The Town of Chevy Chase

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 7202 Oakridge Avenue**
**Fr:** **Dave Walton, Town of Chevy Chase**
**Date:** **November 23, 2015**
**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 and driveway at 7202 Oakridge Avenue. 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 addition and associated structures will result in 3,147 square feet of new impervious area.

If approved, the proposed on-site drainage facilities will consist of four drywells as shown on the attached site plan. The drywells are designed to collect water runoff from the downspouts 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 403.5 cubic feet. According to calculations provided with the application, the total volume required to be infiltrated is 262.25 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, December 3. 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.

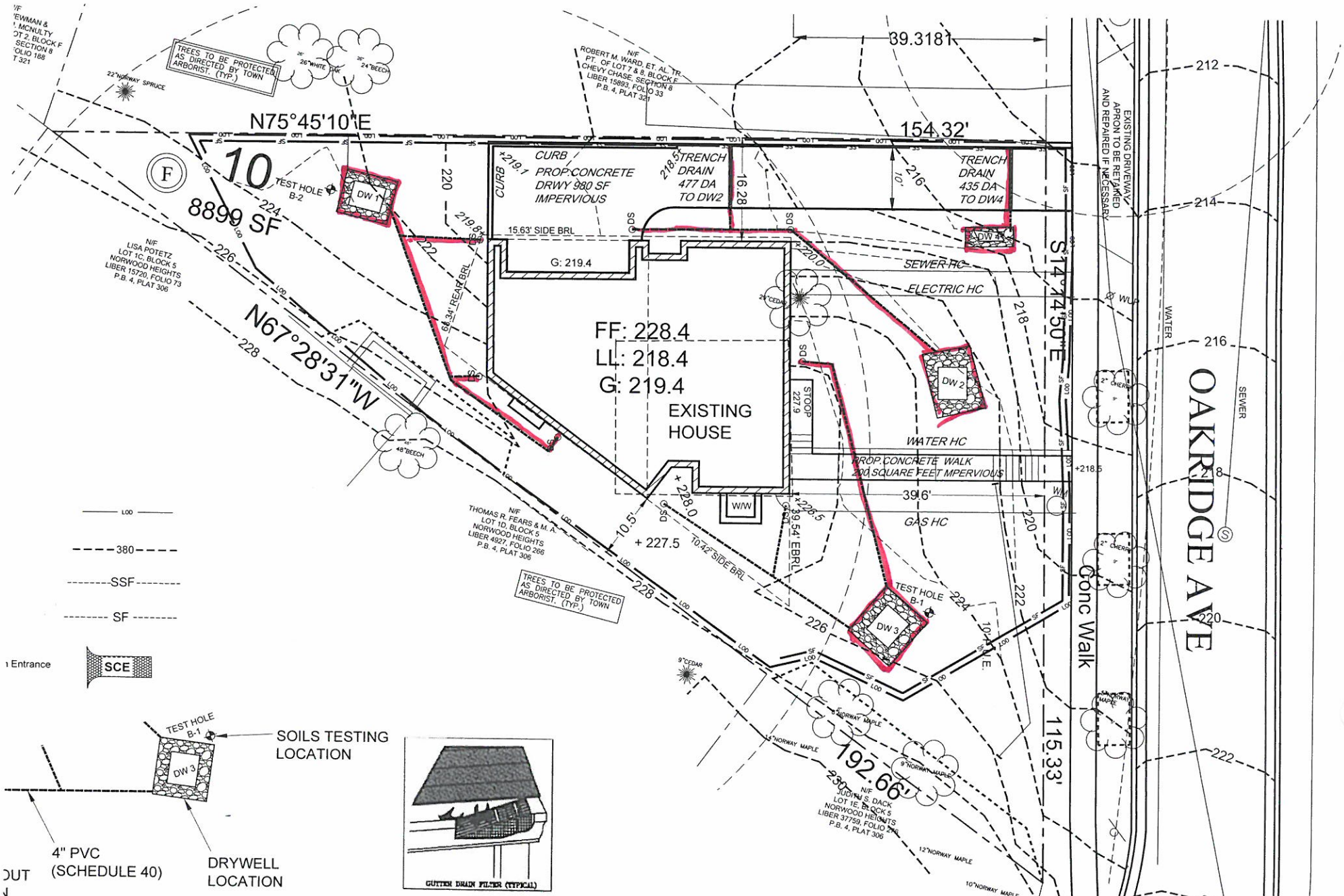
The plan and report are available for public inspection in the Town Office between 8:30 a.m. and 5:00 p.m. Monday through Friday (please call ahead if you would like to review them).

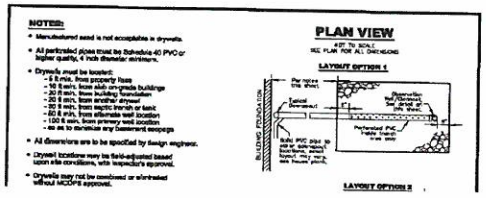
Attachment: Water Drainage Report, Water Drainage Site Plan

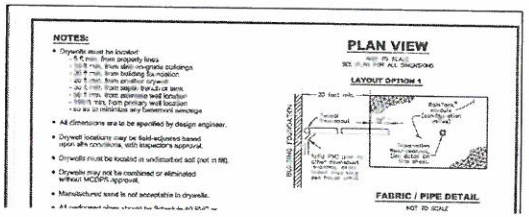
Sent To: 4303, 4307, 4311, 4315 Curtis Road
4306 Leland Street
7201, 7203, 7204, 7205, 7207 Oakridge Lane

CC: Town Council

4301 Willow Lane • Chevy Chase, Maryland 20815 • 301/654-7144 • Fax 301/718-9631 • townoffice@townofchevychase.org
www.townofchevychase.org

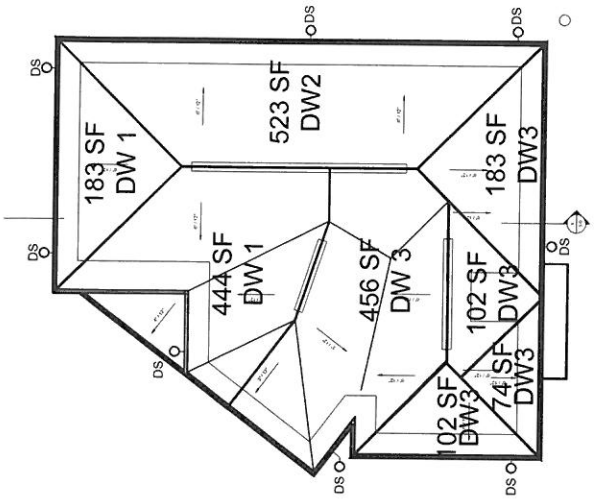



## MAINTENANCE SCHEDULE

periodic inspections and maintenance. The drywell is
vell that should be monitored twice a year and after every
). The depth f water in the drywell should be checked each
4 days after major storm events. It is recommended that a
g the depth of water in the drywell at the time of each
ine the rate at which the system dewaters after a runoff-
ling the depth of the drywell by measuring the distance
well to the bottom of the drywell will assist in




EXISTING CONDITIONS

TOTAL DRAINAGE AREA IN LOD = 8020 S.F.
SOIL TYPE = SEE ENGINEERS REPORT
LAND USE RESIDENTIAL
LOT SIZE = 8899 S.F.

**ESDv TARGET:**

*DRYWELL 1*
PE = 2.6"
Rv = 0.05 + (0.009) (I) = 0.95, (I FOR ROOFTOP IS 100)
A = 527 S.F.

$$ESDv = \frac{PE \times Rv \times A}{12}$$

$$= \frac{2.6 \times 0.95 \times 527}{12} = 108.5 \text{ CF}$$

*DRYWELL 2*
PE = 1.8"
Rv = 0.05 + (0.009) (I) = 0.95, (I FOR ROOFTOP IS 100)
A = 1000 S.F.

$$ESDv = \frac{PE \times Rv \times A}{12}$$

$$= \frac{1.8 \times 0.95 \times 1000}{12} = 142.5 \text{ CF}$$

*DRYWELL 3*
PE = 2.1"
Rv = 0.05 + (0.009) (I) = 0.95, (I FOR ROOFTOP IS 100)
A = 917 S.F.

$$ESDv = \frac{PE \times Rv \times A}{12}$$

$$= \frac{2.1 \times 0.95 \times 917}{12} = 152.5 \text{ CF}$$

*DRYWELL 4 (ADDED TO SATISFY TOWN OF CHEVY CHASE DRAINAGE ORDINANCE)*

*Raintank (9 Needed for capacity)*

PE = 1"
Rv = 0.05 + (0.009) (I) = 0.95, (I FOR DRIVEWAY IS 100)
A = 435 S.F.

$$ESDv = \frac{PE \times Rv \times A}{12}$$

$$= \frac{1.0 \times 0.95 \times 435}{12} = 34.5 \text{ CF}$$

Individual Raintank = 4.22 cf of storage.

