NOTE: ELEVATIONS ARE IN NAVD 88 DATUM

	R STAKEOL		EAGTING
ITEM	STATION	NORTHING	EASTING
FUTURE RESORT ROAD	0.00	FOX 775 44	T 4 740 693 4
CONNECT TO EX. 16" W	0+00	594,775.41	1,342,937.40
16"x6" FH TEE	1+97	594,842.54	1,343,122.61
P.C.	2+29.45	594,853.59	1,343,153.17
16"x6" FH TEE	5+29	595,012.21	1,343,404.29
16" VALVE	7+68	595,206.36	1,343,541.58
P.T.	7+69.57	595,208.40	1,343,542.42
16"x16" TEE	7+73	595,211.12	1,343,543.68
16" VALVE	7+78	595,215.82	1,343,545.91
FUTURE MOUNT VILLA PARI	L <wδυ< td=""><td></td><td><u> </u></td></wδυ<>		<u> </u>
16" VALVE	0+05	595,208.93	1,343,548.31
P.C.	0+07.32	595,207.98	1,343,550.29
16"x6" FH TEE	0+58	595,184.56	1,343,594.79
16"x6" FH TEE	3+40	594,987.54	1,343,792.67
P.C.C.	5+40.86	594,800.09	1,343,386.03
16"x8" TEE	5+59	594,782.34	1,343,864.85
16"X6" FH TEE	6+06	594,735.80	1,343,869.49
16"x8" TEE	7+58	594,584.11	
P.T.	8+39.45	594,506.37	1,343,857.38 1,343,834.22
16" VALVE	9+47		
16"x16" TEE		594,406.23	1,343,796.24
16" VALVE	9+52	594,401.55	1,343,794.47
	9+57	594,396.88	1,343,792.70
P.C.	9+70.86	594,388.49	1,343,787.62
4" COMBINATION AIR VALVE 16"x6" FH TEE	10+50	594,308.60	1,343,762.10
IO XO FR IEE	10+57	594,301.47	1,343,760.01
8" W (BRANCH A)	La contraction de la contracti		
8" VALVE	A0+05	594,582.89	1,343,862.66
P.C.	A0+36.56	594,576.25	1,343,893.08
P.T.	A1+36.60	594,562.96	1,343,992.12
16" W (DDANOU D)			
16" W (BRANCH B) 16" VALVE	B0+05	594,399.70	1,343,799.26
P.C.	B1+48.06	594,349.06	1,343,932.92
P.T.	B2+96.95	594,269.18	The second secon
16"x 8" TEE	B3+21	594,252.12	1,344,057.28 1,344,074.54
16" 1/16 HB			
	B3+52	594,230.71	1,344,096.20
	B4+40	594,197.21	1,344,178.45
	B4+77	594,163.63	1,344,192.60
16" 1/16 HB 16" 1/32 HB	B5+03 B5+84	594,137.58 594,058.23	1,344,192.75 1,344,177.45

		and the state of t		<u> </u>
\triangle	QUANTI	TIES		
ITEM	UNIT	ESTIMATE	AS-BUILT	SUPPLIER
16" D.I.P. (CLASS 54)	L.F.	2470	2519	U.S. PIPE
16"x16" TEE	EA.	2	2	Belair Rd. Supply
16" VALVE	EA.	6	9	BRS
16" AIR RELEASE VALVE	EA.	1)	BRS
16" CAP AND BUTTRESS	EA.	2	2	BRS
16" 1/8 HORIZ. BEND	EA.	2	2	BRS
16" 1/16 HORIZ. BEND	EA.	4	1	BRS
16" 1/32 HORIZ. BEND	EA.	1	3	BRS
16" 1/32 VERT. BEND	EA.	1		BRS
8" D.I.P. (CLASS 54)	L.F.	335	337	U.S. PIPE
16"x8" TEE	EA.	4	4	
8" VALVE	EA.	4	4	BRS
8" CAP	EA.	2	2	BRS
FIRE HYDRANT AND 6" VALVE	EA.	6	ල	BRS
16"x6" TEE	EA.	6	G	BRS
6" D.I.P. CLASS 54	L.F.	110		e e
16" 1/16 VERT. BEND	EA.	2	2	BRS

and shall use his/her own takeoff to establish materials and quantities needed for this project.

PROFESSIONAL CERTIFICATION

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. 10966 EXPIRATION DATE: MAY 31, 2012.

