

# HOWARD COUNTY

Capital Project M - 5585

## Shadow Lane Pipe Lining Project

Storm Water Management Division  
Bureau Of Environmental Services

### INDEX OF SHEETS

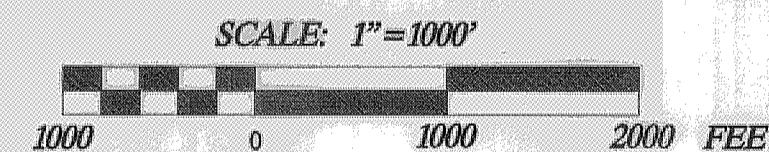
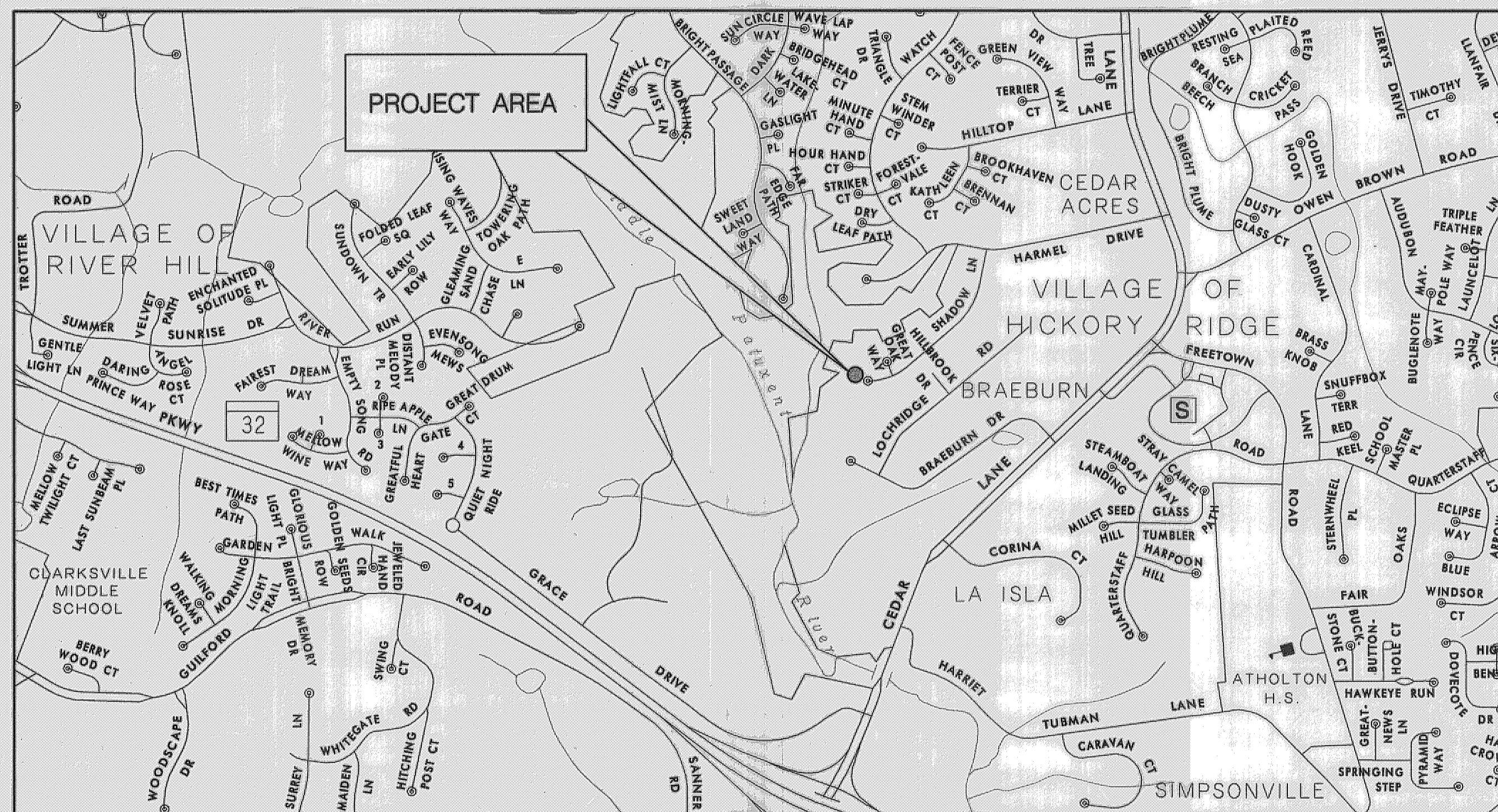
SHEET NO.	TITLE
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2	SITE PLAN
3	EROSION AND SEDIMENT CONTROL GENERAL NOTES
4	TYPICAL DETAILS

### GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY WORK BEING DONE.
- THE DEPARTMENT OF PLANNING AND ZONING HAS DETERMINED THAT THE DISTURBANCE WITHIN THE FLOODPLAIN, STREAM, AND WETLANDS IS ESSENTIAL IN ORDER TO CONSTRUCT THIS PROJECT.
- THIS PLAN IS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS /BUREAU OF ENGINEERING CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. BENCHMARKS SHOWN HEREON WERE PROVIDED BY HOWARD COUNTY SURVEY DIVISION AND AB CONSULTANTS.
- STORMWATER MANAGEMENT IS NOT REQUIRED FOR THIS PROJECT SINCE THE PROJECT WILL NOT ADD IMPERVIOUS AREA NOR WILL IT CHANGE THE EXISTING HYDROLOGY OF THE SITE.
- OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND MCCORMICK TAYLOR DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION.
- A JOINT PERMIT APPLICATION HAS BEEN SUBMITTED TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR THIS PROJECT. (TRACKING NUMBER XXX)
- THE EXISTING INFORMATION SHOWN ON THESE PLANS WAS TAKEN FROM THE BEST AVAILABLE SOURCES AND SHALL BE VERIFIED BEFORE STARTING CONSTRUCTION. THE HOWARD COUNTY DOES NOT GUARANTEE THE COMPLETENESS OR THE CORRECTNESS OF THE SHOWN INFORMATION.
- THE CONTRACTORS SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO HSS'S OPERATION SHALL BE REPAIRED IMMEDIATELY. ALL UTILITIES SHALL HAVE A CLEARANCE BY A MINIMUM OF 6 INCHES VERTICALLY AND A MINIMUM OF 5 FEET HORIZONTALLY.
- SHOULD HSS DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, HSS SHALL NOTIFY MCCORMICK TAYLOR IMMEDIATELY TO RESOLVE THE SITUATION.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
- HSS IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
- THE CONTRACTOR SHALL NOTIFY BUREAU OF UTILITIES AT (410) 313-4900 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- SITE DEVELOPMENT DETAILS ARE REFERENCED FROM THE AS-BUILT SITE DEVELOPMENT PLAN FOR THE VILLAGE OF HICKORY RIDGE SECTION 3 AREA 1, F-83-120

### LEGEND

PROPOSED MEDIAN BARRIER	
ELECTRICAL HAND BOX - SIGNALS	
STATE, COUNTY OR CITY LINES	
PROPOSED TRAFFIC BARRIER	
EXISTING TRAFFIC BARRIER	
PROPOSED FENCE LINE	
EXISTING FENCE LINE	
RIGHT OF WAY LINE	
EXISTING ROADWAY	
BASE OR SURVEY LINE	
TRAVERSE POINT	
APPROXIMATE LIMITS OF CUT AND /OR FILL	
GRADING ELEVATION CONTOURS (5')	
GRADING ELEVATION CONTOURS (1')	
LIMIT OF DISTURBANCE	
EXISTING GROUND CONTOURS (5')	
EXISTING GROUND CONTOURS (1')	
EXISTING PIPE/CULVERT	
EXISTING DROP INLET	
WETLAND	
HEDGE /TREE LINE	
BUSH /TREE	
CONIFEROUS TREE	
LIGHT POLE	



### DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

1-20-2010  
DATE

DESIGNER'S SIGNATURE

MARYLAND  
REGISTRATION  
NUMBER 25819

CHRIS BROOKS, P.E.  
PRINTED NAME

### PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO. 25819, EXPIRATION DATE: 2/25/2011

MARYLAND DEPARTMENT OF THE ENVIRONMENT  
WATER MANAGEMENT ADMINISTRATION  
DAM SAFETY DIVISION  
  
V. P. Dalal 1/22/10  
SR. REGULATORY AND COMPLIANCE ENGINEER DATE

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

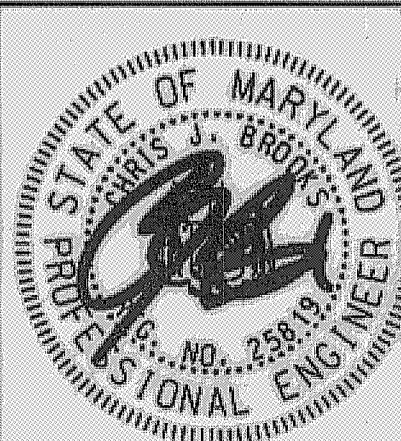
DIRECTOR OF PUBLIC WORKS DATE 2/25/10  
  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE 3/1/10  
CHIEF, STORMWATER MANAGEMENT DIVISION

