

Al Lang, *Mayor*
John Bickerman, *Vice Mayor*
Vicky Taplin, *Secretary*
Fred Cecere, *Treasurer*
Kathy Strom, *Community Liaison*

Notice of Water Drainage Plan Submission

To: Residents Abutting and Confronting 4313 Elm Street
Fr: Dave Walton, Town of Chevy Chase
Date: February 3, 2016
Re: Water Drainage Plan Submission

The Town of Chevy Chase has received a water drainage plan and report for the construction of a new house at 4313 Elm Street. Chapter 28 of the Town Code requires that a water drainage plan be submitted if new impervious surface created by a development activity and all other development activities within the 2 year period prior to filing an application exceeds 700 square feet. According to the application, the house and associated structures will result in 3,090 square feet of new impervious area.

If approved, the proposed on-site drainage facilities will consist of three drywells as shown on the attached site plan. The drywells are designed to collect water runoff from the downspouts or from a surface drain and retain it on site until it is absorbed into the ground. According to the application, the system will provide a total storage volume of 429 cubic feet. According to calculations provided with the application, the total volume required to be infiltrated is 267.8 cubic feet. The calculations are under review by the Town's consulting engineer.

Residents are free to submit comments regarding the proposed water drainage plan. Please submit any comments on the proposed plan by Thursday, February 11. The Town will provide these comments to the Town engineer. The Town Attorney has advised that the engineer is not obligated to incorporate these comments into his review if the plan otherwise meets the requirements of the water drainage ordinance; however, staff has instructed the engineer to give due consideration to any comments received.

The plan and report are available for public inspection in the Town Office between 8:30 a.m. and 5:00 p.m. Monday through Friday (please call ahead if you would like to review them).

Attachment: Water Drainage Report, Water Drainage Site Plan

Sent To: 4311 Elm Street, 4315 Elm Street

CC: Town Council



Experience you can build on.

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10 south bentz street
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info@casengineering.com
www.casengineering.com

civil • surveying • land planning

WATER DRAINAGE COMPUTATIONS

The Town of
Chevy Chase

**4313 ELM STREET
LOT 20, BLOCK L
SECTION 8-A, CHEVY CHASE**

PREPARED FOR:

JRK Contractors LLC
Attn: Fernando Guedes, Jr.
4915 Auburn Avenue, Suite 302
Bethesda, Maryland 20815
(240) 338-1123 Phone

PREPARED BY:

CAS Engineering
10 South Bentz Street
Frederick, Maryland 21701
(301) 703-2345 phone
(301) 607-8045 fax
Attn: Brent D. Allgood

SUBMITTED TO:

The Town of Chevy Chase
4301 Willow Lane
Chevy Chase, Maryland 20815
Attn: William Bissell, P.E.
301-654-7144

December, 2015



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NARRATIVE

The subject property, 4313 Elm Street, Chevy Chase is shown on Tax Map HN 342 as Lot 20, Block L, Section 8-A, Chevy Chase. The 9,549 square foot lot is currently zoned R-60. The property lies along the north side of Elm Street approximately 125-ft east of 44th Street. A driveway easement for the benefit of Lot 20 exists 4-ft on both sides of the subject property and adjacent property, Lot 21, Block L and extends along the shared property line 85-ft. The lot slopes from south to north.

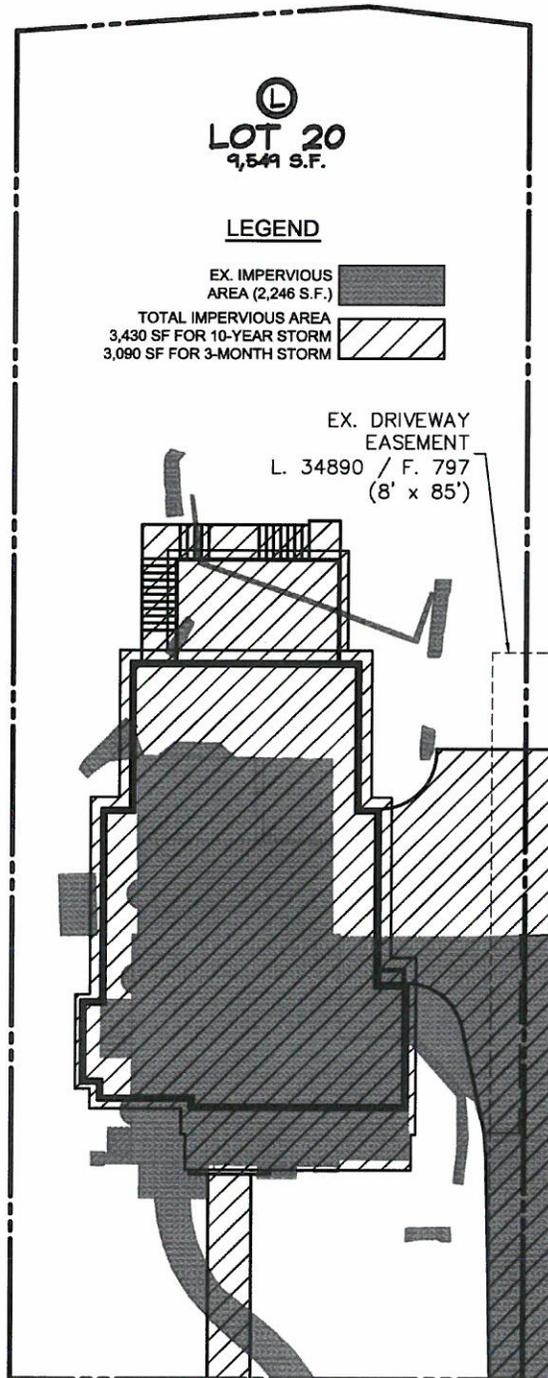
Existing improvements include a single-family detached dwelling, timber retaining walls, and a concrete driveway. The existing house and retaining walls are to be removed while the existing concrete driveway is to remain. The existing improvements constitute approximately 2,246 square feet of impervious area.

Proposed improvements include a single family detached dwelling, covered porches, lead walk, and additional driveway area added to the existing concrete driveway. The proposed improvements constitute 3,090 square feet of impervious area. Total improvements constitute 3,430 square feet and include a portion of the existing concrete driveway that is to remain.

The following calculations along with the soils report (attached hereto as Appendix A) will support the proposed water drainage design. All of the proposed downspouts will be piped directly to the proposed Water Drainage Systems "A", "B" or "C". Drainage System "A" is located in the front yard, while Drainage Systems "B" and "C" are located in the rear yard. Drainage System "A" will consist of a gravel drywell. Drainage Systems "B" and "C" will contain Raintank module units. Each system will include a pop-up emitter which will serve as the overflow release for larger rainfall. These drywells will provide the necessary storage volume for the proposed 3-month storm, which is greater than the runoff difference between the existing and proposed 10-year storms. Total storage volume required by the town is 267.8 cubic feet. As designed, water drainage systems "A", "B" and "C" will provide 429.0 cubic feet, thus exceeding the minimum Town requirements. These Best Management practices along with the placement of topsoil on all disturbed areas, prior to seeding or sodding, will provide control for the 3-month storm runoff.