9 * 4.22 = 37.98 cf of storage.

TOTAL ESDV REQUIRED = 237.25 CF (PER 3 MONTH STORM CALCULATIONS)
TOTAL ESDV PROVIDED = 403.5 CF

DRYWELL VOLUMES

GRAVEL LAYER:
DEPTH = 4.0 FT

SAND LAYER:
DEPTH = 1.0 FT

| DRYWELL | DRAINAGE AREA | ESDV REQUIRED | ESDV PROVIDED | DIMENSIONS | TOP OF STONE |
|---|---|---|---|---|---|
| 1 | 527 | 108.5 | 112 | 8X7X5 | 221.0 |
| 2 | 1000 | 142.5 | 153 | 8.5X9X5 | 220.0 |
| 3 | 917 | 152.5 | 153 | 8.5X9X5 | 224.0 |
| DW #4 | 435 | 34.5 | 37.98 | 7x2x6* | 214.0 ** |

*Or as per allowable site conditions

** Top of Tank

**THOMAS A. MADDOX**
**PROFESSIONAL LAND SURVEYOR**

Registered to Practice:
Maryland
Virginia
District of Columbia

8933 Shady Grove Court
Gaithersburg, MD 20877
(301) 330-0812
FAX(301) 984-6865

Narrative

Novermber 2, 2015

Prepared For: Vicki and Tonic Tep
7202 Oakridge Avenue
Chevy Chase, MD 20815

PARAMOUNT CONSTRUCTION, INC.
KEVIN DAVIS
15809 PARAMOUNT DRIVE
ROCKVILLE, MD 20855

Town of Chevy Chase
4301 Willow Lane
Chevy Chase, Maryland 20815

Property Address: 7202 Oakridge Avenue, Chevy Chase

Lot Information: Lot 10, Block F, Chevy Chase Section 8

Lot Size: 8899 Square Feet

Montgomery County Sediment Control Permit: 263995

Existing Impervious Area: 2864 Square Feet

Proposed Impervious Area: 3147 Square Feet

Required Storage Volume 3 Month Storm: 262.25 Cubic Feet

Provided Storage Volume: 438 Cubic Feet

Provided Storage Method: 4 Drywells

**Town of Chevy Chase**
4301 Willow Lane
Chevy Chase, MD 20815

301-654-7144 (phone)
301-718-9631 (fax)
townoffice@townofchevychase.org

Town Permit No.: _____

## Water Drainage Plan Application

Street Address: 7202 Oakridge Avenue Date: 10/19/2015

Please ensure that you submit a complete application, as incomplete applications will not be reviewed. The Town has developed a guidance documents that should help explain the history, requirements, and methodology of the Town's Water Drainage Ordinance. Copies are available online and in the Town Office. If you have any questions about the Water Drainage Plan approval process, please call the Town Office at 301-654-7144.

**Applicant Information:**

Name: Vicki and Tonic Tep
Phone:
Address: 7202 Oakridge Avenue
Cellular Phone:
City: Chevy Chase State: MD Zip: 20815
E-Mail:

**Contractor Information:**

Name: Paramount Construction
Phone: 301-330-9880
Address: 15809 Paramount Drive Suite A
Cellular Phone:
City: Rockville State: MD Zip: 20855
E-Mail:

**Water Drainage Plan Submittal Requirements – You must submit 2 paper copies and an electronic copy (.pdf)**

__ $500 Application Fee
__ Construction Drawings (including site plan, and detailed schematics)
__ Completed Water Drainage Plan Application
__ Results of soil infiltration tests, certified by a MD licensed geotechnical engineer
__ Hydrologic, hydraulic, and volumetric computations for a three-month storm event
__ Hydrologic, hydraulic, and volumetric computations for a ten-year storm event
__ Report on the potential impacts of the proposed development activity on adjacent and nearby properties, including the public right-of-way
__ Report on the effectiveness and acceptability of measures proposed for managing water drainage
__ Maintenance Schedule
__ Notarized Maintenance Agreement (attached)
__ Performance Bond equal to estimated construction costs of drainage system (Include notarized Surety or Cash Bond Documents (attached) or Letter of Credit (on Bank Letterhead, sample attached))

If overflow pipes from containment vessels discharge water into the street:
__ Right-of-Way usage agreement (available in office)

Estimated cost of installation of the proposed drainage system: $2,500

Please describe the project: 2 gravel drywells connected to downspouts. 1 gravel drywell will be connected to downspout and driveway trenchdrain. 1 raintank configuration connected to driveway trenchdrain.

KD (initial) I hereby certify that this water drainage plan was prepared by a licensed professional civil engineer or land surveyor, licensed in the State of Maryland.

KD (initial) I hereby certify that the development activity will be conducted in strict compliance with the approved water drainage plan.

KD (initial) I hereby certify that I have obtained easements or necessary property interests if the proposed water drainage plan involves development activity such as grading and piping on another private property. I understand that approval of a water drainage plan does not create or affect any right with respect to any adjacent or nearby property without that property owner's permission.

**Infiltration System Location Worksheet**

An infiltration system shall be located at least five (5) feet from any property line, ten (10) feet from any proposed building on the subject property with a basement or cellar foundation, twenty (20) feet from any existing building on any adjoining property with a basement or cellar foundation, and five (5) feet from any existing and proposed building that does not have a basement or cellar foundation.

| Distance from: | Allowed | Proposed (at closest point) |
|---|---|---|
| Any property line: | 5' | 5.5' |
| Building on subject property with basement or cellar: | 10' | 16' |
| Building on adjoining property with basement or cellar: | 20' | 30'+ |
| Building that does not have basement or cellar: | 5' | NA |

I understand that a condition for the issuance of this permit is that the proposed construction will comply at all times with the plans as approved by all applicable government agencies. I hereby declare and affirm, under penalty of perjury, that all matters and facts set forth in the permit application are true and correct to the best of my knowledge, information, and belief.

Applicant's Signature — Print Name: Kevin S. Davis — Date: 11/13/15

## IV. Calculation Worksheets & Sample Projects

**Calculate the 3-Month Required Storage Volume for the New Impervious Surface**

Enter the Total Square Foot AREA of the New Impervious Surface: Box 1 | 3147 |

Describe the Cover Type of the New Impervious Surface Rooftop, Concrete walk & driveway
(Rooftop, concrete or asphalt driveway, semi-pervious surfaces)

Determine Curve Number (CN) for New Impervious Surface : Box 2 | 98 |
(go to Sec. 3 (Methodology) for CN values)

Calculate the Required Storage Volume to Retain; Do this calculation for each type of different cover type that comprises all of the New Impervious Area.

Solve for S (potential maximum retention after runoff begins, unit less value)

$$S = \frac{1000}{CN} - 10$$

S = Box 3 | 0.2 |

Now Solve for Q

$$Q = \frac{(1.25 - 0.2S)^2}{(1.25 + 0.8S)}$$

Where:
Q = runoff (inches)
P = rainfall (1.25 inches for 3-Month Event)
S = potential maximum retention after runoff begins (inches)

Q = 1.0 Inches of Runoff

Convert the Inches of Runoff (Q) to Cubic Feet of Runoff by dividing Q by 12 and multiplying the result by the New Impervious Area (Box 1)

Q (inches) ÷ 12) x Impervious area (square feet) = Required Storage Volume (cubic feet)

Required Storage Volume (cubic feet) = 262.25

If there is more than ONE type of New Impervious Surface, SUM all the calculated values for the Required Storage Volume.

