

VICINITY MAP
SCALE : 1" = 600'

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT S-6175 CONTRACT NO. 20-4541 HOWARD COUNTY, MARYLAND

TYPE OF BUILDING:	RESIDENTIAL/COMMERCIAL
NUMBER OF PARCELS:	N/A
WATER HOUSE CONNECTIONS:	N/A
SEWER HOUSE CONNECTIONS:	N/A
DRAINAGE AREA:	LITTLE PATUXENT

INDEX OF SHEETS	
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5	PLAN AND PROFILE SHEET
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7	MISCELLANEOUS DETAILS
8	JUNCTION CHAMBER PLAN
9	JUNCTION CHAMBER REINFORCEMENT & CAST IN PLACE CONCRETE NOTES
10	JUNCTION CHAMBER DETAILS
11	BY-PASS PLAN AND DETAILS
12	ACCESS ROAD PLAN AND PROFILE
13	MAINTENANCE OF TRAFFIC ACCESS ROAD PLAN
14	EROSION AND SEDIMENT CONTROL PLAN
15	EROSION AND SEDIMENT CONTROL PLAN
16	EROSION AND SEDIMENT CONTROL PLAN & DETAILS
17	EROSION AND SEDIMENT CONTROL NOTES & DETAILS
18	EROSION AND SEDIMENT CONTROL NOTES & DETAILS
19	EROSION AND SEDIMENT CONTROL NOTES, DETAILS, & BMPS

BILL OF MATERIALS				
ITEM	ESTIMATED QUANTITY	MATERIAL	AS-BUILT QUANTITY	SUPPLIER
12" SEWER	36 LF	PVC-FRP	25.4 LF	J.M. YARDSTOCK
30" SEWER	632 LF	PVC-FRP	277/344	GRIFFEN/HOBAS
36" SEWER	2,097 LF	PVC-FRP	2084 LF	HOBAS
* 60" Ø CASING	599 LF	STEEL	619 LF	PERMA LOCK
5' MANHOLE	5 EA.	CONC/BRICK	7 EA.	ATLANTIC
6' MANHOLE	2 EA.	CONC/BRICK	2 EA.	ATLANTIC
5' ADDITIONAL MH	31 V.F.	CONC/BRICK	29 V.F.	ATLANTIC
6' ADDITIONAL MH	11 V.F.	CONC/BRICK	10.7 V.F.	ATLANTIC
JUNCTION CHAMBER	1 EA.	CONC/BRICK	1 EA.	AGGREGATE IND.

* CASING ONLY, DOES NOT INCLUDE CARRIER PIPE

NAME OF UTILITY CONTRACTOR : W.F. WILSON

CHECK BOX :

AS-BUILT DATE :

Sediment control measures for this contract will be implemented in accordance with Section 219 of the Specifications and as shown on these plans.

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

John P. Roberts 2/2/11
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.

Paul K. Spason 1/20/11
DEVELOPER DATE

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REFERS TO A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Thomas N. Dallapala 1/17/11
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. 10966, EXPIRATION DATE MAY 31, 2012.

Thomas N. Dallapala 1/17/11
THOMAS N. DALLAPALA DATE

AS-BUILTS DATE 04-26-12

ESC 1 OF 7

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John P. Roberts 1/31/11
DIRECTOR OF PUBLIC WORKS DATE

Paul K. Spason 1/20/11
CHIEF, BUREAU OF ENGINEERING DATE

John P. Roberts 1/31/11
CHIEF, BUREAU OF UTILITIES DATE

Paul K. Spason 1/20/11
CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2862
410.285.9500
FAX: 410.285.8875



DES: LAL	LAL	REVISED WETLAND LIMIT AND WETLAND BUFFER LIMIT	2/19/11
DRN: CD			
CHK: TND			
DATE: 1.17.11	BY: NO.	REVISIONS	DATE

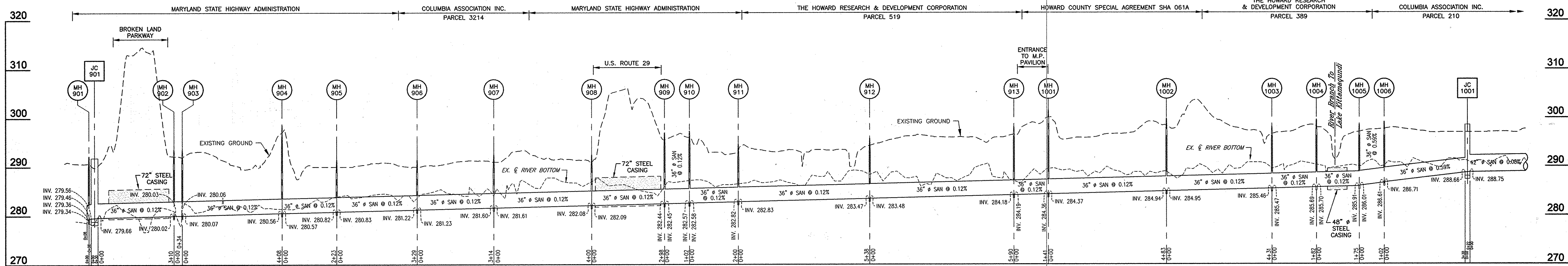
TITLE SHEET

600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE: SHOWN
SHEET 1 OF 19

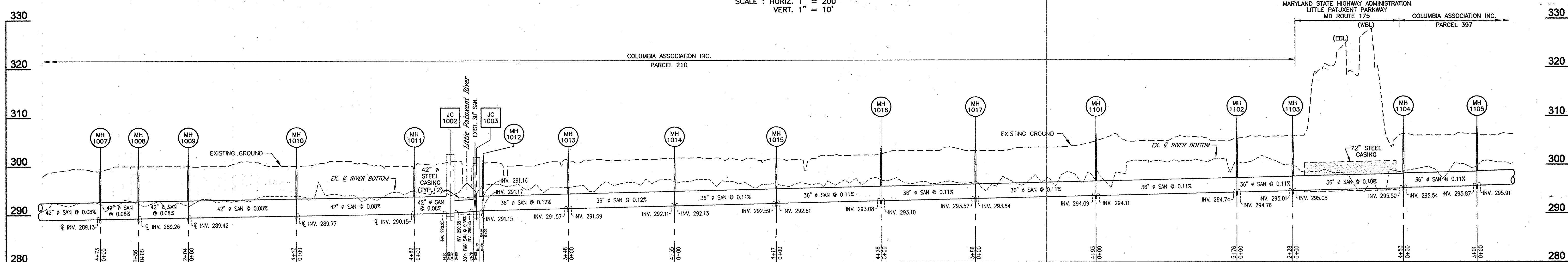


CONTRACT NO. 20-4539 (NOT IN CONTRACT)

CONTRACT NO. 20-4540 (NOT IN CONTRACT)

PROFILE

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



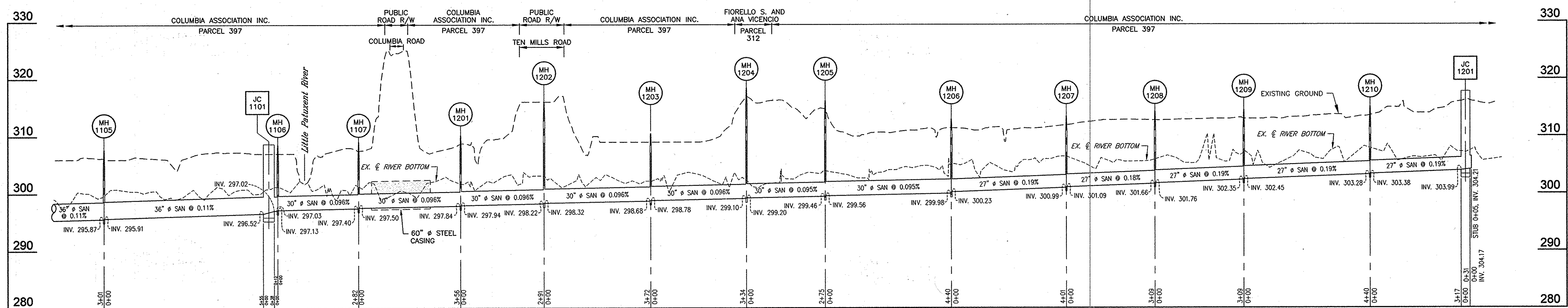
CONTRACT NO. 20-4540 (NOT IN CONTRACT)

CONTRACT NO. 20-4541

PROFILE

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

SEE SHEETS 4 & 5 FOR ASBUILT INFORMATION



CONTRACT NO. 20-4541

CONTRACT NO. 20-4636 (NOT IN CONTRACT)

PROFILE

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

AS-BUILTS DATE 04-26-12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND



DES: LAL			
DRN: CD			
CHK: TND			
DATE: 1.17.11	BY NO.	REVISIONS	DATE

OVERALL PROFILE

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

SCALE:
SHOWN
SHEET
2 OF 19

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

Project: 04-26-12, File: 04-26-12, 11, 2011, 11:52am
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 User: [Name], Date: 11/20/11, 5:31pm
 XREFS: -SPL\Project\04-26-12-Little Patuxent Interceptor\CAD\SECTION_X1\01-00-LP1-X1-Building

GENERAL NOTES

- 1. Approximate location of existing mains are shown. The Contractor shall take all necessary precautions to protect existing mains and services and maintain uninterrupted service. Any damage incurred shall be repaired immediately to the satisfaction of the Engineer by the Contractor at the Contractor's expense.
2. Topographic field surveys were performed in August of 2006 by Dewberry & Davis LLC.
3. Horizontal and Vertical Survey Controls: The coordinates shown on the drawings are based on Maryland State Reference System NAD 83/91 as projected by Howard County Geodetic Control Stations Howard Co. B.M. 30 BA and B.M. 30 G4. All vertical control are based on NAVD 88. Vertical controls provided on the drawings are B.M. 30 BA and B.M. 30 G4.
4. All pipe elevations shown are invert elevations unless otherwise noted on the plans.
5. Clear all utilities by a minimum of 12". Clear all poles by 5'-0" minimum or tunnel as required unless otherwise noted. The owner has contacted the utility companies and has made arrangements for bracing of poles as shown on the drawings. In the event the Contractor's work requires the bracing of additional poles, any cost incurred by the owner for the bracing of additional poles or damages shall be deducted from monies owed the Contractor. The Contractor shall coordinate with the utility companies to schedule the bracing of the poles.
6. For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The Contractor shall have a copy of Volume IV on the job at all times.
7. All existing utilities shall be test pitted/located as necessary and in advance of the proposed construction, in order to properly make all required utility crossings and/or connections. Any discrepancies or utility conflicts shall be immediately reported to the Engineer. Where test pits have been made on existing utilities, they are noted by the symbol [] at the location of the test pit. A note or notes containing the results of the test pit or pits is included on the drawings or specifications. Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the Contractor two (2) weeks in advance of construction operations at his own expense.
8. Contractor shall notify the following utility companies or agencies at least five (5) working days before starting work shown on these plans:
AT&T 1-800-252-1133
BGE - Contractor Services 410-850-4620
BGE - Emergency 410-685-1400
Colonial Pipeline Co. 410-795-1390
Howard County Bureau of Highways 410-313-7450
Howard County Bureau of Utilities (DPW) 410-313-4900
Miss Utility 1-800-257-7777
State Highway Administration 410-531-5533
Verizon 1-800-743-0033 / 410-224-9210
9. Trees and shrubs are to be protected from damage to the maximum extent. Trees and shrubs located within the construction strip are not to be removed or damaged by the Contractor.
10. Contractor shall remove trees, stumps and roots along the line of excavation. Payment for such removal shall be included in the unit price bid for construction of the main.
11. The Contractor shall notify the Howard County Bureau of Highways at (410) 313-7450 at least five (5) working days before any open cut, boring/jacking or trenchless installation operation of any county roads for laying water/sewer mains or house connections. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code.
12. The Contractor shall provide all necessary lines, grades and elevations, and cut sheets shall be prepared based on the lines and grades shown on the Contract drawings.
13. Spoil from trenching operations is to be placed on the uphill side of the trench.
14. MDE Tracking No. 20076408/07-NT-3268.
15. The Contractor shall be responsible for repairing and replacing any existing fences, concrete curb, driveways, paving, curb and gutter pan, paved park pathways*, ramps and bridges, etc. damaged or removed during construction. All disturbed areas shall be returned to their original or better condition.
16. All existing fill shall be removed from the 100 year floodplain & preconstruction contours shall be restored once the utility has been installed and substantially accepted.
17. There shall be no mounding or wasting of materials within the LOD.
18. Contractor will stockpile top 6" of excavated soil to be utilized for final layer of trench backfill 6" thick minimum. See Technical Specification 02660. Stockpile wetland topsoil separately for reinstatement of wetland.
19. Temporary culvert and/or bridge access crossings should be designed and submitted in advance for approval and constructed in accordance with MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION guidelines ISSUED SEPTEMBER 1999, REVISED NOVEMBER, 2000.
* Paved pathways in the LOD from MH 1105 through to MH 1201 will be replaced by the Columbia Association.

SANITARY SEWER MAIN NOTES

- 1. All sanitary sewer mains shall be FRP or PVC SDR 25 unless otherwise noted. For pipe to manhole and junction chamber connections, see Sheet 6.
2. Distances shown for the sanitary sewer main in profile are along the centerline of the pipe from manhole centerline to manhole centerline. Estimated quantities shown on the Bill of Materials exclude distances within manhole interiors.
3. Manhole diameters are as indicated on the plans.
4. Manholes designated as W.T. in Plan and Profile shall have water tight frames and covers similar to, Standard Detail G5.52 / G5.53 (and as specified in the Special Provisions). Where water tight frame and cover is used, set top of frame 1'-6" above existing ground unless otherwise noted on Drawings.

Table with 3 columns: CONTROL NO., COORDINATES (NORTHING, EASTING), ELEVATION. Rows include 30BA, 30G4, 36DB, 36DA, 36EA.

TRAVERSE TABLE with columns: NO., LOCATION. Lists various control points like KCI-215, LPS-15, KCI-220, etc.

STRUCTURE SCHEDULE with columns: STRUCTURE NUMBER, DETAIL SHEET NO., TYPE, LOCATION, INV. IN, INV. OUT, RIM ELEV. Lists structures like MH-1101, MH-1102, etc.

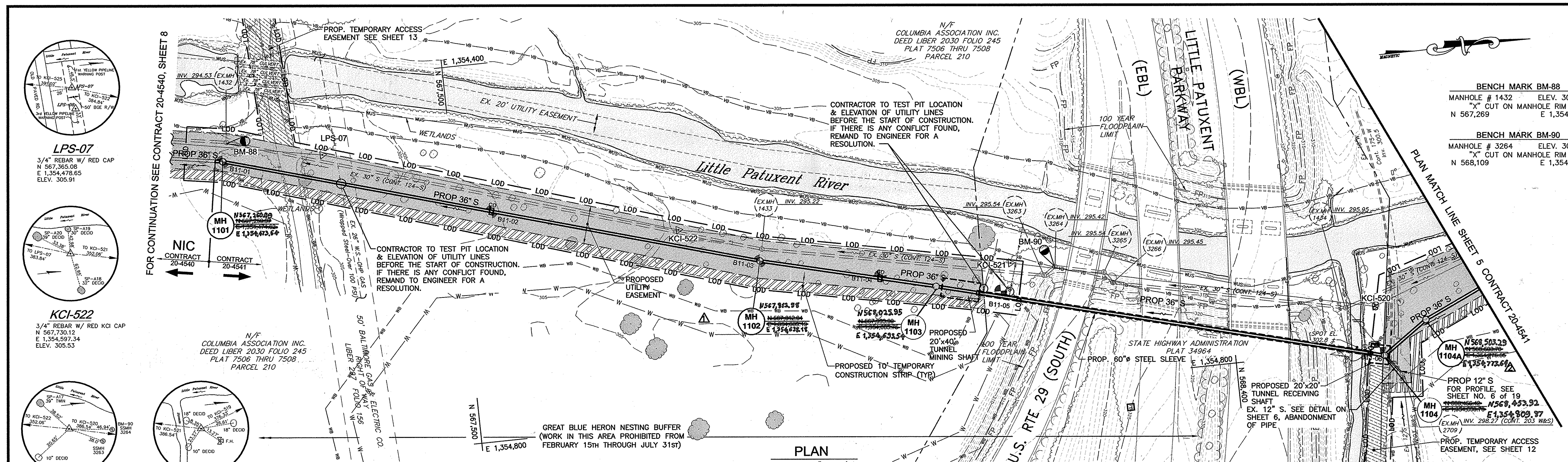
LEGEND

Legend symbols and descriptions for EX. BUILDING, EX. UNDERGROUND CABLE, EX. OVERHEAD ELECTRIC LINES, EX. 100 YR. FLOODPLAIN EASEMENT, EX. UTILITY EASEMENT, EX. UTILITY EASEMENT TO BE ABANDONED, EX. CHAIN LINK FENCE, EX. WOOD FENCE, EX. 100 YR. FLOODPLAIN, EX. UNDERGROUND GAS MAIN, EX. 5 & 10 FOOT CONTOURS, EX. 1 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. WATER MAIN, FIRE HYDRANT, VALVE & REDUCER, PROPOSED UTILITY EASEMENT, TEMPORARY CONSTRUCTION STRIP, TEMPORARY ACCESS EASEMENT, PROPOSED SANITARY SEWER MAIN, PROPOSED 10 FOOT CONTOUR, PROPOSED 2 FOOT CONTOUR, EARTH DIKE, LIMIT OF DISTURBANCE, SILT FENCE, SUPER SILT FENCE, TREE PROTECTION FENCE, ABANDONED EXISTING SEWER, EX. EVERGREEN TREE, EX. DECIDUOUS TREE, EX. SPECIMEN TREE (DEWBERRY), EX. SPECIMEN TREE (KCI), 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, CLAY DAM (SEE DETAIL SHEET 9), EX. PAVEMENT MARKINGS, EX. ROAD RIGHT-OF-WAY, EX. RIVER, EX. RAILROAD TRACKS, EX. SANITARY SEWER, EX. STORM DRAIN, EX. UNDERGROUND TELEPHONE LINE, EX. WOODS LINE, EX. SIDEWALK, EX. WALLS, EX. STREAM, EX. WATERS OF THE U.S., EX. WETLANDS, EX. WETLAND BUFFER, EX. VEGETATION BUFFER.

AS-BUILTS DATE 04-26-12

Project information footer including Department of Public Works, Dewberry & Davis LLC logo, project title LITTLE PATUXENT PARALLEL INTERCEPTOR, contract number 20-4541, sheet number 3 OF 19, and various signatures and dates.

Project: Little Patuxent Parkway, MD. Route 175 - Proposed Sewer and Stormwater Interceptor. Date: 04/26/12. Scale: 1" = 50'. Sheet: 4 of 19.



LPS-07
 3/4" REBAR W/ RED CAP
 N 567,365.08
 E 1,354,478.65
 ELEV. 305.91

KCI-522
 3/4" REBAR W/ RED KCI CAP
 N 567,330.12
 E 1,354,597.34
 ELEV. 305.53

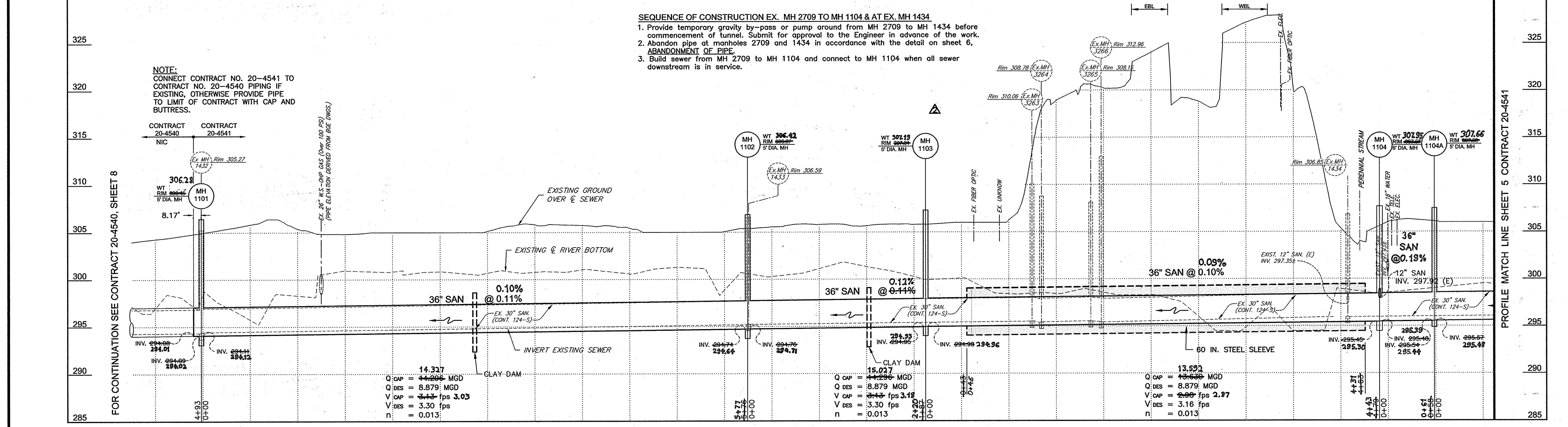
KCI-521
 3/4" REBAR W/ RED KCI CAP
 N 568,074.72
 E 1,354,689.42
 ELEV. 306.15

KCI-520
 3/4" REBAR W/ RED KCI CAP
 N 568,451.48
 E 1,354,755.78
 ELEV. 305.98

NOTE:
 THE LOD IS COINCIDENT WITH THE PROPOSED UTILITY EASEMENT LINE AND SHOWN FIVE (5) FEET OUTSIDE THE ACTUAL LIMIT OF DISTURBANCE FOR CLARITY

NOTE:
 FULL TRENCH COMPACTION SHALL BE REQUIRED IN THE AREA OF THE TUNNEL RECEIVING AND MINING SHAFTS ACCORDING TO HOWARD COUNTY DESIGN MANUAL VOL. IV, SECTION 1000.03.07(c)(i).

COLUMBIA ASSOCIATION INC. PARCEL 210 | LITTLE PATUXENT PARKWAY, MD. ROUTE 175 STATE HIGHWAY ADMINISTRATION | COLUMBIA ASSOCIATION INC. PARCEL 210



SEQUENCE OF CONSTRUCTION EX. MH 2709 TO MH 1104 & AT EX. MH 1434
 1. Provide temporary gravity by-pass or pump around from MH 2709 to MH 1434 before commencement of tunnel. Submit for approval to the Engineer in advance of the work.
 2. Abandon pipe at manholes 2709 and 1434 in accordance with the detail on sheet 6, ABANDONMENT OF PIPE.
 3. Build sewer from MH 2709 to MH 1104 and connect to MH 1104 when all sewer downstream is in service.