I home N. Dallat the Signature of Engineer

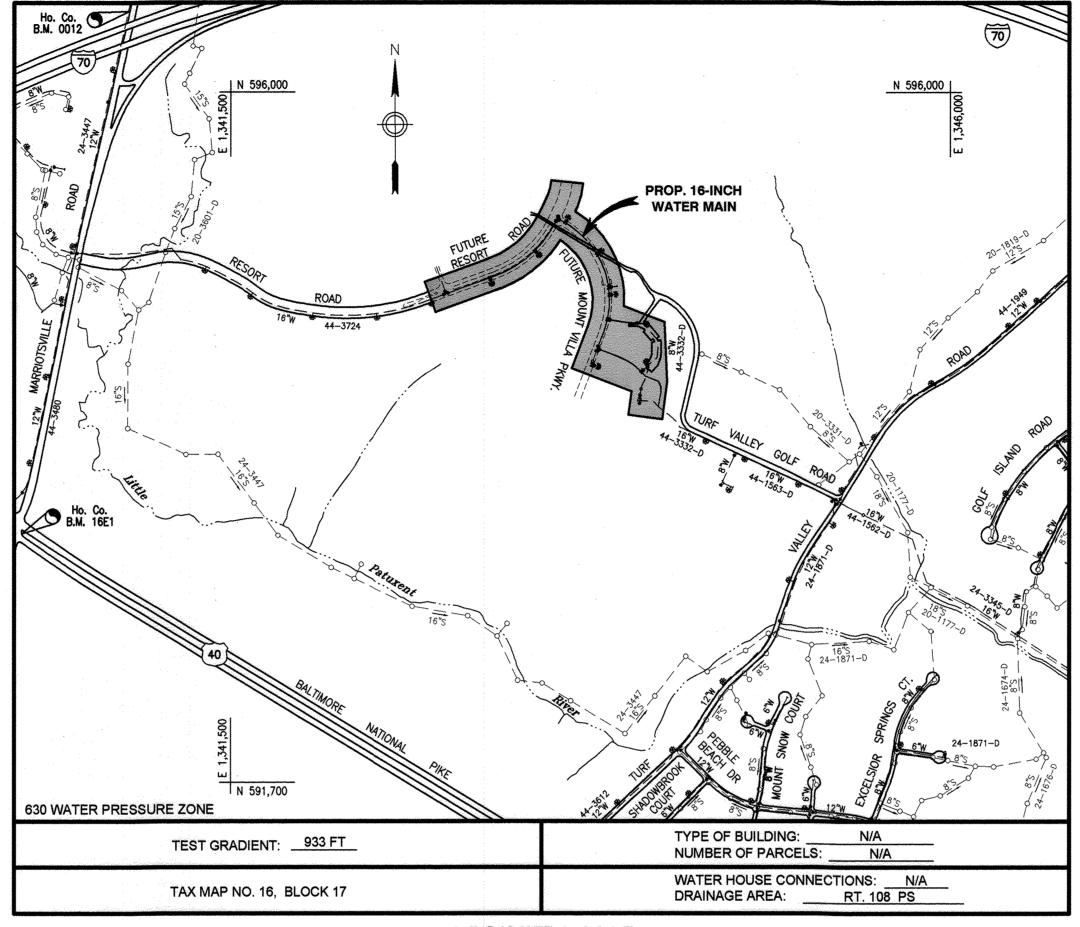
SURVEY CONTROL

CONCRETE MONUMENT AT SURFACE 6.84' WEST OF N.W. CORNER OF BRIDGE FOR MARRIOTSVILLE ROAD OVER NAD 83 (Adj 1991): N 596,502.817 E 1,340,864.356

HOWARD CO. SURVEY CONTROL STA. NO. 16E1 CONCRETE MONUMENT 0.6' BELOW SURFACE AT N.E. CORNER OF INTERSECTION OF MARRIOTSVILLE ROAD AND E.B.L. OF U.S. ROUTE 40. NAD 83 (Adj 1991): N 593,251.002 E 1,340,192.690

HOWARD COUNTY

DEPARTMENT OF PUBLIC WORKS ELLICOTT CITY, MARYLAND 21043



ALBETH HEIGHTS

WATER MAIN EXTENSION - PHASE II CAPITAL PROJECT W-8195 **CONTRACT NO. 44-4480**

LEGEND

	EX. WOODS LINE -		EXISTING WATER MAIN, FIRE
	EX. WOODS LINE	77	HYDRANT, VALVE & REDUCER
· · · · · · · · · · · · · · · · · · ·	EX. SIDEWALK	₩	PROPOSED WATER MAIN, FIRE
180	EX. 10 FOOT CONTOURS		HYDRANT, VALVE & REDUCER
	EX. 2 FOOT CONTOURS	W	EX. WATER METER
<u> </u>	EX. CENTERLINE ROAD	(W)	EX. AIR RELEASE MANHOLE
	EX. CURB & GUTTER	(T)	EX. TELEPHONE MANHOLE
	EX. EDGE OF PAVEMENT	\$	EX. LIGHT POLE
	EX. GUARDRAIL		EX. UTILITY PEDESTAL
	EX. ROAD RIGHT-OF-WAY	Т	EX. UTILITY POLE
	PROPOSED 10 FOOT CONTOUR		EX. SIGN
182	PROPOSED 2 FOOT CONTOUR		BENCHMARK
	TO REMOVE	•	SOIL BORING

INDEX OF SHEETS

SHT. NO. DESCRIPTION TITLE SHEET

PLAN AND PROFILE PLAN AND PROFILE PROFILE AND DETAILS

EROSION AND SEDIMENT CONTROL PLAN EROSION AND SEDIMENT CONTROL DETAILS

EROSION AND SEDIMENT CONTROL NOTES

600' SCALE MAP NO. 16

GENERAL NOTES

- 1. 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.
- 2. Topographic field surveys were performed by Dewberry & Davis LLC in April 2007.
- 3. Horizontal and Vertical Survey Controls:
- The coordinates shown on the drawings are based on the Maryland State Plane Coordinate System (NAD 83/91) as projected by Howard County Geodetic Control Stations Howard Co. B.M. 0012 and B.M. 16E1. All vertical controls are based on NAVD 88.
- 4. All pipe elevations shown are invert elevations unless otherwise noted on the plans.
- 5. 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.
- 6. 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.
- 7. 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 **a** 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.
- 8. 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	
Bureau of Utilities (DPW)	410-313-4900
Verizon	
Miss Utility	1-800-257-7777

- 9. 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.
- 10. 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.
- 11. 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.
- 12. 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.
- 13. 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.

WATER MAIN NOTES

- 1. Tops of water mains shall have a minimum of 3'-6" of cover unless otherwise noted.
- 2. Valves adjacent to tees shall be strapped to tees.
- 3. Fittings and valves shall be restrained as shown on the drawings. If any of the horizontal or vertical bends shown on the drawings are not specifically identified to be restrained. they must be buttressed or anchored in accordance with the Howard County Standard Specifications and Details for Construction.
- 4. 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.
- 5. The Contractor shall not operate any water main valves on the existing water system.
- 6. Fire Hydrants to be removed shall be returned to: **Howard County Bureau of Utilities** 8250 Old Montgomery Road Columbia, Md. 21045 410-313-4900
- 7. The Contractor shall notify the Howard County Bureau of Utilities at least fifteen (15) days prior to any water main shut downs.
- 8. 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; the pipe's exterior shall be epoxy -coated and its interior epoxy lined, in accordance with AWWA C116.
- 9. 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.
- 10. All fire hydrant leads including the tee shall be duetile 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.
- 11. 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.
- 12. 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.