McCormick  
Engineers & Planners  
Since 1946  
Taylor

509 South Exeter Street  
4th Floor  
Baltimore, Maryland 21202  
(410) 662-7400

Howard County  
MARYLAND

Storm Water Management Division  
Bureau of Environmental Services  
6751 Columbia Gateway Drive, Suite 514  
Columbia, Maryland 21046-3143



DES: AH	CB	AS-BUILT	4/22/10
DRN: MR			
CHK: CB			
DATE: 1/20/10			
BY	NO.	REVISION	DATE

HOWARD COUNTY  
CAPITAL PROJECT M-5585  
SHADOW LANE PIPE LINING PROJECT

TITLE SHEET

SCALE  
NOT TO  
SCALE

SHEET

1 OF 4





PIPE LINING	
REMARKS	LENGTH
54" SNAPTITE PIPE LINER	90 FT

TIMBER MATTING	
REMARKS	LENGTH
SET ON TOP OF BANK	20 FT

SANDBAG DAM	
REMARKS	LENGTH
TO BLOCK LOW FLOW OPENING IN RISER	48 FT
TO CONTAIN WORK AREA RUNOFF	39 FT

REMOVABLE PUMPING STATION	
REMARKS	QTY.
TO MAINTAIN STREAM BASEFLOW	1

LEGEND	
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPERTY LINE
	ACCESS ROAD
	LIMIT OF DISTURBANCE
	WATERS OF THE U.S.
	WETLAND BOUNDARY
	WETLAND BUFFER
	REMOVABLE PUMPING STATION
	SANDBAG DAM
	54" SNAPTITE PIPE LINER
	TIMBER MATTING

NOTE: ANY AREAS DISTURBED BY ACCESS SHALL BE STABILIZED THE SAME DAY

**MARYLAND DEPARTMENT OF THE ENVIRONMENT**  
 WATER MANAGEMENT ADMINISTRATION  
 DAM SAFETY DIVISION

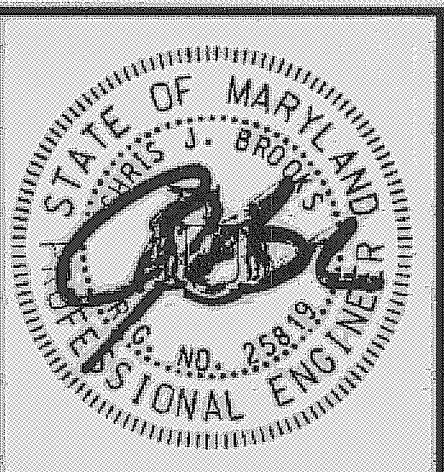
*V.P. Dalal* 1/24/10  
 VISTY P. DALAL  
 SR. REGULATORY AND COMPLIANCE ENGINEER

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DRN: MR			
CHK: CB			
DATE: 1/20/10	BY	NO.	REVISION

**HOWARD COUNTY**  
 CAPITAL PROJECT M-5585  
 SHADOW LANE PIPE LINING PROJECT

**SITE PLAN**

SCALE
1" = 30'
SHEET
2 OF 4



# EROSION AND SEDIMENT CONTROL - GENERAL NOTES

## HOWARD SOIL CONSERVATION DISTRICT TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE RE-DISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

**SEEDBED PREPARATION:** - LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENEED.

**SOIL AMENDMENTS:** - APPLY 600 LBS/ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ. FT.).

**SEEDING:** - FOR PERIODS MARCH 1 - APRIL 30 AND FROM AUGUST 15 - OCTOBER 15, SEED WITH 2-1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ. FT.). FOR THE PERIOD MAY 1 - AUGUST 14, SEED WITH 3 LBS / ACRE OF WEEPING LOVEGRASS (.07 LBS/1000 FT.). FOR THE PERIOD NOVEMBER 16 - FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS/ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

**MULCHING:** - APPLY 1-1/2 TO 2 TONS/ACRE (70 TO 90 LBS/1000 SQ. FT.) OF UNROTTED WEED-FREE, SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL. NO ASPHALT EMULSION SHALL BE USED FOR ANCHORING. ONLY A NON-TOXIC, LATEX BACKING MATERIAL IS ALLOWED.

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.