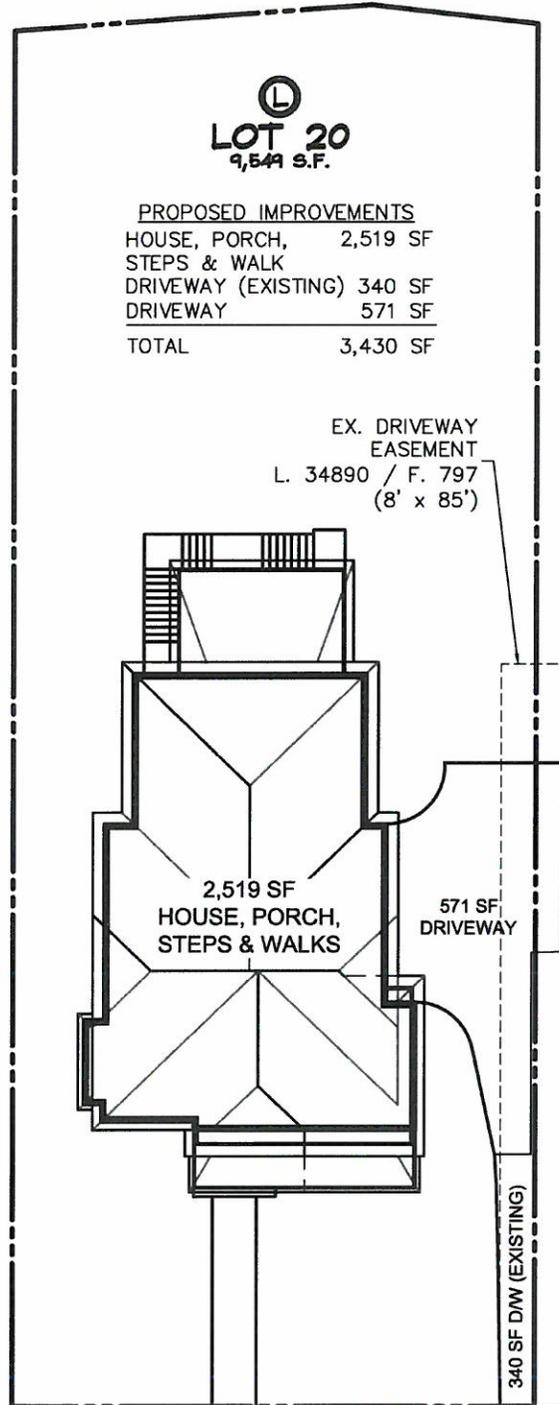
ANALYSIS OF ON-SITE DRAINAGE AREAS

Existing vs. Proposed Conditions



ANALYSIS OF ON-SITE DRAINAGE AREAS

Existing Conditions





ANALYSIS OF ON-SITE DRAINAGE AREAS

Existing Conditions

IMPROVEMENT/ AREA	AREA (Square Feet)	CURVE NUMBER (CN)
House, Porch, Steps, Walk & Wall	1,571 SF	98
Driveway	675 SF	98
Green Space	1,184 SF *	75
TOTAL	IMPERVIOUS AREA 2,246 SQUARE FEET	

* Green space area equates to difference between existing and proposed impervious areas

DETERMINE Q_{10-year}, given P = 5.1 inches

$$Q_{10\text{-year}} = \frac{(P - 0.2S)^2}{(P + 0.8S)} \qquad S = \frac{1000}{CN} - 10 = (1000/98) - 10 = 0.20$$

$$Q_{10\text{-year}} = \frac{((5.1 - 0.2(0.20))^2}{((5.1 + 0.8(0.20))} = 4.87 \text{ INCHES}$$

Q_{10-year} = 4.87 INCHES (from impervious areas)

$$Q_{10\text{-year}} = \frac{(P - 0.2S)^2}{(P + 0.8S)} \qquad S = \frac{1000}{CN} - 10 = (1000/75) - 10 = 3.33$$

$$Q_{10\text{-year}} = \frac{((5.1 - 0.2(3.33))^2}{((5.1 + 0.8(3.33))} = 2.53 \text{ INCHES}$$

Q_{10-year} = 2.53 INCHES (from grass areas)



DETERMINE REQUIRED RETENTION VOLUME, $V_{10\text{-year}}$

$$V_{10\text{-year}} = Q_{10\text{-year}} \times \text{IMPERVIOUS AREA}$$

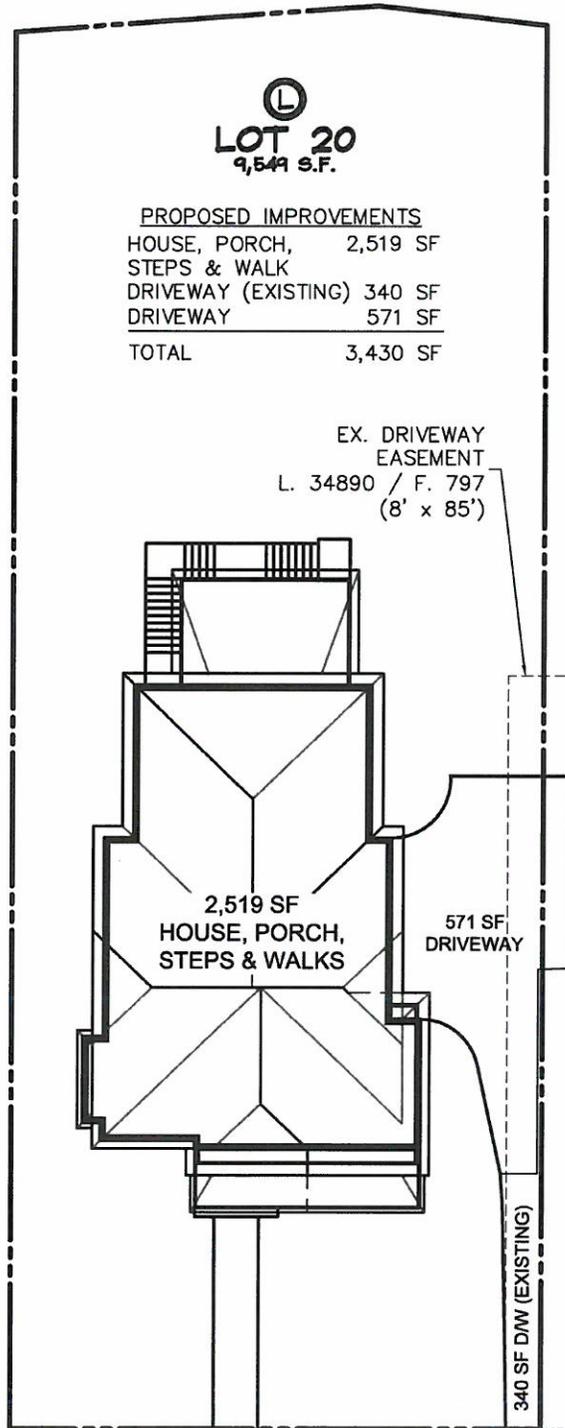
$$= 4.87 \text{ INCHES} \times 2,246 \text{ SF} \times 1 \text{ FT} / 12 \text{ INCHES} = 911.5 \text{ CF}$$

$$= 2.53 \text{ INCHES} \times 1,184 \text{ SF} \times 1 \text{ FT} / 12 \text{ INCHES} = 249.6 \text{ CF}$$

$$V_{10\text{-year}(\text{total})} = \mathbf{1,161.1 \text{ CUBIC FEET}}$$

ANALYSIS OF ON-SITE DRAINAGE AREAS

Proposed Conditions





ANALYSIS OF ON-SITE DRAINAGE AREAS

Proposed Conditions

IMPROVEMENT/ AREA	AREA (Square Feet)	CURVE NUMBER (CN)
House, Porch, Steps & Walk	2,519 SF	98
Driveway (Proposed)	571 SF	98
Driveway (Existing)	340 SF	98
TOTAL	TOTAL PROPOSED IMPERVIOUS AREA (For 3-Month Storm) 3,090 SQUARE FEET	98
TOTAL	TOTAL IMPERVIOUS AREA (For 10-Year Storm) 3,430 SQUARE FEET	98

