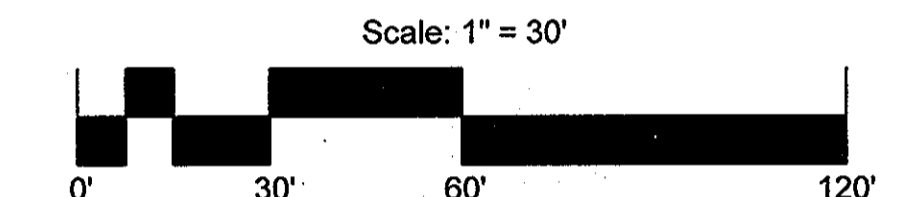


- SITE ANALYSIS DATA CHART:**
- TOTAL PROJECT AREA: 20,005 SF
  - LIMIT OF DISTURBED AREA: 17,548 SF
  - ZONING: R-20
  - PROPOSED USE: RESIDENTIAL
  - TOTAL NUMBER OF UNITS ALLOWED: 1
  - TOTAL NUMBER OF UNITS PROPOSED: 2
  - PROPERTY PREVIOUSLY APPROVED UNDER DPZ - #F-04-065, F-11-075

- GENERAL NOTES**
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
  - THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 1-800-257-777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
  - THE EXISTING BOUNDARY PER PLAT NO. 16686
  - THE SUBJECT PROPERTY IS ZONED R-20 PER THE COMPREHENSIVE ZONING PLAN.
  - THE EXISTING 2' CONTOUR INTERVAL TOPOGRAPHY IS TAKEN FROM A FIELD SURVEY PERFORMED BY MARKS & ASSOCIATES, LLC DATED JUNE, 2003.
  - THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE NAD 83 MARYLAND PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 36DC AND 36DD.
  - STORMWATER MANAGEMENT CONTROL PREVIOUSLY APPROVED ON PLAN NO. F-04-065 SUBJECT TO REVIEW. MOE REQUIREMENTS TO BE MET PER CURRENT GUIDELINES. STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I AND II. IT WAS DETERMINED THAT THE PROJECT MET THE CRITERIA OUTLINED IN THE MOE STORMWATER MANAGEMENT REGULATIONS GUIDELINES FOR IMPLEMENTATION FOR ACCEPTANCE OF THE 2000 DESIGN CRITERIA AND GRANTED A WAIVER. THIS PLAN RECEIVED FINAL PLAN APPROVAL (F-04-065) ON APRIL 6, 2004. THIS PLAN IS ALSO SUBJECT TO THE EXPIRATION OF THIS WAIVER UNLESS ALL STORMWATER MANAGEMENT IS CONSTRUCTED BY MAY 4, 2017.
  - EXISTING UTILITIES BASED UPON PUBLIC WATER CONTRACT # 44-3182 AND PUBLIC SEWER CONTRACT # 20-3363.
  - ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
  - SHC ELEVATIONS SHOWN ARE LOCATED AT THE PROPERTY LINE.
  - IN ACCORDANCE WITH SECTION 128 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS. PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR SETBACK.
  - FOR DRIVE WAY ENTRANCE DETAILS REFER TO THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD DETAIL R 6.06.
  - DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
    - WIDTH - 12' (6' SERVING MORE THAN ONE RESIDENCE);
    - SURFACE - 6" OF COMPACTED CRUSHER RUN BASE WITH R AND CHIP COATING (1-1/2 MIN.);
    - GEOMETRY - MAX. 15% GRADE, MAX. 10% GRADE CHANGE AND MIN. 45' TURNING RADIUS;
    - STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SAFELY PASSING 100 YR. FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE;
    - MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
  - THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
  - THE FOREST CONSERVATION OBLIGATION FOR THIS PLAN WAS SATISFIED WITH THE FINAL PLAN, F-04-065.

