

# CITY OF MERCER ISLAND

## DEVELOPMENT SERVICES GROUP

9611 SE 36TH STREET | MERCER ISLAND, WA 98040

PHONE: 206.275.7605 | [www.mercergov.org](http://www.mercergov.org)

Inspection Requests: Online: [www.MyBuildingPermits.com](http://www.MyBuildingPermits.com) VM: 206.275.7730



## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Narrative and Plan Submittal

**Instructions:** This is a template for a simplified Stormwater Report. This form or an equivalent must accompany your Building Permit Application if the answer is "Yes" to each statement below. If "No" is the answer to one or more of the statements below, a full Drainage Report is required and the project does not qualify for use of the Small Project Stormwater Site Plan/Report template.

Select "yes" or "no" for each statement below. Answer "yes" if the statement accurately describes your project.

Yes	No	Statement
	✓	This project disturbs less than 1 acre and is not part of a larger common plan of development.
	✓	This project converts less than 3/4 acre to lawn or landscape areas.
✓		This project will create, add, or replace (in any combination) 2,000 square feet or greater, but less than 5,000 square feet, of new plus replaced hard surface <b>OR</b> will have a land disturbing activity of 7,000 square feet or greater <b>OR</b> will result in a net increase of impervious surface of 500 square feet or greater.
	✓	This project will not adversely impact a wetland, stream, water of the state, or change a natural drainage course.

### Basic Project Information

Project Name: Forest Creek Estates Lot 4

Site Address: 5202 Forest Ave. SE, Mercer Island, WA 98040

Total Lot Size: 16,396 sq ft

Total Proposed Area to be Disturbed (including stockpile area): 10,256 sq ft

Total Volume of Proposed Cut and Fill: Cut = 1,580 cy, Fill = 1,370 cy, Net = 240 Cut sq ft

Total Proposed New Hard Surface Area: 4,147 sq ft

Total Proposed Replaced Hard Surface Area: 0 sq ft

Total Proposed Converted Pervious Surface Area 6,109  
(Native vegetation to lawn or landscape): \_\_\_\_\_ sq ft

Net Increase in Impervious Surface: 4,147 sq ft



# CITY OF MERCER ISLAND

## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #1 : Preparation of Stormwater Site Plan

#### Written Project Description:

CONSTRUCTION OF NEW SINGLE FAMILY RESIDENCE, 3 STORIES, WITH PARTIALLY BURIED MAIN FLOOR SHOP; CONSTRUCTION OF A SERIES OF RETAINING WALLS TO CREATE FLAT TERRACES IN (E) HILLSIDE;

DETENTION PIPE SYSTEM FOR ALL HARD SURFACES FOR THE LOT (4) AS WELL AS LOT 3; DISCHARGE TO EXISTING STORM MANHOLE TO THE NORTH. REFER TO ATTACHED DRAINAGE PLAN AS WELL AS DETENTION SYSTEM EXHIBIT SHOWING FUTURE BUILD-OUT OF STORM SYSTEM FOR ALL LOTS (#1 THRU #4).

#### Calculate new or replaced areas by surface type:

Lawn or Landscape Areas: _____ 4,666 _____ sq ft	Roof Area: _____ 3,207 _____ sq ft
Other Hard Surface Areas:	
Driveway: _____ 625 _____ sq ft	Patio: _____ 85 _____ sq ft
Sidewalk: _____ 0 _____ sq ft	
Parking Lot: _____ 0 _____ sq ft	Other: _____ 230 _____ sq ft

Attach Drainage Plan

#### Drainage Plan shall include the following:

- Scaled drawing with slopes, lot lines, any public-right-of-way and any easements, location of each on-site stormwater management BMP selected above and the areas served by them, buildings, roads, parking lots, driveways, landscape features, and areas of disturbed soils to be amended.
- The scaled drawing must be suitable to serve as a recordable document that will be attached to the property deed for each lot that includes on-site BMPs. Document submittal must follow the “Standard Formatting Requirements for Recording Documents” per King County: [www.kingcounty.gov/depts/records-licensing/recorders-office/recording-documents.aspx](http://www.kingcounty.gov/depts/records-licensing/recorders-office/recording-documents.aspx)
- Identify design details and maintenance instructions for each on-site BMP, and attach them to this Small Project Stormwater Site Plan/Report.



# CITY OF MERCER ISLAND

## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #2 : Construction Stormwater Pollution Prevention

- Complete Section B of this submittal package: Construction Stormwater Pollution Prevention Plan Narrative (SWPPP)
- Attach construction SWPPP

### Minimum Requirement #3 : Source Control of Pollution

This section contains practices and procedures to reduce the release of pollutants. Provide a description of all known, available and reasonable source control BMPs that will be, or are anticipated to be, used at this location to prevent stormwater from coming into contact with pollutants. Additional BMPs are found in Volume IV of the 2014 Stormwater Management Manual for Western Washington (SWMMWW).

Check the BMPs you will use:

- BMP S411 for Landscaping and Lawn/ Vegetation Management  
Operational practices for sites with landscaping
- BMP S421 for Parking and Storage of Vehicles.  
Public and commercial parking lots can be sources of suspended solids, metals, or toxic hydrocarbons such oils and greases.
- BMP S433 for Pools, Spas, Hot Tubs, Fountains  
Discharge from pools, hot tubs, and fountains can degrade ambient water quality. Routine maintenance activities generate a variety of wastes. Direct disposal of these waters to drainage system and waters of the state are not permitted without prior treatment and approval.
- Other BMPs found in Volume IV of SWMMWW applicable to project:

- No source control BMPs are applicable for this project.



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## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #4 : Preservation of Natural Drainage Systems

Natural drainage patterns shall be maintained and discharges from the project site shall occur at the natural location, to the maximum extent practicable. All outfalls require energy dissipation.

Choose the option below that best describes your project:

This site has existing drainage systems or outfalls. These items are shown on the Drainage Plan. Include the following items on the Drainage Plan:

- Pipe invert elevations, slopes, cover, and material
- Locations, grades, and direction of flow in ditches and swales, culverts, and pipes

Describe how these systems will be preserved:

Discharge of flows from the project will be to an existing storm manhole just north of the project site. This existing storm system outfalls to a creek approximately 75' northeast of the manhole at point of connection. This existing system will be preserved and utilized to convey site flows.

This site does not have any existing drainage systems or outfalls.

Additional Comments:



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## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #5 : On-site Stormwater Management

All projects meeting the thresholds for this Small Project Stormwater Report shall employ on-site stormwater management BMPs (See Small Project Stormwater Requirements Tip Sheet) to infiltrate, disperse, and retain stormwater runoff on-site to the extent feasible without causing flooding or erosion impacts.

#### List #1

For each category select the *first* feasible item on the list below. Document your justification for each infeasible BMP in Section C of this submittal package.

Check one option for each category below:



#### Lawn and Landscape Areas

- My project does not have *Lawn or Landscape* areas
- Post-construction soil quality and depth
- Post-construction soil quality and depth is infeasible (see Section C of this submittal package)



#### Roofs

- My project does not have *Roof* areas
- 1. Full dispersion or downspout full infiltration
- 2. Rain garden or bioretention
- 3. Downspout dispersion system
- 4. Perforated stub-out connections
- 5. On-site detention system or fee-in-lieu of on-site detention authorized by the City Engineer (applicable if options #1-4 are infeasible and drainage from the site will be discharged to a storm or surface water system that includes a watercourse or there is a capacity constraint in the system)
- 6. No Roof BMP (applicable if options #1-4 are infeasible and on-site detention is not required)

Measured Infiltration Rate:           N/A           in/ hr

If #5 or #6 is selected, briefly describe why no Roof BMP is feasible (include detailed information in Section C of this submittal package):

Inadequate space for dispersion on-site. Infiltration not feasible on-site. On-site detention system provided as directed by City.



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## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #5 : On-site Stormwater Management (cont.)



#### Other Hard Surfaces (such as driveway, sidewalk, parking lot, patio, etc.)

- My project does not have *Other Hard Surface* areas
- 1. Full dispersion
- 2. Permeable pavement, rain gardens, or bioretention
- 3. Sheet flow dispersion or concentrated flow dispersion
- 4. On-site detention system or fee-in-lieu of on-site detention authorized by the City Engineer (applicable if options #1-3 are infeasible and drainage from the site will be discharged to a storm or surface water system that includes a watercourse or there is a capacity constraint in the system)
- 5. No Other Hard Surface BMP (applicable if options #1-3 are infeasible and on-site detention is not required)

Measured Infiltration Rate: \_\_\_\_\_ in/ hr

If #4 or #5 is selected, briefly describe why no Other Hard Surface BMP is feasible (include detailed information in Section C of this submittal package):

Inadequate space for dispersion on-site. Infiltration not feasible on-site. On-site detention system provided as directed by City.

### Flow Control Exempt List

Proceed with this list if your project discharges directly to Lake Washington or if findings from a downstream analysis confirm that the downstream system is free of capacity constraints for a minimum of ¼ mile and a maximum of 1 mile.

For flow control exempt discharges, the BMPs listed below for Roofs and Other Hard Surfaces do not need to be evaluated in priority order. You can select any BMP from the lists provided below and do not need to document infeasibility in Section C of this submittal package.

Check one option for each category below:



#### Lawn and Landscape Areas

- My project does not have *Lawn or Landscape* areas
- Post-construction soil quality and depth



# CITY OF MERCER ISLAND

## SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

### Minimum Requirement #5 : On-site Stormwater Management (cont.)



#### Roofs

- My project does not have *Roof* areas
- Downspout full infiltration
- Downspout dispersion system
- Perforated stub-out connections
- Each item above is infeasible

If “Each item above is infeasible” is selected, briefly describe why no Roof BMP is feasible:



#### Other Hard Surfaces (such as driveway, sidewalk, parking lot, patio, etc.)

- My project does not have *Other Hard Surface* areas
- Sheet flow dispersion
- Concentrated flow dispersion
- Each item above is infeasible

If “Each item above is infeasible” is selected, briefly describe why no Other Hard Surface BMP is feasible:



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Instructions

This is a template for a simplified Construction Stormwater Pollution Prevention Plan (“Construction SWPPP”). If “No” is the answer to one or more of the statements on the first page of Section A of this submittal package, then a full Construction SWPPP is required and the project does not qualify for the use of the Small Project Construction SWPPP Narrative template. If the project is less than the thresholds on the first page of Section A of this submittal package, then Minimum Requirement #2 still applies, but this section (Section B) or a full construction SWPPP is not required. You should include your Construction SWPPP in your contract with your builder. A copy of the Construction SWPPP must be located at the construction site or within reasonable access to the site for construction and inspection personnel at all times.

### General Information on the Existing Site and Project

Describe the following in the Project Narrative box below (attach additional pages if necessary):

- Nature and purpose of the construction project
- Existing topography, vegetation, and drainage, and building structures
- Adjacent areas, including streams, lakes, wetlands, residential areas, and roads that might be affected by the construction project
- How upstream drainage areas may affect the site
- Downstream drainage leading from the site to the receiving body of water
- Areas on or adjacent to the site that are classified as critical areas
- Critical areas that receive runoff from the site up to one-quarter mile away
- Special requirements and provisions for working near or within critical areas
- Areas on the site that have potential erosion problems

Project Narrative:

Lot 4 is an irregular shaped lot with the eastern portion undevelopable due to the creek and associated buffer under native growth protection area. The proposed residence, driveway, and associated infrastructure will be constructed within the western portion of the site. The following describes the developable western portion of the site. In the existing pre-developed condition, the site is underlain with vegetation and several mature trees. General topography slopes to the north-northeast. There appears to be man-made slopes of 2H+:1V grade over approx. 16' of vertical relief along the southern portion of the site which transitions to gentle slopes up to the paved turn-around along the north property boundary. In the developed condition, the residence will sit generally in the middle of the lot with driveway to the north. Three cast-in-place retaining walls are proposed to provide flat terraces for the grade transition. All Detention Pipe system is proposed to manage stormwater from all hard surfaces for the lot as well as that for Lot 3 to the south. Please refer to the attached Drainage Plan as well as the Detention Systems Exhibit showing future build-out of storm systems for all Lots (#1 thru #4).





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## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Construction SWPPP Drawings

Refer to the general Drawing Requirements in Stormwater Management Manual for Western Washington (SWMMWW) Volume I, Chapter 3.

### Vicinity Map

Provide a map with enough detail to identify the location of the construction site, adjacent roads, and receiving waters.

