

QUANTITIES				
ITEM	UNIT	ESTIMATE	AS-BUILT	SUPPLIER
8" D.I.P. CLASS 54	L.F.	236	236	BRS
8" VALVE	EA.	1	1	BRS
8" CAP	EA.	1	1	BRS
1" W.H.C. & VALVE	EA.	1	1	BRS
8" 1/8" HORIZ. BEND	EA.	2		

HOWARD COUNTY

DEPARTMENT OF PUBLIC WORKS

ELLICOTT CITY, MARYLAND 21043

GENERAL NOTES

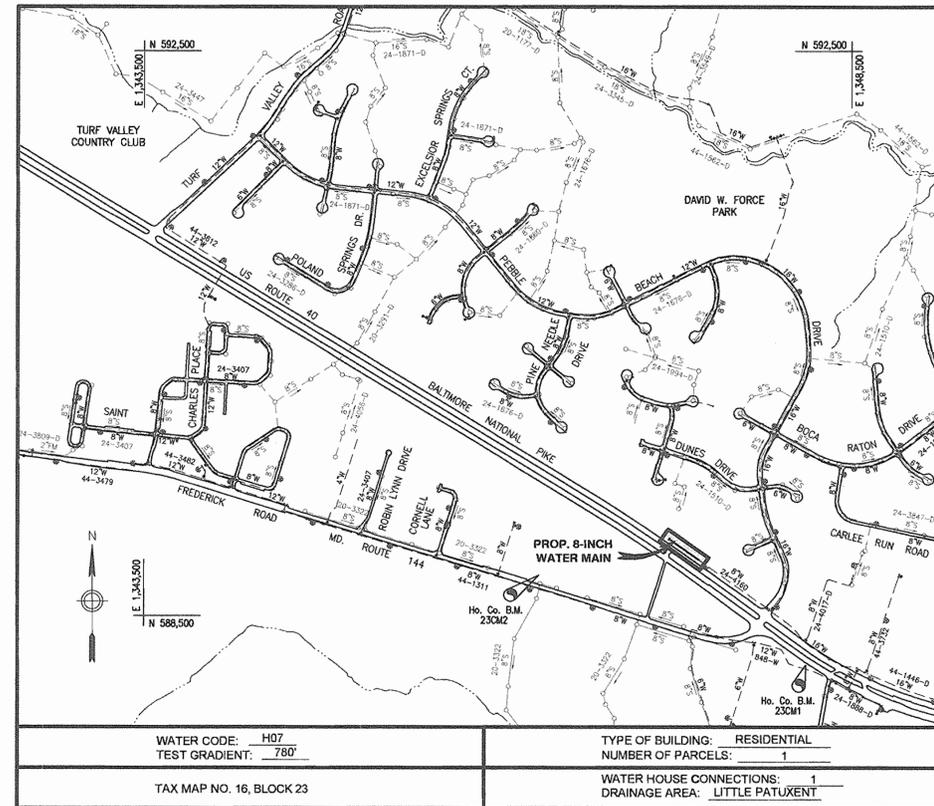
- Approximate location of existing mains are shown. The Contractor shall take all necessary precautions to protect existing mains and services and maintain uninterrupted service. Any damage incurred shall be repaired immediately to the satisfaction of the Engineer by the Contractor at the Contractor's expense.
- Topographic field surveys were performed on February 2007 by Dewberry & Davis LLC.
- Horizontal and Vertical Survey Controls:
The coordinates shown on the drawings are based on Maryland State Reference System NAD 83/91 as projected by Howard County Geodetic Control Stations Howard Co. B.M. 23CM1 and B.M. 23CM2.
- All pipe elevations shown are invert elevations unless otherwise noted on the plans.
- Clear all utilities by a minimum of 12". Clear all poles by 5'-0" minimum or tunnel as required unless otherwise noted. The owner has contacted the utility companies and has made arrangements for bracing of poles as shown on the drawings. In the event the Contractor's work requires the bracing of additional poles, any cost incurred by the owner for the bracing of additional poles or damages shall be deducted from monies owed the Contractor. The Contractor shall coordinate with the utility companies to schedule the bracing of the poles.
- For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The Contractor shall have a copy of Volume IV on the job.
- All existing utilities shall be test pitted/located as necessary and in advance of the proposed construction, in order to properly make all required utility crossings and/or connections. Any discrepancies or utility conflicts shall be immediately reported to the Engineer. Where test pits have been made on existing utilities, they are noted by the symbol  at the location of the test pit. A note or notes containing the results of the test pit or pits is included on the drawings or specifications. Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the Contractor two (2) weeks in advance of construction operations at his own expense.
- Contractor shall notify the following utility companies or agencies at least five (5) working days before starting work shown on these plans:

AT&T	1-800-252-1133
BGE - Contractor Services	410-850-4620
BGE - Emergency	410-685-1400
State Highway Administration	410-531-5533
Bureau of Utilities (DPW)	410-313-4900
Verizon	1-800-743-0033 / 410-224-9210
Colonial Pipeline Co.	410-795-1390
Miss Utility	1-800-257-7777
- Trees and shrubs are to be protected from damage to the maximum extent. Trees and shrubs located within the construction strip are not to be removed or damaged by the Contractor.
- Contractor shall remove trees, stumps and roots along the line of excavation. Payment for such removal shall be included in the unit price bid for construction of the main.
- The Contractor shall notify the Howard County Bureau of Highways at (410) 313-7450 at least five (5) working days before any open cut, boring/jacking or trenchless installation operation of any county roads for laying water/sewer mains or house connections. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code.
- The Contractor is responsible for contacting the various businesses and coordinating his work activities so as not to negatively impact connected customers. The installation of water main shall cause a minimum of disturbance to the existing businesses and notification to the businesses of any "interruptions of service" shall be the responsibility of the Contractor. The County requires that the Contractor notify each business affected, by letter or with door tags, of the impending service interruption at least 48 hours in advance of the planned interruption. In the event of an unplanned interruption, the Contractor will be responsible for notifying the businesses by "door to door" canvassing.
- The Contractor shall provide all necessary lines, grades and elevations, and cut sheets shall be prepared based on the lines and grades shown on the Contract drawings.

BENCH MARKS

HO. CO. B.M. 23CM1
 ALSO KNOWN AS #3240001
 CONCRETE MONUMENT 0.5' ABOVE SURFACE
 NAD 83: N 588,155.63 E 1,348,180.58
 NAVD 88: EL. 490.489

HO. CO. B.M. 23CM2
 ALSO KNOWN AS 23TB
 34" IRON ROD AT SURFACE
 NAD 83: N 588,792.71 E 1,346,293.48
 NAVD 88: EL. 447.084



VICINITY MAP
 SCALE: 1" = 600'

U.S. ROUTE 40 WATER MAIN EXTENSION TO CEMETERY LANE

CAPITAL PROJECT W-8698 CONTRACT NO. 44-4473

WATER MAIN NOTES

- Tops of water mains shall have a minimum of 3'-6" of cover unless otherwise noted.
- Valves adjacent to tees shall be strapped to tees.
- All fittings shall be restrained joints unless otherwise provided for on the drawings.
- Fire Hydrants shall be set to the bury line elevations shown on the drawings. All fire hydrants shall be installed in accordance with Standard Details. Soil around the fire hydrant shall be compacted in accordance with Section 1000 and Section 1005 of the Howard County Standard Specifications.
- The Contractor shall not operate any water main valves on the existing water system.
- Fire Hydrants to be removed shall be returned to:
 Howard County Bureau of Utilities
 8250 Old Montgomery Road
 Columbia, Md. 21045
 410-313-4900
- The Contractor shall notify the Howard County Bureau of Utilities at least fifteen (15) days prior to any water main shut downs.
- All ductile iron pipes to be used on the public water system shall be class 54. Ductile iron fittings shall meet the requirements of the Howard County Design Manual Volume IV - Standard Specifications and Details for Construction and shall be exterior epoxy coated in accordance with AWWA C116.
- All water house connections shall be copper meeting the requirements of and constructed in accordance with the Howard County Design Manual Volume IV - Standard Specifications and Details for Construction.
- All fire hydrant leads including the tee shall be ductile iron class 54 meeting the requirements of and constructed in accordance with the Howard County Design Manual Volume IV - Standard Specifications and Details for Construction.
- All water mains constructed in fill areas shall be restrained ductile iron pipe class 54 meeting the requirements of and constructed in accordance with the Howard County Design Manual Volume IV - Standard Specifications and Details for Construction.
- All water mains within casing pipes shall be restrained ductile iron pipes class 54 meeting the requirements of and constructed in accordance with the Howard County Design Manual Volume IV - Standard Specifications and Details for Construction.

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN AND PROFILE
3	SEDIMENT AND EROSION CONTROL PLAN AND DETAILS
4	SEDIMENT AND EROSION CONTROL NOTES

