Drainage Report

5000 West Mercer Way – Moran Residence

Mercer Island, WA

Prepared for

Edward & Catherine Moran
5000 West Mercer Way
Mercer Island, WA 98040

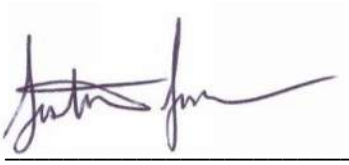
Prepared by

JMJ TEAM
PO Box 2066
Sumner, WA 98390
206.596.2020
Justin Jones, PE

May 19, 2023

PROJECT ENGINEER'S CERTIFICATION

"I hereby state that this Drainage Control Plan for the Moran Residence has been prepared by me or under my supervision and meets minimum standard of care and expertise which is usual and customary in this community for professional engineers. I understand that Pierce County does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities prepared by me."



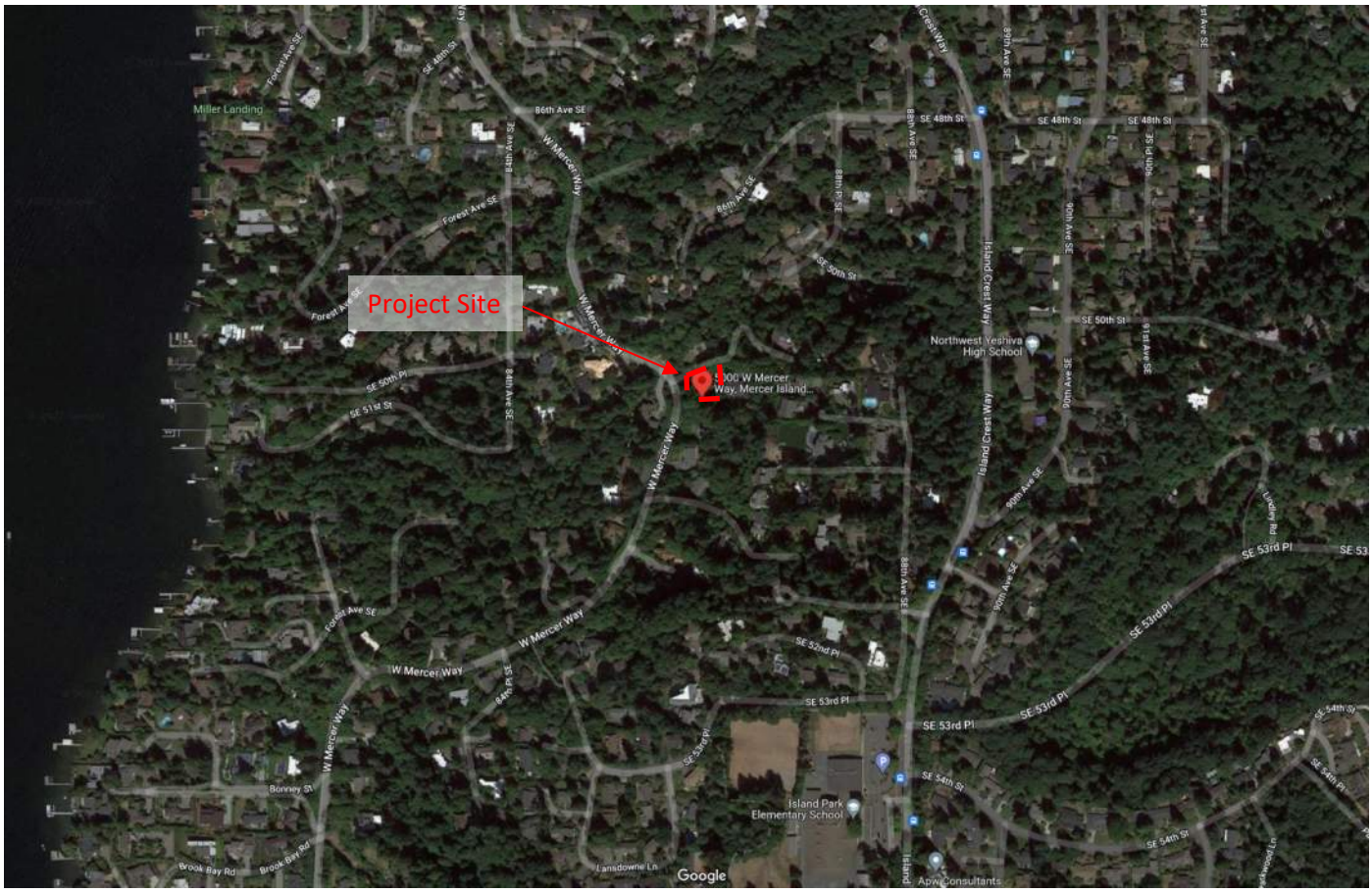
Justin Jones, PE

05-19-2023

TABLE OF CONTENTS

PROJECT OVERVIEW AND MAPS

The Moran Residence is located along West Mercer Way on Mercer Island. The project includes the construction of a new single-family residential building, driveway, and site retaining walls. The projects stormwater approach is to implement detention as the Best Management Practice (BMP).



EXISTING CONDITIONS SUMMARY

The Moran Residence is an undeveloped 0.42 Acre site with grass and tree vegetation covering most the property. The site has steep slopes that slope from east to west.

The existing project site is pervious. The total impervious coverage allowed for this project is 35% or 6,403 SF.

PROPOSED CONDITIONS SUMMARY

The Moran Residence project proposes a house, permeable paver walkaway, concrete driveway, and site retaining walls. Site improvements include the construction of the improvements, clearing and grading, and utility service connections for storm detention, sewer, water, power and communication.

Stormwater management was evaluated for both the building roof areas, and the concrete driveway. Detention has been selected to manage stormwater runoff from the site. Roof leaders will route stormwater along the building and connect to a Type 2 catch basin. Runoff from the driveway will be collected through the Type 2 catch basin located north of the house. Stormwater will be collected in the Type 2 catch basin prior to entering the detention tanks. A control structure will be installed to ensure stormwater flows do not exceed 0.15 CFS, flows from the control structure will be routed to an existing Type 1 catch basin located at the corner of W Mercer Way and the private gravel road to the north of the site. Flows from the driveway will be collected using a trench drain located at the bottom of driveway and will be routed to a Grinder Pump System which will be pump the driveway runoff back to the proposed detention tanks. Footing drains will be installed along the footings of the wall and proposed house, the drains will be routed to the 6" PVC pipe located in the proposed driveway and be conveyed to the existing type 1 catch basin. Stormwater collected from the shoring wall and foundation footings will not be routed through the detention tanks.

The impervious areas will be 25 percent of the entire site. Below is a summary of the proposed lot coverage.

LOT COVERAGE

Proposed Lot Coverage		
	Impervious Areas (SF)	**Pervious Areas (SF)**
Proposed House	2,664	
Proposed Driveway	1,312	
Proposed Retaining Walls	63	
Permeable Pavers		116
Landscaping/Vegetaion		13,722
Totals	**4,039**	**13,838**
Lot Size	18,295	
Max Allowed Impervious Coverage	**35% (6,403 SF)**	
Impervious Lot Coverage	**25%**	

SUMMARY OF MINIMUM REQUIREMENTS

The 2014 Stormwater Management Manual for Western Washington describes the minimum requirements for a new development project. Using the flowchart below, Minimum Requirements 1-5 apply to the project site.

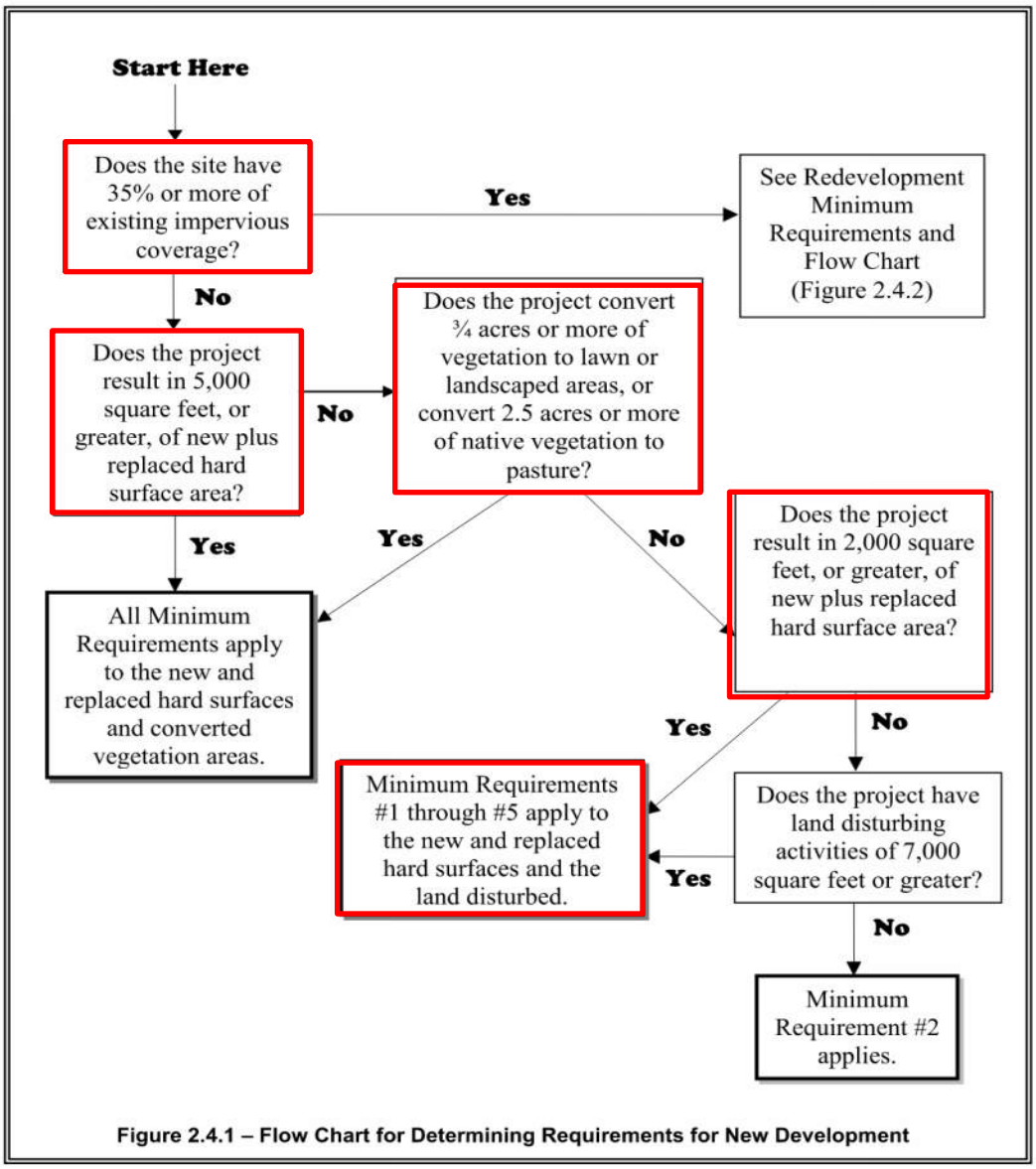


Figure 2.4.1 – Flow Chart for Determining Requirements for New Development

MINIMUM REQUIREMENT 1: PREPARATION OF STORMWATER SITE PLANS

Stormwater Site Plan drawings are submitted with this Permit.

MINIMUM REQUIREMENT 2: CONSTRUCTION STORMWATER POLLUTION PREVENTION

A Temporary Erosion and Sediment Control Plan is included with this Civil Permit. Construction Stormwater Pollution Prevention measures may include: storm drain inlet protection; construction entrance; silt fence and vegetative filtration. See "Temporary Erosion & Sediment Control Plan" in Appendix A for details.

MINIMUM REQUIREMENT 3: SOURCE CONTROL OF POLLUTION

Source control BMPs will be implemented to minimize stormwater contamination and help comply with the 2014 Stormwater Management Manual for Western Washington Manual. BMP's for the project may include:

- *Inspect and clean treatment BMPs, conveyance systems, and catch basins as needed, and determine necessary O & M Improvements.*

MINIMUM REQUIREMENT 4: PRESERVATION OF NATURAL DRAINAGE SYSTEMS AND OUTFALLS

Natural drainage for the site is overland flow from east to west flowing into and existing ditch located along West Mercer Way. Stormwater will be conveyed to detention tanks located in northern portion of the site, stormwater will then outfall to an existing ditch located to the west along West Mercer Way.

MINIMUM REQUIREMENT 5: ONSITE STORMWATER MANAGEMENT

The Moran project site is 18,295 SF and will be 25% impervious after construction. Several stormwater management techniques were studied for the roof and driveway areas.

- Roofs:
    - Bioretention/Rain Gardens were deemed infeasible based on the geo-tech report, due to steep slopes of the site and impermeable soils at shallow depths infiltration was deemed infeasible.
    - Downspout Dispersion Systems were evaluated and deemed infeasible due to the steepness of the site and site constraints to achieve minimum flow paths.
    - Perforated stub connections were considered infeasible based on the geo-tech report, due to steep slopes of the site and shallow impermeable soils making infiltration infeasible.
    - 65/10 dispersion was deemed to be infeasible as the existing property does not maintain 65% of the site area in a native condition.
    - A Dispersion Trench was considered infeasible due to site constraints and not having adequate space for the placement of a dispersion trench.
    - Infiltration trenches were evaluated and were determined infeasible due to the impermeable soils located on site, based on findings found in the geo-tech report.
    - Detention was evaluated and deemed feasible as the BMP for project site, roof runoff will be collected and routed to on site detention system.

- Other Hard surfaces:
    - Bioretention/Rain Gardens were deemed infeasible based on the geo-tech report, due to steep slopes of the site and impermeable soils at shallow depths infiltration was deemed infeasible.

    - 65/10 dispersion was deemed to be infeasible as the existing property does not maintain 65% of the site area in a native condition.

    - Infiltration trenches were evaluated and were determined infeasible due to the impermeable soils located on site, based on findings found in the geo-tech report.

    - Permeable Pavement was deemed infeasible due to impermeable soils located on site. Making infiltration infeasible.

    - Sheet flow dispersion was deemed infeasible due to site constraints, the site slope is greater than 15%.

    - Concentrated flow dispersion was evaluated and deemed infeasible due to the steep site slopes and site constraints that minimum flow paths can't be met.

    - Detention was reviewed and deemed feasible to manage runoff from the proposed driveway. Runoff will be collected through a Type 2 catch basin and routed to the onsite detention tank systems.

LID standards were evaluated, and the Moran residence does not meet the minimum LID thresholds. The projects proposes more than 2,000 SF of impervious area and has more than a net 500 SF impervious area increase to the project site. Therefore, the project is required to use onsite detention. Detention was sized using the City of Mercer Island Detention Sizing Handout (See Appendix B). Using the control structure, flows leaving the site will not exceed 0.15 CFS of the predeveloped flows of the site. Site flows will be routed to a Type 1 catch basin located on the west corner of the site and outfall to an existing ditch located along West Mercer Way. A Grinder pump system will be used to convey the part of the driveway runoff to the detention tank, see Appendix C for pump sizing.

