Construction Stormwater Pollution Prevention Plan

Houtchens Residence

6024 Se 22nd St
Mercer Island, WA 98040

Prepared by BCRA

August 2022

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2106 Pacific Avenue, Suite 300
Tacoma, WA 98402

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

PROJECT:
Houtchens Residence

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Mercer Island, WA 98040

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I hereby state that this report for the Houtchens Residence 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.

08/05/2022

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APPENDICES

SECTION 1 – PROPOSED PROJECT DESCRIPTION

The Houtchens Residence project will include a new single-family home. The site is located in northwest Mercer Island at 6024 SE 22nd St, Mercer Island, WA 98040 on King County parcel number 243970-0110. Proposed work includes demolition of all existing buildings on site and addition of a new driveway extension and new residence.

Total Project Area (SF)	Total Proposed Hard Surface Area (SF)	Total Proposed Disturbed Area (SF)
28,510	9,270	28,510

In the developed condition of the site, stormwater from the new driveway will be collected and treated via StormFilter catchbasin and conveyed to the roof drain system. The roof and footing drains will drain to the relocated storm drain in the north portion of the property which directly discharges to Lake Washington.

SECTION 2 – EXISTING SITE CONDITIONS

The existing site contains a single-family home, detached garage, boathouse and dock on Lake Washington. The site consists of mostly lawn and landscape area, with a paved driveway. The site slopes north to Lake Washington with approximately 24 feet of elevation change over approximately 475 ft. An existing sewer and private storm pipe cross the property from west to east about 120 ft from the north shoreline bulkhead. The private storm pipe outlets runoff from Faben Dr to the west of the project site into Lake Washington through the east shoreline bulkhead. An additional public storm pipe runs along the east property line from SE 22nd St to a catchbasin within the project site, then to an outlet into Lake Washington within the adjacent property to the east. The project is contained within one site which discharges to Lake Washington and will be considered as one Threshold Discharge Area (TDA).

SECTION 3 – ADJACENT AREAS AND CRITICAL AREAS

The parcel is surrounded by other single-family properties, all sloping north toward Lake Washington. The project site is approximately 0.1 miles north of I-90. The site is within a landslide hazard and high groundwater area per Mercer Island GIS.

SECTION 4 – SOIL

The NRCS Web Soil Survey report categorizes the soil on site as Hydrologic Soil Group C. The NRCS Web Soil Survey report can be found in Appendix A.

SECTION 5 – POTENTIAL EROSION PROBLEM AREAS

The project site is within a Potential Landslide and high groundwater area according to Mercer Island GIS.

SECTION 6 – CONSTRUCTION STORMWATER POLLUTION PREVENTION ELEMENTS

The following paragraphs describe how the Construction Stormwater Pollution Prevention Plan (SWPPP) elements have been addressed in this plan. The Grading and Drainage plan accompanying this narrative can be found in Appendix B.

Element #1 - Preserve Vegetation/Mark Clearing Limits

The clearing limits are shown on the Grading and Drainage plan. Prior to beginning land disturbing activities, including clearing and grading, all clearing limits will be clearly marked. Any areas that are to be protected or restricted from construction activities shall be clearly marked. Silt fencing per BMP C233: Silt Fence will be placed on the project site boundaries where stormwater has the potential to be released from the site, as indicated on the Grading and Drainage plan. Existing vegetation shall be preserved to the maximum extent feasible throughout construction.

Element #2 - Establish Construction Access

Existing pavements will be used as an established construction access.

Sediment shall not be tracked onto adjacent streets. If sediment is tracked offsite, clean the affected roadway or access thoroughly at the end of each day, or more frequently as necessary. Remove sediment from roads by shoveling, sweeping, or pick up and transport the sediment to a controlled sediment disposal area. Street washing will be conducted only after sediment is removed.