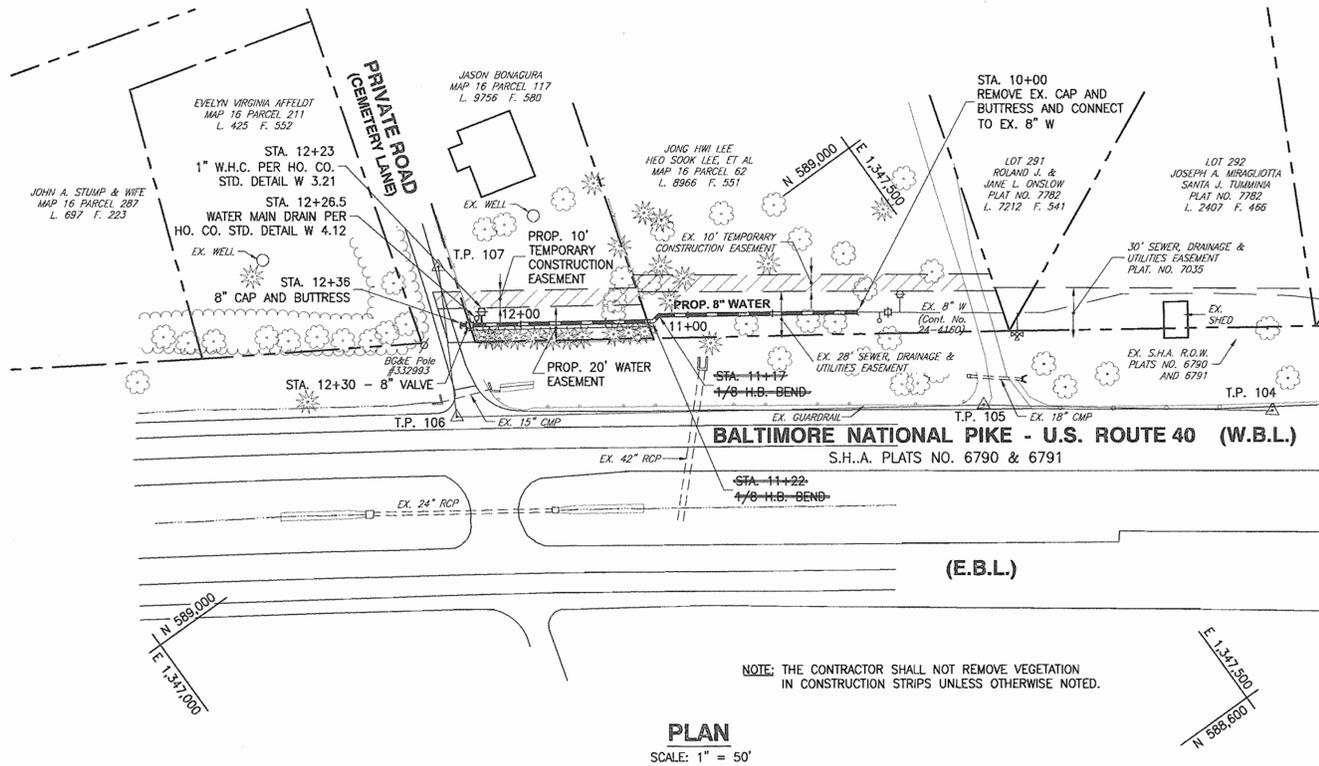
PROFESSIONAL CERTIFICATION

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15512 EXPIRATION DATE: AUGUST 28, 2007

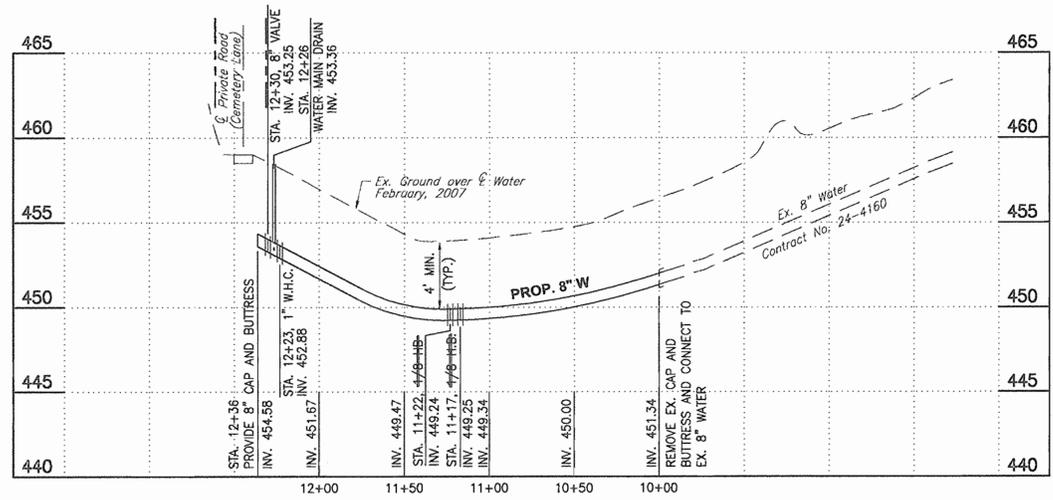
Robert B. III 7-2-07
 Signature of Engineer Date