Area 1 262.25 cf + Area 2 0 cf = 262.25 Total Required Storage Volume (Cubic Feet)

3-Month Storm Event Total Required Storage Volume (cubic feet) to Retain: Box 4 | 262.25 |

**Calculate the 10-Year Required Storage Volume for the New Impervious Surface**

The Surface Cover Type and Curve Number (CN) are the SAME as for the 3-Month Calculation

S = Box 3 | 0.2 |

Solve for Q

$$Q = \frac{(5.1 - 0.2S)^2}{(5.1 + 0.8S)}$$

Where:
Q = runoff (inches)
P = rainfall (5.1 inches for 5-Year Event)
S = potential maximum retention after runoff begins (inches)

Q = 4.9 Inches of Runoff

Convert the Inches of Runoff (Q) to Cubic Feet of Runoff by dividing Q by 12 and multiplying the result by the New Impervious Area (Box 1)

Q (inches) ÷ 12) x Impervious area (square feet) = Required Storage Volume (cubic feet)

Required Storage Volume (cubic feet) = 1285.02

If there is more than ONE type of New Impervious Surface, SUM all the calculated values for the Required Storage Volume.

Area 1 1285.02 c.f. + Area 2 0 c.f. = 1285.02 Total Required Storage Volume (Cubic Feet)

10-Year Storm Event Total Required Storage Volume (cubic feet) to Retain:

Box 5 | 1285.02 |

**Calculate the 10-Year Runoff Volume for the EXISTING Conditions**

This calculation is made using the same footprint used in the Proposed Conditions. These surfaces are to be removed, disturbed and/or altered during the proposed construction.

Describe the Cover Type of the Existing Surface(s) Roof, Walk, DW, Garage, Patio, Deck
(Rooftop, concrete or asphalt driveway, semi-pervious surfaces)

Determine Curve Number (CN) for Existing Surfaces : CN 98
(go to Sec. 3 (methodology) for CN values)

Calculate the Runoff Volume for the Existing Conditions; Do this calculation for each type of different cover type that comprises the same footprint as the New Impervious Area.

Solve for S (potential maximum retention after runoff begins, unit less value)

$S = \frac{1000}{CN} - 10$ S = 0.2

Now Solve for Q

$Q = \frac{(5.1 - 0.2S)^2}{(5.1 + 0.8S)}$

Where:
Q = runoff (inches)
P = rainfall (5.1 inc 6 for 5-Year Event)
S = potential maximum retention after runoff begins (inches)

Q = 4.9 Inches of Runoff

Convert the Inches of Runoff (Q) to Cubic Feet of Runoff by multiplying Q by the New Impervious Area

Q (inches) ÷ 12) x Impervious area (square feet) = Required Storage Volume (cubic feet)

Existing Conditions Runoff Volume (cubic feet) = 1169.5

If there is more than ONE type of Existing Surface, SUM all the calculated values for the Existing Conditions Runoff Volume.

Area 1 1169.5 cf + Area 2 _____ cf = 1169.5 Total Required Storage Volume (Cubic Feet)

10-Year Storm Event Total Runoff Volume for Existing Conditions (cubic feet):

Box 6 | 1169.5 |

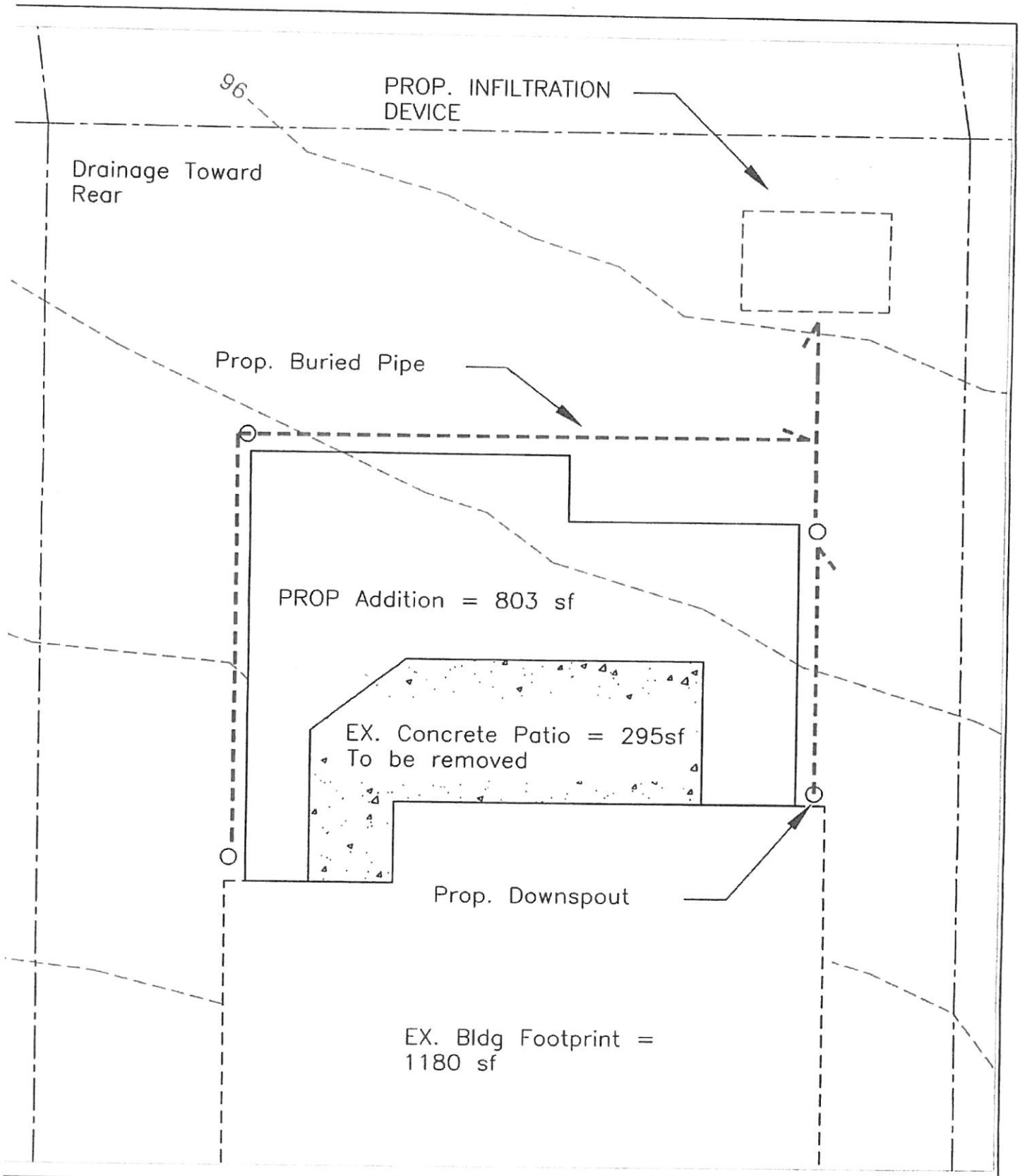
**Calculate the Required Storage Volume to be Retained for the Proposed Project**

Determine the INCREASE in runoff for the 10-Year Storm event by Subtracting the Existing 10-Year Runoff (Box 6) from Proposed 10-Year Runoff (Box 5)

Increase in 10-Year Storm Event Runoff = Box 7 | 115.52 |

COMPARE the Values in Box 4 and Box 7. The LARGER value is the Required Storage Volume to Retain for the Proposed Project.

Box 8 | 262.25 |




**STORMWATER MANAGEMENT PLAN**
**TYP. ADDITION PROJECT**
**(N.T.S.)**

## III. Written Reports

Provide a written report on the potential impacts of the proposed development activity on adjacent and nearby properties.

Proposed development to replace existing house will result in 300 additional square feet of impervious area. Impact will reduce water runoff into adjacent properties and street right of way by 262 cubic feet in 3 month storm to as much 438 cubic feet. Site grading will maintain existing water flow direction.

(You may provide additional sheets if necessary)

Provide a written report on the effectiveness and acceptability of measures proposed for managing water drainage.

Proposed stormwater measures will exceed Town of Chevy Chase requirements by 67% for the 3 month storm.

(You may provide additional sheets if necessary)

## IV. Maintenance Schedule

Provide a written maintenance schedule for each component of the proposed infiltration system (including gutter cleanout, proprietary infiltration systems, gravel drywells, and semi-permeable surfaces). See Section VIII "Maintenance Requirements" in Water Drainage Users' Guide.

