightly condition. If the Lot remains undeveloped for more than twelve (12) months after the recordation of the deed from Developer conveying the Lot to an Owner, the Lot will be landscaped on an interim basis or otherwise covered by a suitable ground cover, until it is developed. An undeveloped Lot will not be surrounded by a fence, and Owner will obtain Developer's reasonable approval of the size and quality of sign(s) on a Lot advertising the availability of the Lot for sale, lease or development, prior to its initial development (but no such approval will be required after the initial development of the Lot).

13. **Term.** This Agreement shall be perpetual (except as provided below) and shall run with the land and shall be binding on and shall inure to the benefit of the parties hereto, their heirs, successors or assigns. By unanimous consent, the Owners (or their successors and assigns, as owner of the respective Lots) may agree to terminate this Agreement, in which case they shall cause to be recorded an instrument acknowledging such termination.

14. **Default and Remedies.**

14.1 **Defaults.** A person shall be deemed to be in default of this Agreement upon the expiration of thirty (30) days from receipt of written notice from any Owner specifying the particulars in which such person has failed to perform such person's obligations under this Agreement, unless such person has, prior to the expiration of the cure period, cured the matters specified in the notice of default. However, such person shall not be deemed to be in default if such failure cannot reasonably be cured within the thirty (30) day cure period, and such person is using good faith, diligent efforts to cure the matters specified in the notice of default.

14.2 **Injunctive Relief.** In the event of a violation or threatened violation by any person of the restrictions contained in this Agreement, any or all of the Owners shall, in addition to any other remedy available at law or in equity, have the right to enjoin such violation or threatened violation in a court of competent jurisdiction, it being acknowledged that monetary damages will be an insufficient remedy for such a violation.

14.3 **Right of Self-Help.** Whenever an Owner is in default under Section 14.1, and without limiting any other rights that any other Owner may have in the event of such a default, at law or in equity, any Owner shall have the right (but not the obligation) to perform the obligation of the defaulting Owner giving rise to such default, provided that the performing Owner first gives the defaulting Owner at least thirty (30) days' notice of the performing Owner's intention to perform the obligation, and provided that the defaulting Owner has not cured the default prior to expiration of such thirty (30) day period. The performing Owner shall be entitled to reimbursement from the defaulting Owner for reasonable costs incurred in performing or contracting for performance of such obligations. Such payment will be due and payable on demand, without contest, upon delivery of its invoice, together with interest at the lower of (1) the rate of ten percent (10%) per annum, or (2) the maximum rate permissible from time to time under applicable law, from the date of the expenditure or the date when it shall have become due to the date of payment in full. The provisions of this paragraph shall be in all respects subject and subordinate to the lien of any mortgages or deeds of trust at any time or from time to time on the land of the defaulting party and the rights of the holder or holders of any mortgages or deeds of trust.

15. **Covenants Running with Land**. The rights contained within this Agreement shall run with the land and inure to, and be for the benefit of, Declarant, McDonald's, and each subsequent Owner of any Lot and their successors and assigns. Easement rights under this Agreement may be used by such Owners and the tenants, sublenants, licensees, concessionaires, mortgagees in possession, customers and business invitees of such parties, subject to the restrictions in Sections 7 and 8 concerning employee parking.

16. **Status of Title; Quiet Enjoyment**. This Agreement is granted subject to all prior easements and encumbrances of record. Each party warrants that it will defend the title and the other Owners' interests under this Agreement against any mortgage, tax lien or construction lien claim affecting the Development or Lot which asserts priority over the interest of the other Owners under this Agreement and which is attributable to the party itself or its tenants, subtenants or occupants.

17. **General Provisions**.

17.1 **Termination of Liability**. Whenever a transfer of ownership of Lot takes place, the transferor will not be liable for a breach of this Agreement occurring after a transfer, except that the grantee shall remain liable if it transfers its interest to a licensee or subsidiary corporation.

17.2 **Construction**. The rule of strict construction does not apply to this grant. This grant shall be given a reasonable construction so that the intention of the parties to convey a commercially usable right of enjoyment to each Owner holding easement rights is carried out.

17.3 **Waiver**. Failure at any time to require performance of any provision of this Agreement shall not limit a party's right to enforce the provision. Any waiver of any breach of any provision shall not be a waiver of any succeeding breach or a waiver of any provision of this Agreement.