Element #3 - Control Flow Rates

The new single-family house is the primary new impervious surface for the project. The project site is flow control exempt as the runoff drains directly into Lake Washington. Runoff from disturbed areas will be attenuated by the silt fence.

Element #4 - Install Sediment Controls

The Grading and Drainage plan in Appendix B specify various erosion/sediment control measures, including silt fencing, tree protection fencing, and inlet protection. Silt Fence (BMP C233: Silt Fence) or similar measures shall be installed to prevent the transport of coarse sediment from leaving a construction site. The contractor shall make a daily surveillance of all sediment control measures and maintain as required.

Catch basin inlet protection (BMP C220: Storm Drain Inlet Protection) shall be installed in all catch basins within 500 feet downstream of all proposed improvements. Sediment controls shall be installed prior to initial site disturbance.

Element #5 - Stabilize Soils

From October 1 through April 30, no soils shall remain exposed and unworked for more than 2 days. From May 1 to September 30, no soils shall remain exposed and unworked for more than 7 days. Soils must also be stabilized at the end of a shift before a holiday or weekend if needed based on the weather forecast. These previous conditions apply to all soils on site, whether at final grade or not. During construction activity, the amount of exposed soil should be minimized.

Soil stabilization BMPs include but are not limited to BMP C120: Temporary and Permanent Seeding, BMP C124: Sodding, BMP C121: Mulching, BMP C123: Plastic Covering, erosion control fabrics and matting, BMP C126:

Polyacrylamide for Soil Erosion Protection, the early application of gravel base on areas to be paved, and BMP C140: Dust Control.

Element #6 - Protect Slopes

Any temporary slopes must be mulched (BMP C121: Mulching), covered with nets or blankets (BMP C122: Nets and Blankets), or covered with plastic sheeting (BMP C123: Plastic Covering) to minimize erosion due to sheet flow runoff.

Element #7 - Protect Drain Inlets

All existing drain inlets, both on and off-site within 500 feet of the proposed project site, that may receive runoff from the construction site shall be provided with inlet protection (BMP C220: Storm Drain Inlet Protection). Inlets shall be inspected weekly at a minimum and daily during storm events. Inlet protection devices should be cleaned or removed and replaced when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).

Element #8 - Stabilize Channels and Outlets

Any temporary channels must be stabilized to prevent erosion from the expected flow velocity from the Type 1A, 10-year, 24-hour storm event for the developed site condition. All outlets of such channels must be stabilized with riprap or other appropriate materials to prevent erosion at the outlet.

Element #9 - Control Pollutants

Control of pollutants other than sediments is the responsibility of the construction superintendent. Maintenance, fueling, and repair of heavy equipment and vehicles must be conducted using spill prevention and control measures. Contaminated surfaces must be cleaned immediately following any discharge or spill incident. Oil changes, hydraulic system drain down, solvent and de-greasing cleaning operations, fuel tank drain down and removal, and other activities that 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.

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. Cover, containment, and protection from vandalism must be provided for all chemicals, liquid products, petroleum products, and other materials that have the potential to pose a threat to human health or the environment per BMP C153: Material Deliver, Storage and Containment. Any slurry or process water that is generated by sawcutting or other surface operations must be prevented from entering the waters of the state (BMP C152: Sawcutting and Surfacing Pollution Prevention).

Element #10 - Control Dewatering

Discharge foundation, vault, and trench dewatering water, which have characteristics similar to stormwater runoff at the site, into a controlled conveyance system before discharge to a sediment trap or sediment pond. Clean, non-turbid dewatering water shall be discharged 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 or interfere with the operation of the system.

Highly turbid or otherwise contaminated dewatering water, such as from construction equipment operation should be handled separately from stormwater. Other treatment or disposal options may include: 1) infiltration, 2) transport off-site in a vehicle, such as vacuum flush truck, for legal disposal in a manner that does not pollute waters of the State, 3) Ecology-approved on-site chemical treatment or other suitable treatment technologies, or 4) use of sedimentation bag with discharge to a ditch or swale for small volumes of localized dewatering.

