

TECHNICAL INFORMATION REPORT

COOMBES DEVELOPMENT

6221 83RD PL SE; MERCER ISLAND, WA 98040



The Concept Group

4701 SW Admiral Way, Ste 353 • Seattle, WA 98116 • (206) 581-0853

Technical Information Report

COOMBES DEVELOPMENT

6221 83RD PL SE
MERCER ISLAND, WA 98040

I certify that this technical information report and all attachments were prepared either by me or my technical staff working directly under my supervision.



Date	Description
July 1, 2022	Original Submission

TABLE OF CONTENTS

MR 1 - STORMWATER SITE PLAN..... 1

PROJECT OVERVIEW 1

DESIGN STANDARDS..... 4

OFFSITE ANALYSIS AND MITIGATION..... 5

MR 2 - SWPPP NARRATIVE 6

CONSTRUCTION SEQUENCE AND PROCEDURE 6

MR 3 - WATER POLLUTION SOURCE CONTROL 7

MR 4 - PRESERVATION OF NATURAL DRAINAGE SYSTEMS AND OUTFALLS, AND PROVISIONS OF OFF-SITE MITIGATION..... 8

MR 5 - ON-SITE STORMWATER MANAGEMENT 8

- Appendix A: Soil Data
- Appendix B: Pump Calculations
- Appendix C: Civil Plan Sheets

MR 1 - STORMWATER SITE PLAN

Project Overview

The property is located at 6221 83rd PI SE in the City of Mercer Island, Washington. The property is currently developed with a single-family residence. The project proposes to demolish the existing SFR to construct a new SFR with an attached garage, along with associated utilities and access driveway.

Site Information

Address: 6221 83rd PI SE; City of Mercer Island, WA

Size: 10,285 sq ft

City, County, State: Mercer Island, King County, Washington

Governing Agency: City of Mercer Island

Design Criteria: 2014 Washington State Department of Ecology Stormwater Manual

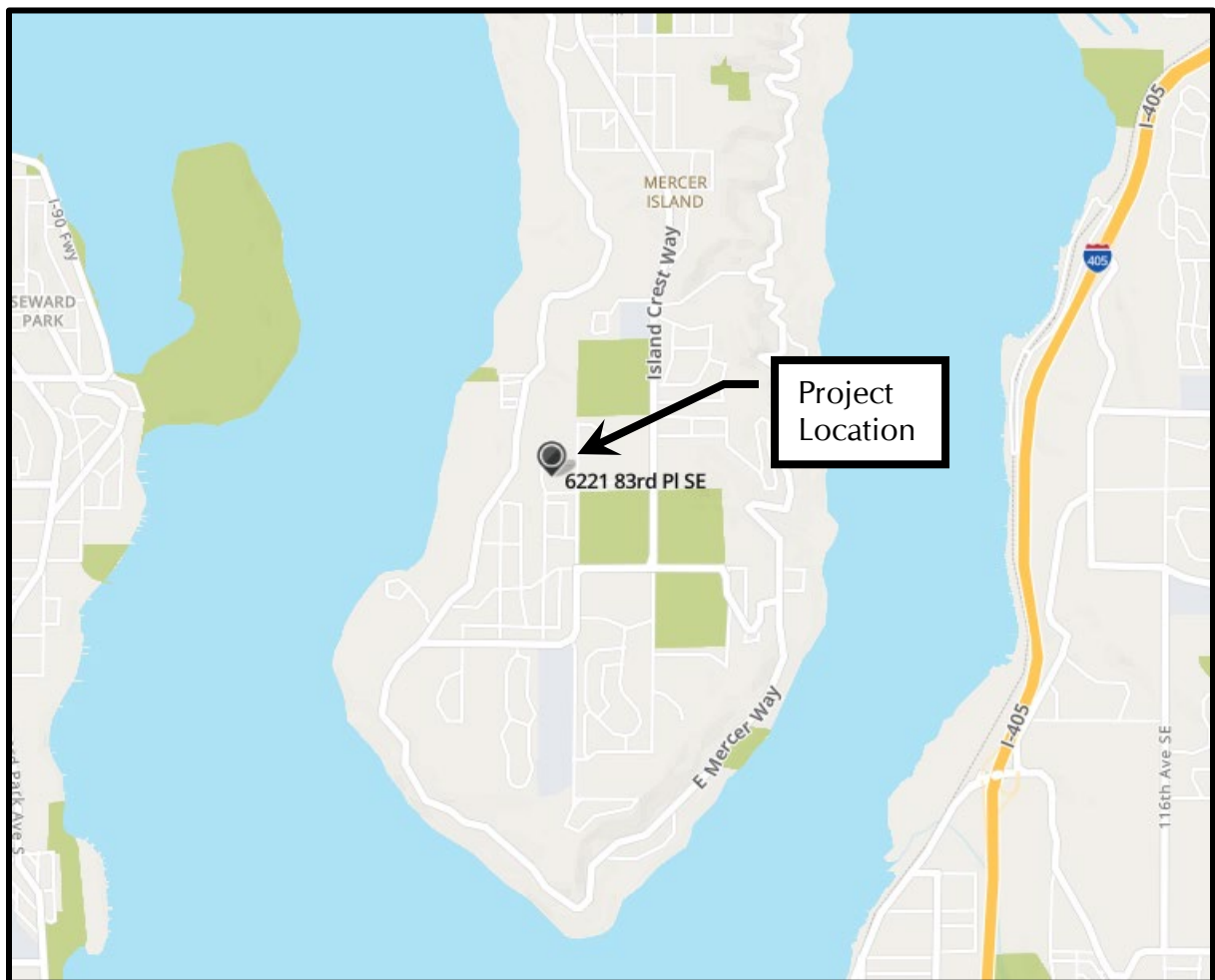


Figure 1 – Vicinity Map / Site Location (Not-to-Scale)

Drainage Basin

The property is located within the Mercer Island drainage basin. The entire property drains to one basin with a contributing area of approximately 0.25 acres. The general topography of the site slopes from west to east. Elevations on the site vary from a high point of 318 feet at the western property line to 308 feet near the eastern property line.

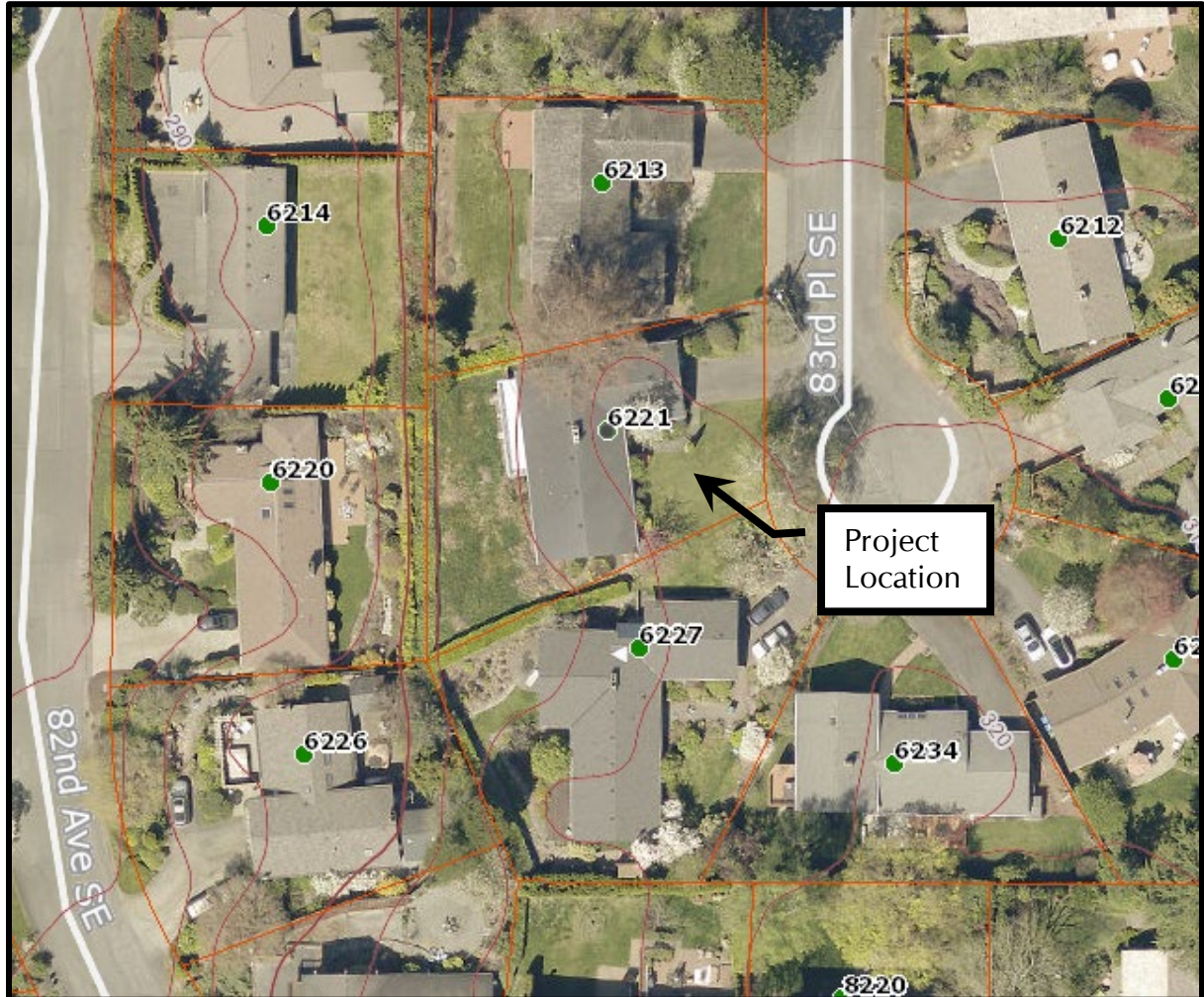


Figure 2 – Drainage Basin Map (Not-to-Scale)

Soils Information

The Soils Conservation Service (SCS) mapped the soils information in the project as predominately AmB, Arents, Alderwood. This type of soil is moderately well drained. The SCS Hydrologic Soil Group is "C". Refer to Appendix A for additional soil information.



Figure 3 – Soils Map (Not-to-Scale)

Existing Conditions Summary

The site is currently developed with one single-family residence, associated garage, driveway, and landscaping. Vegetation consists of lawn and landscaping with evergreen and deciduous trees. The majority of the Site's runoff drains westerly and discharges to 82nd Ave SE, creating one Natural Discharge Area (NDA). Existing impervious surface coverage is detailed in Table 1.

Surface Type	Area (SF)
SFR	3,070
Patio	370
Driveway	507
Walkway	120
Total	4,067

More than 35% of the existing site is covered with impervious surface and therefore the threshold determination for this project is a "Re-Development."

Proposed Conditions Summary

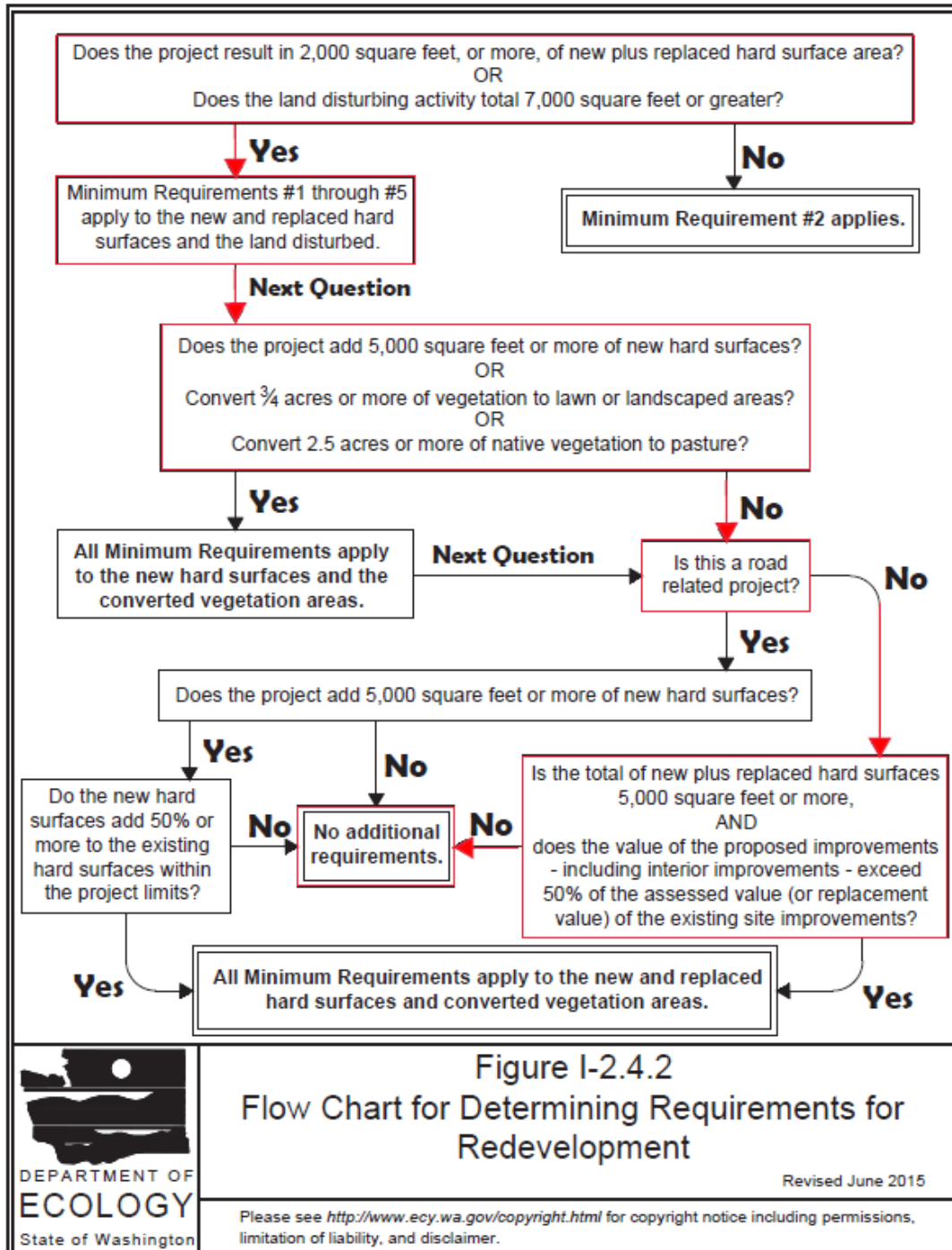
The project proposes to demolish the existing SFR to construct a new SFR with an attached garage, along with associated utilities and access driveway. Table 2 below outlines the projected build-out new impervious surface.

Surface Type	Area (SF)
SFR	2,693
Walkway & Patio	462
Driveway	1,282
Total New Impervious Surface	4,437

Design Standards

The 2014 Stormwater Management Manual for Western Washington sets forth the drainage requirements for this project. More than 35% of the existing site is covered with impervious surface; therefore, the threshold for Redevelopment project applies to this property.

Based on the flowchart of Figure 1-2.4.2 “Flow Chart for Determining Requirements for Redevelopment,” Minimum Requirements #1 - #5 apply to new impervious surface and converted pervious surface.



Offsite Analysis and Mitigation

Surface water runoff from impervious surfaces will be collected and pumped to the city storm drain system located on 83rd Place SE.

Upstream Analysis

The upstream properties are developed with single-family residences. The majority of the upstream runoff is collected and conveyed in the storm drain system located along 83rd Place SE. Furthermore, the subject property is located on a high point relative to the adjacent properties; therefore, no offsite runoff enters the subject property.

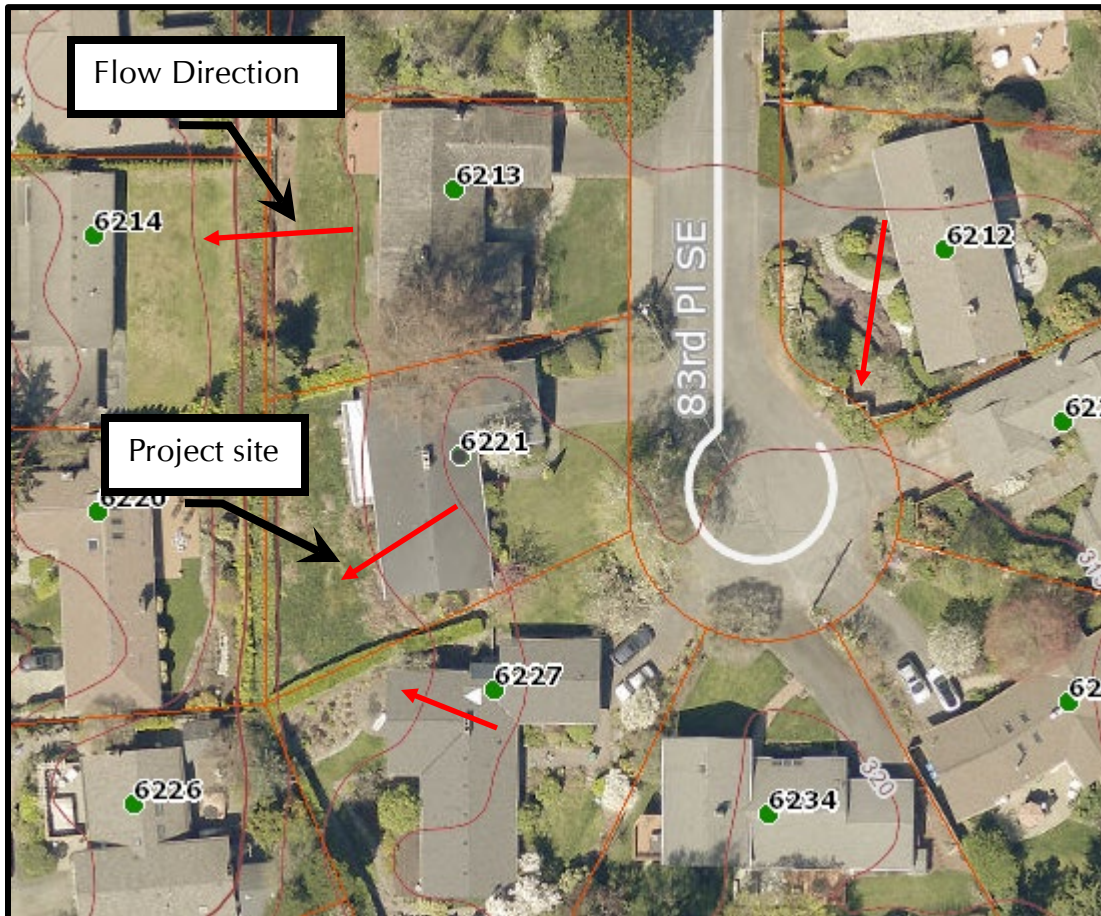


Figure 4 – Upstream Area Map (Not-to-Scale)

Downstream analysis

A Level 1 downstream analysis was performed on May 26, 2022. The weather was overcast with some light misty rain, temperatures in the high-50° F. Stormwater currently sheet flows east towards 82nd Ave SE where it enters the public storm system along 82nd Ave SE. Stormwater then flows east in a 12" concrete pipe for approximately 175 feet through private properties before turning south and continuing in the 12" concrete pipes for approximate 200 feet within private properties. It then travels east in a 12" concrete pipe for approximately 325 feet before discharging to an open ditch. The stormwater then travels north in the open ditch for approximately 200 feet before entering a 30" concrete culver under West Mercer Way. Stormwater then discharges to an open

waterway and travels beyond a ¼ mile from the project site, discharging to Lake Washington. Refer to Figure 5 for the Downstream Study Area Map.