Drywell Systems

Drywell systems require both periodic inspections and maintenance. The drywell is installed with an observation well that should be monitored twice a year and after every large storm event (>0.5 inches). The depth f water in the drywell should be checked each day at the same time for up to 4 days after major storm events. It is recommended that a logbook be maintained showing the depth of water in the drywell at the time of each observation in order to determine the rate at which the system dewaters after a runoff-producing storm event. Recording the depth of the drywell by measuring the distance from the top of the observation well to the bottom of the drywell will assist in determining if sediment is accumulating at the bottom. The Town Engineer will perform as-built and periodic measurements of the depth and record and keep this data at the Town office. During the measurement, it is possible to feel the consistency of the material at the bottom with a steel tape measure. At the initial installation (as-built), the bottom should have a solid and hard feel when the tape measure is contacting the bottom. Any soft or spongy feel with the tape measure indicates debris accumulation and the possibility of a failed system or poor maintenance practices. Once the performance characteristics of the system have been verified, the Town will perform annual inspections, unless the performance data suggests that a more frequent schedule is required. The goal is to have the drywell empty through infiltration within 72 hours after a major storm event. The Town keeps a record of all systems located in the Town and archives the results of all inspections. For maintenance, drywell systems should be devoid of sediment or excessive leaves and debris entering the system. Roof gutters and downspouts should be cleared of excess leaves and tree debris in the fall and in the late spring to prevent the accumulation of debris in the drywell.

a)Gravel Drywells Gravel drywells cannot be flushed and pumped like manufactured drywell systems due to the gravel media which represents 60% percent of the drywell by volume. Standing water, or algal growth on the top of a drywell may indicate failure due to sedimentation in the gravel media. Ponding on the surface above the drywell should generally not occur for long periods (at least 48 hours) following a storm event. Algal growth that is seen in the observation well may also indicate that the system is clogge d and not discharging back to the ground through infiltration. Sediment that accumulates at the bottom of the observation well, which can be felt by a steel tape measure, should not exceed 3 inches in depth. If any of these occurrences are observed, the gravel media should be excavated, cleaned and replaced.

(You may provide additional sheets if necessary)

geolab
GEOTECHNICAL LABORATORIES, INC.
ENGINEERS • GEOLOGISTS • CONSULTANTS

April 7, 2014

Mr. Michael Norton
Norton Land Design
17830 New Hampshire Avenue, Suite 101
Ashton, Maryland 20861

Re: Report for Subsurface Exploration
& Geotechnical Engineering Analysis
7202 Oakridge Avenue
Chevy Chase, Maryland
Project No. 114-024

Dear Mr. Norton:

Geotechnical Laboratories, Inc. (Geolab) has completed the requested exploration and analysis related to the above-referenced project. Two test borings (Nos. B-1 & B-2) were performed by Geolab, Inc. with a hand-operated auger. These test borings were excavated to depths of 8.5 and 10.0 feet, respectively and were field located by referencing the site plans. The results of these test borings and sampling operation are shown on the attached Boring Log.

In addition to the field exploration, a supplemental laboratory testing program was conducted to determine pertinent engineering characteristics of the materials necessary in analyzing their feasibility for construction of a bio-retention facility. The laboratory testing program included a visual classification on all the samples by a geotechnical engineer in accordance with ASTM D-2488 and the U.S. Department of Agriculture's (USDA) soil classification system. Selected samples were subjected to grain size (ASTM D-422) and moisture content testing.

Texturally, the soils encountered in each test boring to the depths explored classified as SANDY LOAM. The encountered soil has the following hydrologic soil properties and infiltration rates assigned by the USDA:

| Texture Class | Effective Water Capacity (inches/hour) | Minimum Infiltration Rate (inches/hour) | Hydrologic Soil Group |
|---|---|---|---|
| SANDY LOAM | 0.25 | 1.02 | B |

Subsurface water (or ground water) and bedrock, both potential limiting factors, were not encountered in this test borings.

8980 Route 108, Suite D, Columbia, Maryland 21045
410-772-2220 301-621-2221 1-888-4geolab fax: 410-772-2221

A field percolation test was performed to measure the infiltration rate. A supplemental boring, located adjacent to Test Boring No. B-1, was subsequently drilled for performance of this field test. This supplemental boring was advanced to a depth of 6.0 feet. A standpipe or casing, 5 inches in diameter, was installed in this latter boring and 24 inches of water was added for a 24-hour pre-soak.

The percolation (supplemental) hole was, after 24 hours, initially restored to a level of 2.0 feet of water at the start of this testing procedure. The water level was thereafter maintained for a period of 4 hours and checked hourly for fall. At the completion, the average hourly infiltration/percolation rate was calculated based on the recorded data. The average infiltration rate was as follows:

| Test Boring No. | Infiltration Rate (inches per hour) | Depth of Pipe (ft) |
|---|---|---|
| B-1 | 2.43 | 6.0 |

All phases of the soil laboratory testing program were conducted in general accordance with applicable ASTM Specifications. The results of these tests can be found on the accompanying Boring Logs, USDA Soil Classification sheets, and Particle Size Distribution Test Reports attached.

Should you have any questions or require any additional information, please contact our office.

Sincerely,
**Geotechnical Laboratories, Inc.**

Brian J. Luoma, E.I.T.
Staff Engineer

G. Matthew Norris, P.E.
Principal

GMN:BJL
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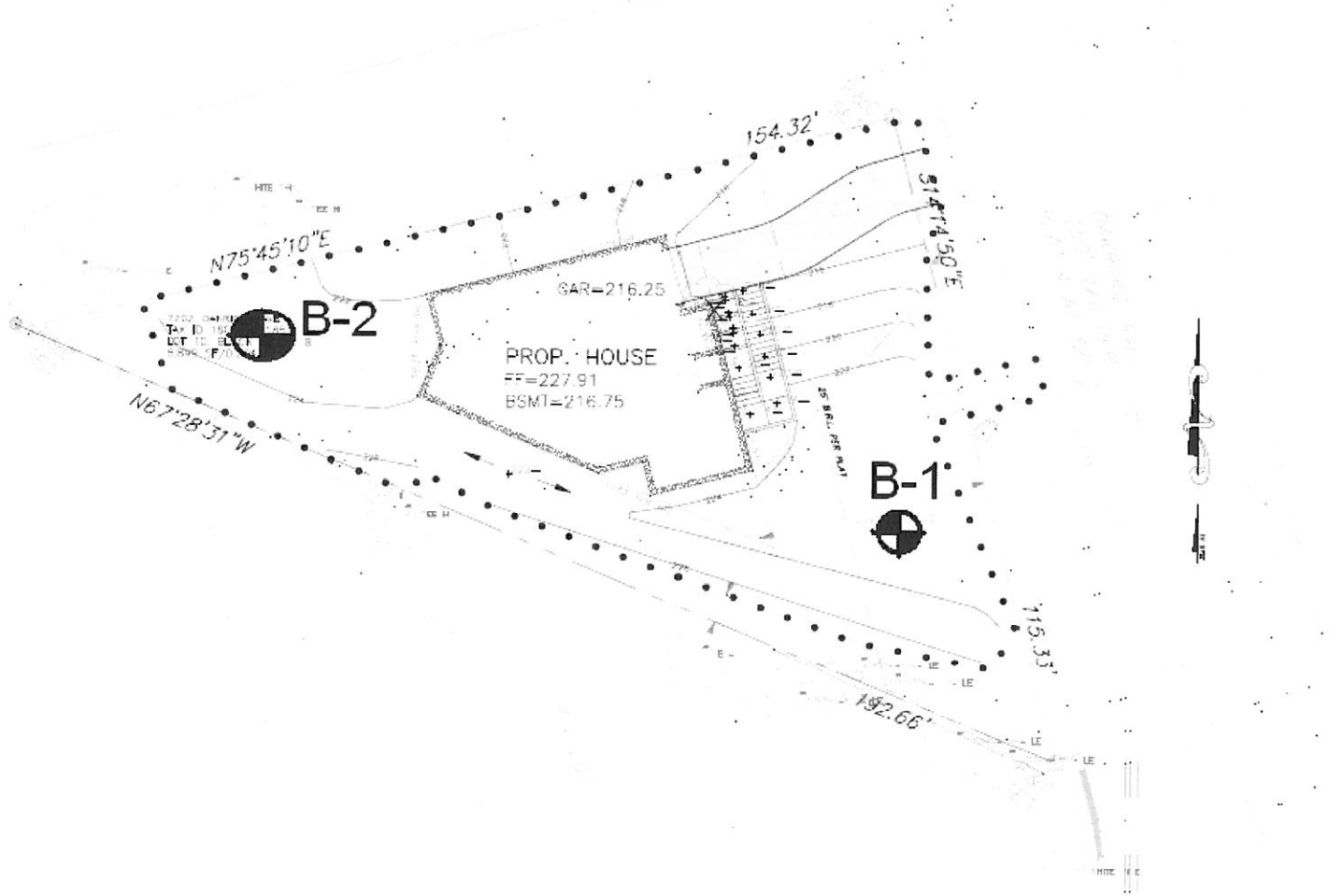



| Boring Location Plan | 7202 Oakridge Avenue |
|---|---|
| | Chevy Chase, Maryland |
| | Project No. 114-024 |