## SEQUENCE OF CONSTRUCTION

1. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) DAYS PRIOR TO THE START OF WORK. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (410) 313-1880 A MINIMUM OF 24 HOURS PRIOR TO THE START OF ANY CONSTRUCTION. THE CONTRACTOR SHALL ALSO NOTIFY THE HOWARD COUNTY BUREAU OF UTILITIES (410) 313-4900 AND MARYLAND DEPARTMENT OF ENVIRONMENT INSPECTOR AT (301) 665-2850, FIVE (5) DAYS BEFORE ANY LAND DISTURBING ACTIVITY.
2. THE CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING WHICH SHALL INCLUDE, BUT NOT BE LIMITED TO, THE COUNTY PROJECT MANAGER, THE ENGINEER, A REPRESENTATIVE FROM HOWARD COUNTY CONSTRUCTION INSPECTION, AN A REPRESENTATIVE FROM THE BUREAU OF UTILITY.
3. THE CONTRACTOR SHALL ACCESS THE PROJECT SITE AS SHOWN ON THE PLANS AND COMPLETE THE WORK DURING DRY WEATHER. THE CONTRACTOR SHOULD TAKE CARE TO AVOID DISTURBING TREES AND OTHER LANDSCAPING FEATURES.
4. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL INSTALL SANDBAG DAMS, AND PUMP AS SHOWN ON THE PLAN SHEET TO BLOCK THE LOW FLOW ORIFICE AND TO PREVENT CONTAMINATED RUNOFF FROM LEAVING THE PROJECT SITE. A PORTABLE SEDIMENT TANK OR APPROVED DEVICE SHALL TREAT SEDIMENT LADEN WATER THAT IS REMOVED FROM THE CULVERT AND WORK AREA. STREAM BASEFLOW SHALL BE MAINTAINED DOWNSTREAM OF THE PROJECT SITE AT ALL TIMES.
5. UPON ESTABLISHING THE STREAM DIVERSION, THE CONTRACTOR MAY INSTALL TIMBER MATTING AND COMMENCE PIPE LINING ACTIVITIES.
6. THE CONTRACTOR SHALL REMOVE THE SANDBAGS AND TIMBER MATTING AND STABILIZE THE WORK AREA IN THE EVENT OF RAIN.
7. AT THE END OF EACH WORK DAY AND UPON COMPLETION OF THE PIPE LINING ACTIVITIES WITH REMOVAL OF ALL EQUIPMENT AND MATERIALS THE CONTRACTOR SHALL STABILIZE ANY DISTURBED AREAS. THE CONTRACTOR SHALL REMOVE ALL RUTS.

## IN-CHANNEL PUMPING NOTES

1. AT THE END OF EACH WORK DAY, THE WORK AREA MUST BE STABILIZED AND THE PUMP AROUND REMOVED FROM THE CHANNEL. REFER TO THE DETAILS AND SPECIFICATIONS FOR MCMC 1.2: PUMP-AROUND PRACTICE WHICH ARE INCLUDED ON THE PLANS.
2. THE CONTRACTOR SHALL SIZE THE PUMP AND DIVERSION HOSES TO ACCOMMODATE THE FLOWS ANTICIPATED DURING CONSTRUCTION IN THE CHANNEL SECTION.
3. SANDBAG/ STONE DIVERSIONS SHALL BE USED IN CONJUNCTION WITH A PORTABLE SEDIMENT TANK TO KEEP THE WORK AREA DRY.
4. THE CONTRACTOR SHALL BE AWARE OF THE WEATHER FORECASTS AND RAIN PREDICTION SO AS TO BE PROPERLY PREPARED TO MAINTAIN OR SHUT DOWN OPERATIONS WHEN APPROPRIATE.

## HOWARD SOIL CONSERVATION DISTRICT PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

**SEEDBED PREPARATION:** LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENEED.

**SOIL AMENDMENTS:** IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

1. **PREFERRED** - APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ. FT.) AND 600 LBS/ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ.FT) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS/ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS/1000 SQ. FT.).
2. **ACCEPTABLE** - APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ. FT.) AND 1000 LBS/ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL.

**SEEDING** - FOR THE PERIODS MARCH 1 - APRIL 30, AND AUGUST 1 - OCTOBER 15, SEED WITH 60 LBS / ACRE (1.4 LBS/1000 SQ. FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 - JULY 31, SEED WITH 60 LBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS/ACRE (0.05 LBS/100 SQ. FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 - FEBRUARY 28, PROTECT SITE BY: **OPTION 1** - TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. **OPTION 2** - USE SOD. **OPTION 3** - SEED WITH 60 LBS/ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

**MULCHING** - APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ. FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL. NO ASPHALT EMULSION SHALL BE USED FOR ANCHORING. ONLY A NON-TOXIC, LATEX TACKING MATERIAL IS ALLOWED.