APPENDIX A

EASEMENTS

1. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
   DISCLOSED BY: DEED
   PURPOSE: ROAD
   RECORDING NO.: 4523171
   AFFECTS: NORTHWESTERLY PORTION AS DESCRIBED THEREIN
   (PLOTTED)
2. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
   DISCLOSED BY: DEED
   PURPOSE: ROAD AND UTILITIES
   RECORDING NO.: 4828502
   AFFECTS: NORTHWESTERLY PORTION AS DESCRIBED THEREIN
   (PLOTTED)
3. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
   DISCLOSED BY: STATUTORY WARRANTY DEED
   PURPOSE: INGRESS, EGRESS AND UTILITIES
   RECORDING NO.: 5597166
   AFFECTS: NORTH 10 FEET OF SAID PREMISES
   (PLOTTED)
4. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
   DISCLOSED BY: STATUTORY WARRANTY DEED
   PURPOSE: ROAD FOR INGRESS AND EGRESS
   RECORDING NO.: 5706728
   AFFECTS: NORTH 10 FEET OF SAID PREMISES
   (PLOTTED)
5. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
   GRANTED TO: WASHINGTON NATURAL GAS COMPANY, A WASHINGTON CORPORATION
   PURPOSE: GAS PIPELINE(S)
   RECORDING DATE: NOVEMBER 16, 1994
   RECORDING NO.: 9411160439
   AFFECTS: FIVE FEET ON EITHER SIDE OF THE NATURAL GAS DISTRIBUTION LINE AS CONSTRUCTED OR TO BE CONSTRUCTED WITHIN THE NORTH 20 FEET OF SAID PREMISES
   (NOT PLOTTED-AS CONSTRUCTED)
6. NOTICE OF ADDITIONAL TAP OR CONNECTION CHARGES, AND THE TERMS AND CONDITIONS THEREOF:
   RECORDING DATE: DECEMBER 6, 1977
   RECORDING NO.: 7712060812
   (NOT PLOTTED-NOT SURVEY RELATED)

TESC NOTES

- Contractor to install temporary erosion and sediment control measures as necessary to ensure stormwater leaving the site is free of settleable solids.
- Roads shall be cleaned thoroughly as needed to protect stormwater infrastructure and downstream water resources. Sediment shall be removed from roads by shoveling or pickup sweeping and be transported to a controlled sediment disposal area.
- Install strom drain inlet protection in all existing catch basins within the project vicinity per City of Mercer Island Detail 4.2.8.
- Install Stabilized Construction Entrance per City of Mercer Island Detail 4.1.1.
- Install Silt Fence as necessary. See City of Mercer Island Detail 4.2.12.
- Install straw bale barriers, wattles and other TESC measures as necessary.
- Exposed soils shall be watered as necessary to prevent dust from leaving the site.
- Contractor to mark clearing limits with lath and flagging.
- Concrete handling and equipment washing shall in accordance with DOE BMP C151.

GENERAL NOTES

- See Tree Inventory Tables in Arborist Report included in this submittal.

CONSTRUCTION NOTES

- 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 lawn and landscape areas are Depth Requirements specified on the approved plan set prior to final inspection of the project.
- POST-CONSTRUCTION SOIL MANAGEMENT

1. Retain & Protect Native Vegetation and Soil
   1.1. Identify Areas of the site that will not be disturbed construction. Fence areas to prevent impacts during construction.

2. loosen Compacted Subsoil
   2.1. In Areas Compacted by Construction Traffic Scarify the top 4-inches of subsoil. Use a Cat-mouted Ripper,tractor-mounted disc, or tiller to mix the first lift of topsoil into the subsoil. USe the equipment listed to scarify soils to a depth of 12-inches before tilling in at least 8-inches of compost.

3. Restore Soils that are Disturbed During Construction
   3.1. Stockpile and reuse existing topsoil (amend if needed to meet 5% organic matter content for turf areas; 10% organic matter content for planting beds).

4. Add Mulch to Planting Beds
   4.1. Spread mulch (coarse bark or wood chips) in the spring or fall (after planting) to control weeds, reduce the need for irrigation and prevent erosion). Apply 1 to 2 inches of mulch on planting beds and around shallow-rooted annuals. Apply 2 to 4 inches of mulch around trees and woody perennials, but make sure to keep mulch 2-3 inches away from tree trunks.

5. Protect Restored Soils from Erosion anad Re-Compaction
   5.1. Prevent runoff from roads or open slopes onto amended soil areas. Compost blankets are an approved erosion control Best Management Practice (BMP) that can be used during construction and then tilled into existing soil at the end of the construction process prior to planting. Once soils have been amended, vehicle traffic should be prohibited to prevent recompilation from occurring.

LEGEND

- Silt Fence
- Tree Protection Fence
- Trees to be Removed
- Protect and Maintain Existing Trees

CALL TWO BUSINESS DAYS BEFORE YOU DIG
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

Owner/Developer:
Edward & Catherine Moran
5000 West Mercer Way
Mercer Island, WA 98040

Architect:
Plan One Fine Home Design
5125 47th Ave S
Seattle, WA 98118
206-612-8511

Engineer:
JUTEAM
Justin Jones, PE
PO Box 2066
Sumner, WA 98390
(206) 596-2020

Project:
Moran Residence

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

JUSTIN M. JONES
STATE OF WASHINGTON
41829
REGISTERED
PROFESSIONAL ENGINEER
05-19-2023

REV	DATE	DESCRIPTION

SHEET TITLE:
Existing Site & TESC Plan

PROJ. NO: 1576001
DATE: May 19, 2023
DRAWN BY:
DESIGN BY:
SHEET NUMBER:
C-01
DWG.

File: 1576001C-EX.dwg Path: J:\1576 - Moran\001 - W Mercer Way\CAD\ Plotted by: JMJ Date: 19-May-23 3:16:50pm

LEGEND

- Proposed Concrete
- Proposed Concrete with Raked Surface
- Proposed Permeable Pavers
- Landscaping/Native Vegetation

GENERAL NOTES

- See Detail on Sheet C-05 for Standard Concrete Section.
- See Detail on Sheet C-05 for Permeable Paver Section.
- Driveway Slopes over 20.0% add a Raked Surface Finish to increase Traction.

LOT COVERAGE

Proposed Lot Coverage		
	Impervious Areas (SF)	Pervious Areas (SF)
Proposed House	2,664	
Proposed Driveway	1,312	
Proposed Retaining Walls	63	
Permeable Pavers		116
Landscaping/Vegetaion		13,722
Totals	**4,039**	**13,838**
Lot Size	18,295	
Max Allowed Impervious Coverage	**35% (6,403 SF)**	
Impervious Lot Coverage	**22%**	

Lot Coverage Calculations		
A. Gross Lot Area	18,295	Square Feet
B. Net Lot Area	16,865	Square Feet
C. Allowed Lot Coverage Area	5,060	Square Feet
D. Allowed Lot Coverage	35	% of Lot
E. Existing Lot Coverage:		
1. Main Structure Roof Area	0	Square Feet
2. Accessory Building Roof Area	0	Square Feet
3. Vehicular Use (driveway, paved access easements [portion used by the lot for access], parking)	0	Square Feet
4. Covered Patios and Covered Decks	0	Square Feet
5. Total Existing Lot Coverage Area (E1 + E2 + E3 + E4)	0	Square Feet
F. (Total Lot Coverage Area Removed)	0	Square Feet
G. Proposed Adjustment for Single Story (Area)	0	Square Feet
H. Proposed Adjustment for Flag Lot	0	Square Feet
I. Total New Lot Coverage Area:		
1. Main Structure Roof Area	2,239	Square Feet
2. Accessory Structure Roof Area	0	Square Feet
3. Vehicular Use (driveway, paved access easements [portion used by the lot for access], parking)	1,912	Square Feet
4. Covered Patios and Covered Decks	425	Square Feet
5. Total New Lot Coverage Area (I1 + I2 + I3 + I4)	4,576	Square Feet
J. Total Project Lot Coverage Area = (E5 - F) + I5	4,576	Square Feet
K. Proposed Lot Coverage Area = (J/B) x 100	27.1	% of Lot

Hardscape Calculations		
A. Gross Lot Area	18,295	Square Feet
B. Net Lot Area	16,865	Square Feet
C. Area Borrowed from Lot Coverage	0	Square Feet
D. Allowed Hardscape Area = 9% of lot area + C	0	% of Lot
E. Allowed Hardscape Area	0	Square Feet
F. Total Existing Hardscape Area:		
1. Uncovered Decks	0	Square Feet
2. Uncovered Patios	0	Square Feet
3. Walkways	0	Square Feet
4. Stairs	0	Square Feet
5. Rockeries and Retaining Walls	0	Square Feet
6. Other	0	Square Feet
7. Total Existing Hardscape Area (F1 +F2 + F3 + F4 + F5 + F6)	0	Square Feet
G. (Total Hardscape Area Removed)	0	Square Feet
H. Total New Hardscape Area:		
1. Uncovered Decks	0	Square Feet
2. Uncovered Patios	0	Square Feet
3. Walkways	119	Square Feet
4. Stairs	44	Square Feet
5. Rockeries and Retaining Walls	70	Square Feet
6. Other	0	Square Feet
7. Total New Hardscape Area (H1 + H2 + H3 + H4 + H5 + H6)	233	Square Feet
I. Total Project Hardscape Area = (F7 - G) + H7	233	Square Feet
J. Total Project Hardscape Area = (I/B) x 100	1.4	Square Feet

Lot Slope Calculations		
Highest Elevation Point of Lot:	222	Feet
Lowest elevation Point of Lot:	184	Feet
Elevation Difference:	38	Feet
Horizontal distance Between High and Low Points:	127	Feet
Lot Slope	29.9%	%

	Square Feet
Lot Area	18,295
Max Allowable Gross Area = (Lot Area)*(40%)* (85%)	6,220
Max Allow Area per Floor = (Max Allowable Gross Area)/2	3,110

Gross Floor Area Calculations				
Building Area	Existing Area (Square Footage)	Removed Area (Square Footage)	New/Addition Area (Square Footage)	Total (Square Footage)
Upper Floor	0	0	1848.8	1848.8
Main Floor	0	0	1402.7	1402.7
Gross Basement Area	0	0	0	0
Garage/Carport	0	0	635.5	635.5
Total Floor Area	**0**	**0**	**3887**	**3887**

CALL TWO BUSINESS DAYS BEFORE YOU DIG
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

Owner/Developer:

Edward & Catherine Moran
5000 West Mercer Way
Mercer Island, WA 98040

Architect:

Plan One Fine Home Design
5125 47th Ave S
Seattle, WA 98118
206-612-8511

Engineer:

JMJTEAM
Justin Jones, PE
PO Box 2066
Sumner, WA 98390
(206) 596-2020

Project:

Moran Residence

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

JUSTIN M. JONES
STATE OF WASHINGTON
41829
REGISTERED
PROFESSIONAL ENGINEER
05-19-2023

REV	DATE	DESCRIPTION

SHEET TITLE:

Site & Grading Plan

PROJ. NO: 1576001

DATE: May 19, 2023

DRAWN BY:

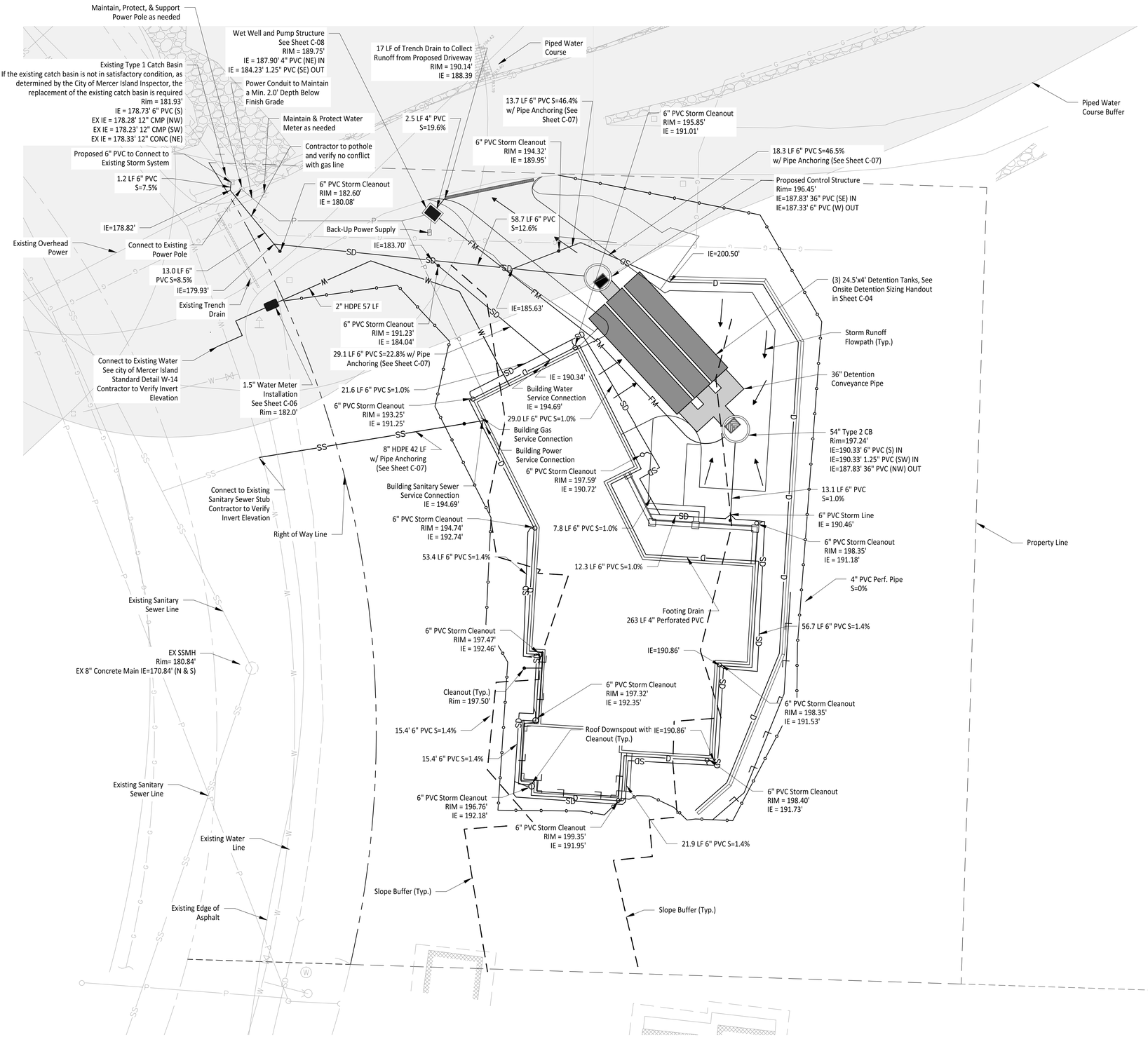
DESIGN BY:

SHEET NUMBER:

C-02

DWG.

File: 1576001C-SP.dwg Path: J:\1576 - Moran\001 - W Mercer Way\CAD\ Plotted By: JMJ Date: 19-May-23 3:11:27pm



LEGEND

- SS — Sanitary Sewer Line
- W — Water Line
- P — Power Conduit
- SD — Stormwater Line

CONSTRUCTION NOTES

- ASTM 3034 SDR 35 PVC pipe, fused solid wall HDPE, schedule 40 ABS, DIP or CIP (up to 8 ft. depth). Over 8 ft. depth and slopes more than 20%, DIP, CIP, or fused solid wall HDPE are required.
- Bedding material for open cut construction must be pea gravel, sand, control density fill (CDF), or 5/8" minus C.R.
- Select backfill material shall be 5/8" minus C.R. or control density fill (CDF).
- Imported backfill material shall be bank run gravel or pit run gravel from an approved supplier meeting APWA/WSDOT gradation specifications. Not allowed in right-of-way.
- Rubber gaskets must be used when appropriate.
- Rigid couplings must be used forconnections to existing stubs in right-of-way.
- A stainless steel strap and saddle (Romac) must be used for coring.
- 1" Water Meter Installation see City of Mercer Island Detail on sheet C-06.
- Tapping Tee Installation see City of Mercer Island Detail on sheet C-06.
- 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.