DETERMINE Q_{3-Month}, given P = 1.25 inches

$$Q_{3\text{-Month}} = \frac{(P - 0.2S)^2}{(P + 0.8S)} \quad S = \frac{1000}{CN} - 10 = (1000/98) - 10 = 0.20$$

$$Q_{3\text{-Month}} = \frac{((1.25 - 0.2(0.20))^2}{((1.25 + 0.8(0.20))} = 1.04 \text{ INCHES}$$

$$Q_{3\text{-Month}} = 1.04 \text{ INCHES}$$

DETERMINE Q_{10-year}, given P = 5.1 inches

$$Q_{10\text{-year}} = \frac{(P - 0.2S)^2}{(P + 0.8S)} \quad S = \frac{1000}{CN} - 10 = (1000/98) - 10 = 0.20$$

$$Q_{10\text{-year}} = \frac{((5.1 - 0.2(0.20))^2}{((5.1 + 0.8(0.20))} = 4.87 \text{ INCHES}$$

$$Q_{10\text{-year}} = 4.87 \text{ INCHES}$$



ANALYSIS OF ON-SITE DRAINAGE AREAS

Proposed Conditions

DETERMINE REQUIRED RETENTION VOLUME, $V_{3\text{-Month}}$ & $V_{10\text{-year}}$

$$\begin{aligned} V_{3\text{-Month}} &= Q_{3\text{-Month}} \times \text{IMPERVIOUS AREA} \\ &= 1.04 \text{ INCHES} \times 3,090 \text{ SF} \times 1 \text{ FT} / 12 \text{ INCHES} = 267.8 \text{ CF} \end{aligned}$$

$$V_{3\text{-Month}} = \mathbf{267.8 \text{ CUBIC FEET}}$$

$$\begin{aligned} V_{10\text{-year}} &= Q_{10\text{-year}} \times \text{IMPERVIOUS AREA} \\ &= 4.87 \text{ INCHES} \times 3,430 \text{ SF} \times 1 \text{ FT} / 12 \text{ INCHES} = 1,392.0 \text{ CF} \end{aligned}$$

$$V_{10\text{-year}} = \mathbf{1,392.0 \text{ CUBIC FEET}}$$

DETERMINE INCREASE IN RUNOFF FOR 10-YEAR STORM

$$V_{10\text{-year}(\text{EX})} = \mathbf{1,161.1 \text{ CUBIC FEET}}$$

$$V_{10\text{-year}(\text{PROP})} = \mathbf{1,392.0 \text{ CUBIC FEET}}$$

$$V_{10\text{-year}(\text{PROP})} - V_{10\text{-year}(\text{EX})} = 1,392.0 - 1,161.1 = 230.9 \text{ CUBIC FEET}$$

DESIGN VOLUME TO RETAIN

Retain the larger of **267.8 cubic feet ($V_{3\text{-Month}}$)** or **230.9 cubic feet ($V_{10\text{-year}}$ Difference).**



STORM DRAINAGE FACILITY DESIGN

Design Storage Volume = $V_{\text{DESIGN}} = 267.8$ CUBIC FEET

DETERMINE VOLUME TO BE RETAINED BY GRAVEL DRYWELLS

Soil report prepared by ECS Mid-Atlantic, LLC (See Attached)

Soil Test Location "SWM-1" has an infiltration rate of 0.489 in/hour at 8.2-feet deep.

One gravel drywell will be located in the front yard that corresponds to infiltration test "SWM-1".

Drywell A

8.7' (L) x 6.5' (W) x 5.0' (H) x 0.40 (void ratio)

Storage Provided = **113.1 C.F.**

Total Storage Provided by Drywells A = $V_{\text{PROVIDED}} = 113$ C.F.

Soil Test Location "SWM-2" has an infiltration rate of 0.75 in/hour at 8.0-feet deep. Two (2) RankTank™ Module drywells will be located in the rear yard that correspond to infiltration test "SWM-2".

Drywell B

34 **Single** Modules x 4.22 cubic feet / module

Storage Provided = **144 C.F.**

Drywell C

14 **Triple** Modules x 12.28 cubic feet / module

Storage Provided = **172 C.F.**

Total Storage Provided by Drywells B & C = $V_{\text{PROVIDED}} = 316$ C.F.

Total Storage Provided by all devices = $V_{\text{PROVIDED}} = 429$ C.F.

Refer to Civil Plans for additional information.



STORM DRAIN PIPE DESIGN

Use the Rational Method to determine Q_{10} for roof drain pipe

$$Q_{10} = C \times I_{10} \times A$$

Assume time of concentration, $T_c = 5$ minutes

$$I_{10} = 7.07 \text{ in /hour}$$

$C = 0.90$ (roof surface, 100% impervious)

$A = 915$ square feet = 0.021 acres (largest combined roof area conveyed to drywell)

$$Q_{10} = C \times I_{10} \times A = 0.9 \times 7.07 \times 0.021 = 0.13 \text{ CFS}$$

$$Q_{10} = 0.13 \text{ CFS}$$

The runoff from largest roof surface generated from the 10-year storm is 0.13 CFS.

Design roof drain pipe to convey $Q_{10} = 0.13 \text{ CFS}$. Assume a minimum slope of 2%.



FlowMaster™ Computation

CIRCULAR CHANNEL ANALYSIS & DESIGN SOLVED WITH MANNING'S EQUATION

OPEN CHANNEL – UNIFORM FLOW

Worksheet Name: 4313 Elm Street

Comment: 4" Schedule 40 PVC roof drains

Solve for Actual Depth

Given Input Data:

Diameter	0.33 ft (4" PVC)
Slope	0.02 ft/ft (2% Min. Slope)
Manning's n	0.013
Discharge	0.13 cfs (see Q ₁₀ calculation, page 10)

Computed Results:

Depth	0.16 ft
Velocity	3.06 fps
Flow Area	0.04 sf
Critical Slope	0.0101 ft/ft
Critical Depth	0.20 ft
Percent Full	49.77%
Froude Number	1.50
Full Capacity	0.26 cfs
QMAX @ .94D	0.28 cfs

Open Channel Flow Module, Version 3.12 (c) 1990
Haestad Methods, Inc. * 37 Brookside Road, Waterbury, Ct 06708

A 4" schedule 40 PVC pipe will be sufficient to convey the 10-year runoff from the largest combined roof area.

Provide 4" PVC for individual downspouts.



MAINTENANCE

Drywell Maintenance

Drywells will be installed with an observation well which should be monitored quarterly for the first year and annually thereafter.

Contributing runoff originates from roofed surfaces. All gutters will be equipped with gutter drain filters (or similar device) to prevent leaves from entering the drywells. Additionally, cleanouts will be provided along longer pipe runs. All upstream structures access points must be monitored for accumulation of sediment and debris on the same schedule as stated above. All accumulation of sediment and debris should be removed promptly.

Drywell Maintenance Schedule

During the first year after construction of the drywells, the system(s) should be monitored on a quarterly basis as well as after significant storms. A log book shall be maintained and shall indicate: date, time, and depth of water in the observation well at 8 to 12 hour intervals for a 48-hour period. Once the performance characteristics of the system have been verified, and warranted, the monitoring schedule can be reduced to an annual basis.

Sediment build-up inside the drywell and in all upstream storm drain structures should be monitored on the same schedule as described above. Sediment deposits shall be removed on a quarterly basis from all upstream structures including gutters. Once the performance characteristics of the system have been verified, and warranted, the sediment removal schedule can be reduced to an annual basis.

