

STORMWATER SITE PLAN

SMITH + CUTRIGHT RESIDENCE
7655 SE 40th Street
Mercer Island, WA

Prepared by

TMM ENGINEERING
381 NE O'Henry Ct
Poulsbo, WA 98370
360-979-6778
11/15/2021

CERTIFICATION

The technical material and data contained in this document was prepared under the direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.



11/15/2021

Trent Murphy

Prepared by Trent Murphy, P.E.

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1.0 PROJECT DESCRIPTION

This project includes the construction of a new single-family residence located at the southwest corner of 40th St. and 78th St. Scope of work includes demolition of the existing residence and reconstructing a new residence on the existing foundation. Site improvements include decks, walkways, retaining walls, and replacement of an existing asphalt driveway. Permeable pavement and a 24" diameter underground detention pipe system will be used to mitigate the stormwater runoff from the property. A perforated underdrain system will be installed beneath the garage slab and outdoor concrete slab to mitigate and convey subsurface water away from the structure.

2.0 EXISTING CONDITIONS

The existing lot is 14,663 SF and includes an existing single-family residence. The surrounding areas around the house include lawn, concrete stairs, walkway, and an asphalt driveway. The property slopes down gradient towards the north and south to a low point near the middle of the property adjacent to the south exterior wall of the residence. 78th St. running north/south slopes down gradient to the north and 40th St., running east/west along the north boundary of the property slopes to the east. Slopes on the property range between 0% and 30%. The existing gutter system is in poor shape with several of the downspouts disconnected and discharging roof runoff adjacent to the residence. There is a low point on the property adjacent to the south side of the existing garage, which historically has created a saturated area and the subsurface water has migrated below the garage foundation causing minor concrete damage within the garage.

3.0 STORMWATER MINIMUM REQUIREMENTS

The stormwater design for this project is based on the requirements set forth by the City of Mercer Island and the 2014 Dept. of Ecology Stormwater Manual. This project is considered a redevelopment and includes 4,981 SF of new/replaced impervious surface, thus triggering Minimum Requirements #1 - #5, as described below.

MR #1 – Preparation of a Stormwater Site Plan – See this document.

MR #2 – Prepare a Construction Stormwater Pollution Prevention Plan (SWPPP) – See Appendix III

MR #3 – Source Control of Pollution – This is a residential property and there are no expected pollutants that the stormwater will contact.

MR #4 – Preservation of Natural Drainage Systems and Outfalls – The stormwater runoff from the subject property will be mitigated with downspout dispersion and underground detention and discharged to the existing Type 1 Catch Basin located at the southwest

corner of 40th St. and 78th St.. The drainage path is consistent with the existing city stormwater drainage system.

MR #5 – On-site Stormwater Management – Roof runoff from the new residence will be collected via downspouts and mitigated utilizing both underground detention pipes and downspout dispersion. The 2 downspouts at the northwest corner of the residence will combine and disperse 651 SF of roof runoff onto a splash block and disperse the stormwater north and east on the subject property. The remaining roof downspouts on the north/northeast side of the residence connect into an underground 4" PVC pipe and convey roof runoff east to an upper catch basin of the 24" diameter detention system. Total roof area flowing to this upper catch basin is 1,160 SF.

1,646 SF of roof runoff from the south and west sides of the residence is collected and conveyed to an upper catch basin located at the southeast corner of the residence and into the 24" diameter detention system. The existing asphalt driveway will be replaced with permeable asphalt pavement. New walkways will be constructed of permeable pavement or permeable pavers.

Full infiltration is considered infeasible for this location due to poor infiltration rates per the City of Mercer Island GIS Mapping Portal. This site also has a history of standing water at the low point near the southeast corner of the residence, suggesting there is seasonal high or perched groundwater. A 24" diameter detention pipe was chosen versus a 36" because the city storm drain system is shallow and will not provide enough pipe cover to allow a 36" pipe system to gravity flow to the city catch basin at the southwest corner of 78th St/40th St. intersection. In accordance with the on-site detention system sizing table for Type C soils, 66 linear feet of 36" diameter pipe is the required detention volume to mitigate 2,806 SF (1,646 SF + 1,160 SF = 2,806 SF) of roof runoff, which equates to a volume of 467 CF. This equivalent storage volume is provided with 149 linear feet of 24" diameter pipe, which equates to 468 CF of storage volume, thus providing the same detention capacity. The storage volume at the height of the second orifice also matches the volume for the 36" pipe requirements per the detention pipe sizing table. The height to the second orifice is 2.4' for the 36" pipe, which equates to 400 CF of storage. The height of the second orifice for the 24" pipe system is set at 1.6', providing for 401 CF of storage.

4.0 REFERENCES

City of Mercer Island Stormwater Management Standards

Washington State Department of Ecology, 2014 Stormwater Management Manual for Western Washington

APPENDIX I

Minimum Requirement Flow Chart

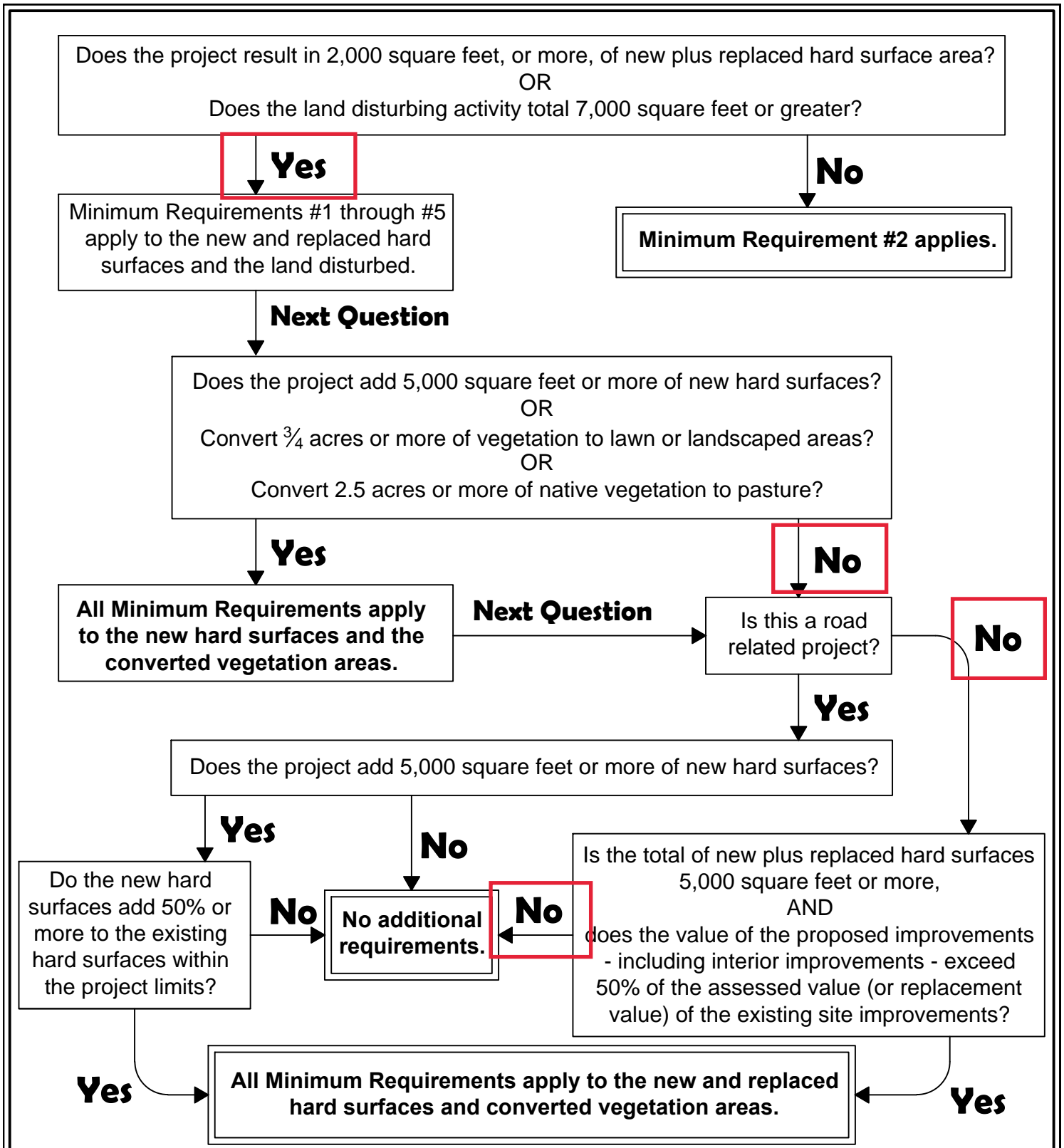
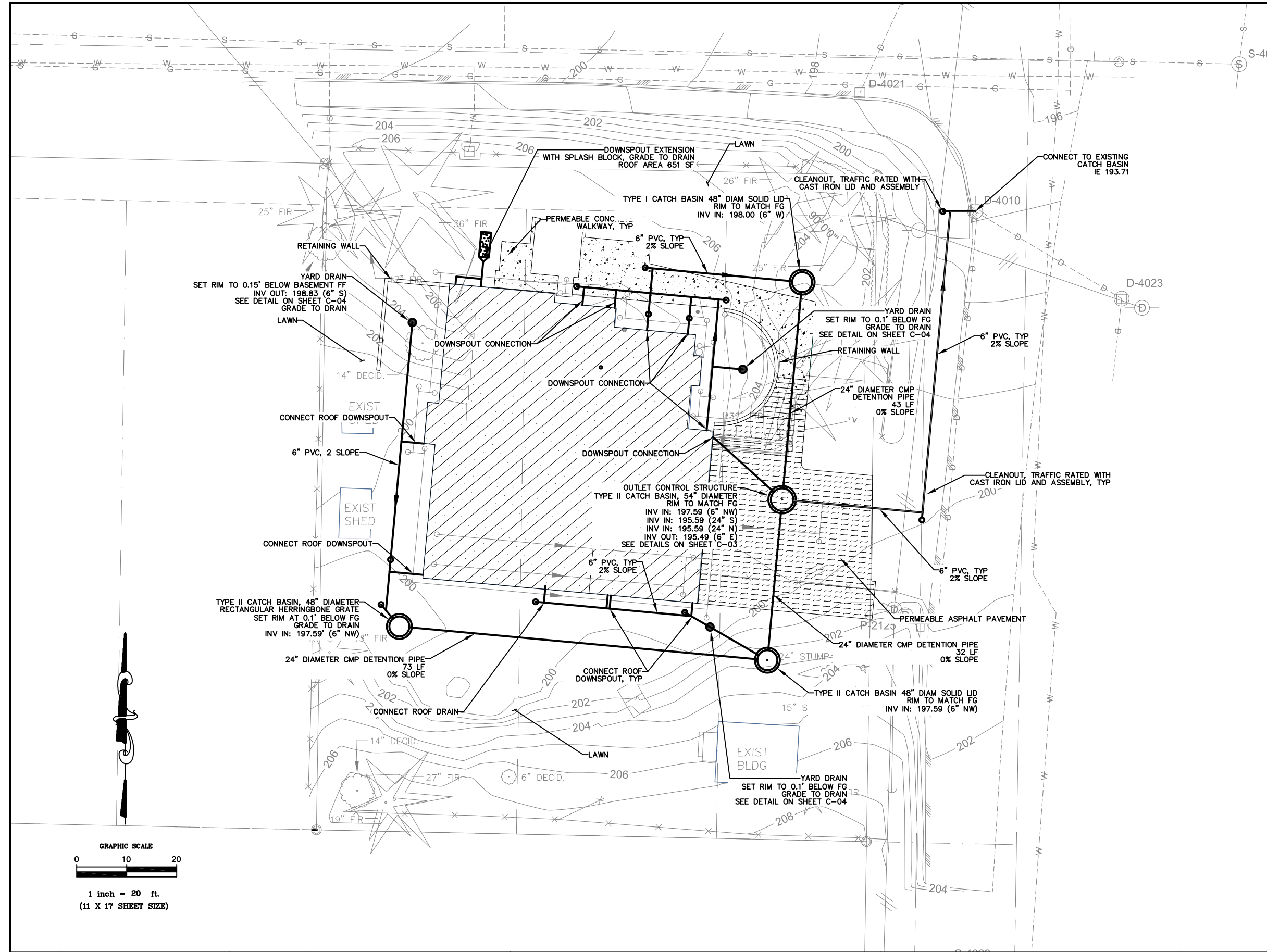