GENERAL NOTES

- Water Service laterals shall have a minimum cover of 12 inches.
- Roof leader locations to be verified by contractor prior to construction.
- Storm pipes to maintain a minimum cover of 1.5' from finish grade.
- Storm pipes to be SDR 35 PVC piping.
- Sanitary Sewer laterals to be soild wall HDPE piping.
- Saniatry Sewer Laterals to mantain a minimum cover of 3.0' from finish grade.
- Pipes entering and exiting catch basins a tee section or bent elbow must be installed for spill control.
- Power conduit shall maintain a minimum cover of 2.0' from finish grade.
- Franchise utilities shown on this plan are not reviewed or approved by the City of Mercer Island.
- The TV inspection of the existing side sewer to the City sewer main on W Mercer Way 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.
- An emergency on-site, back-up power supply and an external alarm system for system failure and high water level indicator are required for the pump system.
- Private property owners shall be responsible for any and call claims for injuries and damage due to the operation or non-operation of the pump system.
- Stormwater Cleanout lid per WSDOT Standard Plan B-85.40-00

CALL TWO BUSINESS DAYS BEFORE YOU DIG
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

Owner/Developer:
Edward & Catherine Moran
5000 West Mercer Way
Mercer Island, WA 98040

Architect:
Plan One Fine Home Design
5125 47th Ave S
Seattle, WA 98118
206-612-8511

Engineer:
JUTEAM
Justin Jones, PE
PO Box 2066
Sumner, WA 98390
(206) 596-2020

Project:
Moran Residence

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

JUSTIN M. JONES — STATE OF WASHINGTON — 41829 — REGISTERED PROFESSIONAL ENGINEER
05-19-2023

REV	DATE	DESCRIPTION

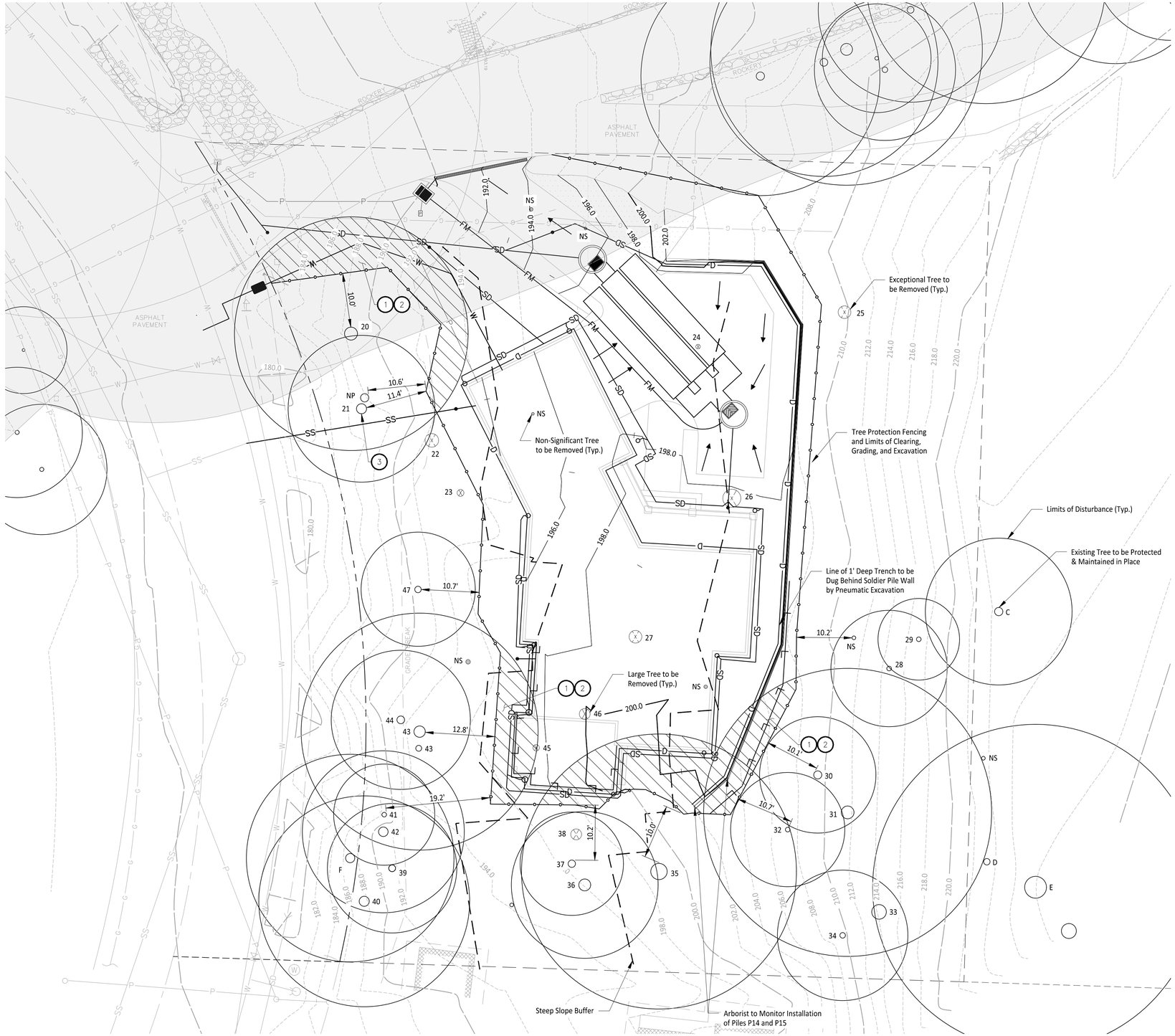
SHEET TITLE:
Utility Plan

PROJ. NO: 1576001
DATE: May 19, 2023
DRAWN BY:
DESIGN BY:

SHEET NUMBER:
C-03

DWG.

File: 1576001C-STRM.dwg Paths: J:\1576 - Moran\001 - W Mercer Way\CAD\ Plotted by: JMJ Date: 19-May-23 3:18:22pm



LEGEND

- Tree Protection Fencing and Limits of Clearing, Grading, and Excavation
- Steep Slope Buffer
- Proposed Water Line
- Proposed Storm Line
- Proposed Drain Line
- Proposed Storm Force Main
- Proposed Sanitary Sewer Line
- Proposed Power Line
- Large Tree to be Removed
- Exceptional Tree to be Removed
- Non-Significant Tree to be Removed

CONSTRUCTION NOTES

1. All grading and excavation work within the limits of disturbance as indicated by cross-hatching shall be monitored by project arborist.
2. Pneumatic air or hydro excavation to be utilized at foundation locations in conflict with critical root zones and under the supervision of project arborist.
3. Utility trenching to be done with hydro or pneumatic methods or by hand excavation if recommended by and under supervision of project arborist

TREE PROTECTION FENCING AND SIGN

1. 6' H Chain Link, wire mesh, or similar open rigid material (No Plywood)
2. Must be installed prior to demolition or ground disturbance
3. Kept in place for the duration of construction
4. No soil disturbance or activity allowed within fenced area; material
5. Modifications of these requirements by approval of SDCI Planner only
6. If roots greater than 2 inch found outside of fencing, protect by hand excavation and, if necessary, cut cleanly and keep moist
7. Use 3 inches or deeper wood chip mulch within tree protection zones as well for all trees impacted within their limits of disturbance

VEGETATION PROTECTION

1. Orange mesh or similar open material
2. Minimize construction zone
3. Protect vegetation outside construction zone with fencing as shown
4. Use 3 inches or deeper wood chip mulch outside fenced areas to protect feeder roots

CALL TWO BUSINESS DAYS BEFORE YOU DIG
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

Owner/Developer:

Edward & Catherine Moran
5000 West Mercer Way
Mercer Island, WA 98040

Architect:

Plan One Fine Home Design
5125 47th Ave S
Seattle, WA 98118
206-612-8511

Engineer:

Justin Jones, PE
PO Box 2066
Sumner, WA 98390
(206) 596-2020

Project:

Moran Residence

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

JUSTIN M. JONES
STATE OF WASHINGTON
41829
REGISTERED
PROFESSIONAL ENGINEER
05-19-2023

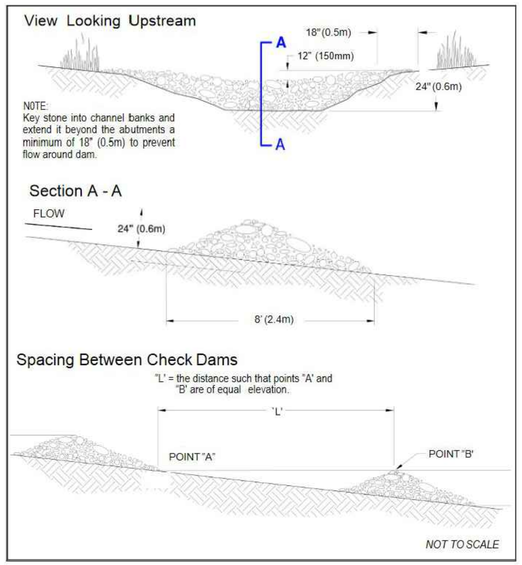
REV	DATE	DESCRIPTION

SHEET TITLE:

Tree Retention Plan

PROJ. NO: 1576001
DATE: May 19, 2023
DRAWN BY:
DESIGN BY:
SHEET NUMBER: C-04
DWG.

File: 1576001C-TREE.dwg Path: J:\1576 - Moran\001 - W Mercer Way\CAD\ Plotted by: JMJ Date: 19-May-23 3:05:38pm



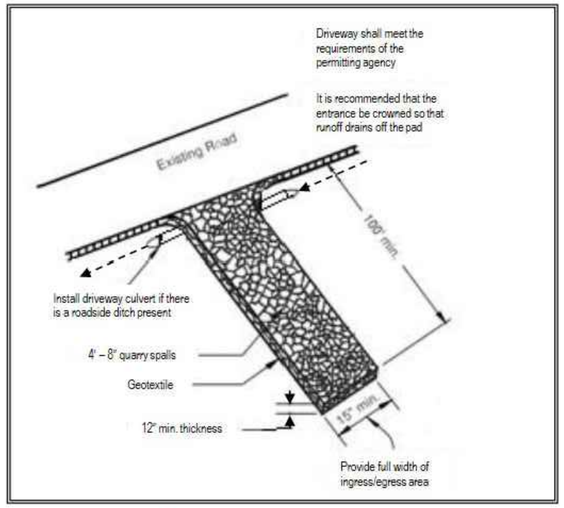


Figure 4.1.1 – Stabilized Construction Entrance

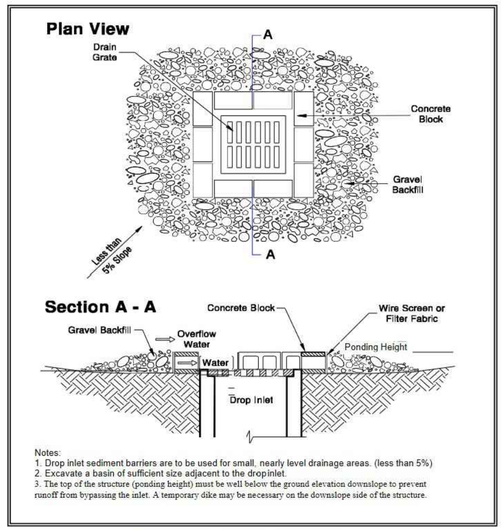
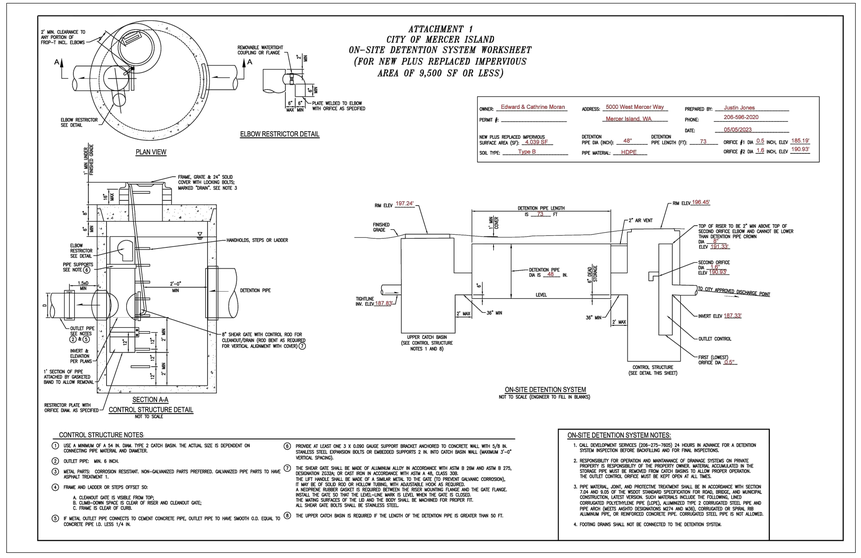


Figure 4.2.8 – Block and Gravel Filter



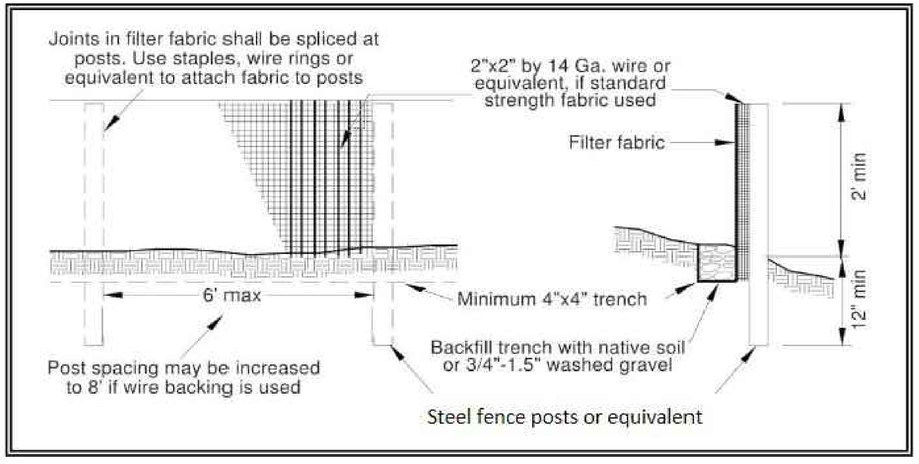


Figure 4.2.12 – Silt Fence

Owner/Developer:

Edward & Catherine Moran
5000 West Mercer Way
Mercer Island, WA 98040

Architect:

Plan One Fine Home Design
5125 47th Ave S
Seattle, WA 98118
206-612-8511

Engineer:

Justin Jones, PE
PO Box 2066
Sumner, WA 98390
(206) 596-2020

Project:

Moran Residence

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

JUSTIN M. JONES
STATE OF WASHINGTON
41829
REGISTERED
PROFESSIONAL ENGINEER

05-19-2023

REV	DATE	DESCRIPTION

SHEET TITLE:

Details

PROJ. NO: 1576001

DATE: May 19, 2023

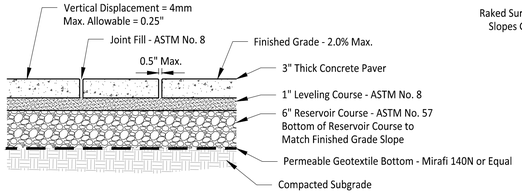
DRAWN BY: | DESIGN BY:

SHEET NUMBER:

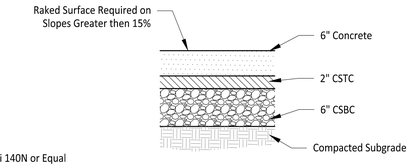
C-05

DWG:

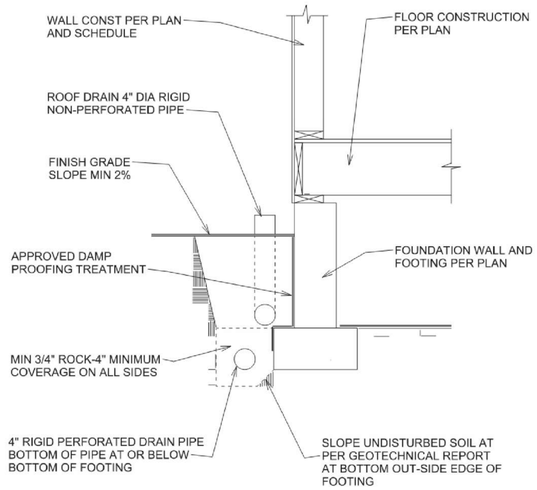
CALL TWO BUSINESS DAYS BEFORE YOU DIG
1–800–424–5555
UTILITIES UNDERGROUND LOCATION CENTER



PERMEABLE PAVERS
SECTION A
1" = 1' C-06



CONCRETE DRIVEWAY
SECTION B
1" = 1' C-06



FOOTING DRAIN DETAIL
SECTION B
3/4" = 1' C-06

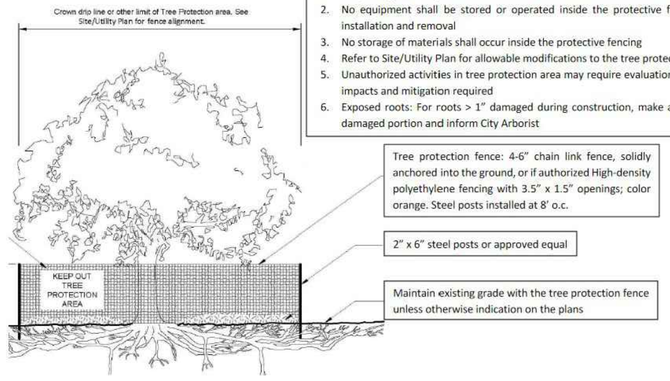
TREE PROTECTION AREA (TPZ)

KEEP OUT!