### Site Map

Include the following (where applicable):

- |                                                                                                                                                                       |                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Legal description of the property boundaries or an illustration of property lines (including distances) on the drawings.          | <input checked="" type="checkbox"/> Final and interim grade contours as appropriate, drainage basins, and the direction of stormwater flow during and upon completion of construction. |
| <input checked="" type="checkbox"/> North arrow.                                                                                                                      | <input checked="" type="checkbox"/> Areas of soil disturbance, including all areas affected by clearing, grading, and excavation.                                                      |
| <input checked="" type="checkbox"/> Existing structures and roads.                                                                                                    | <input checked="" type="checkbox"/> Locations where stormwater will discharge to surface waters during and upon completion of construction.                                            |
| <input checked="" type="checkbox"/> Boundaries and identification of different soil types.                                                                            | <input checked="" type="checkbox"/> Existing unique or valuable vegetation and vegetation to be preserved.                                                                             |
| <input checked="" type="checkbox"/> Areas of potential erosion problems.                                                                                              | <input checked="" type="checkbox"/> Cut-and-fill slopes indicating top and bottom of slope catch lines.                                                                                |
| <input checked="" type="checkbox"/> Any on-site and adjacent surface waters, critical areas, buffers, flood plain boundaries, and Shoreline Management boundaries.    | <input checked="" type="checkbox"/> Total cut-and-fill quantities and the method of disposal for excess material.                                                                      |
| <input checked="" type="checkbox"/> Existing contours and drainage basins and the direction of flow for the different drainage areas.                                 | <input type="checkbox"/> Stockpile; waste storage; and vehicle storage, maintenance, and washdown areas.                                                                               |
| <input checked="" type="checkbox"/> Where feasible, contours extend a minimum of 25 feet beyond property lines and extend sufficiently to depict existing conditions. |                                                                                                                                                                                        |

### Temporary and Permanent BMPs

Include the following on site map (where applicable):

- |                                                                                                                                                          |                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Locations for temporary and permanent swales, interceptor trenches, or ditches.                                      | <input checked="" type="checkbox"/> Details for bypassing off-site runoff around disturbed areas.                                                                                                                             |
| <input checked="" type="checkbox"/> Drainage pipes, ditches, or cut-off trenches associated with erosion and sediment control and stormwater management. | <input checked="" type="checkbox"/> Locations of temporary and permanent stormwater treatment and/or flow control best management practices (BMPs).                                                                           |
| <input checked="" type="checkbox"/> Temporary and permanent pipe inverts and minimum slopes and cover.                                                   | <input checked="" type="checkbox"/> Details for all structural and nonstructural erosion and sediment control (ESC) BMPs (including, but not limited to, silt fences, construction entrances, sedimentation facilities, etc.) |
| <input checked="" type="checkbox"/> Grades, dimensions, and direction of flow in all ditches and swales, culverts, and pipes.                            | <input type="checkbox"/> Details for any construction-phase BMPs or techniques used for Low Impact Development (LID) BMP protection.                                                                                          |
| <input checked="" type="checkbox"/> Locations and outlets of any dewatering systems.                                                                     |                                                                                                                                                                                                                               |



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## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 1: Preserve Vegetation / Mark Clearing Limits

The goal of this element is to preserve native vegetation and to clearly show the limits of disturbance.

This element **does not** apply to my project because:

The site was cleared as part of clearing activity that is subject to an enforcement action and is re-vegetated. Restoration may be necessary to comply with Critical Area Regulations or NPDES requirements. Buffer Zones-BMP C102 may apply if Critical Areas exist on-site and buffer zones shall be protected.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the best management practices (BMPs) you will use:

The perimeter of the area to be cleared shall be marked prior to clearing operation with visible flagging, orange plastic barrier fencing and/or orange silt fencing as shown on the SWPPP site map. The total disturbed area shall be less than 7,000 square feet. Vehicles will only be allowed in the areas to be graded, so no compaction of the undeveloped areas will occur.

Additional Comments:

See C2.0 TESC Plan.

Check the BMPs you will use:

- C101 Preserving Natural Vegetation       C102 Buffer Zones       C103 High Visibility Fence



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## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 2: Construction Access

The goal of this element is to provide a stabilized construction entrance/exit to prevent or reduce or sediment track out.

This element **does not** apply to my project because:

The driveway to the construction area already exists and will be used for construction access. All equipment and vehicles will be restricted to staying on that existing impervious surface.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

A stabilized construction entrance will be installed prior to any vehicles entering the site, at the location shown on the SWPPP site map.

Additional Comments:

See C2.0 TESC Plan.

Check the BMPs you will use:

C105 Stabilized Construction Entrance / Exit

C106 Wheel Wash

C107 Construction Road / Parking Area Stabilization



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## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 3: Control Flow Rates

The goal of this element is to construct retention or detention facilities when necessary to protect properties and waterways downstream of development sites from erosion and turbid discharges.

This element **does not** apply to my project because:

Other Reason / Additional Comments:

A permanent detention facility (pipe) is proposed to control site runoff post development. No adverse impacts to downstream properties are anticipated from this development.

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Flow rates will be controlled by using SWPPP Element 4 sediment controls and BMP T5.13 Post-Construction Soil Quality and Depth if necessary.

Additional Comments:



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## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 4: Sediment Control

The goal of this element is to construct sediment control BMPs that minimize sediment discharges from the site.

This element **does not** apply to my project because:

The site has already been stabilized and re-vegetated.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Sediment control BMPs shall be placed at the locations shown on the SWPPP site map

Additional Comments:

Temporary silt fencing downslope of disturbed areas will be provided prior to grading activities.

Check the BMPs you will use:

C231 Brush Barrier

C233 Silt Fence

C235 Wattles

C232 Gravel Filter Berm

C234 Vegetated Strip



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 5: Stabilize Soils

The goal of this element is to stabilize exposed and unworked soils by implementing erosion control BMPs.

This element **does not** apply to my project because:

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

- Exposed soils shall be worked during the week until they have been stabilized. Soil stockpiles will be located within the disturbed area shown on the SWPPP site map. Soil excavated for the foundation will be backfilled against the foundation and graded to drain away from the building. No soils shall remain exposed and unworked for more than 7 days from May 1 to September 30 or more than 2 days from October 1 to April 30. Once the disturbed landscape areas are graded, the grass areas will be amended using BMP T5.13 Post-Construction Soil Quality and Depth. All stockpiles will be covered with plastic or burlap if left unworked.

Additional Comments:

This is an export site; since there is limited area onsite for stockpiles, it is anticipated that soils will be trucked offsite.

Check the BMPs you will use:

- C120 Temporary & Permanent Seeding
- C122 Nets & Blankets
- C124 Sodding
- C131 Gradient Terraces
- C235 Wattles
- C121 Mulching
- C123 Plastic Covering
- C125 Topsoil / Composting
- C140 Dust Control



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 6: Protect Slopes

The goal of this element is to design and construct cut-and-fill slopes in a manner to minimize erosion.

This element **does not** apply to my project because:

No cut slopes over 4 feet high or slopes steeper than 2 feet horizontal to 1 foot vertical, and no fill slopes over 4 feet high will exceed 3 feet horizontal to 1 foot vertical. Therefore, there is no requirement for additional engineered slope protection.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Additional Comments:

Recommendations for excavations and slopes will follow the Geotechnical Report as noted on C2.0. Upstream drainage will be directed away from cut slopes.

Check the BMPs you will use:

- |                                                                        |                                                            |                                                                                   |
|------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> C120 Temporary & Permanent Seeding | <input checked="" type="checkbox"/> C205 Subsurface Drains | <input checked="" type="checkbox"/> C207 Check Dams                               |
| <input type="checkbox"/> C204 Pipe Slope Drains                        | <input type="checkbox"/> C206 Level Spreader               | <input type="checkbox"/> C208 Triangular Silt Dike (Geotextile-Encased Check Dam) |



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 7: Protect Permanent Drain Inlets

The goal of this element is to protect storm drain inlets during construction to prevent stormwater runoff from entering the conveyance system without being filtered or treated.

This element **does not** apply to my project because:

- The site has open ditches in the right-of-way or private road right-of-way.
- There are no catch basins on or near the site.
- Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

- Catch basins on the site or immediately off site in the right-of-way are shown on the SWPPP site map. Storm drain inlet protection shall be installed.

Additional Comments:

Check the BMPs you will use:

- C220 Storm Drain Inlet Protection





# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 8: Stabilize Channels and Outlets

The goal of this element is to design, construct, and stabilize on-site conveyance channels to prevent erosion from entering existing stormwater outfalls and conveyance systems.

This element **does not** apply to my project because:

Construction will occur during the dry weather. No storm drainage channels or ditches shall be constructed either temporary or permanent. A small swale shall be graded to convey yard drainage around the structure using a shallow slope; it shall be seeded after grading and stabilized.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

A wattle shall be placed at the end of the swale to prevent erosion at the outlet of the swale.

Additional Comments:

Check the BMPs you will use:

C202 Channel Lining     C207 Check Dams     C209 Outlet Protection     C235 Wattles



# CITY OF MERCER ISLAND

## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 9: Control Pollutants

The goal of this element is to design, install, implement and maintain BMPs to minimize the discharge of pollutants from material storage areas, fuel handling, equipment cleaning, management of waste materials, etc.

This element **does not** apply to my project because:

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Any and all pollutants, chemicals, liquid products and other materials that have the potential to pose a threat to human health or the environment will be covered, contained, and protected from vandalism. All such products shall be kept under cover in a secure location on-site. Concrete handling shall follow BMP C151.

Additional Comments:

Check the BMPs you will use:

C151 Concrete Handling

C152 Sawcutting and Surfacing Pollution Prevention

C153 Material Delivery, Storage, and Containment

C154 Concrete Washout Area



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## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 10: Control De-watering

The goal of this element is to handle turbid or contaminated dewatering water separately from stormwater.

This element **does not** apply to my project because:

No dewatering of the site is anticipated.

Other Reason / Additional Comments:

If it **does** apply, describe the steps you will take and select the BMPs you will use:

Additional Comments:

Any dewatering required will follow BMPs below and/or recommendations from the project Geotech.

Check the BMPs you will use:

C203 Water Bars

C236 Vegetated Filtration

C206 Level Spreader



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## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 11: Maintain Best Management Practices

The goal of this element is to maintain and repair all temporary and permanent erosion and sediment control BMPs to assure continued performance.

*Describe the steps you will take:*

- Best Management Practices or BMPs shall be inspected and maintained during construction and removed within 30 days after the City Inspector or Engineer determines that the site is stabilized, provided that they may be removed when they are no longer needed.

### Element 12: Manage the Project

The goal of this element is to ensure that the construction SWPPP is properly coordinated and that all BMPs are deployed at the proper time to achieve full compliance with City regulations throughout the project.

If it **does** apply, describe the steps you will take and select the BMPs you will use:

The Construction SWPPP will be implemented at all times. The applicable erosion control BMPs will be implemented in the following sequence:

- 1. Mark clearing limits
- 2. Install stabilized construction entrance
- 3. Install protection for existing drainage systems and permanent drain inlets
- 4. Establish staging areas for storage and handling polluted material and BMPs
- 5. Install sediment control BMPs
- 6. Grade and install stabilization measures for disturbed areas
- 7. Maintain BMPs until site stabilization, at which time they may be removed

Additional Comments:



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## SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

### Element 13: Protect Low Impact Development BMPs

The goal of this element is to protect on-site stormwater management BMPs (also known as “Low Impact Development BMPs”) from siltation and compaction during construction. On-site stormwater management BMPs used for runoff from roofs and other hard surfaces include: full dispersion, roof downspout full infiltration or dispersion systems, perforated stubout connections, rain gardens, bioretention systems, permeable pavement, sheetflow dispersion, and concentrated flow dispersion. Methods for protecting on-site stormwater management BMPs include sequencing the construction to install these BMPs at the latter part of the construction grading operations, excluding equipment from the BMPs and the associated areas, and using the erosion and sedimentation control BMPs listed below.

*Describe the construction sequencing you will use:*

Additional Comments:

No Low Impact Development BMPs are proposed.

*Select the BMPs you will use:*

- |                                           |                                                     |                                             |
|-------------------------------------------|-----------------------------------------------------|---------------------------------------------|
| <input type="checkbox"/> C102 Buffer Zone | <input type="checkbox"/> C103 High Visibility Fence | <input type="checkbox"/> C231 Brush Barrier |
| <input type="checkbox"/> C233 Silt Fence  | <input type="checkbox"/> C234 Vegetated Strip       |                                             |



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

### Minimum Requirement #5 (On-Site Stormwater Management)

The following tables summarize infeasibility criteria that can be used to justify not using various on-site stormwater management best management practices (BMPs) for consideration for Minimum Requirement #5. This information is also included under the detailed descriptions of each BMP in the 2014 Stormwater Management Manual for Western Washington (Stormwater Manual), but is provided here in this worksheet for additional clarity and efficiency. Where any inconsistencies or lack of clarity exists, the requirements in the main text of the Stormwater Manual shall be applied. If a project is limited by one or more of the infeasibility criteria specified below, but an applicant is interested in implementing a specific BMP, a functionally equivalent design may be submitted to the City for review and approval. Evaluate the feasibility of the BMPs in priority order based on List #1 or #2 (Small Project Stormwater Requirements Tip Sheet and Stormwater Manual). Select the first BMP that is considered feasible for each surface type. Document the infeasibility (narrative description and rationale) for each BMP that was not selected. Only one infeasibility criterion needs to be selected for a BMP before evaluating the next BMP on the list. Attach additional pages for supporting information if necessary.

Note: If your project discharges directly to Lake Washington (flow control exempt) or a downstream analysis confirms that the downstream system is free of capacity constraints for a minimum of ¼ mile and a maximum of 1 mile, then you do not need to complete this worksheet, but should still refer to the infeasibility criteria when selecting BMPs.