AS BUILT 1/25/08

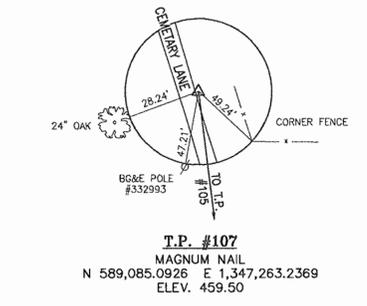
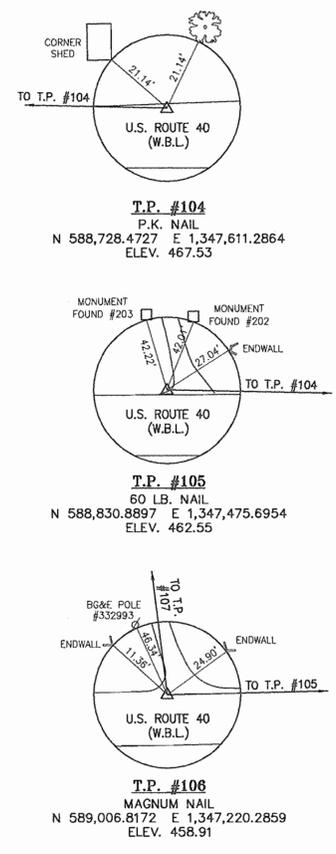
<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>Robert B. III</i> 7/5/07 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>Robert B. III</i> 7-3-07 CHIEF, BUREAU OF UTILITIES DATE</p>	<p>Dewberry Dewberry & Davis LLC 3120 LORD BALTIMORE DRIVE SUITE 211 BALTIMORE, MD 21244-2862 410.265.9500 FAX: 410.265.8875</p>	<p>DES: SSD</p> <p>DRN: ARW</p> <p>CHK: RJB</p> <p>DATE: 7/02/07</p>	<p style="text-align: center;">TITLE SHEET</p> <p>600' SCALE MAP NO. 16</p> <p>BLOCK NO. 23</p> <p>ELECTION DISTRICT NO. 2</p> <p>HOWARD COUNTY, MARYLAND</p>	<p>SCALE: AS SHOWN</p> <p>SHEET 1 OF 4</p>
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PLAN
SCALE: 1" = 50'



PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'

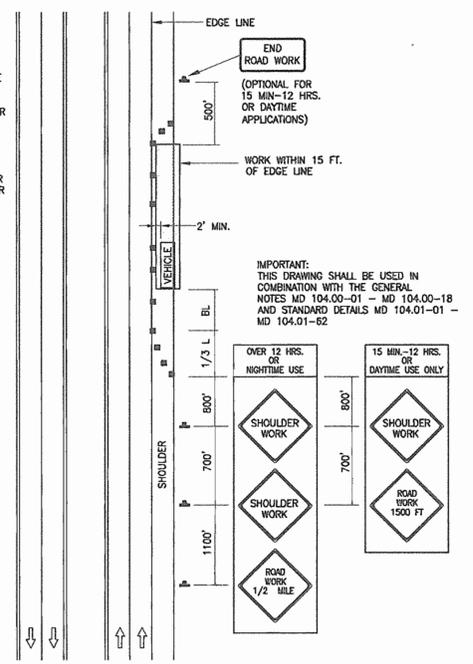


TRAVERSE POINTS USED FOR SURVEY OF THIS CONTRACT WERE SET BY McCRONE ENGINEERING FOR CONTRACT 24-4160 DATED MARCH 2007

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

NOTES:
SHOULDER WORK SIGNS SHALL BE MOUNTED ON THE SIDE OF THE ROADWAY WHERE THE SHOULDER IS AFFECTED. USAGE OF SHOULDER WORK SIGNS ON THE OPPOSITE SIDE OF DIVIDED HIGHWAYS IS OPTIONAL.
SHOULDER CLOSED SIGNS ARE REQUIRED IN PLACE OF SHOULDER WORK SIGNS WHEN THE SHOULDER IS CLOSED BY A PHYSICAL BARRIER REFER TO STANDARD NO. MD 104.05-14.
WHEN WORK INVOLVES A PAVEMENT EDGE DROP-OFF, REFER TO STANDARD NOS. MD 104.06-11 TO MD 104.06-15.

