TRAVERSE DATA				
TRAV. PT.	NORTHING	EASTING	ELEV.	DESCRIPTION
#3	590,565.33	1,365,830.97	330.44	REBAR AND CAP
#4	590,666.29	1,365,785.39	331.41	REBAR AND CAP
#5	590,562.36	1,365,583.52	333.64	REBAR AND CAP
#6	590,633.00	1,365,410.63	335.66	REBAR AND CAP
#7	590,762.61	1,365,279.88	337.01	REBAR AND CAP
#8	590,688.70	1,365,215.53	337.37	REBAR AND CAP
#9	590,565.32	1,365,171.97	356.62	REBAR AND CAP
#165 "SPUR"	590,763.04	1,365,579.27	334.34	REBAR AND CAP

SURVEY CONTROL

B.M. #1
HOWARD CO. CONTROL PT. 24C2
CONCRETE MONUMENT AT SURFACE
NAD 83 (Adj 1991): N 588,648.3230 E 1,366,038.1579
NAVD 88: EL. 354.086

B.M. #2
HOWARD CO. CONTROL PT. 25A2
CONCRETE MONUMENT 5" BELOW GROUND WITH
RAILROAD SPIKE 4" SOUTH
NAD 83 (Adj 1991): N 587,502.6869 E 1,366,556.3996
NAVD 88: EL. 348.215

QUANTITIES ⚠1				
ITEM	UNIT	ESTIMATE	AS-BUILT	SUPPLIER
12" D.I.P. CLASS 54 SEWER MAIN	L.F.	496	545'	L/B WATER SERVICE
STD. 4'-0" PRECAST MANHOLE (HO. CO. STD. G-5.12)	EA.	2	2	ATLANTIC CONCRETE
STD. 4'-0" PRECAST DOGHOUSE WT MANHOLE (HO. CO. STD. G-5.14)	EA.	1	1	ATLANTIC CONCRETE
SEWER HOUSE CONNECTION	L.F.	50'*	60'	L/B WATER SERVICE

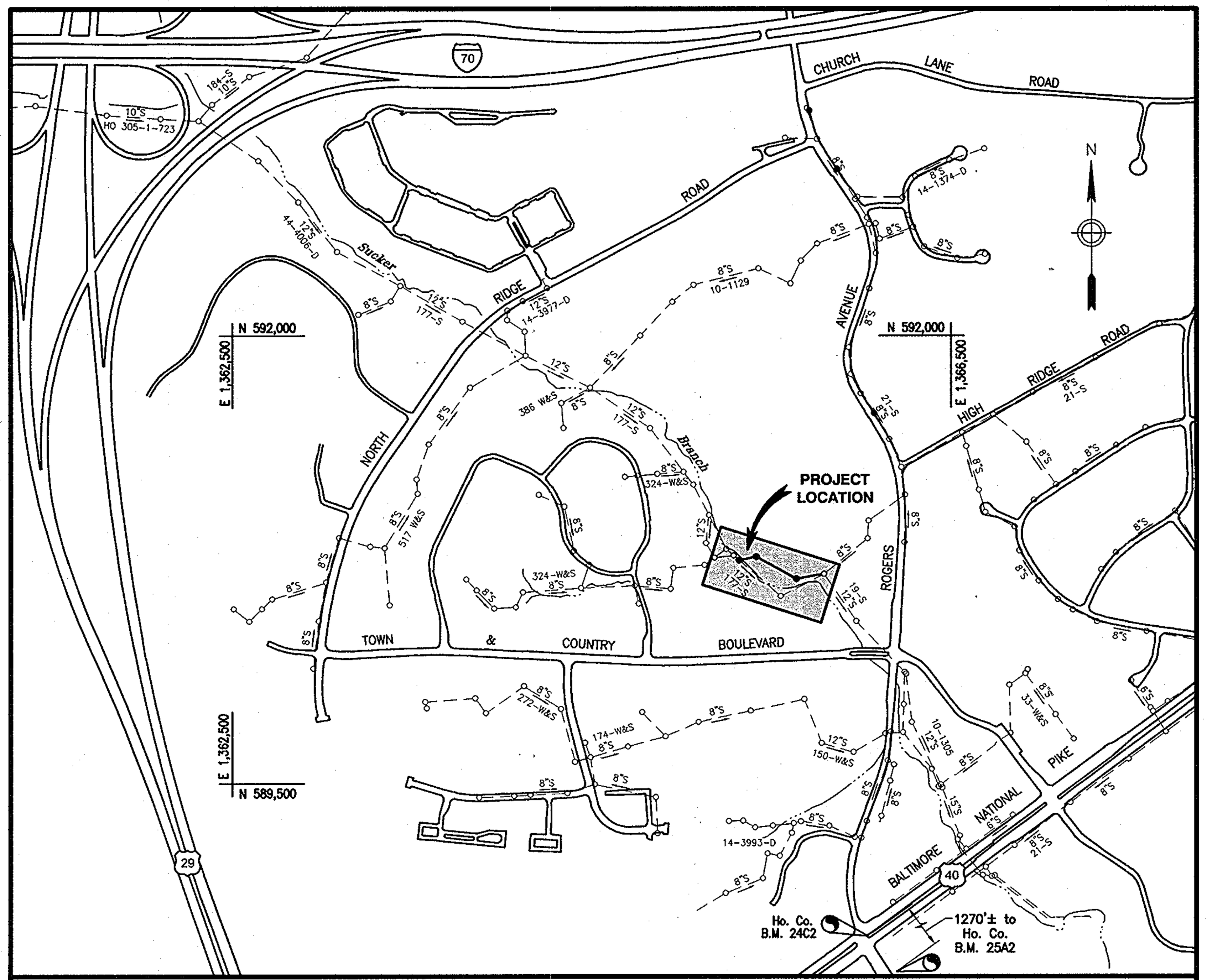
* SEE NOTE 1 UNDER SEQUENCE OF CONSTRUCTION ON SHEET 7.

SEWER STAKEOUT TABLE		
ITEM	NORTHING	EASTING
MANHOLE #1 (HO. CO. STD. G-5.12)	590,643.01	1,365,639.19
MANHOLE #2 (HO. CO. STD. G-5.12)	590,766.25	1,365,415.41
MANHOLE #3 (HO. CO. STD. G-5.14)	590,746.94	1,365,320.87

NOTE: AFTER PLANS ARE APPROVED, ORIGINAL WATER AND SEWER CONTRACT 177-S MUST BE REDLINED TO REMOVE EXISTING SEWER AND REFERENCE THIS CONTRACT.

HOWARD COUNTY

DEPARTMENT OF PUBLIC WORKS
ELLICOTT CITY, MARYLAND 21043



TYPE OF BUILDINGS: RESIDENTIAL/COMMERCIAL
NUMBER OF PARCELS: N/A
SEWER HOUSE CONNECTIONS: N/A
DRAINAGE AREA: PATAPSCO WWTP

VICINITY MAP
SCALE: 1" = 600'

GENERAL NOTES

1. Approximate locations of existing sanitary sewer 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 in September 2007 by Dewberry & Davis LLC.
3. Horizontal and Vertical Survey Controls:
   The coordinates shown on the drawings are based on Maryland State Reference System NAD 83/'91 and NAVD 88 as projected by Howard County Geodetic Control Stations Howard Co. B.M. 24C2 and B.M. 25A2.
4. All pipe elevations shown are invert elevations unless otherwise noted on the plans.
5. Clear all utilities by a minimum of 12".
6. For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifcations and Details for Construction (Latest Edition). The Contractor shall have a copy of Volume IV on the job.
7. All existing utilites 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.
8. Contractor shall notify Miss Utility at 1-800-257-7777 at least five (5) working days before starting work shown on these plans.
9. Trees and shrubs are to be protected from damage to the maximum extent. Trees and shrubs located within the construction strip noted by the symbol ◯ are to be protected in accordance with Howard County Volume IV Design Manual Standard Detail L-9.02.
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 sanitary sewer.
11. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code.
12. 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.

SEWER MAIN NOTES

1. All 12-inch sewer mains shall be DIP, CL. 54 unless otherwise noted.
2. 6-inch sewer house connections shall be DIP. Provide non-shear coupling by DFW (NDS) or equal for transition of existing pipe to DIP.
3. Distances shown for the sewer main are along the centerline of the pipe from manhole to manhole.
4. Elevations shown are to the invert of the sewer main.
5. All manholes shall be 4'-0" inside diameter unless otherwise noted.
6. Manholes designated as W.T. in Plan and Profile shall have water tight frames and covers, Standard Detail G5.52. Where water tight frame and cover is used, set top of frame 1'-6" above existing ground unless otherwise noted on drawings.

SUCKER BRANCH
12-INCH SEWER MAIN REHABILITATION

CAPITAL PROJECT S-6268
CONTRACT NO. 30-4582

LEGEND

- TRAVERSE
- PROPERTY LINE
- DECIDIOUS TREE
- EVERGREEN TREE
- EX. CONTOUR
- EX. SAN. MANHOLE
- EX. SAN. SEWER MAIN
- PROP. SAN. MANHOLE
- PROP. SAN. SEWER MANHOLE
- WOODSLINE
- RIPRAP

INDEX OF SHEETS

AS-BUILTS 06-23-2011

EP-11-13

PROFESSIONAL CERTIFICATION

I, THOMAS N. DALLAPALU, 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.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/10/10	CHIEF, BUREAU OF ENGINEERING	12/9/10
CHIEF, BUREAU OF UTILITIES	12/8/10	CHIEF, UTILITY DESIGN DIVISION PSD	12/9/10

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STATE OF MARYLAND — THOMAS N. DALLAPALU — No. 10966 — REGISTERED PROFESSIONAL ENGINEER

DES: RJM
DRN: ARW
CHK: TND
DATE: DECEMBER 2010

BY	NO.	REVISIONS	DATE
RLI	⚠1	AS-BUILT	6-23-11

TITLE SHEET

600' SCALE MAP NO. 17 BLOCK NO. 24

SUCKER BRANCH
12-INCH SEWER MAIN REHABILITATION
CAPITAL PROJECT S-6268
CONTRACT 30-4582

ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET 1 OF 7

TREES TO BE SAVED		
DESCRIPTION	NORTHING	EASTING
20" WALNUT	590,781.83	1,365,423.33
18" MAPLE	590,777.80	1,365,448.74
22" MAPLE	590,719.37	1,365,541.33
24" MAPLE	590,645.03	1,365,607.20

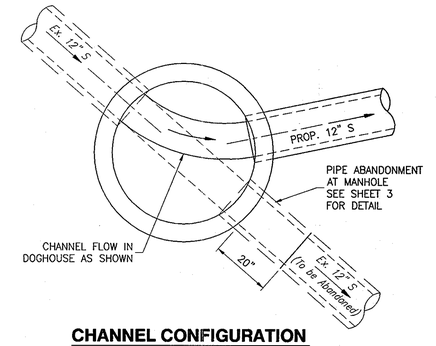
REMOVE EX. MANHOLE 2061 AND EXPOSED EX. 12" SAN. SEWER PIPE 5' INTO BANKS AND PLUG REMAINING PIPE. BACKFILL AND PLACE CLASS II RIPRAP, 7' MIN ON SIDE OF EXCAVATION PER STREAM BANK PROTECTION DETAIL ON SHEET 3.