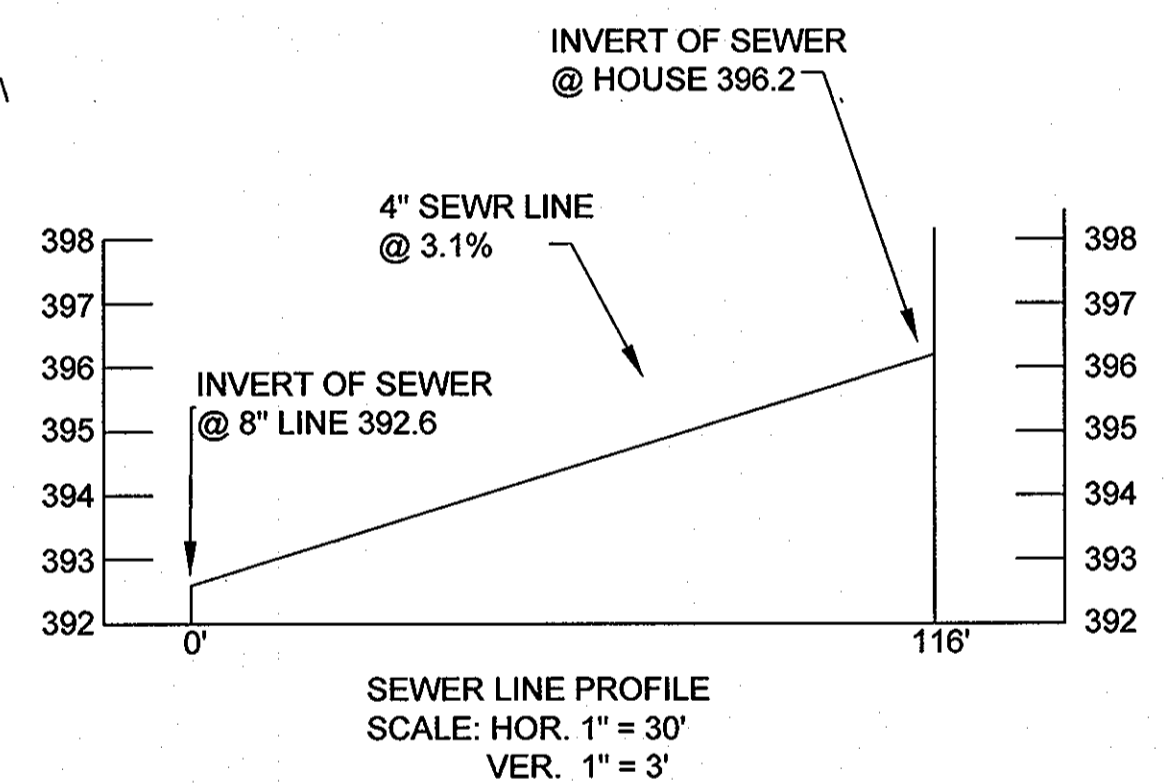


**SEQUENCE OF CONSTRUCTION**

- Prior to clearing trees, installing sediment control measures, or grading, a preconstruction meeting must be conducted on-site with the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division (410) 313-1855 (48 hours notice), the Owners representative, and the site Engineer. This should be conducted in a single day convenient to all parties.
- The limits of disturbance must be field marked prior to clearing of trees, installation of sediment control measures, construction, or other land disturbing activities. This can be completed in a single day unless unforeseen weather delay.
- Clear and grade for installation of sediment control devices. This should be completed in one week unless unforeseen weather delay.
- Install sediment control devices. Traps and basins shall be constructed prior to construction of any earth dikes that convey drainage to a trap and/or basin. This should be completed in 1-2 days unless unforeseen weather delay.
- Once the sediment control devices are installed, the permittee must obtain written approval from the HCDILP inspector before proceeding with any additional clearing, grubbing or grading. Subject to HCDILP inspector schedule, this should take no more than 2 days.
- Construct driveway and new house with grading of the site as needed within limit of disturbance. Project should be completed in 6 months unless unforeseen weather delays.
- Construct stormwater management facilities. Task should be completed within 7 days unless unforeseen weather delays. Planting subject to availability of plant material.
- All disturbed areas must be topsoiled (see topsoiling specifications on plan) prior to final stabilization. Task should be completed within 1-2 days unless unforeseen weather delays.
- Prior to the removal of any sediment control device permittee must obtain written approval from HCDILP inspector.

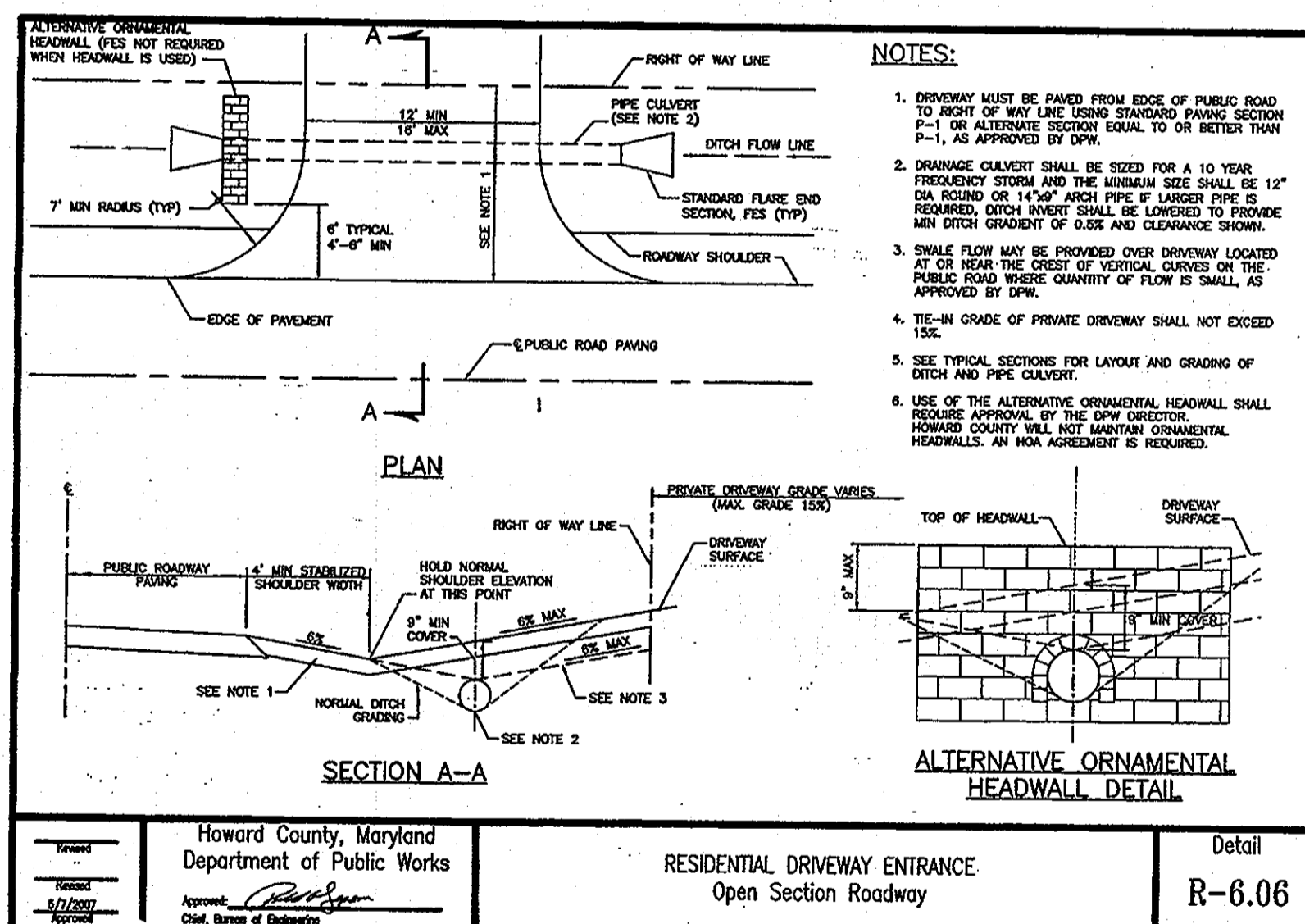
**LEGEND**

- New House
- Property Line
- Existing Contour
- Proposed Grading
- Limit of Disturbance
- Silt Fence
- Downspout / Roofleader Location
- Rooftop Disconnect Flow Path
- Water House Connection
- Sewer House Connection
- Soil Type
- Utility Pole
- Rain Garden
- Stabilized Construction Entrance
- Soil Boring Test Site



**SOILS CHART**

SYMBOL	NAME	COMMENTS
B/C3	Brandywine Loam	8 to 15 % slope, severely eroded
G1B2	Glenelg Loam	3 to 8 % slope, moderately eroded
GnB2	Glenview Silt Loam	8 to 15 % slope, moderately eroded