# BORING LOG

# GEOLAB, INC.

Report No.:

Date: **4/7/2014**

Client: **Mike Norton Design**

Project: **7202 Oakridge Avenue, Chevy Chase** | Project No. **114-024**

Boring No.: **B-1** **(1 of 1)** | Total Depth **8.5** | Elev: **224.0 +/-** | Location: **See Boring Location Plan**

Type of Boring: **Hand Auger** | Started: **4/2/14** | Completed: **4/2/14** | Driller: **D. Rockwood**

| Elevation | Depth | DESCRIPTION OF MATERIALS (classification) | *Sample Blows | Sample Depth (Feet) | Moisture Content | REMARKS |
|---|---|---|---|---|---|---|
| 224 | 0.0 | Topsoil with root (organic) matter | | | | **Boring was dry during and after drilling.** |
| 223.5 | 0.5 | Brown to light brown micaceour fine to medium SAND with some silt, moist (SM, USDA: Sandy Loam) | | | | **Infiltration pipe was set at 6.5'.** |
| | | | | 3.0 | 20.9 | |
| | | | | 3.5 | | |
| 217.5 | 6.5 | Light brown fine to medium micaceous SAND with some silt and fractured rock, moist (SM, USDA: Sandy Loam) | | | | |
| 215.5 | 8.5 | Auger Refusal - End of Boring | | | | |

*Number of blows required for a 140 lb ham[illegible] dropping 30" to drive 2" O.D., 1.375" I.D[illegible]ampler a total of 18 inches in three 6" increments. The sum of the last [illegible] increments of penetration is termed the s[illegible]dard penetration resistance, N.

# BORING LOG

# GEOLAB, INC.

Report No.:

Date: 4/7/2014

Client: **Mike Norton Design**

Project: **7202 Oakridge Avenue, Chevy Chase** | Project No. **114-024**

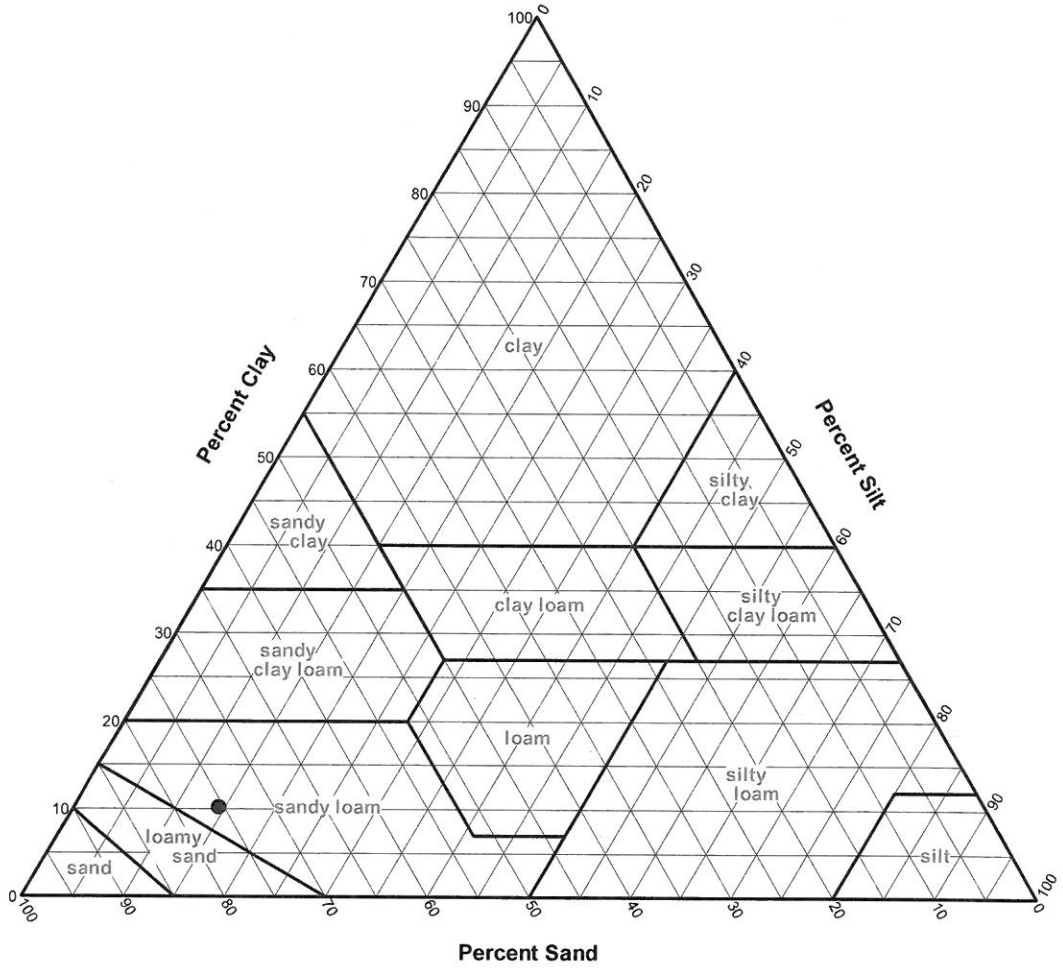
Boring No.: **B-2** **(1 of 1)** | Total Depth **7** | Elev: **224.0 +/-** | Location: **See Boring Location Plan**

Type of Boring: **Hand Auger** | Started: **4/2/14** | Completed: **4/2/14** | Driller: **D. Rockwood**

| Elevation | Depth | DESCRIPTION OF MATERIALS (classification) | *Sample Blows | Sample Depth (Feet) | Moisture Content | REMARKS |
|---|---|---|---|---|---|---|
| 224 | 0.0 | Topsoil with root (organic) matter | | | | **Boring was dry during and after drilling.** |
| 223.5 | 0.5 | Brown to light brown micaceous fine to medium SAND with some silt, moist (SM, USDA: Sandy Loam) | | | | |
| 217.5 | 6.5 | Light brown fine to medium micaceous SAND with some silt, moist (SM, USDA: Sandy Loam) | | | | |
| 217 | 7.0 | End of Boring | | | | |

*Number of blows required for a 140 lb ham[illegible] dropping 30" to drive 2" O.D., 1.375" I.D [illegible]mpler a total of 18 inches in three 6" increments. The sum of the last [illegible] increments of penetration is termed the s[illegible]ard penetration resistance, N.

# USDA Soil Classification




| SOIL DATA | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Source | Sample No. | Depth | Percentages From Material Passing a #10 Sieve | | | Classification |
| | | | | Sand | Silt | Clay | |
| ● | B-1 | S-1 | 3.0'-3.5' | 75.5 | 14.3 | 10.2 | Sandy loam |
| | | | | | | | |
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|---|---|
| **Geolab, Inc.**<br><br>**Columbia, MD** | **Client:** Mike Norton Design<br>**Project:** 7202 Oakridge Avenue, Chevy Chase<br><br>**Project No.:** 114-024 **Figure** |

# TUF-TITE® Trench Drain TR-1

### The only injection molded Trench Drain

- Non-corrosive High Density Polyethylene.
- 235 p.s.i industrial strength
- H-20 wheel load rating

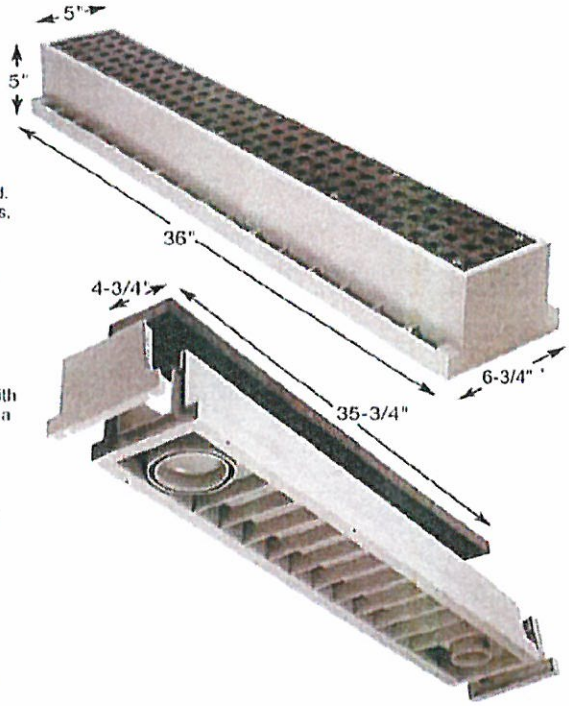
Comes completely assembled. One unit. One price. No Extras.