FOR STREAM INVERT PROTECTION DETAIL SEE SHEET 3 OF 7

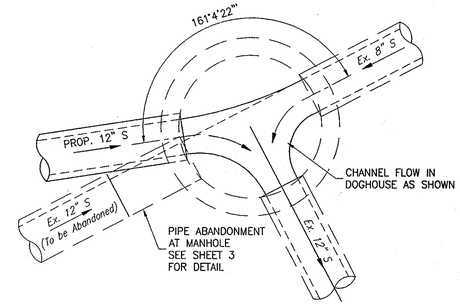
FOR MANHOLE AND PIPE ABANDONMENT DETAILS SEE SHEET 3

DURING AND AFTER PIPE REMOVAL:
APPLY, INSTALL AND MAINTAIN MEASURES TO CONTROL EROSION OF DISTURBED AREAS AND TO MINIMIZE SEDIMENTATION TO ADJACENT WATERCOURSES AND LANDS TO INCLUDE THE APPLICATION OF SEED AND MULCH AND THE INSTALLATION OF SILT FENCE WITHIN 7 DAYS OF INITIAL DISTURBANCE. ALL ASSOCIATED COSTS WILL BE CONSIDERED INCIDENTIAL TO THE CONTRACT.

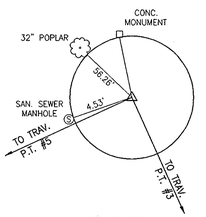
PLAN
SCALE: 1"=50'



CHANNEL CONFIGURATION
PROP. MANHOLE 3
SCALE: 1/2" = 1'-0"

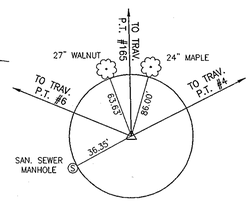


CHANNEL RECONFIGURATION AT
EX. MANHOLE 101
SCALE: 1/2" = 1'-0"

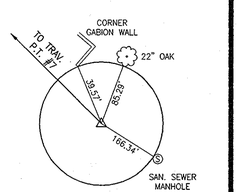


TRAV. PT. #4
REBAR AND CAP
N 590,666.29 E 1,365,785.39
ELEV. 333.41

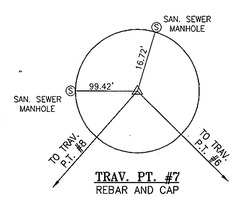
TRAV. PT. #165 "SPUR"
NAIL
N 590,763.04 E 1,365,579.27
ELEV. 334.34



TRAV. PT. #5
REBAR AND CAP
N 590,562.36 E 1,365,583.52
ELEV. 333.64



TRAV. PT. #6
REBAR AND CAP
N 590,633.00 E 1,365,410.63
ELEV. 335.66



TRAV. PT. #7
REBAR AND CAP
N 590,762.61 E 1,365,279.88
ELEV. 337.01

PROFESSIONAL CERTIFICATION

I, THOMAS N. DALLAPALU, 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.

AS-BUILTS 06-23-2011

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/10/10 DATE	CHIEF, BUREAU OF ENGINEERING	12/9/10 DATE
CHIEF, BUREAU OF UTILITIES	12/9/10 DATE	CHIEF, UTILITY DESIGN DIVISION PSD	12/9/10 DATE

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STATE OF MARYLAND — THOMAS N. DALLAPALU — No. 10966 — REGISTERED PROFESSIONAL ENGINEER

DES:	RJM
DRN:	ARW
CHK:	TND
DATE:	DECEMBER 2010

BY	NO.	REVISIONS	DATE
RLI	1	AS-BUILT	6-23-11

SANITARY SEWER PLAN

600' SCALE MAP NO. 17 BLOCK NO. 24

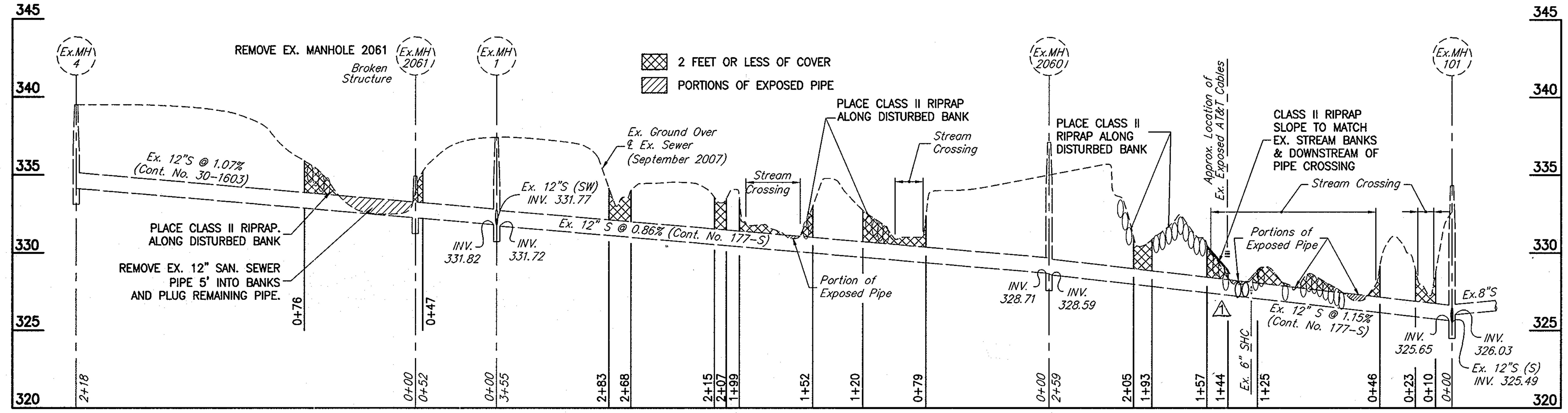
SUCKER BRANCH
12-INCH SEWER MAIN REHABILITATION
CAPITAL PROJECT S-6268
CONTRACT 30-4582

ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

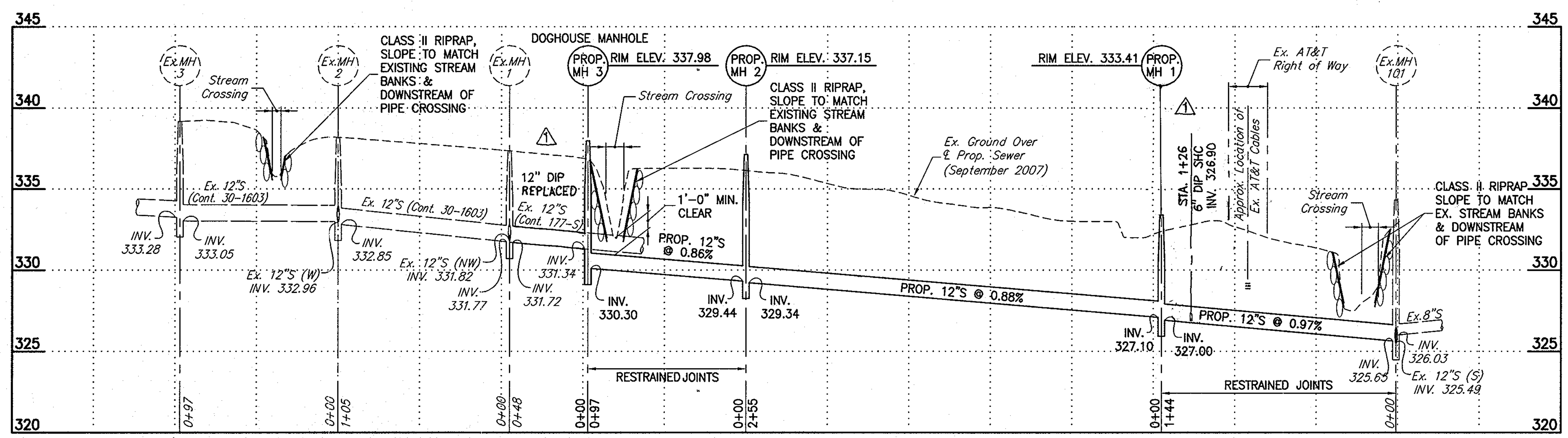
SHEET 2 OF 7

Plotted by: (steve) on Plot Date: Dec 08, 2010 - 1:05pm
Path-->J:\Projects\S0006888 - How Co.Town & Country Blvd.Sewer Rehabilitation\CAD\dwg\Y&C-Plan (Sheets 2-3).dwg
Xrefs Attached:
Last Saved: Aug 20, 2009 - 7:45am
XREFS-->J:\Projects\S0006888 - How Co.Town & Country Blvd.Sewer Rehabilitation\CAD\dwg\Y&C-Border.dwg; XREFS-->J:\Projects\S0006888 - How Co.Town & Country Blvd.Sewer Rehabilitation\CAD\dwg\HOWARD COUNTY SEWER EASEMENT.dwg; XREFS-->J:\Projects\S0006888 - How Co.Town & Country Blvd.Sewer Rehabilitation\CAD\dwg\STAR HIRSCH MAGAZINE HOWARD CROSSING LLC SEWER EASEMENT.dwg



EXISTING SANITARY SEWER PROFILE

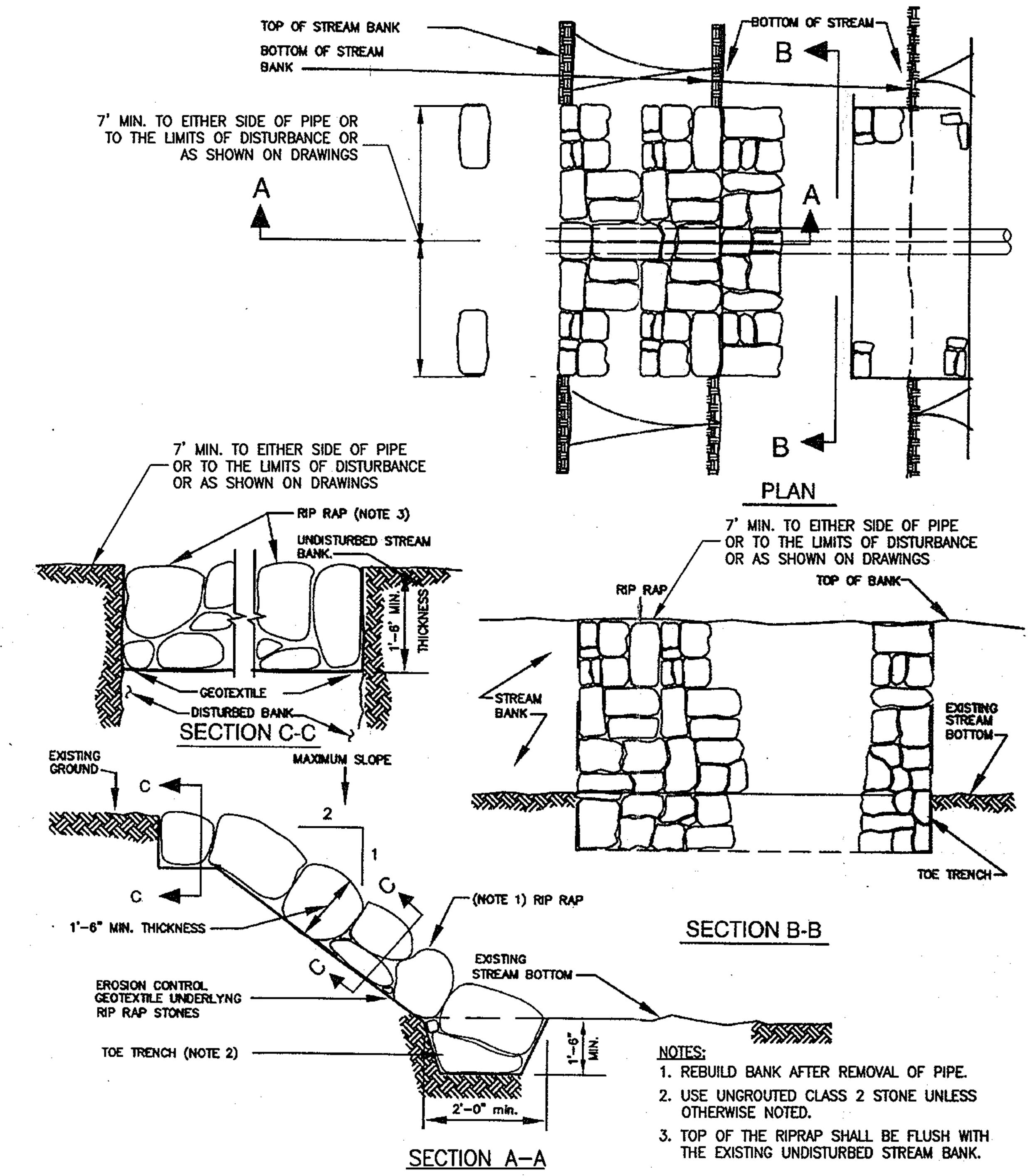
SCALE: 1"=50' HORIZ.
1"=5' VERT.