Figure I-2.4.2
Flow Chart for Determining Requirements for Redevelopment


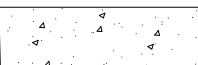

APPENDIX II
Stormwater Site Plan Drawing



GENERAL NOTES

1. SEE SHEET C-03 AND C-04 FOR DETAILS
2. ALL PVC PIPE TO BE 6" DIAM. SDR 35 SOLID WALL UNLESS NOTED OTHERWISE. PROVIDE MIN. 2' COVER OVER PIPE IN TRAFFIC AREAS. MIN 1' OF COVER IN NON-TRAFFIC AREAS.
3. FINISH GRADE AROUND PERIMETER OF STRUCTURE SHALL BE GRADED TO DRAIN AWAY.
4. ALL DISTURBED AREAS NOT COVERED IN HARD SURFACES SHALL RECEIVE BMP T5.13 (POST CONSTRUCTION SOIL QUALITY AND DEPTH) AND HYDROSEED TO ESTABLISH PERMANENT VEGETATION. RETAIN DUFF LAYER AND NATIVE TOPSOIL TO MAXIMUM EXTEND PRACTICAL AND APPLY TO DISTURBED AREAS TO ASSIST AS VEGETATED COVER.
5. ALL MATERIALS AND WORK SHALL ADHERE TO DEPT OF ECOLOGY REQUIREMENTS, CITY OF MERCER ISLAND REQUIREMENTS, AND CURRENT WSDOT SPECIFICATIONS AND STANDARD DRAWINGS.
6. ALL HARD SURFACES TO BE SLOPED AWAY FROM STRUCTURES
7. MINIMUM 2% SLOPE ON PVC PIPE
8. PIPE BEDDING/BACKFILL SHALL ADHERE TO CURRENT WSDOT SPECIFICATIONS AND STANDARD DRAWINGS