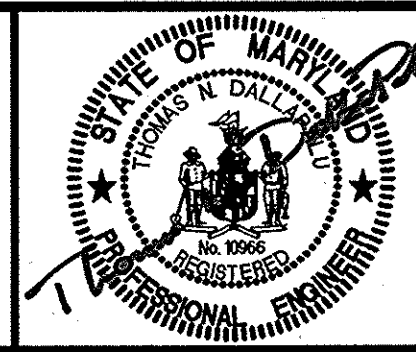
NOTE:
 CONNECT CONTRACT NO. 20-4541 TO CONTRACT NO. 20-4541 PIPING IF EXISTING, OTHERWISE PROVIDE PIPE TO LIMIT OF CONTRACT WITH CAP AND BUTTRESS.

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

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] DATE: 10/29/11
 Chief, Bureau of Engineering: [Signature] DATE: 9/25/11
 Chief, Utility Design Division: [Signature] DATE: 9/26/11

Dewberry & Davis LLC
 3105 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2662
 410.265.9500
 FAX: 410.265.8875



DES: LAL	LAL	REVISED WELAND LIMIT AND WETLAND BUFFER LIMIT	2/15/11
DRN: CD	LAL	REVISED ALIGNMENT MH 1102 THRU MH 1104A (ORIGINAL ALIGNMENT NOT SHOWN FOR CLARITY)	9/23/11
CHK: TND			
DATE: 1.17.11	BY NO.	REVISIONS	DATE

PLAN AND PROFILE SHEET

600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21 ELECTION DISTRICT NO. 5

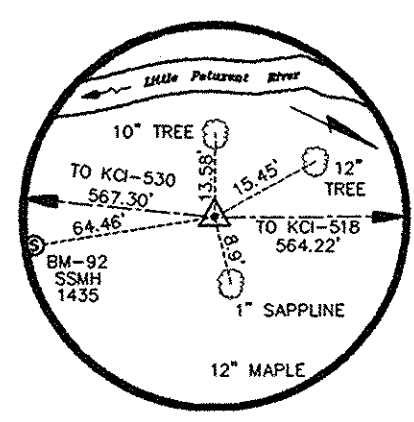
LITTLE PATUXENT PARALLEL INTERCEPTOR
 CAPITAL PROJECT S-6175
 CONTRACT NO. 20-4541
 HOWARD COUNTY, MARYLAND

SCALE: SHOWN
 SHEET 4 OF 19

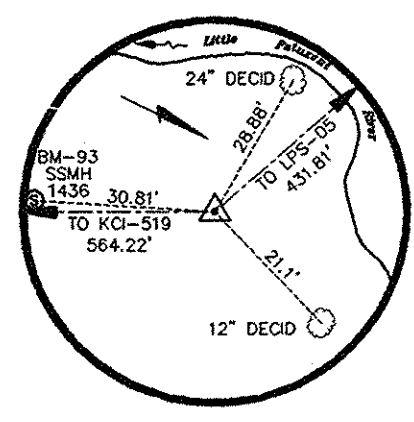
DATE 04-26-12 AS-BUILT

BENCH MARK BM-92
 MANHOLE # 1435 ELEV. 308.26
 "X" CUT ON MANHOLE RIM
 N 568,744 E 1,354,648

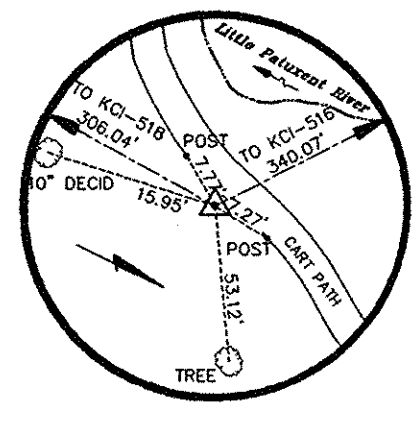
BENCH MARK BM-93
 MANHOLE # 1436 ELEV. 308.96
 "X" CUT ON MANHOLE RIM
 N 569,280 E 1,354,435



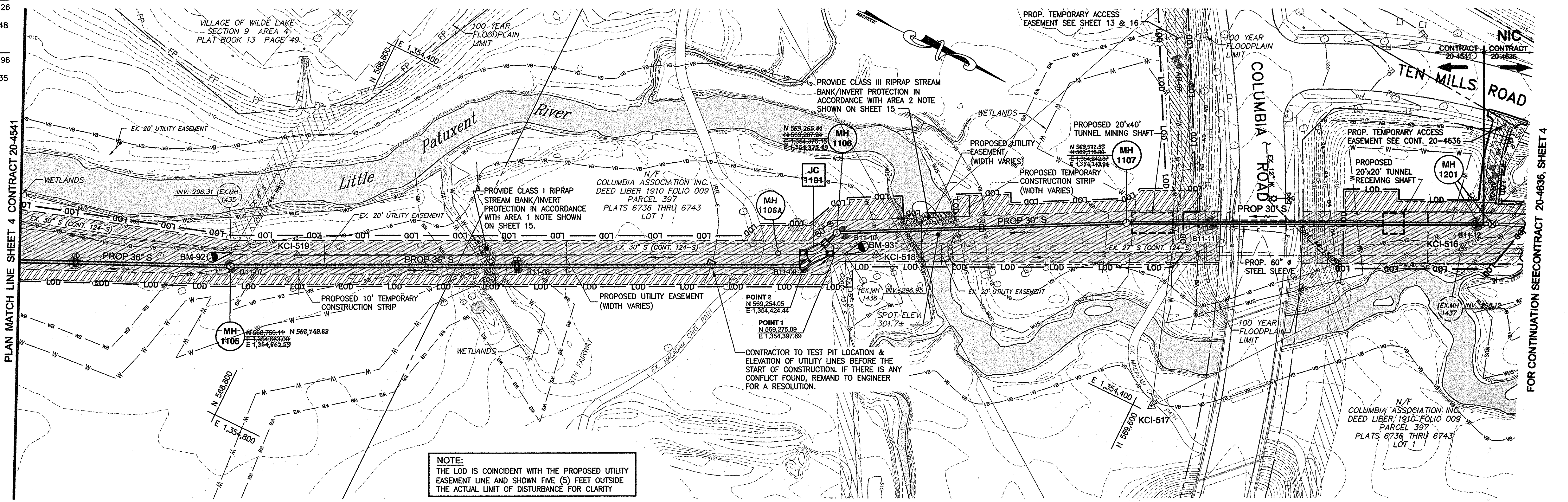
KCI-519
 3/4" REBAR W/ RED KCI CAP
 N 568,804.24 E 1,354,624.94
 ELEV. 305.83



KCI-518
 3/4" REBAR W/ RED KCI CAP
 N 568,311.43 E 1,354,377.54
 ELEV. 306.29



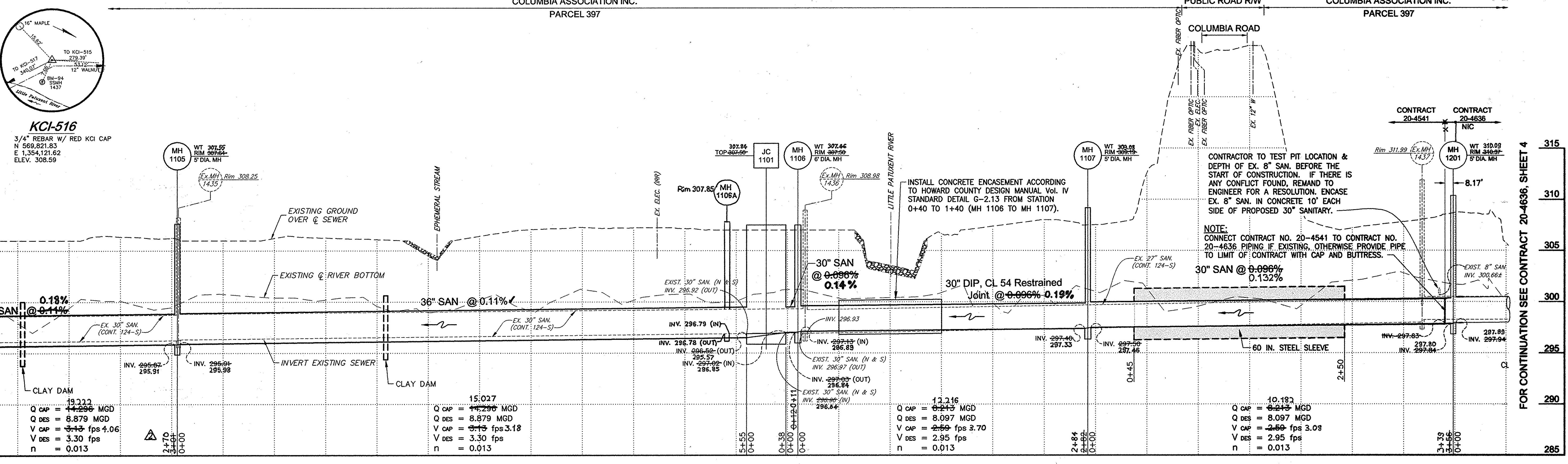
KCI-517
 3/4" REBAR W/ RED KCI CAP
 N 569,817.07 E 1,354,393.14
 ELEV. 306.92



NOTE:
 THE LOD IS COINCIDENT WITH THE PROPOSED UTILITY EASEMENT LINE AND SHOWN FIVE (5) FEET OUTSIDE THE ACTUAL LIMIT OF DISTURBANCE FOR CLARITY

PLAN
 SCALE: 1" = 50'

NOTE:
 FULL TRENCH COMPACTION SHALL BE REQUIRED IN THE AREA OF THE TUNNEL RECEIVING AND MINING SHAFTS ACCORDING TO HOWARD COUNTY DESIGN MANUAL VOL. IV, SECTION 1000.03.07(c)(i).



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

NOTE:
 CONTRACTOR TO TEST PIT LOCATION & DEPTH OF EX. 8" SAN. BEFORE THE START OF CONSTRUCTION. IF THERE IS ANY CONFLICT FOUND, REMAND TO ENGINEER FOR A RESOLUTION. ENCASE EX. 8" SAN. IN CONCRETE 10' EACH SIDE OF PROPOSED 30" SANITARY.

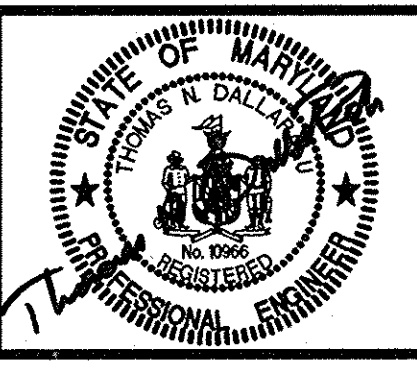
NOTE:
 CONNECT CONTRACT NO. 20-4541 TO CONTRACT NO. 20-4636 PIPING IF EXISTING, OTHERWISE PROVIDE PIPE TO LIMIT OF CONTRACT WITH CAP AND BUTTRESS.

Plotted by: (User) on Plot Date: Jan 18, 2011 at 4:28pm
 Plot Scale: 1/8" = 100' (PLAN) 1/4" = 20' (PROFILE)
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 Plot Path: C:\Users\jdoyle\Documents\Projects\20-4541-1-1-1\20-4541-1-1-1-PLAN SHEET 2.dwg
 User: jdoyle
 Date: 1/18/2011 4:28pm
 Job No: 20-4541-1-1-1
 Job Name: Little Patuxent Parallel Interceptor
 Job Path: C:\Users\jdoyle\Documents\Projects\20-4541-1-1-1\20-4541-1-1-1-PLAN SHEET 2.dwg
 Job Title: Little Patuxent Parallel Interceptor
 Job User: jdoyle
 Job Date: 1/18/2011 4:28pm

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] 1/18/11
 Chief, Bureau of Engineering: [Signature] 1/20/11
 Chief, Bureau of Utilities: [Signature] 1/18/11
 Chief, Utility Design Division: [Signature] 1/20/11

Dewberry
 Dewberry & Davis LLC
 3106 LORD BALTIMORE DRIVE
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 410.265.9500
 FAX: 410.265.8875



DES: LAL	
DRN: CD	
CHK: TND	
DATE: 1.17.11	
BY: NO.	REVISIONS

PLAN AND PROFILE SHEET

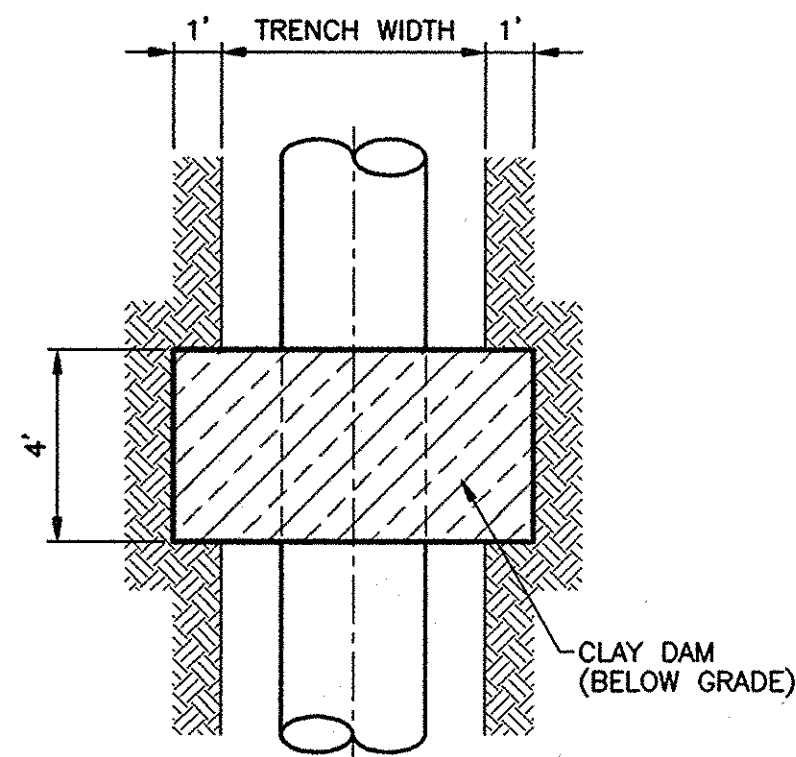
600' SCALE MAP NO. 30
 BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR

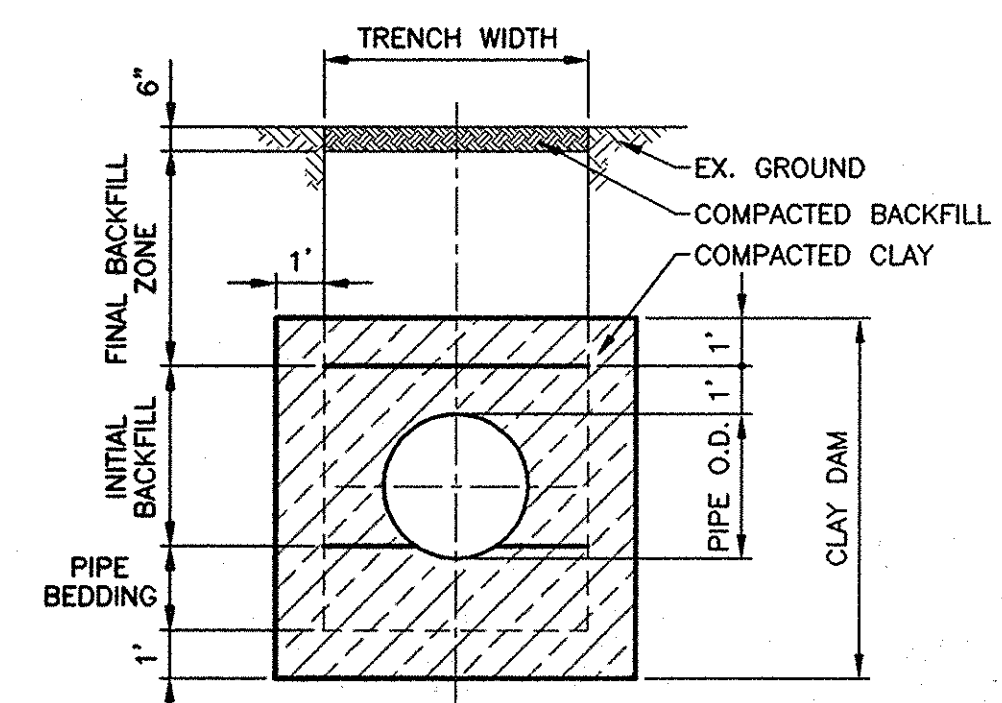
CAPITAL PROJECT S-6175
 CONTRACT NO. 20-4541

ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

SCALE: SHOWN
 SHEET 5 OF 19



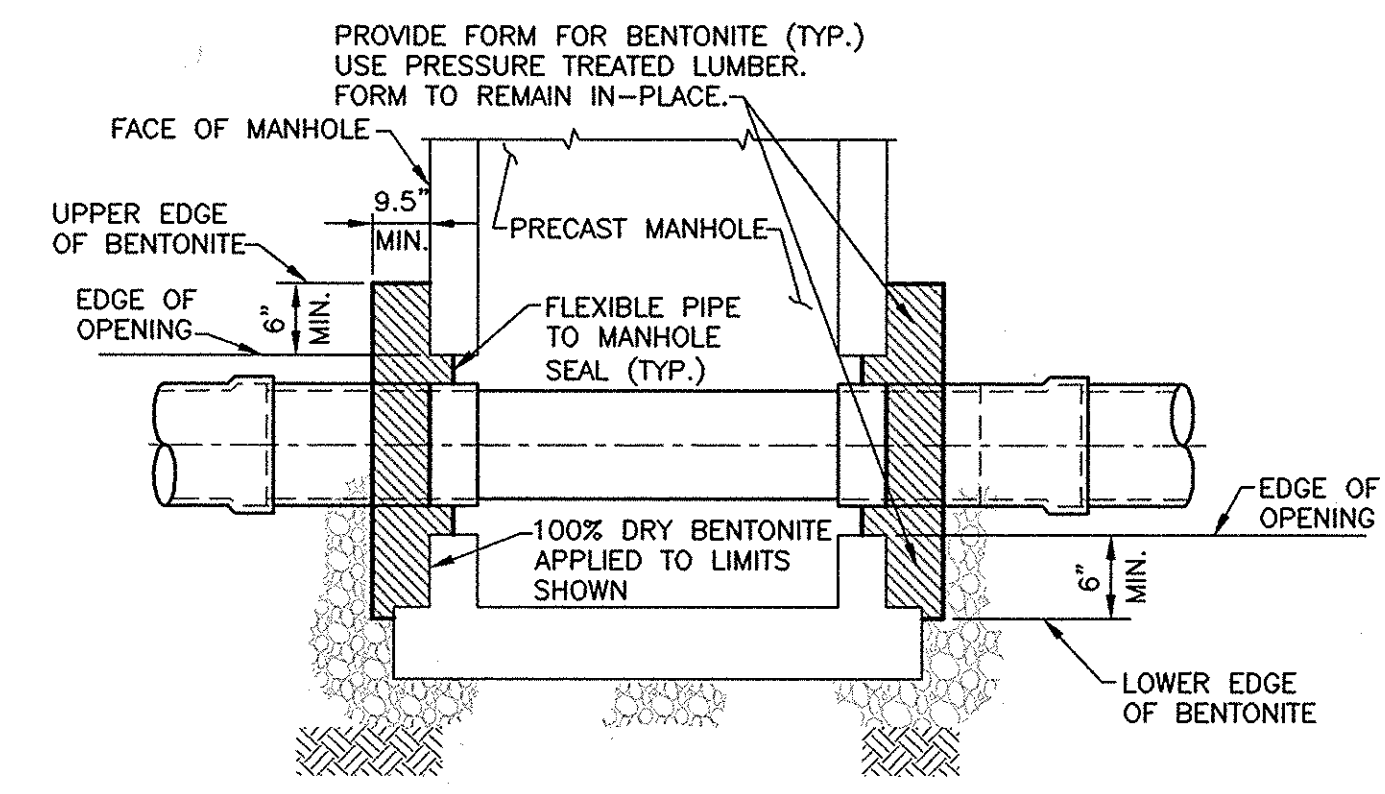
PLAN VIEW



ELEVATION VIEW

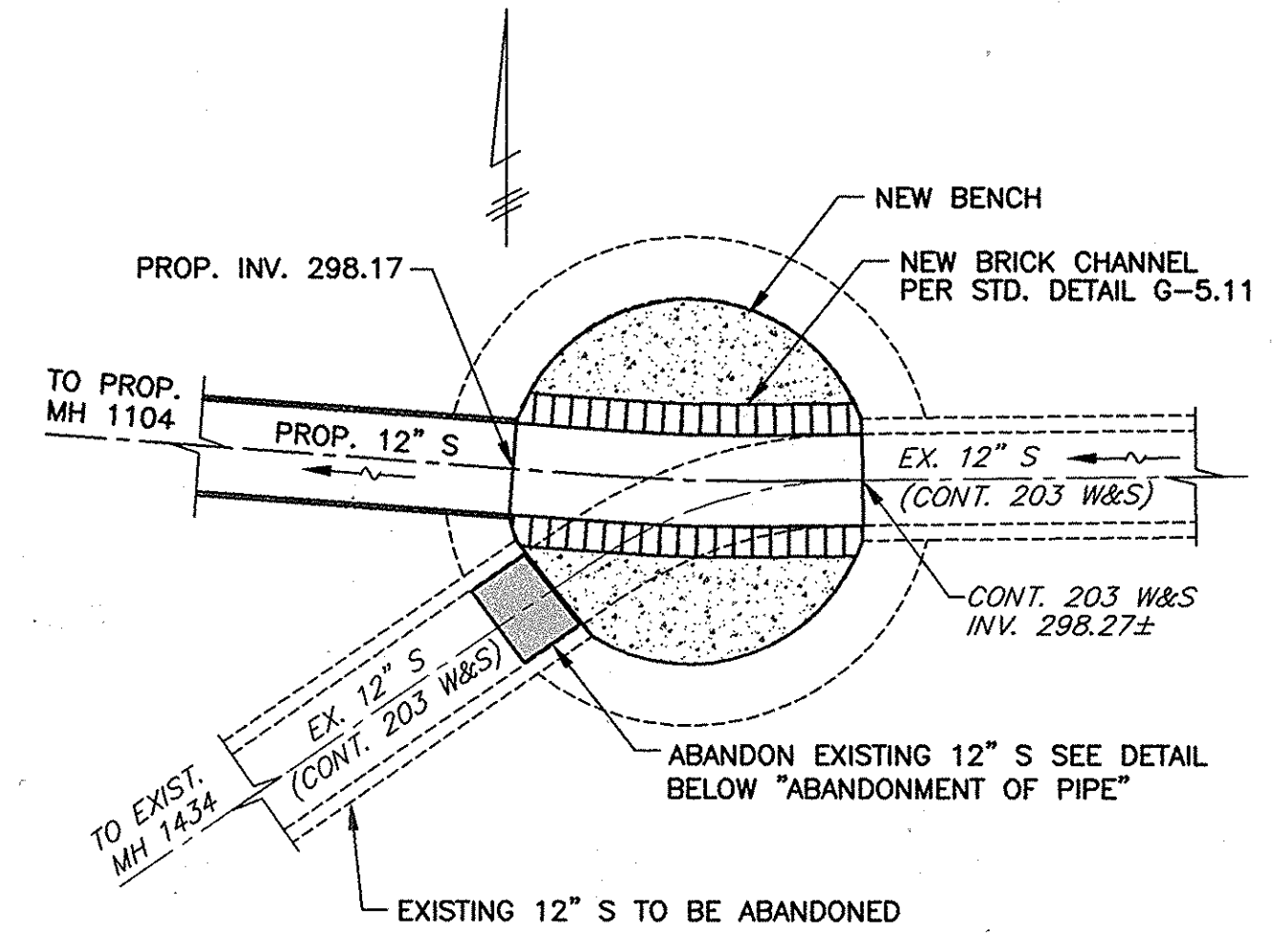
CLAY DAM TYPICAL PIPE BEDDING DETAIL
NO SCALE

- 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.