17.4 **Attorneys' Fees**. In the event suit or action is instituted to interpret or enforce the terms of this Agreement, the prevailing party shall be entitled to recover from the other party such sum as the court may adjudge reasonable as attorneys' fees at trial, on appeal of such suit or action, and on any petition for review, in addition to all other sums provided by law.

17.5 **Indemnity**. Each party shall defend, indemnify and hold the other harmless from any claim, loss, liability or expense (including reasonable attorneys' fees) arising out of or in connection with the party's own negligence or failure to comply with the terms, restrictions and provisions of this Agreement.

17.6 **Entire Agreement**. This Agreement supersedes and replaces all written and oral agreements previously made or existing between the parties with respect to the matters set forth above.

17.7 **Protection of Rights of Mortgagees**. No breach of the provisions in this Agreement shall defeat or render invalid the lien of any mortgage(s) or deed(s) of trust now or hereunder executed which affects the parties' respective interests pursuant to this Agreement; provided, however, that upon any sale under foreclosure of any mortgage(s) or under the provisions of any deed(s) of trust, any purchaser at such sale, and its successors and assigns, shall hold any and all property interest so purchased subject to all of the provisions of this Agreement.

17.8 **Governing Law**. This Agreement will be governed and construed in accordance with the laws of the State of Oregon.

17.9 **Appurtenant Rights**. This Agreement shall be binding upon the parties hereto, their respective successors and assigns, and appurtenant to the real property which is described herein.

17.10 **Dominant and Servient Estates**. Each right granted pursuant to the provisions of this Agreement are expressly or the benefit of the property described above. The property so benefitted shall be the dominant estate and the property burdened by the obligations shall be the servient estate.

17.11 **Status Certificate, Information**. Within twenty (20) days after receipt of a written request, a party shall promptly deliver a written status certificate to the other party stating (i) whether this Agreement is unmodified and in full force and effect, and (ii) whether (to the best of the party's knowledge) the other party is in compliance with its obligations hereunder, and any other matters that may be reasonably requested.

17.12 **Notices**. Notices given under this Agreement shall be in writing and will be deemed given and effective three (3) business days after being deposited in the U.S. Mails, postage prepaid, and sent by registered or certified mail to the other party's address for notices. Each party shall give notice to each other party of its address for notice by written notice to the other party. In the absence of such notice of a party's address for notice purposes, any notice under this Agreement may be given to the address to which property tax statements are delivered by the taxing authority.

17.13 **Amendments**. Except as otherwise set forth herein, this Agreement may not be modified, amended, or terminated except by the written agreement of both parties. A party may waive one or more of its rights under this Agreement in writing signed by the party, and such writing need not be recorded. Otherwise, no modification or amendment of any provision of this Agreement shall be binding unless signed by both parties and recorded in the real property records of the County in which the Development is located.

17.14 **Effect of Invalidation**. If any provision of this Agreement is held to be invalid or unenforceable for any reason, the validity of the remaining provisions of this Agreement shall not be affected thereby.

17.15 **Counterparts**. This Agreement may be executed simultaneously or separately in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the parties have caused this instrument to be duly executed as of the day and year first written above.

DEVELOPER: **KBG INVESTMENT COMPANY, INC.**

By: ____________________

WITNESS:

McDONALD'S: **McDONALD'S CORPORATION**

By: ____________________
Assistant Vice President

By: ____________________
Assistant Secretary

WITNESS:

____

STATE OF OREGON)
) ss.
County of Clackamas)

The foregoing instrument was acknowledged before me this 18 day of September, 1995 by Herb D. Koss, the President of **KBG INVESTMENT COMPANY, INC.**, an Oregon corporation, on behalf of the corporation.

IN WITNESS WHEREOF, I have hereunder set my hand and affixed my official seal the day and year first above written.

Judith [illegible]
Notary Public in and for the
State of Oregon
Residing at: Portland
My commission expires: 4/24/97

OFFICIAL SEAL
JUDITH [illegible]
NOTARY PUBLIC-OREGON
COMMISSION NO [illegible]
MY COMMISSION EXPIRES APRIL 24, 1997

STATE OF ILLINOIS)
) ss.
County of DuPage)

On this 14th day of September, 1995, personally appeared before me Joseph R. Thomas, known to me to be the Assistant Vice President of **McDONALD'S CORPORATION**, a Delaware corporation, and did say that he executed said instrument on behalf of the corporation by its authority duly given, and acknowledged the said instrument to be the voluntary act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

