

TYPE OF BUILDING: N/A
 DRAINAGE AREA: LITTLE PATUXENT
 TREATMENT PLANT: LITTLE PATUXENT
 WWTP
 NUMBER OF BUILDABLE LOTS: N/A
 NUMBER OF NON-BUILDABLE LOTS: N/A
 NUMBER OF W.H.C.: 0
 NUMBER OF S.H.C.: 0

VICINITY MAP

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT S-6175 CONTRACT NO. 20-4534 HOWARD COUNTY, MARYLAND

BILL OF MATERIALS

ITEMS	QUANTITIES ESTIMATED	AS-BUILT		MANUFACTURER / SUPPLIER
		QUANTITIES	TYPE	
30" PVC OR FRP SEWER	1018 LF	995 L.F.	PVC C-905	DIAMOND PLAST/FERGUSON
30" DIP CL. 54 SEWER	131 LF	113 LF	TR-FLEX	UG PIPE/FERGUSON
36" PVC OR FRP SEWER	2583 LF	2540.5 L.F.	PVC C-905	DIAMOND PLAST/FERGUSON
5' DIA. PRECAST MANHOLES	12 EA.	13 EA.	PRECAST	ATLANTIC/SAME
8' DIA. PRECAST MANHOLES	1 EA.	1 EA.	PRECAST	ATLANTIC/SAME
5' DIA MH ADDITIONAL DEPTH	141 VF	137.33 VF	PRECAST	ATLANTIC/SAME
8' DIA MH ADDITIONAL DEPTH	8 VF	7.53 VF	PRECAST	ATLANTIC/SAME
BEND STRUCTURE	1 EA.	1 EA.	CAST IN PLACE	HORNE/SAME
3' BLOW-OFF @ EX. 12" W.U.	1 EA.	1 EA.	MULLER	MULLER/FERGUSON

SHEET INDEX

NO.	DESCRIPTION
1	TITLE SHEET
2	OVERALL PROFILE SHEET
3	GENERAL NOTES
4	PLAN AND PROFILE OF A SEWER MAIN
5	PLAN AND PROFILE OF A SEWER MAIN
6	PLAN AND PROFILE OF A SEWER MAIN
7	EROSION AND SEDIMENT CONTROL PLAN
8	EROSION AND SEDIMENT CONTROL PLAN
9	EROSION AND SEDIMENT CONTROL PLAN
10	STREAM CROSSING DETAILS
11	EROSION AND SEDIMENT CONTROL DETAILS
12	EROSION AND SEDIMENT CONTROL DETAILS
13	CONSTRUCTION DETAILS
14	BEND STRUCTURE DETAILS
15	VOLLMERHAUSEN ROAD MAINTENANCE OF TRAFFIC PLAN

NAME OF UTILITY CONTRACTOR : _____

Sediment control measures for this contract will be implemented in accordance with Section 308 of the Specifications and as shown on these plans.

CHECKBOX
 AS-BUILT DATE _____
 SURVEY AND DRAFTING DIVISION _____

Reviewed for Howard Soil Conservation District and special technical requirements.

[Signature]
 NATURAL RESOURCES CONSERVATION SERVICE
 DATE: _____

This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.

[Signature] 2/10/09
 HOWARD SOIL CONSERVATION DISTRICT DATE

BY THE DEVELOPER :

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] 2/10/09
 DEVELOPER DATE

BY THE ENGINEER :

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.

[Signature] 2/5/09
 ENGINEER DATE

PROFESSIONAL CERTIFICATION :

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 27909, EXPIRATION DATE AUGUST 23, 2010.

[Signature]
 DAVID A. VANDERBEEK, P.E.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 2/10/09
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/10/09
 CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 2-10-09
 CHIEF, UTILITY DESIGN DIVISION DATE

GMB
 GEORGE, MILES & BUHR, LLC
 ARCHITECTS & ENGINEERS
 SALESBURY - BALTIMORE - LEWES - SEAFORD - YORK



DES: D.A.V.	
DRN: M.A.D.	
CHK: W.B.F.	
DATE: 2/5/09	
BY: NO.	REVISION

TITLE SHEET

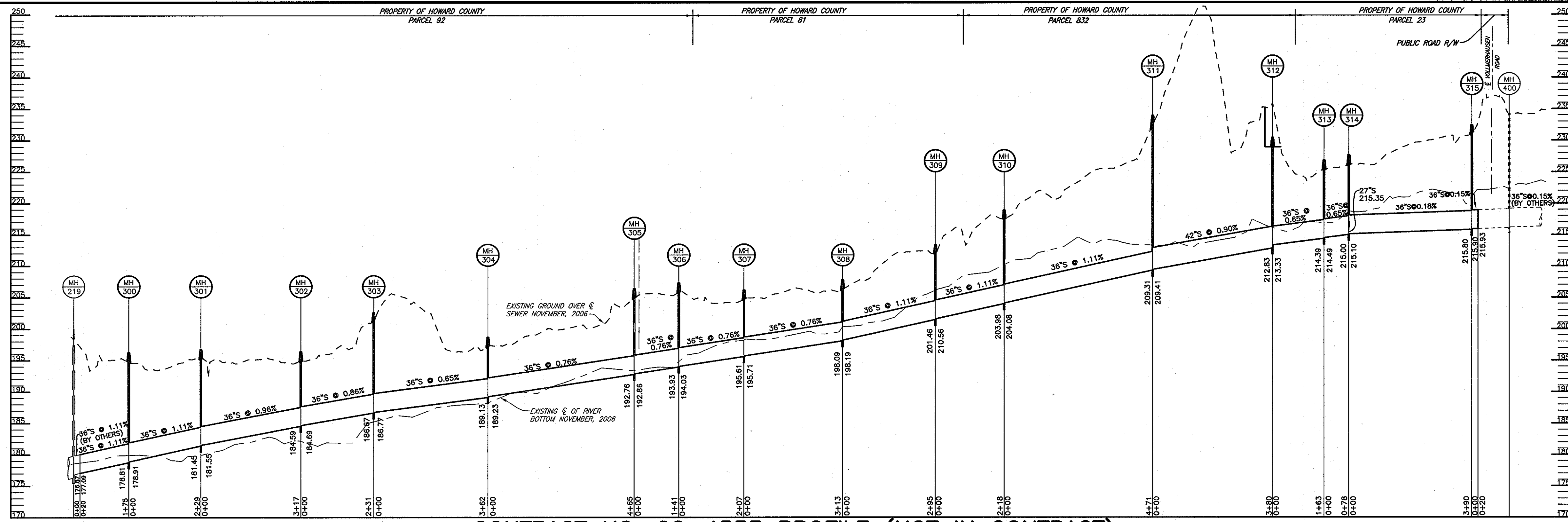
600 SCALE MAP NO. 42 & 47 BLOCK NO. 22 & 4

LITTLE PATUXENT
 PARALLEL INTERCEPTOR SEWER
 CAPITAL PROJECT NO. S-6175
 CONTRACT NO. 20-4534
 6TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

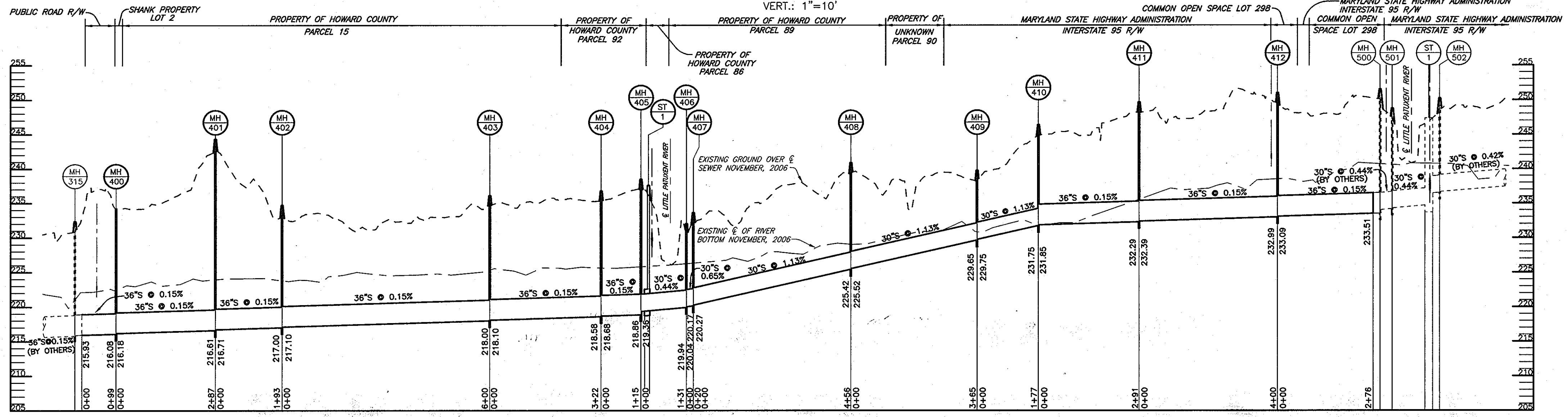
SHEET 1 OF 15

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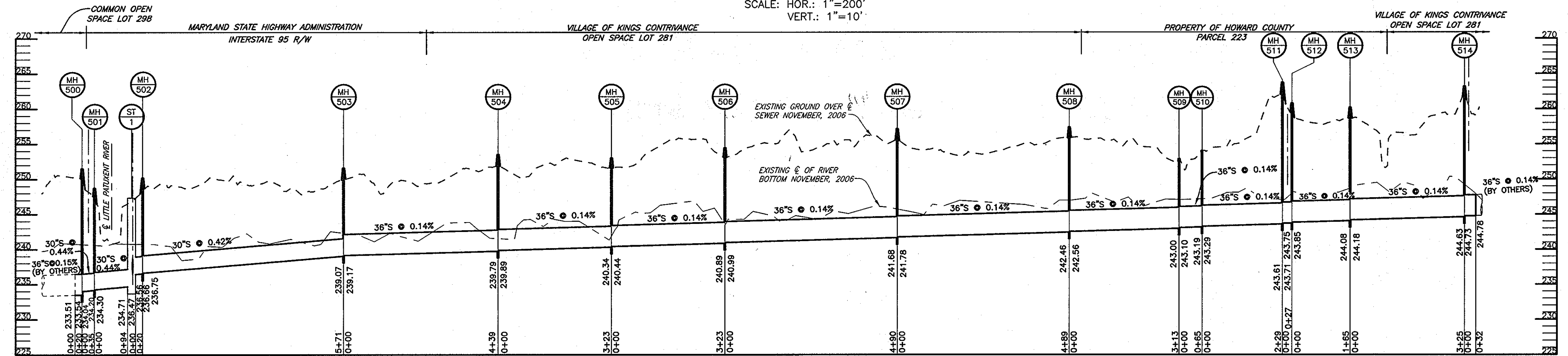
CONTRACT NO. 20-4533 PROFILE (NOT IN CONTRACT)

SCALE: HOR.: 1"=200'
VERT.: 1"=10'



CONTRACT NO. 20-4534 PROFILE * NOTE: SEE SHEETS 4, 5 & 6 FOR AS-BUILT INFORMATION

SCALE: HOR.: 1"=200'
VERT.: 1"=10'



CONTRACT NO. 20-4535 PROFILE (NOT IN CONTRACT)

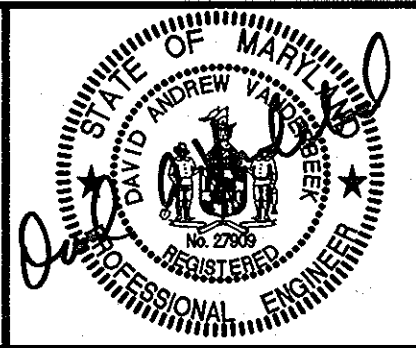
SCALE: HOR.: 1"=200'
VERT.: 1"=10'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 2/10/09
DIRECTOR OF PUBLIC WORKS DATE
CHIEF, BUREAU OF ENGINEERING

[Signature] 2-10-09
CHIEF, UTILITY DESIGN DIVISION DATE

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ARCHITECTS & ENGINEERS
SALISBURY • BALTIMORE • LEWES • SEAFORD • YORK
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DES: D.A.V.			
DRN: M.A.D.			
CHK: W.B.F.			
DATE: 2/5/09	BY	NO.	REVISION

OVERALL PROFILE SHEET


600 SCALE MAP NO. 42 & 47
BLOCK NO. 22 & 4

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT NO. S-6175
CONTRACT NO. 20-4534
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 2 OF 15
AS-BUILT: 1-17-2011

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GENERAL NOTES

- Approximate locations of existing mains are shown. The contractor shall take all necessary precautions to protect existing mains and services and maintain uninterrupted service. Any damage incurred shall be repaired immediately to the satisfaction of the Engineer at the Contractor's expense.
- Topographic field surveys were performed during October and November, 2006, by C.C. Johnson and Malharta, pc.
- Horizontal and Vertical Survey Controls:
The coordinates shown on the drawings are based on Maryland State Reference System NAD '83/'91 as projected by Howard County Geodetic Control Station No. LPS-102, LPS-103 and 42ED.
All vertical controls are based on NAVD '88. Vertical Controls on the drawings are based on Howard County Geodetic Control Station No. LPS-102 and 42ED.
LPS-102 - N 534676.62, E 1360784.80, Elev. 149.32
LPS-103 - N 539918.59, E 1359775.48, Elev. None
42ED - N 546494.25, E 1358095.09, Elev. 286.765
- All pipe elevations shown are invert elevations unless otherwise noted on the plans.
- Clear all utilities by a minimum of 12 inches. Clear all poles by 5'-0" minimum or tunnel as required unless otherwise noted. The owner has contacted the utility companies and has made arrangements for bracing of poles as shown on the drawings. In the event the contractor's work requires the bracing of additional poles, any cost incurred by the owner for the bracing of additional poles or damages shall be deducted from monies owed the contractor. The contractor shall coordinate with the utility companies to schedule the bracing of the poles.
- For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The contractor shall have a copy of Volume IV on the job.
- Where test pits have been made on existing utilities, they are noted by the symbol  at the locations of the test pits. A note or notes containing the results of the test pit or pits is included on the drawings. Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the contractor two weeks in advance of construction operations at his own expense.
- The contractor shall notify the following utility companies or agencies at least five working days before starting work shown on these plans:
AT&T 1-800-252-1133
BGE (Construction Services) 410-850-4620
BGE (Emergency) 410-685-1400
Bureau of Utilities 410-313-4900
Colonial Pipeline Co. 410-795-1390
Miss Utility 1-800-257-7777
State Highway Administration 410-531-5533
Verizon 1-800-743-0033 / 410-224-9210
- The contractor shall install tree protection fence along the limit of disturbance (LOD) for the entire project. Trees within the temporary construction strips and temporary construction easements shall not be removed or damaged by the contractor. Shrubs within the temporary construction strips and temporary construction easements shall be protected from damage to the maximum extent possible.
- The contractor shall remove trees, stumps and roots along the line of excavation. Payment for such removal shall be included in the unit price bid for construction of the main.
- The contractor shall notify the Bureau of Highways, Howard County, at 410-313-7450 at least five working days before open cutting or boring/jacking of any County road for laying water/sewer mains or house connections. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code.
- Spoil from trenching operations is to be placed on the uphill side of the trench.
- The contractor shall be responsible for acquiring any additional staging and/or stockpile areas that he deems necessary.
- MDE Permit Tracking No. 20076408/07-NT-3268.

SEWER NOTES

- Sewer mains for stream crossings shall be CL 54 DIP with lining. All other sewer mains shall be AWWA C-905 PVC or FRP unless otherwise noted.
- All manholes shall be 5'-0" or 8'-0" inside diameter as noted in the Structure Schedule.
- Manholes designated W.T. in profile shall have watertight frame and covers, Standard Detail G5.52. Where watertight manhole frames and covers are used, set top of frame 1"-6" above finished grade unless otherwise noted on the drawings.
- The existing sewer shall remain in service at all times and be protected during construction.
- Final connection of the proposed sewer main to the existing system shall not be completed until all downstream sewer contracts are accepted by the County and the contractor has received written permission from the County.

STRUCTURE SCHEDULE

STRUCTURE	TYPE	LOCATION	INV. IN	INV. OUT	RIM ELEV.	REMARKS
MH-400	5' PRECAST MANHOLE	N 539868.71 E 1359899.22	216.00 (36")	215.76 (36")	234.2	SEE DETAIL SHEET 13
MH-401	5' PRECAST MANHOLE	N 540104.78 E 1360062.47	216.21 (36")	215.85 (36")	244.3	SEE DETAIL SHEET 13
MH-402	5' PRECAST MANHOLE	N 540294.28 E 1360097.37	217.10 (36")	217.00 (36")	234.7	SEE DETAIL SHEET 13
MH-403	5' PRECAST MANHOLE	N 540863.49 E 1359906.72	218.14 (36")	218.00 (36")	235.2	SEE DETAIL SHEET 13
MH-404	5' PRECAST MANHOLE	N 541184.79 E 1359888.51	218.80 (36")	218.58 (36")	236.8	SEE DETAIL SHEET 13
MH-405	5' PRECAST MANHOLE	N 541299.66 E 1359895.57	219.48 (30")	219.36 (36")	238.5	SEE DETAIL SHEET 13
MH-406	5' PRECAST MANHOLE	N 541326.95 E 1359784.69	220.04 (30")	219.94 (30")	239.1	SEE DETAIL SHEET 13
MH-407	5' PRECAST MANHOLE	N 541339.16 E 1359766.15	220.27 (30")	220.17 (30")	239.7	SEE DETAIL SHEET 13
MH-408	5' PRECAST MANHOLE	N 541792.94 E 1359724.81	225.52 (30")	225.42 (30")	240.9	SEE DETAIL SHEET 13
MH-409	5' PRECAST MANHOLE	N 542152.79 E 1359665.79	229.51 (30")	229.45 (30")	239.8	SEE DETAIL SHEET 13
MH-410	5' PRECAST MANHOLE	N 542309.44 E 1359582.42	231.82 (36")	231.72 (30")	245.4	SEE DETAIL SHEET 13
MH-411	5' PRECAST MANHOLE	N 542578.17 E 1359471.99	232.82 (36")	232.72 (36")	246.5	SEE DETAIL SHEET 13
MH-412	5' PRECAST MANHOLE	N 542939.64 E 1359399.21	233.09 (36")	232.99 (36")	251.0	SEE DETAIL SHEET 13
ST-1	BEND STRUCTURE	SEE DETAIL SHEET 14	219.47 (30")	219.44 (30")	237.5	SEE DETAIL SHEET 14

NOTE: LOCATION OF MANHOLES IS GIVEN AT CENTER OF STRUCTURE. RIM ELEVATION IS SET 1'-6" ABOVE EXISTING GROUND PER STD. DETAIL G 5.41 EXCEPT MANHOLE 400 WHICH IS SET FLUSH WITH EXISTING GROUND.