**MAINTENANCE** - INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

## HOWARD COUNTY CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1. B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. **SITE ANALYSIS:**

TOTAL AREA OF SITE	0.1 ACRES
AREA DISTURBED	0 ACRES
AREA TO BE ROOFED OR PAVED	0 ACRES
AREA TO BE VEGETATIVELY STABILIZED	AS NEEDED
TOTAL CUT	0 CU. YDS.
TOTAL FILL	0 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION	TO BE DETERMINED
8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTH OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.
12. OFFSITE WASTE / BORROW SITE SHALL HAVE AN APPROVED SEDIMENT CONTROL PLAN.

## STANDARD AND SPECIFICATIONS FOR TOPSOIL

**DEFINITION**  
PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

**PURPOSE**  
TO PROVIDE A SUITABLE. SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

**CONDITIONS WHERE PRACTICE APPLIES**

- I. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
  - A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
  - B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
  - C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
  - D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

II. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

**CONSTRUCTION AND MATERIAL SPECIFICATIONS**

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

- A. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDEERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1-1/2" IN DIAMETER.
- B. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDEGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
- C. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTURBED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

III. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

- A. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

IV. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:

- A. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
  1. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.
  2. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
  3. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
  4. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME AS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

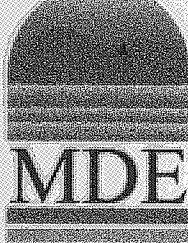
NOTE: TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST, AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

- B. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

V. TOPSOIL APPLICATION

- A. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.
- B. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" - 8" HIGHER IN ELEVATION.
- C. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" - 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
- D. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

**MARYLAND DEPARTMENT OF THE ENVIRONMENT**  
WATER MANAGEMENT ADMINISTRATION  
DAM SAFETY DIVISION

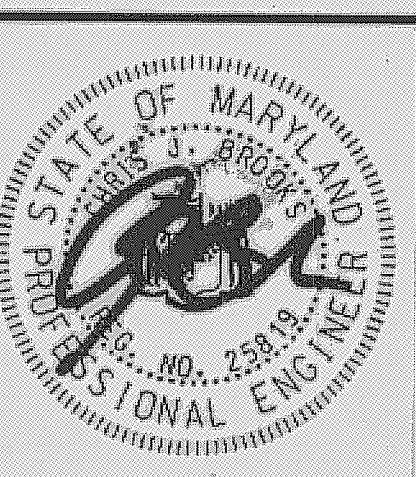
 *V.P. Dalal* 1/22/10  
VISTY P. DALAL  
SR. REGULATORY AND COMPLIANCE ENGINEER

**McCormick & Taylor**  
Engineers & Planners  
Since 1946

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**Howard County**  
MARYLAND

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Bureau of Environmental Services  
6751 Columbia Gateway Drive, Suite 514  
Columbia, Maryland 21046-3143