PATRICIA A VACCARO
MY COMMISSION EXP. OCT. 8,1997

Patricia Vaccaro
Notary Public in and for the
State of Illinois
My commission expires: October 8, 1997

95-056837
STATE OF OREGON
CLACKAMAS COUNTY
Received and placed in the public
records of Clackamas County
RECEIPT# AND FEE: 26435 $66.00
DATE AND TIME: 09/18/95 03:31 PM
JOHN KAUFFMAN, COUNTY CLERK

#9

PC-5 TVFR COMMENTS

TVF&R
Tualatin Valley
Fire & Rescue

www.tvfr.com

December 6, 2018

Jennifer Arnold
Associate Planner
City of West Linn
22500 Salamo Road
West Linn, Oregon 97068

Re: DR-18-08 New Commercial buildings, 2180 8th Court
Tax Lot I.D: 21E35D 00903

Jennifer,

Thank you for the opportunity to review the proposed application surrounding the above named development project. These notes are provided in regards to the application submitted to the City of West Linn on **September 18, 2018**. There may be more or less requirements needed based upon the final project design, however, Tualatin Valley Fire & Rescue will endorse this proposal predicated on the following criteria and conditions of approval.

FIRE APPARATUS ACCESS:

1. **FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDINGS AND FACILITIES:** Access roads shall be within 150 feet of all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building or facility. An approved turnaround is required if the remaining distance to an approved intersecting roadway, as measured along the fire apparatus access road, is greater than 150 feet. (OFC 503.1.1)

2. **DEAD END ROADS AND TURNAROUNDS:** Dead end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround. Diagrams can be found in the corresponding guide that is located at http://www.tvfr.com/DocumentCenter/View/1296. (OFC 503.2.5 & D103.1) **The provided site plan does not appear to meet the above requirements. Please provide an approved turnaround.**

3. **FIRE APPARATUS ACCESS ROAD EXCEPTION FOR AUTOMATIC SPRINKLER PROTECTION:** When buildings are completely protected with an approved automatic fire sprinkler system, the requirements for fire apparatus access may be modified as approved by the Fire Marshal. (OFC 503.1.1)

4. **FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE:** Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet (26 feet adjacent to fire hydrants (OFC D103.1)) and an unobstructed vertical clearance of not less than 13 feet 6 inches. (OFC 503.2.1 & D103.1)

5. **NO PARKING SIGNS:** Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, “No Parking” signs shall be installed on one or both sides of the roadway and in turnarounds as needed. Signs shall read “NO PARKING - FIRE LANE” and shall be installed with a clear space above grade level of 7 feet. Signs shall be 12 inches wide by 18 inches high and shall have red letters on a white reflective background. (OFC D103.6)

Command & Business Operations Center
and North Operating Center
11945 SW 70th Avenue
Tigard, Oregon 97223-9196
503-649-8577

South Operating Center
8445 SW Elligsen Road
Wilsonville, Oregon
97070-9641
503-259-1500

Training Center
12400 SW Tonquin Road
Sherwood, Oregon
97140-9734
503-259-1600

6. **NO PARKING:** Parking on emergency access roads shall be as follows (OFC D103.6.1-2):
   1. 20-26 feet road width – no parking on either side of roadway
   2. 26-32 feet road width – parking is allowed on one side
   3. Greater than 32 feet road width – parking is not restricted

7. **PAINTED CURBS:** Where required, fire apparatus access roadway curbs shall be painted red (or as approved) and marked “NO PARKING FIRE LANE” at 25 foot intervals. Lettering shall have a stroke of not less than one inch wide by six inches high. Lettering shall be white on red background (or as approved). (OFC 503.3) **Tualatin Valley Fire & Rescue will consult on required fire lane markings once a final site circulation plan is approved.**

8. **FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS:** Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet and shall extend 20 feet before and after the point of the hydrant. (OFC D103.1)

9. **SURFACE AND LOAD CAPACITIES:** Fire apparatus access roads shall be of an all-weather surface that is easily distinguishable from the surrounding area and is capable of supporting not less than 12,500 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). Documentation from a registered engineer that the final construction is in accordance with approved plans or the requirements of the Fire Code may be requested. (OFC 503.2.3)

10. **TURNING RADIUS:** The inside turning radius and outside turning radius shall not be less than 28 feet and 48 feet respectively, measured from the same center point. (OFC 503.2.4 & D103.3)

11. **ANGLE OF APPROACH/GRADE FOR TURNAROUNDS:** Turnarounds shall be as flat as possible and have a maximum of 5% grade with the exception of crowning for water run-off. (OFC 503.2.7 & D103.2)