ELEVATION VIEW

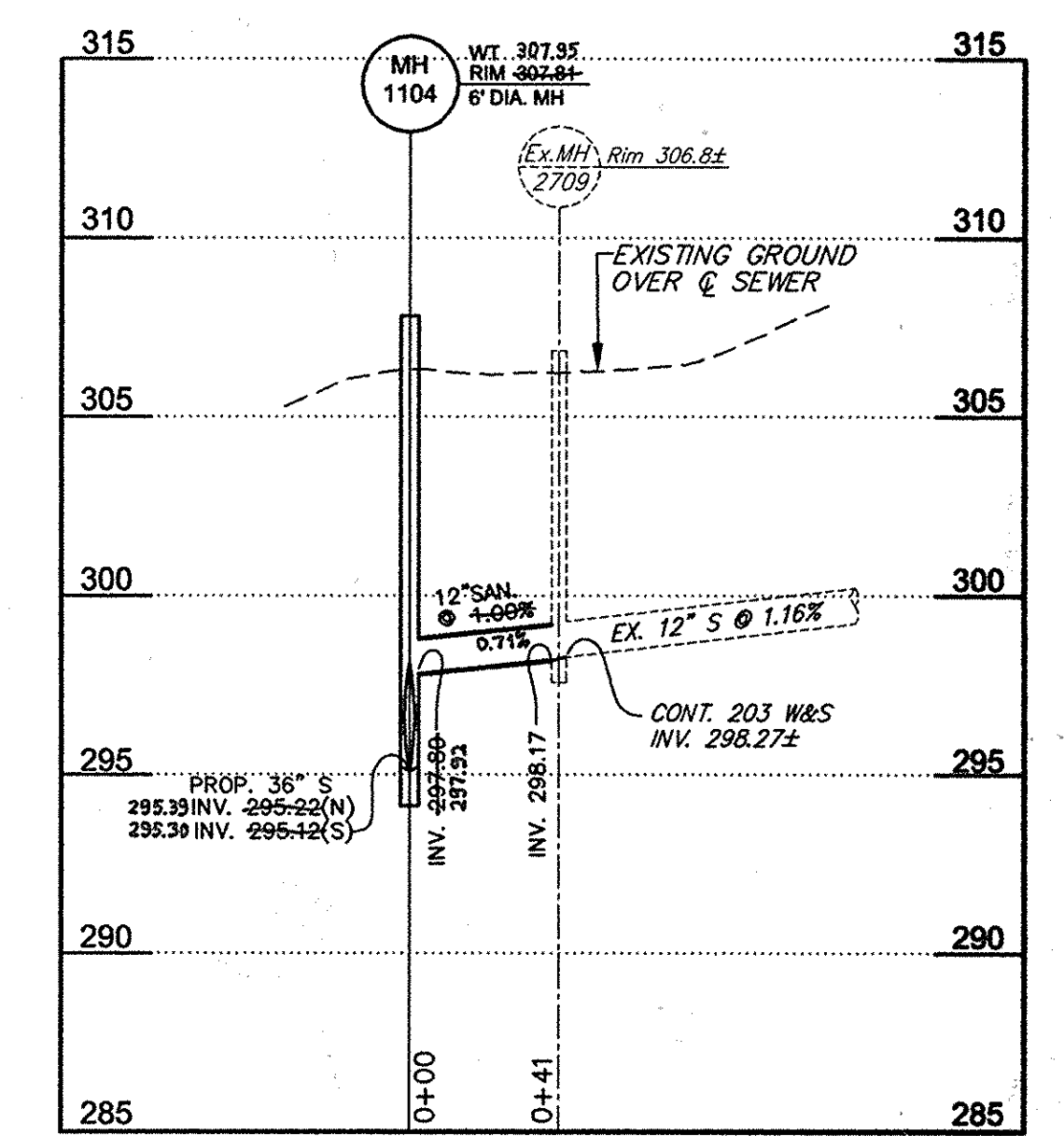
PIPE TO MANHOLE & JUNCTION
CHAMBER CONNECTIONS
NOT TO SCALE



EXISTING MANHOLE 2709

SCALE: 1/2" = 1'-0"

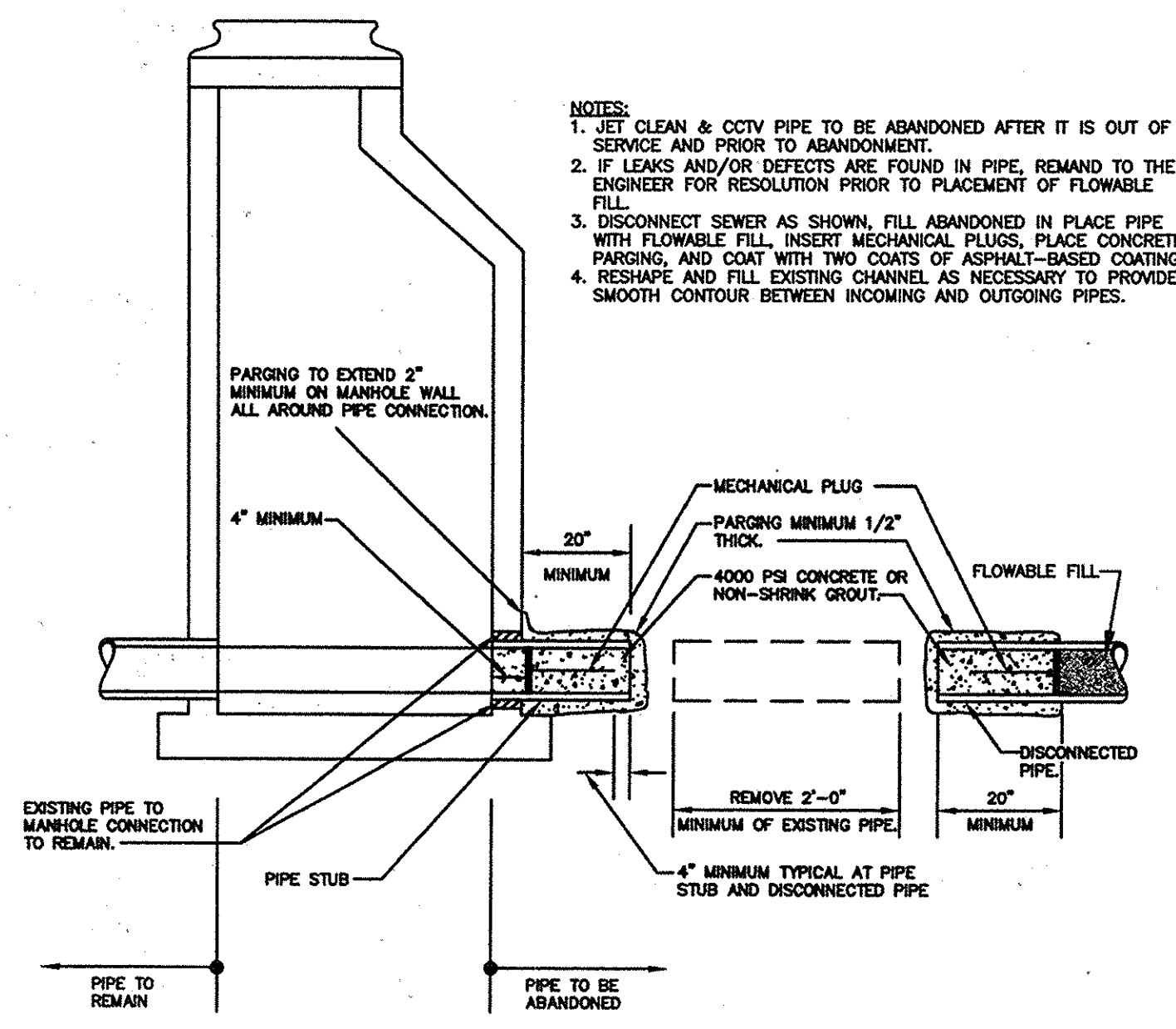
- NOTE:**
1. PROVIDE SEWAGE BY-PASS PLAN IN ADVANCE OF CONSTRUCTION OF STEEL SLEEVE FOR REVIEW.



PROFILE

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

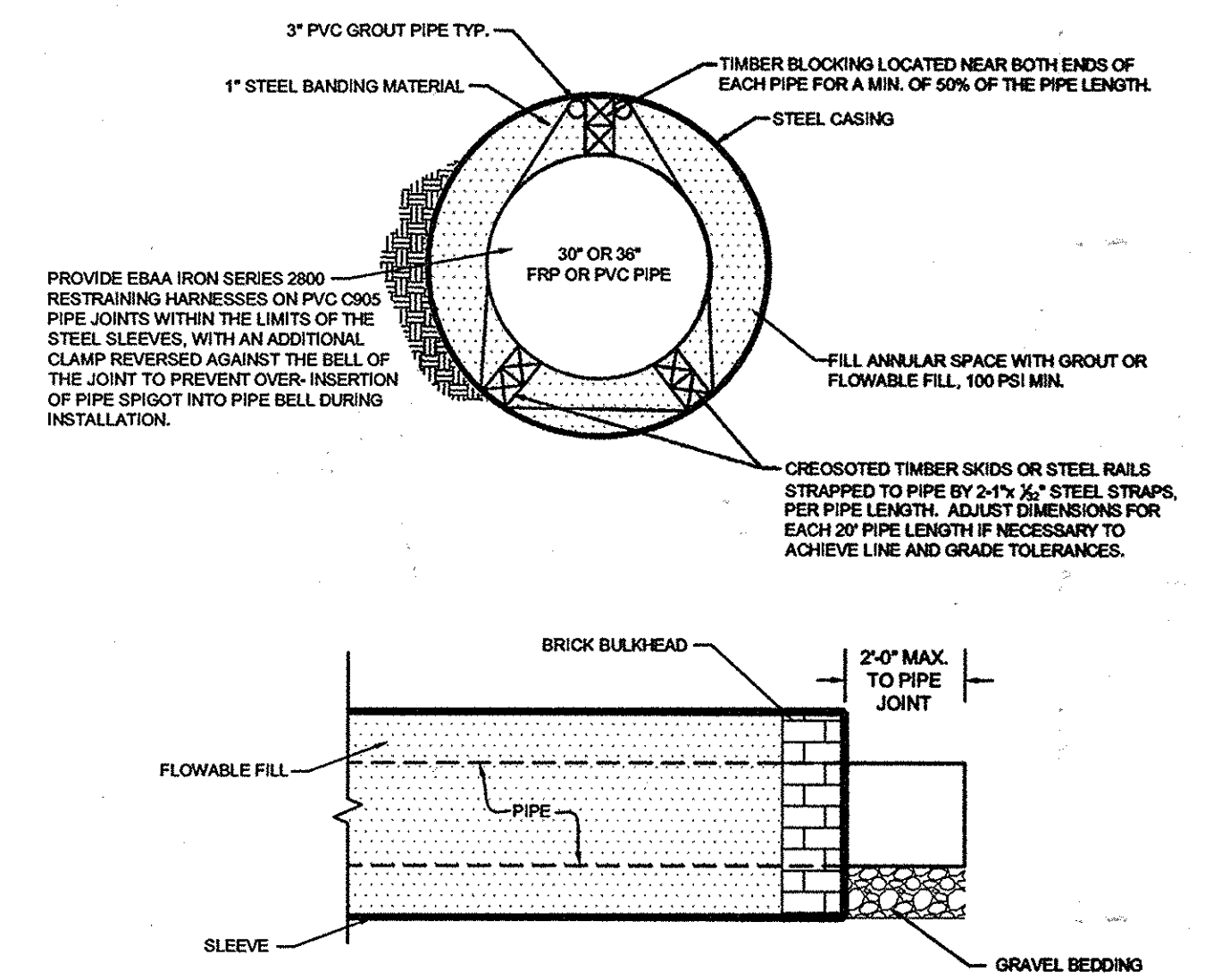
- NOTE:**
1. PROVIDE SEWAGE BY-PASS PLAN IN ADVANCE OF CONSTRUCTION FOR REVIEW.



ABANDONMENT OF PIPE

NOT TO SCALE

- NOTES:**
1. JET CLEAN & CCTV PIPE TO BE ABANDONED AFTER IT IS OUT OF SERVICE AND PRIOR TO ABANDONMENT.
 2. IF LEAKS AND/OR DEFECTS ARE FOUND IN PIPE, REMAND TO THE ENGINEER FOR RESOLUTION PRIOR TO PLACEMENT OF FLOWABLE FILL.
 3. DISCONNECT SEWER AS SHOWN, FILL ABANDONED IN PLACE PIPE WITH FLOWABLE FILL, INSERT MECHANICAL PLUGS, PLACE CONCRETE PARING, AND COAT WITH TWO COATS OF ASPHALT-BASED COATING.
 4. RESHAPE AND FILL EXISTING CHANNEL AS NECESSARY TO PROVIDE SMOOTH CONTOUR BETWEEN INCOMING AND OUTGOING PIPES.



END DETAIL

1. STEEL SLEEVE TO CONFORM TO LATEST AASHTO DESIGN SPECIFICATION.
2. A JOINT IN THE CARRIER PIPE TO BE PROVIDED WITHIN 2 FEET OF EACH OUTSIDE END OF CASING.
3. TWO 2" DIAMETER PIPES THROUGH BULKHEAD TO BE PROVIDED AT EACH SIDE OF MAIN PIPE AT LOW END OF CASING FOR DRAINAGE, PRIOR TO FILLING WITH GROUT.
4. STEEL CASING TO BE 1/2" MINIMUM THICK, AWWA C-200-80 WITH COAL TAR ENAMEL COATING, AWWA C-203 OR C-210. JOINTS TO BE WELDED FULL CIRCUMFERENCE.

60" STEEL SLEEVE DETAIL
NOT TO SCALE

AS-BUILTS DATE 04-26-12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 1/30/11
 Chief, Bureau of Engineering: *[Signature]* 1/20/11
 Chief, Bureau of Utilities: *[Signature]* 1/20/11
 Chief, Utility Design Division: *[Signature]* 1/20/11

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



DES: LAL			
DRN: CD			
CHK: TND			
DATE: 1.17.11	BY	NO.	
			REVISIONS
			DATE

MISCELLANEOUS DETAILS

600' SCALE MAP NO. 30
BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR

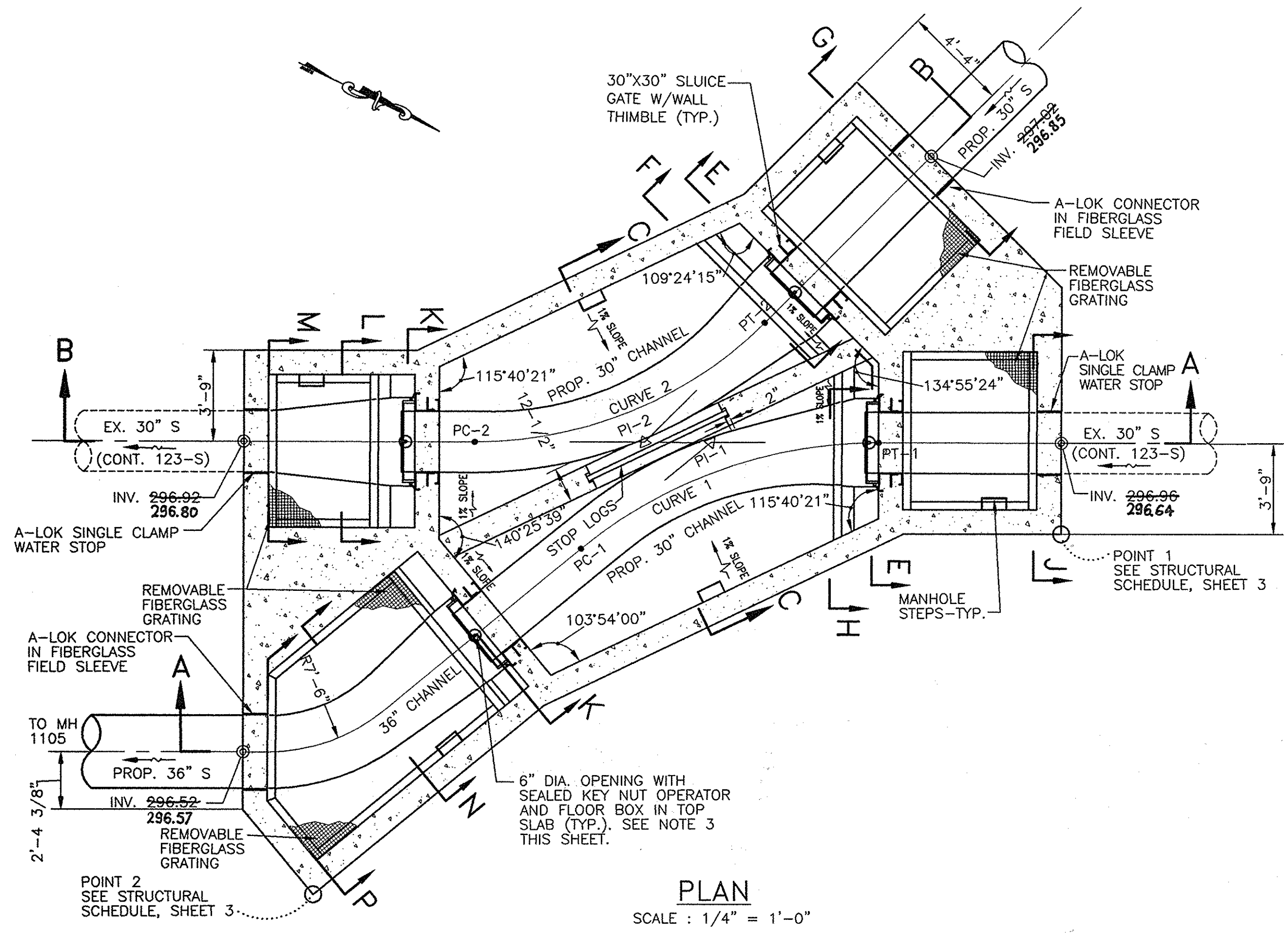
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