TRAVERSE TABLE

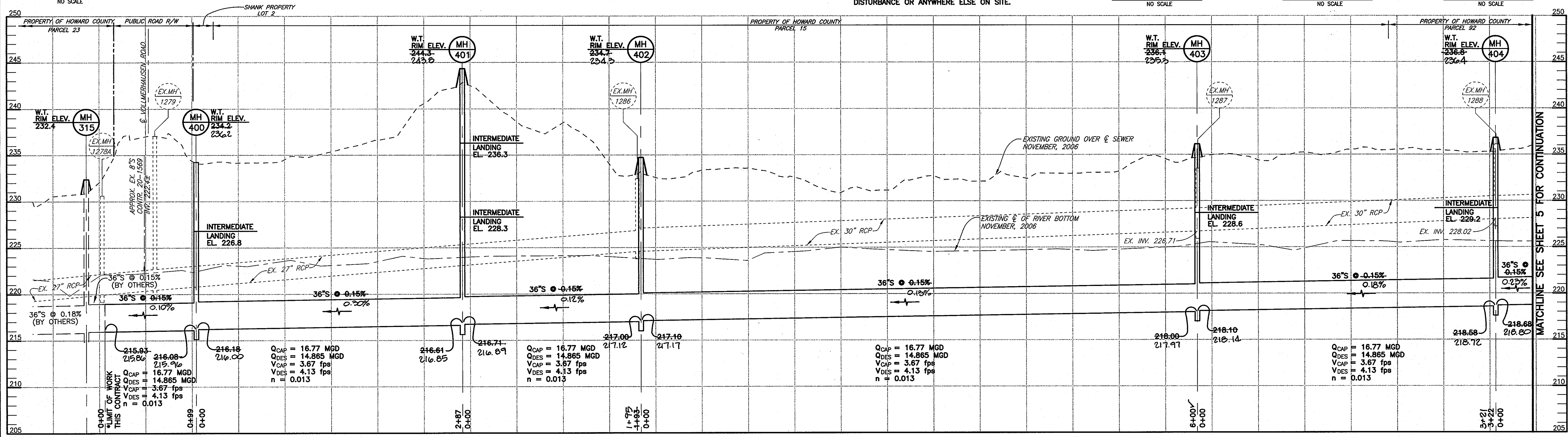
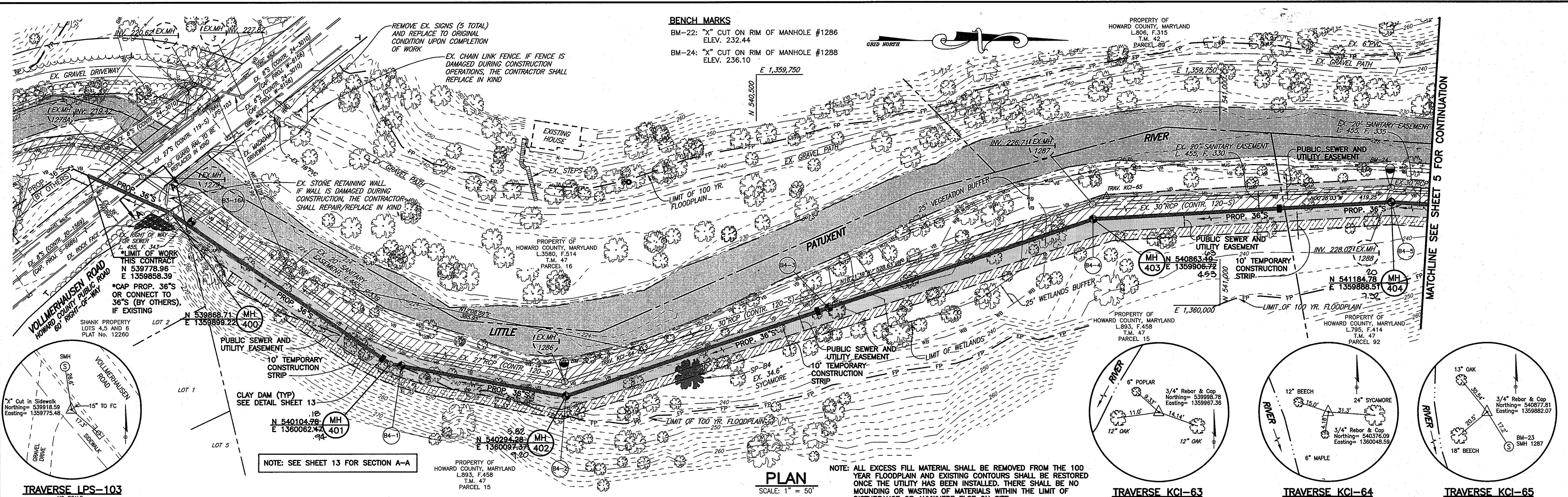
NO.	LOCATION
KCI-63	N 539998.78 E 1359967.36
KCI-64	N 540376.09 E 1360048.59
KCI-65	N 540877.81 E 1359882.07
KCI-66	N 541297.05 E 1359878.65
KCI-67	N 541708.88 E 1359910.35
KCI-68	N 542115.28 E 1359811.26
KCI-69	N 542467.78 E 1359619.05
KCI-70	N 542915.69 E 1359437.79
KCI-71	N 543307.63 E 1359394.61

LEGEND

- EX. BUILDING
- C --- EX. UNDERGROUND CABLE
- E --- EX. UNDERGROUND ELECTRIC
- OHE --- EX. OVERHEAD ELECTRIC LINES
- EX. 100 YR. FLOODPLAIN EASEMENT
- EX. UTILITY EASEMENT
- X --- EX. CHAIN LINK FENCE
- // --- EX. WOOD FENCE
- FP --- EX. 100 YR. FLOODPLAIN
- EX. UNDERGROUND GAS MAIN
- EX. 10 FOOT CONTOURS
- EX. 2 FOOT CONTOURS
- EX. FOOT PATH
- EX. PROPERTY BOUNDARY
- EX. ADJACENT PROPERTY BOUNDARY
- EX. BRIDGE
- EX. CENTERLINE ROAD
- EX. CURB & GUTTER
- EX. EDGE OF PAVEMENT
- EX. GUARDRAIL
- EX. PAVEMENT MARKINGS
- EX. ROAD RIGHT-OF-WAY
- EX. RIVER
- EX. RAILROAD TRACKS
- WUS --- EX. WATERS OF THE U.S.
- EX. SANITARY SEWER
- EX. STORM DRAIN
- EX. STREAM
- vb --- EX. VEGETATION BUFFER
- T --- EX. UNDERGROUND TELEPHONE LINE
- EX. WOODS LINE
- EX. SIDEWALK
- EX. WALLS
- EX. WETLANDS
- wb --- EX. WETLAND BUFFER
- EX. WATER MAIN, FIRE HYDRANT, VALVE & REDUCER
- PROPOSED UTILITY EASEMENT
- TEMPORARY CONSTRUCTION EASEMENT
- TEMPORARY CONSTRUCTION STRIP
- PROPOSED SANITARY SEWER MAIN
- PROPOSED CLAY DAM
- PROPOSED WATER MAIN, FIRE HYDRANT, VALVE & REDUCER
- PROPOSED 10 FOOT CONTOUR
- PROPOSED 2 FOOT CONTOUR
- EARTH DIKE
- LOD --- LIMIT OF DISTURBANCE
- SF --- SILT FENCE
- SSF --- SUPER SILT FENCE
- TP --- TREE PROTECTION FENCE
- EX. EVERGREEN TREE
- EX. SPECIMEN TREE
- EX. DECIDUOUS TREE
- EX. TREE TO BE REMOVED
- EX. ELECTRICAL MANHOLE
- EX. SEWER MANHOLE
- EX. WATER METER
- EX. AIR RELEASE MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. TELEPHONE MANHOLE
- EX. LIGHT POLE
- EX. GAS MANHOLE
- EX. UTILITY PEDESTAL
- EX. UTILITY POLE
- EX. SIGN
- BENCHMARK
- SOIL BORING
- TRAVERSE
- TEST PIT

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<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>[Signature]</i> 2/10/09 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>[Signature]</i> 2-10-09 CHIEF, BUREAU OF ENGINEERING DATE</p> <p><i>[Signature]</i> 2-10-09 CHIEF, UTILITY DESIGN DIVISION DATE</p>	 <p>GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS SALISBURY - BALTIMORE - LEWES - SEAFORD - YORK www.gmbnet.com</p>		<p>DES: D.A.V.</p> <p>DRN: M.A.D.</p> <p>CHK: W.B.F.</p> <p>DATE: 2/5/09</p>	<p>BY NO. REVISION</p>	<p>GENERAL NOTES</p>	<p>LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4534 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 3 OF 15</p>
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TRAVERSE LPS-103
NO SCALE

TRAVERSE KCI-63
NO SCALE

TRAVERSE KCI-64
NO SCALE

TRAVERSE KCI-65
NO SCALE

PLAN
SCALE: 1" = 50'

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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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DATE: 2/5/09

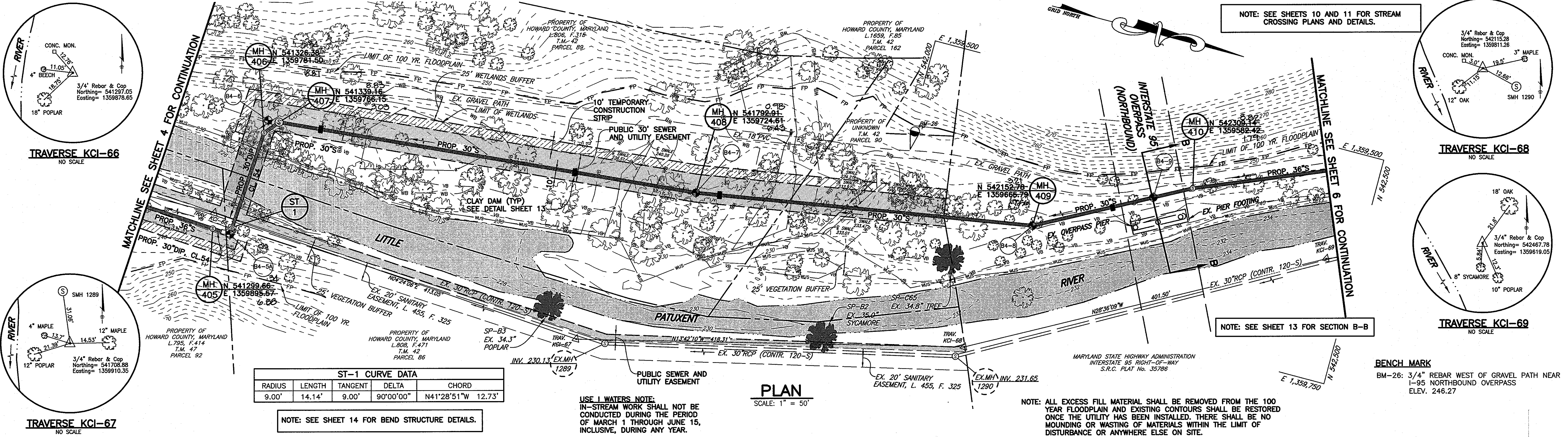
PLAN AND PROFILE OF A SEWER MAIN

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT NO. S-6175
CONTRACT NO. 20-4534
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

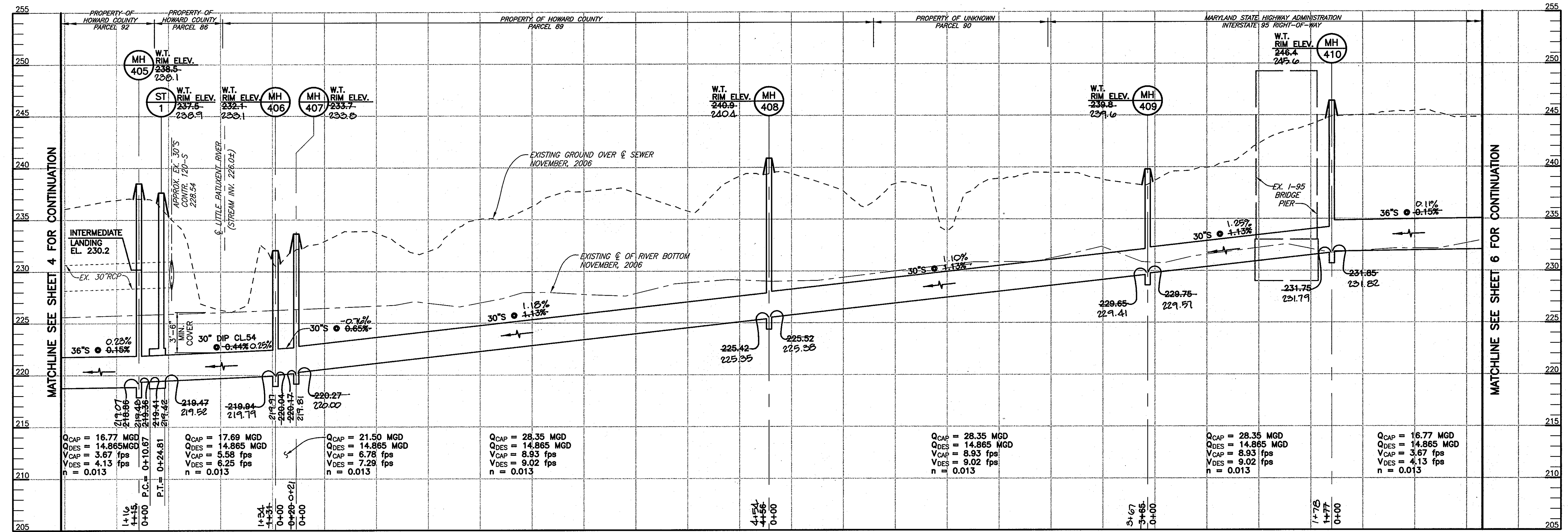
SHEET 4 OF 15

AS-BUILT: 1-17-2011



ST-1 CURVE DATA					
RADIUS	LENGTH	TANGENT	DELTA	CHORD	
9.00'	14.14'	9.00'	90°00'00"	N41°28'51"W	12.73'

PLAN
SCALE: 1" = 50'



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 2/10/09
Chief, Bureau of Engineering: *[Signature]* 2/10/09

Chief, Bureau of Utilities: *[Signature]* 2/10/09
Chief, Utility Design Division: *[Signature]* 2-10-09

GMB
GEORGE, MILES & BUHR, LLC
ARCHITECTS & ENGINEERS
SALISBURY · BALTIMORE · LEVESA · SEAFORD · YORK



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BY	NO.	REVISION	DATE

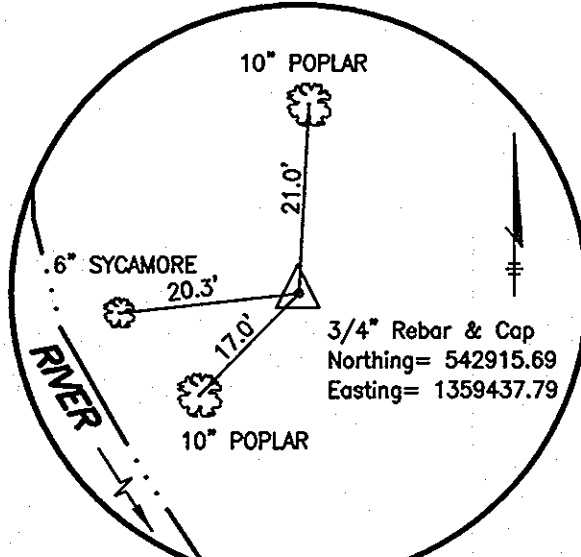
PLAN AND PROFILE OF A SEWER MAIN

600 SCALE MAP NO. 42 & 47. BLOCK NO. 22 & 4.

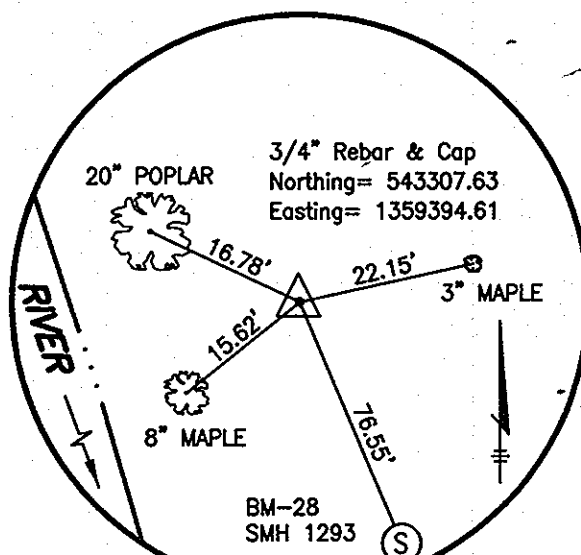
**LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER**
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CONTRACT NO. 20-4534
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 5 OF 15
AS-BUILT: 1-17-2011

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TRAVERSE KCI-70
NO SCALE

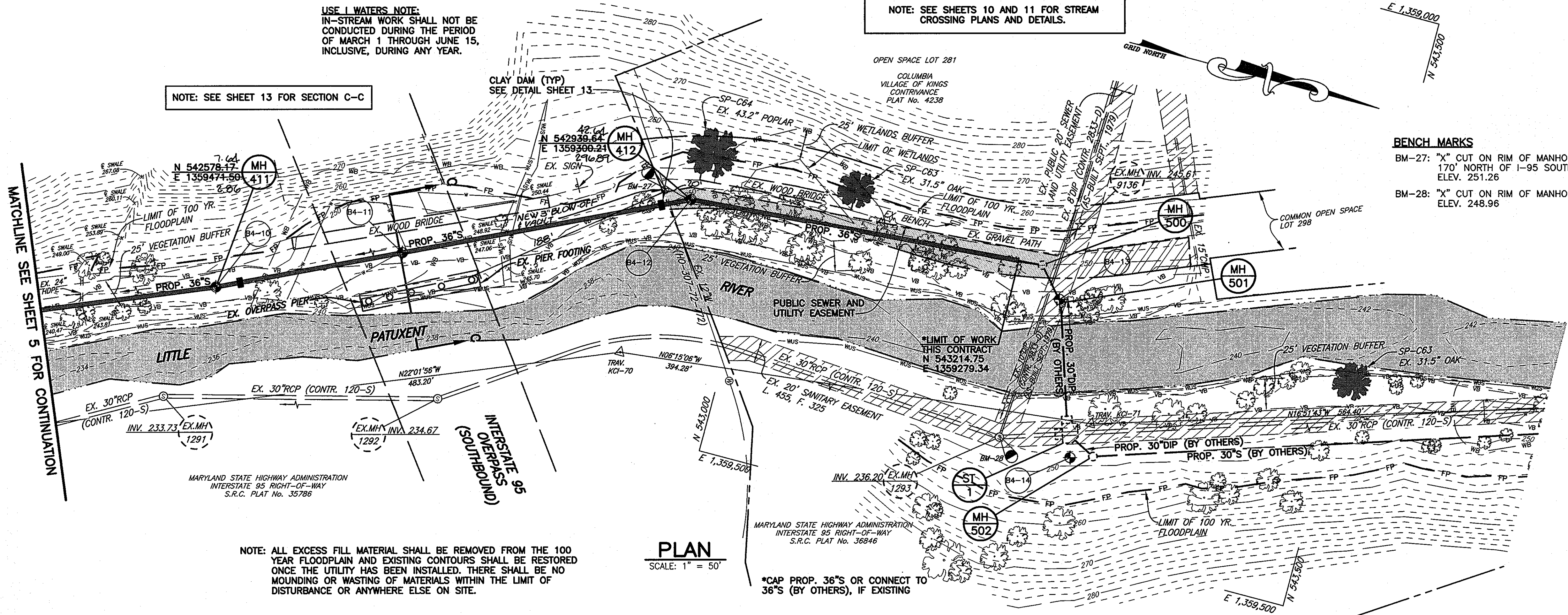


TRAVERSE KCI-71
NO SCALE

USE I-WATERS NOTE:
IN-STREAM WORK SHALL NOT BE
CONDUCTED DURING THE PERIOD
OF MARCH 1 THROUGH JUNE 15,
INCLUSIVE, DURING ANY YEAR.

