CITY OF TUALATIN
Planning Division

ARCHITECTURAL REVIEW

New development, or substantial redevelopment, of multi-family ("common wall") residential, commercial, and industrial use properties is generally subject to Architectural Review (AR). The Architectural Review decision by the Planning Department considers all site design elements, including: building height and appearance, lighting, landscaping, tree preservation, pedestrian circulation, parking, and loading facilities.

Architectural Review also encompasses a Public Facilities Review led by the Engineering Department, to evaluate transportation and access management; sewer, water, and stormwater; water quality and erosion control; and protection of environmentally sensitive areas.

Both departments coordinate with other City departments and outside agencies, such as Tualatin Valley Fire and Rescue and Clean Water Services, to ensure compliance with all applicable development standards.

MINOR ARCHITECTURAL REVIEW (TYPE I): Minor Architectural Review (MAR) is used for small exterior modifications to an existing site or building as described in TDC 33.020(7). See the separate MAR packet for details.

TYPE II: This land use procedure is used when the standards and criteria require limited discretion and interpretation. Type II decisions are decided by staff and require public notice with an opportunity for appeal to the Architectural Review Board, or to City Council for Public Facility review.

TYPE III: This land use procedure requires discretion made by the Architectural Review Board to implement established policy. Type III decisions require public notice and are decided at a public hearing, with an opportunity for appeal to the City Council.

General thresholds for Type III Review are as follows:

- Commercial Buildings: 50,000 square feet and larger
- Industrial Buildings: 150,000 square feet and larger
- Multifamily Housing: 100 units and above, or abutting a single family zone

PRIOR TO APPLICATION SUBMITTAL

- Attend a Pre-Application Meeting (TDC 32.110)
- Notice and host a Neighborhood/Developer Meeting (TDC 32.120)

Following submittal of an Architectural Review application, the applicant must post a sign on the subject property to provide notice of the pending land use application.

SUBMITTAL REQUIREMENTS

Please submit all materials in digital media format (USB preferred), plus two paper copies of your site plans.
Details regarding submittal requirements are listed in TDC 32.140, 33.020(4), and 33.110(4).

GENERAL:
☐ Land Use Application form
☐ Narrative addressing all applicable approval criteria and standards
☐ Title Report
☐ Hydraulic Modeling Worksheet
☐ Service Provider Letter from Clean Water Services
☐ Service Provider Letter/Agreement from Republic Services

PLANS:
☐ Existing Conditions
☐ Site Plan
☐ Tree Preservation Plan
☐ Grading Plan
☐ Utility Plan
☐ Landscape Plan
☐ Lighting Plan
☐ Color Elevations
☐ Materials Board

PUBLIC NOTICE:
☐ Documentation for Neighborhood Developer Meeting
☐ Certification of Sign Posting

TYPICAL REPORTS:
☐ Tree Assessment Report
☐ Transportation Impact Study
☐ Stormwater Management Report

APPROVAL CRITERIA
The applicant's plans and narrative must work together to demonstrate that all applicable criteria are met. The following criteria apply to all AR's.

Other criteria, such as zoning and overlay standards, or standards applicable to a specific use, also apply.

Tualatin Development Code:
- Chapter 33.110 Tree Removal
- Chapter 73A: Site Design
- Chapter 73B: Landscaping
- Chapter 73C: Parking Standards
- Chapter 73D: Waste Management Standards
- Chapter 74: Public Improvement
- Chapter 75: Access Management

Tualatin Municipal Code:
- Chapter 03-02: Sewer Regulations
- Chapter 03-03: Water Service
- Chapter 03-05: Soil Erosion, Surface Water Management, Water Quality Facilities

Hedges D – Fleet Parking Lot

11507 SW 115th Avenue (private street), Tualatin, OR 97062

Table of Contents - For AR Submittal

1. General

a. Land Use Application – Type II
b. Narrative addressing all applicable approval criteria and standards
c. Title Report
d. Hydraulic Modeling Worksheet
e. Service Provider letter from Clean Water Services.
f. Service Provider letter/agreement from Republic Services

2. Plans

a. Existing Conditions – See sheet C0.01
b. Site Plan – See sheet A1.1
c. Tree Preservation Plan – (none)
d. Grading Plan – See sheet C1.20 – C1.30
e. Utility Plan - See sheet C1.30
f. Landscape Plan – See sheet L1.0
g. Lighting Plan – See sheet 1 of 1
h. Colored Elevations (None – there is no building proposed)
j. Materials Board (None – there is no building proposed)

Index of AR Drawings:

Architectural	A1.1	site plan and details
	A1.2	site details
Civil	C0.00	cover sheet
	C 0.01	topographic survey
	C 0.02	construction notes & specifications
	C 1.10	site plan
	C 1.20	grading plan
	C1.21	grading plan enlargements
	C1.30	utility plan
	C1.40	erosion and sediment control plan cover sheet
	C1.41	clearing, demolition, mass grading erosion and sed control plan
	C1.42	utility & street construction grading & stabilization esc plan
	C1.43	erosion and sediment control details
	C5.10	civil details
	C5.11	civil details
	R2.0	public water main extension - plan and profile
	R3.0	public water main extension - details
Landscape	L1.0	landscape plan
	L2.0	landscape Details & Specifications
Site lighting	1 of 1	lighting level point by point calculation plan

3. Public Notice

a. Documentation for Neighborhood Development Meeting
b. Certification of Sign Posting (Installation after AR is accepted & I.D. provided)

4. Reports

a. Transportation Impact Study
b. Stormwater Management Report
c. Existing Bridge – Field Evaluation Report

Hedges D – Fleet Parking Lot

11507 SW 115th Avenue (private street), Tualatin, OR 97062

1. General

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CITY OF TUALATIN
Planning Division

Land Use Application

Project Information

Project Title: Hedges D - Fleet Parking Lot

Brief Description:
349 stall fleet truck parking lot on an unimproved 9.447-acre property located at the west termination of SW 115th Avenue.

Property Information

Address: 11505 SW 115th Avenue

Assessor's Map Number and Tax Lots: Map 190388317; Map Tax Lot 2S127BA00800; Prop ID R2198560

Applicant/Primary Contact

Name: Mac Martin	Company Name: Hedges D, an LLC	
Address: P. O. Box 15523		
City: Seattle	State: WA	ZIP: 98115
Phone: 206-399-6676	Email: MacMartinis@gmail.com	

Property Owner

Name: Same		
Address:		
City:	State:	ZIP:
Phone:	Email:	
Property Owner's Signature:		Date: 9/9/2020

(Note: Letter of authorization is required if not signed by owner)

AS THE PERSON RESPONSIBLE FOR THIS APPLICATION, I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND STATE THAT THE INFORMATION IN AND INCLUDED WITH THIS APPLICATION IN ITS ENTIRETY IS CORRECT. I AGREE TO COMPLY WITH ALL APPLICABLE CITY AND COUNTY ORDINANCES AND STATE LAWS REGARDING BUILDING CONSTRUCTION AND LAND USE.

Applicant's Signature:	Date:

Land Use Application Type:

- ☐ Annexation (ANN)
- ■ Architectural Review (AR)
- ☐ Architectural Review—Single Family (ARSF)
- ☐ Architectural Review—ADU (ARADU)
- ☐ Conditional Use (CUP)
- ☐ Historic Landmark (HIST)
- ☐ Industrial Master Plan (IMP)
- ☐ Plan Map Amendment (PMA)
- ☐ Plan Text Amendment (PTA)
- ☐ Tree Removal/Review (TCP)
- ☐ Minor Architectural Review (MAR)
- ☐ Minor Variance (MVAR)
- ☐ Sign Variance (SVAR)
- ☐ Variance (VAR)

Office Use

Case No:	Date Received:	Received by:
Fee:	Receipt No:	

LANCE MUELLER & ASSOCIATES

ARCHITECTS · AIA

Hedges D – Fleet Parking Lot	September 2020

11507 SW 115th Avenue, Tualatin, OR 97062

Architectural Review Narrative:

Project Description: The applicant, Hedges D, LLC, requests approval for an approximately 349 stall fleet truck parking lot on an unimproved 9.447-acre property located at the west termination of SW 115th Avenue. The parking lot fills the buildable portion of Lot 12; while the unbuildable Tract D, a sensitive area/vegetated corridor, remains. Access to the Hedges D fleet parking lot is from nearby SW Tualatin Sherwood Road, then east on SW 112th Street, west on SW Amu Street that turns into SW 115th street. You enter the property over an existing bridge over Hedges Creek that is partially on-site.

The Hedges D fleet parking lot is custom designed for the tenant's trucks, which at approximately 27' long are larger than typical passenger cars or vans. The parking lot is gated and fenced to prevent public access; and includes the usual parking amenities such as landscaping, pedestrian walks, and lighting. It also has a driver's shelter, portable toilets, bike racks, and a dumpster enclosure. The parking lot is largely invisible from public view due to being surrounded by Hedges Creek and the large Hedges Creek Greenway setbacks that are largely wetlands or wetland buffers. To the east, the Machine Sciences building (aka Hedges C) screens Hedges D fleet parking from the only public street access on SW 115th Street.

The tenant predicts that the Hedges D parking lot could have a daily on-site presence from approximately 5:30AM – 10:30PM, with the first wave of drivers arriving about 6:30AM and the last driver wave departing to deliver packages about 1:00PM. Some drivers arrive onsite with their delivery trucks. Others access their onsite delivery vans using personal vehicles or via public transportation. Once at the fleet parking lot with their delivery trucks, drivers load and depart to deliver packages directly to customers. Due to the wide window of dispatch times from 6:30-12:30, the tenant expects no more than 40-50 vehicles to queue in place during a 30min interval, and the tenant will develop a mix of dispatch times to reduce offsite parking congestion and overall presence. To end the day, drivers park the delivery truck either on the Hedges D parking lot or at an offsite location, and those that leave trucks on-site depart using a personal vehicle or public transport.

Located on improved land in Franklin Industrial Park, Hedges D gets its name from the adjacent Hedges Creek. The "D" designates it as the fourth contiguous industrial project by this ownership team in Franklin Business Park. Hedges A & B are the adjacent phase 1 buildings in stained precast concrete walls and steel structure, and Perlo Construction occupies B. Hedges C is Phase 2, a large metal skinned structure occupied by Machine Sciences. and it largely screens the Hedges D parking lot from the nearest public street. The other contiguous building built by this ownership is Industry Restaurant, also part of phase 1 on Tualatin-Sherwood Road and SW 112th Avenue. This is a much smaller and more intimate building that is a popular restaurant also serving the area with a coffee shop and catering services.

This Architectural Review is in addition to the approved AR 19-0010 for an industrial building on this same lot. AR 19-0010 remains active in case the Fleet Parking project does not go forward.

Hedges A is a 2015 adjacent example of the development team's adjacent projects, showing the high quality of the work in concept and execution. This includes 12" stained precast concrete wall, substantial recessed windows for natural light and façade relief, quality lighting fixtures, substantial landscaping, and concrete drive entries and pedestrian paths. Lower soil bearing led the team to choose a lighter steel structure with metal skin for Hedges C, but the quality remains in a different material and aesthetic. Landscaping will be similar on Hedges D.

The Hedges D site on July 26, 2019 is top-of-image, that was taken when Hedges C (Machine Sciences) started site construction. The SW 115th Avenue access and bridge are to right, and Hedges Creek is left of Hedges C. The image is taken from the roof of Hedges B (Perlo Construction), and you can see a small portion of their parking on the bottom. The Machine Sciences building blocks public views of Hedges D fleet parking. Photo from Perlo Construction files.

Surrounding Uses: Surrounding uses are generally natural no-build areas, transitioning to include a variety of industrial uses

North: General Manufacturing (MG)

- One-story industrial buildings & storage yards

West: General Manufacturing (MG)

- Hedges Creek Greenway
- Undeveloped property

East: General Manufacturing (MG)

- SW 115th Street and water quality pond
- Two-story industrial building (Machine Sciences)

South: General Manufacturing (MG)

- Hedges Creek Greenway
- Undeveloped property

Previous Land Use Actions: **The site has been subject to the following previous land use actions:**

- SB-97-03 Franklin Business Park No. 4- Replat of a portion of Lot 4 recorded with Washington County as Document No. 2008010869
- PTA-99-06 Applied the Industrial Business Park Overlay (IBPO) District to the Franklin Business Park AR-99-23 Franklin Business Park Bldgs A, B & C (Withdrawn and not constructed)
- AR 19-0010 Architectural Review approval for an ±64,000sf industrial building on a 9.447 acre lot - the same lot 12 as this AR submittal. This permit remains active in case the Fleet Parking project does not go forward.

Project Schedule:

- A pre-application/scoping conference for this project was held November 2018 with Tualatin Planner Erin Engman attending.
- A neighborhood/developer meeting—as required by Tualatin Development Code (TDC) 31.063 was held on August 7th, 2020 via Zoom, and no one showed up for the meeting or participated. Meeting documentation is included in the submittal package.
- The proponent's plan is to obtain the relevant entitlement and building permits in 2020, and begin site work construction as soon as possible.

Applicable Criteria: The following Chapters of the Tualatin Development Code (TDC) are applicable to the subject proposal:

B. TDC Chapter 61: General Manufacturing Planning District
C. TDC Chapter 63: Industrial Uses & Utilities & Manufacturing Zones—Environmental Regulations
D. TDC Chapter 69: Industrial Business Park Overlay Planning District
E. TDC Chapter 72: Natural Resource Protection Overlay District
F. TDC Chapter 73: Community Design Standards
G. TDC Chapter 74: Public Improvement Requirements

TDC Chapter 61: General Manufacturing Planning District

CHAPTER 61 - GENERAL MANUFACTURING ZONE (MG)
TDC 61.100. - Purpose.

The purpose of this zone is to provide areas of the City that are suitable for a wide range of heavier manufacturing and processing activities, including those of a more intense nature and impact than the uses allowed in the Light Manufacturing (ML) Planning Zone. Industrial uses that are environmentally adverse or pose a hazard to life and safety are prohibited. A limited amount of commercial service and other support uses are permitted as regulated by the Commercial Services Overlay zone and the Limited Commercial Setback. Acknowledge.

TDC 61.200. - Use Categories.

(1) Use Categories. Table 61-1 lists use categories Permitted Outright (P) or Conditionally Permitted (C) in the MG zone. Our anticipated use on the table (which is permitted outright):

- Vehicle Storage (note, we are out of Limited Commercial Setback).

TDC 61.210. - Additional Limitations on Uses.

(1) Sale of Goods Produced On-Site. The retail sale of goods produced on-site is permitted, provided that the retail sale area, including the showroom area, is no greater than five percent of the gross floor area of the building and does not exceed 1,500 square feet. Acknowledge.

TDC 61.300. - Development Standards.

Development standards in the MG zone are listed in Table 61-2. Additional standards may apply to some uses and situations, see TDC 61.310.

Lot Size & Dimensions: Acknowledge – we meet the standards.

Minimum Setbacks: Acknowledge – we easily meet the standards because of the sensitive area/vegetated corridors that surround our site.

Structure Height: Acknowledge – we easily meet the standards.

TDC 61.310. - Additional Development Standards.

(1) Outdoor Uses. All uses must be conducted wholly within a completely enclosed building, except off-street parking and loading, Acknowledge.

TDC Chapter 63: INDUSTRIAL USES AND UTILITIES AND MANUFACTURING ZONES—ENVIRONMENTAL REGULATIONS

TDC 63.010. - Purpose. The purpose of this section is to protect the public health, safety and general welfare by applying environmental regulations to all industrial uses and utilities, and manufacturing planning districts in the City. These environmental regulations are also intended to protect natural areas from the adverse effects of industrial development. It is intended that the following standards provide statutory authority for the enforcement of regulations relating to noise, vibration, air quality, odors, heat, glare and lighting, storage and stored materials, liquid and solid waste materials, and dangerous substances.

TDC 63.020. - Applicability. The regulations of this Chapter apply to:

(1) All industrial uses and utilities, regardless of the Planning District in which they are located, and

(2) All Manufacturing Planning Districts, regardless of the use category. Acknowledge.

TDC 63.051. - Noise. All uses and development must comply with the Oregon State Department of Environmental Quality standards relating to noise and the City of Tualatin noise ordinance in, TMC 6-14. Acknowledge, the tenant is not known at this time so it is difficult to address specifically.

TDC 63.052. - Vibration. Restrictions. All uses and development must not cause or permit ground vibration into the property of another person that exceeds the limits set forth below in this section (not included). Acknowledge.

TDC 63.053 - Air Quality.

(1) Restrictions. All uses and development must comply with the most recent air quality standards adopted by the Oregon Department of Environmental Quality. Plans of construction and operations must comply with the recommendations and regulations of the State Department of Environmental Quality. Acknowledge.

(2) Method of Measurement. All measurements of air pollution must be by the procedures and with equipment approved by the State Department of Environmental Quality or equivalent and acceptable methods or measurement approved by the City. Upon request of the City, persons responsible for a suspected source of air pollution must provide quantitative and qualitative information regarding the discharge that will adequately and accurately describe operation conditions. Acknowledge.

TDC 63.054. - Odors. All uses and development must not emit odors in such quantities as to create a nuisance condition at any point beyond the subject property line of the emitting use. Acknowledge.

TDC 63.055. - Heat and Glare.

(1) All uses and development must conduct all operations producing heat or glare entirely within an enclosed building.

(2) All uses and development may utilize exterior lighting, but the exterior lighting must be screened, baffled or directed away from residential planning districts. Acknowledge. Our exterior lighting fixtures all include glare cut-off baffles.

TDC 63.056. - Storage and Stored Materials.

(1) All uses and development must store all materials, including wastes, in a manner that will not attract or aid the propagation of insects or rodents, or in any other way create a health or safety hazard. Acknowledge.

(2) All uses and development that utilize open storage that would otherwise be visible at the property line must conceal it from view at the abutting property line by a sight obscuring fence not less than six feet high and not accessible to the general public to protect public safety. Acknowledge. No open storage is requested.

TDC 63.057. - Liquid or Solid Waste Materials.

All uses and development are prohibited from disposing waste onto the site or into adjacent drainage ditches, creeks or other natural waterways in violation of State of Oregon DEQ standards, Clean Water Services Standards, City Standards, or in a manner that causes harm to wildlife. Acknowledge.

TDC 63.058. - Dangerous Substances.

All uses and development are prohibited from the storage, transfer, or processing of hazardous, toxic, or radioactive waste. Acknowledge.

TDC Chapter 69: Industrial Business Park Overlay Planning District

TDC 69.010. - Purpose. The purpose of this district is to recognize and accommodate the changing Industrial Commercial marketplace by allowing mixed uses within the context of an enforceable Master Plan reviewed and approved during Architectural Review. Industrial uses are emphasized, but office and selected service and retail uses are allowed through the operation of the Industrial Business Park Overlay District. A second purpose of this district is to recognize that it is not necessarily appropriate to assume that all industrial, office, service and retail uses are incompatible and, therefore, must be separated based on planning districts. The Industrial Business Park Overlay District allows flexibility in the uses permitted for selected General Manufacturing (MG) District areas. Further, the purpose of this district is to allow selected retail and service uses that are supportive of and secondary to the industrial and office uses.

TDC 69.040. - Implementation of the Industrial Business Park Overlay District. At the time of application for Architectural Review, the applicant shall state in writing if the proposed project is to be developed under the provisions of the Industrial Business Park Overlay District. Selection of the overlay district is at the option of the developer and application of the overlay district shall be implemented upon the developer's statement as part of the Architectural Review application. No public hearing shall be held to decide to apply the overlay district. The overlay district shall only be used in conjunction with the selected MG District areas. The Architectural Review decision may include conditions of approval in accordance with TDC 73.055. The proponent acknowledges this section, and declines to have this project developed under the provisions of this overlay district.

TDC Chapter 72: Natural Resource Protection Overlay District (NPRO)

TDC 72.010. - Purpose.

(1) To identify and protect by preservation and conservation the designated significant natural resources and Other Natural Areas. The designated significant natural resources are greenways and natural areas, which include the riparian areas and scenic areas of the Tualatin River and certain creeks and drainage swales, wetlands, upland forests, meadows, fish and wildlife resources, and the geologic features of the Tonquin Scablands. Significant Natural Resources are identified on the Significant Natural Resource List and Map TDC 72.013 and Map 72-3, TDC). The significant natural resources designated for protection are shown on Map 72-1, TDC. Other Natural Areas are identified on Figure 3-4 of the Parks and Recreation Master Plan. Our 4.45-acre Tract D is recognized as a sensitive area/vegetated corridor, which must be preserved. The owners propose that Clean Water Services improve and maintain the vegetated corridor using their fee-in-lieu process. The owners also propose that they landscape and maintain the sensitive (or buffer) area portion (adjacent to lot 12) after receiving approval from Clean Water Services on the landscape plan. At AR submittal we are not proposing landscaping on Tract D, pending discussions with Clean Water Services on this proposal.

.(2) To provide sufficient area for stormwater runoff to reduce flood hazards and enhance water quality. Acknowledge.

(3) To provide public access to scenic and riparian areas, where appropriate, by designating pedestrian and bicycle path locations. Acknowledge.

(4) To provide specific design standards for development adjacent to, and within, greenways and natural areas in order to preserve and conserve them, and provide mechanisms for the granting of easements or dedications for Greenways, and Natural Areas while allowing reasonable economic development of property adjacent to the greenways and natural areas. Acknowledge.

TDC 72.056. - Vegetated Corridors of Sensitive Areas. Lands subject to these regulations are also subject to the regulations in the Unified Sewage Agency's Design and Construction Standards. Acknowledge.

TDC 72.060. - Development Restrictions in Greenways and Natural Areas.

(1) Except as provided in Subsection (2), no building, structure, grading, excavation, placement of fill, vegetation removal, impervious surface, use, activity or other development shall occur within Riverbank, Creek and Other Greenways, and Wetland and Open Space Natural Areas. Acknowledge.

(2) The following uses, activities and types of development are permitted within Riverbank, Creek and Other Greenways, and Wetland and Open Space Natural Areas provided they are designed to minimize intrusion into riparian areas:

(a) Public bicycle or pedestrian ways, subject to the provisions of TDC 72.070. We will work with CWS on possible pedestrian recreation paths in the sensitive area as a possible amenity.

(b) Public streets, including bridges, when part of a City approved transportation plan, and public utility facilities,

(f) Landscaping, when part of a landscape plan approved through the Architectural Review process. City initiated landscape projects are exempt from the Architectural Review process. Landscaping in Greenways and Natural Areas shall comply with the approved Plant List in the Parks and Recreation Master Plan. When appropriate, technical advice shall be obtained from the Oregon Department of Fish and Wildlife, U.S. Soil Conservation Service, or similar agency, to ensure the proposed landscaping will enhance the preservation of any existing fish or wildlife habitats in the vicinity. Acknowledge.

(g) Wildlife protection and enhancement, including the removal of non-native vegetation and replacement with native plant species. Acknowledge.

(h) Except in Wetland Natural Areas, public boating facilities, irrigation pumps, water-related and water-dependent uses including the removal of vegetation necessary for the development of water-related and water-dependent uses, and replacement of existing structures with structures in the same location that do not disturb additional riparian surface. Acknowledge.

(i) In Wetland Natural Areas, perimeter mowing and other cutting necessary for hazard prevention.

(3) The City may, through the subdivision, conditional use, architectural review, or other development approval process, attach appropriate conditions to approval of a development permit. Such conditions may include, but are not limited to:

(a) Use of Greenways and Natural Areas for storm drainage purposes; Acknowledge.

(b) Location of approved landscaping, pedestrian and bike access areas, and other non-building uses and activities in Greenways and Natural Areas; Acknowledge.

(c) Setback of proposed buildings, parking lots, and loading areas away from the Greenway and Natural Area boundary. Acknowledge.

(4) Greenways and Natural Areas in which an access easement is owned by the City, but retained in private ownership, shall be maintained by the property owner in their natural state and may only be modified if a landscape and maintenance plan complies with the approved Plant List in the Parks and Recreation Master Plan, and has been approved through the Architectural Review process or by the Parks and Recreation Director when Architectural Review is not required. Acknowledge.

(5) The Parks and Recreation Director shall be included as a commentor when a development application proposes dedication of Greenway or Natural Area property to the City or when development is pro-posed on Greenway or Natural Areas property maintained by the Parks and Recreation Department. Acknowledge.

TDC 72.070. - General Guidelines for Pedestrian and Bike Paths in Greenways. To construct bike and pedestrian paths in greenways, the developer of the path shall adhere to the following guidelines, wherever practicable: Acknowledge. We no intentions to construct bike or pedestrian paths in Tract D.

TDC 72.085. - Landscaping Credit within Commercial and Industrial Planning Districts Adjacent to Greenways and Natural Areas.

(1) When a property owner in a Commercial, Institutional, or Industrial Planning District dedicates to the City a portion of the NRPO District, an Other Natural Area or vegetated corridor located within or adjacent to the NRPO District in accordance with a City-approved landscape plan, a Greenway and Natural Area Landscaping Credit shall be applied toward a portion of the site's percentage landscaping requirement. We are taking the landscape percentage credit – see our calculations.

(2) The amount of the Greenway and Natural Area Landscaping Credit shall be as provided in TDC Chapter 73. The applicant must meet all landscaping requirements in this Code to the satisfaction of the Planning Director through the Architectural Review process. Acknowledge.

TDC 72.090. - Reduction in Setback Requirements. When a property owner in a IN, CO, CR, CO/MR, ML, or MG Planning District dedicates to the City land in the NRPO District or Other Natural Area, a bikeway or pedestrian path facility, or a vegetated corridor located within or adjacent to the NRPO District, the minimum front yard setback may be reduced through the AR process as provided in Chapters 50, 51, 52, 55, 60, and 61. Acknowledge, and we are not requesting setback reduction.

TDC 72.120. - Wetlands Protection District. In cases where land within the NRPO District is also within the Wetlands Protection District, Chapter 71, any development permitted by TDC 72.060 shall be subject to the provisions of Chapter 71. Acknowledge. We are working with Clean Water Services on Tract D per our response on TDC 72.010 above.

TDC 72.150. - Modifications for Storm Drainage Improvements. Nothing in this chapter shall prohibit the City or any property owner from altering, enlarging, straightening, piping, or otherwise modifying a creek channel in the NRPO District upon a finding by the City Engineer that such modification is necessary for maintaining the ability of the creek to transmit storm water run-off. Acknowledge.

General Purpose and Objectives of Site and Building Design Standards

TDC 73A.010. - Site and Building Design Standards Purpose and Objectives.

(1) Purpose. The purpose of the site and building design objectives and standards found in TDC 73A through TDC 73G is to promote functional, safe, innovative, and attractive sites and buildings that are compatible with the surrounding environment, including, but not limited to:

(a) The building form, articulation of walls, roof design, materials, and placement of elements such as windows, doors, and identification features; and Following high quality previous developments with buildings in Tualatin and Wilsonville by this owner, this proposal is for a fleet parking lot. This section is not applicable.

(b) The placement, design, and relationship of proposed site elements such as buildings, vehicular parking, circulation areas, bikeways and bike parking, accessways, walkways, buffer areas, and landscaping. This is a destination site not seen from a public street and surrounded by landscaping and will be around 50% in landscaping. This section is largely not applicable.

(2) Objectives. The objectives of site and building design standards in TDC 73A through TDC 73G are to:

(a) Enhance Tualatin through the creation of attractively designed development and streetscapes;

*(b) Encourage originality, flexibility, and innovation in building design; T*his proposal is for a fleet parking lot. This section is not applicable.

(c) Create opportunities for, or areas of, visual and aesthetic interest for occupants and visitors to the site;

(d) Provide a composition of building elements which responds to function, land form, identity and image, accessibility, orientation and climatic factors;

(e) Conserve, protect, and restore fish and wildlife habitat areas, and maintain or create visual and physical corridors to adjacent fish and wildlife habitat areas; See TDC 72.010., 1.

(f) Enhance energy efficiency through the use of landscape and architectural elements; and

(g) Minimize disruption of natural site features such as topography, trees, and water features. There are no existing trees to preserve. See TDC 72.010., 1.

Industrial Design Standards

TDC 73A.400. - Industrial Design Standards.

The following standards are minimum requirements for commercial development in all zones:

(1) Walkways. Commercial development must provide walkways as follows:

(a) Walkways must be a minimum of five feet in width; We provide the minimum 5' of width plus the allowance for car overhangs.

(b) Walkways must be constructed of asphalt, concrete, or a pervious surface such as pavers or grasscrete (not gravel or woody material); Ours are proposed as asphalt with contrasting paint striping to distinguish from vehicle paving.

(c) Walkways must meet ADA standards applicable at time of construction or alteration; We comply.

(e) Walkways through parking areas, drive aisles, and loading areas must be visibly raised and of a different appearance than the adjacent paved vehicular areas; We comply and slopes are modest.

(f) Walkways through parking areas, drive aisles, and loading areas must be of a different appearance than the adjacent paved vehicular areas; and We comply. Walkways are proposed as stamped asphalt to distinguish from vehicle paving.

(g) Outdoor Recreation Access Routes must be provided between the development's walkway and bikeway circulation system and parks, bikeways and greenways where a bike or pedestrian path is designated. With no adjoining public ROW, bikes will use on-site private drives and serve only as access for fleet parking drivers.

(4) Safety and Security. Industrial development must provide safety and security features as follows:

(a) Locate windows and provide lighting in a manner that enables tenants, employees, and police to watch over pedestrian, parking, and loading areas; Not applicable – no building proposed.

(b) Locate windows and interior lighting to enable surveillance of interior activity from the public right-of-way; Not applicable – no building proposed.

(c) Locate, orient, and select exterior lighting to facilitate surveillance of on-site activities from the public right-of-way without shining into public rights-of-way or fish and wildlife habitat areas; We comply – see our exterior lighting plan.

(d) Provide an identification system which clearly locates buildings and their entries for patrons and emergency services; and Not Applicable as there is no building, but the tenant will add directional signs for the fleet parking use, which is closed to the public.

(e) Above ground sewer or water pumping stations, pressure reading stations, water reservoirs, electrical substations, and above ground natural gas pumping stations must provide a minimum six foot tall security fence or wall. Acknowledge.

(5) Service, Delivery, and Screening. Industrial development must provide service, delivery, and screening features as follows:

(a) Above grade and on-grade electrical and mechanical equipment such as transformers, heat pumps and air conditioners must be screened with sight obscuring fences, walls or landscaping; Acknowledge.

(b) Outdoor storage must be screened with a sight obscuring fence, wall, berm or dense evergreen landscaping; and Acknowledge – no outdoor storage proposed.

(c) Above ground pumping stations, pressure reading stations, water reservoirs; electrical substations, and above ground natural gas pumping stations must be screened with sight-obscuring fences or walls and landscaping. Acknowledge.

(6) Adjacent to Transit. Industrial development adjacent to transit must comply with the following: No adjacent transit.

CHAPTER 73B - LANDSCAPING STANDARDS

TDC 73B.010. - Landscape Standards Purpose and Objectives.

(1) Purpose. The purpose of this Chapter is to establish standards for landscaping within Tualatin in order to enhance the environmental and aesthetic quality of the City.

(2) Objectives. The objectives of this Chapter are to: Acknowledge all.

(a) Encourage the retention and protection of existing trees and requiring the planting of trees in new developments;

(b) Use trees and other landscaping materials to temper the effects of the sun, wind, noise, and air pollution.

(c) Use trees and other landscaping materials to define spaces and the uses of specific areas; and

(d) Use trees and other landscaping materials as a unifying element within the urban environment.

TDC 73B.020. - Landscape Area Standards Minimum Areas by Use and Zone. The following are the minimum areas required to be landscaped for each use and zone:

Zone	*Minimum Area Requirement**	*Minimum Area Requirement with dedication for a fish and wildlife habitat**
(3) CO, CR, CC, CG, ML and MG zones except within the Core Area Parking District—All uses	*~~15 percent of the total area to be developed~~*	*12.5 percent of the total area to be developed*

Zone	Minimum Area Requirement*	Minimum Area Requirement with dedication for a fish and wildlife habitat*
(6) Industrial Business Park Overlay District and MBP—must be approved through Industrial Master Plans	20 percent of the total area to be developed	Not applicable
* For properties within the Hedges Creek Wetland Protection District which have signed the "Wetlands Mitigation Agreement," the improved or unimproved wetland buffer area may reduce the required landscaping to 12.5 percent as long as all other landscape requirements are met. We will accept this reduction & meet the other landscape requirements.		

TDC 73B.050. - Additional Minimum Landscaping Requirements for Industrial Uses.

(1) General. In addition to requirements in TDC 73B.020, industrial uses must comply with the following:

(a) All areas not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas, or undisturbed natural areas must be landscaped. We will comply on Lot 12.

(i) This standard does not apply to areas subject to the Hedges Creek Wetlands Mitigation Agreement. Our 4.45-acre Tract D is recognized as a sensitive area/vegetated corridor, which must be preserved. The owners propose that Clean Water Services improve and maintain the vegetated corridor using their fee-in-lieu process. The owners also propose that they landscape and maintain the sensitive (or buffer) area portion (adjacent to lot 12) after receiving approval from Clean Water Services on the landscape plan. At AR submittal we are not proposing landscaping on Tract D, pending discussions with Clean Water Services on this proposal.

(b) Minimum 5-foot-wide landscaped area must be located along all building perimeters viewable by the general public from parking lots or the public right-of-way, but the following may be used instead of the 5-foot-wide landscaped area requirement: We comply.

(i) Pedestrian amenities such as landscaped plazas and arcades; and

(ii) Areas developed with pavers, bricks, or other surfaces, for exclusive pedestrian use and contain pedestrian amenities, such as benches, tables with umbrellas, children's play areas, shade trees, canopies.

(c) Five-foot-wide landscaped area requirement does not apply to:

(i) Loading areas,

(ii) Bicycle parking areas,

(iii) Pedestrian egress/ingress locations, and

(iv) Where the distance along a wall between two vehicle or pedestrian access openings (such as entry doors, garage doors, carports and pedestrian corridors) is less than eight feet.

TDC 73B.070. - Minimum Landscaping Standards for All Zones. The following are minimum standards for landscaping for all zones.

(1) Required Landscape Areas Acknowledge all.	• *Must be designed, constructed, installed, and maintained so that within three years the ground must be covered by living grass or other plant materials.* • *The foliage crown of trees cannot be used to meet this requirement.* • *A maximum of ten percent of the landscaped area may be covered with un-vegetated areas of bark chips, rock or stone.* • *Must be installed in accordance with the provisions of the American National Standards Institute ANSI A300 (Part 1) (Latest Edition).* • *Must be controlled by pruning, trimming, or otherwise so that: It will not interfere with designated pedestrian or vehicular access; and It will not constitute a traffic hazard because of reduced visibility.*
(2) Fences None proposed.	• *Landscape plans that include fences must integrate any fencing into the plan to guide wild animals toward animal crossings under, over, or around transportation corridors.*
(3) Tree Preservation Acknowledge all.	• *Trees and other plant materials to be retained must be identified on the landscape plan and grading plan.* • *During construction:* o *Must provide above and below ground protection for existing trees and plant materials identified to remain;* o *Trees and plant materials identified for preservation must be protected by chain link or other sturdy fencing placed around the tree at the drip line;*

	○ *If it is necessary to fence within the drip line, such fencing must be specified by a qualified arborist;* ○ *Top soil storage and construction material storage must not be located within the drip line of trees designated to be preserved;* ○ *Where site conditions make necessary a grading, building, paving, trenching, boring, digging, or other similar encroachment upon a preserved tree's drip-line area, such grading, paving, trenching, boring, digging, or similar encroachment must only be permitted under the direction of a qualified arborist. Such direction must assure that the health needs of trees within the preserved area can be met; and* ○ *Tree root ends must not remain exposed.* • *Landscaping under preserved trees must be compatible with the retention and health of the preserved tree.* • *When it is necessary for a preserved tree to be removed in accordance with TDC 33.110 (Tree Removal Permit) the landscaped area surrounding the tree or trees must be maintained and replanted with trees that relate to the present landscape plan, or if there is no landscape plan, then trees that are complementary with existing, landscape materials. Native trees are encouraged* • *100 percent of the area preserved under any tree or group of trees (Except for impervious surface areas) retained in the landscape plan must apply directly to the percentage of landscaping required for a development*
(4) Grading Acknowledge all.	• *After completion of site grading, top-soil is to be restored to exposed cut and fill areas to provide a suitable base for seeding and planting.* • *All planting areas must be graded to provide positive drainage.* • *Soil, water, plant materials, mulch, or other materials must not be allowed to wash across roadways or walkways.* • *Impervious surface drainage must be directed away from pedestrian walkways, dwelling units, buildings, outdoor private and shared areas and landscape areas except where the landscape area is a water quality facility.*
(5) Irrigation Acknowledge all.	• *Landscaped areas must be irrigated with an automatic underground or drip irrigation system.*
(6) Re-vegetation in Un-landscaped Areas Acknowledge all.	• *Vegetation must be replanted in all areas where vegetation has been removed or damaged in areas not affected by the landscaping requirements and that are not to be occupied by structures or other improvements.* • *Plant materials must be watered at intervals sufficient to ensure survival and growth for a minimum of two growing seasons.* • *The use of native plant materials is encouraged to reduce irrigation and maintenance demands.* • *Disturbed soils should be amended to an original or higher level of porosity to regain infiltration and stormwater storage capacity.*

TDC 73B.080. - Minimum Standards Trees and Plants.
The following minimum standards apply to the types of landscaping required to be installed for all zones.

(1) Deciduous Shade Trees Acknowledge all.	• *One and on-half inch caliper measured six inches above ground;* • *Balled and burlapped; bare root trees will be acceptable to plant during their dormant season; Reach a mature height of 30 feet or more;* • *Cast moderate to dense shade in summer;* • *Live over 60 years;* • *Do well in urban environments, tolerant of pollution and heat, and resistant to drought;* • *Require little maintenance and mechanically strong; Insect- and disease-resistant;* • *Require little pruning; and* • *Barren of fruit production.*

(2) Deciduous Ornamental Trees Acknowledge all.	• *One and on-half inch caliper measured six inches above ground; balled and burlapped; bare root trees will be acceptable to plant during their dormant season; and Healthy, disease-free, damage-free, well-branched stock, characteristic of the species*
(3) Coniferous Tree Acknowledge all.*s*	• *Five feet in height above ground; Balled and burlapped; bare root trees will be acceptable to plant during their dormant season; and Healthy, disease-free, damage-free, well-branched stock, characteristic of the species.*
(4) Evergreen and Deciduous Shrubs Acknowledge all.	• *One to five gallon size; Healthy, disease-free, damage-free, well-branched stock, characteristic of the species; and Side of shrub with best foliage must be oriented to public view.*
(5) Groundcovers Acknowledge all.	• *Fully rooted; Well branched or leafed; Healthy, disease-free, damage-free, well-branched stock, characteristic of the species; and English ivy (Hedera helix) is prohibited.*
(6) Lawns Acknowledge all.	*Consist of grasses, including sod, or seeds of acceptable mix within the local landscape industry; 100 percent coverage and weed free; and Healthy, disease-free, damage-free, characteristic of the species.*

CHAPTER 73C - PARKING STANDARD

In General

Parking Lot Landscaping

TDC 73C.010. - Off-Street Parking and Loading Applicability and General Requirements.

(1) Applicability. Off-street parking and loading is required to be provided by the owner and/or developer, in all zones, whenever the following occurs:

(a) Establishment of a new structure or use; Acknowledge. Our use is fleet parking.

(2) General Requirements. Off-street parking spaces, off-street vanpool and carpool parking spaces, off-street bicycle parking, and off-street loading berths must be as provided as set forth in TDC 73C.100, unless greater requirements are otherwise established by the conditional use permit or the Architectural Review process. Acknowledge all below in this section – except as noted:

(a) The following apply to property and/or use with respect to the provisions of TDC 73C.100:

(i) The requirements apply to both the existing structure and use, and enlarging a structure or use; Our use is fleet parking.

(ii) The floor area is measured by gross floor area of the building primary to the function of the particular use of the property other than space devoted to off-street parking or loading;

(iii) Where employees are specified, the term applies to all persons, including proprietors, working on the premises during the peak shift;

(iv) Calculations to determine the number of required parking spaces and loading berths must be rounded to the nearest whole number;

(v) If the use of a property changes, thereby increasing off-street parking or loading requirements, the increased parking/loading area must be provided prior to commencement of the new use;

(vi) Parking and loading requirements for structures not specifically listed herein must be determined by the City Manager, based upon requirements of comparable uses listed;

(vii) When several uses occupy a single structure, the total requirements for off-street parking may be the sum of the requirements of the several uses computed separately or be computed in accordance with TDC 73.370(1)(m), Joint Use Parking;

(ix) Required parking spaces must be available for the parking of operable passenger automobiles of residents, customers, patrons and employees and must not be used for storage of vehicles or materials or for the parking of trucks used in conducting the business;

(xi) Required vanpool and carpool parking must meet the 9-foot parking stall standards in Figure 73-1 and be identified with appropriate signage.

TDC 73C.020. - Parking Lot Design Standards. A parking lot, whether an accessory or principal use, intended for the parking of automobiles or trucks, must comply with the following: Acknowledge all below in this section – we have added a few clarifications:

(1) Off-street parking lot design must comply with the dimensional standards set forth in Figure 73-1; Our fleet trucks are larger than passenger vehicles, so our stalls and drive aisles are larger to comply with tenant requirements.
(2) Parking lot drive aisles must be constructed of asphalt, concrete, or pervious concrete;
(3) Parking stalls must be constructed of asphalt, concrete, previous concrete, or a pervious surface such as pavers or grasscrete, but not gravel or woody material. Pervious surfaces, are encouraged for parking stalls in or abutting the Natural Resource Protection Overlay District, Other Natural Areas, or in a Clean Water Services Vegetated Corridor;
(4) Parking lots must be maintained adequately for all-weather use and drained to avoid water flow across sidewalks;
(5) Parking bumpers or wheel stops or curbing must be provided to prevent cars from encroaching on adjacent landscaped areas, or adjacent pedestrian walkways.
(6) Disability parking spaces and accessibility must meet ADA standards applicable at time of construction or alteration;
(7) Parking stalls for sub-compact vehicles must not exceed 35 percent of the total parking stalls required by TDC 73C.100. Stalls in excess of the number required by TDC 73C.100 can be sub-compact stalls;
(8) Groups of more than four parking spaces must be so located and served by driveways that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley;
(9) Drives to off-street parking areas must be designed and constructed to facilitate the flow of traffic, provide maximum safety of traffic access and egress, and maximum safety of pedestrians and vehicular traffic on the site;
(10) On-site drive aisles without parking spaces, which provide access to parking areas with regular spaces or with a mix of regular and sub-compact spaces, must have a minimum width of 22 feet for two-way traffic and 12 feet for one-way traffic; When 90 degree stalls are located on both sides of a drive aisle, a minimum of 24 feet of aisle is required. On-site drive aisles without parking spaces, which provide access to parking areas with only sub-compact spaces, must have a minimum width of 20 feet for two-way traffic and 12 feet for one-way traffic;
(11) Artificial lighting, must be deflected to not shine or create glare in a residential zones, street right-of-way, a Natural Resource Protection Overlay District, Other Natural Areas, or a Clean Water Services Vegetated Corridor; Our site lighting has glare control devices so our lighting does not intrude into our Clean Water Services Vegetated Corridor – see our lighting plan.
(12) Parking lot landscaping must be provided pursuant to the requirements of TDC 73C.200; and
(13) Except for parking to serve residential uses, parking areas adjacent to or within residential zones or adjacent to residential uses must be designed to minimize disturbance of residents. We are not adjacent to residential zones.
TDC 73C.050. - Bicycle Parking Requirements and Standards.
(1) Requirements. Bicycle parking facilities must include:
(a) Long-term parking that consists of covered, secure stationary racks, lockable enclosures, or rooms in which the bicycle is stored;
(i) Long-term bicycle parking facilities may be provided inside a building in suitable secure and accessible locations. We propose bike racks for truck drivers only, as public access is prohibited.
(b) Short-term parking provided by secure stationary racks (covered or not covered), which accommodate a bicyclist's lock securing the frame and both wheels. Same.
(2) Standards. Bicycle parking must comply with the following: Acknowledge all in this section on standards.
(a) Each bicycle parking space must be at least six feet long and two feet wide, with overhead clearance in covered areas must be at least seven feet;
(b) A five-foot-wide bicycle maneuvering area must be provided beside or between each row of bicycle parking. It must be constructed of concrete, asphalt, or a pervious hard surface such as pavers or grasscrete, and be maintained;
(c) Access to bicycle parking must be provided by an area at least three feet in width. It must be constructed of concrete, asphalt, or a pervious hard surface such as pavers or grasscrete, and be maintained;
(d) Bicycle parking areas and facilities must be identified with appropriate signing as specified in the Manual on Uniform Traffic Control Devices (MUTCD) (latest edition). At a minimum, bicycle parking signs must be located at the main entrance and at the location of the bicycle parking facilities;
(e) Bicycle parking must be located in convenient, secure, and well-lighted locations approved through the Architectural Review process. Lighting, which may be provided, must be deflected to not shine or create glare into street rights-of-way or fish and wildlife habitat areas;
(f) Required bicycle parking spaces must be provided at no cost to the bicyclist, or with only a nominal charge for key deposits, etc. This does not preclude the operation of private for-profit bicycle parking businesses;

(h) The City Manager or the Architectural Review Board may approve a form of bicycle parking not specified in these provisions but that meets the needs of long-term and/or short-term parking pursuant to Architectural Review.

TDC 73C.100. - Off-Street Parking Minimum/Maximum Requirements.

(1) The following are the minimum and maximum requirements for off-street motor vehicle parking in the City, except these standards do not apply in the Core Area Parking District. The Core Area Parking District standards are in TDC 73C.110.

USE	MINIMUM MOTOR VEHICLE PARKING	MAXIMUM MOTOR VEHICLE PARKING	BICYCLE PARKING	PERCENTAGE OF BICYCLE PARKING
e) Commercial				
(vi) General office	2.70 spaces per 1,000 square feet of gross floor area	Zone A: 3.4 spaces per 1,000 square feet of gross floor area Zone B: 4.1 spaces per 1,000 square feet of gross floor area	2, or 0.50 spaces per 1,000 gross square feet, whichever is greater	First ten spaces or 40 percent, whichever is greater
f) Industrial				
(i) Manufacturing	1.60 spaces per 1,000 sf of gross floor area	None	2, or 0.10 spaces per 1,000 gross sf, whichever is greater	First five spaces or 30 percent, whichever is greater
(ii) Warehousing	0.30 spaces per 1,000 sf of gross floor area	Zone A: 0.4 spaces per 1,000 square feet of gross floor area Zone B: 0.5 spaces per 1,000 square feet of gross floor area	2, or 0.10 spaces per 1,000 gross square feet, whichever is greater	First five spaces or 30 percent, whichever is greater

None of this table is applicable to fleet parking.

(2) In addition to the general parking requirements in subsection (1), the following are the minimum number of off-street vanpool and carpool parking for commercial, institutional, and industrial uses. Not applicable to fleet parking.

TDC 73C.130. - Parking Lot Driveway and Walkway Minimum Requirements. Parking lot driveways and walkways must comply with the following requirements:

(3) Industrial Use. *Ingress and egress for industrial uses must not be less than the following:*

Required Parking Spaces	*Minimum Number Required*	*Minimum Pavement Width*	*Minimum Pavement Walkways, etc.*
1-250	*1*	*36 feet for first 50' from ROW, 24 feet thereafter*	*No curbs or walkway required*

This section does not apply because our site is accessed from a private drive and our lot is 400’ west of the nearest ROW. That said, our access is excellent because you drive straight into the site with excellent visibility of other vehicles.

TDC 73C.200. - Parking Lot Landscaping Standards Purpose and Applicability.

(1) Purpose. *The goals of the off-street parking lot standards are to create shaded areas in parking lots, to reduce glare and heat buildup, provide visual relief within paved parking areas, emphasize circulation patterns, reduce the total number of spaces, reduce the impervious surface area and stormwater runoff, and enhance the visual environment. The design of the off-street parking area must be the responsibility of the developer and should consider visibility of signage, traffic circulation, comfortable pedestrian access, and aesthetics.* Acknowledge.

(2) Applicability. *Off-street parking lot landscaping standards apply to any surface vehicle parking or circulation area.* Acknowledge.

TDC 73C.230. - Industrial Parking Lot Landscaping Requirements. Industrial uses must comply with the following landscaping requirements for parking lots in all zones.

(1) General. Locate landscaping or approved substitute materials in all areas not necessary for vehicular parking and maneuvering. Acknowledge.

(2) Clear Zone. Clear zone required for the driver at ends of on-site drive aisles and at driveway entrances, vertically between a maximum of 30 inches and a minimum of eight feet as measured from the ground level. Acknowledge.
(3) Perimeter. Minimum five feet in width in all off-street parking and vehicular circulation areas, including loading areas and must comply with the following: Acknowledge all in this section.

(a) Deciduous trees located not more than 30 feet apart on average as measured on center;
(b) Shrubs or ground cover, planted so as to achieve 90 percent coverage within three years;
(c) Plantings which reach a mature height of 30 inches in three years which provide screening of vehicular headlights year round;
(d) Native trees and shrubs are encouraged; and
(e) Exception: Not required where off-street parking areas on separate lots are adjacent to one another and connected by vehicular access.

(4) Landscape Island. Minimum 25 square feet per parking stall must be improved with landscape island areas and must comply with the following. Acknowledge all in this section.

(a) May be lower than the surrounding parking surface to allow them to receive stormwater run-off and function as water quality facilities as well as parking lot landscaping;
(b) Must be protected from vehicles by curbs, but the curbs may have spaces to allow drainage into the islands;
(c) Islands must be utilized at aisle ends to protect parked vehicles from moving vehicles and emphasize vehicular circulation patterns;
(d) Landscape separation required for every eight continuous spaces in a row;
(e) Must be planted with one deciduous shade trees for every four parking spaces; Required trees must be evenly dispersed throughout the parking lot;
(f) Must be planted with groundcover or shrubs;
(g) Native plant materials are encouraged;
(h) Landscape island areas with trees must be a minimum of five feet in width (from inside of curb to curb);
(i) Required plant material in landscape islands must achieve 90 percent coverage within three years; and
(j) Exception: Landscape square footage requirements do not apply to parking structures and underground parking.

(5) Landscaping Along Driveway Access. For lots with 12 or more parking spaces: Acknowledge all in this section.

(a) Landscape area at least five (5) feet in width on each side of an accessway;
(b) Landscape area must extend 30 feet back from the property line; and

CHAPTER 73D - WASTE AND RECYCLABLES MANAGEMENT STANDARDS
TDC 73D.020. - Design Methods. An applicant required to provide mixed solid waste and source separated recyclables storage areas must comply with one of following methods:
(1) The minimum standards method in TDSC 73D.030;
TDC 73D.030. - Minimum Standards Method.
(1) The size and location of the storage area(s) must be indicated on the site plan. Requirements are based on an assumed storage area height of four feet for mixed solid waste and source separated recyclables. Vertical storage higher than four feet, but no higher than seven feet may be used to accommodate the same volume of storage in a reduced floor space (potential reduction of 43 percent of specific requirements). Where vertical or stacked storage is proposed, submitted plans must include drawings to illustrate the layout of the storage area and dimensions for containers.
(2) The storage area requirement is based on uses. If a building has more than one use and that use occupies 20 percent or less of the gross leasable area (GLA) of the building, the GLA occupied by that use must be counted toward the floor area of the predominant use(s). If a building has more than one use and that use occupies more than 20 percent of the GLA of the building, then the storage area requirement for the whole building must be the sum of the area of each use. Minimum storage area requirements by use is as follows:

(c) Commercial, industrial, and institutional developments must provide a minimum storage area of ten square feet plus: We propose a 12' x 14' mixed solid waste and source separated recyclables enclosure. There does not appear to be City requirements for a fleet parking lot, so we based the size on tenant requirements, and upsized slightly to Republic Services' minimum commercial enclosure size..

(i) Office—Four square feet/1,000 square feet gross leasable area (GLA);
(ii) Retail—Ten square feet/1,000 square feet GLA;
(iii) Wholesale/Warehouse/Manufacturing—Six square feet/1,000 square feet GLA;

(iv) Educational and Institutional—Four square feet/1,000 square feet GLA; and

(v) All other uses—Four square feet/1,000 square feet GLA.

(3) Mixed solid waste and source separated recyclables storage areas for multiple tenants on a single site may be combined and shared. Acknowledge, and our intent is to include both in the enclosure.

TDC 73D.070. - Location, Design and Access Standards. The following location, design, and access standards are applicable to all storage areas:

(2) Design Standards. Acknowledge all in this section.

(a) The dimensions of the storage area must accommodate containers consistent with current methods of local collection at time of construction or alteration. Our design has been reviewed and approved by Republic Services, and the approval letter is attached.

(b) Indoor and outdoor storage areas must comply with Oregon Building and Fire Code requirements.

(c) Exterior storage areas must be enclosed by a sight obscuring fence or wall at least six feet in height.

(d) Evergreen plants must be placed around the enclosure walls, excluding the gate or entrance openings for common wall, commercial, and institutional developments.

(e) Gate openings for haulers must be a minimum of ten feet wide and must be capable of being secured in a closed and open position.

(f) Horizontal clearance must be a minimum of ten feet and a vertical clearance of eight feet is required if the storage area is covered.

(g) A separate pedestrian access must also be provided in common wall, commercial, and institutional developments.

(h) Exterior storage areas must have either a concrete or asphalt floor surface. Ours is concrete.

(i) Storage areas and containers must be clearly labeled to indicate the type of material accepted.

(3) Access Standards.

(a) Storage areas must be accessible to users at convenient times of the day, and to hauler personnel on the day and approximate time they are scheduled to provide hauler service. Our design has been reviewed and approved by Republic Services, and the approval letter is attached.

(b) Storage areas must be designed to be easily accessible to hauler trucks and equipment, considering paving, grade, gate clearance and vehicle access.

(c) Storage areas must be accessible to hauler trucks without requiring backing out of a driveway onto a public street. If only a single access point is available to the storage area, adequate turning radius must be provided to allow hauler trucks to safely exit the site in a forward motion.

(d) Storage areas must located so that pedestrian and vehicular traffic movement are not obstructed on site or on public streets adjacent to the site.

CHAPTER 74 - PUBLIC IMPROVEMENT REQUIREMENTS

In General
Improvements
Right-of-Way
Easements and Tracts
Utilities

IN GENERAL

TDC 74.010. - Purpose. The City's Community Plan sets forth the requirements for providing adequate transportation and utility systems to serve the community's present and future needs. Land development without adequate transportation and utility systems will adversely affect the overall economic growth of the City and cause undue damage to the public health and welfare of its citizens. Consequently, the City finds that it is in the public interest to require land development to meet the following improvement requirements. We access our site from the previously established private road on adjacent Lot 8 with an existing private bridge over Hedges Creek. The utilities we need are existing in the same private road.

TDC 74.020. - Authority.

(3) Supervision of Planting. The City Manager has jurisdiction over all trees, plants and shrubs planted or growing in or upon the public rights-of-way of the City and their planting, removal, care, maintenance and protection. The City Manager is to enforce these provisions. Not applicable as we are not adjacent to a ROW.

IMPROVEMENTS

TDC 74.110. - Phasing of Improvements. The applicant may build the development in phases. If the development is to be phased the applicant must submit a phasing plan to the City Manager for approval with the development application. The timing and extent or scope of public improvements and the conditions of development must be determined by the City Council on subdivision applications and by the City Manager on other development applications. No phasing proposed for our fleet parking lot.

TDC 74.120. - Public Improvements.

(1) Except as specially provided, all public improvements must be installed at the expense of the applicant. All public improvements installed by the applicant must be constructed and guaranteed as to workmanship and material as required by the Public Works Construction Code prior to acceptance by the City. Work must not be undertaken on any public improvement until after the construction plans have been approved by the City Manager and a Public Works Permit issued and the required fees paid. Acknowledge.

TDC 74.130. - Private Improvements. All private improvements must be installed at the expense of the applicant. The property owner must retain maintenance responsibilities over all private improvements. Acknowledge.

EASEMENTS AND TRACTS

TDC 74.310. - Greenway, Natural Area, Bike, and Pedestrian Path Dedications and Easements.

(1) Areas dedicated to the City for Greenway or Natural Area purposes or easements or dedications for bike and pedestrian facilities during the development application process must be surveyed, staked and marked with a City approved boundary marker prior to acceptance by the City. None proposed.

(2) For subdivision and partition applications, the Greenway, Natural Area, bike, and pedestrian path dedication and easement areas must be shown to be dedicated to the City on the final subdivision or partition plat prior to approval of the plat by the City; or

(3) For all other development applications, Greenway, Natural Area, bike, and pedestrian path dedications and easements must be submitted to the City Manager ; building permits must not be issued for the development prior to acceptance of the dedication or easement by the City. None proposed.

TDC 74.320. - Slope Easements.

(1) The applicant must obtain and convey to the City any slope easements determined by the City Manager to be necessary adjacent to the proposed development site to support the street improvements in the public right-of-way or accessway or utility improvements required to be constructed by the applicant. None proposed.

(2) For subdivision and partition applications, the slope easement dedication area must be shown to be dedicated to the City on the final subdivision or partition plat prior to approval of the plat by the City; or

(3) For all other development applications, a slope easement dedication must be submitted to the City Manager; building permits must not be issued for the development prior to acceptance of the easement by the City.

TDC 74.330. - Utility Easements.

(1) Utility easements for water, sanitary sewer and storm drainage facilities, telephone, television cable, gas, electric lines and other public utilities must be granted to the City. Acknowledge.

(4) For development applications other than subdivisions and partitions, and for both on-site and off-site easement areas, a utility easement must be granted to the City; building permits must not be issued for the development prior to acceptance of the easement by the City. The City may elect to exercise eminent domain and condemn necessary off-site public utility easements at the applicant's request and expense. The City Council must determine when condemnation proceedings are to be used. Acknowledge.

(5) The width of the public utility easement must meet the requirements of the Public Works Construction Code. All subdivisions and partitions must have a 6-foot public utility easement adjacent to the street and a 5-foot public utility easement adjacent to all side and rear lot lines. Other easements may be required as determined by the City Manager. Acknowledge.

TDC 74.340. - Watercourse Easements.

(1) Where a proposed development site is traversed by or adjacent to a watercourse, drainage way, channel or stream, the applicant must provide a storm water easement, drainage right-of-way, or other means of preservation approved by the City Manager, conforming substantially with the lines of the watercourse. The City Manager must determine the width of the easement, or other means of preservation, required to accommodate all the requirements of the Surface Water Management Ordinance, existing and future storm drainage needs and access for operation and maintenance. We have

an existing bridge over Hedges Creek for our private access road and Hedges Creek is already in a sensitive area/vegetated corridor.
(4) The storm water easement must be sized to accommodate the existing water course and all future improvements in the drainage basin. There may be additional requirements as set forth in TDC Chapter 72, Greenway and Riverbank Protection District, and the Surface Water Management Ordinance. Water quality facilities may require additional easements as described in the Surface Water Management Ordinance. Easements for this purpose already exist and are assumed to be adequate unless notified otherwise.
TDC 74.350. - Maintenance Easement or Lots. A dedicated lot or easement will be required when access to public improvements for operation and maintenance is required, as determined by the City Manager. Access for maintenance vehicles must be constructed of an all-weather driving surface capable of carrying a 50,000-pound vehicle. The width of the lot or easement must be at least 15-feet in order to accommodate City maintenance vehicles. In subdivisions and partitions, the easement or lot must be dedicated to the City on the final plat. In any other development, the easement or lot must be granted to the City and recorded prior to issuance of a building permit. Acknowledge.
TDC 74.485. - Street Trees. Prior to approval of a residential subdivision or partition final plat, the applicant must pay the City a non-refundable fee equal to the cost of the purchase and installation of street trees. The location, placement, and cost of the trees must be determined by the City. This sum must be calculated on the interior and exterior streets as indicated on the final subdivision or partition plat. Not applicable because our lot is accessed via an existing private street.
UTILITIES
TDC 74.610. - Water Service.
(1) Water lines must be installed to serve each property in accordance with the Public Works Construction Code. Water line construction plans must be submitted to the City Manager for review and approval prior to construction. Acknowledged.
(2) If there are undeveloped properties adjacent to the subject site, public water lines must be extended by the applicant to the common boundary line of these properties. The lines must be sized to provide service to future development, in accordance with the City's Water System Master Plan, TDC Chapter 12. Acknowledged.
(3) As set forth is TDC Chapter 12, Water Service, the City has three water service levels. All development applicants must be required to connect the proposed development site to the service level in which the development site is located. If the development site is located on a boundary line between two service levels the applicant must be required to connect to the service level with the higher reservoir elevation. The applicant may also be required to install or provide pressure reducing valves to supply appropriate water pressure to the properties in the proposed development site. Only one water supply source exists and will be connected to for service.
TDC 74.620. - Sanitary Sewer Service.
(1) Sanitary sewer lines must be installed to serve each property in accordance with the Public Works Construction Code. Sanitary sewer construction plans and calculations must be submitted to the City Manager for review and approval prior to construction. Acknowledged.
(2) If there are undeveloped properties adjacent to the proposed development site which can be served by the gravity sewer system on the proposed development site, the applicant must extend public sanitary sewer lines to the common boundary line with these properties. The lines must be sized to convey flows to include all future development from all up stream areas that can be expected to drain through the lines on the site, in accordance with the City's Sanitary Sewer System Master Plan, TDC Chapter 13. Not applicable.
TDC 74.630. - Storm Drainage System.
(1) Storm drainage lines must be installed to serve each property in accordance with City standards. Storm drainage construction plans and calculations must be submitted to the City Manager for review and approval prior to construction. Acknowledged.
(2) The storm drainage calculations must confirm that adequate capacity exists to serve the site. The discharge from the development must be analyzed in accordance with the City's Storm and Surface Water Regulations. Acknowledged.
(3) If there are undeveloped properties adjacent to the proposed development site which can be served by the storm drainage system on the proposed development site, the applicant must extend storm drainage lines to the common boundary line with these properties. The lines must be sized to convey expected flows to include all future development from all up stream areas that will drain through the lines on the site, in accordance with the Tualatin Drainage Plan in TDC Chapter 14. Not applicable.
TDC 74.640. - Grading.
(1) Development sites must be graded to minimize the impact of storm water runoff onto adjacent properties and to allow adjacent properties to drain as they did before the new development. Acknowledged.

(2) A development applicant must submit a grading plan showing that all lots in all portions of the development will be served by gravity drainage from the building crawl spaces; and that this development will not affect the drainage on adjacent properties. The City Manager may require the applicant to remove all excess material from the development site. Acknowledged.

TDC 74.650. - Water Quality, Storm Water Detention and Erosion Control. The applicant must comply with the water quality, storm water detention and erosion control requirements in the Surface Water Management Ordinance. If required:
(1) On subdivision and partition development applications, prior to approval of the final plat, the applicant must arrange to construct a permanent on-site water quality facility and storm water detention facility and submit a design and calculations indicating that the requirements of the Surface Water Management Ordinance will be satisfied and obtain a Stormwater Connection Permit from Clean Water Services; or Not applicable.
(2) On all other development applications, prior to issuance of any building permit, the applicant must arrange to construct a permanent on-site water quality facility and storm water detention facility and submit a design and calculations indicating that the requirements of the Surface Water Management Ordinance will be met and obtain a Stormwater Connection Permit from Clean Water Services. Acknowledged.
(3) For on-site private and regional non-residential public facilities, the applicant must submit a stormwater facility agreement, which will include an operation and maintenance plan provided by the City, for the water quality facility for the City's review and approval. The applicant must submit an erosion control plan prior to issuance of a Public Works Permit. No construction or disturbing of the site must occur until the erosion control plan is approved by the City and the required measures are in place and approved by the City. Acknowledged.

TDC 74.660. - Underground.
(1) All utility lines including, but not limited to, those required for gas, electric, communication, lighting and cable television services and related facilities must be placed underground. Surface-mounted transformers, surface-mounted connection boxes and meter cabinets may be placed above ground. Temporary utility service facilities, high capacity electric and communication feeder lines, and utility transmission lines operating at 50,000 volts or above may be placed above ground. The applicant must make all necessary arrangements with all utility companies to provide the underground services. The City reserves the right to approve the location of all surface-mounted transformers. Acknowledged.
(2) Any existing overhead utilities may not be upgraded to serve any proposed development. If existing overhead utilities are not adequate to serve the proposed development, the applicant must, at their own expense, provide an underground system. The applicant must be responsible for obtaining any off-site deeds and/or easements necessary to provide utility service to this site; the deeds and/or easements must be submitted to the City Manager for acceptance by the City prior to issuance of the Public Works Permit. Acknowledged.

TDC 74.670. - Existing Structures. Not applicable – none.

TDC 74.700. - Removal, Destruction or Injury of Trees. It is unlawful for a person, without a written permit from the City Manager, to remove, destroy, break or injure a tree, plant or shrub, that is planted or growing in or upon a public right-of-way within the City, or cause, authorize, or procure a person to do so, authorize or procure a person to injure, misuse or remove a device set for the protection of any tree, in or upon a public right-of-way. Acknowledged.

TDC 74.705. - Street Tree Removal Permit. Not applicable – no street trees because no ROW.

k

End of Narrative

WFG National Title Insurance Company
a Williston Financial Group company

PROPERTY INFORMATION REPORT

Date: September 15, 2020

File No.: 20-299861
Property: 11507 SW Amu Street, Tualatin, OR 97062

Martin Development NW
P O Box 15523
Seattle, WA 98115

Your Reference: Hedges D, An LLC

The information contained in this report is furnished by WFG National Title Insurance Company (the "Company") as an information service based on the records and the indices maintained by the Company for the county identified below. This report does not constitute title insurance and is not to be construed or used as a commitment for title insurance. The Company assumes and shall have no liability whatsoever for any errors or inaccuracies in this report. In the event any such liability is ever asserted or enforced, such liability shall in no event exceed the paid herein. No examination has been made of the Company's records, other than as specifically set forth in this report.

The effective date of this report is September 4, 2020

REPORT FINDINGS

A. The land referred to in this report is located in the county of Washington State of Oregon, and is described as follows:

See Attached Exhibit "A"

B. As of the Effective Date and according to the last deed of record, we find the title to the land to be vested as follows:

Hedges D, An LLC, an Oregon limited liability company

C. As of the Effective Date and according to the Public Records, the Land is subject to the following liens and encumbrances, which are not necessarily shown in the order of priority:

1. Any adverse claim or defect in the title based upon the assertion that some portion of said land has been removed from or brought within the boundaries of the premises by a avulsive movement of Hedges Creek or has been formed by a process of accretion or reliction or has been created by artificial means or has accreted to such portion so created.

2. Government rights to connect with floor control and propagation of anadromous fish and public rights of fishing and recreational navigation in and to the water, bed and shoreline of the Hedges Creek.

3. Easement, including the terms and provisions thereof:

For	:	Storm Drain Channel
Granted to	:	the City of Tualatin, its successors in interest and assigns
Recorded	:	February 9, 2000
Recording No(s)	:	2000-010208
Affects	:	Said Storm Drain channel is delineated on the plat of Franklin Business Park No. 6. - affects the most Easterly portion of Lot, which abuts the private roadway

4. Covenants, Conditions and Restrictions, including the terms and provisions thereof, as shown on the recorded plat of Franklin Business Park.

5. Easement as shown on the plat of Franklin Business Park

For	:	Conservation purposes
Affects	:	25 foot strips shown on the plat - affects the most Easterly portion of Lot, which abuts the private roadway

Also delineated on the Plat of Franklin Business Park No. 6.

6. Covenants, Conditions, Restrictions and Easements, including the terms and provisions thereof, in Declaration of Franklin Business Park:

Recorded	:	November 10, 2004
Recording No(s)	:	2004-129475

Easements rights over the common areas for the benefit of the Association and the Owners of Franklin Business Park, for access, ingress and egress over all the common areas disclosed in above Declaration, subject to terms therein.

As amended by First Amendment:

Recorded	:	August 5, 2005
Recording No(s)	:	2005-093498

As amended by Second Amendment:

Recorded	:	July 8, 2011
Recording No(s)	:	2011-047427

Said Second Amendment was

Re-Recorded	:	July 15, 2011
Recording No(s)	:	2011-049589

Assignment of Declarant Rights

From	:	Franklin Business Park LLc, an Oregon limited liabilty company
To	:	Franklin Business Park Owners Association, an Oregon nonprofit corporation
Recorded	:	April 17, 2018
Recording No(s)	:	2018-026472

7. Said Covenants, Conditions and Restrictions set forth above contain, amount other things, levies and assessments of Franklin Business Park Owners Association.

8. Easement, including the terms and provisions thereof:

For	:	Public Utility Access
Granted to	:	the City of Tualatin, its successors in interest and assigns
Recorded	:	December 16, 2005
Recording No(s)	:	2005-158560
Affects	:	Portion within private roadway easement

9. Covenants, Conditions and Restrictions, including the terms and provisions thereof, as shown on the recorded Plat of Franklin Business Park No. 4.