LEGEND

-  HOUSE FOOTPRINT
-  CONCRETE PAVEMENT PERMEABLE
-  ASPHALT PAVEMENT PERMEABLE

ABBREVIATIONS

- CMP - CORRUGATED METAL PIPE
- FG - FINISH GRADE
- FF - FINISH FLOOR

STORM DRAINAGE NOTES

LOT SIZE 14,663 SF

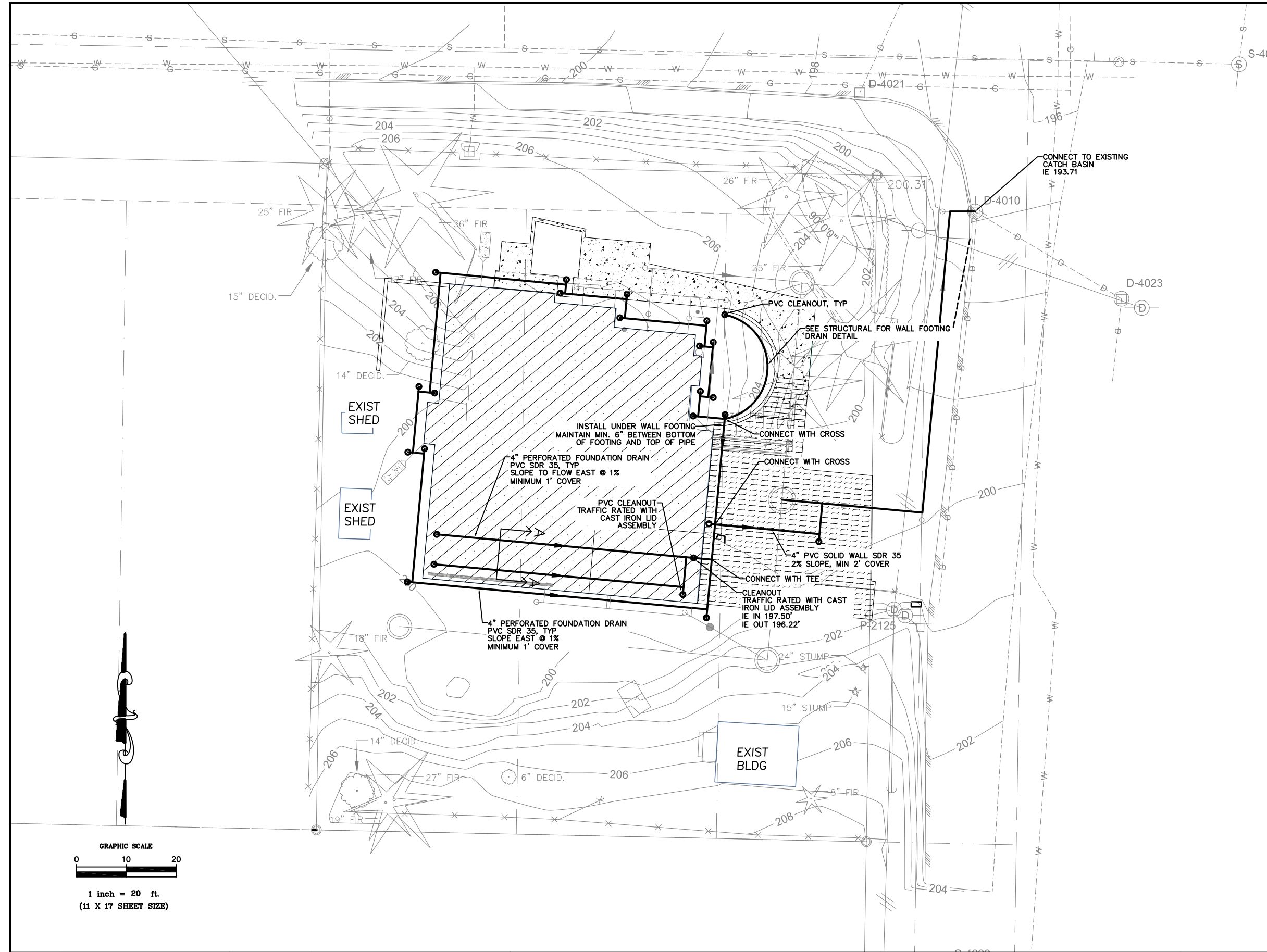
NEW/REPLACED HARD SURFACES

- PAVED WALKWAYS 529 SF
- ROOF AND DECKS 3,457 SF
- ASPHALT DRIVEWAY 995 SF

TOTAL HARD SURFACES = 4,981 SF

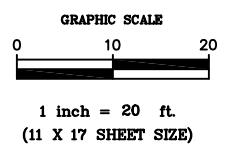
TOTAL LAWN/LANDSCAPING/NATIVE VEGETATION = 9,682 SF

△	REVISIONS	DATE	DESIGNED T. MURPHY	T. MURPHY	<p>TMM ENGINEERING</p> <p>381 NE O'HENRY CT POULSBORO, WA 98370 PH 360.979.6778</p>	PROJECT NAME	<p>SMITH + CUTRIGHT RESIDENCE 7655 SE 40TH STREET MERCER ISLAND, WA 98040</p>	DRAWING NO.
			DRAWN T. MURPHY	T. MURPHY				STORMWATER SITE PLAN
								C-01



GENERAL NOTES

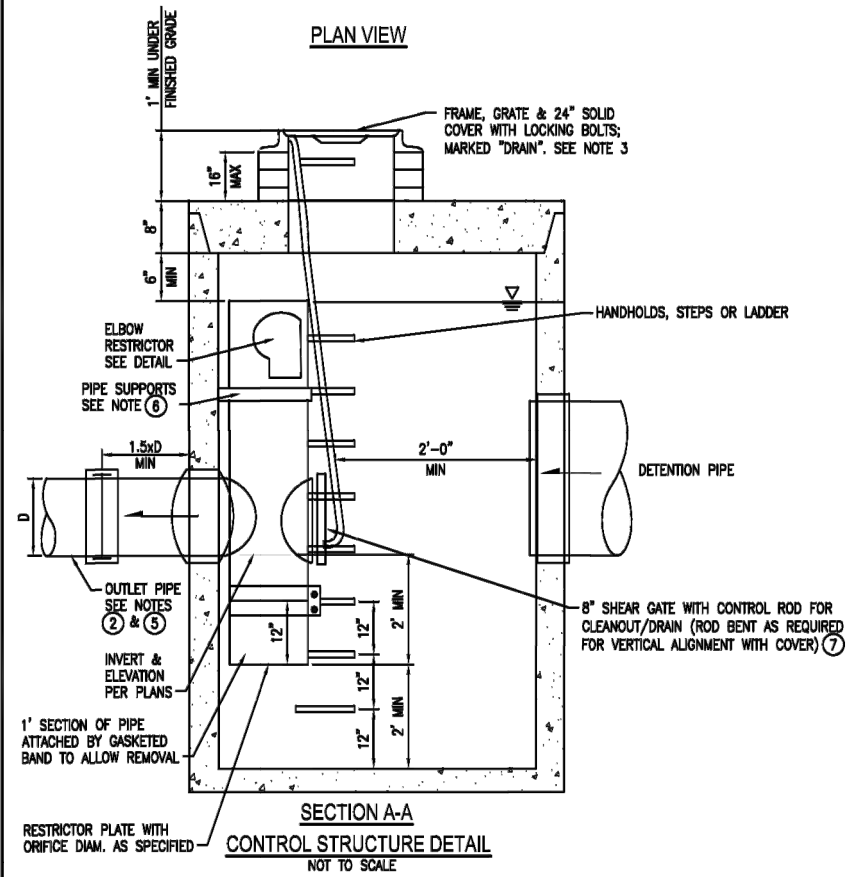
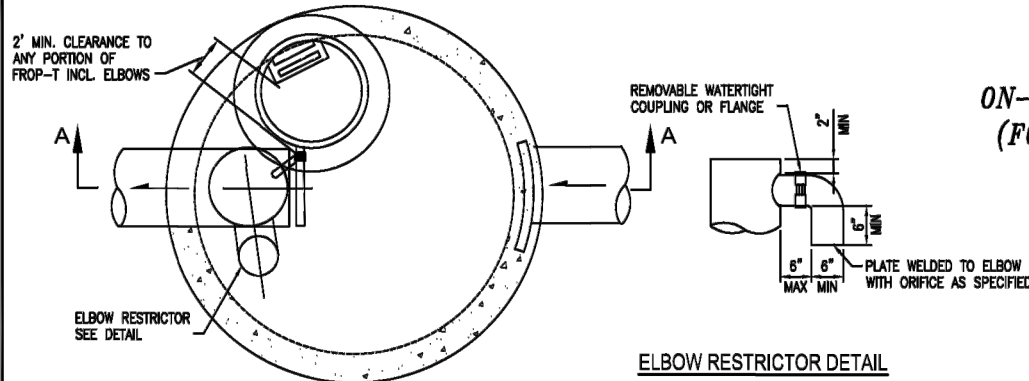
1. SEE SHEET C-04 FOR DETAILS AND GARAGE SLAB UNDERDRAIN SECTION
2. ALL PVC PIPE TO BE SDR 35. PROVIDE MIN. 1' COVER OVER PIPE. BED AND BACKFILL PERFORATED DRAIN PIPE WITH MATERIAL MEETING WSDOT SPEC 9-03.12(4). INSTALL PER WSDOT SPECIFICATIONS
3. CLEANOUTS TO BE NON-TRAFFIC RATED UNLESS NOTED OTHERWISE
4. FINISH GRADE AROUND PERIMETER OF STRUCTURE SHALL BE GRADED TO DRAIN AWAY.
5. ALL DISTURBED AREAS NOT COVERED IN HARD SURFACES SHALL RECEIVE BMP T5.13 (POST CONSTRUCTION SOIL QUALITY AND DEPTH) AND HYDROSEED TO ESTABLISH PERMANENT VEGETATION. RETAIN DUFF LAYER AND NATIVE TOPSOIL TO MAXIMUM EXTEND PRACTICAL AND APPLY TO DISTURBED AREAS TO ASSIST AS VEGETATED COVER.
6. ALL MATERIALS AND WORK INCLUDING PIPE BEDDING/BACKFILL SHALL ADHERE TO CITY OF MERCER ISLAND AND CURRENT WSDOT SPECIFICATIONS AND STANDARD DRAWINGS.



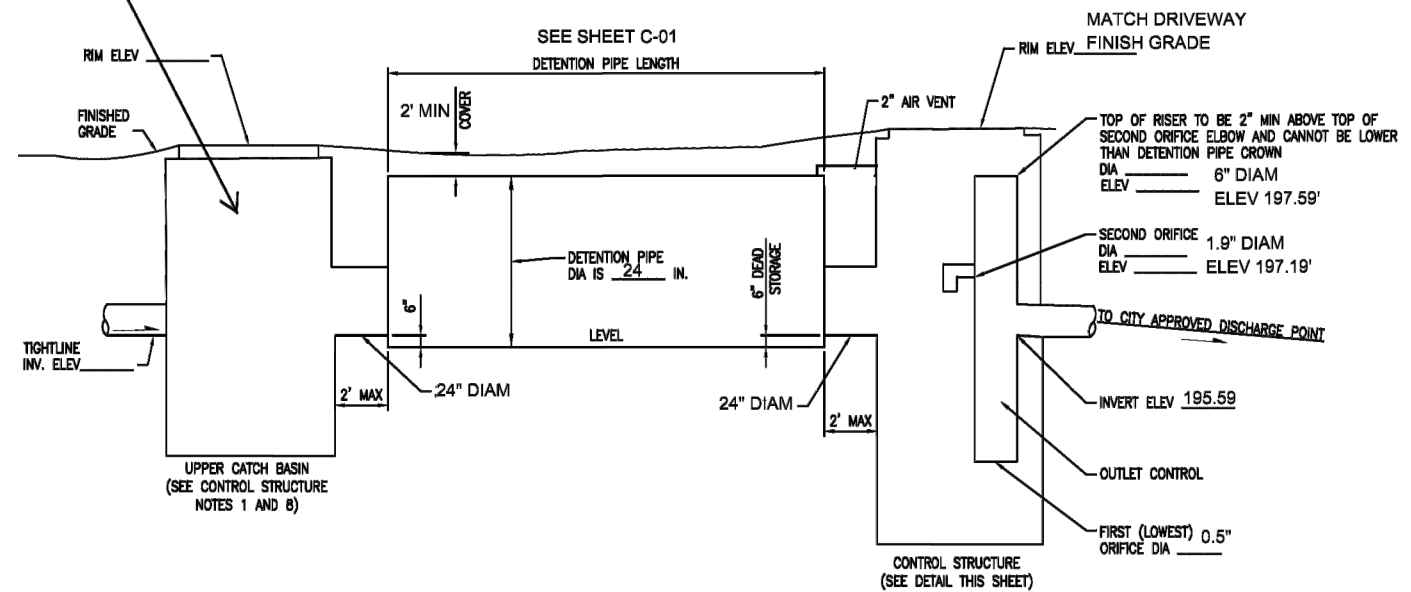
△	REVISIONS	DATE	DESIGNED	T. MURPHY	TMM ENGINEERING 381 NE O'HENRY CT POULSBO, WA 98370 PH 360.979.6778	PROJECT NAME SMITH + CUTRIGHT RESIDENCE 7655 SE 40TH STREET MERCER ISLAND, WA 98040	FOUNDATION DRAINAGE PLAN	DRAWING NO.	2 OF 4
			DRAWN	T. MURPHY				C-02	