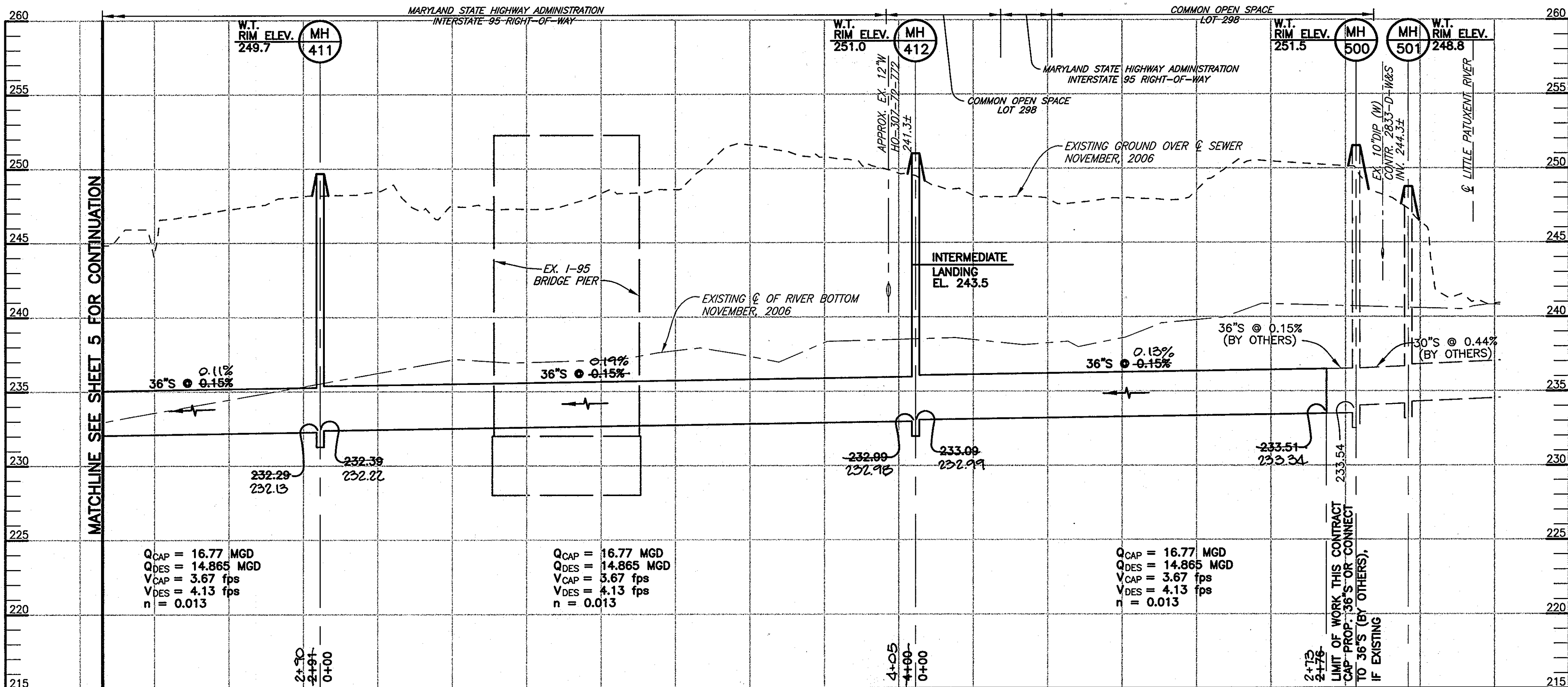
NOTE: SEE SHEET 13 FOR SECTION C-C

NOTE: SEE SHEETS 10 AND 11 FOR STREAM
CROSSING PLANS AND DETAILS.



NOTE: ALL EXCESS FILL MATERIAL SHALL BE REMOVED FROM THE 100
YEAR FLOODPLAIN AND EXISTING CONTOURS SHALL BE RESTORED
ONCE THE UTILITY HAS BEEN INSTALLED. THERE SHALL BE NO
MOUNDING OR WASTING OF MATERIALS WITHIN THE LIMIT OF
DISTURBANCE OR ANYWHERE ELSE ON SITE.

PLAN
SCALE: 1" = 50'



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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] 2/10/09
 Chief, Bureau of Engineering: [Signature] 2/10/09
 Bureau of Utilities: [Signature] 2/10/09
 Chief, Utility Design Division: [Signature] 2-10-09

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DATE: 2/5/09			

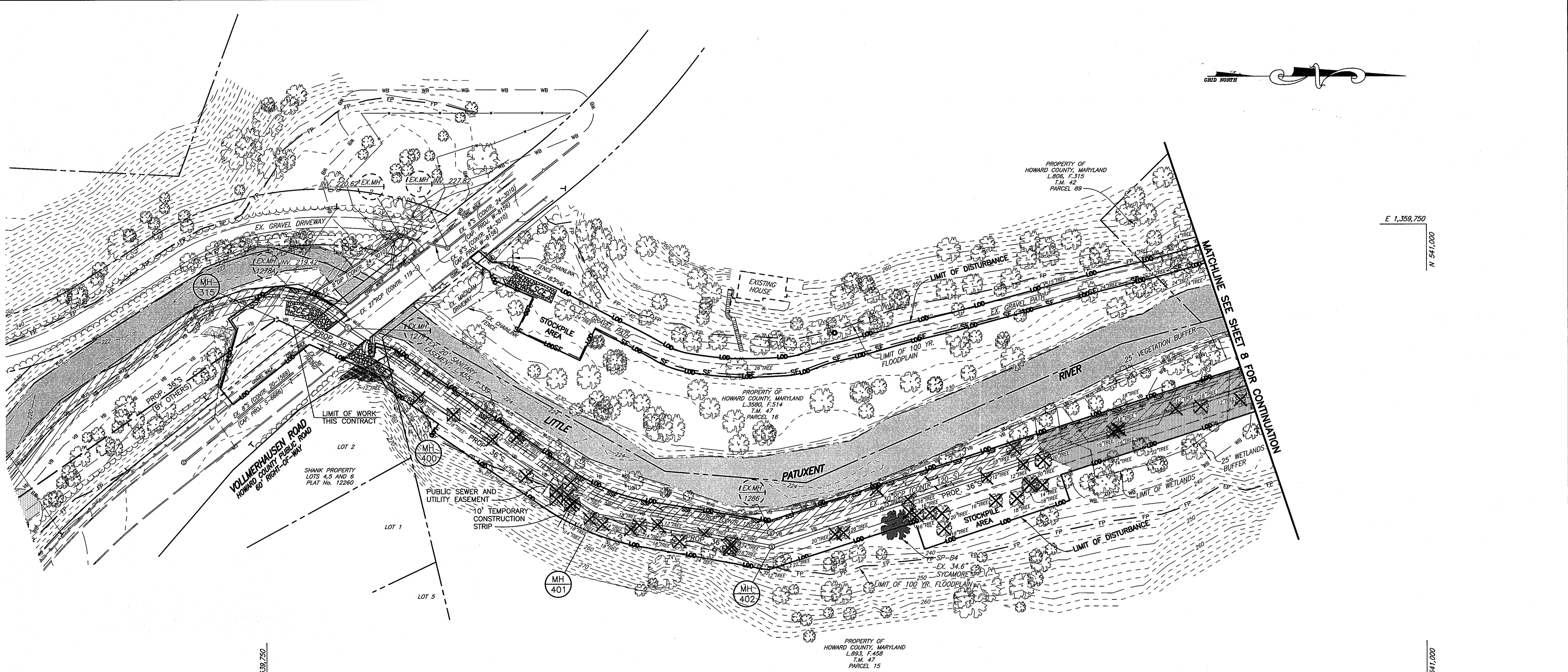
PLAN AND PROFILE OF
A SEWER MAIN

600 SCALE MAP NO. 42 & 47 BLOCK NO. 22 & 4

LITTLE PATUXENT
 PARALLEL INTERCEPTOR SEWER
 CAPITAL PROJECT NO. S-6175
 CONTRACT NO. 20-4534
 6TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
6 OF 15



PLAN
SCALE: 1" = 50'

RESTORATION NOTES

- NON-TIDAL WETLANDS AND ASSOCIATED NON-TIDAL WETLAND BUFFERS WITHIN THE LIMITS OF DISTURBANCE (LOD) HAVE BEEN SHADED ON THIS PLAN FOR CLARITY. FOR WORKING IN THESE AREAS AND FOR RESTORING THEM ONCE THE SEWER INSTALLATION IS COMPLETE, THE CONTRACTOR SHALL ABIDE BY THE REQUIREMENTS OF THE "BEST MANAGEMENT PRACTICES FOR WORKING IN NON-TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS" ON SHEET 11.
- FOR GROUND PREPARATION, SOIL MODIFICATIONS, SEEDING AND STABILIZATION REQUIREMENTS FOR ALL DISTURBED AREAS OUTSIDE OF THE WETLAND AND WETLAND BUFFER AREAS, REFER TO SHEET 12. THESE BASIC REQUIREMENTS ARE SUPPLEMENTED BY TECHNICAL SPECIFICATION, SECTION 02260 - FINISH GRADING AND LANDSCAPING, IN THE SPECIFICATIONS WHICH ADDRESS SPECIFIC SUB-GRADE PREPARATION AND FINISH GRADING REQUIREMENTS.

NOTES

- THE CONTRACTOR SHALL LOCATE THE LIMITS OF DISTURBANCE (LOD) IN THE FIELD AND INSTALL 4' HIGH BLAZE ORANGE FENCING ALONG THE LOD PRIOR TO CONSTRUCTION ACTIVITIES. THE FENCING SHALL BE ANCHORED AT MAXIMUM 8 FEET SPACING, SHALL NOT SAG AND SHALL BE MAINTAINED IN GOOD CONDITION DURING CONSTRUCTION.
- SOIL FROM TRENCHING OPERATIONS IS TO BE PLACED ON THE UPHILL SIDE OF THE TRENCH.
- THE CONTRACTOR SHALL REMOVE FROM THE SITE ALL EXCAVATED STONE LARGER THAN 12 INCHES IN GREATEST DIMENSION.
- ALL EXCESS FILL MATERIAL SHALL BE REMOVED FROM THE 100 YEAR FLOODPLAIN AND EXISTING CONTOURS SHALL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. THERE SHALL BE NO MOUNDING OR WASTING OF MATERIALS WITHIN THE LIMIT OF DISTURBANCE OR ANYWHERE ELSE ON SITE.

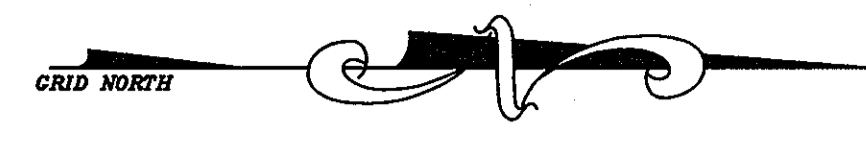
■ DENOTES AREA OF NON-TIDAL WETLANDS AND BUFFER WITHIN THE LOD

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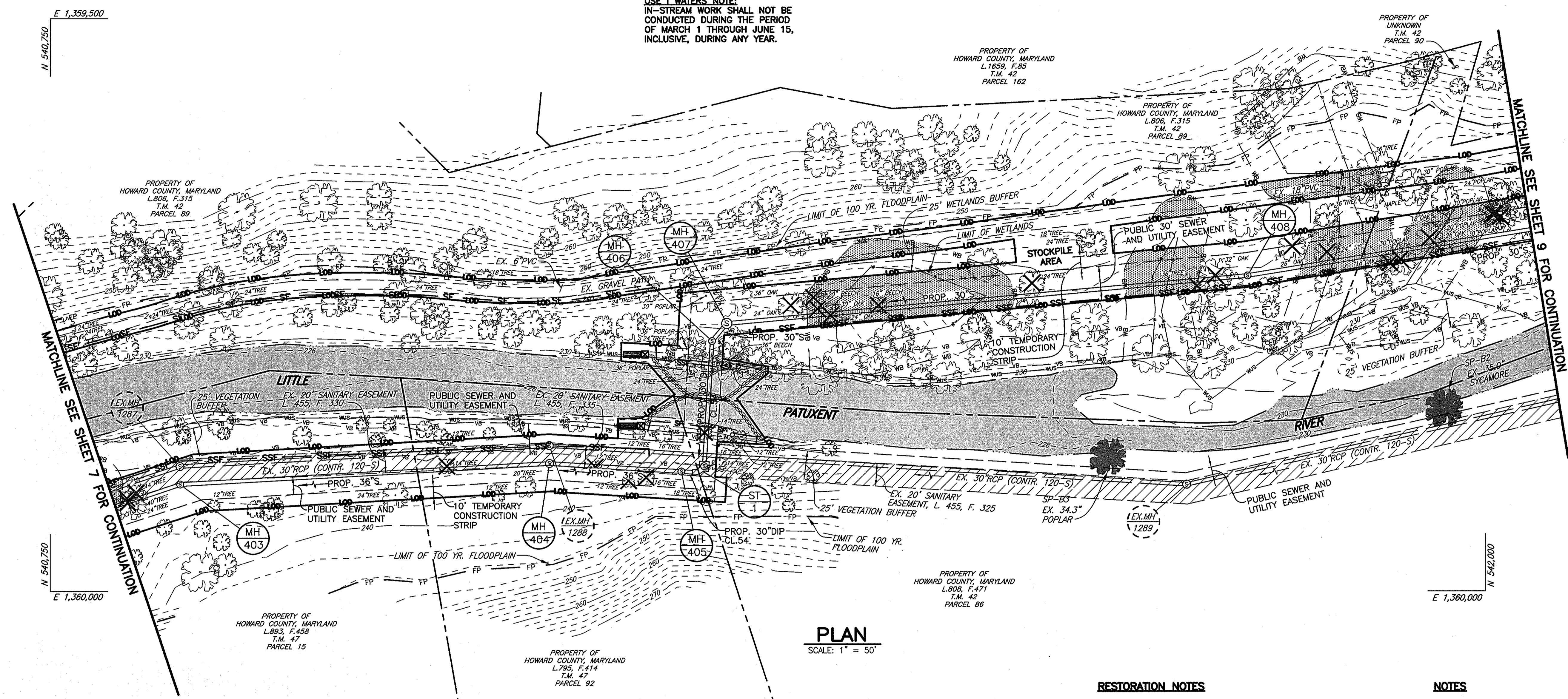
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND		GMB GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS SALISBURY • BALTIMORE • LEVIES • SEAFORD • YORK www.gmbnet.com			
 DIRECTOR OF PUBLIC WORKS DATE: 2/1/09	 CHIEF, BUREAU OF ENGINEERING DATE: 2/10/09	 CHIEF, UTILITY DESIGN DIVISION DATE: 2-10-09	DES: D.A.V. DRN: M.A.D. CHK: W.B.F. DATE: 2/5/09	BY: NO. REVISION DATE	SCALE AS SHOWN SHEET 7 OF 15

EROSION AND SEDIMENT CONTROL PLAN		600 SCALE MAP NO. 42 & 47 BLOCK NO. 22 & 4	
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LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4534 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
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USE 1 WATERS NOTE:
 IN-STREAM WORK SHALL NOT BE
 CONDUCTED DURING THE PERIOD
 OF MARCH 1 THROUGH JUNE 15,
 INCLUSIVE, DURING ANY YEAR.



PLAN
 SCALE: 1" = 50'

NOTE: SEE SHEETS 10 AND 11 FOR STREAM CROSSING PLANS AND DETAILS.

RESTORATION NOTES

- NON-TIDAL WETLANDS AND ASSOCIATED NON-TIDAL WETLAND BUFFERS WITHIN THE LIMITS OF DISTURBANCE (LOD) HAVE BEEN SHADED ON THIS PLAN FOR CLARITY. FOR WORKING IN THESE AREAS AND FOR RESTORING THEM ONCE THE SEWER INSTALLATION IS COMPLETE, THE CONTRACTOR SHALL ABIDE BY THE REQUIREMENTS OF THE "BEST MANAGEMENT PRACTICES FOR WORKING IN NON-TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS" ON SHEET 11.
- FOR GROUND PREPARATION, SOIL MODIFICATIONS, SEEDING AND STABILIZATION REQUIREMENTS FOR ALL DISTURBED AREAS OUTSIDE OF THE WETLAND AND WETLAND BUFFER AREAS, REFER TO SHEET 12. THESE BASIC REQUIREMENTS ARE SUPPLEMENTED BY TECHNICAL SPECIFICATION, SECTION 02260 - FINISH GRADING AND LANDSCAPING, IN THE SPECIFICATIONS WHICH ADDRESS SPECIFIC SUB-GRADE PREPARATION AND FINISH GRADING REQUIREMENTS.

DENOTES AREA OF NON-TIDAL WETLANDS AND BUFFER WITHIN THE LOD

NOTES

- THE CONTRACTOR SHALL LOCATE THE LIMITS OF DISTURBANCE (LOD) IN THE FIELD AND INSTALL 4' HIGH BLAZE ORANGE FENCING ALONG THE LOD PRIOR TO CONSTRUCTION ACTIVITIES. THE FENCING SHALL BE ANCHORED AT MAXIMUM 8 FEET SPACING, SHALL NOT SAG AND SHALL BE MAINTAINED IN GOOD CONDITION DURING CONSTRUCTION.
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<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>Jan. K. Zilber</i> 2/10/09 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>Robert J. Soren</i> 2/10/09 CHIEF, BUREAU OF ENGINEERING DATE</p> <p><i>W. L. Soren</i> 2/10/09 CHIEF, UTILITY DESIGN DIVISION DATE</p>	<p>GMB GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS SALESBURY - BALTIMORE - LEWES - SEAFORD - YORK www.gmbnet.com</p>		<p>DES: D.A.V.</p> <p>DRN: M.A.D.</p> <p>CHK: W.B.F.</p> <p>DATE: 2/5/09</p>	<p>EROSION AND SEDIMENT CONTROL PLAN</p>	<p>LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4534 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 8 OF 15</p>
			BY NO. REVISION DATE	600 SCALE MAP NO. 42 & 47 BLOCK NO. 22 & 4		

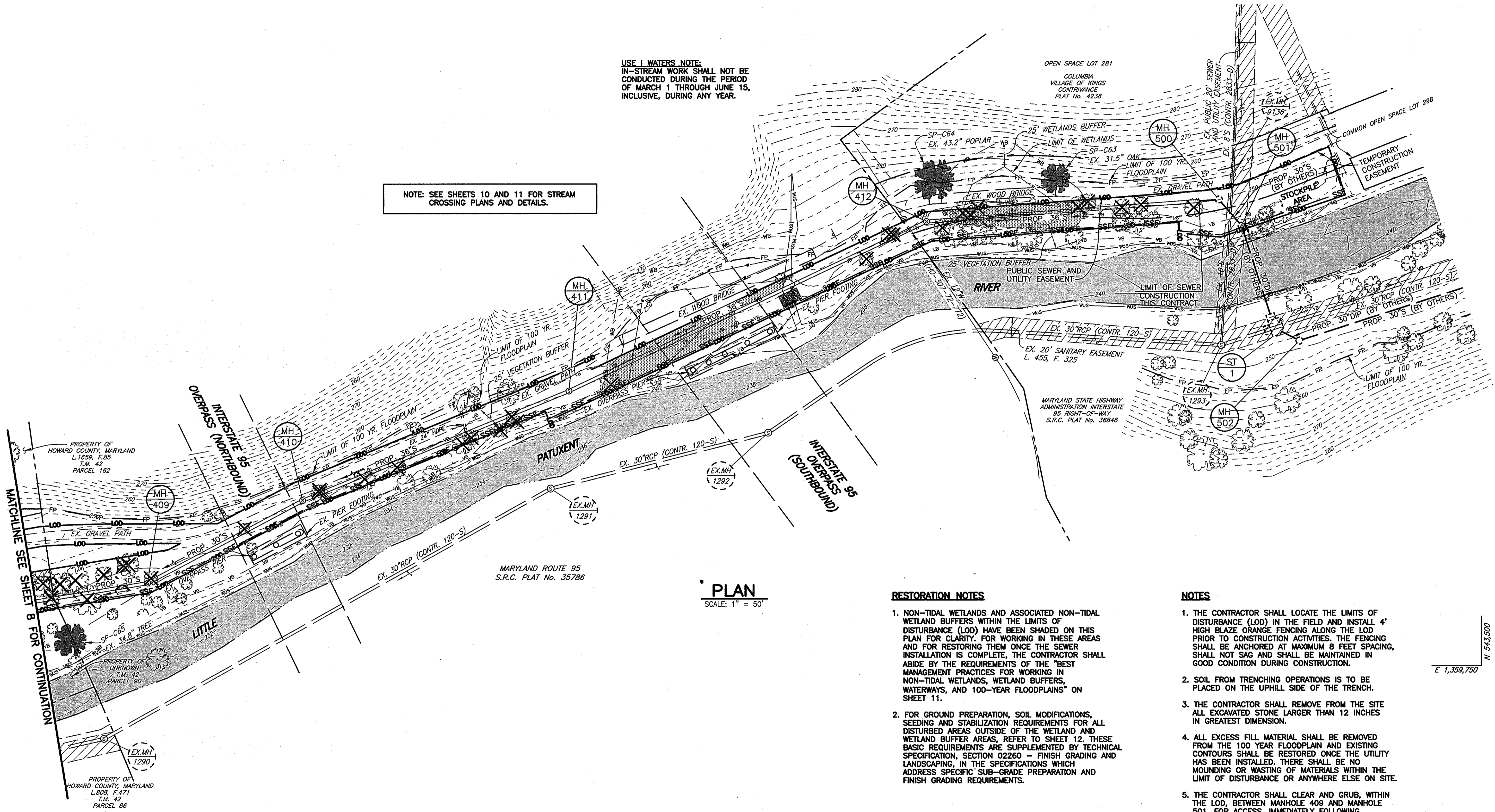
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USE 1 WATERS NOTE:
IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.