12. **ACCESS DURING CONSTRUCTION:** Approved fire apparatus access roadways shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. Temporary address signage shall also be provided during construction. (OFC 3309 and 3310.1)

13. **TRAFFIC CALMING DEVICES:** Shall be prohibited on fire access routes unless approved by the Fire Marshal. (OFC 503.4.1). Traffic calming measures linked here: http://www.tvfr.com/DocumentCenter/View/1578

FIREFIGHTING WATER SUPPLIES:

14. **COMMERCIAL BUILDINGS – REQUIRED FIRE FLOW:** The minimum fire flow and flow duration shall be determined in accordance with OFC Table B105.2. The required fire flow for a building shall not exceed the available GPM in the water delivery system at 20 psi residual. (OFC B105.3)
    Note: OFC B106, Limiting Fire-Flow is also enforced, except for the following:
    - The maximum needed fire flow shall be 3,000 GPM, measured at 20 psi residual pressure.
    - Tualatin Valley Fire & Rescue does not adopt Occupancy Hazards Modifiers in section B105.4-B105.4.1

15. **FIRE FLOW WATER AVAILABILITY:** Applicants shall provide documentation of a fire hydrant flow test or flow test modeling of water availability from the local water purveyor if the project includes a new structure or increase in the floor area of an existing structure. Tests shall be conducted from a fire hydrant within 400 feet for commercial projects, or 600 feet for residential development. Flow tests will be accepted if they were performed within 5 years as long as no adverse modifications have been made to the supply system. Water availability information may not be required to be submitted for every project. (OFC Appendix B) **Adequate fire flow will need to be verified.**

FIRE HYDRANTS:

16. **FIRE HYDRANTS – COMMERCIAL BUILDINGS:** Where a portion of the building is more than **400** feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the building, on-site fire hydrants and mains shall be provided. (OFC 507.5.1)
    - This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system.
    - The number and distribution of fire hydrants required for commercial structure(s) is based on Table C105.1, following any fire-flow reductions allowed by section B105.3.1. Additional fire hydrants may be required due to spacing and/or section 507.5 of the Oregon Fire Code.

    Fire hydrant spacing will need to be verified.

17. **FIRE HYDRANT(S) PLACEMENT:** (OFC C104)
    - Existing hydrants in the area may be used to meet the required number of hydrants as approved. Hydrants that are up to 600 feet away from the nearest point of a subject building that is protected with fire sprinklers may contribute to the required number of hydrants. (OFC 507.5.1)
    - Hydrants that are separated from the subject building by railroad tracks shall not contribute to the required number of hydrants unless approved by the Fire Marshal.
    - Hydrants that are separated from the subject building by divided highways or freeways shall not contribute to the required number of hydrants. Heavily traveled collector streets may be considered when approved by the Fire Marshal.
    - Hydrants that are accessible only by a bridge shall be acceptable to contribute to the required number of hydrants only if approved by the Fire Marshal.

18. **PRIVATE FIRE HYDRANT IDENTIFICATION:** Private fire hydrants shall be painted red in color. Exception: Private fire hydrants within the City of Tualatin shall be yellow in color. (OFC 507)

19. **FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD:** Fire hydrants shall be located not more than 15 feet from an approved fire apparatus access roadway unless approved by the Fire Marshal. (OFC C102.1)

20. **REFLECTIVE HYDRANT MARKERS:** Fire hydrant locations shall be identified by the installation of blue reflective markers. They shall be located adjacent and to the side of the center line of the access roadway that the fire hydrant is located on. In the case that there is no center line, then assume a center line and place the reflectors accordingly. (OFC 507)

21. **FIRE DEPARTMENT CONNECTION (FDC) LOCATIONS:** FDCs shall be located within 100 feet of a fire hydrant (or as approved). Hydrants and FDC's shall be located on the same side of the fire apparatus access roadway or drive aisle, fully visible, and recognizable from the street or nearest point of the fire department vehicle access or as otherwise approved. (OFC 912.2.1 & NFPA 13)
    - Fire department connections (FDCs) shall normally be located remotely and outside of the fall-line of the building when required. FDCs may be mounted on the building they serve, when approved.
    - FDCs shall be plumbed on the system side of the check valve when sprinklers are served by underground lines also serving private fire hydrants.