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

OWNER: LAURA SMITH	7655 SE 40TH ST	PREPARED BY: TRENT MURPHY, PE
PERMIT #:	MERCER ISLAND, WA 98040	PHONE: 360-979-6778
		DATE: 11/15/2021
NEW PLUS REPLACED IMPERVIOUS SURFACE AREA (SF): 4,981 SF	DETENTION PIPE DIA (INCH): 24"	DETENTION PIPE LENGTH (FT): 149
SOIL TYPE: C (TILL SOILS)	PIPE MATERIAL: CMP	ORIFICE #1 DIA _____ INCH, ELEV _____
		ORIFICE #2 DIA _____ INCH, ELEV _____



SEE SHEET C-01 FOR DETENTION SYSTEM LAYOUT AND UPPER CATCH BASIN DETAILS



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

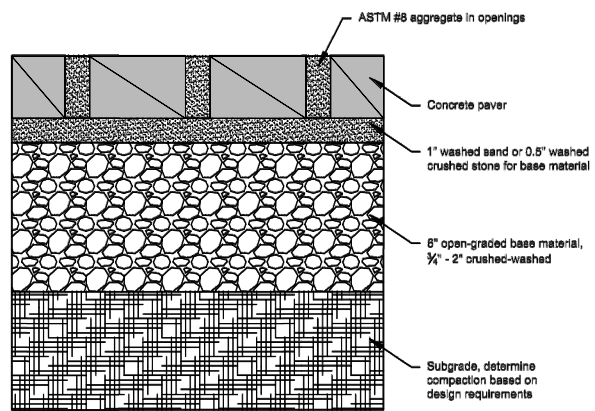
CONTROL STRUCTURE NOTES:

- 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 ZG32A; OR CAST IRON IN ACCORDANCE WITH ASTM A 48, CLASS 30B. THE LIFT HANDLE SHALL BE MADE OF A SIMILAR METAL TO THE GATE (TO PREVENT GALVANIC CORROSION), IT MAY BE OF SOLID ROD OR HOLLOW TUBING, WITH ADJUSTABLE HOOK AS REQUIRED. A NEOPRENE RUBBER GASKET IS REQUIRED BETWEEN THE RISER MOUNTING FLANGE AND THE GATE FLANGE. INSTALL THE GATE SO THAT THE LEVEL-LINE MARK IS LEVEL WHEN THE GATE IS CLOSED. THE MATING SURFACES OF THE LID AND THE BODY SHALL BE MACHINED FOR PROPER FIT. ALL SHEAR GATE BOLTS SHALL BE STAINLESS STEEL.
- ⑧ THE UPPER CATCH BASIN IS REQUIRED IF THE LENGTH OF THE DETENTION PIPE IS GREATER THAN 50 FT.

ON-SITE DETENTION SYSTEM NOTES:

1. CALL DEVELOPMENT SERVICES (206-275-7805) 24 HOURS IN ADVANCE FOR A DETENTION SYSTEM INSPECTION BEFORE BACKFILLING AND FOR FINAL INSPECTIONS.
2. RESPONSIBILITY FOR OPERATION AND MAINTANANCE OF DRAINAGE SYSTEMS ON PRIVATE PROPERTY IS RESPONSIBILITY OF THE PROPERTY OWNER. MATERIAL ACCUMULATED IN THE STORAGE PIPE MUST BE REMOVED FROM CATCH BASINS TO ALLOW PROPER OPERATION. THE OUTLET CONTROL ORIFICE MUST BE KEPT OPEN AT ALL TIMES.
3. PIPE MATERIAL, JOINT, AND PROTECTIVE TREATMENT SHALL BE IN ACCORDANCE WITH SECTION 7.04 AND 9.05 OF THE WSDOT STANDARD SPECIFICATION FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, LATEST VERSION. SUCH MATERIALS INCLUDE THE FOLLOWING, LINED CORRUGATED POLYETHYLENE PIPE (LCPE), ALUMINIZED TYPE 2 CORRUGATED STEEL PIPE AND PIPE ARCH (MEETS AASHTO DESIGNATIONS M274 AND M36), CORRUGATED OR SPIRAL RIB ALUMINUM PIPE, OR REINFORCED CONCRETE PIPE. CORRUGATED STEEL PIPE IS NOT ALLOWED.
4. FOOTING DRAINS SHALL NOT BE CONNECTED TO THE DETENTION SYSTEM.

△	REVISIONS	DATE	DESIGNED	T. MURPHY	TMM ENGINEERING	PROJECT NAME	DRAWING NO.
			DRAWN	T. MURPHY			
					381 NE O'HENRY CT POULSBORO, WA 98370 PH 360.979.6778	SMITH + CUTRIGHT RESIDENCE 7655 SE 40TH STREET MERCER ISLAND, WA 98040	3 OF 4
						DRAINAGE DETAILS	C-03



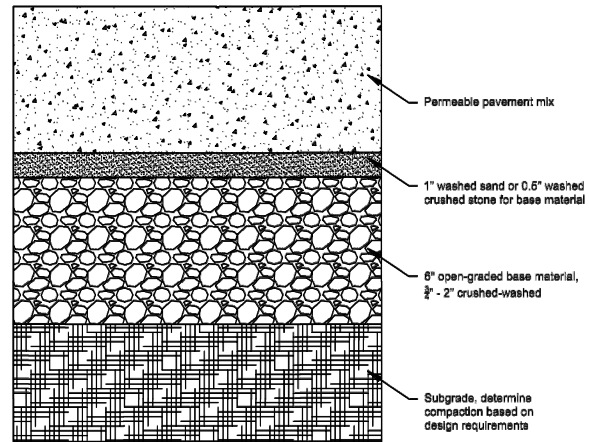
NOT TO SCALE

Figure V-5.3.5
Example of a Permeable Paver Section

Revised January 2016



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NOT TO SCALE

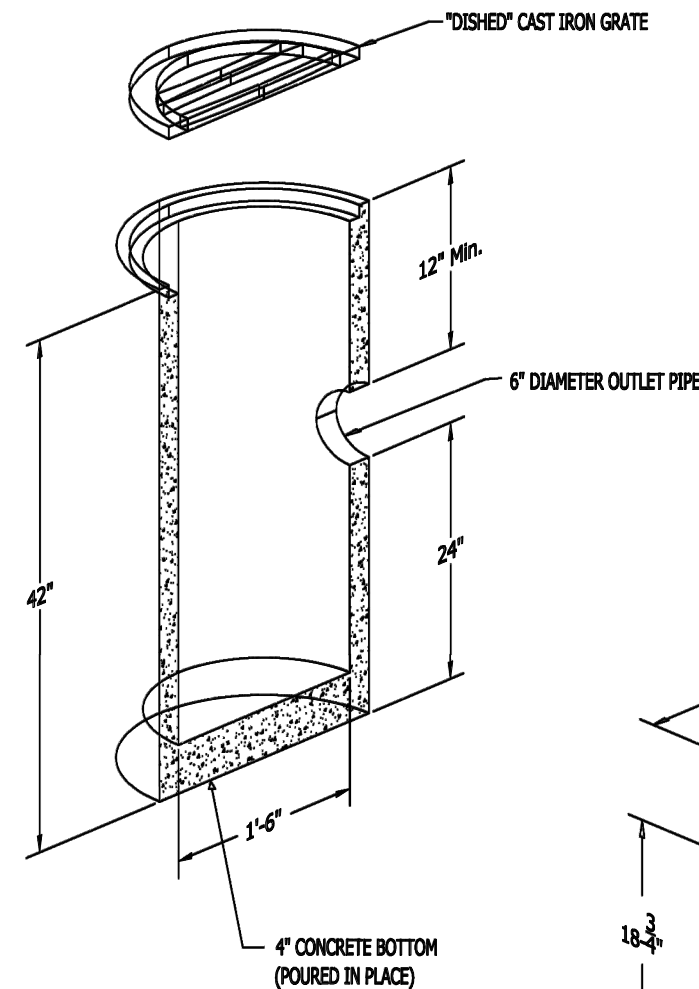
Figure V-5.3.4
Example of a Permeable Pavement
(Concrete or Asphalt) Section