10. Terms and Provisions of Easement and Maintenance Agreement, in Declaration of Access Easement

For	:	Ingress and egress for vehicular and pedestrian traffic on Hedges Creek Drive
And	:	Lot 7, Franklin Business Park No. 3, Lot 8, Franklin Business Park No. 4, and the portion of Lot 4, Franklin Business Park (now known as Franklin Business Park No. 6)
Recorded	:	July 6, 2011
Recording No(s)	:	2011-047430
Affects	:	the private roadway - appurtenant rights.

11. Covenants, Conditions and Restrictions, including the terms and provisions thereof, as shown on the recorded Plat of Franklin Business Park No. 6.

12. Easement as shown on the plat of Franklin Busienss Park No. 6:
    For : Storm Sewer, surface water, drainage and detention easement
    Affects : Tract "D" (Sensitive Area and Vegetated Corridor) over its entirety, being Parcel II herein

13. Access and Water Management Easement, including the terms and provisions thereof:
    For : Pedestrian and vehicle ingress and egress and turnaround for access to water channel easement area referred to as Hedges Creek
    Granted to : Franklin Business Park Owners Association, an Oregon nonprofit corporation
    Recorded : April 17, 2018
    Recording No(s) : 2018-026470
    Affects : see document for location - Appurtenant to Tract "D", Franklin Business Park No. 6

14. 2020-2021 taxes, a lien not yet due and payable.

15. Taxes, including the current fiscal year, not assessed due to Homeowners Association/Common Area (ORS 94.728). If the exempt status is terminated, an additional tax may be levied.
    Property ID No. : R2198561
    Levy Code : 088.15
    Map Tax Lot No. : 2S127BA 00900
    (Affects Parcel II)

16. City liens, if any, of the City of Tualatin.

17. Any unrecorded leases or rights of tenants in possession.

18. No search has been made for Financing Statements filed in the office of the Secretary of State. Exception may be taken to such matters as may be shown thereby. No liability is assumed if a Financing Statement is filed in the office of the County Recorder covering timber, crops, fixtures or contracts on the premises wherein the lands are described other than by metes and bounds or under the rectangular survey system or by recorded lot and block.

    LINKS FOR ADDITIONAL SUPPORTING DOCUMENTS:
    Assessor's Map
    Taxes R2198560
    Taxes R2198561
    Plat Map Franklin Business Park
    Plat Map Franklin Business Park No. 4
    Plat Map Franklin Business Park No. 6
    Vested Deed
    Access amd Water Management Ease ref in legal 2018-026470
    Declaration of Access ref in legal 2011-047430
    Full Assessors Map 2S1W27BA
    Adjoiner Deed TL 400 2S127BA
    Adjoiner Deed TL 500 2S127BA
    Adjoiner Deed TL 600 2S127BA
    Adjoiner Deed TL 100 2S127BB
    Adjoiner Deed TL 200 2S127BB
    Adjoiner Deed TL 1500 2S122C
    Adjoiner Deed TL 1502 2S122C

END OF EXCEPTIONS

NOTE: We find NO judgments or Federal Tax Liens against the name(s) of Hedges D, An LLC, an Oregon Limited Liability Company.

NOTE: Taxes paid in full for 2019 -2020:

Levied Amount	:	$7,210.15
Property ID No.	:	R2198560
Levy Code	:	088.15
Map Tax Lot No. (Affects Parcel I)	:	2S127BA00800

NOTE: The Oregon Corporation Commission disclosed that Hedges D, An LLC, is an active Oregon limited liability company:

Filed	:	April 16, 2018
Member	:	Mac Martin
Member	:	John Martin
Registered Agent	:	Mac Martin

END OF REPORT

Diane Brokke
WFG National Title Insurance Company
12909 SW 68th Pkwy., Suite 350
Portland, OR 97223
Phone: **(503) 431-8504**
Fax: **(503) 684-2978**
Email: **dbrokke@wfgnationaltitle.com**

EXHIBIT A
LEGAL DESCRIPTION

PARCEL I:

Lot 12, FRANKLIN BUSINESS PARK NO. 6, in the City of Tualatin, County of Washington and State of Oregon, a subdivision recorded August 24, 2016, Recording No. 2016-067801.

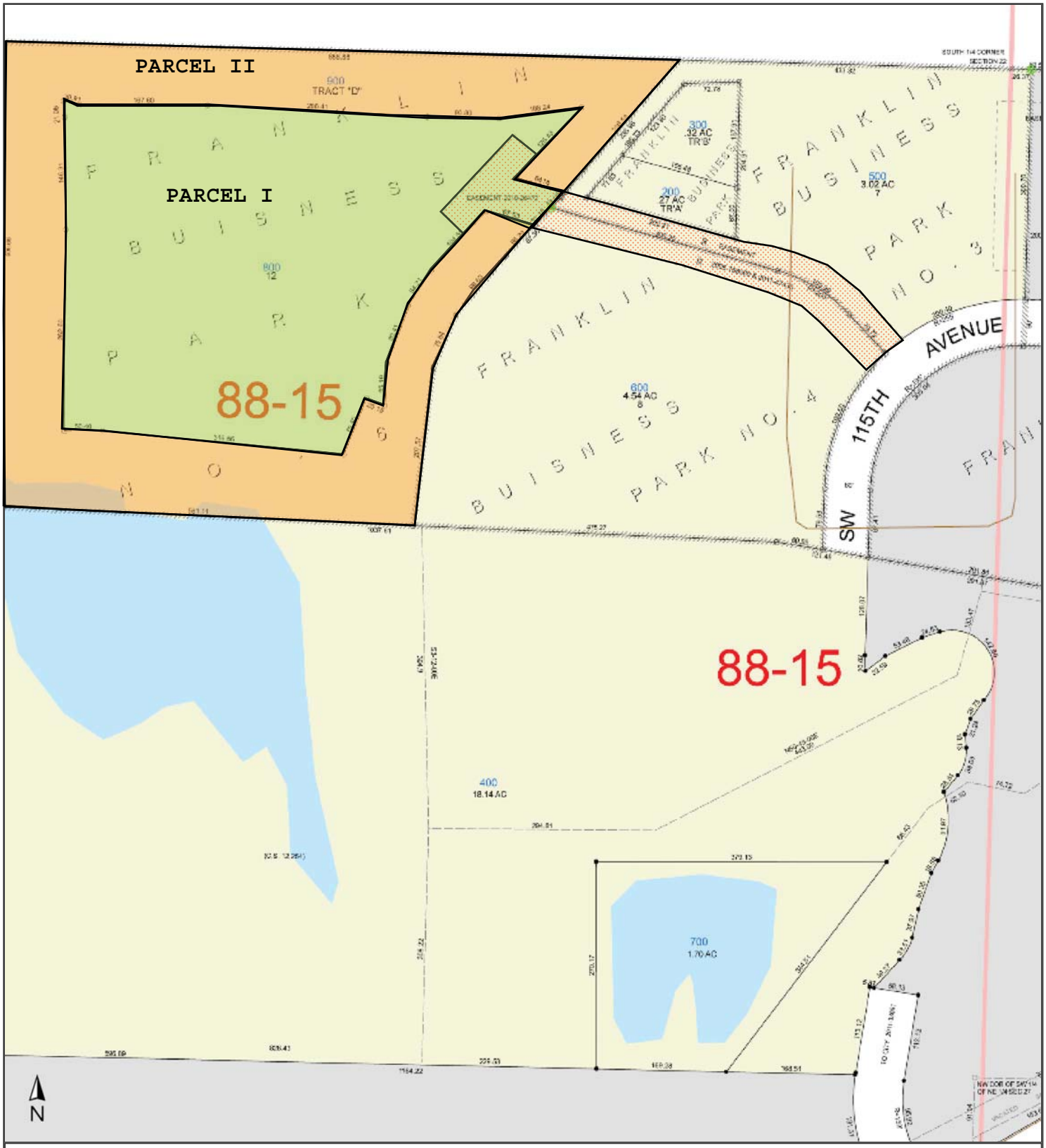
TOGETHER WITH access rights over and across private road (known as Hedges Creek Drive) as described in Declaration of Access Easement recorded July 6, 2011, Recording No. 2011-047430.

PARCEL II:

Tract “D”, FRANKLIN BUSINESS PARK NO. 6, in the City of Tualatin, County of Washington and State of Oregon, a subdivision recorded August 24, 2016, Recording No. 2016-067801.

TOGETHER WITH access rights over and across private road (known as Hedges Creek Drive) as described in Declaration of Access Easement recorded July 6, 2011, Recording No. 2011-047430.

ALSO TOGETHER WITH Access rights granted in Access and Water Management Easement recorded April 17, 2018, Recording No. 2018-026470.



WFG National Title Insurance Company
a Williston Financial Group company

ParcelID: R2198560 2S127BA 00800
11507 SW Amu Street
Tualatin, OR 97062 **R2108561 2S127BA 00900**

This map/plat is being furnished as an aid in locating the herein described land in relation to adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.

WFG Title 18-145135 COMM

File No.: 18-145135

Grantor
Franklin Business Park LLC
Grantee
HEDGES D, AN LLC
After recording return to
HEDGES D, AN LLC P.O. Box 15523 Seattle, WA 98115
Until requested, all tax statements shall be sent to
HEDGES D, AN LLC P.O. Box 15523 Seattle, WA 98115 Tax Acct No(s): **R2198560 and R2198561**

Washington County, Oregon **2018-026473**
D-DW
Stn=19 C DEMMER **04/17/2018 08:48:12 AM**
$25.00 $11.00 $5.00 $20.00 $350.00 **$411.00**

I, Richard Hobernicht, Director of Assessment and Taxation and Ex-Officio County Clerk for Washington County, Oregon, do hereby certify that the within instrument of writing was received and recorded in the book of records of said county.

Richard Hobernicht, Director of
Assessment and Taxation, Ex-Officio

Reserved for Recorder's Use

STATUTORY WARRANTY DEED

Franklin Business Park LLC, an Oregon limited liability company, Grantor(s) convey and warrant to **HEDGES D, AN LLC, an Oregon limited liability company**, Grantee(s), the real property described in the attached Exhibit A, subject only to those liens and encumbrances set forth on the attached Exhibit B.

The true consideration for this conveyance is **$350,000.00**. (Here comply with requirements of ORS 93.030)

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009 AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Executed this 16 day of April, 2018

Franklin Business Park LLC, an Oregon limited liability company

By: Marlborough Enterprises, Inc., an Oregon Corporation
Its: Manager

By Amy Drake Reeves
By: Amy Drake Reeves
Its: President

By Matthew B. Drake
By: Matthew B. Drake
Its: Vice President and Secretary

STATE OF OREGON
COUNTY OF MULTNOMAH

This instrument was acknowledged before me this 16 day of April, 2018 by Amy Drake Reeves and Matthew B. Drake , as President and Vice President and Secretary , of Marlborough Enterprises, Inc., an Oregon Corporation, as Manager of Franklin Business Park LLC, an Oregon limited liability company, on behalf of the limited liability company .

Print Name: Trevor Garrett Cheyne
Notary Public for Oregon
My Commission Expires: 10/15/21

OFFICIAL STAMP
TREVOR GARRETT CHEYNE
NOTARY PUBLIC-OREGON
COMMISSION NO. 967534
MY COMMISSION EXPIRES OCTOBER 15, 2021

EXHIBIT "A"
LEGAL DESCRIPTION

PARCEL I:

Lot 12, FRANKLIN BUSINESS PARK NO. 6, in the City of Tualatin, County of Washington and State of Oregon, a subdivision recorded August 24, 2016, Recording No. 2016-067801.

TOGETHER WITH access rights over and across private road (known as Hedges Creek Drive) as described in Declaration of Access Easement recorded July 6, 2011, Recording No. 2011-047430.

PARCEL II:

Tract "D", FRANKLIN BUSINESS PARK NO. 6, in the City of Tualatin, County of Washington and State of Oregon, a subdivision recorded August 24, 2016, Recording No. 2016-067801.

EXHIBIT "B"
Exceptions

1. Any adverse claim or defect in the title based upon the assertion that some portion of said land has been removed from or brought within the boundaries of the premises by a avulsive movement of Hedges Creek or has been formed by a process of accretion or reliction or has been created by artificial means or has accreted to such portion so created.

2. Government rights to connect with floor control and propagation of anadromous fish and public rights of fishing and recreational navigation in and to the water, bed and shoreline of the Hedges Creek.

3. Easement, including the terms and provisions thereof:

For	:	Storm Drain Channel
Granted to	:	the City of Tualatin, its successors in interest and assigns
Recorded	:	February 9, 2000
Recording No(s)	:	2000-010208
Affects	:	Said Storm Drain channel is delineated on the plat of Franklin Business Park No. 6.

4. Covenants, Conditions and Restrictions, including the terms and provisions thereof, as shown on the recorded plat of Franklin Business Park.

5. Easement as shown on the plat of Franklin Business Park

For	:	Conservation purposes
Affects	:	25 foot strips shown on the plat

Also delineated on the Plat of Franklin Business Park No. 6.

6. Covenants, Conditions, Restrictions and Easements, including the terms and provisions thereof, in Declaration of Franklin Business Park:

Recorded	:	November 10, 2004
Recording No(s)	:	2004-129475

Easements rights over the common areas for the benefit of the Association and the Owners of Franklin Business Park, for access, ingress and egress over all the common areas disclosed in above Declaration, subject to terms therein.

As amended by First Amendment:

Recorded	:	August 5, 2005
Recording No(s)	:	2005-093498

As amended by Second Amendment:

Recorded	:	July 8, 2011
Recording No(s)	:	2011-047427

Said Second Amendment was

Re-Recorded	:	July 15, 2011
Recording No(s)	:	2011-049589

7. Said Covenants, Conditions and Restrictions set forth above contain, amount other things, levies and assessments of Franklin Business Park Owners Association.

8. Easement, including the terms and provisions thereof:

For	:	Public Utility Access
Granted to	:	the City of Tualatin, its successors in interest and assigns
Recorded	:	December 16, 2005
Recording No(s)	:	2005-158560
Affects	:	Portion within private street known as Hedges Creek Drive - easement insured herein on Parcel I.

9. Covenants, Conditions and Restrictions, including the terms and provisions thereof, as shown on the recorded Plat of Franklin Business Park No. 4.

10. Terms and Provisions of Easement and Maintenance Agreement, in Declaration of Access Easement

For	:	Ingress and egress for vehicular and pedestrian traffic on Hedges Creek Drive
And	:	Lot 7, Franklin Business Park No. 3, Lot 8, Franklin Business Park No. 4, and the portion of Lot 4, Franklin Business Park (now known as Franklin Business Park No. 6)
Recorded	:	July 6, 2011
Recording No(s)	:	2011-047430
Affects	:	the Easement insured in Parcel I - appurtenant rights.

11. Covenants, Conditions and Restrictions, including the terms and provisions thereof, as shown on the recorded Plat of Franklin Business Park No. 6.

12. Easement as shown on the Plat of Franklin Business Park No. 6:

For	:	Storm Sewer, surface water, drainage and detention easement
Affects	:	Tract "D" (Sensitive Area and Vegetated Corridor), over its entirety, being Parcel II herein.

Property	Owner	Property Address	2020 In Process Real Market Value
R2198560	HEDGES D, AN LLC	11507 SW AMU ST, TUALATIN, OR 97062	$442,580

2020 GENERAL INFORMATION

Property Status	A Active
Property Type	Industrial
Legal Description	FRANKLIN BUSINESS PARK NO.6, LOT 12, ACRES 5.00
Alternate Account Number	-
Neighborhood	YTSH TUALATIN & SHERWOOD
Map Number	2S127BA00800
Property Use	2300: COUNTY APPRAISED VACANT INDUSTRIAL LAND
Levy Code Area	088.15

RELATED PROPERTIES

Linked Properties	-
Property Group ID	-
Grouped Properties	-
Split / Merge Date	-
Split / Merge Accounts	-
Split / Merge Message	-

2020 OWNER INFORMATION

Owner Name	HEDGES D, AN LLC
Mailing Address	PO BOX 15523 SEATTLE, WA 98115

2020 LAND SEGMENTS

STATE CODE	SEGMENT TYPE	LAND SIZE
L1	30: INDUSTRIAL PARKS	5.00 acres
TOTALS		**5.00 acres**

CERTIFIED / IN PROCESS VALUES

YEAR	IMPROVEMENTS	LAND	RMV	SPECIAL USE	ASSESSED VALUE
2020 (In Process)	$0	$442,580	$442,580	$0	$430,120
2019	$0	$398,260	$398,260	$0	$398,260

SALES HISTORY

SALE DATE	SELLER	BUYER	INST #	SALE PRICE	INST TYPE
4/16/2018	FRANKLIN BUSINESS PARK LLC	HEDGES D, AN LLC	2018026473	$350,000	DW

- If applicable, the described property is receiving special valuation based upon its use. Additional rollback taxes which may become due based on the provisions of the special valuation are not indicated in this listing.

TAX SUMMARY

Effective Date: 9/14/2020 Details

TAXYEAR	TOTAL BILLED	AD VALOREM	SPECIAL ASMT	PRINCIPAL	INTEREST	DATE PAID	TOTAL OWED
2019	$7,210.15	$7,210.15	$0	$7,210.15	$0.00	-	$0.00
2018	$6,935.56	$6,935.56	$0	$6,935.56	$0.00	-	$0.00
2017	$7,512.91	$7,512.91	$0	$7,512.91	$0.00	-	$0.00

TOTAL TAXES DUE

Current Year Due	$0.00
Past Years Due	$0.00
Total Due	$0.00

TAXYEAR	RECEIPT NUMBER	TRANSACTION DATE	PAYMENT AMOUNT
2019	WASH-2020-6770	5-19-2020	$2,403.38
2019	6163664	2-12-2020	$2,403.38
2019	6149497	11-21-2019	$2,403.39
2018	5957352	5-10-2019	$2,311.85
2018	5946961	2-14-2019	$2,311.85
2018	5905035	11-15-2018	$2,311.86

2017	5707215	11-17-2017	$7,287.52

Property	Owner	Property Address	2020 In Process Real Market Value
R2198561	HEDGES D, AN LLC	-	$0

2020 GENERAL INFORMATION

Property Status	A Active
Property Type	Commercial
Legal Description	FRANKLIN BUSINESS PARK NO.6, LOT D, ACRES 4.45
Alternate Account Number	-
Neighborhood	YTSH TUALATIN & SHERWOOD
Map Number	2S127BA00900
Property Use	0000: EXEMPT COMMON PROPERTY IN PLANNED COMMUNITIES
Levy Code Area	088.15

RELATED PROPERTIES

Linked Properties	-
Property Group ID	-
Grouped Properties	-
Split / Merge Date	-
Split / Merge Accounts	-
Split / Merge Message	-

2020 OWNER INFORMATION

Owner Name	HEDGES D, AN LLC
Mailing Address	PO BOX 15523 SEATTLE, WA 98115

EXEMPTIONS/DEFERRALS

EXEMPTION CODE	EXEMPTION DESCRIPTION	EXPIRATION YEAR
HOA	HOA: Homeowners Association/Common Area (ORS 94.728)	-

PROPERTY FLAGS

PROPERTY FLAG CODE	PROPERTY FLAG DESCRIPTION
NA	NON-ASSESSABLE

CERTIFIED / IN PROCESS VALUES

YEAR	IMPROVEMENTS	LAND	RMV	SPECIAL USE	ASSESSED VALUE
2020 (In Process)	$0	$0	$0	$0	$0
2019	$0	$0	$0	$0	$0

SALES HISTORY

SALE DATE	SELLER	BUYER	INST #	SALE PRICE	INST TYPE
4/16/2018	FRANKLIN BUSINESS PARK LLC	HEDGES D, AN LLC	2018026473	$350,000	DW
	FRANKLIN BUSINESS PARK OWNERS ASSOC	FRANKLIN BUSINESS PARK LLC	2018026469	-	DQ

- If applicable, the described property is receiving special valuation based upon its use. Additional rollback taxes which may become due based on the provisions of the special valuation are not indicated in this listing.

TAX SUMMARY

Effective Date: 9/14/2020 Details

TAXYEAR	TOTAL BILLED	AD VALOREM	SPECIAL ASMT	PRINCIPAL	INTEREST	DATE PAID	TOTAL OWED
2019	$0.00	$0.00	$0	$0.00	$0.00	-	$0.00
2018	$0.00	$0.00	$0	$0.00	$0.00	-	$0.00
2017	$0.00	$0.00	$0	$0.00	$0.00	-	$0.00

TOTAL TAXES DUE

Current Year Due	$0.00
Past Years Due	$0.00
Total Due	$0.00

Payment History for R2198561 not found.
Please contact the district if you have further questions.

FRANKLIN BUSINESS PARK NO. 6

A REPLAT OF A PORTION OF LOT 4, "FRANKLIN BUSINESS PARK" IN THE NW 1/4 OF SECTION 27

T.2S., R.1W., WILLAMETTE MERIDIAN

CITY OF TUALATIN, WASHINGTON COUNTY, OREGON

APRIL 6, 2016

RECORDED AS DOCUMENT NO. 2016067801

REFERENCE MATERIAL

SN 5534	DOC. NO. 79010860	DOC. NO. 98096419
SN 12254	DOC. NO. 80018262	DOC. NO. 2000010206
SN 16954	DOC. NO. 87024139	DOC. NO. 2000010208
SN 16777	DOC. NO. 87024688	DOC. NO. 2000029918
SN 17143	DOC. NO. 88000527	DOC. NO. 2001067204
SN 21940	DOC. NO. 90-48076	DOC. NO. 2002-061523
SN 25092	DOC. NO. 90-69330	DOC. NO. 2003-044038
SN 27386	DOC. NO. 98096416	DOC. NO. 2005-158560
SN 28004	DOC. NO. 98096417	DOC. NO. 2011-038796
SN 29072	DOC. NO. 98096418	DOC. NO. 2013-039096
SN 31067	FRANKLIN BUSINESS PARK	
SN 31473	FRANKLIN BUSINESS PARK NO. 3	
SN 31523	FRANKLIN BUSINESS PARK NO. 4	

SCALE: 1" = 60'

DOC. NO. 79010860 (MARINE LUMBER CO.)

DOC. NO. 2006-083653 (TUALATIN YARDS, LLC)

DOC. NO. 2000029918 (FRANKLIN BUSINESS PARK LLC)

DOC. NO. 88000527 (JILLIAN I. WAGER)

DOC. NO. 2013-039096 (POWN PACIFIC BUILDING #1, LLC)

MONUMENT NOT SET (UNDER WATER)

STORM DRAIN CHANNEL EASEMENT TO THE CITY OF TUALATIN PER DOCUMENT NO. 2000010206

TRACT "D" SENSITIVE AREA/VEGETATED CORRIDOR (AREA = 4.449 ACRES)

N 89°37'58"E 888.88'

CENTERLINE DITCH

TOP OF BANK

S 88°52'53"E 240.15'

S 89°05'52"E 235.35'

N 89°46'13"E 408.73'

N 89°46'13"E 408.68'

S 75°22'46"W 20.56'

N 87°37'43"E 40.81'

N 88°02'25"E 147.79'

N 88°18'31"E 127.47'

N 88°29'00"E 167.60'

S 79°12'46"E 20.91'

N 05°40'35"W 21.05'

S 88°57'22"E 286.41'

N 89°25'23"E 93.80'

N 80°23'52"E 108.24'

25' WIDE CONSERVATION EASEMENT FOR THE BENEFIT OF FRANKLIN BUSINESS PARK OWNERS, PER THE PLAT OF FRANKLIN BUSINESS PARK (PLAT BOOK 135, PAGE 9)

TRACT "B" [FBP]

S 38°46'29"W 235.96'

S 38°46'29"W 172.58'

S 38°46'29"W 155.44'

S 40°39'16"W 125.43'

TRACT "A" [FBP]

S 07°56'00"W 0.23'

S 41°39'17"W 106.48'

S 41°39'17"W 106.51'

N 76°22'53"W 88.16'

N 76°22'53"W 31.16'

S 41°39'17"W 19.00'

S 41°39'17"W 87.96'

S 76°22'53"E 229.83'

S 76°22'53"E 306.25'

S 76°22'53"E 257.44'

INITIAL POINT

BASIS OF BEARINGS FRANKLIN BUSINESS PARK NO. 3

FRANKLIN BUSINESS PARK NO.3 LOT 7

(UP 0.6')

S 80°34'07"E 63.63'

N 13°17'07"E 30.00'

N 74°07'37"W 63.50'

C1 L=126.49' R=230.00'

C2 L=109.99' R=200.00'

C3 L=93.49' R=170.00'

N 44°52'20"W 72.27'

S 44°52'20"E 72.27'

C4 L=60.14'

C5

C6

S.W. 115TH AVENUE

30'

30'

N 00°02'48"W 608.66'

N 00°48'13"E 536.93'

N 00°59'02"E 524.97'

N 02°22'38"W 146.31'

N 01°20'35"W 262.80'

TOP OF BANK

LOT 12 (AREA = 4.998 ACRES)

Hedges Creek (BOUNDARY FOLLOWS APPROXIMATE CENTERLINE)

MONUMENT NOT SET (UNDER WATER)

S 38°27'08"W 99.63'

S 38°27'08"W 108.34'

S 38°27'08"W 104.17'

S 38°27'08"W 86.25'

S 37°32'41"W 54.21'

S 40°39'16"W 104.55'

S 18°23'08"W 60.41'

S 21°16'45"W 83.11'

S 21°16'45"W 75.84'

VARIABLE WIDTH PUBLIC UTILITY ACCESS EASEMENT (DOCUMENT NO. 2005-158560)

PRIVATE ACCESS EASEMENT (DOCUMENT NO. 2011-047430)

FRANKLIN BUSINESS PARK NO.4 LOT 8

25' WIDE CONSERVATION EASEMENT FOR THE BENEFIT OF FRANKLIN BUSINESS PARK OWNERS, PER THE PLAT OF FRANKLIN BUSINESS PARK (PLAT BOOK 135, PAGE 9)

S 68°36'24"E 25.15'

S 01°29'55"W 55.19'

S 18°57'34"W 79.40'

S 05°20'16"W 162.85'

S 05°20'16"W 186.98'

S 05°20'16"W 207.57'

MONUMENT NOT SET (UNDER WATER)

STORM DRAIN CHANNEL EASEMENT TO THE CITY OF TUALATIN PER DOCUMENT NO. 2000010208

50.40' S 88°33'26"W

N 86°21'46"W 316.56'

7.0'

12.5'

N 89°56'59"W 499.52'

N 89°56'59"W 514.94'

TOP OF BANK

CENTERLINE DITCH

N 89°20'21"W 561.11'

MONUMENT NOT SET (UNDER WATER)

TRACT "D" SENSITIVE AREA/VEGETATED CORRIDOR (AREA = 4.449 ACRES)

FOUND 5/8" IRON ROD WITH RED PLASTIC CAP STAMPED "RYAN LS 58833" [FBP 4] (DOWN 1.0')

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	CHORD	CHORD BEAR.
C1	230.00'	126.49'	31°30'33"	124.90'	S 60°37'37" E
C2	200.00'	109.99'	31°30'33"	108.61'	S 60°37'37" E
C3	170.00'	93.49'	31°30'33"	92.32'	S 60°37'37" E
C4	255.00'	60.14'	13°30'48"	60.00'	N 44°35'43" E
C5	255.00'	30.09'	6°45'37"	30.07'	N 41°13'06" E
C6	255.00'	30.05'	6°45'11"	30.04'	N 47°58'32" E

LEGEND

O	5/8" X 30" IRON ROD WITH RED PLASTIC CAP STAMPED "RYAN LS 58833", SET APRIL 5, 2016
●	FOUND 1" COPPER DISK STAMPED "LS 58833", PER FBP 3, UNLESS OTHERWISE NOTED
▲	FOUND 1--5/8" DIAMETER ALUMINUM CAP STAMPED "RYAN LS 58833", PER FBP 3
■	FOUND 5/8" IRON ROD WITH RED PLASTIC CAP STAMPED "GARY W. CHEEL PLS 42849", PER FBP & DOC. NO. 2002-090055
( )	RECORD BEARING AND/OR DISTANCE
[ ]	PROBABLE ORIGIN OR FIRST RECORD OF MONUMENT
DOC. NO.	DOCUMENT NUMBER, WASHINGTON COUNTY DEED RECORDS
FBP	PLAT OF "FRANKLIN BUSINESS PARK"
FBP 3	PLAT OF "FRANKLIN BUSINESS PARK NO. 3"
FBP 4	PLAT OF "FRANKLIN BUSINESS PARK NO. 4"
R/W	RIGHT-OF-WAY
SN	SURVEY NUMBER, WASHINGTON COUNTY SURVEY RECORDS

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON JULY 13, 2004 ANTHONY B. RYAN 58833

RENEWAL: DECEMBER 31, 2016

WEDDLE SURVEYING inc.
Excellence is our benchmark.
6950 SW HAMPTON ST., STE. 170, TIGARD, OR 97223
PH: (503) 941-9585 FAX: (503) 941-9640
www.weddlesurveying.net

RECORDED AS DOCUMENT NO. 2016067801

FRANKLIN BUSINESS PARK NO. 6

A REPLAT OF A PORTION OF LOT 4, "FRANKLIN BUSINESS PARK" IN THE NW 1/4 OF SECTION 27

T.2S., R.1W., WILLAMETTE MERIDIAN
CITY OF TUALATIN, WASHINGTON COUNTY, OREGON
APRIL 6, 2016

APPROVALS

APPROVED THIS 24 DAY OF August, 2016
WASHINGTON COUNTY BOARD OF COMMISSIONERS
BY _____

APPROVED THIS 11th DAY OF August, 2016
MAYOR OF THE CITY OF TUALATIN
BY _____

ATTEST THIS 11th DAY OF August, 2016
CITY OF TUALATIN RECORDER
BY Sherilyn Lombos

APPROVED THIS 24th DAY OF AUGUST, 2016
WASHINGTON COUNTY SURVEYOR
BY Derek M. Rigutto D.C.S.

ALL TAXES, FEES, ASSESSMENTS OR OTHER CHARGES AS PROVIDED BY ORS 92.095 HAVE BEEN PAID AS OF THIS 29th DAY OF August, 2016
DIRECTOR OF ASSESSMENT AND TAXATION
(WASHINGTON COUNTY ASSESSOR)
BY _____
DEPUTY

ATTEST THIS 24th DAY OF August, 2016
DIRECTOR OF ASSESSMENT AND TAXATION,
EX-OFFICIO COUNTY CLERK
BY _____
DEPUTY

STATE OF OREGON
COUNTY OF WASHINGTON } SS

I DO HEREBY CERTIFY THAT THIS SUBDIVISION PLAT WAS RECEIVED FOR RECORD ON THIS 24th DAY OF August, 2016 AT 2:23 O'CLOCK P M., AND RECORDED IN THE COUNTY CLERK RECORDS.

_____
DEPUTY COUNTY CLERK

DECLARATION

KNOW ALL MEN BY THESE PRESENTS THAT FRANKLIN BUSINESS PARK, LLC, AN OREGON LIMITED LIABILITY COMPANY, DOES HEREBY MAKE, ESTABLISH AND DECLARE THE ANNEXED MAP OF "FRANKLIN BUSINESS PARK NO. 6" AS DESCRIBED IN THE ACCOMPANYING SURVEYOR'S CERTIFICATE TO BE A TRUE MAP AND PLAT THEREOF, AND HAS CAUSED THE SUBDIVISION TO BE PREPARED AND THE PROPERTY SUBDIVIDED IN ACCORDANCE WITH THE PROVISIONS OF O.R.S. CHAPTER 92, AND DOES HEREBY GRANT ALL EASEMENTS AS SHOWN OR NOTED HEREON. TRACT "D" IS HEREBY CONVEYED TO THE FRANKLIN BUSINESS PARK OWNERS ASSOCIATION.

Franklin G. Drake
FRANKLIN G. DRAKE
PRESIDENT
MARLBOROUGH ENTERPRISES, INC.
MANAGING MEMBER OF
FRANKLIN BUSINESS PARK, LLC

Matthew B. Drake
MATTHEW B. DRAKE
SECRETARY
MARLBOROUGH ENTERPRISES, INC.
MANAGING MEMBER OF
FRANKLIN BUSINESS PARK, LLC

ACKNOWLEDGEMENT

STATE OF OREGON
COUNTY OF MULTNOMAH } SS

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON
AUGUST 8, 2016

BY FRANKLIN G. DRAKE, AS PRESIDENT OF MARLBOROUGH ENTERPRISES, INC., MANAGING MEMBER OF FRANKLIN BUSINESS PARK, LLC.

BY MATTHEW B. DRAKE, AS SECRETARY OF MARLBOROUGH ENTERPRISES, INC., MANAGING MEMBER OF FRANKLIN BUSINESS PARK, LLC.

Frank Wendell Lambert
(NOTARY SIGNATURE)

FRANK WENDELL LAMBERT
NOTARY PUBLIC - OREGON (PRINTED NAME)

COMMISSION NO. 947805

MY COMMISSION EXPIRES: MARCH 01, 2020

NOTES

1. THIS PLAT IS SUBJECT TO THE CONDITIONS OF APPROVAL CONTAINED IN THE CITY OF TUALATIN CASE FILE SB 97-03.
2. TRACT "D" IS FOR A SENSITIVE AREA AND VEGETATED CORRIDOR. TRACT 'D' IS SUBJECT TO A STORM SEWER, SURFACE WATER, DRAINAGE AND DETENTION EASEMENT OVER ITS ENTIRETY FOR THE BENEFIT OF CLEAN WATER SERVICES.
3. TRACT "D" SHALL BE OWNED AND MAINTAINED BY THE FRANKLIN BUSINESS PARK OWNERS ASSOCIATION.

SURVEYOR'S CERTIFICATE

I, ANTHONY B. RYAN, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF OREGON, DO HEREBY CERTIFY THAT I HAVE CORRECTLY SURVEYED AND MARKED WITH PROPER MONUMENTS THE LAND REPRESENTED ON THE ANNEXED MAP OF "FRANKLIN BUSINESS PARK NO. 6", BEING A REPLAT OF A PORTION OF LOT 4, "FRANKLIN BUSINESS PARK", A DULY RECORDED SUBDIVISION IN WASHINGTON COUNTY, SITUATE IN THE NORTHWEST QUARTER OF SECTION 27, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, CITY OF TUALATIN, COUNTY OF WASHINGTON AND STATE OF OREGON AND THAT FOR THE INITIAL POINT OF SAID PLAT I HELD THE POSITION OF A FOUND 1" DIAMETER COPPER DISK STAMPED "LS 58833" MARKING THE SOUTHWEST CORNER OF LOT 7, "FRANKLIN BUSINESS PARK NO. 3, ALSO A DULY RECORDED PLAT IN SAID COUNTY. THE BOUNDARY OF "FRANKLIN BUSINESS PARK NO. 6" IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE ABOVE DESCRIBED INITIAL POINT, ALSO BEING THE NORTHWEST CORNER OF LOT B, "FRANKLIN BUSINESS PARK NO. 4", ALSO A DULY RECORDED PLAT IN SAID COUNTY; THENCE ALONG THE WESTERLY LINES OF SAID LOT B THE FOLLOWING COURSES: SOUTH 41°39'17" WEST, 87.36 FEET; THENCE SOUTH 38°27'08" WEST, 99.83 FEET; THENCE SOUTH 21°16'45" WEST, 75.84 FEET; THENCE SOUTH 05°20'16" WEST, 207.57 FEET TO A POINT ON THE SOUTHERLY LINE OF SAID LOT 4, "FRANKLIN BUSINESS PARK"; THENCE ALONG SAID SOUTHERLY LINE NORTH 89°20'21" WEST, 561.11 FEET TO THE SOUTHWEST CORNER OF SAID LOT 4; THENCE ALONG THE WESTERLY LINE THEREOF NORTH 00°02'48" WEST, 626.66 FEET TO THE NORTHWESTERLY CORNER OF SAID LOT 4; THENCE ALONG THE NORTHERLY LINE THEREOF NORTH 89°37'58" EAST, 888.88 FEET TO THE NORTHWEST CORNER OF SAID LOT 7, "FRANKLIN BUSINESS PARK NO. 3"; THENCE ALONG THE WESTERLY LINE THEREOF SOUTH 38°48'29" WEST, 235.96 FEET TO AN ANGLE CORNER THEREIN; THENCE SOUTH 41°39'17" WEST, 19.05 FEET TO THE INITIAL POINT.

CONTAINING THEREIN 9.447 ACRES, MORE OR LESS.

NARRATIVE

THE PURPOSE OF THIS SURVEY IS TO PLAT INTO A SINGLE LOT AND A TRACT THE REMAINING PORTION OF LOT 4, "FRANKLIN BUSINESS PARK," A DULY RECORDED SUBDIVISION IN WASHINGTON COUNTY, OREGON, SITUATE IN THE NORTHWEST QUARTER OF SECTION 27, TOWNSHIP 2 SOUTH, RANGE 1 WEST, OF THE WILLAMETTE MERIDIAN, IN THE CITY OF TUALATIN, WASHINGTON COUNTY, OREGON.

THE BOUNDARY RESOLUTION IS PER SAID PLAT OF "FRANKLIN BUSINESS PARK". THE BASIS OF BEARINGS IS PER THE PLAT OF "FRANKLIN BUSINESS PARK NO. 3", WASHINGTON COUNTY PLAT RECORDS. ALL FOUND MONUMENTS WERE HELD FOR POSITION UNLESS OTHERWISE NOTED. FALLINGS TO FOUND MONUMENT POSITIONS ARE SHOWN AS BEARING AND DISTANCE FROM CALCULATED POSITION TO FOUND POSITION. THE EASTERLY PROPERTY LINES WERE LOCATED BY HOLDING RECORD DATA PER SAID PLAT OF "FRANKLIN BUSINESS PARK NO. 3" AND THE PLAT OF "FRANKLIN BUSINESS PARK NO. 4".

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
JULY 13, 2004
ANTHONY B. RYAN
58833
RENEWAL: DECEMBER 31, 2016

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City of Tualatin
www.tualatinoregon.gov

Hydraulic Modeling Fee

Water supply modeling is necessary for larger projects to determine the impact of the project's water demand on the water supply system. Water supply modeling will be performed by a consulting engineer based on the most recent version of the Tualatin Water System Master Plan.

Due to possible impacts to the water supply system, the following projects in Tualatin require hydraulic modeling based on the size and type of the project and projected water use for the finished project. The outcome of modeling could require offsite improvements to the water supply system in order to ensure that adequate water supply is available to serve the project and reduce impacts to the overall system.

Hydraulic modeling of the water supply system is required for the following project type/sizes/demand:

Project Type	Criteria	Permit Fee
Commercial or Industrial Building	Building floor area greater than 48,300 square feet **or** Anticipated daily water demand greater than 870 gallons per acre per day	$ 300 per building
Residential development	More than 49 dwelling units	$ 1,000
Multi-family development	More than 49 dwelling units **or** a combined building floor area greater than 48,300 square feet	$ 300 per building

Please complete this form and submit the form and required fee (if applicable) with your land-use application (architectural review, subdivision, etc.).

☒ Commercial or Industrial Development

- Building floor area 0 square feet
- Anticipated water demand (if known) Landscape irrigation only gallons per day
- Described planned building use Fleet parking lot.

☐ Residential Development

- Number of dwelling units or single family home lots _____

☐ Multi-Family Residential Development

- Number of dwelling units_____
- Building floor area (sum of all building) _____
- Number of multi-family buildings_____

Permit fee required based on the information provided above $0

- If no fee is required, enter $0.

NOTE: Water Supply Modeling does not replace the requirement for fire hydrant flow testing. Flow testing of fire hydrants will still be required to verify adequate fire flow of finished system

Clean Water Services

SENSITIVE AREA PRE-SCREENING SITE ASSESSMENT

Clean Water Services File Number 20-001845

1. **Jurisdiction:** Tualatin, OR

2. **Property Information** (example: 1S234AB01400)
   Tax lot ID(s): 2S127BA00800, 2S127BA00900,

   ***OR* Site Address:** 11507 SW Amu Street
   City, State, Zip: Tualatin, OR 97062
   Nearest cross street: SW 112th Ave.

3. **Owner Information**
   Name: Mac Martin
   Company: Hedges C & D LLC
   Address: 841 SW 37th Avenue
   City, State, Zip: Portland, OR 97219
   Phone/fax: 206-399-6676
   Email: MacMartinis@gmail.com

4. **Development Activity** (check **all** that apply)
   - ☐ Addition to single family residence (rooms, deck, garage)
   - ☐ Lot line adjustment
   - ☐ Minor land partition
   - ☐ Residential condominium
   - ☐ Commercial condominium
   - ☐ Residential subdivision
   - ☐ Commercial subdivision
   - ☑ Single lot commercial
   - ☐ Multi lot commercial

   Other

4. **Applicant Information**
   Name: Bob Wells
   Company: Lance Mueller & Associates
   Address: 130 Lakeside Avenue S., Suite 250
   City, State, Zip: Seattle, WA 98122
   Phone/fax: 206-325-2552; 206-328-0554
   Email: bwells@lmueller.com

6. **Will the project involve any off-site work?** ☐ Yes ☐ No ■ Unknown
   Location and description of off-site work:

7. **Additional comments or information that may be needed to understand your project:**
   Proposed construction of a 71,758sf industrial building and site work. No demolition required.

This application does NOT replace Grading and Erosion Control Permits, Connection Permits, Building Permits, Site Development Permits, DEQ 1200-C Permit or other permits as issued by the Department of Environmental Quality, Department of State Lands and/or Department of the Army COE. All required permits and approvals must be obtained and completed under applicable local, state, and federal law.

By signing this form, the Owner or Owner's authorized agent or representative, acknowledges and agrees that employees of Clean Water Services have authority to enter the project site at all reasonable times for the purpose of inspecting project site conditions and gathering information related to the project site. I certify that I am familiar with the information contained in this document, and to the best of my knowledge and belief, this information is true, complete, and accurate.

Print/type name Bob Wells Print/type title Project Manager

Signature Bob Wells Date 5/21/20

FOR DISTRICT USE ONLY

- ☐ Sensitive areas potentially exist on site or within 200' of the site. **THE APPLICANT MUST PERFORM A SITE ASSESSMENT PRIOR TO ISSUANCE OF A SERVICE PROVIDER LETTER.** If Sensitive Areas exist on the site or within 200 feet on adjacent properties, a Natural Resources Assessment Report may also be required.
- ☐ Based on review of the submitted materials and best available information sensitive areas do not appear to exist on site or within 200' of the site. This Sensitive Area Pre-Screening Site Assessment does NOT eliminate the need to evaluate and protect water quality sensitive areas if they are subsequently discovered. This document will serve as your Service Provider Letter as required by Resolution and Order 19-5, Section 3.02.1, as amended by Resolution and Order 19-22. All required permits and approvals must be obtained and completed under applicable local, State and federal law.
- ☒ Based on review of the submitted materials and best available information the above referenced project will not significantly impact the existing or potentially sensitive area(s) found near the site. This Sensitive Area Pre-Screening Site Assessment does NOT eliminate the need to evaluate and protect additional water quality sensitive areas if they are subsequently discovered. This document will serve as your Service Provider Letter as required by Resolution and Order 19-5, Section 3.02.1, as amended by Resolution and Order 19-22. All required permits and approvals must be obtained and completed under applicable local, state and federal law.
- ☐ **THIS SERVICE PROVIDER LETTER IS NOT VALID UNLESS _____ CWS APPROVED SITE PLAN(S) ARE ATTACHED.**
- ☐ The proposed activity does not meet the definition of development or the lot was platted after 9/9/95 ORS 92.040(2). **NO SITE ASSESSMENT OR SERVICE PROVIDER LETTER IS REQUIRED.**

Reviewed by Date 7/16/2020

Once complete, email to: **SPLReview@cleanwaterservices.org** • Fax: **(503) 681-4439**

OR mail to: SPL Review, Clean Water Services, 2550 SW Hillsboro Highway, Hillsboro, Oregon 97123

Revised 2/2020

REPUBLIC SERVICES

10295 Southwest Ridder Road Wilsonville, OR 97070
o 503.570.0626 f 503.582.9307 republicservices.com

September 4. 2020

Bob Wells
Lance Mueller & Associates

Re: Hedges D
TBD 115th Street
Tualatin, OR 97026

Dear Bob,

Thank you, for sending us the site plans for this proposed development in Tualatin Oregon.

My Company: Republic Services of Clackamas and Washington Counties has the franchise agreement to service this area with the City of Tualatin. We will provide complete commercial waste removal and recycling services as needed on a weekly basis for this location

The design locations of the enclosures sent 9/3/2020 and site traffic pattern will allow access for our trucks to service the trash and recycling.

The enclosure design plans and dimensions sent 9/3/2020 which includes 12' wide post to post ID and 14' depth, and gate swing radius of minimum 120 degrees with gate cane poles, is adequate to house two 3-yard trash/recycle containers and 1-65 gallon glass cart.

Thanks Bob, for your help and concerns for our services prior to this project being developed.

Sincerely,

Kelly Herrod
Operations Supervisor
Republic Services Inc.

Hedges D – Fleet Parking Lot

11507 SW 115th Avenue (private street), Tualatin, OR 97062

2. Plans

a. Existing Conditions – See sheet C0.01
b. Site Plan – See sheet A1.1
c. Tree Preservation Plan – (none)
d. Grading Plan – See sheet C1.20 – C1.30
e. Utility Plan - See sheet C1.30
f. Landscape Plan – See sheet L1.0
g. Lighting Plan – See sheet 1 of 1
h. Colored Elevations (None – there is no building proposed)
j. Materials Board (None – there is no building proposed)

Index of AR Drawings:

Architectural	A1.1	site plan and details
	A1.2	site details
Civil	C0.00	cover sheet
	C 0.01	topographic survey
	C 0.02	construction notes & specifications
	C 1.10	site plan
	C 1.20	grading plan
	C1.21	grading plan enlargements
	C1.30	utility plan
	C1.40	erosion and sediment control plan cover sheet
	C1.41	clearing, demolition, mass grading erosion and sed control plan
	C1.42	utility & street construction grading & stabilization esc plan
	C1.43	erosion and sediment control details
	C5.10	civil details
	C5.11	civil details
	R2.0	public water main extension - plan and profile
	R3.0	public water main extension - details
Landscape	L1.0	landscape plan
	L2.0	landscape Details & Specifications
Site lighting	1 of 1	lighting level point by point calculation plan

SITE PLAN

SCALE: 1" = 40'

11' x 27' STALLS -	342
10' MIN. X 24' MIN. STALL -	7
TOTAL	349

north

0 40 80

20 60

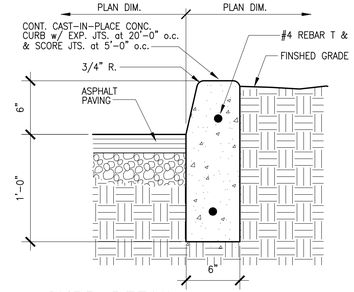
VICINITY MAP

NTS

SHEET INDEX

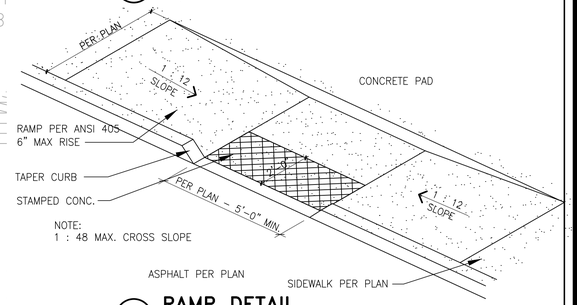
6 CURB DETAIL

1 1/2" = 1'=0"



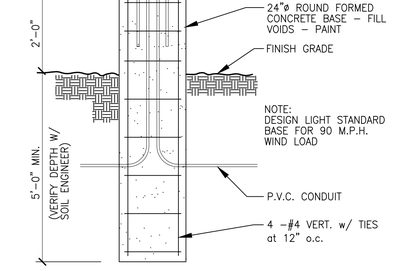
12 RAMP DETAIL

N.T.S.



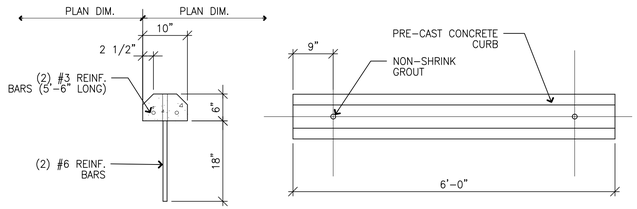
18 LIGHT POLE DETAIL

1/2" = 1'=0"



24 SPEED BUMP

1/2" = 1'=0"



30 PRECAST WHEEL STOP

N.T.S.

9-1-20	date
AR SUBMITTAL	revision
	no.
18-002	job no.
EM	drawn
BW	checked
9-1-20	date

REGISTERED ARCHITECT LANCE MUELLER SEATTLE, WA. 14911 OREGON STATE OF

HEDGES D

SW 115TH STREET

TUALATIN, OREGON

SITE PLAN AND DETAILS

LANCE MUELLER & ASSOCIATES

ARCHITECTS AIA

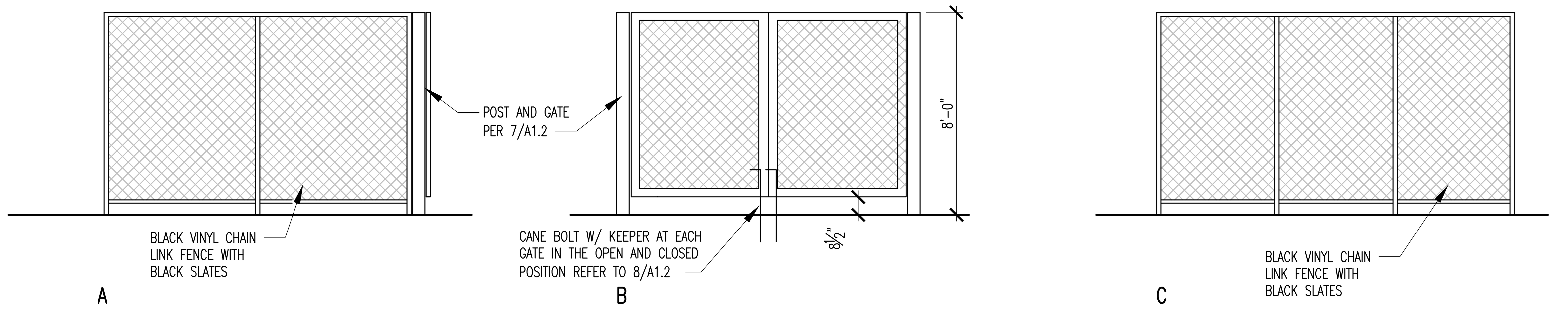
130 LAKESIDE • SUITE 250 • SEATTLE, WA 98122 • (206) 325-2553

sheet

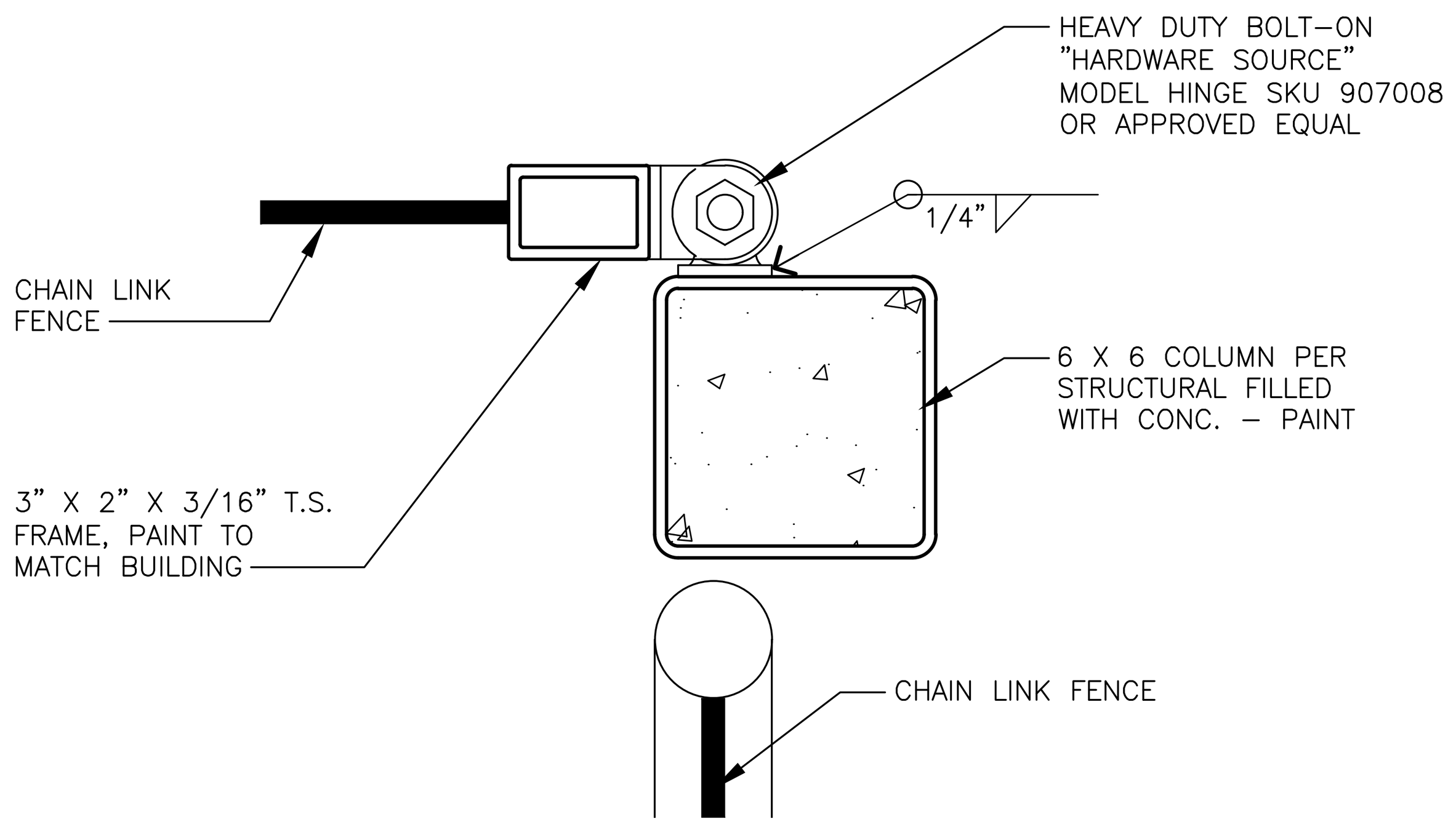
A1.1

SCHEME H

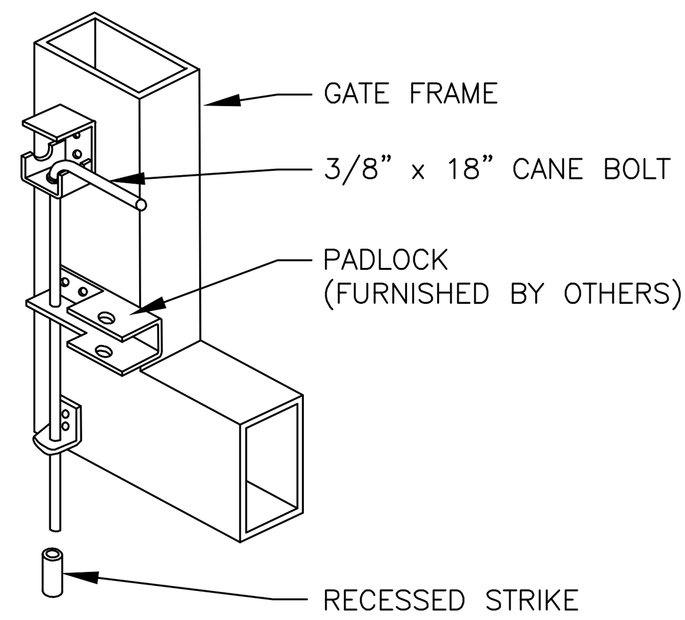
C:\Users\18002 martin - hedges d\18002-parking scheme h.dwg
9/1/2020



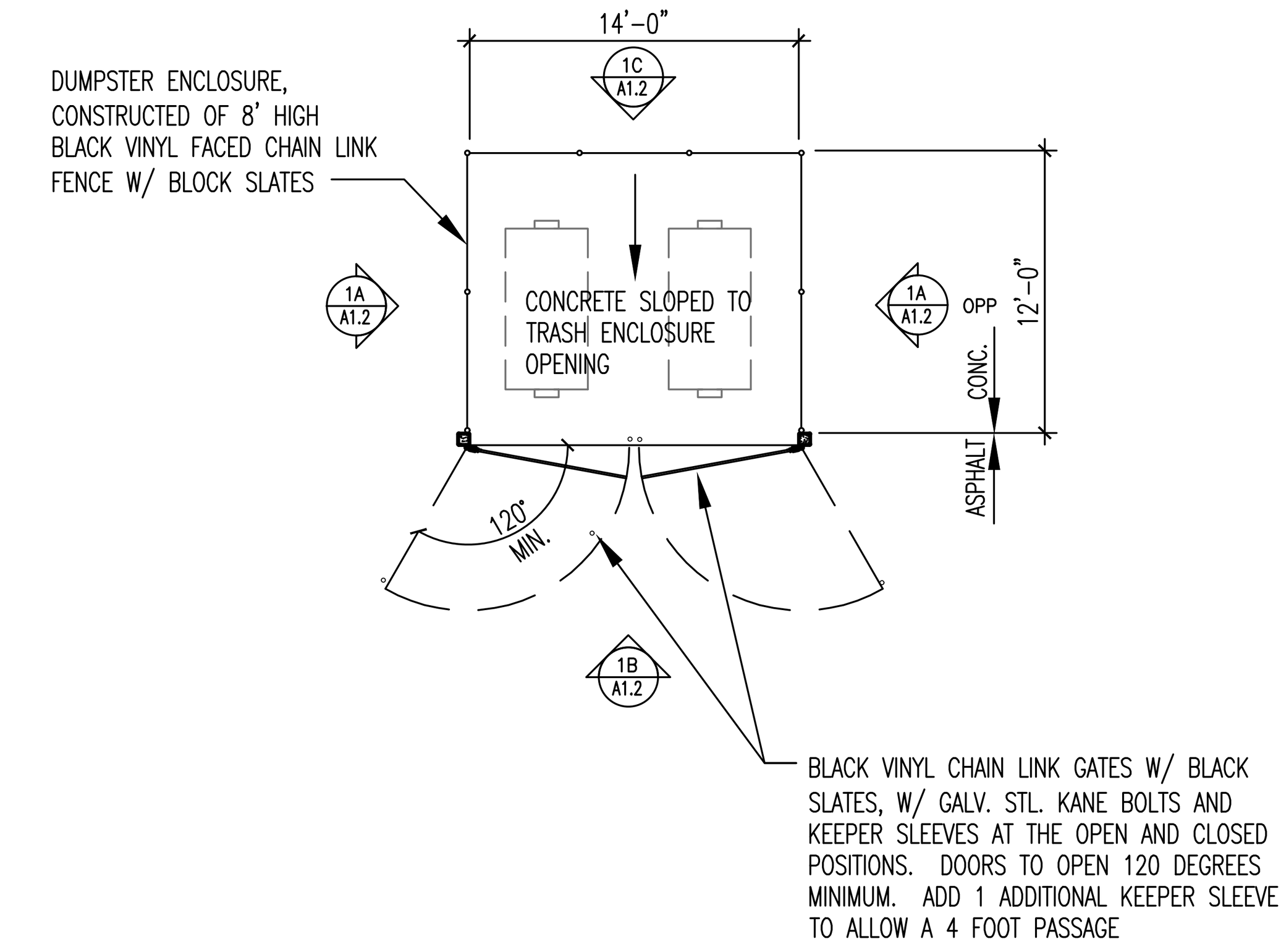
1 **DUMPSTER ELEVATION**
SCALE: 1/4" = 1'-0"



7 **DETAIL**
SCALE: 3" = 1'-0"



8 **DETAIL**
SCALE: 3" = 1'-0"



A **ENLARGED DUMPSTER PLAN**
SCALE: 1/8" = 1'-0"

no.	revision	date
	AR SUBMITTAL	9-1-20

18-002 job no.
EM drawn
BW checked
9-1-20 date

REGISTERED ARCHITECT LANCE MUELLER SEATTLE, WA. 1491 STATE OF OREGON

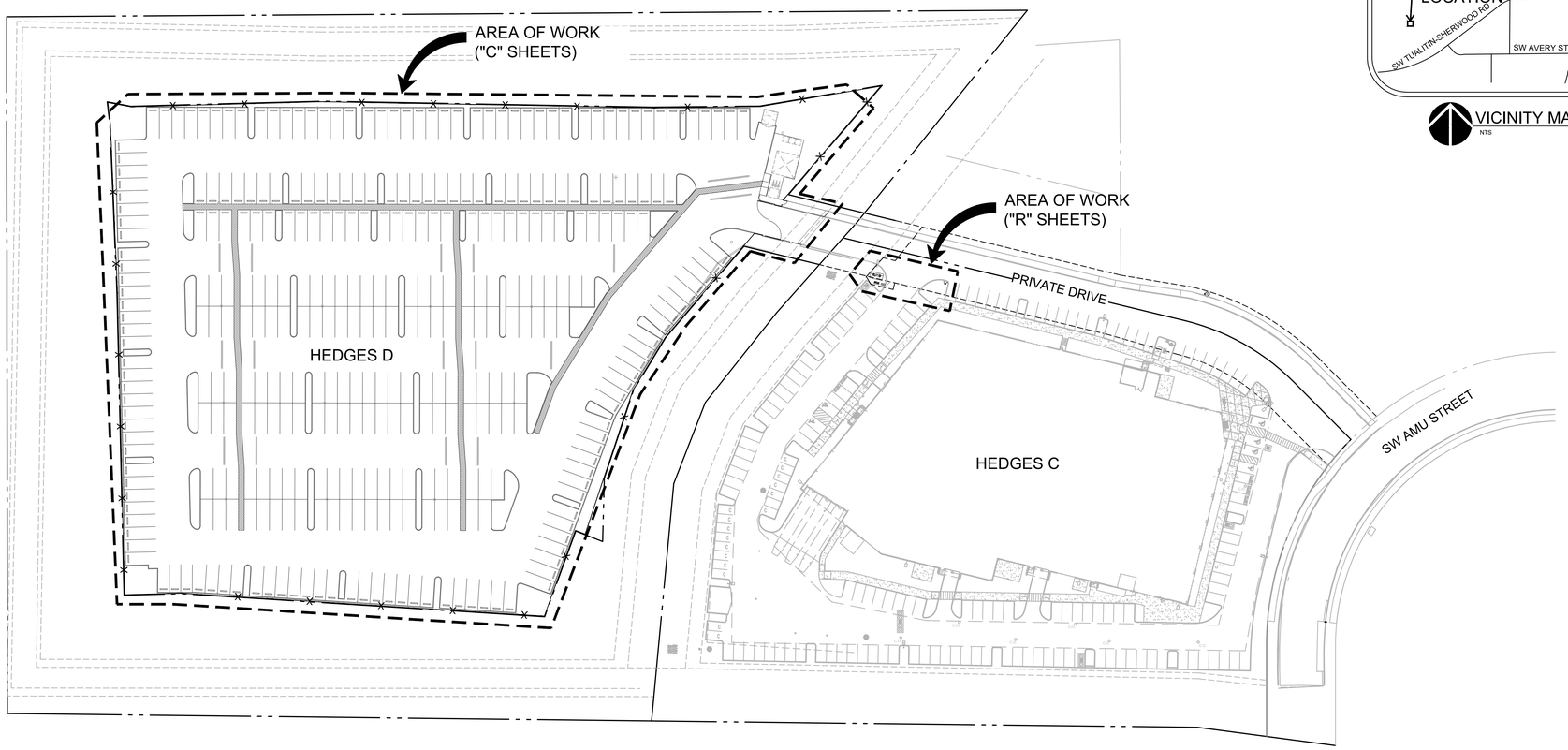
HEDGES D
SW 115TH STREET
TUALATIN, OREGON

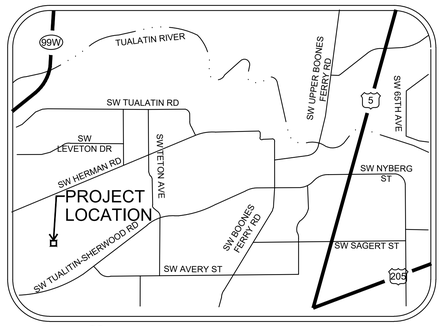
SITE DETAILS

LANCE MUELLER & ASSOCIATES
ARCHITECTS AIA
130 LAKESIDE • SUITE 250 • SEATTLE, WA 98122 • (206) 325-2553

sheet
A1.2

CIVIL SITE IMPROVEMENTS
HEDGES D PARKING LOT
TUALATIN, OREGON





VICINITY MAP
NTS

1 C0.00 SITE MAP

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NOTICE TO EXCAVATORS:
ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER.
(NOTE: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503)-232-1987).

POTENTIAL UNDERGROUND FACILITY OWNERS

Dig Safely.
Call the Oregon One-Call Center
DIAL 811 or 1-800-332-2344

EMERGENCY TELEPHONE NUMBERS

NW NATURAL GAS	
M-F 7am-6pm	**503-226-4211 Ext.4313**
AFTER HOURS	**503-226-4211**
PGE	**503-464-7777**
QWEST	**1-800-573-1311**
CITY BUREAU OF MAINTENANCE	**503-823-1700**
CITY WATER	**503-823-4874**
VERIZON	**1-800-483-1000**

PROJECT LOCATION
11507 SW AMU STREET
TUALATIN, OREGON

LATITUDE = 45°22'28"
LONGITUDE = -122°47'57"

PROPERTY DESCRIPTION
LOT 12, "FRANKLIN BUSINESS PARK" NO. 6
NW¼ OF SECTION 27 T. 2 S., R. 1 W., W.M.
CITY OF TUALATIN
WASHINGTON COUNTY, OREGON

EXISTING LAND USE
THE SITE IS CURRENTLY UNDEVELOPED

VERTICAL DATUM
NGVD '29. SEE "BASIS OF ELEVATIONS" DESCRIPTION ON TOPOGRAPHIC SURVEY SHEET C0.01

AREA SUMMARY
TOTAL SITE AREA = 217,682 SF (5.00 AC)

NEW IMPERVIOUS AREA
- WITHIN PUBLIC RIGHT-OF-WAY: ± 0 SF
- WITHIN PRIVATE PROPERTY: ±191,301 SF

APPLICANT
MARTIN DEVELOPMENT
PO BOX 15523
SEATTLE, WA 98115
CONTACT: MAC MARTIN
PHONE: (206) 399-6676
macmartinis@gmail.com

CIVIL ENGINEER
MACKENZIE
CONTACT: GREG MINO
1515 SE WATER AVE
PORTLAND, OR 97214
PHONE: 503-224-9560
gmino@mcknze.com

ARCHITECT
LANCE MUELLER & ASSOCIATES
CONTACT: BOB WELLS
130 LAKESIDE AVENUE, SUITE 250
SEATTLE, WA 98122
PHONE: 206-325-2553
bwells@lmueller.com

GEOTECHNICAL ENGINEER
GEOENGINEERS, INC.
CONTACT: GREG LANDAU
4000 KRUSE WAY PLACE, BLDG 3, STE 200
LAKE OSWEGO, OR 97035
PHONE: 503-603-6652
glandau@geoengineers.com

CITY OF TUALATIN
PUBLIC WORKS DEPARTMENT
CONTACT: MARK SCHLAGEL
10699 HERMAN ROAD
TUALATIN, OR 97062
PHONE: 503-691-3059
mschlagel@tualatin.gov

UTILITY PROVIDERS
PORTLAND GENERAL ELECTRIC
9480 SW BOECKMAN ROAD
WILSONVILLE,OR 97070
PHONE: 503-672-5428
CONTACT: TRAVIS SMALLWOOD

NW NATURAL GAS
220 NW 2ND AVENUE
PORTLAND, OR 97209
PHONE: 503-226-4211

TVF&R
11945 SW 70TH AVE
TIGARD, OR 97223
PHONE: 503-699-8577
CONTACT: TOM MOONEY

COMCAST
14200 SW BRIGADOON PLACE
BEAVERTON, OR 97005
PHONE: 503-605-4834

FRONTIER
4155 SW CEDAR HILLS BOULEVARD
BEAVERTON, OR 97075
PHONE: 503-641-2004

SHEET INDEX

Architecture ▪ Interiors
Planning ▪ Engineering

Portland, OR
503.224.9560
Vancouver, WA
360.695.7879
Seattle, WA
206.749.9993
www.mcknze.com

MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

Client

MARTIN DEVELOPMENT NW
PO BOX 15523
SEATTLE, WA 98115

Project

HEDGES D PARKING LOT
11507 SW AMU STREET
TUALATIN, OREGON

REGISTERED PROFESSIONAL ENGINEER
91897
OREGON
JULY 10, 2012
GREGORY I. MINO
EXPIRES: 12/31/20

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
COVER SHEET

DRAWN BY: BTS

CHECKED BY: GIM

SHEET
C0.00

JOB NO. **2200339.00**

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET, IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: WEDDLE SURVEYING DATE: 10/21/2019

ARCHITECTURAL REVIEW SUBMITTAL 09/01/20

2200339\00\DRAWINGS\CIVIL\339-C0.00.DWG GIM 08/31/20 11:09 1:50

TOPOGRAPHIC SURVEY
HEDGES C AND D

LOT 8, "FRANKLIN BUSINESS PARK" NO. 4 &
LOT 12, "FRANKLIN BUSINESS PARK" NO. 6

NW 1/4 OF SECTION 27
T. 2 S., R. 1 W., W.M.
CITY OF TUALATIN
WASHINGTON COUNTY, OREGON

LEGEND

- CLEANOUT
- CURB INLET
- COMMUNICATIONS MANHOLE
- COMMUNICATIONS RISER
- FIRE HYDRANT
- GAS RISER
- GAS VALVE
- LIGHT POLE
- 5/8" IRON ROD WITH RED PLASTIC CAP "RYAN LS 58833"
- POWER BOX
- POWER VAULT
- SANITARY SEWER MANHOLE, SSMH
- SIGN
- +142.94 TBC — SPOT GRADE
- TBC — TOP BACK OF CURB; GUT — GUTTER; EP — EDGE OF PAVEMENT
- NG — NATURAL GROUND; EW — EDGE OF WALK
- STORM MANHOLE, SDMH
- WATER METER
- WATER VALVE
- G — GAS LINE
- SS — SANITARY SEWERLINE
- SD — STORM SEWERLINE
- E — UNDERGROUND POWER
- W — WATERLINE
- ASPHALT
- CONCRETE
- GRAVEL

OWNER: HEDGES C, LLC
HEDGES D, LLC

REQUESTED BY: MAC MARTIN
MARTIN DEVELOPMENT NW

WEDDLE SURVEYING

SCALE: 1' = 30'
CONTOUR INTERVAL = 1'
SEPTEMBER 17, 2018

0 30 60 90

BASIS OF ELEVATIONS

WEDDLE CONTROL POINTS WITH ELEVATIONS DERIVED FROM WASHINGTON COUNTY BENCHMARK NO. 89, A BRASS CAP IN MONUMENT BOX MARKING THE QUARTER CORNER BETWEEN SECTIONS 26 & 35, T.2S., R.1E., AT THE INTERSECTION OF IBACH ROAD AND BOONES FERRY ROAD.