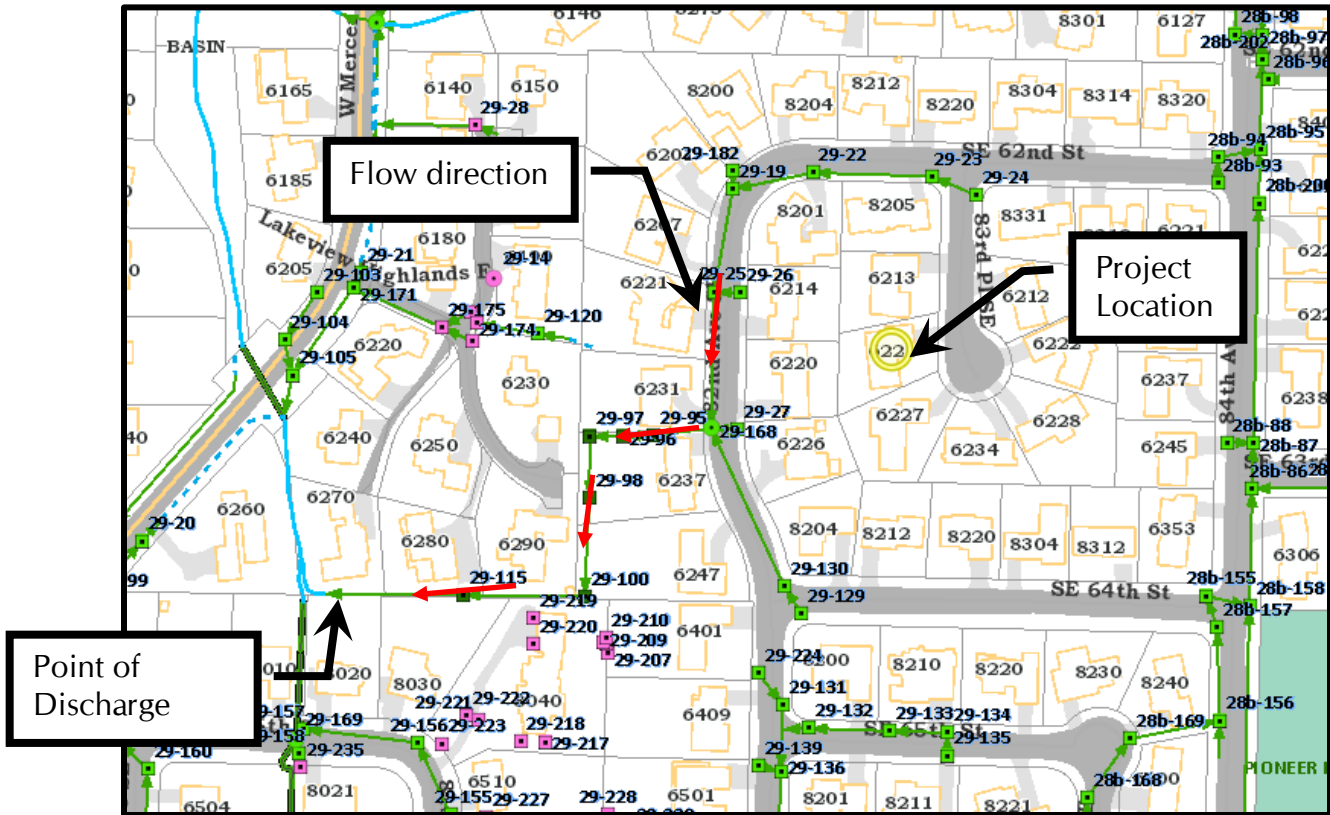


Figure 5 – Downstream Study Area (Not-to-Scale)

No existing or potential flooding, capacity, or erosion problems were observed during the site visit requiring mitigation. Based on this field inspection there are no apparent erosion or capacity problems within the downstream of this project to the point of discharge into Lake Washington.

MR 2 - SWPPP NARRATIVE

The Project will comply with the thirteen SWPPP elements during construction. An erosion control plan has been included in Appendix B.

Construction Sequence and Procedure

Prior to the start of any grading activity upon the site, all erosion control measures, including installation of a stabilized construction entrance, shall be installed in accordance with the construction documents.

The best construction practice will be employed to properly clear and grade the site and to schedule construction activities. The planned construction sequence for the construction of the site is as follows:

1. Flag or fence clearing limits.
2. Install catch basin protection if required.
3. Grade and install construction entrance(s).

4. Install perimeter protection (silt fence, brush barrier, etc.).
5. Maintain erosion control measures in accordance with City of Mercer Island standards and manufacturer's recommendations.
6. Relocate erosion control measures or install new measures so that as site conditions change the erosion and sediment control is always in accordance with the City of Mercer Island Erosion and Sediment Control Standards.
7. Cover all areas that will be unworked for more than seven days during the dry season or two days during the wet season with straw, wood fiber mulch, compost, plastic sheeting or equivalent.
8. Stabilize all areas that reach final grade within seven days.
9. Seed or sod any areas to remain unworked for more than 30 days.
10. Upon completion of the project, all disturbed areas must be stabilized and BMPs removed if appropriate.

Trapping Sediment

Structural control measures will be used to reduce erosion and retain sediment on the site. The control measures will be selected to fit site and seasonal conditions.

The following items will be used to control erosion and sedimentation processes:

- Temporary gravel construction entrance
- Filter fabric fences (silt fences)
- Ground cover measures such as straw cover and/or hydroseeding
- Inlet protection

Vehicle tracking of mud off-site shall be avoided. Installation of a gravel construction entrance will be installed at a location to enter the site. The entrances are a minimum requirement and may be supplemented if tracking of mud onto public streets becomes excessive.

MR 3 - WATER POLLUTION SOURCE CONTROL

This project is a residential development. All known, available, and reasonable source control BMPs will be applied to this Project.

The following pollutants are anticipated to be present on-site:

- Petroleum products
- Excavation waste
- Concrete and grout
- Solid & Sanitary waste

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well-organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

- All vehicles, equipment, and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- On-site fueling tanks and petroleum product storage containers shall include secondary containment.
- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.
- In order to perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.
- Contaminated surfaces shall be cleaned immediately following any discharge or spill incident.

Chemical storage:

- Any chemicals stored in the construction areas will conform to the appropriate source control BMPs listed in the Ecology stormwater manual. All chemicals shall have cover, containment, and protection provided on site.

Demolition:

- Dust released from demolished sidewalks, buildings, or structures will be controlled using Dust Control measures.
- Storm drain inlets vulnerable to stormwater discharge carrying dust, soil, or debris will be protected using Storm Drain Inlet Protection.
- Process water and slurry resulting from saw cutting and surfacing operations will be prevented from entering the waters of the State by implementing Saw cutting and Surfacing Pollution Prevention measures.

Concrete and grout:

- Process water and slurry resulting from concrete work will be prevented from entering the waters of the State by implementing Concrete Handling measures.

Sanitary wastewater:

- Portable sanitation facilities will be firmly secured, regularly maintained, and emptied when necessary.

Solid Waste:

- Solid waste will be stored in secure, clearly marked containers.

MR 4 - PRESERVATION OF NATURAL DRAINAGE SYSTEMS AND OUTFALLS, AND PROVISIONS OF OFF-SITE MITIGATION

The natural drainage patterns will be maintained for this Project. Surface runoff will discharge within the same NDA, discharging into Lake Washington.

MR 5 - ON-SITE STORMWATER MANAGEMENT

The project utilizes Better Site Design by generally matching existing grades where feasible. Existing trees and other vegetation around the site perimeter will be preserved

where possible to help minimize disturbance to the hydrologic cycle. Native soils in all disturbed pervious areas will be amended with compost.

BMP Feasibility and Applicability Discussion for Roof Stormwater Runoff

1. Dispersion/Infiltration
 - o Full dispersion of runoff from impervious surfaces is not feasible due to insufficient area on the site for dispersion flow paths. The minimum 100 feet vegetative flow path cannot be achieved.
 - o Concentrated flow dispersion is not feasible because the minimum 25 feet vegetative flow path cannot be achieved.
 - o Full and limited infiltration is not feasible. Per the City of Mercer Island GIS maps, the site is mapped as infeasible for infiltration.
2. Bioretention and Rain Garden BMPs are not feasible because the site is mapped as infeasible for infiltration, as discussed above.
3. Concentrated Downspout Dispersion Systems are infeasible because a vegetative flow path of 25 ft cannot be provided to accommodate for gravity flow away from the proposed building.
4. Perforated stub-out connection to the City system to mitigate onsite stormwater from the development is not feasible because the site is mapped as infeasible for infiltration, as discussed above.

BMP Feasibility and Applicability Discussion for Driveway Surface

1. Full dispersion of runoff from impervious hard surfaces is not feasible due to insufficient area on the site for dispersion flow paths. The minimum 100 feet of native vegetative flow path cannot be achieved.
2. Concentrated flow dispersion is not feasible because the minimum 25 feet vegetative flow path cannot be achieved.
3. Permeable Pavement is not feasible for this site because the site is mapped as infeasible for infiltration, as discussed above.

Stormwater from the site will be collected and pumped to a detention pipe before discharging to 83rd Place SE. Based on the standard detention pipe, the project proposes a 48" diameter x 60' detention pipe to mitigate onsite stormwater runoff.

TABLE 2 - STANDARD DETENTION PIPE DESIGN FOR PROJECTS BETWEEN 500 SF AND 5,000 SF IMPERVIOUS AREA (WITH 120% CORRECTION FACTOR)

Soil Type*	New Impervious Area (sf)														
	500 to 1,000 sf			1,001 to 2,000 sf			2,001 to 3,000 sf			3,001 to 4,000 sf			4,001 to 5,000 sf		
	Detention Pipe Size (in.) and Length (ft)			Detention Pipe Size (in.) and Length (ft)			Detention Pipe Size (in.) and Length (ft)			Detention Pipe Size (in.) and Length (ft)			Detention Pipe Size (in.) and Length (ft)		
B	36"	48"	60"	36"	48"	60"	36"	48"	60"	36"	48"	60"	36"	48"	60"
C	30	18	11	66	34	22	90	48	30	120	62	42	186	90	48
	22	11	7	43	23	14	66	36	20	78	42	26	132	60	37

Lawn and Landscape Area Soil Management Plan

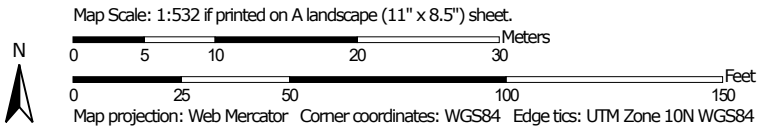
Within the limits of site disturbance, duff and topsoil will be retained in an undisturbed state and stockpiled for later use to stabilize and amend soils throughout the Site. Postconstruction soil amendment will meet the requirements of BMP T5.13 Post-Construction Soil Quality and Depth.

Appendix A Soil Data

Soil Map—King County Area, Washington



Soil Map may not be valid at this scale.




MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

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 1:24,000.

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: King County Area, Washington

Survey Area Data: Version 17, Aug 23, 2021

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

Date(s) aerial images were photographed: Jul 6, 2020—Jul 20, 2020

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AmB	Arents, Alderwood material, 0 to 6 percent slopes	1.2	100.0%
Totals for Area of Interest		1.2	100.0%

King County Area, Washington

AmB—Arents, Alderwood material, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 1hm5p

Elevation: 160 to 590 feet

Mean annual precipitation: 35 to 60 inches

Mean annual air temperature: 50 degrees F

Frost-free period: 150 to 200 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Arents, alderwood material, and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents, Alderwood Material

Setting

Landform: Till plains

Parent material: Basal till

Typical profile

H1 - 0 to 26 inches: gravelly sandy loam

H2 - 26 to 60 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 6 percent

Depth to restrictive feature: 20 to 40 inches to densic material

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 16 to 36 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: B/D

Hydric soil rating: No

Data Source Information

Soil Survey Area: King County Area, Washington

Survey Area Data: Version 17, Aug 23, 2021

Appendix B Pump Calculations

DRAINAGE PUMP DESIGN

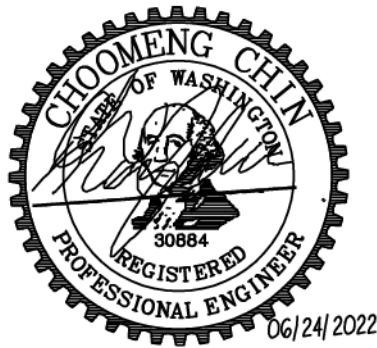
FOR

SINGLE FAMILY RESIDENCE

6221 83RD AVE SE

MERCER ISLAND, WA 98040

June 24, 2022



Prepared by

C2MY Engineers, LLC
P.O. Box 52883
Bellevue, WA 98015-2883
Contact: Choomeng Chin
(206) 922-9376
cmchin.c2my@gmail.com

Prepared for

PBG, LLC
5130 S. 166th Lane
SeaTac, WA 98188
Contact: Han Pham, P.E.
(206)-229-6422
pbg.egr@yahoo.com

This page is intentionally left blank

TABLE OF CONTENTS

- I. PROJECT OVERVIEW5
 - A. Pump Design Requirements:.....5
- II. PUMP DESIGN DESIGN7
 - A. Summary of Input Data:.....7
 - B. Developed Peak flow Calculation:.....8
 - C. Storm Duplex Pump design:10
 - D. Pump Curve:12

This page is intentionally left blank

I. PROJECT OVERVIEW

This report provides the drainage pump system design calculation for the redevelopment of a single-family residence building. The detention system is too deep for gravity discharge to the roadway drainage system and hence a pump is needed. The pump system is designed to discharge the maximum allowable flow rate from the detention system including the 100-year storm frequency.

A. Pump Design Requirements:

Per city requirements:

- a. The pump system shall have dual, alternating pumps with emergency on-site, back-up power supply and an external alarm system for system failure and high water level indicator.
- b. Provide a detail section for the pump system and the structure with all dimensions and invert elevations shown.
- c. Pumped flows shall not exceed the allowable discharge rates set forth herein. Each pump shall be capable of discharging the design flow rate for the 100-year, 24-hour design storm. Provide detail calculations for the pump system including pump curve.
- d. If a stormwater detention system is not required the pump system shall have a storage facility (pond, tank, or vault) sized to hold 25 percent of the total volume of runoff for the developed tributary drainage area for the 2-year, 24-hour design storm.
- e. The pump system shall discharge to an elevation higher than the downstream design water surface elevation to prevent backwater/backflow conditions. Provide such design.

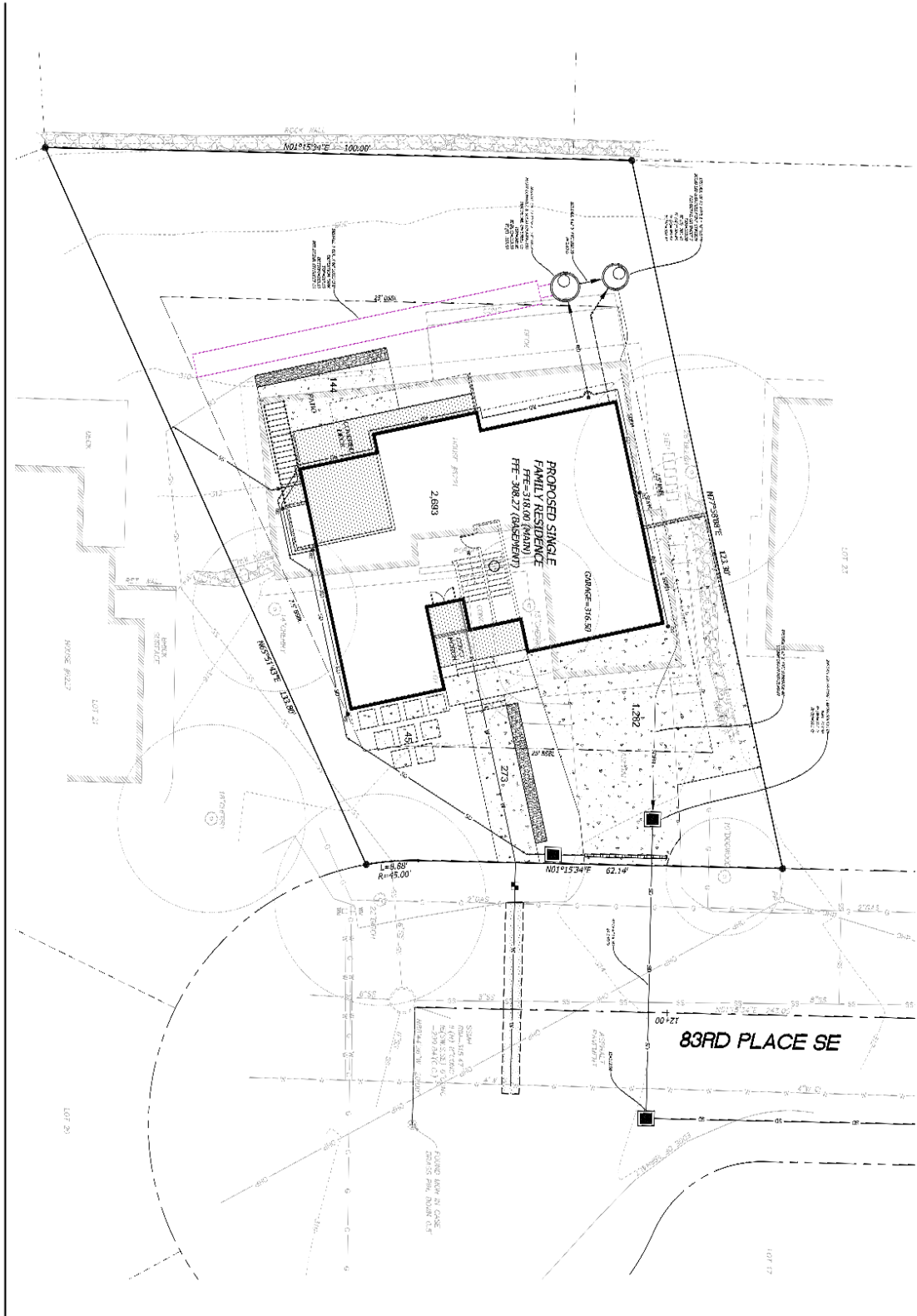


FIGURE 1: PROPOSED SITE DEVELOPEMENT MAP (NTS)

II. PUMP DESIGN DESIGN

The calculated peak runoffs using the SBUH methodology are as follow:

Drainage area= 4437 S.F. (0.10186 acs)

Using proposed condition for the allowable discharges per the detention standards as follow:

- 2-yr/24hr – 0.0289 cfs (15 gpm) (Using 6-mo storm)
- 25-yr/24hr – 0.0870 cfs (41 gpm)
- 100-yr/24hr – 0.0998 cfs (46.8 gpm)

Required minimum pump design working depth = 2.71 feet (254.5 gallons)

The 4-ft diameter pump well with 3’ sump provide 281.99 gallons of volume > 254.5 gallons.
O.k.