NOTE: SEE SHEETS 10 AND 11 FOR STREAM CROSSING PLANS AND DETAILS.



PLAN
SCALE: 1" = 50'

RESTORATION NOTES



1. NON-TIDAL WETLANDS AND ASSOCIATED NON-TIDAL WETLAND BUFFERS WITHIN THE LIMITS OF DISTURBANCE (LOD) HAVE BEEN SHADED ON THIS PLAN FOR CLARITY. FOR WORKING IN THESE AREAS AND FOR RESTORING THEM ONCE THE SEWER INSTALLATION IS COMPLETE, THE CONTRACTOR SHALL ABIDE BY THE REQUIREMENTS OF THE "BEST MANAGEMENT PRACTICES FOR WORKING IN NON-TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS" ON SHEET 11.
2. FOR GROUND PREPARATION, SOIL MODIFICATIONS, SEEDING AND STABILIZATION REQUIREMENTS FOR ALL DISTURBED AREAS OUTSIDE OF THE WETLAND AND WETLAND BUFFER AREAS, REFER TO SHEET 12. THESE BASIC REQUIREMENTS ARE SUPPLEMENTED BY TECHNICAL SPECIFICATION, SECTION 02260 - FINISH GRADING AND LANDSCAPING, IN THE SPECIFICATIONS WHICH ADDRESS SPECIFIC SUB-GRADE PREPARATION AND FINISH GRADING REQUIREMENTS.

NOTES

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5. THE CONTRACTOR SHALL CLEAR AND GRUB, WITHIN THE LOD, BETWEEN MANHOLE 409 AND MANHOLE 501, FOR ACCESS, IMMEDIATELY FOLLOWING INSTALLATION OF SEDIMENT AND EROSION CONTROL MEASURES, AND BEFORE INSTALLATION OF ANY UTILITIES.

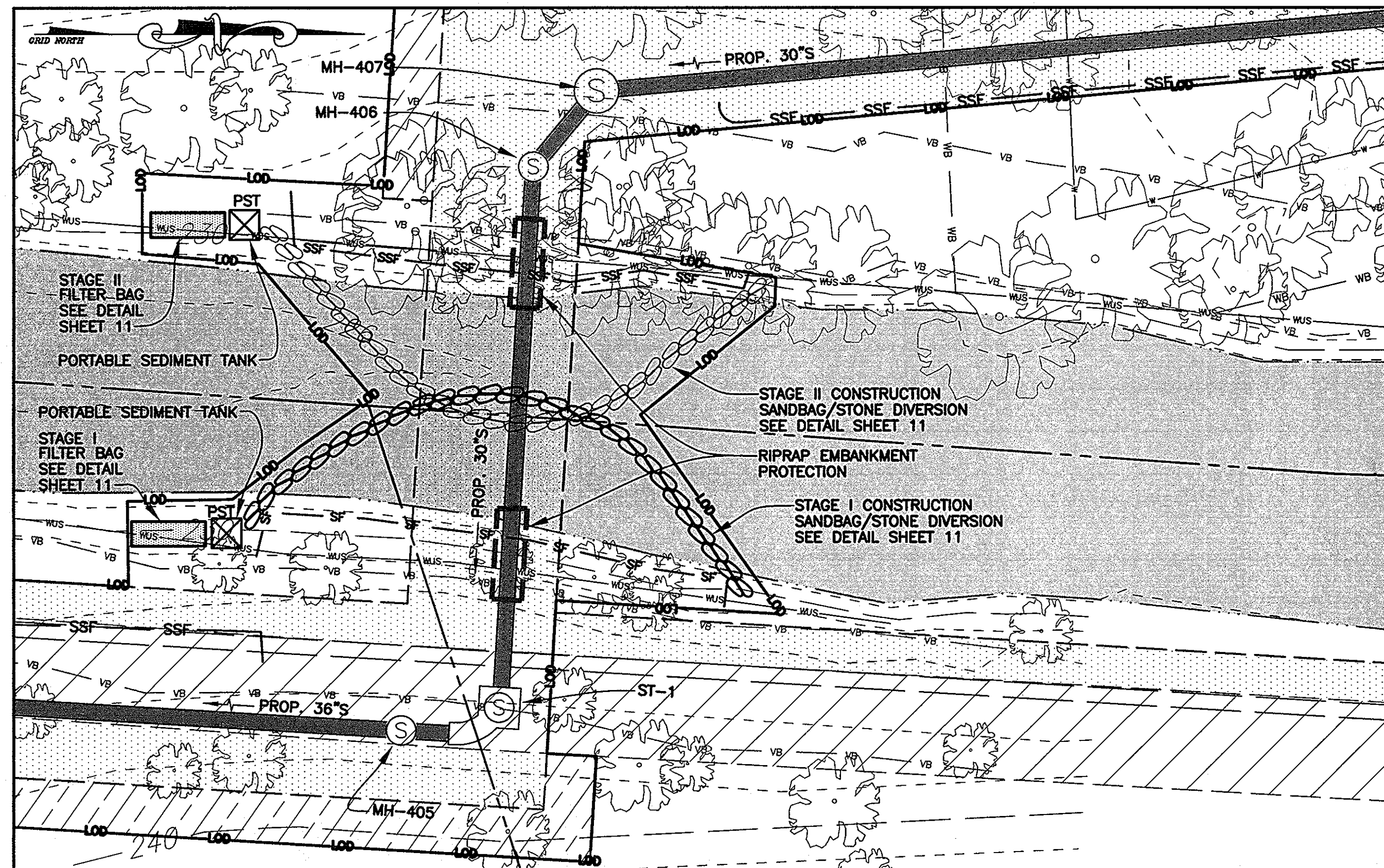
 DENOTES AREA OF NON-TIDAL WETLANDS AND BUFFER WITHIN THE LOD

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND		 GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS SALISBURY - BALTIMORE - LEWES - SEAFORD - YORK www.gmbnet.com		DES: D.A.V.			
Director of Public Works <i>Jan G. K...</i> 2/10/09	DATE			Chief, Bureau of Engineering <i>Robert H. Mason</i> 2/10/09	DATE	DRN: M.A.D.	
Chief, Bureau of Utilities <i>John W. ...</i> 2/10/09	DATE	Chief, Utility Design Division <i>Ray D. Lee</i> 2-10-09	DATE	CHK: W.B.F.			
				DATE: 2/5/09	BY	NO.	REVISION

<p align="center">EROSION AND SEDIMENT CONTROL PLAN</p> <p align="center">LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4534 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>		SCALE AS SHOWN
		SHEET 9 OF 15

600 SCALE MAP NO. 42 & 47	BLOCK NO. 22 & 4	SCALE AS SHOWN
		SHEET 9 OF 15

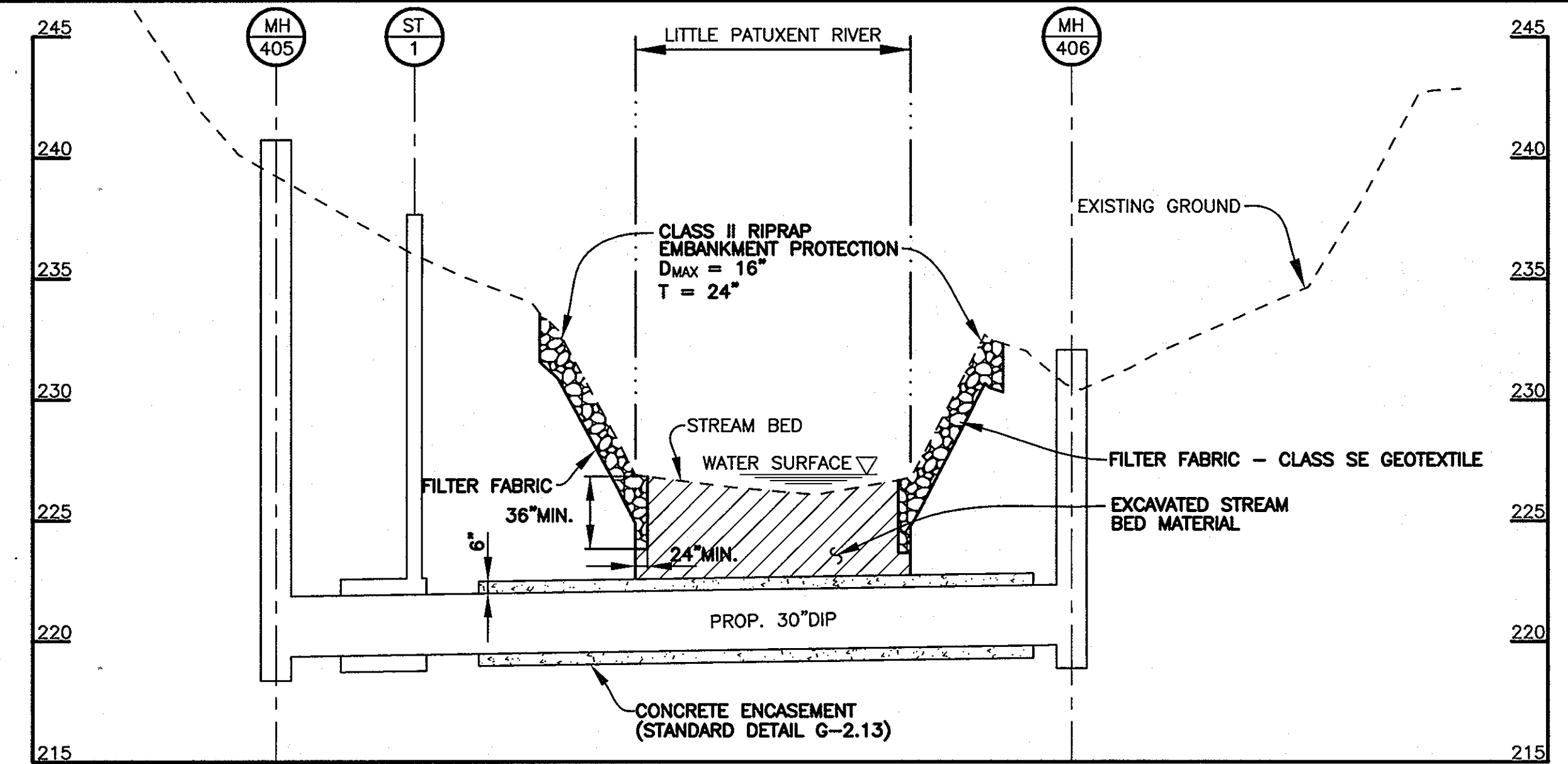


STREAM CROSSING PLAN - MH-405 TO MH-406

SCALE: 1"=20'

SEQUENCE OF CONSTRUCTION (MH-405 TO MH-406)

1. Install Sediment Control Devices (Silt Fence / Super Silt Fence) as shown on the Plans. Existing Super Silt Fence may need to be relocated at the top of the stream crossing to allow room to work and prevent flow of sediment into the work area.
 2. Construct a temporary sandbag Cofferdam upstream to divert water around the Stage I working area.
 3. Construct a temporary sandbag Cofferdam downstream to prevent backwashing into the Stage I construction area.
 4. Dewater the work area for Stage I. Portable Sediment Tank(s) and filter bags shall be utilized to remove sediment from all dewatering.
 5. Install Sediment Control Devices for proposed excavated material storage piles.
 6. Excavate ditch and install sewer pipe and concrete encasement for Stage I. A sufficient volume of material excavated from the stream bed shall be stored to be replaced in kind.
 7. Replace excavated material from the stream bed to restore stream bed to the original elevation for Stage I.
 8. Stabilize the stream bank with riprap for Stage I.
 9. Remove downstream Cofferdam for Stage I. Remove the upstream Cofferdam for Stage I.
 10. Restore the Stage I Dewatering Basin to the original grade.
 11. Repeat Step Nos. 2 through 12 for Stage II construction.
 12. Clean up the entire construction site.
 13. Remove all Sediment Control Devices related to the stream crossing. Restore all relocated Sediment Control Devices from Note 1.
 14. Seed and mulch all disturbed areas.
- Note: In-stream work shall not be conducted during the period of March 1 through June 15, inclusive, during any year.

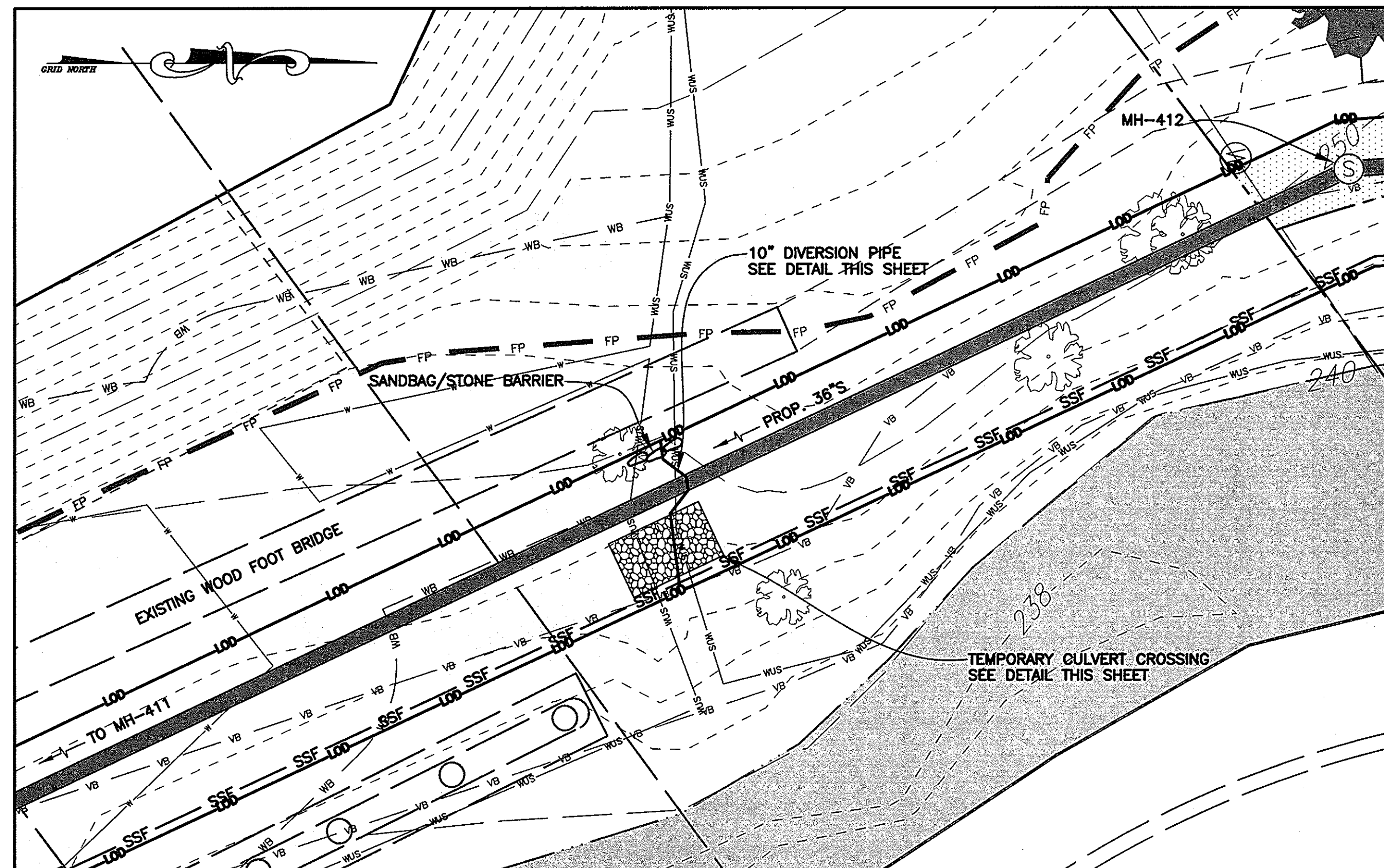


STREAM CROSSING PROFILE - 405 TO MH-406

SCALE: HOR.: 1"=20'
VERT.: 1"=5'

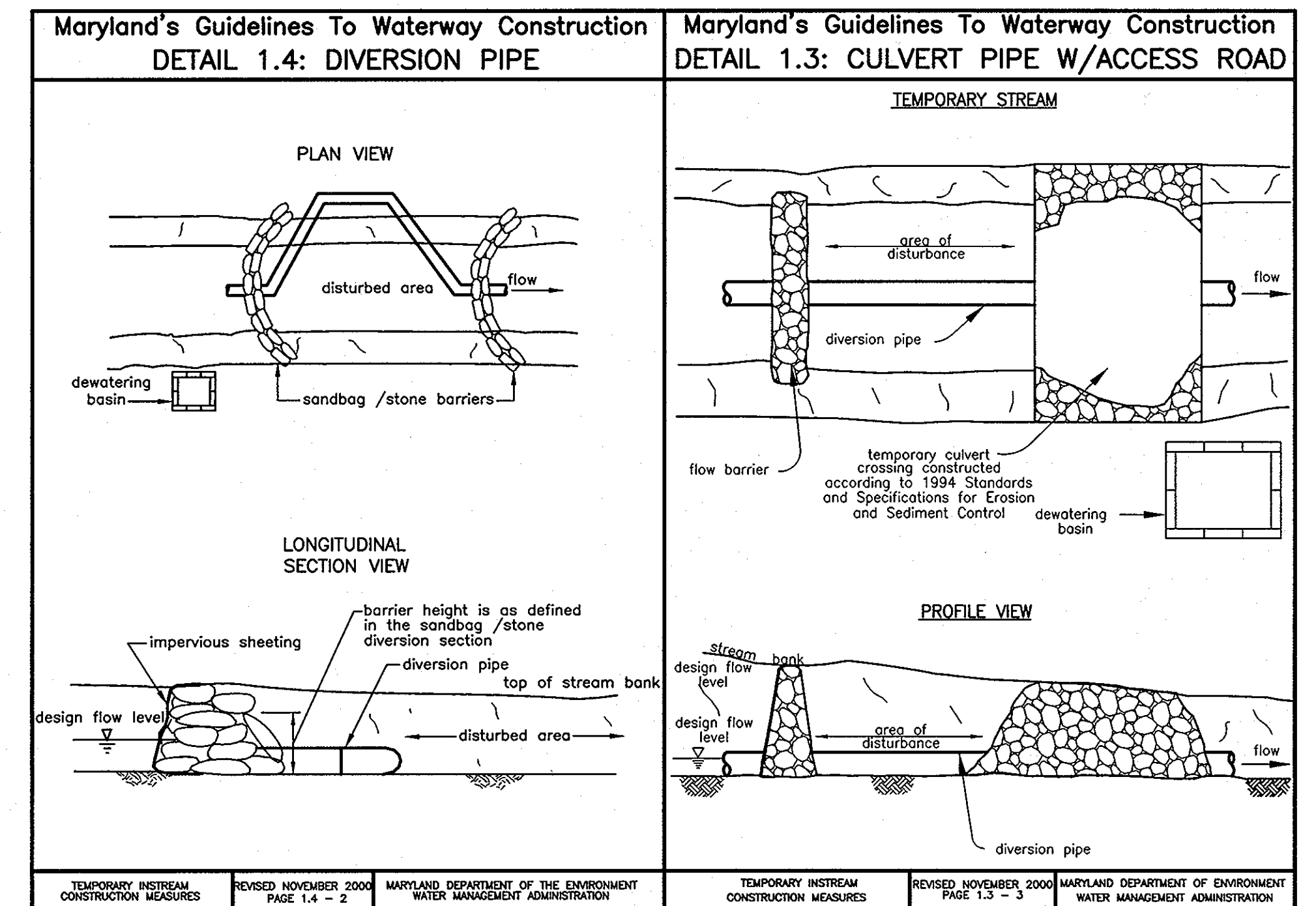
NOTES:

1. D_{max} = MAXIMUM DIAMETER OF RIPRAP.
2. T = THICKNESS OF RIPRAP
3. DUCTILE IRON PIPE (DIP) BETWEEN MH-405 AND MH-406 SHALL BE CL. 54 WITH RESTRAINED JOINTS.