PROPOSED SANITARY SEWER PROFILE

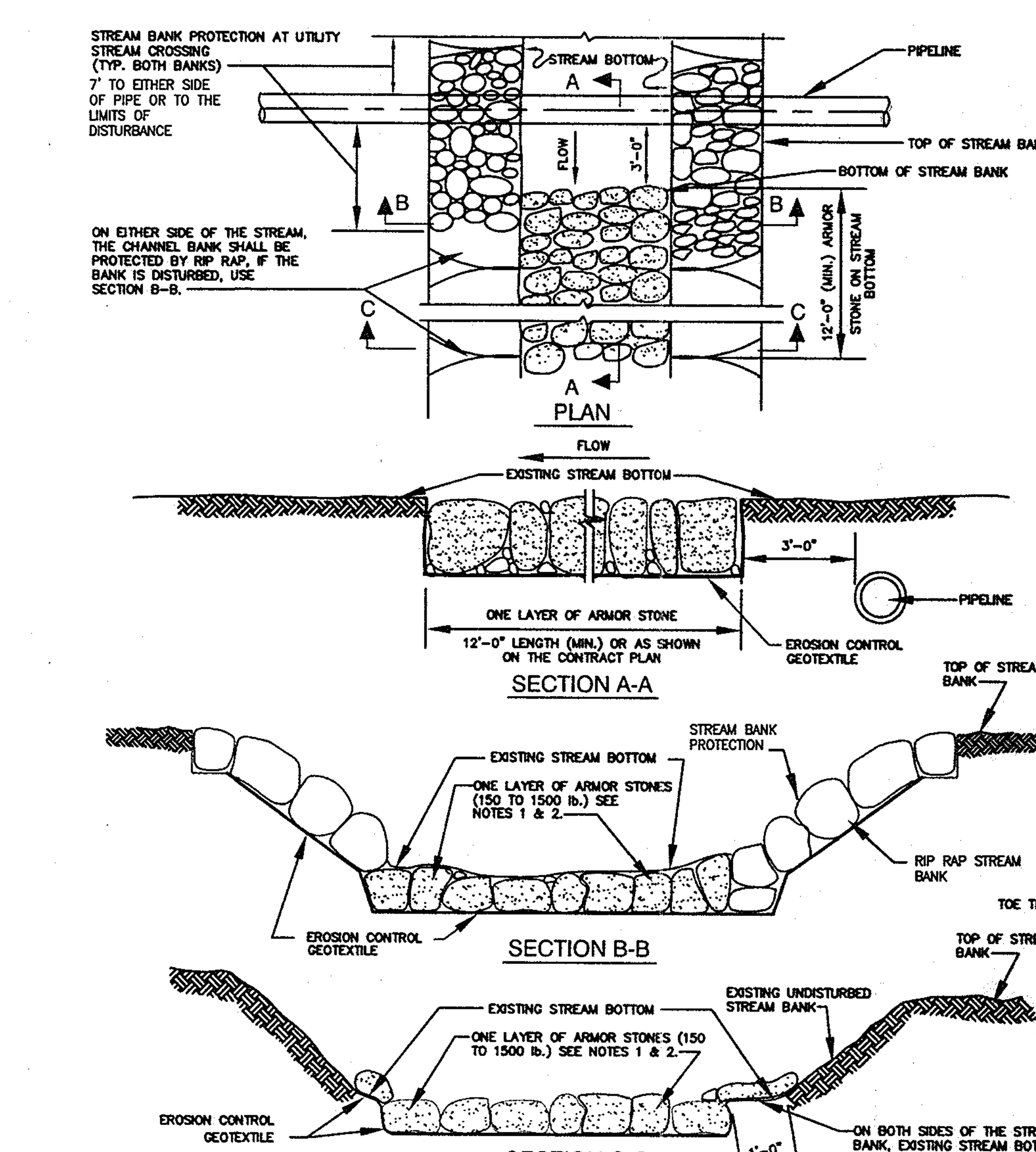
SCALE: 1"=50' HORIZ.
1"=5' VERT.

NOTE: ALL STONE SHALL BE NATURALLY COLORED (NOT WHITE) AND SHALL BE APPROVED BY ENGINEER PRIOR TO INSTALLATION.



STREAM BANK PROTECTION AT ABANDONED PIPE LOCATIONS

NOT TO SCALE

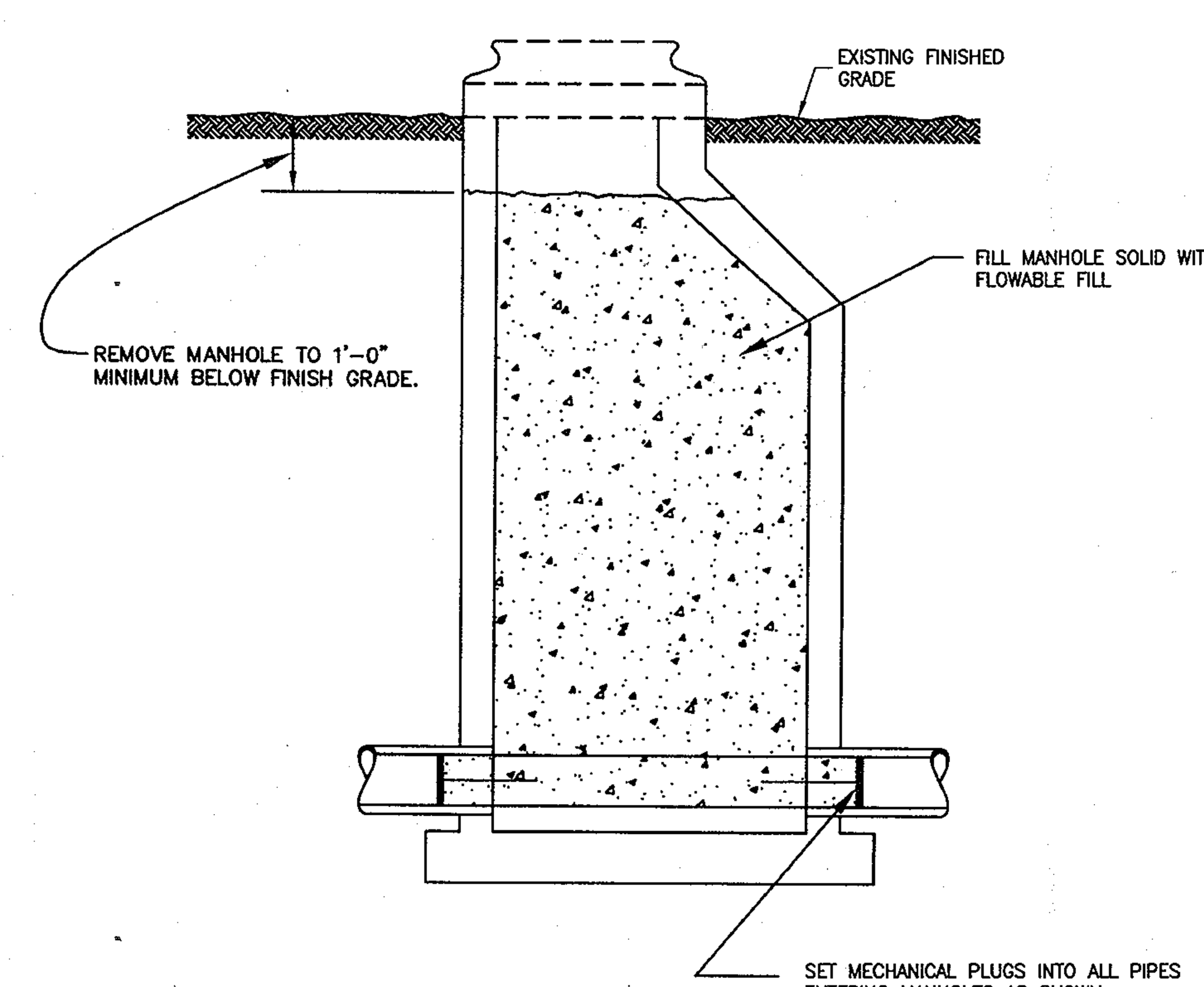


NOTES:

1. ARMOR STONES SHALL BE PLACED IN A MANNER TO PROVIDE A RELATIVELY EVEN STREAM BOTTOM WITH THE TOP OF STONE AT OR BELOW THE ORIGINAL STREAM BOTTOM.
2. ARMOR STONE SHALL BE REASONABLY WELL-GRADED FROM THE SMALLEST TO THE LARGEST SIZE SPECIFIED.