Revised January 2016

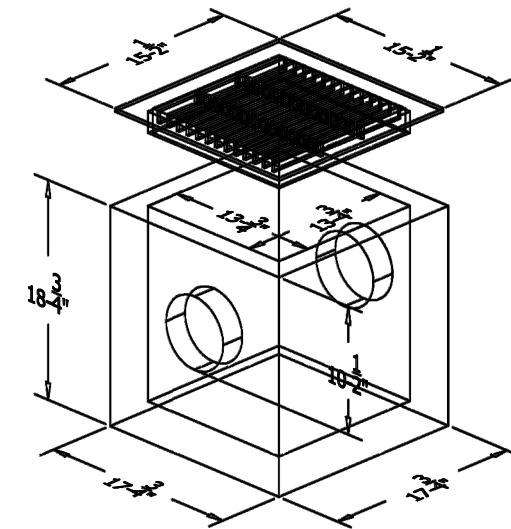


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ROUND TYPE



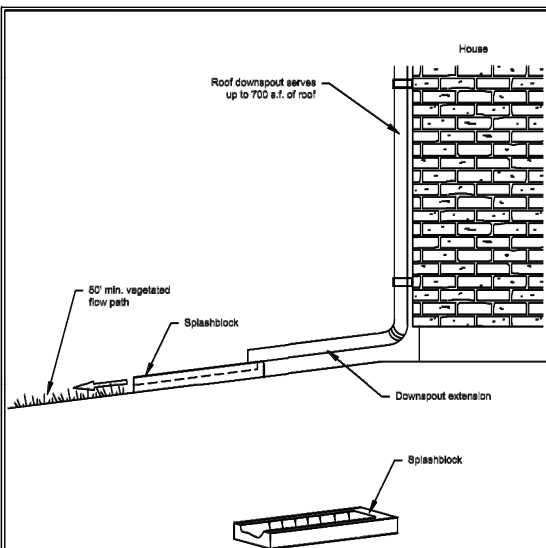
SQUARE TYPE

NOTES

1. FOR USE IN NON-TRAFFIC AREAS ONLY, SUCH AS ENCLOSED YARDS IN PRIVATE RESIDENCES AND ENCLOSED PLAY AREAS IN SCHOOL GROUNDS.
2. FOR USE WITH 6" PIPES AND SMALLER, AND DEPTH LESS THAN 18"
3. LAST STRUCTURE BEFORE ROW HAS 18" MINIMUM SUMP DEPTH

YARD DRAIN DETAIL

NOT TO SCALE



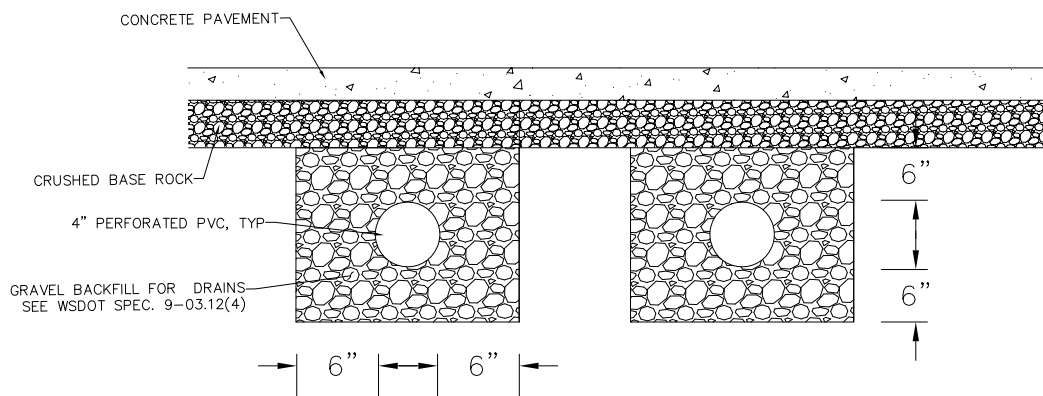
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Figure III-3.1.7
Typical Downspout Splashblock Dispersion

Revised December 2016



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GARAGE SLAB UNDERDRAIN SECTION A

NOT TO SCALE

REVISIONS	DATE	DESIGNED	T. MURPHY
		DRAWN	T. MURPHY

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381 NE O'HENRY CT
POULSBORO, WA 98370
PH 360.979.6778

PROJECT NAME
SMITH + CUTRIGHT RESIDENCE 7655 SE 40TH STREET MERCER ISLAND, WA 98040

DRAINAGE DETAILS

DRAWING NO. 4 OF 4
C-04

APPENDIX III
SWPPP Documents

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

Project: Smith + Cutright Residence
7655 SE 40th St.
Mercer Island, WA 98040

Engineer: Trent Murphy, PE
TMM Engineering
381 NE O'Henry Ct
Poulsbo, WA 98315
360-979-6778
trent@tmmengineeringllc.com

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5. Stabilize Soils
6. Protect Slopes
7. Protect Drain Inlets
8. Stabilize Channels and Outlets
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10. Control De-Watering
11. Maintain BMPs
12. Manage the Project
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4.0 OPERATION AND MAINTENANCE

ADDENDA 1: TESC PLAN

1.0 OBJECTIVE OF THE SWPPP

The purpose of the SWPPP is to mitigate for soil erosion problems on a construction project. The SWPPP explains and illustrates the measures to be taken on the construction site to control these problems. The SWPPP is prepared according to the 2014 WA Dept of Ecology Stormwater Manual.

2.0 PROJECT DESCRIPTION

This project includes the construction of a new single family residence located at the southwest corner of 40th St. and 78th St. Scope of work includes demolition of the existing residence and reconstructing a new residence on the existing foundation. Site improvements include decks, walkway, retaining walls, and replacement of an existing asphalt driveway. Permeable pavement and a non-infiltrating bioretention facilities will be used to mitigate the stormwater runoff from the property.

3.0 ELEMENTS OF THE SWPP

The BMPs listed in this SWPPP, or their equivalent, are to be utilized during construction of this project. It is the contractor's responsibility to ensure erosion is mitigated during construction by correct implementation of the Best Management Practices (BMPs). The contractor shall make field modifications to the BMPs as necessary during construction to prevent transport of sediment from the construction site. Follow Department of Ecology 2014 Stormwater Management Manual for Western Washington.

ELEMENT NO. 1: PRESERVE VEGETATION/MARK CLEARING LIMITS

The clearing limits shall be marked by the contractor prior to any clearing to restrict clearing to the minimum limits. The duff layer, native topsoil, and natural vegetation shall be retained in an undisturbed state to the maximum extent practicable. If it is not practicable to retain the duff layer in place, it should be stockpiled on-site, covered to prevent erosion, and replaced immediately upon completion of the ground disturbing activities.

- BMP C101 – Preserving Natural Vegetation (No disturbance is allowed within 5 feet of drip lines of trees to be saved)
- BMP C102 – Buffer Zones
- BMP C103 – High Visibility Fence

ELEMENT NO. 2: ESTABLISH CONSTRUCTION ACCESS

Stabilized construction entrances shall be constructed to minimize the tracking of sediment onto any public road. These stabilized construction entrances should be constructed as shown on the TESC Plan and in accordance with requirements set forth in

BMP C105. If sediment is tracked off-site, public roads shall be cleaned thoroughly at the end of each day, or more frequently during wet weather. Sediment shall be removed from roads by shoveling or sweeping (No Flushing) and should be transported to a controlled sediment disposal area.

ELEMENT NO. 3: CONTROL FLOW RATES

Stormwater runoff shall be observed during storm events and ensure flow rates are not increased to cause erosion to offsite locations.

ELEMENT NO. 4: INSTALL SEDIMENT CONTROLS

Runoff from fully stabilized areas may be discharged without a sediment removal BMP, but must ensure downstream waterways are protected from erosion due to increases in the volume, velocity, and peak flow rate of stormwater from the project site. Silt fence barriers shall be constructed as shown on the TESC Plan.

In addition to silt fencing, the following BMPs may be implemented where appropriate:

- BMP C220 – Catch Basin Filter
- BMP C207 – Check Dams
- BMP C208 – Triangular Silt Dike (Geotextile-Encased Check Dam)
- BMP C232 – Gravel Filter Berm
- BMP C235 – Straw Wattles

ELEMENT NO. 5: STABILIZE SOILS

All exposed and unworked soils shall be stabilized by application of effective BMPs, which protect the soil from erosion.

Soils must not remain exposed and unworked for more than the time periods set forth below to prevent erosion. This condition applies to all soils on site, whether at final grade or not.