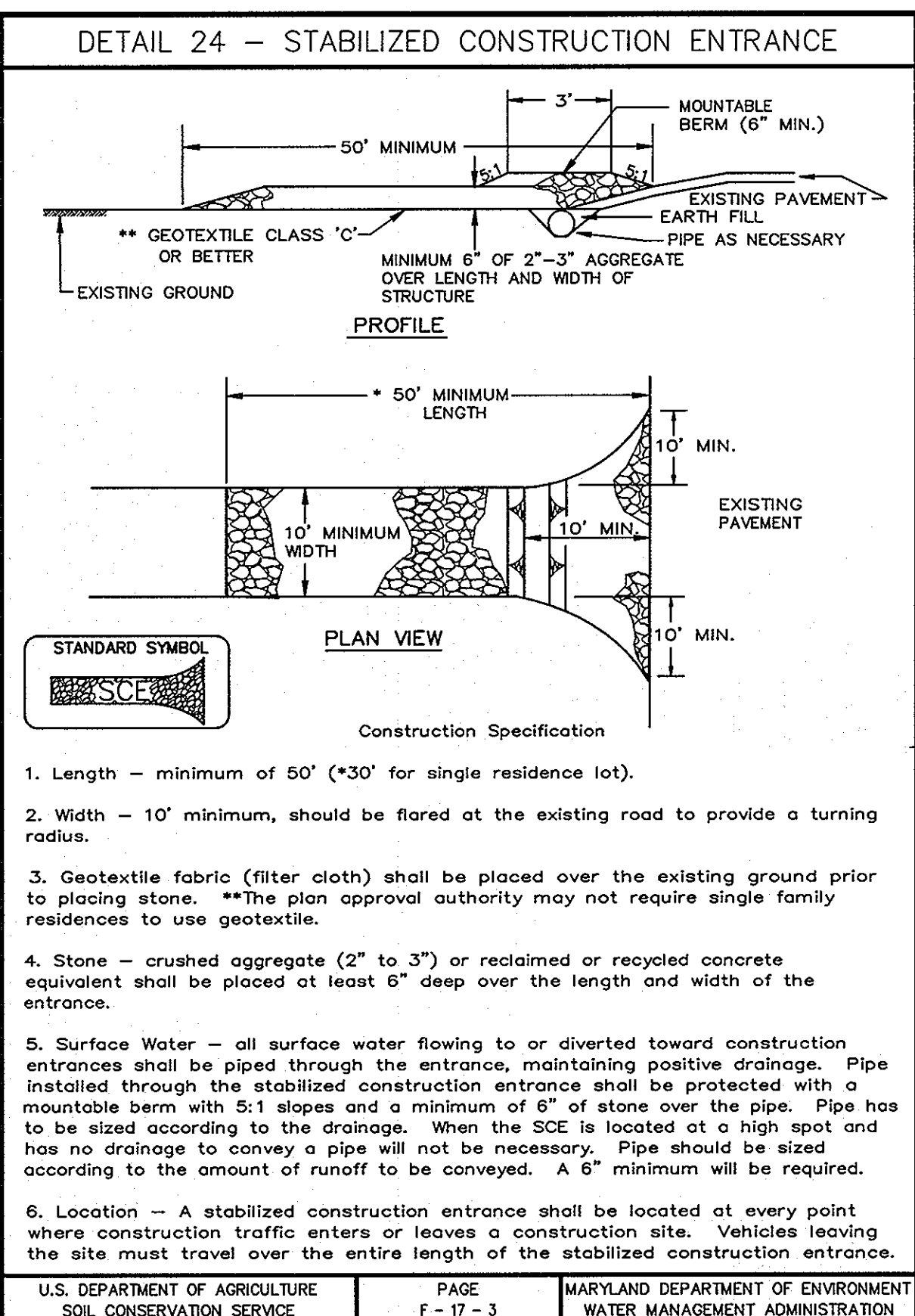
STREAM CROSSING PLAN - MH-411 TO MH-412

SCALE: 1"=20'



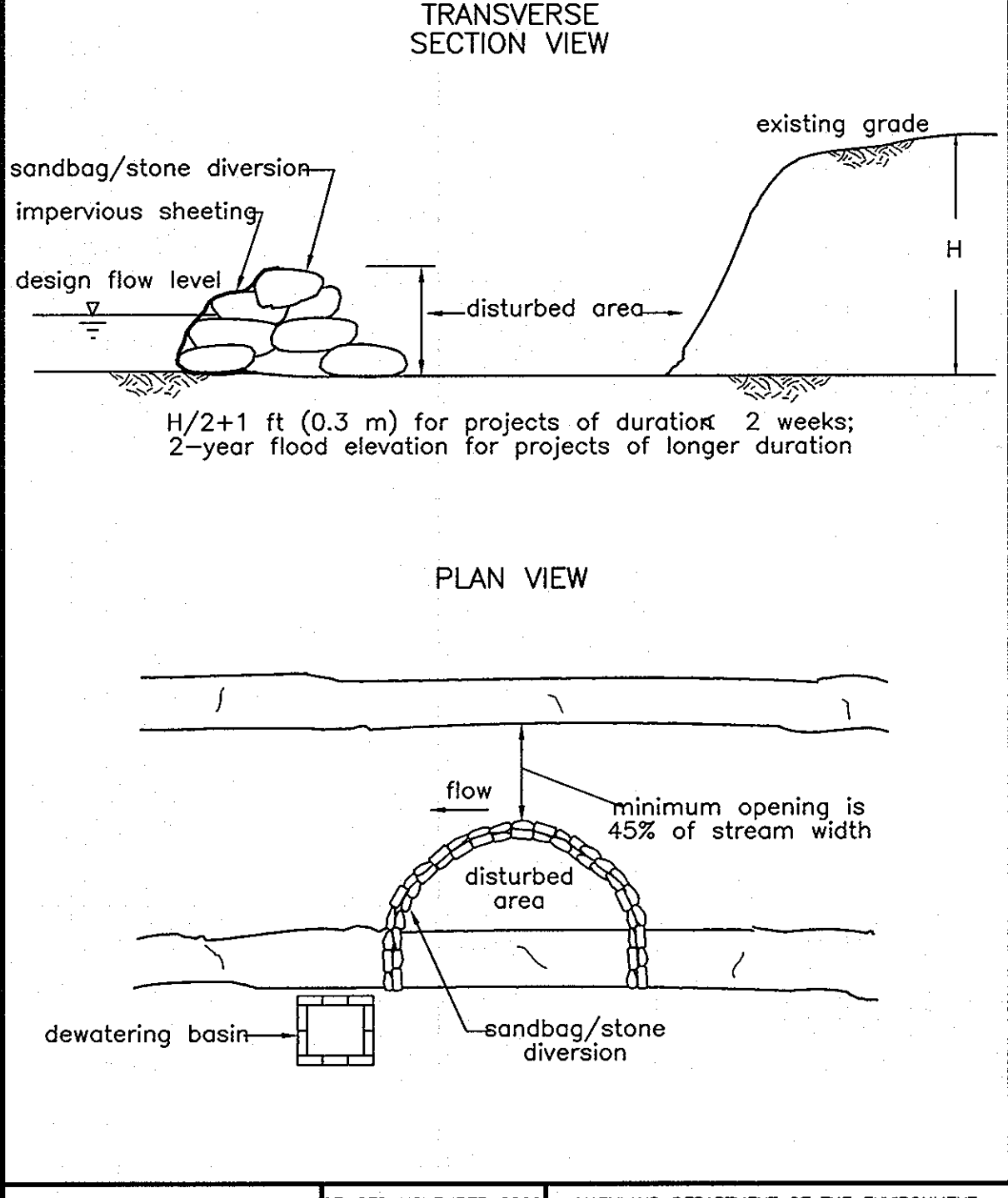
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<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>[Signature]</i> 2/10/09 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>[Signature]</i> 2/10/09 CHIEF, BUREAU OF ENGINEERING DATE</p> <p><i>[Signature]</i> 2-10-09 CHIEF, UTILITY DESIGN DIVISION DATE</p>	<p>GMB</p> <p>GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS SALISBURY • BALTIMORE • LEWES • SEAFORD • YORK</p> <p>www.gmbnet.com</p>	<p>DES: D.A.V.</p> <p>DRN: M.A.D.</p> <p>CHK: W.B.F.</p> <p>DATE: 2/5/09</p>	<p>BY: NO. REVISION DATE</p>	<p style="text-align: center;">STREAM CROSSING DETAILS</p> <p>600 SCALE MAP NO. 42 & 47 BLOCK NO. 22 & 4.</p>	<p style="text-align: center;">LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER</p> <p>CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4534 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 10 OF 15</p>
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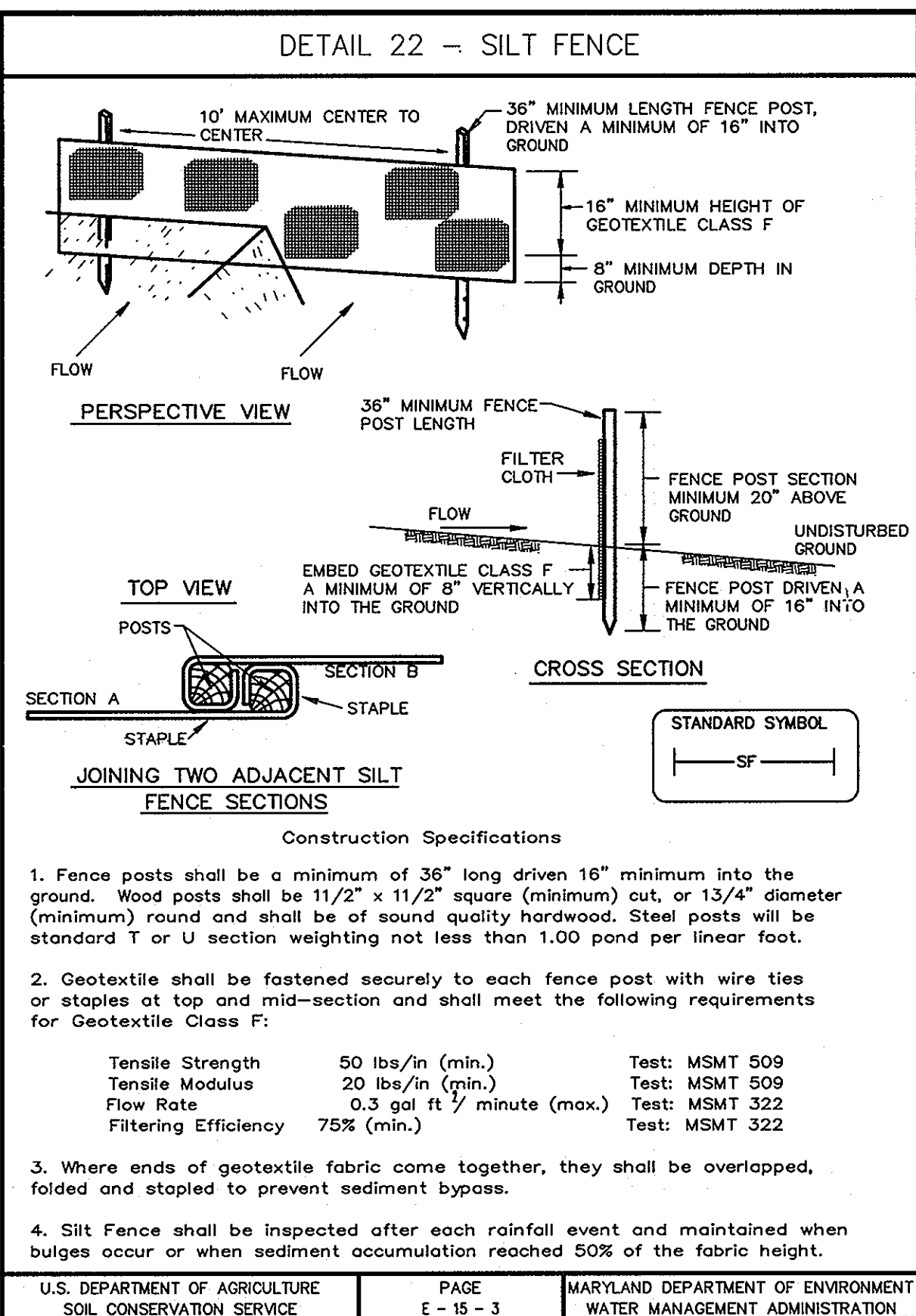


U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 17 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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Maryland's Guidelines To Waterway Construction DETAIL 1.5: SANDBAG/STONE DIVERSION

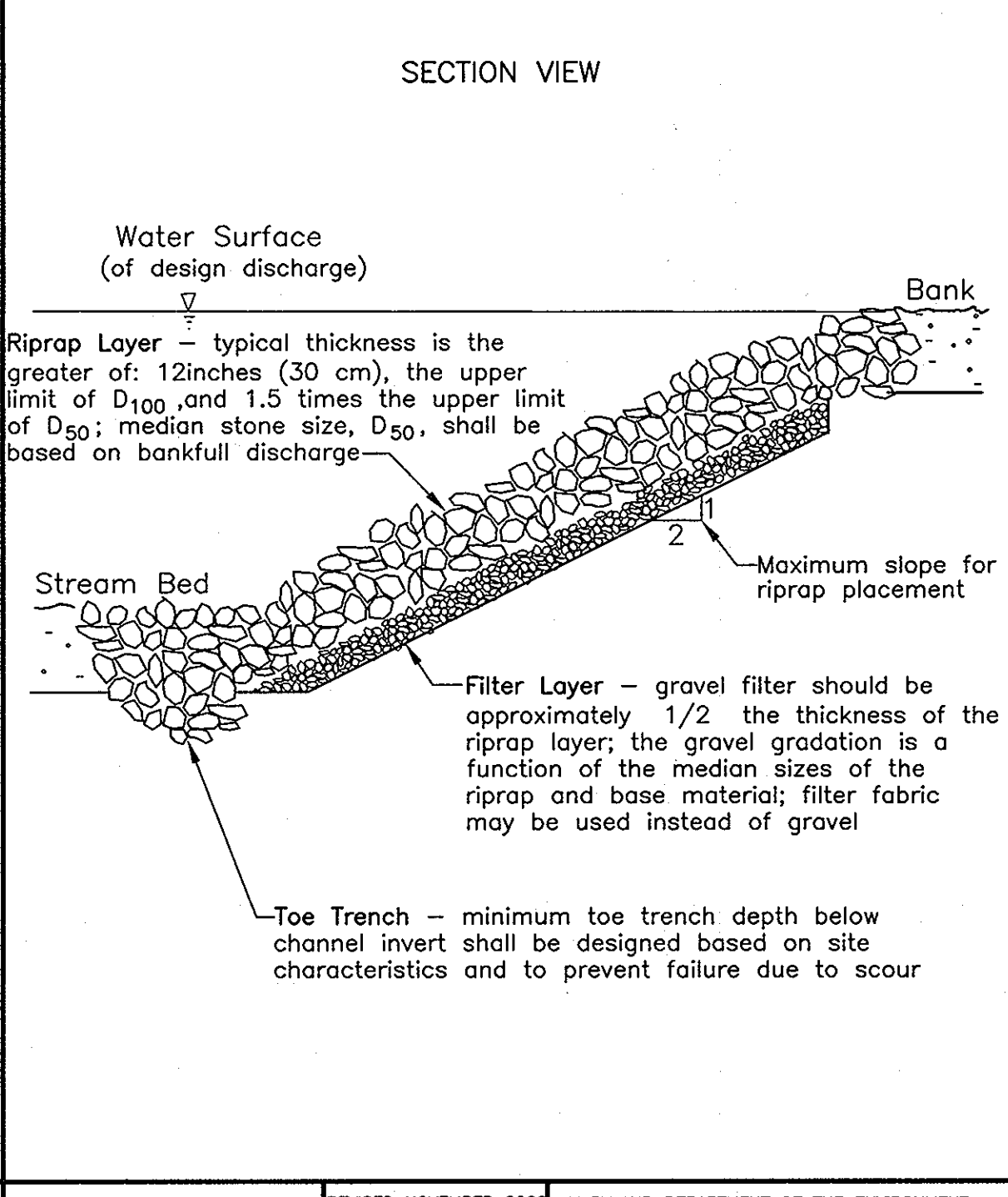


TEMPORARY INSTRUMENT CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.5 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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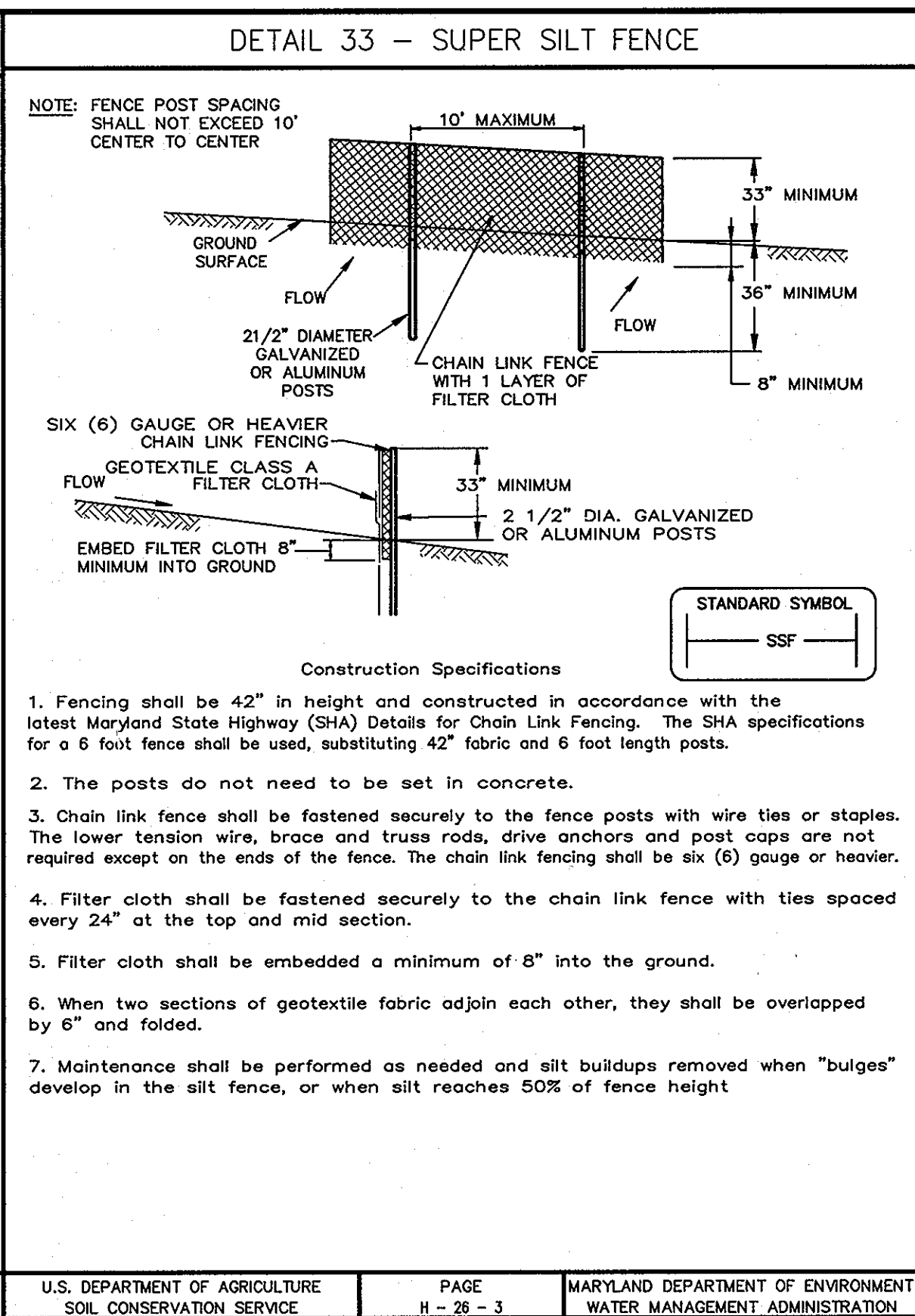