DO NOT REMOVE OR ADJUST THE APPROVED LOCATION OF THIS TREE PROTECTION AREA

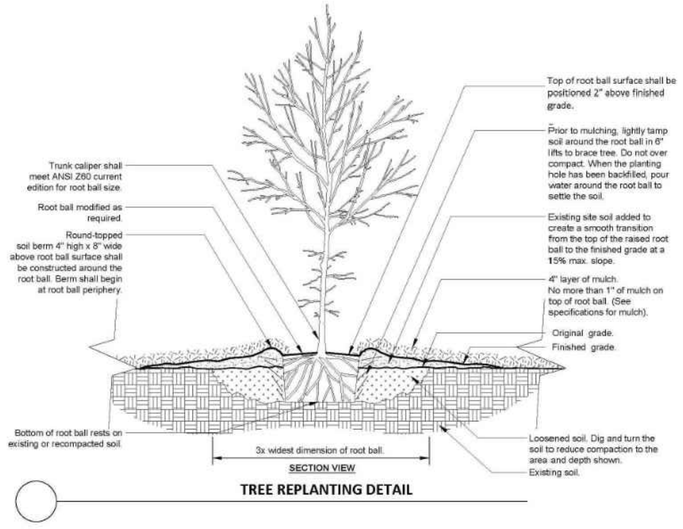
Trees enclosed by this fence are protected and are subject to the conditions of the tree permit. Violation of tree conditions may lead to:

1. Correction Notices or Stop Work Orders until compliance is achieved
2. RE Inspection Fees
3. Arborist reports recommending mitigation



Notes

1. No pruning shall be preformed unless under the direction of an arborist
2. No equipment shall be stored or operated inside the protective fencing including during fence installation and removal
3. No storage of materials shall occur inside the protective fencing
4. Refer to Site/Utility Plan for allowable modifications to the tree protection area.
5. Unauthorized activities in tree protection area may require evaluation by private arborist to identify impacts and mitigation required
6. Exposed roots: For roots > 1" damaged during construction, make a clean straight cut to remove damaged portion and inform City Arborist



TREE REPLANTING DETAIL

CALL TWO BUSINESS DAYS BEFORE YOU DIG
811 1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

Owner/Developer:

Edward & Catherine Moran
5000 West Mercer Way
Mercer Island, WA 98040

Architect:

Plan One Fine Home Design
5125 47th Ave S
Seattle, WA 98118
206-612-8511

Engineer:

JMJTEAM
Justin Jones, PE
PO Box 2066
Sumner, WA 98390
(206) 596-2020

Project:

Moran Residence

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

JUSTIN M. JONES
STATE OF WASHINGTON
41829
REGISTERED
PROFESSIONAL ENGINEER
05-19-2023

REV	DATE	DESCRIPTION

SHEET TITLE:

Details

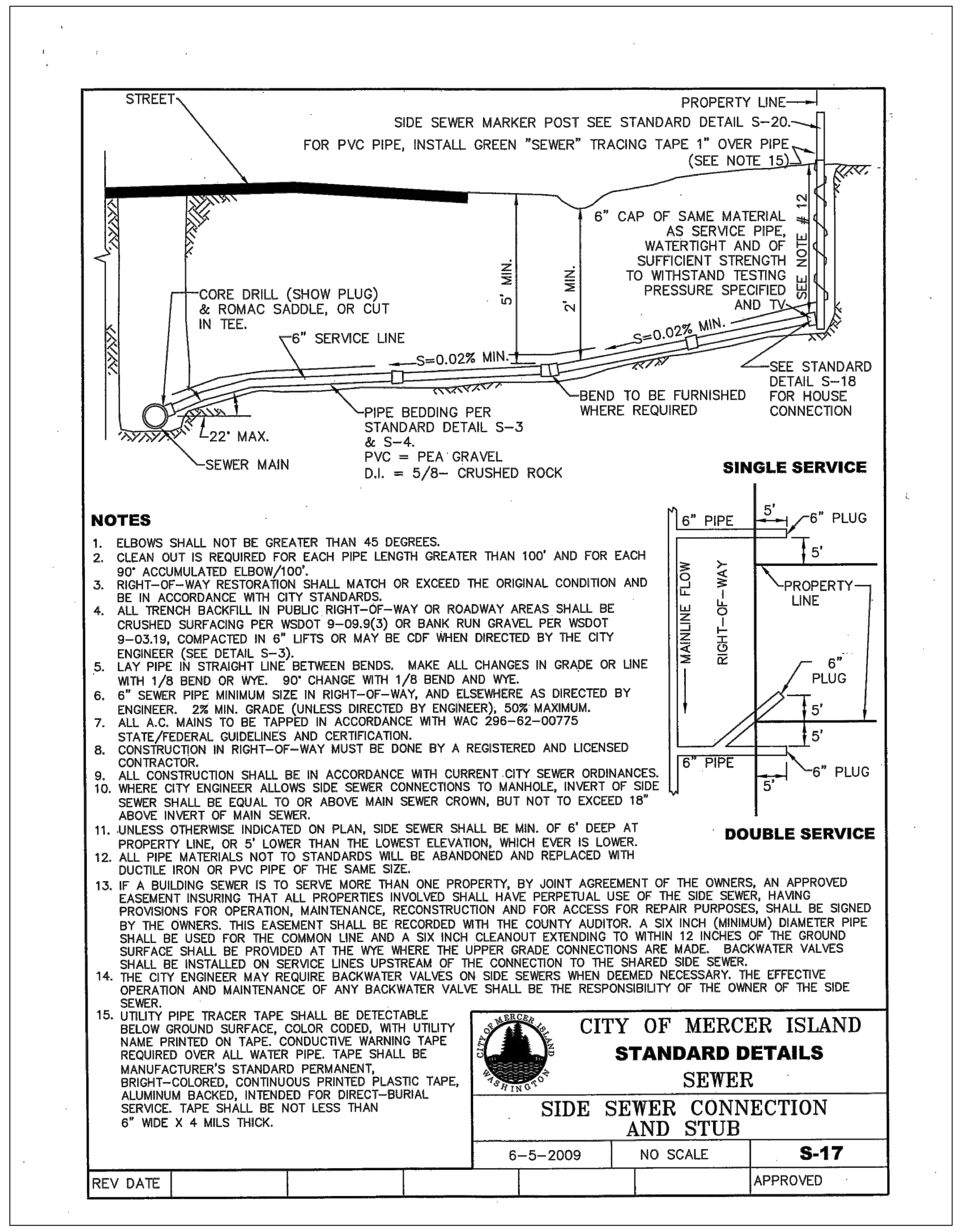
PROJ. NO: 1576001
DATE: May 19, 2023
DRAWN BY:
DESIGN BY:

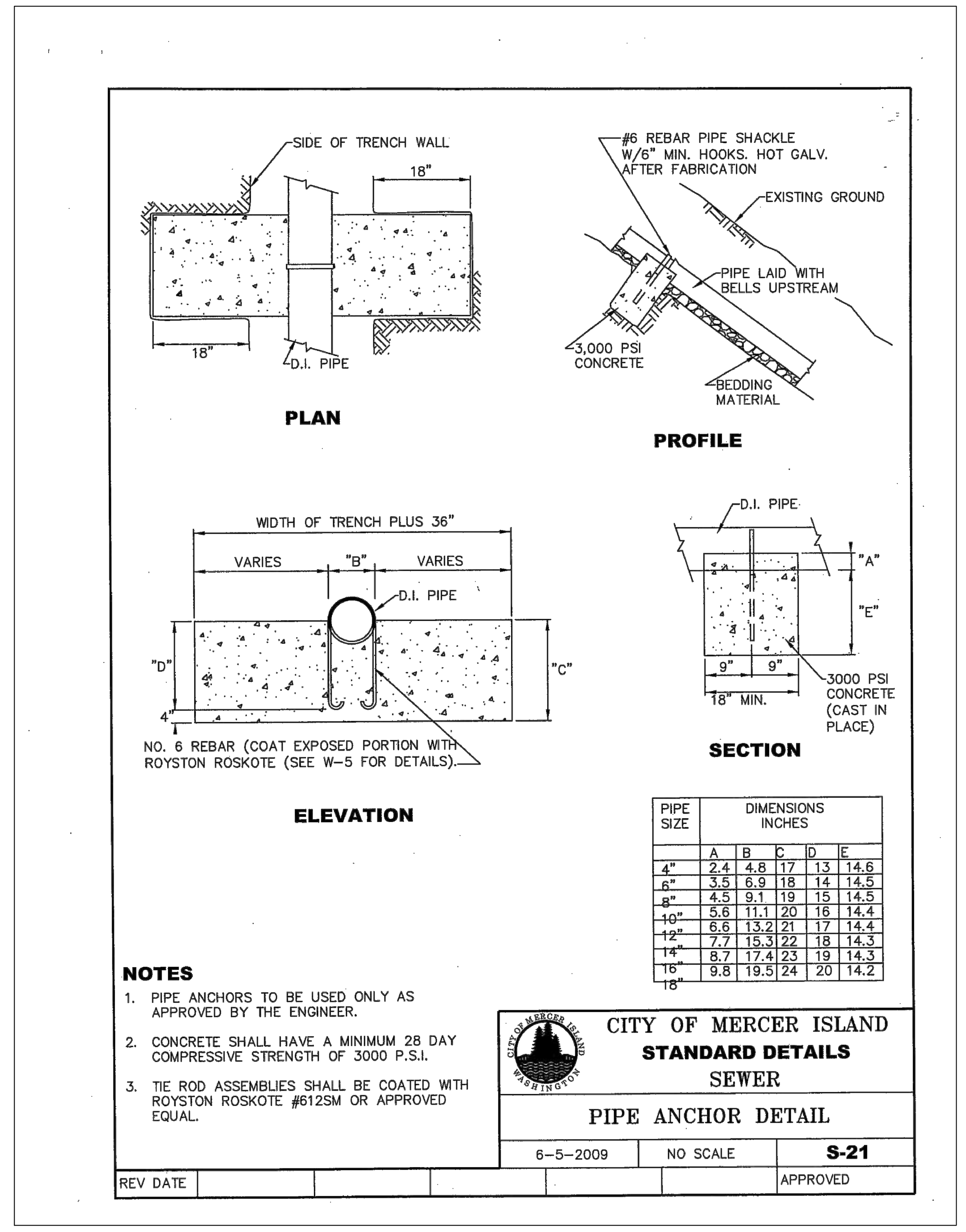
SHEET NUMBER:

C-06

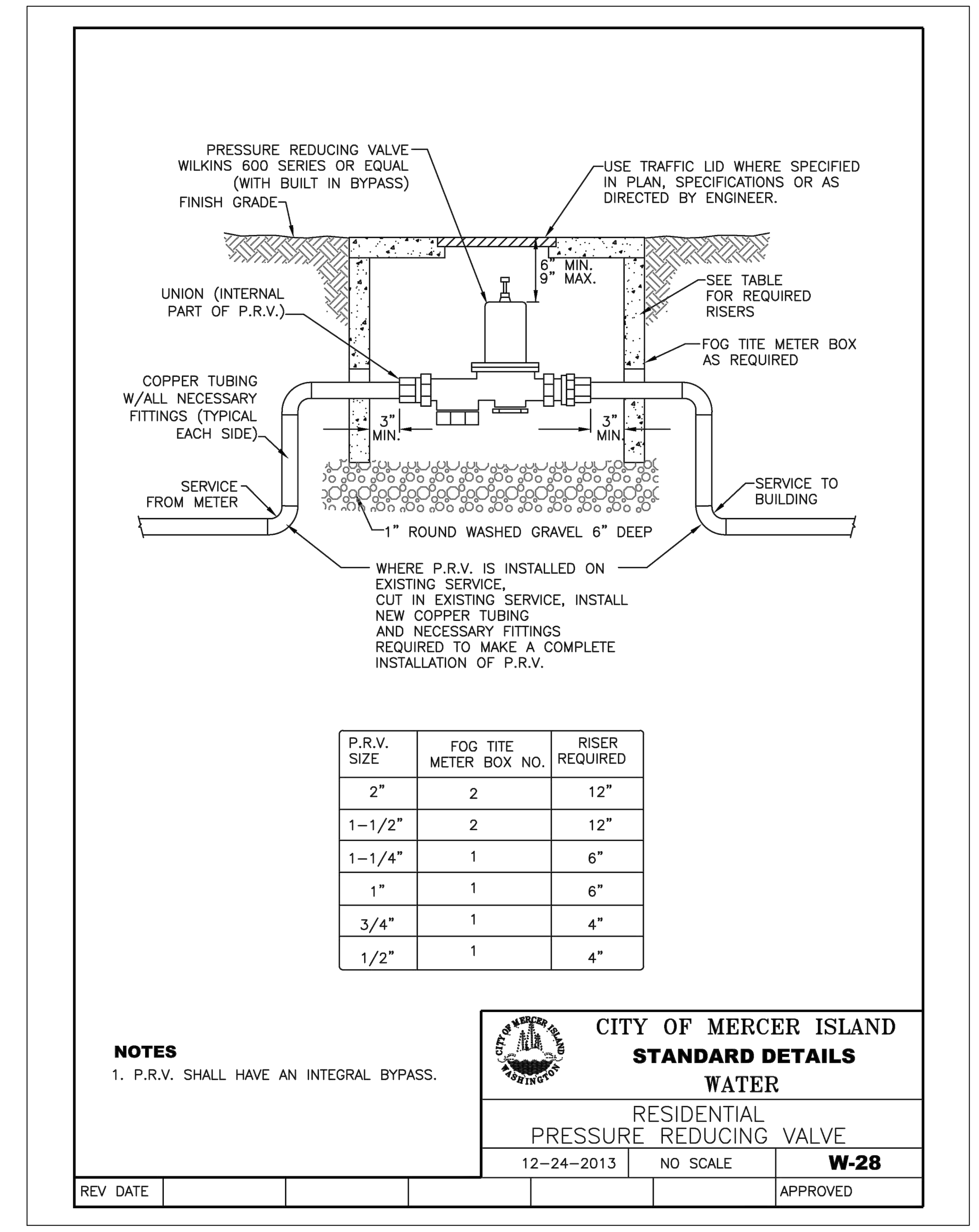
DWG.