ELECTION DISTRICT NO. 5

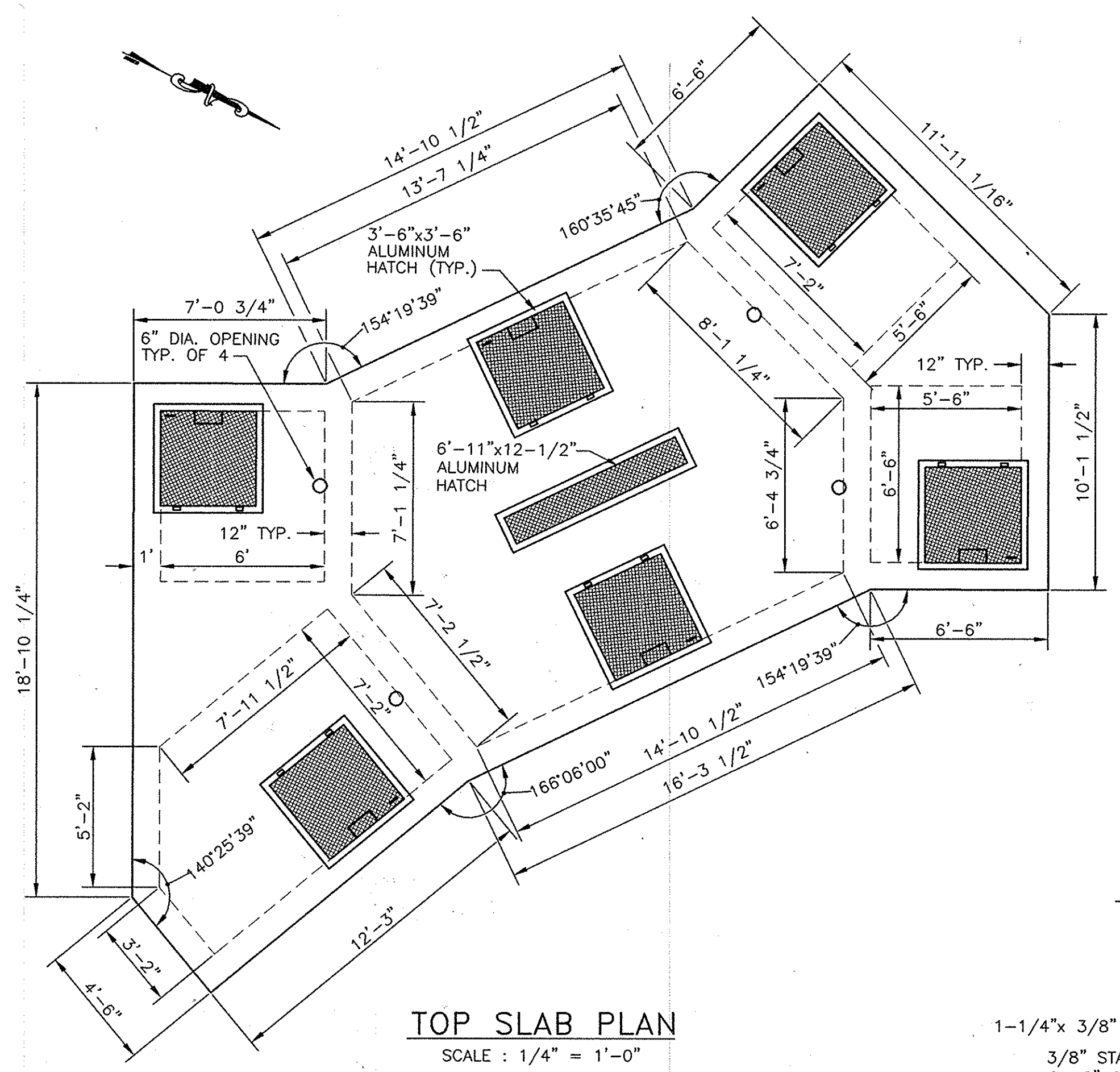
HOWARD COUNTY, MARYLAND

SCALE:
SHOWN
SHEET
6 OF 19

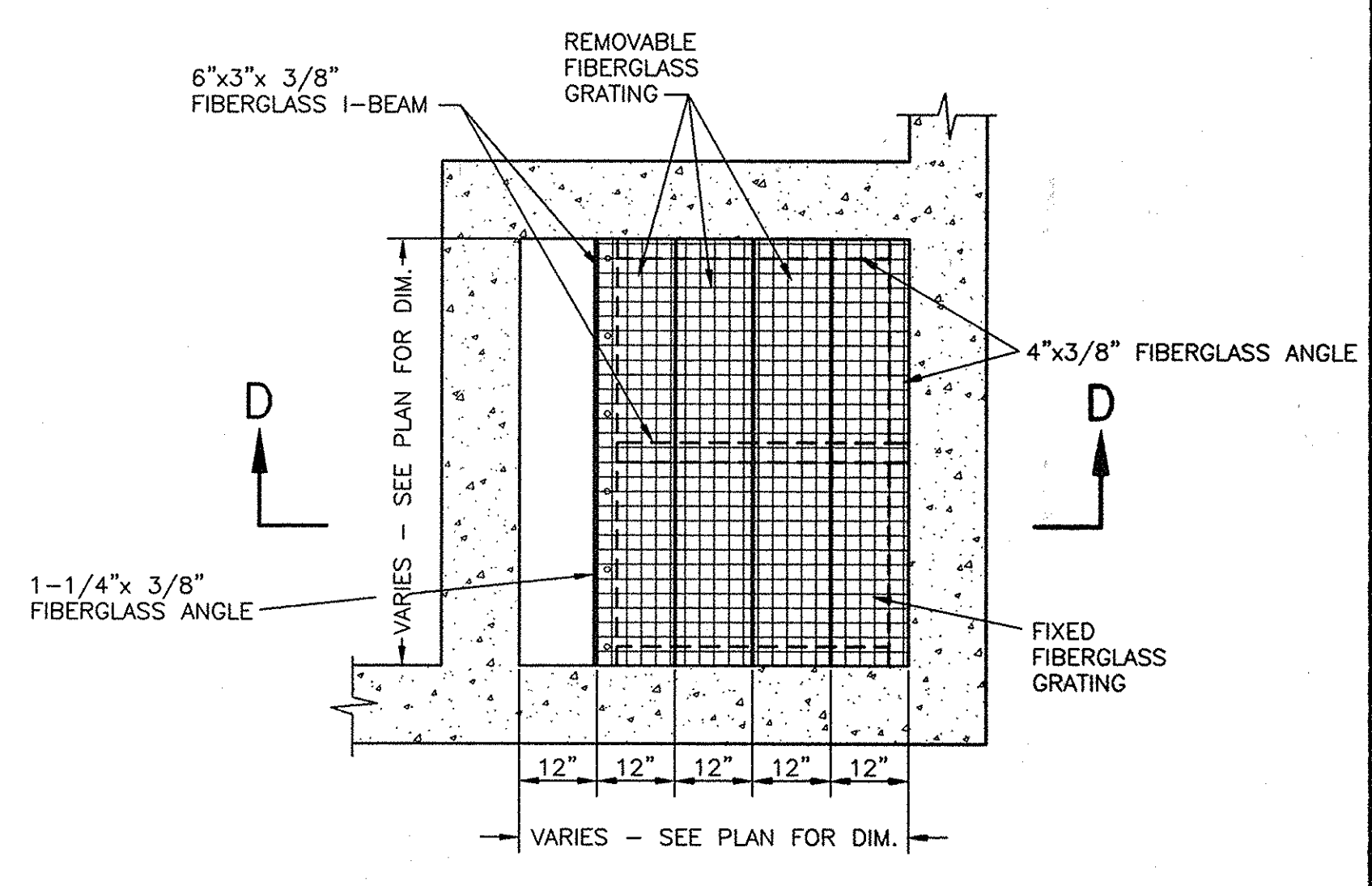
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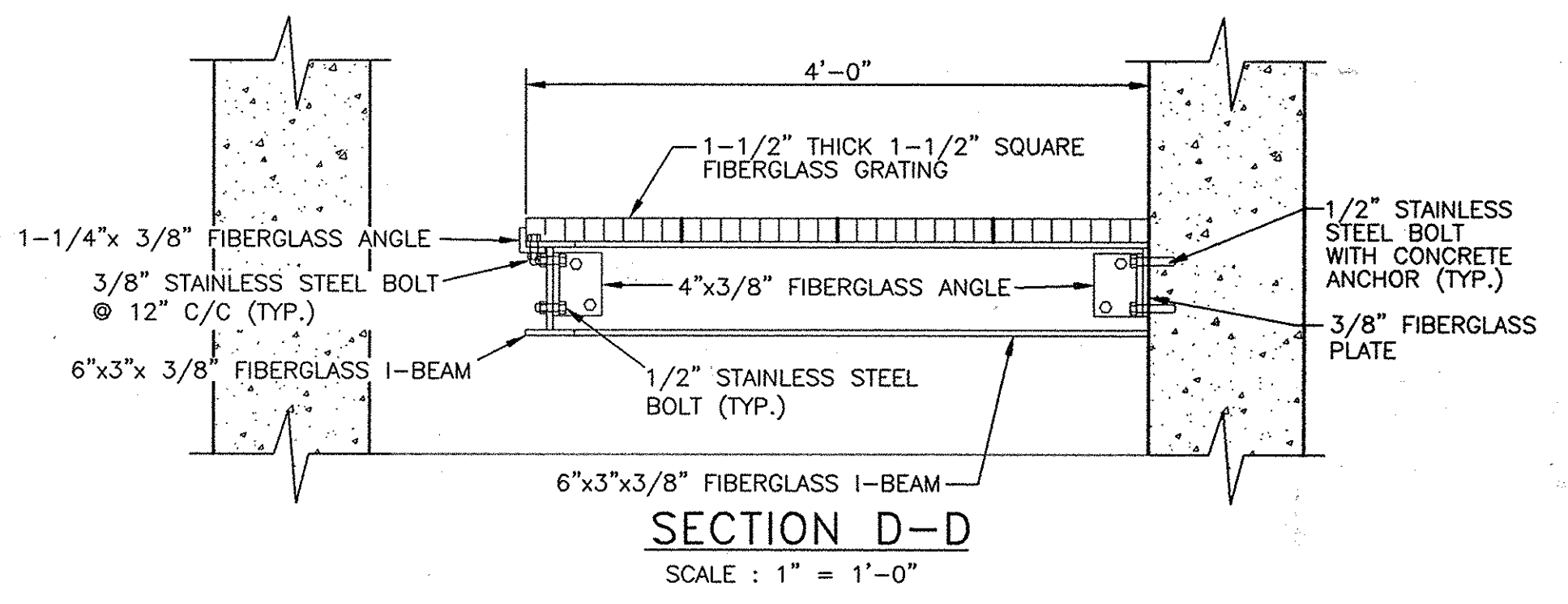
PLAN
SCALE: 1/4" = 1'-0"



TOP SLAB PLAN
SCALE: 1/4" = 1'-0"



FIBERGLASS GRATING DETAIL
SCALE: 1/2" = 1'-0"

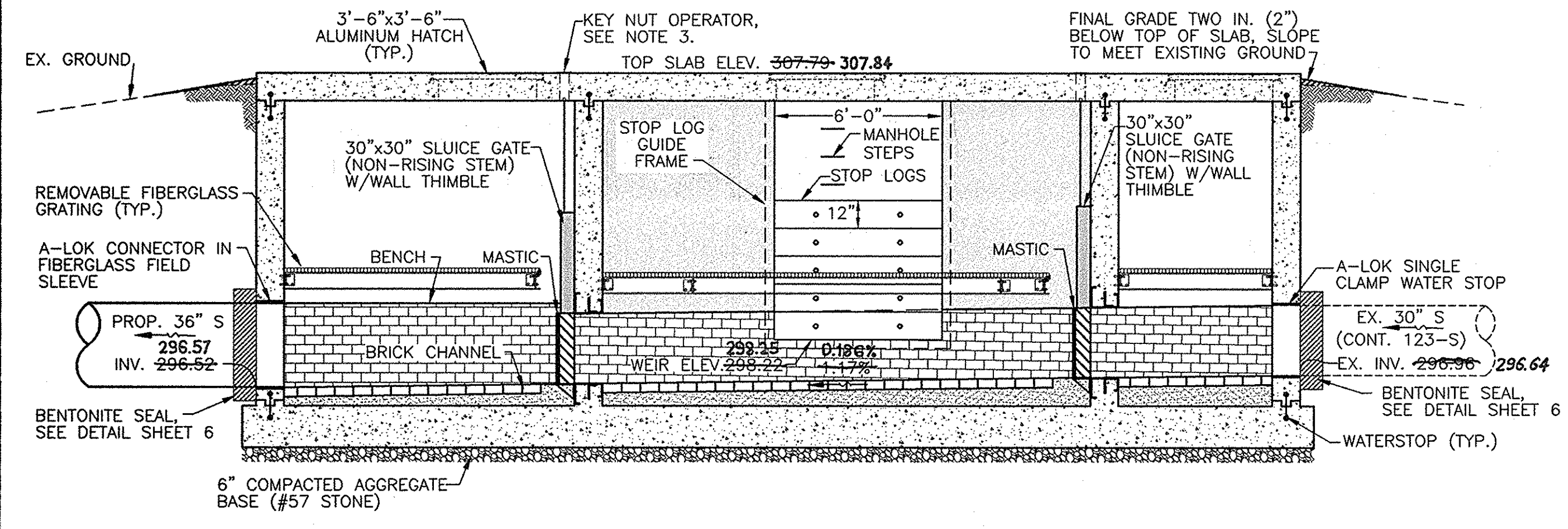


SECTION D-D
SCALE: 1" = 1'-0"

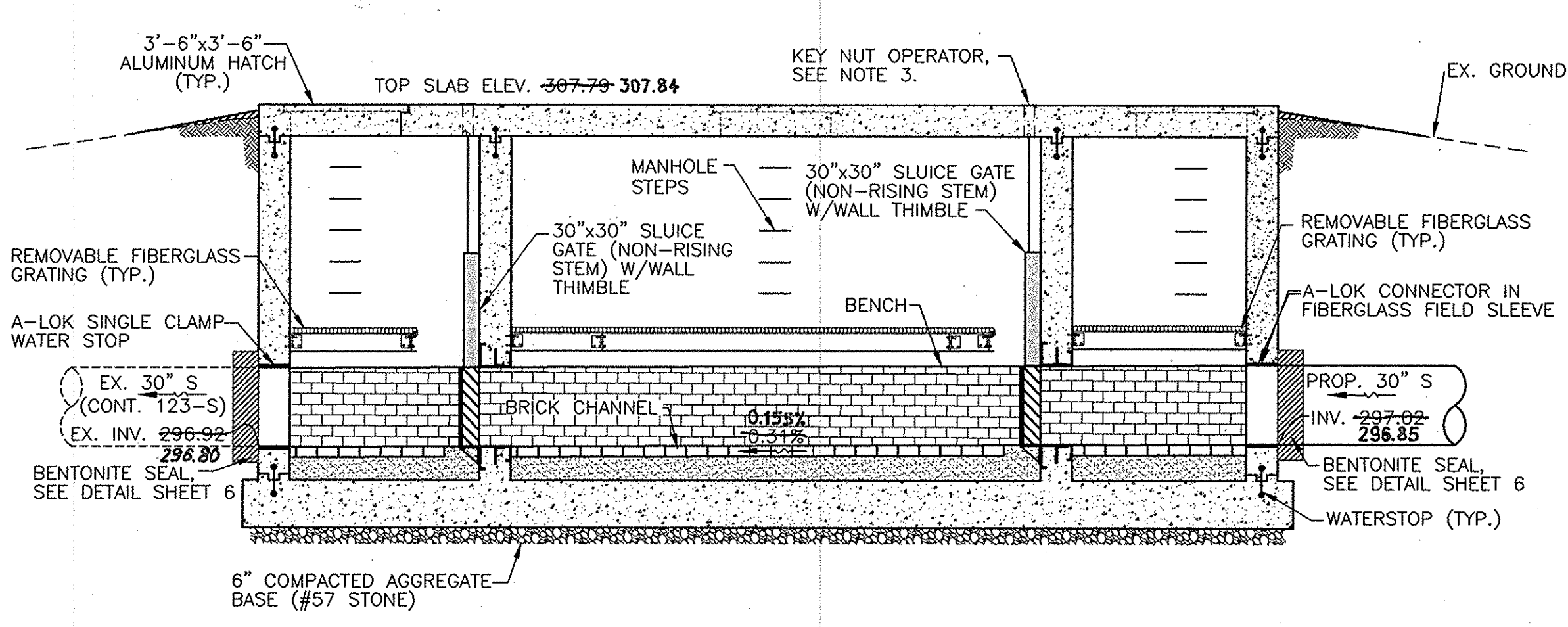
- NOTES:**
- SLUCE GATES SHALL BE FONTAINE SERIES 20 MODEL 202-WALL MOUNTED (COMPLETE WITH WALL THIMBLE) AND NON-RISING STEM (NRS) OR APPROVED EQUAL.
 - A-LOK SINGLE CLAMP WATER STOPS SHALL BE USED AT PIPE ENTRY/EXIT POINTS OF THE DIVERSION STRUCTURE, AS INDICATED ON DRAWINGS.
 - GROUND LEVEL POSITION INDICATOR SHALL BE A SEALED UNIT WITH A STAINLESS STEEL, SEALED FLOOR BOX, KEY NUT OPERATOR AND POSITION INDICATOR SHALL BE GPI-S SERIES AS MANUFACTURED BY DYNATORQUE, INC. OR APPROVED EQUAL.
 - THE SLUCE GATE OF THE 36" OUTLET CHAMBER SHALL REMAIN CLOSED, THE ENTRANCE TO THE PROPOSED 36" SEWER SHALL BE BLOCKED, AND STOP LOGS SHALL BE REMOVED UNTIL ALL DOWNSTREAM SEWER CONTRACTS ARE ACCEPTED BY THE COUNTY. LIKEWISE, THE SLUCE GATE OF THE INLET CHAMBER OF THE PROPOSED 30" SEWER SHALL ALSO BE BLOCKED TO PREVENT SEWAGE FLOWING UPSTREAM IN THE NEW PIPE. SEWAGE SHALL NOT, UNDER ANY CIRCUMSTANCES, BE DISCHARGED TO THE PROPOSED SEWER UNTIL WRITTEN PERMISSION IS PROVIDED BY THE COUNTY.
 - POINTS PT-1 AND PC-2 SHALL BE CENTERED ON THE EXISTING 30 INCH DIAMETER SEWER. THE EXISTING SEWER LOCATION AND INVERTS AT PT-1 AND PC-2 SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO SEWER CONSTRUCTION. THE CONTRACTOR SHALL TEST PIT BOTH LOCATION AND VERIFY THE TOP OF PIPE AND BOTTOM OF PIPE ELEVATIONS AND SHALL ALSO SURVEY THE INCOMING SEWER INVERT AT EX. MANHOLE 1435 AND THE OUTGOING SEWER INVERT AT EX. MANHOLE 1436. THE CONTRACTOR SHALL IMMEDIATELY PROVIDE THIS INFORMATION TO THE ENGINEER AND NOTE ANY DISCREPANCIES.
 - THE JUNCTION CHAMBER REQUIRES AN INTERIOR LINER AND EXTERIOR WATERPROOFING IN ACCORDANCE WITH THE SPECIFICATIONS.
 - ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL BE COATED WITH A BITUMINOUS/ASPHALTIC COMPOUND MINIMUM 10 MIL. THICK.

CURVE DATA				
CURVE NO.	RADIUS	TANGENT	LENGTH	Δ
1	19.13'	6.88'	13.21'	39°34'21"
2	16.75'	6.95'	13.18'	45°04'36"

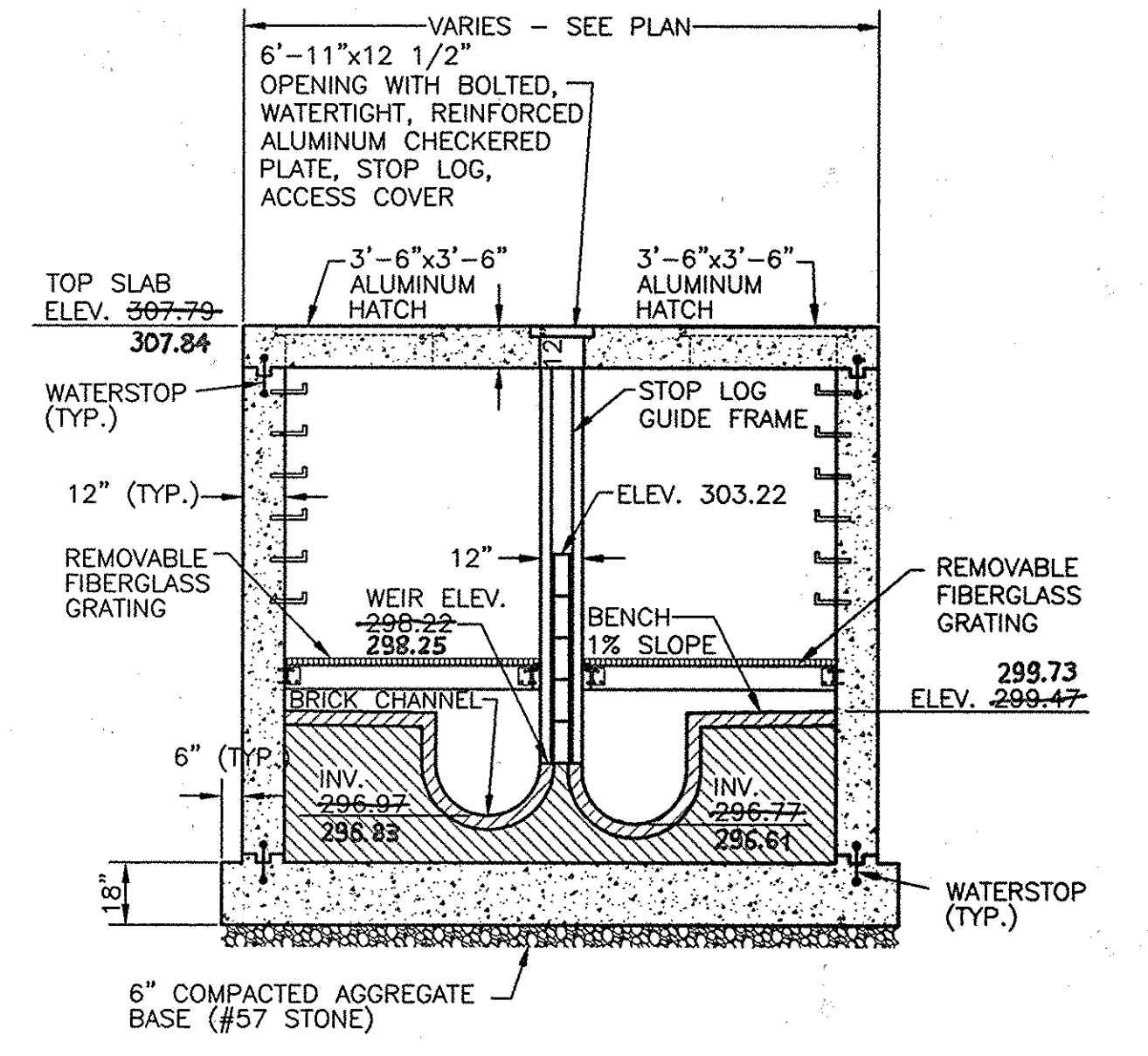
CURVE STAKEOUT DATA		
POINT NO.	NORTH	EAST
PC-1	569,257.66	1,354,406.87
PI-1	569,260.51	1,354,400.61
PT-1	569,266.70	1,354,397.60
PC-2	569,251.82	1,354,404.83
PI-2	569,258.08	1,354,401.79
PT-2	569,260.34	1,354,395.22



SECTION A-A
SCALE: 1/4" = 1'-0"



SECTION B-B
SCALE: 1/4" = 1'-0"



SECTION C-C
SCALE: 1/4" = 1'-0"

AS-BUILT DATE 04-26-12

Printed by (firm) on (date) at (time) on (day) of (month) 2011. 1:30pm
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 Plot Date: 11/14/11 1:30pm
 Plot Scale: 1/4" = 1'-0"
 Plotter: HP DesignJet 2500-600

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 1/31/11
 Chief, Bureau of Utilities: *[Signature]* DATE: 1/20/11
 Chief, Bureau of Engineering: *[Signature]* DATE: 1/20/11
 Chief, Utility Design Division: *[Signature]* DATE: 1/20/11

Dewberry
Dewberry & Davis LLC

3108 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2992
410.265.9500
FAX: 410.265.9875