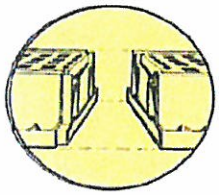
### Snap-on End Caps
Simply remove an end cap, extend the trench to any length, and re-install the end cap.

### Cut to Size
The trench may be field cut with a hand saw, and capped with a male end cap or a TR1-D4 End Drain

### Molded-In Ribs
Provide exceptional vertical compression strength - unequaled by other trench designs.

### Choice of 3 Drains
Three bottom drains are molded in. Knock-out membranes allow trench to be drained with 2" or 3" Schedule 40, or 4" SDR35 pipe.



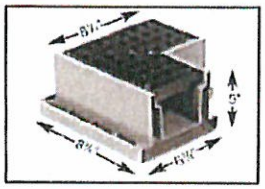



### Interlocking Molded Ends
No need to remove the grate during installation. Simply snap the trenches together for a Tuf-Tite® free-flowing fit.

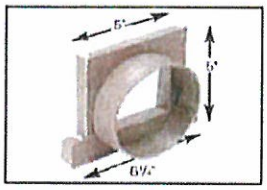
### ADA Compliant Grate
Safe, square 1/2" x 1/2" openings. Molded of specially formulated HDPE with no foam or fillers.

### Stainless Screws
The grate is held in place with 10 Type A-SmS screws.

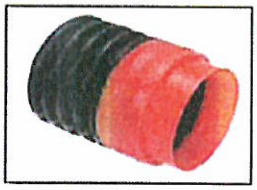
### Americans With Disabilities Act
*Regulation 4.5.4:* If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2" (13mm) wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominant direction of travel.



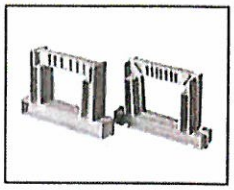
**TR1-90 Corner**
90° injection molded HDPE corner unit for Trench Drain. Molded interlocking ends for simple, snap-together installation. Comes assembled with grate and 6 Type A-SmS stainless screws. ADA compliant.



**Optional End Drain TR1-D4**
Male End Drain snaps on female end of Trench Drain. Accepts:
- 4" SDR35-3034 pipe
- 4" 2729 pipe
- 4" corrugated pipe when used with an MF-4 pipe connector



**MF-4 Pipe Connector**
To connect 4" corrugated pipe to the bottom of Trench Drain or to the End Drain TR1-D4. Provides a watertight fit.



**Gender Changer**
Changes male end to female (TR1-GCF) or female end to male (TR1-GCM)

TUF-TITE®
Drainage and Septic Products

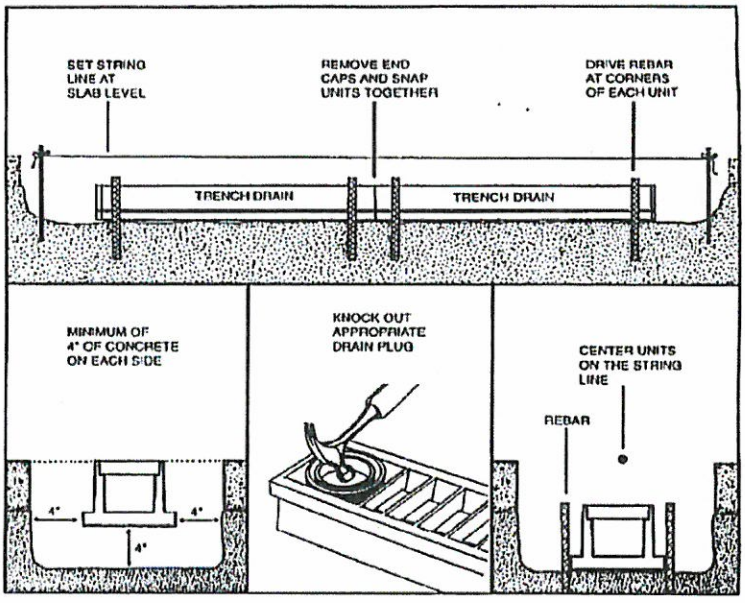
See additional drainage products on reverse side

* ADDENDA
7202 OAKRIDGE AVE
CHEVY CHASE, MD 20815
TOWN OF CHEVY CHASE
WATER DRAINAGE SUBMISSION
TRENCH DRAIN SPEC

# TUF-TITE™ Trench Drain Installation Guide (In Concrete)

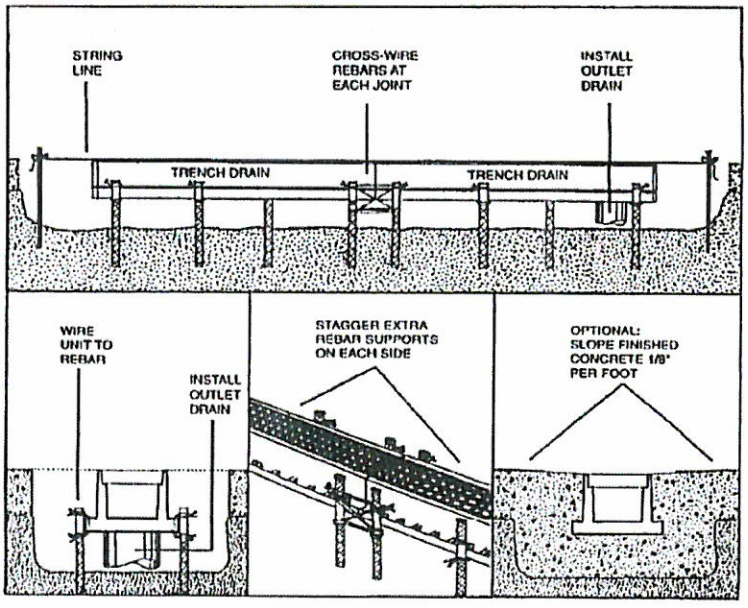
### EXCAVATE AND LAYOUT UNITS

1. **Dig Trench.** Mark off your Trench Drain layout and dig a trench, allowing for a minimum of 4" of concrete on both sides and underneath the Trench Drain. Make the excavation wide enough and deep enough so bedding concrete will be equal to the slab thickness.
2. **Stake out a string line.** String a line over the center of the path you want the Trench Drain to run. Set string at desired elevation.
3. **Layout Trench Drains.** Center them under the string line. Remove end caps and snap units together.
4. **Prepare for outlets.** Determine where you want outlet pipes and use a hammer to knock out the appropriate plugs on bottom of Trench Drains. If optional End-Cap Drains are to be used, this is unnecessary.
5. **Set rebar supports.** Drive rebar into sub-base alongside the "Wire Holes" at the four corners of each Trench Drain. Rebar should be set snugly against the units.




### ELEVATE AND WIRE UNITS

6. **Elevate Trench Drains.** Unsnap the first Trench Drain, lift it to the level of the string line, and wire it in place on the rebar. Snap in the next unit and wire it in position on the rebar. Follow the same routine until all units are in place.
7. **Add reinforcement.** Where two Trench Drains join, cross-wire the rebars for more stability. Drive in and wire at least one additional rebar to each side of each unit as shown.
8. **Final preparation.** Before pouring concrete, connect your outlet pipe to the bottom of the Trench Drain. Use duct tape to cover the grate.
9. **Concreting.** Pour concrete equally on both sides of the Trench Drain to maintain alignment. Concrete should be finished flush with the Trench Drain. Concrete edger may be used if desired.