Lawn and Landscaped Areas		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Post-construction Soil Quality and Depth List #1 and #2	<input type="checkbox"/> Siting and design criteria provided in BMP T5.13 ( <b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved. <input type="checkbox"/> Lawn and landscape area is on till slopes greater than 33 percent.	
Roofs		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Full Dispersion List #1 and #2	<input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.30 ( <b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved. <input checked="" type="checkbox"/> A 65 to 10 ratio of forested or native vegetation area to impervious area cannot be achieved. <input checked="" type="checkbox"/> A minimum forested or native vegetation flowpath length of 100 feet (25 feet for sheet flow from a non-native pervious surface) cannot be achieved.	Downstream slope exceeds maximum allowable for dispersion. Insufficient space on-site for dispersion.
Downspout Full Infiltration List #1 and #2	<input checked="" type="checkbox"/> Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards. <input type="checkbox"/> Site setbacks and design criteria provided in BMP T5.10A ( <b>Stormwater Manual</b> Volume III, Section 3.1.1) cannot be achieved. <input type="checkbox"/> The lot(s) or site does not have out-wash or loam soils. <input type="checkbox"/> There is not at least 3 feet or more of permeable soil from the proposed final grade to the seasonal high groundwater table or other impermeable layer. <input type="checkbox"/> There is not at least 1 foot or more of permeable soil from the proposed bottom of the infiltration system to the seasonal high groundwater table or other impermeable layer.	Infiltration is not permitted for this project based on City's map and is also not recommended by the project Geotech due to fine soils on site and steep slopes along the east side of the property.



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Bioretention or Rain Gardens  List #1 (both) and List #2 (bioretention only)	<p><i>Note: Criteria with setback distances are as measured from the bottom edge of the bioretention soil mix.</i></p> <p>Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or down-gradient flooding.</li> <li><input type="checkbox"/> Within an area whose ground water drains into an erosion hazard, or landslide hazard area.</li> <li><input type="checkbox"/> Where the only area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, pre-existing structures, or pre-existing road or parking lot surfaces.</li> <li><input type="checkbox"/> Where the only area available for siting does not allow for a safe overflow pathway to stormwater drainage system or private storm sewer system.</li> <li><input type="checkbox"/> Where there is a lack of usable space for bioretention areas at re-development sites, or where there is insufficient space within the existing public right-of-way on public road projects.</li> <li><input type="checkbox"/> Where infiltrating water would threaten existing below grade basements.</li> <li><input type="checkbox"/> Where infiltrating water would threaten shoreline structures such as bulkheads.</li> </ul> <p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards</li> <li><input type="checkbox"/> Within setback provided for BMP T7.30 (<b>Stormwater Manual</b> Volume V, Section 7.4)</li> <li><input type="checkbox"/> Where they are not compatible with surrounding drainage system as determined by the city (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention area).</li> </ul>	See previous responses.



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Bioretention or Rain Gardens (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Where land for bioretention is within an erosion hazard, or landslide hazard area (as defined by MICC 19.07.060).</li> <li><input type="checkbox"/> Where the site cannot be reasonably designed to locate bioretention areas on slopes less than 8 percent.</li> <li><input type="checkbox"/> Within 50 feet from the top of slopes that are greater than 20 percent and over 10 feet of vertical relief.</li> <li><input type="checkbox"/> For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act [MTCA]):               <ul style="list-style-type: none"> <li>• Within 100 feet of an area known to have deep soil contamination.</li> <li>• Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater.</li> <li>• Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area.</li> <li>• Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.</li> </ul> </li> <li><input type="checkbox"/> Within 100 feet of a closed or active landfill.</li> <li><input type="checkbox"/> Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.</li> <li><input type="checkbox"/> Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons.</li> </ul>	See previous responses.





# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Bioretention or Rain Gardens (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Where field testing indicates potential bioretention/rain garden sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. A small-scale or large-scale PIT in accordance with <b>Stormwater Manual</b> Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to demonstrate infeasibility of bioretention areas. If the measured native soil infiltration rate is less than 0.30 in/hour, bioretention/rain garden BMPs are not required to be evaluated as an option in List #1 or List #2. In these slow draining soils, a bioretention area with an underdrain may be used to treat pollution-generating surfaces to help meet Minimum Requirement #6, Runoff Treatment. If the underdrain is elevated within a base course of gravel, it will also provide some modest flow reduction benefit that will help achieve Minimum Requirement #7.</li> <li><input type="checkbox"/> Where the minimum vertical separation of 3 feet to the seasonal high groundwater elevation or other impermeable layer would not be achieved below bioretention that would serve a drainage area that exceeds the following thresholds (and cannot reasonably be broken down into amounts smaller than indicated): <ul style="list-style-type: none"> <li>o 5,000 square feet of pollution-generating impervious surface (PGIS)</li> <li>o 10,000 square feet of impervious area</li> <li>o 0.75 acres of lawn and landscape.</li> </ul> </li> <li><input type="checkbox"/> Where the minimum vertical separation of 1 foot to the seasonal high groundwater or other impermeable layer would not be achieved below bioretention that would serve a drainage area less than the above thresholds.</li> <li><input type="checkbox"/> Within 100 feet of a drinking water well, or a spring used for drinking water supply.</li> <li><input type="checkbox"/> Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC.</li> </ul>	See previous responses.



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Downspout Dispersion Systems List #1 and #2	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.10B (<b>Stormwater Manual</b> Volume III, Section 3.1.2) cannot be achieved.</li> <li><input type="checkbox"/> For splash blocks, a vegetated flowpath at least 50 feet in length from the downspout to the downstream property line, structure, stream, wetland, slope over 15 percent, or other impervious surface is not feasible.</li> <li><input type="checkbox"/> For trenches, a vegetated flowpath of at least 25 feet in between the outlet of the trench and any property line, structure, stream, wetland, or impervious surface is not feasible. A vegetated flowpath of at least 50 feet between the outlet of the trench and any slope steeper than 15 percent is not feasible.</li> </ul>	Downstream slope exceeds maximum allowable for dispersion.
Perforated Stub-Out Connections List #1 and #2	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards</li> <li><input type="checkbox"/> For sites with septic systems, the only location available for the perforated portion of the pipe is located up-gradient of the drainfield primary and reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.</li> <li><input type="checkbox"/> Site setbacks and design criteria provided in BMP T5.10C (<b>Stormwater Manual</b> Volume III, Section 3.1.3) cannot be achieved.</li> <li><input type="checkbox"/> There is not at least 1 foot of permeable soil from the proposed bottom (final grade) of the perforated stub-out connection trench to the highest estimated groundwater table or other impermeable layer.</li> <li><input type="checkbox"/> The only location available for the perforated stub-out connection is under impervious or heavily compacted soils.</li> </ul>	Infiltration is not permitted for this project based on City's map and is also not recommended by the project Geotech due to fine soils on site and steep slopes along the east side of the property.
On-site Detention List #1 and #2	<ul style="list-style-type: none"> <li><input type="checkbox"/> Project discharges directly to Lake Washington.</li> <li><input type="checkbox"/> Findings from a 1/4 mile downstream analysis confirm that the downstream system is free of capacity constraints.</li> <li><input type="checkbox"/> Site setbacks and design criteria provided in the <b>Stormwater Manual</b> (Volume III, Section 3.2.2) cannot be achieved.</li> </ul>	Chosen for onsite stormwater management.



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Full Dispersion List #1 and #2	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.30 (<b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved.</li> <li><input type="checkbox"/> A 65 to 10 ratio of forested or native vegetation area to impervious area cannot be achieved.</li> <li><input type="checkbox"/> A minimum forested or native vegetation flowpath length of 100 feet (25 feet for sheet flow from a non-native pervious surface) cannot be achieved.</li> </ul>	Same as described for roof drainage.
Permeable Pavement List #1 and #2	<p>Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or downgradient flooding.</li> <li><input type="checkbox"/> Within an area whose ground water drains into an erosion hazard, or landslide hazard area.</li> <li><input type="checkbox"/> Where infiltrating and ponded water below the new permeable pavement area would compromise adjacent impervious pavements.</li> <li><input type="checkbox"/> Where infiltrating water below a new permeable pavement area would threaten existing below grade basements.</li> <li><input type="checkbox"/> Where infiltrating water would threaten shoreline structures such as bulkheads.</li> <li><input type="checkbox"/> Down slope of steep, erosion prone areas that are likely to deliver sediment.</li> <li><input type="checkbox"/> Where fill soils are used that can become unstable when saturated.</li> <li><input type="checkbox"/> Excessively steep slopes where water within the aggregate base layer or at the subgrade surface cannot be controlled by detention structures and may cause erosion and structural failure, or where surface runoff velocities may preclude adequate infiltration at the pavement surface.</li> <li><input type="checkbox"/> Where permeable pavements cannot provide sufficient strength to support heavy loads at industrial facilities such as ports.</li> <li><input type="checkbox"/> Where installation of permeable pavement would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, or pre-existing road subgrades.</li> </ul>	Same as described for roof drainage.



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Permeable Pavement (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards</li> <li><input type="checkbox"/> Within an area designated as an erosion hazard, or landslide hazard.</li> <li><input type="checkbox"/> Within 50 feet from the top of slopes that are greater than 20 percent.</li> <li><input type="checkbox"/> For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under MTCA):               <ul style="list-style-type: none"> <li>• Within 100 feet of an area known to have deep soil contamination.</li> <li>• Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater.</li> <li>• Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area.</li> <li>• Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.</li> </ul> </li> <li><input type="checkbox"/> Within 100 feet of a closed or active landfill.</li> <li><input type="checkbox"/> Within 100 feet of a drinking water well, or a spring used for drinking water supply, if the pavement is a pollution-generating surface.</li> <li><input type="checkbox"/> Within 10 feet of a small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC.</li> <li><input type="checkbox"/> Within 10 feet of any underground storage tank and connecting underground pipes, regardless of tank size. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.</li> <li><input type="checkbox"/> At multi-level parking garages, and over culverts and bridges.</li> <li><input type="checkbox"/> Where the site design cannot avoid putting pavement in areas likely to have long-term excessive sediment deposition after construction (e.g., construction and landscaping material yards).</li> </ul>	Same as described for roof drainage.



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Permeable Pavement (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Where the site cannot reasonably be designed to have:               <ul style="list-style-type: none"> <li>• Porous asphalt surface &lt; 5% slope</li> <li>• Pervious concrete surface &lt; 10% slope</li> <li>• Permeable interlocking concrete pavement surface &lt; 12% slope</li> <li>• Grid systems &lt; 6-12% slope (check with manufacturer and local supplier to confirm maximum slope)</li> </ul> </li> <li><input type="checkbox"/> Where the subgrade soils below a pollution-generating permeable pavement (e.g., road or parking lot) do not meet the soil suitability criteria for providing treatment. See soil suitability criteria for treatment in the <b>Stormwater Manual</b> Volume III, Section 3.3.7. Note: In these instances, the city may approve installation of a 6 inch sand filter layer meeting city specifications for treatment as a condition of construction.</li> <li><input type="checkbox"/> Where underlying soils are unsuitable for supporting traffic loads when saturated. Soils meeting a California Bearing Ratio of 5 percent are considered suitable for residential access roads.</li> <li><input type="checkbox"/> Where replacing existing impervious surfaces unless the existing surface is a non-pollution generating surface over an outwash soil with a saturated hydraulic conductivity of 4 inches per hour or greater.</li> <li><input type="checkbox"/> Where appropriate field testing indicates soils have a measured (a.k.a., initial) subgrade soil saturated hydraulic conductivity less than 0.3 inches per hour. Only small-scale PIT or large-scale PIT methods in accordance with <b>Stormwater Manual</b> Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to evaluate infeasibility of permeable pavement areas. (Note: In these instances, unless other infeasibility restrictions apply, roads and parking lots may be built with an underdrain, preferably elevated within the base course, if flow control benefits are desired.)</li> <li><input type="checkbox"/> Roads that receive more than very low traffic volumes, and areas having more than very low truck traffic. Roads with a projected average daily traffic volume of 400 vehicles or less are very low volume roads (AASHTO 2001) (U.S. Department of Transportation, 2013). Areas with very low truck traffic volumes are roads and other areas not subject to through truck traffic but may receive up to weekly use by utility trucks (e.g., garbage, recycling), daily school bus use, and multiple daily use by pick-up trucks, mail/parcel delivery trucks, and maintenance vehicles. (Note: This infeasibility criterion does not extend to sidewalks and other non-traffic bearing surfaces associated with the collector or arterial).</li> </ul>	Same as described for roof drainage.



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Permeable Pavement (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> At sites defined as “high-use sites” (refer to the Glossary in the <b>Stormwater Manual</b> Volume I).</li> <li><input type="checkbox"/> In areas with “industrial activity” as identified in 40 CFR 122.26(b)(14).</li> <li><input type="checkbox"/> Where the risk of concentrated pollutant spills is more likely such as gas stations, truck stops, and industrial chemical storage sites.</li> <li><input type="checkbox"/> Where routine, heavy applications of sand occur in frequent snow zones to maintain traction during weeks of snow and ice accumulation.</li> <li><input type="checkbox"/> Where the seasonal high groundwater or an underlying impermeable/low permeable layer would create saturated conditions within 1 foot of the bottom of the lowest gravel base course.</li> </ul>	Same as described for roof drainage.
Bioretention or Rain Gardens  List #1 (both) and List #2 (bioretention only)	<p><i>Note: Criteria with setback distances are as measured from the bottom edge of the bioretention soil mix.</i></p> <p>Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or down-gradient flooding.</li> <li><input type="checkbox"/> Within an area whose ground water drains into an erosion hazard, or landslide hazard area.</li> <li><input type="checkbox"/> Where the only area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, pre-existing structures, or pre-existing road or parking lot surfaces.</li> <li><input type="checkbox"/> Where the only area available for siting does not allow for a safe overflow pathway to stormwater drainage system or private storm sewer system.</li> <li><input type="checkbox"/> Where there is a lack of usable space for bioretention areas at re-development sites, or where there is insufficient space within the existing public right-of-way on public road projects.</li> <li><input type="checkbox"/> Where infiltrating water would threaten existing below grade basements.</li> <li><input type="checkbox"/> Where infiltrating water would threaten shoreline structures such as bulkheads.</li> </ul>	Same as described for roof drainage.