U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 15 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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Maryland's Guidelines To Waterway Construction DETAIL 2.1: RIPRAP

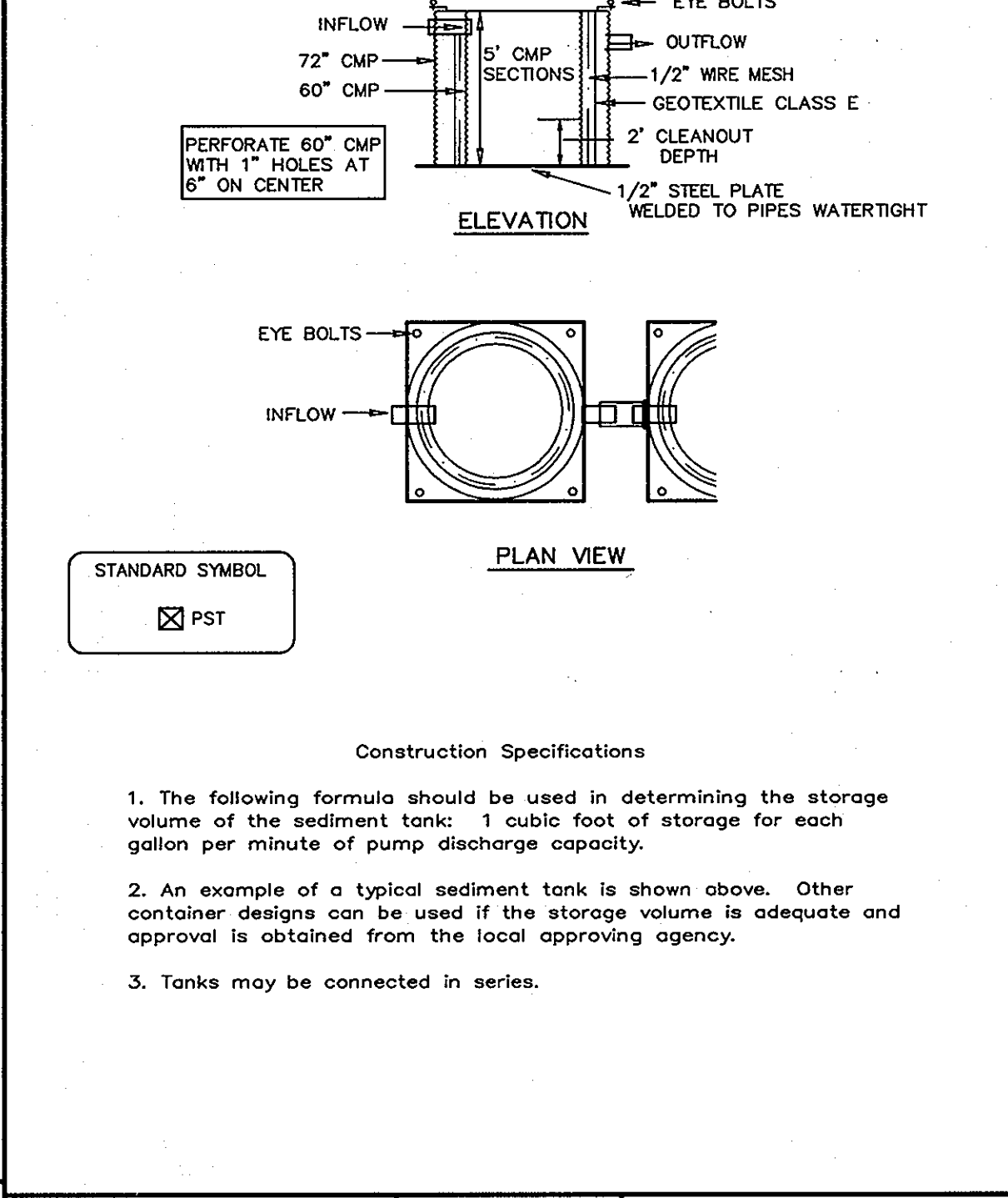


TEMPORARY INSTRUMENT CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 2.1 - 4	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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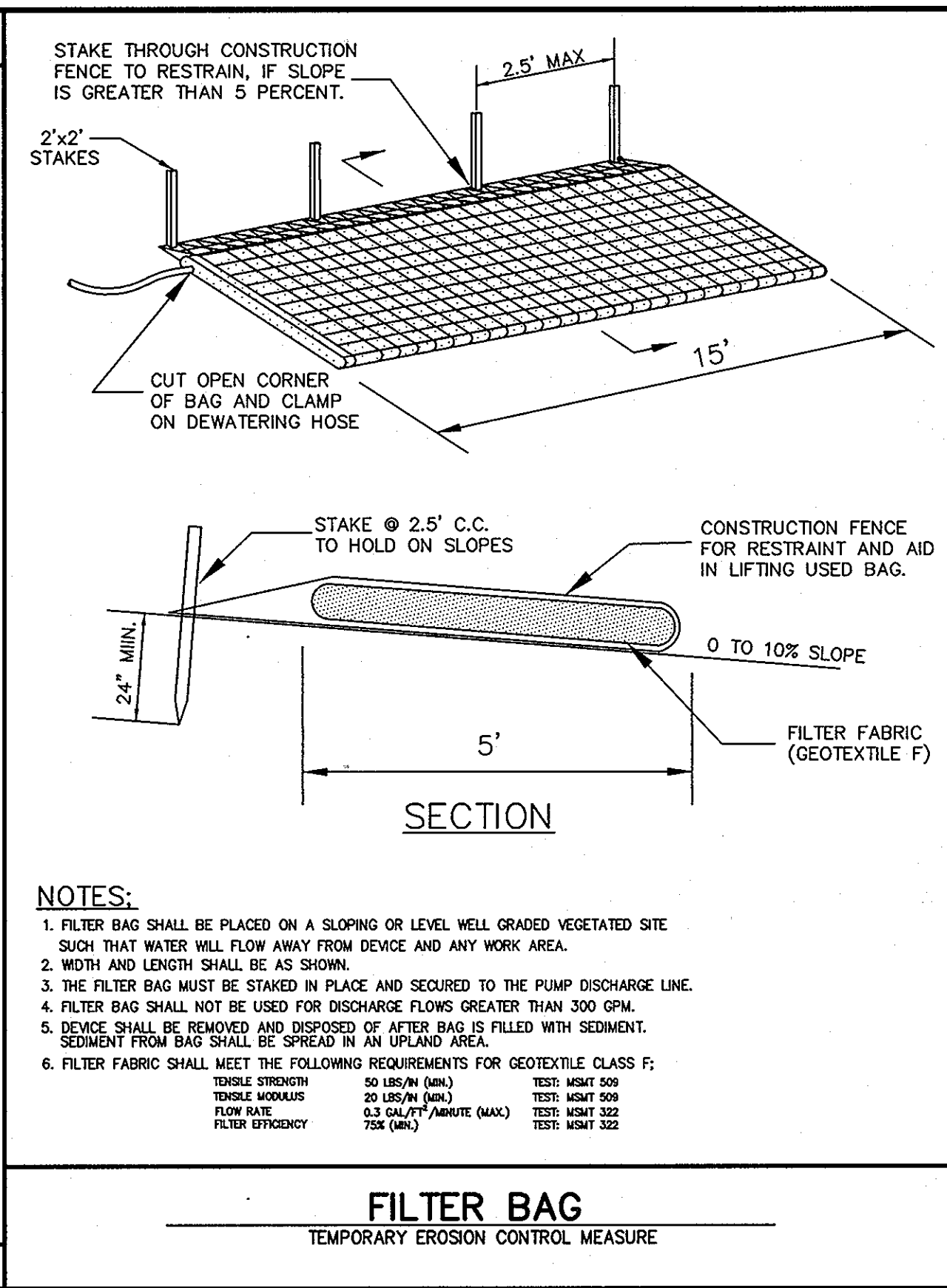


U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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DETAIL 21 - PORTABLE SEDIMENT TANK



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D - 14 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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PROJECT SEQUENCE OF CONSTRUCTION

1. Notify Miss Utility (1-800-257-7777) at least 48 hours prior to beginning work.
2. Notify Howard County Department of Inspections, Licenses and Permits (410-313-1855) at least 48 hours prior to beginning work on-site and obtain grading permit. (1 day)
3. Clear and grub for sediment and erosion control measures or devices only. (7 days)
4. Install all sediment and erosion control measures and devices including stabilized construction entrance(s). (10 days)
5. Notify Howard County Department of Inspections, Licenses and Permits upon completion of the installation work noted above. (1 day)
6. With the approval of the Howard County Department of Inspections, Licenses and Permits, clear and grub the remainder of the site and stabilize immediately. (21 days)
7. Begin excavation and installation of utilities. Work shall be limited to that which can be backfilled and stabilized in one day per Standard Sediment Control Note No. 11. Stabilize work area at the end of each work day. (455 days)
8. Connect to existing utilities where applicable. (7 days)
9. With permission from the Sediment Control Inspector, remove stabilized construction entrance(s). (2 days)
10. Stabilize all disturbed areas. (14 days)
11. Following approval from the Howard County Department of Inspections, Licenses and Permits Inspector, remove all remaining sediment control measures and stabilize any remaining areas. (7 days)

- ### 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 (410-313-1855).
 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 1994 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 47 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
 4. ALL SEDIMENT TRAPS/BASINS MUST BE FENCED AND WARNING SIGNS POSTED AROUND THE PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
 5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING, AND MULCHING (SEC. G.). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL 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	5.5 ACRES
AREA TO BE ROOFED OR PAVED	0.5 ACRES
AREA TO BE VEGETATIVELY STABILIZED	5.0 ACRES
TOTAL CUT	11,462 CU. YARDS
TOTAL FILL	11,462 CU. YARDS

 OFFSITE WASTE AREA LOCATION TO HAVE ACTIVE GRADING PERMIT
 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 CONTROLS 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 THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY.
 12. SITE GRADING WILL BEGIN ONLY AFTER ALL PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN A FUNCTIONING CONDITION.
 13. SEDIMENT WILL BE REMOVED FROM TRAPS WHEN ITS DEPTH REACHES CLEAN OUT ELEVATION SHOWN ON THE PLANS.
 14. CUT AND FILL QUANTITIES PROVIDED UNDER SITE ANALYSIS DO NOT REPRESENT BID QUANTITIES. THESE QUANTITIES DO NOT DISTINGUISH BETWEEN TOPSOIL, STRUCTURAL FILL OR EMBANKMENT MATERIAL, NOR DO THEY REFLECT CONSIDERATION OF UNDERCUTTING OR REMOVAL OF UNSUITABLE MATERIAL. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITE CONDITIONS WHICH MAY AFFECT THE WORK.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

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 buffers, 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 buffers, or waterways, or permanent modification of the 100-year flood plain in excess of that lost under the originally authorized structure or fill.
6. Rectify any nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year flood plain 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 for 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. The area should be seeded and mulched to reduce erosion after construction activities have been completed.
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 classification of the stream:

Use I waters: In-stream work shall not be conducted during the period of 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 the aquatic species, unless the purpose of the activity is to impound water.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D - 14 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 2/10/09
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/10/09
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 2/10/09
BUREAU OF UTILITIES DATE

[Signature] 2-10-09
CHIEF, UTILITY DESIGN DIVISION DATE

GMB
GEORGE, MILES & BUHR, LLC
ARCHITECTS & ENGINEERS
SAUSURY - BALTIMORE - LEVIES - SEAFORD - YORK
www.gmbnet.com

DES: D.A.V.
DRN: M.A.D.
CHK: W.B.F.
DATE: 2/5/09

BY NO. REVISION DATE

EROSION AND SEDIMENT CONTROL DETAILS

600 SCALE MAP NO. 42 & 47 BLOCK NO. 22 & 4

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT NO. S-6175
CONTRACT NO. 20-4534
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 11 OF 15

AS-BUILT: 1-17-2011

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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 WARRANTY 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 PREPARATION**
- i. TEMPORARY SEEDING
 - a. SEEDBED PREPARATION SHALL CONSIST OF LOOSENING SOIL TO A DEPTH OF 3"-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 SERCEIA 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 TEST 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.
 - e. SEE TECHNICAL SPECIFICATIONS, SECTION 02260, FOR SPECIAL REQUIREMENTS.

- 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 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 THE 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. PER ACRE; K20 (POTASSIUM): 200 LBS. PER ACRE.
 - 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" 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 WEEDS 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 10mm, DIAMETER APPROXIMATELY 1mm, 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 PER 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 PER 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 OF 50 LBS. OF WOOD CELLULOSE FIBER PER 100 GALLONS OF 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 THE SIZE OF THE AREA AND EROSION HAZARD:
- i. A MULCH ANCHORING TOOL IS A TRACTOR-DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE 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 LBS. PER ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LBS. OF WOOD CELLULOSE FIBER PER 100 GALLONS 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 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'-15' WIDE AND 300'-3,000' 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 1 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 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.

- 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 GRADING OPERATION CEASES 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 5, 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.

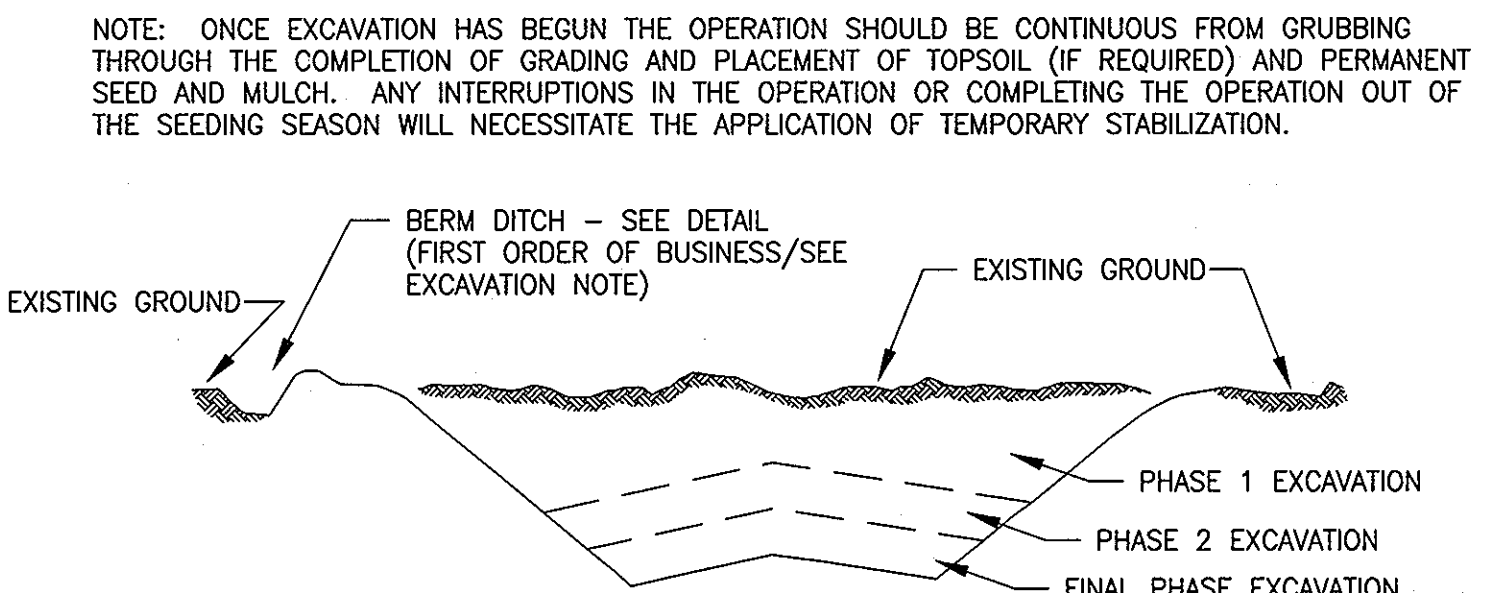


FIGURE 4: INCREMENTAL STABILIZATION - CUT

- iii. THIS SITE HAS A DISTURBED AREA OVER 5 ACRES, THEREFORE, 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. PER 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	
1	CREeping RED FESCUE (30%) CHEWINGS FESCUE (30%) ROUGH BLUE GRASS (20%) CATALINA PERENNIAL RYEGRASS (20%)	200	3/1-5/15 AND 8/15-10/15	1"	90 lb/ac (2.0 lb/1000 sf)	175 lb/ac (4 lb/1000 sf)	175 lb/ac (4 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)

SECTION IV - SOD

- TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).
- A. GENERAL SPECIFICATIONS**
- i. CLASS OF TURFGRASS SOD SHALL BE MARYLAND OR VIRGINIA STATE CERTIFIED OR APPROVED. SOD 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 SUPPLIER'S WIDTH AND LENGTH. MAXIMUM ALLOWABLE DEVIATION FROM STANDARD WIDTHS AND LENGTHS SHALL BE 5%. BROKEN PADS AND TORN OR UNEVEN EDGES 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% 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 STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
 - 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 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.