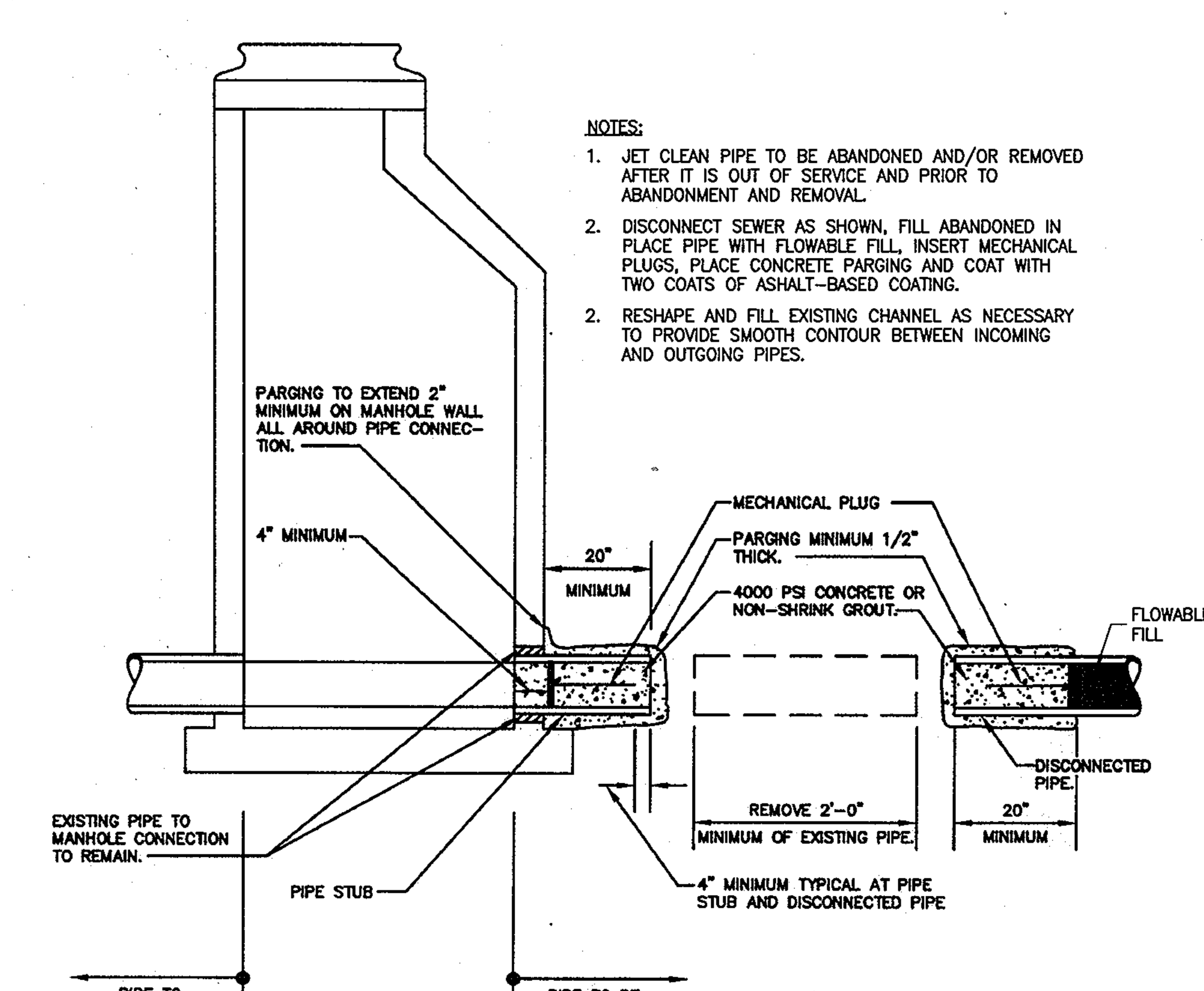
STREAM INVERT PROTECTION FOR SHALLOW UTILITY STREAM CROSSING

NOT TO SCALE



COMPLETE MANHOLE ABANDONMENT

NOT TO SCALE



NOTES:

1. JET CLEAN PIPE TO BE ABANDONED AND/OR REMOVED AFTER IT IS OUT OF SERVICE AND PRIOR TO ABANDONMENT AND REMOVAL.
2. DISCONNECT SEWER AS SHOWN, FILL ABANDONED IN PLACE PIPE WITH FLOWABLE FILL, INSERT MECHANICAL PLUGS, PLACE CONCRETE PARGING AND COAT WITH TWO COATS OF ASHALT-BASED COATING.
2. RESHAPE AND FILL EXISTING CHANNEL AS NECESSARY TO PROVIDE SMOOTH CONTOUR BETWEEN INCOMING AND OUTGOING PIPES.

ABANDONMENT OF PIPE AT MANHOLE AND LEFT IN PLACE

NOT TO SCALE

AS-BUILTS 06-23-2011

PROFESSIONAL CERTIFICATION

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/10/10 DATE	CHIEF, BUREAU OF ENGINEERING	12/9/10 DATE
CHIEF, BUREAU OF UTILITIES	12/9/10 DATE	CHIEF, UTILITY DESIGN DIVISION	12/9/10 DATE

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FAX: 410.265.8875

DES:	RJM
DRN:	ARW
CHK:	TND
DATE:	DECEMBER 2010

BY	NO.	REVISIONS	DATE
RLI	1	AS-BUILT	6-23-11

SANITARY SEWER PROFILES AND DETAILS

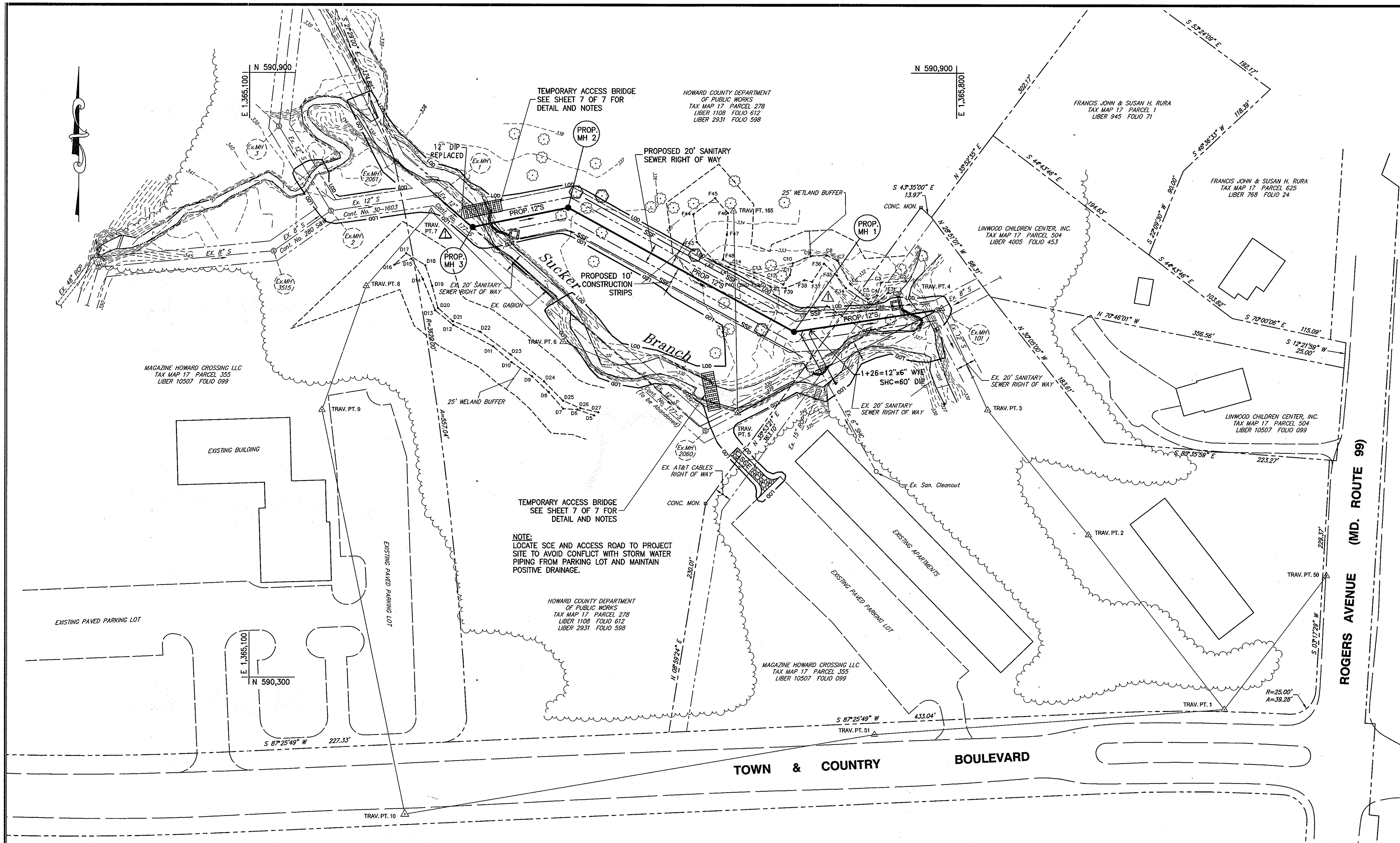
600' SCALE MAP NO. 17 BLOCK NO. 24

SUCKER BRANCH
12-INCH SEWER MAIN REHABILITATION
CAPITAL PROJECT S-6268
CONTRACT 30-4582

ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET 3 OF 7



LEGEND

- PROPOSED SEWER MAIN AND MANHOLE
- LIMIT OF DISTURBANCE
- SUPER SILT FENCE
- SILT FENCE
- WETLAND
- 25' WETLAND BUFFER
- DEWATERING BASIN (WPD 1.1)
- SANDBAG/STONE DIVERSION (WPD 1.5)
- STABILIZED CONSTRUCTION ENTRANCE

Sheet Notes:

1. The contractor shall ensure that no disturbance occurs beyond the limit of the proposed construction easement. Super silt fence shall be installed within the construction easement shown on this plan. LOD shown on plan outside of proposed construction easement for illustrative purposes only.
2. All of the contractor's work is restricted to the proposed construction easement shown, except that the exiting paved parking lot may be used for ingress and egress.

SEWER BY-PASS NOTES

1. Contractor to submit the following prior to execution:
   a. Submit method for maintaining sewage flows to include:
      Bypass pumping plan showing:
      1) Intake manhole.
      2) Service over pumping.
      3) Receiving manhole.
      4) Expected flows. (Contractor to field verify)
         a) Design Q = 1.28 M.G.D.
         b) Capacity = 2.20 M.G.D.
      5) Pump size.
      6) Pipe layout.
      7) Backup equipment.
2. Maintain existing sewage flows during connection to existing sewer.
3. Take precautions and employ methods required to prevent sewage backup.
4. Return diverted sewage to sanitary system and do not discharge on surfaces or into streams or storm drains.
5. Use enclosed bypass flumes equivalent in size to existing sewer being diverted, when required.
6. Immediately clean and disinfect raw sewage spills and overflows.

SEDIMENT AND EROSION CONTROL PLAN

SCALE: 1"=50'

UTILITY NOTES

1. 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.
2. PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

PROFESSIONAL CERTIFICATION

I, THOMAS N. DALLAPALU, 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/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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Developer ____ Date ____

Print Name ____

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

Thomas N. Dallapalu — Signature of Engineer — 12/9/10 Date

Thomas N. DallaPalu — Print Name

AS-BUILTS 06-23-2011

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

Howard Soil Conservation District — 12/13/10 Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/10/10 DATE	CHIEF, BUREAU OF ENGINEERING	12/9/10 DATE
CHIEF, BUREAU OF UTILITIES	12/9/10 DATE	CHIEF, UTILITY DESIGN DIVISION PSD	12/9/10 DATE

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STATE OF MARYLAND — THOMAS N. DALLAPALU — No. 10966 — REGISTERED PROFESSIONAL ENGINEER

DES:	RJM
DRN:	ARW
CHK:	TND
DATE: DECEMBER 2010	

BY	NO.	REVISIONS	DATE
RLI	1	AS-BUILT	6-23-11

SEWER MAIN REHABILITATION SEDIMENT AND EROSION CONTROL PLAN

600' SCALE MAP NO. 17 — BLOCK NO. 24

SUCKER BRANCH
12-INCH SEWER MAIN REHABILITATION
CAPITAL PROJECT S-6268
CONTRACT 30-4582

ELECTION DISTRICT NO. 2 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Section I – Vegetative Stabilization Methods and Materials

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 not usually necessary for temporary seeding.

iii. 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)

i. 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. Soil 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 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.

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 means.

ii. Permanent Seeding

a. Minimum soil conditions required for permanent vegetative establishment:

1. Soil pH shall be between 6.0 and 7.0.
2. Soluble salts shall be less than 500 parts per million (ppm).
3. 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 penetration.
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 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 a slope.

c. 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.