DES: LAL	DATE: 1.17.11	BY NO.	REVISIONS	DATE
DRN: RLJ				
CHK: TND				

JUNCTION CHAMBER PLAN

600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21

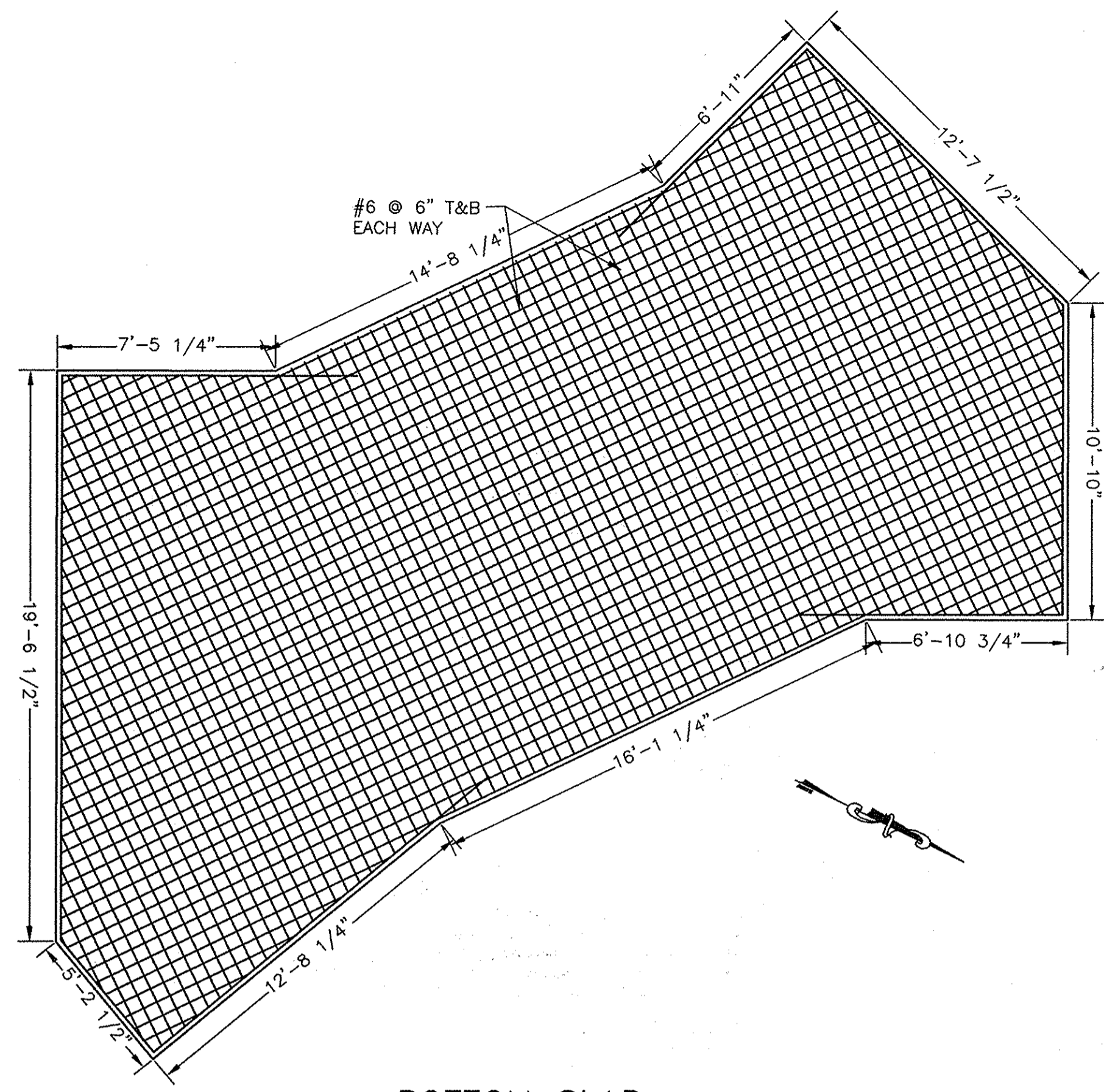
LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

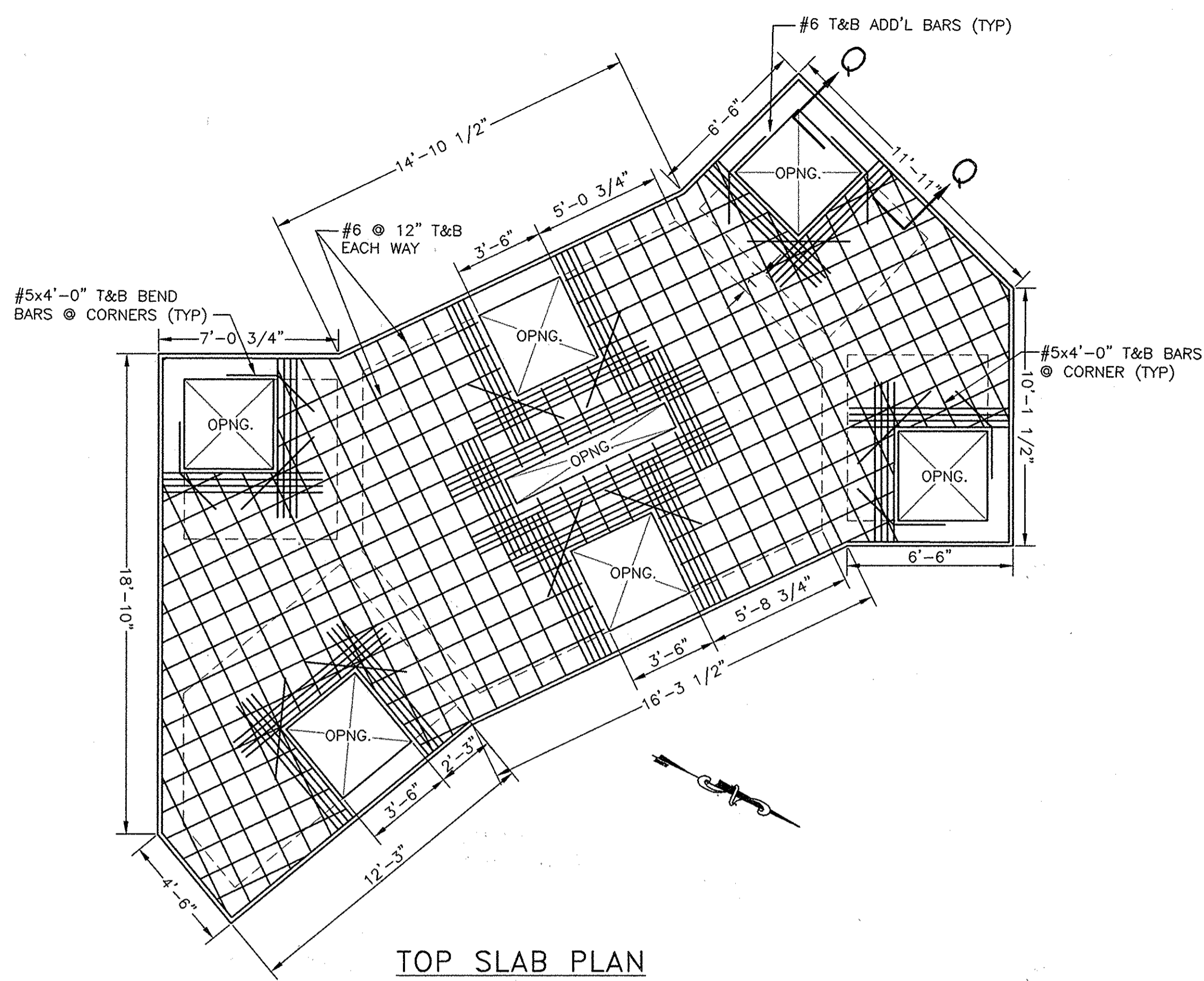
ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

SCALE: SHOWN

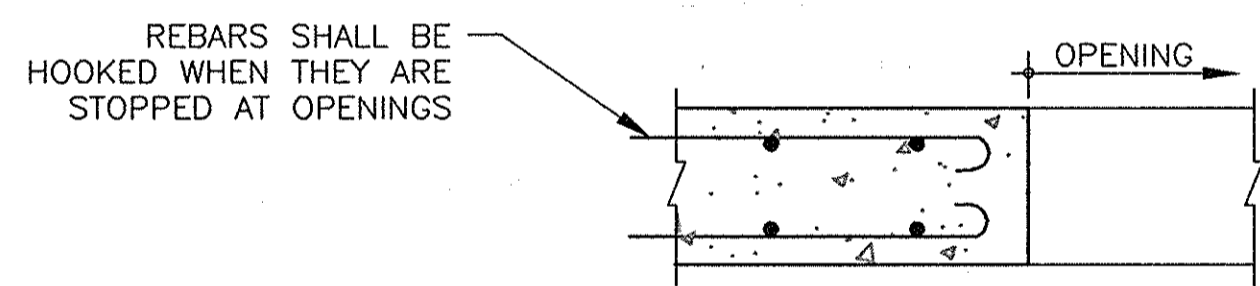
SHEET 8 OF 19



BOTTOM SLAB
SCALE : 1/4" = 1'-0"



TOP SLAB PLAN
SCALE : 1/4" = 1'-0"



SECTION Q-Q
SCALE : NTS

DESIGN LOADS *	
DEAD LOADS STRUCTURE	— ACTUAL WEIGHT OF
WEIGHT OF SOIL P.C.F. DEAD LOAD	— 100 P.C.F. TO RESIST UPLIFT 120
LIVE LOAD	— IN AREAS NOT OCCUPIED BY EQUIPMENT OR SUBJECT TO TRUCK LOADING
	FLOOR 100 P.S.F.
	EQUIPMENT - ACTUAL WEIGHT - 150 P.S.F. MINIMUM
	TRUCK - H20-44 AASHTO LOADING
	WALKWAYS - 100 P.S.F.
	STAIRWAY - 100 P.S.F.
	ROOF - 30 P.S.F.
SNOW LOAD	— GROUND SNOW LOAD - 20 P.S.F.
WIND LOAD (EXPOSURE C)	— BASIC WIND SPEED - 90 MPH
SEISMIC LOAD	— DESIGN CATEGORY B
EARTH PRESSURES	— LATERAL EARTH PRESSURES ARE BASED ON A FRICTION ANGLE OF 30°. BACKFILL MATERIAL SHALL NOT BE PLACED AGAINST FOUNDATION WALLS UNTIL THE UPPER BRACING COMPONENTS ARE IN PLACE FOR AT LEAST 7 DAYS.

CAST IN PLACE CONCRETE NOTES

ALL DIMENSIONS, LOCATIONS AND ELEVATIONS OF EXISTING STRUCTURES SHOWN ON THE CONTRACT DRAWINGS, SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

THE SIZES AND LOCATIONS OF EQUIPMENT PADS AND PEDESTALS, AS WELL AS EQUIPMENT RELATED FLOOR AND SLAB OPENINGS, ARE DEPENDENT UPON THE ACTUAL EQUIPMENT FURNISHED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND COORDINATE ALL SUCH ITEMS. NO DIMENSIONS INDICATED ON THESE DRAWINGS SHALL BE ALTERED WITHOUT THE ENGINEER'S APPROVAL. ALL EQUIPMENT PADS AND OTHER EQUIPMENT SUPPORTS REQUIRED MAY NOT HAVE BEEN SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO CIVIL, ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SIZES AND LOCATIONS OF SUCH PADS AND SUPPORTS.

FOR NOTES PERTAINING TO INDIVIDUAL STRUCTURES, SEE DRAWINGS FOR THOSE STRUCTURES.

CODES

"INTERNATIONAL BUILDING CODE," 2006, INTERNATIONAL CODE COUNCIL
 AMERICAN INSTITUTE OF STEEL CONSTRUCTION, (AISC) "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN" 1989
 AMERICAN CONCRETE INSTITUTE, (ACI-318-95) "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
 AMERICAN CONCRETE INSTITUTE, (ACI-308-01) "CODE REQUIREMENTS, FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES" CONCRETE *

ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.

REINFORCED CONCRETE SHALL BE DETAILED AND CONSTRUCTED IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE, (ACI 301-89) "SPECIFICATIONS FOR STRUCTURAL CONCRETE".

ALL REINFORCEMENT SHALL CONFORM TO ASTM SPECIFICATION #615, DEFORMED, GRADE 60.

WELDED WIRE FABRIC SHALL CONFORM TO ASTM SPECIFICATION #165.

UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COVER FOR REINFORCEMENT SHALL BE AS FOLLOWS:

- UNIFORMED CONCRETE BOTTOM BARS IN FOOTINGS AND SLABS ON EARTH OR GRAVEL - 3"
- BEAMS, SLABS, COLUMNS AND WALLS, EXPOSED TO GROUND, WEATHER OR PROCESS LIQUID AFTER THE REMOVAL OF FORMS - 2"
- BEAMS, COLUMNS AND PIERS NOT EXPOSED TO WEATHER OR PROCESS LIQUID - 1 1/2"
- STRUCTURAL SLABS NOT EXPOSED TO GROUND, WEATHER, PROCESS LIQUID OR TRUCK TRAFFIC - 1"
- STRUCTURAL SLAB NOT EXPOSED TO GROUND, WEATHER OR PROCESS LIQUID, BUT SUBJECT TO TRUCK TRAFFIC:
 TOP OF SLAB - 1 1/2"
 BOTTOM OF SLAB - 1"

ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.

THE CONTRACTOR SHALL SUBMIT SHOP DETAILS OF REINFORCING STEEL BEFORE PROCEEDING WITH FABRICATION.

REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE, (ACI 315) "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT" AND (ACI SP-08) "ACI DETAILING MANUAL 1994".

ALL SPLICES FOR REINFORCING BARS NOT DIMENSIONED ON THE DRAWINGS SHALL BE DETAILED AS TABULATED ON THIS DRAWING.

CONCRETE SLAB AND WALLS SHALL BE POURED BETWEEN INDICATED JOINTS, ALLOWING A MINIMUM PERIOD OF 3 DAYS TO ELAPSE BETWEEN ADJACENT POURS.

CONSTRUCTION JOINTS SHALL BE AS DETAILED ON THE DRAWINGS AND NO ADDITIONAL JOINTS SHALL BE USED, NOR ANY OMITTED, EXCEPT BY WRITTEN AUTHORIZATION OF THE ENGINEER. ADDITIONAL ENGINEER APPROVED CONSTRUCTION JOINTS SHALL NOT RESULT IN ADDITIONAL EXPENSE TO THE OWNER.

WATERSTOPS SHALL BE 3/8" THICK x 6" WIDE, PAUL MURPHY, FLAT DUMBBELL TYPE, AS NOTED ON THE DRAWINGS. SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.

ANCHOR BOLTS AND EQUIPMENT PEDESTALS SHALL BE SIZED AND LOCATED AS REQUIRED TO SUIT EQUIPMENT FURNISHED.

SEE ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL EMBEDDED ITEMS SUCH AS SLEEVES, ANCHORS, ELECTRICAL CONDUITS, AND OPENINGS, WHICH MAY INTERFERE WITH CONCRETE CONSTRUCTION. ALL PIPING AND OTHER EMBEDDED ITEMS ARE NOT SHOWN ON STRUCTURAL DRAWINGS.

WHERE A BEAM FRAMES INTO A WALL, IF A CONSTRUCTION JOINT IS NOT INDICATED AT THE BOTTOM OF THE BEAM, A POCKET SHALL BE PROVIDED IN THE WALL FOR BEAM BEARING. THE DEPTH OF THE POCKET SHALL BE FULL THE THICKNESS OF THE WALL.

FOUNDATION

ALL FOUNDATIONS SHALL BE FOUND ON SOIL HAVING BEARING CAPACITY OF 3000 PSF (AS DETERMINED BY THE GEOTECHNICAL ENGINEER, EBA ENGINEERING, INC. MAY 2008) AT THE ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS. WHERE FOUNDATIONS ARE FOUND ON FILL THE GEOTECHNICAL ENGINEER SHALL VERIFY ITS CAPACITY.

ALL EXCAVATIONS SHALL BE KEPT DRY. STANDING WATER SHALL NOT BE ALLOWED IN EXCAVATIONS.

BEFORE PLACING ANY CONCRETE ON SUBGRADE, THE CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER.

A STRUCTURAL SLAB SHALL BE USED WHEN UNCOMPACTED FILL EXCEEDS 6".

THE CONTRACTOR SHALL VERIFY THE BEARING CAPACITY OF THE BEARING SOILS IN THE FOOTING EXCAVATION PRIOR TO CASTING ANY FOOTINGS. WRITTEN VERIFICATION SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER.

REFER TO THE SPECIFICATIONS AND SOILS REPORT (IF AVAILABLE) FOR THE SITE PREPARATION REQUIREMENTS.

SHOP DRAWINGS

THE GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL STRUCTURAL ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS FOR APPROVAL. THE STRUCTURAL ENGINEER WILL NOT BE RESPONSIBLE FOR THE STRUCTURAL CERTIFICATION AND DESIGN OF THE PROJECT IF THE GENERAL CONTRACTOR FAILS TO OBTAIN APPROVAL OF THE SHOP DRAWINGS. THE GENERAL CONTRACTOR SHALL INFORM THE STRUCTURAL ENGINEER IN WRITING CONCERNING DEVIATIONS AND/OR OMISSIONS FROM THE CONTRACT DOCUMENTS AT THE TIME OF SHOP DRAWING SUBMISSION. THE GENERAL CONTRACTOR SHALL STATE ON THE SHOP DRAWINGS THAT CONTRACT DOCUMENT REQUIREMENTS HAVE BEEN MET AND THAT ALL DIMENSIONS, CONDITIONS AND QUANTITIES HAVE BEEN REVIEWED AND VERIFIED AS SHOWN AND/OR CORRECTED ON THE SHOP DRAWINGS.

MISCELLANEOUS ITEMS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES FOR THE STRUCTURAL WORK.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING, FURNISHING, ERECTING, AND REMOVING ANY SHORING AND BRACING REQUIRED DURING CONSTRUCTION.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL SAFETY REGULATIONS, PROGRAMS AND PRECAUTIONS RELATED TO ALL WORK ON THIS PROJECT.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF PERSONS AND PROPERTY EITHER ON OR ADJACENT TO THE PROJECT AND SHALL PROTECT SAME AGAINST INJURY, DAMAGE OR LOSS.

NO OPENINGS OR CHANGES IN SIZE, DIMENSION OR LOCATION SHALL BE MADE IN ANY STRUCTURAL ELEMENTS WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.

THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED ON THE STRUCTURE. SUCH LOADS SHALL NOT EXCEED THE CAPACITY OF THE STRUCTURE AT ANY TIME.

THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION, AND ANY TEMPORARY BRACING OR SUPPORT REQUIRED TO ACCOMMODATE THE CONTRACTOR'S MEANS AND METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH NEW WORK IN AREAS AFFECTED BY EXISTING CONDITIONS. THE STRUCTURAL ENGINEER SHALL BE INFORMED IN WRITING OF CONFLICTS BETWEEN EXISTING AND PROPOSED NEW CONSTRUCTION.

CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL DIMENSIONS SHOWN ON THE CONTRACT DOCUMENTS. INCONSISTENCIES ON THE STRUCTURAL DRAWINGS OR BETWEEN THE STRUCTURAL DRAWINGS AND ANY OTHER CONTRACT, SHOP, FABRICATION, OR OTHER DRAWINGS OR INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER PRIOR TO PROCEEDING WITH AFFECTED WORK.

AS-BUILTS DATE 04-26-12

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 1/31/11
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 1/31/11
 CHIEF, BUREAU OF UTILITIES DATE

[Signature] 1/20/11
 CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 1/20/11
 CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
Dewberry & Davis LLC

3108 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2992
 410.265.9500
 FAX: 410.265.8875



DES: LAL			
DRN: RLJ			
CHK: TND			
DATE: 1.17.11	BY NO.	REVISIONS	DATE

JUNCTION CHAMBER
REINFORCEMENT & CAST IN PLACE
CONCRETE NOTES

600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21

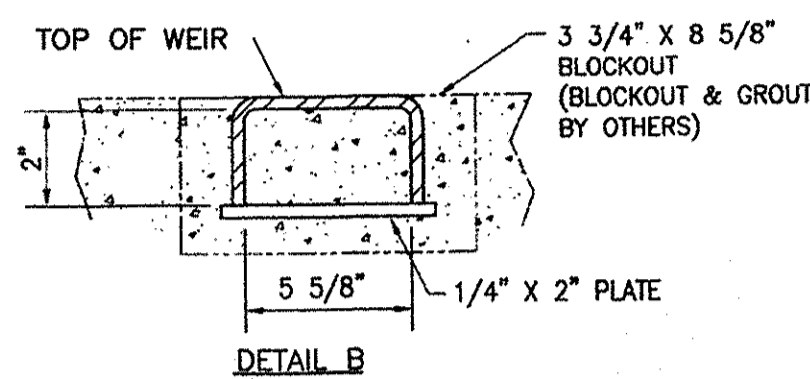
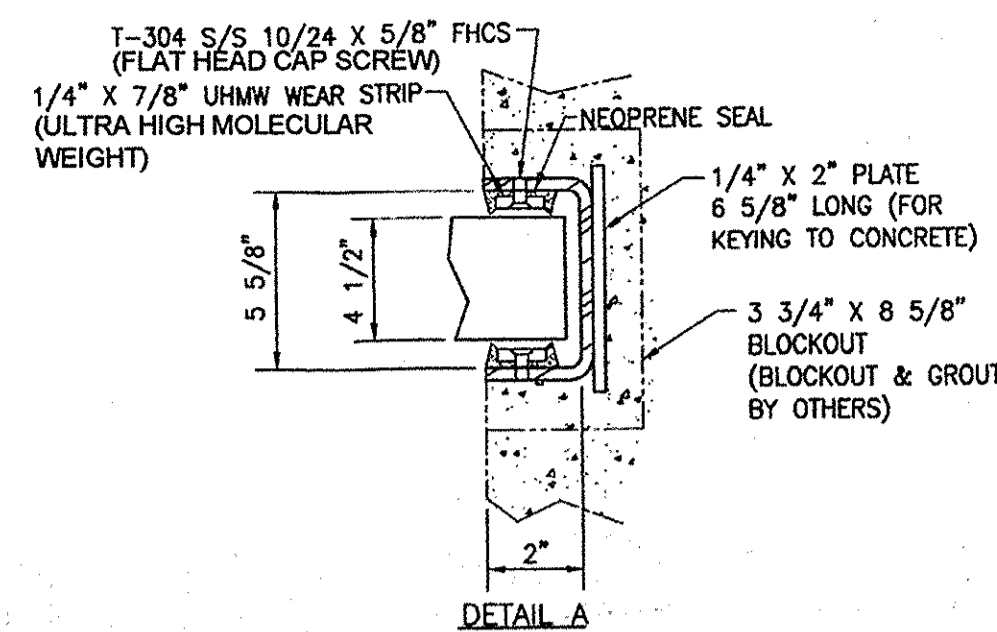
LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
 CONTRACT NO. 20-4541

ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

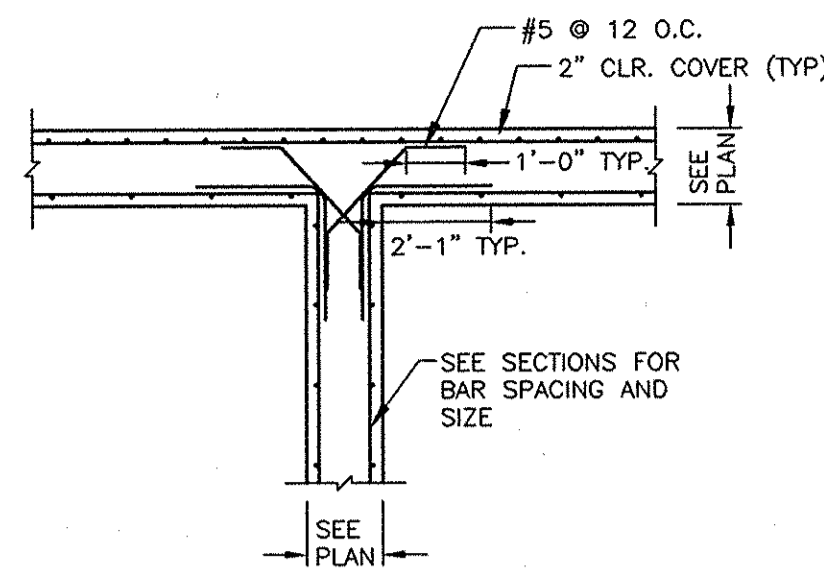
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SHEET 9 OF 19



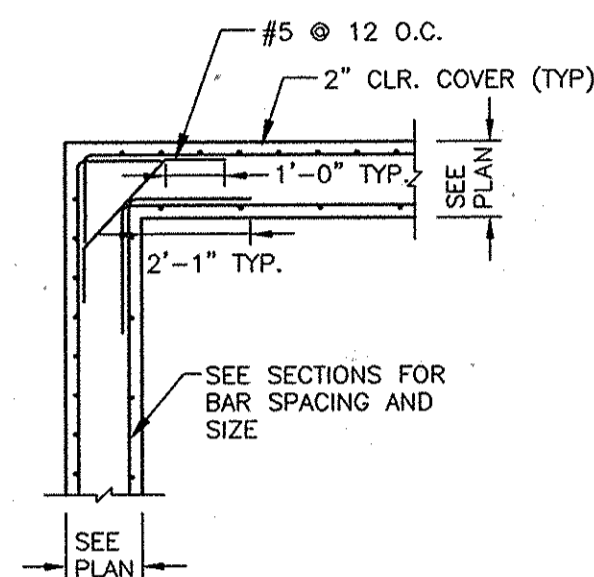
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FRAME DETAILS**

SCALE : NTS



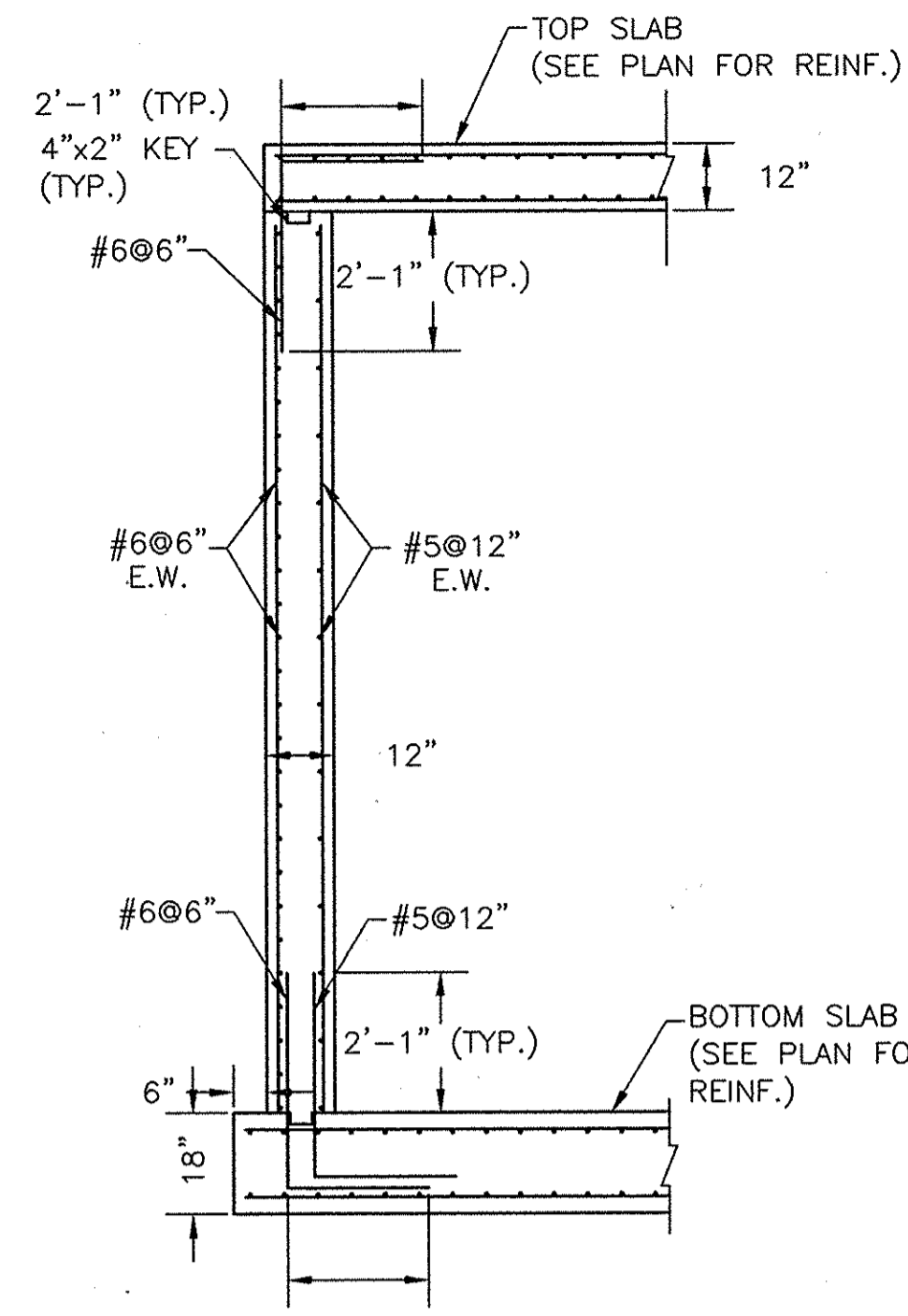
**TYPICAL INTERSECTION
DETAIL**

SCALE : NTS



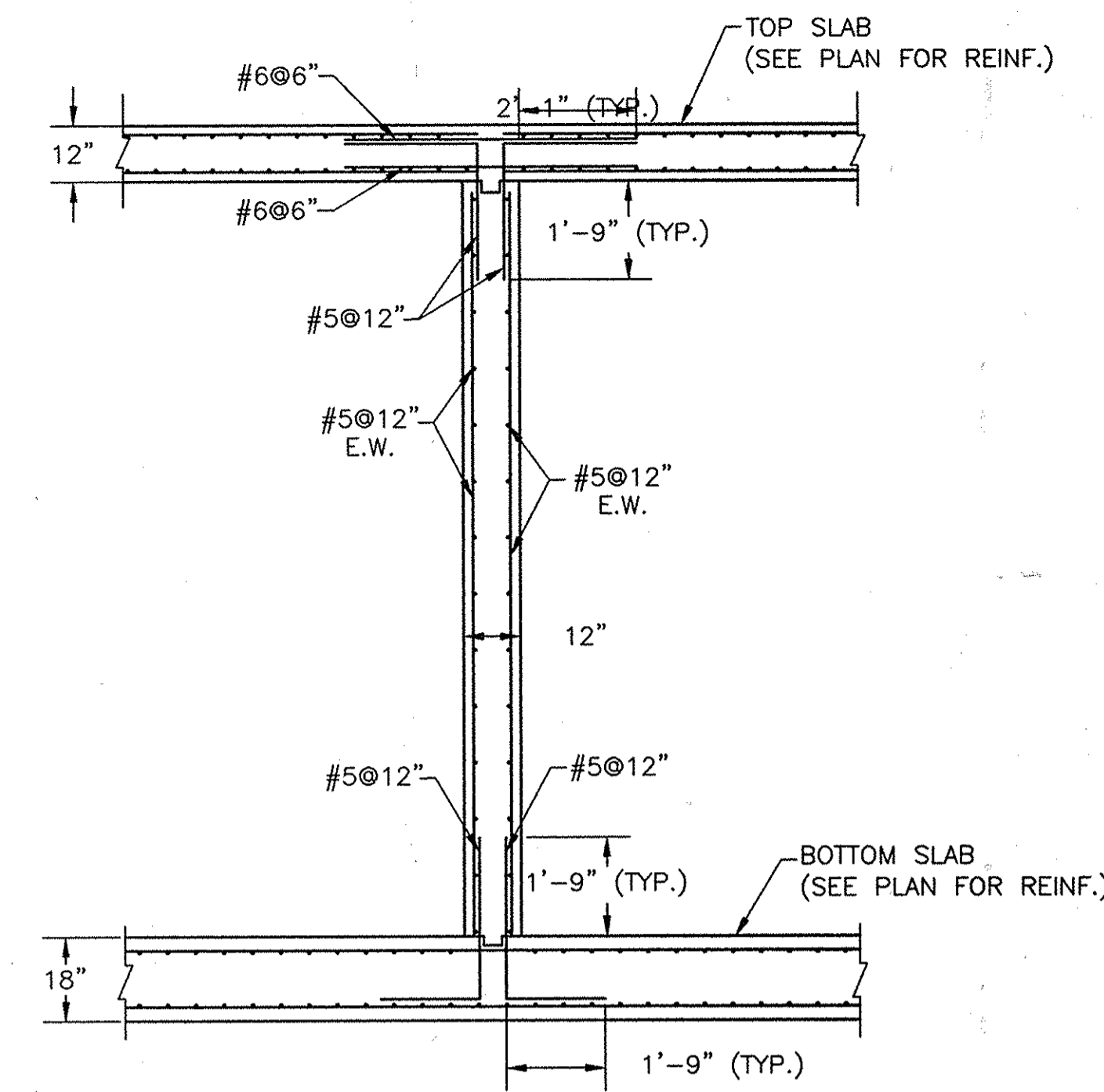
TYPICAL CORNER DETAIL

SCALE : NTS



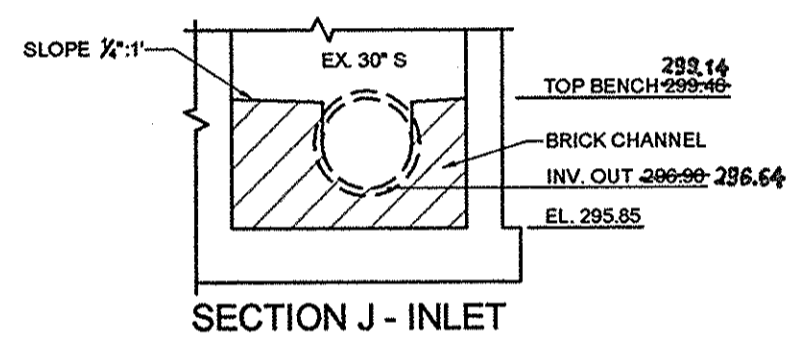
OUTER WALL TYPICAL SECTION

SCALE : 3/8" = 1'-0"

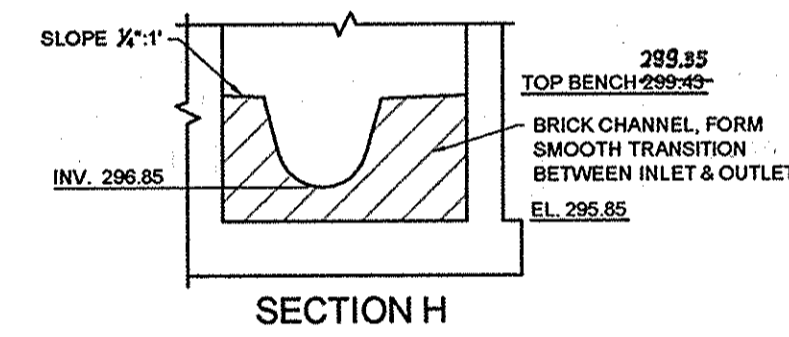


INNER WALL TYPICAL SECTION

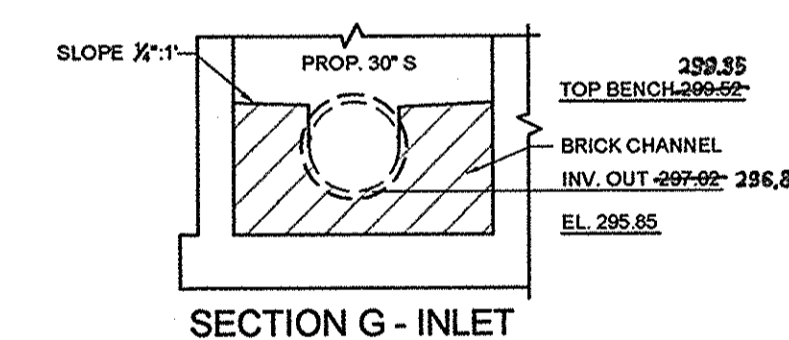
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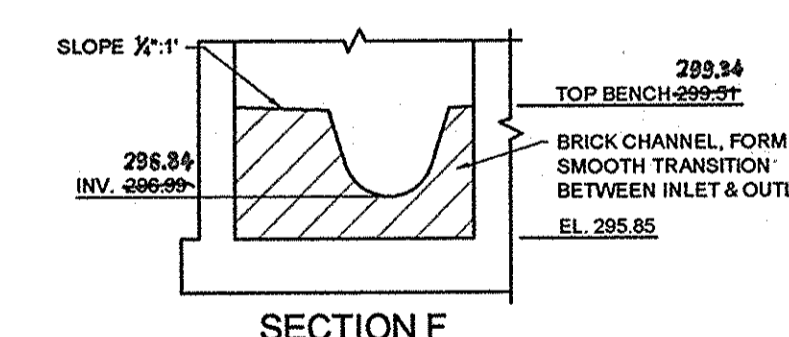
SECTION J - INLET



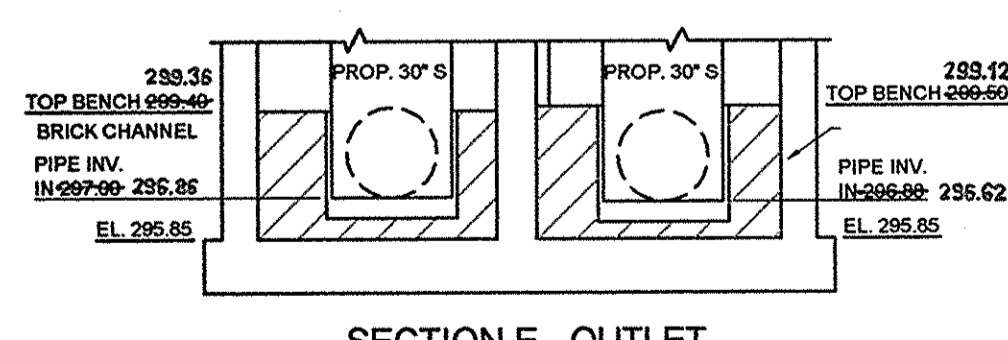
SECTION H



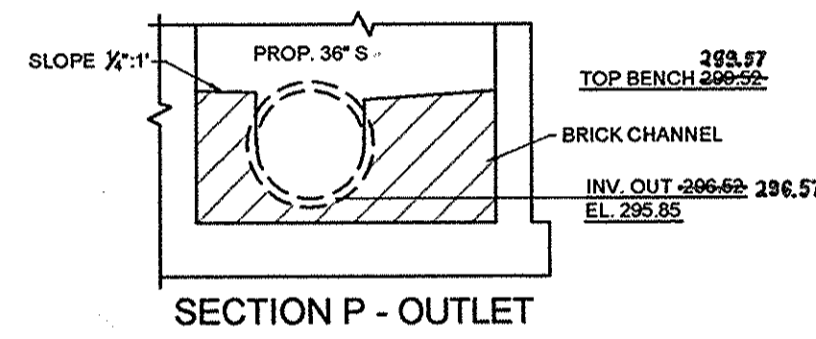
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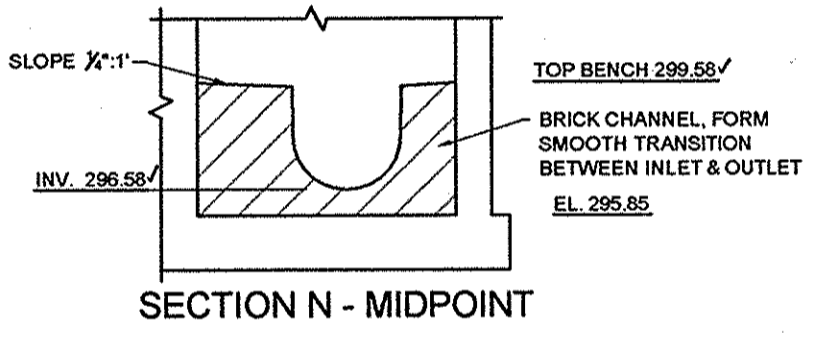
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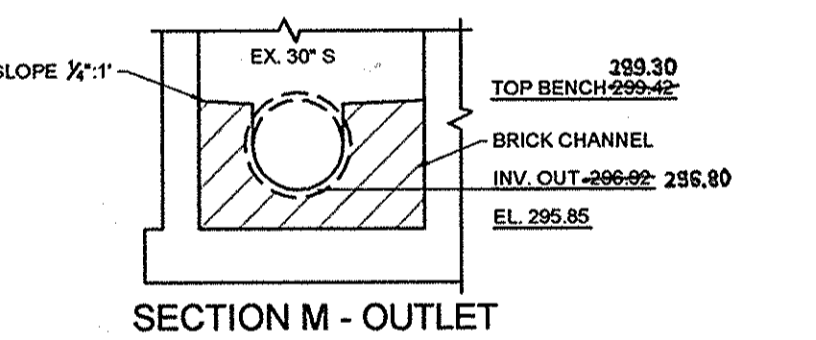
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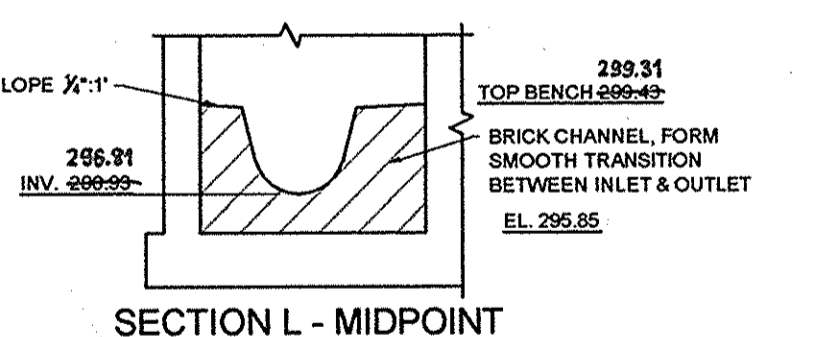
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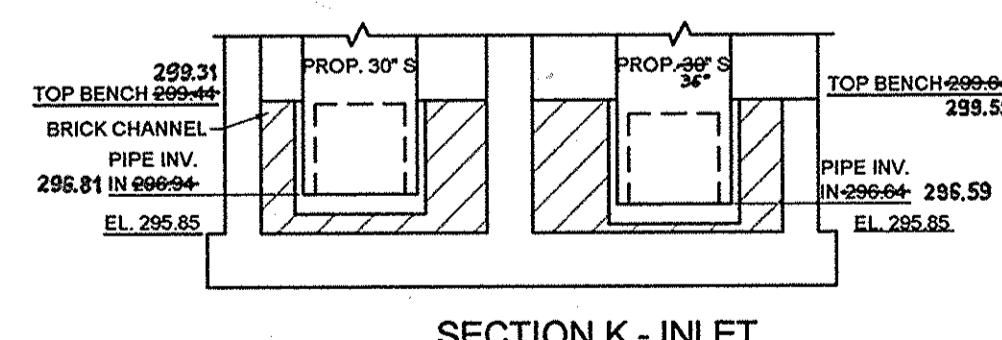
SECTION N - MIDPOINT



SECTION M - OUTLET



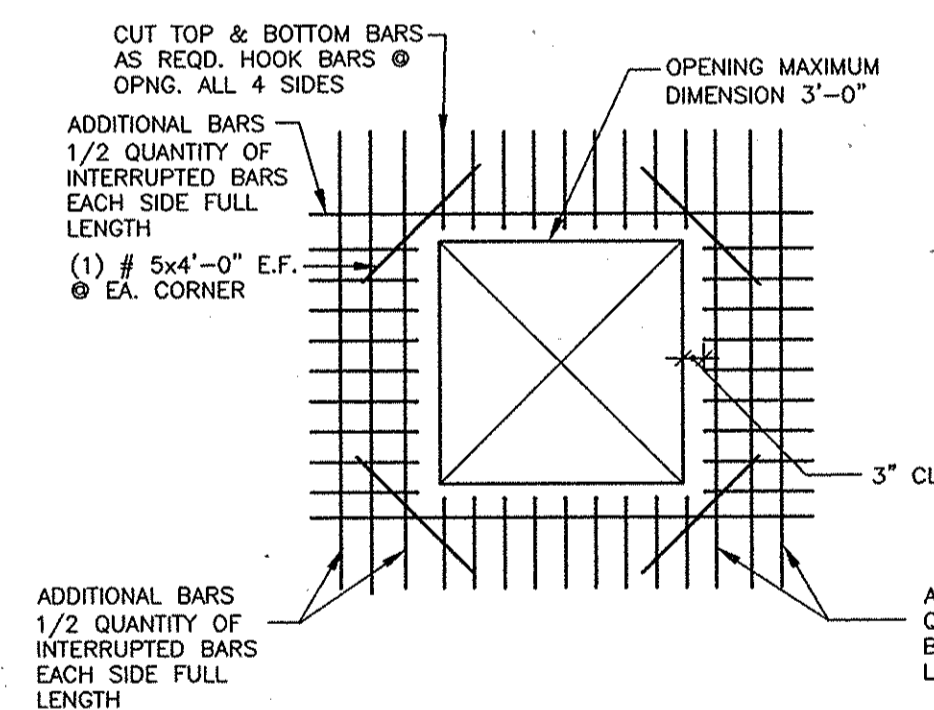
SECTION L - MIDPOINT



SECTION K - INLET

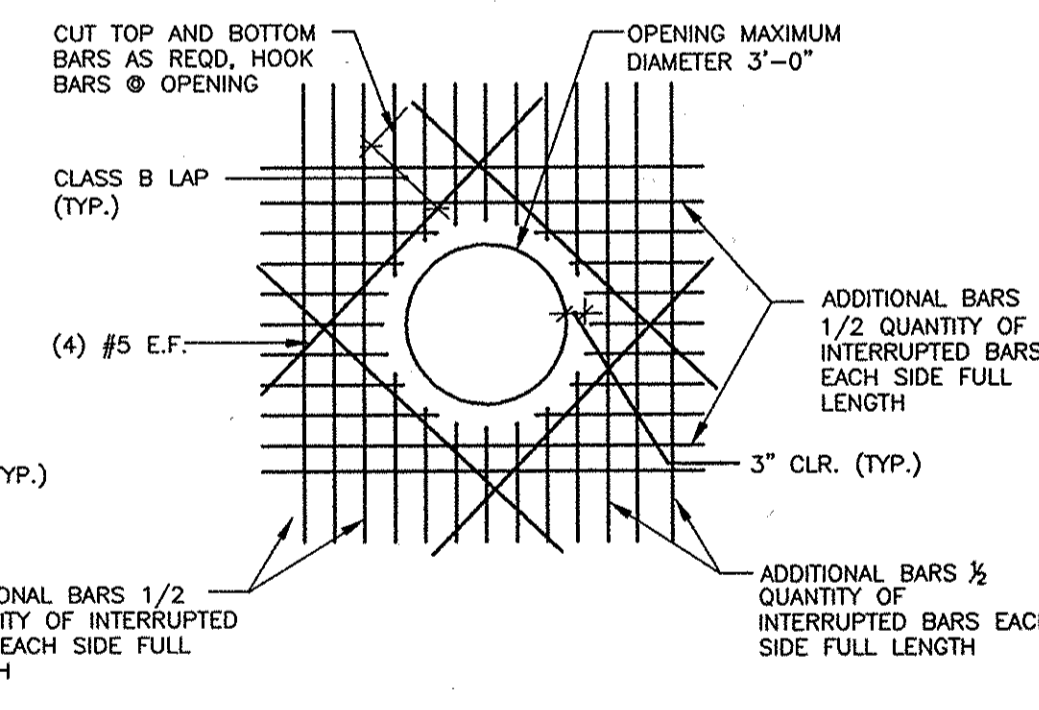
CROSS SECTIONS

SCALE : 3/16" = 1'-0"



**WALL OR SLAB OPENING
DETAIL**

SCALE : NTS (2'-4" SQ. MAX.)