Element #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 conducted in accordance with standard procedures for the BMPs. Sediment control BMPs must be inspected weekly at the end of each work week, after a runoff-producing storm event during the dry season, and daily during the wet season.

Protection should be provided for all BMPs installed for the permanent control of stormwater from sediment and compaction. All BMPs that are to remain in place following completion of construction shall be examined and placed in full operating conditions. If sediment enters the BMPs during construction, it shall be removed and the facility shall be returned to the conditions specified in the construction documents.

All temporary erosion and sediment control BMPs should 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 or stabilized on site. Disturbed soil areas resulting from removal of BMPs or vegetation shall be permanently stabilized.

Element #12 - Manage the Project

Site demolition and grading shall be performed after the erosion and sediment control measures have been constructed.

The contractor shall inspect, maintain, and repair all BMPs as needed to ensure continued performance of their intended function. A Certified Erosion and Sediment Control Lead (CESCL) who can be on-site or on-call at all times, must be identified by the contractor. The Construction SWPPP shall be retained on-site or within reasonable access to the site at all times. The SWPPP shall be modified to include any additional or modified BMPs that are deemed necessary to manage erosion and sediment on the site. Revisions to the SWPPP must be completed within seven days.

Element #13 - Protect Low Impact Development BMPs

All BMPs implemented on site must be maintained and repaired until after the site is completely stabilized in order to protect the function of the BMP in erosion control practice. All heavy equipment must be kept off existing soils under LID facilities that have been excavated to final grade in order to retain the infiltration rate of the soils. Protect infiltration trenches from sedimentation during construction. If sedimentation does occur, all sediment shall be removed prior to final filling and grading.

SECTION 7 – CONSTRUCTION PHASING

The recommended construction sequence includes the following steps in this order. However, some portions of the steps may be performed out of sequence as conditions require.

BMP Sequence of Construction

1. Stake and flag limits of disturbance.
2. Install tree protection.
3. Install temporary construction fencing and access gates as necessary.
4. Install inlet protection.
5. Excavate for building pad and install building foundation.
6. Install silt fence(s) on the site (clear only those areas necessary to install silt fence).
7. Install permanent utilities, stormwater drainage systems, etc.

8. Prepare site for paving.
9. Pave site.
10. Stabilize site with final landscaping per plans.
11. Remove temporary erosion and sediment control (TESC) measures after site is stabilized. Silt fence protecting the bioretention cell shall remain in place until grass is established in its tributary area.

SECTION 8 – FINANCIAL/OWNERSHIP RESPONSIBILITIES

Mark Houtchens is the site owner and financially responsible party for the construction work. The contractor is responsible to install and maintain erosion control BMPs and prevent sediment-laden stormwater from leaving the site and is liable for any such discharges.

SECTION 9 – ENGINEERING CALCULATIONS

This project does not propose any engineered temporary sediment control BMPs, therefore no engineering calculations are required.

SECTION 10 – CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL)

The contractor must designate a CESCL to be available 24/7 for construction erosion and sediment control throughout the duration of the project.

APPENDIX A

NRCS Web Soil Survey Report, Retrieved July 2022

(See next sheet)