ELEVATION = 276.48' (NGVD '29) (MONUMENT HAS BEEN DESTROYED. RELATIVE ELEVATIONS HAVE BEEN PERPETUATED.)

SURVEYOR'S NOTES

1. UTILITIES SHOWN HEREON ARE PER ABOVE GROUND EVIDENCE, AS BUILT MAPPING FROM THE CITY OF TUALATIN AND NORTHWEST NATURAL GAS AND UTILITY LOCATE SERVICE PAINT. THE SURVEYOR MAKES NO GUARANTEE AS TO THE EXACT LOCATION, OR EXTENT OF UNDERGROUND UTILITIES. CALL 811 BEFORE DIGGING!
2. THE BASIS OF BEARINGS FOR THIS SURVEY IS THE PLAT OF "FRANKLIN BUSINESS PARK", WASHINGTON COUNTY PLAT RECORDS.
3. EASEMENTS ARE SHOWN PER THE PLAT OF FRANKLIN BUSINESS PARK NO. 4 AND 6.
4. NOT ALLSURVEY MONUMENTS ARE NOT SHOWN. REFER TO THE PLAT OF FRANKLIN BUSINESS PARK NO. 4 AND 6 FOR MONUMENT LOCATIONS.
5. UTILITIES AT BRIDGE NOT TIED DUE TO EXTREME HORNET INFESTATION

REVISIONS/UPDATES

09/17/18
EXPANDED TOPOGRAPHY TO SOUTH AND WEST (TOWARD CREEK) OVER HEDGES 'C' SITE, DUE TO RECENT CLEARING, GRAGING AND BRUSH REMOVAL.

REGISTERED
PROFESSIONAL
LAND SURVEYOR
OREGON
JULY 13, 2004
ANTHONY B. RYAN
58833
RENEWAL: DECEMBER 31, 2018

WEDDLE SURVEYING INC.
Excellence is our benchmark.
6950 SW HAMPTON ST., STE. 170, TIGARD, OR 97223
PH: (503) 941-9585 FAX: (503) 941-9640
www.weddlesurveying.net

C0.01

220033900\DRAWINGS\CIVIL\339-C0.01.DWG GIM 08/22/20 16:29 1:30 JOB NO. 5522

GRADING SPECIFICATION NOTES

REFER TO THE PROJECT GEOTECHNICAL REPORT FOR ALL GRADING RELATED SPECIFICATIONS.

SITE WORK SPECIFICATION NOTES

1. BASE ROCK FOR CONCRETE SLABS, PAVEMENT, AND SIDEWALKS: 3/4 INCH CRUSHED AGGREGATE BASE IN ACCORDANCE WITH STATE DEPARTMENT OF TRANSPORTATION (DOT) SPECIFICATIONS, LATEST EDITION
2. PLACE AGGREGATE IN MAXIMUM 4 INCH LAYERS. ROLLER COMPACT TO SPECIFIED DENSITY. USE MECHANICAL TAMPING EQUIPMENT IN AREAS INACCESSIBLE TO ROLLER EQUIPMENT. COMPACT AGGREGATE BASE TO MINIMUM 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557.
3. WHERE NOT NOTED ON PLANS, ENSURE 0.5% MINIMUM SLOPE ON CONCRETE SURFACES, 1.0% ON ASPHALT SURFACES, AND 2.0% IN LANDSCAPED AREAS
4. HOT MIX ASPHALT CONCRETE (HMAC): LEVEL 2, 1/2 INCH DENSE-GRADED HMAC PER STATE DOT SPECIFICATIONS. PG 64-22 OR BETTER
   - A. PLACE HMAC OVER PREPARED AND COMPACTED AGGREGATE BASE PER PLAN. MINIMUM COMPACTED LIFT THICKNESS: 2.0 INCHES. MAXIMUM COMPACTED LIFT THICKNESS: 3.0 INCHES
   - B. COMPACT HMAC TO MINIMUM DENSITY 91% OF ASTM D2041 LABORATORY DENSITY.
   - C. SEAL COAT (FOG COAT): EMULSIFIED ASPHALT FOG COAT, CSS-1, CSS-1H, OR HFRS-P1 TYPE PER STATE DOT SPECIFICATIONS
     - C.1. PREPARE EMULSIFIED ASPHALT PER MANUFACTURER'S REQUIREMENTS. APPLY UNIFORMLY WITH AN ASPHALT DISTRIBUTOR AT A RATE OF 0.10 TO 0.15 GALLONS PER SQUARE YARD, OR AS RECOMMENDED BY THE MANUFACTURER. PROTECT SEALED ASPHALT PAVEMENT SURFACE FROM VEHICLE AND FOOT TRAFFIC UNTIL CURED
5. SITE CONCRETE: ALL MATERIALS AND WORK SHALL CONFORM WITH ACI 318, LATEST EDITION
   - A. COMPRESSIVE STRENGTH (PSI) AT 28 DAYS:
     - A.1. VEHICULAR PAVEMENTS: 4,000 (MINIMUM)
     - A.2. PEDESTRIAN PAVEMENTS: 3,000 (MINIMUM)
     - A.3. CURBS AND GUTTERS: 3,000 (MINIMUM)
   - B. JOINTS: ALIGN CURB, GUTTER, AND SIDEWALK JOINTS
     - B.1. PROVIDE SCORED JOINTS AT 5 FOOT MAXIMUM INTERVALS, EVENLY SPACED, BETWEEN SIDEWALKS AND CURBS, BETWEEN CURBS AND PAVEMENT, OR AS INDICATED ON PLAN.
     - B.2. PROVIDE EXPANSION JOINTS EVERY FOURTH JOINT TO SEPARATE PAVING FROM VERTICAL SURFACES AND UTILITY PENETRATIONS, OR AS INDICATED ON PLAN
   - C. FINISHING:
     - C.1. PAVEMENTS: BROOM FINISH, PERPENDICULAR TO DIRECTION OF TRAVEL
     - C.2. SIDEWALKS: LIGHT BROOM, PERPENDICULAR TO DIRECTION OF TRAVEL, TROWELED AND RADIUSED EDGE, 1/8 TO 1/4 INCH RADIUS. NO SHINERS UNLESS SPECIFICALLY CALLED FOR ON PLAN
     - C.3. CURBS AND GUTTERS: LIGHT BROOM, PARALLEL TO PAVEMENT DIRECTION
6. PAINTED PAVEMENT MARKINGS:
   - A. PAINT: MPI NO. 97 (OR EQUAL) LATEX TRAFFIC MARKING PAINT, WHITE (FOR STANDARD PARKING STRIPING) OR AS INDICATED ON PLAN
     - A.1. PREPARATION: CLEAN PAVEMENT SURFACES THOROUGHLY PRIOR TO INSTALLATION. PREPARE SURFACES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
     - A.2. INSTALLATION: APPLY PAINT WHEN PAVEMENT SURFACE OR THE ATMOSPHERE TEMPERATURE IS BETWEEN 50 DEGREES AND 95 DEGREES F. APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. APPLY PAINT IN ONE COAT ONLY. FOR SYMBOLS, UTILIZE A TEMPLATE THAT WILL PROVIDE TRUE, SHARP EDGES AND ENDS FOR THE PAVEMENT MARKING. PROTECT NEWLY PAINTED MARKINGS FROM DISTURBANCE AND TRACKING
     - A.3. PAVEMENT MARKING REMOVAL: SANDBLAST OR OTHER METHOD OF COMPLETE REMOVAL OF SPECIFIED MARKING. BLACKOUT METHODS MUST BE APPROVED BY THE OWNER
7. CHAIN LINK FENCE AND GATE MATERIALS AND INSTALLATION SHALL BE CONFORMANT WITH THE CHAIN LINK FENCE MANUFACTURER'S INSTITUTE PRODUCT MANUAL AND ASSOCIATED SPECIFICATIONS

PRIVATE UTILITY SPECIFICATION NOTES

1. PRODUCTS:
   - B. DOMESTIC WATER:
     - B.1. PLASTIC PIPE CONFORMING TO THE STATE PLUMBING CODE, LATEST EDITION, WITH PRESSURE RATED FITTINGS PER MANUFACTURER RECOMMENDATIONS
   - C. FIRE WATER:
     - C.1. PLASTIC PIPE CONFORMING TO AWWA C900, RATED FOR 200 PSI MINIMUM, WITH MECHANICAL JOINT FITTINGS/RESTRAINTS PER MANUFACTURER RECOMMENDATIONS.
     - C.2. IF WITHIN 5 FOOT OF A BACKFLOW PREVENTOR, USE DUCTILE IRON PIPE CONFORMANT WITH THE CITY OF TUALATIN TECHNICAL SPECIFICATIONS.
     - C.3. BACKFLOW PREVENTER: CONTRACTOR TO CONFIRM WITH AGENCY HAVING JURISDICTION (AHJ). IF AHJ DOES NOT SPECIFY, USE DOUBLE CHECK DETECTOR FIRE PROTECTION BACKFLOW PREVENTION ASSEMBLY COMPLIANT WITH THE STATE PLUMBING CODE
   - D. SANITARY SEWER:
     - D.1. PLASTIC PIPE CONFORMING TO ASTM D3034, LATEST EDITION. WITH ELASTOMERIC GASKETED CONNECTIONS AND WYE FITTINGS PER MANUFACTURER RECOMMENDATIONS
   - E. STORM DRAINAGE:
     - E.1. PLASTIC PIPE CONFORMING TO ASTM D3034, LATEST EDITION. WITH ELASTOMERIC GASKETED CONNECTIONS AND WYE FITTINGS PER MANUFACTURER RECOMMENDATIONS
   - F. MANHOLES:
     - F.1. REINFORCED PRECAST CONCRETE IN ACCORDANCE WITH ASTM C478 (ASTM C478M) WITH RESILIENT CONNECTORS COMPLYING WITH ASTM C923 (ASTM C923M)
     - F.2. LID AND FRAME: ASTM A48/A48M, CLASS 30B CAST IRON CONSTRUCTION. MACHINED FLAT BEARING SURFACE, REMOVABLE LID, H-20 LOAD RATED, WITH LID MOLDED WITH IDENTIFYING NAME
     - F.3. MANHOLE STEPS: FORMED GALVANIZED STEEL RUNGS, 3/4 INCH DIAMETER
   - G. TRACER WIRE:
     - G.1. MAGNETIC DETECTABLE CONDUCTOR, CLEAR PLASTIC COVERING, IMPRINTED WITH THE NAME OF THE TYPE OF UTILITY SERVICE (I.E. "STORM SEWER SERVICE") IN LARGE LETTERS
2. SEE PROJECT GEOTECHNICAL REPORT FOR UTILITY TRENCHING AND BACKFILL SPECIFICATIONS
3. INSTALLATION:
   - B. PIPE COVER:
     - B.1. WATER: 36 INCH MINIMUM
     - B.2. STORM AND SANITARY: 12 INCH MINIMUM. PLASTIC PIPING SHALL BE SUBSTITUTED FOR DUCTILE IRON PIPING (CONFORMANT WITH ASTM A746) WHERE MINIMUM COVER CANNOT BE ACHIEVED. THE CONTRACTOR SHALL CONSULT WITH ENGINEER OF RECORD PRIOR TO MAKING THE MATERIAL SUBSTITUTION AND SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT SHALLOW PIPING DURING CONSTRUCTION
   - C. SANITARY SEWER AND WATER PIPES: WHERE SANITARY SEWER PIPING WILL BE INSTALLED WITHIN 10 FEET OF A DOMESTIC WATER PIPE, AND AS APPROVED BY THE LOCAL BUILDING OFFICIAL, THE SANITARY PIPE SHALL BE MADE OF A MATERIAL APPROVED FOR USE WITHIN A BUILDING (I.E. PVC SCHEDULE 40). HOWEVER, IN NO CASE SHALL THE SANITARY LINE BE LOCATED WITHIN 12 INCHES OF A DOMESTIC WATER LINE (BOTH HORIZONTALLY AND VERTICALLY)
   - D. PIPE CROSSINGS/SEPARATION: MAINTAIN MINIMUM SEPARATION OF WATER MAIN FROM SEWER PIPING IN ACCORDANCE WITH LOCAL AGENCY AND STATE PLUMBING CODES, LATEST EDITIONS. WHERE NOT REGULATED BY CODE, MAINTAIN A MINIMUM OF 12 INCH VERTICAL SEPARATION AT PIPE CROSSINGS
   - E. GRAVITY SYSTEMS: MAINTAIN MINIMUM SLOPES AS DEFINED BY LOCAL AGENCY AND STATE PLUMBING CODES. WHERE NOT REGULATED BY CODE OR INDICATED ON PLANS, MAINTAIN A MINIMUM OF 1.0% SLOPE ON ALL SANITARY SEWER PIPING AND 0.5% ON ALL STORM DRAIN PIPING UNLESS NOTED OTHERWISE ON PROJECT PLANS
   - F. PIPE OUTLETS: ALL EXPOSED PIPE INLETS AND OUTLETS SHALL BE PROPERLY STABILIZED WITH RIP RAP.
   - G. CATCH BASINS: ALL CATCH BASINS TO HAVE A 24 INCH MINIMUM SUMP AND HOODED OUTLET UNLESS NOTED OTHERWISE ON PROJECT PLANS
   - H. MANHOLES: ALL SANITARY MANHOLES SHALL BE CHANNELIZED. STORM MANHOLES SHALL PROVIDE A 24 INCH SUMP UNLESS UNLESS OTHERWISE SPECIFIED ON PROJECT PLANS. ENSURE WATERTIGHT SEAL AT ALL PIPE PENETRATIONS TO MANHOLES. LIDS SHALL BE MARKED TO IDENTIFY TYPE OF UTILITY
   - I. CLEANOUTS: CLEANOUTS SHALL BE PROVIDED IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE, LATEST EDITION (AT A MINIMUM, EVERY 100 LINEAL FEET OF PIPE RUN OR EVERY 135 DEGREE OF CUMULATIVE ANGLE). CLEANOUTS SHALL BE OF THE SAME SIZE OF THE PIPE THEY ARE SERVING. LIDS SHALL BE MARKED TO IDENTIFY TYPE OF UTILITY
   - J. BACKFLOW PREVENTERS: BACKFLOW PREVENTERS SHALL BE INSTALLED IN A COMPLIANT UNDERGROUND VAULT (EXCEPT REDUCED PRESSURE DEVICES) WITH SUMP PUMP DISCHARGING TO AN APPROVED DISCHARGE POINT. VAULT SHALL BE SIZED TO ACCOMMODATE THE INSTALLATION OF AN FDC ON THE DOWNSTREAM END WITHIN THE VAULT, EVEN IF THE FDC IS NOT INSTALLED AT TIME OF VAULT INSTALLATION. REDUCED PRESSURE DEVICES SHALL BE INSTALLED IN AN ABOVE GROUND HEATED ENCLOSURE, UNLESS THE AUTHORITY HAVING JURISDICTION ALLOWS FOR INSTALLATION IN A VAULT
   - K. MECHANICAL JOINT RESTRAINTS: UNLESS NOTED OTHERWISE, ALL FIRE WATER SUPPLY SYSTEMS SHALL BE PROVIDED WITH MECHANICAL JOINT RESTRAINTS AT FITTINGS, CALCULATED AND SIZED BASED ON PROJECT CONDITIONS. CONTRACTOR SHALL PROVIDE RESTRAINT LENGTH SIZING CALCULATIONS WITH WATER SYSTEM PRODUCT SUBMITTAL

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE CURRENT AMERICAN PUBLIC WORKS ASSOCIATION STANDARDS FOR PUBLIC WORKS CONSTRUCTION
2. THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN IS BASED ON A SURVEY BY OTHERS AND IS SHOWN FOR REFERENCE ONLY. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS WITH ITS OWN RESOURCES PRIOR TO START OF ANY CONSTRUCTION
3. CONTRACTOR MUST COMPLY WITH LOCAL AND STATE REQUIREMENTS TO NOTIFY ALL UTILITY COMPANIES FOR LINE LOCATIONS SEVENTY-TWO (72) HOURS (MINIMUM) PRIOR TO START OF WORK. DAMAGE TO UTILITIES SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE
4. CONTRACTOR SHALL ADJUST ALL STRUCTURES IMPACTED BY CONSTRUCTION IMPROVEMENTS TO NEW FINISH GRADES
5. REQUEST BY THE CONTRACTOR FOR CHANGES TO THE PLANS MUST BE APPROVED BY THE ENGINEER.
6. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRES A PUBLIC WORKS PERMIT
7. CONTRACTOR SHALL PROVIDE THE ENGINEER OF RECORD WITH AS-BUILT PLANS AT LEAST 2 WEEKS PRIOR TO REQUESTING AGENCY SIGN OFF ON PERMITS FOR OCCUPANCY
8. CONTRACTOR SHALL PERFORM ALL THE WORK SHOWN ON THE DRAWINGS AND ALL INCIDENTAL WORK NECESSARY TO COMPLETE THE PROJECT

DEMOLITION NOTES

1. INSTALL EROSION CONTROL MEASURES AND TEMPORARY FENCING PRIOR TO ANY DEMOLITION ACTIVITIES
2. DEMOLISH AND REMOVE ALL STRUCTURES AND ASSOCIATED FEATURES (APPURTENANCES), AS SHOWN
3. DEMOLISH ALL PAVED AREAS ON SITE AS SHOWN, DOWN TO NATIVE SUBGRADE
4. ALL VEGETATION AND DELETERIOUS MATERIALS WITHIN THE LIMITS OF WORK SHALL BE STRIPPED AND REMOVED FROM THE SITE PRIOR TO GRADING WORK, UNLESS NOTED OTHERWISE (E.G. PROTECTED TREES)
5. PROTECT ALL EXISTING LANDSCAPING AT AND BEYOND LIMITS OF WORK
6. PROTECT ALL UNDERGROUND UTILITY SERVICES AND CONDUIT UNLESS NOTED OTHERWISE
7. WHERE APPLICABLE, VERIFY DISCONNECT OF GAS AND ELECTRIC WITH UTILITY. CUT/CAP UTILITY SERVICES (STORMWATER AND SANITARY WITHIN 5 FEET OF EDGE OF R.O.W.) CAP WATERLINE ON OWNER'S SIDE OF METER AND PERFORM OTHER DEMOLITION TASKS AS REQUIRED. ADDITIONAL REMOVALS MAY BE REQUIRED BY THE AUTHORITIES HAVING JURISDICTION AND THE CONTRACTOR SHALL CONFIRM ACCORDINGLY PRIOR TO BID

GRADING NOTES

1. ROUGH GRADING: ROUGH GRADE TO ALLOW FOR DEPTH OF BUILDING SLABS, PAVEMENTS, BASE COURSES, AND TOPSOIL PER DETAILS AND SPECIFICATIONS
2. FINISH GRADING: BRING ALL FINISH GRADES TO LEVELS INDICATED. WHERE GRADES ARE NOT OTHERWISE INDICATED, HARDSCAPE FINISH GRADES ARE TO BE THE SAME AS ADJACENT SIDEWALKS, CURBS, OR THE OBVIOUS GRADE OF ADJACENT STRUCTURE. SOFTSCAPE GRADES (INCLUDING ADDITIONAL DEPTH OF TOPSOIL) SHALL BE SET 6 INCHES BELOW BUILDING FINISHED FLOORS WHERE ABUTTING BUILDINGS, 1-2 INCHES WHERE ABUTTING WALKWAYS OR CURBS, OR MATCHING OTHER SOFTSCAPE GRADES. GRADE TO UNIFORM LEVELS OR SLOPES BETWEEN POINTS WHERE GRADES ARE GIVEN. ROUND OFF SURFACES, AVOID ABRUPT CHANGES IN LEVELS. AT COMPLETION OF JOB AND AFTER BACKFILLING BY OTHER TRADES HAS BEEN COMPLETED, REFILL AND COMPACT AREAS WHICH HAVE SETTLED OR ERODED TO BRING TO FINAL GRADES
3. EXCAVATION: EXCAVATE FOR SLABS, PAVING, AND OTHER IMPROVEMENTS TO SIZES AND LEVELS SHOWN OR REQUIRED. ALLOW FOR FORM CLEARANCE AND FOR PROPER COMPACTION OF REQUIRED BACKFILLING MATERIAL. DAMAGE TO UTILITIES SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE
4. EFFECTIVE EROSION PREVENTION AND SEDIMENT CONTROL IS REQUIRED. EROSION CONTROL DEVICES MUST BE INSTALLED AND MAINTAINED MEETING THE LOCAL AGENCY AND STATE AGENCY REQUIREMENTS. THE AUTHORITIES HAVING JURISDICTION MAY, AT ANY TIME, ORDER CORRECTIVE ACTION AND STOPPAGE OF WORK TO ACCOMPLISH EFFECTIVE EROSION CONTROL
5. DRAINAGE SHALL BE CONTROLLED WITHIN THE WORK SITE AND SHALL BE ROUTED SO THAT ADJACENT PRIVATE PROPERTY, PUBLIC PROPERTY, AND THE RECEIVING SYSTEM ARE NOT ADVERSELY IMPACTED. THE ENGINEER AND/OR AUTHORITIES HAVING JURISDICTION MAY, AT ANY TIME, ORDER CORRECTIVE ACTION AND STOPPAGE OF WORK TO ACCOMPLISH EFFECTIVE DRAINAGE CONTROL
6. SITE TOPSOIL STOCKPILED DURING CONSTRUCTION AND USED FOR LANDSCAPING SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT
7. CONTRACTOR TO REVIEW AND CONFIRM GRADES AT JOIN POINTS, SUCH AS AT DAYLIGHT LIMITS AND BUILDING ENTRANCES, PRIOR TO CONSTRUCTION
8. ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL BE CONSTRUCTED AT 2% MAXIMUM SLOPE IN ALL DIRECTIONS
9. PEDESTRIAN SIDEWALK CONNECTIONS BETWEEN PUBLIC R.O.W. AND BUILDING ENTRANCES SHALL BE CONSTRUCTED AT AND 2% MAXIMUM CROSS SLOPE AND 5% MAXIMUM LONGITUDINAL SLOPE (8.33% FOR DESIGNATED RAMPS)

UTILITY NOTES

1. ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF THE STATE PLUMBING AND BUILDING CODES WITH LOCAL AMENDMENTS AS APPLICABLE ALONG WITH ANY ADDITIONAL REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
2. THE WORKING DRAWINGS ARE GENERALLY DIAGRAMMATIC. THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW REQUIRED FOR INSTALLATION IN THE SPACE PROVIDED. THEY DO NOT SHOW EVERY DIMENSION, COMPONENT PIECE, SECTION, JOINT OR FITTING REQUIRED TO COMPLETE THE PROJECT. ALL LOCATIONS FOR WORK SHALL BE CHECKED AND COORDINATED WITH EXISTING CONDITIONS IN THE FIELD BEFORE BEGINNING CONSTRUCTION. EXISTING UNDERGROUND UTILITIES WITHIN THE LIMITS OF EXCAVATION SHALL BE VERIFIED AS TO CONDITION, SIZE AND LOCATION BY UNCOVERING (POTHOLING), PROVIDING SUCH IS PERMITTED BY THE AUTHORITIES HAVING JURISDICTION, BEFORE BEGINNING CONSTRUCTION. CONTRACTOR TO NOTIFY ENGINEER IF THERE ARE ANY DISCREPANCIES.
3. NOT ALL REQUIRED CLEANOUTS ARE SHOWN ON THE PLANS. PROVIDE CLEANOUTS AS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION AND THE CURRENT EDITION OF THE STATE PLUMBING CODE (E.G. UNIFORM PLUMBING CODE CHAPTER 7, SECTIONS 707 AND 719, AND CHAPTER 11, SECTION 1101.13)
4. ALL SANITARY AND STORM PIPING IS DESIGNED USING CONCENTRIC PIPE TO PIPE AND WYE FITTINGS, UNLESS OTHERWISE NOTED
5. ALL DOWNSPOUT LEADERS TO BE 6 INCHES AT 2.0% MINIMUM UNLESS NOTED OTHERWISE
6. IF APPLICABLE, PROVIDE 2 INCH PVC DRAIN LINE FROM DOMESTIC WATER METER VAULT AND BACKFLOW PREVENTER VAULT TO THE DOUBLE DETECTOR CHECK VALVE (FIRE) VAULT. PROVIDE 1/3 HP SUMP PUMP AT BASE OF FIRE VAULT AND INSTALL 2 INCH PVC DRAIN LINE WITH BACKFLOW VALVE FROM SUMP PUMP TO DAYLIGHT AT NEAREST CURB. FURNISH 3/4 INCH DIAMETER CONDUIT FROM BUILDING ELECTRICAL ROOM TO FIRE VAULT FOR SUMP PUMP ELECTRICAL SERVICE. NOTE: COORDINATE WITH FIRE PROTECTION CONTRACTOR FOR FLOW SENSOR INSTALLATION AND CONDUIT REQUIREMENTS
7. PREFABRICATED PLUMBING PRODUCTS USED SHALL BE LISTED ON THE IAPMO R&T PRODUCT LISTING DIRECTORY (pld.iapmo.org). ALL SUBMITTALS FOR REVIEW SHALL BE ACCOMPANIED BY MANUFACTURER'S LITERATURE CLEARLY STATING THIS CERTIFICATION AND/OR THE PRODUCT LISTING CERTIFICATE FROM THE IAPMO DIRECTORY WEBSITE
8. IF APPLICABLE, CONTRACTOR TO PROVIDE POWER TO IRRIGATION CONTROLLER. SEE LANDSCAPE PLANS AND SPECIFICATIONS
9. SEE BUILDING PLUMBING DRAWINGS FOR PIPING WITHIN THE BUILDING AND UP TO 5 FEET OUTSIDE THE BUILDING, INCLUDING ANY FOUNDATION DRAINAGE PIPING
10. CONTRACTOR TO MAINTAIN MINIMUM 3 FEET OF COVER OVER ALL UTILITY PIPING AND CONDUITS, UNLESS NOTED OTHERWISE
11. WHERE CONNECTING TO AN EXISTING PIPE, AND PRIOR TO ORDERING MATERIALS, THE CONTRACTOR SHALL EXPOSE THE END OF THE EXISTING PIPE TO VERIFY THE LOCATION, SIZE, AND ELEVATION. NOTIFY ENGINEER OF ANY DISCREPANCIES
12. CONTRACTOR SHALL SCOPE ALL PRIVATE ONSITE GRAVITY SYSTEM LINES THAT ARE BEING CONNECTED TO FOR PROPOSED SERVICE. SCOPING SHALL OCCUR A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES WITH AS-BUILT RECORDS/SURVEY FINDINGS OR IF THE EXISTING UTILITIES ARE DAMAGED OR SHOW SIGNS OF SIGNIFICANT DETERIORATION. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH VIDEO RECORDS, ALONG WITH A SKETCH IF THE LOCATIONS DIFFER FROM AS-BUILT PLANS OR SURVEY FINDINGS
13. PRODUCT MATERIAL SUBMITTALS FOR REVIEW BY THE ENGINEER SHALL BE ACCOMPANIED BY A MANUFACTURER'S CERTIFICATION THAT THE PRODUCT IS CAPABLE OF MEETING PERFORMANCE EXPECTATIONS (I.E. - WATERTIGHT, MINIMUM/MAXIMUM BURIAL, PREVENTION OF GROUNDWATER INTRUSION, ETC.) BASED ON THEIR REVIEW OF THE PROJECT PLANS. IN THE ABSENCE OF A MANUFACTURER'S CERTIFICATION, THE GENERAL CONTRACTOR'S REVIEW STAMP SHALL CONSTITUTE THAT THEY HAVE PERFORMED THE NECESSARY REVIEW TO CERTIFY THE PRODUCT'S CONFORMANCE TO PROJECT SPECIFICATIONS AND GENERAL EXPECTATIONS
14. PIPE LENGTHS SHOWN ON PLANS ARE TWO DIMENSIONAL AND MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE
15. MANHOLE RIM ELEVATIONS SHOWN ON PLANS REFERENCE THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECONCILING LIDS/GRATES/ETC TO THE SLOPES OF THE SITE GRADING
16. MANHOLE OR VAULT RIM ELEVATIONS SHALL BE SET FLUSH IN PAVEMENT AREAS AND 3-4 INCHES ABOVE GRADE IN LANDSCAPE AREAS. RIMS IN PAVEMENT AREAS SHALL BE H-20 TRAFFIC RATED

SITE WORK NOTES

1. ALL CURB RADII TO BE 3 FEET UNLESS NOTED OTHERWISE
2. STAIR RISERS AND TREADS SHALL BE CONFORMANT WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE CURRENT EDITION OF THE STATE BUILDING CODE (E.G. INTERNATIONAL BUILDING CODE, CHAPTER 10, SECTION 1011.5)
3. WHEREVER A PEDESTRIAN WALKING PATH IS WITHIN 36 INCHES OF A VERTICAL DROP OF 30 INCHES OR GREATER, GUARDRAIL SHALL BE INSTALLED CONFORMANT WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE CURRENT EDITION OF THE STATE BUILDING CODE (E.G. INTERNATIONAL BUILDING CODE, CHAPTER 10, SECTION 1015)

ABBREVIATIONS

ARCH	ARCHITECTURAL	RD	ROOF DRAIN
BW	BOTTOM OF WALL	ROW	RIGHT OF WAY
CB	CATCH BASIN	SAN	SANITARY SEWER
C	COMPACT	STM	STORM
CL	CENTERLINE	TC	TOP OF CURB
CO	CLEANOUT	TW	TOP OF WALL
CRB	CRUSHED ROCK BASE	TYP	TYPICAL
ELEV	ELEVATION	WM	WATER METER
EX	EXISTING	AP	ANGLE POINT
E.W.	EACH WAY	COMM	COMMUNICATIONS
FG	FINISHED GRADE	DDC	DOUBLE DETECTOR CHECK
FF	FINISHED FLOOR ELEVATION	DI	DUCTILE IRON
FH	FIRE HYDRANT	DR	DRIVE
FW	FIRE WATER	DWG	DRAWING
GPM	GALLONS PER MINUTE	ELEC	ELECTRICAL
IE	INVERT ELEVATION	FDC	FIRE DEPARTMENT CONNECTION
INV	INVERT	FLG	FLANGE
LS	LANDSCAPE	GV	GATE VALVE
MAX	MAXIMUM	LT	LEFT
MH	MANHOLE	MJ	MECHANICAL JOINT
MIN	MINIMUM	NO.	NUMBER
NTS	NOT TO SCALE	PR	PROPOSED
OC	ON CENTER	SCH	SCHEDULE
PCC	PORTLAND CEMENT CONCRETE	ST	STREET
PIV	POST INDICATOR VALVE	STA	STATION
PSI	POUNDS PER SQUARE INCH	SW	SOUTHWEST

LEGEND

SEE SHEET R2.0 FOR PUBLIC WATER FACILITY LEGEND

	EXISTING	PROPOSED
LOT/ROW LINE		
LIMITS OF GRADING DESIGN		
CENTERLINE		
STORM DRAIN CHANNEL EASEMENT		
CONSERVATION EASEMENT		
WETLAND BOUNDARY	WTB WTB	
CONTOUR	158	166
RIDGE LINE		
VEHICLE OVERHANG		
SANITARY SEWER LINE	SS SS	
STORM PIPE		
FIRE WATERLINE	W W W	
DOMESTIC WATERLINE	W W W	
GAS LINE	G G G	
WATER VALVE	WAT	
RIP RAP		
FIRE HYDRANT		
CATCH BASIN		
MANHOLE		
STREET/SITE LIGHT		
SIGN		
FLOW CONTROL MANHOLE		

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TUALATIN, OREGON

REGISTERED PROFESSIONAL ENGINEER
91897
OREGON
JAN. 10, 2017
GREGORY I. MIAO
EXPIRES: 12/31/20

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
CONSTRUCTION NOTES & SPECIFICATIONS ABBREVIATIONS AND LEGEND

DRAWN BY: BTC

CHECKED BY: GIM

SHEET

C0.02

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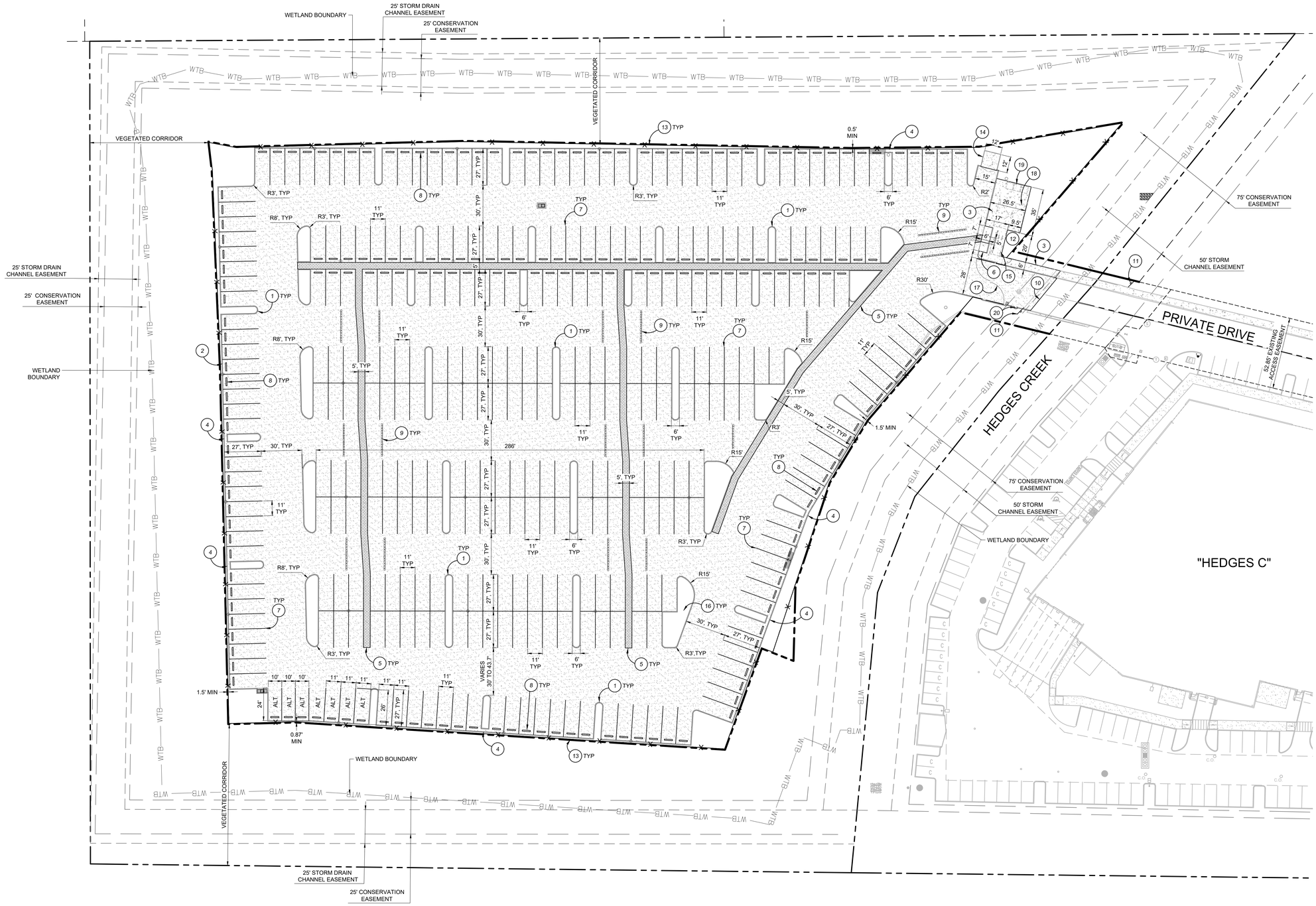

PAVEMENT LEGEND

*PAVEMENT SECTIONS SHOWN BELOW REFER TO THE GEOTECHNICAL REPORT BY GEOENGINEERS, INC. DATED JULY 10, 2019. ALL RECOMMENDATIONS THEREIN SHALL BE FOLLOWED.

ASPHALT PAVEMENT SECTION
ASPHALTIC CONCRETE (AC) OVER CRUSHED ROCK BASE (CRB) OVER COMPACTED SUBGRADE PER GEOTECHNICAL REQUIREMENTS

DRIVE AISLES:	4.0" AC OVER 11.0" CRB
PARKING STALLS:	3.0" AC OVER 8.0" CRB

CONCRETE PAVEMENT SECTION
PORTLAND CEMENT CONCRETE (PCC) OVER CRUSHED ROCK BASE (CRB) OVER COMPACTED SUBGRADE PER GEOTECHNICAL REQUIREMENTS

SITE SLABS-ON-GRADE:	6.0" PCC OVER 6.0" CRB, REINFORCED W/ #4 REBAR @ 12" OC, EW
SIDEWALKS:	4.0" PCC OVER 2.0" CRB, REINFORCED W/ #4 REBAR @ 24" OC, EW

PARKING LEGEND

27' × 11' — DELIVERY VAN STALL (TYPICAL)
27' (EXCLUSIVE OF OVERHANG) X 11'

24' × 10' ALT — DELIVERY VAN STALL (ALTERNATE)
24'-26' (EXCLUSIVE OF OVERHANG) X 10'

1 / C1.10 SITE PLAN

30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

KEYNOTES

1. 6" CONCRETE VERTICAL CURB PER 1/C5.10
2. 6" DEEPENED CONCRETE VERTICAL CURB PER 2/C5.10. CONTRACTOR TO DETERMINE APPLICABLE LOCATIONS BASED ON FIELD CONDITIONS
3. CONCRETE SIDEWALK PER 3/C5.10
4. CONCRETE CURB CHANNEL FOR DRAINAGE PER 4/C5.10
5. STAMPED ASPHALT WALKWAY PER 5/C5.10
6. ACCESSIBLE CURB RAMP PER 6/C5.10
7. 4" WHITE PARKING STRIPE PER 7/C5.10
8. WHEEL STOP PER 8/C5.10
9. SPEED BUMP PER 9/C5.10
10. SAWCUT 12" ONTO BRIDGE SECTION AND REPLACE PAVEMENT FULL DEPTH PER 10/C5.10
11. PROVIDE VEHICLE LOAD LIMIT SIGN (AASHTO HS20) AT BRIDGE CROSSING PER 11/C5.10. COORDINATE REQUIREMENTS WITH FIRE MARSHAL
12. BIKE RACK PER ARCHITECTURAL PLANS
13. PERIMETER SECURITY FENCE PER ARCHITECTURAL PLANS
14. TRASH ENCLOSURE PER ARCHITECTURAL PLANS
15. ELECTRICAL TRANSFORMER ON CONCRETE PAD PER ELECTRIC SERVICE PROVIDER
16. SITE LIGHT (DESIGN-BUILD BY CONTRACTOR)
17. AUTOMATIC ENTRY GATE (DESIGN-BUILD BY CONTRACTOR). ADJUST CURB ALIGNMENTS TO ACCOMODATE WITHOUT DECREASING DRIVE LANE WIDTH
18. 20'x20' STAND UP SHELTER BY TENANT
19. PORTABLE TOILET BY TENANT
20. ADJUST CURB ALIGNMENT TO ACCOMMODATE EXISTING GAS VALVE

PARKING TABULATIONS	
11' x 27' DELIVERY VAN STALLS	342
11' x 24' DELIVERY VAN STALLS	7
TOTAL DELIVERY VAN STALLS	349

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OREGON
JANUARY 10, 2017
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SITE PLAN

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C1.10

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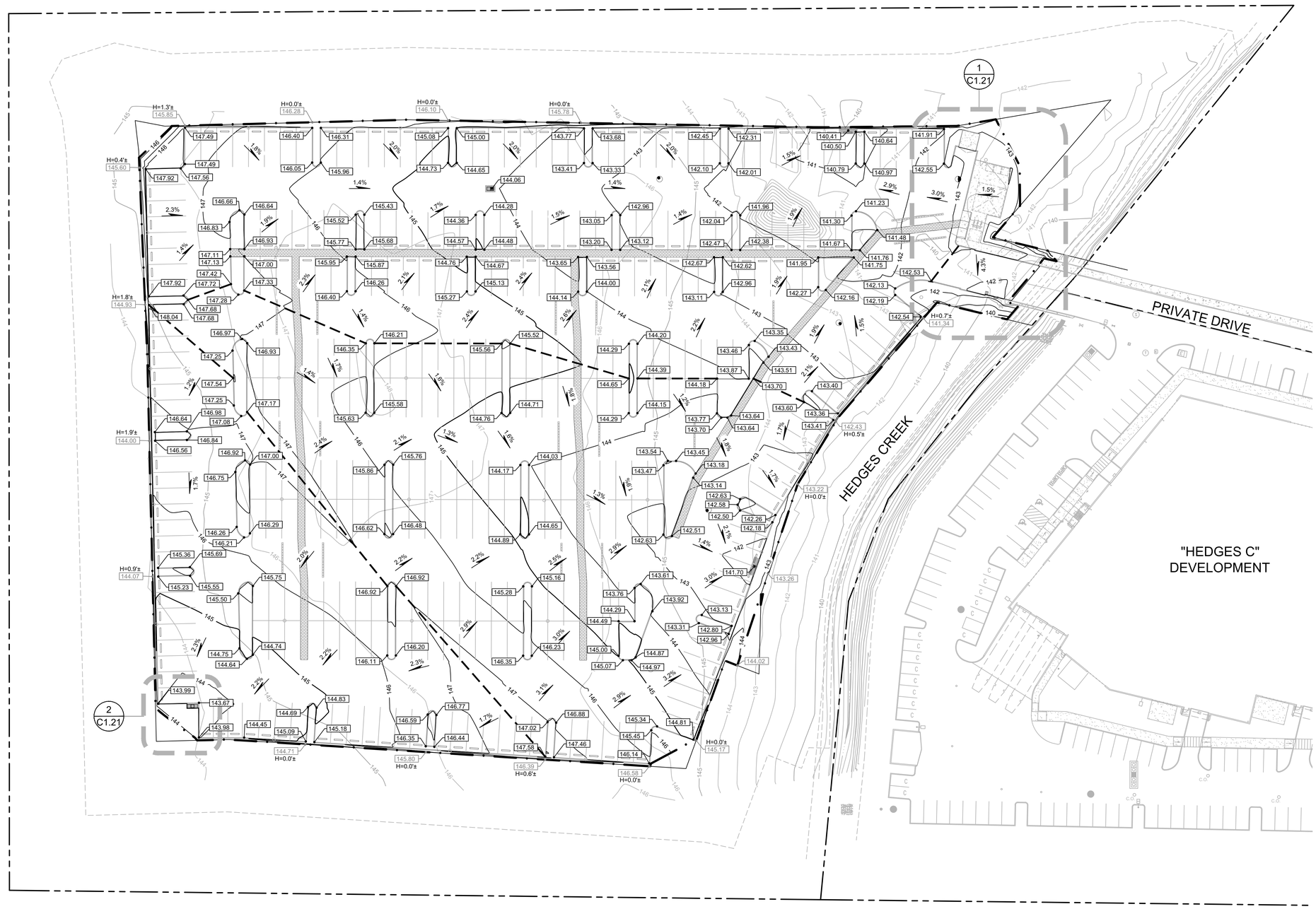

1 C1.20 GRADING PLAN

30 0 15 30 60 120

(IN FEET)
1 inch = **30** ft.

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SHEET TITLE:
GRADING PLAN

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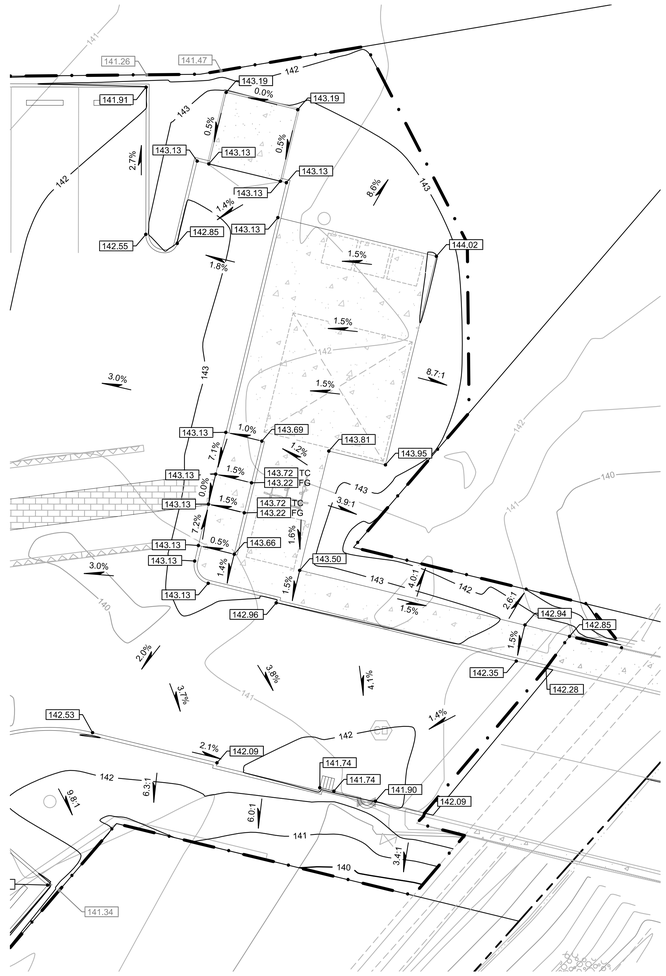
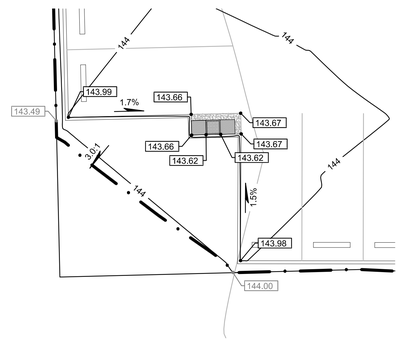


1 C1.21 SITE ENTRY AREA

0 2.5 5 10 20
(IN FEET)
1 inch = 5 ft.



2 C1.21 SW CATCH BASIN AREA

0 2.5 5 10 20
(IN FEET)
1 inch = 5 ft.

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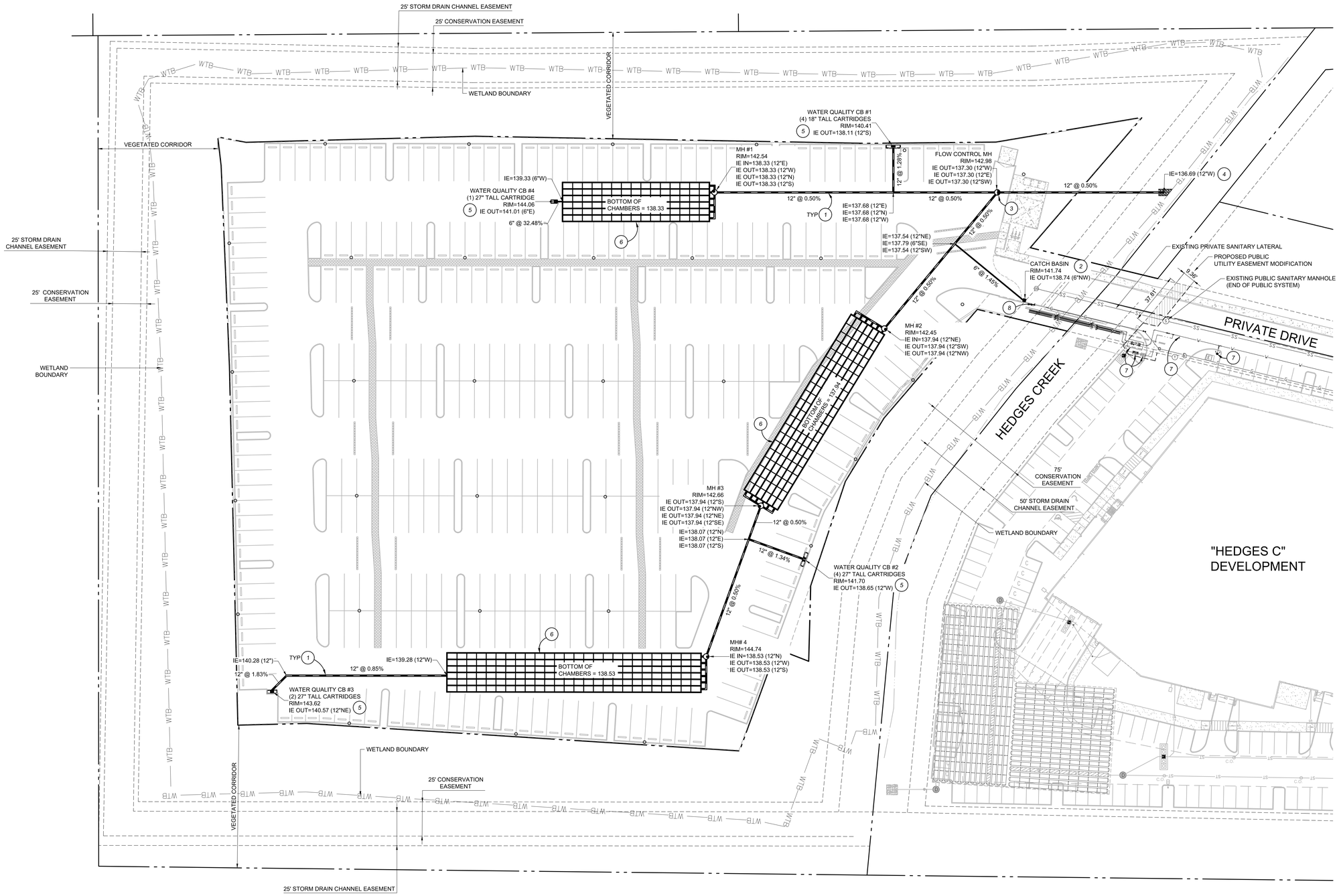

1 C1.30 UTILITY PLAN

30 0 15 30 60 120

(IN FEET)
1 inch = **30** ft.

KEYNOTES

1. INSTALL STORM PIPE, SIZE PER PLAN, TRENCHING PER 12/C5.10 AND PROJECT SPECIFICATIONS
2. INSTALL CATCH BASIN PER 13/C5.10
3. INSTALL FLOW CONTROL MANHOLE PER 1-1B/C5.11
4. INSTALL PIPE OUTFALL, PROVIDE CLASS 50 RIP RAP PAD PER 2/C5.11
5. INSTALL WATER QUALITY CATCH BASIN (# CARTRIDGES AS NOTED) PER SAMPLE CUT SHEET ON C5.11
6. INSTALL UNDERGROUND DETENTION SYSTEM (372 CHAMBERS TOTAL, 6" STONE ENCASEMENT) WITH 12" HEADER SYSTEM AND CONNECTOR MANHOLES PER SAMPLE CUT SHEET ON C5.11
7. REFER TO SHEETS R2.0 AND R3.0 FOR PUBLIC WATER FACILITY CONSTRUCTION
8. ADJUST EXISTING GAS VALVE TO GRADE

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: WEDDLE SURVEYING DATE: 10/21/2019

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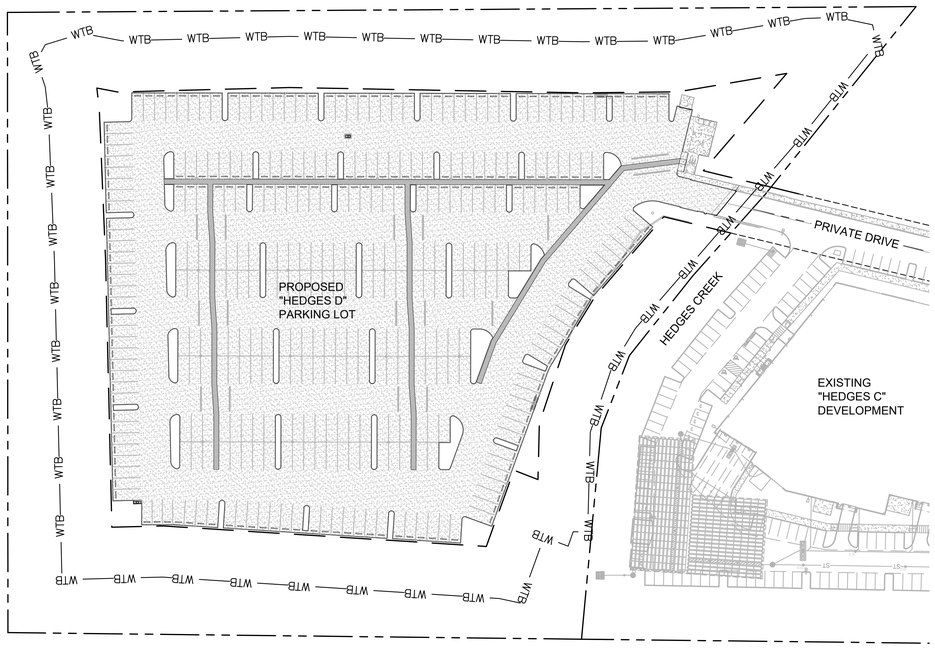
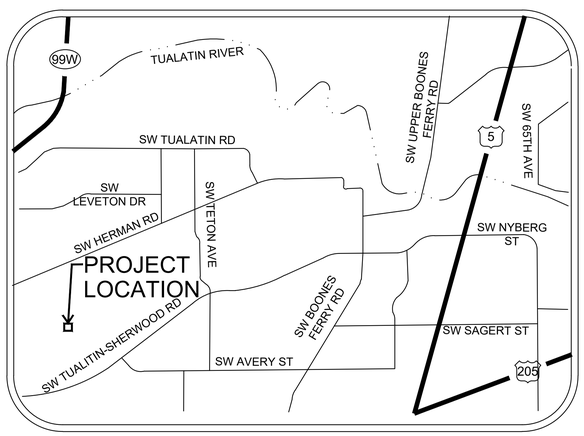
"HEDGES D" EROSION AND SEDIMENT CONTROL PLAN (1200-CN)

TUALATIN, OR

TAX LOTS 100, 800, 1100
2S101CA00100, 2S101CA00800,2S1010001100
WASHINGTON COUNTY, OREGON



SITE MAP
1"=80'



VICINITY MAP
NTS

STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES:

"SCHEDULE" NOTATIONS REFER TO D.E.Q. GENERAL PERMIT LANGUAGE

1. ALL PERMIT REGISTRANTS MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT.
2. THE ESCP MEASURES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, UPGRADE THESE MEASURES AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS.
3. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. SUBMIT ALL NECESSARY REVISION TO DEQ OR AGENT.
4. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION.
5. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS.
6. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED.
7. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, REPAIRED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS.
8. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. DIRECT ALL WASH WATER INTO A PIT OR LEAK-PROOF CONTAINER. HANDLE WASH WATER AS WASTE, CONCRETE DISCHARGE TO WATERS OF THE STATE IS PROHIBITED.
9. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS.
10. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS.
11. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES.
12. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE.
13. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS.
14. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES.
15. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL.
16. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE.
17. IF A STORMWATER TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
18. AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS.
19. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND DURING WET WEATHER OCTOBER 01 - MAY 31.
20. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL.
21. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT. AND BEFORE BMP REMOVAL.
22. CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT.
23. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIMEFRAME.
24. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS.
25. PROVIDE PERMANENT EROSION CONTROL MEASURES ON ALL EXPOSED AREAS. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. HOWEVER, DO REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AS EXPOSED AREAS BECOME STABILIZED, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. PROPERLY DISPOSE OF CONSTRUCTION MATERIALS AND WASTE, INCLUDING SEDIMENT RETAINED BY TEMPORARY BMPS.
26. IF VEGETATIVE SEED MIXES ARE SPECIFIED, SEEDING MUST TAKE PLACE NO LATER THAT SEPTEMBER 1; THE TYPE AND PERCENTAGES OF SEED IN THE MIX MUST BE IDENTIFIED ON THE PLANS.
27. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE DISCHARGED OVER AN UNDISTURBED, PREFERABLY VEGETATED AREA, AND THROUGH A SEDIMENT CONTROL BMP I.E. (FILTER BAG).
28. ALL EXPOSED SOILS MUST BE COVERED DURING THE WET WEATHER PERIOD, OCTOBER 01 - MAY 31.
29. IF WATER OF THE STATE IS WITHIN THE PROJECT SITE OR WITHIN 50 FEET OF THE PROJECT BOUNDARY, MAINTAIN THE EXISTING NATURAL BUFFER WITHIN THE 50-FOOT ZONE FOR THE DURATION OF THE PERMIT COVERAGE, OR MAINTAIN LESS THAN THE ENTIRE EXISTING NATURAL BUFFER AND PROVIDE ADDITIONAL EROSION AND SEDIMENT CONTROL BMPS.

PROPERTY DESCRIPTION:

CITY OF TUALATIN DOWN A PRIVATE DRIVE WEST
FROM SW AMU STREET AND SW 115TH STREET

PROJECT LOCATION:

11507 SW AMU STREET
TUALATIN, OREGON

LATITUDE = 45°22'28"
LONGITUDE = -122°47'57"

ATTENTION EXCAVATORS:

OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN 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 CENTER. YOU MUST NOTIFY THE CENTER AT LEAST TWO BUSINESS DAYS, BEFORE COMMENCING AN EXCAVATION. CALL 503-246-6699.

GENERAL NOTE:

THIS PLAN SHOWS THE MINIMUM SUGGESTED LEVEL OF EROSION AND SEDIMENT CONTROL PROTECTION REQUIRED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT ADDITIONAL MEASURES AS NECESSARY TO COMPLY WITH ALL PERMITS, LOCAL, AND STATE REQUIREMENTS.

DEVELOPER

MARTIN DEVELOPMENT
98115 PO BOX 15523
SEATTLE, WA
CONTACT: MAC MARTIN
PHONE: (206) 399-6676
macmartinis@gmail.com

CIVIL ENGINEER

MACKENZIE
CONTACT: GREG MINO
1515 SE WATER AVE
PORTLAND, OR 97214
PHONE: 503-224-9560
gmino@mcknze.com

SURVEYOR

WEDDLE SURVEYING INC.
CONTACT: ANTHONY RYAN
6950 SW HAMPTON ST., STE. 170
TIGARD, OR 97223
PHONE:503-941-9585
office@weddlesurveying.com

INSPECTION FREQUENCY TABLE

SITE CONDITION	MINIMUM FREQUENCY
1. ACTIVE PERIOD	DAILY WHEN STORMWATER RUNOFF, INCLUDING RUNOFF FROM SNOWMELT, IS OCCURRING. AT LEAST ONCE EVERY FOURTEEN (14) DAYS, REGARDLESS OF WHETHER STORMWATER RUNOFF IS OCCURRING.
2. PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY.	ONCE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES ARE IN WORKING ORDER. ANY NECESSARY MAINTENANCE AND REPAIR MUST BE MADE PRIOR TO LEAVING THE SITE.
3. INACTIVE PERIODS GREATER THAN FOURTEEN (14) CONSECUTIVE CALENDAR DAYS.	ONCE EVERY MONTH.
4. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER.	IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION.
5. PERIODS DURING WHICH DISCHARGE IS UNLIKELY DUE TO FROZEN CONDITIONS.	MONTHLY. RESUME MONITORING IMMEDIATELY UPON MELT, OR WHEN WEATHER CONDITIONS MAKE DISCHARGES LIKELY.

BMP MATRIX FOR CONSTRUCTION PHASES

REFER TO DEQ GUIDANCE MANUAL FOR A COMPREHENSIVE LIST OF AVAILABLE BMP'S.

	CLEARING	MASS GRADING	UTILITY INSTALLATION	STREET CONSTRUCTION	FINAL STABILIZATION	WET WEATHER (OCT. 1 - MAY 31ST)
EROSION PREVENTION						
PRESERVE NATURAL VEGETATION	** X	X	X	X	X	X
GROUND COVER					X	X
HYDRAULIC APPLICATIONS						
PLASTIC SHEETING						X
MATTING						
DUST CONTROL	X	X	X	X	X	X
TEMPORARY/ PERMANENT SEEDING		X	X	X	X	X
BUFFER ZONE						
OTHER:						
SEDIMENT CONTROL						
SEDIMENT FENCE (PERIMETER)	** X	X	X	X	X	X
SEDIMENT FENCE (INTERIOR)						
STRAW WATTLES						
FILTER BERM	X	X	X	X		
INLET PROTECTION	** X	X	X	X	X	X
DEWATERING						
SEDIMENT TRAP						
NATURAL BUFFER ENCROACHMENT						
OTHER:						
RUN OFF CONTROL				X		X
CONSTRUCTION ENTRANCE	** X	X	X	X	X	
PIPE SLOPE DRAIN						
OUTLET PROTECTION	X	X	X	X	X	
SURFACE ROUGHENING					X	
CHECK DAMS						
OTHER:						
POLLUTION PREVENTION						
PROPER SIGNAGE	X	X	X	X	X	X
HAZ WASTE MGMT.	X	X	X	X	X	X
SPILL KIT ON-SITE	X	X	X	X	X	X
CONCRETE WASHOUT AREA	X	X	X	X	X	X
OTHER:						

* SIGNIFIES ADDITIONAL BMP'S REQUIRED FOR WORK WITHIN 50' OF WATER OF THE STATE.
** SIGNIFIES BMP THAT WILL BE INSTALLED PRIOR TO ANY GROUND DISTURBING ACTIVITY.

NARRATIVE DESCRIPTIONS

EXISTING SITE CONDITIONS

* UNDEVELOPED LAND WITH WETLANDS (UNDISTURBED, OUTSIDE OF LOT BOUNDARY)

DEVELOPED CONDITIONS

*DELIVERY VAN PARKING LOT

NATURE OF CONSTRUCTION ACTIVITY AND ESTIMATED TIME TABLE

* MASS GRADING	(05/01/21 TO 06/15/21)
* UTILITY INSTALLATION	(06/15/21 TO 07/15/21)
* SITE CONSTRUCTION	(07/15/21 TO 10/01/21)
* FINAL STABILIZATION	(10/01/21 TO 10/15/21)

TOTAL SITE AREA = 217,682 SF (5.00 AC)

TOTAL DISTURBED AREA = 212,795 SF (4.89 AC)

SITE SOIL CLASSIFICATION: (FROM USGS)

27 - LABISH MUCKY CLAY
43 - WAPATO SILTY CLAY LOAM
37C - VERBOORT SILTY CLAY LOAM, 0 TO 3 PERCENT SLOPES

RECEIVING WATER BODIES:

NEAREST WATER BODY: HEDGES CREEK

PERMITTEE'S SITE INSPECTOR:

COMPANY/AGENCY: PERLO CONSTRUCTION
INSPECTOR: TIM KOFSTAD
PHONE:(503) 701-8150
E-MAIL: TKOFSTAD@PERLO.BOZ
EXPERIENCE: ID# ECO-3-5111804, EXP. 5/11/2021

RATIONALE STATEMENT

A COMPREHENSIVE LIST OF AVAILABLE BEST MANAGEMENT PRACTICES (BMP) OPTIONS BASED ON DEQ's GUIDANCE MANUAL HAS BEEN REVIEWED TO COMPLETE THIS EROSION AND SEDIMENT CONTROL PLAN. SOME OF THE ABOVE LISTED BMP's WERE NOT CHOSEN BECAUSE THEY WERE DETERMINED TO NOT EFFECTIVELY MANAGE EROSION PREVENTION AND SEDIMENT CONTROL FOR THIS PROJECT BASED ON SPECIFIC SITE CONDITIONS, INCLUDING SOIL CONDITIONS TOPOGRAPHIC CONSTRAINTS, ACCESSIBILITY TO THE SITE, AND OTHER RELATED CONDITIONS, AS THE PROJECT PROGRESSES AND THERE IS A NEED TO REVISE THE ESCP PLAN, AN ACTION PLAN WILL BE SUBMITTED.

INITIAL _____

EROSION AND SEDIMENT CONTROL PLANS SHEET INDEX

Architecture ▪ Interiors
Planning ▪ Engineering

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MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

Client

MARTIN DEVELOPMENT NW
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SEATTLE, WA 98115

Project

HEDGES D PARKING LOT
11507 SW AMU STREET
TUALATIN, OREGON

REGISTERED PROFESSIONAL ENGINEER
91897
OREGON
JAN. 10, 2017
GREGORY I. MINO
EXPIRES: 12/31/20

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
EROSION AND SEDIMENT CONTROL PLAN COVER SHEET

DRAWN BY: GIM

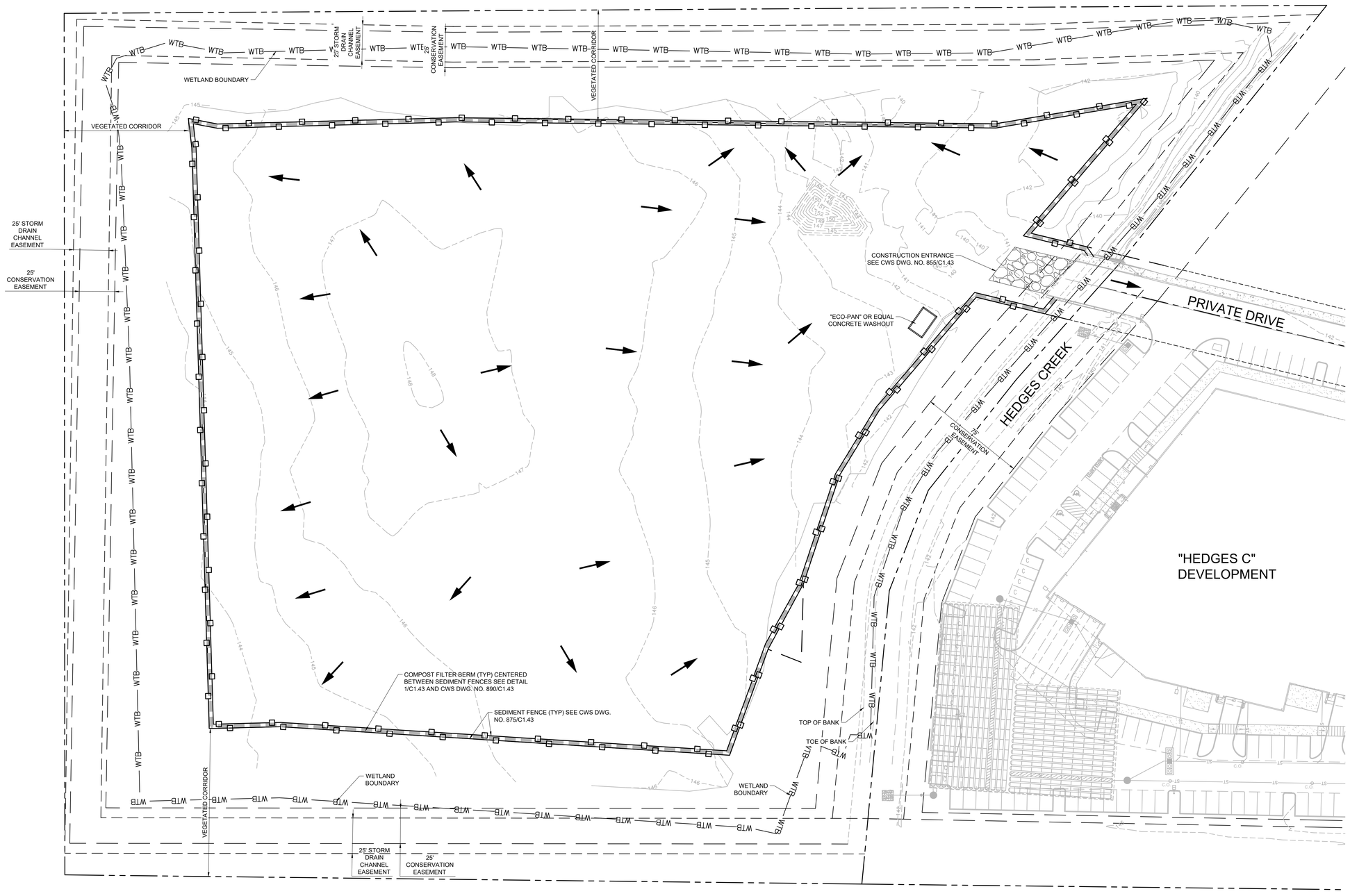
CHECKED BY: MWB

SHEET
C1.40

JOB NO. **2200339.00**

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: **WEDDLE SURVEYING** DATE: **10/21/2019**

ARCHITECTURAL REVIEW SUBMITTAL 09/01/20



1 C1.41

CLEARING, DEMOLITION, MASS GRADING EROSION AND SED CONTROL PLAN

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

LEGEND

- EXISTING DRAINAGE FLOW DIRECTION
- COMPOST FILTER BERM
- SEDIMENT FENCE/STRAW WATTLE
- INLET PROTECTION
- GRAVEL CONSTRUCTION ENTRANCE
- CONCRETE WASHOUT

STAGING AND STOCKPILE AREAS ARE TO BE DETERMINED BY THE CONTRACTOR AND ADJUSTED TO ACCOMMODATE THE PROGRESS OF CONSTRUCTION. THE OWNER'S EROSION CONTROL INSPECTOR SHALL BE MADE AWARE OF ALL CHANGES AND CONSULTED FOR BMP IMPLEMENTATIONS THAT MAY BE NECESSARY TO ACCOMMODATE THE SELECTED LOCATIONS.