TUF-TITE
Drainage and Septic Products

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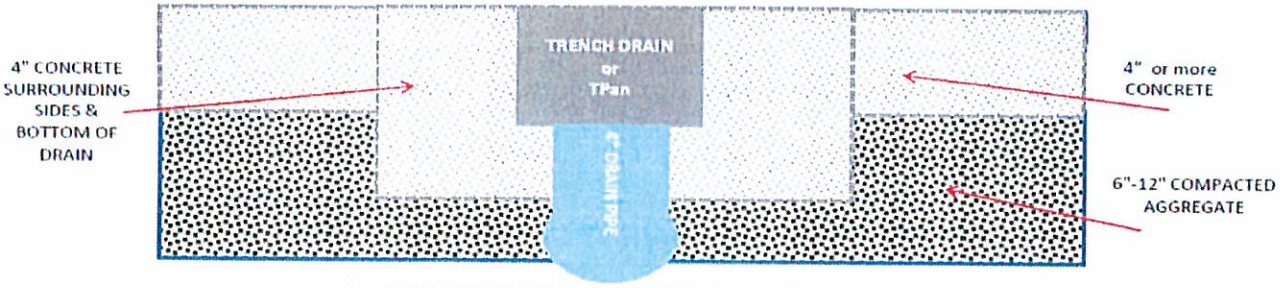
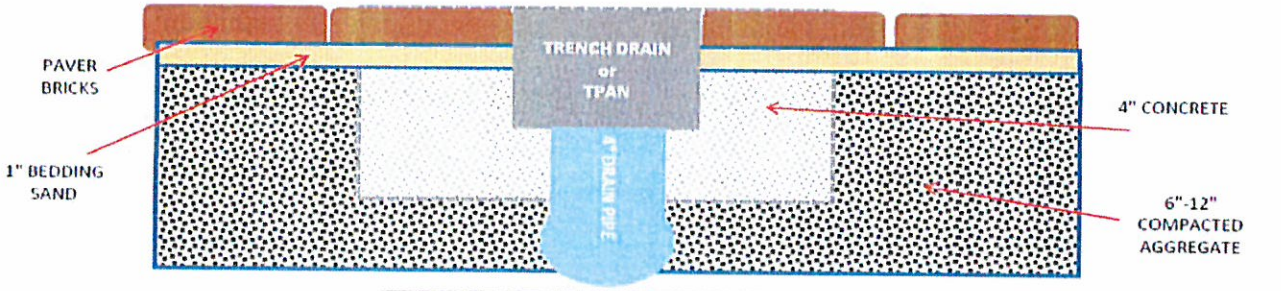
Form TRI-3 Printed In U.S.A.

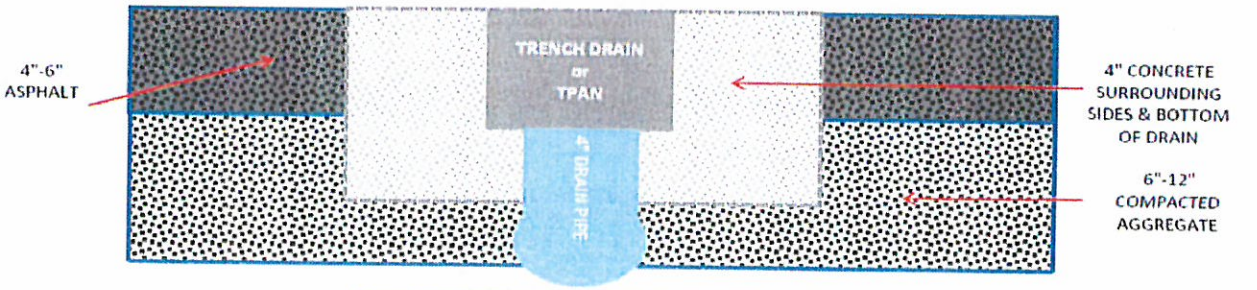
# HARDSCAPE INSTALLATION METHODS: TRENCH DRAIN & TRENCH PAN



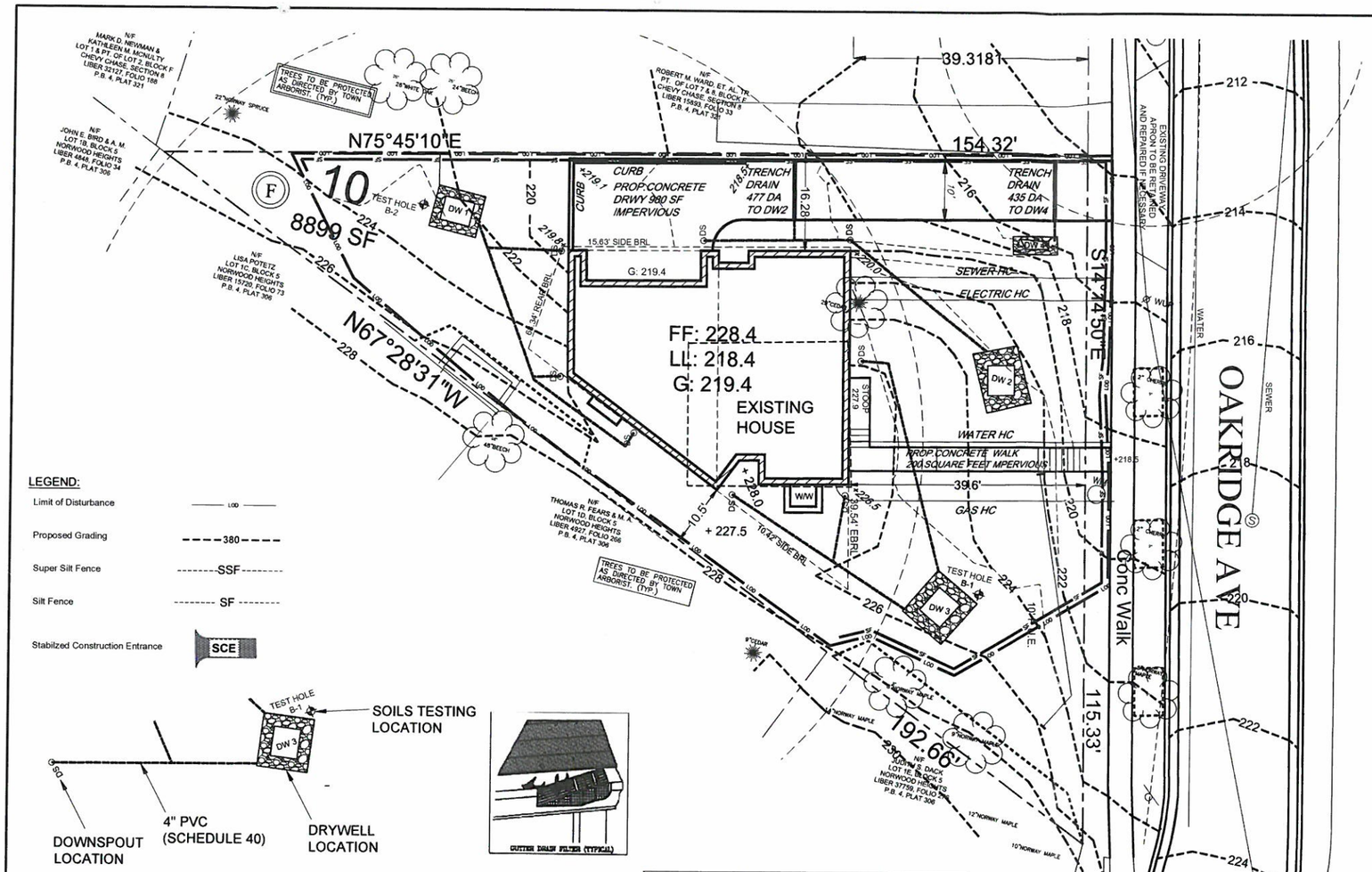

CONCRETE INSTALLATION




PAVER BRICK INSTALLATION




ASPHALT INSTALLATION

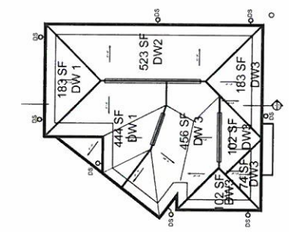



NOTE: TRENCH DRAIN SHALL BE TUF-TITE, TRENCH DRAIN TR-1, OR SIMILAR.