KEY:
■ CHANNELIZING DEVICES
— SIGN SUPPORT
↑ FACE OF SIGN
↑ DIRECTION OF TRAFFIC
□ WORK SITE



**SHOULDER WORK /DIVIDED UNCON.
GREATER THAN 40 MPH**
MD 104.04-01

PROFESSIONAL CERTIFICATION
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Robert M. Beaman 7-2-07
Signature of Engineer Date

AS BUILT 1/25/08

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
7/10/07
7-3-07
7-3-07

Dewberry
Dewberry & Davis LLC
3120 LORD BALTIMORE DRIVE
SUITE 211
BALTIMORE, MD 21244-2862
410.285.9500
FAX: 410.285.8875

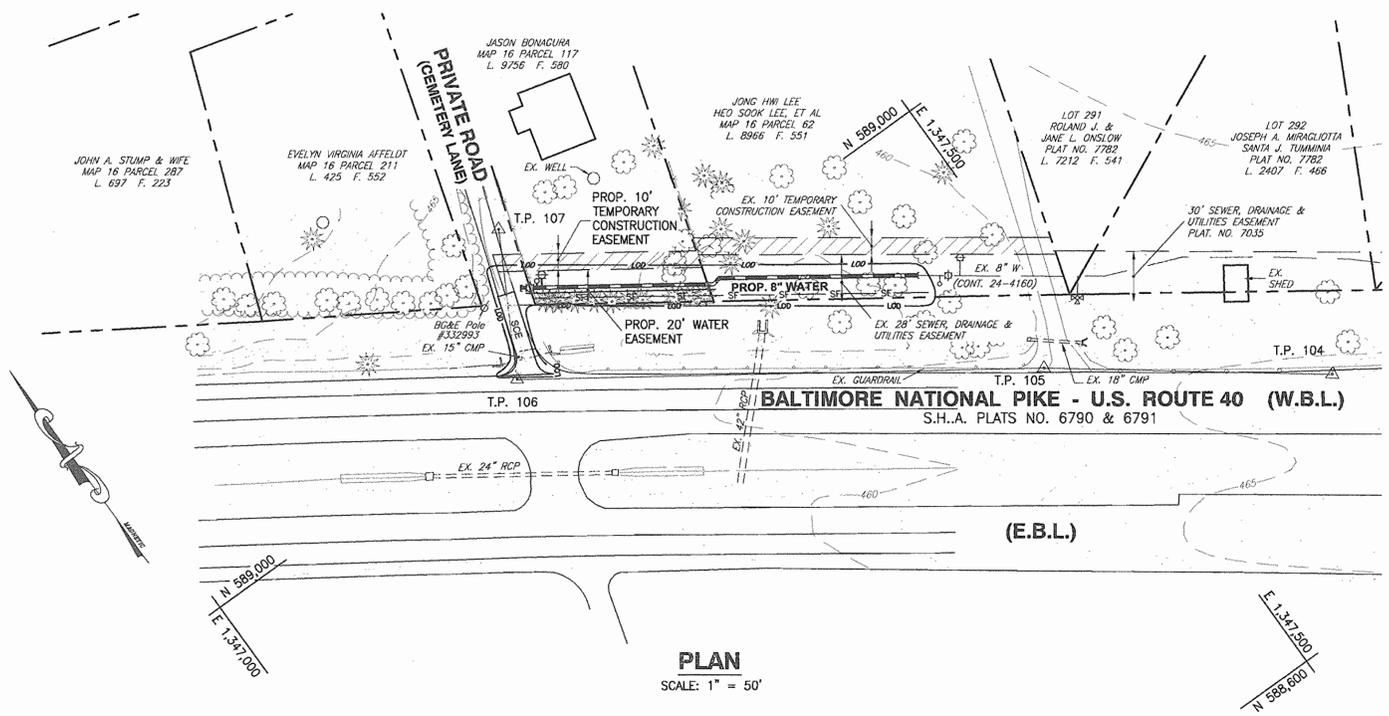


DES:	SSD				
DRN:	ARW				
CHK:	RJB				
DATE:	7/02/07	BY	NO.	REVISIONS	DATE

PLAN AND PROFILE
600' SCALE MAP NO. 16
BLOCK NO. 23

US ROUTE 40 WATER MAIN EXTENSION TO CEMETERY LANE
CAPITAL PROJECT W-8698
CONTRACT 44-4473
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
SHEET 2 OF 4



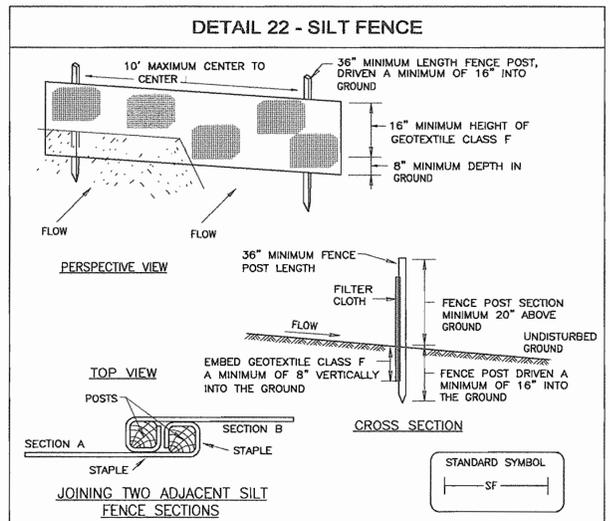
PLAN
SCALE: 1" = 50'