D. Seed Specifications

i. 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 seed used.

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 on 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

i. 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 hydroseeding.

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 contact.

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.

a. 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)

i. 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)

a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.

b. 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.

c. WCFM, including dye, shall contain no germination or growth inhibiting factors.

d. 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.

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.

ii. 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 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.

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.

iii. 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.

iv. 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

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 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.

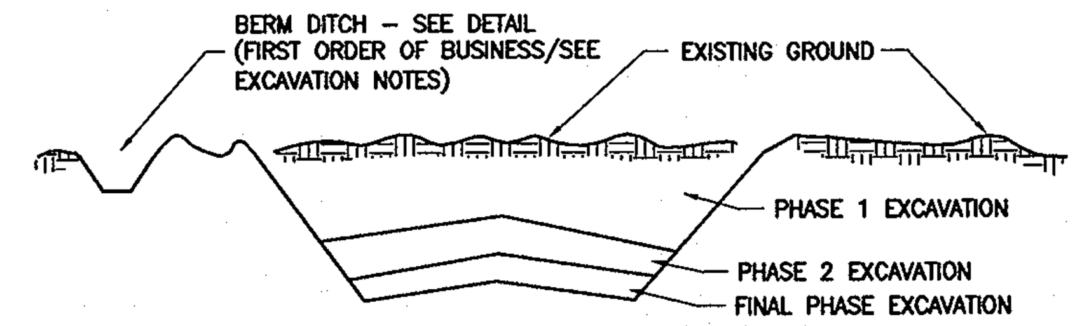


Figure 4 Incremental Stabilization – Cut

J. Incremental Stabilization of Embankments – Fill Slopes

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 fill as shown in Figure 4, unless other methods shown on the plans address this area.

b. Place phase 1 embankment, dress and stabilize.

c. Place phase 2 embankment, dress and stabilize.

d. 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.

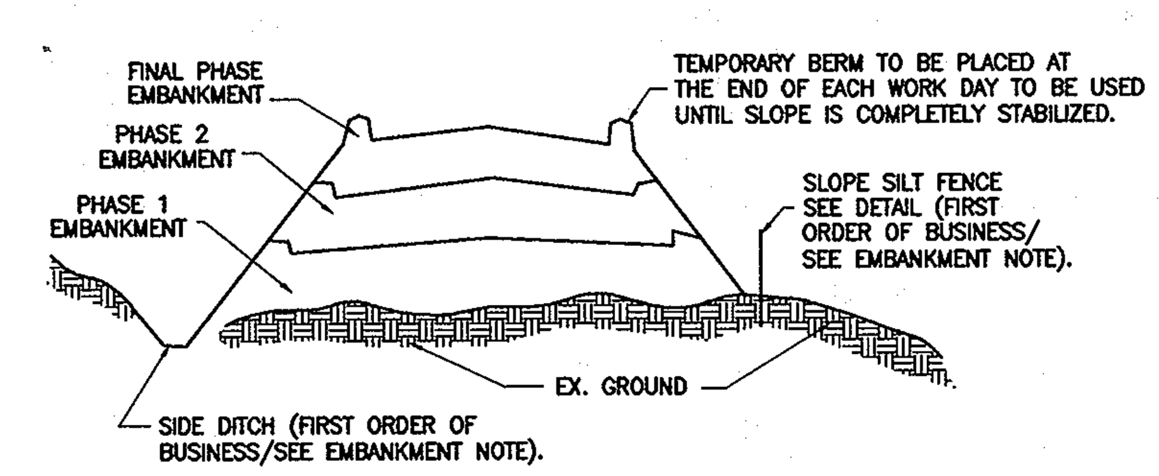


Figure 5 Incremental Stabilization – Embankment Fill
Comply with MD 378 Specifications.

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

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 MIXTURE (HARDINESS ZONE 6b) FROM TABLE 26					FERTILIZER RATE (10–10–10)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
	ANNUAL RYEGRASS	50 LB/AC	3/1 – 4/30 8/15 – 11/1	1/4"–1/2"	600 LB/AC (15 LB/ /1000 SF)	2 TONS/AC (100 LB /1000 SF)
	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

i. 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 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.

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. ft. (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

SEED MIXTURE (HARDINESS ZONE 6b) FROM TABLE 25					FERTILIZER RATE (10–20–20)			LIME RATE
NO.	SPECIES	APPLICATION RATE(LB/AC)	SEEDING DATES	SEEDING DEPTHS	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"	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)
7	TALL FESCUE WEEPING LOVEGRASS SERECIA LESPEDEZA	110 LB/AC 3 LB/AC 20 LB/AC	3/1 – 10/15	1/4"–1/2"				

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 labels 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 not be acceptable.

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 percent of the section.

iv. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

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 agronomist or soil scientist prior to its installation.

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 surface.

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.

C. Sod Maintenance

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 content.

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

i. 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.

ii. 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.

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 cultivars may be blended.

iv. 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 seedings with adequate water for plant growth (23/64 " 0 1" 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 adverse sites.

D. Repairs and Maintenance

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

i. Once the vegetation is established, the site shall have 95% ground cover to be considered adequately stabilized.

ii. If the stand provides less than 40% ground coverage, reestablish following original lime, fertilizer, seedbed preparation and seeding recommendations.

iii. If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing half of the rates originally applied may be necessary.

iv. 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

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 germination 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 — Site is defined as areas involving any improvement.

Total Area of Site	1.18 Acres
Area Disturbed	1.18 Acres
Area to be paved	0 Acres
Area to be Vegetatively Stabilized	1.18 Acres
Total Cut	670 Cu. Yds.
Total Fill	677 Cu. Yds.
Offsite waste/borrow area location	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.

I/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. I ALSO AUTHORIZE PERIODIC ON–SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Developer ________ Date ________

Print Name ________

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

Thomas N. DallaPalu (signature) — 12/9/10
Signature of Engineer — Date

Thomas N. DallaPalu
Print Name

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

(signature) — 12/13/10
Howard Soil Conservation District — Date

PROFESSIONAL CERTIFICATION

I, THOMAS N. DALLAPALU, 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.

AS-BUILTS 06–23–2011

ESC 5 OF 7

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/10/10	CHIEF, BUREAU OF ENGINEERING	DATE 12/9/10
CHIEF, BUREAU OF UTILITIES	DATE 12/9/10	CHIEF, UTILITY DESIGN DIVISION	DATE 12/9/10

Dewberry®
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

STATE OF MARYLAND — THOMAS N. DALLAPALU — No. 10966 — REGISTERED PROFESSIONAL ENGINEER

DES:	RJM
DRN:	ARW
CHK:	TND
DATE:	DECEMBER 2010

BY	NO.	REVISIONS	DATE
RLI	1	AS-BUILT	6-23-11

SEDIMENT AND EROSION CONTROL NOTES

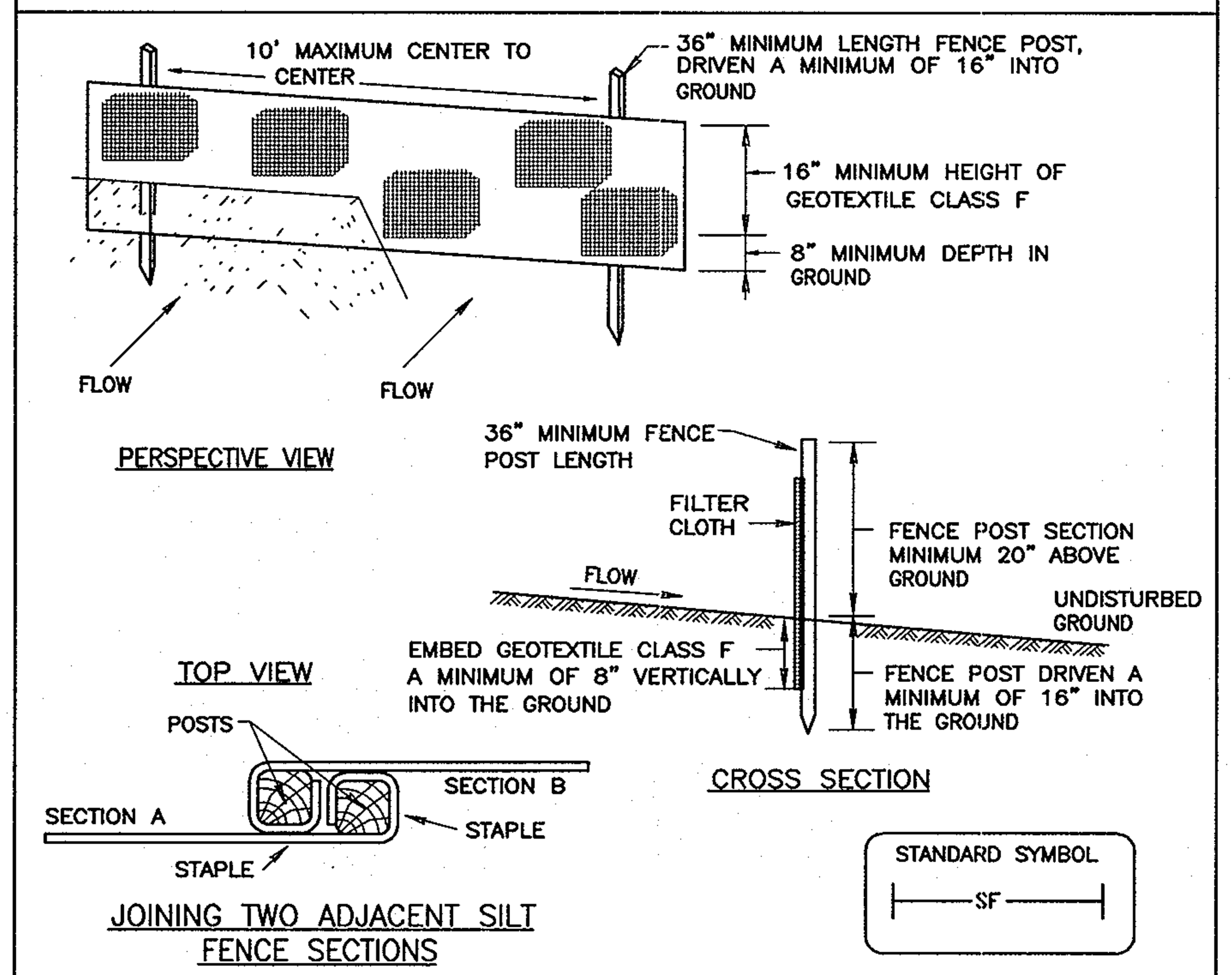
600' SCALE MAP NO. 17 — BLOCK NO. 24

SUCKER BRANCH
12-INCH SEWER MAIN REHABILITATION
CAPITAL PROJECT S-6268
CONTRACT 30-4582

ELECTION DISTRICT NO. 2 — HOWARD COUNTY, MARYLAND

SCALE: NO SCALE

DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (minimum) cut, or 13/4" 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 pond per linear foot.
2. 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 ^{2}/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

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SILT FENCE

Silt Fence Design Criteria

Slope Steepness	(Maximum) Slope Length	(Maximum) Silt Fence Length
Flatter than 50:1	unlimited	unlimited
50:1 to 10:1	125 feet	1,000 feet
10:1 to 5:1	100 feet	750 feet
5:1 to 3:1	60 feet	500 feet
3:1 to 2:1	40 feet	250 feet
2:1 and steeper	20 feet	125 feet

Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

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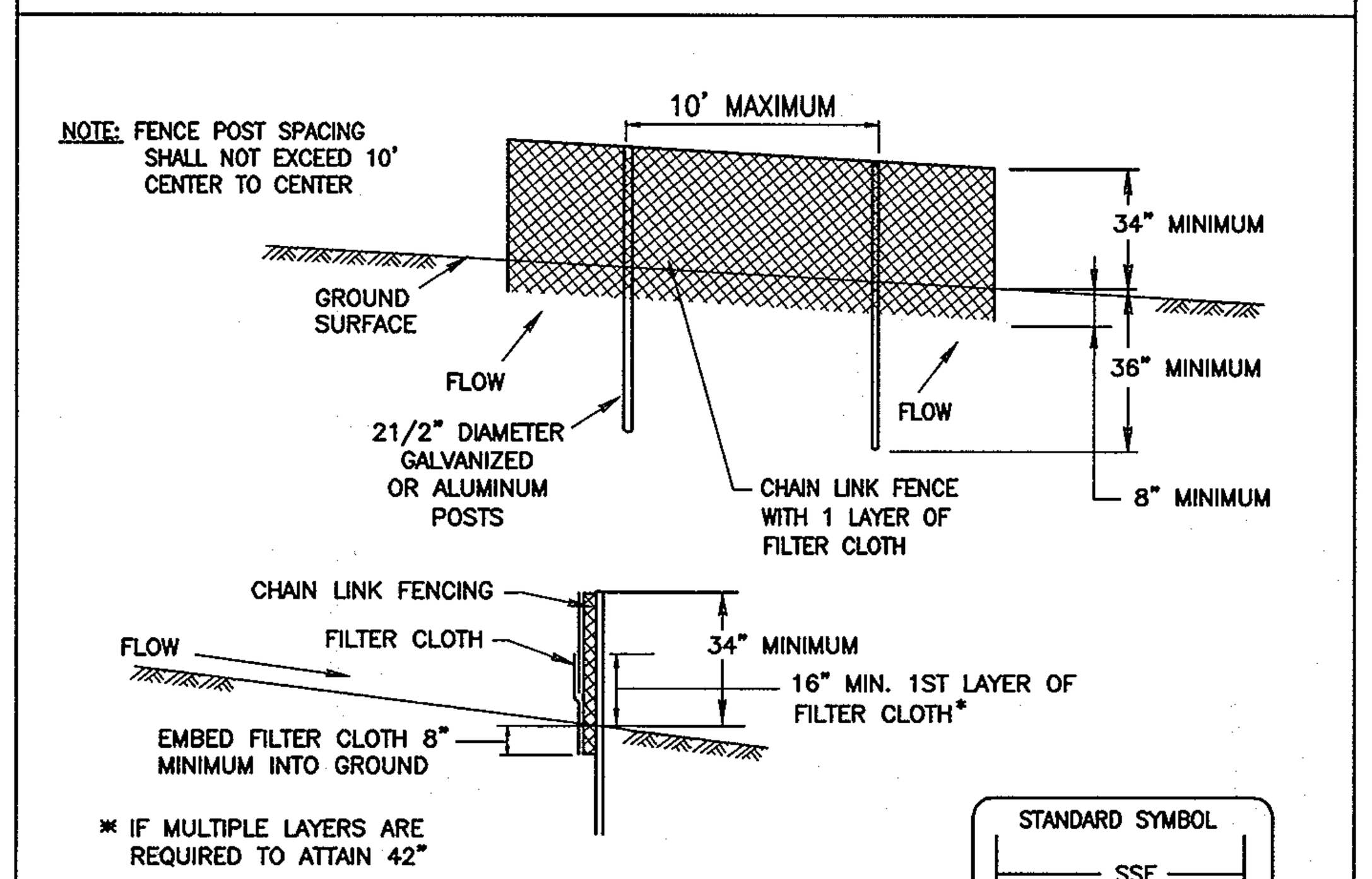
DETAIL 33 - SUPER SILT FENCE



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 8" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
7. Filter cloth 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 ^{2}/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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SUPER SILT FENCE

Design Criteria

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

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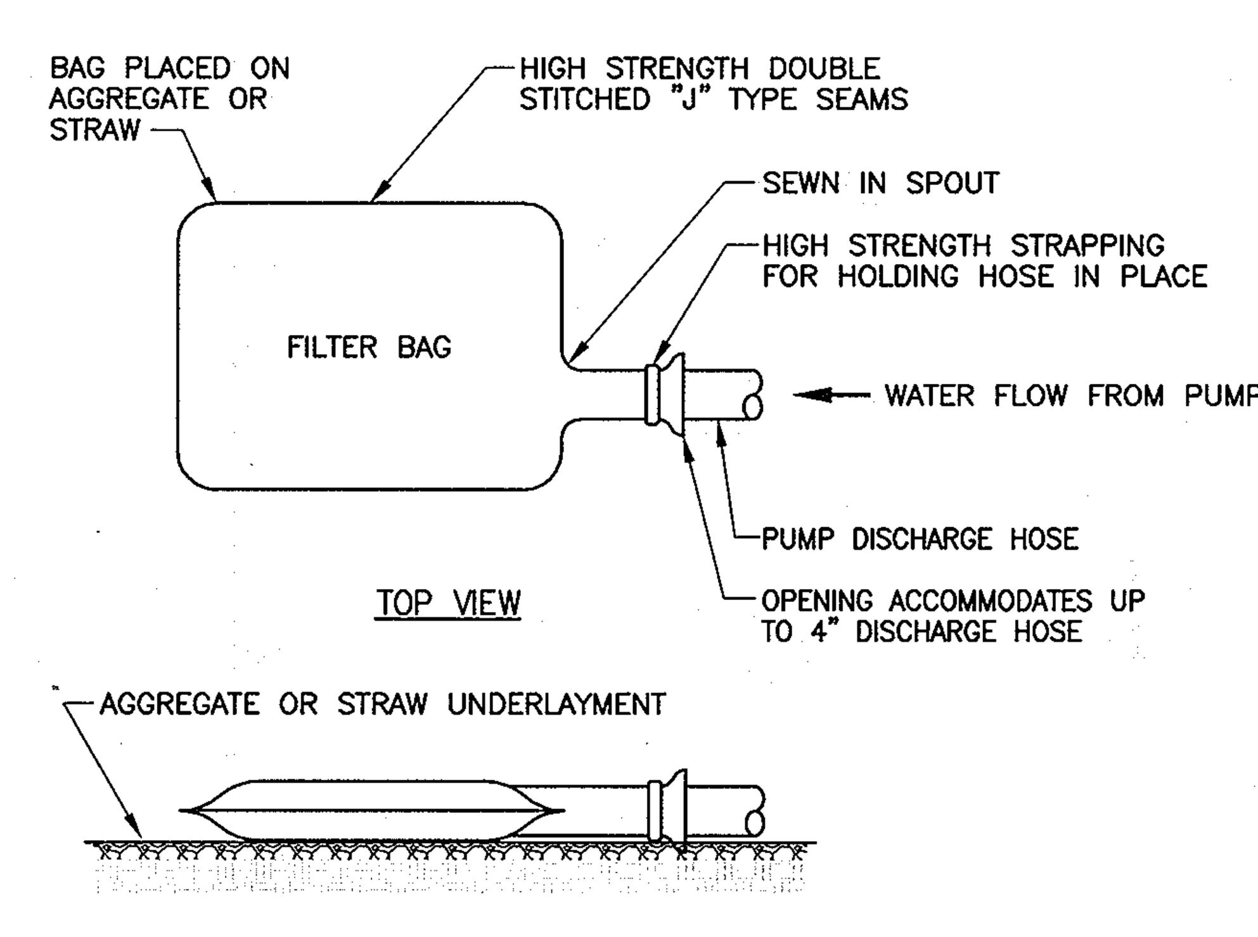
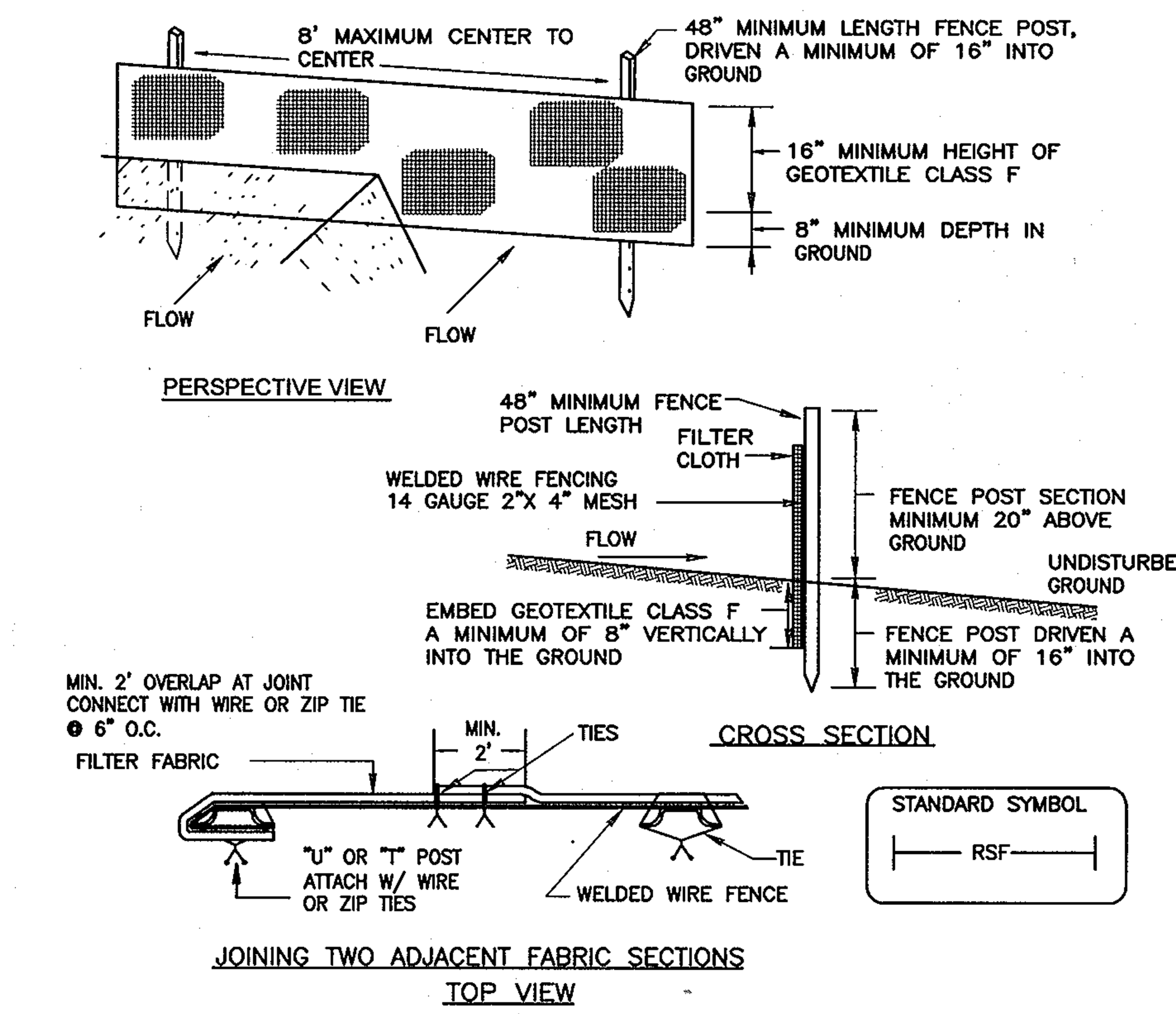