Ponding, standing water, or algal growth on the top of a drywell may indicate failure due to sedimentation in the gravel media. If water ponds for more than 48 hours after a major storm or more than six inches of sediment has accumulated the gravel media should be excavated and replaced.

Repair and / or replacement of drywells to be in accordance with Town, County and State requirements applicable at the time of the inspection.

STORM DRAINAGE COST ESTIMATE

4313 Elm Street

CONSTRUCTION COST ESTIMATE FOR
STORMWATER DRAINAGE SYSTEM

ITEM	QUANTITY	INSTALLED	COST
<i>SWM Facility</i>			
GRAVEL DRYWELLS	1	\$400.00 EA	\$400.00
RAINTANK SINGLE MODULES	34	\$25.00 EA	\$850.00
RAINTANK TRIPLE MODULES	12	\$80.00 EA	\$960.00
		TOTAL	\$2,210.00

APPENDIX - SOILS REPORT



August 24, 2015

Mr. Jeffrey Robertson
CAS Engineering
108 West Ridgeville Boulevard
Suite 101
Mount Airy, Maryland 21771

ECS Job No.: 13-7161

Reference: Report of Subsurface Exploration and Infiltration Test Results, CAS Project No. 15-162, 4313 Elm Street, Chevy Chase, Maryland

Dear Mr. Robertson:

As requested, ECS Mid-Atlantic, LLC (ECS) has completed the soil boring and infiltration testing for the proposed stormwater management (SWM) facilities at the above referenced project.

Soil Conditions

Subsurface conditions within the proposed stormwater management areas were evaluated with two (2) soil test borings drilled to a maximum depth of 15 feet below the existing ground surface.

Six inches of topsoil was encountered at each of the boring locations. Natural soils were encountered below the surface cover and were identified as SILT with Sand (ML), Sandy SILT (ML), Silty SAND (SM) and Silty SAND with Gravel (SM). Some of the natural soils contained mica and trace amounts of clay and gravel. Based on Standard Penetration Test (SPT) results, the natural soils encountered ranged from loose to very dense. The color of these natural materials was light brown, grayish brown and reddish brown and the moisture content of the soils was characterized as moist.

More detailed descriptions of the soils encountered are provided on the boring log attached to this letter.

Groundwater Observations

Groundwater was not encountered during drilling of the soil borings. Observations for groundwater were made during sampling and upon completion of the drilling operations at the boring locations. In auger drilling operations, water is not introduced into the boreholes, and the groundwater position can often be determined by observing water flowing into or out of the borehole. Furthermore, visual observation of the soil samples retrieved during the auger drilling exploration can often be used in evaluating the groundwater conditions.

The highest groundwater observations are normally encountered in winter and early spring. Variations in the location of the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, and other factors not immediately apparent at the time of this exploration. Perched water may also be encountered at the interface of coarse and fine-grained soils.

Infiltration Testing

In order to evaluate potential infiltration at this property, two in-situ infiltration tests were performed on August 20, 2015. The tests were conducted at depths of about 8 feet below existing grades. The test locations were selected and located in the field by ECS.

The in-situ infiltration testing consisted of auguring a soil probe down to the test depth and installing a solid length of five inch diameter PVC pipe. The pipe was then presoaked for 24 hours by filling the pipe with approximately two feet of water. After the initial filling of the pipe, infiltration testing was completed by monitoring the drop in the water level at 60-minute intervals for four hours. The rate of drop over the four total hours is considered the infiltration rate. The test results are as shown in the table on the following page.

Test Location	Test Depth (ft)	Soil Encountered at Test Depth	Field Infiltration Rate (in/hr)
SWM-1	8.2	Medium Dense Silty SAND (SM)	0.48
SWM-2	8	Loose SILT with Sand (ML)	0.75

The results reported above are based on field measurements. We recommend that the design rate be calculated as 2/3 of the field rate to account for siltation over time.

This report has been prepared to aid in the evaluation of this site and to assist the design team with the design of the on-site stormwater management facilities. The report scope is limited to this specific project and the location described. The project description represents our current understanding of the significant aspects of the proposed improvements relevant to the geotechnical considerations.

We appreciate the opportunity to have provided geotechnical engineering services on this project. Should you have questions regarding our findings or need additional consultations, please do not hesitate to contact our office.

Respectfully,

ECS MID-ATLANTIC, LLC

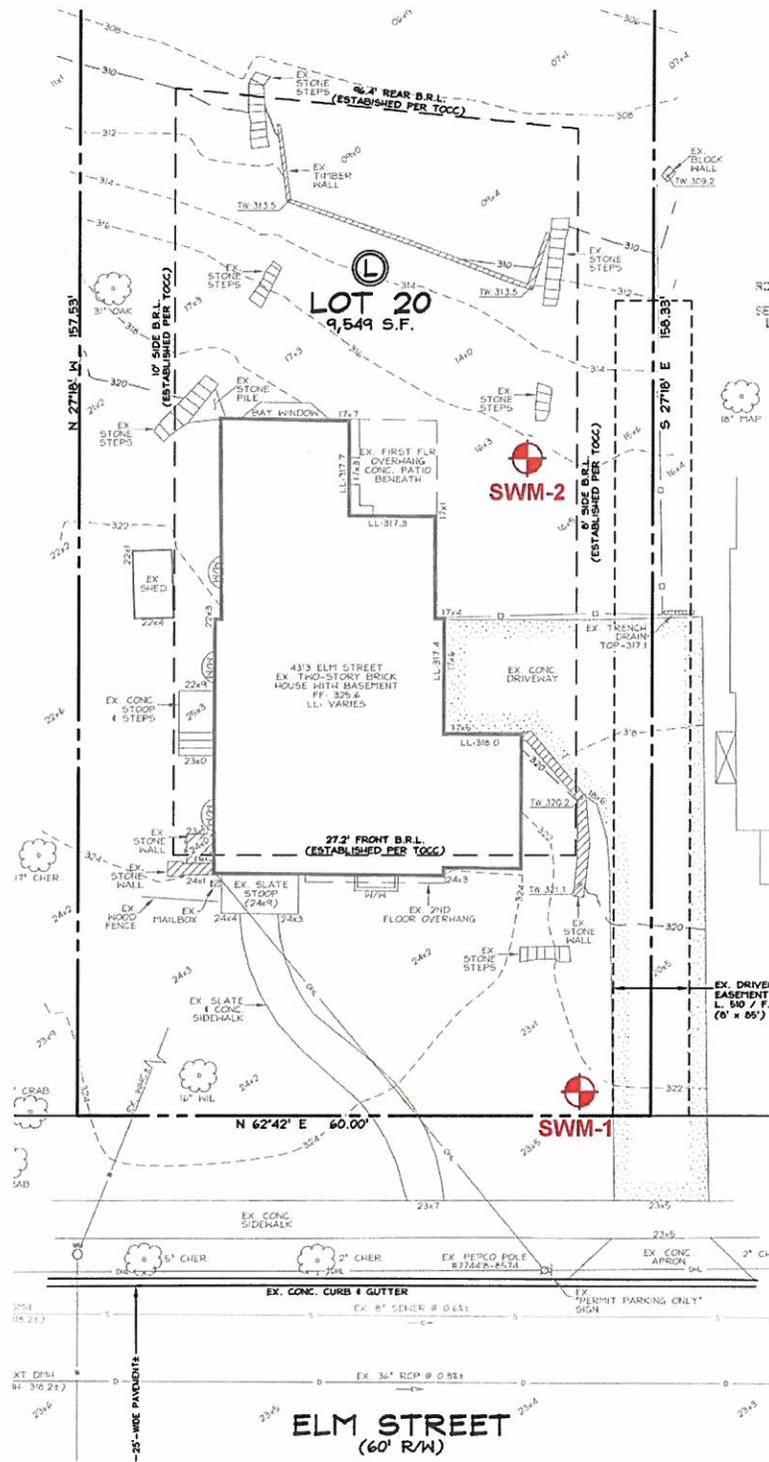


Brian A. Meley, P.G.
Geotechnical Project Manager



Jeffrey A. McGregor, P.E.
Principal Engineer

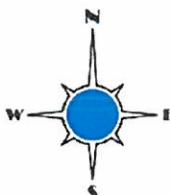
Enclosure: Boring Location Diagram (1 page)
Boring Logs (2 pages)