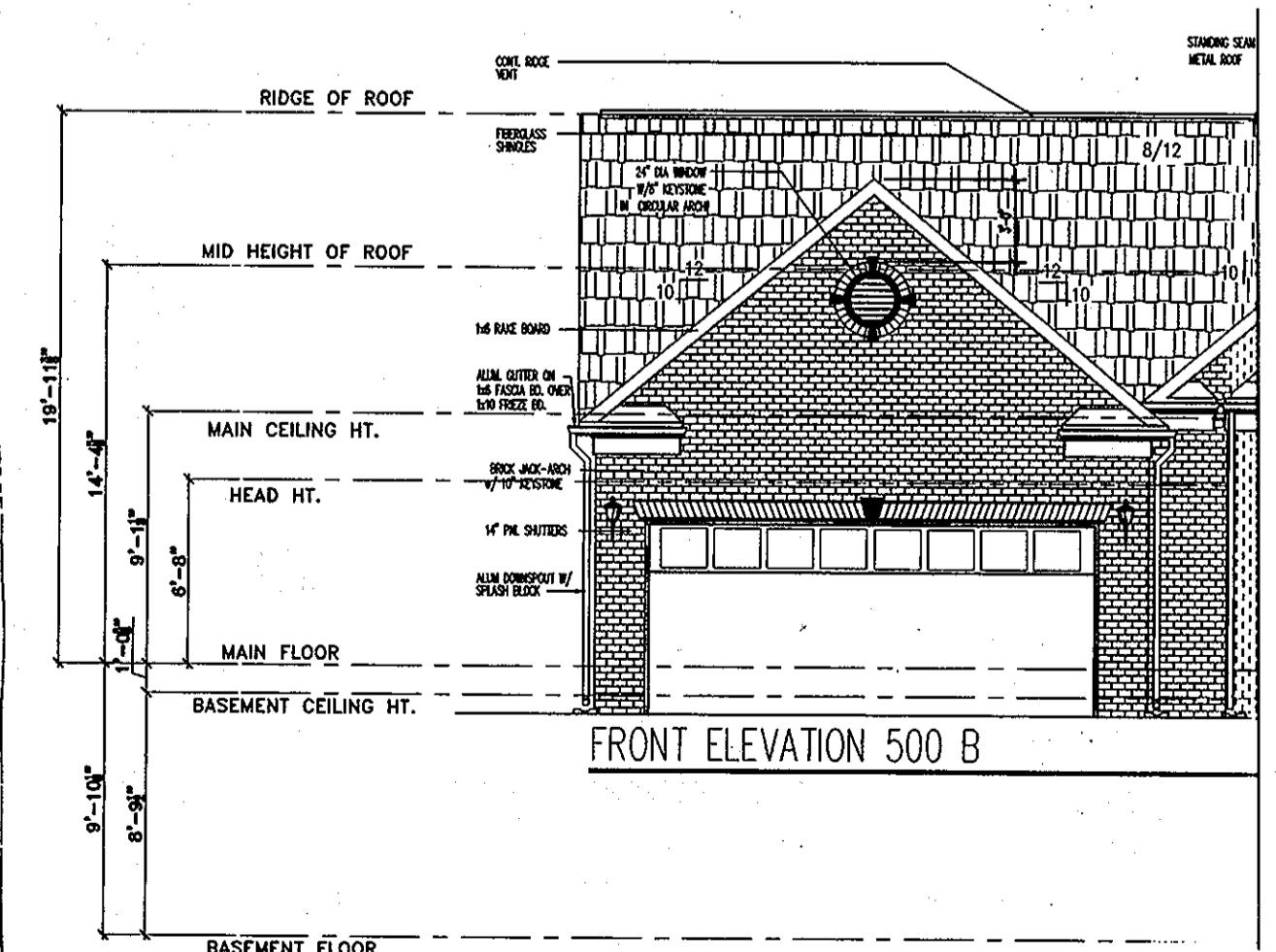
Howard County, Maryland  
Department of Public Works  
RESIDENTIAL DRIVEWAY ENTRANCE  
Open Section Roadway  
Detail  
R-6.06

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.  
*John K. Volz* 5/3/11  
Howard SCD Date

**ENGINEER'S CERTIFICATE**  
"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."  
*David W. McKee* 4-26-11  
Signature of Engineer (print name below signature) Date

**DEVELOPER'S CERTIFICATE**  
"I certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel involved in the construction project will have a Certificate of Attendance as a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."  
*Levon & Frances Parker* 4/27/2011  
Signature of Developer (print name below signature) Date

APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Chris Williams* 5/9/11  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*Vest Sanderlin* 5/11/11  
CHIEF, DEVELOPMENT OF LAND DEVELOPMENT DATE  
*Thomas & Swick* 5/11/11  
DIRECTOR DATE



**SHEET INDEX**

SHEET No. 1	SDP
SHEET No. 2	SDP - NOTES & DETAILS
SHEET No. 3	LANDSCAPE PLAN

**B&A**  
Benning & Associates, Inc.  
Land Planning Consultants  
8933 Shady Grove Court  
Gaithersburg, MD 20877  
(301)948-0240

**OWNER/DEVELOPER:**  
**LEVON & FRANCES PARKER**  
421 OLD LINE AVE  
LAUREL, MD 20724  
301-498-5512

**ADDRESS CHART**

LOT/PARCEL #	STREET ADDRESS
LOT 1	6027 JERRY'S DRIVE

**PERMIT INFORMATION CHART**

Subdivision Name	Section/Area	Lot/Parcel No.
NEWMAN PROPERTY		LOT 1
Plan #	1765	
Water Code		

**REVISIONS**

Date	Description
1-January-21-2014	
2-February-16-2011	BASEMENT EGRESS RELOCATED FROM REAR OF HOUSE TO SIDE. 4/11/11

**SITE DEVELOPMENT PLAN**  
**Lot 1 of the Newman Property**  
**Plat No. 16686-21565**  
**Tax Map No. 35 Fifth Election District**  
**Grid 12, Parcel 179**  
**Howard County, Maryland**

DESIGN BY: DW  
DRAWN BY: PH  
CHECKED BY: DW  
DATE: NOV. 2010  
SCALE: 1" = 30'

HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 2001 EXPIRATION DATE: 10/21/2012

1 SHEET OF 3

MD-378 CONSTRUCTION SPECIFICATIONS FOR STORMWATER MANAGEMENT FACILITIES: These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

**Site Preparation**  
Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment. Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared. All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

**Earth Fill**  
**Material** - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6" from or other objectionable materials. Fill material for the center of the embankment and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

**Placement** - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

**Compaction** - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out. When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within ± 2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

**Cut Off Trench** - The cutoff trench shall be excavated into impervious material along or parallel to the line of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

**Embankment Core** - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

**Structure Backfill**  
Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

**Pipe Conduits**  
All pipes shall be circular in cross section.  
**Corrugated Metal Pipe** - All of the following criteria shall apply for corrugated metal pipe:  
1. Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

3. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, pre-punched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard lap type band with 12-inch wide by 3/8 inch thick closed cell circular neoprene gasket; and a 12-inch wide huggie type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8 inch thick closed cell circular neoprene gasket will be installed within 12 inches on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable. Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

5. Backfilling shall conform to "Structure Backfill".

6. Other details (anti-seep collars, valves, etc.) shall be as shown on drawings.

**Reinforced Concrete Pipe** - All of the following criteria shall apply for reinforced concrete pipe:

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.

2. Bedding - Reinforced concrete pipe conduits shall be laid in concrete bedding / cradle for their entire length. This bedding / cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

3. Laying pipe - bell and spigot pipe shall be placed with the bell and upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.

4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti-seep collars, valves, etc.) shall be shown on the drawings.