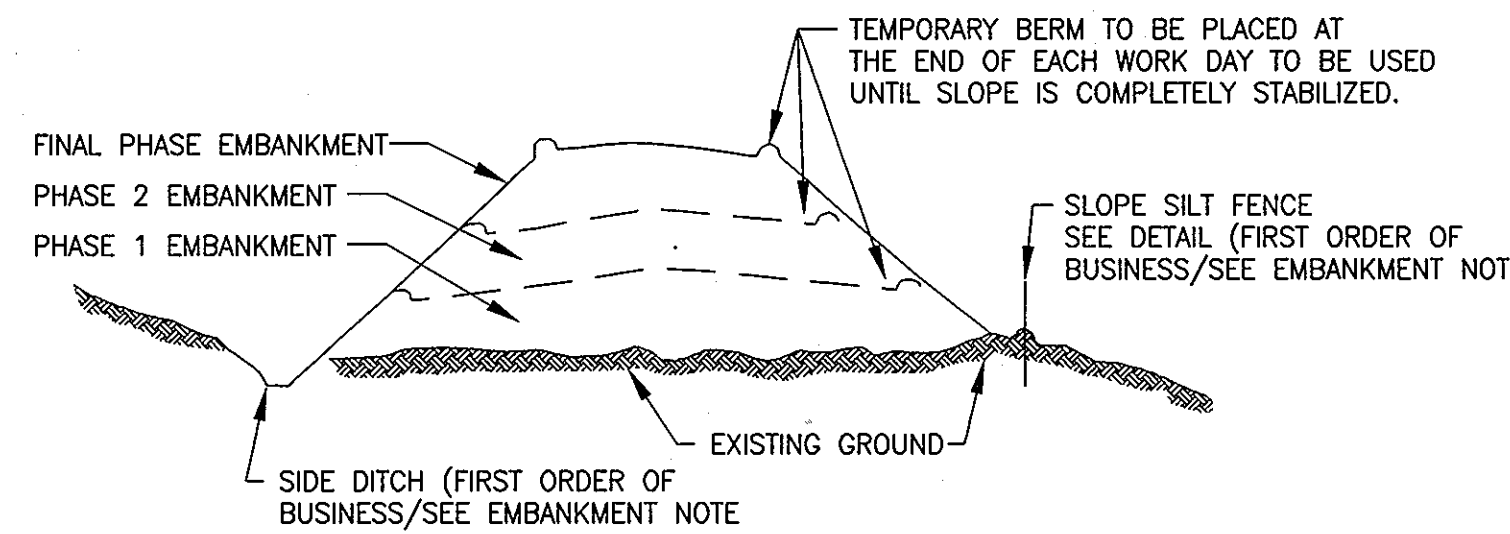


FIGURE 5: INCREMENTAL STABILIZATION - FILL

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 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		
	RYE PLUS FOXTAIL MILLET	150	3/1-4/30 5/1-8/14 8/15-11/15	1"	600 lb/ac (15 lb/1000sf)	2 tons/ac 100 lb/1000sf

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 SEEDING 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 OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-SCS FIELD OFFICE TECHNICAL GUIDE, SECTION 342 - CRITICAL AREA PLANTING. FOR SPECIAL LAWN MAINTENANCE AREAS, SEE SECTIONS IV SOD AND V TURFGRASS.

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND			
[Signature] DIRECTOR OF PUBLIC WORKS	2/6/09 DATE	[Signature] CHIEF, BUREAU OF ENGINEERING	2/10/09 DATE
[Signature] BUREAU OF UTILITIES	2/11/09 DATE	[Signature] CHIEF, UTILITY DESIGN DIVISION	2-10-09 DATE

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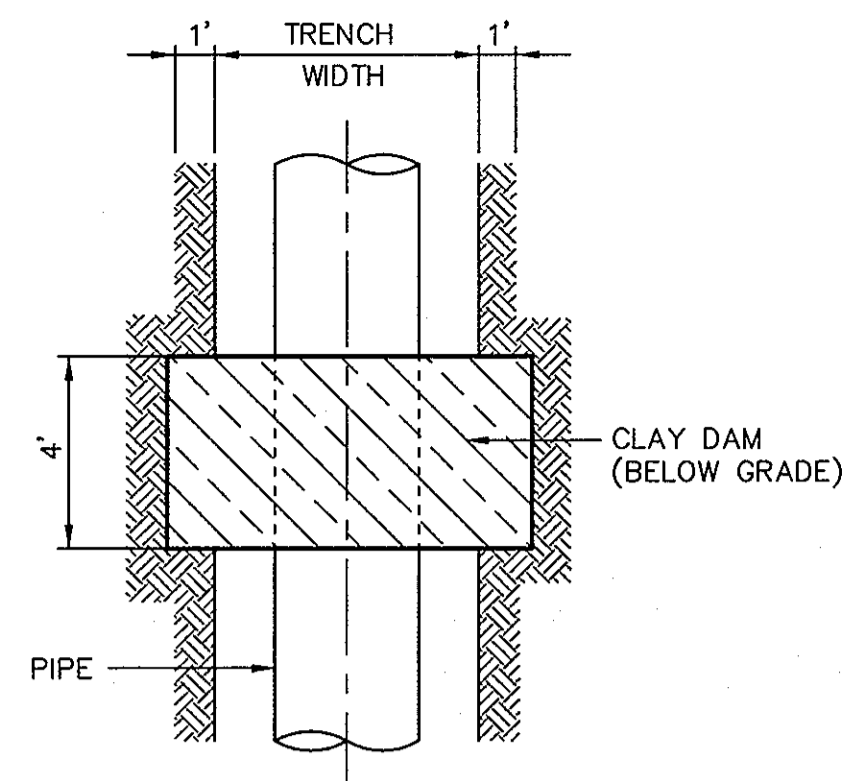
DES: D.A.V.			
DRN: M.A.D.			
CHK: W.B.F.			
DATE: 2/5/09			
BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL DETAILS

600 SCALE MAP NO. 42 & 47 BLOCK NO. 22 & 4

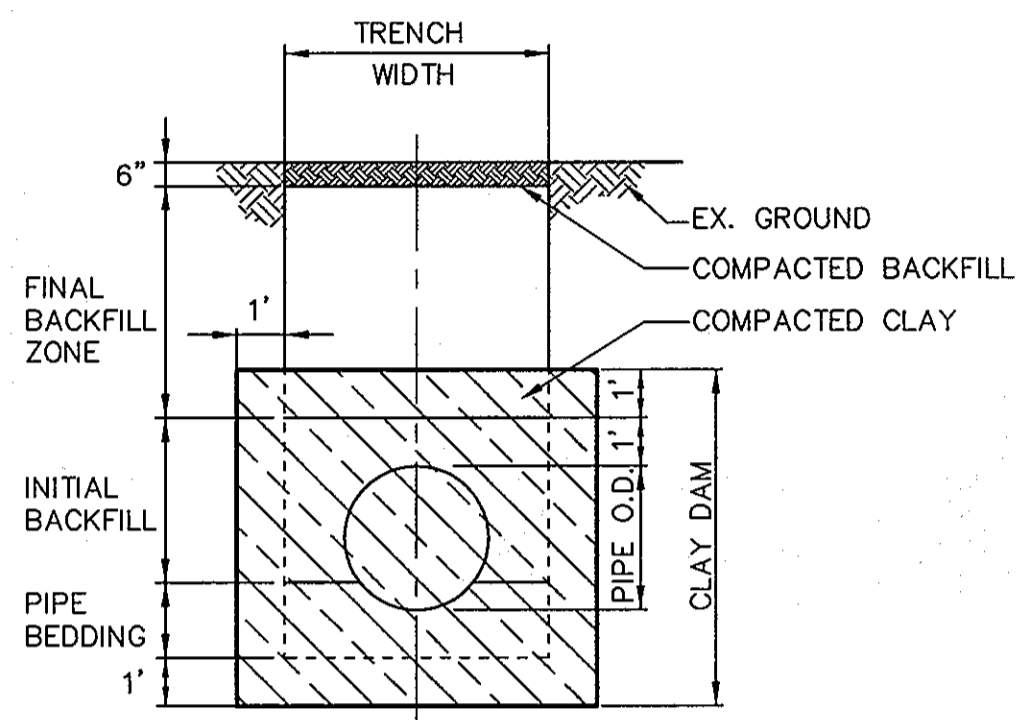
**LITTLE PATUXENT
 PARALLEL INTERCEPTOR SEWER**
 CAPITAL PROJECT NO. S-6175
 CONTRACT NO. 20-4534
 6TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 12 OF 15

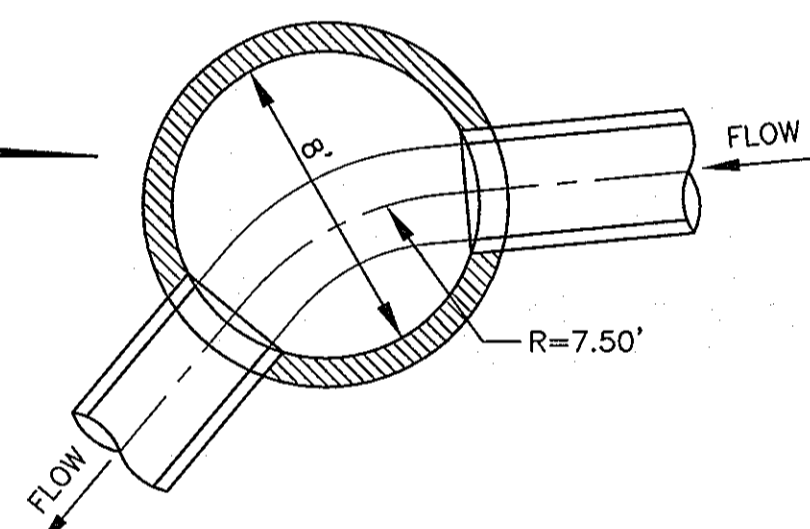


CLAY DAM NOTES

1. CLAY DAM SHALL BE INSTALLED AT INTERVALS NO GREATER THAN 500 FEET AND AS SHOWN ON THE PLANS.
2. CLAY DAM LENGTH SHALL BE 4 FEET ALONG THE PIPE AXIS, AND SHALL BE PLACED FROM UNDERCUT SUBGRADE OR TRENCH SUBGRADE UP TO 1 FOOT OVER THE INITIAL BACKFILL.
3. PLACE CLAY DAM IN 6" LIFTS, USING CLAY MEETING THE REQUIREMENTS OF AASHTO M145 SOIL GROUPS A-6 OR A-7 AND COMPACT TO MIN. 92%.
4. NO STONE SHALL BE USED IN THE BOTTOM OF THE TRENCH OR IN THE FINAL BACKFILL ZONE ALONG THE LENGTH OF THE DAM.



CLAY DAM TYPICAL PIPE BEDDING DETAIL
NO SCALE

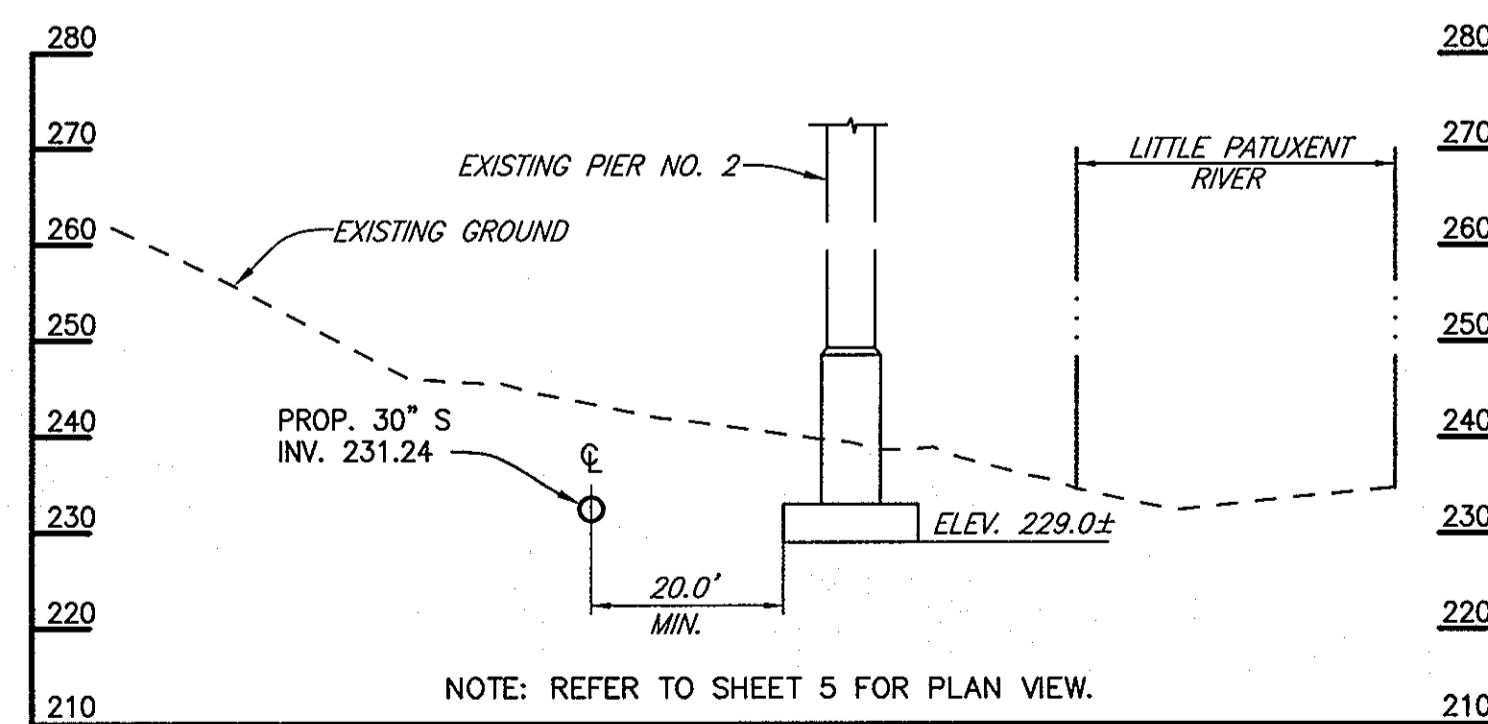


NOTES:

1. THE CENTERLINE OF ALL PIPES ENTERING A MANHOLE SHALL INTERSECT WITHIN 1"± OF THE LONGITUDINAL AXIS OF THE MANHOLE BARREL (CENTER).
2. MANHOLE CHANNEL AND BENCH SHALL BE PRECAST OR FORMED USING SEWER BRICK (ASTM DESIGNATION C32-73, GRADE SM, SIZE NO. 1).
3. CHANNEL SHALL PROVIDE SMOOTH HYDRAULIC TRANSITION BETWEEN PIPES.
4. MINIMUM CENTERLINE CHANNEL RADIUS SHALL BE 2.5 x OUTLET PIPE DIAMETER.

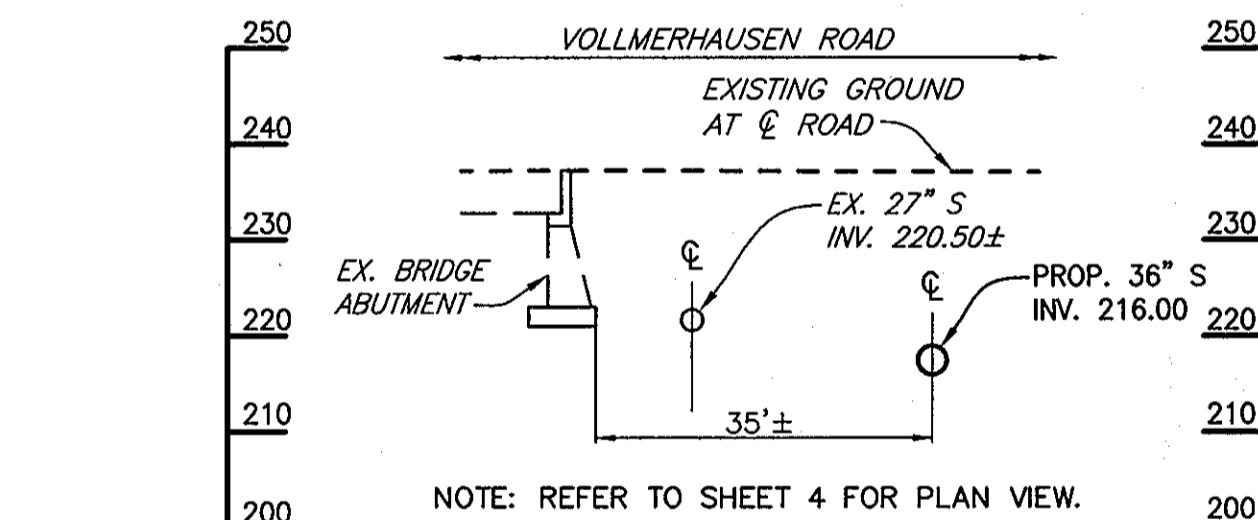
MANHOLE CHANNEL CONFIGURATION DETAIL

SCALE: 1" = 5'



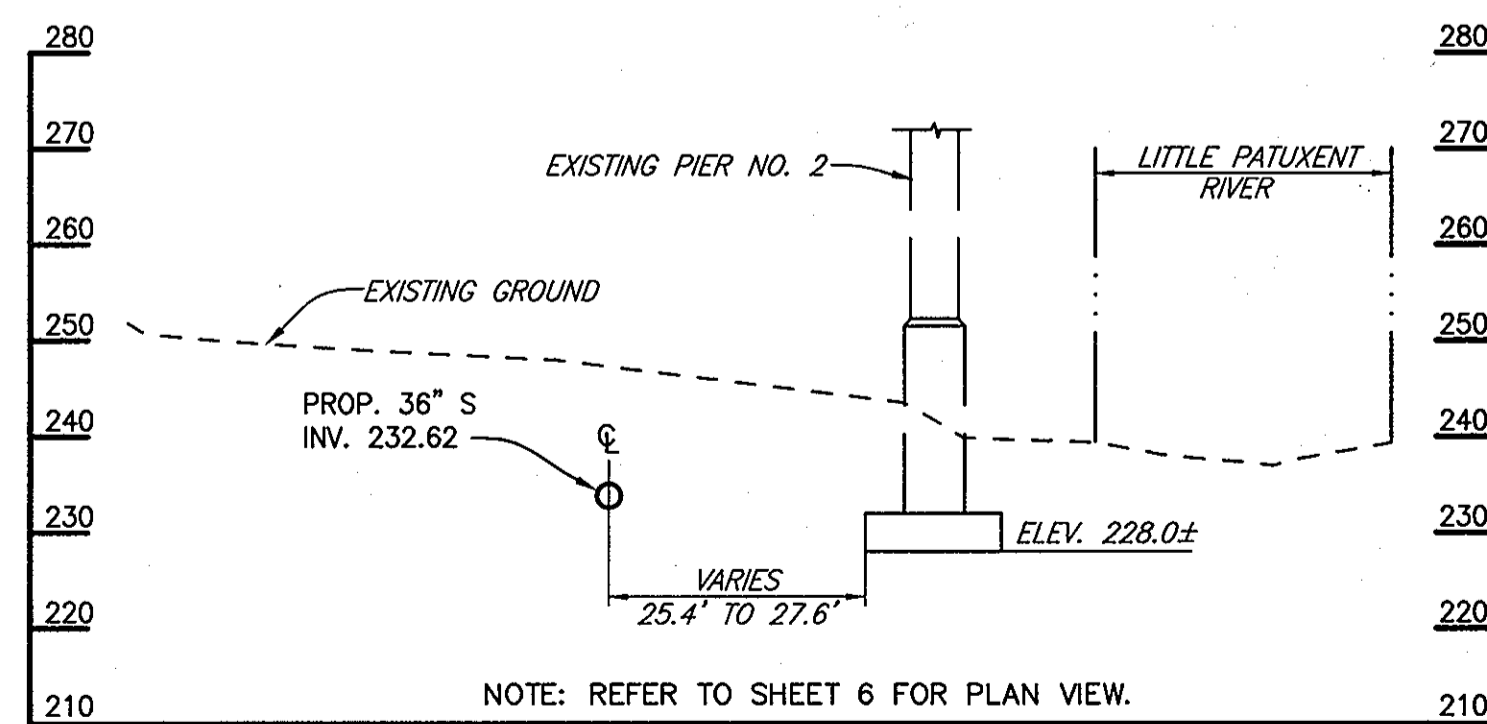
SECTION B-B THRU NORTHBOUND I-95 OVERPASS

SCALE: 1" = 20'



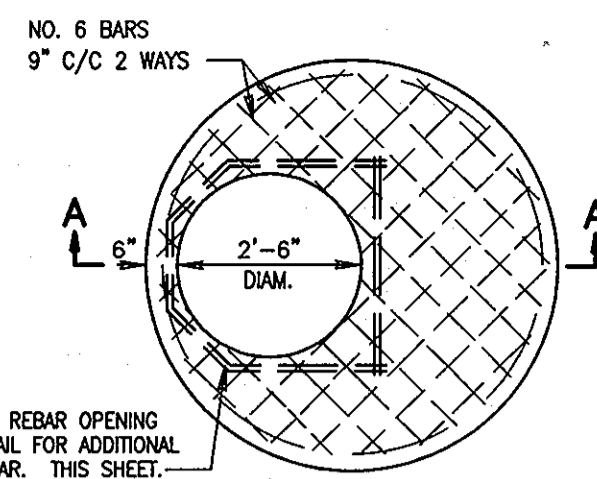
SECTION A-A THRU VOLLMERHAUSEN ROAD BRIDGE

SCALE: 1" = 20'

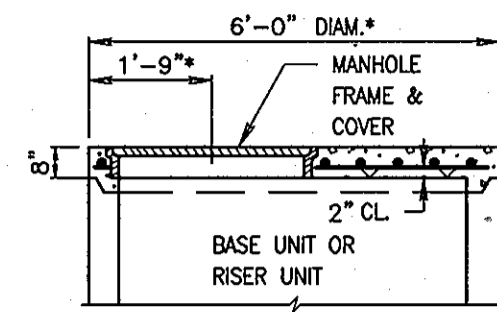


SECTION C-C THRU SOUTHBOUND I-95 OVERPASS

SCALE: 1" = 20'



FLAT SLAB TOP
(SHOWN WITHOUT FRAME & COVER)



SECTION A-A

NOTES

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C-478 AND THE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON STANDARD DETAIL G-5.11.
2. CONCRETE SHALL BE MIX NO.6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE UNITS AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.23 IN. ²/FT FOR THE 60" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185 AND A-92. REINFORCEMENT BARS SHALL MEET ASTM A-615, GRADE 60.
4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.23 IN. ²/FT. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER-TIGHT USING RUBBER O-RING GASKETS MEETING ASTM A-361 & C-443.
6. MINIMUM DISTANCE BETWEEN PIPE OPENINGS IN MANHOLE WALL SHALL BE 12 INCHES.
7. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
8. MIX NO.2 PRECAST CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED AND SHALL SLOPE TOWARD OUTLET AS DIRECTED BY THE ENGINEER.
9. NO MORE THAN ONE 1" RISER SECTION MAY BE USED PER MANHOLE.
10. MANHOLE INTERIOR LINER IS REQUIRED. REFER TO "SANITARY SEWER MANHOLES" SECTION OF THE SPECIAL PROVISIONS.