 TEST LOCATION			



BORING LOCATION DIAGRAM
FREDERICK OFFICE
5112 PEGASUS COURT
SUITE S
FREDERICK MD 21704

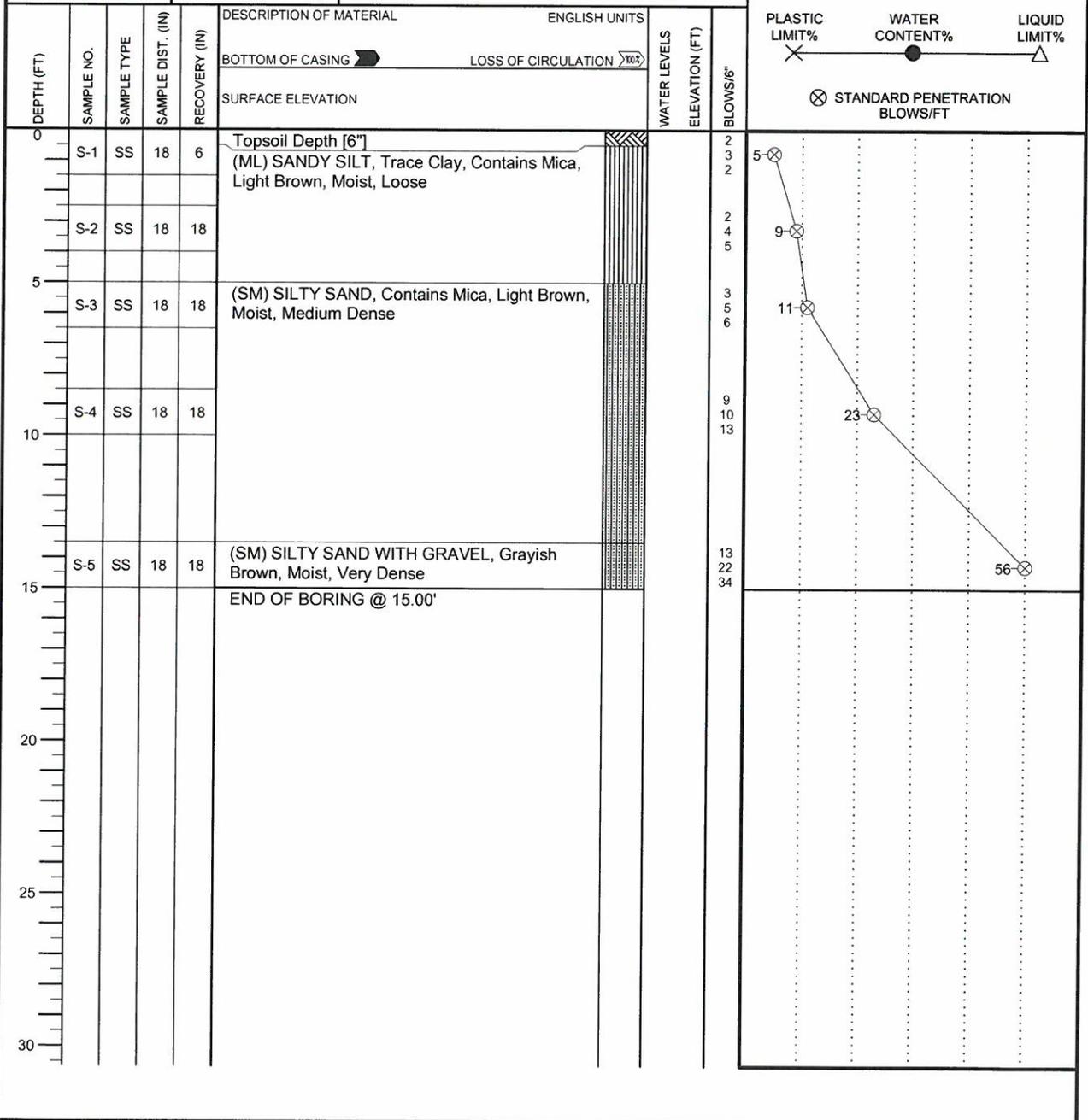


ECS PROJECT NO.13:7161
4313 ELM STREET SWM
4313 ELM STREET
CHEVY CHASE MD

CLIENT CAS Engineering	JOB # 13:7161	BORING # SWM-1	SHEET 1 OF 1	
PROJECT NAME 4313 Elm Street SWM	ARCHITECT-ENGINEER Jeffrey A. McGregor			

SITE LOCATION
4313 Elm Street, Chevy Chase, MD

NORTHING EASTING STATION



○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL Dry	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED	08/19/15	CAVE IN DEPTH @ 8.5'
WL(BCR) Dry	WL(ACR) Dry	BORING COMPLETED	08/19/15	HAMMER TYPE Auto
WL		RIG CME 55	FOREMAN K.Kersh	DRILLING METHOD HSA

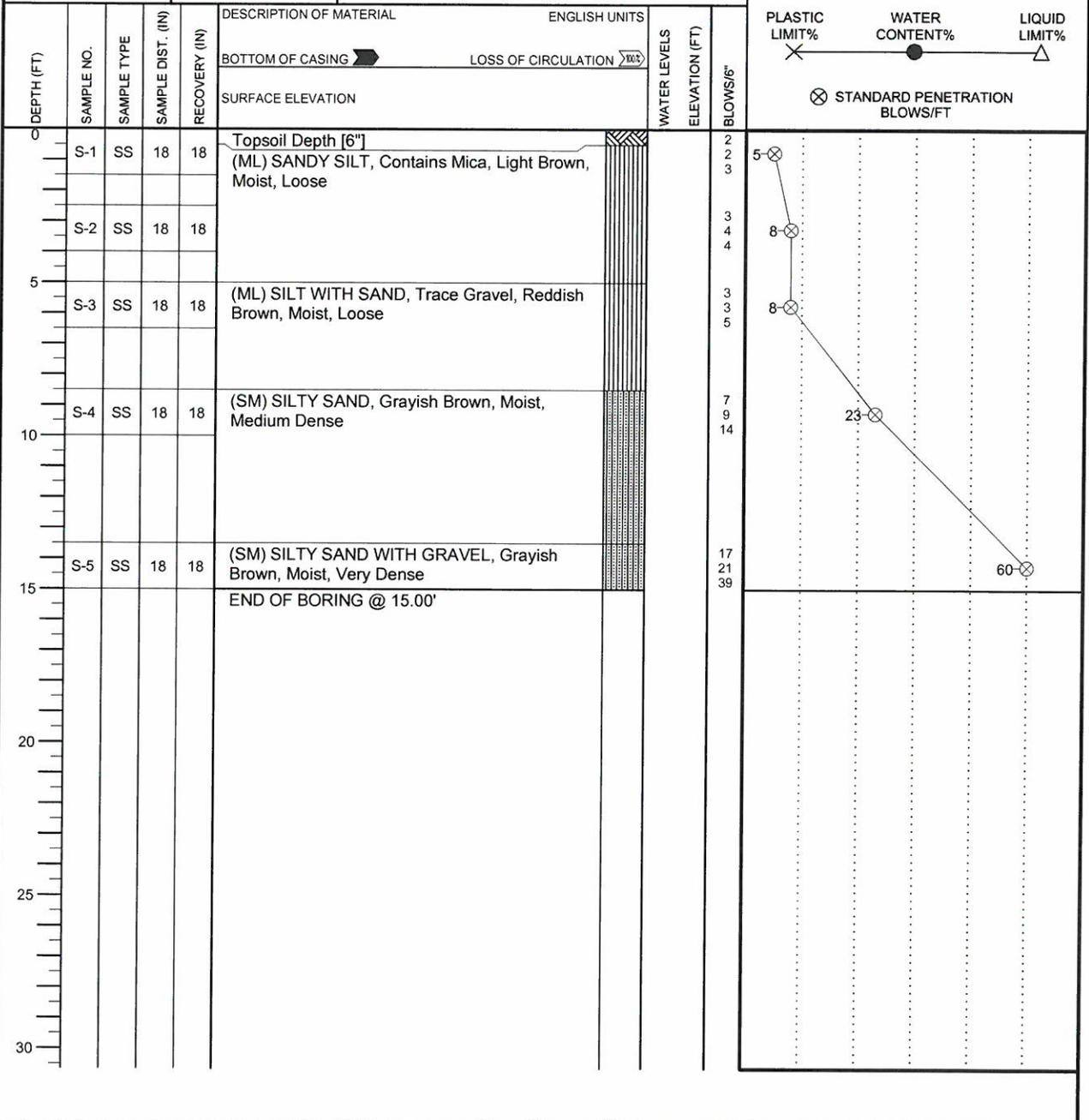
CLIENT CAS Engineering	JOB # 13:7161	BORING # SWM-2	SHEET 1 OF 1	
PROJECT NAME 4313 Elm Street SWM	ARCHITECT-ENGINEER Jeffrey A. McGregor			