FILTER BAG

NOT TO SCALE



Construction Specifications

1. Metal fence post shall be a minimum of 48" long driven 16" minimum into the ground. Post shall be standard T or U section weighting not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or zip ties 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 / ^{2}minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and wired tied or zip tied to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

Silt Fence Design Criteria

Slope Steepness	(Maximum) Slope Length	(Maximum) Silt Fence Length
Flatter than 50:1	unlimited	unlimited
50:1 to 10:1	125 feet	1,000 feet
10:1 to 5:1	100 feet	750 feet
5:1 to 3:1	60 feet	500 feet
3:1 to 2:1	40 feet	250 feet
2:1 and steeper	20 feet	125 feet

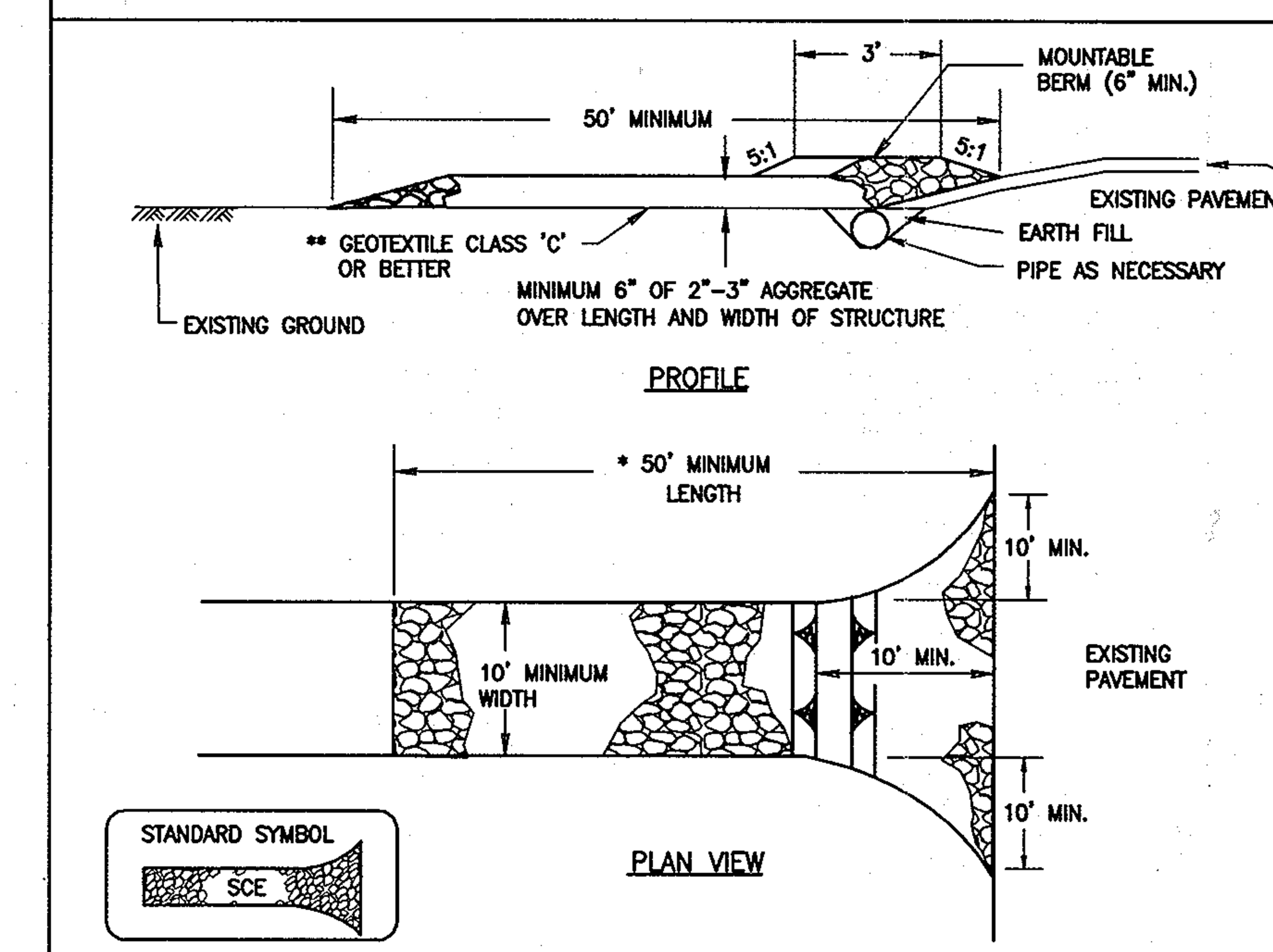
Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

REINFORCED SILT FENCE

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFER, WATERWAYS, & 100 YEAR FLOODPLAIN

1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100 YEAR FLOODPLAIN.
2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFER, WATERWAYS, OR THE 100 YEAR FLOODPLAIN.
3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100 YEAR FLOODPLAIN.
5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFER, WATERWAYS, OR PERMANENT MODIFICATION OF THE 100 YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
6. RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100 YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW OR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS.
8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
9. TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM: USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
11. CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



Construction Specifications

1. Length - minimum of 50' (*30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. 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.
5. 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 is necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point 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/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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Developer ______ Date ______

Print Name ______

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

Thomas N. DallaPalu — Signature of Engineer — 12/9/10 Date

Thomas N. DallaPalu — Print Name

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

[signature] Howard Soil Conservation District — 12/13/10 Date

AS-BUILTS 06-23-2011

ESC 6 OF 7

PROFESSIONAL CERTIFICATION

I, THOMAS N. DALLAPALU, 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.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/10/10	CHIEF, BUREAU OF ENGINEERING	DATE 12/9/10
CHIEF, BUREAU OF UTILITIES	DATE 12/9/10	CHIEF, UTILITY DESIGN DIVISION PSP	DATE 12/9/10

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STATE OF MARYLAND — THOMAS N. DALLAPALU — No. 10966 — REGISTERED PROFESSIONAL ENGINEER

DES:	RJM
DRN:	ARW
CHK:	TND
DATE:	DECEMBER 2010

BY	NO.	REVISIONS	DATE
RLI	⚠	AS-BUILT	6-23-11

STREAM RESTORATION SEDIMENT AND EROSION CONTROL DETAILS

600' SCALE MAP NO. 17 — BLOCK NO. 24

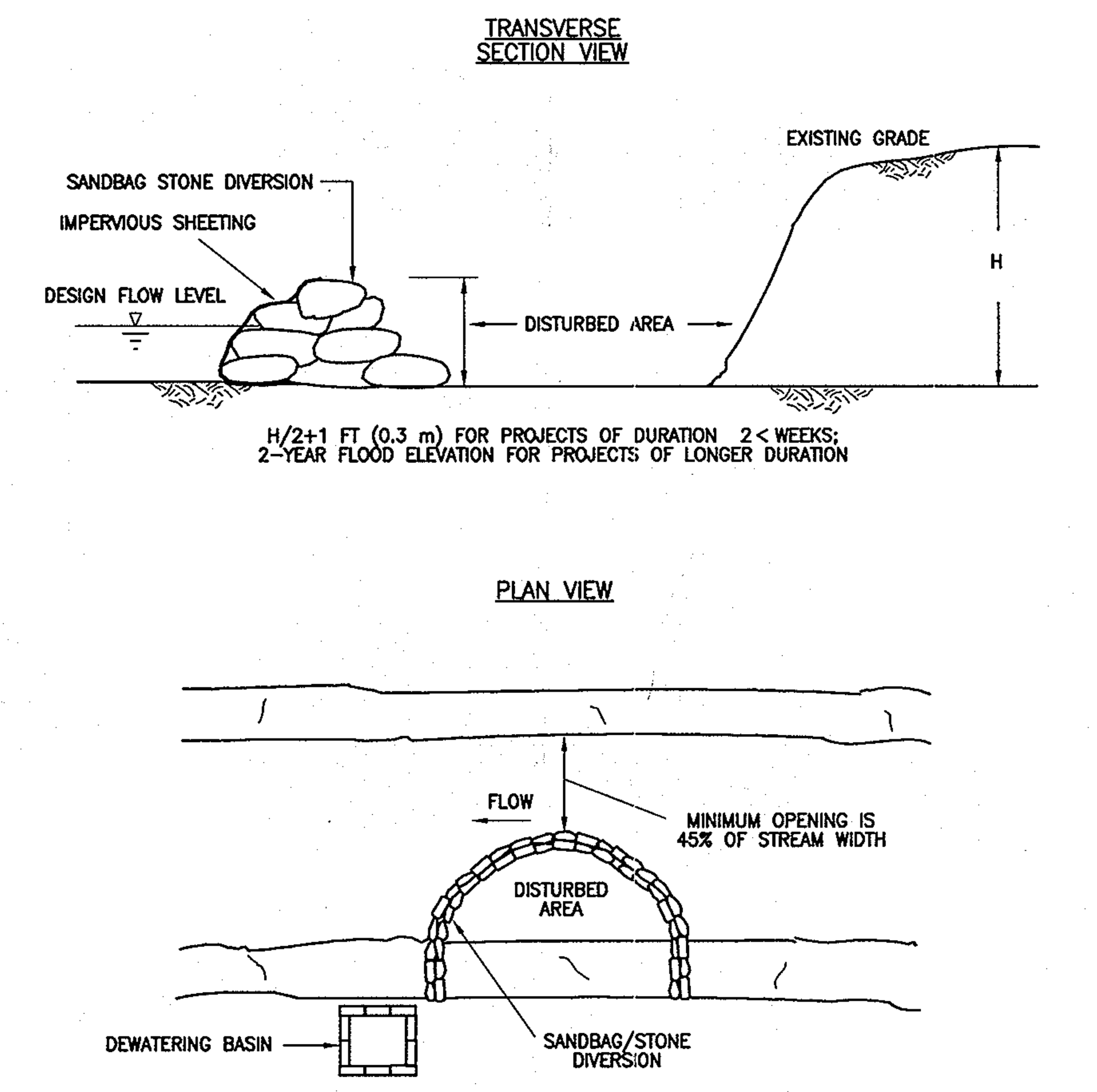
SUCKER BRANCH
12-INCH SEWER MAIN REHABILITATION
CAPITAL PROJECT S-6268
CONTRACT 30-4582

ELECTION DISTRICT NO. 2 — HOWARD COUNTY, MARYLAND

SCALE: NO SCALE

SHEET 6 OF 7

Maryland's Guidelines To Waterway Construction
DETAIL 1.5: SANDBAG/STONE DIVERSION



TEMPORARY IN STREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.5 – 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing sandbag or stone flow diversions for the purpose of erosion control when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS

Diversions are used to isolate work areas from flow during the construction and in–stream projects. Diversions which have an insufficient flow capacity can fail and severely erode the disturbed channel section under construction. Therefore, in–channel construction activities should occur only during periods of low rainfall. This temporary measure may not be practical in large channels.

MATERIAL SPECIFICATIONS

Materials for sandbag and stone stream diversions should meet the following requirements:

- *Riprap:* Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters).
- *Sandbags:* Sandbags should consist of materials which are resistant to ultra–violet radiation, tearing and puncture and should be woven tightly enough to prevent leakage of fill material (i.e. sand, fine gravel, etc.)
- *Sheeting:* Sheeting should consist of polyethylene or other materials which are impervious and and resistant to puncture and tearing.