ELECTION DISTRICT NO. 3

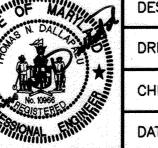
AS BUILT 12-10-2010

HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

Dewberry Dewberry & Davis LLC

3106 LORD BALTIMORE DRIVE BALTIMORE, MD 21244-2662 FAX: 410.265.8875



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TITLE SHEET

BLOCK NO. 17

ALBETH HEIGHTS WATER MAIN EXTENSION - PHASE II

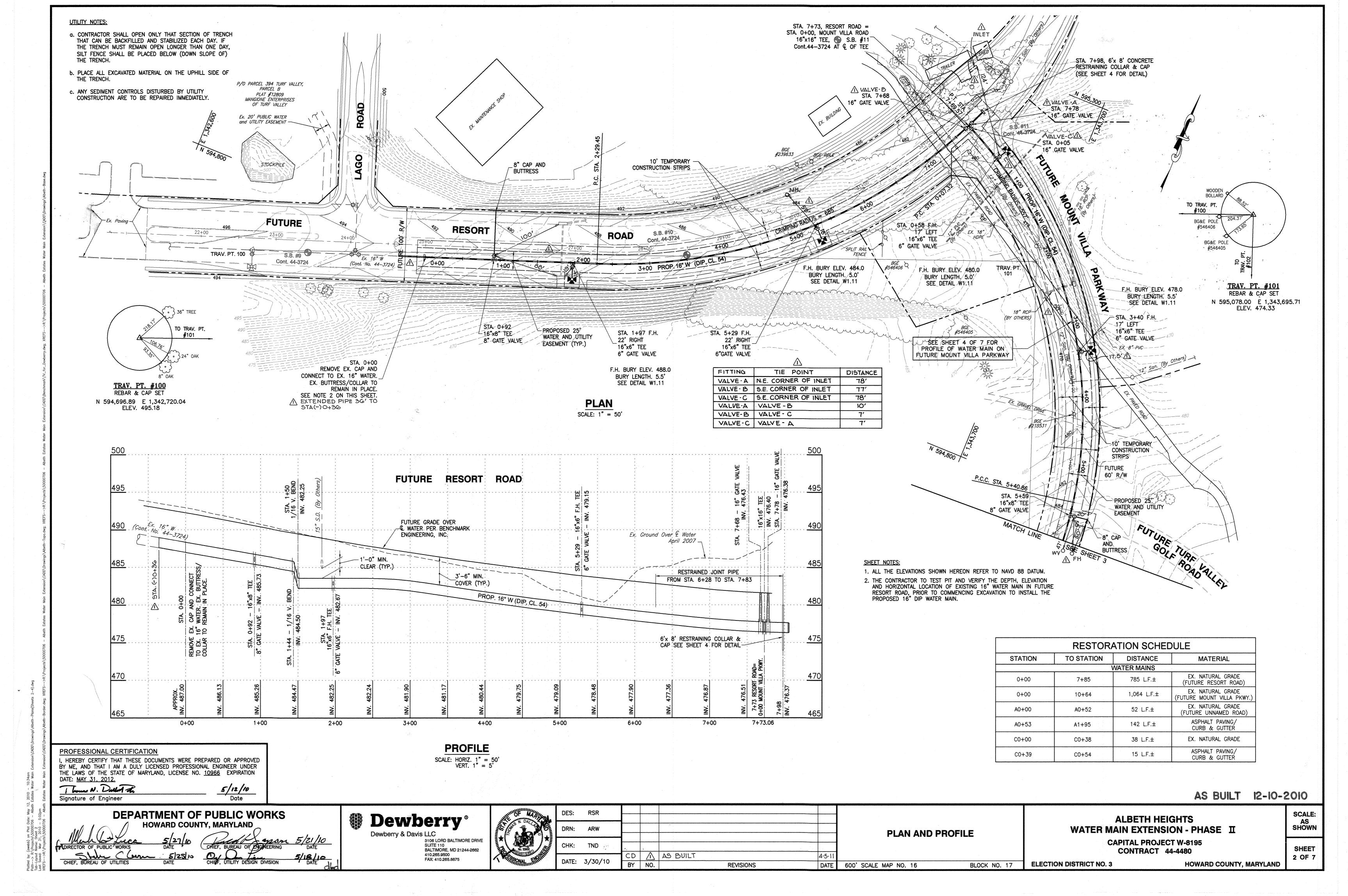
CAPITAL PROJECT W-8195 CONTRACT 44-4480

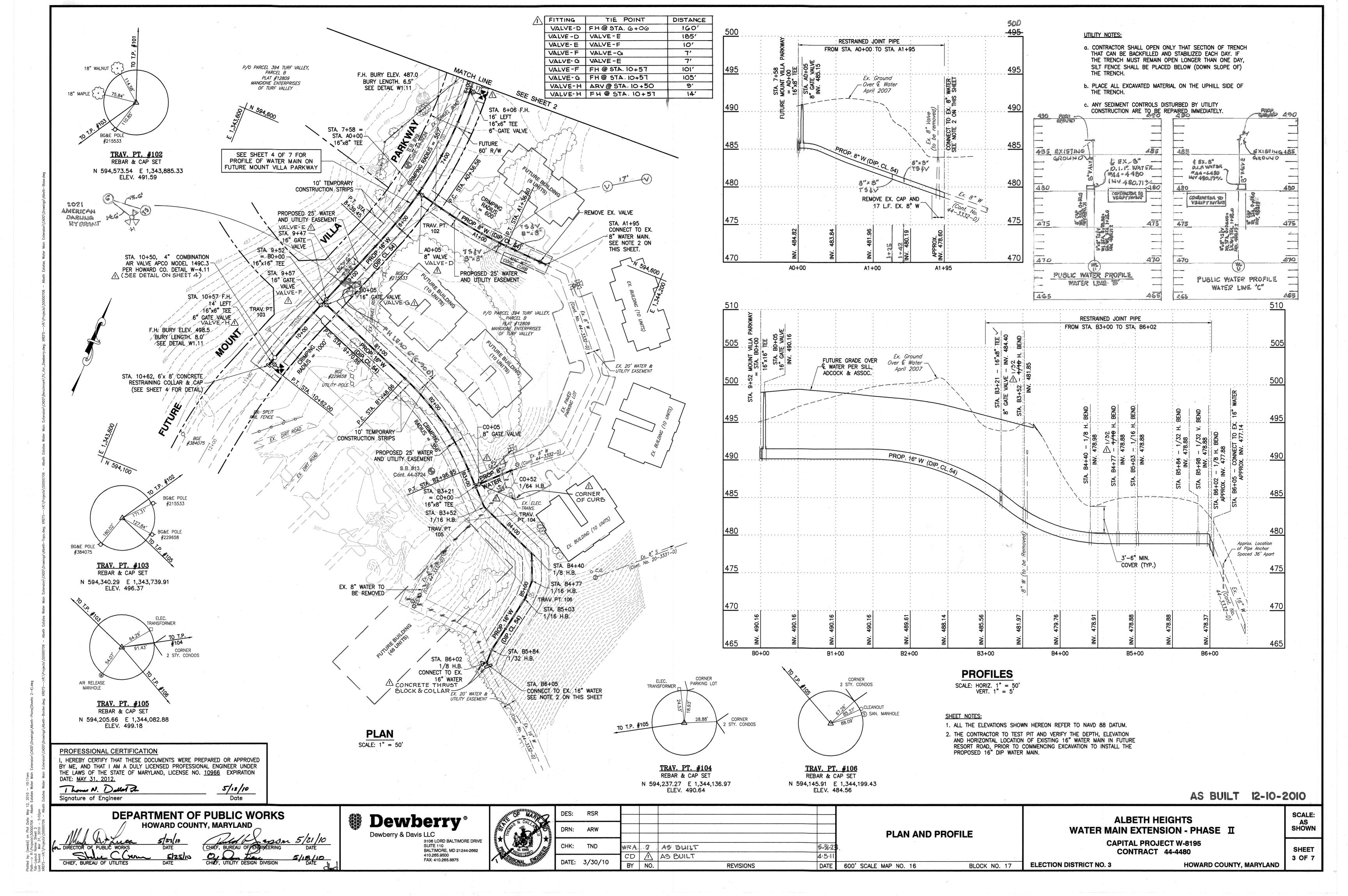
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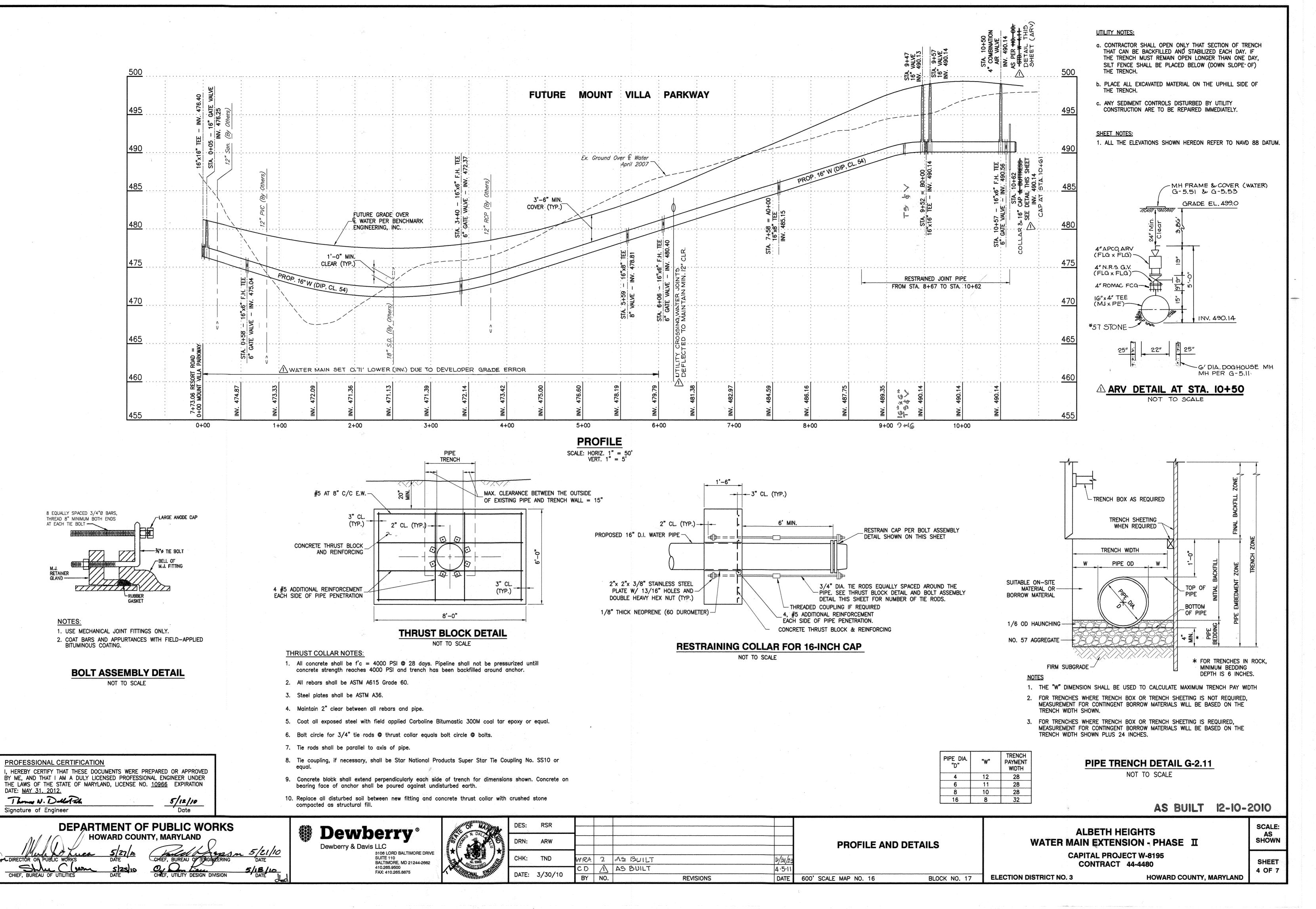
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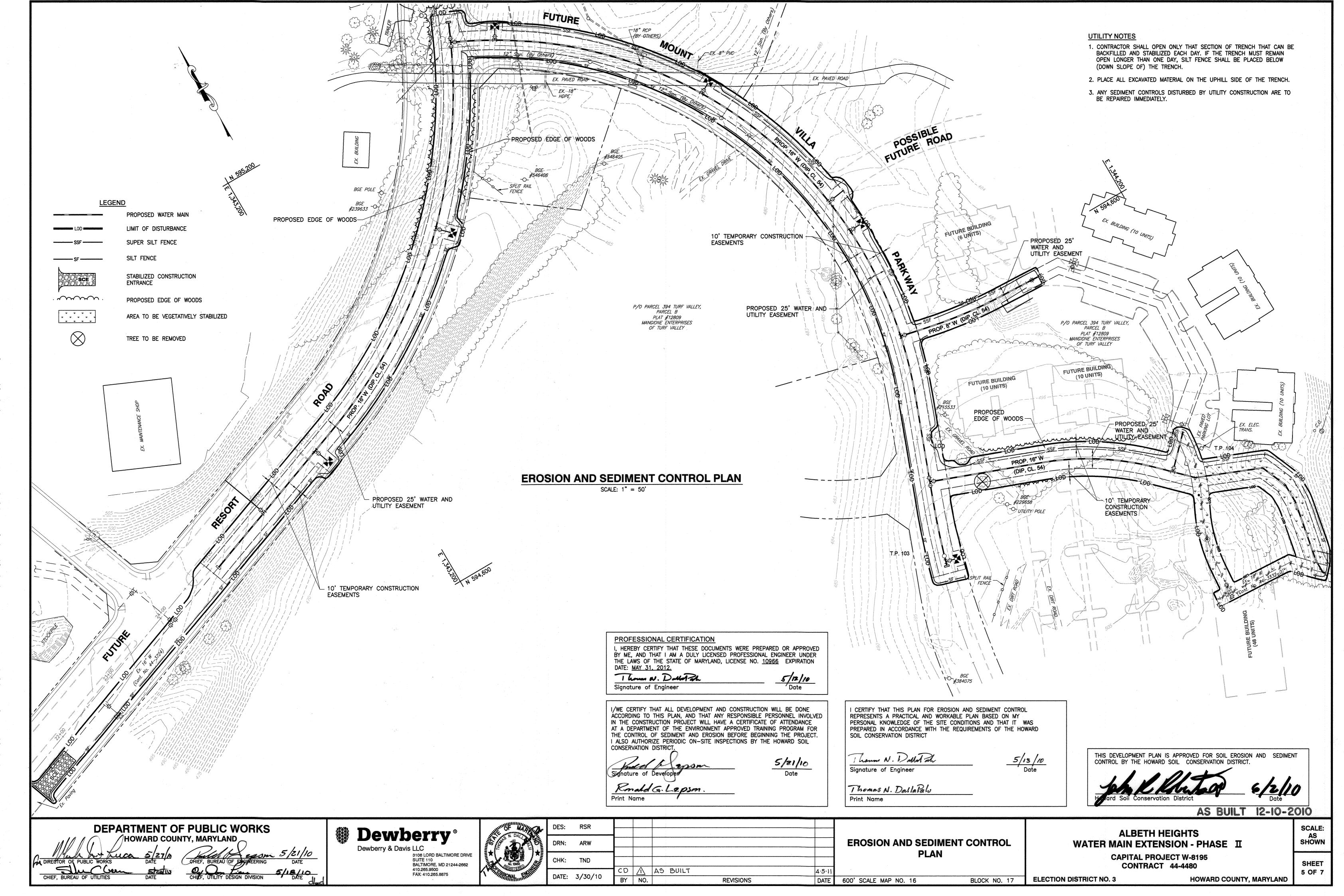
1 OF 7