File: 1576001C-DT.dwg Path: o:\1576 - Moran\001 - W Mercer Way\Cad\ Plotted by: JMJ Date: 19-May-23 2:51:48pm

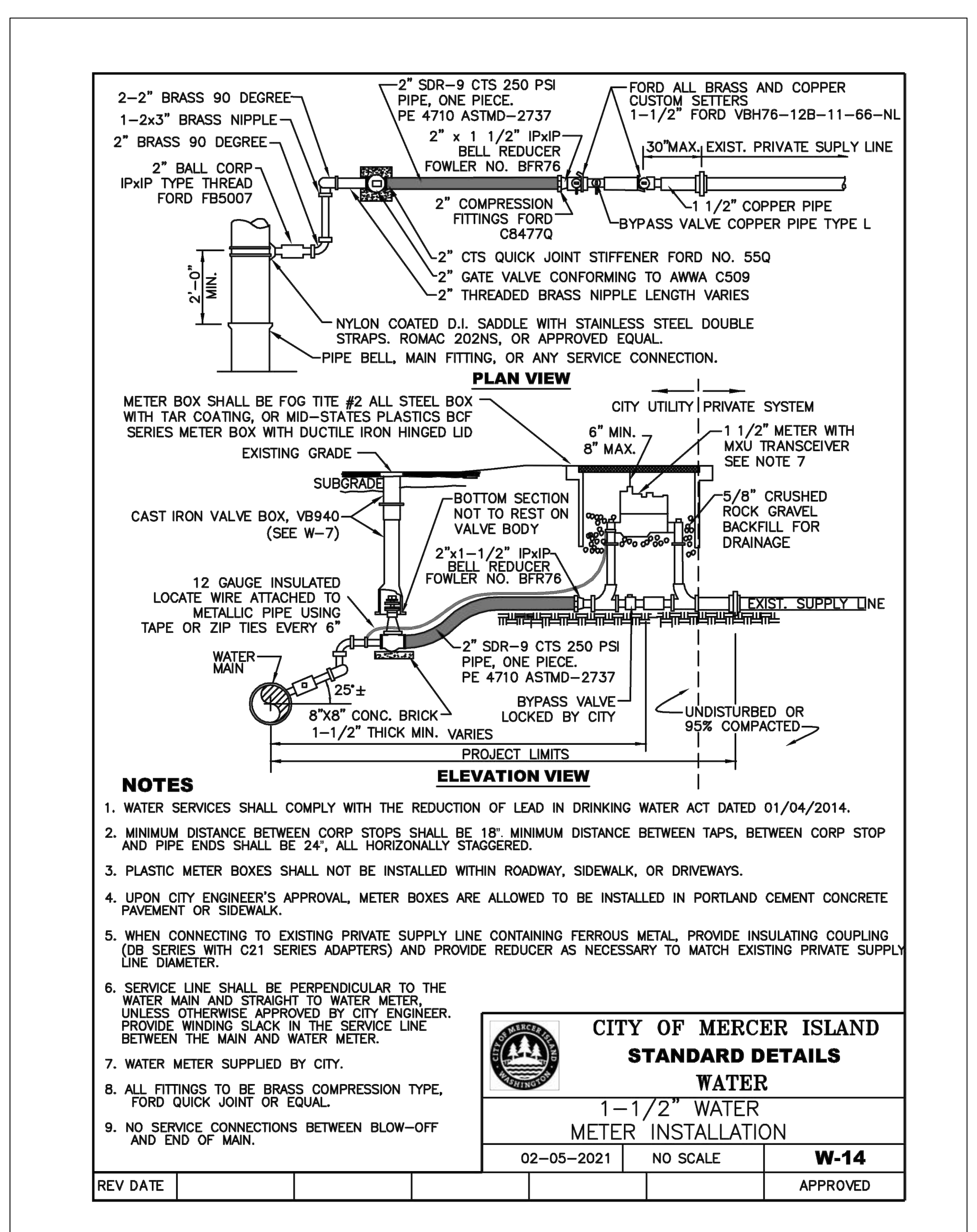

STREET
PROPERTY LINE
SIDE SEWER MARKER POST SEE STANDARD DETAIL S-20
FOR PVC PIPE, INSTALL GREEN "SEWER" TRACING TAPE 1" OVER PIPE (SEE NOTE 15)
6" CAP OF SAME MATERIAL AS SERVICE PIPE, WATERTIGHT AND OF SUFFICIENT STRENGTH TO WITHSTAND TESTING PRESSURE SPECIFIED AND TV
CORE DRILL (SHOW PLUG) & ROMAC SADDLE, OR CUT IN TEE.
6" SERVICE LINE
S=0.02% MIN.
BEND TO BE FURNISHED WHERE REQUIRED
SEE STANDARD DETAIL S-18 FOR HOUSE CONNECTION
PIPE BEDDING PER STANDARD DETAIL S-3 & S-4. PVC = PEA GRAVEL D.I. = 5/8- CRUSHED ROCK
22° MAX.
SEWER MAIN
SINGLE SERVICE
6" PIPE
6" PLUG
5'
PROPERTY LINE
MAINLINE FLOW
RIGHT-OF-WAY
DOUBLE SERVICE
NOTES
1. ELBOWS SHALL NOT BE GREATER THAN 45 DEGREES.
2. CLEAN OUT IS REQUIRED FOR EACH PIPE LENGTH GREATER THAN 100' AND FOR EACH 90° ACCUMULATED ELBOW/100'.
3. RIGHT-OF-WAY RESTORATION SHALL MATCH OR EXCEED THE ORIGINAL CONDITION AND BE IN ACCORDANCE WITH CITY STANDARDS.
4. ALL TRENCH BACKFILL IN PUBLIC RIGHT-OF-WAY OR ROADWAY AREAS SHALL BE CRUSHED SURFACING PER WSDOT 9-09.9(3) OR BANK RUN GRAVEL PER WSDOT 9-03.19, COMPACTED IN 6" LIFTS OR MAY BE CDF WHEN DIRECTED BY THE CITY ENGINEER (SEE DETAIL S-3).
5. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH 1/8 BEND OR WYE. 90° CHANGE WITH 1/8 BEND AND WYE.
6. 6" SEWER PIPE MINIMUM SIZE IN RIGHT-OF-WAY, AND ELSEWHERE AS DIRECTED BY ENGINEER. 2% MIN. GRADE (UNLESS DIRECTED BY ENGINEER), 50% MAXIMUM.
7. ALL A.C. MAINS TO BE TAPPED IN ACCORDANCE WITH WAC 296-62-00775 STATE/FEDERAL GUIDELINES AND CERTIFICATION.
8. CONSTRUCTION IN RIGHT-OF-WAY MUST BE DONE BY A REGISTERED AND LICENSED CONTRACTOR.
9. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT CITY SEWER ORDINANCES.
10. WHERE CITY ENGINEER ALLOWS SIDE SEWER CONNECTIONS TO MANHOLE, INVERT OF SIDE SEWER SHALL BE EQUAL TO OR ABOVE MAIN SEWER CROWN, BUT NOT TO EXCEED 18" ABOVE INVERT OF MAIN SEWER.
11. UNLESS OTHERWISE INDICATED ON PLAN, SIDE SEWER SHALL BE MIN. OF 6' DEEP AT PROPERTY LINE, OR 5' LOWER THAN THE LOWEST ELEVATION, WHICH EVER IS LOWER.
12. ALL PIPE MATERIALS NOT TO STANDARDS WILL BE ABANDONED AND REPLACED WITH DUCTILE IRON OR PVC PIPE OF THE SAME SIZE.
13. IF A BUILDING SEWER IS TO SERVE MORE THAN ONE PROPERTY, BY JOINT AGREEMENT OF THE OWNERS, AN APPROVED EASEMENT INSURING THAT ALL PROPERTIES INVOLVED SHALL HAVE PERPETUAL USE OF THE SIDE SEWER, HAVING PROVISIONS FOR OPERATION, MAINTENANCE, RECONSTRUCTION AND FOR ACCESS FOR REPAIR PURPOSES, SHALL BE SIGNED BY THE OWNERS. THIS EASEMENT SHALL BE RECORDED WITH THE COUNTY AUDITOR. A SIX INCH (MINIMUM) DIAMETER PIPE SHALL BE USED FOR THE COMMON LINE AND A SIX INCH CLEANOUT EXTENDING TO WITHIN 12 INCHES OF THE GROUND SURFACE SHALL BE PROVIDED AT THE WYE WHERE THE UPPER GRADE CONNECTIONS ARE MADE. BACKWATER VALVES SHALL BE INSTALLED ON SERVICE LINES UPSTREAM OF THE CONNECTION TO THE SHARED SIDE SEWER.
14. THE CITY ENGINEER MAY REQUIRE BACKWATER VALVES ON SIDE SEWERS WHEN DEEMED NECESSARY. THE EFFECTIVE OPERATION AND MAINTENANCE OF ANY BACKWATER VALVE SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE SIDE SEWER.
15. UTILITY PIPE TRACER TAPE SHALL BE DETECTABLE BELOW GROUND SURFACE, COLOR CODED, WITH UTILITY NAME PRINTED ON TAPE. CONDUCTIVE WARNING TAPE REQUIRED OVER ALL WATER PIPE. TAPE SHALL BE MANUFACTURER'S STANDARD PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED PLASTIC TAPE, ALUMINUM BACKED, INTENDED FOR DIRECT-BURIAL SERVICE. TAPE SHALL BE NOT LESS THAN 6" WIDE X 4 MILS THICK.
CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
SIDE SEWER CONNECTION AND STUB
6-5-2009
NO SCALE
S-17
REV DATE
APPROVED

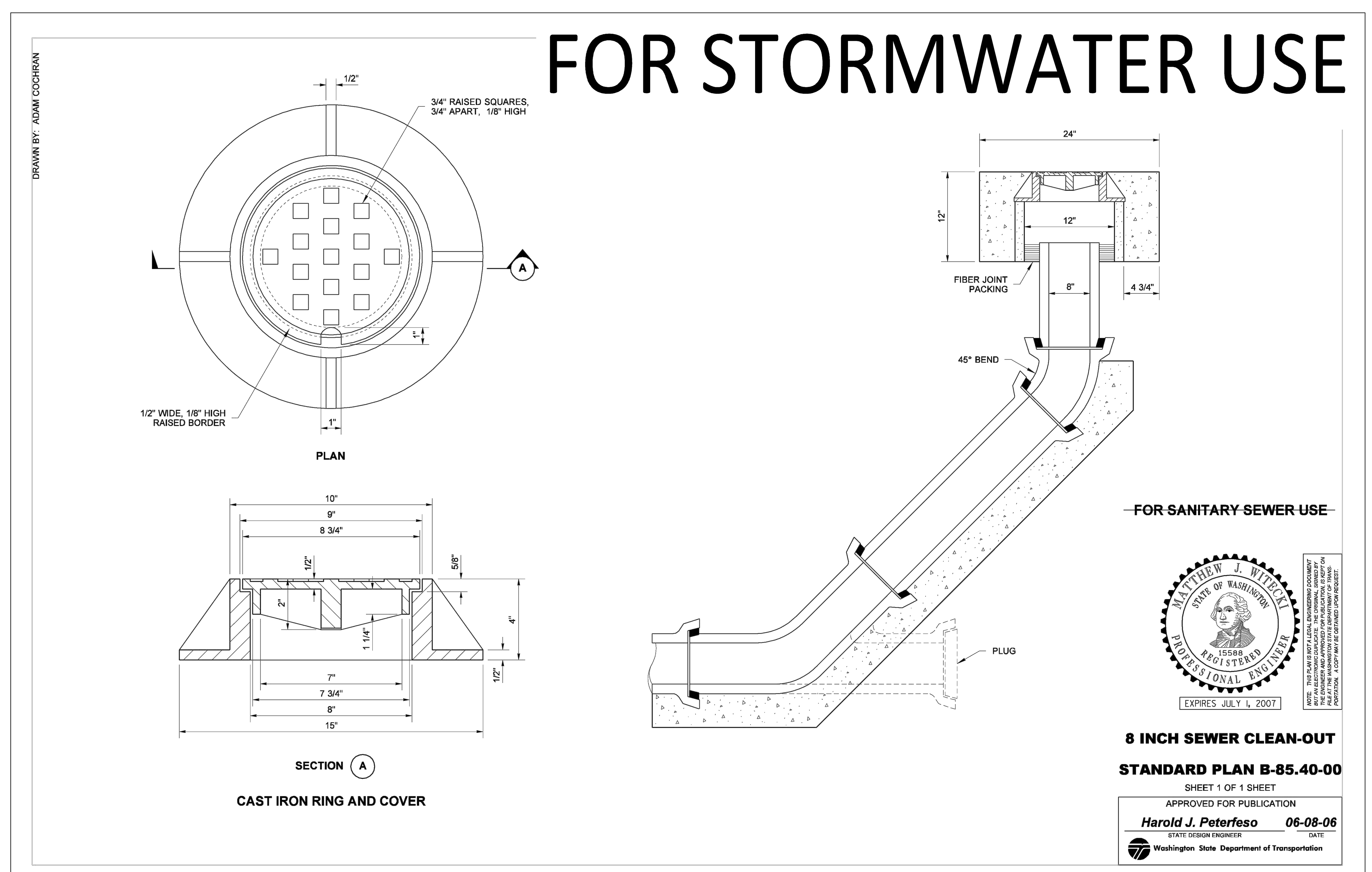

SIDE OF TRENCH WALL
18"
D.I. PIPE
PLAN
#6 REBAR PIPE SHACKLE W/6" MIN. HOOKS. HOT GALV. AFTER FABRICATION
EXISTING GROUND
PIPE LAID WITH BELLS UPSTREAM
3,000 PSI CONCRETE
BEDDING MATERIAL
PROFILE
WIDTH OF TRENCH PLUS 36"
VARIES
"B"
D.I. PIPE
"D"
"C"
NO. 6 REBAR (COAT EXPOSED PORTION WITH ROYSTON ROSKOTE (SEE W-5 FOR DETAILS)
ELEVATION
"A"
"E"
9"
18" MIN.
3000 PSI CONCRETE (CAST IN PLACE)
SECTION
NOTES
1. PIPE ANCHORS TO BE USED ONLY AS APPROVED BY THE ENGINEER.
2. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 P.S.I.
3. TIE ROD ASSEMBLIES SHALL BE COATED WITH ROYSTON ROSKOTE #612SM OR APPROVED EQUAL.
CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
PIPE ANCHOR DETAIL
6-5-2009
NO SCALE
S-21
REV DATE
APPROVED

PIPE SIZE	DIMENSIONS INCHES				
	A	B	C	D	E
4"	2.4	4.8	17	13	14.6
6"	3.5	6.9	18	14	14.5
8"	4.5	9.1	19	15	14.5
10"	5.6	11.1	20	16	14.4
12"	6.6	13.2	21	17	14.4
14"	7.7	15.3	22	18	14.3
16"	8.7	17.4	23	19	14.3
18"	9.8	19.5	24	20	14.2


PRESSURE REDUCING VALVE WILKINS 600 SERIES OR EQUAL (WITH BUILT IN BYPASS)
FINISH GRADE
USE TRAFFIC LID WHERE SPECIFIED IN PLAN, SPECIFICATIONS OR AS DIRECTED BY ENGINEER.
6" MIN. 9" MAX.
UNION (INTERNAL PART OF P.R.V.)
SEE TABLE FOR REQUIRED RISERS
FOG TITE METER BOX AS REQUIRED
COPPER TUBING W/ALL NECESSARY FITTINGS (TYPICAL EACH SIDE)
3" MIN.
SERVICE FROM METER
SERVICE TO BUILDING
1" ROUND WASHED GRAVEL 6" DEEP
WHERE P.R.V. IS INSTALLED ON EXISTING SERVICE, CUT IN EXISTING SERVICE, INSTALL NEW COPPER TUBING AND NECESSARY FITTINGS REQUIRED TO MAKE A COMPLETE INSTALLATION OF P.R.V.
NOTES
1. P.R.V. SHALL HAVE AN INTEGRAL BYPASS.
CITY OF MERCER ISLAND
STANDARD DETAILS
WATER
RESIDENTIAL PRESSURE REDUCING VALVE
12-24-2013
NO SCALE
W-28
REV DATE
APPROVED

P.R.V. SIZE	FOG TITE METER BOX NO.	RISER REQUIRED
2"	2	12"
1-1/2"	2	12"
1-1/4"	1	6"
1"	1	6"
3/4"	1	4"
1/2"	1	4"