THIS PLAN IS INTENDED TO BE ONLY A BASELINE APPROACH TO EROSION AND SEDIMENT CONTROL FOR THE PROJECT SITE. THE OWNER'S EROSION AND SEDIMENT CONTROL INSPECTOR SHALL BE RESPONSIBLE FOR INSTRUCTING THE CONTRACTOR TO ADJUST BMP'S AS NECESSARY TO PROPERLY MANAGE THE VARIOUS PHASES OF CONSTRUCTION AND ANY UNFORESEEN CONDITIONS REQUIRING DIFFERENT OR ADDITIONAL BMP'S TO MANAGE.

SEE SHEETS C1.43 FOR EROSION AND SEDIMENT CONTROL DETAILS

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: WEDDLE SURVEYING DATE: 10/21/2019

ARCHITECTURAL REVIEW SUBMITTAL 09/01/20

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Client

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SEATTLE, WA 98115

Project

HEDGES D PARKING LOT
11507 SW AMU STREET
TUALATIN, OREGON

REGISTERED PROFESSIONAL ENGINEER
91897
OREGON
JULY 10, 2012
GREGORY I. MINO
EXPIRES: 12/31/20

REVISION SCHEDULE

Delta	Issued As	Issue Date

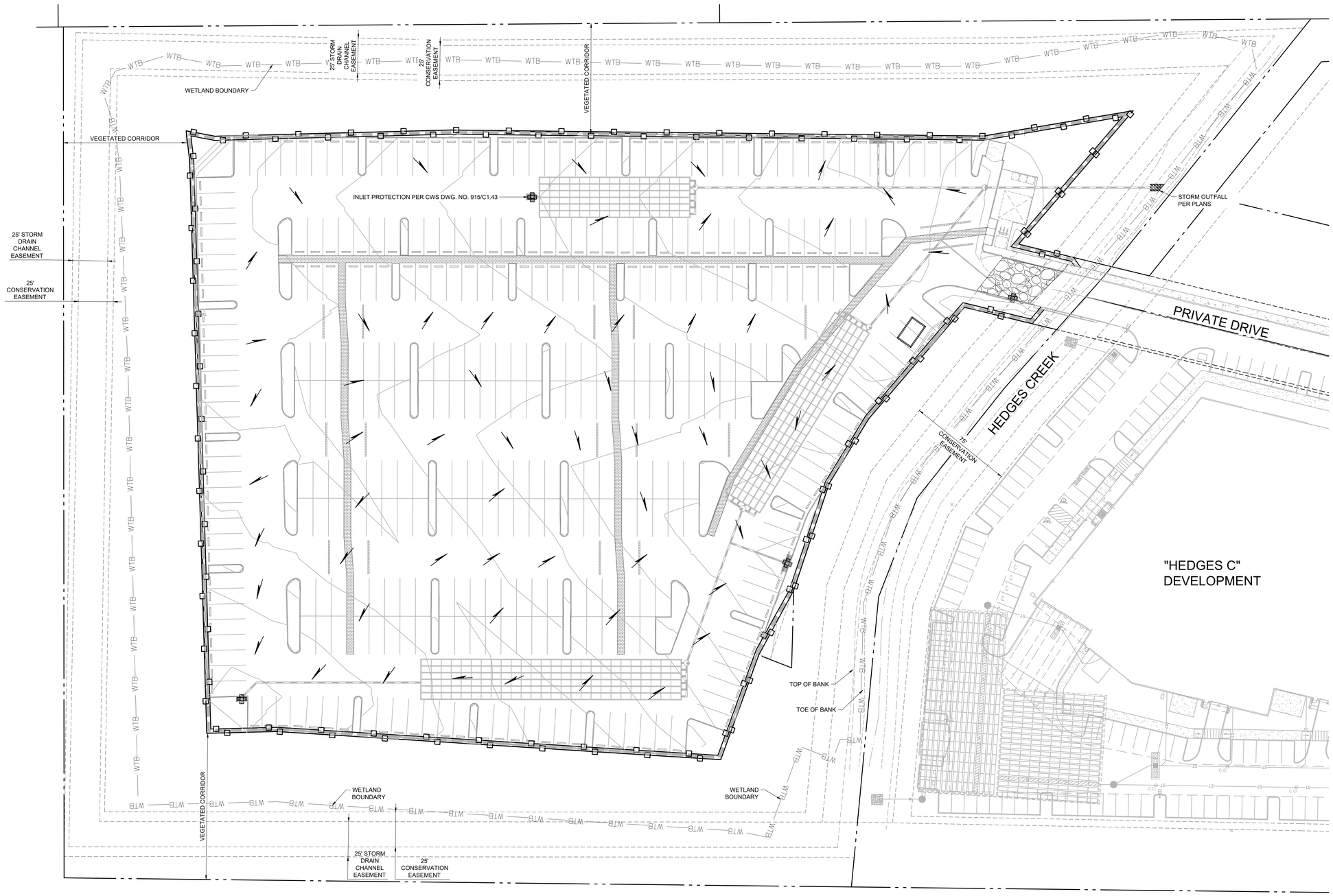
SHEET TITLE:
CLEARING, DEMOLITION, MASS GRADING EROSION AND SED CONTROL PLAN

DRAWN BY: GIM

CHECKED BY: MWB

SHEET
C1.41

JOB NO. **2200339.00**



1 C1.42

UTILITY & STREET CONSTRUCTION GRADING & STABILIZATION ESC PLAN

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

LEGEND

EXISTING	PROPOSED	
		DRAINAGE FLOW DIRECTION
		COMPOST FILTER BERM
		SEDIMENT FENCE
		INLET PROTECTION
		GRAVEL CONSTRUCTION ENTRANCE
		DRIVE THROUGH TIRE WASH

STAGING AND STOCKPILE AREAS ARE TO BE DETERMINED BY THE CONTRACTOR AND ADJUSTED TO ACCOMMODATE THE PROGRESS OF CONSTRUCTION. THE OWNER'S EROSION CONTROL INSPECTOR SHALL BE MADE AWARE OF ALL CHANGES AND CONSULTED FOR BMP IMPLEMENTATIONS THAT MAY BE NECESSARY TO ACCOMMODATE THE SELECTED LOCATIONS.

THIS PLAN IS INTENDED TO BE ONLY A BASELINE APPROACH TO EROSION AND SEDIMENT CONTROL FOR THE PROJECT SITE. THE OWNER'S EROSION AND SEDIMENT CONTROL INSPECTOR SHALL BE RESPONSIBLE FOR INSTRUCTING THE CONTRACTOR TO ADJUST BMP'S AS NECESSARY TO PROPERLY MANAGE THE VARIOUS PHASES OF CONSTRUCTION AND ANY UNFORESEEN CONDITIONS REQUIRING DIFFERENT OR ADDITIONAL BMP'S TO MANAGE.

SEE SHEETS C1.43 FOR EROSION AND SEDIMENT CONTROL DETAILS

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: WEDDLE SURVEYING DATE: 10/21/2019

ARCHITECTURAL REVIEW SUBMITTAL 09/01/20

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EXPIRES: 12/31/20

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
UTILITY & STREET CONSTRUCTION GRADING & STABILIZATION ESC PLAN

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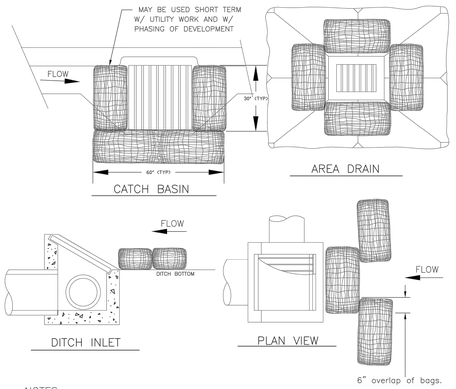
CHECKED BY: MWB

SHEET
C1.42

JOB NO. **2200339.00**



NOTES:

1. ADDITIONAL MEASURES MUST BE CONSIDERED DEPENDING ON SOIL TYPES.
2. BIO-FILTER BAGS SHOULD BE STAKED WHERE APPLICABLE USING (2) 1"x2" WOODEN STAKES OR APPROVED EQUAL PER BAG.
3. WHEN USING 30" BIO-BAGS TO PROTECT A CATCH BASIN YOU MUST HAVE 4 BAGS AND THEY SHALL BE OVERLAPPED BY 6".

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF CLEAN WATER SERVICES EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

INLET PROTECTION TYPE 4

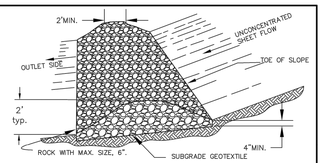
DRAWING NO. 915 REVISED 12-16

CleanWater Services

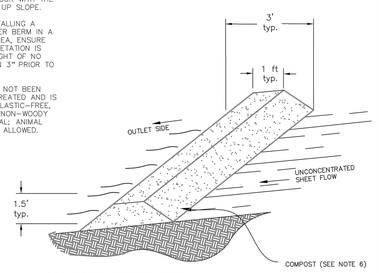
FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF CLEAN WATER SERVICES EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

NOTES:

1. DIRECT THE OUTLET SIDE OF THE ROCK/COMPOST FILTER BERMS ONTO A STABILIZED AREA, SUCH AS VEGETATION AND/OR ROCK.
2. EMBED ROCK FILTER BERM A MIN. OF 4" INTO THE EXISTING GROUND/EMBANKMENT.
3. USE ROCK FILTER BERM ON 3:1 OR FLATTER SIDE SLOPES, WITHIN THE SAFETY CLEAR ZONE. USE 6:1 OR FLATTER ON SIDE SLOPES.
4. PLACE COMPOST FILTER BERM'S ALONG OR ON THE GROUND CONTOUR WITH THE ENDS TURNED UP SLOPE.
5. PRIOR TO INSTALLING A COMPOST FILTER BERM IN A VEGETATED AREA, ENSURE THAT THE VEGETATION IS CUT TO A HEIGHT OF NO GREATER THAN 3" PRIOR TO INSTALLATION.
6. COMPOST HAS NOT BEEN CHEMICALLY TREATED AND IS WEED-FREE, PLASTIC-FREE, DECOMPOSED, NON-WOODY PLANT MATERIAL; ANIMAL WASTE IS NOT ALLOWED.



ROCK FILTER BERM



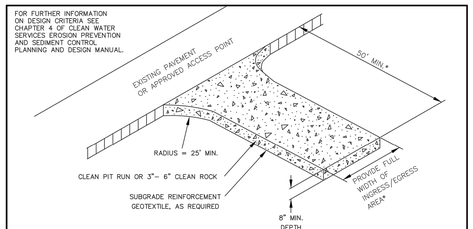
COMPOST FILTER BERM

FILTER BERMS ROCK/COMPOST

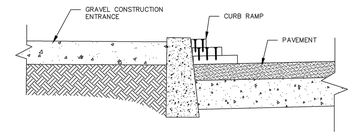
DRAWING NO. 890 REVISED 12-16

CleanWater Services

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF CLEAN WATER SERVICES EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.



*20' MIN. FOR SINGLE FAMILY AND DUPLEX RESIDENTIAL



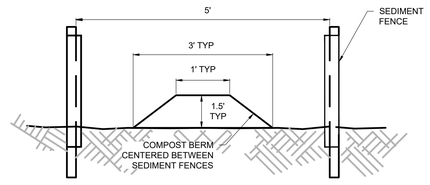
NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF- WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. WHERE RUNOFF CONTAINING SEDIMENT LADEN WATER IS LEAVING THE SITE VIA THE CONSTRUCTION ENTRANCE, OTHER MEASURES SHALL BE IMPLEMENTED TO DIVERT RUNOFF THROUGH AN APPROVED FILTERING SYSTEM.
5. DIMENSIONS
   SINGLE FAMILY
   20' LONG BY 20' WIDE 8" DEEP OF ¾" MINUS CLEAN ROCK.
   COMMERCIAL
   50' LONG BY 20' WIDE 3-6" CLEAN ROCK, GOVERNING AUTHORITY MAY REQUIRE GEOTEXTILE FABRIC TO PREVENT SUB-SOIL PUMPING.

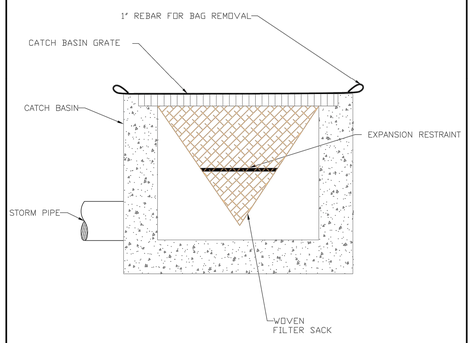
CONSTRUCTION ENTRANCE

DRAWING NO. 855 REVISED 12-16

CleanWater Services



1 C1.43 COMPOST BERM AND SEDIMENT FENCE N.T.S.



CATCH BASIN INSERT

NOTE:

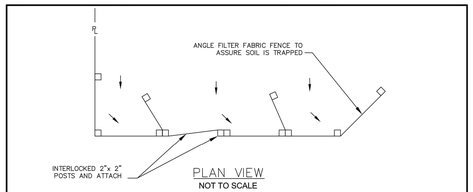
1. RECESSED CURB INLET CATCH BASINS MUST BE BLOCKED WHEN USING FILTER FABRIC INLET SACKS. SIZE OF FILTER FABRIC INLET SACKS TO BE DETERMINED BY MANUFACTURER.

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF CLEAN WATER SERVICES EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

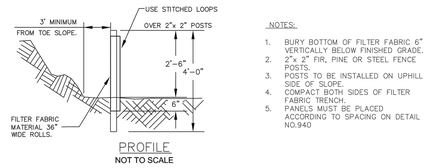
INLET PROTECTION TYPE 5

DRAWING NO. 920 REVISED 12-16

CleanWater Services



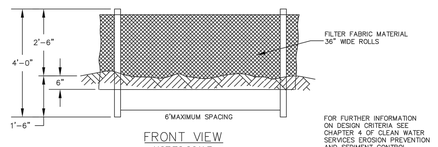
PLAN VIEW
NOT TO SCALE



PROFILE
NOT TO SCALE

NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x 2" FIR, PINE OR STEEL FENCE POSTS.
3. POSTS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
4. COMPACT BOTH SIDES OF FILTER FABRIC TRENCH.
5. PANELS MUST BE PLACED ACCORDING TO SPACING ON DETAIL NO.940



FRONT VIEW
NOT TO SCALE

SEDIMENT FENCE

DRAWING NO. 875 REVISED 12-16

CleanWater Services

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF CLEAN WATER SERVICES EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

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91897
OREGON
JAN. 10, 2017
GREGORY I. MINO
EXPIRES: 12/31/20

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
EROSION AND SEDIMENT CONTROL DETAILS

DRAWN BY: GIM

CHECKED BY: MWB

SHEET

C1.43

JOB NO. **2200339.00**

ARCHITECTURAL REVIEW SUBMITTAL 09/01/20

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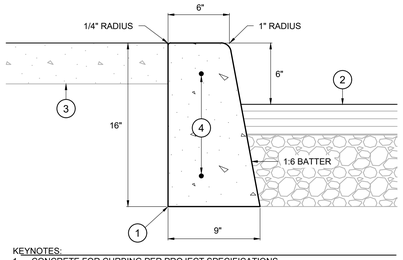
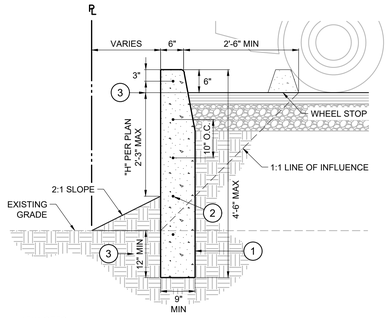


KEYNOTES:
1. CONCRETE FOR CURBING PER PROJECT SPECIFICATIONS
2. PAVEMENT SECTION PER CIVIL PLANS
3. SEE CIVIL PLANS FOR IMPROVEMENTS AT BACK OF CURB. WHERE SIDEWALK OCCURS, THE SIDEWALK AND TOP OF CURB SHALL BE FLUSH. WHERE ABUTTING A PLANTER AREA, THE FINAL GRADE SHALL BE 1" MINIMUM BELOW TOP OF CURB, OR AS DIRECTED BY THE LANDSCAPE ARCHITECT.
4. #4 REBAR, TOP AND BOTTOM, CONTINUOUS, 3" MINIMUM EMBEDMENT

1 C5.10 VERTICAL CURB
NTS

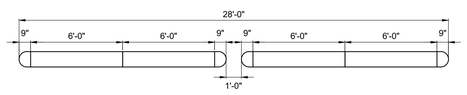


KEYNOTES:
1. ALL REQUIREMENTS OF THE VERTICAL CURB DETAIL APPLY TO THIS DETAIL
2. #4 REBAR, SPACING AS SHOWN, CONTINUOUS, 3" MINIMUM EMBEDMENT
3. THIS DETAIL APPLIES IN ANY CONDITION WHERE THE GRADE BEHIND THE CURB IS LOWER THAN THE PAVEMENT GRADE IN FRONT OF THE CURB

2 C5.10 DEEPENED VERTICAL CURB
NTS

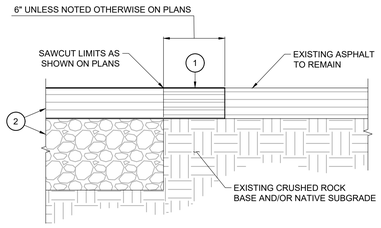
NOTES:
1. CONTRACTOR TO PROVIDE MATERIAL SAMPLE, CUT SHEET, OR OTHER MEANS ADEQUATE TO DEMONSTRATE THE FINISHED PRODUCT FOR OWNER CONSIDERATION.
2. QUALIFICATIONS AND PRIOR EXPERIENCE OF INSTALLING CONTRACTOR SHALL BE PROVIDED FOR OWNER CONSIDERATION.
3. STAMPED ASPHALT SHALL BE COATED TO PROVIDE A DURABLE, SLIP-RESISTANT AND ATTRACTIVE FINISHED COATING.

5 C5.10 STAMPED ASPHALT
NTS



NOTES:
1. 12" WIDE BY 2.25" TALL PREFABRICATED RUBBER SPEED BUMP WITH YELLOW MARKINGS AND ROUNDED END CAPS.
2. PROVIDE 12" SEPARATION FOR DRAINAGE, CENTER OVERALL SPEED BUMP ASSEMBLY IN DRIVE AISLE.
3. FASTEN TO SURFACE PER MANUFACTURER RECOMMENDATIONS.

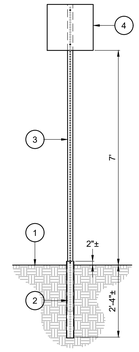
9 C5.10 SPEED BUMP
NTS



KEYNOTES:
1. ADDITIONALWIDTH OF EXISTING ASPHALT PAVEMENT TO BE SAWCUT AND REMOVED BEYOND THE SAWCUT LIMITS SHOWN ON PLANS
2. PROPOSED ASPHALT PAVEMENT SECTION PER PLANS

NOTES:
A. DO NOT DISTURB THE EXISTING CRUSHED ROCK BASE OR NATIVE SUBGRADE UNDER THE ADDITIONAL WIDTH OF SAWCUT OR EXISTING ASPHALT PAVEMENT
B. PAVEMENT REPLACEMENT WITHIN THE ADDITIONAL SAWCUT LIMITS SHALL MATCH EXISTING OR PROPOSED SECTION, WHICHEVER IS GREATER

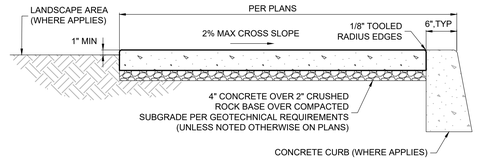
10 C5.10 ASPHALT PAVEMENT SAWCUT
NTS



KEYNOTES:
1. EXISTING OR FINISHED GRADE PER PLANS
2. 30" LONG, PERFORATED GALVANIZED 12GA METAL POST SLEEVE SIZED TO ACCOMMODATE 2"x2" SQUARE POST. EMBED SLEEVE SUCH THAT APPROXIMATELY 2" IS EXPOSED ABOVE GRADE TO ALLOW FOR INSTALLATION OF THE CORNER BOLT IN THE TOP HOLE
3. 10' LONG, 2"x2" SQUARE PERFORATED GALVANIZED 12GA METAL SIGN POST (UNISTRUT TELESPAR, OR EQUAL). SIGN POST SHALL BE EMBEDDED A MINIMUM OF 12" INTO THE POST SLEEVE
4. ATTACH SIGN TO PERFORATED POST USING A MINIMUM OF 2 DRIVE RIVETS THROUGH THE FACE OF THE SIGN. SIZE, SHAPE, AND WORDING OF SIGN PER PLANS OR SEPARATE DETAIL

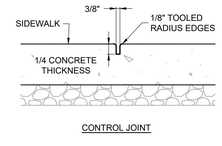
NOTES:
A. SIGN POST SHALL BE PLACED SUCH THAT EDGE OF MOUNTED SIGN IS AT LEAST 24" AWAY FROM ANY ADJACENT ROADWAY
B. ROUND OR WOOD POSTS ARE NOT PERMITTED

11 C5.10 SIGN POST
NTS

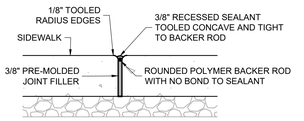


NOTES:
1. CONCRETE SIDEWALK SHALL BE BROOM FINISHED UNLESS OTHERWISE NOTED ON PLANS
2. SEE PROJECT SPECIFICATIONS FOR CONCRETE, AGGREGATE BASE, AND JOINT MATERIALS
3. WHERE SIDEWALK ABUTS CURBING, SURFACE SHALL BE FLUSH WITH TOP OF CURB UNLESS NOTED OTHERWISE ON PLANS. WHERE SIDEWALK ABUTS LANDSCAPE OR OTHER PERVIOUS AREA, GRADE SHALL BE RECESSED 1" MINIMUM OR AS OTHERWISE DICTATED BY THE LANDSCAPE ARCHITECT OR NOTED ON PROJECT PLANS
4. DO NOT USE SHINERS ON TOOLED EDGES UNLESS NOTED OTHERWISE
5. CONTROL JOINTS SHALL BE EVENLY SPACED AND LOCATED EVERY 5' MAXIMUM, WITH EXPANSION JOINTS EVERY FOURTH JOINT, OR PER PLAN. SIDEWALK JOINTS SHALL BE ALIGNED WITH CURB JOINTS OR WHERE PERPENDICULAR CURBING INTERSECTS.

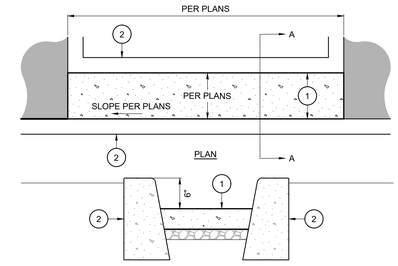
3 C5.10 CONCRETE SIDEWALK AND JOINTS
NTS



CONTROL JOINT



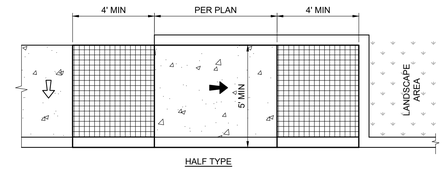
EXPANSION JOINT



KEYNOTES:
1. 4" CONCRETE OVER 2" ROCK BASE. CONCRETE AND BASE PER SPECIFICATIONS
2. CONCRETE VERTICAL CURB PER

NOTES:
1. CHANNEL SLOPE TO MATCH SLOPE OF ADJACENT PAVEMENT
2. WHERE CHANNEL IS IN-LINE WITH CURB AND GUTTER, CONTINUE CROSS SECTION OF CURB AND GUTTER THROUGH LENGTH OF CHANNEL

4 C5.10 CONCRETE CURB CHANNEL
NTS



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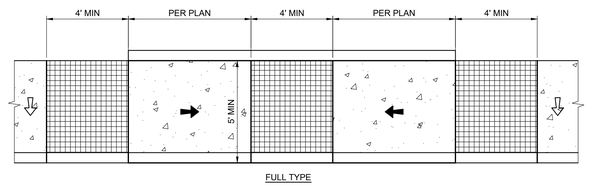

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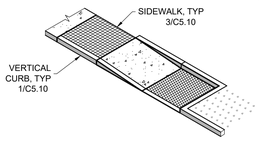
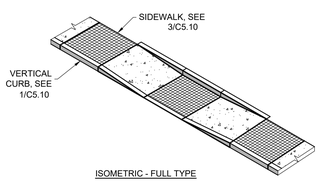


ISOMETRIC - HALF TYPE



ISOMETRIC - FULL TYPE

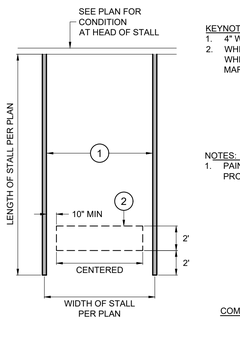
LEGEND
TURNING SPACE/LANDING
MAX 2.0% FINISHED
SLOPE IN ALL DIRECTIONS*

SLOPE 1.5% MAX*
(MAX 2.0% FINISHED SURFACE SLOPE)

SLOPE 7.5% MAX*
(MAX 8.3% FINISHED SLOPE)

*SLOPES GOVERN OVER ELEVATIONS

6 C5.10 PARALLEL CURB RAMPS
NTS



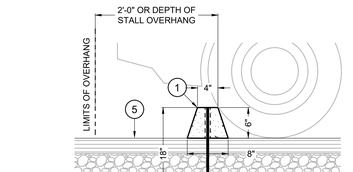
KEYNOTES:
1. 4" WIDE WHITE STRIPE
2. WHITE PAVEMENT MARKING, 2" MIN STROKE, WHERE CALLED OUT ON PLANS. COMMON MARKINGS SHOWN HEREON

NOTES:
1. PAINT MATERIALS AND APPLICATION PER PROJECT SPECIFICATIONS

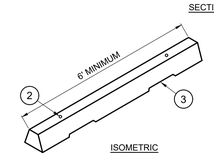
COMPACT
CARPOOL

COMMON PARKING STALL DESIGNATIONS

7 C5.10 PARKING STALL STRIPING
NTS



SECTION

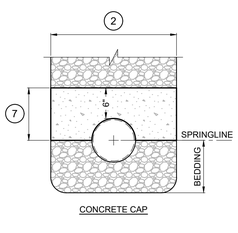


ISOMETRIC

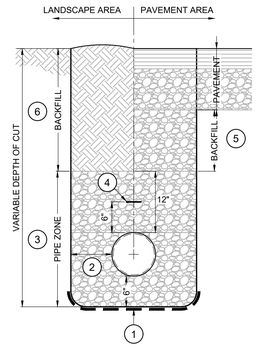
KEYNOTES:
1. PRECAST WHEEL STOP
2. DOWEL HOLES (2 MINIMUM)
3. DRAINAGE SLOTS (2 MINIMUM)
4. DOWEL INTO PAVEMENT (2 MINIMUM). #4 REBAR OR PER MANUFACTURER'S RECOMMENDATION
5. FINISHED GROUND PER CIVIL PLANS

8 C5.10 PRECAST WHEEL STOP
NTS

THIS DETAIL IS FOR USE ON PRIVATE PROPERTY ONLY. TRENCHING AND BACKFILL REQUIREMENTS FOR WORK IN THE PUBLIC RIGHT-OF-WAY SHALL BE COMPLIANT WITH THE STANDARDS OF THE AUTHORITY HAVING JURISDICTION



CONCRETE CAP



KEYNOTES:
1. INSTALL TRENCH STABILIZATION AS REQUIRED BY THE GEOTECHNICAL ENGINEER
2. TRENCH WIDTH SHALL ACCOMMODATE THE PIPE DIAMETER PLUS ONE ADDITIONAL PIPE DIAMETER ON EITHER SIDE OF THE PIPE, BUT IN NO CASE LESS THAN 6 INCHES OR MORE THAN 18 INCHES
3. PIPE ZONE TO CONSIST OF IMPORTED GRANULAR MATERIAL
4. TRACER WIRE
5. BACKFILL IN PAVEMENT AREAS WITH IMPORTED GRANULAR MATERIAL TO PAVEMENT SUBGRADE ELEVATION
6. BACKFILL IN LANDSCAPE AREAS WITH NATIVE MATERIAL TO PLANTER SUBGRADE ELEVATION. MOUND TOP TO SHED AT 2% EACH DIRECTION IF TRENCH IS LOCATED IN UNDEVELOPED, NON-LANDSCAPED AREAS
7. CONCRETE CAP: WHERE CALLED OUT ON PLANS, OR WHERE PIPE COVER IS LESS THAN 12 INCHES IN VEHICULAR AREAS, PROVIDE 6 INCH THICK CONCRETE CAP THE WIDTH OF THE TRENCH, BEARING ON THE BEDDING HAUNCHING AT THE SPRINGLINE OF THE PIPE

NOTES:
1. SEE GEOTECHNICAL REPORT AND PROJECT SPECIFICATIONS FOR RECOMMENDED MATERIALS AND FURTHER REQUIREMENTS (i.e. MINIMUM COMPACTION)
2. IF GROUNDWATER IS ENCOUNTERED, CONSULT THE GEOTECHNICAL ENGINEER OF RECORD FOR ADDITIONAL RECOMMENDATIONS WITH REGARD TO TRENCHING, PIPE PLACEMENT, AND BACKFILL

12 C5.10 UTILITY TRENCH BEDDING AND BACKFILL
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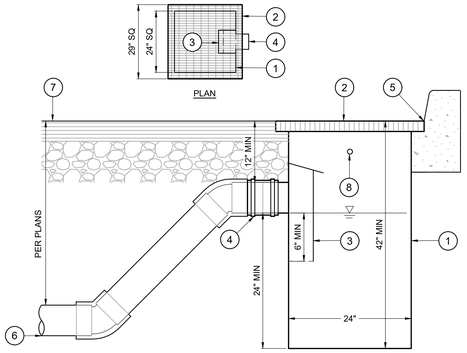

KEYNOTES:
1. PREFABRICATED, ASPHALT DIPPED, 10 GAUGE STEEL SUMPED CATCH BASIN WITH INTEGRAL GRATE FRAME
2. BIKE PROOF, HEAVY DUTY REMOVABLE TRAFFIC GRATE CAPABLE OF SUPPORTING H20 LOADING
3. SEDIMENT TRAP WITH HINGED LID
4. INSTALL FLEXIBLE CLAMPED COUPLING ON INTEGRAL CATCH BASIN OUTLET. IMMEDIATELY TURN DOWN PIPING AT 45 DEGREES TO INTERSECT WITH THE SITE PIPING
5. LOCATE CATCH BASIN SUCH THAT THE EDGE OF GRATE FRAME IS INLINE WITH THE ABUTTING CURBLINE (WHERE APPLIES).
6. PIPE SIZE, INVERT, AND SLOPE PER PLANS
7. PAVING SECTION PER PLANS
8. 1/2 INCH TO 1 INCH DIAMETER WEEPHOLES, MINIMUM 1 PER SIDE. CONTRACTOR SHALL VERIFY COMPLIANCE WITH LOCAL JURISDICTION PRIOR TO PROCURING MATERIALS

NOTES:
1. ALL PRODUCTS USED SHALL BE COMPLIANT WITH BOTH THE UNIFORM AND LOCAL JURISDICTION PLUMBING CODES
2. WHERE ABUTTING CURBING, GRATE SHALL BE ORIENTED SO THAT THE ELONGATED PATTERN IS PERPENDICULAR TO THE CURB FACE

13 C5.10 STEEL CATCH BASIN
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SHEET
C5.10

JOB NO. **2200339.00**

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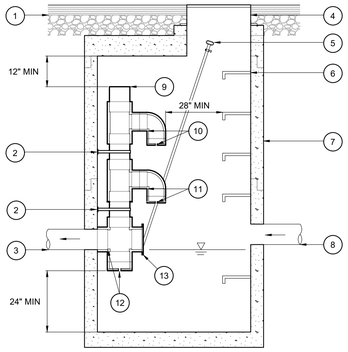

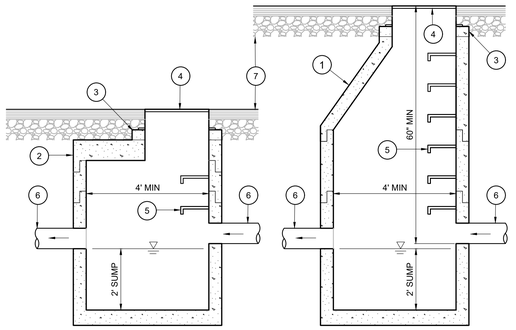

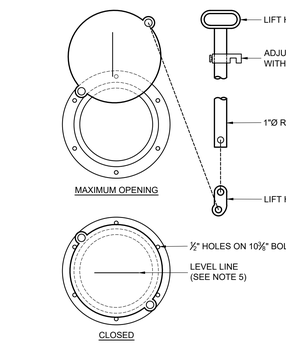

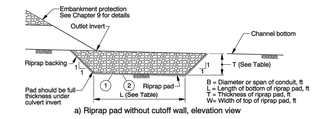

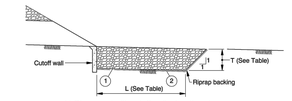

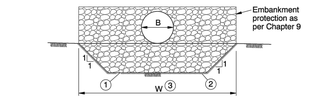

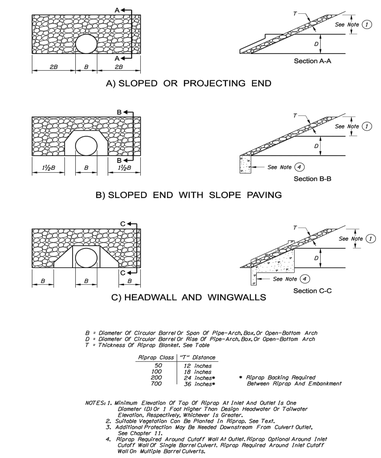

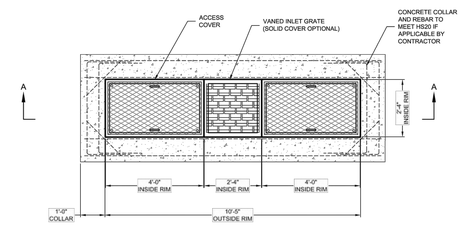

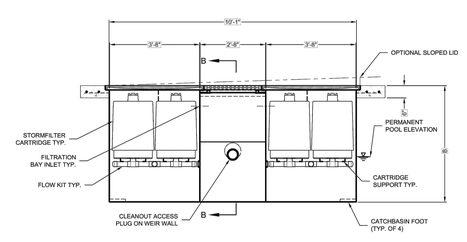

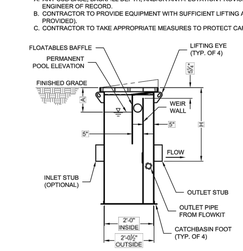

KEYNOTES:
1. PAVING SECTION PER PLANS
2. SECURE PIPE STACK TO MANHOLE WITH RUST PROOF TIE STRAPS AND BOLTS
3. OUTLET PIPE SIZE, INVERT, AND SLOPE PER PLANS
4. STANDARD MANHOLE FRAME AND COVER. RIM ELEVATION PER PLANS
5. LIFT HANDLE FOR SHEAR GATE, SEE DETAIL 1B/C5.11
6. MANHOLE STEP PER 1A/C5.11
7. MANHOLE PER 1A/C5.11
8. INLET PIPE SIZE, INVERT, AND SLOPE PER PLANS
9. OVERFLOW SIZE AND ELEVATION = 8", 139.70
10. ORIFICE 3 SIZE AND ELEVATION = N/A
11. ORIFICE 2 SIZE AND ELEVATION = 3", 138.50
12. ORIFICE 1 SIZE AND ELEVATION = 0.5", 136.80
13. SHEAR GATE PER DETAIL 1B/C5.11

NOTES:
A. CONTRACTOR IS RESPONSIBLE FOR SELECTING THE MANHOLE SIZE, TYPE, AND MATERIAL BASED UPON PROJECT SITE CONDITIONS, PROJECT PLANS & SPECIFICATIONS, AND THE DIMENSIONAL CRITERIA HEREON
B. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL FLOW CONTROL MANHOLES FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO PROCURING MATERIALS
C. SELECTED MANHOLE SHALL MEET THE CRITERIA OF THE PROJECT SPECIFICATIONS AND BE INSTALLED ACCORDINGLY
D. INLET AND OUTLET PIPES CONNECTIONS SHALL BE COMPLIANT WITH PROJECT SPECIFICATIONS OR THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION, WHICHEVER IS MOST STRINGENT
E. UNLESS NOTED OTHERWISE, PIPE STACK, CROSS FITTING FOR ORIFICE 1 & SHEAR GATE, AND OVERFLOW SHALL BE THE SIZE OF THE OUTLET PIPE. USE REDUCING TEES AS APPROPRIATE FOR THE ADDITIONAL ORIFICES TO OPTIMIZE SPACE CONSTRAINTS

1/C5.11 FLOW CONTROL MANHOLE

NTS

KEYNOTES:
1. 48" MIN DIAMETER PRECAST CONCRETE MANHOLE WITH ECCENTRIC CONE
2. 48" MIN DIAMETER PRECAST CONCRETE FLAT TOP MANHOLE (USED WHEN LESS THAN 60" AVAILABLE FROM PIPE INVERT TO RIM). CONCENTRIC LID SHALL BE USED AND STEPS SHALL BE OMITTED WHEN DEPTH FROM RIM TO INVERT IS LESS THAN 3 FEET
3. PRECAST CONCRETE GRADE RING AS REQUIRED TO ACCOMMODATE PAVING SECTION (12" TOTAL, MAX)
4. MANHOLE FRAME AND COVER PER PROJECT SPECIFICATIONS, RIM ELEVATION PER PLANS
5. 6 1/2" MIN LONG MANHOLE STEPS AT 12" ON CENTER PER PROJECT SPECIFICATIONS. LOCATE WITHIN 24" OF COVER AND FLOOR OF MANHOLE, AND A MINIMUM OF 5" FROM PRECAST SECTION JOINT
6. PIPE SIZE, INVERT, AND SLOPE PER PLANS
7. PAVING SECTION PER PLANS

NOTES:
A. MANHOLE DIAMETER SHALL BE INCREASED, IF REQUIRED, TO PROVIDE A MINIMUM OF 12" SEPARATION BETWEEN PIPE CONNECTIONS, OR WHEN ANY PIPE DIAMETER IS GREATER THAN 1/2 THE DIAMETER OF THE MANHOLE
B. MANHOLE ACCESS COVER SHALL NOT BE LOCATED DIRECTLY OVER A PIPE CONNECTION UNLESS DIRECTED OTHERWISE BY THE ENGINEER
C. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL MANHOLES FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO PROCURING MATERIALS
D. SELECTED MANHOLE SHALL MEET THE CRITERIA OF THE PROJECT SPECIFICATIONS AND BE INSTALLED ACCORDINGLY
E. INLET AND OUTLET PIPES CONNECTIONS SHALL BE COMPLIANT WITH PROJECT SPECIFICATIONS OR THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION, WHICHEVER IS MOST STRINGENT

1A/C5.11 STORM SEWER MANHOLES

NTS

NOTES
1. THE FRAME AND LADDER OR STEPS ARE TO BE OFFSET SO THAT: THE SHEAR GATE IS VISIBLE FROM THE TOP; THE CLIMB-DOWN SPACE IS CLEAR OF RISER AND GATE; THE FRAME IS CLEAR OF THE CURB (IF APPLICABLE)
2. THE SHEAR GATE SHALL BE MADE OF ALUMINUM ALLOY IN ACCORDANCE WITH ASTM B 26M AND ASTM B 275, DESIGNATION ZG32A; OR CAST IRON IN ACCORDANCE WITH ASTM A 48, CLASS 30B
3. THE LIFE HANDLE SHALL BE MADE OF SIMILAR METAL TO THE GATE (TO PREVENT GALVANIC CORROSION)
4. A NEOPRENE RUBBER GASKET IS REQUIRED BETWEEN THE PIPE MOUNTING FLANGE AND THE GATE FLANGE
5. INSTALL THE GATE SO THAT THE LEVEL-LINE IS LEVEL WHEN THE GATE IS CLOSED
6. THE MATING SURFACES OF THE LID AND THE BODY SHALL BE MACHINED TO PROPER FIT
7. ALL SHEAR GATE BOLTS SHALL BE STAINLESS STEEL
8. THE SHEAR GATE MAXIMUM OPENING SHALL BE CONTROLLED BY LIMITED HINGE MOVEMENT, A STOP TAB, OR SOME OTHER DEVICE
9. ALTERNATIVE SHEAR GATE DESIGNS ARE ACCEPTABLE, IF MATERIAL SPECIFICATIONS ARE MET AND FLANGE BOLT PATTERN MATCHES. CONTRACTOR TO SUBMIT SHOP DRAWINGS TO ENGINEER PRIOR TO ORDERING OR CONSTRUCTION

1B/C5.11 SHEAR GATE

NTS

TABLE		
Riprap Class	L * (ft)	T (ft)
50	4B or 1.3	2.3
100	4B or 1.6	3.3
200	4B or 2.0	4.3
700	4B or 3.3	5.6

* L is the greater of 4B or the listed dimension.

Notes:

① Do not excavate non-erodible rock in order to place riprap.

② Use riprap backing under Class 200 and Class 700 loose riprap.

③ Top width of the riprap pad is the larger of 5B or the width of the embankment protection (see Chapter 9).

Figure 11-16 Dimensions of Riprap Pads

B = Diameter Of Circular Barrel Or Span Of Pipe-Arch, Box, Or Open-Bottom Arch
D = Diameter Of Circular Barrel Or Rise Of Pipe-Arch, Box, Or Open-Bottom Arch
T = Thickness Of Riprap Blanket. See Table

Riprap Class	*"T" Distance*
50	*12 inches*
100	*18 inches*
200	*24 inches**
700	*36 inches**

** Riprap Backing Required Between Riprap And Embankment*

NOTES: 1. Minimum Elevation Of Top Of Riprap At Inlet And Outlet Is One Diameter (D) Or 1 Foot Higher Than Design Headwater Or Tailwater Elevation, Respectively, Whichever Is Greater.
2. Suitable Vegetation Can Be Planted In Riprap. See Text.
3. Additional Protection May Be Needed Downstream From Culvert Outlet, See Chapter 11.
4. Riprap Required Around Cutoff Wall At Outlet. Riprap Optional Around Inlet Cutoff Wall Of Single Barrel Culvert. Riprap Required Around Inlet Cutoff Wall On Multiple Barrel Culverts.

Figure 9-21 Typical Culvert Embankment Protection Details

2/C5.11 PIPE OUTFALL

N.T.S.

1:1

STORMTECH SC-740 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

STORMTECH SC-740 CHAMBER
(not to scale)

Nominal Chamber Specifications

Size (L x W x H)
85.4" x 51" x 30"
2,170 mm x 1,295 mm x 762 mm

Chamber Storage
45.9 ft³ (1.30 m³)

Min. Installed Storage*
74.9 ft³ (2.12 m³)

Weight
74.0 lbs (33.6 kg)

Shipping
30 chambers/pallet
60 end caps/pallet
12 pallets/truck

*Assumes 6" (150 mm) stone above, below and between chambers and 40% stone porosity.

EMBEDMENT STONE SHALL BE A CLEAN, CRUSHED AND ANGULAR STONE WITH AN AASHTO M43 DESIGNATION BETWEEN #3 AND #57

CHAMBERS SHALL MEET THE REQUIREMENTS FOR ASTM F2418 POLYPROPLENE (PP) CHAMBERS OR ASTM F922 POLYETHYLENE (PE) CHAMBERS

ADS GEOSYNTHETICS 601T NON-WOVEN GEOTEXTILE ALL AROUND CLEAN, CRUSHED, ANGULAR EMBEDMENT STONE

PAVEMENT LAYER (DESIGNED BY SITE DESIGN ENGINEER)

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 4 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF FOUR CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL.
PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
3. STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
4. INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
5. MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
6. STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
7. STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
8. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
9. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

4-CARTRIDGE CATCHBASIN STORMFILTER DATA

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"

CONFIGURATION
OUTLET
INLET

SLOPED LID	YES\NO
SOLID COVER	YES\NO

NOTES/SPECIAL REQUIREMENTS:

*PER ENGINEER OF RECORD

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com

4 CARTRIDGE CATCHBASIN
STORMFILTER
STANDARD DETAIL

WATER QUALITY CATCH BASIN AND UNDERGROUND DETENTION SYSTEM CUT SHEETS ARE SAMPLES FOR REFERENCE ONLY. CONTRACTOR RESPONSIBLE FOR OBTAINING SITE SPECIFIC SHOP DRAWINGS FROM PRODUCT MANUFACTURERS AND SUBMITTING TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING. PRODUCT INSTALLATION SHALL BE PER MANUFACTURER RECOMMENDATIONS.

M.
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HEDGES D PARKING LOT
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TUALATIN, OREGON

REGISTERED PROFESSIONAL ENGINEER
91897
OREGON
JAN. 10, 2017
GREGORY I. MINO
EXPIRES: 12/31/20

REVISION SCHEDULE		
Delta	Issued As	Issue Date

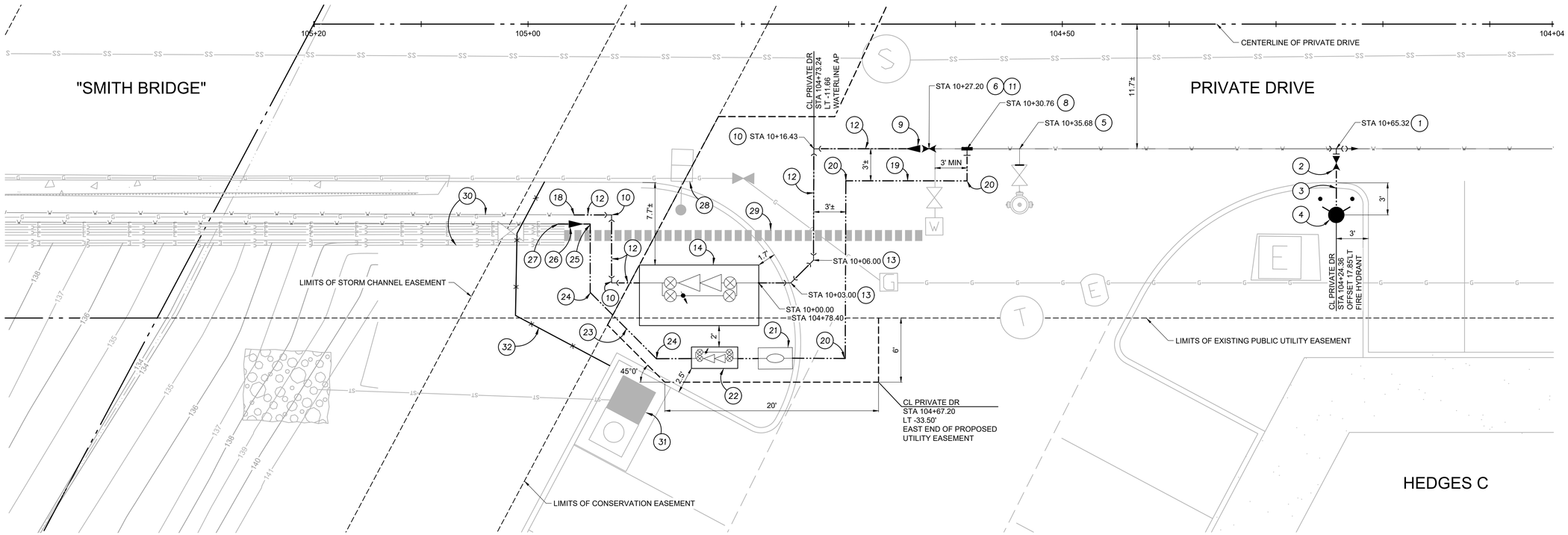
SHEET TITLE:
CIVIL DETAILS

DRAWN BY: GIM
CHECKED BY: MWB

SHEET
C5.11

JOB NO. **2200339.00**

ARCHITECTURAL REVIEW SUBMITTAL 09/01/20



NOTES

1. PRIOR TO MOBILIZATION OF CONSTRUCTION EQUIPMENT AND MATERIALS, CONTRACTOR SHALL POTHOLE EXISTING UTILITIES IN THE AREA OF WORK AND NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES FROM THE INFORMATION SHOWN ON THE PLANS.
2. PRIOR TO WATERLINE WORK, EXISTING MAINLINE SHALL BE SHUT OFF AT THE NEAREST DOWNSTREAM POINT. CONTRACTOR TO COORDINATE WITH THE APPROPRIATE CITY OF TUALATIN STAFF ACCORDINGLY.
3. ALL WORK AND MATERIALS SHALL CONFORM TO THE CITY OF TUALATIN TECHNICAL SPECIFICATIONS. SEE CHAPTER 300, SECTIONS 326 THROUGH 329 (AND ASSOCIATED REFERENCES) FOR WATERLINE CONSTRUCTION AND SECTION 320 FOR TRENCH EXCAVATION AND BACKFILL REQUIREMENTS. SEE CITY OF TUALATIN DWG NO. 241 ON R3.0 FOR TRENCH & SURFACE RESTORATION DETAIL.
4. ALL DUCTILE IRON AND PVC C900 PIPE AND FITTING WORK SHOWN HEREON SHALL BE FULLY RESTRAINED.
5. CONTRACTOR TO COORDINATE DEPTHS OF NEW WATERLINES WITH PROPOSED/FUTURE FRANCHISE UTILITY SERVICE CONDUITS AND INFRASTRUCTURE. MAINTAIN A MINIMUM 1 FOOT CLEARANCE FROM WATER LINE.
6. DO NOT BACKFILL EXCAVATIONS FOR CONNECTIONS UNTIL INSPECTED AND ACCEPTED BY THE CITY OF TUALATIN.
7. CONTRACTOR TO COORDINATE FINISHED GRADES AND LANDSCAPING AROUND BACKFLOW DEVICES TO ENSURE ADEQUATE VISUAL SCREENING.

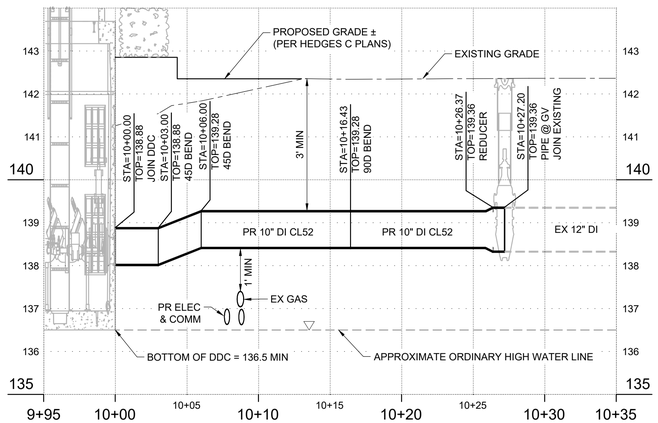
WATERLINE LEGEND

- WATERLINE
- TAPPING SLEEVE
- MJ X MJ GATE VALVE
- MJ X FLG GATE VALVE
- MJ X FLG TEE
- MJ BEND (90 DEGREE)
- MJ BEND (45 DEGREE)
- BLIND FLANGE
- PIPE REDUCER/INCREASER
- CUT-IN SLEEVE
- DOUBLE CHECK DETECTOR
- REDUCED PRESSURE ASSEMBLY
- WATER METER
- FIRE HYDRANT

1 R2.0 PUBLIC WATER MAIN EXTENSION - PLAN

5 0 2.5 5 10 20

(IN FEET)
1 inch = 5 ft.



2 R2.0 PUBLIC WATER MAIN EXTENSION - PROFILE

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 3'

KEYNOTES

1. CUT AND REMOVE PORTION OF EXISTING 12" DI WATER MAIN AS REQUIRED TO INSTALL NEW TEE. INSTALL 12" x 6" DI MJ x FLG TEE WITH 12" MJ CUT-IN SLEEVE
2. 6" FLG x MJ GATE VALVE PER CITY OF TUALATIN DWG NO. 600
3. 6" DI CL52 PIPE
4. FIRE HYDRANT PER CITY OF TUALATIN DWG NO. 610
5. REMOVE EXISTING FIRE HYDRANT AND GATE VALVE ASSEMBLY AND INSTALL DI BLIND FLANGE ON LATERAL
6. REMOVE EXISTING 90 DEGREE PIPE BEND, PIPE, GATE VALVE, AND BLOW OFF ASSEMBLY.
7. NOT USED
8. 2" STAINLESS STEEL SADDLE TAP WITH CORPORATION STOP PER CITY OF TUALATIN DWG NO. 633
9. 12" X 10" DI MJ REDUCER
10. 10" x 10" DI MJ 90 DEGREE BEND
11. 12" MJ x MJ GATE VALVE PER CITY OF TUALATIN DWG NO. 600
12. 10" DI CL52 PIPE
13. 10" DI MJ 45 DEGREE BEND
14. 10" DOUBLE CHECK DETECTOR WITHOUT FDC PER CITY OF TUALATIN DWG NO. 614. COORDINATE POWER SUPPLY FOR SUMP PUMP AND FIRE ALARM SERVICE FOR TAMPER SWITCHES FROM HEDGES D BUILDING
15. NOT USED
16. NOT USED
17. NOT USED
18. MECHANICALLY JOIN EXISTING 10" WATER PIPE. USE PIPE ADAPTERS AS REQUIRED TO ACCOMMODATE DIFFERENCES IN MATERIAL
19. 2" "TYPE K" RIGID COPPER TUBE PER CITY OF TUALATIN DWG NO. 633
20. 2" 90 DEGREE BRASS COMPRESSION FITTING PER CITY OF TUALATIN DWG NO. 633
21. 2" METER BOX AND METER SETTER ASSEMBLY PER CITY OF TUALATIN DWG NO. 633
22. 2" REDUCED PRESSURE BACKFLOW ASSEMBLY IN HEATED ENCLOSURE PER CITY OF TUALATIN DWG NO. 607. COORDINATE POWER SUPPLY FOR HEATED ENCLOSURE FROM HEDGES D BUILDING
23. 2" SCH 40 PIPE
24. 2" SCH 40 45 DEGREE BEND
25. 2" SCH 40 90 DEGREE BEND
26. 2" x 4" SCH 40 PIPE INCREASER
27. JOIN EXISTING 4" WATER PIPE. USE PIPE ADAPTERS AS REQUIRED TO ACCOMMODATE DIFFERENCES IN MATERIAL
28. PROPOSED LIGHT POLE LOCATION PER HEDGES C CIVIL PLANS
29. POTENTIAL FRANCHISE UTILITY CONDUIT ROUTE
30. EXISTING UTILITY BANK CROSSING BRIDGE TO HEDGES D SIDE OF CREEK
31. INSTALL CATCH BASIN SEDIMENT FILTER PER 1/R3.0
32. INSTALL SEDIMENT FENCE PER 2/R3.0

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: WEDDLE SURVEYING DATE: 10/21/2019

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SEATTLE, WA 98115

Project

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PARKING LOT
11507 SW AMU STREET
TUALATIN, OREGON

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
PUBLIC WATER MAIN EXTENSION - PLAN AND PROFILE

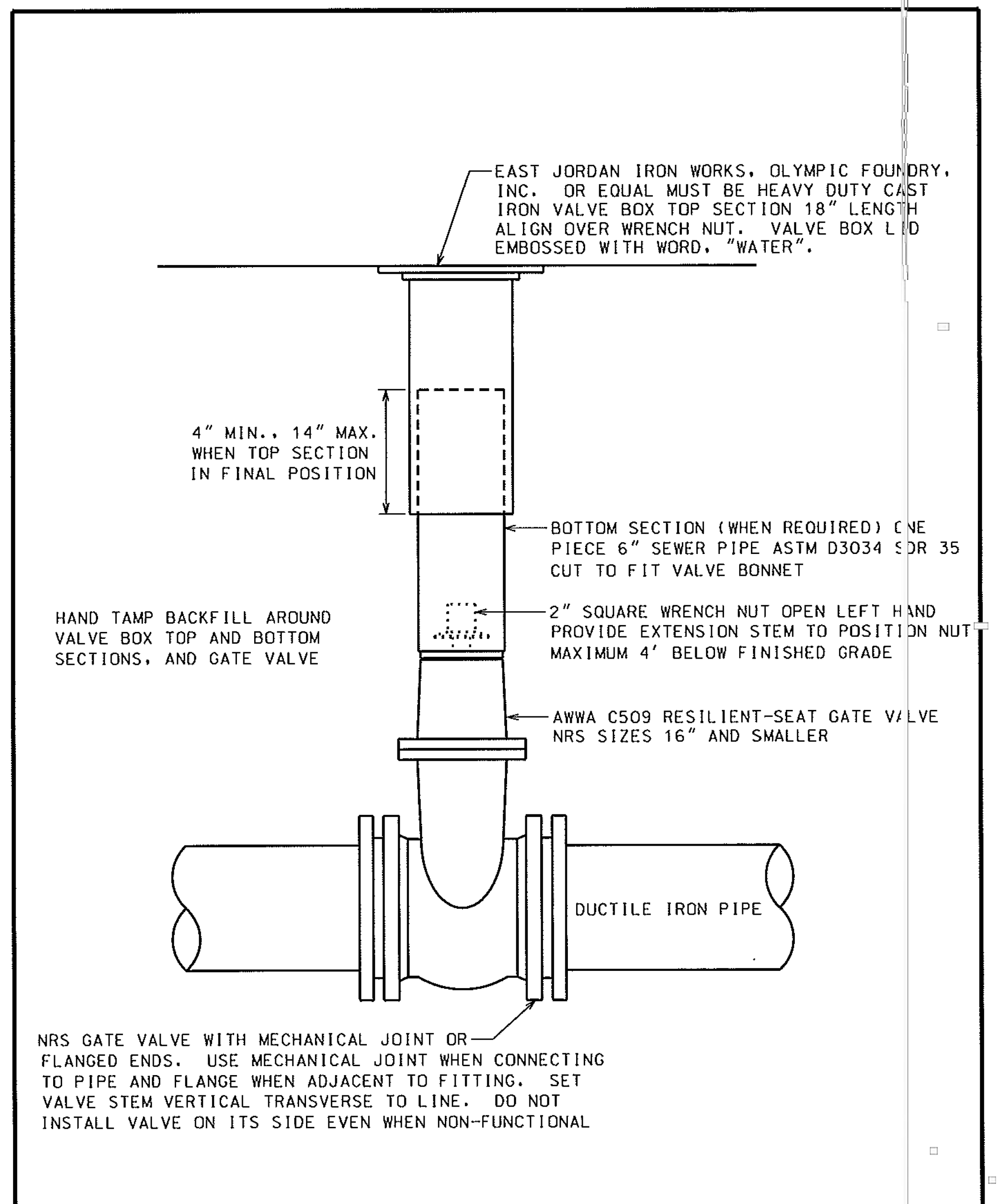
DRAWN BY: BTC

CHECKED BY:GIM

SHEET:
R2.0

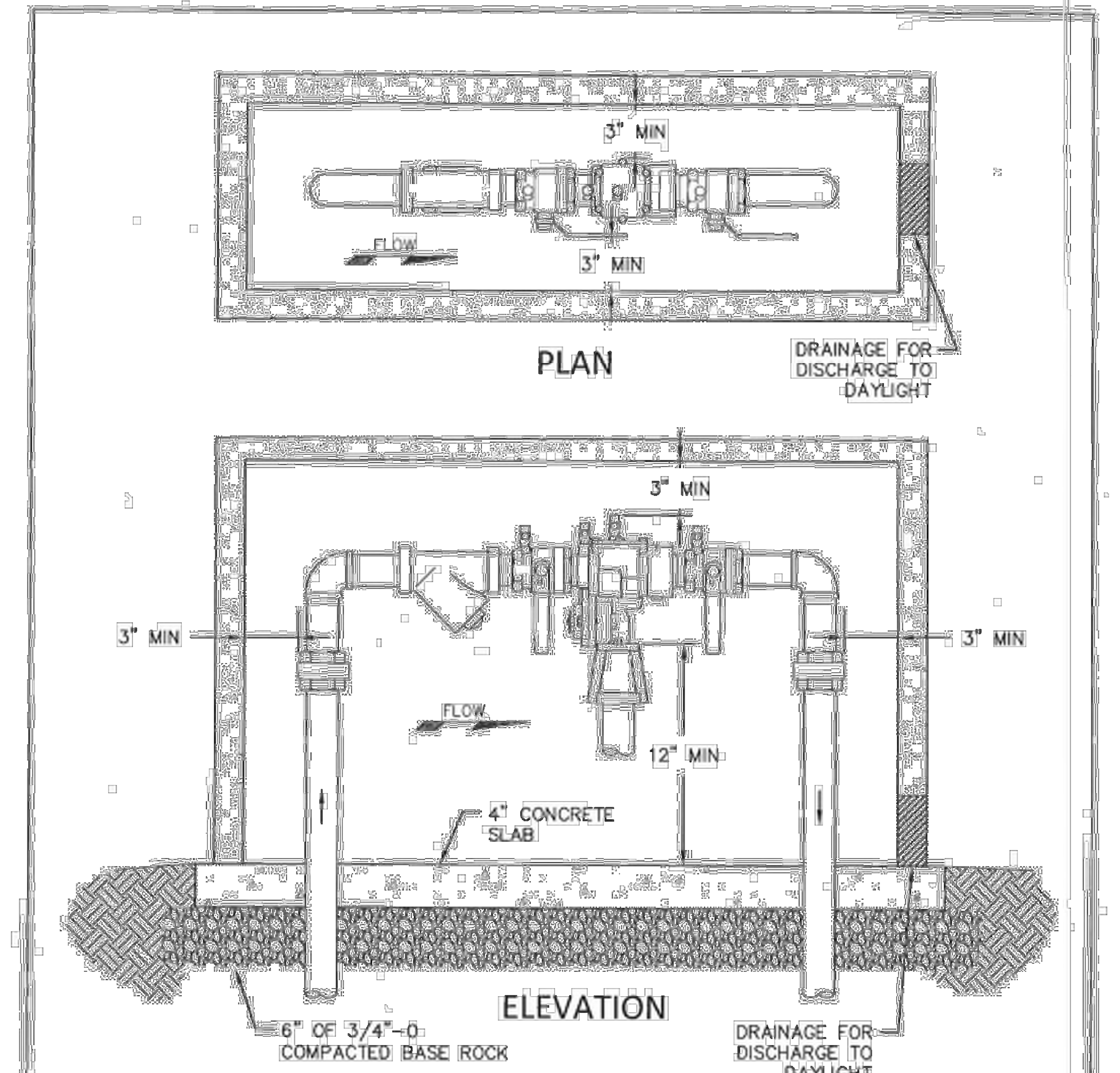
JOB NO. 2200339.00

ARCHITECTURAL REVIEW SUBMITTAL 09/01/20



CITY OF TUALATIN, OR — VALVE GATE

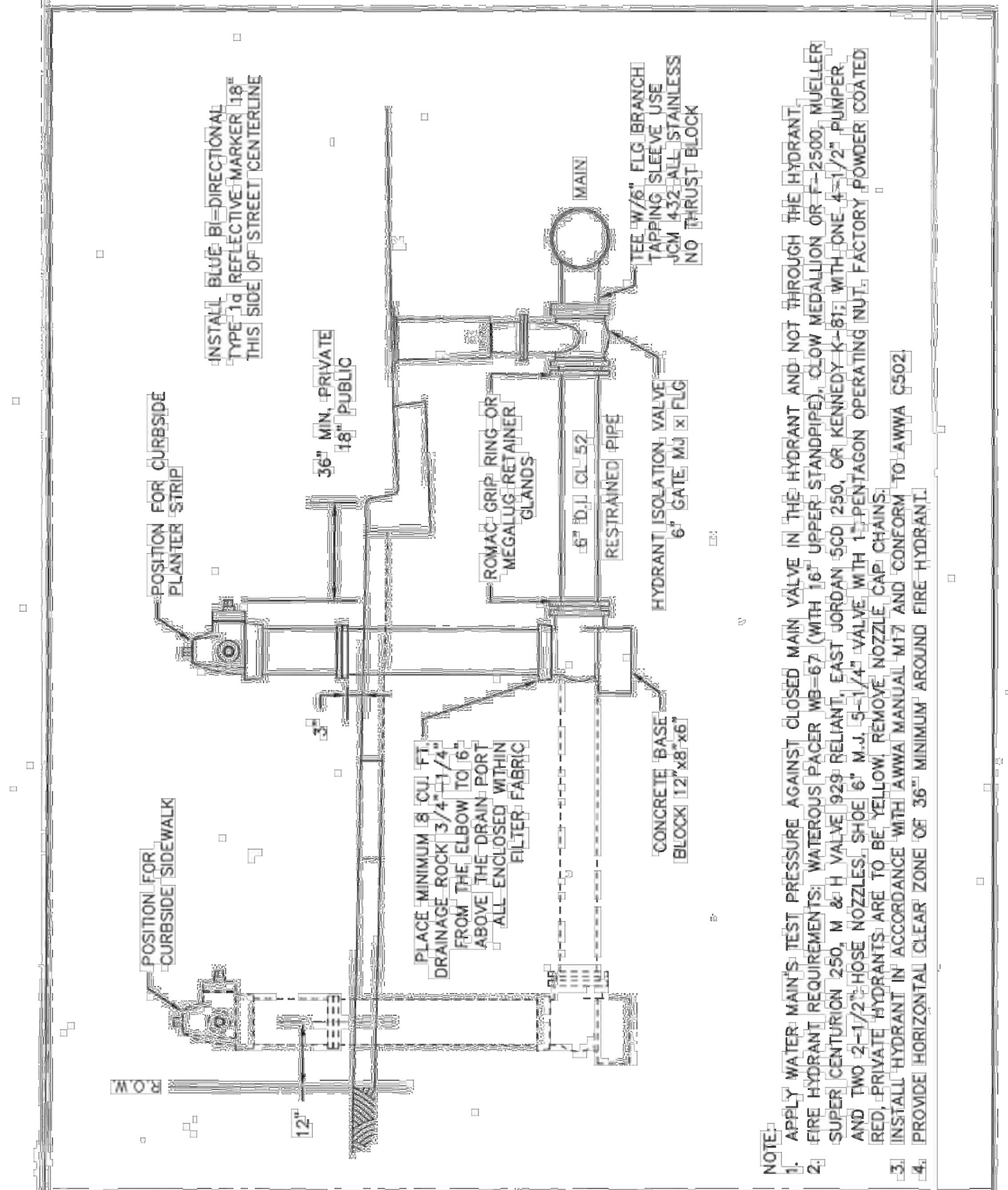
REVISED: 3/2010 | VALID: 4/2010 | SCALE: 1:10 | DRAWN: L.V. | APPROVED: K.L.H. | DWG NO. 600



NOTES:
1. COMPLY WITH OAR 333-61-070 AND AWWA C511, WHICH REQUIRES BACKFLOW ASSEMBLY TO BE APPROVED BY THE OREGON STATE HEALTH DIVISION. FLUSH SUPPLY LINE BEFORE INSTALLATION.
2. MOUNT ASSEMBLY ABOVE GROUND IN A HEATED, INSULATED, AND PROTECTIVE ENCLOSURE (HOT BOX OR SIMILAR) AT THE RIGHT-OF-WAY IN A LOCATION APPROVED BY CITY OF TUALATIN.
3. PLACE FLOOR LEVEL ABOVE THE 100-YEAR FLOOD ELEVATION WITH ADEQUATE DRAINAGE FOR DISCHARGE TO DAYLIGHT CAPABLE OF DRAINING A FULL RELIEF VALVE DISCHARGE SIZED PER AWWA STANDARDS.
4. DESIGNED HEATING TO MAINTAIN A MINIMUM AMBIENT TEMPERATURE OF 40° WITH AN OUTSIDE TEMPERATURE OF -10° AND WIND SPEED OF 20 MPH.
5. CLEARANCES SHOWN ARE MINIMUM.
6. WALL MOUNT ALL ELECTRICAL EQUIPMENT TO MEET ALL RELEVANT CODES FOR ELECTRICAL EQUIPMENT AND INSTALLATION.
7. PROVIDE INSPECTOR WITH CERTIFIED TEST REPORT UPON COMPLETION.