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Bioretention or Rain Gardens (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Where evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards.</li> <li><input type="checkbox"/> Within setback provided for BMP T7.30 (<b>Stormwater Manual</b> Volume V, Section 7.4)</li> <li><input type="checkbox"/> Where they are not compatible with surrounding drainage system as determined by the city (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention area).</li> <li><input type="checkbox"/> Where land for bioretention is within an erosion hazard, or landslide hazard area (as defined by MICC 19.07.060).</li> <li><input type="checkbox"/> Where the site cannot be reasonably designed to locate bioretention areas on slopes less than 8 percent.</li> <li><input type="checkbox"/> Within 50 feet from the top of slopes that are greater than 20 percent and over 10 feet of vertical relief.</li> <li><input type="checkbox"/> For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act [MTCA]):               <ul style="list-style-type: none"> <li>• Within 100 feet of an area known to have deep soil contamination.</li> <li>• Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater.</li> <li>• Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area.</li> <li>• Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.</li> </ul> </li> <li><input type="checkbox"/> Within 100 feet of a closed or active landfill.</li> <li><input type="checkbox"/> Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.</li> </ul>	Same as described for roof drainage.



# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Bioretention or Rain Gardens (cont.)	<p>The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons.</li> <li><input type="checkbox"/> Where field testing indicates potential bioretention/rain garden sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. A small-scale or large-scale PIT in accordance with <b>Stormwater Manual</b> Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to demonstrate infeasibility of bioretention areas. If the measured native soil infiltration rate is less than 0.30 in/hour, bioretention/rain garden BMPs are not required to be evaluated as an option in List #1 or List #2. In these slow draining soils, a bioretention area with an underdrain may be used to treat pollution-generating surfaces to help meet Minimum Requirement #6, Runoff Treatment. If the underdrain is elevated within a base course of gravel, it will also provide some modest flow reduction benefit that will help achieve Minimum Requirement #7.</li> <li><input type="checkbox"/> Where the minimum vertical separation of 3 feet to the seasonal high groundwater elevation or other impermeable layer would not be achieved below bioretention that would serve a drainage area that exceeds the following thresholds (and cannot reasonably be broken down into amounts smaller than indicated):               <ul style="list-style-type: none"> <li>o 5,000 square feet of pollution-generating impervious surface (PGIS)</li> <li>o 10,000 square feet of impervious area</li> <li>o 0.75 acres of lawn and landscape.</li> </ul> </li> <li><input type="checkbox"/> Where the minimum vertical separation of 1 foot to the seasonal high groundwater or other impermeable layer would not be achieved below bioretention that would serve a drainage area less than the above thresholds</li> <li><input type="checkbox"/> Within 100 feet of a drinking water well, or a spring used for drinking water supply.</li> <li><input type="checkbox"/> Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC.</li> </ul>	Same as described for roof drainage.





# CITY OF MERCER ISLAND

## SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	Infeasibility Criteria	Infeasibility Description and Rationale for Each BMP Not Selected
Sheet Flow Dispersion List #1 and #2	<input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.12 ( <b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved. <input type="checkbox"/> Positive drainage for sheet flow runoff cannot be achieved. <input type="checkbox"/> Area to be dispersed (e.g., driveway, patio) cannot be graded to have less than a 15 percent slope. <input type="checkbox"/> For flat to moderately sloped areas, at least a 10 foot-wide vegetation buffer for dispersion of the adjacent 20 feet of contributing surface cannot be achieved. For variably sloped areas, at least a 25 foot vegetated flowpath between berms cannot be achieved.	Same as described for roof drainage.
Concentrated Flow Dispersion List #1 and #2	<input checked="" type="checkbox"/> Site setbacks and design criteria provided in BMP T5.11 ( <b>Stormwater Manual</b> Volume V, Section 5.3) cannot be achieved. <input type="checkbox"/> A minimum 3 foot length of rock pad and 50 foot flowpath OR a dispersion trench and 25 foot flowpath for every 700 square feet of drainage area followed with applicable setbacks cannot be achieved. <input type="checkbox"/> More than 700 square feet drainage area drains to any dispersion device.	Same as described for roof drainage.
On-site Detention List #1 and #2	<input type="checkbox"/> Project discharges directly to Lake Washington. <input type="checkbox"/> Findings from a 1/4 mile downstream analysis confirm that the downstream system is free of capacity constraints. <input type="checkbox"/> Site setbacks and design criteria provided in the <b>Stormwater Manual</b> (Volume III, Section 3.2.2) cannot be achieved.	Same as described for roof drainage.



# CITY OF MERCER ISLAND

## SECTION D: POST-CONSTRUCTION SOIL MANAGEMENT

### Attachments Required *(Check off required items that are attached)*

<input checked="" type="checkbox"/> Site Plan showing, to scale: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Areas of undisturbed native vegetation (no amendment required)</li> <li><input checked="" type="checkbox"/> New planting beds (amendment required)</li> <li><input checked="" type="checkbox"/> New turf areas (amendment required)</li> <li><input type="checkbox"/> Type of soil improvement proposed for each area</li> </ul>
<input type="checkbox"/> Soil test results (required if proposing custom amendment rates)
<input type="checkbox"/> Product test results for proposed amendments

### Total Amendment / Topsoil / Mulch for All Areas

Calculate the quantities needed for the entire site based on all of the areas identified on the Site Plan and the calculations on the following page(s):

Product	Total Quantity (CY)	Test Results
Product #1: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes <input type="checkbox"/> no <input type="checkbox"/>
Product #2: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes <input type="checkbox"/> no <input type="checkbox"/>
Product #3: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes <input type="checkbox"/> no <input type="checkbox"/>

CY = cubic yards, C:N = Carbon:Nitrogen



# CITY OF MERCER ISLAND

## SECTION D: POST-CONSTRUCTION SOIL MANAGEMENT

### Amendment / Topsoil / Mulch by Area

For each identified area on your Site Plan, provide the following information: (Use additional sheets if necessary)

Area # Per Plan (should match identified Area # on Site Plan)

Planting type:  Turf  Undisturbed native vegetation  
 Planting Beds  Other: \_\_\_\_\_

### Pre-Approved Amendment Method

<input checked="" type="checkbox"/>	Amend with compost Turf: <u>3,705</u> SF x 5.4 CY ÷ 1,000 SF = <u>20</u> CY Planting beds: <u>1,820</u> SF x 9.3 CY ÷ 1,000 SF = <u>17</u> CY Total Quantity = <u>37</u> CY Scarification depth: 8 inches	Product: <u>TBD</u>
<input type="checkbox"/>	Stockpile and amend Turf: _____ SF x 5.4 CY ÷ 1,000 SF = _____ CY Planting beds: _____ SF x 9.3 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY Scarification depth: 8 inches	Product: _____
<input type="checkbox"/>	Topsoil import Turf: _____ SF x 18.6 CY ÷ 1,000 SF = _____ CY Planting beds: _____ SF x 18.6 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY Scarification depth: 6 inches	Product: _____

### Custom Amendment

<input type="checkbox"/>	Amend with compost Attach information on bulk density, percent organic matter, moisture content, C:N ratio, and heavy metals analysis to support custom amendment rate and scarification depth. Total Quantity = _____ CY Scarification depth: _____ inches	Product: _____
<input type="checkbox"/>	Stockpile and amend Attach information on bulk density, percent organic matter, moisture content, C:N ratio, and heavy metals analysis to support custom amendment rate and scarification depth. Total Quantity = _____ CY Scarification depth: _____ inches	Product: _____

### Mulch

<input type="checkbox"/>	Amend with compost Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY	Product: _____
<input type="checkbox"/>	Stockpile and amend Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY	Product: _____
<input type="checkbox"/>	Topsoil import Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF = _____ CY Total Quantity = _____ CY	Product: _____

CY = cubic yards, C:N = Carbon:Nitrogen



# CITY OF MERCER ISLAND

## SECTION E: SIGNATURE PAGE

### **Project Engineer's Certification for Section B**

For Stormwater Site Plans with engineered elements, the Construction SWPPP is stamped by a professional engineer licensed in the State of Washington in civil engineering.

If required, attach a page with the project engineer's seal with the following statement:


Forest Creek Estates Lot 4

*"I hereby state that this Construction Stormwater Pollution Prevention Plan for \_\_\_\_\_  
(name of project)  
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 for 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."*

### **Applicant Signature for Full Stormwater Package (Sections A through D)**

I have read and completed the Stormwater Submittal Package and know the information provided to be true and correct.

Print Applicant Name: Schwin Chaosilapakul

Applicant Signature:  Date 9/11/2020

**PROJECT TEAM**

**OWNER:**  
SEASCAPE HOMES LLC  
JON TELLEFSON  
PO BOX 40568  
BELLEVUE, WA 98015  
PH: 206.972.9950  
EMAIL: JMT1231@GMAIL.COM

**ARCHITECT:**  
STURMAN ARCHITECTS  
BRAD STURMAN  
9 - 103RD AVENUE NE SUITE 203  
BELLEVUE, WA 98004  
PH: 425.451.7003  
EMAIL: BRADS@STURMANARCHITECTS.COM

**PROJECT ENGINEER:**  
PATRICK HARRON & ASSOCIATES, LLC  
SCHWIN CHAOSILAPAKUL, PE  
14900 INTERURBAN AVENUE S #279  
SEATTLE, WA 98168  
PH: 206.674.4659  
EMAIL: SCHWIN@PATRICKHARRON.COM

**PROJECT SURVEYOR:**  
MEAD GILMAN LAND SURVEYORS  
P.O. BOX 289  
WOODINVILLE, WA 98072  
PH: 425.486.1252  
EMAIL: WWW.MEADGILMAN.COM

**GEOTECH:**  
GEOTECH CONSULTANTS INC  
JIM STRANGE, P.E.  
2401 10TH AVE E, SEATTLE, WA 98102  
PH: 425.747.5618  
EMAIL: JAMES@GEOTECHNW.COM

**ARBORIST:**  
ARBOR INFO, LLC  
THOMAS W. HANSON, CF, RCA  
2406 N CASTLE WAY  
BRIER, WA 98036  
PH: 206.300.9711  
EMAIL: TOM.HANSON@ARBORINFO.COM

**PROJECT INFORMATION**

**DEVELOPMENT DATA:**  
SITE AREA 16,396 SF (0.376 AC)  
SITE ADDRESS 5202 FOREST AVE SE  
MERCER ISLAND, WA 98040  
PARCEL NUMBER 141030-0063

**LEGAL DESCRIPTION**

LOTS 1-4, KNUTSON SHORT PLAT, MERCER ISLAND SHORT PLAT NO SUB07-003 AS RECORDED UNDER REC. NO. 20071210900010.

**VERTICAL DATUM**

NAVD 88 (GEOID 18)  
BASED ON RAPID STATIC GPS MEASUREMENTS WITH OPUS SOLUTION.

**BENCHMARKS**

TBM-A  
FOUND 4"x4" CONC MON WITH 2" BRASS DISC  
LS#2534 WITH PUNCH 0.3' BELOW GRADE IN CASE  
69.6' NW OF NW PROP CORNER.  
ELEV. = 104.53'

TBM-B  
FOUND 1/2" REBAR AND MGA CONTROL CAP AT W  
SIDE FOREST DRIVE, 0.5' W OF WEST EDGE ASPHALT  
PAVEMENT AND 15.5' W OF CB-5078.  
ELEV. = 113.94'

**BASIS OF BEARINGS**

NOT DONE YET

**FOREST CREEK ESTATES LOT 4**

SE1/4, NE1/4, SEC. 24, TWP. 24 N., RGE. 4 E., W.M.

**CRITICAL AREAS AND EASEMENT CALLOUTS:**

1. NATIVE GROWTH PROTECTION AREA (NGPA) BUFFER.
2. EXISTING NGPA SPLIT-RAIL FENCE WITH SIGNAGE. FENCE TO BE REPAIRED IF REQUIRED.
3. SANITARY SEWER EASEMENT REC.NO. 5820490.
4. PROPOSED PRIVATE STORM EASEMENT IN BENEFIT OF LOTS 1-3.