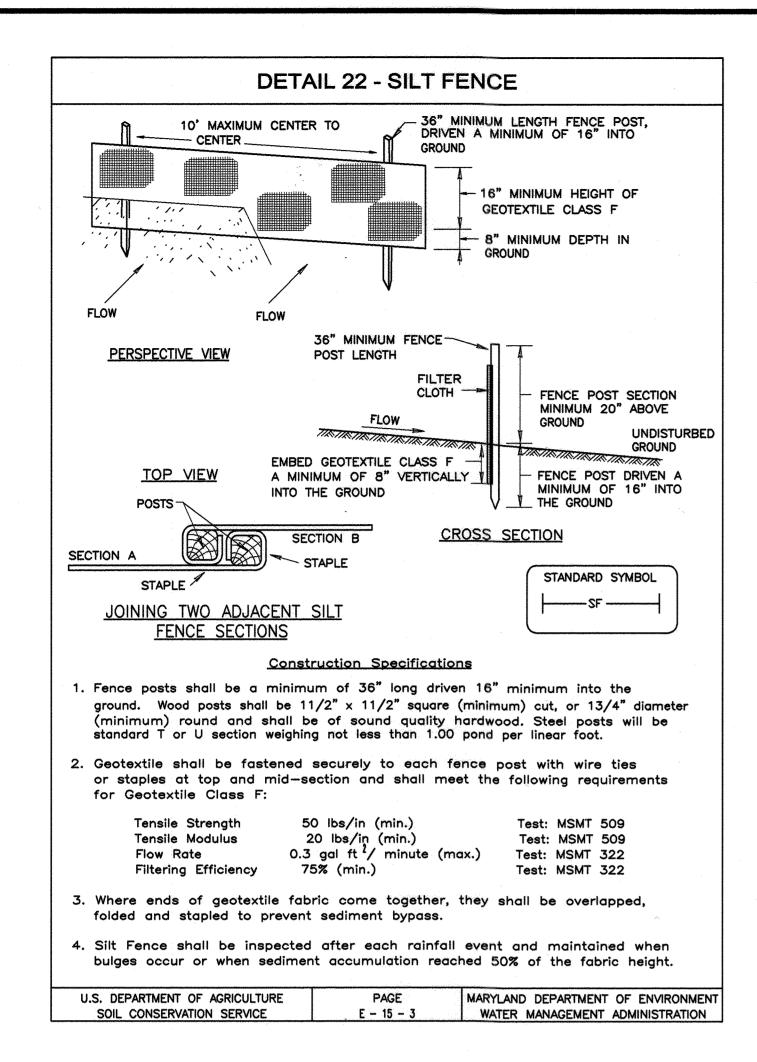


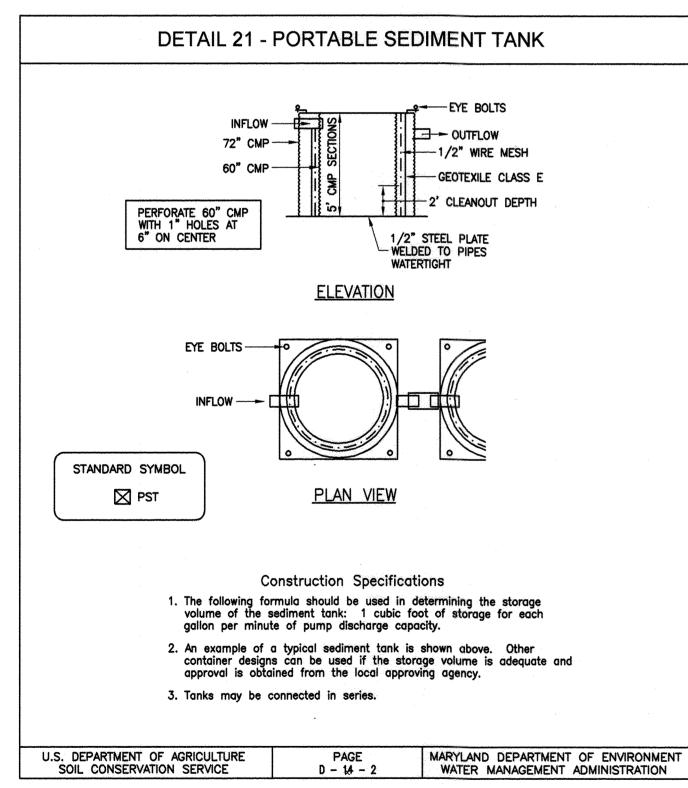


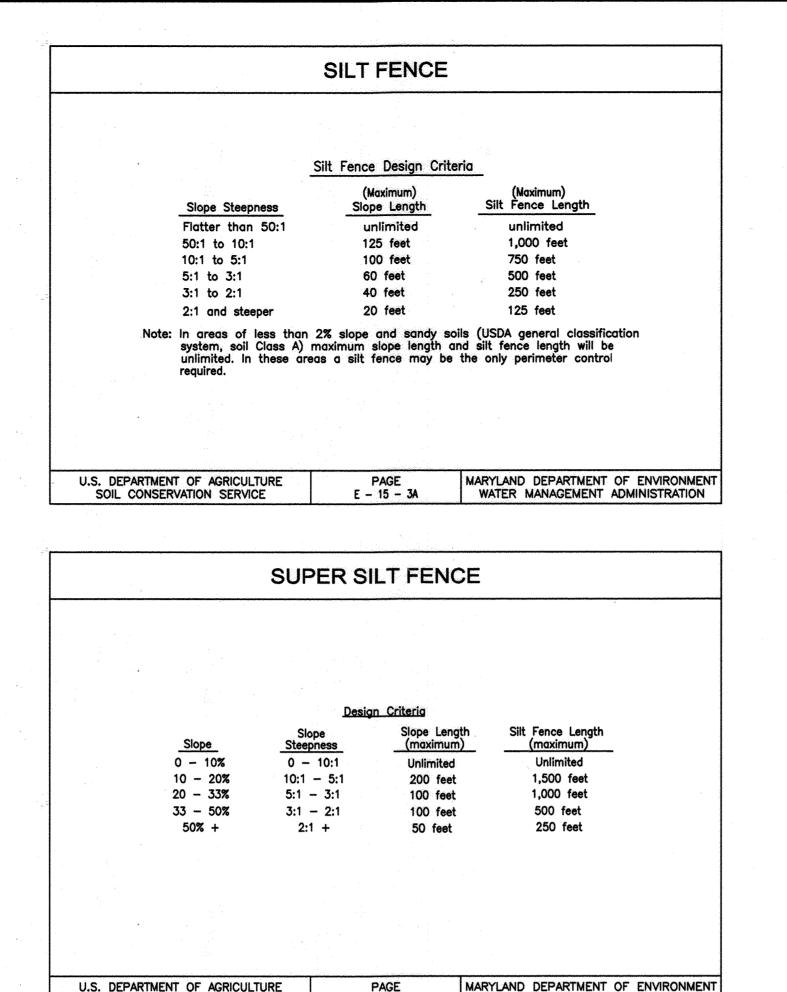


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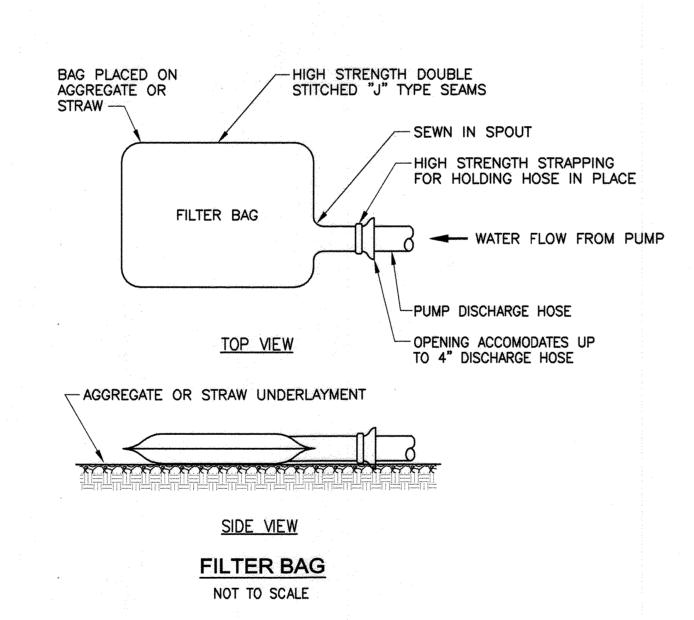