- LEGEND**
- L.O.D. — LIMIT OF DISTURBANCE
 - SF — SILT FENCE
 - CIP CURB INLET PROTECTION
 - AGIP AT GRADE INLET PROTECTION

- UTILITY NOTES**
- CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF THE TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWN SLOPE OF) THE TRENCH.
 - PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
 - ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

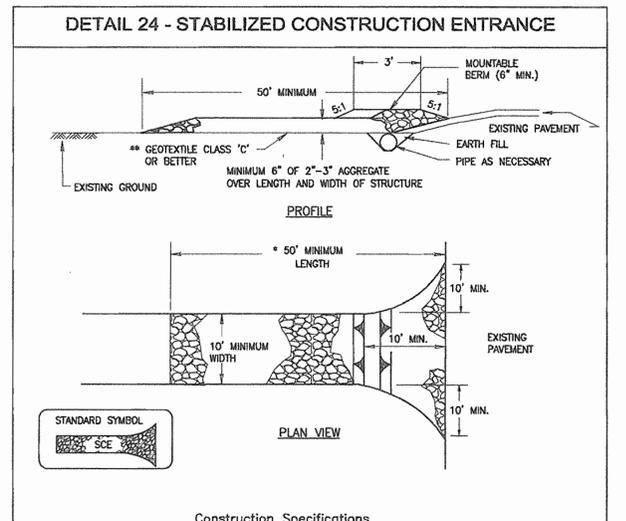
PROFESSIONAL CERTIFICATION
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15512 EXPIRATION DATE: AUGUST 28, 2007

R. Joseph Burns, III 7-2-07
Signature of Engineer Date



- Construction Specifications**
- Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.
 - Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in. (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in. (min.)	Test: MSMT 509
Flow Rate	0.3 gal. ft. 1/2 minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322
 - Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
 - Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.
- U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-15-3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



- Construction Specifications**
- Length - minimum of 50' (*30' for single residence lot).
 - Width - 10' minimum, should be flared at the existing road to provide a turning radius.
 - Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. *If the plan approval authority may not require single family residences to use geotextile.
 - Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
 - Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE located at a high spot and has no drainage to convey a pipe will not be necessary. Pipes should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
 - Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.
- U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-17-3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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

R. Joseph Burns, III 7-2-07
Signature of Engineer Date

R. JOSEPH BURNS, III
Print Name

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

Jim Mays 7/10/07
USDA-Natural Resources Conservation Service Date

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

John R. Pollock 7/10/07
Howard Soil Conservation District Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John A. Stump 7/10/07
DIRECTOR OF PUBLIC WORKS DATE

Rita Bar 7-3-07
CHIEF, BUREAU OF UTILITIES DATE

Paul Seaman 7/5/07
CHIEF, BUREAU OF ENGINEERING DATE

Chris O'Donnell 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
Dewberry & Davis LLC
3120 LORD BALTIMORE DRIVE
SUITE 211
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875



DES:	SSD				
DRN:	ARW				
CHK:	RJB				
DATE:	7/02/07	BY:	NO.	REVISIONS	DATE

SEDIMENT AND EROSION CONTROL PLAN AND DETAILS

600' SCALE MAP NO. 16 BLOCK NO. 23

US ROUTE 40 WATER MAIN EXTENSION TO CEMETERY LANE
CAPITAL PROJECT W-8698
CONTRACT 44-4473

ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
SHEET 3 OF 4

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Section I - Vegetative Stabilization Methods and Materials

- A. Site Preparation
- Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
 - Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
 - Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.
- B. Soil Amendments (Fertilizer and Lime Specifications)
- Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer for sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
 - Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrant of the producer.
 - Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98-100% will pass through a #20 mesh sieve.
 - Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.
- C. Seeded Protection
- Temporary Seeding
 - Seeded preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or ripper construction equipment. After the soil is loosened it should not be rolled or dragged smooth but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.
 - Permanent Seeding
 - Minimum soil conditions required for permanent vegetative establishment:
 - Soil pH shall be between 6.0 and 7.0.
 - Soluble salts shall be less than 500 parts per million (ppm).
 - The soil shall contain less than 40% clay but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if leovgrass or sercia lepedeza is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.
 - Soil shall contain 1.5% minimum organic matter by weight.
 - Soil must contain sufficient pore space to permit adequate root penetration.
 - If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
 - Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 - 5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down the slope.
 - Apply soil amendments as per soil tests or as included on the plans.
 - Mix soil amendments into the top 3 - 5" of topsoil by disking or other suitable means. Lawn areas should be seeded by hand, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seeded preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1" - 3" of soil should be loose and friable. Seeded loosening may not be necessary on newly disturbed areas.