BUILDING ACCESS AND FIRE SERVICE FEATURES

22. **KNOX BOX:** A Knox Box for building access may be required for structures and gates. See Appendix B for further information and detail on required installations. Order via www.tvfr.com or contact TVF&R for assistance and instructions regarding installation and placement. (OFC 506.1)

23. **FIRE PROTECTION EQUIPMENT IDENTIFICATION:** Rooms containing controls to fire suppression and detection equipment shall be identified as "Fire Control Room." Signage shall have letters with a minimum of 4 inches high with a minimum stroke width of 1/2 inch, and be plainly legible, and contrast with its background. (OFC 509.1)

24. **PREMISES IDENTIFICATION:** New and existing buildings shall have approved address numbers; building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property, including monument signs. These numbers shall contrast with their background. Numbers shall be a minimum of 4 inches high with a minimum stroke width of 1/2 inch. (OFC 505.1)

If you have questions or need further clarification, please feel free to contact me at **503-259-1510.**

Sincerely,

Jason Arn

Jason Arn
Deputy Fire Marshal II

Email Jason.arn@tvfr.com

Cc: file

A full copy of the New Construction Fire Code Applications Guide for Commercial and Multi-Family Development is available at http://www.tvfr.com/DocumentCenter/View/1296

TVF&R®
Tualatin Valley
Fire & Rescue

www.tvfr.com

December 20, 2018

Jennifer Arnold
Associate Planner
City of West Linn
22500 Salamo Road
West Linn, Oregon 97068

Re: DR-18-08 New Commercial buildings, 2180 8th Court (Amended from 12/6/18 version)
Tax Lot I.D: 21E35D 00903

Jennifer,

Thank you for the opportunity to review the proposed application surrounding the above named development project. These notes are provided in regards to the application submitted to the City of West Linn on **September 18, 2018 and referencing the revised site plan dated December 19, 2018**. There may be more or less requirements needed based upon the final project design, however, Tualatin Valley Fire & Rescue will endorse this proposal predicated on the following criteria and conditions of approval.

To further clarify, the following comments are in reference only to the project where it leaves the public right of way – past the apron of the existing public cul-de-sac and enters on to the private property.

FIRE APPARATUS ACCESS:

1. **FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDINGS AND FACILITIES:** Access roads shall be within 150 feet of all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building or facility. An approved turnaround is required if the remaining distance to an approved intersecting roadway, as measured along the fire apparatus access road, is greater than 150 feet. (OFC 503.1.1) **The revised site plan dated 12/19/18 meets the above requirements.**

2. **DEAD END ROADS AND TURNAROUNDS:** Dead end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround. Diagrams can be found in the corresponding guide that is located at http://www.tvfr.com/DocumentCenter/View/1296. (OFC 503.2.5 & D103.1) **Current plan meets. The revised site plan dated 12/19/18 meets the above requirements.**

3. **FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE:** Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet (26 feet adjacent to fire hydrants (OFC D103.1)) and an unobstructed vertical clearance of not less than 13 feet 6 inches. (OFC 503.2.1 & D103.1)

4. **NO PARKING SIGNS:** Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, "No Parking" signs shall be installed on one or both sides of the roadway and in turnarounds as needed. Signs shall read "NO PARKING - FIRE LANE" and shall be installed with a clear space above grade level of 7 feet. Signs shall be 12 inches wide by 18 inches high and shall have red letters on a white reflective background. (OFC D103.6)

5. **NO PARKING:** Parking on emergency access roads shall be as follows (OFC D103.6.1-2):
    1. 20-26 feet road width – no parking on either side of roadway
    2. 26-32 feet road width – parking is allowed on one side
    3. Greater than 32 feet road width – parking is not restricted

6. **PAINTED CURBS:** Where required, fire apparatus access roadway curbs shall be painted red (or as approved) and marked "NO PARKING FIRE LANE" at 25 foot intervals. Lettering shall have a stroke of not less than one inch wide by six inches high. Lettering shall be white on red background (or as approved). (OFC 503.3) **Tualatin Valley Fire & Rescue will consult on required fire lane markings once a final site circulation plan is approved.**

7. **FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS:** Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet and shall extend 20 feet before and after the point of the hydrant. (OFC D103.1)

8. **SURFACE AND LOAD CAPACITIES:** Fire apparatus access roads shall be of an all-weather surface that is easily distinguishable from the surrounding area and is capable of supporting not less than 12,500 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). Documentation from a registered engineer that the final construction is in accordance with approved plans or the requirements of the Fire Code may be requested. (OFC 503.2.3)