**Drainage Diaphragms** - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

**Concrete**  
Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

**Rock Riprap**  
Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

**Care of Water during Construction**  
All work on permanent structures shall be carried out in areas free from water. The contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

**Stabilization**  
All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

**Erosion and Sediment Control**  
Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

**ESD CALCULATIONS:**

Lot 1  
Total Area - 20,005 sf (0.46 ac)  
Hydrologic Soil Group B (GB, GbC) - 100%  
RCN = 55

Proposed Impervious - New House (roof) - 3,177 sf  
Driveway - 1,040 sf  
Total - 4,217 sf or 21%

$R_v = 0.05 + (0.009)(21) = 0.24$

ESD targets  
 $P_e = 1.2"$   
 $R_v = 0.24"$

$ESD_v = 1.2(24)(20,005)/12 = 480$  cf of total storage to be provided

Non Rooftop Disconnect (Driveway)  
 $V = 1(95)(1,040)/12 = 82$  cf of storage provided

**Rain Garden Calculations**

Raingarden #1 designed to treat 1,940 sf of impervious surface (rooftop)

Surface area (Af) of raingarden shall be at least 2% of the contributing Drainage Area  
 $A_f = 207$  sf or 10.6%  
 $P_e = 10(207 / 1,940) = 1.1"$

Storage - Raingarden will have 6" of ponding depth and 1' of planting soil. A 3" layer of mulch with porosity(n) of 0.4 is to be placed on top.

$(207 \times .5) + [(207 \times 1.25) \times .4] = 207$  cf provided  
ponding depth storage in media

Raingarden #2 designed to treat 1,237 of impervious surface (rooftop).

Surface area (Af) of raingarden shall be at least 2% of the contributing Drainage Area  
 $A_f = 191$  sf or 15.4%  
 $P_e = 10(191 / 1,237) = 1.5"$

Storage - Raingarden will have 6" of ponding depth and 1' of planting soil. A 3" layer of mulch with porosity(n) of 0.4 is to be placed on top.

$(191 \times .5) + [(191 \times 1.25) \times .4] = 191$  cf provided  
ponding depth storage in media

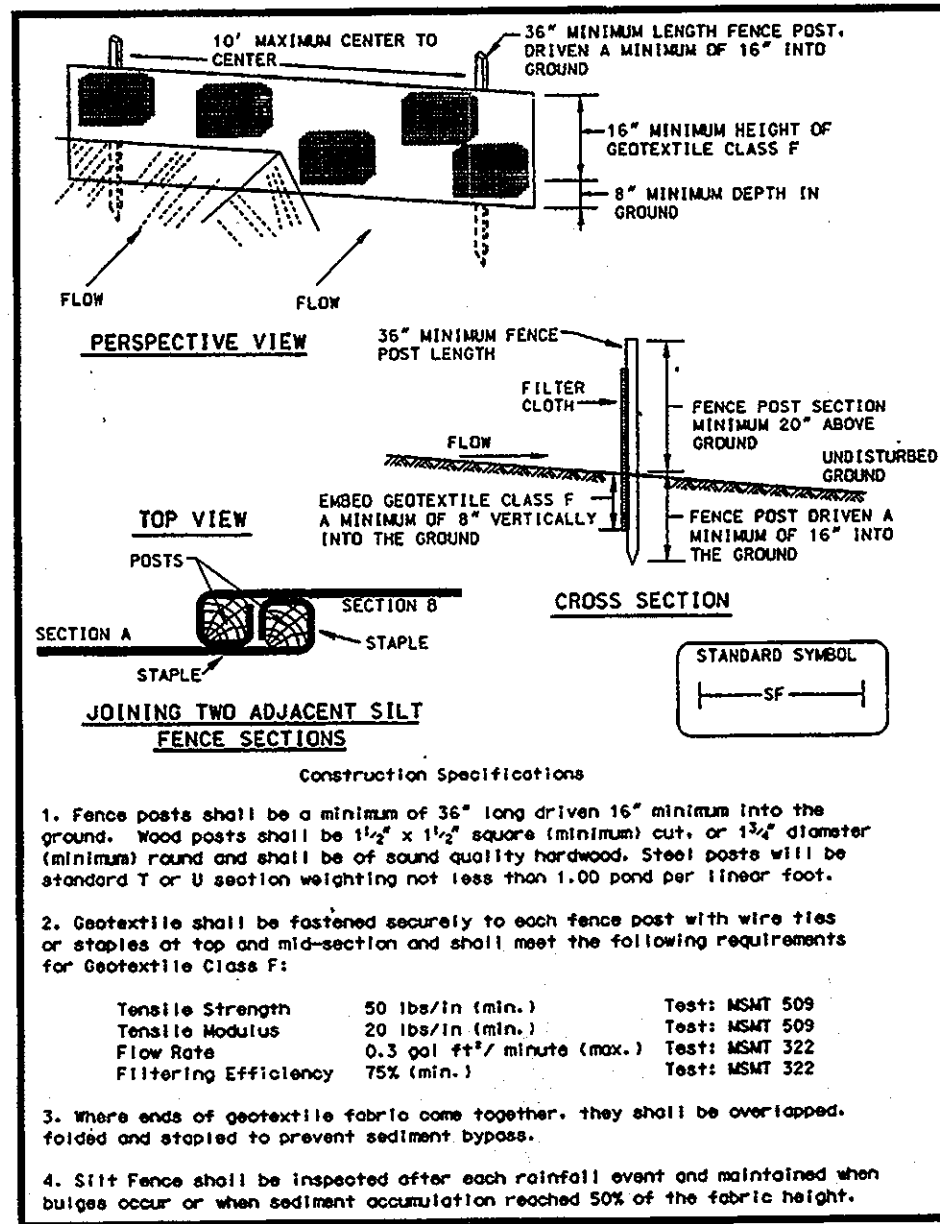
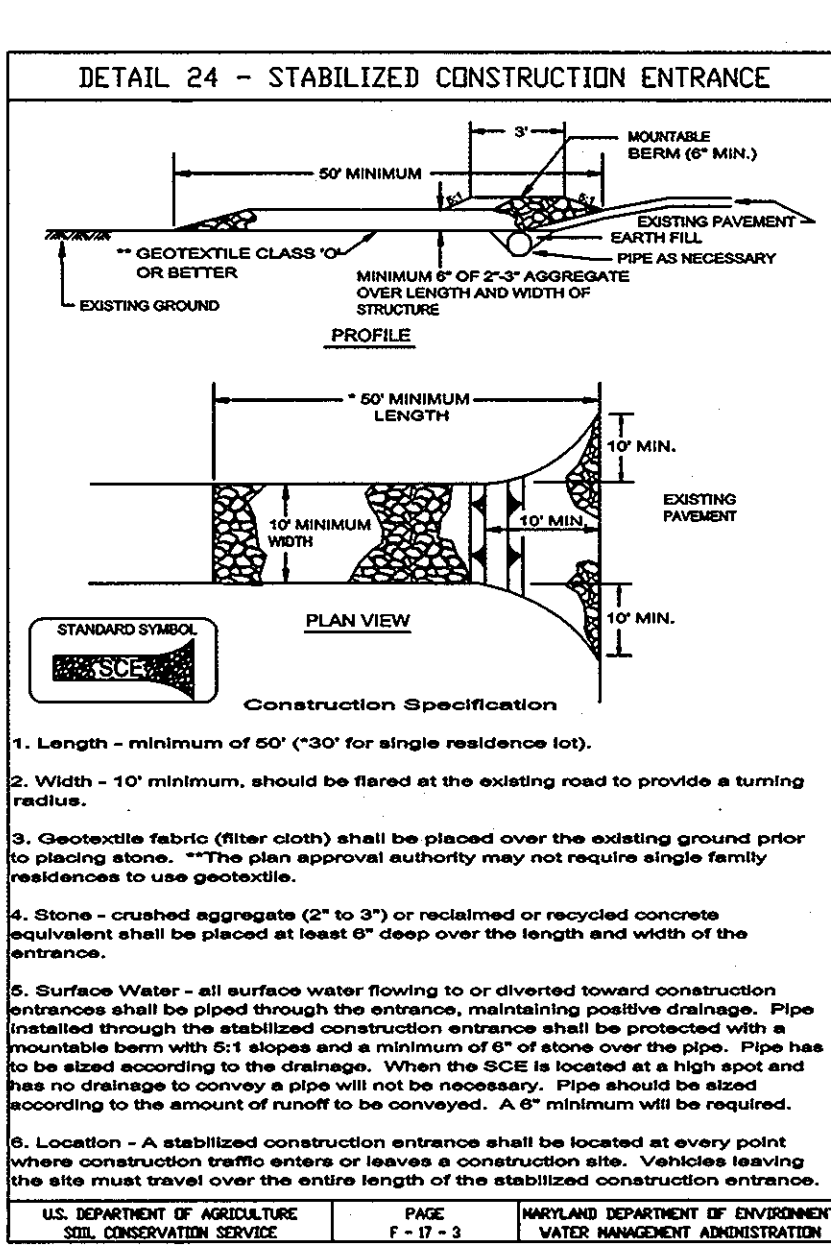
Total Storage provided  $82cf + 207cf + 191cf = 480cf$

**HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES**

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
2. All vegetative and structural practices are to be installed according to the provisions of this plan and area to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol 1, Chapter 12 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis:  
Total Area of Site - 0.46 Acres  
Area Disturbed - 0.40 Acres  
Area to be roofed or paved - 0.09 Acres  
Area to be vegetatively stabilized - 0.31 Acres  
Total Cut - 450 Cu. Yds.  
Total Fill - 575 Cu. Yds.  
Offsite waste/borrow area location: To be determined
8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each work day, whichever is shorter.

**PERMANENT SEEDING NOTES**

- Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.
- Seedbed Preparation:** Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.
- Soil Amendments:** In lieu of soil test recommendations, use one of the following schedules:
1. Preferred - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 ureaform fertilizer (90 lbs/1000 sq. ft.).
  2. Acceptable - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil.
- Seeding** - For the periods March 1-April 30, and August 1-October 15, seed with 60 lbs/acre (1.4 lbs/1000 sq. ft.) of Kentucky 31 Tall Fescue. For the period May 1-July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs/acre (.05 lbs/1000 sq. ft.) of weeping lovegrass. During the period of October 16-February 28, protect site by:  
Option 1 - Two tons per acre of well anchored straw mulch and seed as soon as possible in the spring.  
Option 2 - Use sod.  
Option 3 - Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.
- Mulching** - Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq. ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq. ft.) for anchoring.
- Maintenance** - Inspect all seedling areas and make needed repairs, replacements and reseedings.
- TEMPORARY SEEDING NOTES**  
Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.
- Seedbed preparation:** Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.
- Soil Amendments:** Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).
- Seeding** - For periods March 1-April 30 and from August 15-October 15, seed with 2 1/2 bushel per acre of annual rye (3.2 lbs/1000 sq. ft.). For the period May 1-August 14, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 sq. ft.). For the period November 16-February 28, protect site by applying 2 tons/acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.
- Mulching** - Apply 1 1/2 to 2 tons/acre (70 to 90 lbs/1000 sq. ft.) of unrotted weed-free, small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 ft or higher, use 348 gal. per acre (8 gal/1000 sq. ft.) for anchoring.
- Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.