United States Department of Agriculture

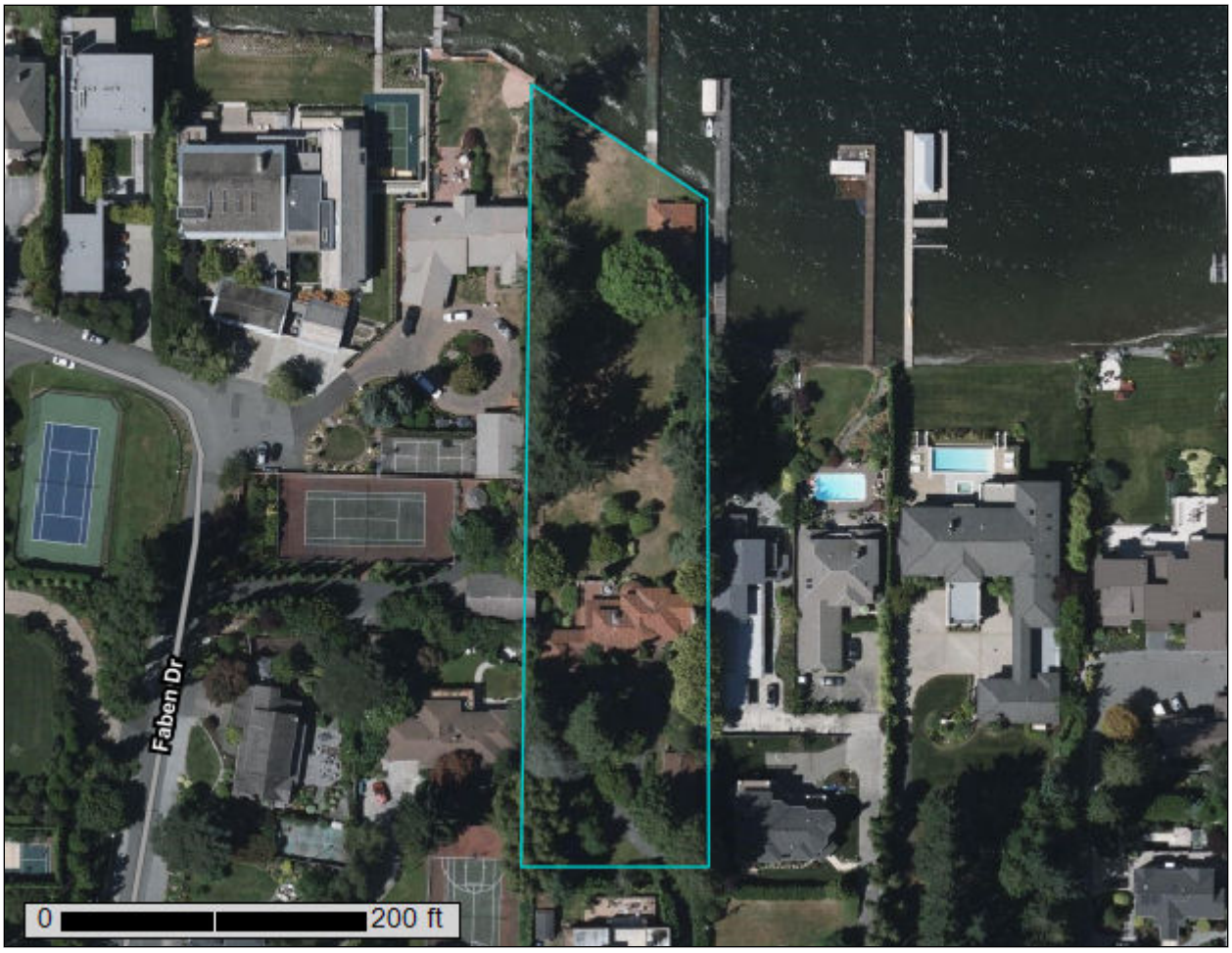
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for King County Area, Washington

Houtchens Residence



July 25, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Houtchens Residence)

Map Scale: 1:911 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 40 80 160 240

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: King County Area, Washington
Survey Area Data: Version 17, Aug 23, 2021

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

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

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

Map Unit Legend (Houtchens Residence)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KpB	Kitsap silt loam, 2 to 8 percent slopes	1.3	99.8%
Totals for Area of Interest		**1.3**	**100.0%**

Map Unit Descriptions (Houtchens Residence)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

King County Area, Washington

KpB—Kitsap silt loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1hmt9
Elevation: 0 to 590 feet
Mean annual precipitation: 37 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 160 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Kitsap and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kitsap