A. SUMMARY OF INPUT DATA:

Drainage area = 1005 SF

TIME OF CONCENTRATION CALCULATIONS

24 hr. ISOPLUVIALS:

P2=	2.00	in/day
P10=	3.00	in/day
P100=	4.00	in/day

sheet flow:	$Tt = \{(.42)(Ns*L)^{0.8}\} / \{(P2)^{0.5} * (So)^{0.4}\}$
conc. flow:	$Tt = L / (60 * Ks * (So)^{0.5})$

TIME OF CONCENTRATION CALCULATIONS

Existing	Status	Length	Ns	Ks	Slp%(ave)	Tt(min)	Tc Used (min.)
Impervious		49	0.011		8.3	0.5	5
Pervious	Sheet Flow	133	0.15		5	10.8	10.8
Proposed							
Impervious	Sheet Flow	36	0.011		8.3	0.4	
	Channel	122	0.011		2	1.8	5
Pervious	NA						

B. DEVELOPED PEAK FLOW CALCULATION:**Project Precips**

[2 yr]	2.00 in
[5 yr]	2.80 in
[10 yr]	3.00 in
[25 yr]	3.50 in
[100 yr]	4.00 in
[6-mo]	1.28 in

PRE1 Event Summary:

BasinID	Peak Q (cfs)	Peak T (hrs)	Peak Vol (ac-ft)	Area ac	Method /Loss	Raintype	Event
PRE1	0.0550	8.00	0.0205	0.19	SBUH/SCS	TYPE1A	2 yr
PRE1	0.0948	8.00	0.0346	0.19	SBUH/SCS	TYPE1A	10 yr
PRE1	0.1155	8.00	0.0419	0.19	SBUH/SCS	TYPE1A	25 yr
PRE1	0.1364	8.00	0.0493	0.19	SBUH/SCS	TYPE1A	100 yr
PRE1	0.0288	7.83	0.0111	0.19	SBUH/SCS	TYPE1A	6-mo

Drainage Area: PRE1

Hyd Method:	SBUH Hyd	Loss Method:	SCS CN Number
Peak Factor:	484.00	SCS Abs:	0.20
Storm Dur:	24.00 hrs	Intv:	10.00 min
	Area	CN	TC
Pervious	0.0937 ac	86.00	0.18 hrs
Impervious	0.0937 ac	98.00	0.01 hrs
Total	0.1874 ac		

Supporting Data:**Pervious CN Data:**

Lawn 86.00 0.0937 ac

Impervious CN Data:

Roof and driveway 98.00 0.0937 ac

Pervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	Lawn	133.00 ft	5.00%	0.1500	10.79 min

Impervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	Roof	49.00 ft	8.30%	0.0110	0.49 min

Dev1 Event Summary:

BasinID	Peak Q (cfs)	Peak T (hrs)	Peak Vol (ac-ft)	Area ac	Method /Loss	Raintype	Event
Dev1	0.0480	7.83	0.0151	0.10	SBUH/SCS	TYPE1A	2 yr
Dev1	0.0740	7.83	0.0235	0.10	SBUH/SCS	TYPE1A	10 yr
Dev1	0.0870	7.83	0.0277	0.10	SBUH/SCS	TYPE1A	25 yr
Dev1	0.0998	7.83	0.0319	0.10	SBUH/SCS	TYPE1A	100 yr
Dev1	0.0289	7.83	0.0090	0.10	SBUH/SCS	TYPE1A	6-mo

Drainage Area: Dev1

Hyd Method:	SBUH Hyd	Loss Method:	SCS CN Number
Peak Factor:	484.00	SCS Abs:	0.20
Storm Dur:	24.00 hrs	Intv:	10.00 min
	Area	CN	TC
Pervious	0.0000 ac	86.00	0.00 hrs
Impervious	0.1018 ac	98.00	0.04 hrs

Total 0.1018 ac

Supporting Data:

Impervious CN Data:

Driveway+Roof 98.00 0.1018 ac

Impervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	Roof	36.00 ft	8.30%	0.0110	0.38 min
Sheet	Channel	122.00 ft	2.00%	0.0110	1.80 min

C. STORM DUPLEX PUMP DESIGN:**6221 83rd PI SE, Mercer Is. - STORM PUMP CAPACITY ANALYSIS**STORM WATER LIFT STATION DESIGN

A. DETERMINE THE REQUIRED RATE OF PUMPING;

100-YR PEAK FLOW, $Q_{max} = 0.0998$ cfs = 46.8 GPM (Allowable flow rate from prop. condition - See Storm Shed Calc.)

B. COMPUTE THE STORAGE REQUIREMENT FOR THE WETWELL:

USING 2 PUMPS AND 4 CYCLES PER HOUR

TIME FOR ONE PUMP CYCLE:

$$T = (V/Q - S) + (V/S)$$

Where:

T = THE TIME FOR ONE PUMP CYCLE IN MINUTES = 25

V = THE EFFECTIVE VOLUME OF THE WETWELL IN GALLON = V

Q = THE PUMPING RATE IN GALLONS PER MINUTE = 47

S = THE FLOW INTO THE WETWELL IN GALLONS PER MINUTE = 15 0.0289 cfs
(Allowable 50% of 2-yr prop. flow rate)

$$V = TS(Q - S)/Q = 255$$

USE 4 FEET DIAMETER WET WELL
VOLUME PER FOOT = 94.00 GAL/FT
WORKING DEPTH = 2.71 FEET = 254.52 Gallons

Availale Storage Vol., 3 feet = 281.99 GAL OK

C. DETERMINE THE FORCEMAIN DIAMETER:

$Q_{max} = 47$ GPM = 0.10 CFS

MAXIMUM CROSS SECTION REQUIRED = 0.035 SF
(FOR VEL. = 3 FPS) = 5.00 SI

USE 2 INCH DIAMETER HDPE PIPE, $V = Q/A$
(AREA = 0.022 SF) = 4.78 FPS ~ 3 FPS ~OK

D. DETERMINE HEAD LOSS OF HDPE FORCE MAIN:

$$H = (Q / (0.006757)(C)(D^{2.63}))^{1.85}$$

WHERE: H = THE HEAD LOSS IN FEET PER 1000 FEET OF PIPE = H
 Q = THE FLOW IN GALLON PER MINUTE = 47
 C = THE HAZEN-WILLIAM COEFFICIENT OF ROUGHNESS = 140
 D = THE PIPE DIAMETER IN INCHES = 2 USED

H = 46.75 FEET (for 2-in Diameter Pipe)

LENGTH OF PIPE = 91 FEET HEAD LOSS IN PIPE = 4 FT.

E. COMPUTE THE TOTAL DYNAMIC HEAD (TDH)

a) STATIC DISCHARGE HEAD = **12.33** FEET
 DISCHARGE ELEVATION = 312.75
 PUMP OFF ELEVATION = 300.42

b) MINOR LOSSES = **5.9**
 2 - 90 DEG. ELL = 1.4
 1 - GATE VALVE = 0.2
 1 - CHECK VALVE = 2.5
 1 - TEE = 1.8

c) TOTAL DISCHARGE HEAD LOSS = **22.48** FEET

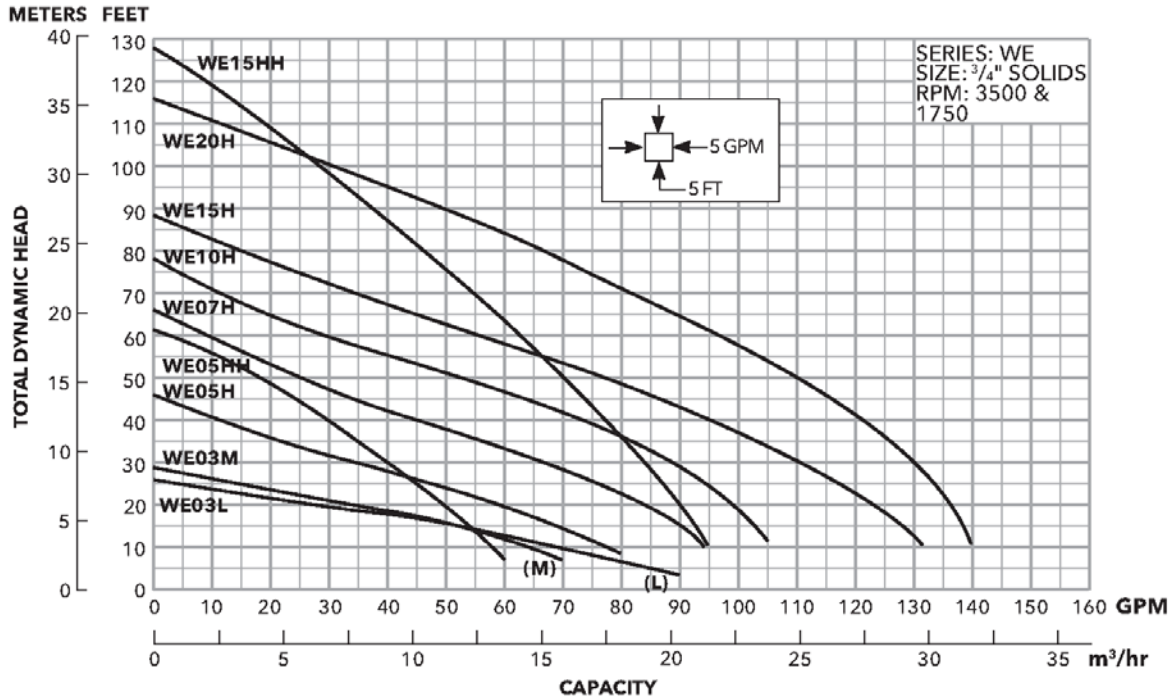
G. COMPUTE THE REQUIRED BRAKE HORSEPOWER:

H_{brake} = (GPM x TDH) / (3960 X EFF.) = **0.443** USE 1/2 HP SUBMERSIVE PUMP WITH
 MIN. EFF. OF 60 %

WHERE: GPM = FLOW RATE IN GALLON PER MINUTE
 TDH = TOTAL DYNAMIC HEAD OF THE SYSTEM IN FEET
 WHEN DELIVERING THE REQUIRED FLOW RATE
 3930 = A CONSTANT
 EFF = PUMP EFFICIENCY EXPRESSED IN DECIMAL FORM

D. PUMP CURVE:

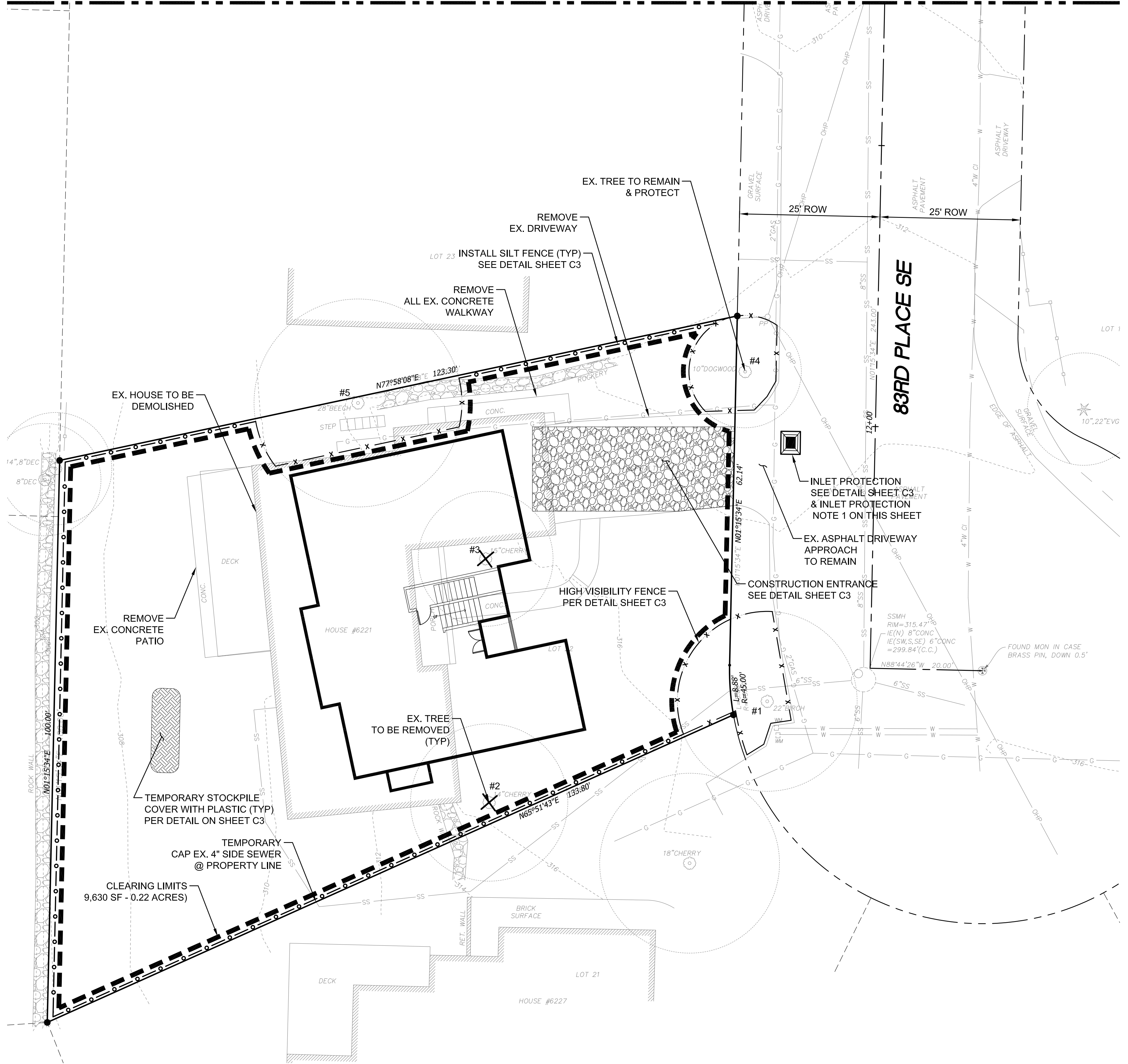
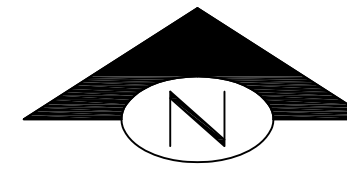
Use Goulds Pump WE Series, Model WE0511 HH (1/2 HP) or equal.
See Plan for pump details.



Appendix C Civil Plans

Jul 07, 2022 12:10pm Han Pham L:\Working\222465 - 6221 83rd Place SE (COOMBES Development)\CADD\Drawings\222465-PS-C1.dwg Layout Name: C1

MATCHLINE - SEE SHEET C2



TREE INVENTORY:

#1 - 14"	EUROPEAN WHITE BIRCH (BETULA PENDULA)	REGULATED-YES
#2 - 14"	MT. FUJI CHERRY (PRUNUS SERRULATA 'SHIROTAE')	REGULATED-YES
#3 - 15"	KWANZAN CHERRY (PRUNUS SERRULATA 'KWANZAN')	REGULATED-YES
#4 - 7"	FLOWERING DOGWOOD (CORNUS FLORIDA)	REGULATED-YES
#5 - 28"	EUROPEAN BEECH (FAGUS SYLVATICA L.)	REGULATED-YES

STABILIZE SOILS:

TEMPORARY COVER MEASURES SHALL BE PROVIDED WHEN NECESSARY TO PROTECT DISTURBED AREAS. THE INTENT OF THESE MEASURES IS TO PREVENT EROSION BY HAVING AS MUCH AREA AS POSSIBLE COVERED DURING ANY PERIOD OF PRECIPITATION. TOPSOIL LAYERS SHALL BE RETAINED AND PROTECTED TO THE MAXIMUM EXTENT FEASIBLE. ANY TOPSOIL THAT IS STOCKPILED ONSITE SHALL BE COVERED TO PREVENT EROSION AND SATURATION, AND SHALL BE REUSED IN LANDSCAPED AREAS UPON COMPLETION OF THE GROUND DISTURBING ACTIVITIES. TEMPORARY COVER SHALL BE INSTALLED IF AN AREA IS TO REMAIN UNWORKED FOR MORE THAN 7 DAYS DURING THE DRY SEASON (MAY 1 TO SEPTEMBER 30) OR FOR MORE THAN TWO CONSECUTIVE WORKING DAYS DURING THE WET SEASON (OCTOBER 1 TO APRIL 30). COVER METHODS INCLUDE THE USE OF SURFACE ROUGHENING, MULCH, EROSION CONTROL NETS AND BLANKETS, PLASTIC COVERING, SEEDING, AND SODDING. MULCH AND PLASTIC SHEETING ARE PRIMARILY INTENDED TO PROTECT DISTURBED AREAS FOR A SHORT PERIOD OF TIME, TYPICALLY DAYS TO A FEW MONTHS. SEEDING AND SODDING ARE MEASURES FOR AREAS THAT ARE TO REMAIN UNWORKED FOR MONTHS. EROSION NETS AND BLANKETS ARE TO BE USED IN CONJUNCTION WITH SEEDING STEEP SLOPES

GENERAL NOTE:

1. LAND CLEARING, GRADING, FILLING, AND FOUNDATION WORK ARE NOT PERMITTED BETWEEN OCTOBER 1ST AND APRIL 1ST. ANY WORK THAT IS PROPOSED DURING THE WET SEASON MUST SUBMIT A SEASONAL DEVELOPMENT LIMITATION WAIVER FOR APPROVAL BY THE BUILDING OFFICIAL

PROJECT ENGINEER'S CERTIFICATION:

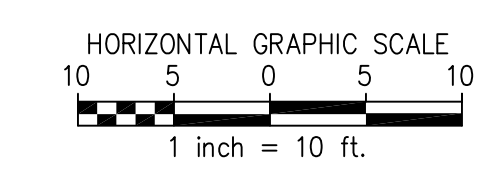
I HEREBY STATE THAT THIS CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN FOR JABOODA HOMES RESIDENCE HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND MEETS THE STANDARD OF CARE AND EXPERTISE WHICH IS USUAL AND CUSTOMARY IN THIS COMMUNITY OF PROFESSIONAL ENGINEERS. I UNDERSTAND THAT THE CITY OF MERCER ISLAND DOES NOT AND WILL NOT ASSUME LIABILITY FOR THE SUFFICIENCY, SUITABILITY, OR PERFORMANCE OF CONSTRUCTION SWPPP BMPs PREPARED BY ME.