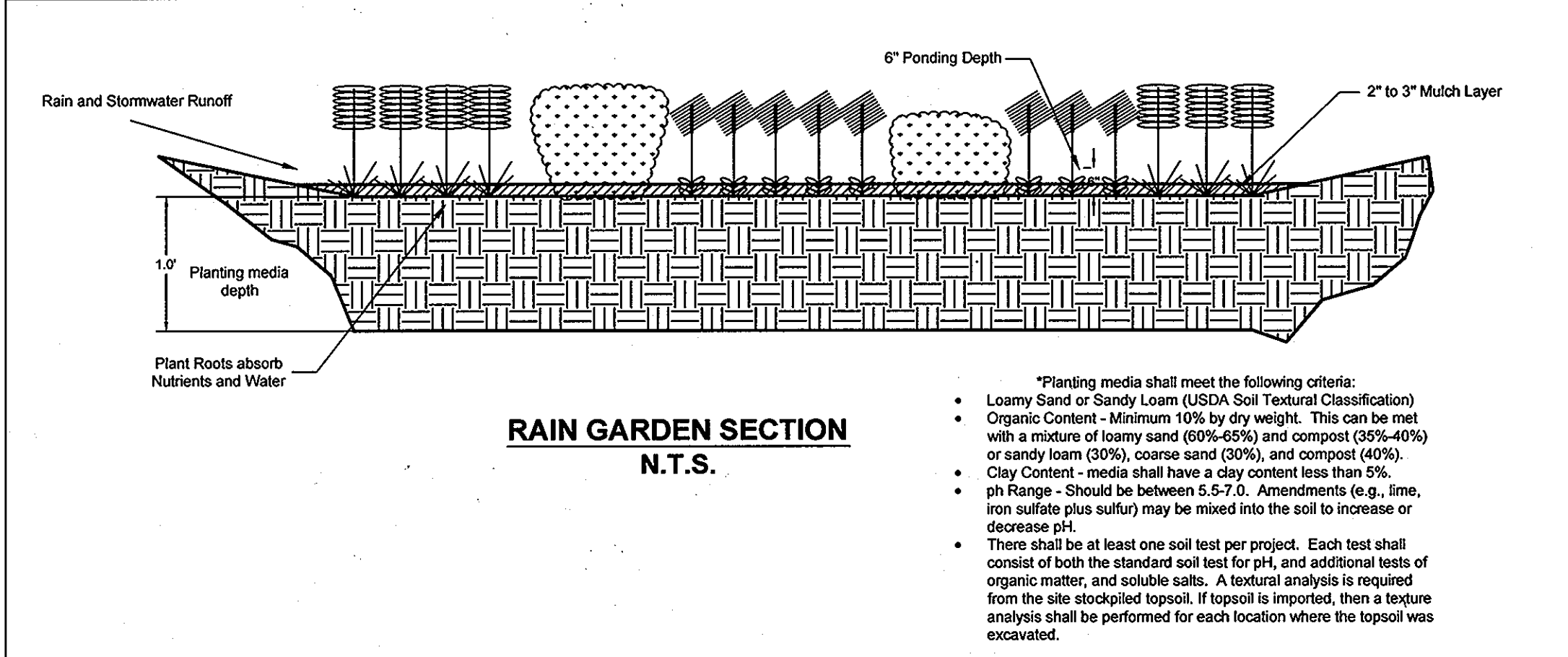


**OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), ENHANCED FILTERS (M-9)**

1. Annual maintenance of plant material, mulch layer and soil layer is required. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland Stormwater Design Manual Volume II, Table A.4.1 and 2.
2. Schedule of plant inspection will be twice a year in spring and fall. This inspection will include removal of dead and diseased vegetation considered beyond treatment. Treatment of all diseased trees and shrubs and replacement of all deficient stakes and wires.
3. Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer once every 2 to 3 years.
4. Soil erosion to be addressed on an as needed basis, with a minimum of once per month and after heavy storm events.

**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1) DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)**

1. Maintenance of areas receiving disconnected runoff is generally no different than that required for other lawn or landscaped areas. The areas receiving runoff should be protected from future compaction or development of impervious area. In commercial areas, foot traffic should be discouraged as well.



APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 5/11/11

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT  
Signature of Engineer (print name below signature)  
Date: 5/3/11

ENGINEER'S CERTIFICATE  
I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.  
Signature of Engineer (print name below signature)  
Date: 4-26-11

DEVELOPER'S CERTIFICATE  
I/We certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District.  
Signature of Developer (print name below signature)  
Date: 4/07/2011

REVISIONS  
1. January 21 - 2011  
2. February 15, 2011  
BASEMENT FLOORS REMOVED FROM REAR OF HOUSE 6/1/13

**SITE DEVELOPMENT PLAN**  
Lot 1 of the Newman Property  
Plat No. 16686 21565  
Tax Map No. 35 Fifth Election District  
Grid 12, Parcel 179  
Howard County, Maryland

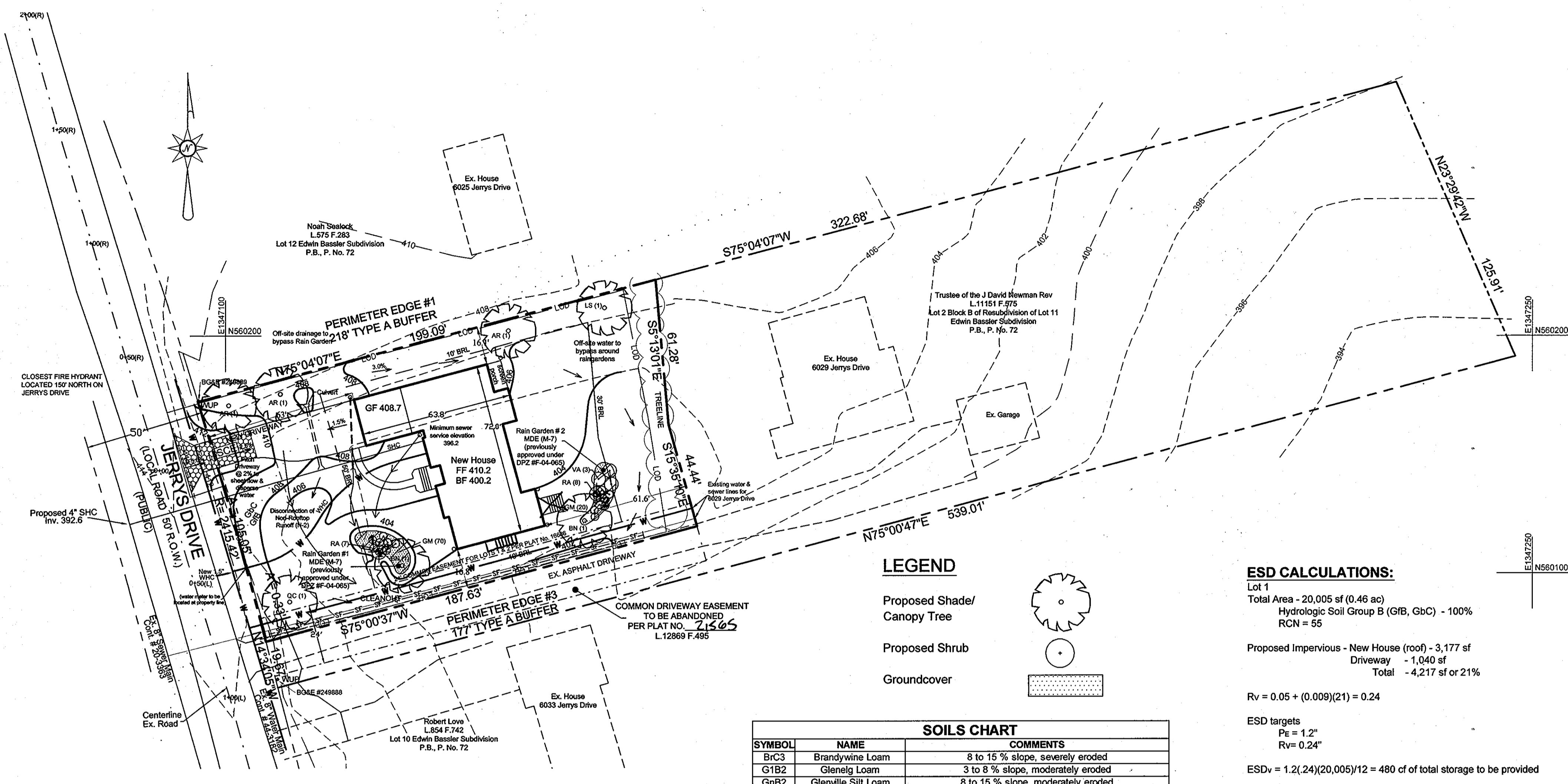
DESIGN BY: DVM  
DRAWN BY: DVM  
CHECKED BY: PHS  
DATE: NOV. 2010  
SCALE: 1" = 30'

HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 2001  
EXPIRATION DATE: 10/21/2012

2 SHEET OF 3

**B&A** Benning & Associates, Inc.  
Land Planning Consultants  
8933 Shady Grove Court  
Gaithersburg, MD 20877  
(301)948-0240