Setting

Landform: Terraces
Parent material: Lacustrine deposits with a minor amount of volcanic ash

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 24 inches: silt loam
H3 - 24 to 60 inches: stratified silt to silty clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Ecological site: F002XA004WA - Puget Lowlands Forest
Forage suitability group: Soils with Few Limitations (G002XN502WA)
Other vegetative classification: Soils with Few Limitations (G002XN502WA)
Hydric soil rating: No

Minor Components

Alderwood

Percent of map unit: 10 percent
Hydric soil rating: No

Bellingham

Percent of map unit: 3 percent

Landform: Depressions
Other vegetative classification: Wet Soils (G002XN102WA)
Hydric soil rating: Yes

Seattle

Percent of map unit: 1 percent
Landform: Depressions
Other vegetative classification: Wet Soils (G002XN102WA)
Hydric soil rating: Yes

Tukwila

Percent of map unit: 1 percent
Landform: Depressions
Other vegetative classification: Wet Soils (G002XN102WA)
Hydric soil rating: Yes

References

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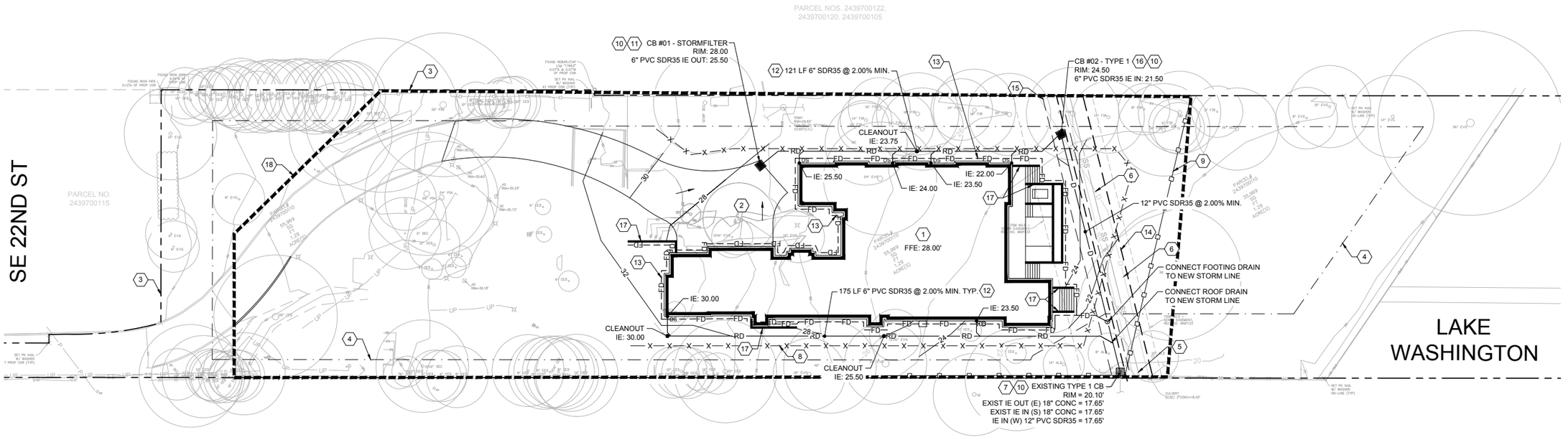
APPENDIX B

Grading and Drainage Plans

(See next sheet)