During the dry season (May 1 - Sept. 30): 7 days

During the wet season (October 1 - April 30): 2 days.

In areas where the soils will remain unworked for more than 30 days or have reached final grade, seeding and mulching shall be used in accordance with BMP C120 Temporary and Permanent Seeding. BMP C121 Compost Mulching may only be used on proposed landscape areas. It is not approved as a general TESC mulch.

If a slope of 2H:1V or greater with at least 10 feet of vertical relief, nets or blankets shall be used according to BMP C122. BMP C122 shall also be used for drainage ditches and

swales. Sod shall be used in accordance with BMP C124 for disturbed areas that require immediate vegetative cover. Dust control shall be used as needed to prevent wind transport of dust from the disturbed soil surfaces and in accordance with BMP C140.

In addition, the following BMPs may be used to stabilize soils where appropriate:

- BMP C123 – Plastic Covering
- BMP C125 – Top Soiling

ELEMENT NO. 6: PROTECT SLOPES

Slopes will be stabilized as indicated in Element No. 5. Cut/fill slopes shall be constructed in a manner that will minimize erosion. In addition, the following BMPs may be implemented where appropriate:

- BMP C120 – Temporary and Permanent Seeding
- BMP C200 – Interceptor Dike and Swale
- BMP C202 – Channel Lining (Rubble concrete channel lining is now allowed)
- BMP C201 – Grass-Lined Swales
- BMP C205 – Subsurface Drains (Minimum 6" diameter pipe)
- BMP C204 – Pipe Slope Drains (Used as temporary measure only)
- BMP C206 – Level Spreader
- BMP C207 – Check Dams

ELEMENT NO. 7: PROTECT DRAIN INLETS

All storm drain inlets made operable during construction as well as all existing structures within the project limits shall be protected so that stormwater runoff shall not enter the conveyance system without first being filtered or treated to remove sediment. Inlets should be inspected weekly at a minimum and daily during storm events. Inlet protection devices shall be cleaned and removed and replaced when sediment has filled one-third of the available storage (unless a more stringent standard is specified by the product manufacturer).

ELEMENT NO. 8: STABILIZE CHANNELS AND OUTLETS

Stabilization, including armoring material adequate to prevent erosion of outlets, adjacent to streambanks, slopes, and downstream reaches shall be provided at the outlets of all conveyance systems.

ELEMENT NO. 9: CONTROL POLLUTANTS

All pollutants, including waste materials and demolition debris that occur on-site during construction shall be handled and disposed of in a manner that does not cause

contamination of stormwater. Maintenance and repair of heavy equipment and vehicles involving oil changes, hydraulic system drain down, solvent and de-greasing cleaning operations, fuel tank drain down and removal, and other activities which may result in discharge or spillage of pollutants to the ground or into stormwater runoff must be conducted using spill prevention measures, such as drip pans. Contaminated surfaces shall be cleaned immediately following any discharge or spill incident. Emergency repairs may be performed on-site using temporary plastic placed beneath and, if raining, over the vehicle. Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturer recommendations shall be followed for application rates and procedures.

These source control BMPs will apply to this project as determined by the City:

- A Spill Prevention Control and Countermeasures Plan (prepared by contractor)
- Maintenance of Storm Drainage Facilities (by contractor during construction)

In addition, the following BMPs shall be implemented where appropriate:

- BMP C150 – Materials on Hand
- BMP C151 – Concrete Handling
- BMP C153 – Material Delivery, Storage and Containment
- BMP C154 – Concrete Washout Area
- BMP C162 - Scheduling

ELEMENT NO. 10: CONTROL DE-WATERING

Clean, non-turbid, de-watering water; as determined by the Certified Professional in Erosion and Sediment Control, can be discharged to systems tributary to state surface waters, provided the de-watering flow does not cause erosion or flooding of receiving waters. These clean waters should not be routed through stormwater sediment ponds.

Highly turbid or otherwise contaminated de-watering water, such as from construction equipment operation, shall be handled separately from stormwater at the site. Discharge foundation, vault, and trench de-watering water, which has similar characteristics to stormwater runoff at the site, into a controlled conveyance system before discharge to a sediment trap or sediment pond. Discharge clean, non-turbid de-watering water, such as well-point ground water, to systems tributary to, or directly into surface waters of the State, provided the dewatering flow does not cause erosion or flooding of receiving waters. Do not route clean dewatering water through stormwater sediment ponds. Note that “surface waters of the State” may exist on a construction site as well as off site; for example, a creek running through a site. Handle highly turbid or otherwise contaminated dewatering water, such as from construction equipment

operation, clamshell digging, concrete tremie pour, or work inside a cofferdam, separately from stormwater. Other treatment or disposal options may include:

1. Infiltration
2. Transport off-site in a vehicle, such as a vacuum flush truck, for legal disposal in a manner that does not pollute state waters.
3. Ecology-approved on-site chemical treatment or other suitable treatment technologies.
4. Use of a sedimentation bag that discharges to a ditch or swale for small volumes of localized dewatering. Be prepared for possible bag failure.

ELEMENT NO. 11: MAINTAIN BMPs

All temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. All maintenance and repair shall be in accordance with BMPs.

Sediment control BMPs shall be inspected weekly or after a runoff-producing storm event during the dry season and daily during the wet season.

All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed and disturbed soil areas resulting from removal of BMPs or vegetation shall be permanently stabilized.

ELEMENT NO. 12: MANAGE THE PROJECT

Phasing of Construction

The project shall be phased in order to prevent, to the maximum extent practicable, the transport of sediment from the site during construction. Revegetation of exposed areas and maintenance of that vegetation shall be an integral part of the clearing activities for each phase.

The CESCL or inspector is required and must have the skills to assess the site conditions and construction activities that could impact the quality of stormwater. They must assess the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges. The CESCL or inspector must follow the requirements per the Dept of Ecology.

All BMPs shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function. Sampling and analysis of the stormwater discharges from the construction site may be necessary to ensure compliance with standards. Whenever inspection and/or monitoring reveals that the BMPs are

inadequate, due to the actual discharge of or potential to discharge a significant amount of any pollutant, the construction SWPPP shall be modified, as appropriate, in a timely manner.

The construction SWPPP shall be retained on-site or within reasonable access to the site. The construction SWPPP shall be modified whenever there is a significant change in the design, construction, operation, or maintenance of any BMP.

ELEMENT NO. 13: PROTECT LOW IMPACT DEVELOPMENT BMPs

The permeable pavement/pavers shall be installed at the end of the construction sequence when all soil is stabilized. No storing of materials or equipment containing dirt or sediment shall be placed on the permeable pavement. Clean the permeable pavement to remove any tracked sediment prior to demobilization.

4.0 OPERATION AND MAINTENANCE

The following table lists the inspection and maintenance schedule for the TESC BMPs:

BMP C233 Silt Fence

Inspection Frequency	Management Practices/Maintenance Work
Within 24 hours after a rain event	<ul style="list-style-type: none"> • Repair any damage immediately. • Intercept and convey all evident concentrated flows uphill of the silt fence to a sediment pond. • Check the uphill side of the fence for signs of the fence clogging and acting as a barrier to flow and then causing channelization of flows parallel to the fence. If this occurs, replace the fence or remove the trapped sediment. • Remove sediment deposits when the deposit reaches approximately one-third the height of the silt fence, or install a second silt fence.

	<ul style="list-style-type: none"> • Replace filter fabric that has deteriorated due to ultraviolet breakdown
Regular frequency – Once per week	Same inspection items as above

BMP C235 Wattles

Inspection Frequency	Management Practices/Maintenance Work
Within 24 hours after a rain event	<ul style="list-style-type: none"> • Wattles may require maintenance to ensure they are in contact with soil and thoroughly entrenched, especially after significant rainfall on steep sandy soils • Replace broken stakes. • Repair rips or replace wattle if filler material is removed • Remove/dispose of sediment buildup if sediment exceeds ½ the wattle height
Regular frequency – Once per week	Same inspection items as above

BMP C105 Stabilized Construction Entrance/Exit


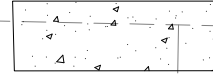
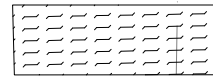
Inspection Frequency	Management Practices/Maintenance Work
Within 24 hours after a rain event	<p>Quarry spalls shall be added if the pad is no longer in accordance with the specifications.</p> <ul style="list-style-type: none"> • If the entrance is not preventing sediment from being tracked onto pavement, then alternative measures to keep the streets free of sediment shall be used. This may include replacement/cleaning of the existing quarry spalls, street sweeping, an increase in the dimensions of the entrance, or the installation of a wheel wash.