**SITE, WATER, & SEWER CALLOUTS:**

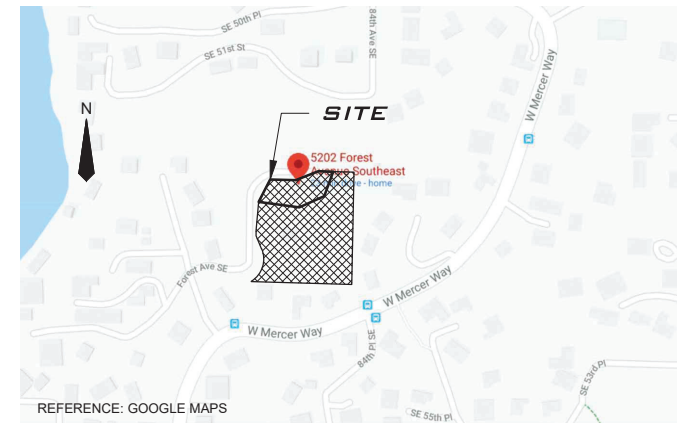
1. BUILDING FOOTPRINT.
2. ROOF LINE.
- 2A. ROOF DOWNSPOUT (TYP).
3. CONCRETE DRIVEWAY.
4. CONCRETE HARDSCAPE.
5. CAST IN PLACE RETAINING WALL (TYP).
6. BUILDING SETBACK LINE (TYP).
7. CONNECT NEW 6" SEWER LINE WITH CLEANOUT TO EX. 6" SEWER STUB AT APPROX. IE 101.1. PROVIDE MINIMUM OF 2% SLOPE. COORDINATE WITH PUBLIC WORKS INSPECTOR FOR SCOPE AND RE-USE OF EXISTING LINE.
8. EXISTING WATER SERVICE TO BE UTILIZED IF ADEQUATE. SIZE OF METER AND LINE TO BE VERIFIED FOR DOMESTIC AND FIRE SERVICE DEMANDS. MINIMUM 1" WATER METER AND 1.5" SUPPLY LINE (FROM METER TO HOUSE) FOR DOMESTIC AND FIRE SYSTEM. DOUBLE DETECTOR CHECK VALVE ASSEMBLY TO BE PROVIDED AS REQUIRED. IF NEW SERVICE CONNECTION TO THE MAIN IS REQUIRED, NEAT LINE SAW-CUT FOR WATER LINE TRENCHING AND RESTORE PAVEMENT PER PER CITY OF MERCER ISLAND STANDARDS. SEE SHEET C1.2.

**STORM CALLOUTS:**

1. CONNECT TO EXISTING CATCH BASIN.
2. PERIMETER DRAIN - 4" PERF. SD @ 0.0%. 4" IE 101.5. CONNECT TO CB#1 & CB#2.
- 2A. COLLECTION TRENCH PER DETAIL ON C1.1.
3. 4" FOOTING DRAIN SYSTEM TO EXTEND AROUND BUILDING PERIMETER. CONNECT TO 8" STORM SYSTEM ONSITE PER PLAN @ 2% MIN.
4. WALL FOOTING DRAIN SYSTEM TO CONNECT TO 8" STORM SYSTEM AT 2% MIN. AT APPROXIMATE LOCATION SHOWN.
5. 15" DIA. D.I. OR C900 SLEEVE TO EXTEND AT MINIMUM 2' BEYOND FOOTING.
6. 8" DIA. STORM SYSTEM TO PROVIDE FUTURE CONNECTION FOR LOT 3 (SOUTH) STORM SYSTEM. PROVIDE 1.5" MIN. COVER OVER SLEEVE BENEATH RETAINING WALLS.
7. CAP 8" DIA. STORM LINE AND PROVIDE CLEANOUT AT 5' SOUTH OF LOT 4/LOT 3 PROPERTY LINE.

**ABBREVIATIONS:**

- GENERAL:**  
EX EXISTING  
TYP TYPICAL  
NTS NOT TO SCALE
- SITE:**  
FY FRONT YARD  
SY SIDE YARD  
RY REAR YARD  
BSBL BUILDING SETBACK
- GRADING:**  
FG FINISH GRADE  
EG EXISTING GRADE  
HP HIGH POINT  
LP LOW POINT  
FF FINISH FLOOR  
TC TOP OF CURB  
BC BOTTOM OF CURB  
FL FLOW LINE  
EY ELEVATION
- STORM:**  
CB CATCH BASIN  
SDMH STORM DRAIN MANHOLE  
SDCO STORM DRAIN CLEANOUT  
IE PIPE INVERT  
SLL SOLID LOCKING LID  
DTE DOWN-TURNED ELBOW  
UTE UP-TURNED ELBOW  
O.W. OBSERVATION WELL  
DWS DESIGN WATER SURFACE  
L/D LIVE/DEAD STORAGE INTERFACE  
SED SEDIMENT STORAGE  
BOT BOTTOM  
RD ROOF DRAIN  
FD FOOTING DRAIN  
TD TRENCH DRAIN
- WATER:**  
WA WATER
- SEWER:**  
SS SANITARY SEWER  
SSMH SANITARY SEWER MANHOLE  
SSCO SANITARY SEWER CLEANOUT  
DF DRAINFIELD



**VICINITY MAP**  
NST

**IMPERVIOUS AREA INVENTORY:**

Description	Impervious Area Inventory (sf)			
	Roof, Drive, and HS	Walls	Offsite	Total
Lot 4	3,899	248	0	4,147
Lot 3*	4,935	0	284	5,219
<b>Total</b>	<b>8,834</b>	<b>248</b>	<b>284</b>	<b>9,366</b>

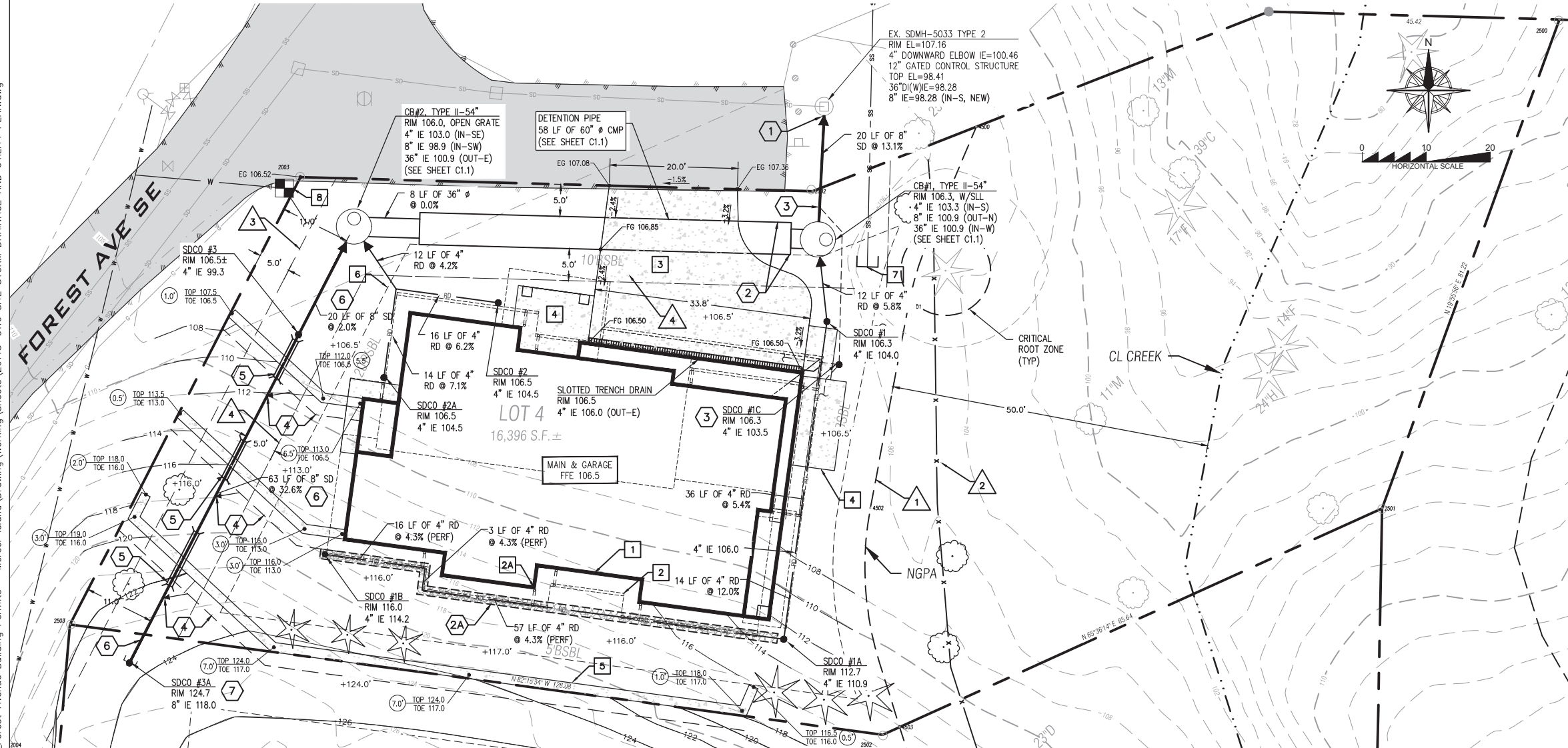
\*Detention System sized to accommodate future improvements on Lot 3

**LEGEND**

- SET 1/2" X 24" REBAR WITH YELLOW PLASTIC CAP STAMPED "MGA 35145 48383"
- FOUND CORNER
- ⊕ FOUND MONUMENT
- ⊕ TEMPORARY BENCHMARK
- ⊕ GAS VALVE
- ⊕ ELECTRICAL JUNCTION BOX
- UTILITY POLE
- ⊕ CATCH BASIN - TYPE I
- ⊕ CATCH BASIN - TYPE II
- ⊕ STORM CLEANOUT
- YARD DRAIN
- ⊕ SEWER MANHOLE
- FIRE HYDRANT
- HOSE BIB
- ⊕ WATER METER
- ⊕ WATER VALVE
- BOLLARD
- SIGN
- SOIL TEST PIT
- CONIFEROUS TREE
- DECIDUOUS TREE
- ASPHALT
- FENCE LINE
- OVERHEAD POWER LINES
- SANITARY SEWER LINE
- STORM DRAIN LINE
- GAS LINE
- WATER MAIN
- ASPHALT HATCH
- CONCRETE HATCH
- DECK HATCH
- GRAVEL HATCH
- CEDAR
- DECIDUOUS
- ELM
- HEMLOCK
- MAPLE
- CONC SLAB
- CS FINISH FLOOR
- FL FLOW LINE/ ASPH THICKENED EDGE
- ST STAIRS

**SHEET LIST**

Sheet Number	Sheet Description	Sheet Title
1	C1.0	SITE, GRADING, STORM, & UTILITY PLAN
2	C1.1	STORM DETAILS
3	C1.2	WATER DETAILS
4	C2.0	TESC PLAN
5	C2.1	TESC DETAILS



**CALL 48 HOURS  
BEFORE YOU DIG  
811**

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 1-800-424-5555 OR 811 (CELL) A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

Sep 15, 2020 12:32:53PM - User Schwin Chaosilapakul  
P: \\2020\20113\_Forest Avenue Building Permits - Mercer Island\Drawing\Working\Sheets\20113-C1.0 SITE STORM DRAINAGE AND UTILITY PLAN.dwg

BY: \_\_\_\_\_ DESCRIPTION: \_\_\_\_\_

DATE: \_\_\_\_\_

R#1: \_\_\_\_\_ R#2: \_\_\_\_\_ R#3: \_\_\_\_\_ R#4: \_\_\_\_\_

**PATRICK HARRON & ASSOCIATES, LLC**  
Civil Engineering & Planning  
14900 Interurban Ave. S, Suite 279, Seattle, WA 98168  
Phone: 206.674.4659 / Fax: 206.674.4660  
Web: patrickharron.com

**BUILDING PERMIT**  
**SITE, GRADING, STORM, & UTILITY PLAN**

PROJ. NO: 20113 DSN. BY: SC  
DN. BY: CWA CHK. BY: SC

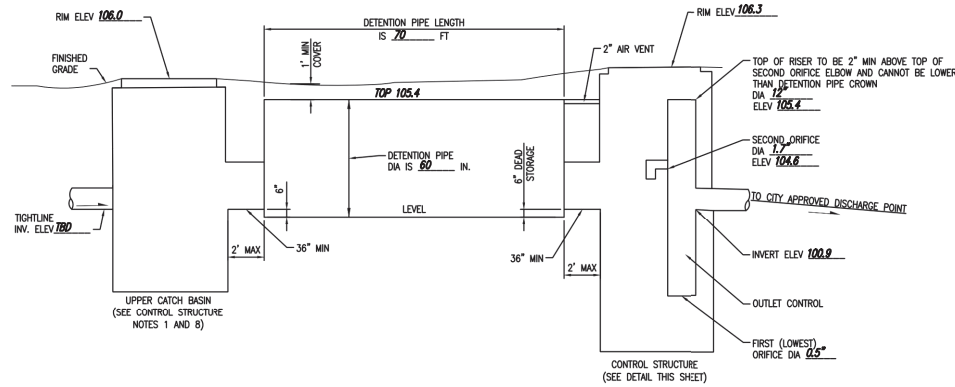
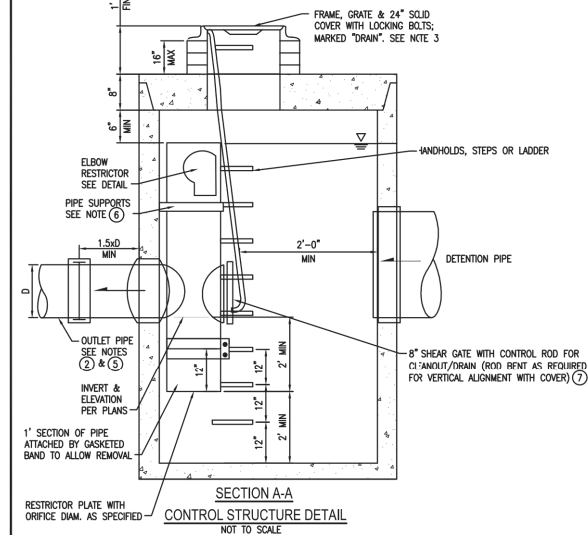
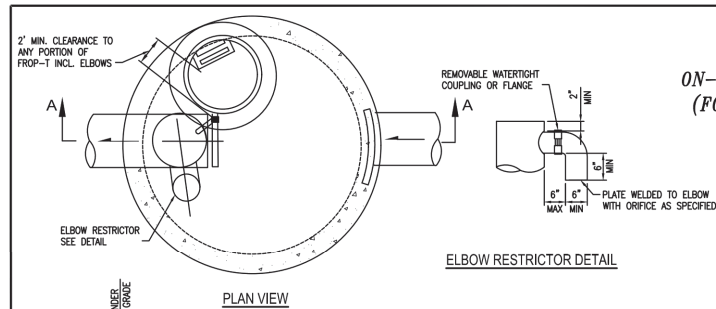
**FOREST CREEK ESTATES LOT 4**

DATE: 9/15/20  
SCALE: AS SHOWN  
DRAWING NO: C1.0  
1 OF 5

# FOREST CREEK ESTATES LOT 4

SE1/4, NE1/4, SEC. 24, TWP. 24 N., RGE. 4 E., W.M.