2-2" BRASS 90 DEGREE
1-2x3" BRASS NIPPLE
2" BRASS 90 DEGREE
2" BALL CORP IPxIP TYPE THREAD FORD FB500-7
2" SDR-9 CTS 250 PSI PIPE, ONE PIECE. PE 4710 ASTMD-2737
2" x 1 1/2" IPxIP BELL REDUCER FOWLER NO. BFR76
FORD ALL BRASS AND COPPER CUSTOM SETTERS 1-1/2" FORD VBH76-12B-11-66-NL
30"MAX. EXIST. PRIVATE SUPLY LINE
1 1/2" COPPER PIPE
BYPASS VALVE COPPER PIPE TYPE L
2" COMPRESSION FITTINGS FORD C8477Q
2" CTS QUICK JOINT STIFFENER FORD NO. 55Q
2" GATE VALVE CONFORMING TO AWWA C509
2" THREADED BRASS NIPPLE LENGTH VARIES
NYLON COATED D.I. SADDLE WITH STAINLESS STEEL DOUBLE STRAPS. ROMAC 202NS, OR APPROVED EQUAL.
PIPE BELL, MAIN FITTING, OR ANY SERVICE CONNECTION.
PLAN VIEW
METER BOX SHALL BE FOG TITE #2 ALL STEEL BOX WITH TAR COATING, OR MID-STATES PLASTICS BCF SERIES METER BOX WITH DUCTILE IRON HINGED LID
CITY UTILITY | PRIVATE SYSTEM
6" MIN. 8" MAX.
1 1/2" METER WITH MXU TRANSCEIVER SEE NOTE 7
EXISTING GRADE
SUBGRADE
CAST IRON VALVE BOX, VB940 (SEE W-7)
BOTTOM SECTION NOT TO REST ON VALVE BODY
2"x1-1/2" IPxIP BELL REDUCER FOWLER NO. BFR76
5/8" CRUSHED ROCK GRAVEL BACKFILL FOR DRAINAGE
EXIST. SUPPLY LINE
12 GAUGE INSULATED LOCATE WIRE ATTACHED TO METALLIC PIPE USING TAPE OR ZIP TIES EVERY 6"
WATER MAIN
2" SDR-9 CTS 250 PSI PIPE, ONE PIECE. PE 4710 ASTMD-2737
25°±
BYPASS VALVE LOCKED BY CITY
8"X8" CONC. BRICK 1-1/2" THICK MIN. VARIES
UNDISTURBED OR 95% COMPACTED
PROJECT LIMITS
ELEVATION VIEW
NOTES
1. WATER SERVICES SHALL COMPLY WITH THE REDUCTION OF LEAD IN DRINKING WATER ACT DATED 01/04/2014.
2. MINIMUM DISTANCE BETWEEN CORP STOPS SHALL BE 18". MINIMUM DISTANCE BETWEEN TAPS, BETWEEN CORP STOP AND PIPE ENDS SHALL BE 24", ALL HORIZONALLY STAGGERED.
3. PLASTIC METER BOXES SHALL NOT BE INSTALLED WITHIN ROADWAY, SIDEWALK, OR DRIVEWAYS.
4. UPON CITY ENGINEER'S APPROVAL, METER BOXES ARE ALLOWED TO BE INSTALLED IN PORTLAND CEMENT CONCRETE PAVEMENT OR SIDEWALK.
5. WHEN CONNECTING TO EXISTING PRIVATE SUPPLY LINE CONTAINING FERROUS METAL, PROVIDE INSULATING COUPLING (DB SERIES WITH C21 SERIES ADAPTERS) AND PROVIDE REDUCER AS NECESSARY TO MATCH EXISTING PRIVATE SUPPLY LINE DIAMETER.
6. SERVICE LINE SHALL BE PERPENDICULAR TO THE WATER MAIN AND STRAIGHT TO WATER METER, UNLESS OTHERWISE APPROVED BY CITY ENGINEER. PROVIDE WINDING SLACK IN THE SERVICE LINE BETWEEN THE MAIN AND WATER METER.
7. WATER METER SUPPLIED BY CITY.
8. ALL FITTINGS TO BE BRASS COMPRESSION TYPE, FORD QUICK JOINT OR EQUAL.
9. NO SERVICE CONNECTIONS BETWEEN BLOW-OFF AND END OF MAIN.
CITY OF MERCER ISLAND
STANDARD DETAILS
WATER
1-1/2" WATER METER INSTALLATION
02-05-2021
NO SCALE
W-14
REV DATE
APPROVED


FOR STORMWATER USE
DRAWN BY: ADAM COCHRAN
1/2"
3/4" RAISED SQUARES, 3/4" APART, 1/8" HIGH
A
1/2" WIDE, 1/8" HIGH RAISED BORDER
PLAN
10"
9"
8 3/4"
7"
7 3/4"
8"
15"
SECTION A
CAST IRON RING AND COVER
24"
12"
FIBER JOINT PACKING
8"
4 3/4"
45° BEND
PLUG
FOR SANITARY SEWER USE
MATTHEW J. WITECKI
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER
EXPIRES JULY 1, 2007
8 INCH SEWER CLEAN-OUT
STANDARD PLAN B-85.40-00
SHEET 1 OF 1 SHEET
APPROVED FOR PUBLICATION
Harold J. Peterfeso 06-08-06
STATE DESIGN ENGINEER DATE
Washington State Department of Transportation

CALL TWO BUSINESS DAYS BEFORE YOU DIG
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

Owner/Developer:
Edward & Catherine Moran
5000 West Mercer Way
Mercer Island, WA 98040

Architect:
Plan One Fine Home Design
5125 47th Ave S
Seattle, WA 98118
206-612-8511

Engineer:
JUTEAM
Justin Jones, PE
PO Box 2066
Sumner, WA 98390
(206) 596-2020

Project:
Moran Residence

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

05-19-2023

REV	DATE	DESCRIPTION

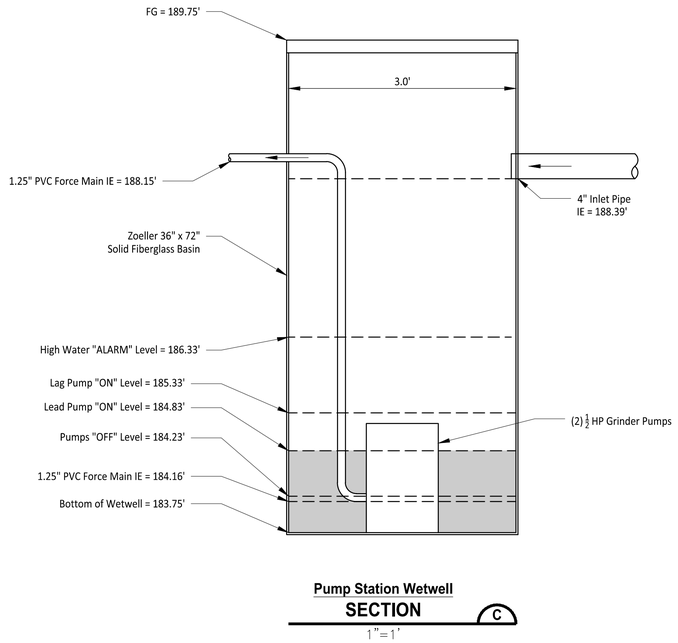
SHEET TITLE:
Details

PROJ. NO:	1576001
DATE:	May 19, 2023
DRAWN BY:	DESIGN BY:

SHEET NUMBER:
C-07

DWG:

File: 1576001C-DT.dwg Path: J:\1576 - Moran\001 - W Mercer Way\CAD\ Plotted by: JMJ Date: 19-May-23 2:52:01pm



Pump Station Wetwell
SECTION C
1" = 1'

OUTDOOR BASINS AND ACCESSORIES

SIMPLEX OUTDOOR BASINS - FIBERGLASS ONLY - NO HOLES DRILLED

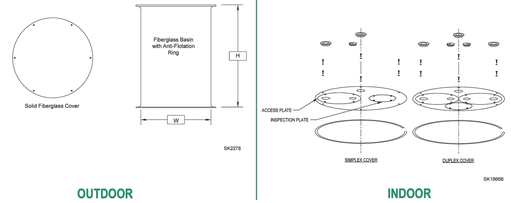
Size	Item No.	Description
24" X 48"	31-0866	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
24" X 60"	31-0946	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
24" X 72"	31-0594	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
30" X 48"	31-1830	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
30" X 60"	31-1831	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
30" X 72"	31-1586	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring

All basins include 5 field installed adapta-flex seals - (1) 1¼", (1) 1½", (2) 2" and (1) 4" grommets.

DUPLEX OUTDOOR BASINS - FIBERGLASS ONLY - NO HOLES DRILLED

Size W X H	Item No.	Description
36" X 48"	31-1450	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
36" X 60"	31-1451	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
36" X 72"	31-1452	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring

All basins include 5 field installed adapta-flex seals - (1) 1¼", (1) 1½", (2) 2" and (1) 4" grommets.
ADDITIONAL BASIN SIZES WITH OPTIONS (i.e. Rail Studs) ARE AVAILABLE. CONSULT FACTORY.



OUTDOOR INDOOR

OUTDOOR TANK VENTS

Item No.	Color	Material	Size	Dimension (W x H)	Pipe Area	Screen Area
10-1753	Black	Plastic	2" Female NPT	4.625" X 3.125"	3.1 sq. in.	6.9 sq. in.
10-1461	Green	Metal	2" Female NPT	4.625" X 3.125"	3.1 sq. in.	6.9 sq. in.
10-1462	Green	Metal	3" Female NPT	6.875" X 4.500"	7.1 sq. in.	19.6 sq. in.
10-1463	Green	Metal	4" Female NPT	9.250" X 5.000"	12.6 sq. in.	35.8 sq. in.
10-1464	Green	Metal	6" Female NPT	11.125" X 6.625"	28.3 sq. in.	42.5 sq. in.

ZOELLER® PUMP COMPANY

MAIL TO: P.O. BOX 16347 • Louisville, KY 40256-0347
SHIP TO: 3649 Cane Run Road • Louisville, KY 40211-1961
(502) 778-2731 • 1 (800) 928-PUMP • FAX (502) 774-3624

Your Peace of Mind is Our Top Priority®

visit our web site: www.zoeller.com

Trusted. Tested. Tough.™

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

ZOELLER® PUMP COMPANY

SECTION: 2.25.021
FM2882
0817
Supersedes
0716

U.S. Patent No. 8,562,287

TECHNICAL DATA SHEET
SHARK GRINDER
Model 803/805/807 Residential Grinder Pumps

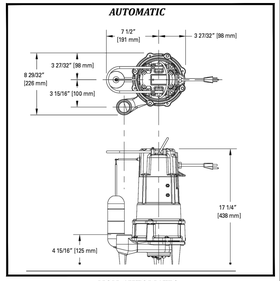
PRODUCT SPECIFICATIONS

MOTOR	Horse Power	0.5 - 1.0
	Voltage	115/230
	Phase	1 Ph
	Hertz	60 Hz
	RPM	3400
	Type	Capacitor start / Capacitor run
	Insulation	Class B
	Amps	115 V (7-11) / 230 V (3-5)
PUMP	Operation	Automatic & nonautomatic
	Auto On/Off Points	13" (33 cm) / 5-3/4" (14.6 cm)
	Discharge Size	1.25" NPT
	Cord Length	15' (5 m) standard
	Cord Type	UL listed 3-wire plug
	Max. Head	55' (16.8 m)
	Max. Operating Temp.	130° F (54 °C)
	Cooling	Oil
	Motor Protection	Auto reset thermal overload (1 Ph)
MATERIALS	Cover	Cast iron
	Motor housing	Cast iron
	Adapter	Cast iron
	Pump housing	Cast iron
	Upper Bearing	Ball bearing
	Lower Bearing	Ball bearing
	Mechanical Seals	Carbon and ceramic
	Impeller Type	Non-clogging vortex
	Impeller	Engineered plastic
	Hardware	Stainless steel
	Motor Shaft	1215 cold rolled steel
	Gasket	Neoprene
	Cutter & Plate	440C Stainless Steel

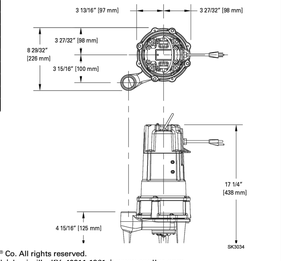
NOTE: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.

NOTE: See model comparison chart for specific details.

AUTOMATIC



NON-AUTOMATIC

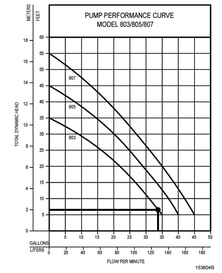


Tested to UL778 and CSA22.2 108 Standard

502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | www.zoeller.com

TOTAL DYNAMIC HEAD FLOW PER MINUTE

MODEL	803		805		807	
Feet	Meters	Gal	Liters	Gal	Liters	Gal	Liters	Gal	Liters
5	1.5	35	132	40	151	45	170
10	3.0	31	117	37	140	42	159
20	6.1	22	83	29	110	35	132
30	9.1	9	34	20	76	27	102
40	12.2	--	--	8	30	18	68
50	15.2	--	--	--	--	7	26
Shut-off Head		35 ft. (10.7 m)		45 ft. (13.7 m)		55 ft. (16.8 m)	



Model	MODEL COMPARISON										
	Seal	Mode	Volts	Ph	Amps	HP	Hz	Lbs.	Kg	Simplex	Duplex
M803	Single	Auto	115	1	7.0	0.5	60	65	29	1	3
N803	Single	Non	115	1	7.0	0.5	60	65	29	2	2 & 3
BN803	Single	Auto	115	1	7.0	0.5	60	65	29	4	3
D803	Single	Auto	230	1	3.0	0.5	60	65	29	1	3
E803	Single	Non	230	1	3.0	0.5	60	65	29	2	2 & 3
BE803	Single	Auto	230	1	3.0	0.5	60	65	29	4	3
M805	Single	Auto	115	1	9.0	0.75	60	65	29	1	3
N805	Single	Non	115	1	9.0	0.75	60	65	29	2	2 & 3
BN805	Single	Auto	115	1	9.0	0.75	60	65	29	4	3
D805	Single	Auto	230	1	4.0	0.75	60	65	29	1	3
E805	Single	Non	230	1	4.0	0.75	60	65	29	2	2 & 3
BE805	Single	Auto	230	1	4.0	0.75	60	65	29	4	3
M807	Single	Auto	115	1	11.0	1.0	60	65	29	1	3
N807	Single	Non	115	1	11.0	1.0	60	65	29	2	2 & 3
BN807	Single	Auto	115	1	11.0	1.0	60	65	29	4	3
D807	Single	Auto	230	1	5.0	1.0	60	65	29	1	3
E807	Single	Non	230	1	5.0	1.0	60	65	29	2	2 & 3
BE807	Single	Auto	230	1	5.0	1.0	60	65	29	4	3

SELECTION GUIDE

1. Integral float-operated mechanical switch, no external control required.
2. For automatic use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM0488 for correct model of duplex control panel.
4. Single piggyback switch included.

⚠ CAUTION All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | www.zoeller.com

Owner/Developer:

Edward & Catherine Moran
5000 West Mercer Way
Mercer Island, WA 98040

Architect:

Plan One Fine Home Design
5125 47th Ave S
Seattle, WA 98118
206-612-8511

Engineer:

JJTEAM

Justin Jones, PE
PO Box 2066
Sumner, WA 98390
(206) 596-2020

Project:

Moran Residence

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

JUSTIN M. JONES
STATE OF WASHINGTON
41829
REGISTERED
PROFESSIONAL ENGINEER

05-19-2023

REV	DATE	DESCRIPTION

SHEET TITLE:

Details

PROJ. NO: 1576001

DATE: May 19, 2023

DRAWN BY:

DESIGN BY:

SHEET NUMBER:

C-08

DWG.