INLET PROTECTION NOTE:

1. CONTRACTOR TO INSTALL INLET PROTECTION ON ALL CATCH BASINS DOWNSTREAM WITHIN 50'

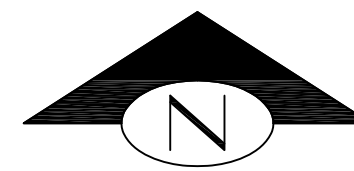
LEGEND

- PROPERTY LINE
- - - ADJACENT PROPERTY LINE
- RIGHT OF WAY LINE
- - - RIGHT OF WAY CENTERLINE
- ▭ PROPOSED STRUCTURE



REFERENCE SHEET NO.	C1	SHEET	1
		OF	7
		SHEETS	
<p>COOMBES DEVELOPMENT 6221 83RD PLACE SE MERCER ISLAND, WA 98040</p> <p>TREE PROTECTION PLAN TESC PLAN - 1</p>			
<p>PBC Land Development and Civil Engineering Consultants 5130 South 166th Lane Seattle, WA 98188 T (206) 229-6422</p>			
ISSUE DATE	7-05-2022	DESIGNED BY:	L. PHAN
JOB NO.	R22465	DRAWN BY:	L. PHAN
NO.	DATE	CHECKED BY:	H.H. PHAN
		PROJ. MNGR:	H.H. PHAN
NO.	DATE	REVISION DESCRIPTION	

Jul 07, 2022 - 12:56pm Han Phan L:\Working\R22465 - 6221 83rd Place SE (COOMBES Development)\CADD\Drawings\R22465-PS-C2.dwg Layout Name: C2

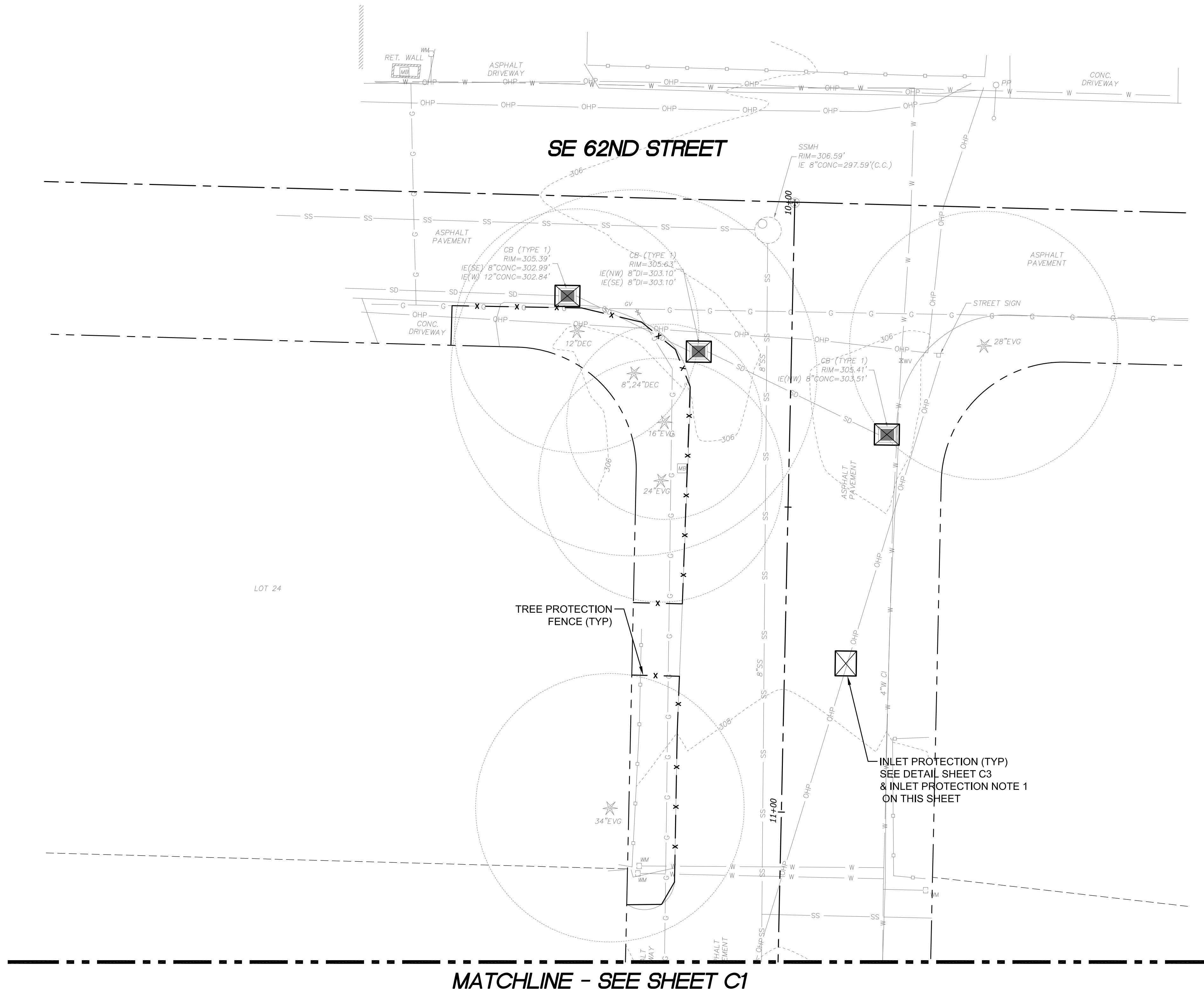


INLET PROTECTION NOTE:

1. CONTRACTOR TO INSTALL INLET PROTECTION ON ALL CATCH BASINS DOWNSTREAM WITHIN 50'

LEGEND

- PROPERTY LINE
- - - - - ADJACENT PROPERTY LINE
- - - - - RIGHT OF WAY LINE
- - - - - RIGHT OF WAY CENTERLINE



MATCHLINE - SEE SHEET C1

REFERENCE SHEET NO.
Q2

SHEET 2 OF 7 SHEETS

COOMBES DEVELOPMENT
6221 83RD PLACE SE
MERCER ISLAND, WA 98040
TREE PROTECTION PLAN
TESC PLAN - 2

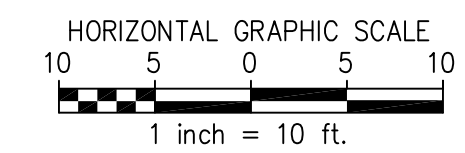


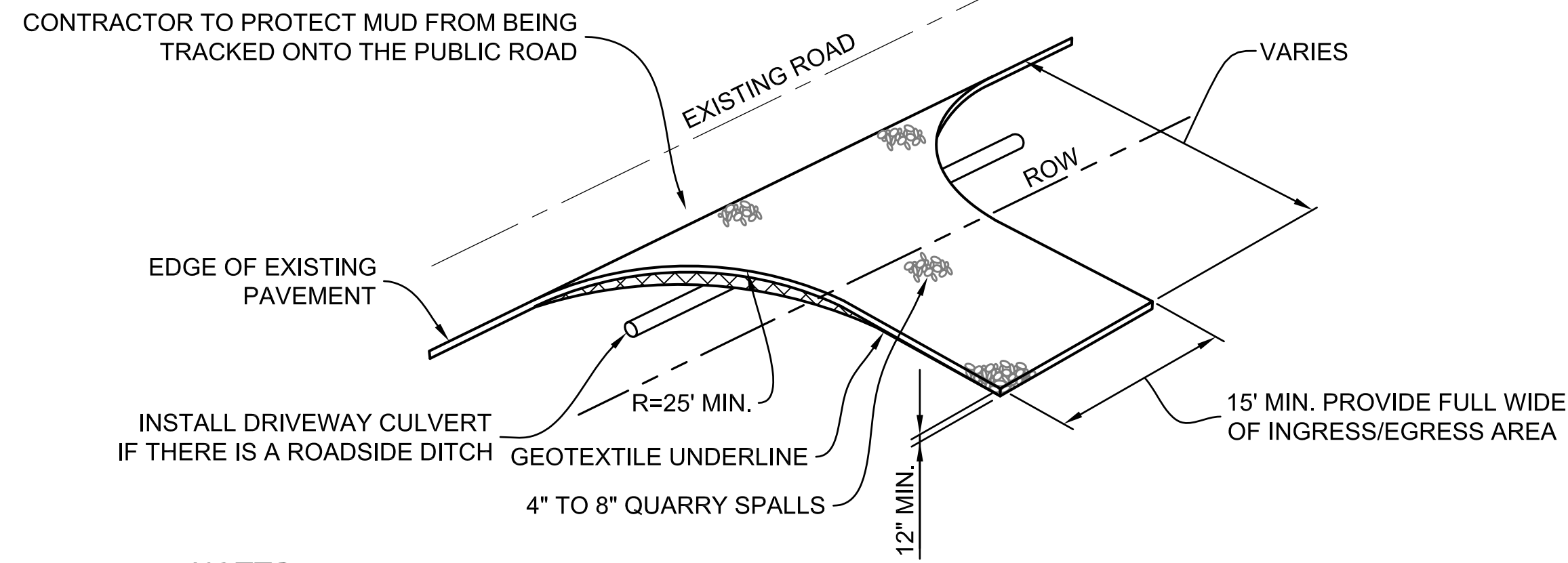
PBC
Land Development and Civil Engineering Consultants
5130 South 166th Lane
SeaTac, WA 98188
T (206) 229-6422

JOB NO.	ISSUE DATE
R22465	7-05-2022
DESIGNED BY:	L. PHAN
DRAWN BY:	L. PHAN
CHECKED BY:	H.H. PHAN
PROJ. MNGR:	H.H. PHAN

REVISION DESCRIPTION

NO. DATE BY





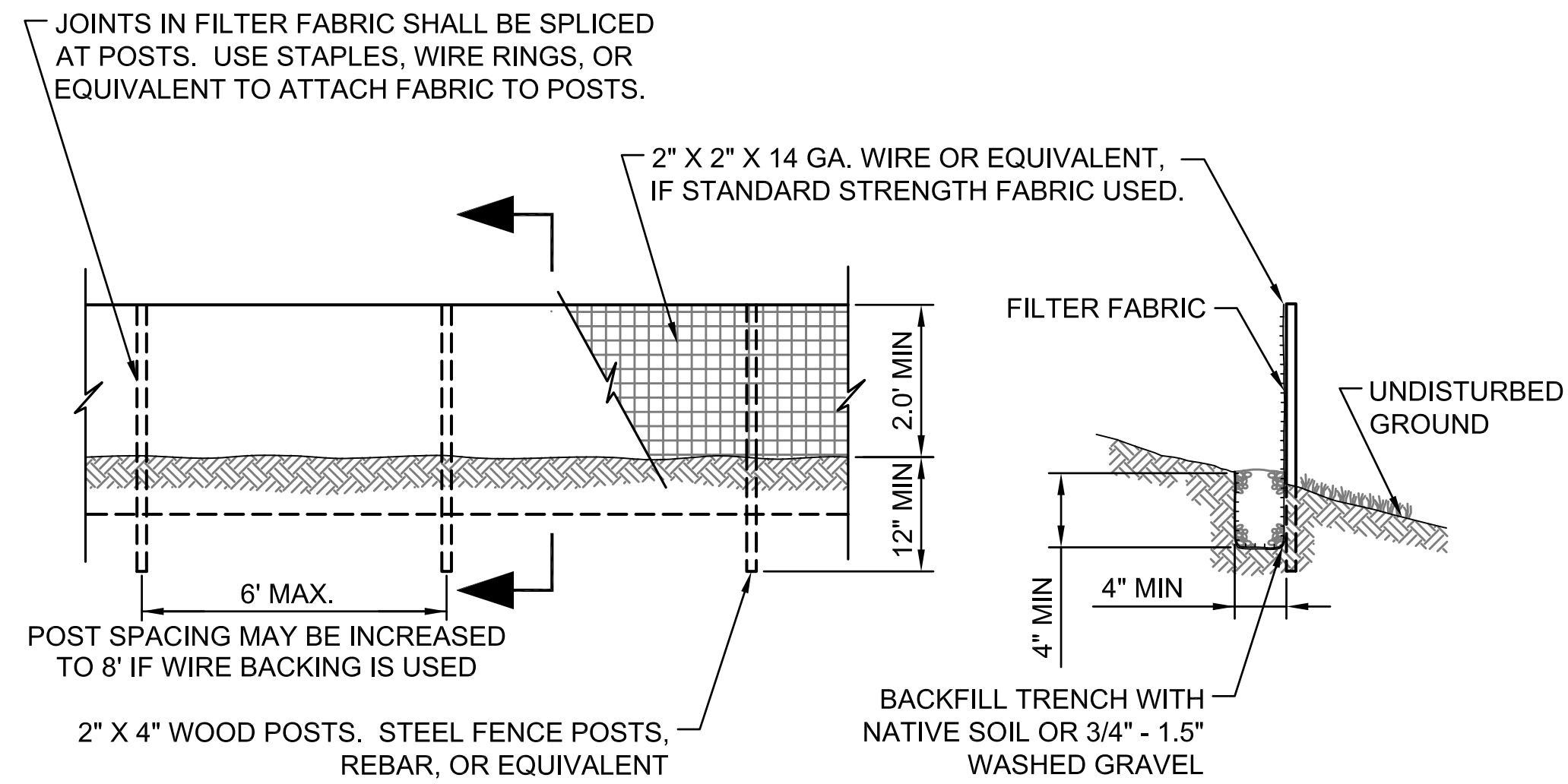
NOTES:

DRIVEWAYS SHALL BE PAVED TO THE EDGE OF RIGHT-OF-WAY PRIOR TO INSTALLATION OF THE CONSTRUCTION ENTRANCE TO AVOID DAMAGING OF THE ROADWAY.

IT IS RECOMMENDED THAT THE ENTRANCE BE CROWNED SO THAT RUNOFF DRAINS OFF THE ROAD.

CONSTRUCTION ENTRANCE DETAIL

SCALE: NONE

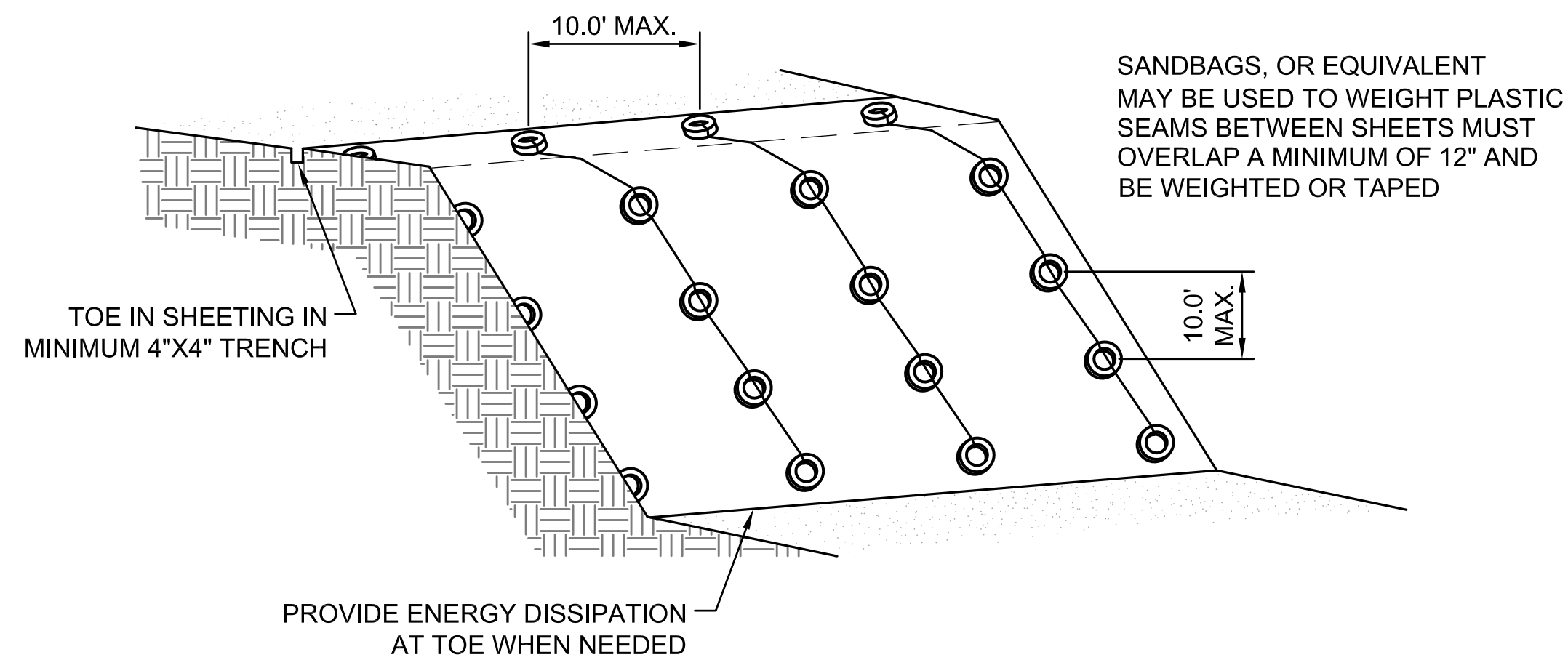


NOTES:

FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOUR WHENEVER POSSIBLE.