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



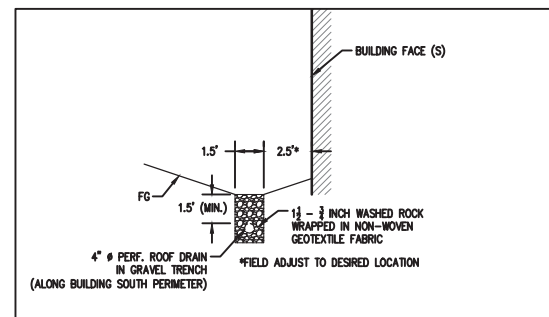
ON-SITE DETENTION SYSTEM  
NOT TO SCALE (ENGINEER TO FILL IN BLANKS)

### 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. STAINLESS 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 Z632A; OR CAST IRON IN ACCORDANCE WITH ASTM A 48, CLASS 30B. THE LEFT 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 (206-275-7600) 24 HOURS IN ADVANCE FOR A DETENTION SYSTEM INSPECTION BEFORE BACKFILLING AND FOR FINAL INSPECTIONS.
2. RESPONSIBILITY FOR OPERATION AND MAINTENANCE 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 (LCPPE), ALUMINIZED TYPE 2 CORRUGATED STEEL PIPE AND PIPE ARCH (MEETS AASHTO DESIGNATIONS M24 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.



COLLECTION TRENCH DETAIL:  
SCALE: NTS

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) <sup>(3)</sup>		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	45	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	55	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	123	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	45	0.5	0.5	4.6	3.6	1.8	1.5
7,001 to 8,000 sf	36"	216	145	0.5	0.5	2.8	2.2	2.0	1.9
	48"	119	75	0.5	0.5	3.8	2.9	2.2	1.7
	60"	73	45	0.5	0.5	4.5	3.6	2.0	1.6
8,001 to 8,500 sf <sup>(1)</sup>	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	55	0.5	0.5	4.6	3.6	2.0	1.6
8,501 to 9,000 sf	36"	NA <sup>(1)</sup>	164	0.5	0.5	NA <sup>(1)</sup>	2.2	NA <sup>(1)</sup>	1.9
	48"	NA <sup>(1)</sup>	85	0.5	0.5	NA <sup>(1)</sup>	2.9	NA <sup>(1)</sup>	1.9
	60"	NA <sup>(1)</sup>	55	0.5	0.5	NA <sup>(1)</sup>	3.6	NA <sup>(1)</sup>	1.7
9,001 to 9,500 sf <sup>(2)</sup>	36"	NA <sup>(1)</sup>	174	0.5	0.5	NA <sup>(1)</sup>	2.2	NA <sup>(1)</sup>	2.1
	48"	NA <sup>(1)</sup>	94	0.5	0.5	NA <sup>(1)</sup>	2.9	NA <sup>(1)</sup>	2.0
	60"	NA <sup>(1)</sup>	58	0.5	0.5	NA <sup>(1)</sup>	3.7	NA <sup>(1)</sup>	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.
- <sup>(1)</sup> On Type B soils, new plus replaced impervious surface areas exceeding 8,500 sf trigger Minimum Requirement #7 (Flow Control)
- <sup>(2)</sup> On Type C soils, new plus replaced impervious surface areas exceeding 9,500 sf trigger Minimum Requirement #7 (Flow Control)
- <sup>(3)</sup> Minimum orifice diameter = 0.5 inches
- in = inch  
ft = feet  
sf = square feet

Last updated 1-26-18

BY: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

DATE: \_\_\_\_\_

R#1: \_\_\_\_\_

R#2: \_\_\_\_\_

R#3: \_\_\_\_\_

R#4: \_\_\_\_\_

R#5: \_\_\_\_\_

R#6: \_\_\_\_\_

R#7: \_\_\_\_\_

R#8: \_\_\_\_\_

R#9: \_\_\_\_\_

R#10: \_\_\_\_\_

R#11: \_\_\_\_\_

R#12: \_\_\_\_\_

R#13: \_\_\_\_\_

R#14: \_\_\_\_\_

R#15: \_\_\_\_\_

R#16: \_\_\_\_\_

R#17: \_\_\_\_\_

R#18: \_\_\_\_\_

R#19: \_\_\_\_\_

R#20: \_\_\_\_\_

R#21: \_\_\_\_\_

R#22: \_\_\_\_\_

R#23: \_\_\_\_\_

R#24: \_\_\_\_\_

R#25: \_\_\_\_\_

R#26: \_\_\_\_\_

R#27: \_\_\_\_\_

R#28: \_\_\_\_\_

R#29: \_\_\_\_\_

R#30: \_\_\_\_\_

R#31: \_\_\_\_\_

R#32: \_\_\_\_\_

R#33: \_\_\_\_\_

R#34: \_\_\_\_\_

R#35: \_\_\_\_\_

R#36: \_\_\_\_\_

R#37: \_\_\_\_\_

R#38: \_\_\_\_\_

R#39: \_\_\_\_\_

R#40: \_\_\_\_\_

R#41: \_\_\_\_\_

R#42: \_\_\_\_\_

R#43: \_\_\_\_\_

R#44: \_\_\_\_\_

R#45: \_\_\_\_\_

R#46: \_\_\_\_\_

R#47: \_\_\_\_\_

R#48: \_\_\_\_\_

R#49: \_\_\_\_\_

R#50: \_\_\_\_\_

BUILDING PERMIT

STORM DETAILS

9/15/20

**PATRICK HARRON & ASSOCIATES, LLC**  
Civil Engineering & Planning  
14900 Interurban Ave., Suite 279, Seattle, WA 98148  
Phone: 206.674.4659 / Fax: 206.674.4660  
Web: patrickharron.com

PROJ. NO.: 20113

DES. BY: SC

DRN. BY: CWA

CHK. BY: SC

FOREST CREEK ESTATES  
LOT 4

5202 FOREST AVE SE, MERCER ISLAND, WA 98040

DATE: 9/15/20

SCALE: AS SHOWN

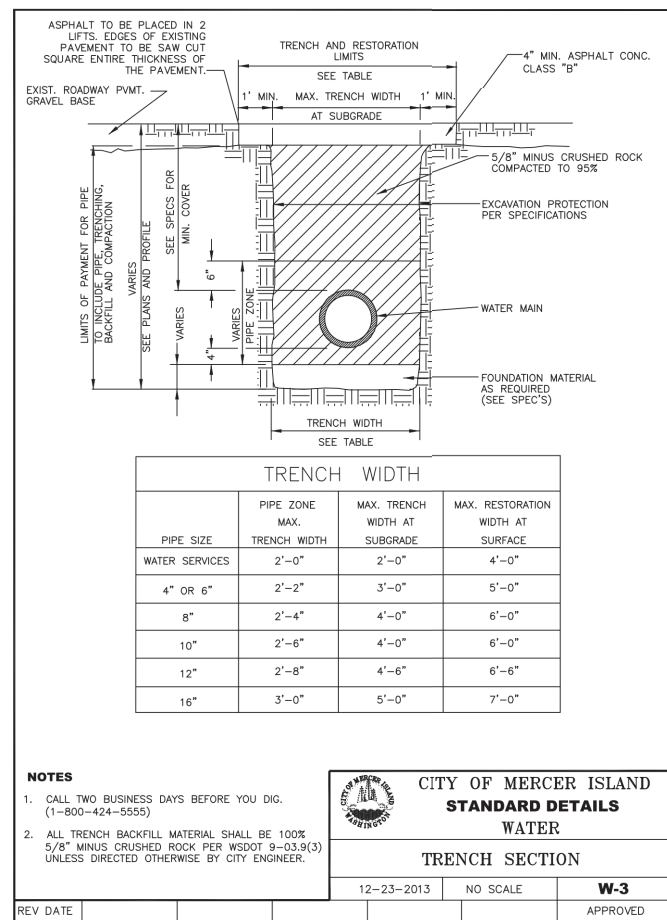
DRAWING NO.: C1.1  
2 OF 5

**CALL 48 HOURS  
BEFORE YOU DIG  
811**

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 1-800-424-5555 OR 811 (CELL) A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

# FOREST CREEK ESTATES LOT 4

SE1/4, NE1/4, SEC. 24, TWP. 24 N., RGE. 4 E., W.M.

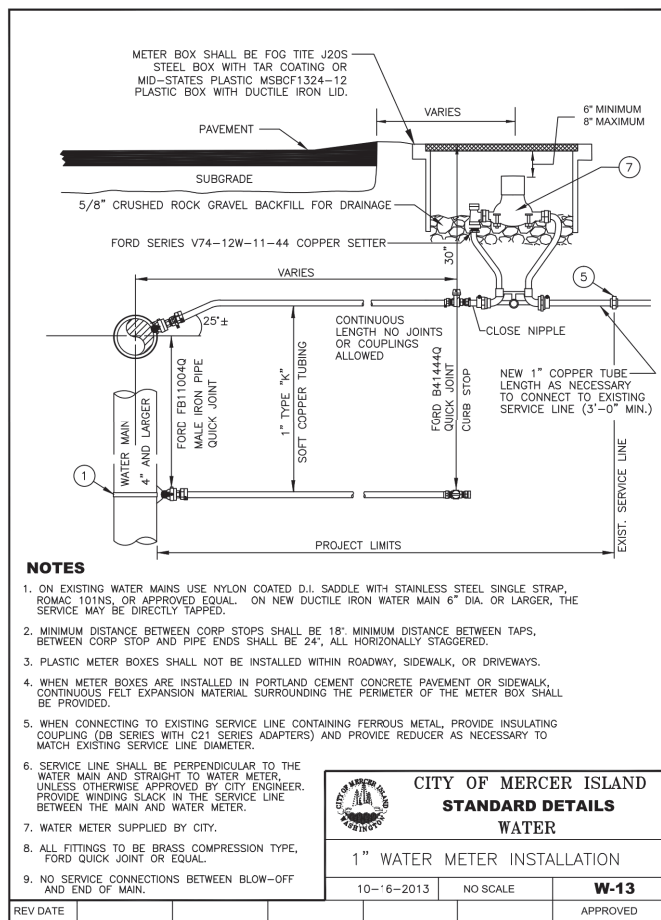


**CITY OF MERCER ISLAND**  
**STANDARD DETAILS**  
**WATER**

**TRENCH SECTION**

12-23-2013	NO SCALE	<b>W-3</b>
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REV DATE: APPROVED