CALL TWO BUSINESS DAYS BEFORE YOU DIG
811
1-800-424-5555
UTILITIES UNDERGROUND LOCATION CENTER

File: 1576001C-DT.dwg Path: J:\1576 - Moran\001 - W Mercer Way\Cad\ Plotted by: JMJ Date: 19-May-23 2:52:27pm

APPENDIX B

Table 1

ON-SITE DETENTION DESIGN FOR PROJECTS BETWEEN 500 SF AND 9,500 SF NEW PLUS REPLACED IMPERVIOUS SURFACE AREA

New and Replaced Impervious Surface Area (sf)	Detention Pipe Diameter (in)	Detention Pipe Length (ft)		Lowest Orifice Diameter (in)[3]		Distance from Outlet Invert to Second Orifice (ft)		Second Orifice Diameter (in)	
		B soils	C soils	B soils	C soils	B soils	C soils	B soils	C soils
500 to 1,000 sf	36"	30	22	0.5	0.5	2.2	2.0	0.5	0.8
	48"	18	11	0.5	0.5	3.3	3.2	0.9	0.8
	60"	11	7	0.5	0.5	4.2	3.4	0.5	0.6
1,001 to 2,000 sf	36"	66	43	0.5	0.5	2.2	2.3	0.9	1.4
	48"	34	23	0.5	0.5	3.2	3.3	0.9	1.2
	60"	22	14	0.5	0.5	4.3	3.6	0.9	0.9
2,001 to 3,000 sf	36"	90	66	0.5	0.5	2.2	2.4	0.9	1.9
	48"	48	36	0.5	0.5	3.1	2.8	0.9	1.5
	60"	30	20	0.5	0.5	4.2	3.7	0.9	1.1
3,001 to 4,000 sf	36"	120	78	0.5	0.5	2.4	2.2	1.4	1.6
	48"	62	42	0.5	0.5	2.8	2.9	0.8	1.3
	60"	42	26	0.5	0.5	3.8	3.9	0.9	1.3
4,001 to 5,000 sf	36"	134	91	0.5	0.5	2.8	2.2	1.7	1.5
	48"	73	49	0.5	0.5	3.6	2.9	1.6	1.5
	60"	46	31	0.5	0.5	4.6	3.5	1.6	1.3
5,001 to 6,000 sf	36"	162	109	0.5	0.5	2.7	2.2	1.8	1.6
	48"	90	59	0.5	0.5	3.5	2.9	1.7	1.5
	60"	54	37	0.5	0.5	4.6	3.6	1.6	1.4
6,001 to 7,000 sf	36"	192	128	0.5	0.5	2.7	2.2	1.9	1.8
	48"	102	68	0.5	0.5	3.7	2.9	1.9	1.6
	60"	64	43	0.5	0.5	4.6	3.6	1.8	1.5
7,001 to 8,000 sf	36"	216	146	0.5	0.5	2.8	2.2	2.0	1.9
	48"	119	79	0.5	0.5	3.8	2.9	2.2	1.7
	60"	73	49	0.5	0.5	4.5	3.6	2.0	1.6
8,001 to 8,500 sf[1]	36"	228	155	0.5	0.5	2.8	2.2	2.1	1.9
	48"	124	84	0.5	0.5	3.7	2.9	1.9	1.8
	60"	77	53	0.5	0.5	4.6	3.6	2.0	1.6
8,501 to 9,000 sf	36"	NA [1]	164	0.5	0.5	NA [1]	2.2	NA [1]	1.9
	48"	NA [1]	89	0.5	0.5	NA [1]	2.9	NA [1]	1.9
	60"	NA [1]	55	0.5	0.5	NA [1]	3.6	NA [1]	1.7
9,001 to 9,500 sf[2]	36"	NA [1]	174	0.5	0.5	NA [1]	2.2	NA [1]	2.1
	48"	NA [1]	94	0.5	0.5	NA [1]	2.9	NA [1]	2.0
	60"	NA [1]	58	0.5	0.5	NA [1]	3.7	NA [1]	1.7

Notes:

▪ Minimum Requirement #7 (Flow Control) is required when the 100-year flow frequency causes a 0.15 cubic feet per second increase (when modeled in WWHM with a 15-minute timestep). Breakpoints shown in this table are based on a flat slope (0-5%). The 100-year flow frequency will need to be evaluated on a site-specific basis for projects on moderate (5-15%) or steep (> 15%) slopes.

▪ Soil type to be determined by geotechnical analysis or soil map.

▪ Sizing includes a Volume Correction Factor of 120%.

▪ Upper bound contributing area used for sizing.

[1] On Type B soils, new plus replaced impervious surface areas exceeding 8,500 sf trigger Minimum Requirement #7 (Flow Control)

[2] On Type C soils, new plus replaced impervious surface areas exceeding 9,500 sf trigger Minimum Requirement #7 (Flow Control)

[3] Minimum orifice diameter = 0.5 inches

in = inch

ft = feet

sf = square feet

Basis of Sizing Assumptions:

Sized per MR#5 in the Stormwater Management Manual for Puget Sound Basin (1992 Ecology Manual)

SBUH, Type 1A, 24-hour hydrograph

2-year, 24-hour storm = 2 in; 10-year, 24-hour storm = 3 in; 100-year, 24-hour storm = 4 in

Predeveloped = second growth forest (CN = 72 for Type B soils, CN = 81 for Type C soils)

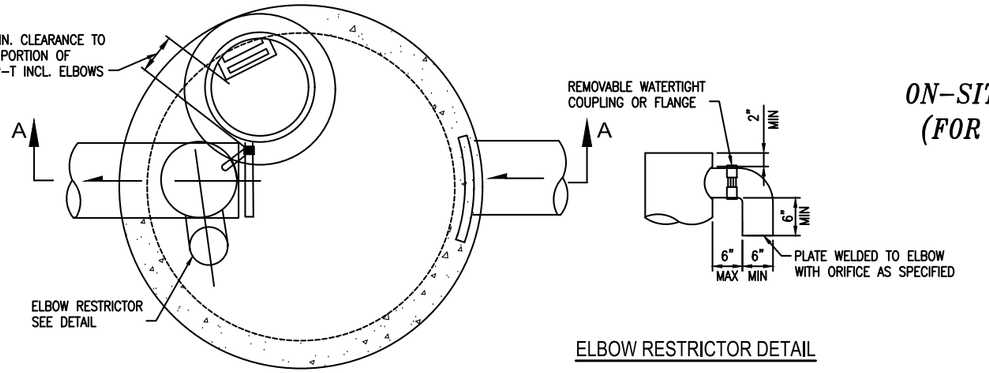
Developed = impervious (CN = 98)

0.5 foot of sediment storage in detention pipe

Overland slope = 5%

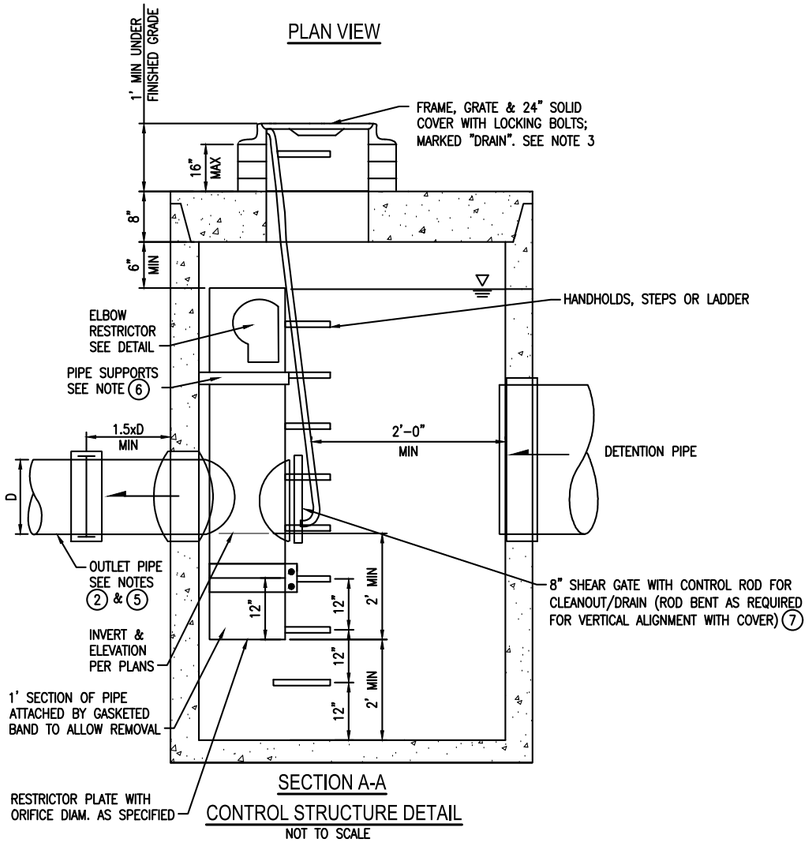
ATTACHMENT 1
CITY OF MERCER ISLAND
ON-SITE DETENTION SYSTEM WORKSHEET
(FOR NEW PLUS REPLACED IMPERVIOUS AREA OF 9,500 SF OR LESS)

OWNER: Edward & Cathrine Moran
ADDRESS: 5000 West Mercer Way
PREPARED BY: Justin Jones
PERMIT #: _____
Mercer Island, WA
PHONE: 206-596-2020
DATE: 05/05/2023
NEW PLUS REPLACED IMPERVIOUS SURFACE AREA (SF): 4,039 SF
DETENTION PIPE DIA (INCH): 48"
DETENTION PIPE LENGTH (FT): 73
ORIFICE #1 DIA 0.5 INCH, ELEV 185.19'
SOIL TYPE: Type B
PIPE MATERIAL: HDPE
ORIFICE #2 DIA 1.6 INCH, ELEV 190.93'

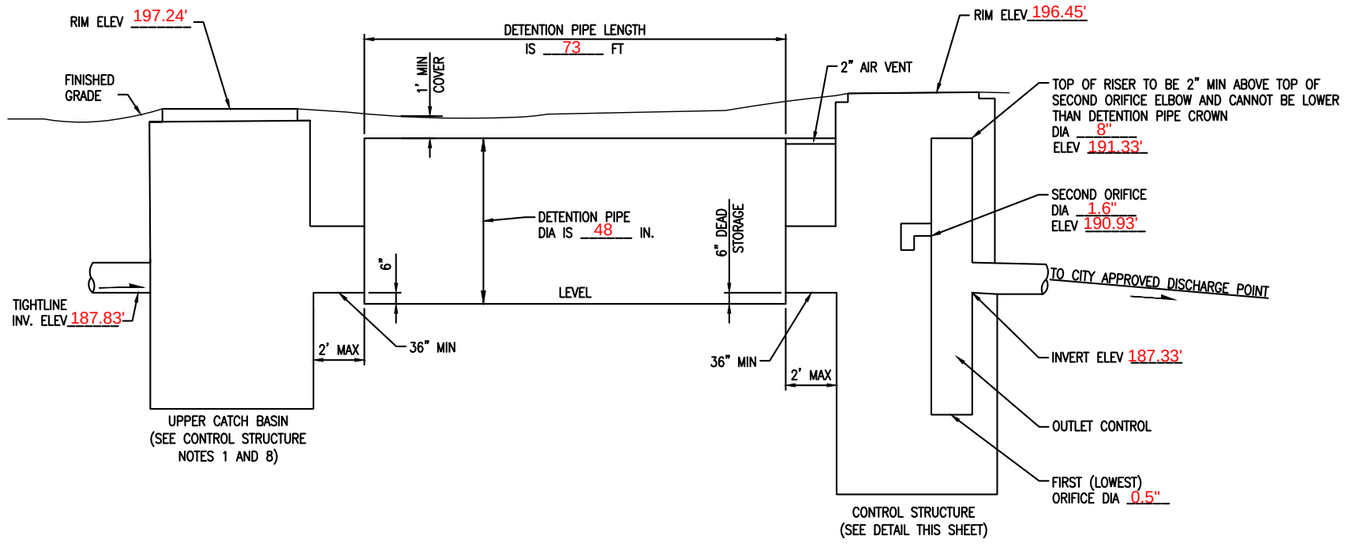


PLAN VIEW

ELBOW RESTRICTOR DETAIL



SECTION A-A
CONTROL STRUCTURE DETAIL
NOT TO SCALE



ON-SITE DETENTION SYSTEM
NOT TO SCALE (ENGINEER TO FILL IN BLANKS)

CONTROL STRUCTURE NOTES:

1. USE A MINIMUM OF A 54 IN. DIAM. TYPE 2 CATCH BASIN. THE ACTUAL SIZE IS DEPENDENT ON CONNECTING PIPE MATERIAL AND DIAMETER.
2. OUTLET PIPE: MIN. 6 INCH.
3. METAL PARTS: CORROSION RESISTANT. NON-GALVANIZED PARTS PREFERRED. GALVANIZED PIPE PARTS TO HAVE ASPHALT TREATMENT 1.
4. FRAME AND LADDER OR STEPS OFFSET SO:
   A. CLEANOUT GATE IS VISIBLE FROM TOP;
   B. CLIMB-DOWN SPACE IS CLEAR OF RISER AND CLEANOUT GATE;
   C. FRAME IS CLEAR OF CURB.
5. 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.
6. PROVIDE AT LEAST ONE 3 X 0.090 GAUGE SUPPORT BRACKET ANCHORED TO CONCRETE WALL WITH 5/8 IN. STANLESS STEEL EXPANSION BOLTS OR EMBEDDED SUPPORTS 2 IN. INTO CATCH BASIN WALL (MAXIMUM 3'-0" VERTICAL SPACING).
7. 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.
   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.
8. THE UPPER CATCH BASIN IS REQUIRED IF THE LENGTH OF THE DETENTION PIPE IS GREATER THAN 50 FT.

ON-SITE DETENTION SYSTEM NOTES:

1. CALL DEVELOPMENT SERVICES (206-275-7605) 24 HOURS IN ADVANCE FOR A DETENTION SYSTEM INSPECTION BEFORE BACKFILLING AND FOR FINAL INSPECTIONS.
2. 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.
3. 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, LINED 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.
4. FOOTING DRAINS SHALL NOT BE CONNECTED TO THE DETENTION SYSTEM.

APPENDIX C

Technical Memorandum

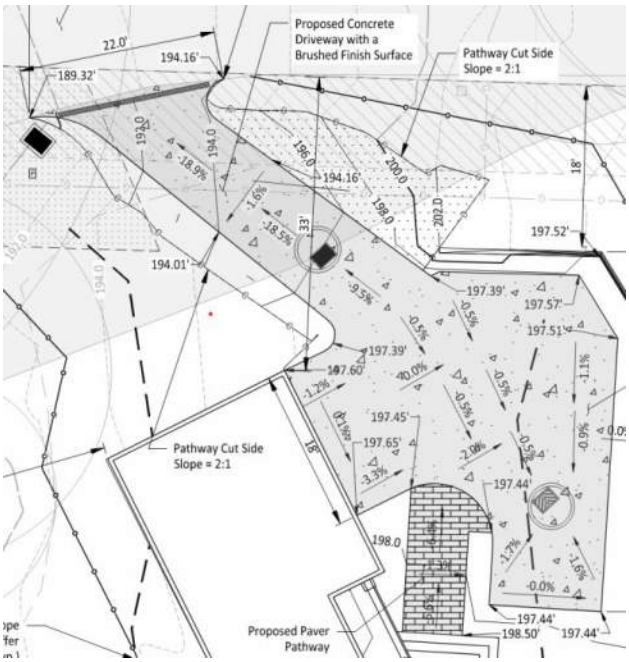
Project:	5000 West Mercer Way, WA 98040 Mordan Residence	From:	Justin Jones, PE
RE:	Storm Drainage Report - Driveway Pump System	Date:	March 21, 2023

03/21/2023

Introduction

This memo presents the criteria and methodology used for sizing the storm pump and force main conveying the driveway runoff to the detention pond. The proposed project site is a single-family project with a proposed 2,664 SF house, 1,312 SF driveway, 63 SF of retaining walls, and 119 SF of permeable paver path. The project adds more than 2,000 SF, but less than 5,000 SF of new plus replaced hard surfaces, therefore the runoff from the pollution generating surfaces does not have to be treated. An underground detention tank with a flow control structure will be used to manage stormwater runoff flows. The detention tank and control structure were sized per the City of Mercer Island on-site detention design requirements.