SHEET NOTES

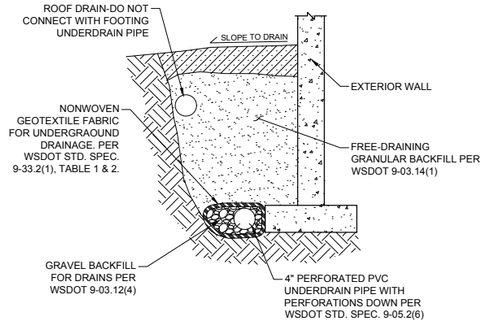
1. NEW SINGLE FAMILY HOUSE. SEE ARCHITECTURAL PLANS.
2. DRIVEWAY. SEE ARCHITECTURAL PLANS.
3. PROPERTY LINE.
4. BUILDING SETBACK.
5. RE-ROUTED SANITARY SEWER LINE SHOWN FOR REFERENCE ONLY. IMPROVEMENTS BY OTHERS.
6. EXISTING 12" STORM DRAINAGE LINE.
7. CONNECT STORM DRAIN LINE TO EXISTING ON-SITE CATCH BASIN.
8. TREE PROTECTION. SEE ARCHITECTURAL PLANS.
9. SILT FENCE. SEE ARCHITECTURAL PLANS.
10. INLET PROTECTION PER DETAIL. (4/C-301)
11. 2 CARTRIDGE CATCHBASIN STORMFILTER PER DETAIL. (3/C-301)
12. ROOF DRAIN PER DETAILS. (1/C-201) (2/C-201)
13. FOOTING DRAIN PER DETAIL. (2/C-201)
14. 10' SEWER EASEMENT, TYP.
15. 7' STORM EASEMENT, TYP.
16. CONNECT NEW 12" PVC SDR35 STORM DRAIN LINE TO EXISTING 12" STORM LINE. CONTRACTOR TO VERIFY EXACT LOCATION, PIPE TYPE, AND INVERT ELEVATION PRIOR TO CONSTRUCTION.
17. PROPOSED RETAINING WALL SHOWN FOR REFERENCE ONLY. SEE ARCHITECTURAL PLANS FOR RETAINING WALL DESIGN.
18. CLEARING LIMITS.

GENERAL NOTES

1. LAWN AND LANDSCAPE AREAS SHALL MEET THE POST-CONSTRUCTION SOIL QUALITY AND DEPTH REQUIREMENTS SPECIFIED ON THE PLAN SET PRIOR TO FINAL INSPECTION OF THE PROJECT. PROPOSED LAWN AND LANDSCAPE AREAS SHALL RECEIVE TOPSOIL AMENDED WITH CEDAR GROVE FINE GRADE COMPOST OR OTHER COMPOST THAT MEETS WSDOT STANDARD SPEC 9-14.5(B) AT A RATE OF 0.01 CY PER SQUARE FOOT. SEE DETAIL FOR POST CONSTRUCTION SOIL QUALITY AND DEPTH SECTION. (5/C-301)
2. PROVIDE A MINIMUM 2 INCH LIFT OF MULCH IN ALL PLANTING AREAS FOR EROSION CONTROL.
3. PROPOSED LAWN AREAS SHALL RECEIVE TOPSOIL AMENDED WITH CEDAR GROVE FINE GRAVE COMPOST OR OTHER COMPOST THAT MEETS WSDOT STANDARD SPEC 9-14.5(B) AT A RATE OF 0.005 CY PER SQUARE FOOT. SEE DETAIL FOR POST CONSTRUCTION SOIL QUALITY AND DEPTH SECTION. (5/C-301)

TESC NOTES

1. INLET PROTECTION SHALL BE PROVIDED FOR ALL CATCH BASINS WITHIN 500 FT OF THE PROJECT SITE DURING CONSTRUCTION.



FOOTING AND ROOF DRAIN SECTION (1)

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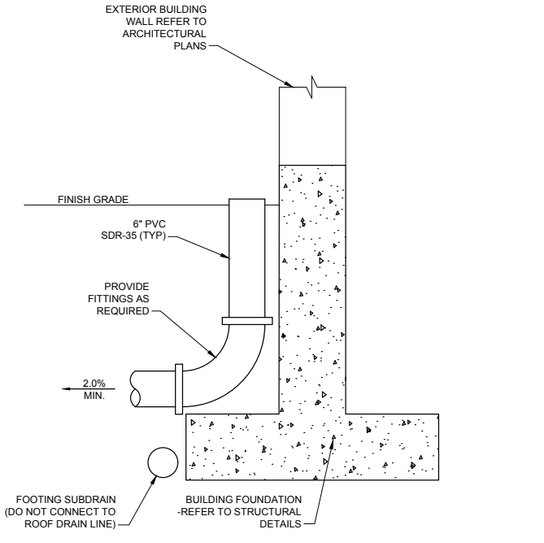