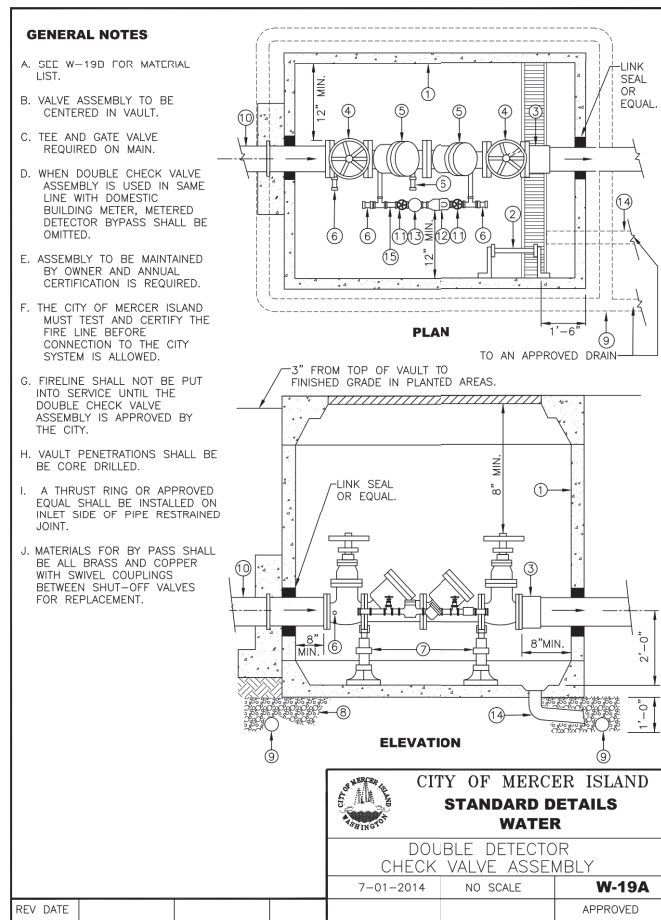


**CITY OF MERCER ISLAND**  
**STANDARD DETAILS**  
**WATER**

**1" WATER METER INSTALLATION**

10-16-2013	NO SCALE	<b>W-13</b>
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REV DATE: APPROVED



**CITY OF MERCER ISLAND**  
**STANDARD DETAILS**  
**WATER**

**DOUBLE DETECTOR CHECK VALVE ASSEMBLY**

7-01-2014	NO SCALE	<b>W-19A</b>
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REV DATE: APPROVED

Sep 15, 2020 12:33:02PM - User: Schwin, Chaasilapakul  
P: \\2020\20113\_Forest Avenue Building Permits - Mercer Island\Drawing\Working\Sheets\20113-C1.2 WATER DETAILS.dwg

BY	DESCRIPTION	DATE	RF#

**BUILDING PERMIT**

**WATER DETAILS**

9/15/20

**PATRICK HARRON & ASSOCIATES, LLC**  
Civil Engineering & Planning  
14900 Interurban Ave. S. Suite 279, Seattle, WA 98148  
Phone: 206.674.4659 / Fax: 206.674.4660  
Web: patrickharron.com

PROJ. NO: 20113	DSN. BY: SC
DRN. BY: CWA	CHK. BY: SC

**FOREST CREEK ESTATES LOT 4**

5202 FOREST AVE SE, MERCER ISLAND, WA 98040

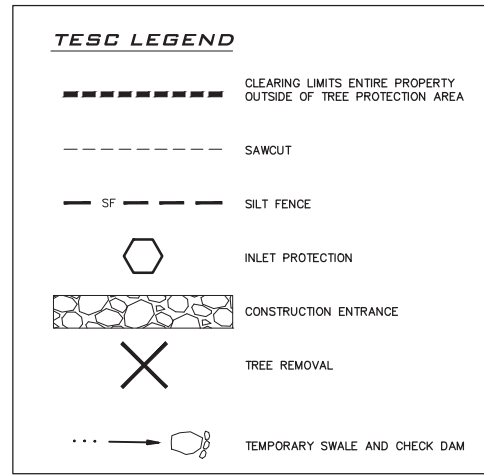
DATE: 9/15/20
SCALE: AS SHOWN
DRAWING NO: C1.2 3 OF 5

**CALL 48 HOURS BEFORE YOU DIG 811**

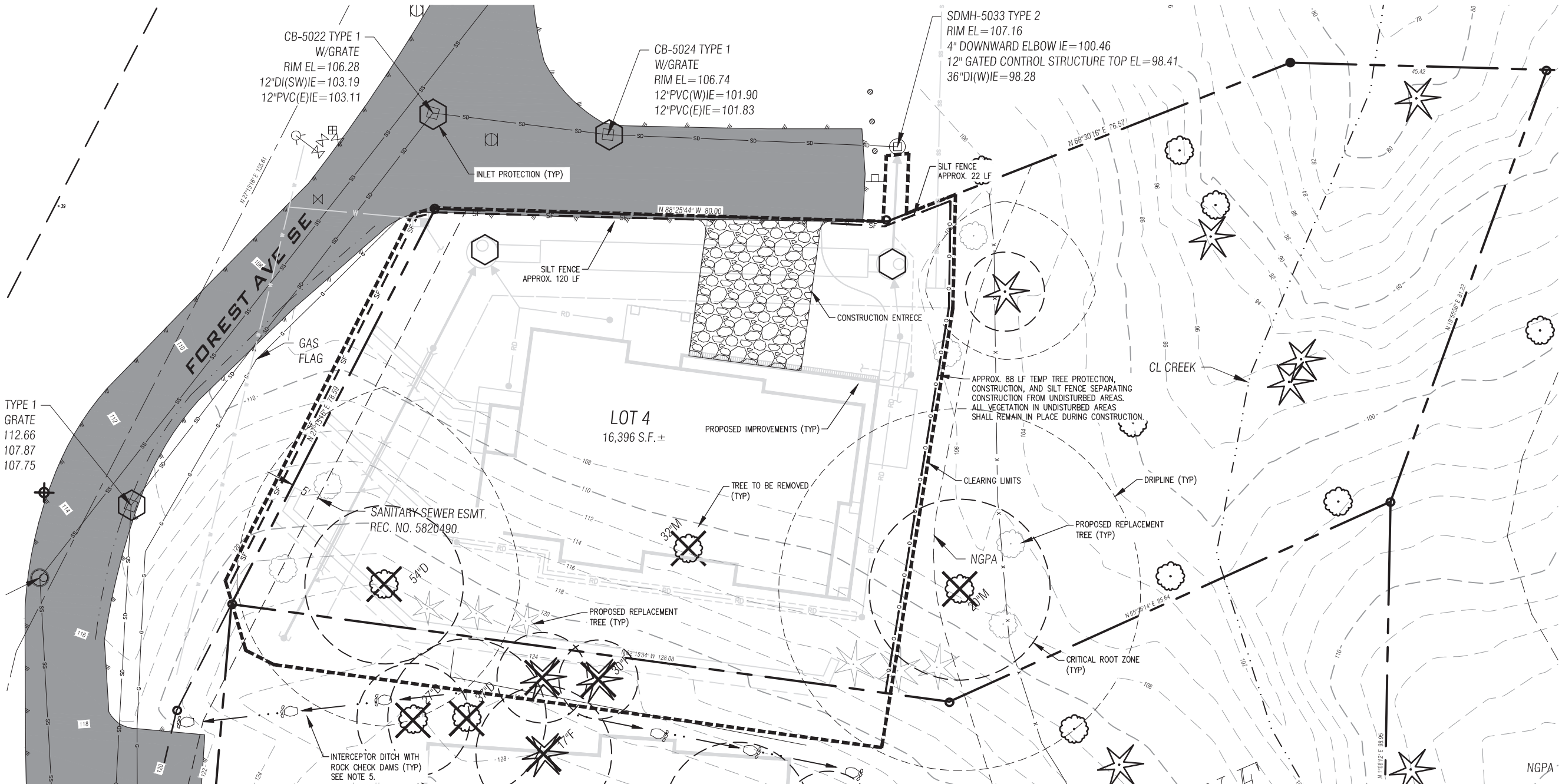
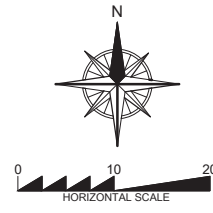
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# FOREST CREEK ESTATES LOT 4

SE1/4, NE1/4, SEC. 24, TWP. 24 N., RGE. 4 E., W.M.



- TESC NOTES:**
- CLEARING LIMITS SHOWN ARE APPROXIMATE AND REPRESENT THE MINIMUM REQUIRED TO INSTALL PROPOSED IMPROVEMENTS. CLEARING LIMITS MAY BE ADJUSTED TO FIT FIELD CONDITIONS BUT SHALL NOT ENCRoACH WITHIN CRITICAL ROOT ZONES OF TREES TO BE RETAINED; COORDINATE WITH PROJECT ARBORIST TO DETERMINE CRITICAL ROOT ZONES FOR DISTURBANCE WITHIN TREE DRIP LINES.
  - SILT FENCING TO BE INSTALLED ALONG DOWN-SLOPE OF AREAS TO BE DISTURBED WITHIN THE PROPERTY. ADJUST AS REQUIRED WITH CHANGES TO CLEARING LIMITS.
  - THIS TESC PLAN IS PROVIDED TO SHOW THE MINIMUM MEASURES REQUIRED TO CONTROL EROSION AND SEDIMENT TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING APPROPRIATE MEASURES FOR CHANGING SITE CONDITIONS.
  - REFER TO ARCHITECTURAL TREE PLANS FOR ADDITIONAL TREE REMOVAL AND REPLACEMENT DETAILS.
  - INSTALL INTERCEPTOR DITCH WITH ROCK CHECK DAMS UPSTREAM OF PROJECT SITE TO DIVERT FLOWS AWAY FROM TEMPORARY EXCAVATION. PROVIDE TEMPORARY DISPERSION DEVICES SUCH AS A 10'x2'x1.5'D ROCK TRENCH OR EQUIVALENT FOR FLOWS DIRECTED TO THE EAST TOWARDS SLOPE AND NGPA.
  - REFER TO GEOTECH REPORT FOR RECOMMENDATIONS ON EXCAVATION AND SLOPES.



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BY	DESCRIPTION	DATE	RF#

BUILDING PERMIT  
**TESC PLAN**

**PATRICK HARRON & ASSOCIATES, LLC**  
Civil Engineering & Planning  
14900 Interurban Ave. S. Suite 279, Seattle, WA 98148  
Phone: 206.674.4669 / Fax: 206.674.4660  
Web: patrickharron.com

PROJ. NO. 20113	DSN. BY: SC
DRN. BY: CWA	CHK. BY: SC

**FOREST CREEK ESTATES LOT 4**

5202 FOREST AVE SE, MERCER ISLAND, WA 98040

**CALL 48 HOURS BEFORE YOU DIG 811**

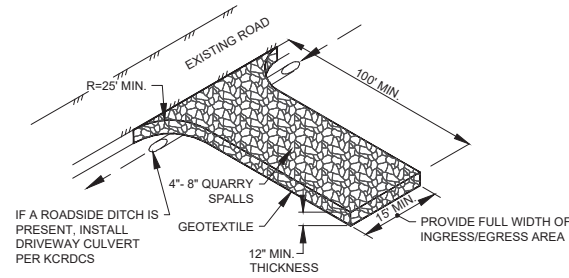
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DATE: 9/15/20
SCALE: AS SHOWN
DRAWING NO. C2.0
4 OF 5



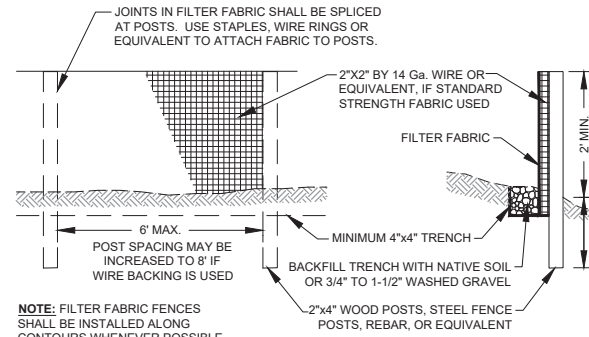
# FOREST CREEK ESTATES LOT 4

SE1/4, NE1/4, SEC. 24, TWP. 24 N., RGE. 4 E., W.M.



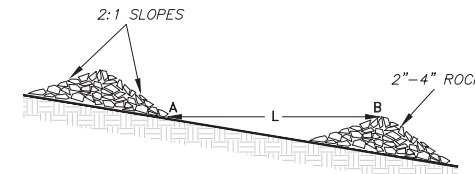
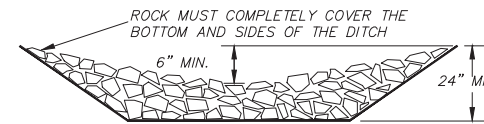
- NOTES:**
- PER KING COUNTY ROAD DESIGN AND CONSTRUCTION STANDARDS (KCRDCS), DRIVEWAYS SHALL BE PAVED TO EDGE OF R-O-W PRIOR TO INSTALLATION OF THE CONSTRUCTION ENTRANCE TO AVOID DAMAGING OF THE ROADWAY.
  - IT IS RECOMMENDED THAT THE ENTRANCE BE CROWNED SO THAT RUNOFF DRAINS OFF THE PAD.