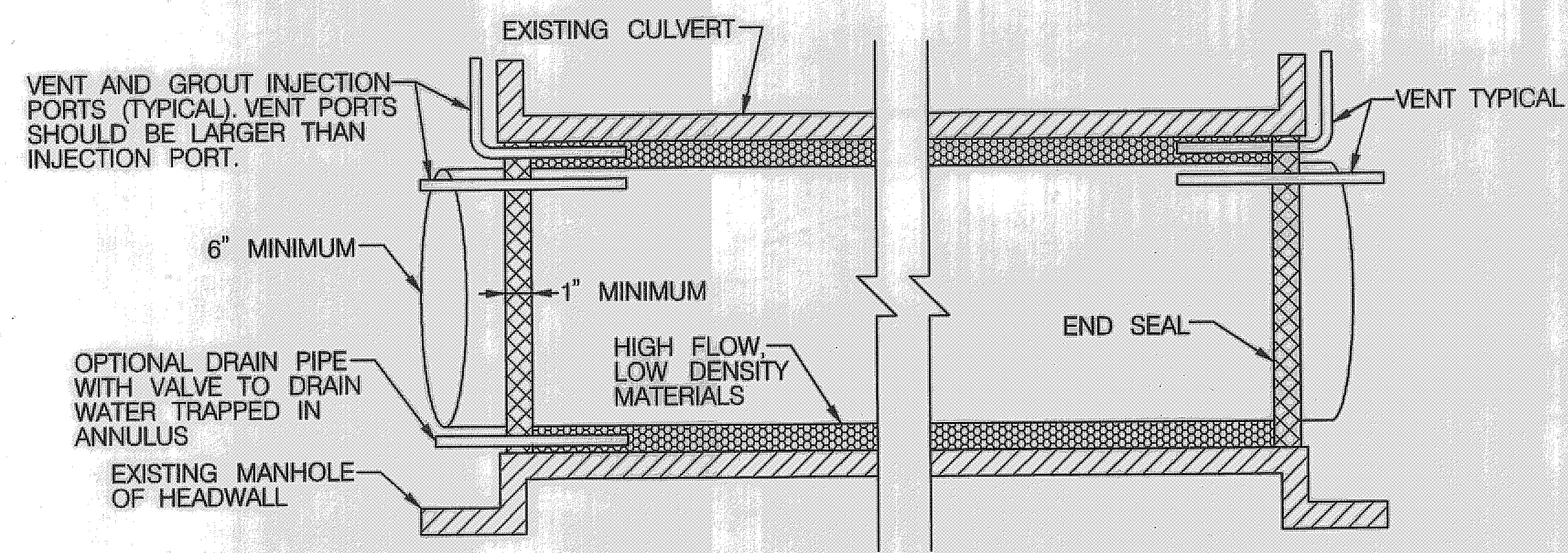
DES: AH	CB	AS-BUILT	4/22/10
DRN: MR			
CHK: CB			
DATE: 1/20/10	BY	NO.	REVISION

**HOWARD COUNTY  
CAPITAL PROJECT M-5585  
SHADOW LANE PIPE LINING PROJECT**

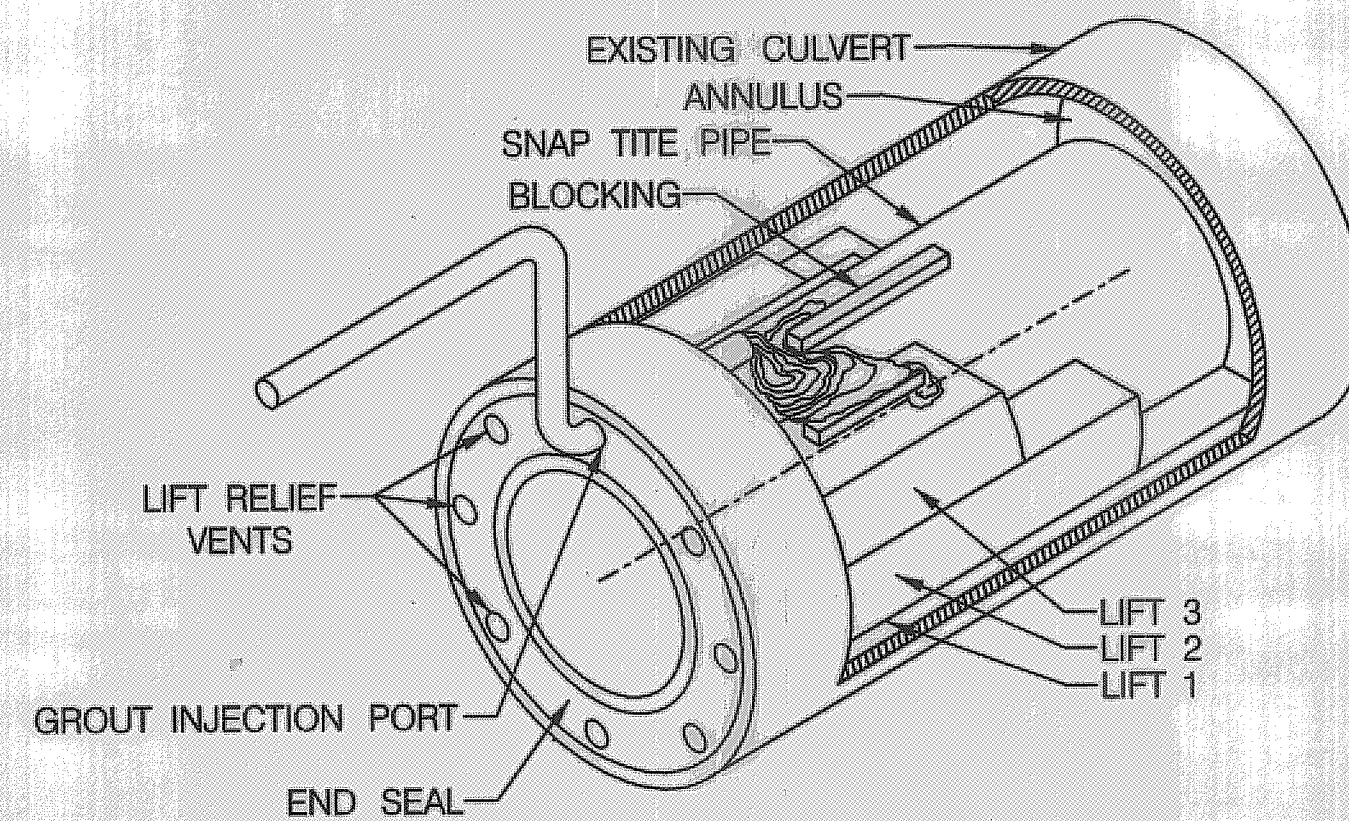
**EROSION AND SEDIMENT  
CONTROL NOTES**