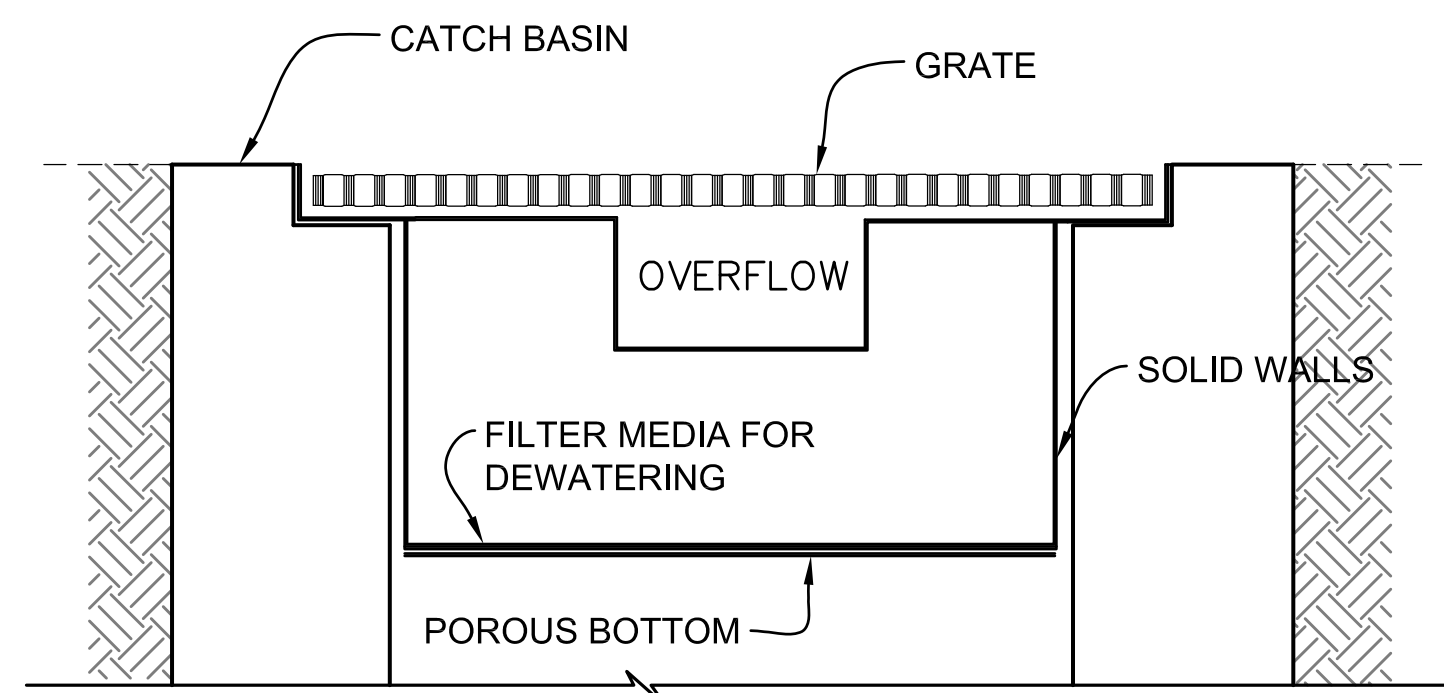
SILT FENCE DETAIL

SCALE: NONE



PLASTIC COVERING DETAIL

SCALE: NONE

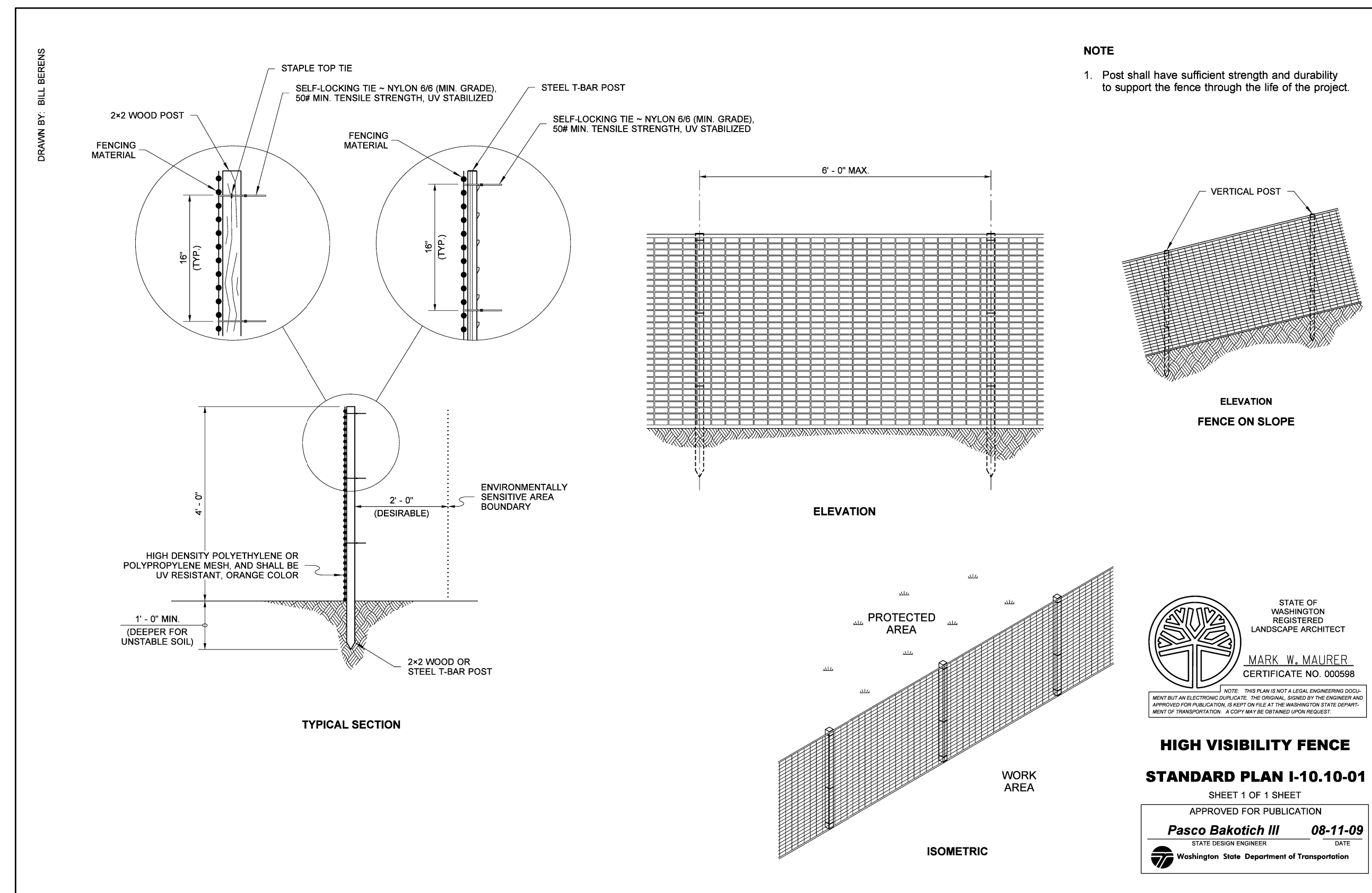


NOTES:

THIS DETAIL IS ONLY SCHEMATIC. ANY INSERT IS ALLOWED THAT HAS A MIN. 0.5 CUBIC FEET OF STORAGE WITH THE MEANS TO DEWATER THE STORED SEDIMENT, PROVIDE AN OVERFLOW, AND CAN BE EASILY MAINTAINED.

INLET PROTECTION DETAIL

SCALE: NONE



HIGH VISIBILITY FENCE
STANDARD PLAN I-10.10-01
 SHEET 1 OF 1 SHEET
 APPROVED FOR PUBLICATION
Pasco Bakotich III 08-11-09
 STATE ENGINEER
 Washington State Department of Transportation



COOMBES DEVELOPMENT
 6221 83RD PLACE SE
 MERCER ISLAND, WA 98040

TESC DETAILS

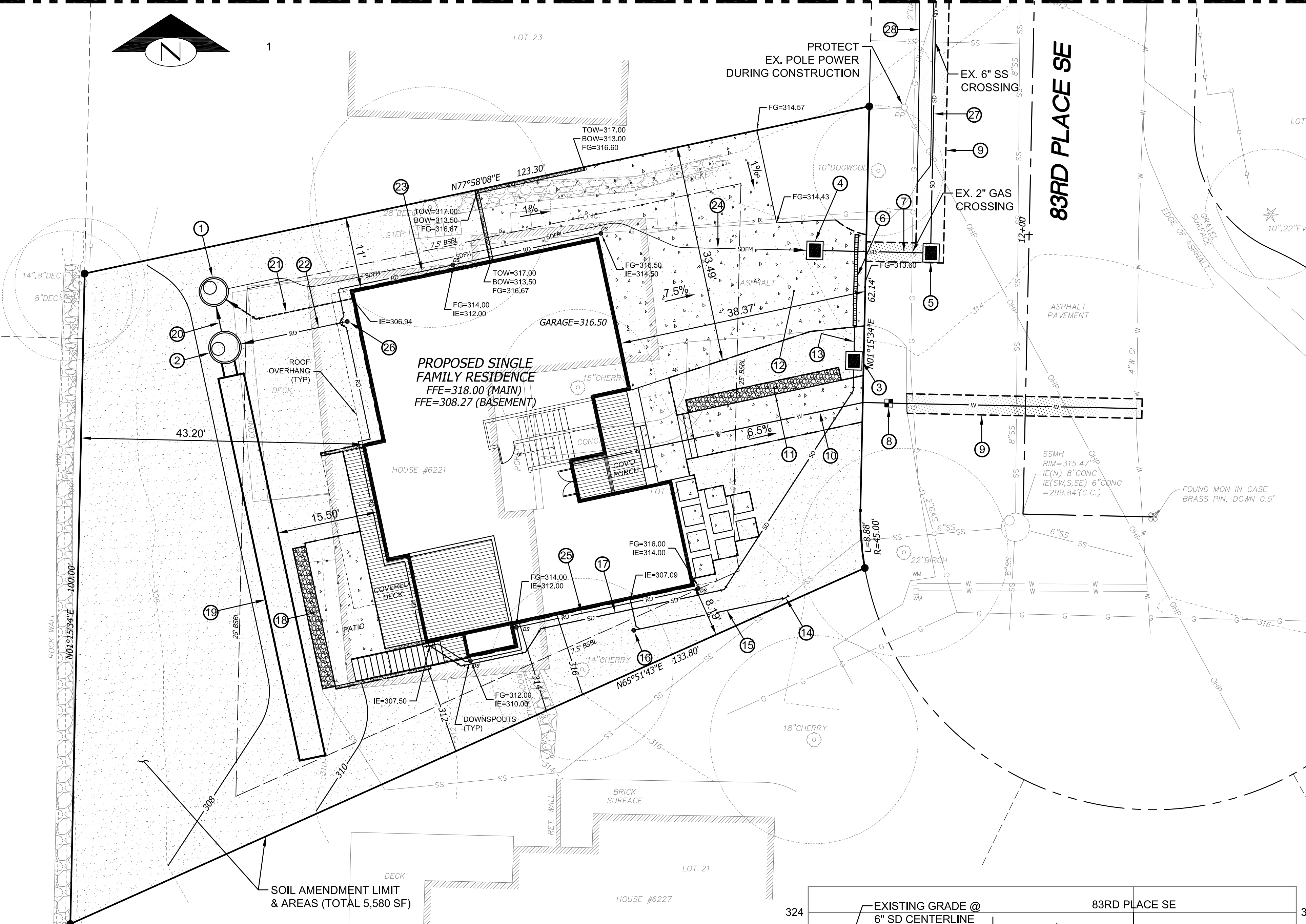


PBC
 Land Development and Civil Engineering Consultants
 5130 South 166th Lane
 Seattle, WA 98188
 T (206) 229-6422

ISSUE DATE	7-05-2022
DESIGNED BY:	L. PHAN
DRAWN BY:	L. PHAN
CHECKED BY:	H. H. PHAN
PROJ. MNGR:	H. H. PHAN

NO.	DATE	REVISION DESCRIPTION

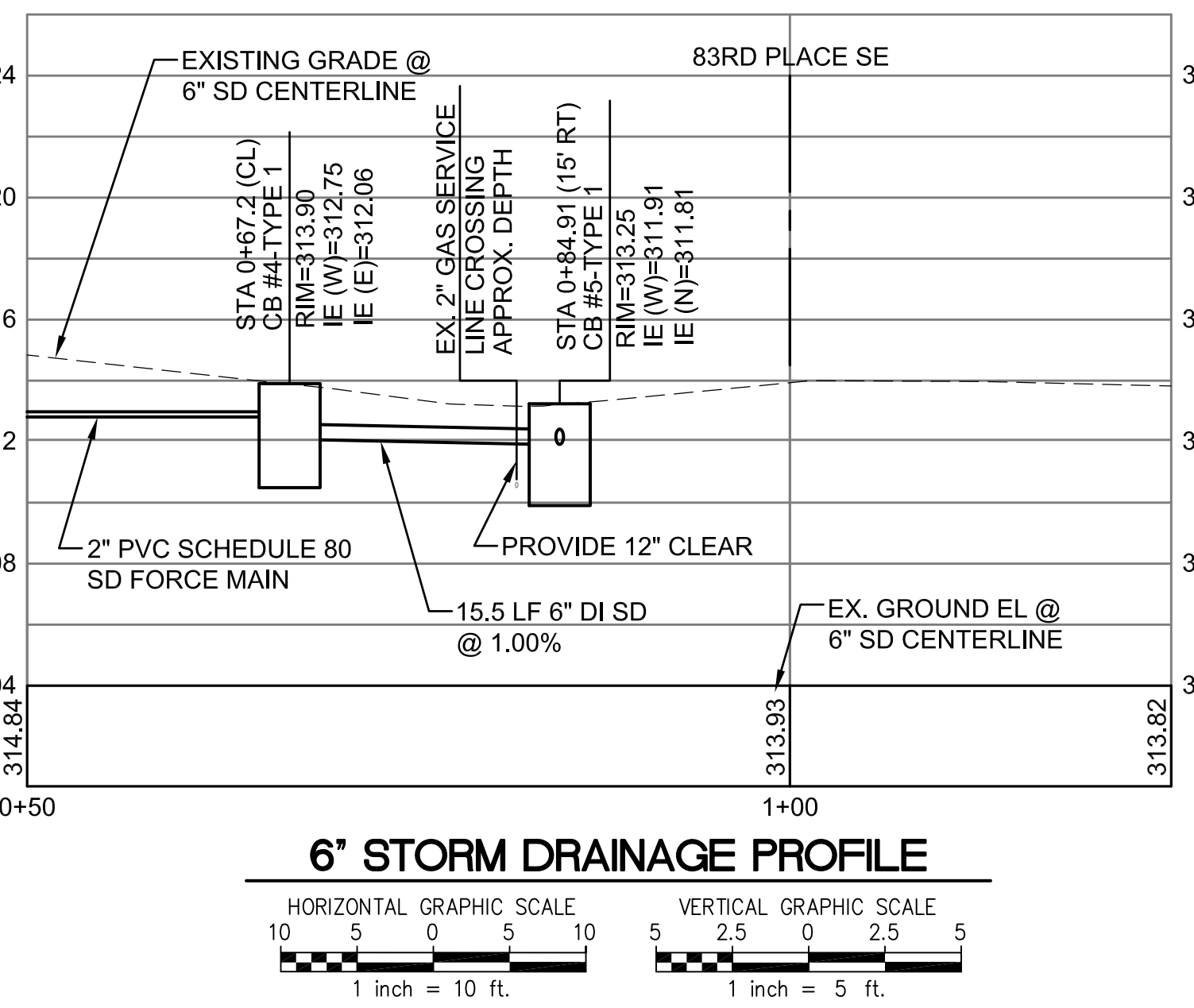
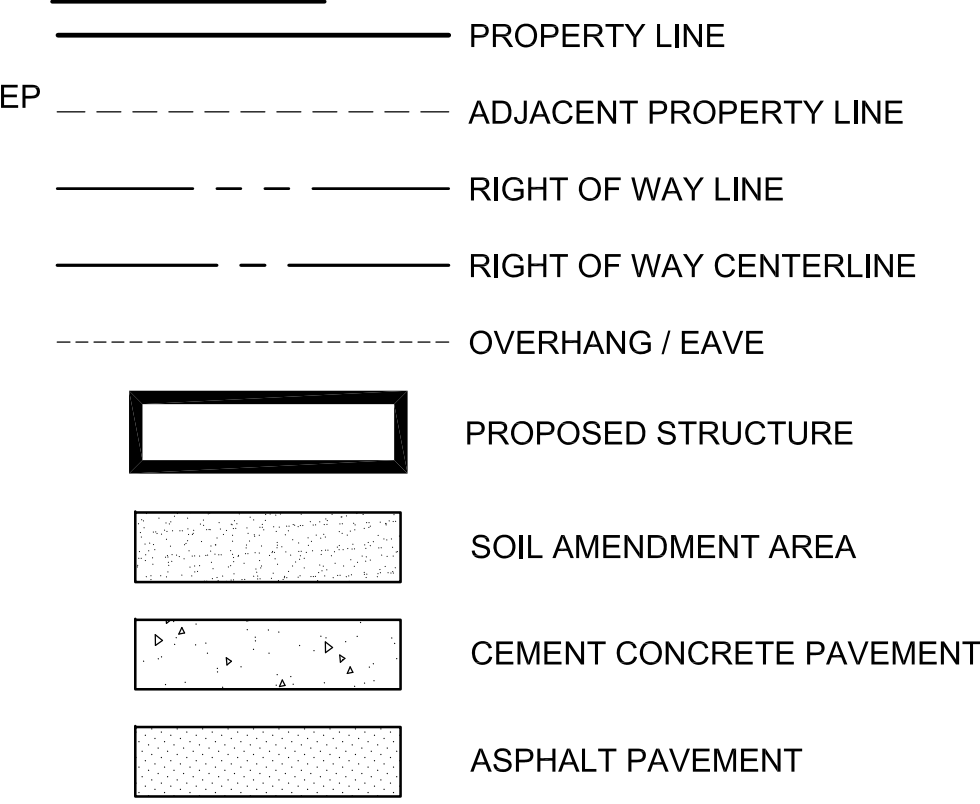
Jul. 03, 2022 9:50pm Han Phan L:\Working\R22465 - 6221 83rd Place SE (COOMBES Development)\CADD\Drawings\R22465-PS-C3.dwg Layout Name: C3