- G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.
- If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
 - When straw mulch is used, it shall be applied to all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth between 1" and 2". Mulch applied shall achieve uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
 - Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons water.
- H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:
- A mulch anchoring tool is a tractor draw implement designed to punch and anchor mulch into soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
 - Wood Cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
 - Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. The remainder of area should be applied uniform after binder application. Synthetic binders - such as Acrylic DLR (Agra-Tack), DCA-70, Petroret, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
 - Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

- I. Incremental Stabilization - Cut Slopes
- All cut slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15'.
 - Construction sequence (refer to Figure 4 below):
 - Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
 - Perform phase 1 excavation, dress and stabilize.
 - Perform phase 2 excavation, dress, and stabilize. Overseed phase 1 areas as necessary.
 - Perform final phase excavation, dress, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun, the operation should be continuous from grubbing through completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the season will necessitate the application of temporary stabilization.

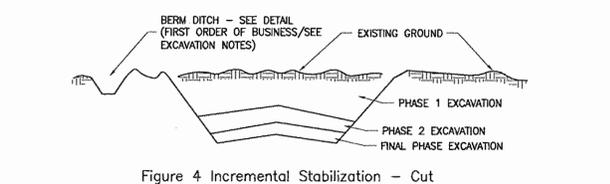


Figure 4 Incremental Stabilization - Cut

- J. Incremental Stabilization of Embankments - Fill Slopes
- Embankments shall be constructed in lifts as prescribed on the plans.
 - Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15', or when the grading operation ceases as prescribed in the plans.
 - At the end of each day, temporary berms and pipe slope drains should be constructed along the top edge of the embankment to intercept surface runoff and convey it down the slope in a non-erosive manner to a sediment trapping device.
 - Construction sequence: Refer to Figure 5 (below):
 - Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct Slope Silt Fence on low side of fill as shown in Figure 4, unless other methods shown on the plans address this area.
 - Place phase 1 embankment, dress and stabilize.
 - Place phase 2 embankment, dress and stabilize.
 - Place final phase embankment, dress and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun, the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

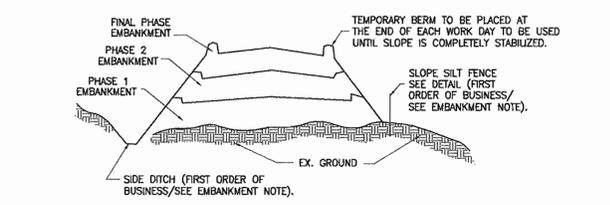


Figure 5 Incremental Stabilization - Embankment Fill Comply with MD 378 Specifications.

Section II - Temporary Seeding

Vegetation - annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

A. Seed Mixtures - Temporary Seeding

- Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardness Zone (from Figure 5) and enter them in the Temporary Seeding Summary below, along with application rates, seeding dates and seeding depths. If this Summary is not put on the plans and completed, then Table 26 must be put on the plans.
- For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

SEED MIXTURE (HARDINESS ZONE 5b)				SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-10-10)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING RATE (LB/AC)				
1	ANNUAL RYEGRASS	50 LB/AC	3/1 - 4/30	1/4" - 1/2"	600 LB/AC (15 LB/1000 SF)	2 TONS/AC (100 LB/1000 SF)	
2	MILLET	50 LB/AC	5/1 - 8/14	1/2"			

Section III: Permanent Seeding

- Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas generally receiving low maintenance.
- A. Seed Mixtures - Permanent Seeding
- Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardness Zone (from Figure 5) and enter them in the Permanent Seed Summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this Summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Technical Field Office Guide, Section 342 - Critical Area Planting. For special lawn maintenance areas, see Section IV Sod and V Turfgrass.
 - For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in.
 - For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2 lbs/1000 sq. ft. (150 lbs/acre), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

SEED MIXTURE (HARDINESS ZONE 5b)				SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING RATE (LB/AC)			N	P205	K20	
3	TALL FESCUE PERENNIAL RYE KY.BLUGRASS	125 LB/AC 15 LB/AC 10 LB/AC	3/1 - 5/15	1/4" - 1/2"					
7	TALL FESCUE WEEPING LOVEGRASS SEREGIA LESPEDEZA	110 LB/AC 3 LB/AC 20 LB/AC	3/1 - 10/15	1/4" - 1/2"	90 LB/AC (15 LB/1000 SF)	175 LB/AC (4 LB/1000 SF)	175 LB/AC (4 LB/1000 SF)	2 TONS/AC (100 LB/1000 SF)	

Section IV - Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

- A. General specifications
- Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.
 - Sod shall be machine cut to a uniform soil thickness of 3/4", plus or minus 1/4", at the time of cutting. Measurement for thickness shall exclude top grass and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pods and torn or uneven ends will not be acceptable.
 - Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
 - Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
 - Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.
- B. Sod Installation
- During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.
 - The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
 - Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.
 - Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any pieces of sod shall be completed within eight hours.
- C. Sod Maintenance
- In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4". Watering shall discontinue during the heat of the day to prevent wilting.
 - After the first week, sod watering is required as necessary to maintain adequate moisture content.
 - The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3" unless otherwise specified.