	<ul style="list-style-type: none"> • Any sediment that is tracked onto pavement shall be removed by shoveling or street sweeping. The sediment collected by sweeping shall be removed or stabilized on site. The pavement shall not be cleaned by washing down the street, except when high efficiency sweeping is ineffective and there is a threat to public safety. If it is necessary to wash the streets, the construction of a small sump to contain the wash water shall be considered. The sediment would then be washed into the sump where it can be controlled. • Perform street sweeping by hand or with a high efficiency sweeper. Do not use a non-high efficiency mechanical sweeper because this creates dust and throws soils into storm systems or conveyance ditches. • Any quarry spalls that are loosened from the pad, which end up on the roadway shall be removed immediately. • If vehicles are entering or exiting the site at points other than the construction entrance(s), fencing (see BMP C103) shall be installed to control traffic. • Upon project completion and site stabilization, all construction accesses intended as permanent access for maintenance shall be permanently stabilized.
<p>Regular frequency – Once per week</p>	<p>Same inspection items as above</p>

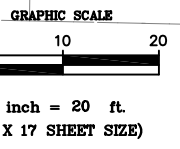
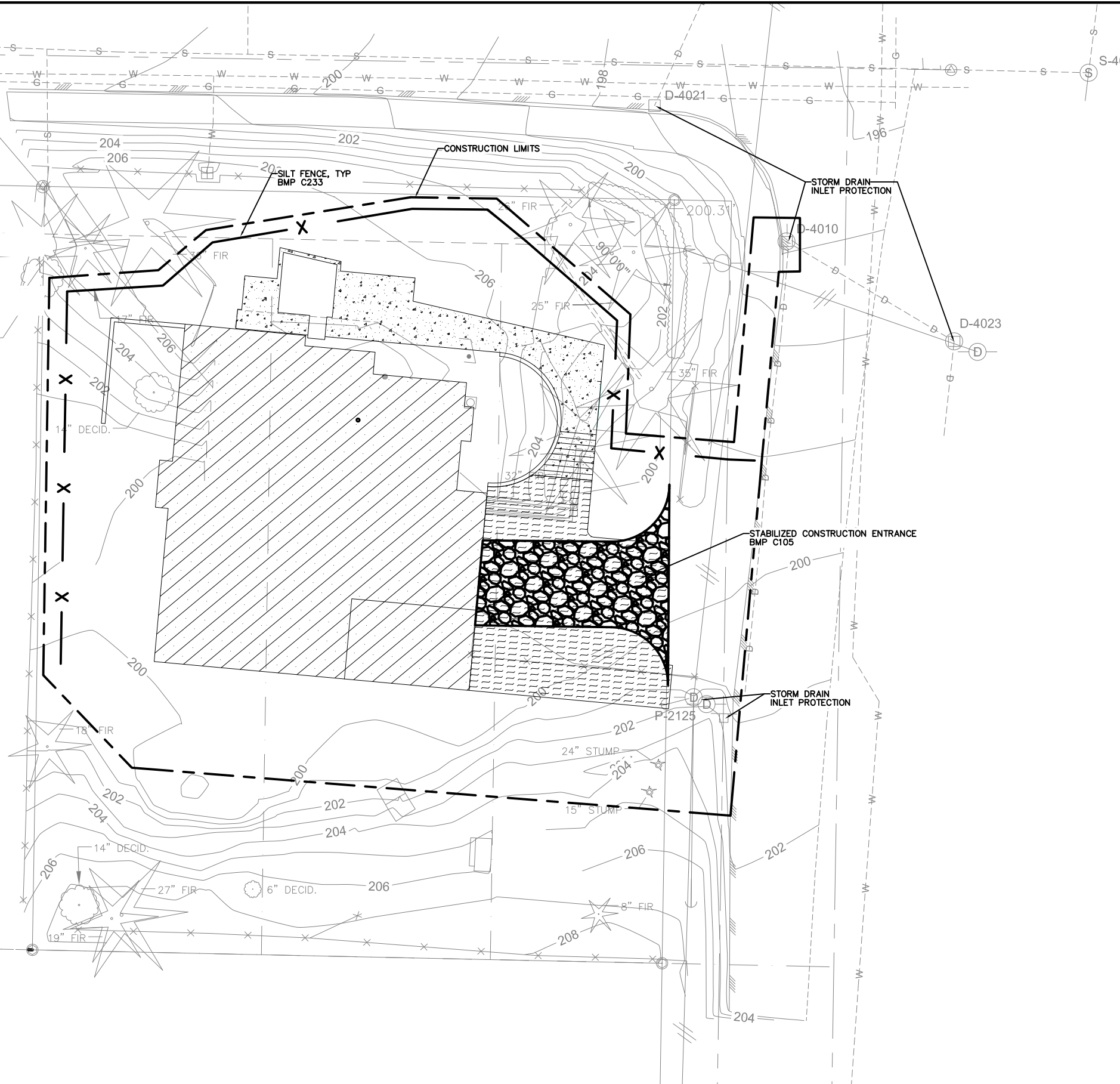
GENERAL NOTES

1. SEE SHEET TESC-02 FOR GENERAL NOTES
2. SLOPES AROUND PERIMETER OF STRUCTURE SHALL BE GRADED TO DRAIN AWAY.
3. ADJUST EROSION CONTROL BMPs AS NECESSARY TO PREVENT SEDIMENT TRANSPORT OFFSITE.
4. ALL MATERIALS AND WORK SHALL ADHERE TO DEPT OF ECOLOGY REQUIREMENTS, CITY OF MERCER ISLAND REQUIREMENTS, AND CURRENT WSDOT SPECIFICATIONS AND STANDARD DRAWINGS.

LEGEND

-  HOUSE FOOTPRINT
-  CONCRETE PAVEMENT PERMEABLE
-  ASPHALT PAVEMENT PERMEABLE

15" DECID.



△	REVISIONS	DATE	DESIGNED	T. MURPHY	TMM ENGINEERING 381 NE O'HENRY CT POULSBORO, WA 98370 PH 360.979.6778	PROJECT NAME SMITH + CUTRIGHT RESIDENCE 7655 SE 40TH STREET MERCER ISLAND, WA 98040	TESC PLAN	DRAWING NO.	1 OF 2
			DRAWN	T. MURPHY				TESC-01	

APPENDIX IV

Detention Sizing Chart

Table 1

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

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

Notes:

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

- Soil type to be determined by geotechnical analysis or soil map.
- Sizing includes a Volume Correction Factor of 120%.
- Upper bound contributing area used for sizing.

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

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

⁽³⁾ Minimum orifice diameter = 0.5 inches

in = inch

ft = feet

sf = square feet

Basis of Sizing Assumptions:

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

SBUH, Type 1A, 24-hour hydrograph

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

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

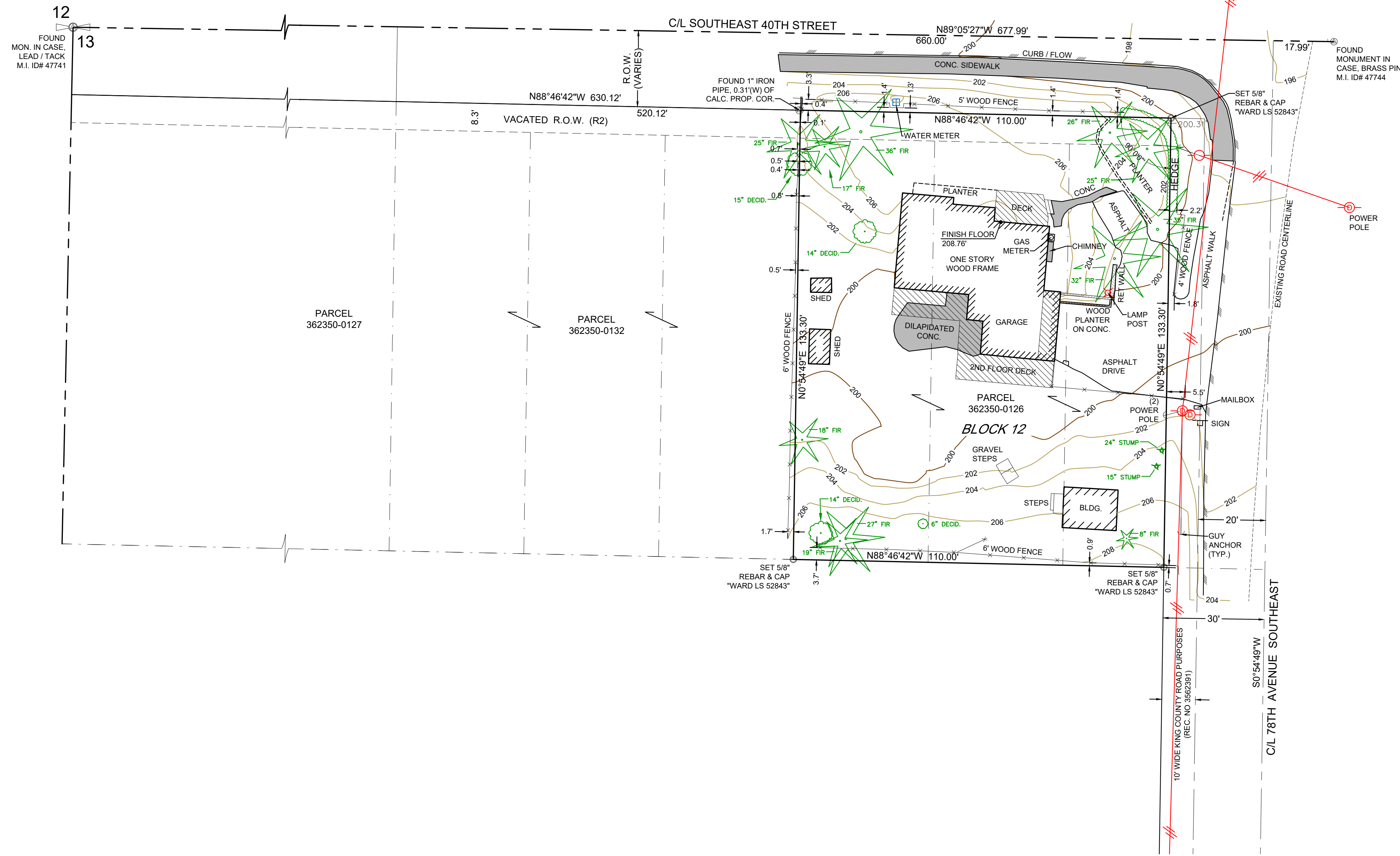
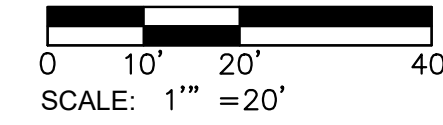
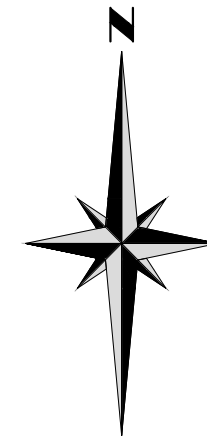
Developed = impervious (CN = 98)