**WALL OR SLAB OPENING
DETAIL**

SCALE : NTS (3' > MAX.)

AS-BUILTS DATE 04-26-12

**DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND**

Director of Public Works: *[Signature]* DATE: 1/31/11
 Chief, Bureau of Utilities: *[Signature]* DATE: 1/31/11
 Chief of Engineering: *[Signature]* DATE: 1/20/11
 Chief Utility Design Division: *[Signature]* DATE: 1/20/11



Dewberry & Davis LLC
 3108 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2662
 410.265.9500
 FAX: 410.295.8875



DES: LAL

DRN: RLI

CHK: TND

DATE: 1.17.11

BY	NO.	REVISIONS	DATE

JUNCTION CHAMBER DETAILS

600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
 CONTRACT NO. 20-4541

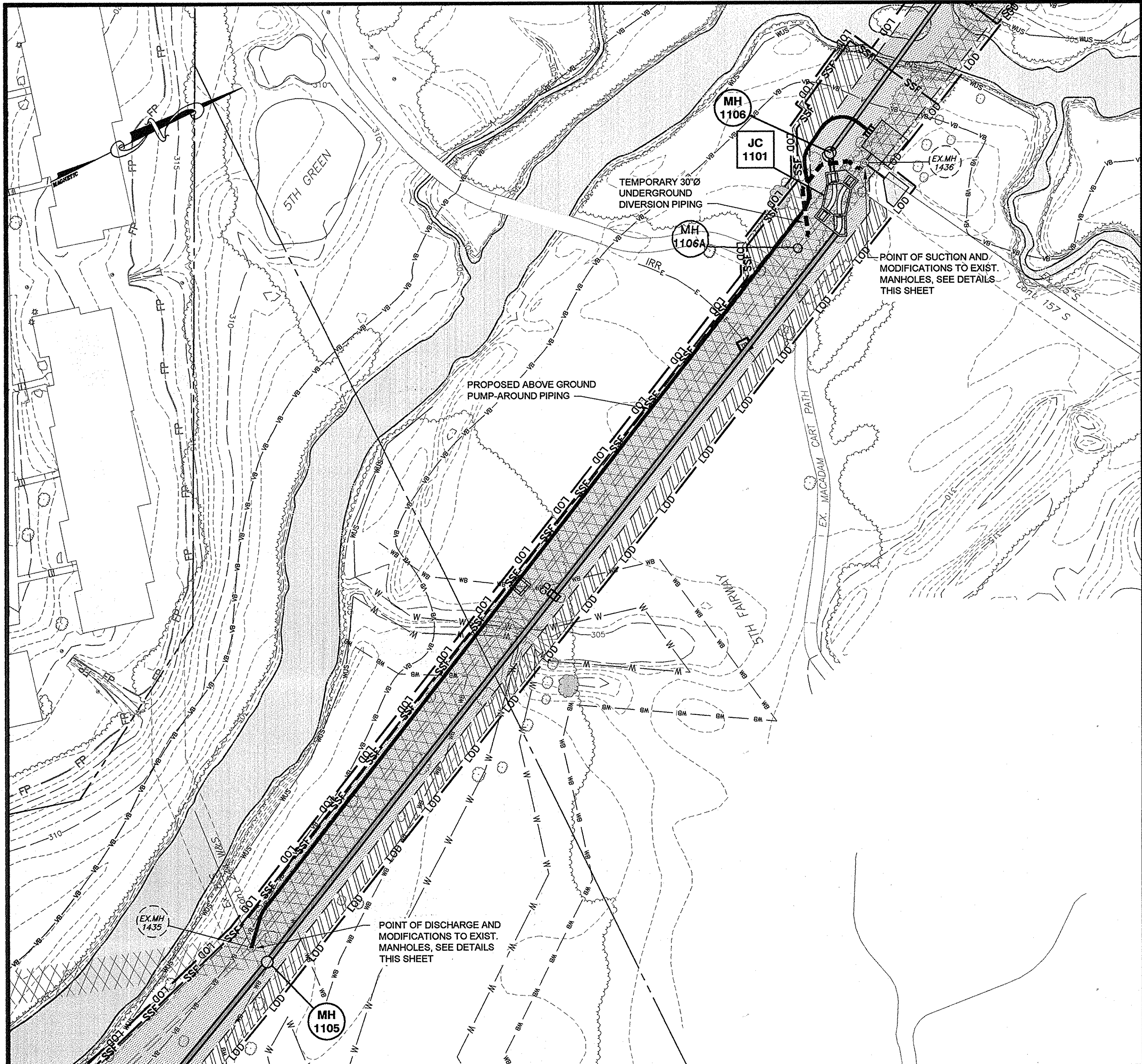
ELECTION DISTRICT NO. 5

HOWARD COUNTY, MARYLAND

SCALE:
 SHOWN

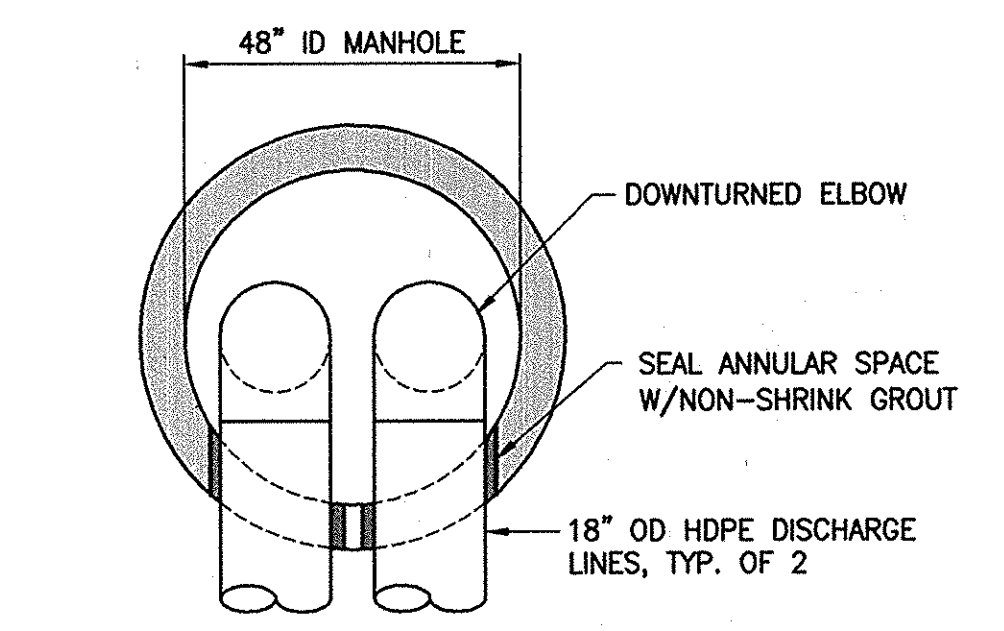
SHEET
 10 OF 19

Plotted by (name) on (date) at (time) in (location) 3/20/11 3:23pm
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 User: mccormac
 Printer: HP DesignJet 5000-600
 Plot Device: HP DesignJet 5000-600
 Plot Date: 3/20/11 3:23pm
 Plot Time: 3:23pm
 Project: 11-14-11-By-Pass-Plan
 Job: LITTLE PATUXENT PARALLEL INTERCEPTOR BY-PASS PLAN
 Sheet: 11 OF 19



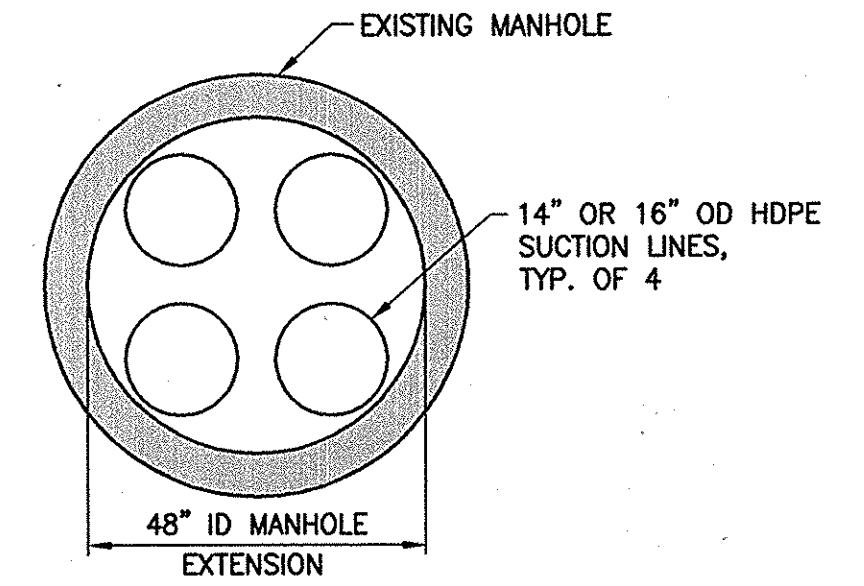
BY-PASS PLAN
SCALE: 1" = 40'

NOTE:
 A TEMPORARY DIVERSION PIPE ALTERNATIVE TO FULL-TIME BY-PASS PUMPING WILL BE CONSIDERED ONLY IF IT DOES NOT RAISE THE HYDRAULIC GRADE LINE OF EXISTING FLOWS (I.E., NO SURCHARGING OF THE EXISTING SEWER WILL BE ALLOWED).

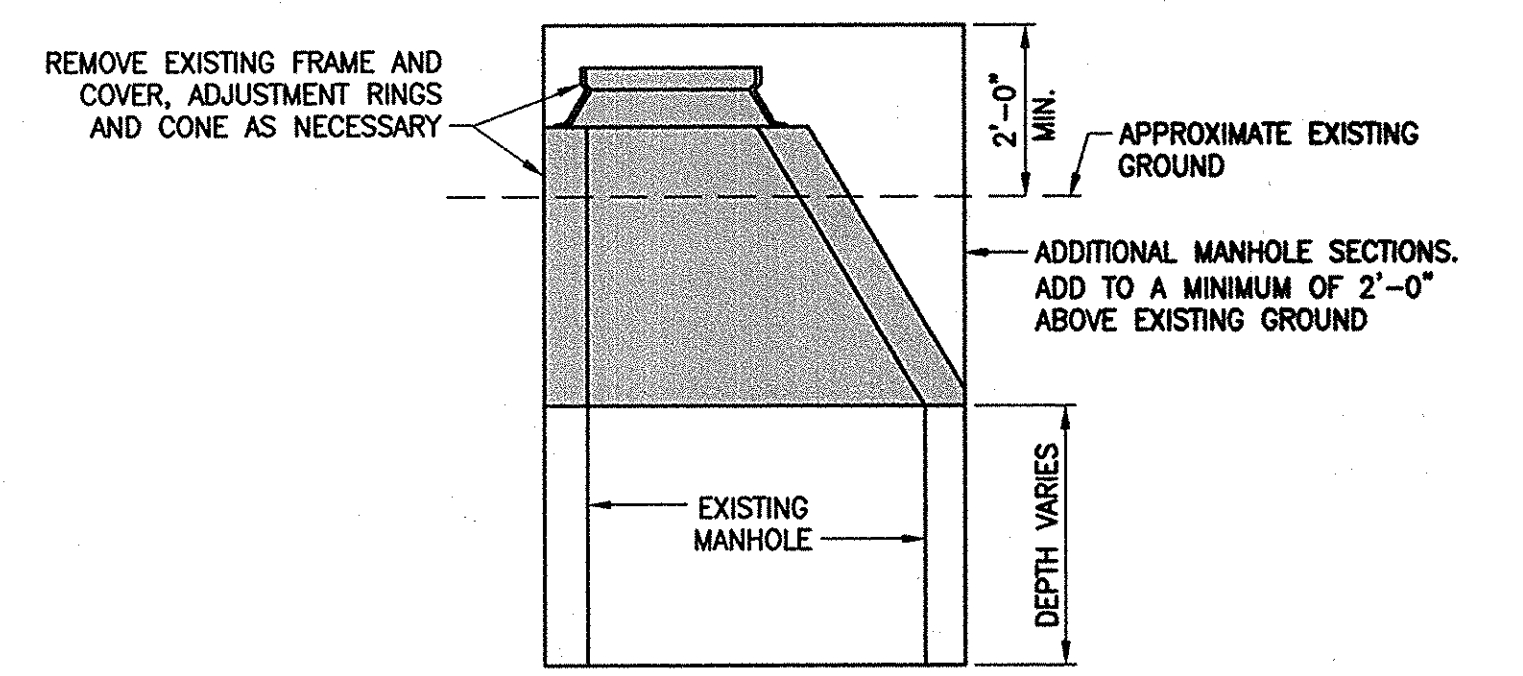


NOTE: HOLES IN MANHOLE WALL FOR DISCHARGE PIPES SHALL BE REPAIRED/PLUGGED WHEN WORK IS COMPLETE.

POINT OF DISCHARGE EX. MH 1436
NOT TO SCALE

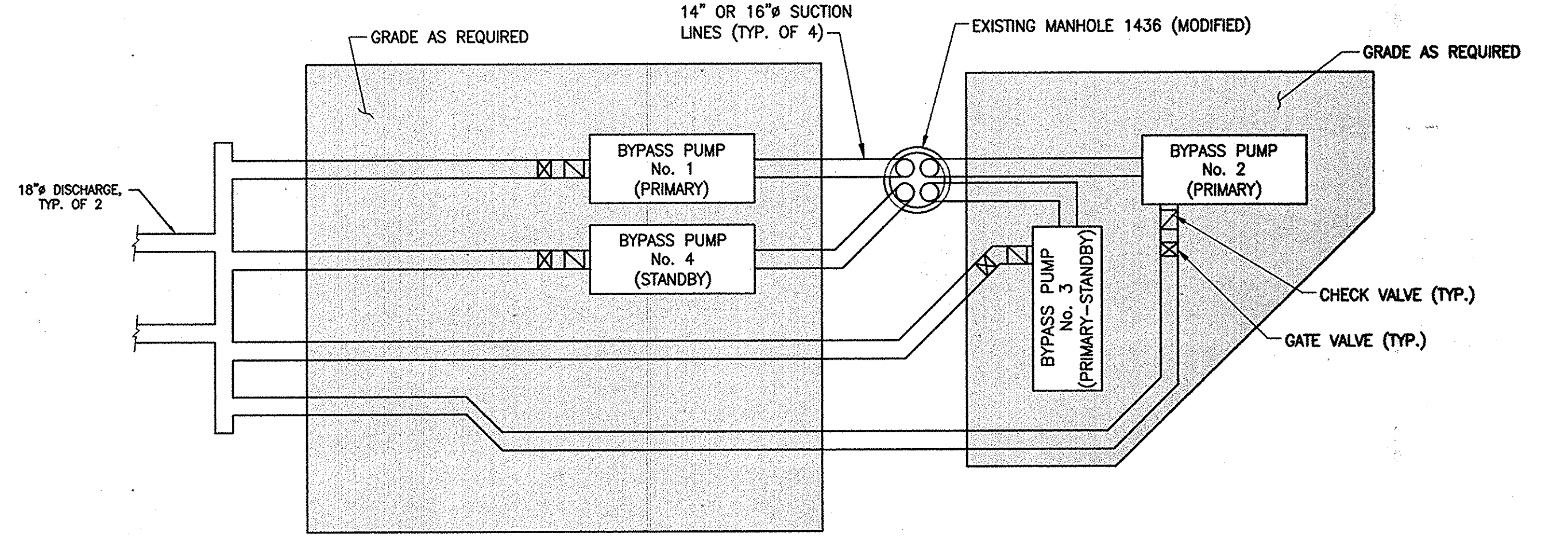


POINT OF SUCTION EX. MH 1436
NOT TO SCALE



MODIFICATIONS TO EXISTING MANHOLE 1436
NOT TO SCALE

- BY-PASS PUMP NOTES:**
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING, FURNISHING, INSTALLING, OPERATING, AND MAINTAINING THE BYPASS SYSTEM, AS PER THE SPECIFICATIONS.
 2. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS TO VERIFY DESIGN AND SIZING OF THE BYPASS SYSTEM.
 3. THE CONTRACTOR SHALL BE RESPONSIBLE, INCLUDING PAYMENT OF PENALTIES, FOR ANY VIOLATIONS AND SPILLAGE OF SEWAGE.
 4. EACH PUMP SHALL BE FITTED WITH AN INDIVIDUAL SUCTION PIPE. MANIFOLD SUCTION SHALL NOT BE ALLOWED.
 5. NO STORMWATER SHALL BE ALLOWED TO ENTER POINT OF SUCTION MANHOLE.
 6. STANDBY PUMP(S) SHALL BE CONNECTED AT ALL TIMES.
 7. PUMPS SHALL BE BOSWIN DRI-PRIME MODEL DPC 300 (OR APPROVED EQUAL).
 8. PROTECTION FENCE SHALL BE INSTALLED ALONG SIDE OF PUMPS, SUCTION LINES AND DISCHARGE LINES AS A VISUAL BARRIER TO CONSTRUCTION TRAFFIC.



SUGGESTED BY-PASS PUMP SCHEMATIC LAYOUT
NOT TO SCALE

- TEMPORARY UNDERGROUND DIVERSION ALTERNATIVE (TUDA)**
1. A TEMPORARY DIVERSION PIPE ALTERNATIVE TO FULL OR PART TIME BY-PASS PUMPING WILL BE CONSIDERED IF SUBMITTED WITH SHOP DRAWINGS SHOWING ALL PROPOSED MATERIALS AND LAYOUT IN PLAN AND PROFILE VIEWS. THE TEMPORARY UNDERGROUND DIVERSION ALTERNATIVE WILL REQUIRE TWO PERMANENT BUILD-OVER MANHOLES CONSTRUCTED ACCORDING TO THE SAME SPECIFICATIONS AS ALL OTHER MANHOLES FOR THIS PROJECT. ALL TEMPORARY PIPE MUST BE REMOVED AT PROJECT COMPLETION.