Section IV - Turfgrass Establishment

Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance. Areas to receive seed shall be tilled by disking or other approved methods to a depth of 2 to 4 inches, leveled and raked to prepare a proper seedbed. Stones and debris over 1 1/2 inches in diameter shall be removed. The resulting seedbed shall be in such condition that future mowing of grasses will pose no difficulty.

Note: Choose certified material. Certified material is the best guarantee to cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

- A. Permanent Seeding
- Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of three bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
 - Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.
 - Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: certified Tall Fescue Cultivars 95-100%, certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding rate: 5 to 8 lb/1000 sf. One or more cultivars may be blended.
 - Kentucky Bluegrass/Fine Fescue - Shade Mixture - For use in areas with shade in bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: certified Kentucky Bluegrass Cultivars 30-40% and certified Fine Fescue and 60-70%. Seeding rate: 1 1/2 - 3 lbs/1000 square feet. A minimum of 3 Kentucky bluegrass cultivars must be chosen, with each cultivar ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
- Note: Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication, Agronomy Mimeo #77, "Turfgrass Cultivar Recommendations for Maryland".
- B. Ideal times of seeding
- Western MD: March 15 - June 1, August 1 - October 1 (Hardiness Zones - 5b, 6a)
Central MD: March 1 - May 15, August 15 - October 15 (Hardiness Zone - 6b)
Southern MD, Eastern Shore: March 1 - May 15, August 15 - October 15 (Hardiness Zones - 7a,7b)
- C. Irrigation
- If soil moisture is deficient, supply new seedlings with adequate water for plant growth (2 3/4" x 0" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

- D. Repairs and Maintenance
- Inspect all seeded areas for failures and make necessary repairs, replacements, and reseeding within the planting season.
- Once the vegetation is established, the site shall have 95% ground cover to be considered adequately stabilized.
 - If the stand provides less than 40% ground coverage, reestablish following original lime, fertilizer, seeded preparation and seeding recommendations.
 - If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing half of the rates originally applied may be necessary.
 - Maintenance fertilizer rates for permanent seedings are shown in table 24. For lawns and other medium to high maintenance turfgrass areas, refer to the University of Maryland publication "Lawn Care in Maryland" Bulletin No. 171.

SEDIMENT CONTROL GENERAL NOTES

- A minimum of 48 hours notice must be given to Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction. 410-313-1855.
- All vegetative and structural practices are to be installed according to the provisions of the plan and are to be in conformance with the most current Maryland Standards and Specifications for Soil Erosion and Sediment Control and revisions thereto.
- 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.
- 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.
- 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.
- Site Analysis
Site is defined as areas involving any improvement.
Total Area of Site 0.166 Acres
Area Disturbed 0.166 Acres
Area to be paved 0 Sq. Yds.
Area to be Vegetatively Stabilized 640 Sq. Yds.
Total Cut 380 Cu. Yds.
Total Fill 380 Cu. Yds.
Offsite waste/borrow area location To be determined by contractor.
- Any sediment control practices which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- 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.
- 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.
- Spoil from trench excavation shall be place on the uphill side of the excavation.

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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	
<i>R. Joseph Burns, III</i> Signature of Engineer	7-2-07 Date
R. JOSEPH BURNS, III Print Name	
THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.	
<i>Jim Mason</i> USDA-Natural Resources Conservation Service	7/10/07 Date
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.	
<i>John P. Roberts</i> Howard Soil Conservation District	7/10/07 Date

PROFESSIONAL CERTIFICATION

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 15512 EXPIRATION DATE: AUGUST 28, 2007

R. Joseph Burns, III
Signature of Engineer
7-2-07
Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

R. Joseph Burns, III
DIRECTOR OF PUBLIC WORKS
DATE 7-3-07

R. Joseph Burns, III
CHIEF, BUREAU OF ENGINEERING
DATE 7-3-07

R. Joseph Burns, III
CHIEF, UTILITY DESIGN DIVISION
DATE 7-3-07

Dewberry
Dewberry & Davis LLC
3120 LORD BALTIMORE DRIVE
SUITE 211
BALTIMORE, MD 21244-2992
410-266-9200
FAX: 410-265-8875

DES:	SSD
DRN:	ARW
CHK:	RJB
DATE:	7/02/07
BY:	NO.

REVISIONS	DATE	600' SCALE MAP NO. 16	BLOCK NO. 23
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AS BUILT 1/25/08

SEDIMENT AND EROSION CONTROL NOTES

US ROUTE 40 WATER MAIN EXTENSION TO CEMETERY LANE
CAPITAL PROJECT W-8698
CONTRACT 44-4473

ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
SHEET 4 OF 4