OWNER/DEVELOPER:  
**LEVON & FRANCES PARKER**  
421 OLD LINE AVE  
LAUREL, MD 20724  
301-498-5512



Location #1

Project: Raingardens @ 6027 Jerry's Drive  
Client: Benning & Associates, Inc.  
Location: Columbia, Howard County, Maryland

Project No.: 1113  
Date: 01/09/2011  
Est. Elevation: 404 +/-

App. Depth to Water	Soil Profile	USCS	Description	Depth	Moisture	Specific Gravity
0.0 - 1.0	CL	CL	Topsoil & organic Medium brown, moist, silty Clayey silt	1.0'	7	2.65
1.0 - 2.0	ML	ML	Brown, moist, silty, loose fine sand, trace clay	2.0'	8	2.65
2.0 - 3.0	SM	SM	Light to medium brown, moist, sandy silty sand	3.0'	10	2.65
3.0 - 4.0	SP	SP	Sandy loam (SEDA)	4.0'	18	2.65
4.0 - 5.0	SC	SC	Light brown, moist, medium to course sand, some silt & weathered rock fragments	5.0'	24	2.65

SOIL BORING LOG: LOCATION 1

Location #2

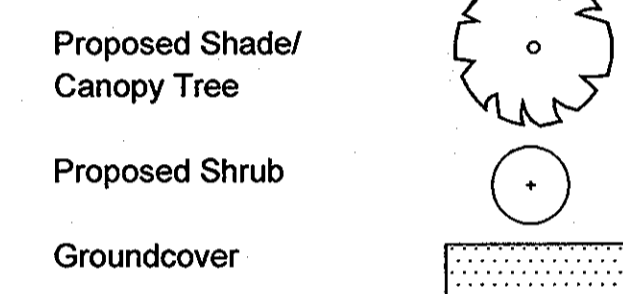
Project: Raingardens @ 6027 Jerry's Drive  
Client: Benning & Associates, Inc.  
Location: Columbia, Howard County, Maryland

Project No.: 1113  
Date: 01/09/2011  
Est. Elevation: 402 +/-

App. Depth to Water	Soil Profile	USCS	Description	Depth	Moisture	Specific Gravity
0.0 - 1.0	CL	CL	Topsoil & organic Brown, moist, clayey silt	1.0'	8	2.65
1.0 - 2.0	ML	ML	Brown, moist, sandy silt, trace clay	2.0'	8	2.65
2.0 - 3.0	SM	SM	Medium brown, moist, sandy silty sand	3.0'	12	2.65
3.0 - 4.0	SP	SP	Sandy loam (SEDA)	4.0'	18	2.65
4.0 - 5.0	SC	SC	Light brown, moist, medium to course sand, some silt & weathered rock fragments	5.0'	20	2.65

SOIL BORING LOG: LOCATION 2

LEGEND



SOILS CHART

SYMBOL	NAME	COMMENTS
Brc3	Brandywine Loam	8 to 15 % slope, severely eroded
G1B2	Glenella Loam	3 to 8 % slope, moderately eroded
GnB2	Glenville Silt Loam	8 to 15 % slope, moderately eroded

ESD CALCULATIONS:

Lot 1  
Total Area - 20,005 sf (0.46 ac)  
Hydrologic Soil Group B (G1B, GbC) - 100%  
RCN = 55

Proposed Impervious - New House (roof) - 3,177 sf  
Driveway - 1,040 sf  
Total - 4,217 sf or 21%

Rv = 0.05 + (0.009)(21) = 0.24

ESD targets  
Pe = 1.2"  
Rv = 0.24"

ESDv = 1.2(.24)(20,005)/12 = 480 of total storage to be provided

Non Rooftop Disconnect (Driveway)  
V = 1(.95)(1,040) / 12 = 82 of storage provided

Rain Garden Calculations

Raingarden #1 designed to treat 1,940 sf of impervious surface (rooftop)

Surface area (Af) of raingarden shall be at least 2% of the contributing Drainage Area  
Af = 207 sf or 10.6%  
Pe = 10 (207 / 1,940) = 1.1"

Storage - Raingarden will have 6" of ponding depth and 1' of planting soil. A 3" layer of mulch with porosity(n) of 0.4 is to be placed on top.

(207 x .5) + [(207 x 1.25) x .4] = 207 cf provided  
ponding depth storage in media

Raingarden #2 designed to treat 1,237 sf of impervious surface (rooftop)

Surface area (Af) of raingarden shall be at least 2% of the contributing Drainage Area  
Af = 191 sf or 15.4%  
Pe = 10 (191 / 1,237) = 1.5"

Storage - Raingarden will have 6" of ponding depth and 1' of planting soil. A 3" layer of mulch with porosity(n) of 0.4 is to be placed on top.

(191 x .5) + [(191 x 1.25) x .4] = 191 cf provided  
ponding depth storage in media

Total Storage provided 82cf + 207cf + 191cf = 480cf

LANDSCAPE NOTES  
AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.

THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.

THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. LANDSCAPE SURETY IN THE AMOUNT OF \$2,100.00 IS REQUIRED AS PART OF THE BUILDERS GRADING PERMIT.

THE LOCATION AND SPECIES FOR PERIMETER LANDSCAPING IS SHOWN ON PLAN.

NO LANDSCAPING TO BE INSTALLED WITHIN ANY PUBLIC EASEMENT FOR WATER, SEWER OR STORM DRAIN.

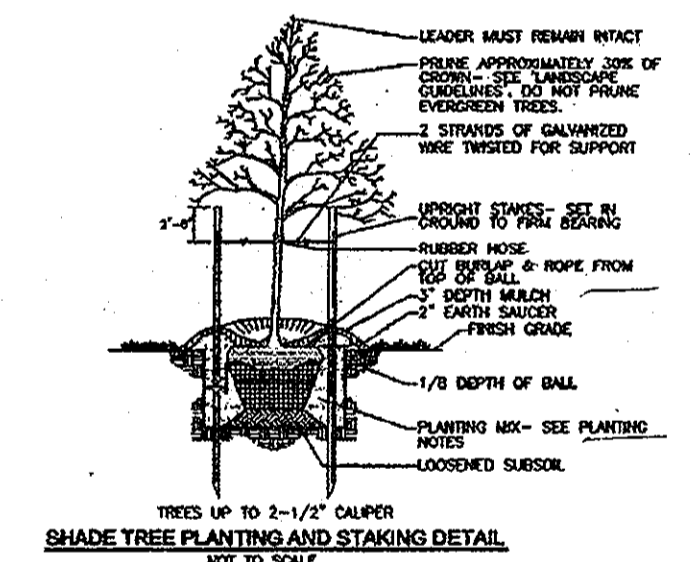
THERE ARE NO SPECIMEN TREES ON THIS SITE

NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN THE LANDSCAPE EDGE FOR WHICH CREDIT IS TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS AUTHORIZED.