CONSTRUCTION NOTES:

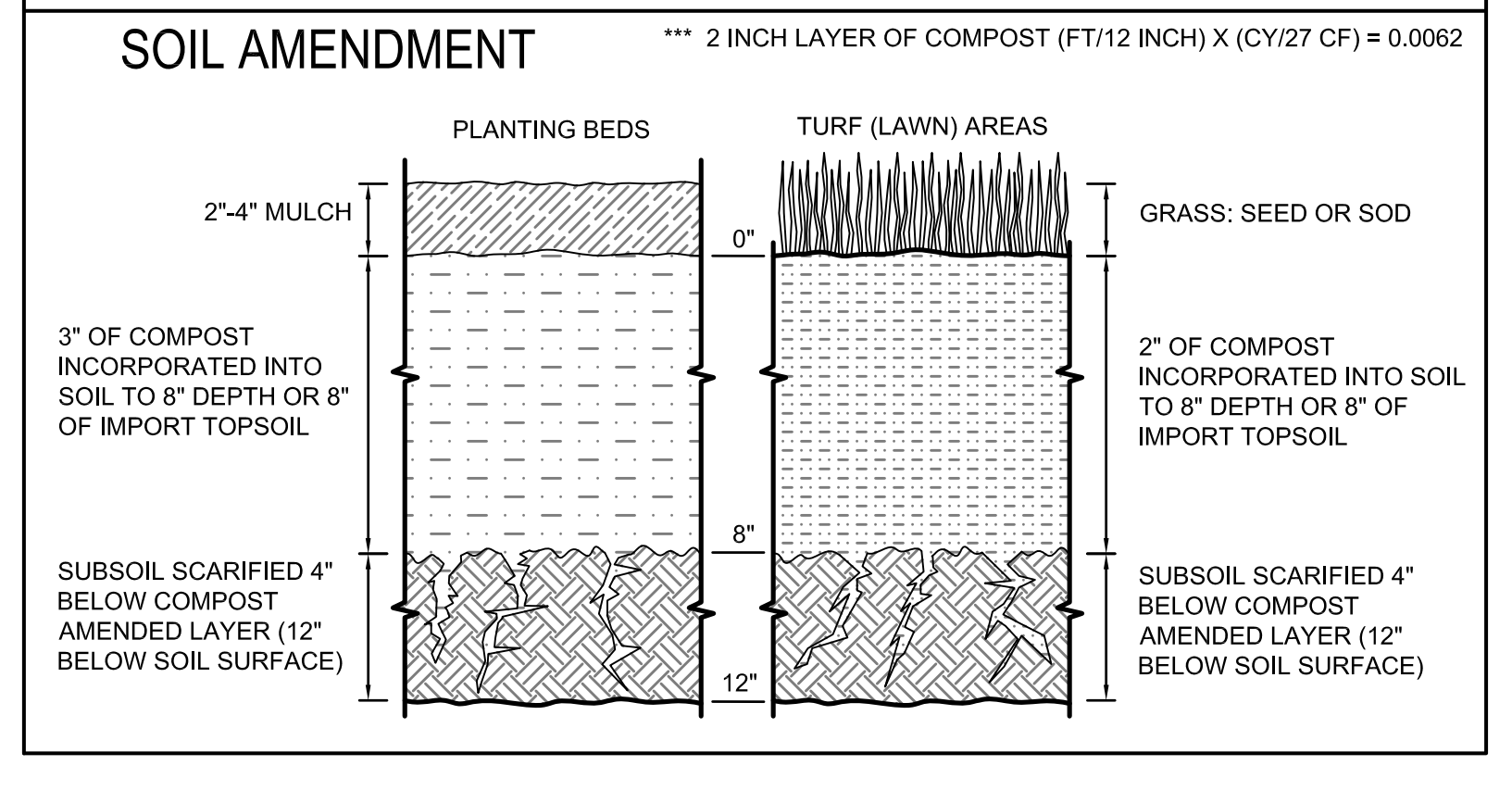
1. INSTALL CB #3 TYPE 1 - 48" WITH SOLID LID & DUPLEX PUMP STATION PER DETAIL ON SHEET 7
RIM=308.50
IE (S)=303.42
IE (SE)=304.00
IE (E)=304.42
SUMP=300.42
2. INSTALL CB #2 TYPE 2 - 54" WITH FLOW CONTROL & SOLID LOCKING LID PER DETAIL ON SHEET C6
RIM=308.50
IE (N,S)=303.50
IE (E)=305.50
3. CB #1-TYPE 1 WITH SOLID LID & OIL SEPARATOR (RISER TEE)
RIM=314.10
IE (N)=311.70
IE (S)=311.60
4. INSTALL CB #4-TYPE 1 WITH SOLID LID
RIM=313.90
IE (W)=312.75
IE (E)=312.06
5. CB #5-TYPE 1 WITH SOLID LID
RIM=313.25
IE (W)=312.18
IE (N)=312.08
6. 14' LONG x 5' WIDE SLOTTED DRAIN (DURA) H2O RATED TRAFFIC LID
RIM=313.70
IE=313.30
7. 15.5 LF 6" DI SD @ 1.00%
8. 1" WATER METER WITH 33 LF 2" SERVICE WATER SEE NOTE 1
9. SAWCUT & PAVEMENT PATCHING DETAILS TO BE APPROVED BY CITY INSPECTOR
10. 49 LF 1 1/2" WATER SERVICE LINE (POLYETHYLENE PIPE SDR 7)
11. INSTALL 2' WIDE x 24' LONG x 18" DEEP GRAVEL STRIP FOR WALKWAY DISPERSION
12. 4" CEMENT CONC. PAVEMENT
13. 4 LF 4" DI SD @ 50.00%
14. CONNECT TO EX. 4" SIDE SEWER (FIELD VERIFY) SEE NOTE 2
15. 29 LF 4" SDR 35 PVC GRAVITY SIDE SEWER @ 2.00%
16. 4" SSCO #2
IE=307.00
17. 89 LF 4" SDR 35 PVC SD @ 2.00% MIN. CONNECT TO 4" ROOF DRAIN LINE
18. INSTALL 2' WIDE x 20' LONG x 18" DEEP GRAVEL STRIP FOR PATIO DISPERSION
19. INSTALL 4' DIA. X 60' LONG CMP DETENTION TANK
TOP=307.00
BOTTOM=303.00
PER DETAIL ON SHEET C6
20. INSTALL 4 LF 8" PVC SDR 35 @ 2.00%
21. 17 LF 4" SOLID SDR 35 PVC FOOTING DRAIN COLLECTOR @ 14.00%
22. 21 LF 4" SDR 35 PVC ROOF DRAIN COLLECTOR @ 3.00%
23. 46 LF 4" SDR 35 PVC ROOF DRAIN @ 2.00% MIN.
24. INSTALL 91 LF 2" PVC SCHEDULE 80 STORM DRAIN FORCE MAIN
25. 105 LF 4" SDR 35 PVC ROOF DRAIN @ 2.00% MIN.
26. 6" SDCO #1
IE=306.01
27. 176 LF 6" DI SD @ 5.00%
28. 2' WIDE ASPHALT THICKENED EDGE

LEGEND



ESTIMATED COMPOST REQUIRED FOR SOIL AMENDMENT

4.437	(SQUARE FEET) X 0.0062 *** =	28	(CUBIC YARDS)
DISTURBED AREA REQUIRING AMENDMENT		REQUIRED COMPOST	



- NOTES:**
1. NEW WATER METER LOCATE 27.5' NORTH OF EXISTING WATER METER AND 4' EAST OF PROPERTY LINE. CONTRACTOR TO FIELD VERIFY THE EXISTING WATER LINE AND COORDINATE WITH CITY WATER DEPARTMENT DURING CONSTRUCTION.
 2. THE TV INSPECTOR OF THE EXISTING SIDE SEWER TO THE CITY SEWER MAIN ON 83RD PLACE SE IS REQUIRED PRIOR TO ANY WORK RELATED TO THE SIDE SEWER. IF THE RESULT OF THE TV INSPECTION IS NOT IN SATISFACTORY CONDITION, AS DETERMINED BY THE CITY OF MERCER ISLAND INSPECTOR, THE REPLACEMENT OF THE EXISTING SIDE SEWER IS REQUIRED.



Know what's below.
Call before you dig.

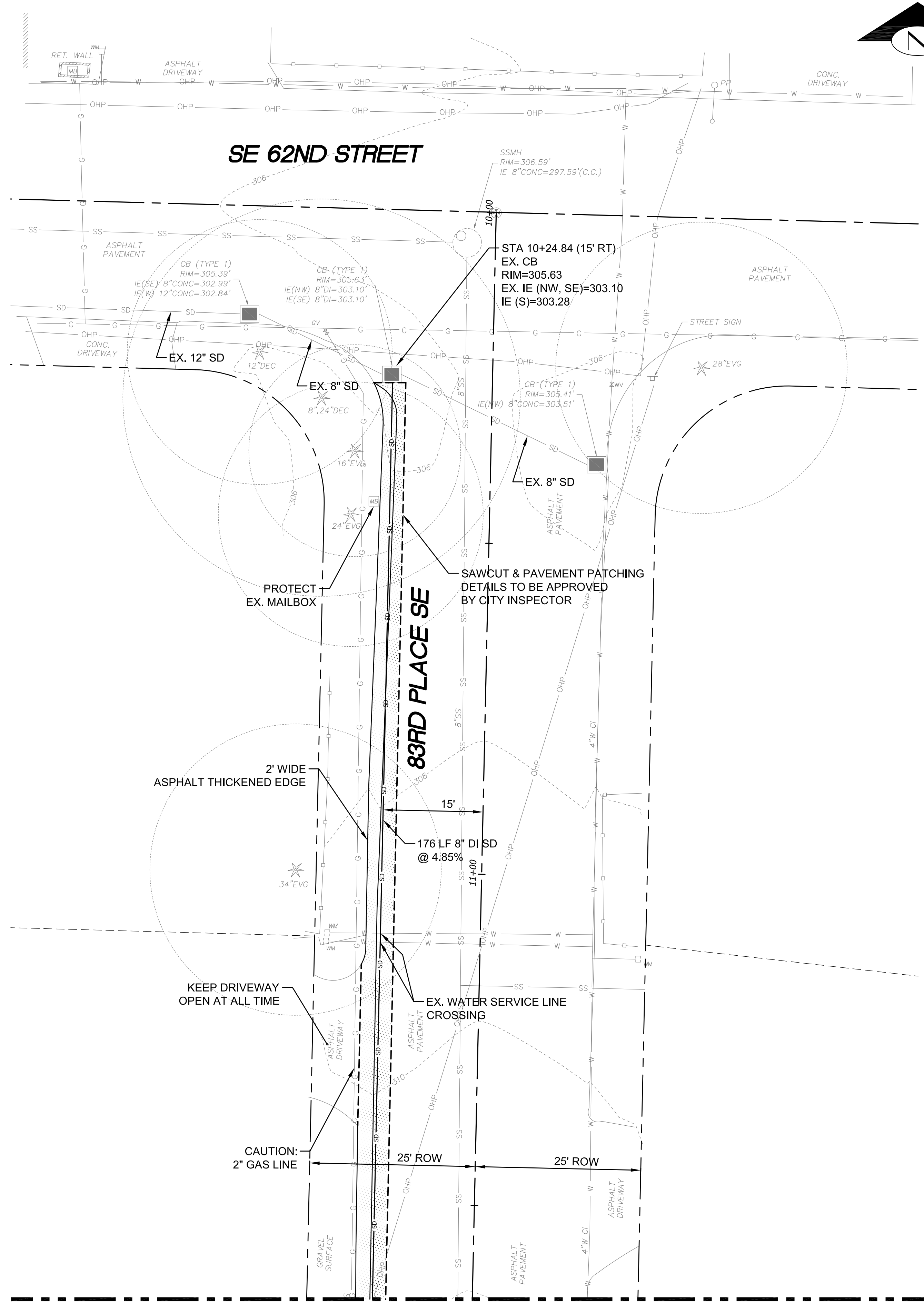
SOIL AMENDMENT NOTE:
THE LAWN AND LANDSCAPE AREAS ARE REQUIRED TO PROVIDE POST-CONSTRUCTION SOIL QUALITY AND DEPTH IN ACCORDANCE WITH BMP T5.13. THE PROJECT CIVIL ENGINEER MUST PROVIDE A LETTER OF CERTIFICATION TO ENSURE THAT THE LAWN AND LANDSCAPE AREAS ARE MEETING THE POST-CONSTRUCTION SOIL QUALITY AND DEPTH REQUIREMENTS SPECIFIED ON THE APPROVED PLAN SET PRIOR TO FINAL INSPECTION OF THE PROJECT.

A BACKUP GENERATOR IS REQUIRED FOR THE FOOTING DRAIN PUMP SYSTEM

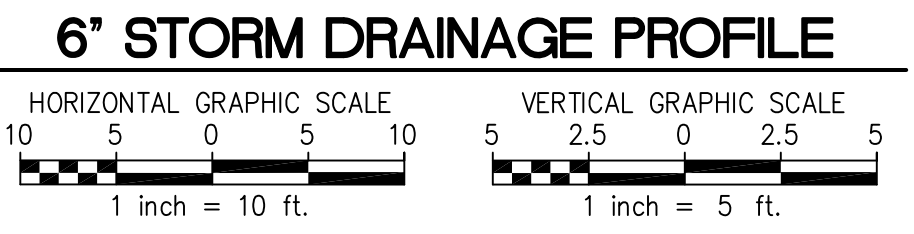
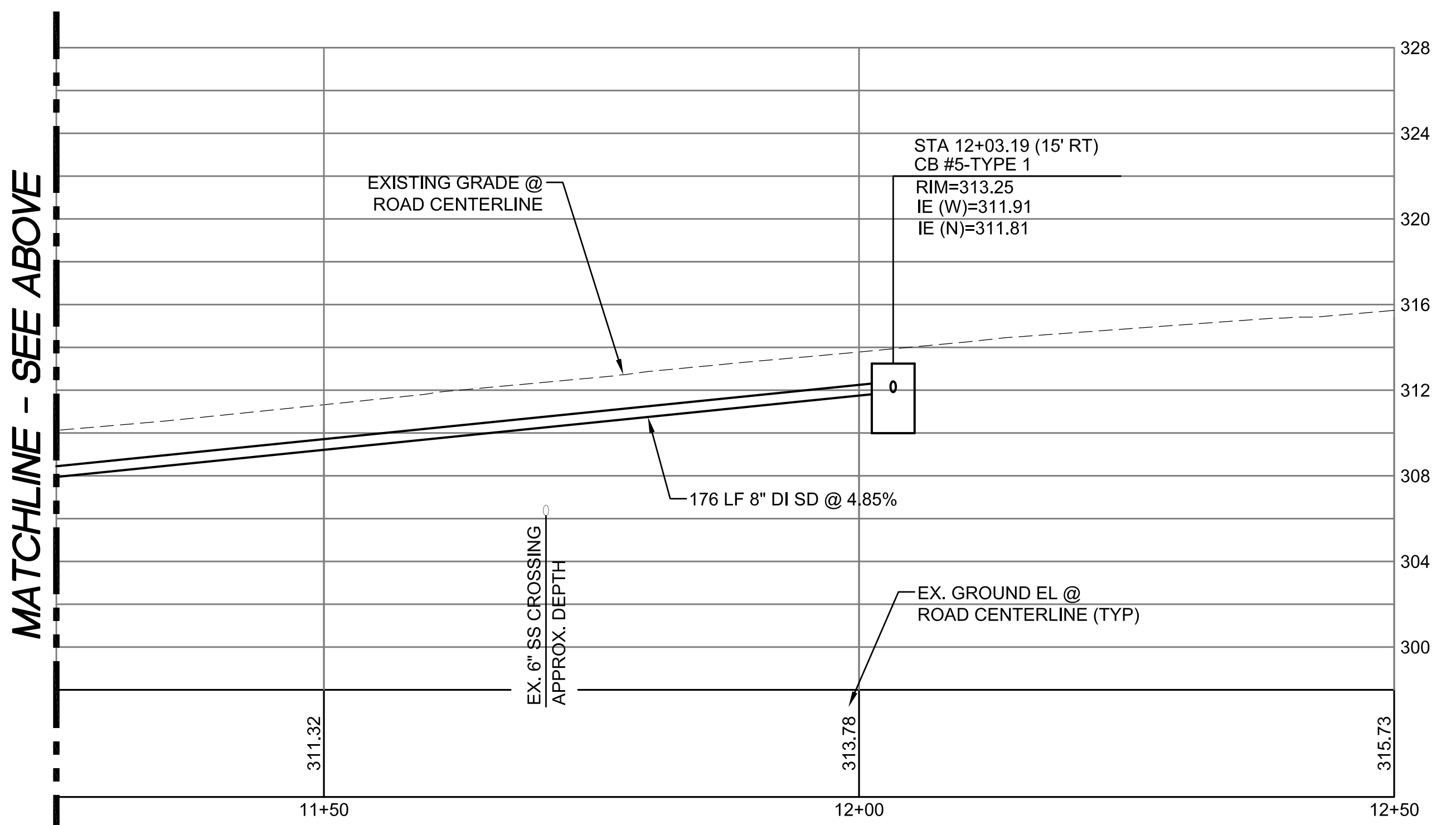
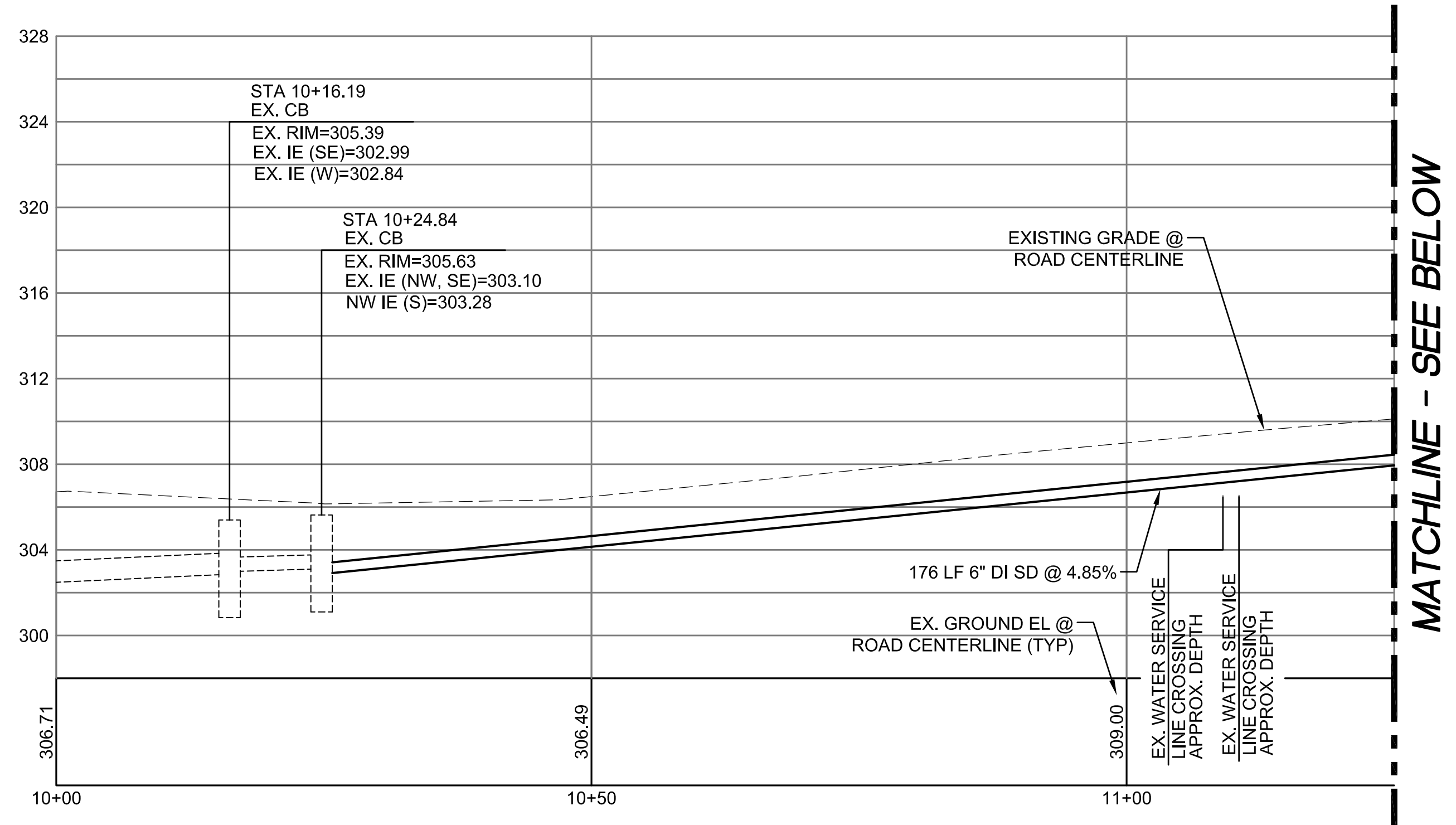
PRIVATE PROPERTY OWNER SHALL BE RESPONSIBLE FOR ANY AND ALL CLAIMS FOR INJURIES AND DAMAGE DUE TO THE OPERATION OR NON-OPERATION OF THE PUMP SYSTEM