**VICINITY MAP**
**SCALE: 1" = 1,000'**

Sheet 1 of 2
Revisions
7/10/2015

**DATE: JUNE 2015**
**SCALE: 1" = 10'**




EXISTING CONDITIONS

| | |
|---|---|
| TOTAL DRAINAGE AREA IN LOD = | 8020 S.F. |
| SOIL TYPE | = SEE ENGINEERS REPORT |
| LAND USE | RESIDENTIAL |
| LOT SIZE | = 8899 S.F. |

**ESDv TARGET:**

*DRYWELL 1*
PE = 2.6"
Rv = 0.05 + (0.009) (I) = 0.95, (I FOR ROOFTOP IS 100)
A = 527 S.F.

$$ESDv = \frac{PE \times Rv \times A}{12}$$

$$= \frac{2.6 \times 0.95 \times 527}{12} = 108.5 \text{ CF}$$

*DRYWELL 2*
PE = 1.8"
Rv = 0.05 + (0.009) (I) = 0.95, (I FOR ROOFTOP IS 100)
A = 1000 S.F.

$$ESDv = \frac{PE \times Rv \times A}{12}$$

$$= \frac{1.8 \times 0.95 \times 1000}{12} = 142.5 \text{ CF}$$

*DRYWELL 3*
PE = 2.1"
Rv = 0.05 + (0.009) (I) = 0.95, (I FOR ROOFTOP IS 100)
A = 917 S.F.

$$ESDv = \frac{PE \times Rv \times A}{12}$$

$$= \frac{2.1 \times 0.95 \times 917}{12} = 152.5 \text{ CF}$$

*DRYWELL 4 (ADDED TO SATISFY TOWN OF CHEVY CHASE DRAINAGE ORDINANCE)*

*Raintank (9 Needed for capacity)*

PE = 1"
Rv = 0.05 + (0.009) (I) = 0.95, (I FOR DRIVEWAY IS 100)
A = 435 S.F.

$$ESDv = \frac{PE \times Rv \times A}{12}$$

$$= \frac{1.0 \times 0.95 \times 435}{12} = 34.5 \text{ CF}$$

Individual Raintank = 4.22 cf of storage.

9 * 4.22 = 37.98 cf of storage.

TOTAL ESDV REQUIRED = 237.25 CF (PER 3 MONTH STORM CALCULATIONS)
TOTAL ESDV PROVIDED = 403.5 CF

DRYWELL VOLUMES

GRAVEL LAYER:
DEPTH = 4.0 FT

SAND LAYER:
DEPTH = 1.0 FT

| DRYWELL | DRAINAGE AREA | ESDV REQUIRED | ESDV PROVIDED | DIMENSIONS | TOP OF STONE |
|---|---|---|---|---|---|
| 1 | 527 | 108.5 | 112 | 8X7X5 | 221.0 |
| 2 | 1000 | 142.5 | 153 | 8.5X9X5 | 220.0 |
| 3 | 917 | 152.5 | 153 | 8.5X9X5 | 224.0 |
| DW #4 | 435 | 34.5 | 37.98 | 7x2x6* | 214.0 ** |

*Or as per allowable site conditions

** Top of Tank

**LEGEND:**

| | |
|---|---|
| Limit of Disturbance | LOD |
| Proposed Grading | 380 |
| Super Silt Fence | SSF |
| Silt Fence | SF |
| Stabilzed Construction Entrance | SCE |



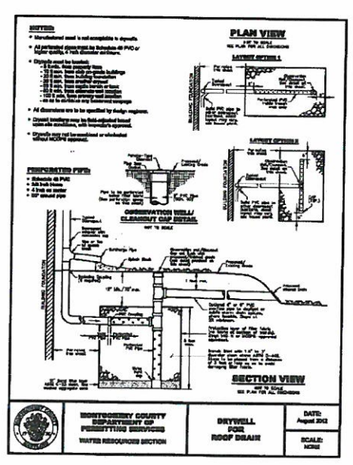


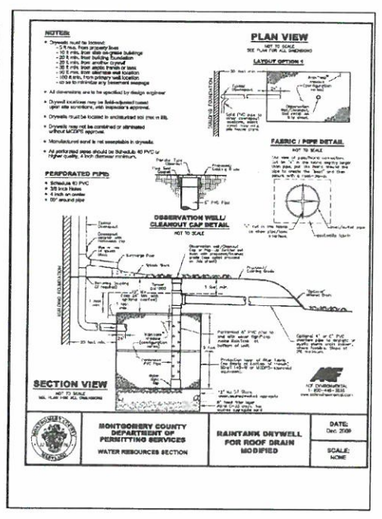


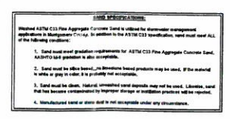
## DRYWELL MAINTENANCE SCHEDULE

Drywell Systems
Drywell systems require both periodic inspections and maintenance. The drywell is installed with an observation well that should be monitored twice a year and after every large storm event (>0.5 inches). The depth f water in the drywell should be checked each day at the same time for up to 4 days after major storm events. It is recommended that a logbook be maintained showing the depth of water in the drywell at the time of each observation in order to determine the rate at which the system dewaters after a runoff-producing storm event. Recording the depth of the drywell by measuring the distance from the top of the observation well to the bottom of the drywell will assist in determining if sediment is accumulating at the bottom. The Town Engineer will perform as-built and periodic measurements of the depth and record and keep this data at the Town office. During the measurement, it is possible to feel the consistency of the material at the bottom with a steel tape measure. At the initial installaton (as-built), the bottom should have a solid and hard feel when the tape measure is contacting the bottom. Any soft or spongy feel with the tape measure indicates debris accumulation and the possibility of a failed system or poor maintenance practices. Once the performance characteristics of the system have been verified, the Town will perform annual inspections, unless the performance data suggests that a more frequent schedule is required. The goal is to have the drywell empty through infiltration within 72 hours after a major storm event. The Town keeps a record of all systems located in the Town and archives the results of all inspections. For maintenance, drywell systems should be devoid of sediment or excessive leaves and debris entering the system. Roof gutters and downspouts should be cleared of excess leaves and tree debris in the fall and in the late spring to prevent the accumulation of debris in the drywell.

a)Gravel Drywells Gravel drywells cannot be flushed and pumped like manufactured drywell systems due to the gravel media which represents 60% percent of the drywell by volume. Standing water, or algal growth on the top of a drywell may indicate failure due to sedimentation in the gravel media. Ponding on the surface above the drywell should generally not occur for long periods (at least 48 hours) following a storm event. Algal growth that is seen in the observation well may also indicate that the system is clogged and not discharging back to the ground through infiltration. Sediment that accumulates at the bottom of the observation well, which can be felt by a steel tape measure, should not exceed 3 inches in depth. If any of these occurrences are observed, the gravel media should be excavated, cleaned and replaced.



**MISS UTILITY**

Call "Miss Utility" at 1-800-257-7777, 48 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation. The excavator is responsible for compliance with requirements of Chapter 36A of the Montgomery County Code.

NOTES:
ANY DIFFERENCES IN APPROVED SEDIMENT CONTROL PLAN 263995 AND THIS PLAN ARE SUPERCEDED BY THIS PLAN IN ACCORDANCE WITH TOWN OF CHEVY CHASE DRAINAGE ORDINANCE.

NOTE:
SOURCE OF GEOTECHNICAL REPORT:
GEOLAB
DATED APRIL 7, 2014

NOTE:
SOURCE OF TWO-FOOT CONTOUR INTERVAL TOPOGRAPHY:
MERIDIAN SURVEYS (AUGUST 2013)

STATE OF MARYLAND THOMAS A. MADDOX No. 10193 PROFESSIONAL LAND SURVEYOR

10/1/2015

0 5 10 15 20 30 40
1 INCH = 10 FEET

OWNER / OCCUPANTS
VICKI AND TONIC TEP
7202 OAKRIDGE AVENUE
CHEVY CHASE MD 20815
(P) 202-506-5595

THOMAS A. MADDOX
PROFESSIONAL LAND SURVEYOR
8933 SHADY GROVE COURT
GAITHERSBURG, MD 20877
301-330-0812
TAMPS@YMAIL.COM

DRAINAGE PLAN
**CHEVY CHASE SECTION 8 LOT 10, BLOCK F**
**TOWN OF CHEVY CHASE**
7202 OAKRIDGE AVENUE, CHEVY CHASE, MARYLAND 20815
Election District No. 7
Montgomery County, Maryland