**CONSTRUCTION ENTRANCE**  
NTS



**NOTE:** FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOURS WHENEVER POSSIBLE

**SILT FENCE**  
NTS

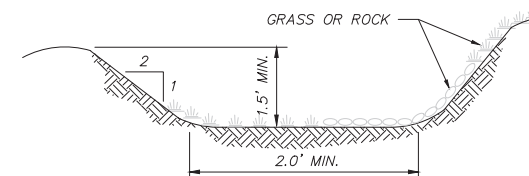


**ROCK CHECK DAMS**  
NTS

DITCH SLOPE	CHECK DAM SPACING
0 - 5%	150 FEET
5 - 10%	100 FEET
10%	50 FEET

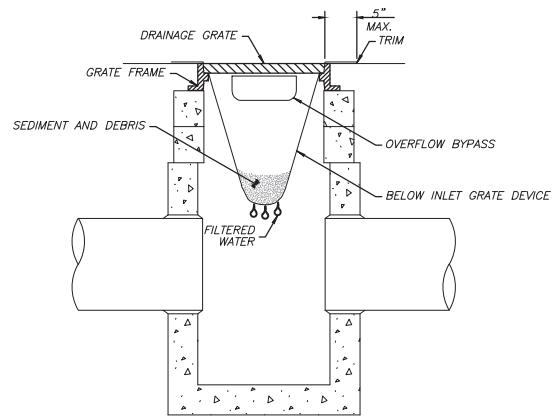
**CHECK DAM NOTES:**

- ROCK CHECK DAMS SHALL BE OF 2" TO 8" FACE, SOUND QUARRY ROCK.
- ROCK CHECK DAMS SHALL BE 1' HIGH IN THE CENTER AND A MINIMUM OF 0.5' HIGHER ON THE SIDES.
- CHECK DAMS SHALL BE TOED IN AT THE BASE A MINIMUM OF 0.5' TO PREVENT EROSION.
- CHECK DAMS SHALL BE CONSTRUCTED IN SUCH A MANNER THAT THE ROCK IS FIRMLY PLACED WITH A MINIMUM OF SPACE BETWEEN ROCKS.
- THE FACES OF THE DAM SHALL BE SMOOTH WITH NO ROCKS PROTRUDING MORE THAN 2".

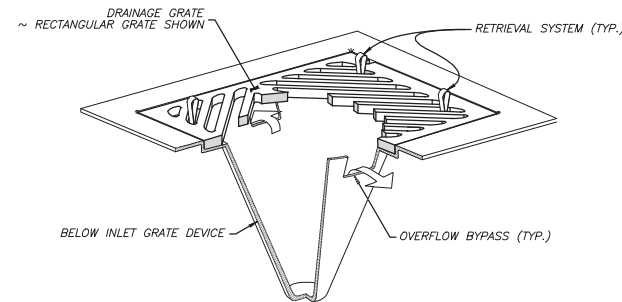


**INTERCEPTOR DITCH**  
NTS

- SIZE THE BELOW INLET GRATE DEVICE (BIGD) FOR THE STORM WATER STRUCTURE IT WILL SERVICE.
- THE BIGD SHALL HAVE A BUILT-IN HIGH-FLOW RELIEF SYSTEM (OVERFLOW BYPASS).
- THE RETRIEVAL SYSTEM MUST ALLOW REMOVAL OF THE BIGD WITHOUT SPILLING THE COLLECTED MATERIAL.
- PERFORM MAINTENANCE IN ACCORDANCE WITH STANDARD SPECIFICATION 8-01.3(15).



**CATCH BASIN INLET PROTECTION DETAIL**  
NTS



**CALL 48 HOURS  
BEFORE YOU DIG  
811**

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BY	DESCRIPTION	DATE	R#

BUILDING PERMIT  
**TESC DETAILS**

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Web : patrickharron.com

PROJ. NO:	20113	DSN. BY:	SC
DSN. BY:	CWA	CHK. BY:	SC

**FOREST CREEK ESTATES  
LOT 4**

5202 FOREST AVE SE, MERCER ISLAND, WA 98040

DATE:	9/15/20
SCALE:	AS SHOWN
DRAWING NO.:	C2.1 5 OF 5

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# FOREST CREEK ESTATES - DETENTION SYSTEMS EXHIBIT

SE1/4, NE1/4, SEC. 24, TWP. 24 N., RGE. 4 E., W.M.

## DETENTION PIPE SYSTEMS DISCIPTION:

THIS EXHIBIT IS PROVIDED TO SHOW THE PROPOSED DETENTION PIPE SYSTEMS FOR STORMWATER MANAGEMENT FOR FUTURE BUILDOUT OF ALL LOTS (1 THRU 4) PART OF FOREST CREEK ESTATES DEVELOPMENT. TWO DETENTION PIPE SYSTEMS ARE PROPOSED, SYSTEM A PROVIDES DETENTION FOR LOTS 3 & 4, AND SYSTEM B PROVIDES DETENTION FOR LOTS 1 & 2. THE FINAL DESIGN AND SIZING ARE SUBJECT TO MINOR CHANGES WHEN BUILDING PERMITS ARE SUBMITTED FOR EACH LOT.

Description	Impervious Area Inventory (sf)			Total
	Roof, Drive, and HS	Walls	Offsite	
Lot 4	3,899	248		4,147
Lot 3*	4,935		284	5,219
Lot 2*	5,725	326	485	6,536
Lot 1*	4,761	139		4,900
<b>Total</b>	<b>19,320</b>	<b>713</b>	<b>769</b>	<b>20,802</b>

\*Approximated Future Improvements

Description	Impervious Areas* (sf)		Required Length for 60" dia. Pipe	
	A	B	A**	B***
Lots 3 & 4	9366		58	
Lots 1 & 2		11436		70

\*Including new and replaced hardsurfaces offsite

\*\*Sized per Standard Table for 60" dia. Pipe with Impervious Areas between 9,001 sf - 9,500 sf ==> 58 lf

\*\*\*Sized at 164 SF/LF of 60" dia. Pipe (9,500sf/58 lf)

Detention System A Elevations		
Description	Elevation (ft)	Inc. Depth (ft)
FG Min.*	106.9	1.5
DWS	105.4	4.5
L/D	100.9	0.0
Sed. (=L/D)	100.9	0.5
Bottom	100.4	1.0
Excavation	99.4	1.0

\*Beneath Driveway

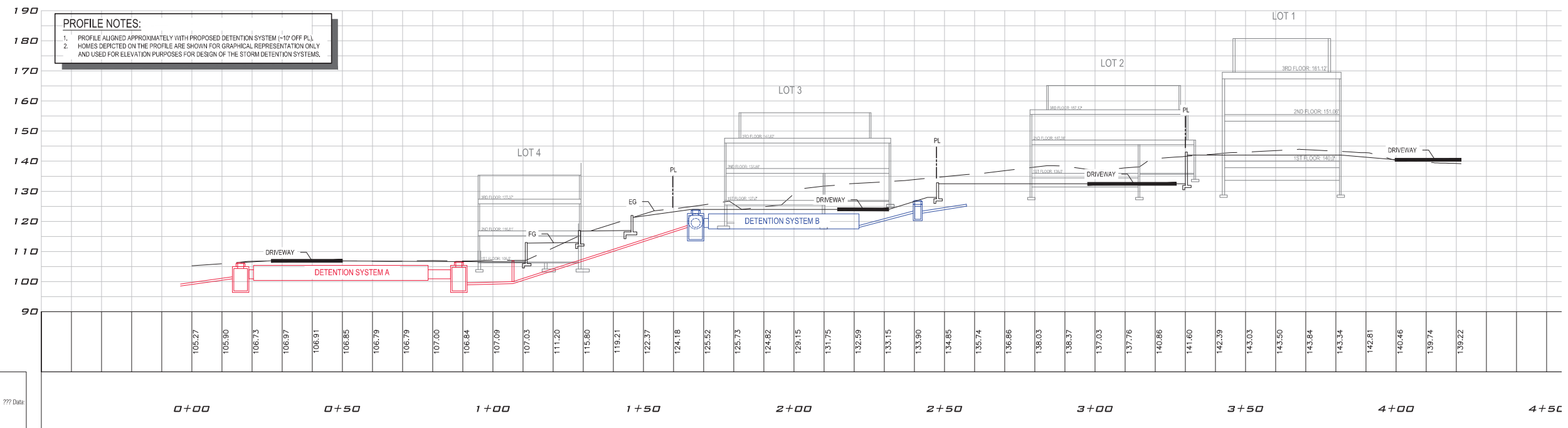
Detention System B Elevations		
Description	Elevation (ft)	Inc. Depth (ft)
FG Min.*	124.0	1.5
DWS	122.5	4.5
L/D	118.0	0.0
Sed. (=L/D)	118.0	0.5
Bottom	117.5	1.0
Excavation	116.5	1.0

\*Beneath Driveway

## ABBREVIATIONS:

PROFILE:  
 FG FINISHED GRADE  
 EG EXISTING GRADE  
 FF FINISHED FLOOR  
 PL PROPERTY LINE

DETENTION SYSTEM:  
 DWS DESIGN WATER SURFACE  
 L/D LIVE/DEAD STORAGE INTERFACE  
 SED SEDIMENT STORAGE  
 BOT BOTTOM



Sep 14, 2020 6:19:01PM - User: Schwin, Chaoslapakul  
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BY	DESCRIPTION	DATE	R#

BUILDING PERMIT  
**DETENTION SYSTEMS EXHIBIT**

  
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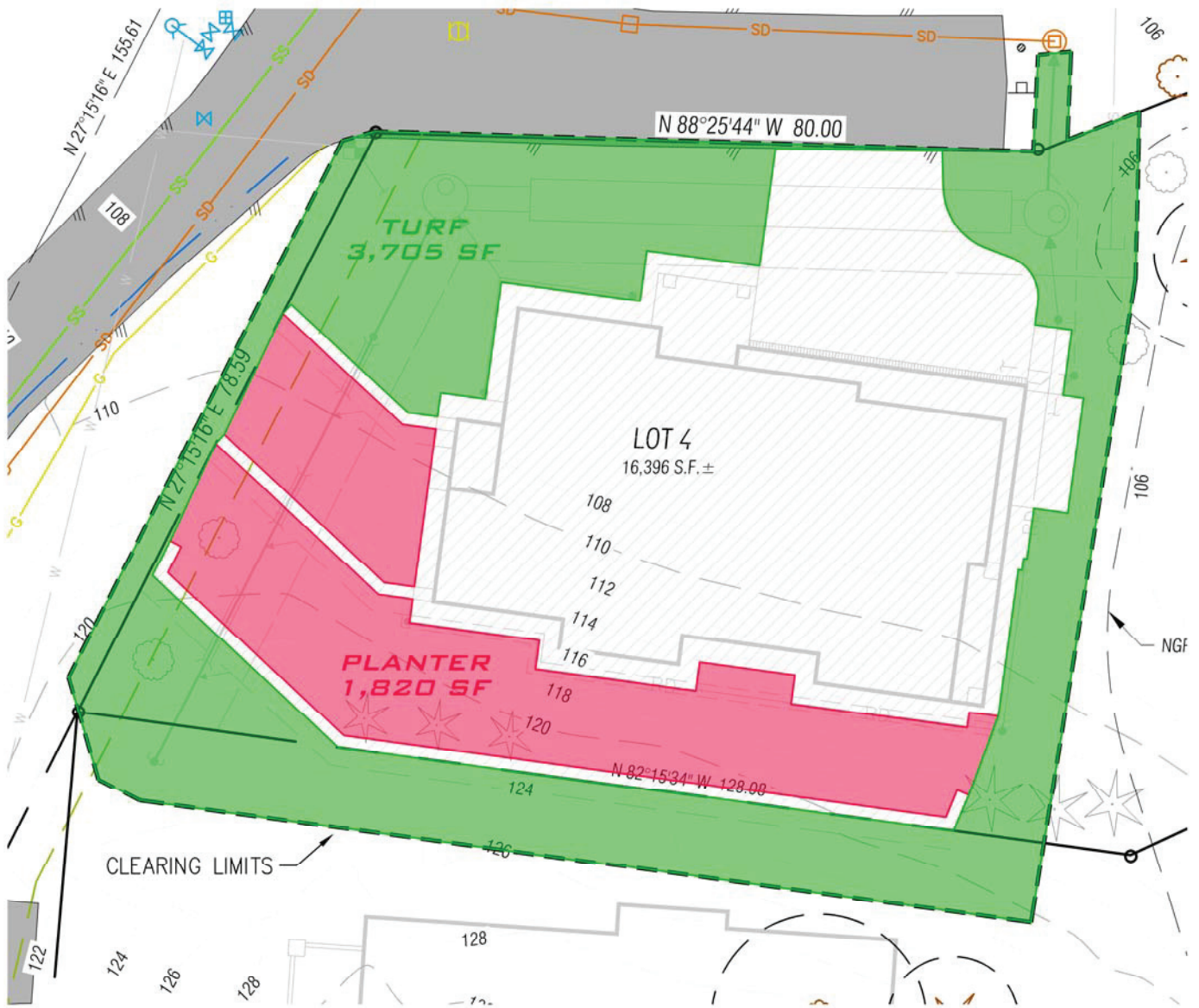
PROJ. NO:	20113	DSN. BY:	SC
DRN. BY:	CWA	CHK. BY:	SC

**FOREST CREEK ESTATES  
 DETENTION SYSTEMS  
 EXHIBIT**

5202 FOREST AVENUE S.E. MERCER ISLAND, WA 98040

DATE:	9/14/20
SCALE:	AS SHOWN
DRAWING NO.:	EX-DET 1 OF 1

# FOREST CREEK ESTATES LOT 4 - SOIL AMENDMENT EXHIBIT



Civil Engineering & Planning

14900 Interurban Ave. S  
Suite 279, Seattle, WA 98168  
Phone : 206.674.4659 / Fax: 206.674.4660  
Web : patrickharron.com

DWN. BY SC	DATE 9/11/2020	JOB NO. 20113
CHKD. BY SC	SCALE 1"=20'	SHEET 1 OF 1