REFERENCE SHEET NO.	C4	SHEET	4
		OF	7
		SHEETS	
COOMBES DEVELOPMENT 6221 83RD PLACE SE MERCER ISLAND, WA 98040 STORMWATER / UTILITY PLAN AND DETAILS - 1			
ISSUE DATE	7-05-2022	DESIGNED BY:	L. PHAN
JOB NO.	R22465	DRAWN BY:	L. PHAN
		CHECKED BY:	H.H. PHAN
		PROJ. MNGR:	H.H. PHAN
NO.	DATE	REVISION DESCRIPTION	

Jul 07, 2022 - 12:44pm Han Phan L:\Working\R22465 - 6221 83rd Place SE (COOMBES Development)\CADD\Drawings\R22465-PS-C5.dwg Layout Name: C5



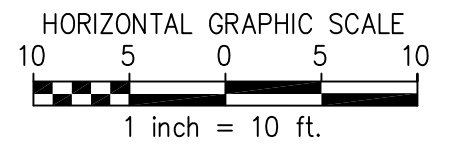
MATCHLINE - SEE SHEET C5



LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- RIGHT OF WAY LINE
- RIGHT OF WAY CENTERLINE
- ASPHALT PAVEMENT

EXISTING CB NOTE:
IF THE EXISTING CATCH BASIN IS NOT IN SATISFACTORY CONDITION, AS DETERMINED BY THE CITY OF MERCER ISLAND INSPECTOR, THE REPLACEMENT OF THE EXISTING CATCH BASIN IS REQUIRED.



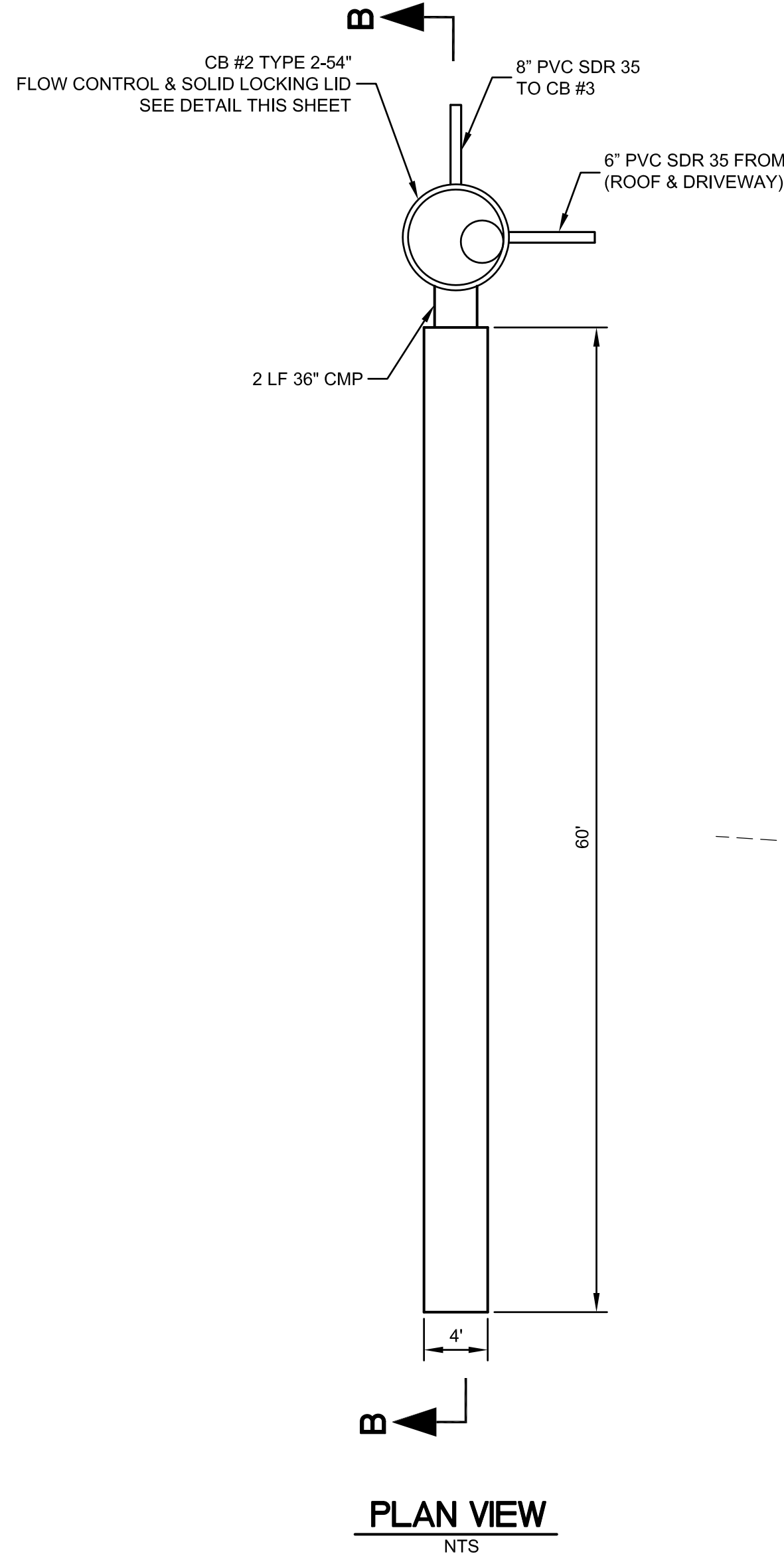
REFERENCE SHEET NO. C5	SHEET 5 OF 7 SHEETS	
COOMBES DEVELOPMENT 6221 83RD PLACE SE MERCER ISLAND, WA 98040 STORMWATER / UTILITY PLAN AND DETAILS - 2		
JOB NO. R22465	ISSUE DATE 7-05-2022	
DESIGNED BY: L. PHAN	DRAWN BY: L. PHAN	
CHECKED BY: H.H. PHAN	PROJ. MNGR: H.H. PHAN	
NO.	DATE	REVISION DESCRIPTION

STANDARD DETENTION SYSTEM NOTES:

- CALL DEVELOPMENT SERVICES (206-275-7605) 24 HOURS IN ADVANCE FOR A DETENTION SYSTEM INSPECTION BEFORE BACKFILLING AND FOR FINAL INSPECTIONS.
- RESPONSIBILITY FOR OPERATION AND MAINTANANCE OF DRAINAGE SYSTEMS ON PRIVATE PROPERTY IS RESPONSIBILITY OF THE PROPERTY OWNER. MATERIAL ACCUMULATED IN THE STORAGE PIPE MUST BE REMOVED FROM CATCH BASINS TO ALLOW PROPER OPERATION. THE OUTLET CONTROL ORIFICE MUST BE KEPT OPEN AT ALL TIMES.
- PIPE MATERIAL, JOINT, AND PROTECTIVE TREATMENT SHALL BE IN ACCORDANCE WITH SECTION 7.04 AND 9.05 OF THE WSDOT STANDARD SPECIFICATION FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, LATEST VERSION. SUCH MATERIALS INCLUDE THE FOLLOWING: LINE AND CORRUGATED POLYETHYLENE PIPE (LCPE), ALUMINIZED TYPE 2 CORRUGATED STEEL PIPE AND PIPE ARCH (MEETS AASHTO DESIGNATIONS M274 AND M36), CORRUGATED OR SPIRAL RIB ALUMINUM PIPE, OR REINFORCED CONCRETE PIPE. CORRUGATED STEEL PIPE IS NOT ALLOWED.

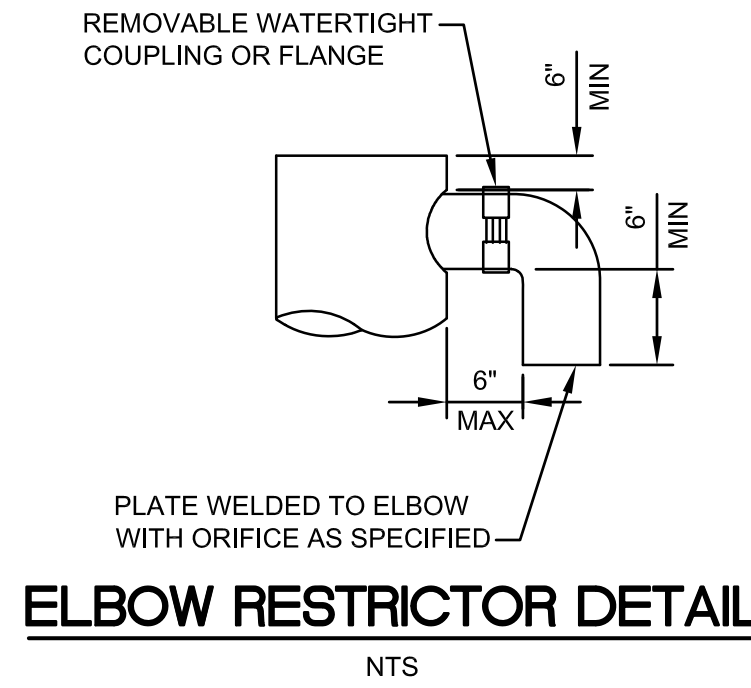
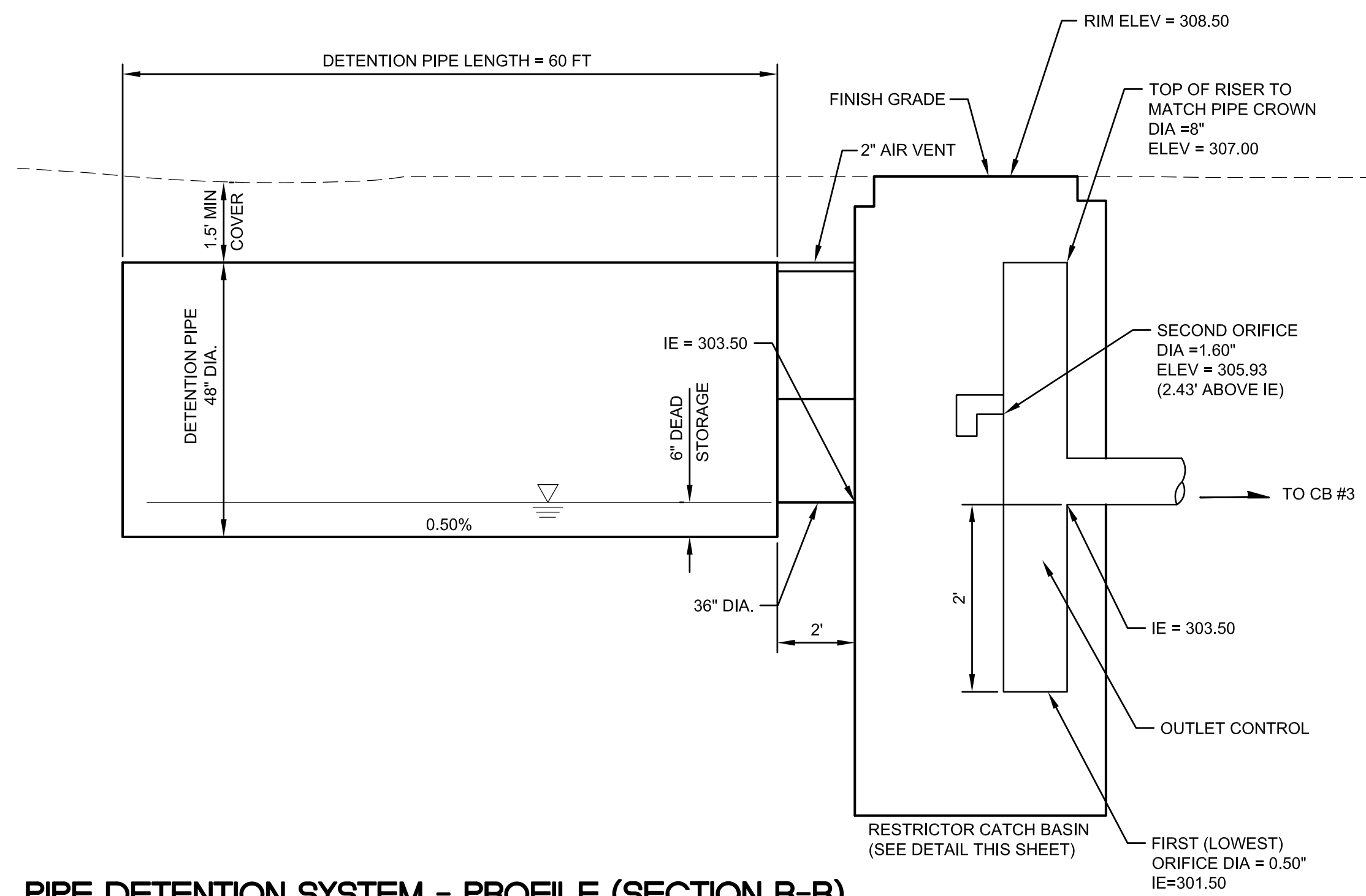
OWNER: JON COOMBES ADDRESS: 6221 83RD PLACE SE PREPARED BY: HAN PHAN, PE
 PERMIT #: _____ ADDRESS: MERCER ISLAND, WA 98040 PHONE: 206-229-6422
 DATE: 5-05-2022
 IMPERVIOUS SURFACE AREA (SF): 4,437 DETENTION PIPE DIA (INCH) 48 DETENTION PIPE LENGTH (FT): 60 ORIFICE #1 DIA = 0.50 INCH, ELEV = 301.50
 PIPE MATERIAL: CMP ORIFICE #2 DIA = 1.60 INCH, ELEV = 305.93