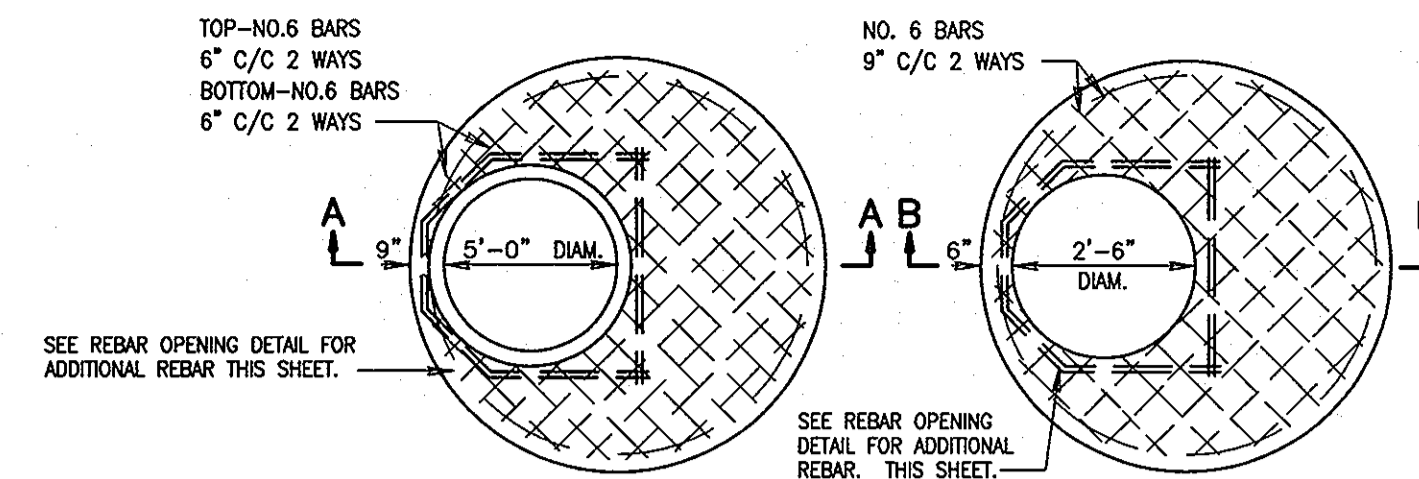
* DIMENSIONS TO BE CONFIRMED BY THE MANUFACTURER

NOTE: "STANDARD DETAIL" REFERS TO DETAILS IN HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.

SECTION VIEW

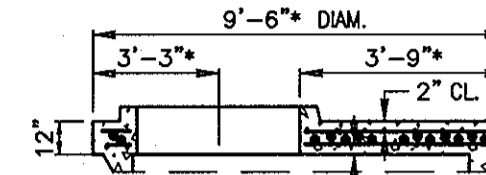
5'-0" DIAMETER PRECAST MANHOLE

NO SCALE

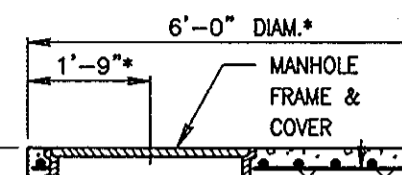


FLATOP REDUCER

FLAT SLAB TOP
(SHOWN WITHOUT FRAME & COVER)



SECTION A-A



SECTION B-B

NOTES

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C-478 AND THE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON STANDARD DETAIL G-5.11.
2. CONCRETE SHALL BE MIX NO.6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE UNITS AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.37 IN. ²/FT FOR THE 96" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185 AND A-92. REINFORCEMENT BARS SHALL MEET ASTM A-615, GRADE 60.
4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.37 IN. ²/FT. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER-TIGHT USING RUBBER O-RING GASKETS MEETING ASTM A-361 & C-443.
6. MINIMUM DISTANCE BETWEEN PIPE OPENINGS IN MANHOLE WALL SHALL BE 12 INCHES.
7. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
8. MIX NO.2 PRECAST CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED AND SHALL SLOPE TOWARD OUTLET AS DIRECTED BY THE ENGINEER.
9. NO MORE THAN ONE 1" RISER SECTION MAY BE USED PER MANHOLE.
10. MANHOLE INTERIOR LINER IS REQUIRED. REFER TO "SANITARY SEWER MANHOLES" SECTION OF THE SPECIAL PROVISIONS.

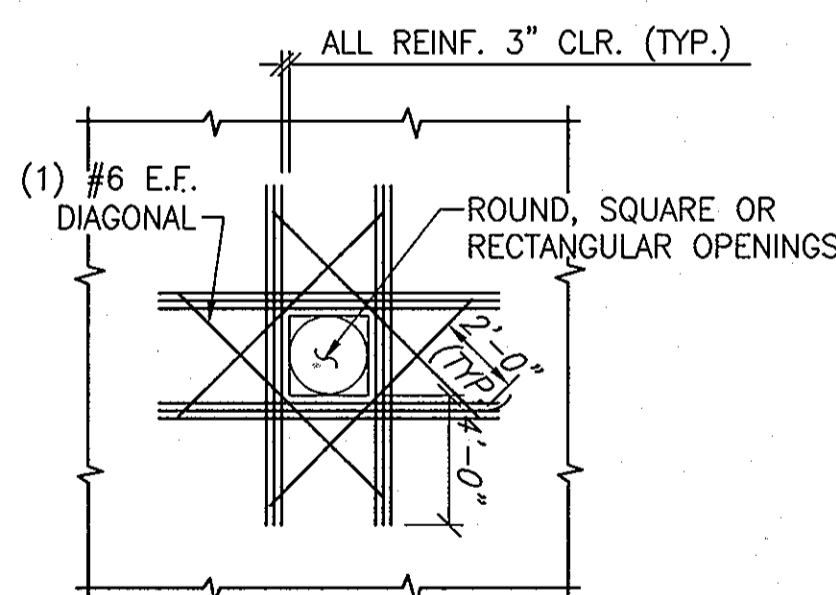
* DIMENSIONS TO BE CONFIRMED BY THE MANUFACTURER

NOTE: "STANDARD DETAIL" REFERS TO DETAILS IN HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.

SECTION VIEW

8'-0" DIAMETER PRECAST MANHOLE

NO SCALE

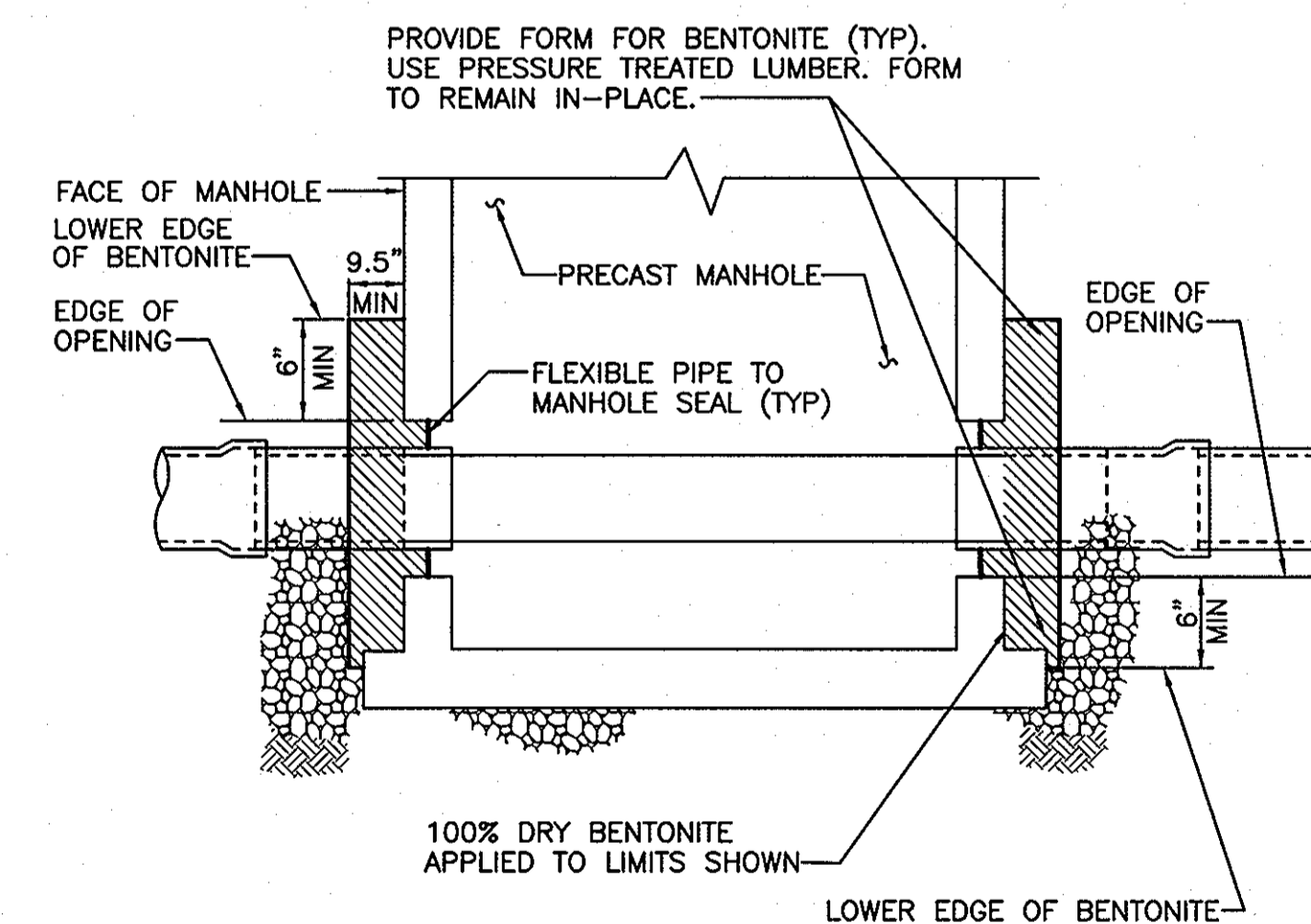


NOTE:

1. PROVIDE ADDITIONAL REINFORCING, (MINIMUM OF ONE-HALF THE NUMBER OF PRINCIPLE REINFORCING BARS BEING INTERRUPTED BY THE OPENING AT EACH FACE ON EACH SIDE).
2. FOR OPENINGS LESS THAN 12" DIA., NO ADDITIONAL REINFORCING IS REQUIRED PROVIDED, NO REINFORCING IS INTERRUPTED BY THE OPENING.

REBAR OPENING DETAIL

NO SCALE



PIPE TO MANHOLE CONNECTION

NO SCALE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 2/10/09
 Chief, Bureau of Engineering: *[Signature]* 2/10/09
 Chief, Utility Design Division: *[Signature]* 2-10-09
 Bureau of Utilities: *[Signature]* 2/10/09

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GEORGE, MILES & BUHR, LLC
ARCHITECTS & ENGINEERS
SALISBURY - BALTIMORE - LEWES - SEAFORD - YORK
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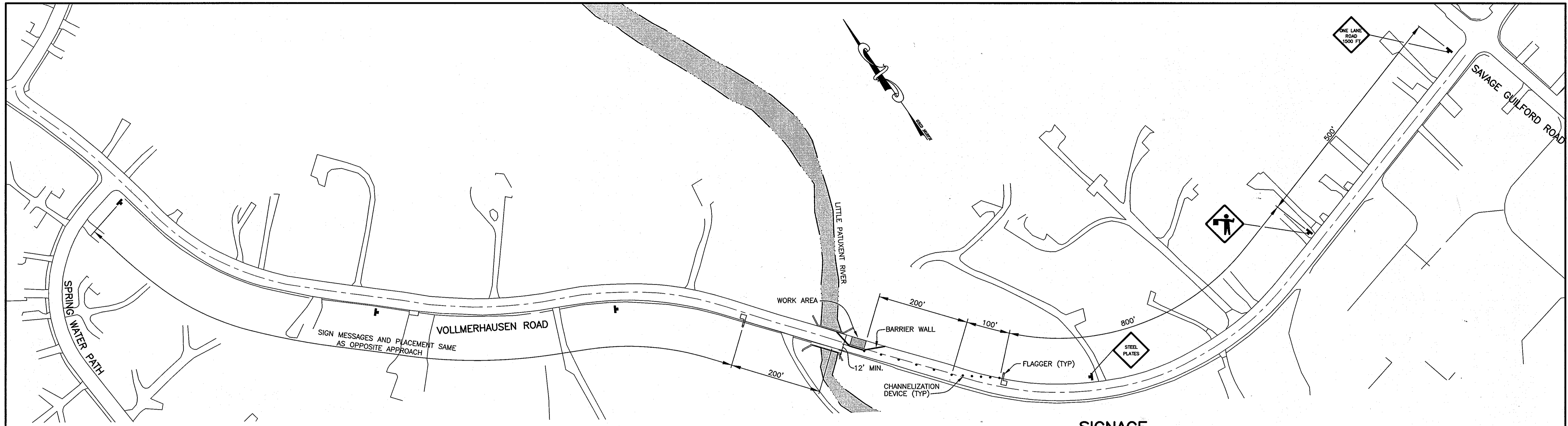
DES: D.A.V.			
DRN: M.A.D.			
CHK: W.B.F.			
DATE: 2/5/09	BY: NO.	REVISION	DATE

CONSTRUCTION DETAILS

600 SCALE MAP NO. 42 & 47 BLOCK NO. 22 & 4

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT NO. S-6175
CONTRACT NO. 20-4534
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 13 OF 15



WESTBOUND LANE
SCALE: 1" = 100'

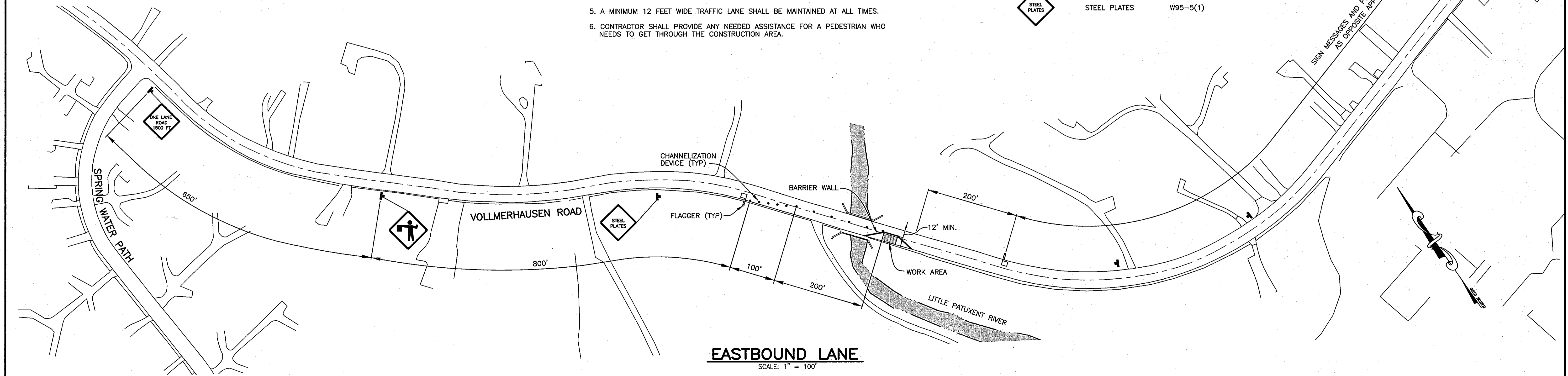
NOTES:

1. THIS DRAWING SHALL BE USED IN COMBINATION WITH THE SHA GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-62, MD 104.02-10 AND MD 104.06-14.
2. CONTRACTOR SHALL USE FLAGGER TO CONTROL TRAFFIC WHEN CONSTRUCTION VEHICLES ARE ENTERING AND EXITING THE CONSTRUCTION SITE.
3. WORK IN VOLLMERHAUSEN ROAD, INCLUDING LANE CLOSURES, IS LIMITED TO BETWEEN 9:00 AM AND 4:00 PM.
4. OPEN TRENCHES SHALL BE BACKFILLED AND STABILIZED OR COVERED WITH STEEL PLATES AT THE END OF EACH WORK DAY.
5. A MINIMUM 12 FEET WIDE TRAFFIC LANE SHALL BE MAINTAINED AT ALL TIMES.
6. CONTRACTOR SHALL PROVIDE ANY NEEDED ASSISTANCE FOR A PEDESTRIAN WHO NEEDS TO GET THROUGH THE CONSTRUCTION AREA.

SIGNAGE

DETAIL	NAME	REFERENCE
	FLAGGER	W20-7a
	ONE LANE ROAD - 1500 FT	W20-4
	STEEL PLATES	W95-5(1)

EASTBOUND LANE
SCALE: 1" = 100'



G:\DRAWINGS\2005-212_LITTLE_PATUXENT_SEWER\DWG\CURRENT\Contract_410-15-NOT.dwg, 2/16/2009 3:34:53 PM, HP Design/Plot 1055CM by HP.pcl

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND		 GMB GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS SALISBURY • BALTIMORE • LEWES • SEAFORD • YORK www.gmbnet.com	 DES: D.A.V. DRN: M.A.D. CHK: W.B.F. DATE: 2/5/09	VOLLMERHAUSEN ROAD MAINTENANCE OF TRAFFIC PLAN	LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4534 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 15 OF 15
Director of Public Works <i>[Signature]</i> DATE: 2/10/09	Chief, Bureau of Engineering <i>[Signature]</i> DATE: 2-10-09					

BY	NO.	REVISION	DATE

600 SCALE MAP NO. 42 & 47 BLOCK NO. 22 & 4