DOWNSPOUT CONNECTION (2)

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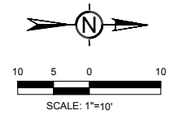

SCALE: 1"=10'

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JUSTIN JAN GOROCH STATE OF WASHINGTON 43432 REGISTERED PROFESSIONAL ENGINEER

PROJECT
HOUTCHENS RESIDENCE
6024 SE 22ND ST
MERCER ISLAND, WA 98040

REVISIONS

DATE
08.05.2022

BCRA NO.
22135

DRAWN BY: KSS DESIGNED BY: KSS

REVIEWED BY: JJG

SHEET TITLE
GRADING AND DRAINAGE PLAN

SHEET
C-101

DATE PLOTTED: 8/5/2022 2:23:38 PM FILENAME: C-201 GRADING DRAINAGE AND UTILITIES.DWG BY: —

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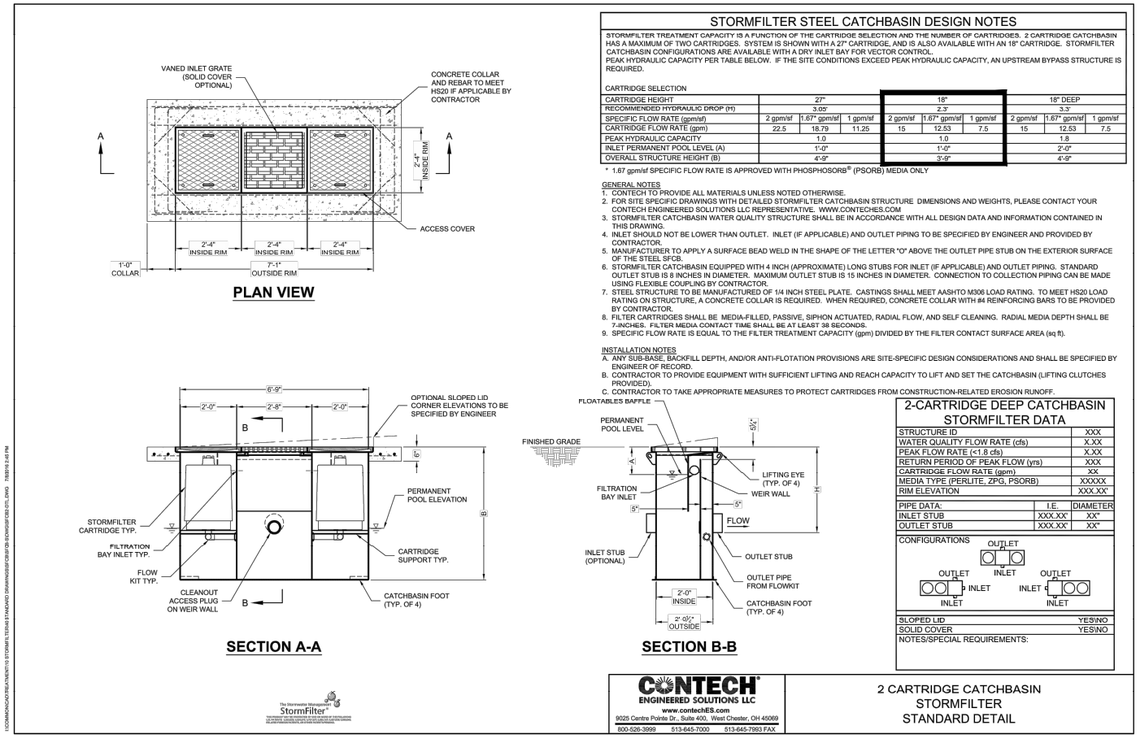