FOOTING DRAINS SHALL NOT BE CONNECTED TO DETENTION SYSTEM



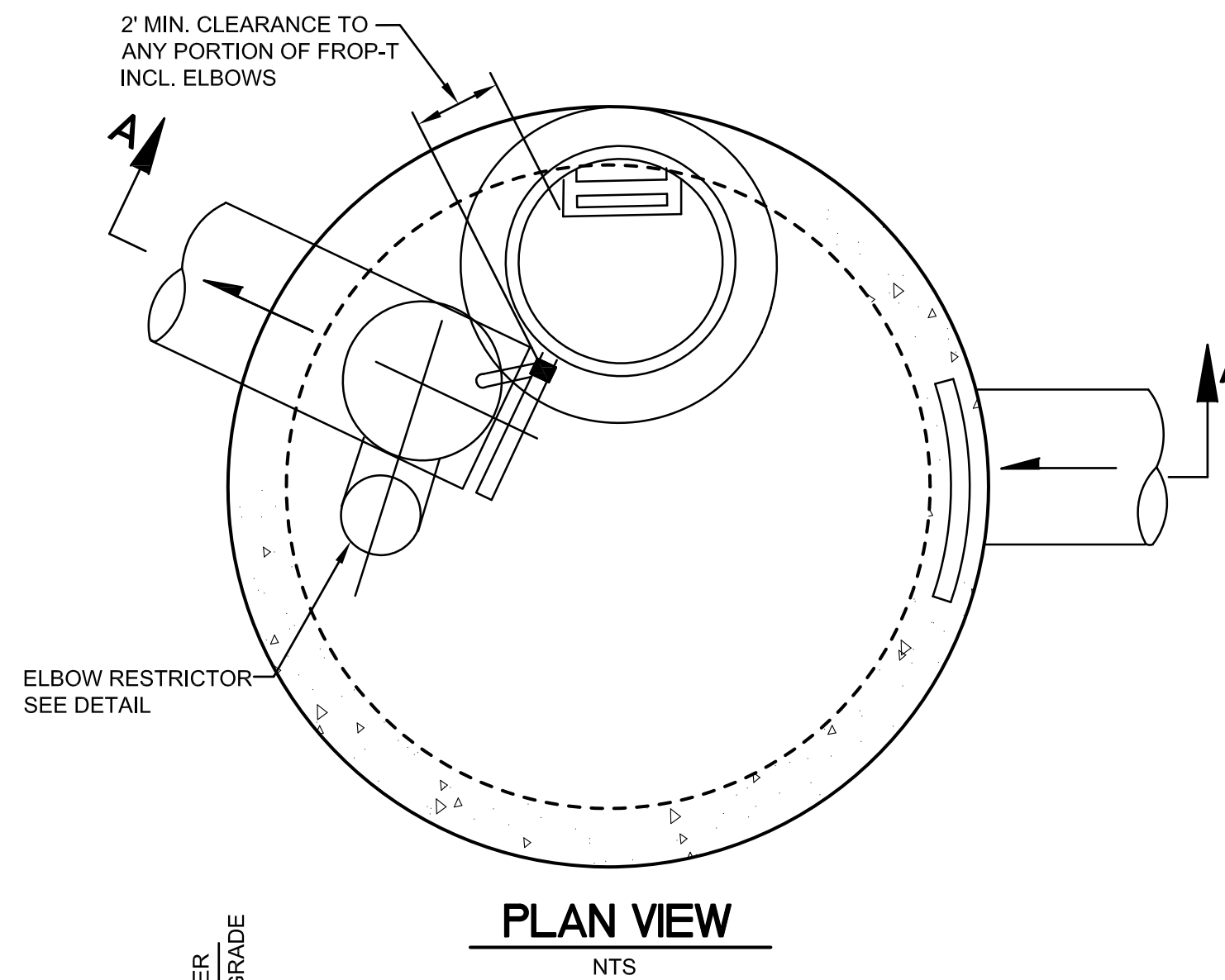
PIPE DETENTION SYSTEM - PROFILE (SECTION B-B)

NTS



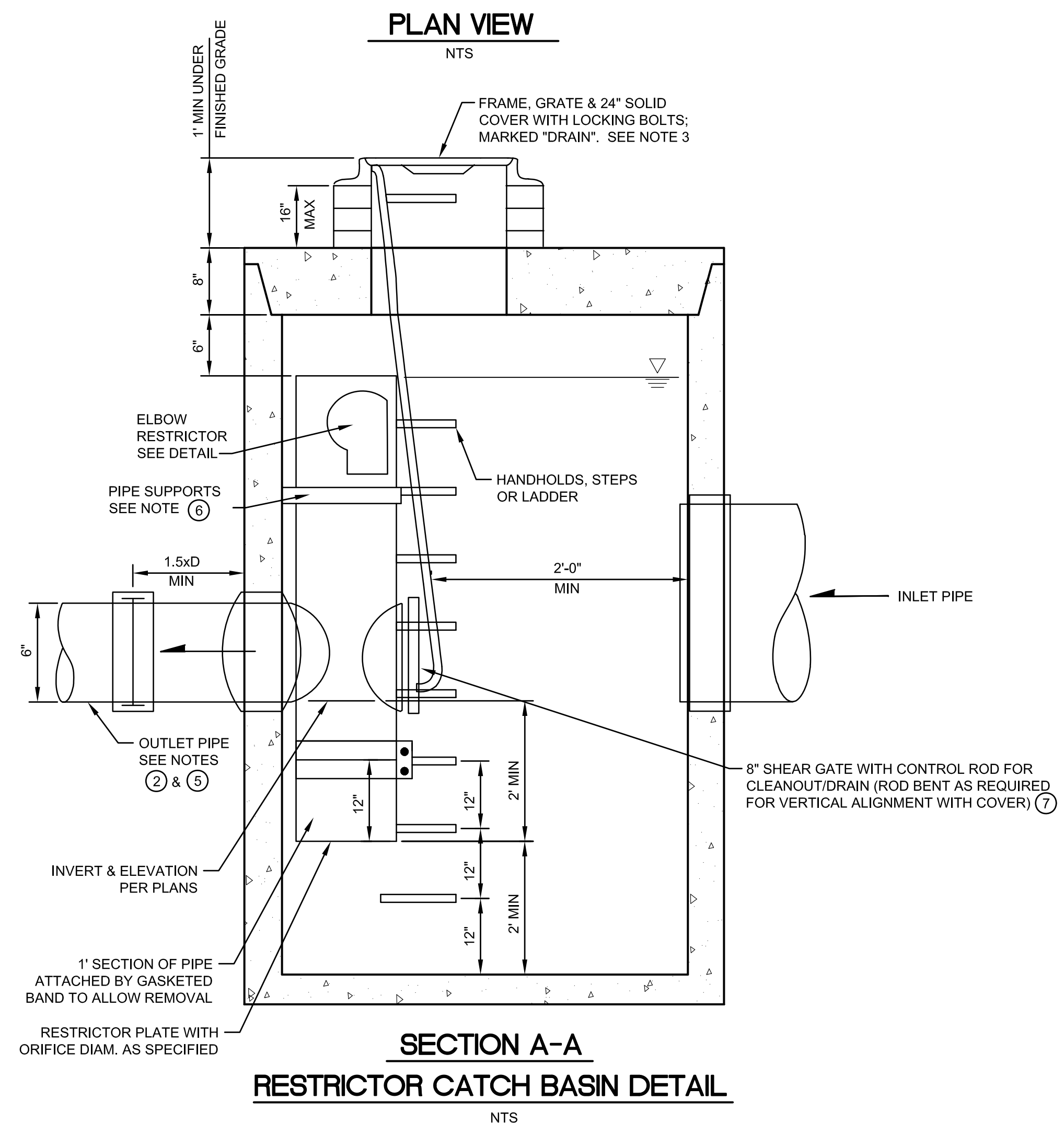
ELBOW RESTRICTOR DETAIL

NTS



PLAN VIEW

NTS



**SECTION A-A
RESTRICTOR CATCH BASIN DETAIL**

NTS

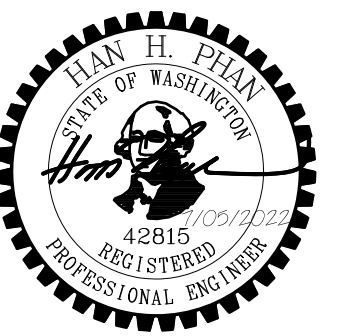
RESTRICTOR CATCH BASIN NOTES:

- USE A MINIMUM OF A 72" DIA. TYPE 2 CATCH BASIN WHEN CONNECTING PIPE MATERIAL IS CONCRETE OR LCPE. A 54" DIA. TYPE 2 CATCH BASIN MAY BE USED FOR OTHER CIRCULAR SINGLE WALL PIPE (SUCH AS CORRUGATED ALUMINUM PIPE).
- OUTLET PIPE: MIN. 6".
- METAL PARTS: CORROSION RESISTANT. NON-GALVANIZED PARTS PREFERRED. GALVANIZE PIP PARTS TO HAVE ASPHALT TREATMENT 1.
- FRAME AND LADDER OR STEPS OFFSET SO:
 - CLEANOUT GATE IS VISIBLE FROM TOP;
 - CLIMB-DOWN SPACE IS CLEAR OF RISER AND CLEANOUT GATE;
 - FRAME IS CLEAR OF CURB.
- IF METAL OUTLET PIPE CONNECTS TO CEMENT CONCRETE PIPE, OUTLET PIPE TO HAVE SMOOTH O.D. EQUAL TO CONCRETE PIPE I.D. LESS 1/4 IN.
- PROVIDE AT LEAST ONE 3 X 0.090 GAUGE SUPPORT BRACKET ANCHORED TO CONCRETE WALL WITH 3/8 IN. STAINLESS STEEL EXPANSION BOLTS OR EMBEDDED SUPPORTS 2 IN. INTO CATCH BASIN WALL (MAXIMUM 3'-0" VERTICAL SPACING).
- THE SHEAR GATE SHALL BE MADE ON 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. THE LIFT HANDLE SHALL BE MADE OF A SIMILAR METAL TO THE GATE (TO PREVENT GALVANIC CORROSION), IT MAY BE OF SOLID ROD OR HOLLOW TUBING, WITH ADJUSTABLE HOOK AS REQUIRED. A NEOPRENE RUBBER GASKET IS REQUIRED BETWEEN THE RISER MOUNTING FLANGE AND THE GATE FLANGE. INSTALL THE GATE SO THAT THE LEVEL-LINE MARK IS LEVEL WHEN THE GATE IS CLOSED. THE MATING SURFACES OF THE LID AND THE BODY SHALL BE MACHINED FOR PROPER FIT. ALL SHEAR GATE BOLTS SHALL BE STAINLESS STEEL.

REFERENCE SHEET NO. **C6**

SHEET **6** OF **7** SHEETS

COOMBES DEVELOPMENT
6221 83RD PLACE SE
MERCER ISLAND, WA 98040
DETENTION PIPE SYSTEM
DETAILS



PBC
 Land Development and Civil Engineering Consultants
 5130 South 166th Lane
 Seattle, WA 98188
 T (206) 229-6422

ISSUE DATE	7-05-2022
DESIGNED BY:	L. PHAN
DRAWN BY:	L. PHAN
CHECKED BY:	H. H. PHAN
PROJ. MGR:	H. H. PHAN

REVISION DESCRIPTION

NO. DATE BY

Jul 03, 2022 - 10:03am Han Phan L:\Working\R22465 - 6221 83rd Place SE (COOMBES Development)\CADD\Drawings\R22465-PS-C7.dwg Layout Name: Layout1

Soil Type*	New Impervious Area (sf)														
	500 to 1,000 sf			1,001 to 2,000 sf			2,001 to 3,000 sf			3,001 to 4,000 sf			4,001 to 5,000 sf		
	Detention Pipe Size (in.) and Length (ft)			Detention Pipe Size (in.) and Length (ft)			Detention Pipe Size (in.) and Length (ft)			Detention Pipe Size (in.) and Length (ft)			Detention Pipe Size (in.) and Length (ft)		
B	36"	48"	60"	36"	48"	60"	36"	48"	60"	36"	48"	60"	36"	48"	60"
C	30	18	11	66	34	22	90	48	30	120	62	42	186	90	48
	22	11	7	43	23	14	66	36	20	78	42	26	132	60	37

NEW IMPERVIOUS CALC.

ROOF AREA (INCLUDING OVERHANG): 2,693 SF
 DRIVEWAY: 1,282 SF
 WALKWAY & PATIO: 462 SF
 TOTAL: 4,437 SF

REFERENCE SHEET NO. **C7**
 SHEET 7 OF 7 SHEETS

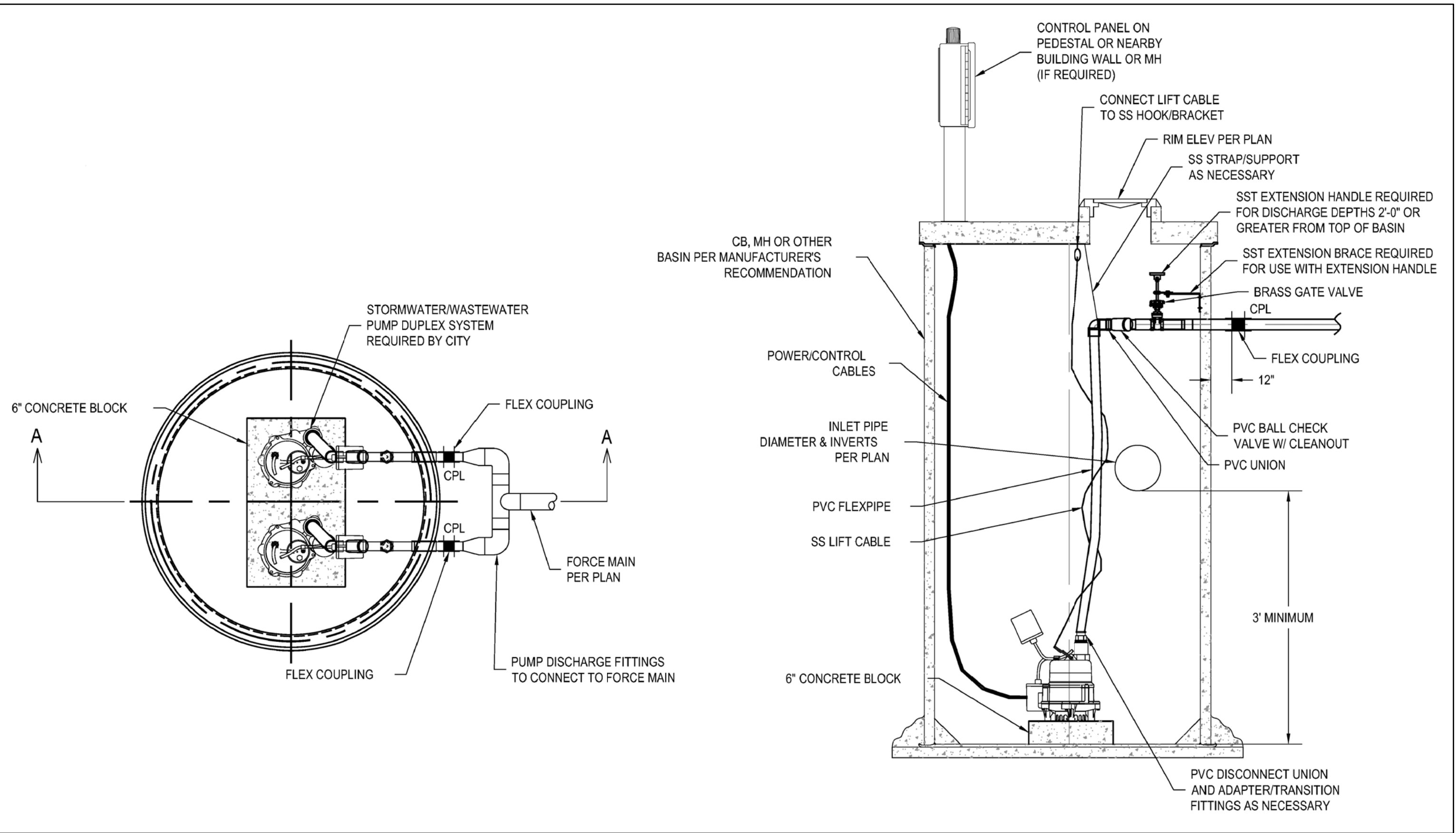
COOMBES DEVELOPMENT
 6221 83RD PLACE SE
 MERCER ISLAND, WA 98040

DETAILS



Outlet Orifice Size and Design Height for Type B Soils Only															
Detention Pipe Size (in)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)
36	0.5	2.2	0.5	0.5	2.2	0.94	0.5	2.2	0.94	0.5	2.4	1.4	0.5	2.44	1.4
48	0.5	3.3	0.94	0.5	3.2	0.9	0.5	3.1	0.9	0.5	2.8	0.8	0.5	2.7	0.75
60	0.5	4.15	0.47	0.5	4.3	0.94	0.5	4.2	0.94	0.5	3.8	0.94	0.5	4.14	0.9

Outlet Orifice Size and Design Height for Type C Soils Only															
Detention Pipe Size (in)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)	Lowest Orifice Diameter (inches)	Distance from Outlet to Second Orifice (feet)	Second Orifice Diameter (inches)
36	0.5	2	0.8	0.5	2.3	1.41	0.5	2.4	1.9	0.5	2.15	1.64	0.5	1.72	2.3
48	0.5	3.2	0.8	0.5	3.3	1.17	0.5	2.83	1.5	0.5	2.9	1.3	0.5	2.43	1.6
60	0.5	3.4	0.6	0.5	3.6	0.89	0.5	3.7	1.1	0.5	3.9	1.28	0.5	4.3	2.2



DUPLEX PUMP STATION
 SCALE: NONE

GENERAL DESCRIPTION	DUPLEX PARALLEL SUBMERSIBLE GRINDER PUMPS
DESIGN CALCULATIONS	FROM RATIONAL METHOD CALCULATION: PEAK INFLOWS: 25-YR = 41 GPM 100-YR = 46.8 GPM
DESIGN FLOW AND TDH	1 PUMP: 46.8 GPM @ 22.5' TDH 2 PUMP: 46.8 GPM @ 22.5' TDH
PUMP ELECTRICAL	1 HP, 1 PHASE, 115 V, WE SERIES (MODEL WE0511 HH OR EQ.)
PUMP CONTROLS	ALTERNATE PUMP STARTS, LOW AND HIGH LEVEL ALARM LIGHT
PUMP MOUNTING AND DISCHARGE	INCREASER TO 2" DISCHARGE WITH 2" UNION, CHECK VALVE, AND GATE VALVE FROM EACH PUMP
DISCHARGE MANIFOLD	2" x 2" DISCHARGE TO FORCE MAIN
FORCE MAIN & FITTINGS	2"
FLOAT SPECIFICATIONS	
REDUNDANT OFF AND LOW LEVEL ALARM	PER MANUFACTURE'S REQUIREMENTS
OFF	PER MANUFACTURE'S REQUIREMENTS
ON (1ST PUMP)	1.5' ABOVE OFF
ON (2ND PUMP)	2.5' ABOVE OFF
HIGH LEVEL ALARM	0.5' ABOVE 2ND PUMP ON
MIN. HEIGHT FROM HIGH LEVEL ALARM TO LOWEST INLET	0.5'
NOTES:	
1. THESE SPECIFICATIONS ARE SCHEMATIC IN NATURE AND SHALL BE CONFIRMED BY SUPPLIER AND CONTRACTOR.	
2. PUMP FLOATS/CONTROLS SHALL BE FIELD TESTED AND ADJUSTED TO ACHIEVE OPTIMUM PUMP CYCLE TIMES PER MANUFACTURE'S RECOMMENDATIONS.	
3. EXPLOSION PROOF PUMPS, CONTROLS, AND ELECTRICAL COMPONENTS SHALL BE INSTALLED IF REQUIRED BY CODE.	

STORM DRAIN DUPLEX PUMP STATION SPECIFICATIONS

JOB NO. R22465	ISSUE DATE	7-05-2022
	DESIGNED BY:	L. PHAN
PROJ. MNGR.	DRAWN BY:	L. PHAN
	CHECKED BY:	H.H. PHAN
NO.	DATE	REVISION DESCRIPTION

PBC
 Land Development and Civil Engineering Consultants
 5130 South 166th Lane
 Seattle, WA 98188
 T (206) 229-6422