Runoff from part of the driveway will be conveyed to the detention tank using gravity flow through catch basins and storm lines. The remaining driveway runoff will be collected using a trench drain and pumped to the detention tank using a duplex pump system in a fiberglass basin. The pump system was sized based on the developed 100-year peak storm discharge rate, 0.009 cfs, for the portion of the driveway runoff that needs to be pumped to the detention tank, see driveway drainage plan below.

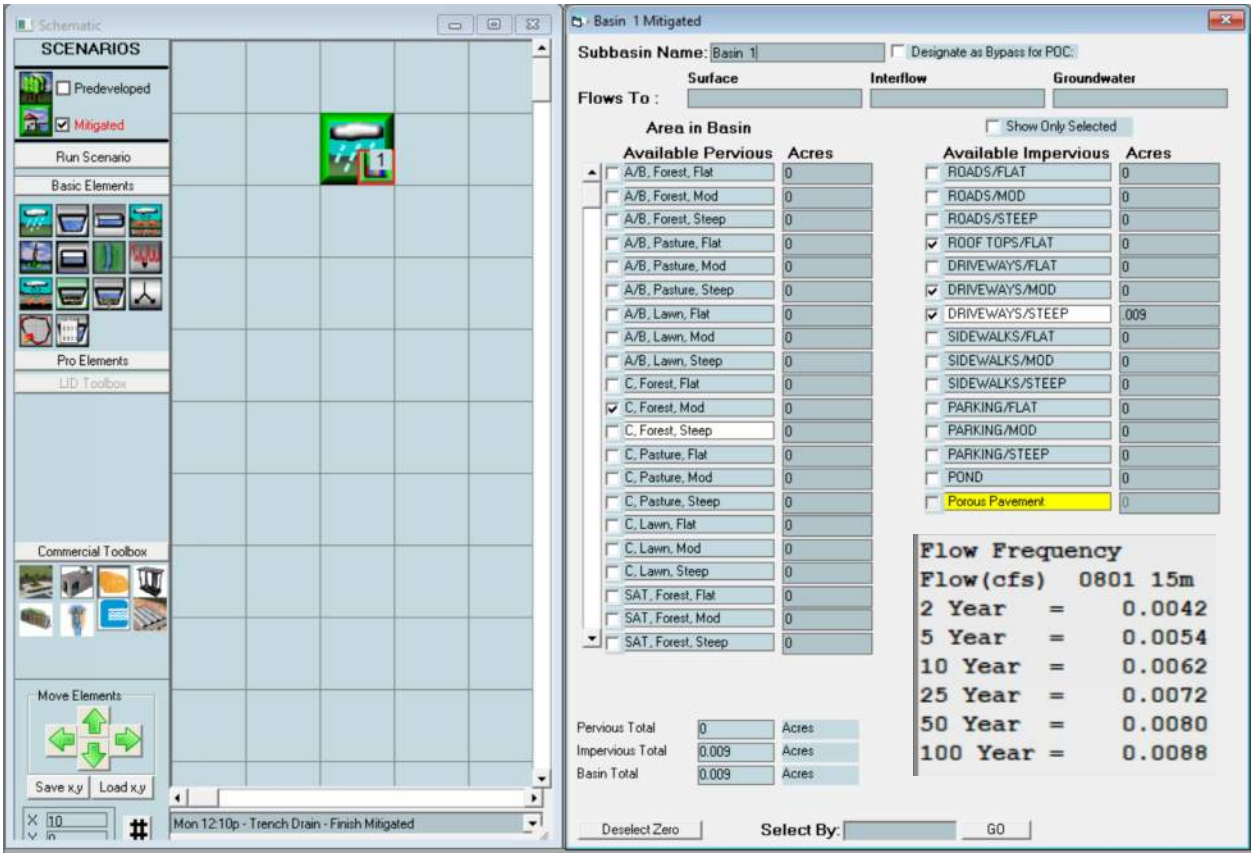


Existing Site

The existing site has moderate slopes that span the site from east to west. Runoff from the existing landscaping currently flows to the west of the site. The driveway will slope up to the proposed house location. A detention tank will be placed below the driveway portion to the east of the proposed house.

Proposed Storm Pump System

To maintain the existing stormwater flows, the runoff from the sloped driveway portion will be pumped to the detention tank where a control structure will limit the flows. The 100-year peak release rate of the trench drain is 0.009cfs/4.04 GPM, see WWHM modeling below.



A Grinder Pump Package system includes (2) 1/2 HP Grinder Pumps and a 36” x 72” fiberglass basin. The top of the fiberglass basin is at an elevation of 189.75’. The inlet of the pump in the fiberglass basin is at an invert elevation of 184.16’ and will eventually discharge at an invert elevation of 190.33’ in the Type 2 Catch Basin connected to the detention tank. Below is a summary of the proposed pump cycle and discharge velocity.

- Total Dynamic Head ≈ 6.17’
- Discharge Rate = 33 GPM
- Pump Cycle Minimum Storage Volume = 31.94 Gallons
- Time to Fill Minimum Storage Volume = 7.91 minutes
- Time to Discharge Minimum Storage Volume = 1.10 minutes
- Pump Cycle Time = 9.01 minutes
- Pump Cycles per Hour = 6.66

- Outlet Pipe: 1.25” Schedule 80 PVC
- Discharge Velocity = 8.62 ft/s

The proposed Grinder Pump Package system has a storage volume of 31.94 Gallons per pump cycle. Therefore, the pump will start after 7.91 minutes. Once the pump is turned on, the pump will run for 1.10 minutes before the “OFF” water level is peached. Subsequently, the cycle time is 9.01 minutes and there will be 6.66 cycles per an hour. See abbreviated pump specifications below.

Trusted. Tested. Tough.™

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

ZOELLER PUMP COMPANY

SECTION: 2.25.021
FM2882
0817
Supersedes
0716

U.S. Patent No. 8,562,287

TECHNICAL DATA SHEET
SHARK GRINDER
Model 803/805/807 Residential Grinder Pumps

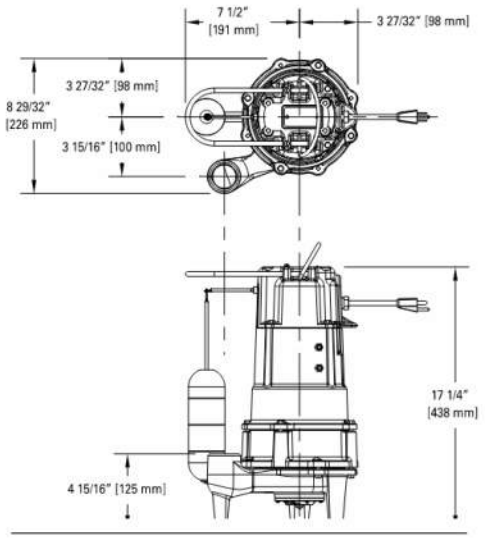
PRODUCT SPECIFICATIONS

MOTOR	Horse Power	0.5 - 1.0
	Voltage	115/230
	Phase	1 Ph
	Hertz	60 Hz
	RPM	3400
	Type	Capacitor start / Capacitor run
	Insulation	Class B
	Amps	115 V (7-11) / 230 V (3-5)
PUMP	Operation	Automatic & nonautomatic
	Auto On/Off Points	13" (33 cm) / 5-3/4" (14.6 cm)
	Discharge Size	1.25" NPT
	Cord Length	15' (5 m) standard
	Cord Type	UL listed 3-wire plug
	Max. Head	55' (16.8 m)
	Max. Operating Temp.	130° F (54 °C)
	Cooling	Oil
	Motor Protection	Auto reset thermal overload (1 Ph)
MATERIALS	Cover	Cast iron
	Motor housing	Cast iron
	Adapter	Cast iron
	Pump housing	Cast iron
	Upper Bearing	Ball bearing
	Lower Bearing	Ball bearing
	Mechanical Seals	Carbon and ceramic
	Impeller Type	Non-clogging vortex
	Impeller	Engineered plastic
	Hardware	Stainless steel
	Motor Shaft	1215 cold rolled steel
	Gasket	Neoprene
	Cutter & Plate	440C Stainless Steel

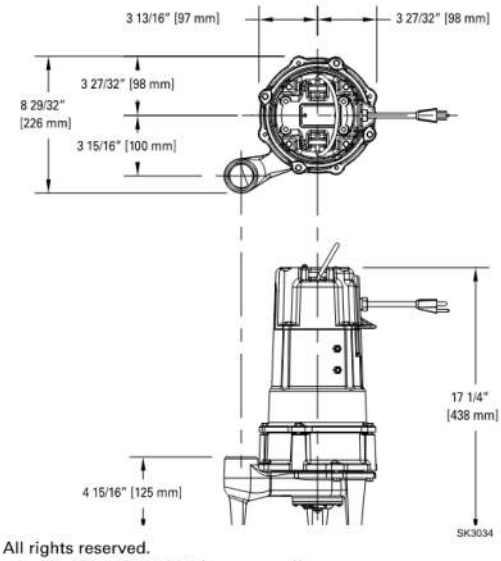
NOTE: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.

NOTE: See model comparison chart for specific details.

AUTOMATIC



NON-AUTOMATIC

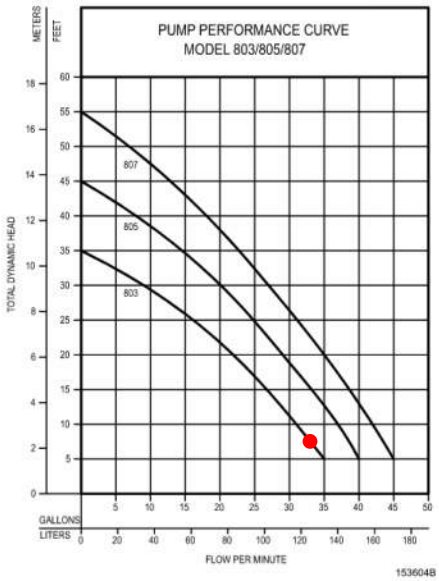


Tested to UL778 and CSA22.2 108 Standard

502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | www.zoeller.com

TOTAL DYNAMIC HEAD FLOW PER MINUTE

MODEL		803		805		807	
Feet	Meters	Gal.	Liters	Gal.	Liters	Gal.	Liters
5	1.5	35	132	40	151	45	170
10	3.0	31	117	37	140	42	159
20	6.1	22	83	29	110	35	132
30	9.1	9	34	20	76	27	102
40	12.2	--	--	8	30	18	68
50	15.2	--	--	--	--	7	26
Shut-off Head:		35 ft. (10.7 m)		45 ft. (13.7 m)		55 ft. (16.8 m)	



Model	MODEL COMPARISON										
	Seal	Mode	Volts	Ph	Amps	HP	Hz	Lbs.	Kg	Simplex	Duplex
M803	Single	Auto	115	1	7.0	0.5	60	65	29	1	3
N803	Single	Non	115	1	7.0	0.5	60	65	29	2	2 & 3
BN803	Single	Auto	115	1	7.0	0.5	60	65	29	4	3
D803	Single	Auto	230	1	3.0	0.5	60	65	29	1	3
E803	Single	Non	230	1	3.0	0.5	60	65	29	2	2 & 3
BE803	Single	Auto	230	1	3.0	0.5	60	65	29	4	3
M805	Single	Auto	115	1	9.0	0.75	60	65	29	1	3
N805	Single	Non	115	1	9.0	0.75	60	65	29	2	2 & 3
BN805	Single	Auto	115	1	9.0	0.75	60	65	29	4	3
D805	Single	Auto	230	1	4.0	0.75	60	65	29	1	3
E805	Single	Non	230	1	4.0	0.75	60	65	29	2	2 & 3
BE805	Single	Auto	230	1	4.0	0.75	60	65	29	4	3
M807	Single	Auto	115	1	11.0	1.0	60	65	29	1	3
N807	Single	Non	115	1	11.0	1.0	60	65	29	2	2 & 3
BN807	Single	Auto	115	1	11.0	1.0	60	65	29	4	3
D807	Single	Auto	230	1	5.0	1.0	60	65	29	1	3
E807	Single	Non	230	1	5.0	1.0	60	65	29	2	2 & 3
BE807	Single	Auto	230	1	5.0	1.0	60	65	29	4	3

SELECTION GUIDE

1. Integral float-operated mechanical switch, no external control required.
2. For automatic use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM0486 for correct model of duplex control panel.
4. Single piggyback switch included.

⚠ CAUTION All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | www.zoeller.com

OUTDOOR BASINS AND ACCESSORIES

SIMPLEX OUTDOOR BASINS - FIBERGLASS ONLY - NO HOLES DRILLED

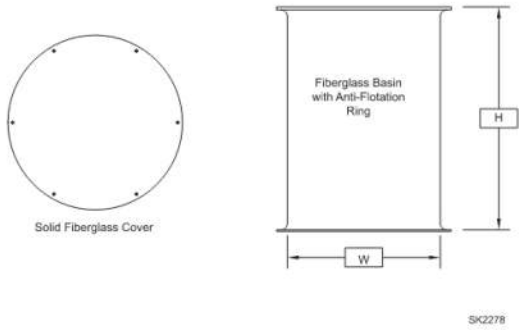
Size	Item No.	Description
24" X 48"	31-0866	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
24" X 60"	31-0946	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
24" X 72"	31-0594	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
30" X 48"	31-1830	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
30" X 60"	31-1831	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
30" X 72"	31-1586	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring

All basins include 5 field installed adapta-flex seals - (1) 1¼", (1) 1½", (2) 2" and (1) 4" grommets.

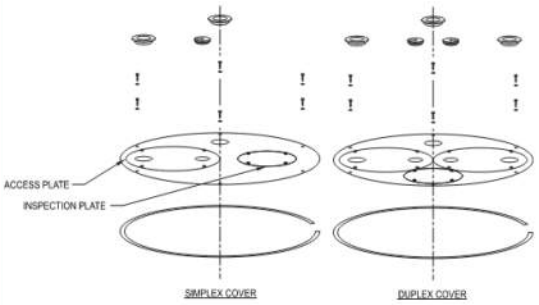
DUPLEX OUTDOOR BASINS - FIBERGLASS ONLY - NO HOLES DRILLED

Size W X H	Item No.	Description
36" X 48"	31-1450	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
36" X 60"	31-1451	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring
36" X 72"	31-1452	Solid Fiberglass Basin with Solid Fiberglass Cover and Anti-Flotation Ring

All basins include 5 field installed adapta-flex seals - (1) 1¼", (1) 1½", (2) 2" and (1) 4" grommets.
ADDITIONAL BASIN SIZES WITH OPTIONS (i.e. Rail Studs) ARE AVAILABLE. CONSULT FACTORY.



OUTDOOR



INDOOR

OUTDOOR TANK VENTS

Item No.	Color	Material	Size	Dimension (W x H)	Pipe Area	Screen Area
10-1753	Black	Plastic	2" Female NPT	4.625" X 3.125"	3.1 sq. in.	6.9 sq. in.
10-1461	Green	Metal	2" Female NPT	4.625" X 3.125"	3.1 sq. in.	6.9 sq. in.
10-1462	Green	Metal	3" Female NPT	6.875" X 4.500"	7.1 sq. in.	19.6 sq. in.
10-1463	Green	Metal	4" Female NPT	9.250" X 5.000"	12.6 sq. in.	35.8 sq. in.
10-1464	Green	Metal	6" Female NPT	11.125" X 6.625"	28.3 sq. in.	42.5 sq. in.

ZOELLER®
PUMP COMPANY

MAIL TO: P.O. BOX 16347 • Louisville, KY 40256-0347
SHIP TO: 3649 Cane Run Road • Louisville, KY 40211-1961
(502) 778-2731 • 1 (800) 928-PUMP • FAX (502) 774-3624

Your Peace of Mind is Our Top Priority®

visit our web site:
www.zoeller.com