SITE LOCATION
4313 Elm Street, Chevy Chase, MD

NORTHING _____ EASTING _____ STATION _____

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%
 STANDARD PENETRATION BLOWS/FT



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

<input checked="" type="checkbox"/> WL Dry WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/19/15	CAVE IN DEPTH @ 12.0'
<input checked="" type="checkbox"/> WL(BCR) Dry <input checked="" type="checkbox"/> WL(ACR) Dry	BORING COMPLETED 08/19/15	HAMMER TYPE Auto
<input checked="" type="checkbox"/> WL	RIG CME 55 FOREMAN K.Kersh	DRILLING METHOD HSA

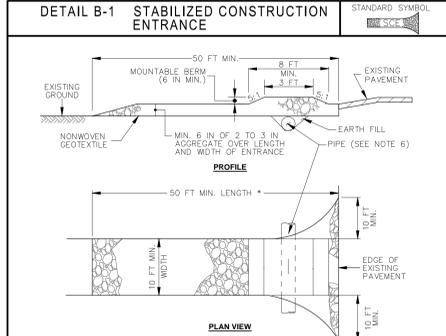
STANDARD EROSION AND SEDIMENT CONTROL NOTES

MAY 2013

- THE PERMITTEE SHALL NOTIFY THE DEPARTMENT OF PERMITTING SERVICES (DPS) FORTY-EIGHT (48) HOURS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND UNLESS WAIVED BY THE DEPARTMENT, SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING BETWEEN THEM OR THEIR REPRESENTATIVE, THEIR ENGINEER AND AN AUTHORIZED REPRESENTATIVE OF THE DEPARTMENT.
- THE PERMITTEE MUST OBTAIN INSPECTION AND APPROVAL BY DPS AT THE FOLLOWING POINTS:
 - AT THE REQUIRED PRE-CONSTRUCTION MEETING.
 - FOLLOWING INSTALLATION OF SEDIMENT CONTROL MEASURES AND PRIOR TO ANY OTHER LAND DISTURBING ACTIVITY.
 - DURING THE INSTALLATION OF A SEDIMENT BASIN OR STORMWATER MANAGEMENT STRUCTURE AT THE REQUIRED INSPECTION POINTS (SEE INSPECTION CHECKLIST ON PLAN). NOTIFICATION PRIOR TO COMMENCING CONSTRUCTION IS MANDATORY.
 - PRIOR TO REMOVAL OR MODIFICATION OF ANY SEDIMENT CONTROL STRUCTURE(S).
 - PRIOR TO FINAL ACCEPTANCE.
- THE PERMITTEE SHALL CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES PER THE APPROVED PLAN AND CONSTRUCTION SEQUENCE. SHALL HAVE THEM INSPECTED AND APPROVED BY THE DEPARTMENT PRIOR TO BEGINNING ANY OTHER LAND DISTURBANCES. SHALL ENSURE THAT ALL RUNOFF FROM DISTURBED AREAS IS DIRECTED TO THE SEDIMENT CONTROL DEVICES, AND SHALL NOT REMOVE ANY EROSION OR SEDIMENT CONTROL MEASURE WITHOUT PRIOR PERMISSION FROM THE DEPARTMENT.
- THE PERMITTEE SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO TRAVELERS PUBLIC THROUGHPHARE(S). ALL MATERIALS DEPOSITED ONTO PUBLIC THROUGHPHARE(S) SHALL BE REMOVED IMMEDIATELY.
- THE PERMITTEE SHALL INSPECT PERIODICALLY AND MAINTAIN CONTINUOUSLY IN EFFECTIVE OPERATING CONDITION. ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIME AS THEY ARE REMOVED INTO THE PROPER LOCATION. THE PERMITTEE SHALL BE RESPONSIBLE FOR IMMEDIATELY REPAIRING OR REPLACING ANY SEDIMENT CONTROL MEASURES WHICH HAVE BEEN DAMAGED OR REMOVED BY THE PERMITTEE OR ANY OTHER PERSON.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:
 - THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SHALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND
 - SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