9. **TURNING RADIUS:** The inside turning radius and outside turning radius shall not be less than 28 feet and 48 feet respectively, measured from the same center point. (OFC 503.2.4 & D103.3)

10. **ANGLE OF APPROACH/GRADE FOR TURNAROUNDS:** Turnarounds shall be as flat as possible and have a maximum of 5% grade with the exception of crowning for water run-off. (OFC 503.2.7 & D103.2)

11. **ACCESS DURING CONSTRUCTION:** Approved fire apparatus access roadways shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. Temporary address signage shall also be provided during construction. (OFC 3309 and 3310.1)

12. **TRAFFIC CALMING DEVICES:** Shall be prohibited on fire access routes unless approved by the Fire Marshal. (OFC 503.4.1). Traffic calming measures linked here: http://www.tvfr.com/DocumentCenter/View/1578

FIREFIGHTING WATER SUPPLIES:

13. Fire flow, hydrant public/private number and placement, Fire Department Connection(s), etc. may be required based on final building design. These items must be reviewed and approved before the Building Permit Issuance. Details can be located at http://www.tvfr.com/DocumentCenter/View/1296.

If you have questions or need further clarification, please feel free to contact me at **503-259-1510.**

Sincerely,

Jason Arn

Jason Arn
Deputy Fire Marshal II

Email Jason.arn@tvfr.com

Cc: file

A full copy of the New Construction Fire Code Applications Guide for Commercial and Multi-Family Development is available at http://www.tvfr.com/DocumentCenter/View/1296

PC-6 ODOT COMMENTS

Oregon
Kate Brown, Governor

Department of Transportation
Region 1 Headquarters
123 NW Flanders Street
Portland, Oregon 97209
(503) 731.8200
FAX (503) 731.8259

December 17, 2018 ODOT #8227

ODOT Response

Project Name: Shari's Restaurant Redevelopment	**Applicant:** Ed Bruin
Jurisdiction: City of West Linn	**Jurisdiction Case #:** DR-18-08
Site Address: 2180 8th Court, West Linn, OR	**State Highway: I-205**

The site of this proposed land use action is in the vicinity of the I-205/10th Street Interchange. As discussed during the City of West Linn's most recent Transportation System Plan (TSP) update, ODOT has interests along 10th Street between the Blankenship Road/Salamo Road and Willamette Falls Drive intersections. ODOT has permitting authority for the interchange facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation.

COMMENTS/FINDINGS

There are a number of projects in the City of West Linn's TSP that are related to the I-205/10th Street Interchange area, including, but not limited to, Project Numbers M18 through M24.

TSP Project Number M19: 8th Court

As identified in the City's TSP, Project Number M19 is directly relevant to this property and development. Project Number M19 identifies establishment of:

> "… a crossover easement from the 8th Court terminus to Willamette Falls Drive when development occurs to preserve ingress and egress for existing and future development and provide relief to the 8th Court/10th Street intersection and secondary emergency access." *(See City of West Linn Transportation System Plan, Table 24: Motor Vehicle Plan Projects)*

This property and its redevelopment will be the first in the sequence of development to achieve this project. As noted by the applicant during the pre-application meeting an existing easement is in place. The applicant, City, and ODOT should work together to ensure that the existing easement meets the intent of this project by (1) providing *public* ingress-egress access through the properties, and (2) is adequately designed for safe and efficient access. As related to Project Number M19, this development and its outcome will set a precedence for future development to the east.

ODOT RECOMMENDED LOCAL CONDITIONS OF APPROVAL

☒ Verify and/or establish necessary public crossover easements to achieve City of West Linn's Transportation System Plan Project Number M19. Further coordination with the City and ODOT may be required.

Signs:

☒ Off-premises signs require a permit through the ODOT Outdoor Advertising Sign program (ORS 377.725). To determine whether or not a sign will be on or off premises contact Jill Hendrickson (ODOT Right-of-Way 503.986.3635).

☒ Private signs are not permitted in the state highway right of way (ORS 377.700-377.840).

Please send a copy of the Notice of Decision including conditions of approval to:

ODOT Region 1 Planning
Development Review
123 NW Flanders St
Portland, OR 97209

Region1_DEVREV_Applications@odot.state.or.us

Development Review Planner: Marah Danielson	503.731.8258 marah.b.danielson@odot.state.or.us
Traffic Contact: Avi Tayar, P.E.	503.731.8221
District Contact: James Nelson	971.673.2942