0.5 foot of sediment storage in detention pipe

Overland slope = 5%

APPENDIX V
Existing Conditions Survey

BOUNDARY AND TOPOGRAPHIC SURVEY
A PORTION OF BLOCK 12 OF REPLAT OF ISLAND PARK, MERCER ISLAND, WASHINGTON
 WITHIN THE NW1/4 OF THE NE1/4 OF SECTION 13, TOWNSHIP 24 NORTH, RANGE 04 EAST, W.M., KING COUNTY, WASHINGTON



VERTICAL DATUM:

NAVD 88. BASED ON CONTROL TIES TO CITY OF MERCER ISLAND CONTROL POINTS:

ID NUMBER: 47744 ID NUMBER: 47741
 N: 212734.474 N: 212745.2569
 E: 1294452.056 E: 1293774.046
 ELEV: 193.403 ELEV: 210.908

CONTOUR INTERVAL - 2 FOOT:

THE CONTOURS SHOWN HEREON WERE COMPUTER GENERATED FROM DIRECT FIELD OBSERVATIONS WITH RESULTING ACCURACY THAT MEETS OR EXCEEDS NATIONAL MAPPING STANDARDS, ONE-HALF THE CONTOUR INTERVAL.

PROJECT BENCHMARK:

TOP OF REBAR AND CAP MARKING THE NORTHEAST PROPERTY CORNER FOR KING COUNTY PARCEL NUMBER 362350-0126, WITHIN BLOCK 12 OF REPLAT OF ISLAND PARK, KING COUNTY, WASHINGTON.
 ELEVATION = 200.31'

HORIZONTAL DATUM:

N 89°05'27\"/>

GENERAL NOTES:

1. THE PURPOSE OF THIS SURVEY IS TO SHOW THE EXTERIOR BOUNDARY LINES, EXISTING SITE IMPROVEMENTS, NATURAL FEATURES AND EXISTING TERRAIN FOR KING COUNTY PARCEL NUMBER 362350-0126, WITHIN BLOCK 12 OF REPLAT OF ISLAND PARK, IN THE COUNTY OF KING, FOR THE INTENDED USE OF ARCHITECTURAL AND CIVIL ENGINEERING DESIGN.
2. THIS SURVEY WAS PERFORMED USING A TRIMBLE S SERIES, 3\"/>

LEGAL DESCRIPTION:

STATUTORY WARRANTY DEED
 AFN: 20090701001371

THE NORTH 125 FEET OF THE EAST 120 FEET OF BLOCK 12, REPLAT OF ISLAND PARK, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 13 OF PLATS, PAGE(S) 58, IN KING COUNTY, WASHINGTON;

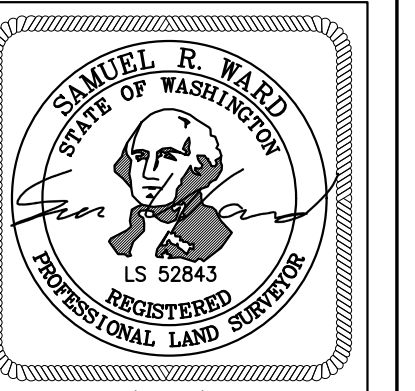
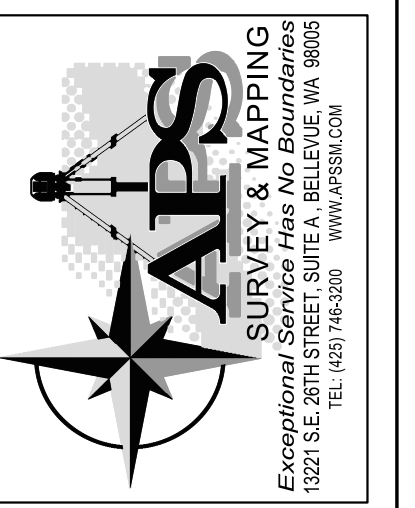
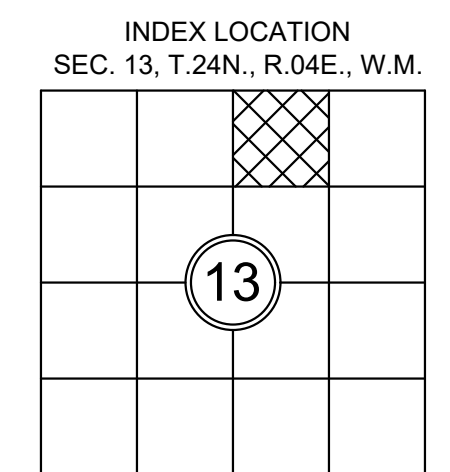
EXCEPT THE EAST 10 FEET THEREOF CONVEYED TO KING COUNTY FOR ROAD PURPOSES BY DEED RECORDED UNDER RECORDING NUMBER 3562391;

TOGETHER WITH THE SOUTH 8.3 FEET OF THAT PORTION OF VACATED SOUTHEAST 40TH STREET, FORMERLY FREEMAN AVENUE, ADJOINING SAID PREMISES ON THE NORTH.

REFERENCES:

- | | |
|---|---|
| R1. REPLAT OF ISLAND PARK
AFN: 1906731409502
VOLUME 13 OF PLATS, PAGE 58
DATE: JULY 31, 1906 | R5. RECORD OF SURVEY
AFN: 9904199010
BOOK 129 OF SURVEYS, PAGE 45
DATE: APRIL 19, 1999 |
| R2. RECORD OF SURVEY
AFN: 20200205900017
BOOK 419 OF SURVEYS, PAGE 61
DATE: FEBRUARY 5, 2020 | R6. RECORD OF SURVEY
AFN: 2000803900015
BOOK 139 OF SURVEYS, PAGE 118
DATE: AUGUST 3, 2000 |
| R3. RECORD OF SURVEY
AFN: 7907169003
BOOK 19 OF SURVEYS, PAGE 83
DATE: JULY 16, 1979 | R7. RECORD OF SURVEY
AFN: 20110830900002
BOOK 282 OF SURVEYS, PAGE 182
DATE: AUGUST 30, 2011 |
| R4. RECORD OF SURVEY
AFN: 9005179006
BOOK 73 OF SURVEYS, PAGE 21
DATE: MAY 17, 1990 | |

KCPN 362350-0126
 TOTAL LOT AREA
 14,663 SQ. FT.
 0.337 ACRES



BOUNDARY AND TOPOGRAPHIC SURVEY
 TAX PARCEL NO. 362350-0126
 7655 SOUTHEAST 40TH STREET, MERCER ISLAND, WASHINGTON
 FOR
 LAURA S. SMITH
 MERCER ISLAND
 WASHINGTON

DATE: 12/28/2020
 SCALE: 1" = 20'
 APSSM PROJECT NO.: 1805.002
 ACAD NAME: 18050021.dwg

SURVEYED BY: JC/DA	DRAWN BY: MAGG	CHECKED BY: VW	SRW
		APPROVED BY: CK'D	APPR.
DATE	BY	REVISION	

SHEET 1 OF 1