ALL AREAS DISTURBED OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM MUST BE REFINISHED AND STABILIZED IMMEDIATELY. MAINTENANCE MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION.
- THE PERMITTEE SHALL APPLY SOIL, SEED, AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES TO ALL DISTURBED AREAS WITHIN SEVEN (7) CALENDAR DAYS AFTER STRIPPING AND GRADING ACTIVITIES HAVE CEASED ON THAT AREA. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION. ACTIVE CONSTRUCTION AREAS SUCH AS BORROW OR STOCKPILE AREAS, ROADWAY IMPROVEMENTS, AND AREAS WITHIN FIFTY (50) FEET OF A BUILDING UNDER CONSTRUCTION MAY BE EXEMPT FROM THIS REQUIREMENT, PROVIDED THAT EROSION AND SEDIMENT CONTROL MEASURES ARE INSTALLED AND MAINTAINED TO PROTECT THOSE AREAS.
- PRIOR TO REMOVAL OF SEDIMENT CONTROL MEASURES, THE PERMITTEE SHALL STABILIZE ALL CONTRIBUTORY DISTURBED AREAS WITH REQUIRED SOIL AMENDMENTS AND TOPSOIL, USING SOIL OR AN APPROVED PERMANENT SEED MIXTURE AND AN APPROVED ANCHORED MULCH. WOOD FIBER MULCH MAY ONLY BE USED IN SEEDING SEASON WHEN THE SOIL DOES NOT EXCEED 10% AND GRADING HAS BEEN DONE TO PROMOTE SHEET FLOW DRAINAGE. AREAS BROUGHT TO FINISHED GRADE DURING THE SEEDING SEASON SHALL BE PERMANENTLY STABILIZED WITHIN SEVEN (7) CALENDAR DAYS OF ESTABLISHMENT. WHEN PROPERTY IS BROUGHT TO FINISHED GRADE DURING THE SEEDING SEASON OF NOVEMBER THROUGH FEBRUARY, AND PERMANENT STABILIZATION IS FOUND TO BE IMPRACTICAL, AN APPROVED TEMPORARY SEED AND STRAW MULCH SHALL BE APPLIED TO ALL DISTURBED AREAS. THE FINAL PERMANENT STABILIZATION OF SUCH PROPERTY SHALL BE COMPLETED PRIOR TO THE FOLLOWING SEASON.
- THE SITE PERMIT, WORK MATERIALS, APPROVED S/CSH PLANS, AND TEST REPORTS SHALL BE AVAILABLE AT THE SITE FOR INSPECTION BY DULY AUTHORIZED OFFICIALS OF MONTGOMERY COUNTY.
- SURFACE DRAINAGE FLOWS OVER UNSTABILIZED CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER PERMANENT DRAINAGE FLOWS FROM TRAVELERS AREAS OR BY INSTALLING MECHANICAL DEVICES TO LOWER THE WATER DOWN SLOPE WITHOUT CAUSING EROSION. DIKES SHALL BE INSTALLED AND MAINTAINED AT THE POINT OF CUT OR FILL SLOPES UNTIL THE SLOPE AND DRAINAGE AREA TO IT ARE FULLY STABILIZED, AT WHICH TIME THEY MUST BE REMOVED AND FINAL GRADING DONE TO PROMOTE SHEET FLOW DRAINAGE. MECHANICAL DEVICES MUST BE PROVIDED AT POINTS OF CONCENTRATED FLOW WHERE EROSION IS LIKELY TO OCCUR.
- PERMANENT SHALES OR OTHER POINTS OF CONCENTRATED WATER FLOW SHALL BE STABILIZED WITHIN 3 CALENDAR DAYS OF ESTABLISHMENT WITH SOIL OR SEED WITH AN APPROVED EROSION CONTROL MATTING OR BY OTHER APPROVED STABILIZATION MEASURES.
- SEDIMENT CONTROL DEVICES SHALL BE REMOVED, WITH PERMISSION OF THE DEPARTMENT, WITHIN THIRTY (30) CALENDAR DAYS FOLLOWING ESTABLISHMENT OF PERMANENT STABILIZATION IN ALL CONTRIBUTORY DRAINAGE AREAS. STORMWATER MANAGEMENT STRUCTURES USED TEMPORARILY FOR SEDIMENT CONTROL SHALL BE CONVERTED TO THE PERMANENT CONFIGURATION WITHIN THIS TIME PERIOD AS WELL.
- NO PERMANENT CUT OR FILL SLOPE WITH A GRADE STEEPER THAN 3:1 WILL BE PERMITTED IN LAND MAINTENANCE AREAS UNLESS A SLOPE PROTECTION MEASURE IS INSTALLED AND BE PERMITTED IN NON-MAINTENANCE AREAS PROVIDED THAT THOSE AREAS ARE INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN WITH NON-MAINTENANCE GROUND COVER SPECIFIED FOR PERMANENT STABILIZATION. SLOPE GRADIENT STEEPER THAN 2:1 WILL NOT BE PERMITTED WITH VEGETATIVE STABILIZATION.
- THE PERMITTEE SHALL INSTALL A SPRINGBLOCK AT THE BOTTOM OF EACH DOWNSPOUT UNLESS THE DOWNSPOUT IS CONNECTED BY A DRAIN LINE TO AN ACCEPTABLE OUTLET.
- FOR FINISHED GRADING, THE PERMITTEE SHALL PROVIDE ADEQUATE GRADIENTS SO AS TO PREVENT WATER FROM STANDING ON THE SURFACE OF LANDS MORE THAN THIRTY-FOUR (34) HOURS AFTER THE END OF A RAINFALL, EXCEPT IN DESIGNATED DRAINAGE COURSES AND SHALE FLOW AREAS, WHICH MAY DRAIN AS LONG AS FORTY-EIGHT (48) HOURS AFTER THE END OF A RAINFALL.
- SEDIMENT TRAPS OR BASINS ARE NOT PERMITTED WITHIN 20 FEET OF A BUILDING WHICH IS EXISTING OR UNDER CONSTRUCTION. NO BUILDING MAY BE CONSTRUCTED WITHIN 20 FEET OF A SEDIMENT TRAP OR BASIN.
- ALL INLETS IN NON-SUPP AREAS SHALL HAVE ASPHALT BERTHS INSTALLED AT THE TIME OF BASE PAVING ESTABLISHMENT.
- THE SEDIMENT CONTROL INSPECTOR HAS THE OPTION OF REQUIRING ADDITIONAL SEDIMENT CONTROL MEASURES, AS DEEMED NECESSARY.
- ALL TRAP ELEVATIONS ARE RELATIVE TO THE OUTLET ELEVATION, WHICH MUST BE ON EXISTING UNDISTURBED GROUND.
- VEGETATIVE STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- SEDIMENT TRAP(S)/BASIN(S) SHALL BE CLEANED OUT AND RESTORED TO THE ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO THE POINT OF ONE-HALF (1/2) THE NET STORAGE DEPTH OF THE TRAP/BASIN (1/4 THE NET STORAGE DEPTH FOR S1-H1) OR WHEN REQUIRED BY THE SEDIMENT CONTROL INSPECTOR.
- SEDIMENT REMOVED FROM TRAP(S)/BASIN(S) SHALL BE PLACED AND STABILIZED IN APPROVED AREAS, BUT NOT WITHIN A FLOODPLAIN.
- ALL SEDIMENT BASINS AND TRAPS MUST BE SURROUNDED WITH A WELDED WIRE SAFETY FENCE. THE FENCE MUST BE AT LEAST 42 INCHES HIGH, HAVE POSTS SPACED NO FARTHER APART THAN 8 FEET, HAVE PESH OPENINGS NO GREATER THAN 6 INCHES IN WIDTH AND FOUR INCHES IN HEIGHT, WITH A MINIMUM OF 14 GAUGE WIRE. SAFETY FENCE MUST BE MAINTAINED IN GOOD CONDITION AT ALL TIMES.
- NO EXCAVATION IN THE AREAS OF EXISTING UTILITIES IS PERMITTED UNLESS THEIR LOCATION HAS BEEN DETERMINED. CALL "MISS UTILITY" AT 1-800-267-7777, 48 HOURS PRIOR TO THE START OF WORK.
- OFF-SITE SPOIL OR BORROW AREAS MUST HAVE PRIOR APPROVAL BY DPS.
- SEDIMENT TRAP/BASIN DEWATERING FOR CLEANOUT OR REPAIR MAY ONLY BE DONE WITH THE DPS INSPECTOR'S PERMISSION. THE INSPECTOR MUST APPROVE THE DEWATERING METHOD FOR EACH APPLICATION. THE FOLLOWING METHODS MAY BE CONSIDERED:
 - PUMP DISCHARGE MAY BE DIRECTED TO ANOTHER ON-SITE SEDIMENT TRAP OR BASIN, PROVIDED 1/3 OF SUFFICIENT VOLUME AND THE PUMP INTAKE IS FLOATED TO PREVENT AGITATION OR SUCTION OF DEPOSITED SEDIMENTS; OR
 - THE PUMP INTAKE MAY UTILIZE A REMOVABLE PUMPING STATION AND MUST DISCHARGE INTO AN UNDISTURBED AREA THROUGH A NON-EROSIVE OUTLET; OR
 - THE PUMP INTAKE MAY BE FLOATED AND DISCHARGE INTO A DIRT BAG (1/2 OZ. NON-NOVEN FABRIC), OR APPROVED EQUIVALENT, LOCATED IN AN UNDISTURBED BUFFER AREA.