SCALE  
NOT TO SCALE  
SHEET  
3 OF 4

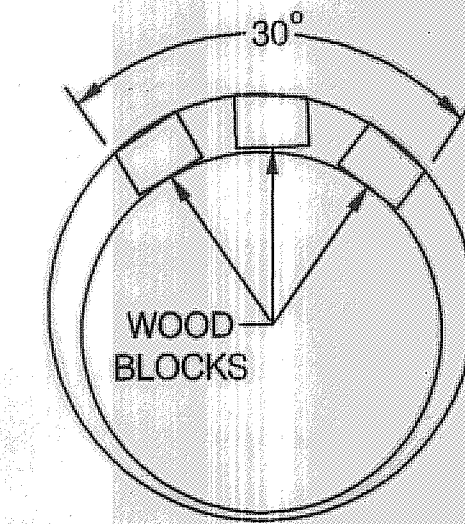
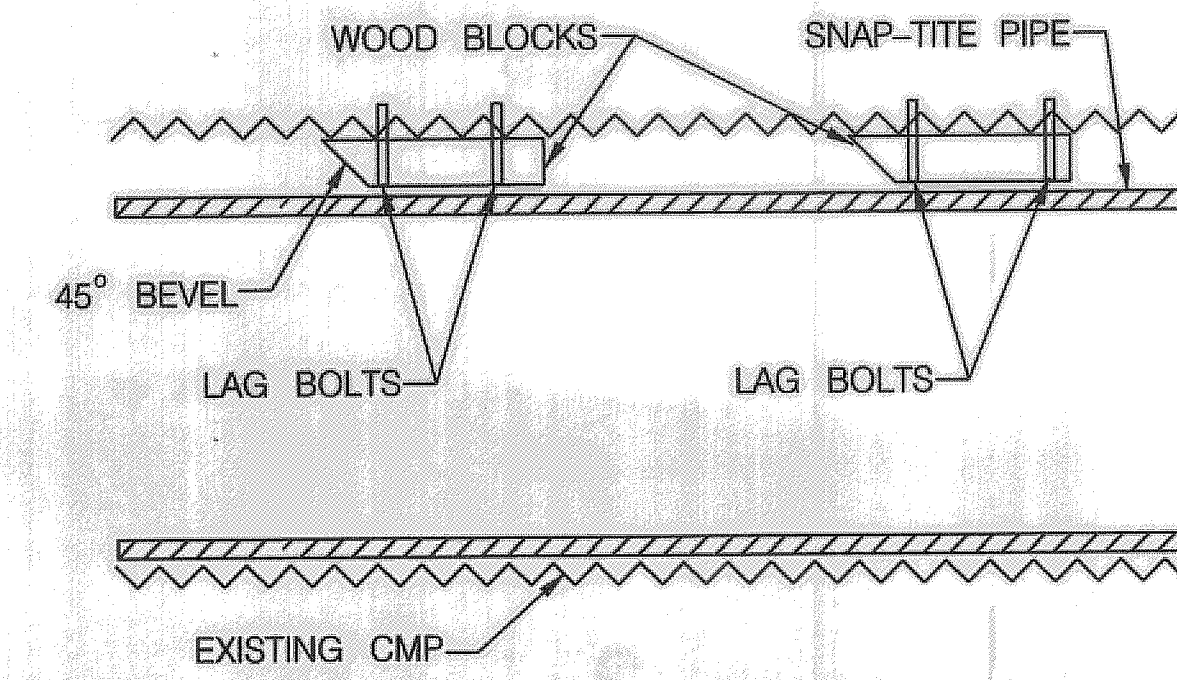