MATERIAL SPECIFICATIONS

All erosion and sediment control devices, including dewatering basins, should be implemented as as the first order business according to plan approval by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should be installed around the perimeter of the work area.

1. The diversion structure should be installed from upstream to downstream
2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration of less than 2 weeks, the height of the diversion should be one half of the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
3. All excavated material should be deposited and stabilized in an approved area outside the the 100–year floodplain unless authorized by the WMA.
4. Sediment–laden water from the construction area should be pumped to a dewatering basin.

TEMPORARY IN STREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES*

PAGE 1.5–1

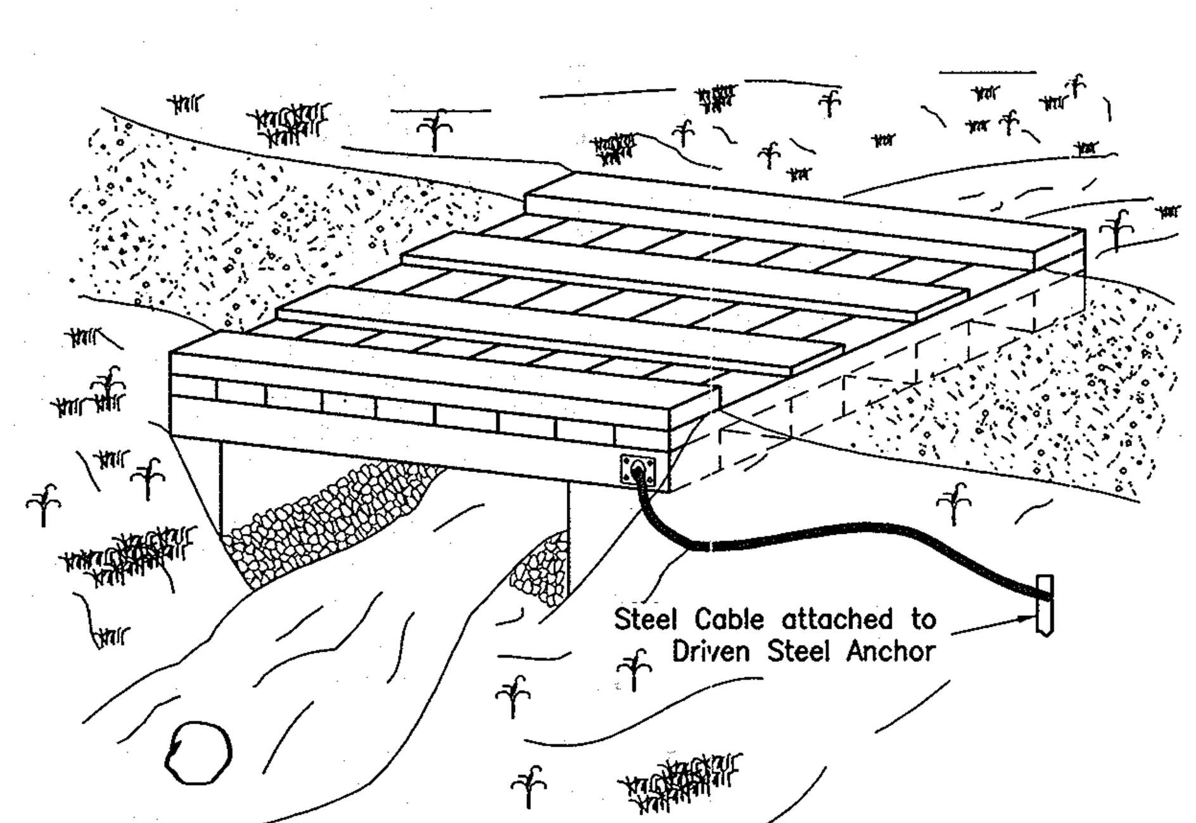
MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18–inch (0.45 meters) overlap.
6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.
7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100–year floodplain unless authorized by the WMA.
8. Sediment control devices are to remain in place until all disturbed areas stabilized in accordance with an approved sediment and control plan and the inspecting authority approves their removal.

TEMPORARY IN STREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES*

PAGE 1.5–1

Maryland's Guidelines To Waterway Construction
DETAIL 4.8: TEMPORARY ACCESS BRIDGE



STREAM CROSSINGS	PAGE 4.8 – 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 4.8: TEMPORARY ACCESS BRIDGE

Temporary steam crossing intended for minimum corridor disturbance

DESCRIPTION

A temporary access bridge is a stream crossing made of wood, metal, or other materials designed to limit the amount of disturbance to the stream banks and bed.

EFFECTIVE USES & LIMITATIONS

Temporary access bridges are the preferred method of waterway crossing since they typically cause the least disturbance to the waterway bed and banks, pose the least chance for inter–reference with fish migration, and can be quickly removed and reused.

MATERIAL SPECIFICATIONS

- *Stringers:* Stringers should either be logs, sawn timber, prestressed concrete beams, or other approved materials.
- *Deck Materials:* Deck materials should be of sufficient strength to support the anticipated load.

CONSTRUCTION SEQUENCE

All erosion and sediment control devices, including stream diversions, should be implemented as as the first order business according to plan approval by the WMA or local authority. Dewatering basins should be built as needed and swales or ditches should be used to prevent surface drainage from entering the stream via the bridge crossing. *(See the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control.)* The proposed construction, maintenance, and removal sequence is as follows:

1. Abutments should be placed parallel to, and on, stable banks such that the structure is at or above bankfull depth to prevent the entrapment of floating materials and debris.
2. Temporary access bridges should be constructed to span the entire channel. If the bankfull channel width exceeds 8 feet (2.5 meters), then a footing, pier, or other bridge support may be constructed within the waterway. No support will be permitted within the channel for water–ways less that 8 feet wide. One additional bridge support will be permitted for each 8–foot width of the channel.
3. All decking members should be placed perpendicularly to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway.
4. Although run planks are optional, they may be necessary to properly distribute loads. One run plank should be provided for each track of the equipment wheels and should be securely fastened to the length of the span.
5. Curbs or fenders may be installed along the outer sides of the deck to provide additional safety.
6. Bridges should be securely anchored at one end using steel cable or chain to prevent the bridge from floating downstream and possibly causing an obstruction to the flow. Anchoring at only one end will prevent channel obstruction in the event that flood waters float the bridge. Acceptable anchors are large trees, boulders, or driven steel anchors.

TEMPORARY IN STREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES*

PAGE 4.8–1

MGWC 4.8: TEMPORARY ACCESS BRIDGE

7. All areas disturbed during installation should be stabilized within 14 calendar days in accordance with a revegetation plan approved by the WMA.
8. Periodic inspection should be performed by the user to ensure that the bridge, streambed, and stream banks are maintained and not damaged. accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.
9. Maintenance should be performed as needed to ensure that the structure complies with all the standards and specifications. This should include the removal of trapped sediment and debris which should then be disposed of and stabilized outside the floodplain.
10. When the temporary bridge is no longer needed, all structures including abutments and other bridging materials should be removed within 14 calendar days. In all cases, the bridge materials should be removed within 1 year of installation. Removal of the bridge and clean–up of the area, including protection and stabilization of disturbed streams banks, should be accomplished without the use of construction equipment in the waterway.

TEMPORARY IN STREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES*

PAGE 4.8–2

SEQUENCE OF OPERATION

1. Pre–construction meeting: Notify the Howard County Construction Division (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 County 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 the project inspector.
3. Clear and grub those areas for installation of sediment and erosion perimeter controls. Remove and salvage topsoil.
4. Install sediment and erosion control measures including the stablized construction entrance from the paved parking lot and super silt fence along the proposed sewer alignment.
5. With the approval of the County Sediment and Erosion Control Inspector, clear and grub the remainder of the site.
6. Perform the following sequence for each day of utility construction operations:
   a. Excavate and install sanitary sewer and appurtenances. Place backfill and compact.
   b. Place topsoil, fine grade, seed and apply mulch to disturbed area.
   c. Town & Country Boulevard and paved parking lot 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) filled with silt. Haul sediment to an Howard County approved site.
8. No excavated material shall be placed in the ditch adjacent to the existing roadway. 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. Stabilize any remaining disturbed areas as required.
11. Remove any remaining sediment controls after prior approval from Howard County Inspections and Permits Division. Fine grade and stabilize area formerly occupied by perimeter controls.

SEQUENCE OF CONSTRUCTION

1. Deliver written notice to 8732 Town and Country Blvd. and all other adjacent properties 48 hours prior to commencement of work being conducted to include the following:
   a. Local telephone number for inquiries.
   b. A summary of work to be completed.
      i. Fax or email copies of all delivered residential notices to the Howard County Department of Public Works designated Engineer.
2. Provide silt fence, stabilized construction entrance, temporary access bridge and all other devices as shown on Sheet 4 of the contract drawings prior to commencement of main line sewer construction.
3. Test pit the existing sewer service shown on the contract drawings to be extended and reconnected between ex. MH 101 and proposed MH 1. Take necessary steps, by way of test pit, test hole or televising ex. sewer lines to confirm exact location of the connection to the ex. main and obtain invert elevation of the connection and determine if the extended connection may be laid to new line @ 2 percent grade. Remand to Engineer for resolution if 2 percent grade cannot be obtained.
4. Maintain sewer service at all times to apartment dwelling @ 8636 Town and Country Blvd.
5. Commence sewer main installation @ existing MH 101.
6. Build and complete backfill of sewer to within five feet of proposed MH 3.
7. Provide mirror and low pressure air test of the new sewer.
8. Build doghouse MH # 3.
9. Form channel in Ex. MH and MH 3 as shown on sheet 2 of 7.
10. Perform all abandonments with approved stream diversions after new sewer main line and service connections have been tested, approved and placed in service and existing sewer has been jet cleaned as directed on sheet 3 of 7.

I/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. I ALSO AUTHORIZE PERIODIC ON–SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Developer — Date

Print Name

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Thomas N. DallaPalu — 12/9/10
Signature of Engineer — Date

Thomas N. DallaPalu
Print Name

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

[signature] — 12/13/10
Howard Soil Conservation District — Date

AS-BUILTS 06–23–2011

ESC 7 OF 7

PROFESSIONAL CERTIFICATION

I, THOMAS N. DALLAPALU, 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.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Signature	Date	Signature	Date
DIRECTOR OF PUBLIC WORKS	12/10/10	CHIEF, BUREAU OF ENGINEERING	12/9/10
CHIEF, BUREAU OF UTILITIES	12/9/10	CHIEF, UTILITY DESIGN DIVISION PSD	12/9/10

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STATE OF MARYLAND — THOMAS N. DALLAPALU — No. 10966 — REGISTERED PROFESSIONAL ENGINEER

DES:	RJM
DRN:	ARW
CHK:	TND
DATE:	DECEMBER 2010

BY	NO.	REVISIONS	DATE
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STREAM RESTORATION SEDIMENT AND EROSION CONTROL DETAILS

600' SCALE MAP NO. 17 — BLOCK NO. 24

SUCKER BRANCH
12-INCH SEWER MAIN REHABILITATION
CAPITAL PROJECT S-6268
CONTRACT 30-4582

ELECTION DISTRICT NO. 2 — HOWARD COUNTY, MARYLAND

SCALE: NO SCALE

SHEET 7 OF 7