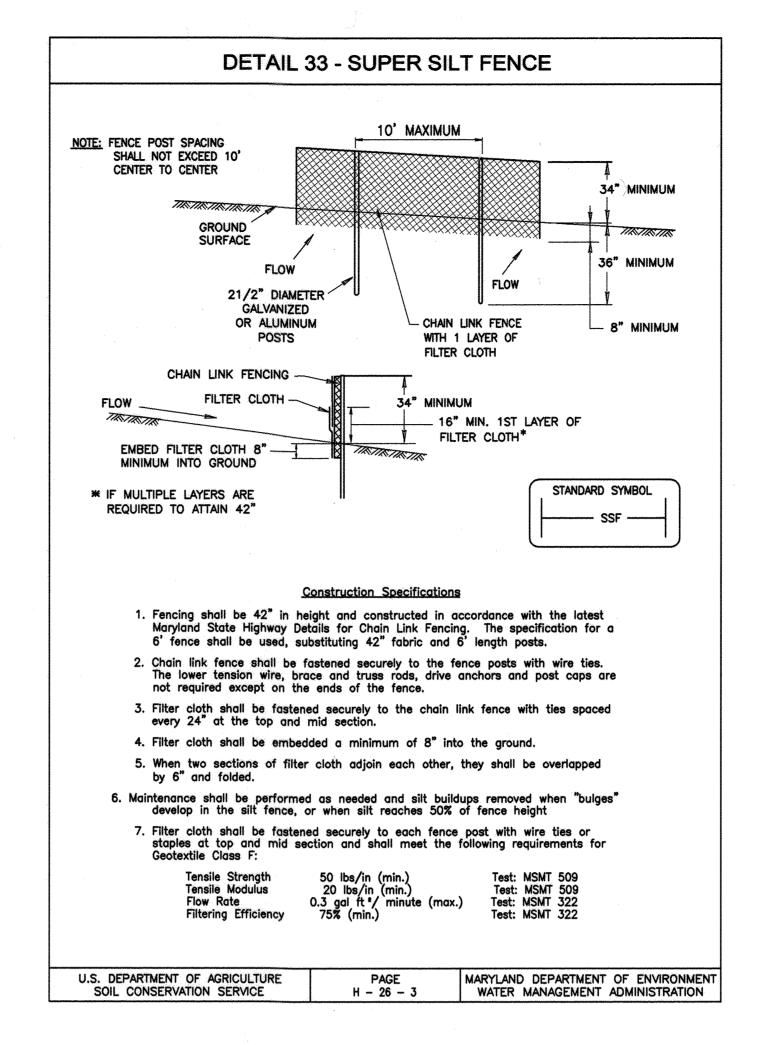




SOIL CONSERVATION SERVICE

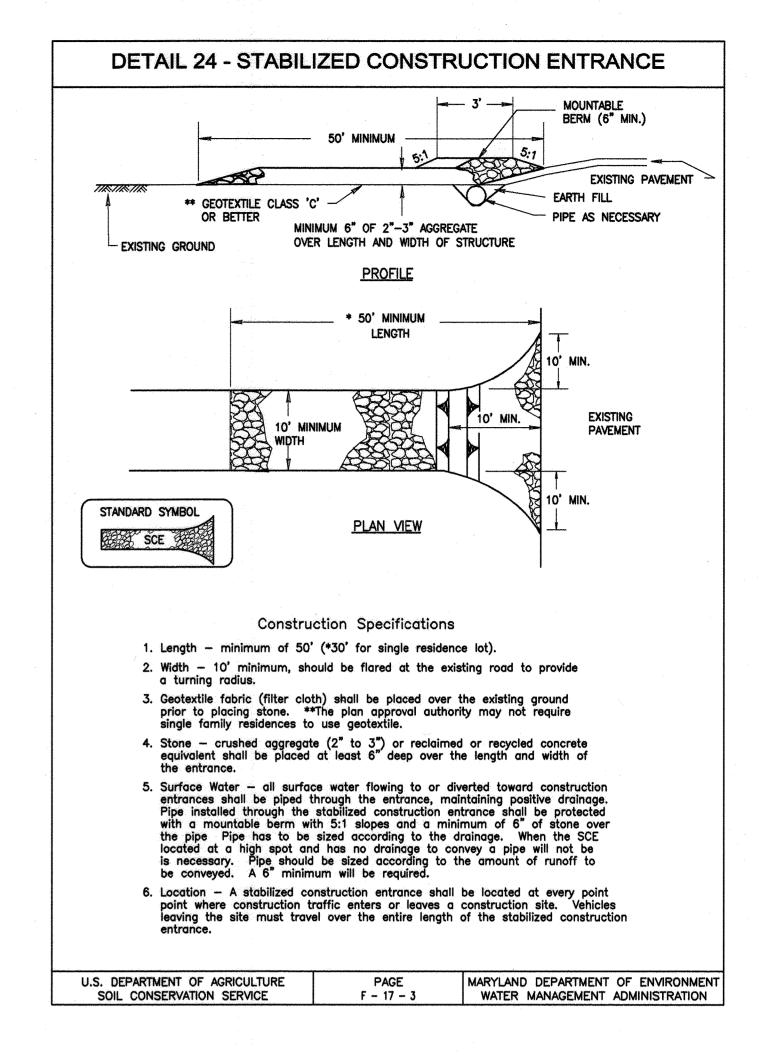


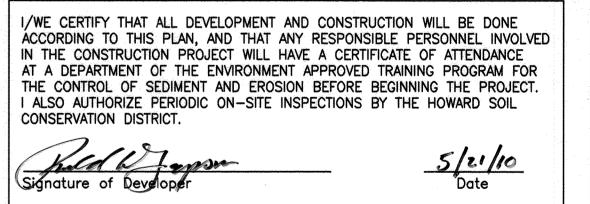
WATER MANAGEMENT ADMINISTRATION



SEQUENCE OF OPERATION

- 1. Pre-construction meeting: Notify the Department of Inspections, Licenses and Permits (1-410- 313-3800) at least 48 hours before commencing work. Work may not commence until the permittee or the responsible personnel have met on site with the sediment and erosion control inspector to review the approved plans.
- 2. Contractor shall locate and procure all staging and stockpiling areas which shall be approved by project inspector.
- 3. Conduct test pit operations. Present finalized schedule of work to the Engineer and Howard County Inspections, Licenses and Permits Division.
- 4. Clear and grub those areas for installation of sediment and erosion perimeter
- Install sediment control devices as required per the Plans. Obtain approval from
- the County Sediment and Erosion Control Inspector. Perform the following sequence for each day of utility construction operation:
- a. Install silt fence downstream of area to be worked on a daily basis. b. Clear and grub area where pipeline will be installed. Remove and salvage topsoil.
- c. Excavate and install water main and appurtenances. Place backfill
- d. Place topsoil, fine grade, seed and apply mulch to disturbed area.
 e. Streets are to be swept free of dirt and debris.
- 7. Direct all water pumped during trench dewatering operations to an approved portable sediment tank. Clean out tank when one-third (1/3) is filled with silt. Haul sediment to a County approved site.
- 8. No excavated material shall be placed in an area outside the limits of disturbance shown in the plans. The Contractor shall take precautions to prevent the disturbance of existing vegetated areas to the extent possible. Any existing vegetated areas disturbed as a result of the contractor's work operations shall be stabilized by the end of the work day.
- 9. Stabilize the top of all trenches by the end of each work day. All excess stockpiled soil remaining after refilling of the trench(s) shall be removed from the surface and hauled from the site by the end of the working day. The Contractor shall be responsible for obtaining all permits for his off-site stockpile areas. The Contractor shall also adequately clean all dirt and mud off the roadways by the end of each working day.
- 10. Permanently Stabilize any remaining disturbed areas as required.
- 11. Remove any remaining sediment controls after prior approval from Howard County Inspections, Licenses and Permits Division.





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

Thoma N. Dallat De Signature of Engineer

Lonald G. Lepson

5/12/10

Thomas N. Dalla Palv Print Name

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT

AS BUILT 12-10-2010

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

, 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. 10966 EXPIRATION

PROFESSIONAL CERTIFICATION

DATE: MAY 31, 2012.

Signature of Engineer

Thomas N. Dalled The

5/12/10

Dewberry Dewberry & Davis LLC 3106 LORD BALTIMORE DRIVE SUITE 110 BALTIMORE, MD 21244-2662

410.265.9500

FAX: 410.265.8875



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EROSION AND SEDIMENT CONTROL DETAILS

BLOCK NO. 17

600' SCALE MAP NO. 16

ALBETH HEIGHTS WATER MAIN EXTENSION - PHASE II

ELECTION DISTRICT NO. 3

CAPITAL PROJECT W-8195 CONTRACT 44-4480

SHOWN SHEET

HOWARD COUNTY, MARYLAND

6 OF 7

SCALE:

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40am Main

A. Site Preparation

- i. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins. ii. Perform all grading operations at right angles to the slope. Final grading and shaping is