CITY OF TUALATIN, OR — REDUCED PRESSURE BACKFLOW ASSEMBLY 3/4" THRU 2"

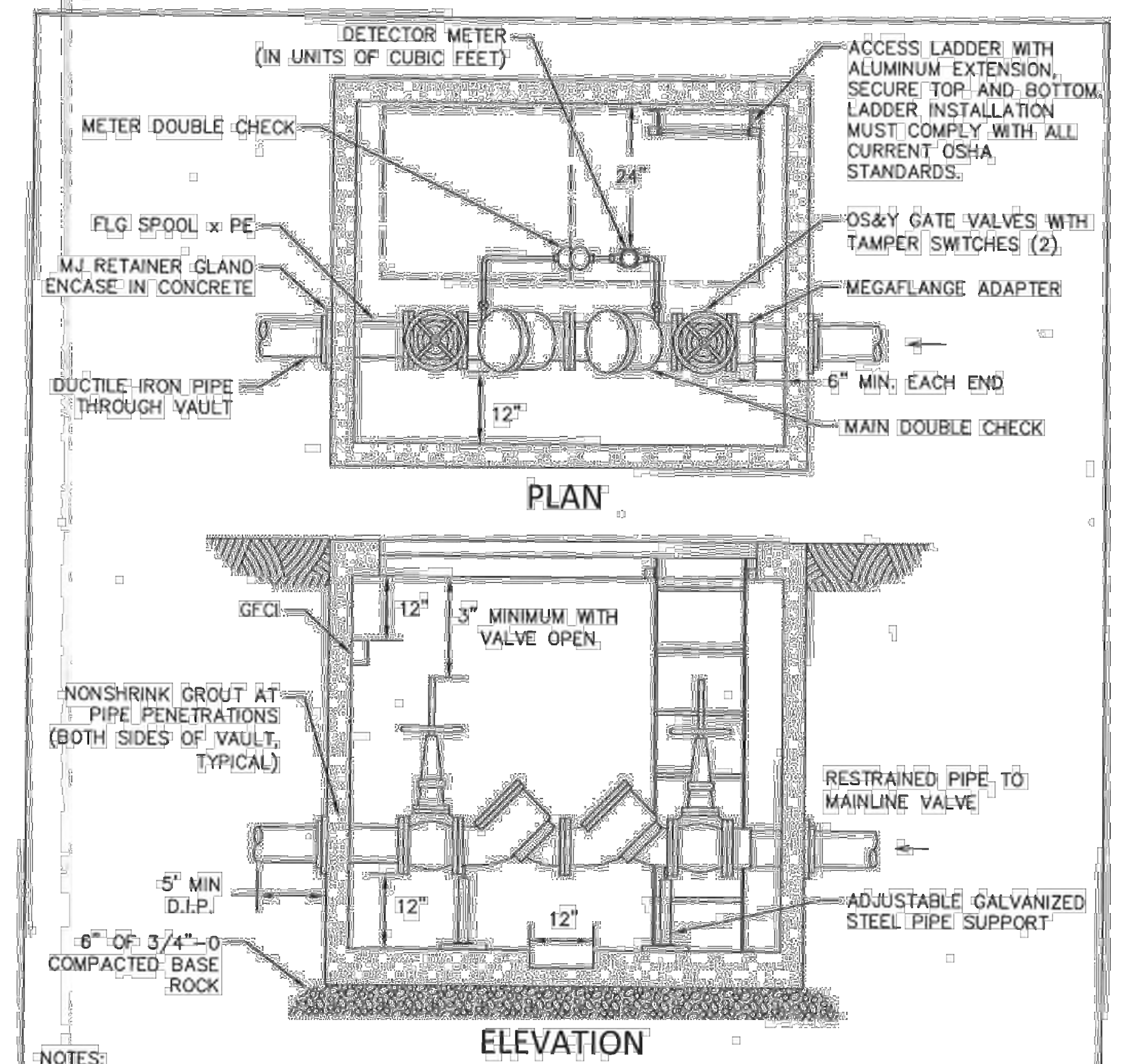
REVISED: 12/2018 | VALID: 12/2018 | SCALE: NOT TO SCALE | DRAWN: C. FERGESON | APPROVED: K. MCMILLAN | DWG NO. 607



NOTE:
1. APPLY WATER MAIN'S TEST PRESSURE AGAINST CLOSED MAIN VALVE IN THE HYDRANT AND NOT THROUGH THE HYDRANT.
2. FIRE HYDRANTS SHALL BE WATEROUS PACER WB-67 (WITH UPPER STANDPIPE), CLOW MEDALLION OR F-2500, MUELLER SUPER CENTURION 250, M & H VALVE 929 REDLINE, EAST JORDAN 5CD 250, OR KENNEDY K-81 WITH ONE 4-1/2" PUMPER AND TWO 2-1/2" HOSE NOZZLES; SHOE 6" M.J. 5-1/4" VALVE WITH 1" PENTAGON OPERATING NUT. FACTORY POWDER COATED RED. PRIVATE HYDRANTS ARE TO BE YELLOW. REMOVE NOZZLE CAP CHAINS.
3. INSTALL HYDRANT IN ACCORDANCE WITH AWWA MANUAL M17 AND CONFORM TO AWWA C502.
4. PROVIDE HORIZONTAL CLEAR ZONE OF 36" MINIMUM AROUND FIRE HYDRANT.

CITY OF TUALATIN, OR — FIRE HYDRANT ASSEMBLY

REVISED: 12/2018 | VALID: 12/2018 | SCALE: 1:25 | DRAWN: C. FERGESON | APPROVED: K. MCMILLAN | DWG NO. 610

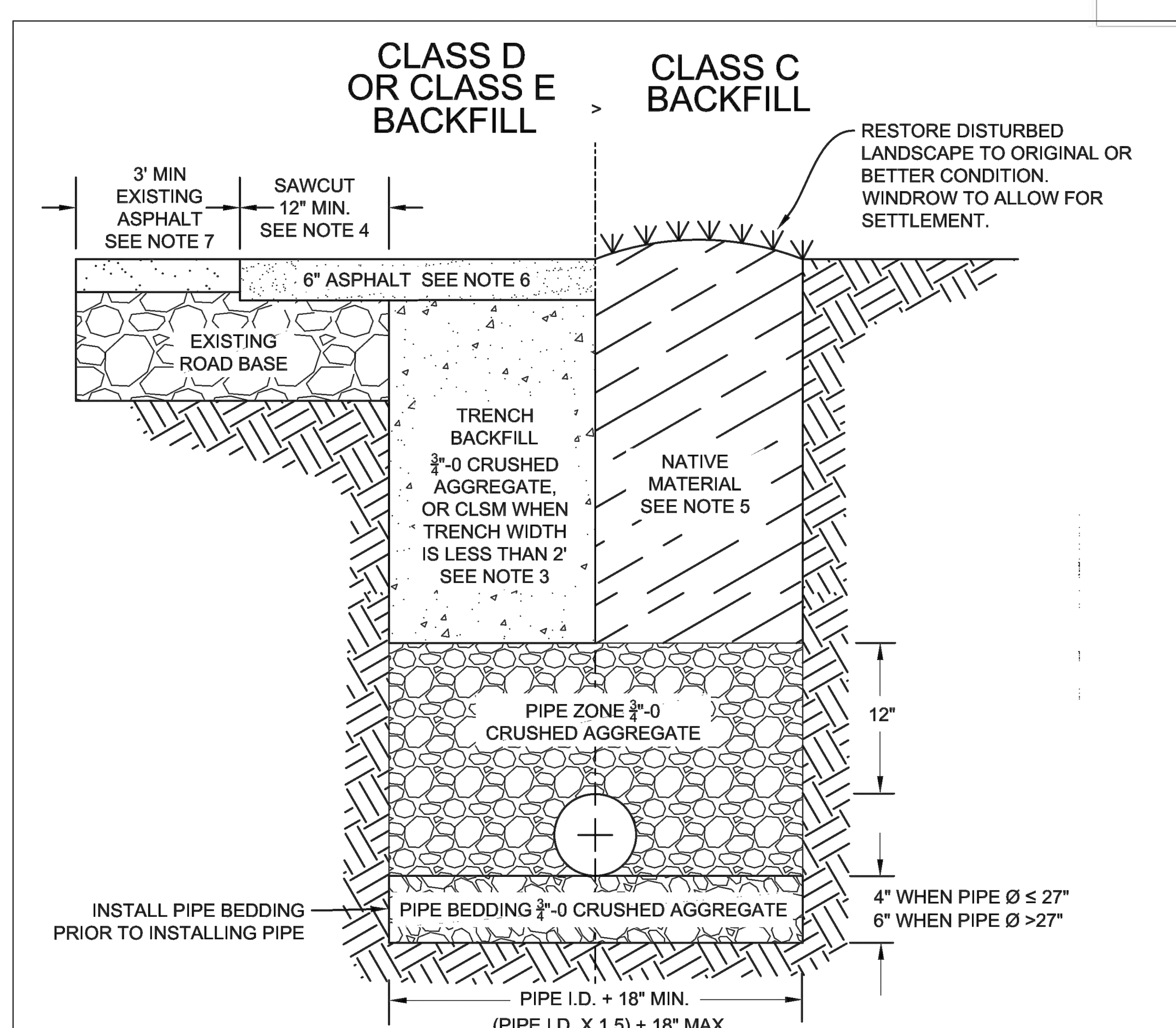


NOTES:
1. USE DUCTILE IRON PIPE THROUGH AND 5' BEYOND VAULT ON PRIVATE SIDE DUE TO VAULT SETTLEMENT. NO PIPE BELL ENDS INSIDE VAULT.
2. INSTALL PLUGS IN TEST COCKS.
3. ASSEMBLY MAY ALSO BE MOUNTED ABOVE GROUND IN AN INSULATED PROTECTIVE ENCLOSURE AT THE RIGHT-OF-WAY.
4. CHECK VAULT FLOTATION AND CORRECT IF NECESSARY.
5. BACKFLOW ASSEMBLY AND INSTALLATION TO COMPLY WITH AWWA C510 AND OAR 333-61-070.
6. PROVIDE SUMP PUMP WITH DIAPHRAGM OR VERTICAL FLOAT SWITCH AND 2" PVC CHECK VALVE AND PIPE DISCHARGE TO DAYLIGHT. SUPPLY POWER THRU GFCI INTERNAL WALL MOUNT 12" BELOW CEILING.
7. PROVIDE INSPECTOR WITH CERTIFIED TEST REPORT UPON COMPLETION.

PIPE SIZE	OLDCASTLE	COVER OFFSET
4"	687-WA	2-332P
6"	687-WA	2-332P
8"	5106-LA	3-332P
10"	5106-LA	3-332P

CITY OF TUALATIN, OR — DOUBLE CHECK DETECTOR FIRE PROTECTION WITHOUT FDC

REVISED: 12/2018 | VALID: 12/2018 | SCALE: NOT TO SCALE | DRAWN: C. FERGESON | APPROVED: K. MCMILLAN | DWG NO. 614

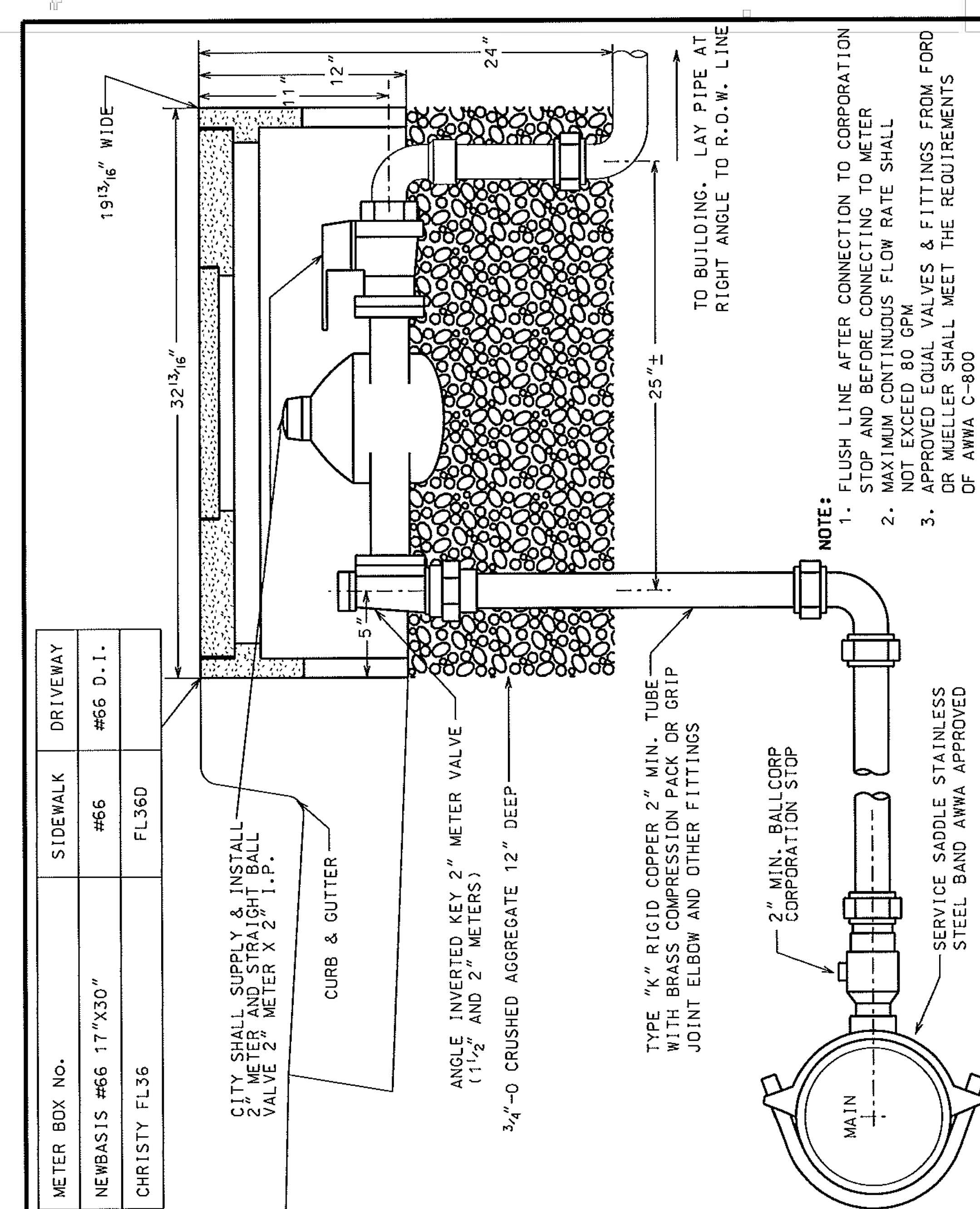


NOTES:

1. SEE STANDARD DRAWING NO. 480 FOR ROADS PAVED WITHIN THE LAST 5 YEARS.
2. SEE STANDARD DRAWING NO. 481 FOR CONCRETE ROADWAY RESTORATION.
3. WHEN TRENCH WIDTH IS LESS THAN 2' WIDE, BACKFILL WITH CLASS E, CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH A 28-DAY DESIGN STRENGTH OF 100-200 PSI.
4. SAWCUT A MINIMUM OF 12" OF PAVEMENT FROM EDGE OF TRENCH.
5. COMPACT CRUSHED AGGREGATE BACKFILL TO 92% AASHTO T 180, AND COMPACT NATIVE MATERIAL TO 90% AASHTO T 99, OR TO SATISFACTION OF CITY ENGINEER.
6. PROVIDE A MINIMUM ASPHALT THICKNESS OF 6" OR MATCH EXISTING THICKNESS, WHICHEVER IS GREATER.
7. IF LESS THAN 3' OF UNDISTURBED ASPHALT REMAINS BETWEEN THE EXCAVATION AND EDGE OF THE ROADWAY, REMOVE AND REPAIR THE REMAINING AREA.

CITY OF TUALATIN, OR — TRENCH & SURFACE RESTORATION

REVISED: 2/12/2018 | DRAFTED BY: S. STRASSER | APPROVED BY: J. FUCHS | SCALE: NTS | DRAWING NO. 241

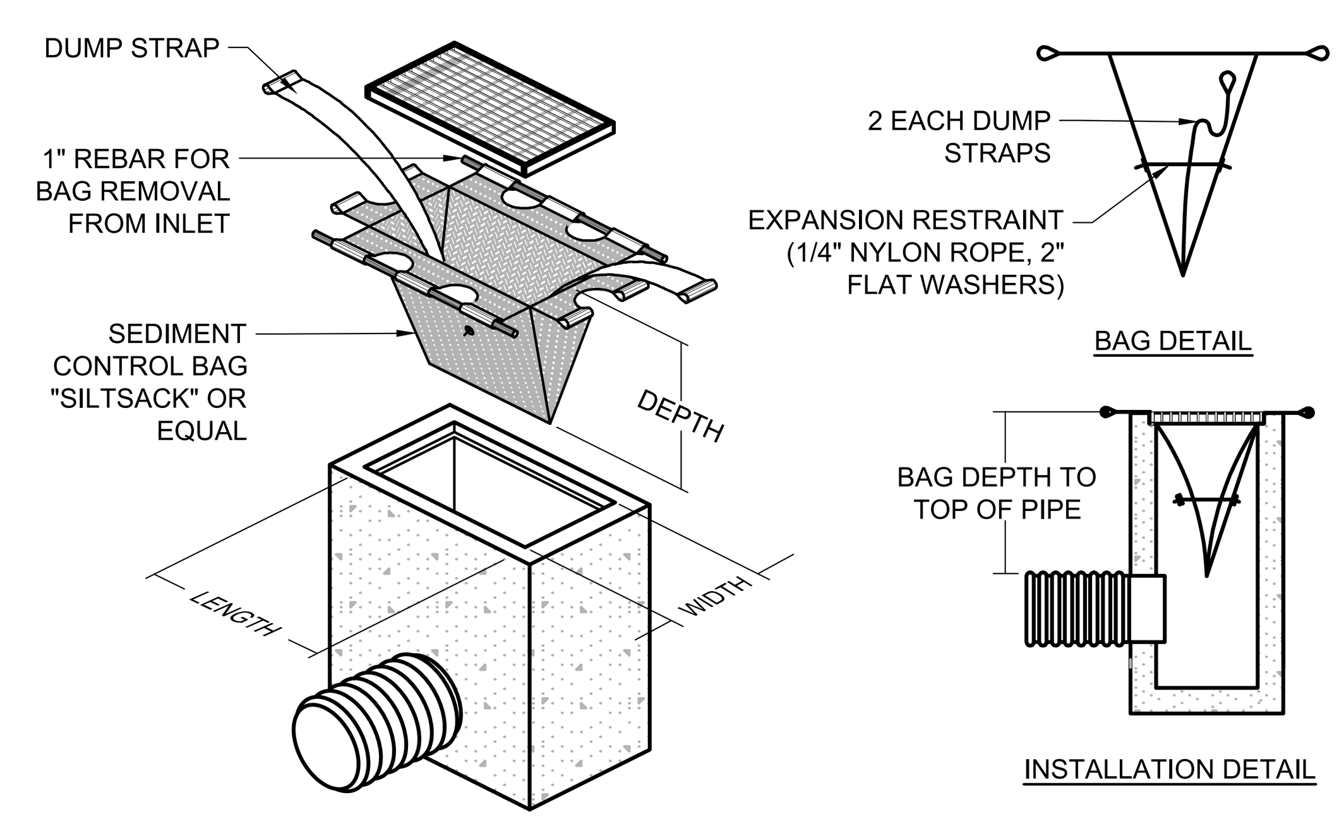


NOTE:
1. FLUSH LINE AFTER CONNECTION TO CORPORATION STOP AND BEFORE CONNECTING TO METER
2. MAXIMUM CONTINUOUS FLOW RATE SHALL NOT EXCEED 80 GPM
3. APPROVED EQUAL VALVES & FITTINGS FROM FORD OR MUELLER SHALL MEET THE REQUIREMENTS OF AWWA C-800

METER BOX NO.	SIDEWALK	DRIVEWAY
NEWBASIS #66 17"X30"	#66	#66 D.I.
CHRISTY FL36	FL36D	

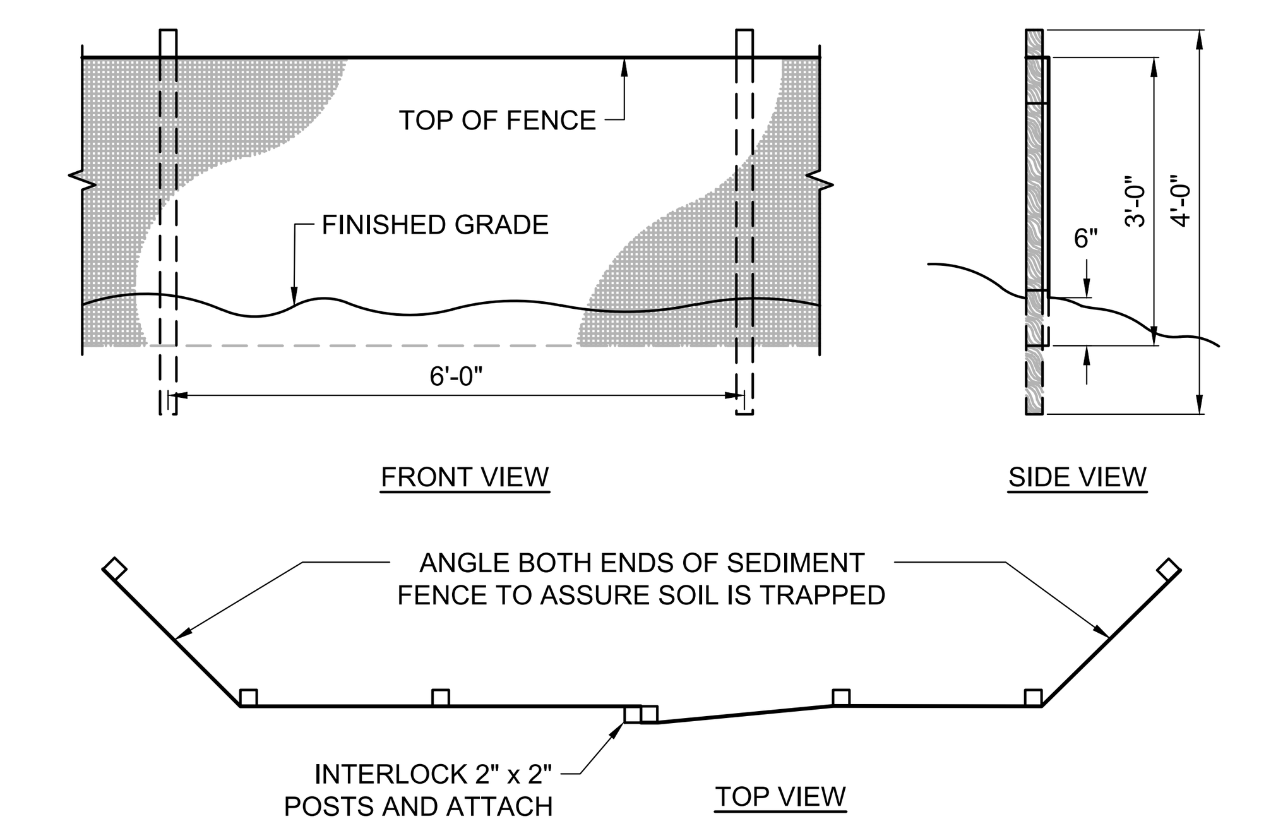
CITY OF TUALATIN, OR — WATER SERVICE 2" METER

REVISED: 3/2008 | VALID: 3/2008 | SCALE: 1:8 | DRAWN: S.N. | APPROVED: K.L.H. | DWG NO. 633



NOTES:
A. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE CORRECT SIZE DEVICE FOR EACH INLET
B. THE INLET SEDIMENT CONTROL DEVICE SHALL BE OF NORMAL FLOW DESIGN, 40 GAL/MIN/SF WITH NO OVERFLOWS
C. THE SEDIMENT CONTROL DEVICE SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED A MINIMUM OF ONCE PER MONTH AND WITHIN THE 24 HOURS FOLLOWING A STORM EVENT
D. SUBSTITUTION OF A SHEET OF FILTER FABRIC PLACED OVER THE OPENING OF THE INLET IS NOT APPROVED

1 / R3.0 — CATCH BASIN SEDIMENT FILTER BAG — NTS



NOTES:
A. BURY BOTTOM OF FILTER FABRIC 6" MIN VERTICALLY BELOW FINISHED GRADE
B. UTILIZE 2" x 2" FIR, PINE, OR STEEL FENCE POSTS TO ANCHOR FENCING
C. ATTACH FENCING TO POSTS USING STITCHED LOOPS INSTALLED ON UPHILL SIDE OF SLOPE
D. COMPACT THE NATIVE FILL IN ALL AREAS OF FILTER FABRIC TRENCH
E. ACCUMULATED SEDIMENT CAN BE ALLOWED TO REACH NO MORE THAN ONE-THIRD OF THE SEDIMENT FENCE HEIGHT

2 / R3.0 — SEDIMENT FENCE — NTS

M.
Architecture ▪ Interiors
Planning ▪ Engineering

Portland, OR 503.224.9560
Vancouver, WA 360.695.7879
Seattle, WA 206.749.9993
www.mcknze.com

MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

Client

MARTIN DEVELOPMENT NW
PO BOX 15523
SEATTLE, WA 98115

Project

HEDGES D PARKING LOT
11507 SW AMU STREET
TUALATIN, OREGON

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
PUBLIC WATER MAIN EXTENSION - DETAILS

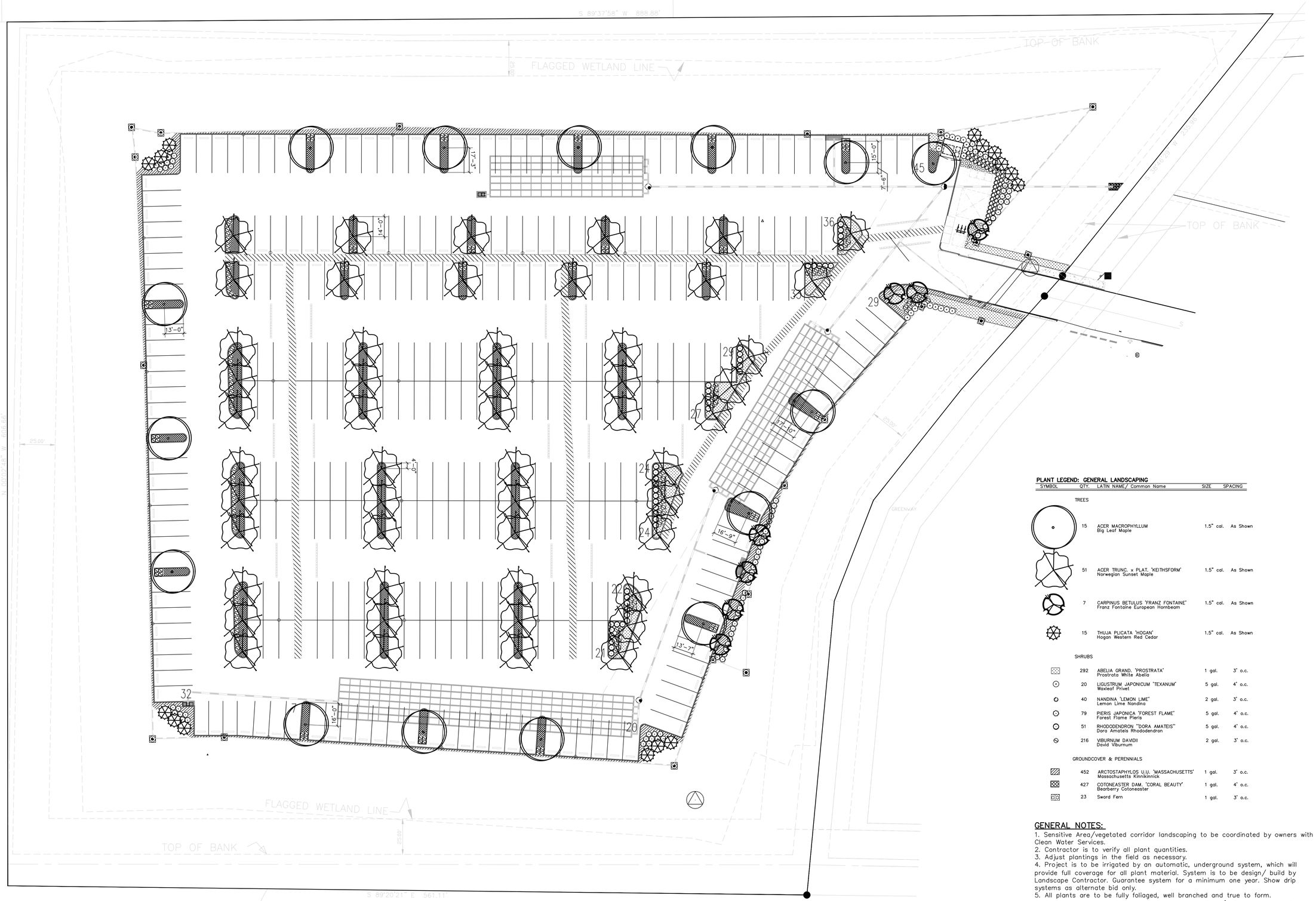
DRAWN BY: BTC
CHECKED BY: GIM
SHEET:

R3.0

JOB NO. 2200339.00

ARCHITECTURAL REVIEW SUBMITTAL 09/01/20

220033900\DRAWINGS\CIVIL\339-R3.0.DWG GIM 08/22/20 20:05 1:1



LANDSCAPE PLAN

SCALE 1" = 30'-0"

PLANT LEGEND: GENERAL LANDSCAPING

SYMBOL	QTY.	LATIN NAME / Common Name	SIZE	SPACING
		TREES		
	15	ACER MACROPHYLLUM Big Leaf Maple	1.5" cal.	As Shown
	51	ACER TRUNC. x PLAT. 'KEITHSFORM' Norwegian Sunset Maple	1.5" cal.	As Shown
	7	CARPINUS BETULUS 'FRANZ FONTAINE' Franz Fontaine European Hornbeam	1.5" cal.	As Shown
	15	THUJA PLICATA 'HOGAN' Hogan Western Red Cedar	1.5" cal.	As Shown
		SHRUBS		
	292	ABELIA GRAND. 'PROSTRATA' Prostrata White Abelia	1 gal.	3' o.c.
	20	LIGUSTRUM JAPONICUM 'TEXANUM' Waxleaf Privet	5 gal.	4' o.c.
	40	NANDINA 'LEMON LIME' Lemon Lime Nandina	2 gal.	3' o.c.
	79	PIERIS JAPONICA 'FOREST FLAME' Forest Flame Pieris	5 gal.	4' o.c.
	51	RHODODENDRON "DORA AMATEIS" Dora Amateis Rhododendron	5 gal.	4' o.c.
	216	VIBURNUM DAVIDII David Viburnum	2 gal.	3' o.c.
		GROUNDCOVER & PERENNIALS		
	452	ARCTOSTAPHYLOS U.U. 'MASSACHUSETTS' Massachusetts Kinnikinnick	1 gal.	3' o.c.
	427	COTONEASTER DAM. 'CORAL BEAUTY' Bearberry Cotoneaster	1 gal.	4' o.c.
	23	Sword Fern	1 gal.	3' o.c.

GENERAL NOTES:

1. Sensitive Area/vegetated corridor landscaping to be coordinated by owners with Clean Water Services.
2. Contractor is to verify all plant quantities.
3. Adjust plantings in the field as necessary.
4. Project is to be irrigated by an automatic, underground system, which will provide full coverage for all plant material. System is to be design/ build by Landscape Contractor. Guarantee system for a minimum one year. Show drip systems as alternate bid only.
5. All plants are to be fully foliaged, well branched and true to form.
6. Contractor is to notify Landscape Architect or Owner's Representative of any site changes or unforeseen conditions that may be detrimental to plant health, or cause future problems to any structural elements of the project.
7. Contractor shall notify the Landscape Architect if specified materials or methods are not consistent with local climate and/or practices.

NO.	DATE	REVISIONS

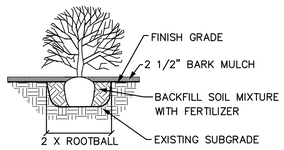
REGISTERED LANDSCAPE ARCHITECT
LA793
ERIN HOLSONBACK
OREGON
5/10/2013
EXP. 5/31/21

OTTEN + ASSOCIATES
LANDSCAPE ARCHITECTURE
3933 South Kelly Avenue, Suite B · Portland, OR 97239
Phone: (503) 972-0311 · www.ottenla.com

HEDGES D
SW 115TH STREET
TUALATIN, OREGON

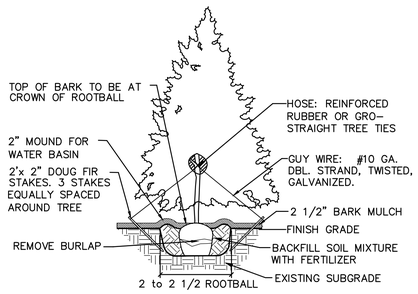
LANDSCAPE PLAN

DATE	9-2-2020
SCALE	NOTED
DRAWN	DM
CHECKED	EH
SHEET NO	L1.0
	1 OF 1



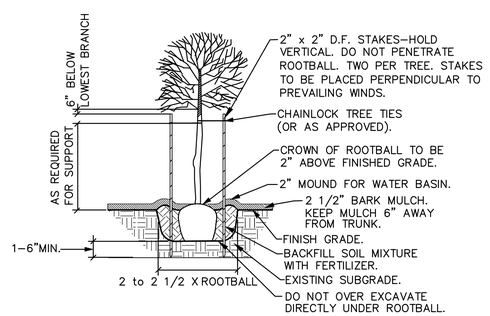
SHRUB PLANTING DETAIL

NOT TO SCALE



EVERGREEN TREE STAKING DETAIL

NOT TO SCALE



NOTE: ANY PROPOSED CHANGES TO OUR SPECIFICATION OR DETAIL SHOULD BE APPROVED BY THE LANDSCAPE ARCHITECT. LIKEWISE, IN ACCORDANCE WITH BEST PRACTICES OF LOCAL LANDSCAPE INSTALLATION, SHOULD THE LANDSCAPE CONTRACTOR FIND A PREFERRED ALTERNATE METHOD, THE LANDSCAPE ARCHITECT MAY BE SO ADVISED.

GENERAL DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

OUTLINE SPECIFICATIONS PLANTING AND SEEDING:

GENERAL: All plants shall conform to all applicable standards of the latest edition of the "American Association of Nurserymen Standards", A.N.S.I. Z60.1 – 1973. Meet or exceed the regulations and laws of Federal, State, and County regulations, regarding the inspection of plant materials, certified as free from hazardous insects, disease, and noxious weeds, and certified fit for sale in Oregon.

The apparent silence of the Specifications and Plans as to any detail, or the apparent omission from them of a detailed description concerning any point, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of first quality are to be used. All interpretations of these Specifications shall be made upon the basis above stated.

Landscape contractor shall perform a site visit prior to bidding to view existing conditions.

PERFORMANCE QUALITY ASSURANCE: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary horticultural practices and who are completely familiar with the specified requirements and methods needed for the proper performance of the work of this section.

NOTIFICATION: Give Landscape Architect minimum of 2 days advance notice of times for inspections. Inspections at growing site does not preclude Landscape Architect's right of rejection of deficient materials at project site. Each plant failing to meet the above mentioned "Standards" or otherwise failing to meet the specified requirements as set forth shall be rejected and removed immediately from the premises by the Contractor and at his expense, and replaced with satisfactory plants or trees conforming to the specified requirements.

SUBSTITUTIONS: Only as approved by the Landscape Architect or the Owner's Representative.

GUARANTEE AND REPLACEMENT: All plant material shall be guaranteed from final acceptance for one full growing season or one year, whichever is longer. During this period the Contractor shall replace any plant material that is not in good condition and producing new growth (except that material damaged by severe weather conditions, due to Owner's negligence, normally unforeseen peculiarities of the planting site, or lost due to vandalism). Guarantee to replace, at no cost to Owner, unacceptable plant materials with plants of same variety, age, size and quality as plant originally specified. Conditions of guarantee on replacement plant shall be same as for original plant.

Landscape Contractor shall keep on site for Owner's Representative's inspection, all receipts for soil amendment and topsoil deliveries.

PROTECTION: Protect existing roads, sidewalks, and curbs, landscaping, and other features remaining as final work. Verify location of underground utilities prior to doing work. Repair and make good any damage to service lines, existing features, etc. caused by landscaping installation.

PLANT QUALITY ASSURANCE: Deliver direct from nursery. Maintain and protect roots of plant material from drying or other possible injury. Store plants in shade and protect them from weather immediately upon delivery, if not to be planted within four hours.

Nursery stock shall be healthy, well branched and rooted, formed true to variety and species, full foliaged, free of disease, injury, defects, insects, weeds, and weed roots. Trees shall have straight trunks, symmetrical tips, and have an intact single leader. Any trees with double leaders will be rejected upon inspection. All Plants: True to name, with one of each bundle or lot tagged with the common and botanical name and size of the plants in accordance with standards of practice of the American Association of Nurserymen, and shall conform to the Standardized Plant Names, 1942 Edition.

Container grown stock: Small container–grown plants, furnished in removable containers, shall be well rooted to ensure healthy growth. **Grow container plants in containers a minimum of one year** prior to delivery, with roots filling container but not root bound. Bare root stock: Roots well–branched and fibrous. Balled and burlapped (B&B): Ball shall be of natural size to ensure healthy growth. Ball shall be firm and the burlap sound. No loose or made ball will be acceptable.

TOPSOIL AND FINAL GRADES: Landscape Contractor is to supply and place 12" of topsoil in planting beds and 6" in lawn areas. Landscape Contractor is to verify with the General Contractor if the on–site topsoil is or is not conducive to proper plant growth. The topsoil shall be a sandy loam, free of all weeds and debris inimical to lawn or plant growth. Furnish soil analysis by a qualified soil testing laboratory stating percentages of organic matter; gradation of sand, silt and clay content; cation exchange capacity; deleterious material; pH; and plant nutrient content of the topsoil. Report suitability of topsoil for plant growth and recommended quantities of nitrogen, phosphorus and potash nutrients and soil amendments (including compost) to be added to produce satisfactory topsoil. If stockpiled topsoil on site is not conducive to proper plant growth, the Landscape Contractor shall import the required amount.

Landscaping shall include finished grades and even distribution of topsoil to meet planting requirements. Grades and slopes shall be as indicated. Planting bed grades shall be approximately 3" below adjacent walks, paving, finished grade lines, etc., to allow for bark application. Finish grading shall remove all depressions or low areas to provide positive drainage throughout the area.

PLANTING SPECIFICATIONS:

HERBICIDES: Prior to soil preparation, all areas showing any undesirable weed or grass growth shall be treated with Round–up in strict accordance with the manufacturer's instructions.

SOIL PREPARATION: Work all areas by rototilling to a minimum depth of 8". Remove all stones (over 1½" size), sticks, mortar, large clumps of vegetation, roots, debris, or extraneous matter turned up in working. Soil shall be of a homogeneous fine texture. Level, smooth and lightly compact area to plus or minus .10 of required grades.

In groundcover areas add 2" of compost (or as approved) and till in to the top 6" of soil.

PLANTING HOLE: Lay out all plant locations and excavate all soils from planting holes to 2 1/2 times the root ball or root system width. Loosen soil inside bottom of plant hole. Dispose of any "subsoil" or debris from excavation. Check drainage of planting hole with water, and adjust any area showing drainage problems.

SOIL MIX: Prepare soil mix in each planting hole by mixing:
2 part native topsoil (no subsoil)
1 part compost (as approved)

Thoroughly mix in planting hole and add fertilizers at the following rates:
Small shrubs – 1/8 lb./ plant
Shrubs – 1/3 to 1/2 lb./ plant
Trees – 1/3 to 1 lb./ plant

FERTILIZER: For trees and shrubs use Commercial Fertilizer "A" Inorganic (5–4–3) with micro–nutrients and 50% slow releasing nitrogen. For initial application in fine seed lawn areas use Commercial Fertilizer "B" (8–16–8) with micro–nutrients and 50% slow–releasing nitrogen. For lawn maintenance use Commercial Fertilizer "C" (22–16–8) with micro–nutrients and 50% slow–releasing nitrogen. DO NOT apply fertilizer to Water Quality Swale.

PLANTING TREES AND SHRUBS: Plant upright and face to give best appearance or relationship to adjacent plants and structures. Place 6" minimum, lightly compacted layer of prepared planting soil under root system. Loosen and remove twine binding and burlap from top 1/2 of root balls. Cut off cleanly all broken or frayed roots, and spread roots out. Stagger Plants in rows. Backfill planting hole with soil mix while working each layer to eliminate voids.

When approximately 2/3 full, water thoroughly, then allow water to soak away. Place remaining backfill and dish surface around plant to hold water. Final grade should keep root ball slightly above surrounding grade, not to exceed 1". Water again until no more water is absorbed. Initial watering by irrigation system is not allowed.

STAKING OF TREES: Stake or guy all trees. Stakes shall be 2" X 2" (nom.) quality tree stakes with point. They shall be of Douglas Fir, clear and sturdy. Stake to be minimum 2/3 the height of the tree, not to exceed 8'–0". Drive stake firmly 1'–6" below the planting hole. Tree ties for deciduous trees shall be "Chainlock" (or better). For Evergreen trees use "Gro–Strait" Tree Ties (or a reinforced rubber hose and guy wires) with guy wires of a minimum 2 strand twisted 12 ga. wire. Staking and guying shall be loose enough to allow movement of tree while holding tree upright.

MULCHING OF PLANTINGS: Mulch planting areas with dark, aged, medium grind fir or hemlock bark (aged at least 6 months) to a depth of 2" in ground cover areas and 2½" in shrub beds. Apply evenly, not higher than grade of plant as it came from the nursery, and rake to a smooth finish. Water thoroughly, then hose down planting area with fine spray to wash leaves of plants.

FINE LAWN AREAS: In fine lawn area apply Commercial Fertilizer Mix "B" at 4.5 lbs. Per 1,000 sq.ft. and rake into soil surface. Establish an even, fine textured seedbed meeting grades, surfaces and texture. Sow seed with a mechanical spreader at the uniform rates as noted below. Rake seed lightly to provide cover.

ROUGH SEED AREA: In rough seeded area, establish an evenly graded seedbed. Sow seed with a mechanical spreader at the uniform rates as noted below. Rake seed lightly to provide cover.

SEED: Bluetag grass seed conforming to applicable State laws. No noxious weed seeds. Submit Guaranteed analysis.
Fine Lawn Seed Mix: To contain 50% Top Hat Perennial Ryegrass, 30% Derby Supreme Ryegrass, 20% Longfellow Chewings Fescue (Hobbs and Hopkins Pro–Time 303 Lawn Mix or as approved) Sow Seed at 5 lbs. / 1000 sq. ft.
Rough Seed Mix: To Contain: 60% Perennial Ryegrass, 15% Eureka Hard Fescue, and 20% Herbaceous Plants and Clover (Hobbs and Hopkins Pro–Time 705 PDX, or approved equal). Sow at 2 lbs. Per 1,000 sq.ft.

MAINTENANCE OF SEEDED AREAS:
Fine Lawn Areas: The lawn areas shall be maintained by watering, mowing, reseeding, and weeding for a minimum of 60 days after seeding. After 30 days, or after the second mowing, apply Commercial Fertilizer Mix "C" at 5 lbs. per 1,000 sq. ft. Mow and keep at 1½" to 2" in height. Remove clippings and dispose of off site.

GENERAL MAINTENANCE: Protect and maintain work described in these specifications against all defects of materials and workmanship, through final acceptance. Replace plants not in normal healthy condition at the end of this period. Water, weed, cultivate, mulch, reset plants to proper grade or upright position, remove dead wood and do necessary standard maintenance operations. Irrigate when necessary to avoid drying out of plant materials, and to promote healthy growth.

CLEAN–UP: At completion of each division of work all extra material, supplies, equipment, etc., shall be removed from the site. All walks, paving, or other surfaces shall be swept clean, mulch areas shall have debris removed and any soil cleared from surface. All areas of the project shall be kept clean, orderly and complete.

NO.	DATE	REVISIONS

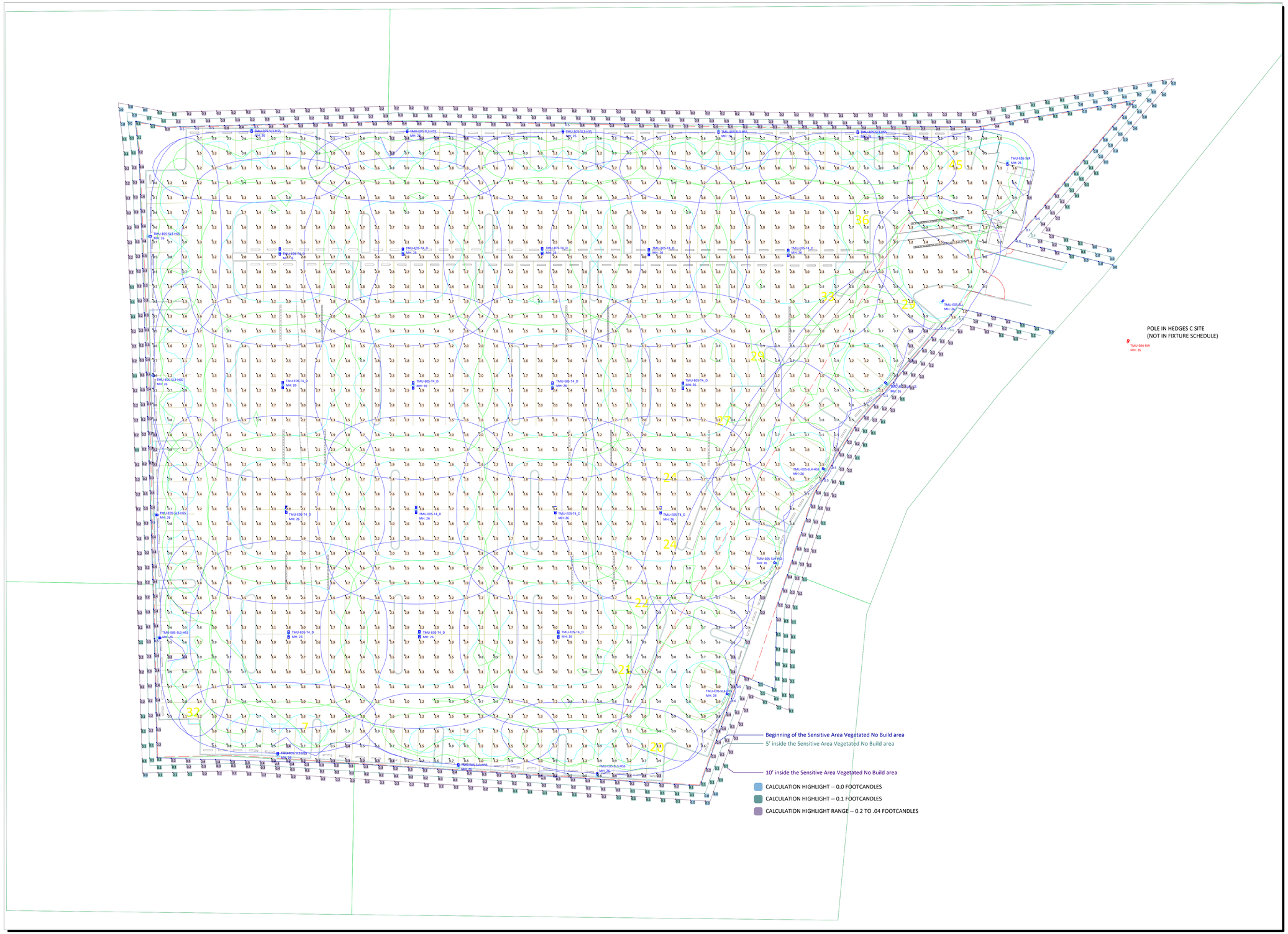
REGISTERED LANDSCAPE ARCHITECT
LA793
ERIN HOLSONBACK
OREGON
5/10/2013
EXP. 5/31/21

OTTEN + ASSOCIATES
LANDSCAPE ARCHITECTURE
3933 South Kelly Avenue, Suite B · Portland, OR 97239
Phone: (503) 972-0311 · www.ottenla.com

HEDGES D
SW 115TH STREET
TUALATIN, OREGON

LANDSCAPE PLAN

DATE 9-2-2020
SCALE AS SHOWN
DRAWN DM | CHECKED EH
SHEET NO L2.0
2 OF 2



Scale: 1 inch= 30 Ft.

Calculation Summary

Label	Description	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PARKING_PARKING		Illuminance	Fc	1.51	4.0	0.2	7.55	20.00
perimeter	calculation at perimeter of Sensitive Area Vegetated No Build area	Illuminance	Fc	0.31	1.6	0.0	N.A.	N.A.
perimeter 10	calculation 10' inside the Sensitive Area Vegetated No Build area	Illuminance	Fc	0.15	0.4	0.0	N.A.	N.A.
perimeter 5	calculation 5' inside the Sensitive Area Vegetated No Build area	Illuminance	Fc	0.21	0.8	0.0	N.A.	N.A.

Standard Luminaire Schedule

Project: OPT3

Symbol	Qty	Label	Manufacturer	Part # Description	LLF	Arm	Arrangement	Arr. Lum. Lumens	Arr. Watts	Filename	BUG Rating
	1	TMU-E05-SLL	COOPER LIGHTING SOLUTIONS - STREETWORKS (FORMERLY EATON)	TMU-E05-LED-E-U-SLL	0.900	0.66725	SINGLE	13912	127.3	TMU-E05-LED-E-U-SLL.ies	B2-U0-G3
	1	TMU-E05-SLR	COOPER LIGHTING SOLUTIONS - STREETWORKS (FORMERLY EATON)	TMU-E05-LED-E-U-SLR	0.900	0.66725	SINGLE	13912	127.3	TMU-E05-LED-E-U-SLR.ies	B2-U0-G3
	4	TMU-E05-SL4-HSS	COOPER LIGHTING SOLUTIONS - STREETWORKS (FORMERLY EATON)	TMU-E05-LED-E-U-SL4-HSS	0.900	0.66725	SINGLE	10174	127.3	TMU-E05-LED-E-U-SL4-HSS.ies	B1-U0-G3
	12	TMU-E05-SL3-HSS	COOPER LIGHTING SOLUTIONS - STREETWORKS (FORMERLY EATON)	TMU-E05-LED-E-U-SL3-HSS	0.900	0.66725	SINGLE	8669	127.3	TMU-E05-LED-E-U-SL3-HSS.ies	B0-U0-G2
	16	TMU-E05-T4_D	COOPER LIGHTING SOLUTIONS - STREETWORKS (FORMERLY EATON)	TMU-E05-LED-E-U-T4	0.900	0.66725	2 @ 180 DEGREES	30220	254.6	TMU-E05-LED-E-U-T4.ies	B2-U0-G3

NOTES:
1.LIGHT LOSS FACTOR APPLIED, INITIAL VALUES WILL BE HIGHER
2.FIXTURE HEIGHT: NOTED
3.POLE HEIGHT: FIXTURE HEIGHT LESS BASE
4.STANDARD REFLECTANCE USED: 26% GROUND EQUAL TO ASPHALT
5.CALCULATION POINTS LOCATED ON GROUND

SEATAC LIGHTING & CONTROLS, LLC
15455 - 53rd Ave. S.
Tukwila, WA 98188
FOR ALL DRAWING INQUIRIES PLEASE CONTACT
SEATAC LIGHTING 206.575.6865

TITLE
LIGHTING CALCULATION

PROJECT NAME
HEDGES D

LOCATION
TULATIN, OREGON

DATE
8/27/2020

DRAWN BY
JWILLIAMS

SCALE
NOTED

SHEET NO.
Page 1 of 2

Hedges D – Fleet Parking Lot

11507 SW 115th Avenue (private street), Tualatin, OR 97062

3. Public Notice

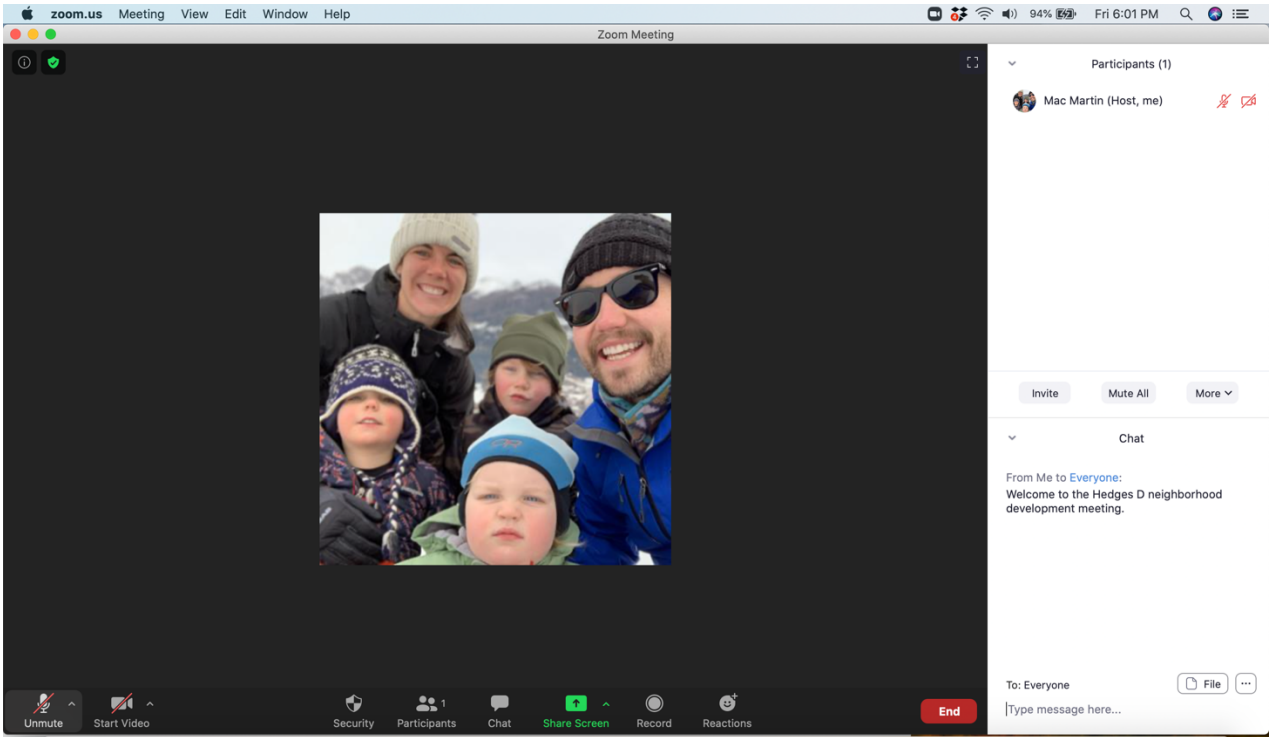
a. Documentation for Neighborhood Development Meeting

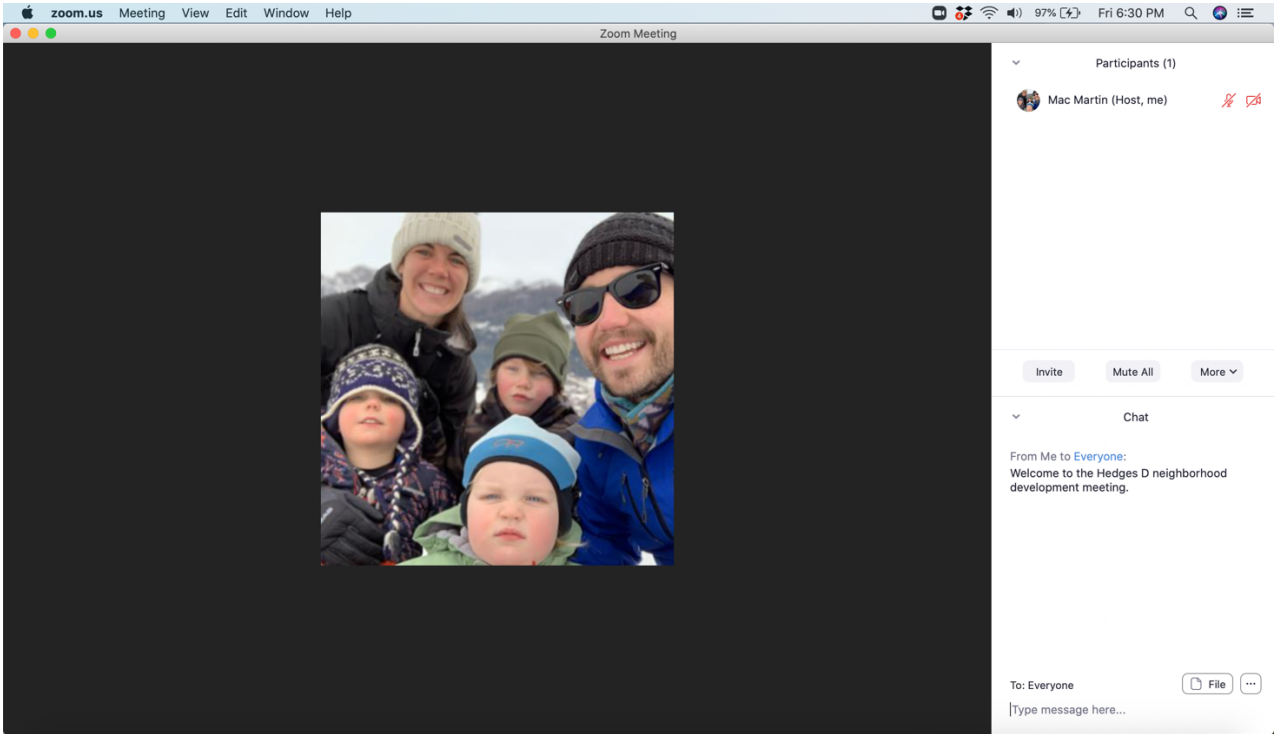
b. Certification of Sign Posting (Installation after AR is accepted & I.D. provided)

Hedges D: Neighborhood Meeting Packet: Parking Lot

Meeting Minutes

The meeting was held on 8/7/2020 @ 6:00 PM via Zoom. There were no people who showed up for the meeting or participated. I have screenshot below from the meeting to show that the meeting was held for 30 minutes without any other participants.





NOTICE OF NEIGHBORHOOD DEVELOPER MEETING

July 22nd, 2020

Hedges D, an LLC
PO Box 15523
Seattle WA 98115

RE: Hedges D, located at the end of SW 115th St.

Dear Property Owner:

You are cordially invited to attend a neighborhood meeting on **8/7/2020 @ 6:00 PM via Zoom, log in for free with Meeting ID: 759 2066 8950, Passcode: 9Hcen6.** This meeting shall be held to discuss a proposed project located at the end of SW 115th St. The proposal is to build a vehicle storage parking lot. This parking lot will conform to all Tualatin city standards and will have 4.5 acres of buffer and plantings around it for screening and environmental benefits. This site is zoned General Manufacturing ("MG") and is controlled by Chapter 61 of the Tualatin Development Code. Per Table 61-1, Vehicle Storage is a permitted use in the MG zone. We have already received land use approval for this site in the past, but we have changed the site plan enough to require another land use approval.

This is an informational meeting to share the development proposal with interested neighbors. You will have the opportunity to review preliminary plans and identify topics of interest for consideration. If you have any questions or comments ahead of time, please email them to me at the email provided below.

Regards,

Mac Martin
Martin Development
MartinDevelopment@outlook.com

cc: lsanford@tualatin.gov ; Tualatin Community Development Department

Hedges D: Neighborhood Meeting Packet: Parking Lot

Neighborhood Developer Meetings
Community Development Department - Planning Division

CERTIFICATION OF SIGN POSTING

In addition to the requirements of TDC 31.064(2), the 18" x 24" sign must display the meeting date, time, and address as well as a contact phone number. The block around the word "NOTICE" must remain orange composed of the RGB color values Red 254, Green 127, and Blue 0. Staff has a Microsoft PowerPoint 2007 template of this sign design available through the Planning Division homepage at:
https://www.tualatinoregon.gov/planning/land-use-application-sign-templates

---

As the applicant for the Hedges D, Parking Lot project, I hereby certify that on this day, July 24th, 2020 sign(s) was/were posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Division.

Applicant's Name: Mac Martin, Managing Member
(Please Print)

Applicant's Signature: _____

Date: September 2nd, 2020

Hedges D: Neighborhood Meeting Packet: Parking Lot

Hedges D: Neighborhood Meeting Packet: Parking Lot

Neighborhood Developer Meetings
Community Development Department - Planning Division

AFFIDAVIT OF MAILING NOTICE

STATE OF OREGON)
) SS
COUNTY OF WASHINGTON)

I, Mackenzie Martin being first duly sworn, depose and say:

That on the 2nd day of September, 20 20, I served upon the persons shown on Exhibit "A" (Mailing Area List), attached hereto and by this reference incorporated herein, a copy of the Notice of Neighborhood/Developer Meeting marked Exhibit "B," attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses shown on said Exhibit "A" are their regular addresses as determined from the books and records of the Washington County and/or Clackamas County Departments of Assessment and Taxation Tax Rolls, and that said envelopes were placed in the United States Mail with postage fully prepared thereon.

Signature

SUBSCRIBED AND SWORN to before me this _____ day of _____, 20_____.

Due to COVID concerns,
I didn't want to go into an office
and get this notorized, but this
makes my statement no less true
or valuable. Thanks

_____
Notary Public for Oregon
My commission expires:

RE: _____

CERTIFICATION OF SIGN POSTING

The applicant must provide and post a sign pursuant to Tualatin Development Code (TDC 32.150). The block around the word "NOTICE" must remain yellow composed of the RGB color values Red 255, Green 255, and Blue 0. A template is available at:
https://www.tualatinoregon.gov/planning/land-use-application-sign-templates

NOTE: For larger projects, the Community Development Department may require the posting of additional signs in conspicuous locations.

As the applicant for the _____ project, I hereby certify that on this day, _____ sign(s) was/were posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Division.

Applicant's Name: _____
(Please Print)

Applicant's Signature: _____

Date: _____

Hedges D – Fleet Parking Lot

11507 SW 115th Avenue (private street), Tualatin, OR 97062

4. Reports

a. Transportation Impact Study
b. Stormwater Management Report
c. Existing Bridge – Field Evaluation Report

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

September 11, 2020 Project #: 23574

Mac Martin
Martin Development
P.O. Box 15523
Seattle, WA 98115

RE: Hedges D Development Trip Debiting Letter – September 2020 Update

Dear Mac:

This letter documents the anticipated site trip generation for Hedges D development within the Franklin Business Park in Tualatin. Kittelson & Associates, Inc. previously prepared a debiting letter for this site dated January 16, 2020 reflecting the anticipated construction of a 76,872 square foot manufacturing building. Based on evolving market conditions and tenant needs, a 349-space secure fleet surface parking facility is now proposed in lieu of the planned manufacturing building.

This letter provides trip generation estimates for the fleet parking use, documents trips associated with previously approved site development, and compares the total trip generation of the proposed and constructed uses with the vested overall site trip generation. As documented herein, the trip generation associated with the proposed Hedges D development is consistent with the previously analyzed full build-out of Franklin Business Park. Further, upon completion of Hedges D, additional vested trips will remain for other future site development. As such, no further traffic impact analysis is needed.

BACKGROUND

As documented in the 1999 traffic study for the Franklin Business Park, a total of 1,328 trips were vested for overall site development. To date, approved and constructed site development includes:

- 101,400 square foot warehousing building;
- 64,808 square foot building with 30,000 square feet of office space and 34,808 square feet of warehousing space; and,
- 72,255 square foot Hedges C manufacturing building (as constructed).

The proposed new secure surface parking lot will be used for overnight storage of a fleet of Sprinter delivery vans (the delivery vans will all be dispatched off-site during the daytime supporting a nearby distribution center). Typical use of the surface parking lot is anticipated as follows:

- The parking area will house Sprinter vans overnight and employee's personal vehicles during the daytime hours.

- The drivers (employees) will arrive at the site in the morning, pick-up their assigned Sprinter van and travel off-site for package loading at the distribution center and subsequent customer delivery.
    - Sprinter drivers will arrive at the parking lot and then depart in their assigned delivery van over the course of staggered start times to allow for appropriate pick-up staging at the delivery center.
    - Sprinter drivers are expected to arrive for their workday in nine groups of people spaced between 9:15 AM and 1:00 PM. The drivers will participate in a daily safety meeting lasting about 15 minutes and then depart for loading off-site. The designated start time for individual drivers reflects both operator efforts to avoid their fleet mixing with peak traffic loading on the transportation network and the delivery needs (timing) of customers.
- Drivers will return their assigned Sprinter van to the parking area in the evening after completing their 10-hour delivery shift.
    - Sprinter drivers are expected to return to the overnight parking lot between approximately 7:10 PM and 10:30 PM (many customer deliveries occur in the late afternoon/early evening hours). The return times reflect operator efforts to spread out the arrivals of inbound drivers with the departures of outbound personal vehicles and outside the evening commuter peak.
- Most of the drivers are expected to commute to and from the fleet parking facility in one of three ways:
    - By personal vehicle, in which case they will park their vehicle on-site upon arrival in the morning and depart with their personal vehicle in the evening;
    - By a company shuttle that provides transportation for drivers to an off-site parking location whether their personal vehicles are housed; or
    - By bicycle, in which case they will park their bicycle in the designated bike rack on-site.

A small number of drivers may be dropped off at the parking area by others, given the somewhat uncertain return end-of-day pickup time associated with variable delivery needs/scheduling for any given driver.

TRIP GENERATION ESTIMATE

To date, weekday daily, AM peak hour and PM peak hour vehicle trip generation estimates for Franklin Business Park site development have been prepared using trip rates from the *Trip Generation Manual*, *9th Edition*, as published by the Institute of Transportation Engineers. Our review of both the 9th and

10th Edition of the *Trip Generation Manual* revealed that there is no land use data available directly reflective of the proposed fleet parking use or the unique staffing hours proposed for the fleet drivers.[1] Lacking data from the *Trip Generation Manual*, a quantitative estimate of the site trip generation was developed predicated on the following assumptions:

- The adjacent street system morning commute peak is generally considered to occur between 7:00 and 9:00 AM whereas the fleet parking shift arrival is expected to occur between 9:15 AM and 1:00 PM, suggesting the vast majority (and possibly all) of the inbound driver movements in the morning should occur outside the traditional commuter peak hour.

- The adjacent street system evening commute peak is generally considered to occur between 4:00 and 6:00 PM whereas the fleet parking shift is expected to conclude between 7:10 and 10:30 PM, suggesting all of the evening site trips could occur well outside the traditional commuter peak hour.

- The owner anticipates the parking lot will be fully utilized overnight during the peak November-early January delivery period and about 50% utilized the remainder of the year[2].

- Trips can be tracked to individual Sprinter vehicles and employee vehicles as presented below by season.

Sprinter Vehicle Trips

- Each Sprinter vehicle will depart the site in the morning at the start of the delivery driver shift (one trip out) and will enter the site in the evening at the end of the shift (one trip in), resulting in two trips at the site per day per Sprinter van.

December-Early January Peak Season

  - Daily Sprinter van trips = (1 trip out + 1 trip in) × 349 Sprinter vans = 698 trips

[1] The Park-and-Ride Lot with Bus or Light Rail Service (Land Use Code 90) was noted as a potential proxy use in the *Trip Generation Manual, 10th Edition* and has an average trip rate of 0.43 trips per parking space. While available, the Park-and-Ride Lot trip data is not reflective of the bi-directional nature of site trips with employees arriving in one vehicle and departing in another within the same hour.

[2] Additional "surge fleet" vehicle use is anticipated on-site during the Christmas holiday shopping season when supplemental delivery vehicles are used to support peak holiday delivery volume. The operator expects the entire surface parking lot to be occupied overnight by delivery vehicles during peak delivery season (typically November through late December/early January) with the lot approximately 50 percent utilized the remainder of the year.

- 9:15-1:00 PM trips = 1 trip out × 349 Sprinter vans = 349 trips out
    - Recognizing that all outbound trips are anticipated to occur starting after the safety briefing that begins at 9:15 AM, one could reasonably conclude no outbound trips occur between 7:00 and 9:00 AM.
- 7:10-10:30 PM trips = 1 trip in × 349 Sprinter vans = 349 trips in
    - Recognizing that all of inbound trips are anticipated to occur starting at 7:10 PM, one could reasonably conclude no site trips occur between 4:00 and 6:00 PM.