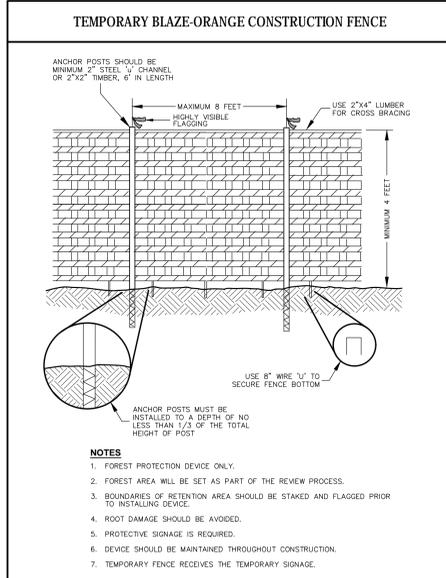
REMEMBER: DEWATERING OPERATION AND METHOD MUST HAVE PRIOR APPROVAL BY THE DPS INSPECTOR.
- THE PERMITTEE MUST NOTIFY THE DEPARTMENT OF ALL UTILITY CONSTRUCTION ACTIVITIES WITHIN THE PERMITTED LIMITS OF DISTURBANCE PRIOR TO THE COMMENCEMENT OF THOSE ACTIVITIES.
- TOPSOIL MUST BE APPLIED TO ALL PVIOUS AREAS WITHIN THE LIMITS OF DISTURBANCE PRIOR TO PERMANENT STABILIZATION IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS.



CONSTRUCTION SPECIFICATIONS

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET x 30 FEET FOR SINGLE RESIDENCE (S1). USE MINIMUM WIDTH OF 10 FEET. FLARE SIZE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTAIN BERM WITH 4:1 SLOPE AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTAIN BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN LEVEL SURFACE. MAINTAIN BERM AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCOPING, AND/OR SWEEPING. REMOVE ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

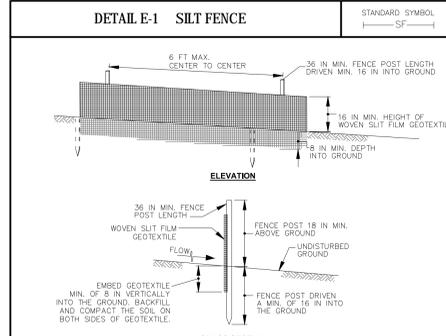
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U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



CONSTRUCTION SPECIFICATIONS

- FOREST PROTECTION DEVICE ONLY.
- FOREST AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
- BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
- ROOT DAMAGE SHOULD BE AVOIDED.
- PROTECTIVE SIGNAGE IS REQUIRED.
- DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.
- TEMPORARY FENCE RECEIVES THE TEMPORARY SIGNAGE.

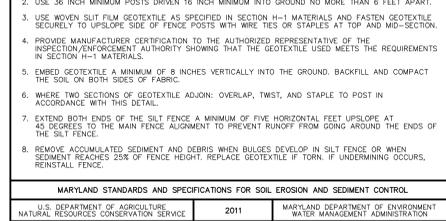
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CONSTRUCTION SPECIFICATIONS

- USE WOOD POSTS 1 1/2 x 1 1/2 x 1/4 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 10 POUNDS PER LINEAL FOOT.
- USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
- USE WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
- PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
- WHERE TWO SECTIONS OF GEOTEXTILE ADJON: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
- EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, REINSTALL FENCE.

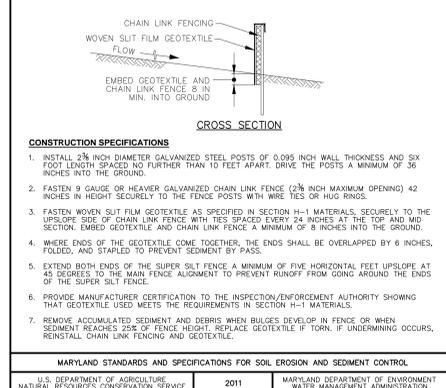
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CONSTRUCTION SPECIFICATIONS

- LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
- SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 2 FEET DEEP.
- PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
- PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
- KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G. RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. MET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.

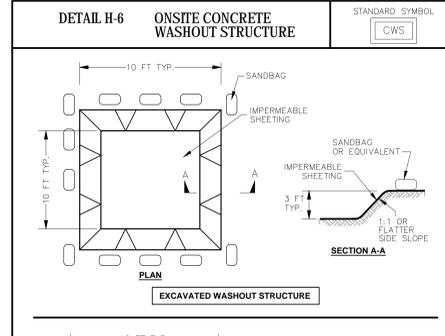
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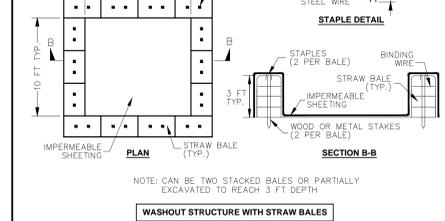
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DESIGN CERTIFICATION
I hereby certify that this plan has been prepared in accordance with the 2011 Maryland Standards and Specification for Soil Erosion and Sediment Control. Montgomery County Department of Permitting Services Executive Regulation 6-90, 7-22AM on 36-90, and Montgomery County Department of Public Works and Transportation "Storm Drain Design Criteria" dated August 1988.
Curt A. Schreffler 12/07/2015
DESIGN ENGINEER SIGNATURE DATE
CURT A. SCHREFFLER, P.E. No. 19568
PRINTED NAME AND TITLE REGISTRATION NUMBER

CERTIFICATION OF THE QUANTITIES
I hereby certify that the estimated total amount of excavation and fill as shown on these plans has been computed to 30 cubic yards of excavation, 25 cubic yards of fill and the total area to be disturbed as shown on these plans has been determined to be 10,325 square feet.
Curt A. Schreffler 12/07/2015
DESIGN ENGINEER SIGNATURE DATE
CURT A. SCHREFFLER, P.E. No. 19568
PRINTED NAME AND TITLE REGISTRATION NUMBER

OWNER/DEVELOPER CERTIFICATION
I/We hereby certify that all clearing, grading, construction, and/or development will be done pursuant to this plan and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.
Curt A. Schreffler 12/7/15
DESIGNER SIGNATURE DATE
JRK BUILDERS
4915 ALBURN AVENUE, SUITE 302
BETHESDA, MD 20814
(301) 338-1123 PHONE
info@jrkbuilders.com

DATE	12/2015
PROJECT	15-162
ENGINEERING	BDA
ILLUSTRATION	BDA
APPROVAL	CAS
SCALE	1"=10'

4915 ELM STREET, CHEVY CHASE, MD 20815
FLAT BOOK 4, PLAT 359, CIRCA 1926
LOT 20, BLOCK L & PARCEL 445
SECTION 8-A, CHEVY CHASE
BETHESDA (7TH) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND
BUILDING PERMIT SITE PLAN AND SEDIMENT CONTROL PLAN AND DRAINAGE PLAN

10 South Bentz Street
Frederick, Maryland 21701
301-799-2222
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CIVIL • SURVEYING • LAND PLANNING

APPLICANT
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chr@claudelcapparchitects.com

4313 ELM STREET
LOT 20, BLOCK L & PARCEL 445
SECTION 8-A, CHEVY CHASE
-TOWN OF CHEVY CHASE-
BUILDING PERMIT SITE PLAN,
SEDIMENT CONTROL PLAN AND
WATER DRAINAGE PLAN