TYPICAL GROUTING ARRANGEMENT



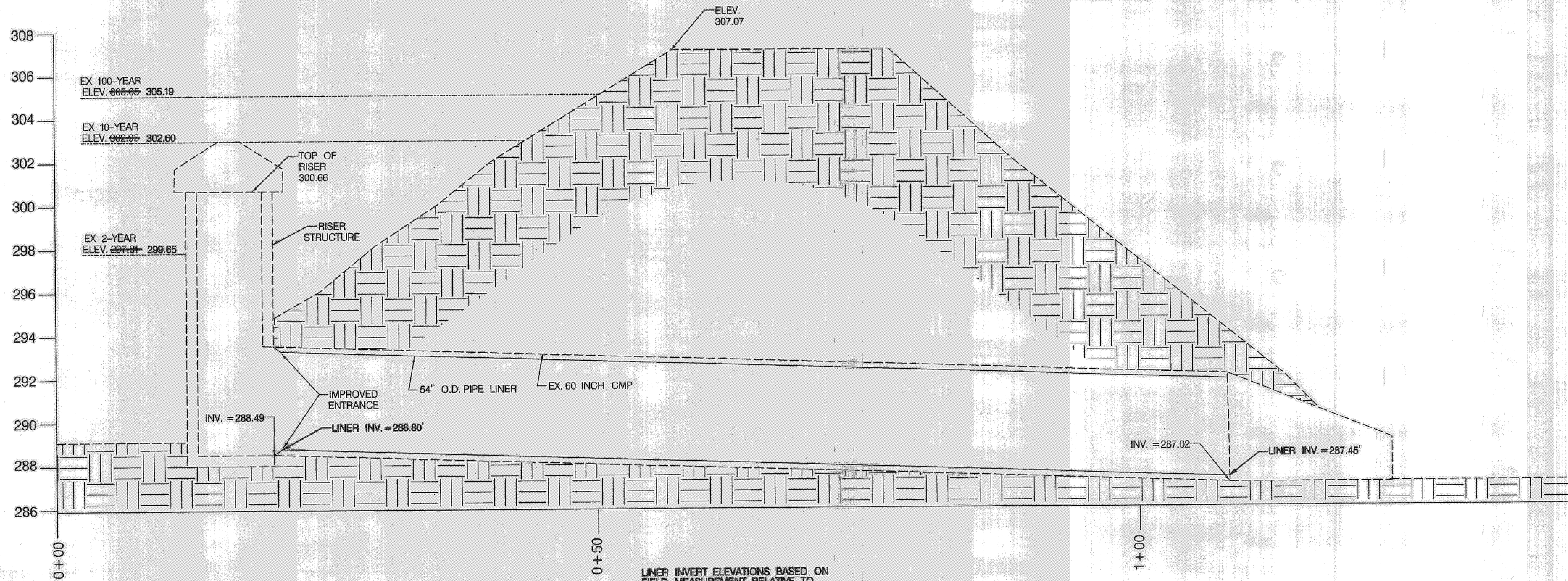
SEALING THE ANNULAR SPACE



END VIEW OF BLOCK PLACEMENT  
STAGGER 6 FT LONG BLOCKS 15"  
SPACING THEM EVERY 4 FT

BLOCKING DETAIL

NOTE: RESIN IMPREGNATED LINER (INSITUFORM OR SIMILAR) MAY BE USED IN PLACE OF THE SNAP TITE LINER SHOWN AND INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS.



LINER INVERT ELEVATIONS BASED ON FIELD MEASUREMENT RELATIVE TO EXISTING PIPE INVERTS NOTED ON ORIGINAL AS BUILT PLAN SET F-83-120

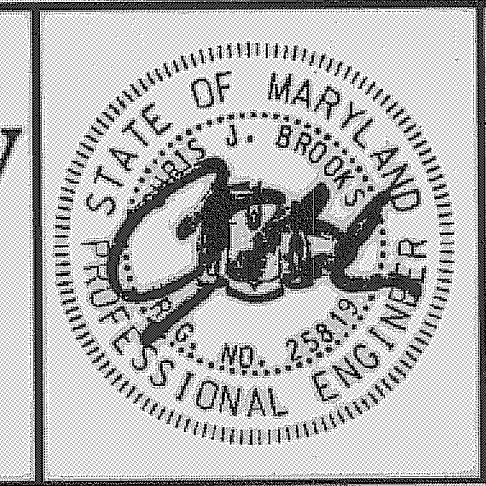
MARYLAND DEPARTMENT OF THE ENVIRONMENT  
WATER MANAGEMENT ADMINISTRATION  
DAM SAFETY DIVISION

*V.P. Dalal* 1/22/10  
VISTY P. DALAL  
SR. REGULATORY AND COMPLIANCE ENGINEER

**McCormick Taylor**  
Engineers & Planners  
Since 1946

**Howard County**  
MARYLAND

Storm Water Management Division  
Bureau of Environmental Services  
6751 Columbia Gateway Drive, Suite 514  
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CAPITAL PROJECT M-5585  
SHADOW LANE PIPE LINING PROJECT

**TYPICAL DETAILS**

SCALE  
AS SHOWN

SHEET  
4 OF 4