Late January-October Season

- Daily Sprinter van trips = (1 trip out + 1 trip in) × 175 Sprinter vans = 350 trips
- 9:15 AM-1:00 PM trips = 1 trip out × 175 Sprinter vans = 175 trips out
    - Recognizing that all outbound trips are anticipated to occur starting after the safety briefing that begins at 9:15 AM, one could reasonably conclude no outbound trips occur between 7:00 and 9:00 AM.
- 7:10-10:30 PM trips = 1 trip in × 175 Sprinter vans = 175 trips in
    - Recognizing that all of inbound trips are anticipated to occur starting at 7:10 PM, one could reasonably conclude no site trips occur between 4:00 and 6:00 PM.

Sprinter Employee Trips

- Each Sprinter vehicle is operated by a single employee during the course of a typical workday.
- Each employee that commutes to the fleet parking facility in a single occupant personal vehicle will generate one trip in at the start of their shift and one trip out at the end of their shift, resulting in two trips per day per employee single occupant vehicle.

December-Early January Peak Season

- Daily employee trips = (1 trip out + 1 trip in) × 349 employees = 698 trips
    - 9:15 AM-1:00 PM trips = 1 trip in × 349 employees = 349 trips in
- Assume up to 10% of 349 trips occur between 8:00 and 9:00 AM associated with employees who arrive early = 35 trips in

- Therefore AM commuter peak hour trips = 35 in

- 7:10-10:30 PM trips = 1 trip in × 349 employees = 349 trips out
    - As noted above, no trips occur between 4:00 and 6:00 PM

Late January-October Season

- Daily employee trips = (1 trip out + 1 trip in) × 175 employees = 350 trips
    - 9:15 AM -1:00 PM trips = 1 trip in × 175 employees = 175 trips in
- Assume 10% of 175 trips occur between 8:00 and 9:00 AM = 18 trips in
    - Therefore AM commuter peak hour trips = 18 in
- 7:10-10:30 PM trips = 1 trip in × 175 employees = 175 trips out
    - As noted above, no trips occur between 4:00 and 6:00 PM

- Each employee commuting by bicycle to and from the site will result in one fewer entry and one fewer exit trip per day compared to commuting along in a private vehicle. For the purposes of the trip generation estimate, no reductions in vehicular trips were applied associated with employees arriving by bicycle.
- Each employee commuting by shuttle van has the potential to result in one fewer entry and one fewer exit trip per day compared to commuting along in a private vehicle, though any shuttle trips made for the exclusive transport of one employee will result in no net change to vehicle trips to and from the site. For the purposes of the trip generation estimate, no reductions in vehicular trips were applied associated with employees arriving via shuttle van.

Tables 1 and 2 summarize seasonal trip estimates for the site based on the assumptions above and conservatively assuming all employees commute by themselves in private vehicles.

Table 1. November-Early January Fleet Parking Site Trip Generation Estimate (349 delivery vehicles)

Trip Source	Daily Trips	7-9 AM Commuter Peak Hour			4-6 PM Commuter Peak Hour		
		Total	In	Out	Total	In	Out
Sprinter Vehicle	698	0	0	0	0	0	0
Employee Vehicle	698	35	35	0	0	0	0
Total	**1,396**	**35**	**35**	**0**	**0**	**0**	**0**

Table 2. Late January-October Fleet Parking Site Trip Generation Estimate (175 delivery vehicles)

Trip Source	Daily Trips	AM Commuter Peak Hour			PM Commuter Peak Hour		
		Total	In	Out	Total	In	Out
Sprinter Vehicle	350	0	0	0	0	0	0
Employee Vehicle	350	18	18	0	0	0	0
Total	**700**	**18**	**18**	**0**	**0**	**0**	**0**

The trip estimates shown in Tables 1 and 2 are considered conservatively high (over-estimating) because:

- The estimates assume 10% of site trips occur during the 7:00-9:00 AM commuter peak period even though the first group of the Sprinter van drivers are expected to arrive on site for a 9:15 AM delivery shift start.
- The trip estimates assume every employee commutes to and from the fleet parking site in their own personal vehicle.
    - No reduction was made for employee trips made by bicycle.
    - No reduction was made for employee trips made by carpool.
    - No reduction was made for employee trips made via the employer shuttle.

OVERALL SITE TRIP DEBITING SUMMARY

Incorporating the trip data in Table 1 (peak season), trip generation estimates for the existing and proposed uses are summarized in Table 2.

Table 2 Trip Generation Estimates

Land Use	ITE Code	Size (square feet)	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Existing (Constructed) Uses									
Light Industrial	110	101,300	710	93	82	11	98	12	86
Warehousing	150	136,208	485	41	32	9	44	11	33
Office	710	30,000	331	47	41	6	45	8	37
Manufacturing (Hedges C)[1]	140	72,255	276	53	41	12	53	19	34
Subtotal Trips			**1,802**	**234**	**196**	**38**	**240**	**50**	**190**
Proposed Use									
Fleet Parking (Peak Season)		-	1,396	35	35	0	0	0	0
Existing + Proposed Uses									
Total Trips			**3,198**	**269**	**231**	**38**	**240**	**50**	**190**

[1] The December 6, 2019 Hedges C Trip Debiting Letter assumed a 72,970 square foot building whereas the actual constructed is slightly smaller.

Trip Accounting

Table 3 provides a trip summary of the existing and proposed uses at Franklin Business Park along with the corresponding trip debiting.

Table 3 Trip Debiting Summary

Use	Number of PM Peak Hour Trips	PM Peak Hour Vested Trips Remaining
1999 Traffic Study Vesting	1,328	1,328
Uses constructed to date	(240)	1,088
Proposed Hedges D	(0)	1,088

After accounting for the existing uses and the proposed Hedges D development, 1,088 weekday PM peak hour trips remain vested for future development of the site.

Please call us at (503) 535-7433 if additional information is needed regarding this evaluation or if you have questions.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Chris Brehmer, PE
Senior Principal Engineer

MACKENZIE.

DESIGN DRIVEN | CLIENT FOCUSED

DRAINAGE REPORT

To
City of Tualatin

For
Hedges D Parking Lot

Submitted
September 1, 2020

Project Number
2200339.00

MACKENZIE
Since 1960

RiverEast Center | 1515 SE Water Avenue, Suite 100, Portland, OR 97214
T 503.224.9560 | F 503.228.1285 | www.mcknze.com

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APPENDICES

1. INTRODUCTION

The following storm drainage calculations are intended to support the water quality and hydromodification systems for the Hedges D Parking Lot Development. This report demonstrates the proposed stormwater system's compliance with Clean Water Services Design and Construction Standards (April 2019).

The 5-acre development includes surface parking for delivery vans and van driver personal vehicles, a concrete paved gathering area with a tent and portable restrooms, at-grade walking paths, proprietary treatment devices, and underground storage on currently undeveloped fallow land in the City of Tualatin. The project is tributary to Hedges Creek of the Tualatin River Watershed. The property is surrounded by a vegetated corridor and storm surface drainage easements. The project is subject to the 2019 Clean Water Services Design and Construction Standards, including water quality and hydromodification requirements.

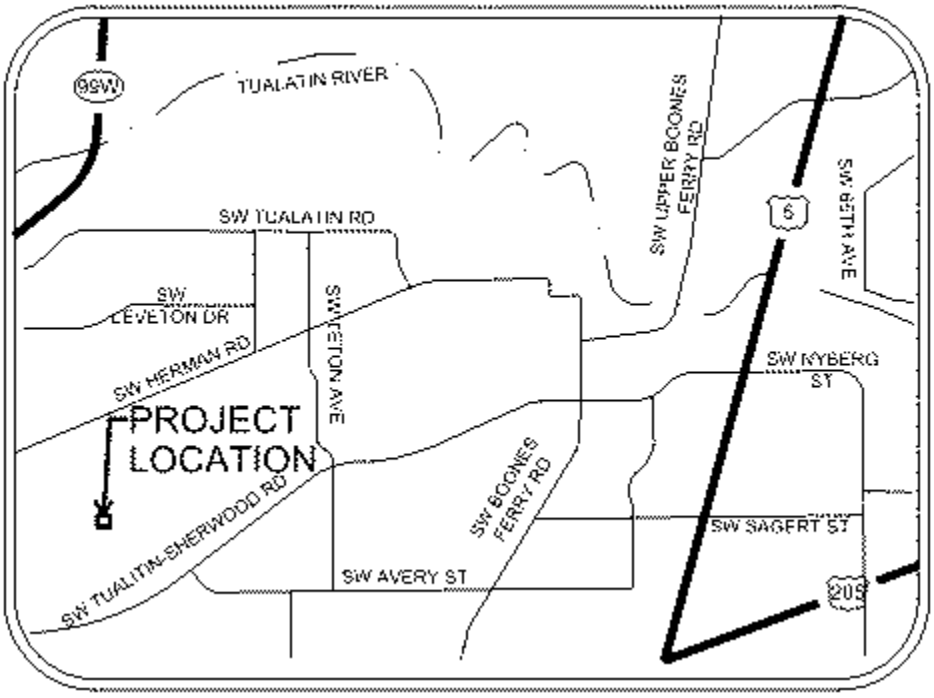


Figure 1: Vicinity Map

2. BASIS OF DESIGN AND ASSUMPTIONS

BASIS OF DESIGN

This project is subject to the design requirements of the 2019 Clean Water Services Design and Construction Standards.

- Hydrologic calculations are computed using TR-55, the Santa Barbara Urban Hydrograph (SBUH), and Autodesk Hydraflow Hydrographs Extension, Version 2020.
- Impervious area used in design of water quality, conveyance capacity, and hydromodification
    - Quality: Area = New Impervious + 3(Modified Impervious)
    - Quantity: All new and modified impervious area created by the development
- The project creates more than 1,000 square feet of impervious surfaces and so is subject to implement water quality components mitigate impacts of hydromodification
    - Conveyance facilities will be sized from the 25-year storm
    - Water Quality: A dry weather storm event totaling 0.36 inches of precipitation falling in 4 hours with an average storm return period of 96 hours.
    - To address Hydromodification requirements, the project follows Category 2, option 2 Peak-Flow Matching design to address Hydromodification requirements: attenuate the 2-year post-development peak flow to ½ the 2-year pre-developed peak flow, the 5-year-post-developed peak to the 5-year pre-developed peak, and the 10-year post-developed peak to the 10-year pre-developed peak.

Table 1: Storm Events to be Used in CWS Design (CWS Table 4-4)

Recurrence Interval	Total 24-Hour Precipitation Depth (water equivalent inches)
2-year	2.5
5-year	3.10
10-year	3.45
25-year	3.90

ASSUMPTIONS

- Groundwater does not interact with the system for the scope of this analysis
- Infiltration rates are negligible
- Hedges Creek has sufficient capacity for project flows and downstream analysis is not required
- Backwater from Hedges creek will be negligible at worst within the scope of this analysis

3. WATER QUALITY

This project creates more than 1,000 square feet of impervious surface and is thus required to implement techniques to reduce impacts to the downstream receiving water body. Water quality will be provided using Contech StormFilter Catch Basins. Per section 4.07.8 of the CWS manual, proprietary devices meeting the removal efficiency requirements (designed to remove 65 percent of the total phosphorus from the runoff from the impervious area that is tributary to the facility) in section 4.04.3(a) are allowed for single commercial, industrial, multi-family, or condominium parcels. Per Contech's Phosphsorb Media Brochure, the Stormfilter Cartridges containing Phosphosorb Media have a TSS removal efficiency of 89% and phosphorous removal efficiency of 82%, and thus meet the requirements of CWS. Each filter is capable of providing this level of treatment for up to 15 gpm (18" tall cartridge) to 22 gpm (27" tall).

The impervious area and resultant number of required filters for each of the four drainage basins (shown in the Basin Map in Appendix E) are summarized in Table 2. See Appendix D for operations and maintenance procedures for the Contech StormFilters.

Table 2: Water Quality Summary

Drainage Basin	Impervious Area (ft^2)	Water Quality Flow (gpm)	Required # of Filters
NW	20,000	18.85	2 (27" Tall)
NE	63,800	59.70	4 (18" Tall)
SW	39,500	36.80	2 (27" Tall)
SE	80,900	75.85	4 (27" Tall)

CWS standards for water quality is to design for a storm event totaling 0.36 inches or precipitation over 4 hours, and is calculated as follows:

$$\text{Water Quality Volume } (ft^3) = \frac{0.36 \text{ (in.)} \times \text{Area (sq. ft.)}}{12 \text{ (in/ft)}}$$

$$\text{Water Quality Flow } (ft^3/s) = \frac{\text{Water Quality Volume } (ft^3)}{14{,}400 \text{ seconds}}$$

Pollutants of concern in parking lot include zinc from brake pads and copper from wheels, which are addressed with the proprietary media.

4. HYDROMODIFICATION

This project creates more than 1,000 square feet of impervious surface and is thus required to implement techniques to reduce impacts to the downstream receiving water body. Impacts for this project will be mitigated by implementing an ADS StormTech underground detention system with a flow control manhole. The facility will outfall directly to Hedges Creek with a rip rap pad for energy dissipation.

CWS requires a Hydromodification Assessment (per section 4.03.3 of the CWS Design and Construction Standards) to determine the method that must be used to meet flow control standards. Using the CWS Hydromodification Map Web Tool, the project is determined to be low risk and exists in a developed area. Because the project is over 80,000 ft^2, the project falls under Approach Category 2 per Table 3.

Table 3: Hydromodification Approach Project Category Table (CWS Table 4-2)

<table>
<tr><th>Development Class/ Risk Level</th><th>Small Project 1,000 – 12,000 SF</th><th>Medium Project >12,000 – 80,000 SF</th><th>Large Project > 80,000 SF</th></tr>
<tr><td>Expansion/ High</td><td rowspan="6">Category 1</td><td>Category 3</td><td rowspan="3">Category 3</td></tr>
<tr><td>Expansion/ Moderate</td></tr>
<tr><td>Expansion/ Low</td><td>Category 2</td></tr>
<tr><td>Developed/ High</td><td>Category 3</td></tr>
<tr><td>Developed/ Moderate</td><td rowspan="2">Category 2</td><td rowspan="2">Category 2</td></tr>
<tr><td>Developed/ Low</td></tr>
</table>

Under Category 2, the following options may be used to address hydromodification:

1. Infiltration Low Impact Development Approach (LIDA), using the Standard LIDA Sizing, described in Section 4.08.5; or
2. Peak-Flow Matching Detention, using design criteria described in Section 4.08.6; or
3. Combination of Infiltration LIDA and Peak-Flow Matching Detention, using criteria described in Section 4.08.5 and 4.08.6; or
4. Any option listed in Category 3

The Peak-Flow Matching Detention design criteria was chosen to be pursued for this project. Per section 4.08.6 of the 2019 CWS Design and Construction Standards, approaches shall be designed such that the post-development runoff rates from the site do not exceed the pre-development runoff rates shown in Table 4.

Table 4: Pre-Development Peak Runoff Rate Targets (CWS Table 4-7)

Post-Development Peak Runoff Rate	Pre-Development Peak Runoff Rate Target
2-year, 24-hour	50% of 2-year, 24-hour
5-year, 24-hour	5-year, 24 hour
10-year, 24-hour	10-year, 24-hour

Peak flow matching flows for each of the detention systems are summarized in Table 5. See Appendix B for supporting calculations and Appendix D for operations and maintenance procedures for the underground detention system.

Table 5: Hydromodification Summary			
Storm Event	**Pre-Development Flow (ft^3/s)**	**Post-Development Flow (ft^3/s)**	**Required Storage Volume (ft^3)**
(½) 2-year	0.133	0.132	43,550
5-year	0.562	0.184	
10-year	0.766	0.211	

5. CONVEYANCE DESIGN

The conveyance design was determined using TR-55 and the Santa Barbara Urban Hydrograph. The 25-year design storm was applied over the entire site to determine a peak flow value. This peak flow value was prorated over each area tributary to catch basins, area drains, and roof drains (see attached Basin Map). Critical points along the system were identified and these prorated flow values were balanced against the capacity at each critical point. The Table 6 was used for design of the conveyance system.

The peak 25-yr developed flow was prorated into each of the 4 major subareas to determine the design flow for conveyance. Per Hydraflow calculations in Appendix B, the peak 25-yr developed flow across the site is 4.31 cfs over 4.73 acres, thus the ratio is 0.91 cfs/ac. Prorations into each of the major subareas is shown in Table 7. Comparing the maximum capacities outlined in Table 6 with the sizes indicated on the project plans, it can be seen that the pipe sizes selected for the conveyance system will be adequate.

Table 6: General Pipe Sizing for Conveyance

Pipe Size/Slope	Capacity (ft^3/s)
8” @ 0.50%	0.85
12” @ 0.30%	1.94
12” @ 0.50%	2.50

Table 7: Subarea Peak Flows for Conveyance

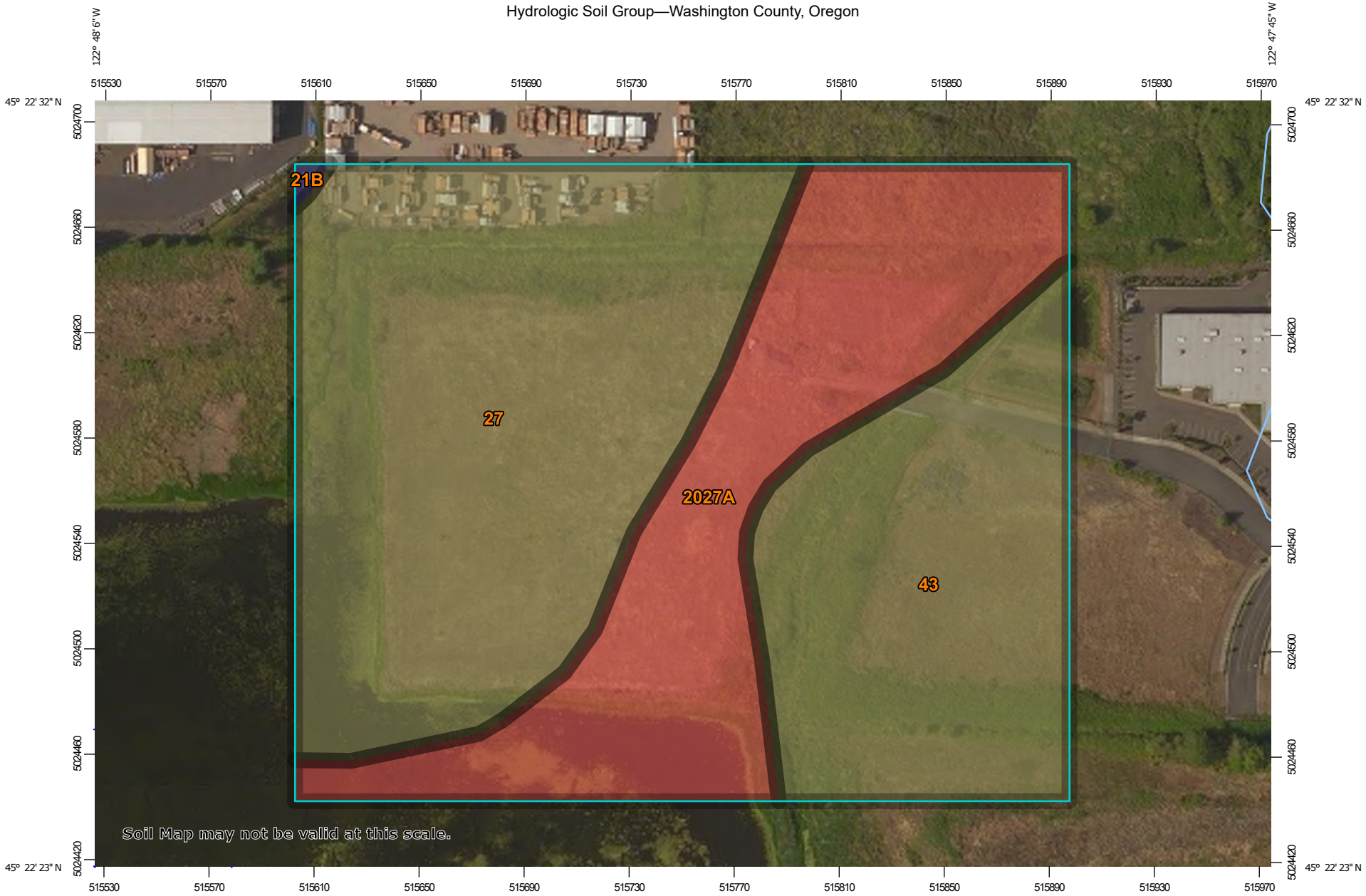
Subarea	Peak Flow
NW	0.42
NE	1.33
SW	0.83
SE	1.69

6. CONCLUSION

The on-site private stormwater management approach for the Hedges D project includes the implementation of an underground detention system and proprietary treatment devices, which meets the water quality and hydromodification criteria of the 2019 CWS Design and Construction Standards.

APPENDIX A

NRCS WEB SOIL SURVEY SUMMARY



Map Scale: 1:2,050 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Oregon
Survey Area Data: Version 17, Sep 10, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 3, 2014—Aug 23, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
21B	Hillsboro loam, 3 to 7 percent slopes	B	0.0	0.2%
27	Labish mucky clay	C/D	7.9	44.5%
43	Wapato silty clay loam	C/D	4.7	26.3%
2027A	Verboort silty clay loam, 0 to 3 percent slopes	D	5.1	29.1%
Totals for Area of Interest			**17.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX B

WATER QUANTITY SIZING CALCULATIONS

Hydraflow Table of Contents

339-Pond.gpw

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Thursday, 08 / 27 / 2020

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SBUH Runoff	------	-------	0.265	-------	0.562	0.766	1.054	-------	-------	Pre-Developed
2	SBUH Runoff	------	-------	2.607	-------	3.340	3.764	4.308	-------	-------	Developed
3	Reservoir	2	-------	0.104	-------	0.243	0.390	0.541	-------	-------	Route Through Pond

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

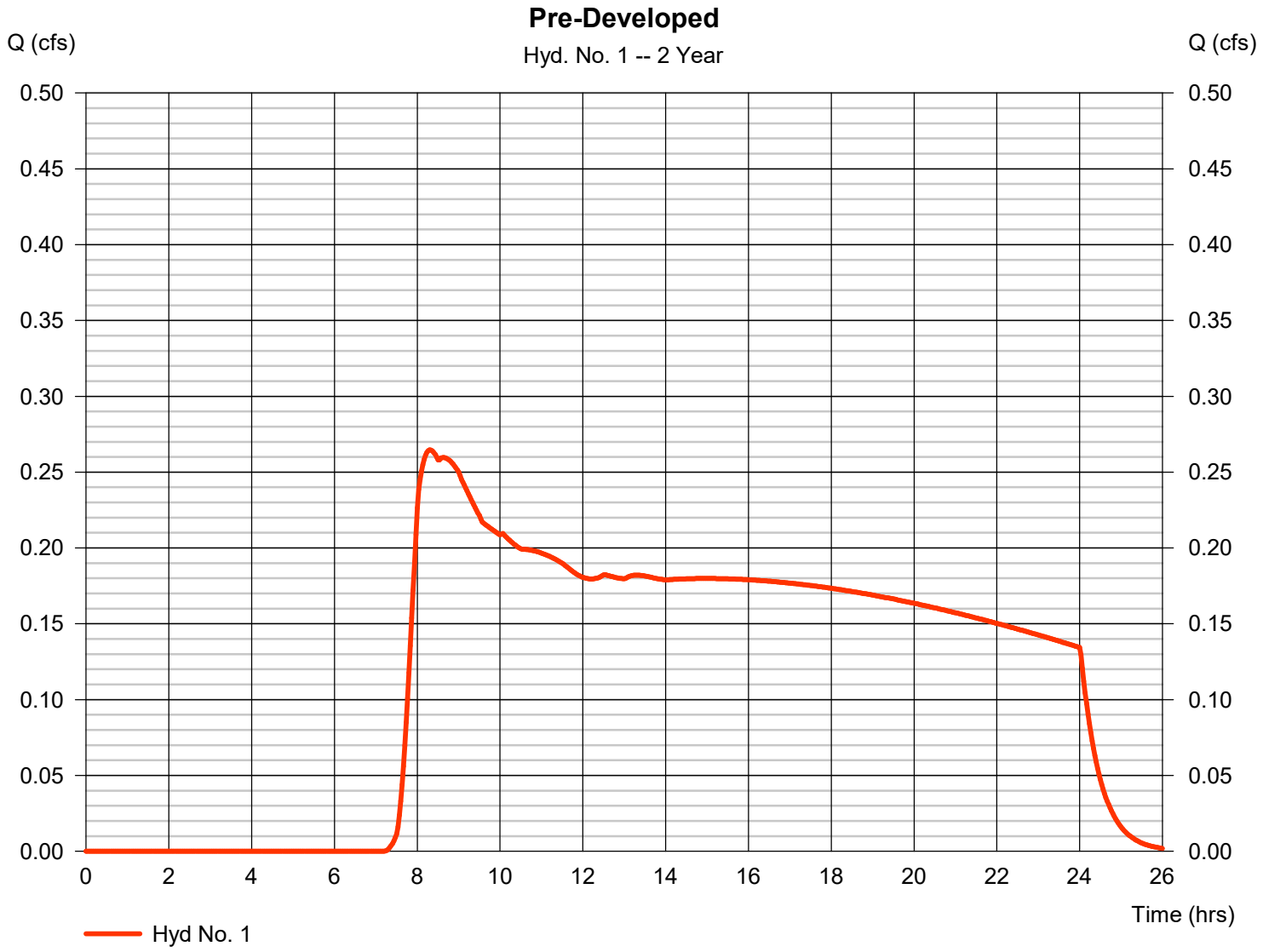
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.265	2	498	10,797	------	------	------	Pre-Developed
2	SBUH Runoff	2.607	2	474	36,589	------	------	------	Developed
3	Reservoir	0.104	2	1444	12,395	2	138.71	33,401	Route Through Pond

Hydrograph Report

Hyd. No. 1

Pre-Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.265 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.30 hrs
Time interval	= 2 min	Hyd. volume	= 10,797 cuft
Drainage area	= 4.890 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 27.80 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



TR55 Tc Worksheet

Hyd. No. 1

Pre-Developed

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.150		0.011		0.011		
Flow length (ft)	= 300.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.50		0.00		0.00		
Land slope (%)	= 2.00		0.00		0.00		
Travel Time (min)	**= 26.70**	**+**	**0.00**	**+**	**0.00**	**=**	**26.70**
Shallow Concentrated Flow							
Flow length (ft)	= 150.00		0.00		0.00		
Watercourse slope (%)	= 2.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.28		0.00		0.00		
Travel Time (min)	**= 1.10**	**+**	**0.00**	**+**	**0.00**	**=**	**1.10**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 27.80 min

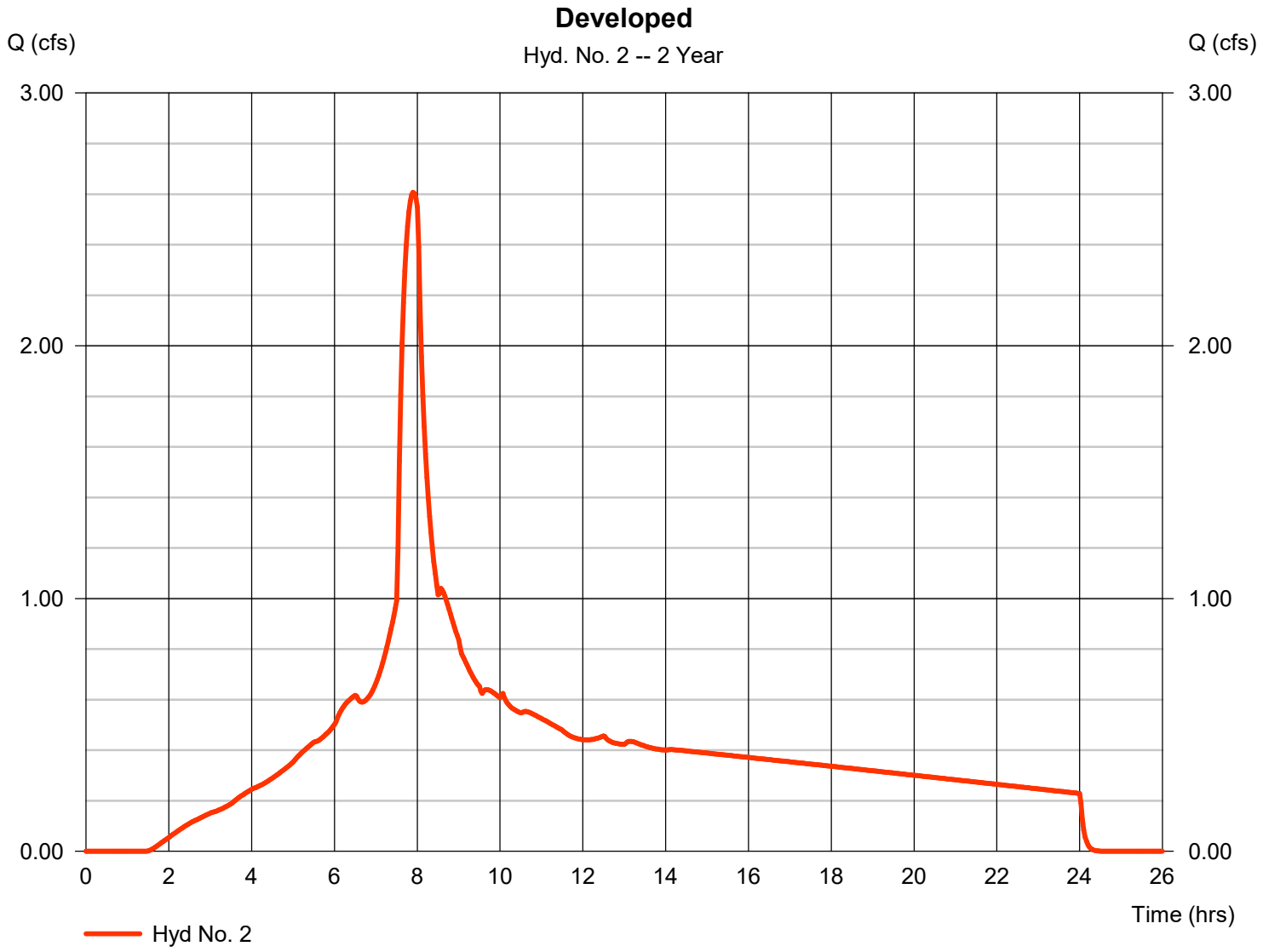
Hydrograph Report

Hyd. No. 2

Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 2.607 cfs
Storm frequency	= 2 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 36,589 cuft
Drainage area	= 4.890 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(0.440 x 74) + (4.450 x 98)] / 4.890



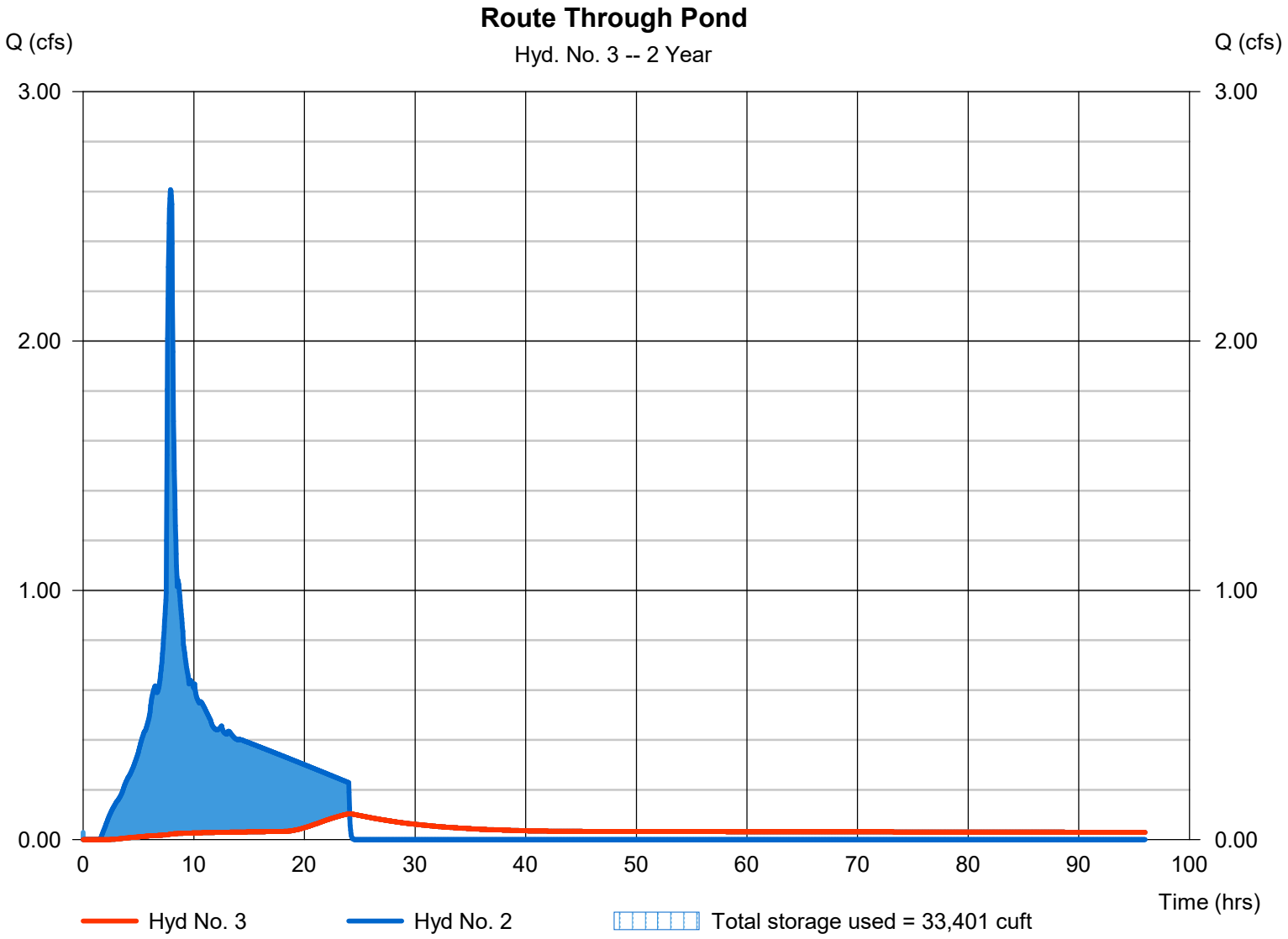
Hydrograph Report

Hyd. No. 3

Route Through Pond

Hydrograph type	=	Reservoir	Peak discharge	=	0.104 cfs
Storm frequency	=	2 yrs	Time to peak	=	24.07 hrs
Time interval	=	2 min	Hyd. volume	=	12,395 cuft
Inflow hyd. No.	=	2 - Developed	Max. Elevation	=	138.71 ft
Reservoir name	=	Pond	Max. Storage	=	33,401 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 1 - Pond

Pond Data

UG Chambers -Invert elev. = 137.92 ft, Rise x Span = 2.50 x 4.25 ft, Barrel Len = 7.12 ft, No. Barrels = 370, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 137.42 ft, Width = 4.75 ft, Height = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	137.42	n/a	0	0
0.35	137.77	n/a	4,090	4,090
0.70	138.12	n/a	7,223	11,312
1.05	138.47	n/a	9,512	20,824
1.40	138.82	n/a	9,337	30,162
1.75	139.17	n/a	9,039	39,201
2.10	139.52	n/a	8,592	47,792
2.45	139.87	n/a	7,942	55,734
2.80	140.22	n/a	6,949	62,683
3.15	140.57	n/a	4,916	67,599
3.50	140.92	n/a	4,090	71,689

Culvert / Orifice Structures

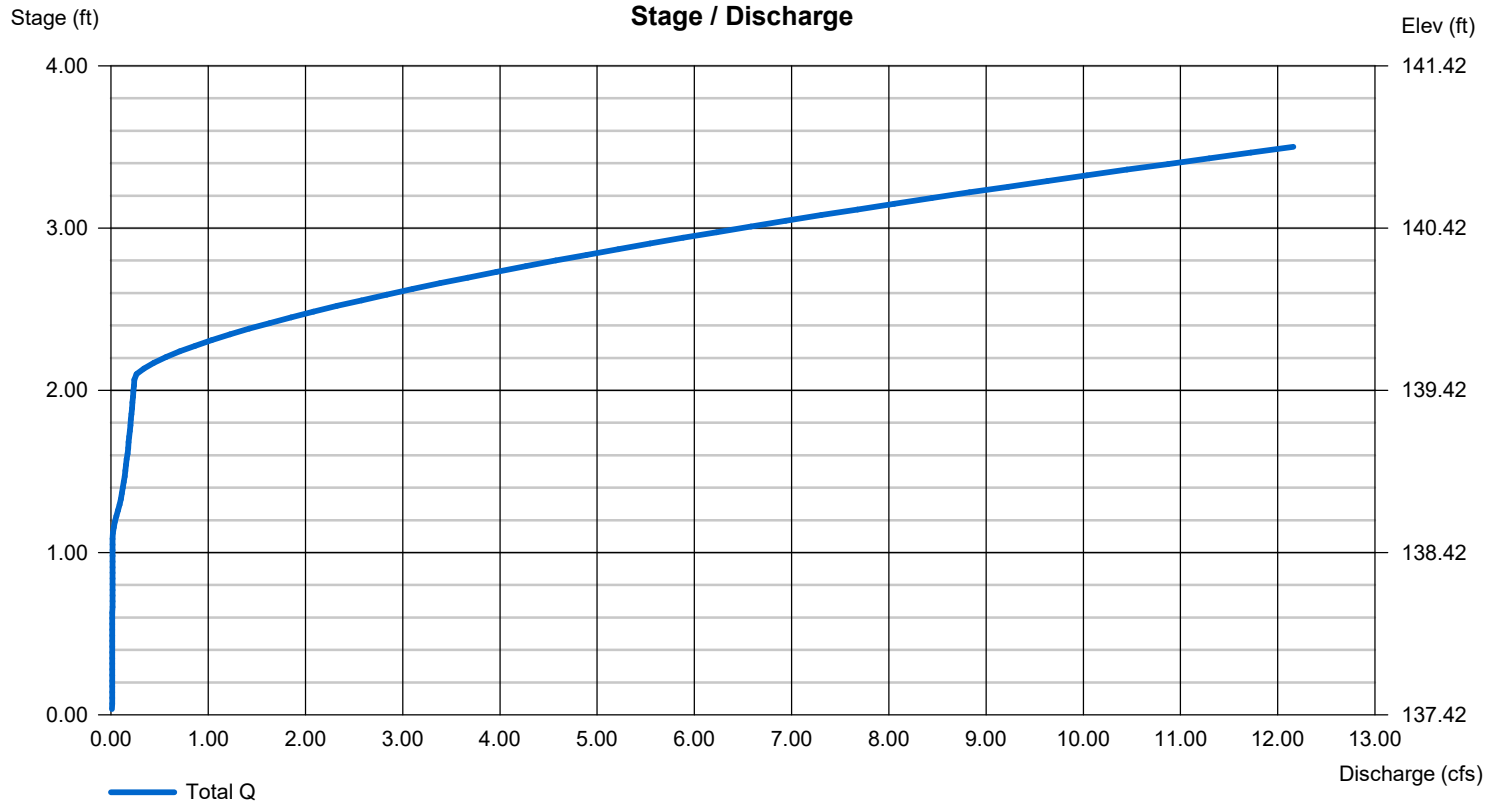
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.50	3.00	Inactive	Inactive
Span (in)	= 0.50	3.00	8.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 136.80	138.50	139.70	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.09	0.00	0.00	0.00
Crest El. (ft)	= 139.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.010 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

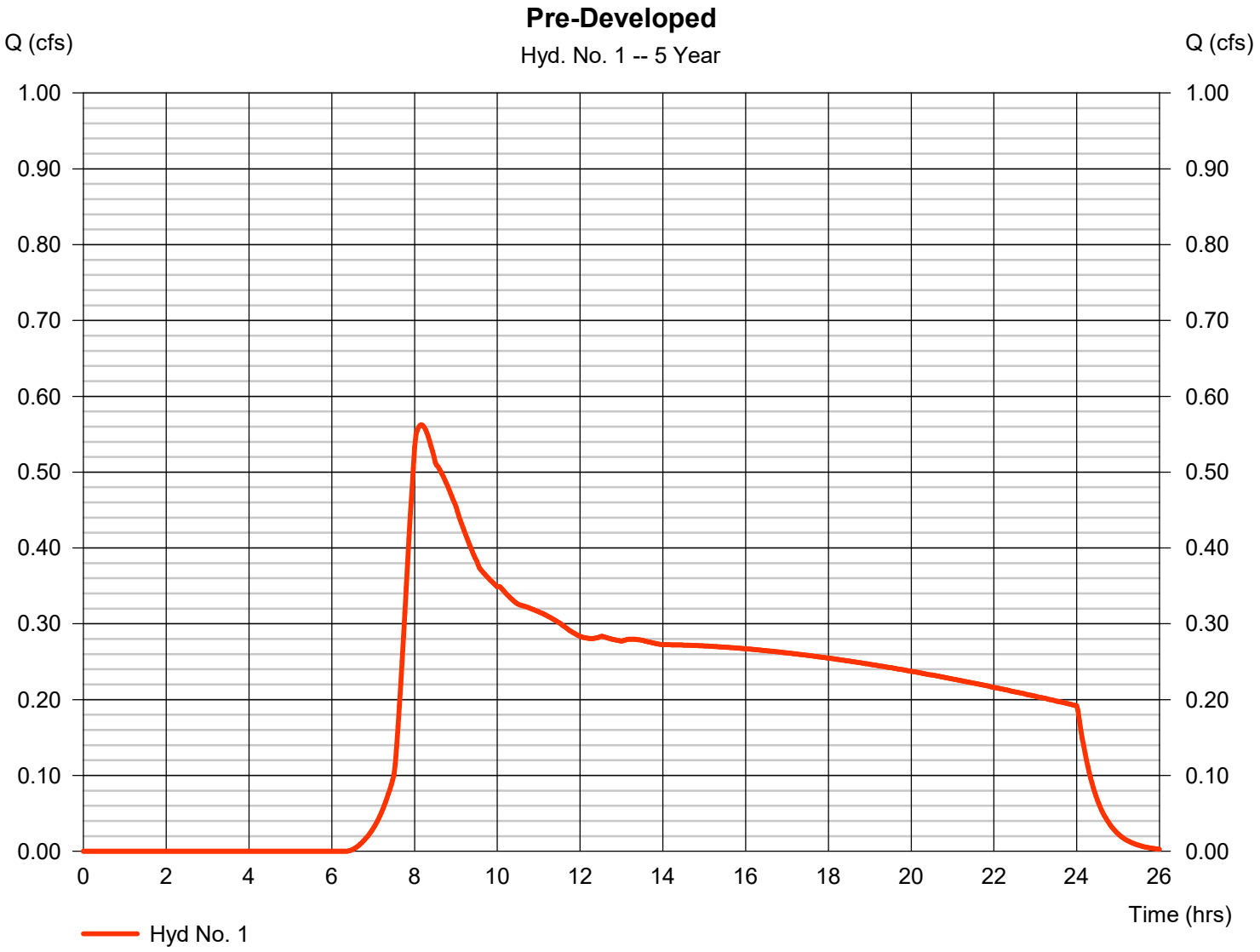
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.562	2	490	17,259	------	------	------	Pre-Developed
2	SBUH Runoff	3.340	2	474	47,049	------	------	------	Developed
3	Reservoir	0.243	2	1442	21,316	2	139.04	39,796	Route Through Pond

Hydrograph Report

Hyd. No. 1

Pre-Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.562 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.17 hrs
Time interval	= 2 min	Hyd. volume	= 17,259 cuft
Drainage area	= 4.890 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 27.80 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



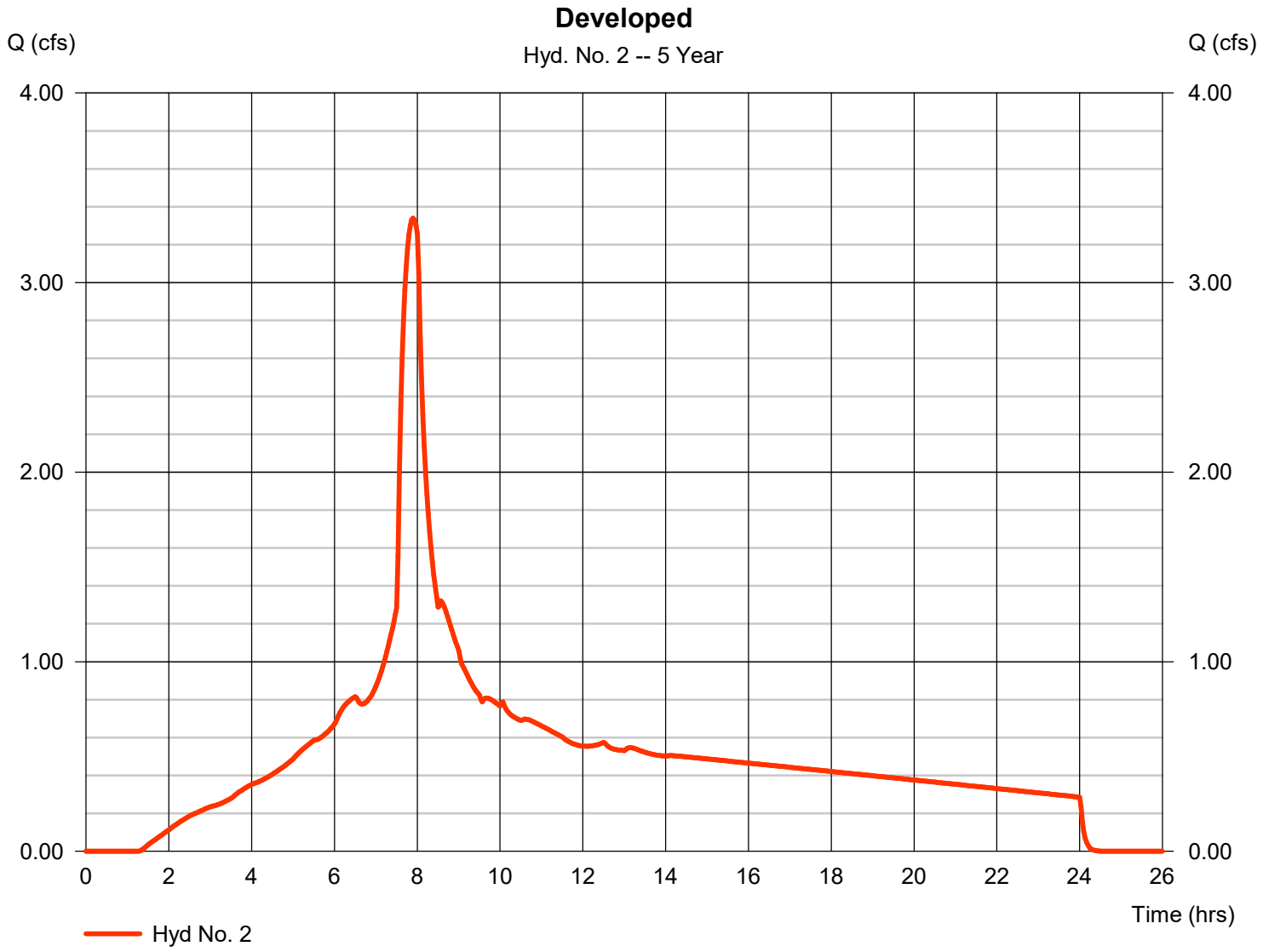
Hydrograph Report

Hyd. No. 2

Developed

Hydrograph type	=	SBUH Runoff	Peak discharge	=	3.340 cfs
Storm frequency	=	5 yrs	Time to peak	=	7.90 hrs
Time interval	=	2 min	Hyd. volume	=	47,049 cuft
Drainage area	=	4.890 ac	Curve number	=	96*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.440 x 74) + (4.450 x 98)] / 4.890



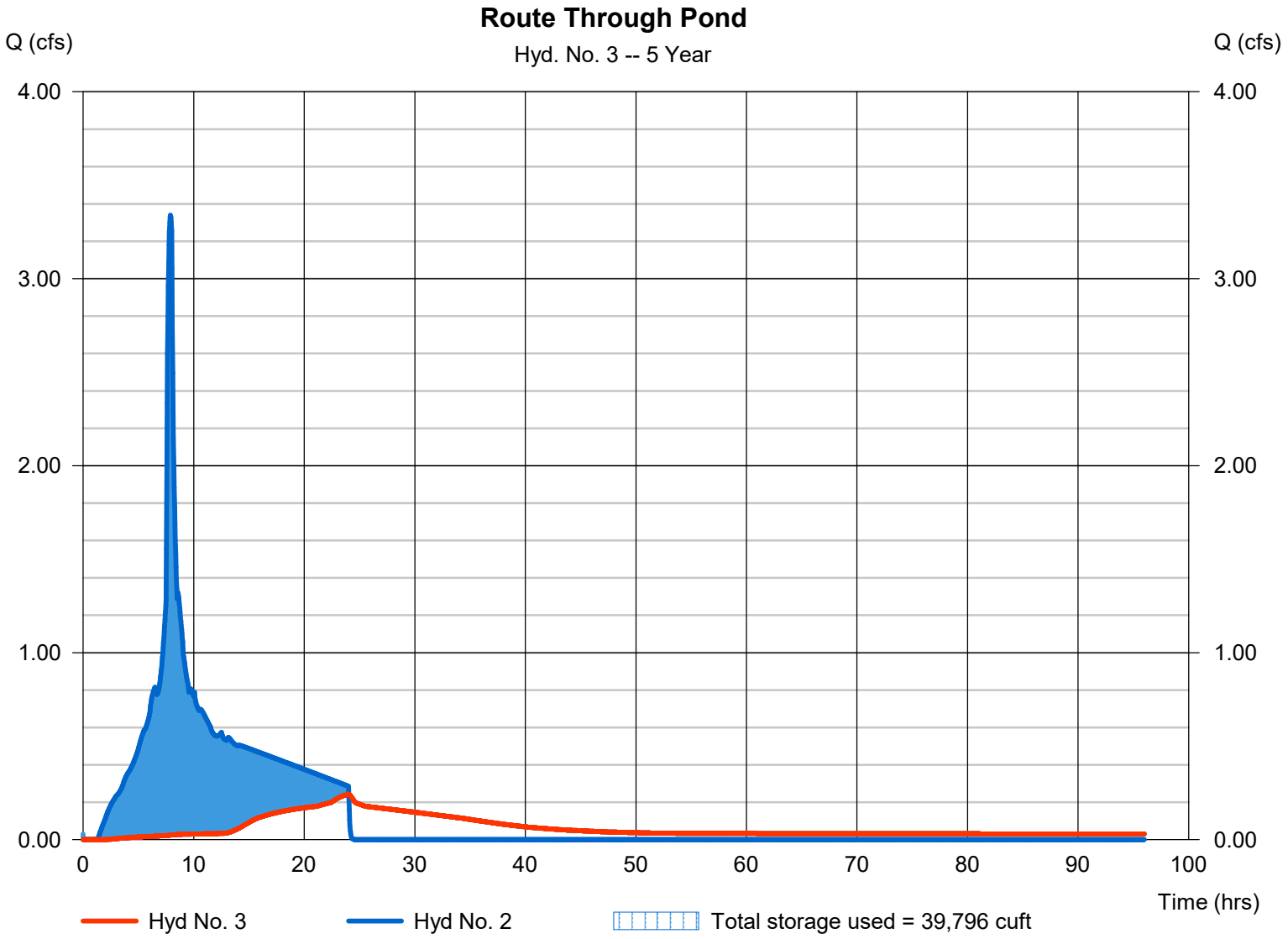
Hydrograph Report

Hyd. No. 3

Route Through Pond

Hydrograph type	=	Reservoir	Peak discharge	=	0.243 cfs
Storm frequency	=	5 yrs	Time to peak	=	24.03 hrs
Time interval	=	2 min	Hyd. volume	=	21,316 cuft
Inflow hyd. No.	=	2 - Developed	Max. Elevation	=	139.04 ft
Reservoir name	=	Pond	Max. Storage	=	39,796 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

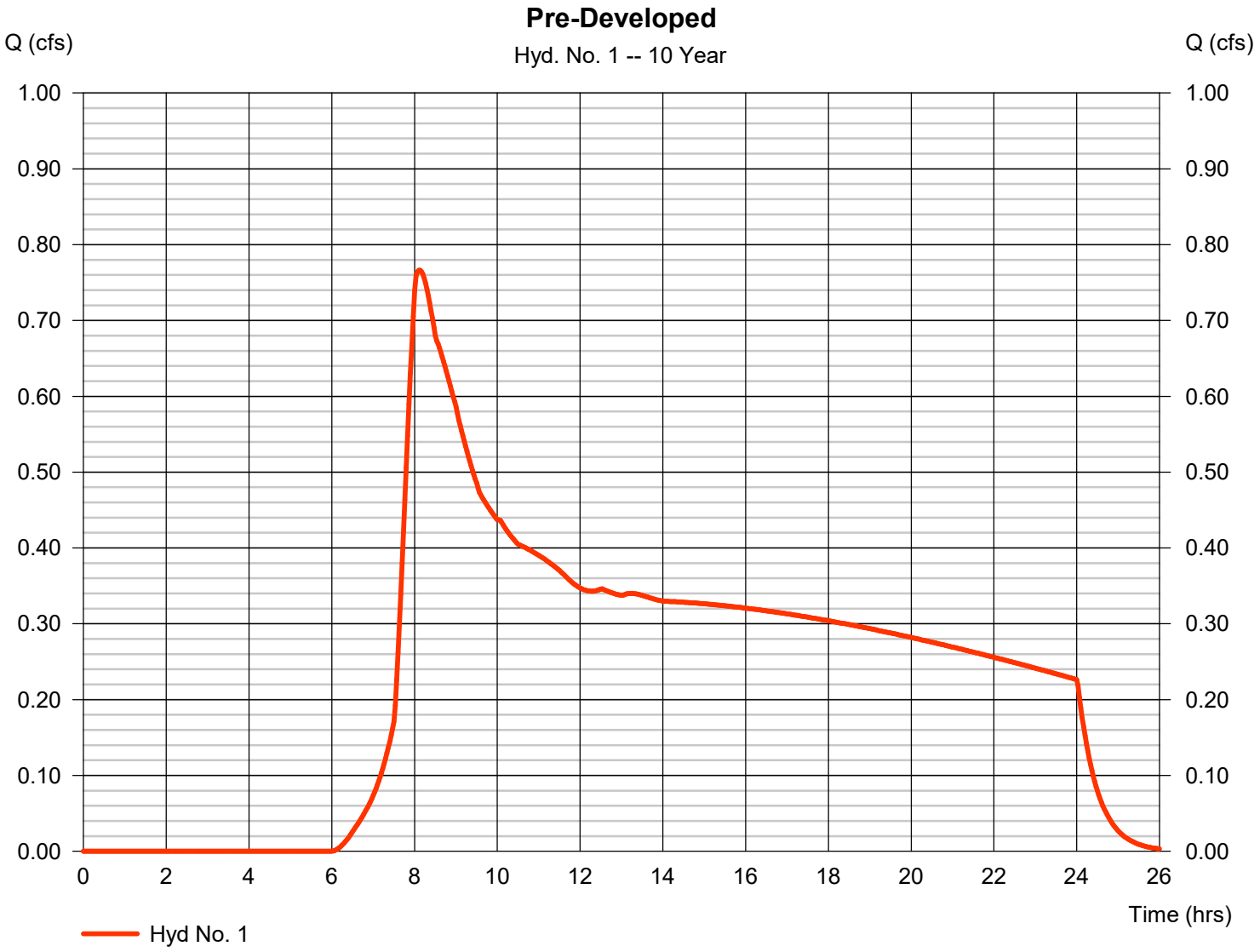
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.766	2	488	21,399	------	------	------	Pre-Developed
2	SBUH Runoff	3.764	2	474	53,179	------	------	------	Developed
3	Reservoir	0.390	2	1252	27,337	2	139.09	40,782	Route Through Pond

Hydrograph Report

Hyd. No. 1

Pre-Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.766 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.13 hrs
Time interval	= 2 min	Hyd. volume	= 21,399 cuft
Drainage area	= 4.890 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 27.80 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



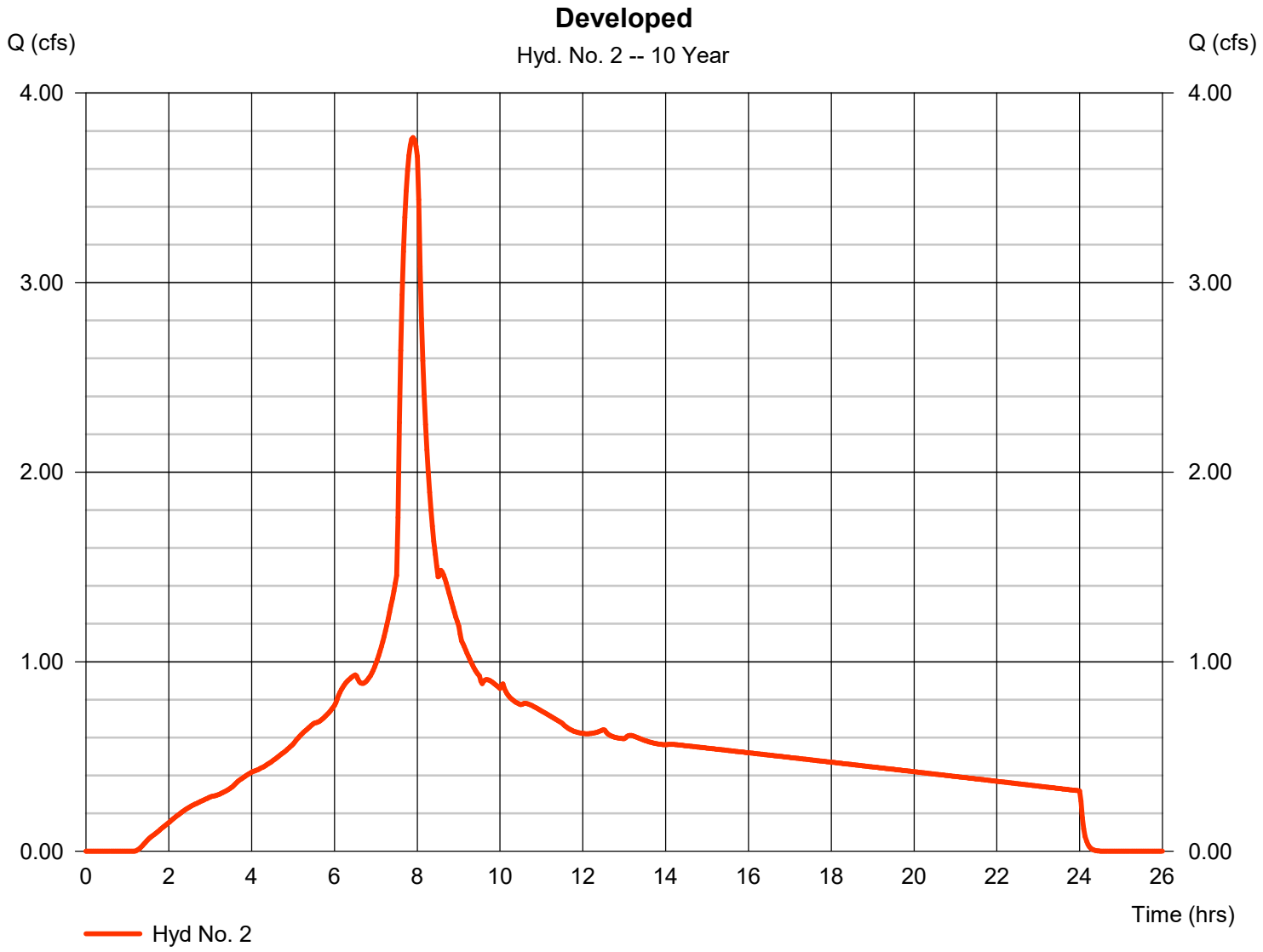
Hydrograph Report

Hyd. No. 2

Developed

Hydrograph type	=	SBUH Runoff	Peak discharge	=	3.764 cfs
Storm frequency	=	10 yrs	Time to peak	=	7.90 hrs
Time interval	=	2 min	Hyd. volume	=	53,179 cuft
Drainage area	=	4.890 ac	Curve number	=	96*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.440 x 74) + (4.450 x 98)] / 4.890



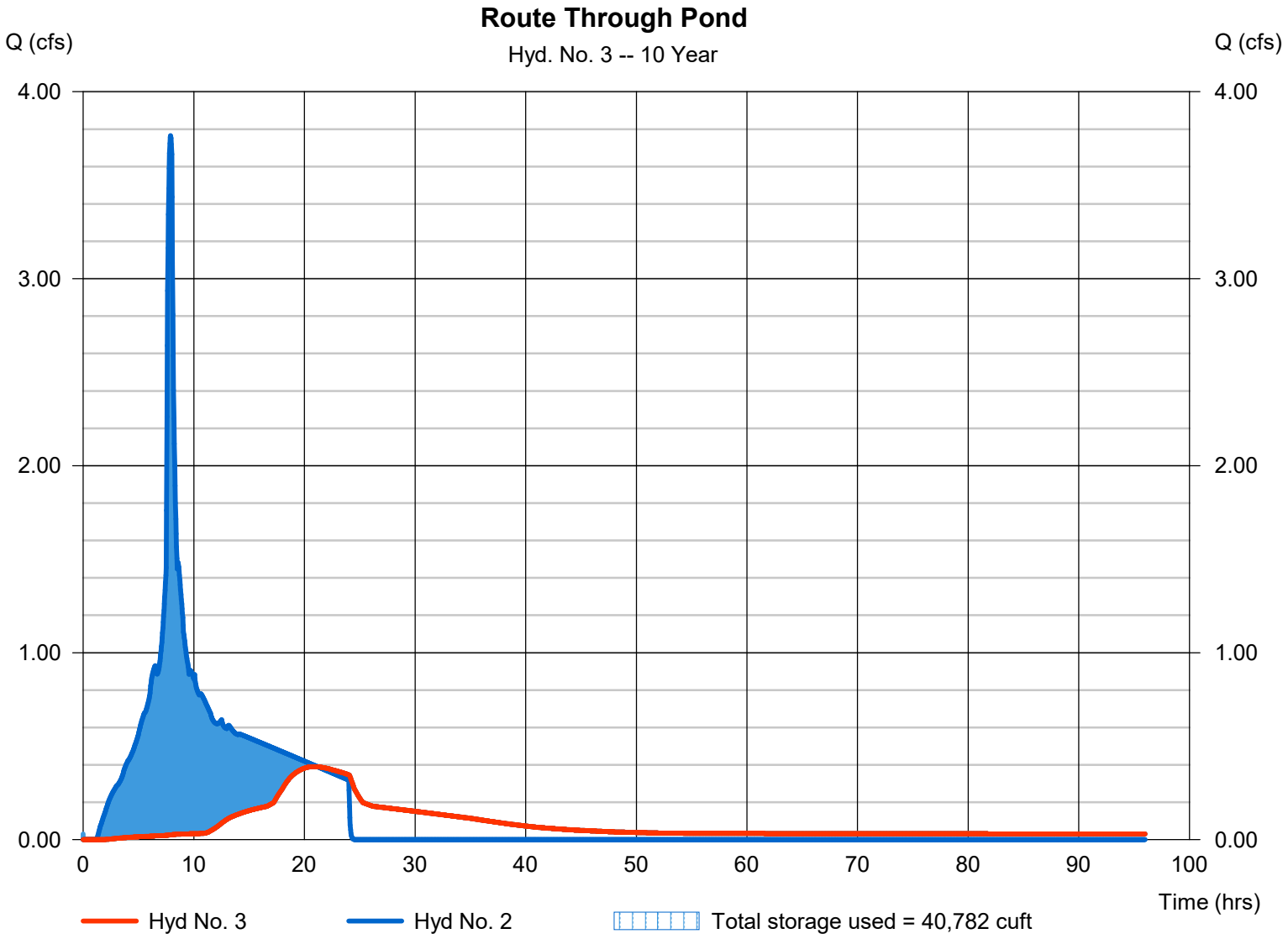
Hydrograph Report

Hyd. No. 3

Route Through Pond

Hydrograph type	=	Reservoir	Peak discharge	=	0.390 cfs
Storm frequency	=	10 yrs	Time to peak	=	20.87 hrs
Time interval	=	2 min	Hyd. volume	=	27,337 cuft
Inflow hyd. No.	=	2 - Developed	Max. Elevation	=	139.09 ft
Reservoir name	=	Pond	Max. Storage	=	40,782 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

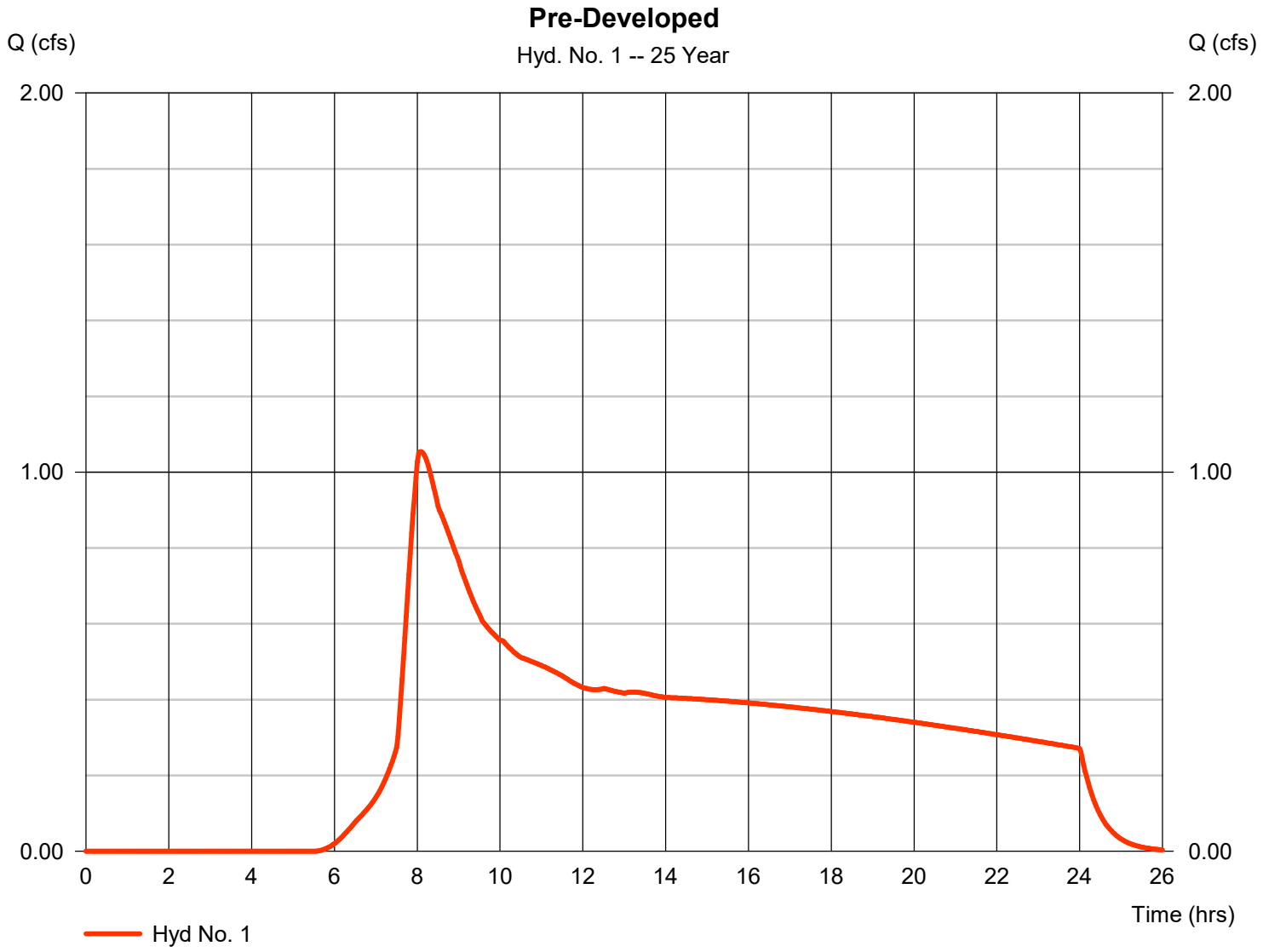
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	1.054	2	486	27,040	------	------	------	Pre-Developed
2	SBUH Runoff	4.308	2	474	61,080	------	------	------	Developed
3	Reservoir	0.541	2	1046	35,193	2	139.13	41,537	Route Through Pond

Hydrograph Report

Hyd. No. 1

Pre-Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 1.054 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.10 hrs
Time interval	= 2 min	Hyd. volume	= 27,040 cuft
Drainage area	= 4.890 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 27.80 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



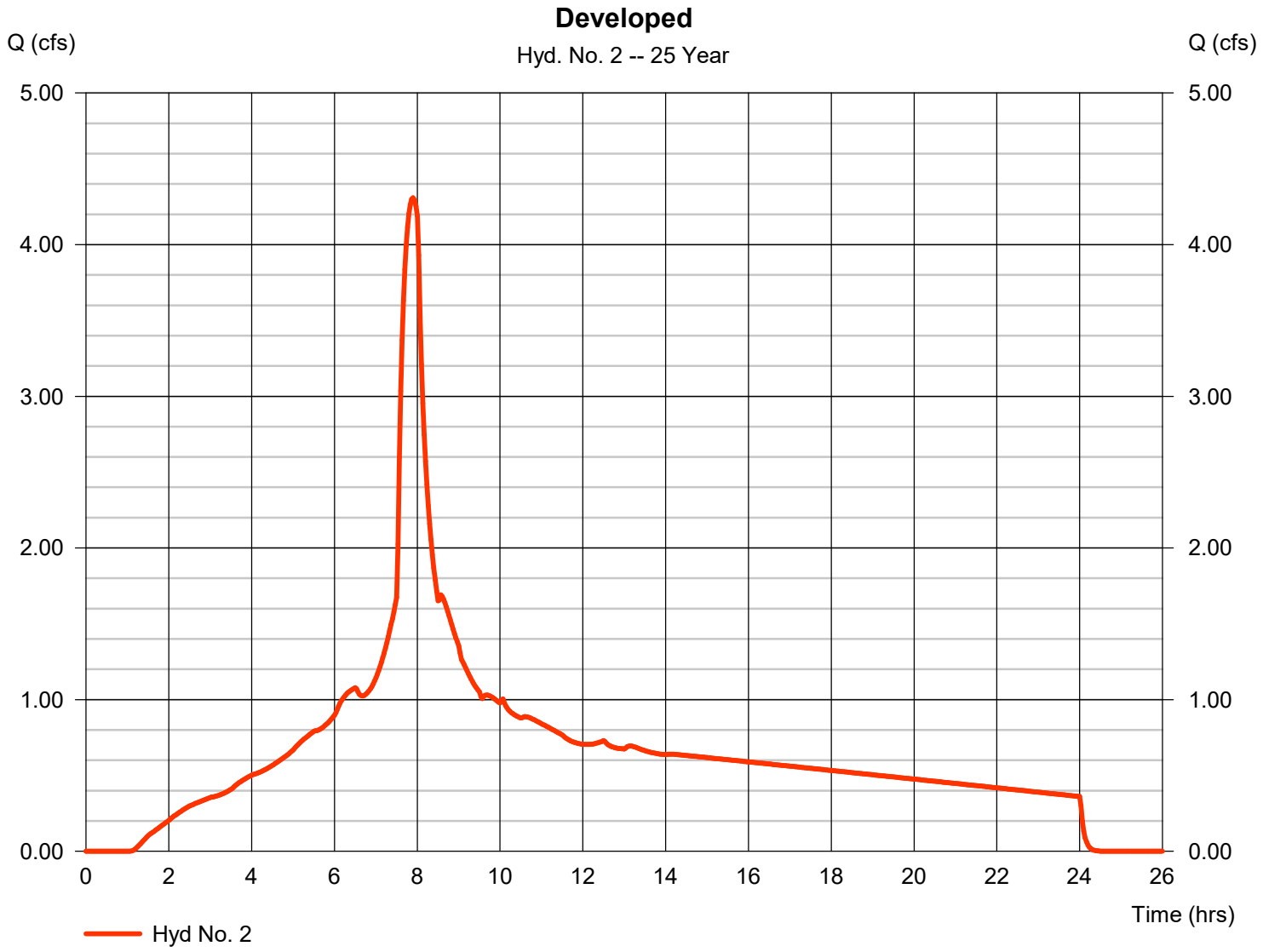
Hydrograph Report

Hyd. No. 2

Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 4.308 cfs
Storm frequency	= 25 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 61,080 cuft
Drainage area	= 4.890 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(0.440 x 74) + (4.450 x 98)] / 4.890



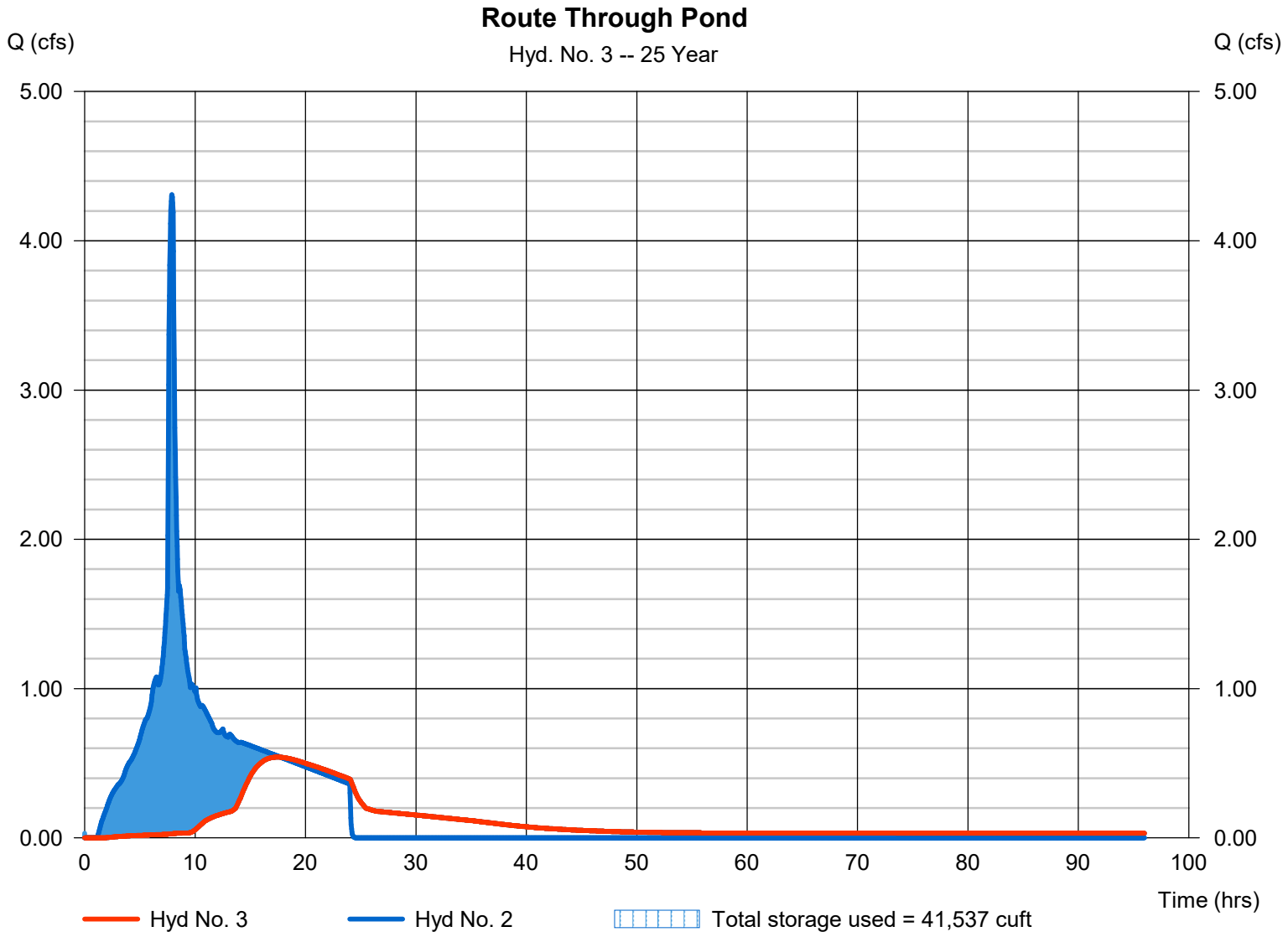
Hydrograph Report

Hyd. No. 3

Route Through Pond

Hydrograph type	= Reservoir	Peak discharge	= 0.541 cfs
Storm frequency	= 25 yrs	Time to peak	= 17.43 hrs
Time interval	= 2 min	Hyd. volume	= 35,193 cuft
Inflow hyd. No.	= 2 - Developed	Max. Elevation	= 139.13 ft
Reservoir name	= Pond	Max. Storage	= 41,537 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Reports & Calc Templates\Calc Templates\Stormwater\Hydraflow Stormwater Precipitation Data\CWS precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	2.50	0.00	3.10	3.45	3.90	4.20	4.50
SCS 6-Hr	0.00	1.05	0.00	1.25	1.55	1.70	1.80	1.90
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX C

O&M MANUAL

Stormwater Operations & Maintenance Manual

For:

Hedges D Parking Lot
Tualatin, Oregon

September 2020

Prepared by:

Mackenzie
1515 SE Water Avenue
Suite 100
Portland, OR 97214
2200339.00

TABLE OF CONTENTS

ATTACHMENTS

I. GENERAL- SITE DESCRIPTION, ASSUMPTIONS AND GENEREAL SYSTEM DESCRIPTION

This plan was developed to provide a basis for maintenance of stormwater facilities for the Hedges D parking lot project located in Tualatin, Oregon. Construction of the Hedges D project includes a delivery van parking lot, landscape, supporting utilities, water quality filter catch basins, and underground detention chambers.