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 2 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF TWO CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL.
PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

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

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

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

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

2-CARTRIDGE DEEP CATCHBASIN STORMFILTER DATA

STRUCTURE ID		XXX
WATER QUALITY FLOW RATE (cfs)		X.XX
PEAK FLOW RATE (<1.8 cfs)		X.XX
RETURN PERIOD OF PEAK FLOW (yrs)		XXX
CARTRIDGE FLOW RATE (gpm)		XX
MEDIA TYPE (PERLITE, ZPG, PSORB)		XXXXX
RIM ELEVATION		XXX.XX'
PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"

CONFIGURATIONS: OUTLET / INLET / OUTLET / INLET / INLET / OUTLET / INLET

SLOPED LID	YES/NO
SOLID COVER	YES/NO
NOTES/SPECIAL REQUIREMENTS:	

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800-526-3999 513-645-7000 513-645-7993 FAX

2 CARTRIDGE CATCHBASIN STORMFILTER STANDARD DETAIL

CATCHBASIN STORMFILTER

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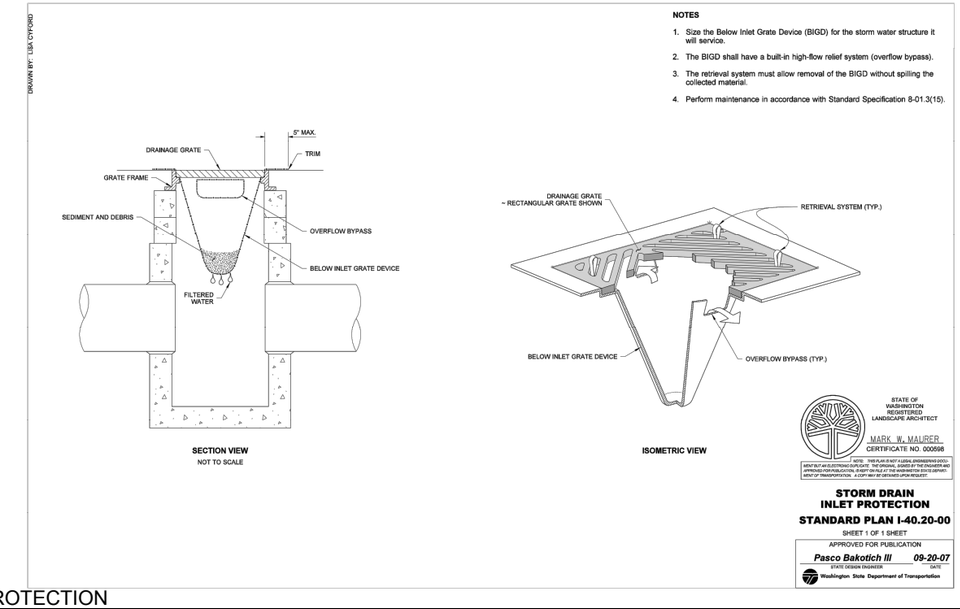
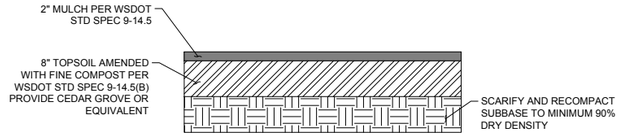


INLET PROTECTION

SCALE: NTS 4



NOTE: CONTRACTOR SHALL AMEND STOCKPILED TOP SOILS WITH COMPOST PER DETAIL AND PLACE IN ALL DISTURBED LANDSCAPE AREAS.

POST CONSTRUCTION SOIL QUALITY AND DEPTH

SCALE: NTS 5

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SHEET TITLE
CONSTRUCTION DETAILS

SHEET
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