PLANT SCHEDULE - RECOMMENDED SPECIES LIST

KEY	QUANTITY	SIZE	SCIENTIFIC NAME	COMMON NAME	SPACING	COMMENTS
GM	70	#1	Geranium maculatum	Cranesbill	12" o.c.	
<b>Shrubs: 7</b>						
KEY	QUANTITY	SIZE	SCIENTIFIC NAME	COMMON NAME	SPACING	COMMENTS
RA	7	3 gal	Rhus aromatica	Fragrant Sumac	3' o.c.	
<b>Rain Garden #2</b>						
KEY	QUANTITY	SIZE	SCIENTIFIC NAME	COMMON NAME	SPACING	COMMENTS
GM	20	#1	Geranium maculatum	Cranesbill	12" o.c.	
<b>Shrubs: 11</b>						
RA	8	3 gal	Rhus aromatica	Fragrant Sumac	3' o.c.	
VA	3	24" -36"	Viburnum acerifolium	Maple Leaf Viburnum	7' o.c.	
<b>Perimeter Edge</b>						
<b>Trees: 7</b>						
KEY	QUANTITY	SIZE	SCIENTIFIC NAME	COMMON NAME	SPACING	COMMENTS
AR	3	2.5" -3' cal	Acer rubrum 'October Glory'	Red Maple	25' o.c.	
BN	2	2.5" -3' cal	Betula nigra 'Heritage'	Heritage Clump Birch		
LS	1	2.5" -3' cal	Liquidambar styraciflua	Sweetgum		
QC	1	2.5" -3' cal	Quercus coccinea	Scarlet Oak		

No substitutions without prior approval



I/WE FURTHER CERTIFY THAT UPON COMPLETION, A LETTER OF NOTICE, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS AS SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

*Lawi Parker*  
NAME  
4/27/2011  
DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

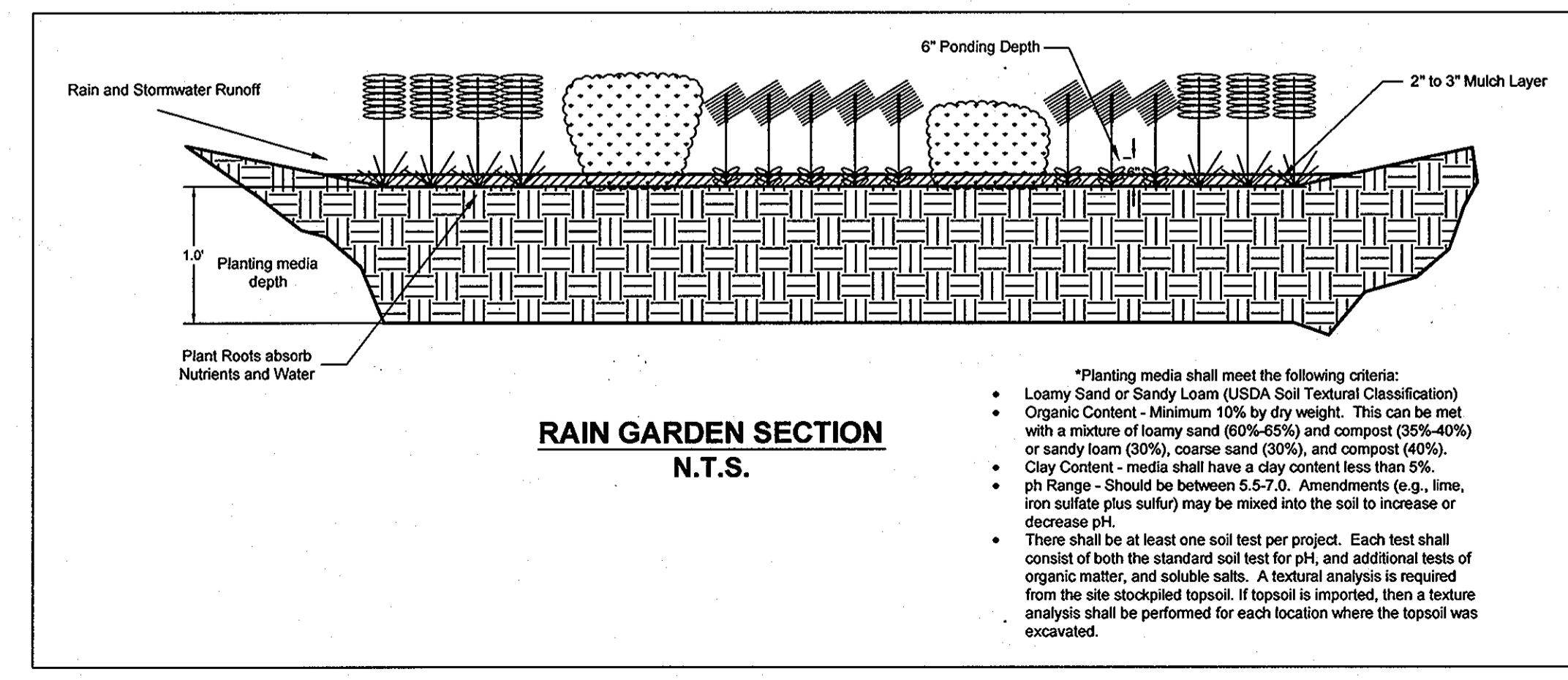
Howard SCD \_\_\_\_\_ Date \_\_\_\_\_

ENGINEER'S CERTIFICATE  
"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

*David W. McKee*  
Signature of Engineer (print name below signature)  
4-26-11  
Date

DEVELOPER'S CERTIFICATE  
"We certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."

*Levon D. Parker*  
Signature of Developer (print name below signature)  
4/27/2011  
Date



\*Planting media shall meet the following criteria:

- Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
- Organic Content - Minimum 10% by dry weight. This can be met with a mixture of loamy sand (60%-65%) and compost (35%-40%) or sandy loam (30%), coarse sand (30%), and compost (40%).
- Clay Content - media shall have a clay content less than 5%.
- pH Range - Should be between 5.5-7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textual analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*William D. Parker* 5/9/11  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Vet Sheehan* 5/11/11  
CHIEF, DEVELOPMENT OF LAND DEVELOPMENT DATE

*Dorcas E. Butler* 5/11/11  
DIRECTOR DATE

REVISIONS

1. January 24, 2011  
2. February 15, 2011  
*PERIMETER CREDITS RELOCATED FROM REAR OF HOUSE TO SIDE YARD*

**SUPPLEMENTAL PLAN - LANDSCAPE PLAN**  
Lot 1 of the Newman Property  
Plat No. 16686- 21565  
Tax Map No. 35 Fifth Election District  
Grid 12, Parcel 179  
Howard County, Maryland

DESIGN BY: DWM  
DRAWN BY: PHS  
CHECKED BY: DWM  
DATE: NOV. 2010  
SCALE: 1" = 30'

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 2001  
EXPIRATION DATE: 10/21/2012

3 SHEET OF 3