Runoff from the site sheets flows to various filter or standard catch basins and is detained in underground chamber systems prior to outfall to the creek.

This Operations and Maintenance Plan generally provides maintenance requirements of the stormwater collection and treatment system. Best Management Practices (BMPs) related to maintenance of the facilities shall include regular maintenance and upkeep of the parking and landscape areas.

II. GENERAL MAINTENANCE AND FACILITY-SPECIFIC MAINTENANCE REQUIREMENTS

The Hedges D Facilities Manager shall be responsible for regular inspections and maintenance of the storm drainage system and related facilities. Inspections shall include observations of the landscaping, parking areas, catch basin grates and basins for debris, loose soil or sediment that may enter the system. Inspection of the collection system includes observation of the catch basins, and conveyance lines. General maintenance requirements of those facilities include removal of sediment and debris, repair of damaged components and general maintenance of mechanical systems.

Facility-specific maintenance requirements shall also be the responsibility of the Hedges D Facilities Manager. Inspections shall include documentation of observations and maintenance or repairs of each of the drainage system facilities. This would include:

- Landscape areas
- Parking areas
- Catch basins
- Cleanouts
- Conveyance pipes
- Treatment devices
- Detention elements

Operations and Maintenance Contact

Hedges D – Facilities Manager

##########
##########
##########

III. GENERAL MAINTENANCE ACTIVITIES

Maintenance of stormwater system components is the key to a successful stormwater plan. Most stormwater systems can fail in the first few years due to lack of adequate maintenance. The following guidelines will be used for general maintenance of the stormwater system.

1. Dry sweeping of the parking area to reduce accumulation of sediments and debris in the catch basins will be conducted regularly. Clogging the catch basin with sediments will result in its failure.

2. Quarterly visual inspection of the catch basins for debris and obstructions. All catch basins or other structures shall be kept clear of sediment, debris or other obstructions that may affect the flow or treatment of stormwater.

3. Visually inspect the stormwater system after all major storm events for evidence of system problems. Look for ponded water, debris, erosion, or any other signs of system problems.

4. Annually inspect the spill kit to ensure all supplies are available and have not deteriorated or expired (Note: each tenant shall have a separate spill kit or access to a shared spill kit). Check with city staff to stay aware of newly available products or spill containment procedures. Become familiar with the spill control plan (included with this O&M Plan) and ensure that at least one employee during each work shift is familiar with the plan (always have someone on-site who is aware of the spill containment kit and procedures).

5. Biannually or quarterly inspect the catch basin sumps. Sediments need to be removed along with any oils before the deposits reach one foot in depth and before the outlet is obstructed. Materials removed from the catch basin inlet shall be disposed of in accordance with applicable state law. Records of debris disposal shall be kept on file at the main office in accordance with the state law and shall be available for review by regulating agencies.

IV. SITE PLAN SHOWING LOCATION OF FACILITY COMPONENTS

The attached O&M Facility Map shows the general location of the facility components. The site utility “As-built” drawings should be consulted for further information regarding facility locations, sizes or details.

V. INSPECTION PROGRAM – PERFORMANCE MEASURES FOR MAINTENANCE ACTIVITIES

Objective

The objective of this manual is to help the property owner to maintain the storm sewer system for Hedges D so it can continue to operate as designed.

Requirements

Conduct inspections with the as-built plans in hand. Inspect the facility on a quarterly basis for the first 3 years from construction, and a minimum or semi-annually thereafter. Additional inspections will be necessary after long dry periods, large storms or spills. Immediately remove spilled material, taking the appropriate safety and disposal precautions.

Keep inspection records to track the progressive development of the system over time. The inspection records shall include:

1. Sediment condition and depth in sumps
2. Water elevation/observations (sheen, smell, etc.)
3. Conditions of the inlet and outlet pipes, and remaining storage capacity
4. Unscheduled maintenance needs
5. Components that do not meet performance criteria and require immediate maintenance
6. Common problem areas, solutions, and general observations
7. Aesthetic conditions

Collection System

The collection system consists of underground pipes and catch basins.

Catch Basins

The catch basins are metal basins with steel grates. The catch basins have a trapped outlet and sump and need to be inspected and maintained (if necessary) on a quarterly basis and following major storm events. Maintenance includes inspection of the structure itself and removal of any oils, debris or sediment as described in the maintenance table. Check to see if sediment has built up on the bottom of the catch basin by measuring down from the outlet pipe. If it is less than 12-inches then the catch basin needs to be cleaned out.

Storm Sewer Pipes

The storm sewer pipes are plastic with associated fittings. The pipes need to be inspected and cleaned quarterly (in necessary) following major storm events. Cleanouts and manholes are provided for access to the pipe system. The pipes need to be inspected for sediment buildup and cleaned out, if necessary, using a vactor truck so that sediment is removed.

Filter System

Refer to attached manufacturer recommendations.

Detention System

Refer to attached manufacturer recommendations.

Maintenance Schedule

Summer: Make structural repairs; clean gutters and downspouts; remove any build-up of weeds or organic debris.

Fall: Replant exposed soil and replace dead plants. Remove sediment and plant debris.

Winter: Clear gutters and downspouts.

Spring: Remove sediment and plant debris. Replant exposed soil and replace dead plants.

All season: Weed as necessary.

Maintenance Record

All facility operators are required to keep an inspection and maintenance log. Record date, description, and contractor (if applicable) for all repairs, landscape maintenance, and facility cleanout activities. Keep work orders and invoices on file and make available upon request of the City inspector.

Access

Maintain ingress/egress per design standards.

Vector (Mosquitoes and Rats)

Facilities must not harbor mosquito larvae or rodents. Record the time/date, weather, and site conditions when vector activity is observed. Record when vector abatement started and ended.

VI. O&M INSPECTION SCHEDULE

- Quarterly inspection of the catch basins and drainage system for accumulation of sediments or oils

- Annual inspection of the emergency spill kit to ensure that all supplies are available and have not deteriorated or expired

- Quarterly inspection of the swale for proper landscape maintenance, removal of trash or sediment and repair of erosion

- Materials removed from the catch basin or pipes shall be disposed of in accordance with state law

Employee and Public Education

Employees with be trained upon hiring and thereafter annually, when new requirements are published or when there are any changes to the system equipment. Employee training will include:

- Reading this Stormwater Management Plan
- Familiarity of all components and locations for materials indicated in the SWMP
- Spill response and Personal Protective Equipment (PPE)
- Documentation requirements

VII. MAINTENANCE EQUIPMENT

Hand tools or other specialized equipment may be necessary to maintain the facilities. Suggested maintenance equipment is listed in the Inspection Checklist. The Facility Manager shall be responsible to maintain on-site, or be able to make available, all required equipment.

Suggested Maintenance Equipment and Materials

- Push broom
- Rake
- Shovel
- Spill kit
- Manhole lid puller
- General landscape tools (weed cutters, pruning clippers, leak rake, etc.)
- Vactor Truck

VIII. SEDIMENT STORAGE, TESTING, AND DISPOSAL

Maintenance of the storm drainage facilities (manholes and catch basins) may include removal of oils, sediments or debris that requires specialized testing or disposal. All removed oils, sediments or other debris shall be disposed of in accordance with applicable regulations. The Facility Manager shall be responsible to retain a qualified company to dispose of this material or otherwise comply with the applicable regulations. The Facility Manager should contact the City of Tualatin Public Works to verify current regulations or requirements. Local companies providing testing, storage and disposal services:

Evergreen Pacific: (503) 835-5028
Loy Clark: (503) 849-4560
All Vac: (503) 289-4063

IX. EMERGENCY CONTACTS

Emergency Contacts

##################
##################
##################

Maintenance Responsibilities

The Facility Manager shall be responsible to inspect, maintain or otherwise repair the stormwater facilities. Regular inspections shall occur, and documentation of the inspections, maintenance or repairs kept on-site for a minimum of three years from the date of the activity.

X. SPILL PREVENTION AND CONTROL PLAN

Spill prevention is an important factor in the successful operation of a stormwater management system. All employees will be trained to this plan so that they are certain of the location of materials, who to notify in case of a spill, and how to initially contain the spill of hazardous materials. Employees shall never dump water materials into the stormwater collection/treatment system. Employees shall be observant of other potential contamination occurrences. All employees will review the following page regarding detailed spill response steps.

This data will be posted in an accessible area.

WHAT TO DO IN CASE OF A SPILL

1. The spill kit is located #######
2. Get the spill kit (and spill kit instructions when provided)
    a. If possible, determine visually what type of fluids have been spilled
    b. Put on gloves and glasses or any other necessary Personal Protective Equipment (PPE)
    c. Get the absorbent material provided in the kit and drain block cover (pig)
    d. Place the absorbent material in the path of the spill
    e. Remove any debris from the vicinity of the catch basin inlets in the parking lot
    f. Unroll the drain blocker, and place is snugly over the catch basin inlet
    g. Verify the cover has full contact with the rim of the catch basin inlet
    h. Use snakes, pillow or pigs to completely contain the areas
    i. If the spill cannot be contained locally, shut off the storm drain pumps so any spilled material does not leave the site
3. Notify the following personnel immediately:

City of Tualatin Public Works:	(503) 629-3091
After Hours:	(503) 629-0111
Department of Environmental Quality:	(800) 452-0311
	(800) 452-4011
	(503) 229-5263

Note: Only dry cleanup methods may be employed to clean up spills (i.e. no use of water to wash spilled materials from pavement will be conducted).

XI. ADDITIONAL MAINTENANCE REQUIREMENTS FOR INITIAL ESTABLISHMENT PERIOD

Initial maintenance of landscape vegetation may require additional attention to ensure that landscaping, groundcover and erosion control measures are established or maintained as intended. Proper landscaping and groundcover are an important feature of a successful storm drainage system.

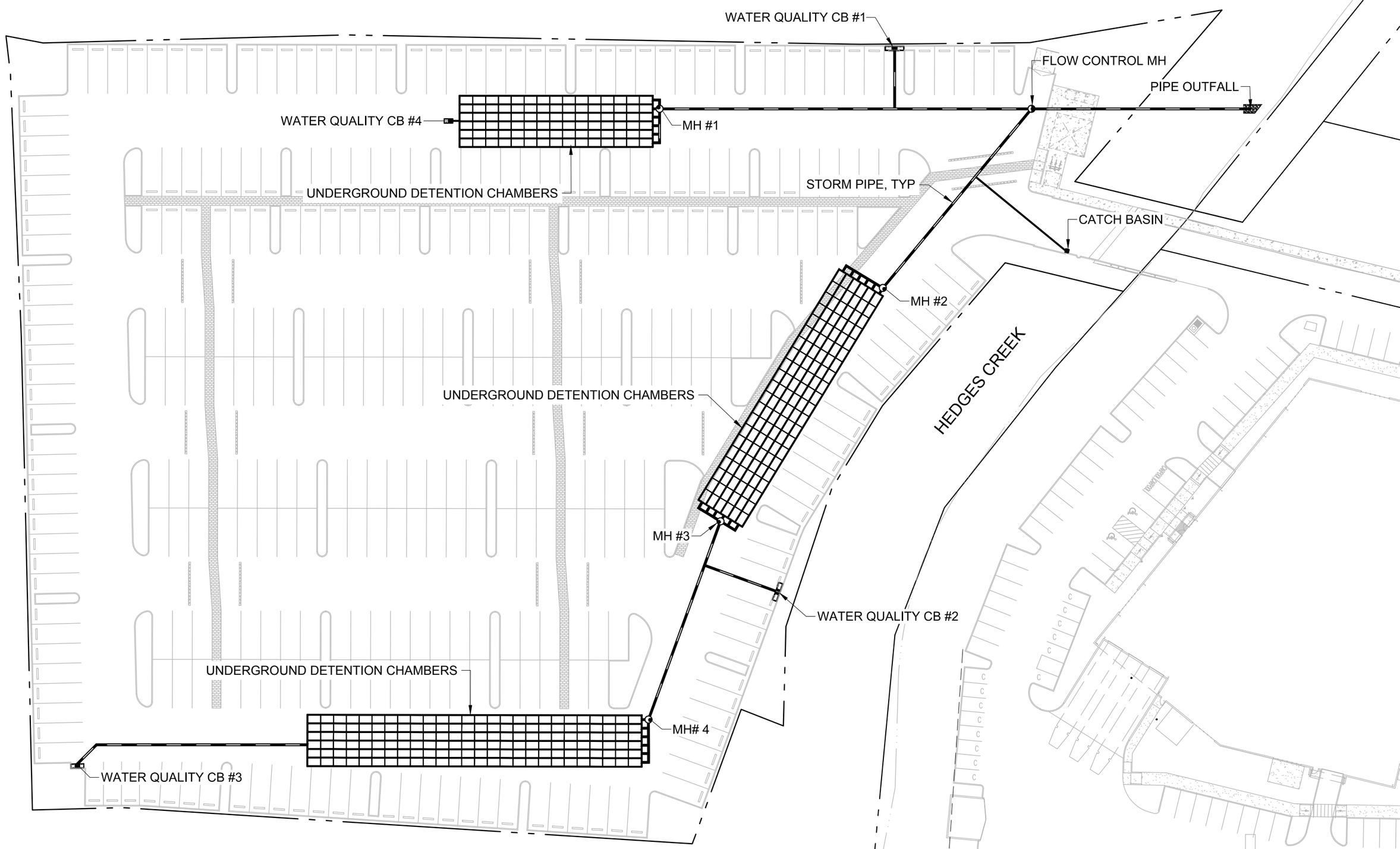
1. During the initial 3-year establishment period, remove undesired vegetation using minimal (or preferably no) use of toxic herbicides and pesticides at least 3 times a year. Replace plants that die during this period.

2. Irrigate as necessary to establish site landscaping

3. Replenish mulch at least annually. Make sure that all exposed soil is covered with mulch or other groundcover

4. Do not use excessive fertilizers, herbicides or pesticides for vegetation maintenance

5. Use replacement plants that conform to the initial planting list



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-

O&M SITE MAP

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

Date:____________ Initials:___________
Work performed by:____
Work performed:____
____
Work area or specific stormwater facility area: _____________________________________
Details:____
____

Date:____________ Initials:___________
Work performed by:____
Work performed:____
____
Work area or specific stormwater facility area: _____________________________________
Details:____
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Date:____________ Initials:___________
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Date:____________ Initials:___________
Work performed by:____
Work performed:____
____
Work area or specific stormwater facility area: _____________________________________
Details:____
____

Maintenance Guidelines

The primary purpose of the Stormwater Management StormFilter® is to filter and prevent pollutants from entering our waterways. Like any effective filtration system, periodically these pollutants must be removed to restore the StormFilter to its full efficiency and effectiveness.

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site. Maintenance activities may be required in the event of a chemical spill or due to excessive sediment loading from site erosion or extreme storms. It is a good practice to inspect the system after major storm events.

Maintenance Procedures

Although there are many effective maintenance options, we believe the following procedure to be efficient, using common equipment and existing maintenance protocols. The following two-step procedure is recommended::

1. **Inspection**
   - Inspection of the vault interior to determine the need for maintenance.
2. **Maintenance**
   - Cartridge replacement
   - Sediment removal

Inspection and Maintenance Timing

At least one scheduled inspection should take place per year with maintenance following as warranted.

First, an inspection should be done before the winter season. During the inspection the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, a maintenance (replacement of the filter cartridges and removal of accumulated sediments) should be performed during periods of dry weather.

In addition to these two activities, it is important to check the condition of the StormFilter unit after major storms for potential damage caused by high flows and for high sediment accumulation that may be caused by localized erosion in the drainage area. It may be necessary to adjust the inspection/ maintenance schedule depending on the actual operating conditions encountered by the system. In general, inspection activities can be conducted at any time, and maintenance should occur, if warranted, during dryer months in late summer to early fall.

Maintenance Frequency

The primary factor for determining frequency of maintenance for the StormFilter is sediment loading.

A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media inside the cartridges. The flow through the system will naturally decrease as more and more particulates are trapped. Eventually the flow through the cartridges will be low enough to require replacement. It may be possible to extend the usable span of the cartridges by removing sediment from upstream trapping devices on a routine as-needed basis, in order to prevent material from being re-suspended and discharged to the StormFilter treatment system.

The average maintenance lifecycle is approximately 1-5 years. Site conditions greatly influence maintenance requirements. StormFilter units located in areas with erosion or active construction may need to be inspected and maintained more often than those with fully stabilized surface conditions.

Regulatory requirements or a chemical spill can shift maintenance timing as well. The maintenance frequency may be adjusted as additional monitoring information becomes available during the inspection program. Areas that develop known problems should be inspected more frequently than areas that demonstrate no problems, particularly after major storms. Ultimately, inspection and maintenance activities should be scheduled based on the historic records and characteristics of an individual StormFilter system or site. It is recommended that the site owner develop a database to properly manage StormFilter inspection and maintenance programs..

Inspection Procedures

The primary goal of an inspection is to assess the condition of the cartridges relative to the level of visual sediment loading as it relates to decreased treatment capacity. It may be desirable to conduct this inspection during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, then typically large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, then maintenance is warranted and the cartridges need to be replaced.

Warning: In the case of a spill, the worker should abort inspection activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct an inspection:

Important: Inspection should be performed by a person who is familiar with the operation and configuration of the StormFilter treatment unit and the unit's role, relative to detention or retention facilities onsite.

1. If applicable, set up safety equipment to protect and notify surrounding vehicle and pedestrian traffic.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the access portals to the vault and allow the system vent.
4. Without entering the vault, visually inspect the inside of the unit, and note accumulations of liquids and solids.
5. Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the flow of water per drainage pipe. Record all observations. Digital pictures are valuable for historical documentation.
6. Close and fasten the access portals.
7. Remove safety equipment.
8. If appropriate, make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
9. Discuss conditions that suggest maintenance and make decision as to whether or not maintenance is needed.

Maintenance Decision Tree

The need for maintenance is typically based on results of the inspection. The following Maintenance Decision Tree should be used as a general guide. (Other factors, such as Regulatory Requirements, may need to be considered).

Please note Stormwater Management StormFilter devices installed downstream of, or integrated within, a stormwater storage facility typically have different operational parameters (i.e. draindown time). In these cases, the inspector must understand the relationship between the retention/detention facility and the treatment system by evaluating site specific civil engineering plans, or contacting the engineer of record, and make adjustments to the below guidance as necessary. Sediment deposition depths and patterns within the StormFilter are likely to be quite different compared to systems without upstream storage and therefore shouldn't be used exclusively to evaluate a need for maintenance.

1. Sediment loading on the vault floor.
   a. If >4" of accumulated sediment, maintenance is required.
2. Sediment loading on top of the cartridge.
   a. If >1/4" of accumulation, maintenance is required.
3. Submerged cartridges.
   a. If >4" of static water above cartridge bottom for more than 24 hours after end of rain event, maintenance is required. (Catch basins have standing water in the cartridge bay.)
4. Plugged media.
   a. While not required in all cases, inspection of the media within the cartridge may provide valuable additional information.
   b. If pore space between media granules is absent, maintenance is required.
5. Bypass condition.
   a. If inspection is conducted during an average rain fall event and StormFilter remains in bypass condition (water over the internal outlet baffle wall or submerged cartridges), maintenance is required.
6. Hazardous material release.
   a. If hazardous material release (automotive fluids or other) is reported, maintenance is required.
7. Pronounced scum line.
   a. If pronounced scum line (say ≥ 1/4" thick) is present above top cap, maintenance is required.

Maintenance

Depending on the configuration of the particular system, maintenance personnel will be required to enter the vault to perform the maintenance.

Important: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flows is occurring.

Replacement cartridges can be delivered to the site or customers facility. Information concerning how to obtain the replacement cartridges is available from Contech Engineered Solutions.

Warning: In the case of a spill, the maintenance personnel should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct cartridge replacement and sediment removal maintenance:

1. If applicable, set up safety equipment to protect maintenance personnel and pedestrians from site hazards.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
7. Remove used cartridges from the vault using one of the following methods:

Method 1:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

   Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact Contech Engineered Solutions for suggested attachment devices.

B. Remove the used cartridges (up to 250 lbs. each) from the vault.

Important: Care must be used to avoid damaging the cartridges during removal and installation. The cost of repairing components damaged during maintenance will be the responsibility of the owner.

C. Set the used cartridge aside or load onto the hauling truck.

D. Continue steps a through c until all cartridges have been removed.

Method 2:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

B. Unscrew the cartridge cap.

C. Remove the cartridge hood and float.

D. At location under structure access, tip the cartridge on its side.

E. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.

F. Set the empty, used cartridge aside or load onto the hauling truck.

G. Continue steps a through e until all cartridges have been removed.

8. Remove accumulated sediment from the floor of the vault and from the forebay. This can most effectively be accomplished by use of a vacuum truck.
9. Once the sediments are removed, assess the condition of the vault and the condition of the connectors.
10. Using the vacuum truck boom, crane, or tripod, lower and install the new cartridges. Once again, take care not to damage connections.
11. Close and fasten the door.
12. Remove safety equipment.
13. Finally, dispose of the accumulated materials in accordance with applicable regulations. Make arrangements to return the used **empty** cartridges to Contech Engineered Solutions.

Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

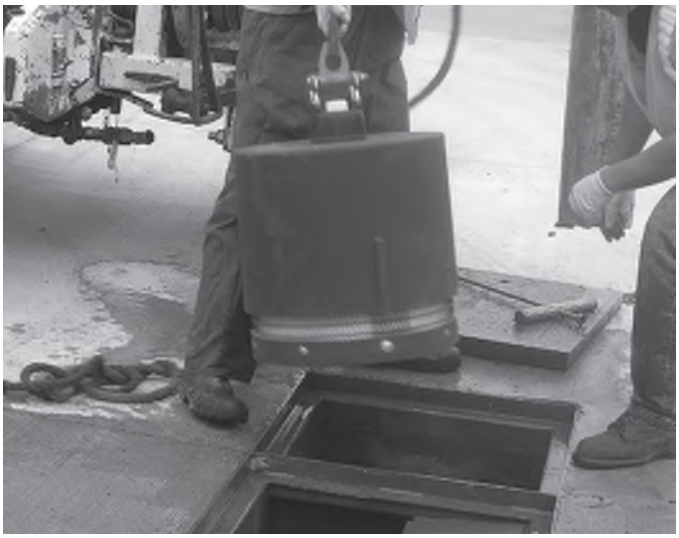
Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Related Maintenance Activities - Performed on an as-needed basis

StormFilter units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the StormFilter to be successful, it is imperative that all other components be properly maintained. The maintenance/repair of upstream facilities should be carried out prior to StormFilter maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.



Inspection Report

Date: _____ Personnel: _____

Location: _____ System Size: _____ Months in Service: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other: _____

Sediment Thickness in Forebay: _____ Date: _____

Sediment Depth on Vault Floor: _____

Sediment Depth on Cartridge Top(s): _____

Structural Damage: _____

Estimated Flow from Drainage Pipes (if available): _____

Cartridges Submerged: Yes ☐ No ☐ Depth of Standing Water: _____

StormFilter Maintenance Activities (check off if done and give description)

☐ Trash and Debris Removal: _____

☐ Minor Structural Repairs: _____

☐ Drainage Area Report _____

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

Items Needing Further Work: _____

Owners should contact the local public works department and inquire about how the department disposes of their street waste residuals.

Other Comments:

_____

_____

_____

_____

_____

_____

_____

_____

Review the condition reports from the previous inspection visits.

StormFilter Maintenance Report

Date: _____ Personnel: _____

Location: _____ System Size: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other: _____

List Safety Procedures and Equipment Used: _____

_____

_____

System Observations

Months in Service: _____

Oil in Forebay (if present): Yes ☐ No ☐

Sediment Depth in Forebay (if present): _____

Sediment Depth on Vault Floor: _____

Sediment Depth on Cartridge Top(s): _____

Structural Damage: _____

Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

StormFilter Cartridge Replacement Maintenance Activities

Remove Trash and Debris: Yes ☐ No ☐ Details: _____

Replace Cartridges: Yes ☐ No ☐ Details: _____

Sediment Removed: Yes ☐ No ☐ Details: _____

Quantity of Sediment Removed (estimate?):

Minor Structural Repairs: Yes ☐ No ☐ Details: _____

Residuals (debris, sediment) Disposal Methods: _____

Notes:

_____

_____

_____

_____

_____

_____

_____

12.0 Inspection and Maintenance

12.1 ISOLATOR ROW INSPECTION

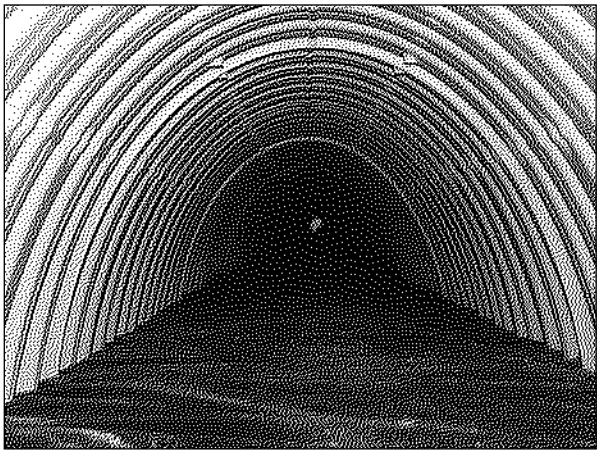
Regular inspection and maintenance are essential to assure a properly functioning stormwater system. Inspection is easily accomplished through the manhole or optional inspection ports of an Isolator Row. Please follow local and OSHA rules for a confined space entry.

Inspection ports can allow inspection to be accomplished completely from the surface without the need for a confined space entry. Inspection ports provide visual access to the system with the use of a flashlight. A stadia rod may be inserted to determine the depth of sediment. If upon visual inspection it is found that sediment has accumulated to an average depth exceeding 3" (76 mm), cleanout is required.

A StormTech Isolator Row should initially be inspected immediately after completion of the site's construction. While every effort should be made to prevent sediment from entering the system during construction, it is during this time that excess amounts of sediments are most likely to enter any stormwater system. Inspection and maintenance, if necessary, should be performed prior to passing responsibility over to the site's owner. Once in normal service, a StormTech Isolator Row should be inspected bi-annually until an understanding of the sites characteristics is developed. The site's maintenance manager can then revise the inspection schedule based on experience or local requirements.

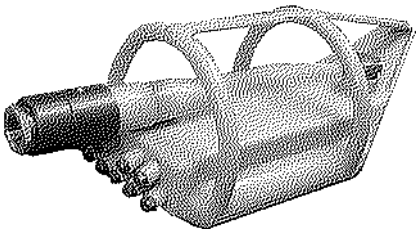
12.2 ISOLATOR ROW MAINTENANCE

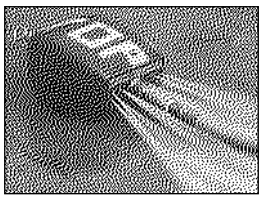
JetVac maintenance is recommended if sediment has been collected to an average depth of 3" (76 mm) inside the Isolator Row. More frequent maintenance may be required to maintain minimum flow rates through the Isolator Row. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, a wave of suspended sediments is flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/ JetVac combination vehicles. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" (1143 mm) are best. The JetVac process shall only be performed on StormTech Rows that have AASHTO class 1 woven geotextile over the foundation stone (ADS 315ST or equal).

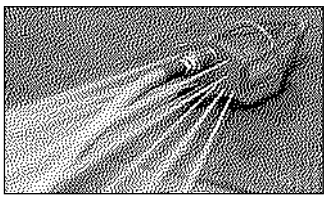


Looking down the Isolator Row

A typical JetVac truck (This is not a StormTech product.)







Examples of culvert cleaning nozzles appropriate for Isolator Row maintenance. (These are not StormTech products).

12.0 Inspection & Maintenance

STORMTECH ISOLATOR™ ROW - STEP-BY-STEP MAINTENANCE PROCEDURES

Step 1) Inspect Isolator Row for sediment

A) Inspection ports (if present)

i. Remove lid from floor box frame

ii. Remove cap from inspection riser

iii. Using a flashlight and stadia rod, measure depth of sediment

iv. If sediment is at, or above, 3” (76 mm) depth proceed to Step 2. If not proceed to Step 3.

B) All Isolator Rows

i. Remove cover from manhole at upstream end of Isolator Row

ii. Using a flashlight, inspect down Isolator Row through outlet pipe

1. Follow OSHA regulations for confined space entry if entering manhole

2. Mirrors on poles or cameras may be used to avoid a confined space entry

iii. If sediment is at or above the lower row of sidewall holes [approximately 3” (76 mm)] proceed to Step 2. If not proceed to Step 3.

Step 2) Clean out Isolator Row using the JetVac process

A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45” (1143 mm) or more is preferable

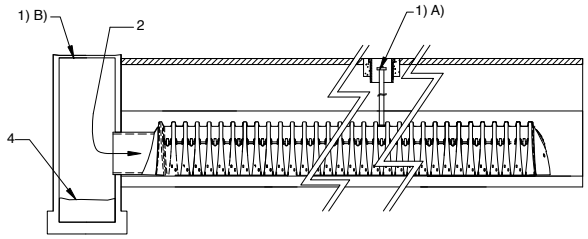
B) Apply multiple passes of JetVac until backflush water is clean

C) Vacuum manhole sump as required during jetting

Step 3) Replace all caps, lids and covers

Step 4) Inspect and clean catch basins and manholes upstream of the StormTech system following local guidelines.

Figure 20 – StormTech Isolator Row (not to scale)



12.3 ECCENTRIC PIPE HEADER INSPECTION

Theses guidelines do not supercede a pipe manufacturer’s recommended I&M procedures. Consult with the manufacturer of the pipe header system for specific I&M procedures. Inspection of the header system should be carried out quarterly. On sites which generate higher levels of sediment more frequent inspections may be necessary. Headers may be accessed through risers, access ports or manholes. Measurement of sediment may be taken with a stadia rod or similar device. Cleanout of sediment should occur when the sediment volume has reduced the storage area by 25% or the depth of sediment has reached approximately 25% of the diameter of the structure.

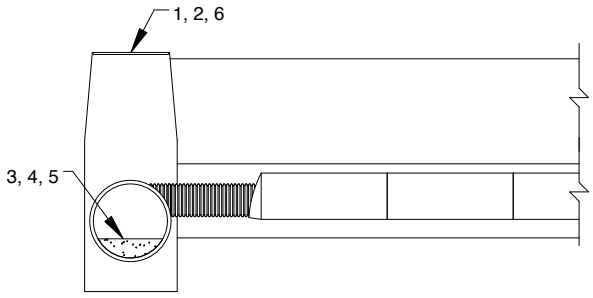
12.4 ECCENTRIC PIPE MANIFOLD MAINTENANCE

Cleanout of accumulated material should be accomplished by vacuum pumping the material from the header. Cleanout should be accomplished during dry weather. Care should be taken to avoid flushing sediments out through the outlet pipes and into the chamber rows.

Eccentric Header Step-by-Step Maintenance Procedures

1. Locate manholes connected to the manifold system
2. Remove grates or covers
3. Using a stadia rod, measure the depth of sediment
4. If sediment is at a depth of about 25% pipe volume or 25% pipe diameter proceed to step 5. If not proceed to step 6.
5. Vacuum pump the sediment. Do not flush sediment out inlet pipes.
6. Replace grates and covers
7. Record depth and date and schedule next inspection

Figure 21 – Eccentric Manifold Maintenance



Please contact StormTech’s Technical Services Department at 888-892-2894 for a spreadsheet to estimate cleaning intervals.

APPENDIX D

GEOTECHNICAL REPORT

Report of Additional Geotechnical Engineering Services

The Hedges Development—Building D
Tualatin, Oregon

for
Martin Development

July 10, 2019

GeoEngineers
Earth Science + Technology

Report of Additional Geotechnical Engineering Services

The Hedges Development—Building D
Tualatin, Oregon

for
Martin Development

July 10, 2019

GeoEngineers

4000 Kruse Way Place
Building 3, Suite 200
Lake Oswego, Oregon 97035
503.624.9274

Report of Additional Geotechnical Engineering Services

The Hedges Development—Building D
Tualatin, Oregon

File No. 0821-014-06

July 10, 2019

Prepared for:

Martin Development
PO Box 15523
Seattle, Washington 98115

Attention: Mac Martin

Prepared by:

GeoEngineers, Inc.
4000 Kruse Way Place
Building 3, Suite 200
Lake Oswego, Oregon, 97035
503.624.9274

Tyler A. Pierce, PE
Project Engineer

Greg A. Landau, PE, GE

Digitally signed by Greg A. Landau, PE, GE
Date: 2019.07.10 15:31:42 -07'00'

REGISTERED PROFESSIONAL ENGINEER
OREGON
NOVEMBER 08, 2005
GREG ALAN LANDAU

Greg A. Landau, PE, GE
Associate Geotechnical Engineer

EXPIRES: 12/31/20

TAP:GAL:cje

GeoEngineers

Table of Contents

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

This report presents the results of GeoEngineers' additional geotechnical engineering services for the proposed Hedges D site at the Hedges Development in Tualatin, Oregon. The site is located at the west end of SW 115th Street and is bounded by private properties, or undeveloped riparian wetlands, to the north, west and south, and by the Hedges Creek channel on the east. The location of the site is shown in the Vicinity Map, Figure 1.

GeoEngineers completed a Due Diligence and Preliminary Geotechnical Engineering Services Report for Hedges C & D, dated September 6, 2018 (Preliminary Report). Since the Preliminary Report was finalized, the proposed Hedges D development has been modified from a single 64,500-square-foot (sf) building to two buildings—a northern 34,600-sf building and a southern 25,000-sf building. Building loads have not been developed at the time this report was prepared, but we understand the proposed buildings will be a single-story, concrete tilt panel construction with the possibility of 50 percent mezzanine.

Subsurface conditions encountered during the due diligence phase encountered a variable thickness of human placed fill material over alluvium, including a variable layer of very soft elastic silt, very loose silty sand and peat.

2.0 SCOPE OF SERVICES

The purpose of this report is to better define the subsurface conditions beneath the proposed buildings and update our recommendations from the Preliminary Report, as appropriate. Our proposed scope of services included the following:

1. Reviewed previous explorations completed at the site.
2. Coordinated utility locating prior to our explorations by contacting the public "One Call" locating service.
3. Explored subsurface soil and groundwater conditions at the site by completing up to four cone penetrometer tests (CPT), to depths between 47 and 81 feet below ground surface (bgs). The CPTs were located within the proposed building footprints and completed in a single day.
4. Prepared this report that summarizes our findings and provides our recommendations for aggregate piers, including layout, estimated depths, and whether grouted aggregate piers are appropriate. Our report includes a description of surface and subsurface conditions and a Site Plan showing explorations locations and other pertinent features. Results of the CPTs, as well as updated subsurface cross sections are included.

3.0 FIELD EXPLORATIONS AND LABORATORY TESTING

3.1. Field Explorations

The subsurface conditions at the proposed building locations were evaluated by performing four CPTs to depths between 47 and 81 feet below ground surface (bgs), in addition to the three geotechnical borings to depths ranging from 41½ to 81½ feet bgs, performed for the Preliminary Report. We also reviewed logs of borings performed during earlier explorations of the site by others (GeoDesign, Inc. 1997).

The approximate locations of the explorations, including those performed by others, are shown in Figure 2. The results of our explorations are presented in Appendix A.

3.2. Laboratory Testing

Soil samples are not collected when performing CPT's, so laboratory testing was not completed for this phase of the project. Laboratory tests completed for Hedges D during the due diligence phase are presented in Appendix A.

4.0 SITE CONDITIONS

4.1. Surface Conditions

The site is an approximately 5-acre parcel located west of the Hedges Creek canal. Similar drainage canals have been excavated along the north and much of the west side of the parcel. The site is currently vacant and is covered with rough field grass and small trees. The site surface is flat to very gently undulating, with elevations across the site ranging from approximately 150 feet above mean sea level (MSL) to 153 feet MSL.

4.2. Subsurface Conditions

The project site is located within the Tualatin River valley, once dominated by the active floodplains and alluvial terraces of the Tualatin River and its tributaries such as Hedges Creek.

During agricultural development and later urbanization of Tualatin-Sherwood metropolitan area, these lowlands were altered, largely by channelization of the tributary streams as well as raising the grade of the original riparian lowlands by placing a variety of fill materials ranging from ditch channel spoil, silt, sand, gravel, and construction and demolition debris. The original topography of Hedges Creek as well as the surrounding agricultural areas were never documented or, if so, was not preserved, so the thickness, extent, and location of these fills are not well defined. The project site is mantled with these man-made fills.

Two types of soil were encountered underlying the site within the depth of exploration—fill and alluvial sediments. The latter are further divided into Holocene-age alluvial silt, fine sand, and clay overlying Pleistocene-age silts and sand to gravel alluvium deposited by the catastrophic Missoula Floods. Records of site grading indicate that silty and sandy man-made fill was placed across the bulk of the site in the late 1990s, raising the site grades between 8 and 19 feet.

Subsurface conditions beneath each building are described below.

4.2.1. Northern Building (Building A)

The fill extends between 10 and 18 feet bgs across the northern building footprint. The composition of the fill is likely variable across the building footprint, varying between stiff to very stiff silt and dense silty sand to soft silt or loose silty fine sand. The CPTs were predrilled through the fill, so information pertaining to the consistency of the fill is limited to the borings conducted for the Preliminary Report.

Very soft to medium stiff silt, sandy silt or elastic silt and loose silty sand or silty gravel was encountered below the fill to depths ranging between 70 and 89 feet. A layer of highly organic peat ranging between 8 and 22 feet thick was encountered underlying the building footprint, at depths between 20 and 24 feet bgs. Beneath the very soft/loose alluvial deposits, very stiff silt with sand and dense to very dense silty

gravels and sands were encountered. Dense gravels were encountered in B-02D at 40 feet bgs and in GeoDesign, Inc. (GDI) B-3 at a depth of 89 feet bgs.

4.2.2. Southern Building (Building B)

Beneath the southern building footprint, the fill extends between 9 and 10 feet bgs. No borings or CPTs were conducted within the fill beneath the southern building, but based on our explorations and surface observations, we anticipate the fill conditions are like those encountered below the northern building.

Very soft to medium stiff silt, sandy silt, elastic silt or organic silt, and very loose to loose silty gravel and sand was encountered to depths between 65 and 70 feet bgs. Similar to the northern building, a layer of highly organic peat or organic silt ranging between 19 and 28 feet thick was encountered at depths between 15 and 18 feet bgs. Beneath the very soft/very loose alluvial deposits, very stiff to hard silt or dense to very dense silty gravels and sands were encountered. The dense gravels were observed at a depth of 66 feet bgs in GDI B-7 and at 80 feet bgs in CPT-2.

4.2.3. Groundwater

During our drilling program completed in February 2018, groundwater was encountered within ½ foot to 4 feet bgs in B-01D and B-02D, respectively. Pore water dissipation tests performed during the CPT soundings estimate static groundwater between 7 and 15 feet bgs.

Groundwater conditions are expected to vary seasonally due to rainfall events and other factors.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary

A summary of geotechnical considerations is provided below. The summary is presented for introductory purposes only and should be used in conjunction with the complete recommendations presented in this report.

- An 8 to 28-foot-thick layer of organic silt and peat was encountered under the proposed building footprints. This organic material is highly compressible and will likely continue to settle with additional loading, although the majority of settlement under the weight of the existing fill has likely occurred.
- Based on pore pressure readings, groundwater was estimated between approximately 7 to 15 feet bgs during CPT soundings completed in June 2019. Based on drilled borings completed in February 2018, groundwater was encountered at or near the surface.
- The buildings can be supported on aggregate piers under the building footings or the entire building footprint. Grouted aggregate piers will likely be required to mitigate for the organic soils encountered.

Our specific geotechnical recommendations are presented in the following sections of this report.

6.0 EARTHWORK RECOMMENDATIONS

6.1. Site Preparation

Initial site preparation and earthwork operations will include stripping and grading the site, and excavating for utilities and foundations.

Depending on the final layout of the buildings, stripping of grass rootzone and removal and grubbing of shrubs/trees surrounding the structures may be required. Existing shrubs/trees should be removed from the site in all proposed building pad and pavement areas and for a 5-foot margin around such areas. Typically, the depth of stripping is approximately 6 to 8 inches, although thicker stripping depths may be required. The actual stripping depth should be based on field observations at the time of construction. Stripped material should be transported off site for disposal or used in landscaped areas.

Trees and their root balls should be grubbed to the depth of the roots, which could exceed 3 feet bgs. Depending on the methods used to remove the preceding material, considerable disturbance and loosening of the subgrade could occur. We recommend that disturbed soil be removed to expose medium stiff or stiffer native soil. The resulting excavations should be backfilled with structural fill.

6.2. Subgrade Preparation and Evaluation

Upon completion of site preparation activities, the exposed subgrade should be proof-rolled with a fully-loaded dump truck or similar heavy rubber-tired construction equipment to identify soft, loose or unsuitable areas. Proof-rolling should be conducted prior to placing fill, and should be observed by a representative of GeoEngineers who will evaluate the suitability of the subgrade and identify areas of yielding that are indicative of soft or loose soil. If soft or loose zones are identified during proof-rolling, these areas should be excavated to the extent indicated by our representative and replaced with Imported Select Structural Fill as defined in this report.

During wet weather, or when the exposed subgrade is wet or unsuitable for proof-rolling, the prepared subgrade should be evaluated by observing excavation activity and probing with a steel foundation probe. Observations, probing and compaction testing should be performed by a member of our staff. Wet soil that has been disturbed due to site preparation activities or soft or loose zones identified during probing, should be removed and replaced with Imported Select Structural Fill as defined in this report.

6.3. Wet Weather Construction

The fine-grained soils at the site are highly susceptible to moisture. Wet weather construction practices will be necessary if work is performed during periods of wet weather. If site grading will occur during wet weather conditions, it will be necessary to use track-mounted equipment, use gravel working pads and employ other methods to reduce ground disturbance. The contractor should be responsible to protect the subgrade during construction.

During wet weather we recommend that:

- The ground surface in and around the work area should be sloped so that surface water is directed to a sump or discharge location. The ground surface should be graded such that areas of ponded water do not develop.
- The site soils should not be left uncompacted and exposed to moisture. Sealing the surficial soils by rolling with a smooth-drum roller prior to periods of precipitation will reduce the extent to which these soils become wet or unstable.
- Construction activities should be scheduled so that the length of time that soils are left exposed to moisture is reduced to the extent practicable.

- During periods of wet weather, concrete should be placed as soon as practical after preparing foundation excavations. Foundation bearing surfaces should not be exposed to standing water. Should water infiltrate and pool in the excavation, the water should be removed, and the foundation subgrade should be re-evaluated before placing reinforcing steel or concrete. Foundation subgrade protection, such as a 3- to 4-inch-thickness of crushed rock, may be necessary if footing excavations are exposed to extended wet weather conditions.

6.4. Excavation

It is our opinion that conventional earthmoving equipment in proper working condition should be capable of making necessary general excavations. The earthwork contractor should be responsible for reviewing this report, including the exploration logs, providing their own assessments, and providing equipment and methods needed to excavate the site soils while protecting subgrades.

6.5. Dewatering

As discussed in Section 4.2.3 of this report, depending on the time of year construction is completed, groundwater may be encountered at or near the ground surface. If groundwater is encountered, saturated/wet soils should be dewatered. Sump pumps are expected to adequately address groundwater encountered in shallow excavations.

6.6. Shoring

All trench excavations should be made in accordance with applicable Occupational Safety and Health Administration (OSHA) and state regulations. Site soils within expected excavation depths consist of a variable human placed fill, classified as OSHA Soil Type C, provided there is no seepage and excavations occur during periods of dry weather. Excavations deeper than 4 feet should be shored or laid back at an inclination of 1.5H:1V (horizontal to vertical) for Type C soils. Flatter slopes may be necessary if workers are required to enter. Excavations made to construct footings or other structural elements should be laid back or shored at the surface as necessary to prevent soil from falling into excavations.

Shoring for trenches less than 6 feet deep that are above the effects of groundwater should be possible with a conventional box system. Moderate sloughing should be expected outside the box. Shoring deeper than 6 feet or below the groundwater table should be designed by a registered engineer before installation. Further, the shoring design engineer should be provided with a copy of this report.

In our opinion, the contractor will be in the best position to observe subsurface conditions continuously throughout the construction process and to respond to the soil and groundwater conditions. Construction site safety is generally the sole responsibility of the contractor, who also is solely responsible for the means, methods and sequencing of the construction operations and choices regarding excavations and shoring. Under no circumstances should the information provided by GeoEngineers be interpreted to mean that GeoEngineers is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

6.7. Structural Fill and Backfill

6.7.1. General

Materials used to support building foundations, floor slabs, hardscape, pavements and any other areas intended to support structures or within the influence zone of structures are classified as structural fill for the purposes of this report.

All structural fill should be free of debris, clay balls, roots, organic matter, frozen soil, man-made contaminants, particles with greatest dimension exceeding 4 inches and other deleterious materials. The suitability of soil for use as structural fill will depend on the gradation and moisture content of the soil. As the amount of fines in the soil matrix increases, the soil becomes increasingly more sensitive to small changes in moisture content and achieving the required degree of compaction becomes more difficult or impossible. Recommendations for suitable fill material are provided in the following sections.

6.7.2. Use of On-site Soil

As described in Section 4.2, the on-site near surface soil consists of variable silty fill. On-site soils can be used as structural fill, provided the material meets the above requirements, although due to moisture sensitivity, this material will likely be unsuitable as structural fill during most of the year. If the soil is too wet to achieve satisfactory compaction, moisture conditioning by drying back the material will be required. If the material cannot be properly moisture conditioned, we recommend using imported material for structural fill.

An experienced geotechnical engineer from GeoEngineers should determine the suitability of on-site soil encountered during earthwork activities for reuse as structural fill.

6.7.3. Imported Select Structural Fill

Imported select granular material may be used as structural fill. Imported Select Structural Fill should consist of pit or quarry run rock, crushed rock, or crushed gravel and sand that is fairly well-graded between coarse and fine sizes, with approximately 25 to 65 percent passing the U.S. No. 4 sieve. It should have less than 5 percent passing the U.S. No. 200 sieve and have a minimum of two mechanically fractured faces. During dry weather, the fines content can be increased to a maximum of 12 percent.

6.7.4. Aggregate Base

Aggregate base material located under floor slabs and pavements, and crushed rock used in footing overexcavations, should consist of imported clean, durable, crushed angular rock. Aggregate base material should be well-graded, have a maximum particle size of 1 inch and have less than 5 percent passing the U.S. No. 200 sieve. In addition, aggregate base shall have a minimum of 75 percent fractured particles according to American Association of State Highway and Transportation Officials (AASHTO) TP-61 and a sand equivalent of not less than 30 percent based on AASHTO T-176.

6.7.5. Trench Backfill

Backfill for pipe bedding and in the pipe zone should consist of well-graded granular material with a maximum particle size of ¾ inch and less than 5 percent passing the U.S. No. 200 sieve. Trench backfill material should be free of organic matter and other deleterious materials. Further, the backfill should meet

the pipe manufacturer's recommendations. Above the pipe zone, Imported Select Structural Fill may be used as described above.

6.7.6. Fill Placement and Compaction

Structural fill should be compacted to a minimum of 95 percent of the maximum dry density (MDD) at moisture contents that are within 3 percent of the optimum moisture content as determined by ASTM International (ASTM) Standard Practices Test Method D 1557 (Modified Proctor). The optimum moisture content varies with gradation and should be evaluated during construction. Fill material that is not near the optimum moisture content should be moisture conditioned prior to compaction.

Fill and backfill material should be placed in uniform, horizontal lifts and compacted with appropriate equipment. The appropriate lift thickness will vary depending on the material and compaction equipment used. It is the contractor's responsibility to select appropriate compaction equipment and place the material in lifts that are thin enough to meet these criteria. However, in no case should the loose lift thickness exceed 18 inches.

A representative from GeoEngineers should evaluate compaction of each lift of fill. Compaction should be evaluated by compaction testing, unless other methods are proposed for oversized materials and are approved by GeoEngineers prior to fill placement. These other methods typically involve procedural placement and compaction specifications together with verifying requirements such as proof-rolling.

6.8. Temporary Cut Slopes

Earthwork activities are expected to occur at grade, we do not expect significant cut slopes at the site.

7.0 STRUCTURAL DESIGN RECOMMENDATIONS

The foundation support recommendations provided below are based on our analysis and collaborative discussion considering required performance and cost for the project. We have carefully evaluated foundation support and subgrade preparation to provide efficient foundation design and adequate performance for the proposed building, while still considering the project schedule, soil conditions and cost of earthwork.

7.1. Foundation Support Recommendations

7.1.1. Aggregate Piers

Shallow spread footings supported on aggregate piers would provide relatively high bearing capacity and reduced settlement by creating a stiff soil subgrade. Ground improvement methods can consist of the Rammed Aggregate Pier® (RAP) System constructed by GeoPier Foundation Company, Vibro Piers™ constructed by Hayward Baker, or alternate systems if approved in advance by GeoEngineers. Aggregate pier systems are typically designed and constructed by the specialty contractor to a performance specification. They should submit a ground improvement design that has been completed and stamped by a registered professional engineer with experience in such projects. We recommend that GeoEngineers review the design on behalf of the Owner, although the specialty contractor will retain responsibility for the design and construction of the ground improvements to the specified performance criteria.

The inclusion of grout to the aggregate pier system provides additional structural rigidity within the pier element that extends through the soft compressible peat material. We anticipate that the aggregate piers would extend from footing subgrade to approximately 45 feet bgs, although the grout-improved zone would likely not extend the full depth.

We anticipate aggregate piers will extend one row outside the building footprint. They should be designed to meet the final bearing capacity and settlement tolerances provided by the structural engineer. The specialty contractor would provide final design and in-house quality control for the piers. We recommend that GeoEngineers provide construction quality assurance for the Owner during the construction process.

7.1.2. Bearing Capacity

The bearing capacity of the aggregate pier-improved subgrade would be determined by the specialty contractor and will be dependent on actual building loads and acceptable settlement magnitudes. Based on conversations with GeoPier, their aggregate piers typically can achieve bearing capacity of approximately 4,000 to 6,000 pounds per square foot (psf) in soils similar to those at the site that have been improved with aggregate piers. This value may be increased by one third when considering earthquake or wind loads.

We recommend footings have a minimum width of 24 inches and the bottom of the exterior footings be founded at least 18 inches below the lowest adjacent grade, or as needed to meet the design loads. The recommended minimum footing depth is greater than the anticipated frost depth.

7.1.3. Foundation Settlement

Settlement for shallow foundations supported on an aggregate pier improved subgrade, as described above, would depend on the specialty contractor's design. Typically, the systems are designed to a performance specification that is normally on the order of approximately 1 inch.

7.1.4. Lateral Resistance

Lateral foundation loads may be resisted by passive resistance on the sides of footings and by friction on the base of the shallow foundations. For shallow foundations supported on subgrade soils prepared as described above, the allowable frictional resistance may be computed using a coefficient of friction of 0.4 applied to vertical dead-load forces.

The allowable passive resistance may be computed using an equivalent fluid density of 280 pounds per cubic foot (pcf) (triangular distribution). These values are appropriate for foundation elements that are poured directly against undisturbed soils or surrounded by structural fill.

The above coefficient of friction and passive equivalent fluid density values incorporate a factor of safety of about 1.5.

7.2. Drainage Considerations

We recommend the ground surface be sloped away from the buildings at least 2 percent. All downspouts should be tightlined away from the building foundation areas and should also be discharged into a stormwater disposal system. Downspouts should not be connected to footing drains.

We recommend that perimeter footing drains be installed around the proposed buildings at the base of the exterior footings. The perimeter footing drains should be provided with cleanouts and should consist of at least 4-inch-diameter perforated pipe placed on a 3-inch bed of, and surrounded by, 6 inches of drainage material enclosed in a non-woven geotextile such as Mirafi 140N (or approved alternate) to prevent fine soil from migrating into the drain material. We recommend against using flexible tubing for footing drainpipes. The perimeter drains should be sloped to drain by gravity to a suitable discharge point, preferably a storm drain. We recommend that the cleanouts be covered and placed in flush-mounted utility boxes. Water collected in roof downspout lines must not be routed to the footing drain lines.

7.3. Slab-on-Grade Floors

The exposed subgrade should be evaluated after site grading is complete. Proof-rolling with heavy, rubber-tired construction equipment should be used for this purpose during dry weather. Probing should be used to evaluate the subgrade during periods of wet weather. The exposed soil should be firm and unyielding, and without significant groundwater. Loose and disturbed areas should be removed and replaced with compacted structural fill.

We recommend that GeoEngineers observe the condition of all subgrade areas to evaluate whether the work is completed in accordance with our recommendations.

Conventional slabs may be supported on-grade, provided the subgrade soils are prepared as recommended above. For slabs designed as a beam on an elastic foundation, a modulus of subgrade reaction of 150 pounds per cubic inch (pci) may be used for subgrade soils prepared as recommended over the capillary break. It should be noted that this minimum thickness of capillary break will not provide adequate support of construction traffic.

We recommend that the slab-on-grade floors be underlain by a 6-inch-thick capillary break consisting of clean (less than 5 percent passing the No. 200 sieve) ¾-inch crushed gravel. We recommend that the capillary break be compacted to at least 95 percent of the MDD in accordance with ASTM Test Method D 1557. We also recommend that an appropriate vapor retarder be installed below the floor slab to further reduce the risk of moisture migration through the on-grade floor slabs if they are inhabited spaces.

Slab-on-grade settlements will be estimated by the ground improvement subcontractor.

8.0 RECOMMENDED ADDITIONAL GEOTECHNICAL SERVICES

During construction, GeoEngineers should observe the installation of the ground improvements, evaluate the suitability of the foundation subgrades, evaluate structural backfill, and provide a summary letter of our construction observation services. The purposes of GeoEngineers construction phase services are to confirm that the subsurface conditions are consistent with those observed in the explorations and other reasons described in Appendix B, Report Limitations and Guidelines for Use.

9.0 LIMITATIONS

We have prepared this report for the exclusive use of Martin Development and their authorized agents for The Hedges Development—Building D Project in Tualatin, Oregon.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

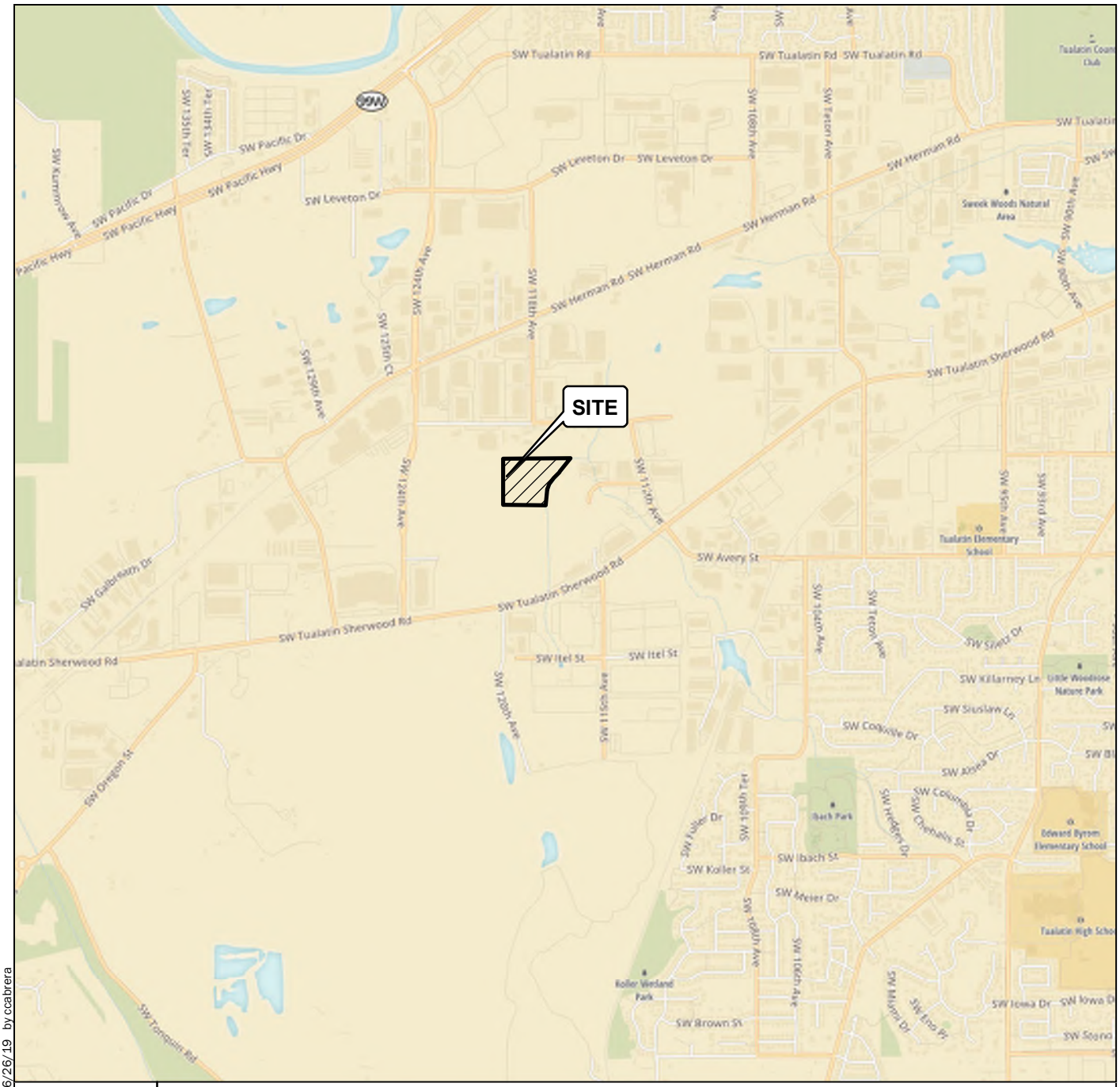
Please refer to Appendix B titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

10.0 REFERENCES

GeoDesign, Inc. 1997. Report of Geotechnical Engineering Services, Lots 11 and 12, Franklin Business Park, Southwest Avery Street and Tualatin-Sherwood Road, Tualatin, Oregon, GDI Project: Drake-3, prepared for Drake Management Company, dated June 6, 1997.

FIGURES

GeoEngineers



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 10N

Vicinity Map

Hedges D
Tualatin, Oregon

GeoEngineers

Figure 1

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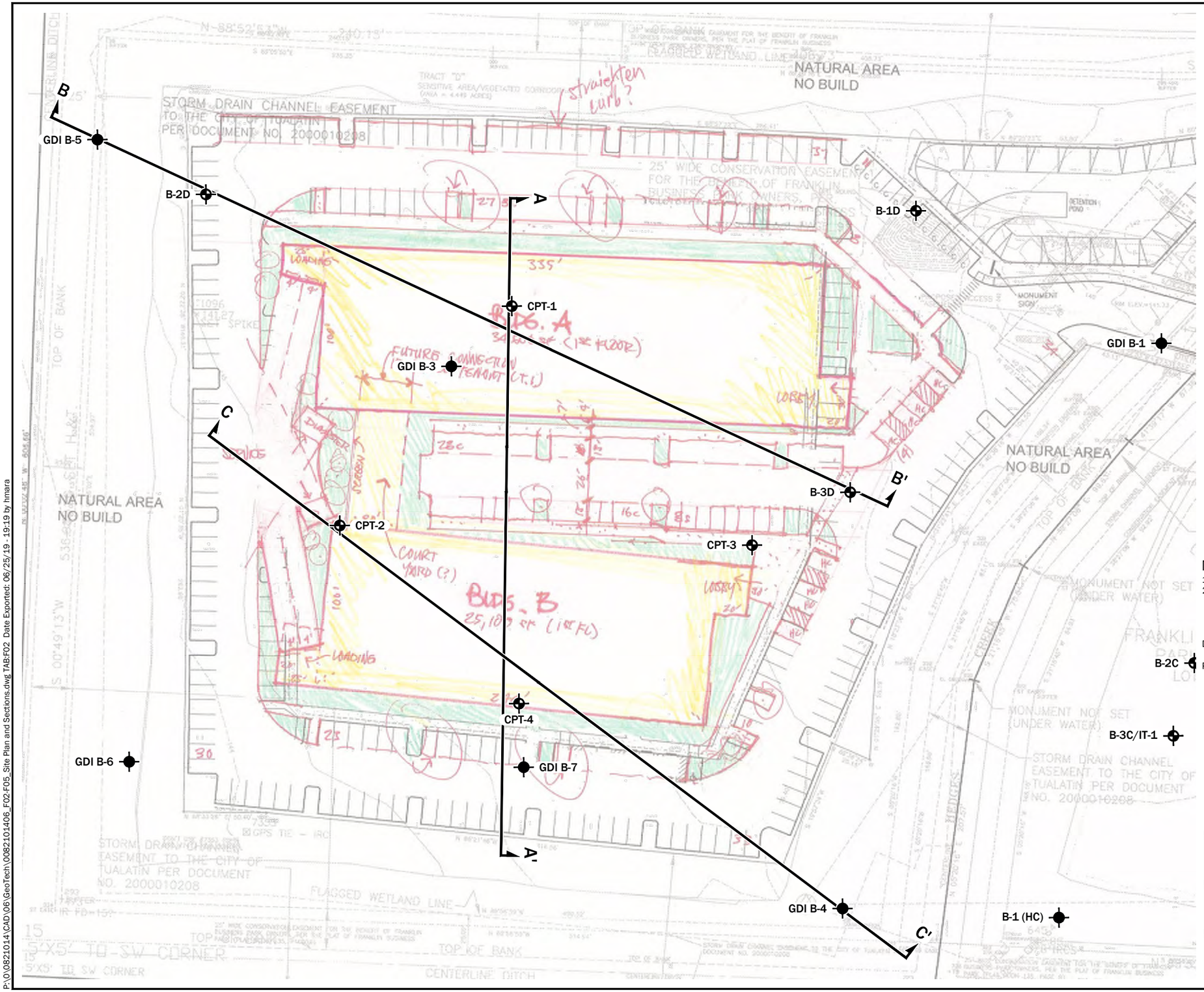


Legend

- B-1D — GeoEngineers Exploration Number and Approximate Location
- GDI B-1 — Exploration Number and Approximate Location (by Others)
- A — A' — Cross Section Location

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Background PDF from Lance Muller Associates dated 4/19/19.