- ot usually necessary for temporary seeding. iii. Schedule required soil tests to determine soil amendment composition and application ates 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 on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. samples taken for engineering purposes may also be used for chemical analyses
 - ii. 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 warrantee of the producer.
 - iii. 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.
- iv. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

C. Seedbed Protection i. Temporary Seeding

- a. Seedbed 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 rippers mounted on construction equipment. After the soil is loosened if 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.
- b. Apply fertilizer and lime as prescribed on the plans.
- c. Incorporate lime and fertilizer into the top 3 5" of soil by disking or other suitable

ii. Permanent Seeding

- a. 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 lovegrass or serecia lespedeza is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable
 - 4. Soil shall contain 1.5% minimum organic matter by weight. 5. Soil must contain sufficient pore space to permit adequate root
- 6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
- b. Areas previously graded in conformance with the drawings shall be maintained i 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 a slope.
- Apply soil amendments as per soil tests or as included on the plans
- d. Mix soil amendments into the top 3-5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed 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 a dozer leaving 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. Seedbed loosening may not be necessary on newly disturbed areas.

- All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job. Note: Seed tags shall be made available to the inspector to verify type and rate of
- ii. Inoculant The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen—fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75-80° F can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding

Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.

- a. If fertilizer is being applied at the time of seeding, the application rate amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P205 (phosphorous): 200 lbs/ac; K20 (potassium); 200 lbs/ac.
- b. Lime use only ground agricultural limestone, (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when
- c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
- ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
 - a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil
 - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
- iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
- Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
- b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. Mulch Specifications (In order of preference)

Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.

ii. Wood Cellulose Fiber Mulch (WCFM)

DIRECTOR OF PUBLIC WORKS

- WCFM shall consist of specially prepared wood cellulose processed into a uniform
- fibrous physical state. WCFM shall be dyed green or contain a green dye in the package that will provide
- an appropriate color to facilitate visual inspection of the uniformly spread slurry. WCFM, including dye, shall contain no germination or growth inhibiting factors. WCFM materials shall be manufactured and processed in such a manner that the
- wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover. on application having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
- e. WCFM material shall contain no elements or compounds at concentration levels that will be phyto-toxic.

DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

- f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.
- Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

- G. Mulching Seeded Areas Mulch shall be applied to all seeded areas immediately after seeding.
 - i. 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 spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a 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.
- iii. 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 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:
- i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into soil surface a minimum of two (2) inches. This practice is most effective on large greas, 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.
- ii. 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 appear uniform after binder application. Synthetic binders— such as Acrylic DLR (Agro-Tack), DCA-70, Petroset. 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

I. Incremental Stabilization - Cut Slopes

- i. 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'.
- ii. Construction sequence (refer to Figure 4 below):
 - a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
 - b. Perform phase 1 excavation, dress and stabilize
 - c. Perform phase 2 excavation, dress, and stabilize. Overseed phase I areas as necessary d. Perform final phase excavation, dress, and stabilize. Overseed previously seeded areas

Note: Once excavation has begun, the opperation 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.

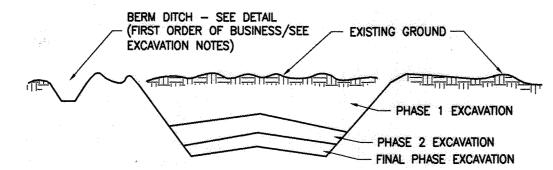


Figure 4 Incremental Stabilization - Cut

J. Incremental Stabilization of Embankments - Fill Slopes

- i. Embankments shall be constructed in lifts as prescribed on the plans.
- ii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15', or when the grading operation cease as prescribed in the plans.
- iii. 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.
- iv. Construction sequence: Refer to Figure 5 (below):
 - a. 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 fi as shown in Figure 4, unless other methods shown on the plans address this area
- b. Place phase 1 embankment, dress and stabilize.
- Place phase 2 embankment, dress and stabilize
- Place final phase embankment, dress and stabilize. Overseed previously seeded

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.

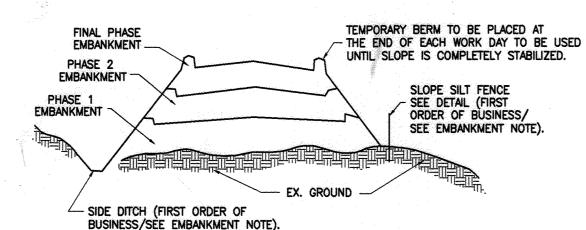


Figure 5 Incremental Stabilization - Embankment Fill Comply with MD 378 Specifications.

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 i. Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness 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.
 - ii. 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.

TEMPORARY SEEDING SUMMARY

	SEED N	MIXTURE (HARDIN TABLE 26	FERTILIZER RATE	LIME DATE		
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	(10–10–10)	LIME RATE
	ANNUAL RYEGRASS	50 LB/AC	3/1 - 4/30 8/15 - 11/1	1/4"-1/2"	600 LB/AC	2 TONS/AC
- :	MILLET	50 LB/AC	5/1 - 8/14	1/2"	(15 LB/ /1000 SF)	(100 LB /1000 SF)
		`				

Section III: Permanent Seeding

Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas receiving low maintainence.

A. Seed Mixtures - Permanent Seeding

- Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness 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 athetic treatment may be found in USDA-SCS Technical Field Office Guide, Section 342 - Critica Area Planting. For special lawn maintenance areas, see Section IV Sod and V Turfgrass.
- ii. 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.
- iii. For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2 lbs/1000 sq. t. (150 lbs/ac), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

PERMANENT SEEDING SUMMARY

		XTURE (HARE ABLE 25	DINESS ZONE 6b	FERTILIZER RATE (10-20-20)			LIME RATE				
NO.	SPECIES	APPLICATION RATE(LB/AC)		ING DATES SEEDING N P205 K20							
3	TALL FESCUE PERENNIAL RYE KY.BLUEGRASS	125 LB/AC 15 LB/AC 10 LB/AC	3/1 - 5/15 8/15 - 10/15	1/4"-1/2"							
7	TALL FESCUE WEEPING LOVEGRASS SERECIA 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

- i. Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod abels shall be made available to the job foreman and inspector.
- ii. Sod shall be machine cut at a uniform soil thickness of 3/4", plus or minus 1/4", at the time of cutting. Measurement for thickness shall exclude top growth 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 pads and torn or uneven ends will
- iii. 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
- iv. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet)
- v. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agranomist or soil scientist prior to

B. Sod Installation

- i. During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.
- ii. 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 staggers 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.
- iii. 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
- iv. 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 piece of sod shall be completed within eight hours.

- i. 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 should be done during the heat of the day to prevent wilting.
- ii. After the first week, sod watering is required as necessary to maintain adequate moisture
- iii. 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
- iii. 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
- 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)

PROFESSIONAL CERTIFICATION

EROSION AND SEDIMENT CONTROL

NOTES

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. 10966 EXPIRATION DATE: MAY 31, 2012.

Thomas N. David The 5/12/10 Signature of Engineer

If soil moisture is deficient, supply new seedings with adequate water for plant growth (23/64 "01" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on

Inspect all seeded areas for failures and make necessary repairs, replacements, and reseedings within the planting season.

- Once the vegetation is established, the site shall have 95% ground cover to be considered
- ii. If the stand provides less than 40% ground coverage, reestablish following original lime,
- fertilizer, seedbed 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 n Maryland" Bulletin No. 171.

SEDIMENT CONTROL GENERAL NOTES

Total Area of Site

Area to be paved

Offsite waste/borrow area location

Area Disturbed

Total Cut

Total Fill

- 1. 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.
- 2. 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.
- 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 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 aermination and establishment of grasses.
- 5. 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.

	•	•						
6.	Site Analysis	Sit	e is	defined	as	areas	involving	

any improvement 3.03 Acres 3.03 Acres 300 Sq. Ft. 1,360 Sq. Yds. 3,251 Cu. Yds. 3,097 Cu. Yds. Area to be Vegetatively Stabilized

To be determined by contractor.

7. Any sediment control practices which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

- 8. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector,
- 9. 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.
- 10. 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
- 11. Spoil from trench excavation shall be place on the uphill side of the excavation

/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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. ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Develope

Ronald G. Lepson

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

Thomas N. Dastal The 5/12/10 Signature of Engineer

Thomas N. Dalla Pala Print Name

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

AS BUILT 12-10-2010

5/21/10

ALBETH HEIGHTS WATER MAIN EXTENSION - PHASE II

> **CAPITAL PROJECT W-8195 CONTRACT 44-4480**

ELECTION DISTRICT NO. 3

Dewberry Dewberry & Davis LLC 3106 LORD BALTIMORE DRIVE

SUITE 110 BALTIMORE, MD 21244-2662

410.265.9500

FAX: 410.265.8875



DES: DRN: ARW CHK: TND

RSR

CD | A | AS BUILT DATE: 3/30/10 NO. **REVISIONS**

DATE 600' SCALE MAP NO. 16

BLOCK NO. 17

HOWARD COUNTY, MARYLAND

SHEET 7 OF 7

SCALE:

AS

SHOWN

SEC 4