Projection: OR State Plane, North Zone, NAD83, US Foot

N W E S

60 0 60
Feet

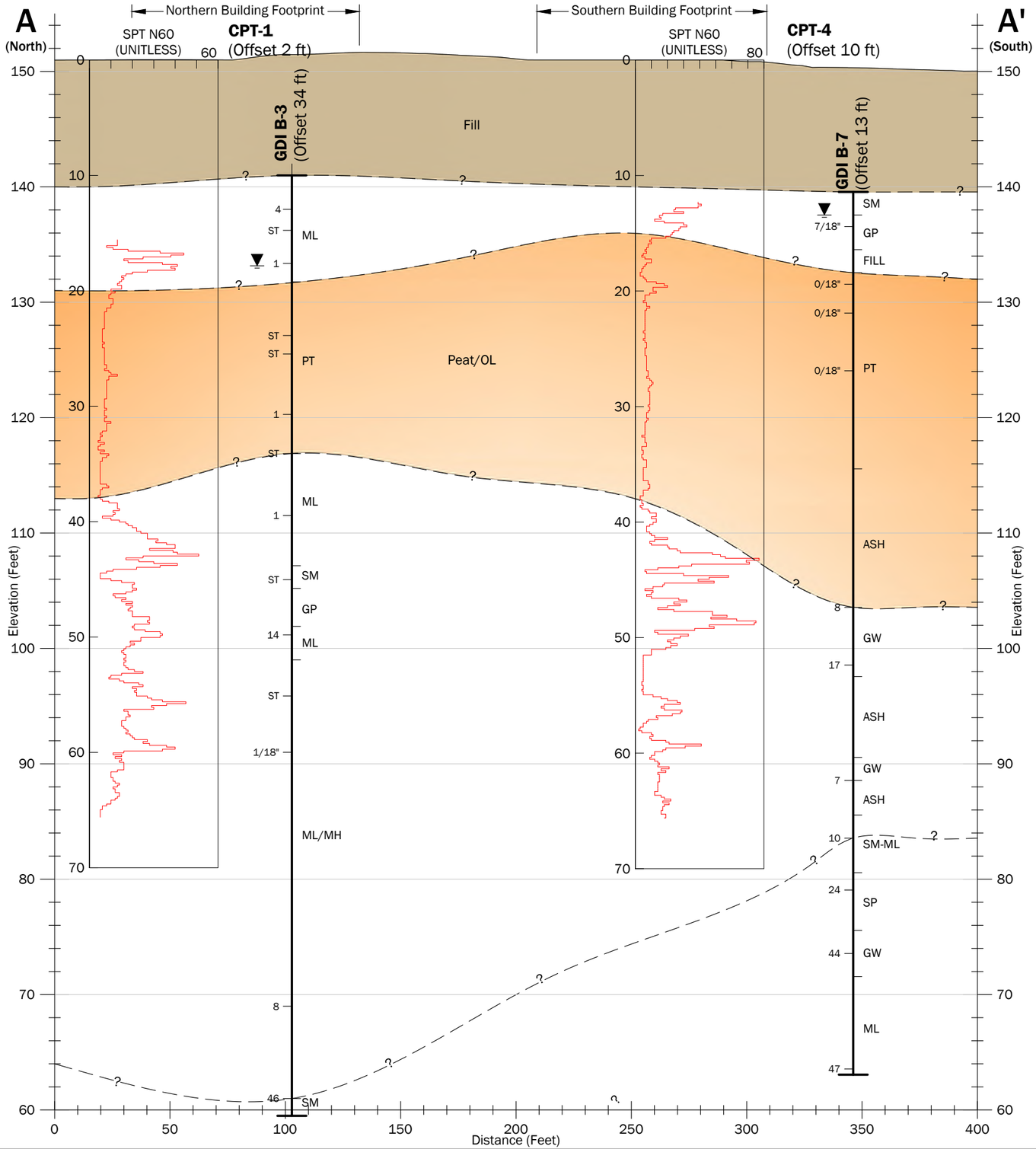
Site Plan

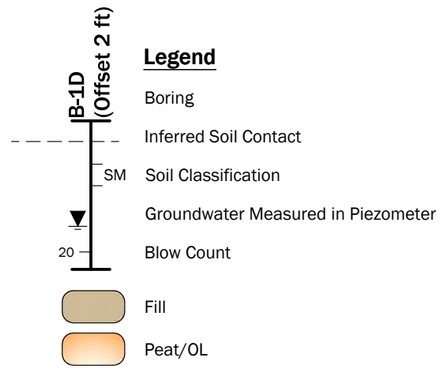
Hedges D
Tualatin, Oregon

GeoEngineers

Figure 2

P:\0\0821014\CAD\06\GeoTech\0082101406_F02-F05_Site Plan and Sections.dwg TAB:F02 Date Exported: 06/25/19 -19:19 by hmara





Notes:

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
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Datum: NAVD 88, unless otherwise noted.

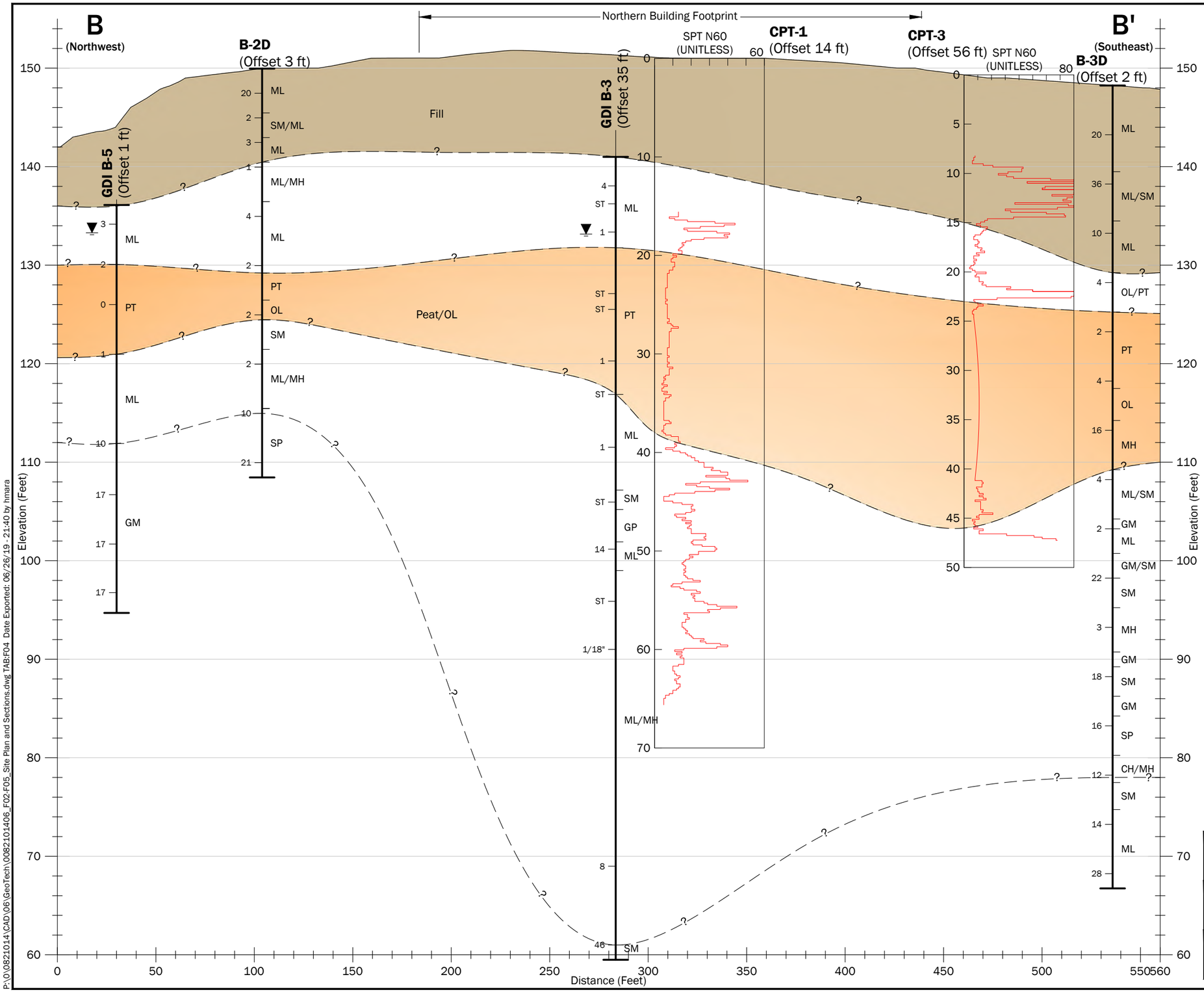
50 0 50
Horizontal Scale in Feet
10 0 10
Vertical Scale in Feet
Vertical Exaggeration: 5X

Cross Section A-A'

Hedges D
Tualatin, Oregon

GeoEngineers

Figure 3



Notes:

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Datum: NAVD 88, unless otherwise noted.

50 0 50
Horizontal Scale in Feet
10 0 10
Vertical Scale in Feet
Vertical Exaggeration: 5X

Cross Section B-B'

Hedges D
Tualatin, Oregon

GeoEngineers

Figure 4

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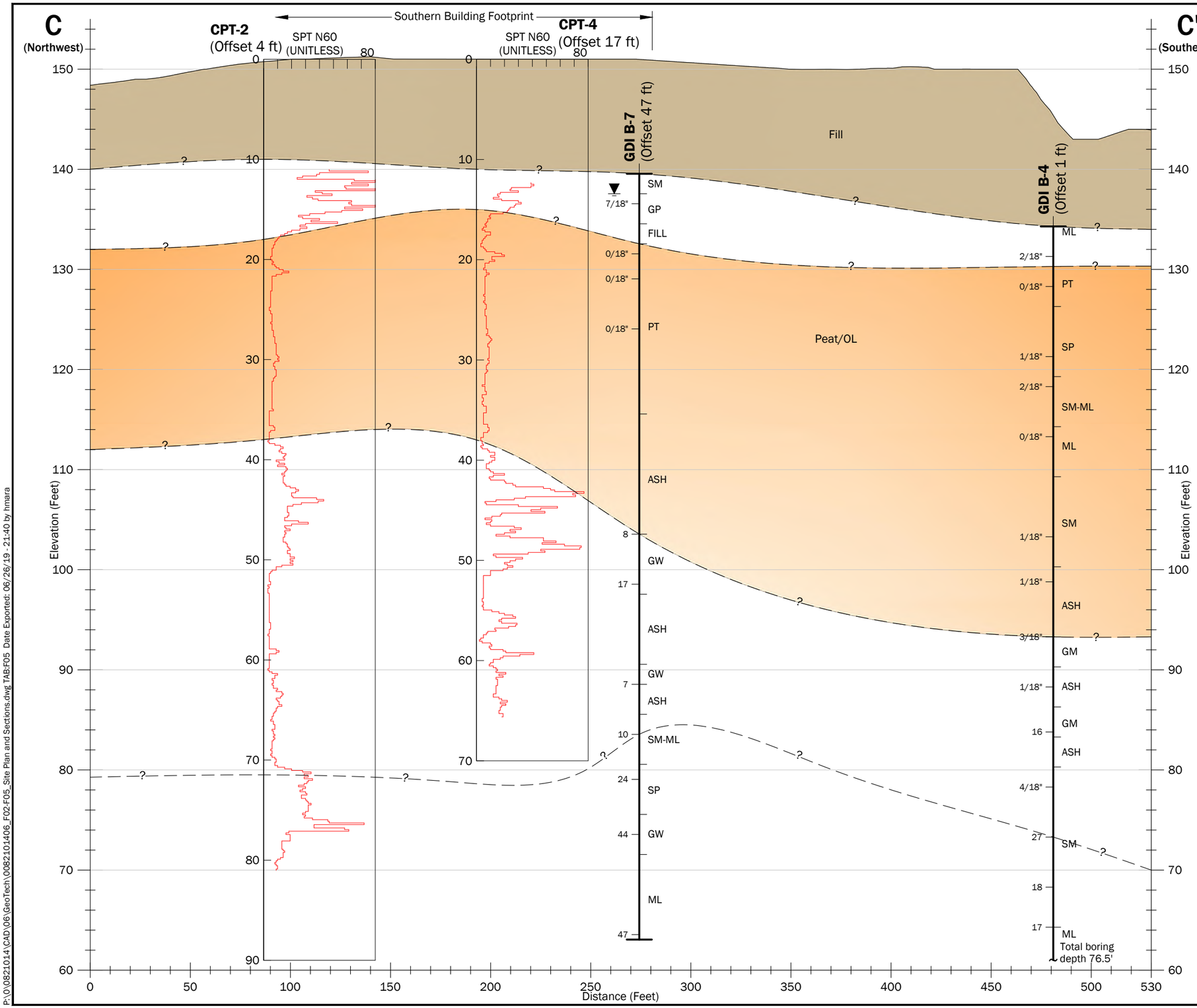

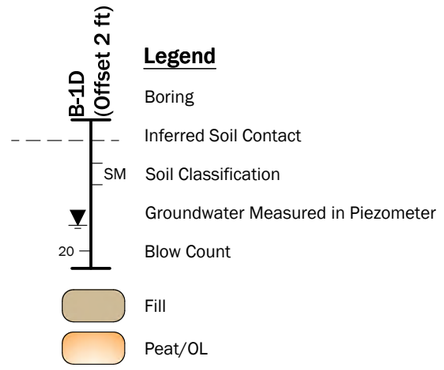

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Datum: NAVD 88, unless otherwise noted.

50 0 50
Horizontal Scale in Feet
10 0 10
Vertical Scale in Feet
Vertical Exaggeration: 5X

Cross Section C-C'

Hedges D
Tualatin, Oregon

GeoEngineers

Figure 5

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APPENDICES

GeoEngineers

APPENDIX A
Field Exploration and Laboratory Testing

APPENDIX A
FIELD EXPLORATIONS AND LABORATORY TESTING

Subsurface conditions were explored by drilling two borings with a trailer-mounted drill rig employing solid-stem auger techniques provided by Dan Fisher Drilling on February 15, 2018, one boring with a tracked rig and mud-rotary techniques provided by Western States Drilling on February 21, 2018, and four cone CPT soundings on June 10, 2019, with a truck rig owned and operated by Oregon Geotechnical Explorations. The locations of the explorations were estimated by taping/pacing from existing site features. The approximate exploration locations are shown in the Site Plan, Figure 2.

Borings (Completed during Due Diligence Phase)

The drilling was continuously monitored by an engineering geologist from our office who maintained a detailed log of subsurface explorations, visually classified the soil encountered and obtained representative soil samples from the borings.

Representative soil samples were obtained from each boring at approximate 2½- to 10-foot-depth intervals using either: (1) a 1-inch, inside-diameter, standard split spoon sampler; or (2) a 2.4-inch, inside-diameter, split-barrel ring sampler (Dames & Moore [D&M]). The samplers were driven into the soil using a 140-pound hammer free-falling 30 inches on each blow; the trailer-mounted (Fisher) rig using rope-and-cathead methods, the track (Western States) using an autohammer.

The number of blows required to drive the sampler each of three, 6-inch increments of penetration were recorded in the field. The sum of the blow counts for the last two, 6-inch increments of penetration is reported on the boring logs as the ASTM International (ASTM) Standard Practices Test Method D 1556 standard penetration test (SPT) N-value. The N-value for D&M samples have been reduced by approximately 50 percent from the field readings to roughly correlate with the SPT N-values.

Recovered soil samples were visually classified in the field in general accordance with ASTM D 2488 and the classification chart listed in Key to Exploration Logs, Figure A-1. Logs of the borings are presented in Figures A-2 through A-4. The logs are based on interpretation of the field and laboratory data and indicate the depth at which subsurface materials or their characteristics change, although these changes might actually be gradual.

Cone Penetration Tests (CPT)

The CPT is a subsurface exploration technique in which a small-diameter steel tip with adjacent sleeve is continuously advanced with hydraulically operated equipment. Measurements of tip and sleeve resistance allow interpretation of the soil profile and the consistency of the strata penetrated. The tip, sleeve resistance and pore water pressure are recorded on the CPT logs. The logs of the CPT probes are presented in Figures A-5 through A-8.

Laboratory Testing (completed during Due Diligence Phase)

Soil samples obtained from the explorations were transported to GeoEngineers' laboratory and evaluated to confirm or modify field classifications, as well as to evaluate engineering properties of the soil samples. Representative samples were selected for laboratory testing to determine the moisture content, moisture-density, percent fines (material passing the U.S. No. 200 sieve), and organic content. The tests were performed in general accordance with ASTM standard practices or other applicable procedures.

The results of the moisture content and percent fines determinations are presented at the respective sample depths in the exploration logs in Appendix A.

Moisture Content

Moisture content tests were completed in general accordance with ASTM D 2216 for representative samples obtained from the explorations. The results of these tests are presented in the exploration logs in Appendix A at the depths at which the samples were obtained.

Moisture-Density

We completed moisture density (dry density) testing on selected D&M samples in general accordance with the ASTM D 2937 test method. The results are presented on the boring logs.

Percent Passing U.S. No. 200 Sieve (%F)

Selected samples were "washed" through the U.S. No. 200 mesh sieve to estimate the relative percentages of coarse- and fine-grained particles in the soil. The percent passing value represents the percentage by weight of the sample finer than the U.S. No. 200 sieve. These tests were conducted to verify field descriptions and to estimate the fines content for analysis purposes. The tests were conducted in accordance with ASTM D 1140, and the results are shown in the exploration logs in Appendix A at the respective sample depths.

Organic Content

Organic content tests were performed to determine the amount of organic material present in selected samples in general accordance with ASTM D 2974, Method C. The results of the organic content tests are presented in the exploration logs in Appendix A.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GeoEngineers

Figure A-1

Drilled Start 2/15/2018 End 2/15/2018	Total Depth (ft) 41.5	Logged By JLL Checked By GL	Driller Dan Fischer Drilling	Drilling Method Solid-stem Auger	
Surface Elevation (ft) 149 Vertical Datum NAVD88		Hammer Data Rope & Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Paul Bunyan Trailer	
Easting (X) 7611554 Northing (Y) 631175		System Datum OR State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed	

Notes: D&M N-value reduced by 50 percent to approximate SPT N-value

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						ML	Brown silt, low to medium plasticity, grass roots to 6 to 8 inches, trace to occasional sand (very stiff, moist) (fill)			Groundwater observed at approximately 6 inches below ground surface during drilling
145		10	22		1						
	5	14	9		2		SM	Brown silty fine to medium sand, fine gravel (loose, moist to wet)			
140		0	8		3						
	10	12	8		4		ML	Light gray-brown fine sandy silt, low plasticity, trace brick fragments and gravel (medium stiff, moist to wet)			
								Drill action indicates cobble or debris 12½ to 14½ feet			
135	15	0	12		5			Dark gray fine to medium sandy silt with gravel, angular basalt gravel to 4 inches (stiff, wet)			
130							ML	Dark gray silt, moderate plasticity, trace to occasional roots and organic fibers, trace fine sand (medium stiff, wet) (alluvium)	31		DD = 86 pcf
	20	10	6		6 MD						
125							OL/PT	Dark gray to black organic silt with fine sand, occasional interbeds of brown peat, much fibrous organic matter (soft, wet)	276		OC = 40 percent
	25	12	3		7 OC						
120											
	30	1	4		8 OC			Gray sandy silt with organic silt (soft to medium stiff, wet)	95		OC = 10 percent
115							ML/MH	Dark gray silt, moderate plasticity, trace fine sand (medium stiff, wet)			
	35										

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on USGS Topo. Vertical approximated based on USGS Topo.

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Log of Boring B-01D

GeoEngineers

Project: The Hedges - Building C and D
Project Location: Tualatin, Oregon
Project Number: 0821-014-02

Figure A-2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample	FIELD DATA: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	35	1	5		9						
110							SM	Dark gray silty medium to coarse sand, occasional gravel (dense, wet)			
	40	12	38		10		GM	Dark gray silty gravel with coarse sand, angular basalt gravel to 1-inch (dense, wet)			

Log of Boring B-01D (continued)

GeoEngineers

Project: The Hedges - Building C and D
Project Location: Tualatin, Oregon
Project Number: 0821-014-02

Figure A-2
Sheet 2 of 2

Drilled Start 2/15/2018 End 2/15/2018	Total Depth (ft) 41.5	Logged By JLL Checked By GL	Driller Dan Fischer Drilling	Drilling Method Solid-stem Auger	
Surface Elevation (ft) 150 Vertical Datum NAVD88		Hammer Data Rope & Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Paul Bunyan Trailer	
Easting (X) 7611117 Northing (Y) 631187		System Datum OR State Plane North NAD83 (feet)		See "Remarks" section for groundwater observed	

Notes: D&M N-value reduced by 50 percent to approximate SPT N-value

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0	12	20		1		ML	Dark brown silt, trace sand and debris (roots to 6 to 8 inches) (stiff, moist) (fill)			
								Mixed gray and brown silt with fine to medium sand, occasional gravel, low plasticity (very stiff, moist)			
145	5	14	2		2 %F		SM	Brown silty fine sand with occasional interbeds of sandy silt, occasional gravel to ¾-inch, low plasticity to non-plastic (loose and soft, wet)	26	37	Groundwater observed at approximately 4 feet below ground surface during drilling
		14	3		3 MD		ML	Dark gray to occasional brown mottling silt, trace fine sand, low to moderate plasticity (soft, wet)	30		DD = 95 pcf
140	10	12	1		4		ML/MH	Gray-brown silt to elastic silt, trace fine sand, occasional gravel, moderate plasticity (very soft, wet) (alluvium)			
135	15	16	4		5 MD		ML	Dark gray silt, low to moderate plasticity, occasional organic fragments including fibers, roots and stems, occasional 3- to 4-inch-thick organic silt layers with much organic matter (soft, wet)	31		DD = 88 pcf
130	20	0	2		6 MD				212		DD = 33 pcf
							OL	Brown organic silt, trace peat, fibrous organic matter, trace fine sand (soft, wet)			
125	25	4	2		7			Becomes yellow-brown with red-brown mottling, moderate plasticity, stems and grass blades			
							SM	Dark gray silty fine sand, massive (very loose, wet)			
120	30	8	2		8		ML/MH	Mixed light gray and brown elastic silt with gray-brown silt, trace organic matter, low to medium plasticity (soft, wet)			
115	35										

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on USGS Topo. Vertical approximated based on USGS Topo.

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Log of Boring B-02D

GeoEngineers

Project: The Hedges - Building C and D
Project Location: Tualatin, Oregon
Project Number: 0821-014-02

Figure A-3
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
110	35		12	10		9		SP	Dark gray poorly-graded coarse sand, massive (loose, wet)			
	40		6	21		10			Becomes medium dense			

Log of Boring B-02D (continued)

GeoEngineers

Project: The Hedges - Building C and D
Project Location: Tualatin, Oregon
Project Number: 0821-014-02

Figure A-3
Sheet 2 of 2

Drilled Start 2/21/2018 End 2/21/2018	Total Depth (ft) 81.5	Logged By JLL Checked By GL	Driller Western States Soil Conservation, Inc.	Drilling Method Mud Rotary	
Surface Elevation (ft) 149 Vertical Datum NAVD88		Hammer Data Roper & Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment CME-850 Truck	
Easting (X) 7611497 Northing (Y) 630994		System Datum OR State Plane North NAD83 (feet)		Groundwater not observed at time of exploration	

Notes: D&M N-value reduced by 50 percent to approximate SPT N-value

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						ML	Dark brown silt, roots and organic matter to 6 to 8 inches, low to moderate plasticity (soft, wet) (fill)			
								Drill action and cuttings indicate occasional cobbles, cobble-sized brick, concrete debris 2 to 4 feet			
145	5	12	20		1			Becomes dark gray, trace fine sand, occasional fine sandy silt, low plasticity to non-plastic (very stiff, moist)			
								Large debris/cobble fragments 7½ to 9 feet			
140							ML/SM	Dark gray, occasional brown silt with fine to medium sand and gravel to silty medium to coarse sand with gravel, round to angular basalt gravels (dense and hard, moist)			
	10	14	36		2 %F				18	36	
135							ML	Dark gray, green, occasional medium silt, low plasticity, trace fine sand, occasional sand, trace angular gravel, brick fragments (stiff, moist)			
	15	14	10		3						
130							PT	Black, occasional brown peat, low plasticity, fibrous organic matter (soft, moist) (alluvium)			
	20	18	4		4 OC				404		OC = 56 percent
								Occasional wood fragments, wet			
125	25	18	2		5 MD				304		DD = 17 pcf
120											
	30	18	4		6 OC				329		OC = 42 percent
							OL	Brown organic silt, much organic fibers, low plasticity, fine horizontal layers (soft, moist)			
115							MH	Gray elastic silt, trace organic matter, moderate			
	35										

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on USGS Topo. Vertical approximated based on USGS Topo.

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Log of Boring B-03D

GeoEngineers

Project: The Hedges - Building C and D
Project Location: Tualatin, Oregon
Project Number: 0821-014-02

Figure A-4

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample	FIELD DATA: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	35	16	P		7			plasticity (very soft, moist)			
110							ML/SM	Interbedded gray silt, low plasticity, trace fine sand and silty fine sand, occasional 1-inch layers of coarse sand (soft and loose, wet)	57		DD = 67 pcf
	40	18	4		8 MD						
105							GM	Drill action indicates gravel 44 to 45 feet			
	45	12	2		9		ML	Gray silt, low to moderate plasticity, trace fine sand (soft, wet)			Lost circulation at 45 feet
100							GM/SM				Drill action indicates gravel, occasional cobble 47½ to 50 feet, coarse sand and gravel in cuttings Lost circulation at 48 feet
	50	0	22		10		SM	Dark gray silty coarse sand with gravel to silty gravel with coarse sand (medium dense, wet)			
95							MH	Gray elastic silt, massive (soft, wet)			
	55	16	3		11						
90							GM				Drill action indicates gravel at 57½ Lost circulation at 58 feet
	60	6	18		12		SM	Dark gray silty coarse sand with gravel, angular basalt gravel to 1½ inches (medium dense, wet)			
85							GM				Driller reports very loose to loose gravel
	65	10	16		13		SP	Dark gray poorly-graded coarse sand with gravel (medium dense, wet)			
80					AL		ML	Light gray silt, moderate to high plasticity (very soft, wet)	61		AL (LL = 40, PL = 29, PI = 17)
	70	16	12		14		SM	Gray-green silty fine sand, massive to horizontal layers (medium dense, wet)			
75							ML	Gray-green silt, low plasticity, trace fine sand, massive (stiff, moist)			
	75	18	14		15						

Log of Boring B-03D (continued)

GeoEngineers

Project: The Hedges - Building C and D
Project Location: Tualatin, Oregon
Project Number: 0821-014-02

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample / Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
70										
	80	0	28	16			Becomes gray-green with brown mottling, very stiff			

Log of Boring B-03D (continued)

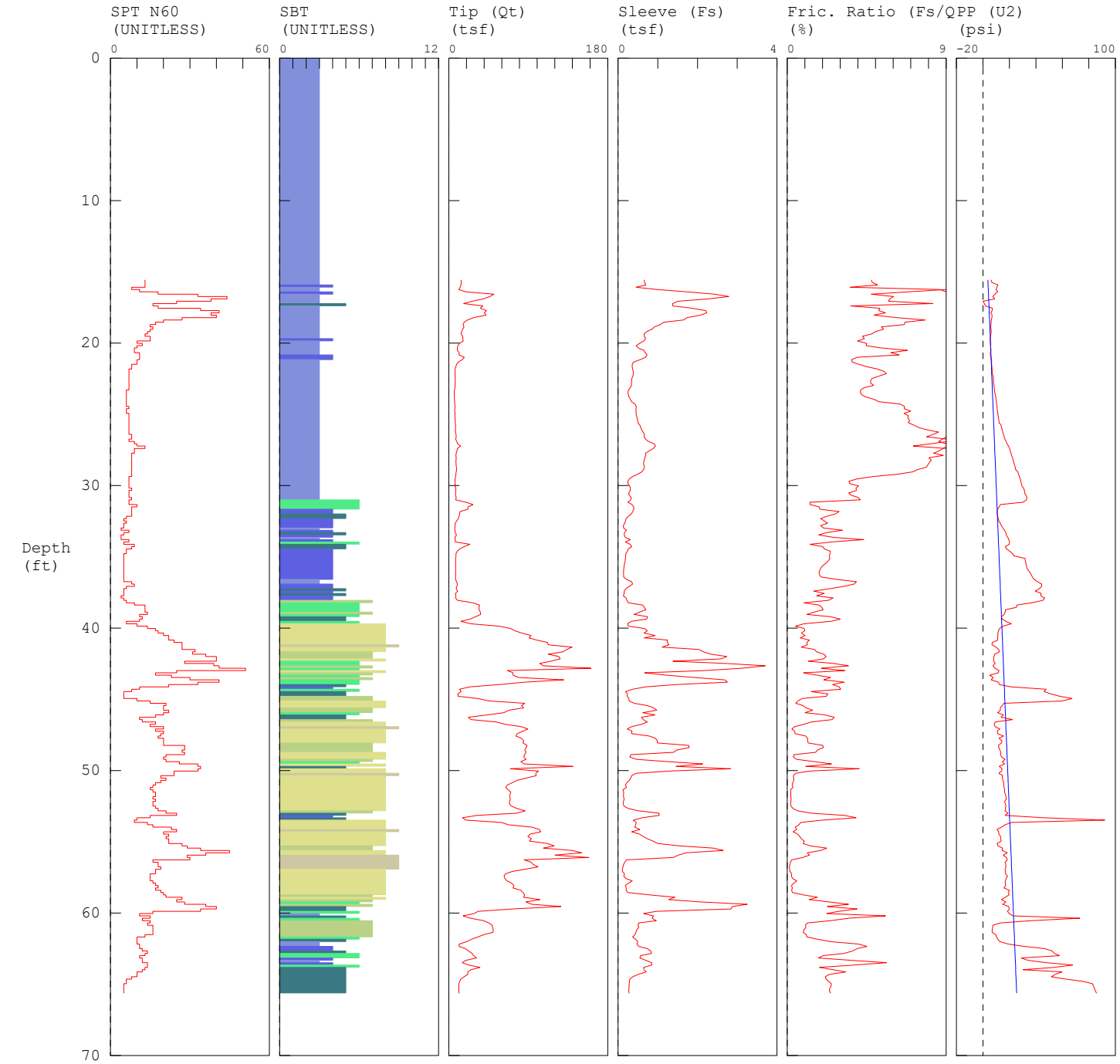
GeoEngineers

Project: The Hedges - Building C and D
Project Location: Tualatin, Oregon
Project Number: 0821-014-02

Figure A-4
Sheet 3 of 3

GeoEngineers / CPT-1 / Hedges SW 115th Street Tualatin

OPERATOR: OGE TAJ
CONE ID: DPG1386
HOLE NUMBER: CPT-1
TEST DATE: 6/10/2019 1:10:12 PM
TOTAL DEPTH: 65.617 ft



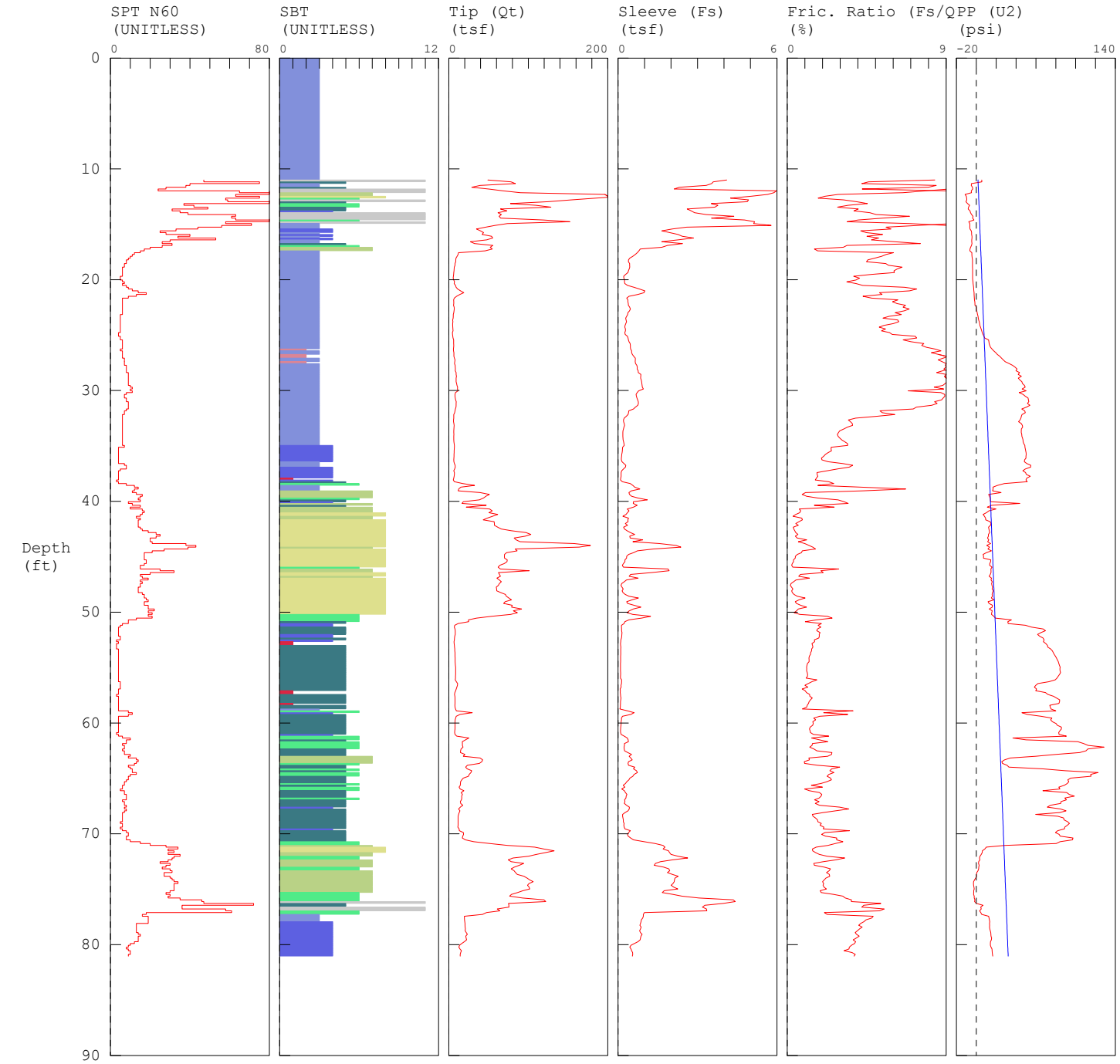
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty cl
6 sandy silt to clayey si
7 silty sand to sandy si
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

Figure A-5

GeoEngineers / CPT-2 / Hedges SW 115th Street Tualatin

OPERATOR: OGE TAJ
CONE ID: DPG1386
HOLE NUMBER: CPT-2
TEST DATE: 6/10/2019 11:38:23 AM
TOTAL DEPTH: 81.037 ft



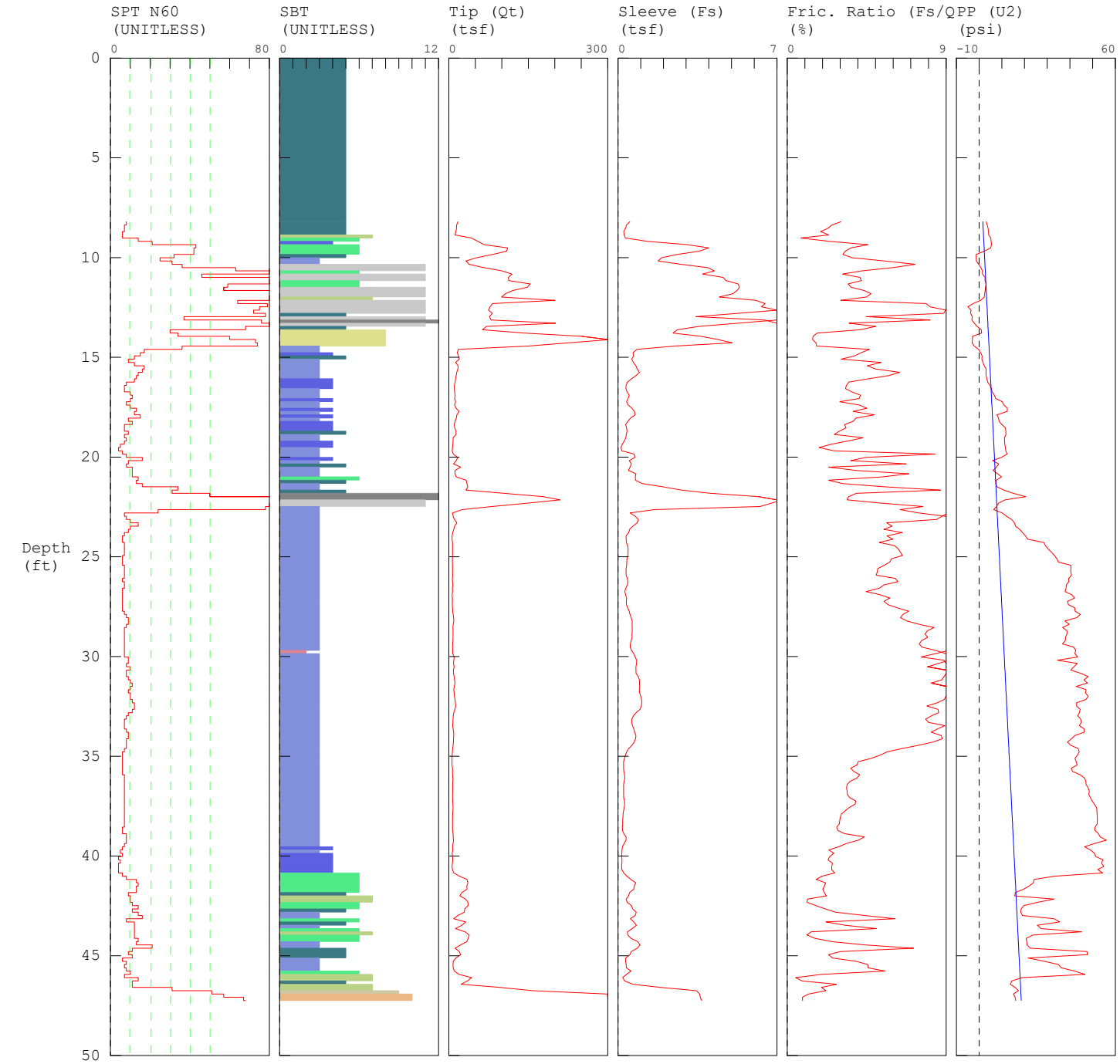
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty cl
6 sandy silt to clayey si
7 silty sand to sandy si
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

Figure A-6

GeoEngineers / CPT-3 / Hedges SW 115th Street Tualatin

OPERATOR: OGE TAJ
CONE ID: DPG1386
HOLE NUMBER: CPT-3
TEST DATE: 6/10/2019 9:48:19 AM
TOTAL DEPTH: 47.244 ft



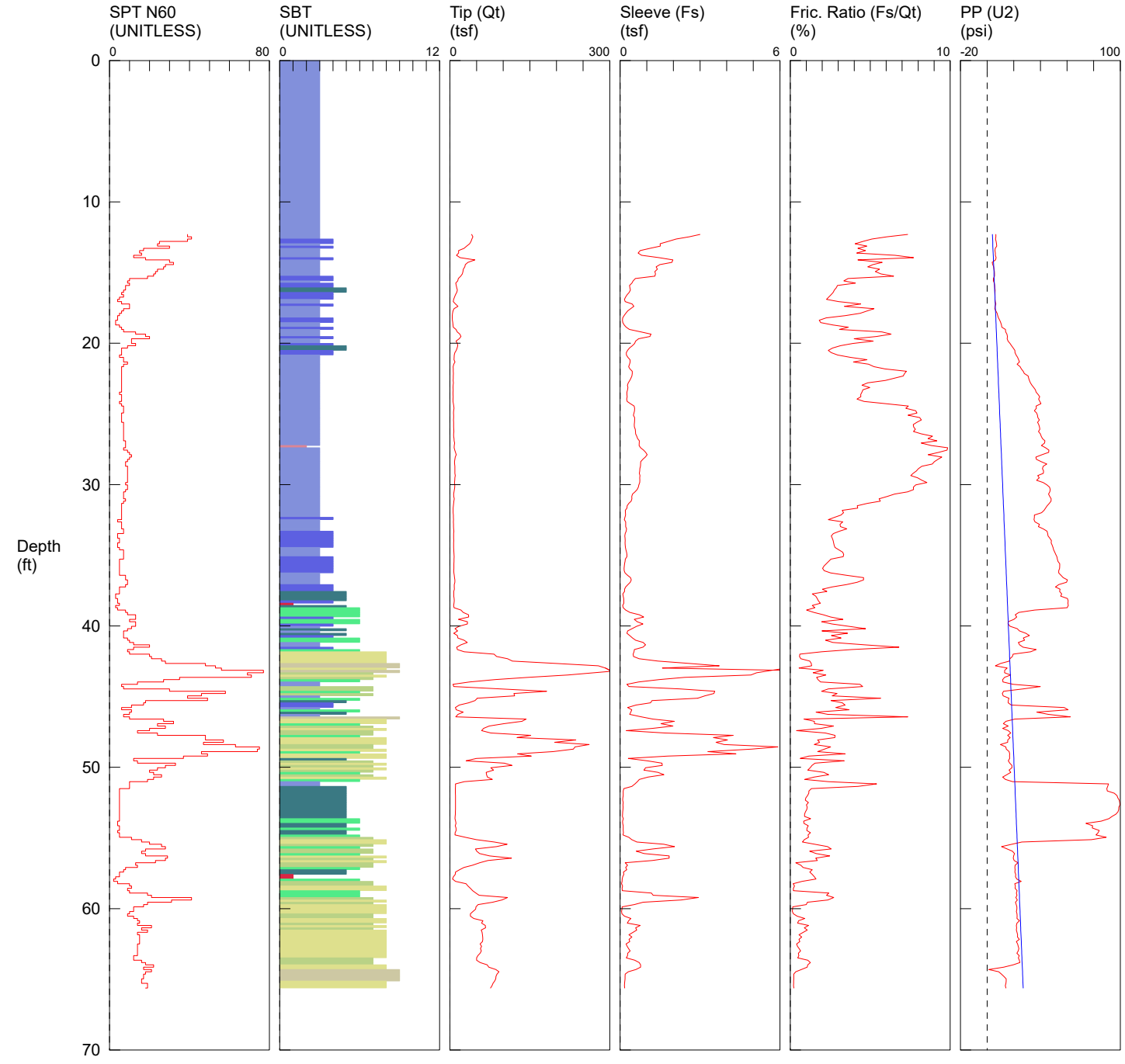
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty cl
6 sandy silt to clayey si
7 silty sand to sandy si
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

Figure A-7

GeoEngineers / CPT-4 / Hedges SW 115th Street Tualatin

OPERATOR: OGE TAJ
CONE ID: DPG1386
HOLE NUMBER: CPT-4
TEST DATE: 6/10/2019 2:19:25 PM
TOTAL DEPTH: 65.617 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

Figure A-8

APPENDIX B
Report Limitations and Guidelines for Use

APPENDIX B
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of the Martin Development and for the Project specifically identified in the report. The information contained herein is not applicable to other sites or projects.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report Is Based on a Unique Set of Project-specific Factors

This report has been prepared for The Hedges Development—Building D Project in Tualatin, Oregon. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

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[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most Geotechnical and Geologic Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable but recognize that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

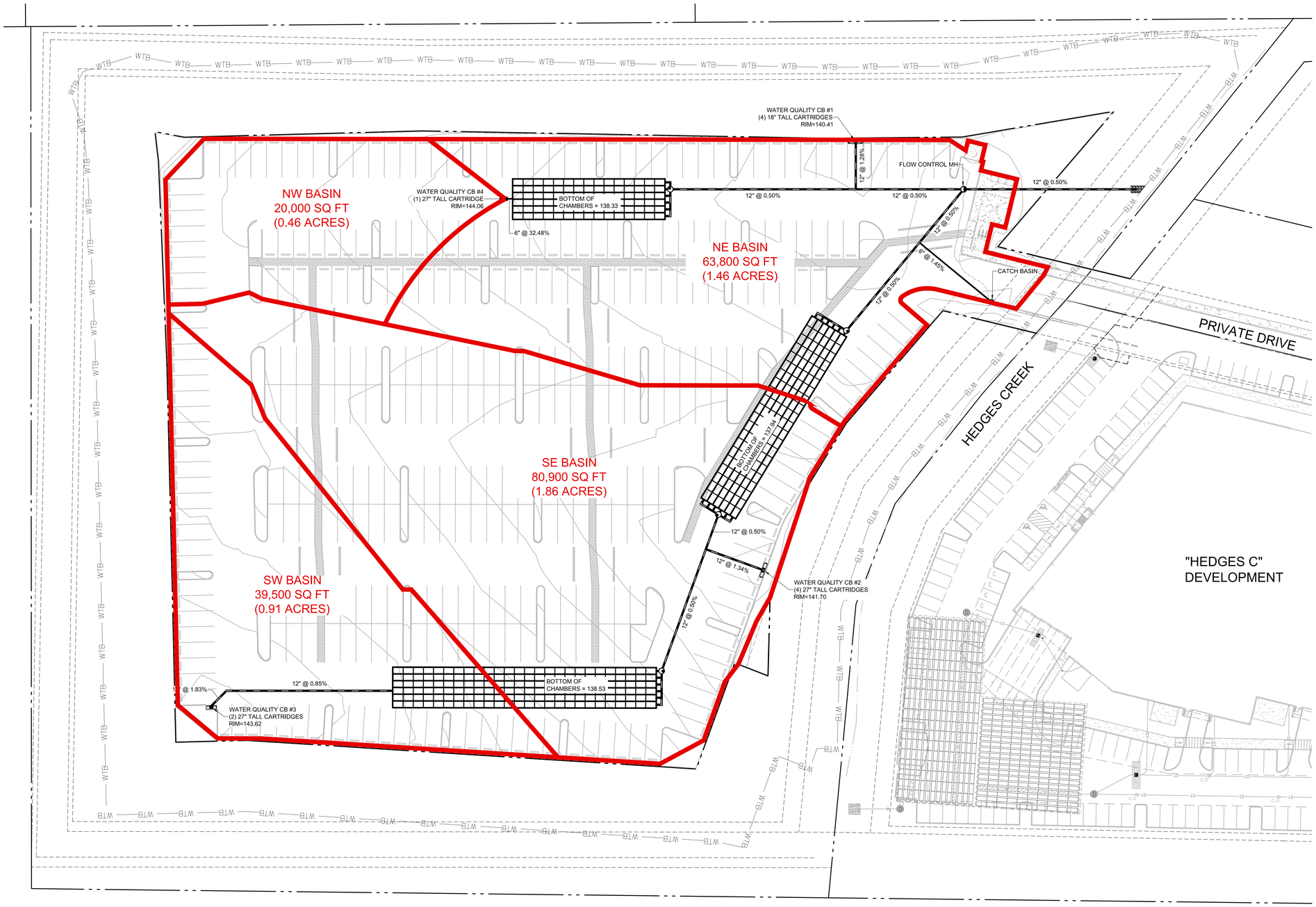
Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

APPENDIX E

BASIN MAP



1 BASIN MAP

30 0 15 30 60 120

(IN FEET)
1 inch = **30** ft.

Architecture ▪ Interiors
Planning ▪ Engineering

Portland, OR
503.224.9560
Vancouver, WA
360.695.7879
Seattle, WA
206.749.9993
www.mcknze.com

MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

Client

MARTIN DEVELOPMENT NW
PO BOX 15523
SEATTLE, WA 98115

Project

HEDGES D PARKING LOT
11507 SW AMU STREET
TUALATIN, OREGON

REGISTERED PROFESSIONAL ENGINEER
91697
OREGON
JAN. 10, 2014
GREGORY I. MINO
EXPIRES: 12/31/20

REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
BASIN MAP

DRAWN BY: BTC

CHECKED BY: GIM

SHEET
-

JOB NO. **2200339.00**

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: WEDDLE SURVEYING DATE: 10/21/2019

PERMIT SUBMITTAL 08/10/20

2200339\00\DRAWINGS\CIVIL\EXHIBITS\339-BASIN MAP.DWG GIM 08/27/20 10:36 1:30

VLMK
ENGINEERING + DESIGN

FIELD INVESTIGATION

To:	Martin Real Estate	*Report Date:*	September 9, 2020
Project:	Hedges Lot D	*Site Visit:*	September 3, 2020
Location:	SW 115th Street Tualatin, Oregon	*VLMK Project Number:*	20180292
Weather:	Sunny	*Temperature:*	Approx. 90 deg. F
File Path:	G:\ACAD2018\20180292\Correspondence\Hedges D Bridge _Field Evaluation Report.docx		

PRESENT AT SITE

Trent Nagele, P.E., S.E., VLMK Engineering + Design

PURPOSE

As requested, a site visit was made to review the general condition of the bridge that crosses Hedges Creek at the end of SW 115th Street and provides access to Lot D in the Franklin Industrial Park.

Specifically, this report addresses item #13 in Tualatin Valley Fire & Rescue's review notes dated January 17, 2020 for proposed development of Tax Lot I.D.: 2S127BA0800.

> *"Please provide an engineers report regarding the private bridge that indicates the weight limit and the soundness of the bridge. Please indicate who is responsible for the maintenance of the bridge. Vehicle load limits signs shall be posted at both entrances to the bridge."*

OBSERVATIONS

Original design drawings for the bridge were obtained from Conlee Engineers, Inc. of Portland, Oregon. These drawings have two structural sheets – S1 and S2 – and are dated 10-15-01, with revision dates on sheet S2 of 4-15-02 and 4-27-04.

Structural Notes on sheet S1 indicate the bridge is designed to, "Highway Loads – AASHTO HS20". A copy of these drawings is attached, and the notes indicate additional criteria for sidewalks, railings and piping support.

The bridge is a single span concrete structure supported by abutments and piles on either side of the creek. The main deck utilizes precast concrete planks, 4-feet wide and 18-inches thick with a span of 39-feet measured from centerline of the abutments. Railings on either side of the bridge are

galvanized steel tubes. Utility piping is supported underneath the bridge and along the south side. A 6-foot sidewalk is present along the north side.

Based on visual observations of the structure at the site, the bridge is in good and sound condition. There were no observed signs of deterioration or other conditions that would reduce the capacity of the structure to support the design load.

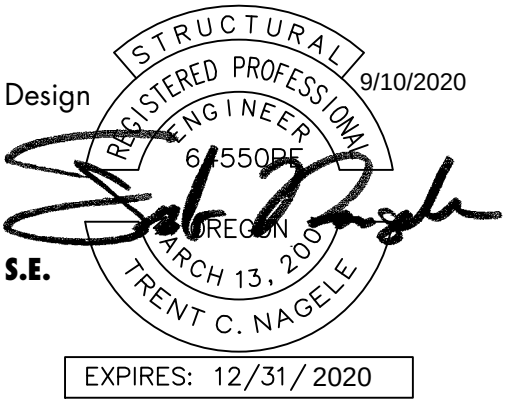
RECOMMENDATIONS

1. Future maintenance and/or evaluations of the structure are the responsibility of the owner, Martin Real Estate, and will be coordinated by them.

2. The bridge was designed for the AASHTO HS20 design criteria which is consistent with typical highway bridge standards for over-the-road vehicles. Commonly, unless a bridge has a reduced load capacity that is less than the HS20 standard, it should not be necessary to post a load rating. Please confirm if posting is required for this bridge? Note that the HS20 criteria does not correspond to a single weight limit, but rather considers a number of factors, including quantity, spacing and weight distribution to the vehicle axles, which makes posting any specific weights difficult and not wholly accurate.

Should you have questions or need additional information, please contact us.

Submitted by,
VLMK Engineering + Design



TRENT NAGELE, P.E., S.E.
Principal

Attachments: Figures (1)
Photographs (6)
Original Drawings (2 pp.)

Distribution:

Mac Martin, Martin Real Estate	macmartinis@gmail.com
Bob Wells, LMA Architects	bwells@lmueller.com

Figure 1 – Aerial of Bridge Location

Photo 1

Bridge, looking generally west.

Photo 2
Bridge, looking west.

Photo 3
South side of bridge.

Photo 4
North side of bridge.

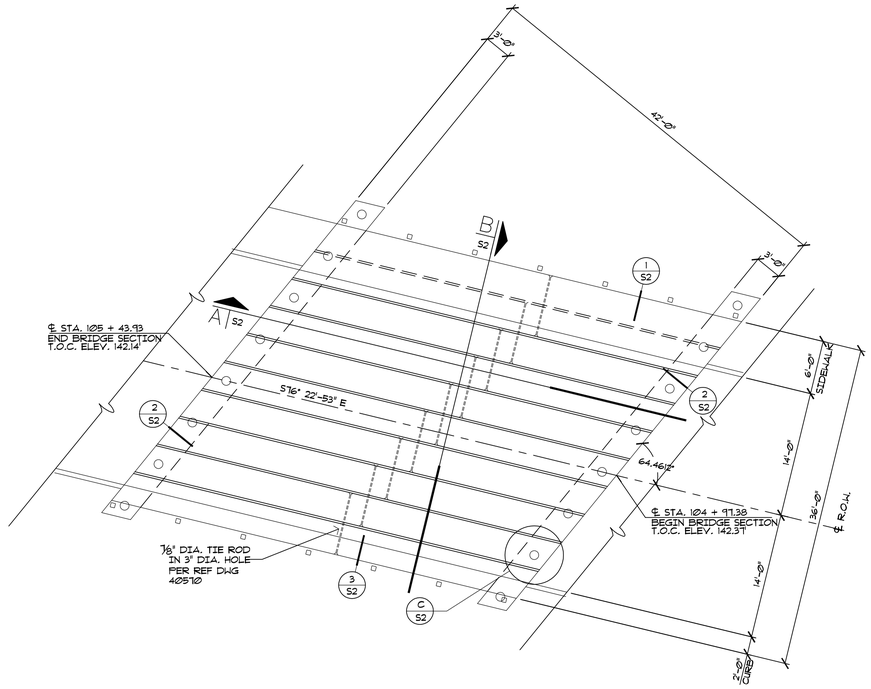
Photo 5
Bridge railing.

Photo 6

Underside of bridge (looking toward east abutment).

Photo 7

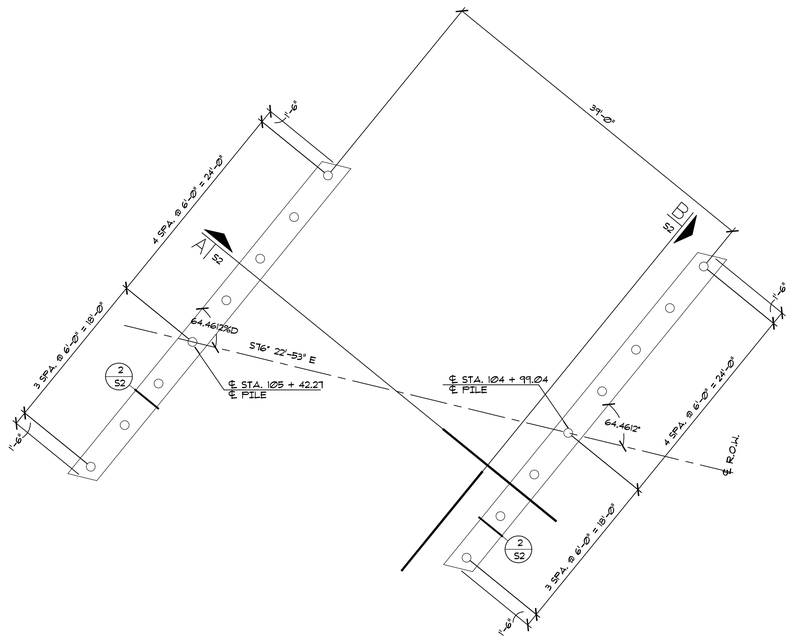
Underside of bridge (looking toward west abutment).



NORTH

BRIDGE DECK PLAN

SCALE: 1/8" = 1'-0"



NORTH

FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

STRUCTURAL NOTES

CODE: STANDARD SPECIFICATIONS FOR BRIDGES (AASHTO LATEST EDITION)

DESIGN: DEAD LOADS - AS REQUIRED
HIGHWAY LOADS - AASHTO HS20
SIDEWALKS - 85 PSF OR HS20
RAILING - PER ASHTO ART. 1.1.8
PIPING - 60#/' PER B/S2
PILING - 60 TON PER GEOTECHNICAL REPORT (9-13-00) PREPARED BY GEODESIGN.

CONCRETE: PLANT MIXED PER ASTM C 94. REFERENCE SPECIFICATIONS ACI 301.
1. STRENGTH - F'C = 3,000 PSI AT 28 DAYS. MINIMUM CEMENT CONTENT
5½ SACKS/CU. YD., 5% + 1% ENTRAINED AIR.
2. REINFORCING - ASTM A615, GRADE 60. LAP BARS AS SHOWN ON PLANS WITH MINIMUM LAP OF 36 BAR DIAMETERS.
3. COVER - AS FOLLOWS UNLESS SHOWN OTHERWISE ON PLANS.
A. CONCRETE PLACES AGAINST EARTH - 3"
B. FORMED CONCRETE AGAINST EARTH - 2"
C. SLABS-ON-GRADE - 2" TOP
4. FINISH -
A. PILE CAPS - SMOOTH FORM FINISH. FILL TIE HOLES WITH WITH NON-SHRINK GROUT AND GRIND SMOOTH. TOP OF CAP TO HAVE HARD TROWELED FINISH.
5. SUBMITTALS
A. MIX DESIGN - 4 COPIES.
B. REINFORCING SHOP DRAWINGS - 4 COPIES
6. INSPECTION - ENGINEER SHALL INSPECT REINFORCING IN PLACE PRIOR TO PLACING CONCRETE.
7. SAMPLING AND TESTING - TESTING LABORATORY TO SAMPLE AND TEST CONCRETE PER AASHTO, ART. 22.4.1.

PRECAST, PRESTRESSED VOIDED SLAB SYSTEM
1. REFERENCE STANDARDS - AASHTO SECTION 1.6 AND OSHD STANDARD PLANS (DWG. 405563 & 405712) FOR 18" STD. P/C, P/S SLAB.
2. DESIGN - FABRICATOR SHALL DESIGN AND DETAIL PRECAST PRESTRESSED MEMBERS. CALCULATIONS AND SHOP DRAWINGS SHALL BE STAMPED BY AN ENGINEER REGISTERED IN OREGON.
3. BEARING PADS - ELASTOMERIC CONFORMING TO DIVISION 2, SECTION 25 OF AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES.
4. SUBMITTALS
A. MIX DESIGN - 4 COPIES.
B. CALCULATIONS - 2 COPIES.
C. SHOP DRAWINGS - 4 COPIES.
D. TEST REPORTS - 4 COPIES.

STRUCTURAL AND MISELLANEOUS STEEL
1. MATERIALS -
A. SHAPES AND PLATES - ASTM A36
B. STRUCTURAL TUBING - ASTM A500, GRADE B
C. PIPE - ASTM A53
2. WELDING - BY CERTIFIED WELDERS PER AWS RECOMMENDATIONS. E 70 XX ELECTRODES.
3. BOLTS - ASTM A307
4. FABRICATION AND ERECTION - PER AASHTO SECTION 2.10
5. FINISH - HOT DIP GALVANIZE AFTER FABRICATION PER AASHTO MIII (ASTM A123)
6. SUBMITTALS
A. SHOP DRAWINGS - 4 COPIES.

REVISIONS

CONLEE ENGINEERS, INC.
1308 S.W. Bertha Blvd.
Portland, Oregon 97219 (503) 244-0579

PRIVATE HAUL ROAD / HEDGES CREEK BRIDGE
FRANKLIN INDUSTRIAL PARK
TUALATIN, OREGON

BRIDGE PLANS & STRUCTURAL NOTES

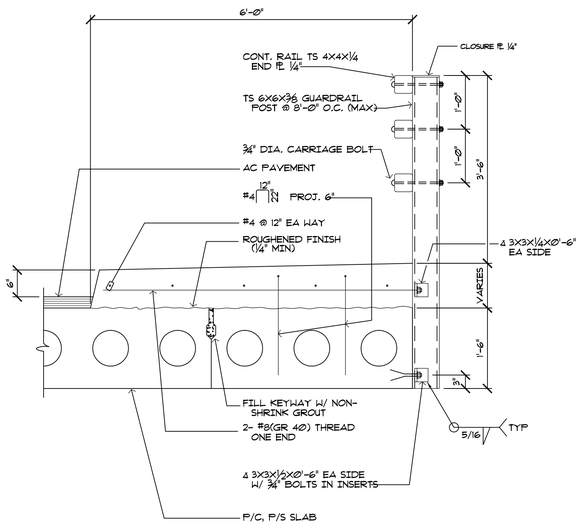
DATE: 10-15-01

PROJECT NO: DMC01

SHEET NO

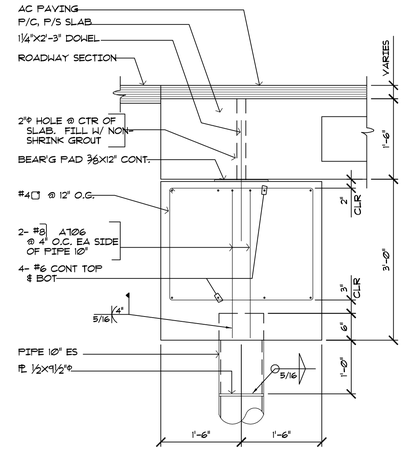
S1

OF



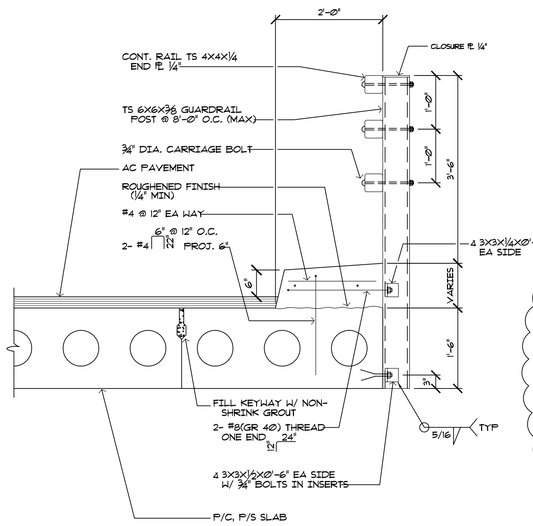
1 S2 SECTION AT SIDEWALK AND GUARDRAIL

SCALE: 3/4" = 1'-0"



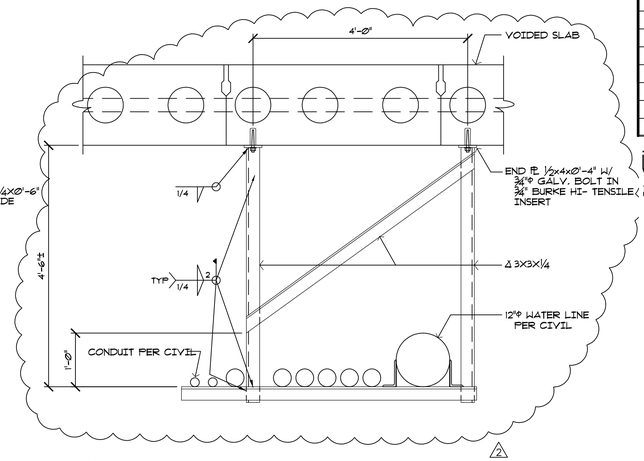
2 S2 BRIDGE DECK / ABUTMENT

SCALE: 3/4" = 1'-0"



3 S2 SECTION @ CURB AND GUARDRAIL

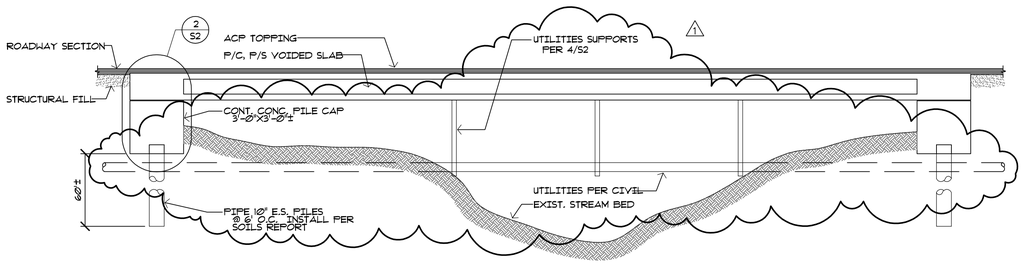
SCALE: 3/4" = 1'-0"



NOTE:
1. MAX SPACING 12'-0" O.C.
2. HOT DIP GALVANIZE AFTER FABRICATION

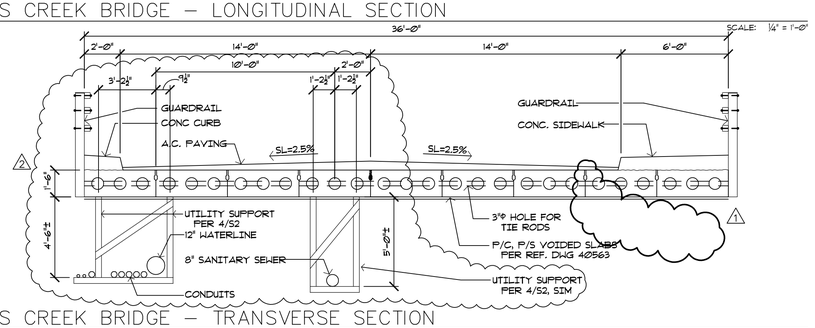
4 S2 UTILITY SUPPORT

SCALE: 3/4" = 1'-0"



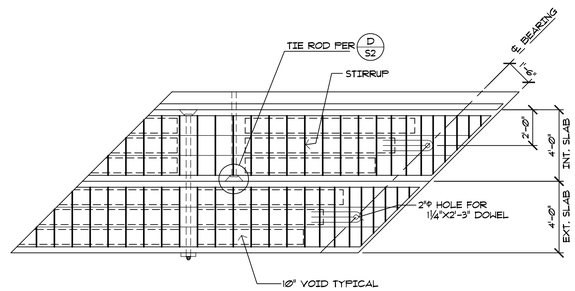
A S2 HEDGES CREEK BRIDGE – LONGITUDINAL SECTION

SCALE: 1/4" = 1'-0"



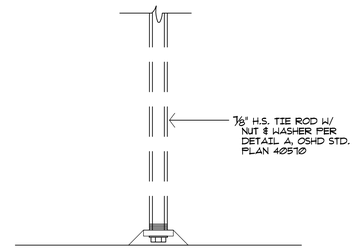
B S2 HEDGES CREEK BRIDGE – TRANSVERSE SECTION

SCALE: 1/4" = 1'-0"



C S2 PRECAST PRESTRESSED SLAB PLAN

SCALE: N.T.S.



D S2 TIE ROD DETAIL

SCALE: 1 1/2" = 1'-0"

REVISIONS	
1	4-15-02
2	4-27-04

CONLEE ENGINEERS, INC.
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Portland, Oregon 97219 (503) 244-0579

PRIVATE HAUL ROAD / HEDGES CREEK BRIDGE
FRANKLIN INDUSTRIAL PARK
TUALATIN, OREGON

BRIDGE SECTIONS & DETAILS

DATE: 10-15-01

PROJECT NO: DMC01

SHEET NO

S2

OF

Hedges D – Fleet Parking Lot

11507 SW 115th Avenue (private street), Tualatin, OR 97062

End