AS-BUILTS DATE 04-26-12

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS DATE: 1/31/11	<i>[Signature]</i> CHIEF, BUREAU OF ENGINEERING DATE: 1/20/11
<i>[Signature]</i> CHIEF, BUREAU OF UTILITIES DATE: 1/20/11	<i>[Signature]</i> CHIEF, UTILITY DESIGN DIVISION DATE: 1/20/11

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2662
410.266.9500
FAX: 410.266.8875



DES:	LAL				
DRN:	CD				
CHK:	TND				
DATE:	1.17.11	BY	NO.	REVISIONS	DATE

BY-PASS PLAN AND DETAILS

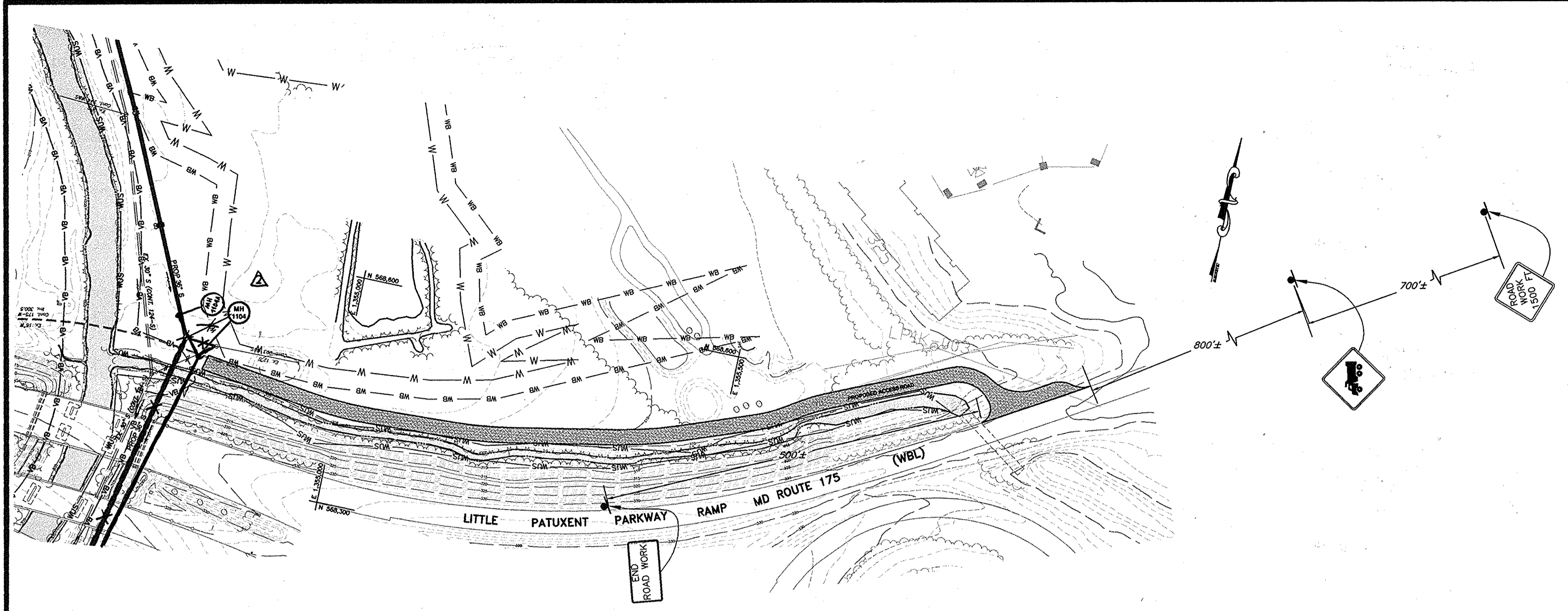
600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

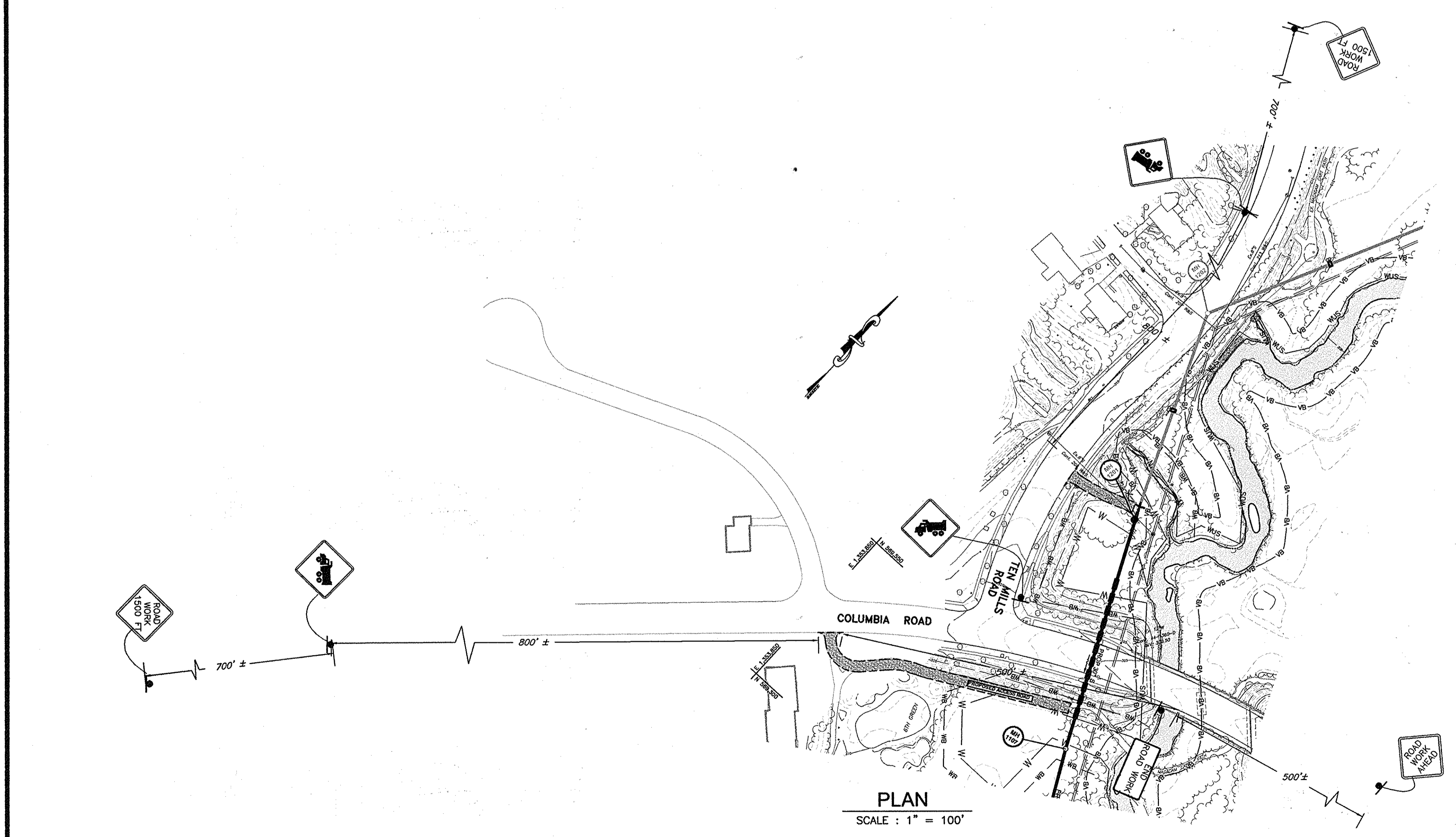
ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE: SHOWN
SHEET 11 OF 19

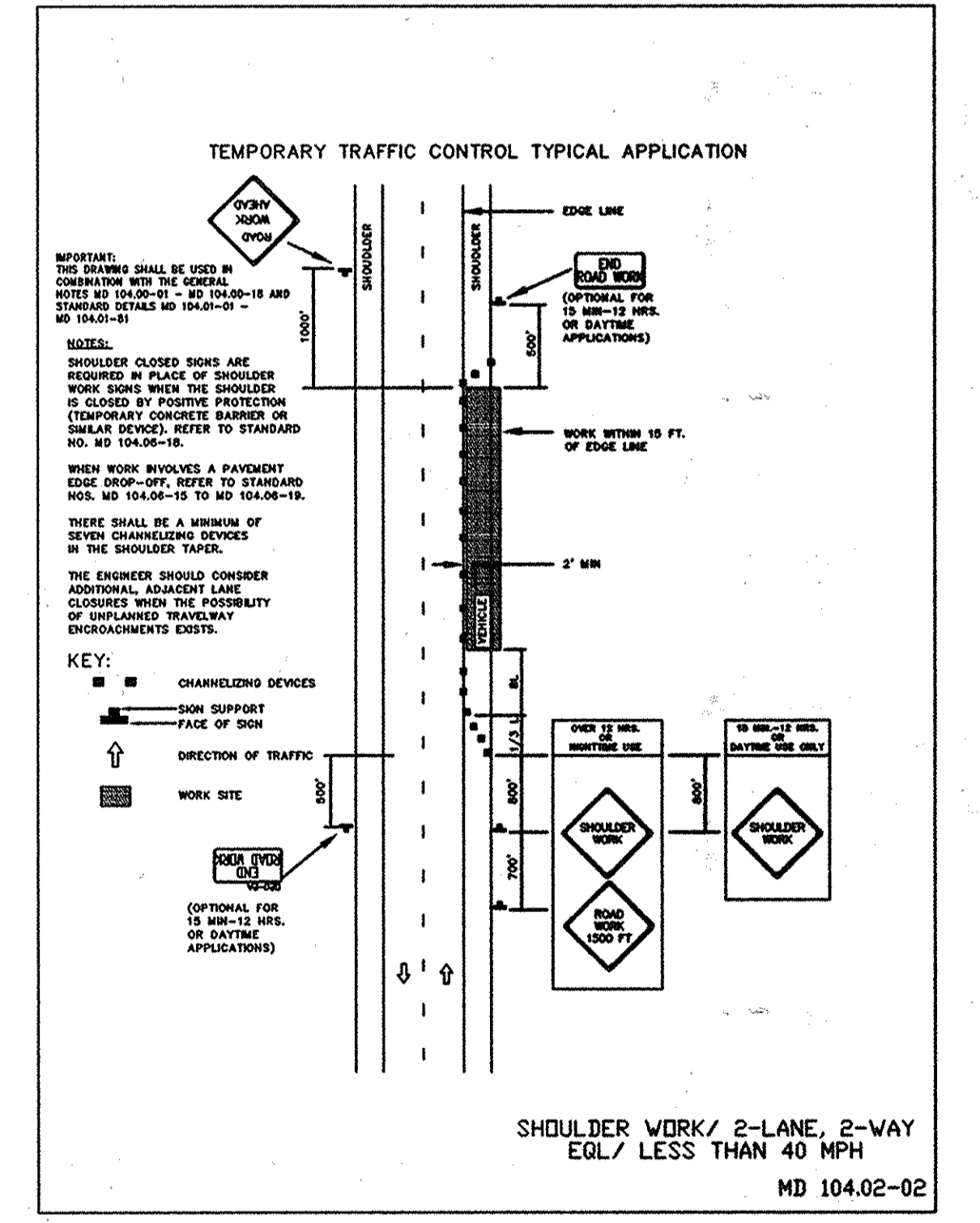
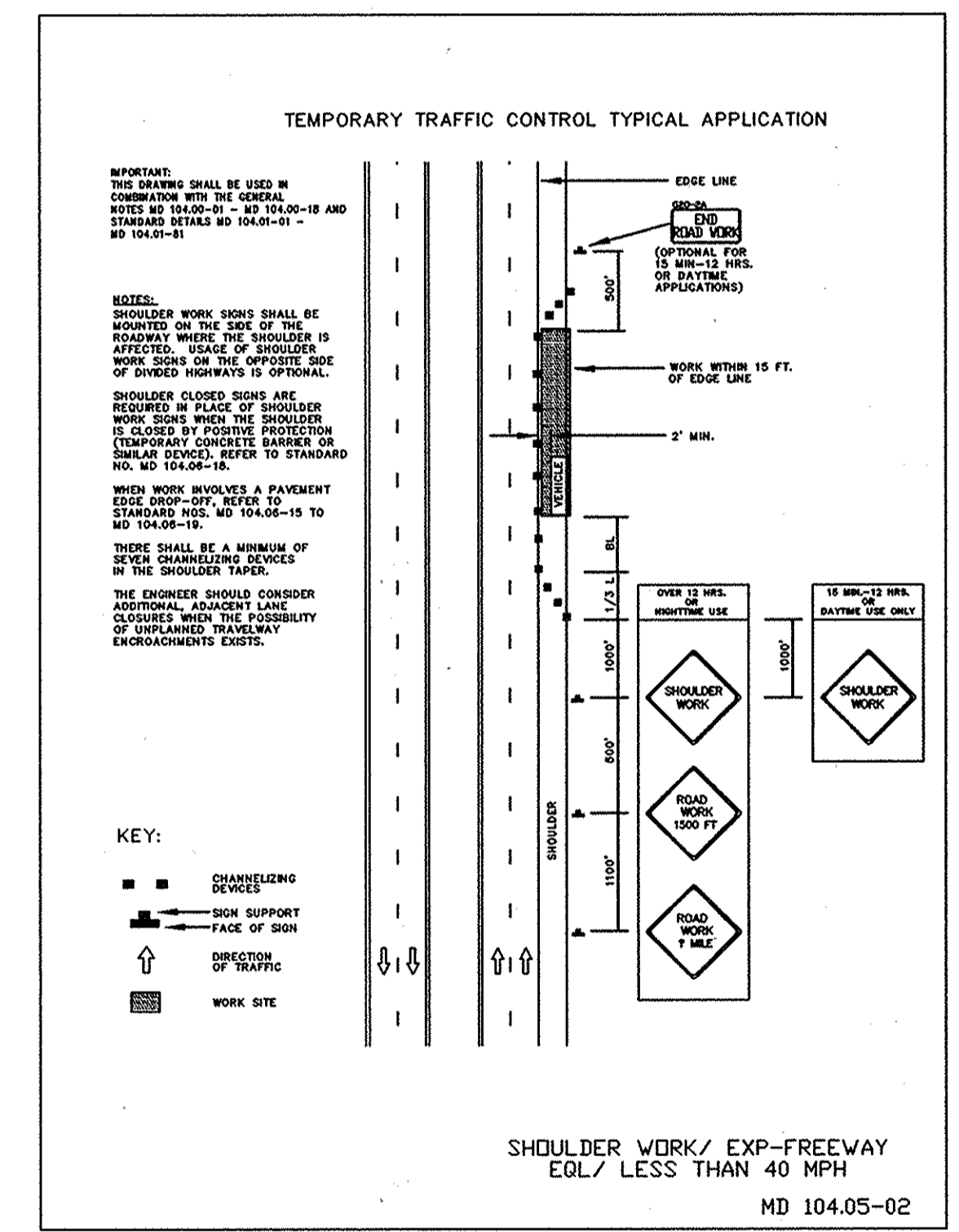
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 Plotter Version: 1.0
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 Plotter Model Number: HP DesignJet T1100e PCL6
 Plotter Version Number: 1.0
 Plotter Manufacturer Address: Hewlett-Packard Development Company, L.P., 3000 Hanover Street, Palo Alto, CA 94304, USA
 Plotter Model Number: HP DesignJet T1100e PCL6
 Plotter Version Number: 1.0
 Plotter Manufacturer: Hewlett-Packard
 Plotter Model Number: HP DesignJet T1100e PCL6
 Plotter Version Number: 1.0
 Plotter Manufacturer Address: Hewlett-Packard Development Company, L.P., 3000 Hanover Street, Palo Alto, CA 94304, USA



PLAN
SCALE : 1" = 100'



PLAN
SCALE : 1" = 100'

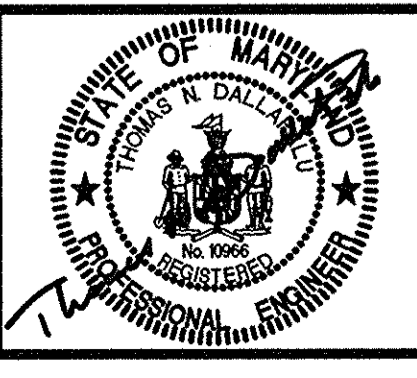


AS-BUILTS DATE 04-26-12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] 1/20/11
 Chief, Bureau of Engineering: [Signature] 1/20/11
 Chief, Bureau of Utilities: [Signature] 1/20/11
 Chief, Utility Design Division: [Signature] 1/20/11

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



DES: LAL			
DRN: CD	LAL	MH 1103 TO MH 1104-REVISED ALIGNMENT; MH 1104 TO MH 1105-ADD MH 1104A; SHORTENED MH 1104 TO MH 1105 BY 30'	2/23/11
CHK: TND			
DATE: 1.17.11	BY NO.	REVISIONS	DATE

**MAINTENANCE OF TRAFFIC
ACCESS ROAD PLAN**

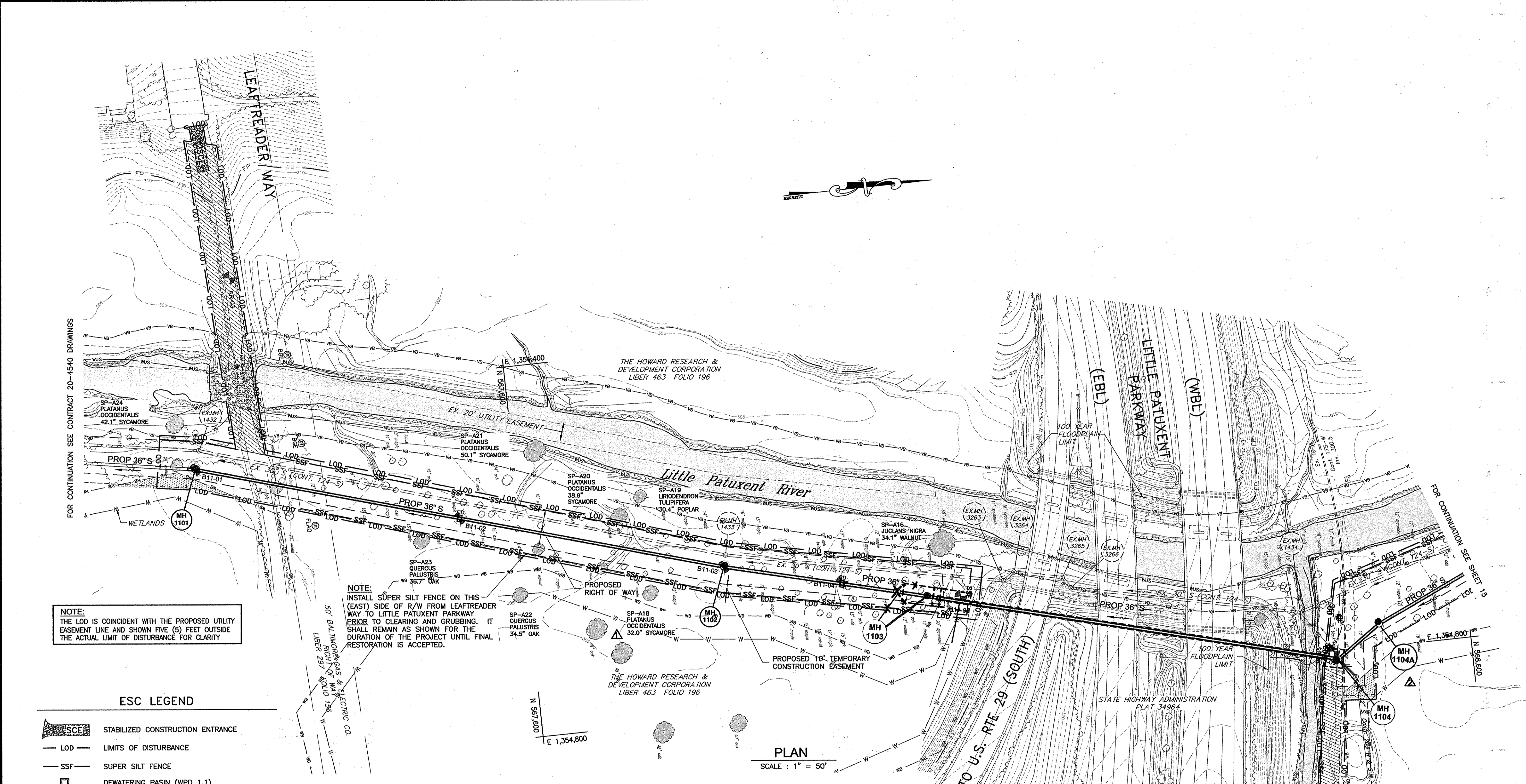
600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE:
SHOWN
SHEET
13 OF 19

Project: S:\Projects\20-4540-Interceptor\CAD\Drawings\Topo.dwg; User: j...; Date: 10/13/2011; Time: 10:00:00 AM; Plot: ESC - PLAN SHEET 4 of 19
 Project: S:\Projects\20-4540-Interceptor\CAD\Drawings\Topo.dwg; User: j...; Date: 10/13/2011; Time: 10:00:00 AM; Plot: ESC - PLAN SHEET 4 of 19



NOTE:
 THE LOD IS COINCIDENT WITH THE PROPOSED UTILITY EASEMENT LINE AND SHOWN FIVE (5) FEET OUTSIDE THE ACTUAL LIMIT OF DISTURBANCE FOR CLARITY

NOTE:
 INSTALL SUPER SILT FENCE ON THIS (EAST) SIDE OF R/W FROM LEAFREADER WAY TO LITTLE PATUXENT PARKWAY PRIOR TO CLEARING AND GRUBBING. IT SHALL REMAIN AS SHOWN FOR THE DURATION OF THE PROJECT UNTIL FINAL RESTORATION IS ACCEPTED.

ESC LEGEND

	STABILIZED CONSTRUCTION ENTRANCE
	LIMITS OF DISTURBANCE
	SUPER SILT FENCE
	DEWATERING BASIN (WPD 1.1)
	PUMP-AROUND PRACTICE (WPD 1.2)
	CULVERT PIPE WITH ACCESS ROAD (MDE H-29-12 & 12A)
	SANDBAG / STONE DIVERSION (WPD 1.5)
	25' STREAM BUFFER WITHIN LOD

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 FLOODPLAIN" ON SHEET 19.
- FOR GROUND PREPARATION, SOIL MODIFICATIONS, DISTURBED AREAS OUTSIDE OF THE WETLAND AND WETLAND BUFFER AREAS, REFER TO SHEET 17. 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.
- SHADING (SEE LEGEND THIS SHEET) DENOTES AREAS OF NON-TIDAL WETLANDS AND BUFFER WITHIN THE LOD

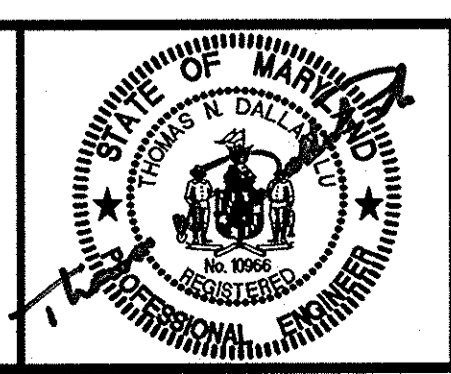
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James L. ... 10/26/11
 DIRECTOR OF PUBLIC WORKS DATE

Paul ... 9/28/11
 CHIEF, BUREAU OF ENGINEERING DATE

... 9/28/11
 CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
 Dewberry & Davis LLC
 3108 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2692
 410.265.9500
 FAX: 410.265.8875



DES: LAL	LAL	REVISD WELAND LIMIT AND WETLAND BUFFER LIMIT	2/15/11
DRN: CD	LAL	REVISED ALIGNMENT MH 1102 THRU MH 1104A (ORIGINAL ALIGNMENT NOT SHOWN FOR CLARITY)	9/23/11
CHK: TND			
DATE: 1.17.11	BY NO.	REVISIONS	DATE

EROSION AND SEDIMENT CONTROL PLAN

600' SCALE MAP NO. 30
 BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR

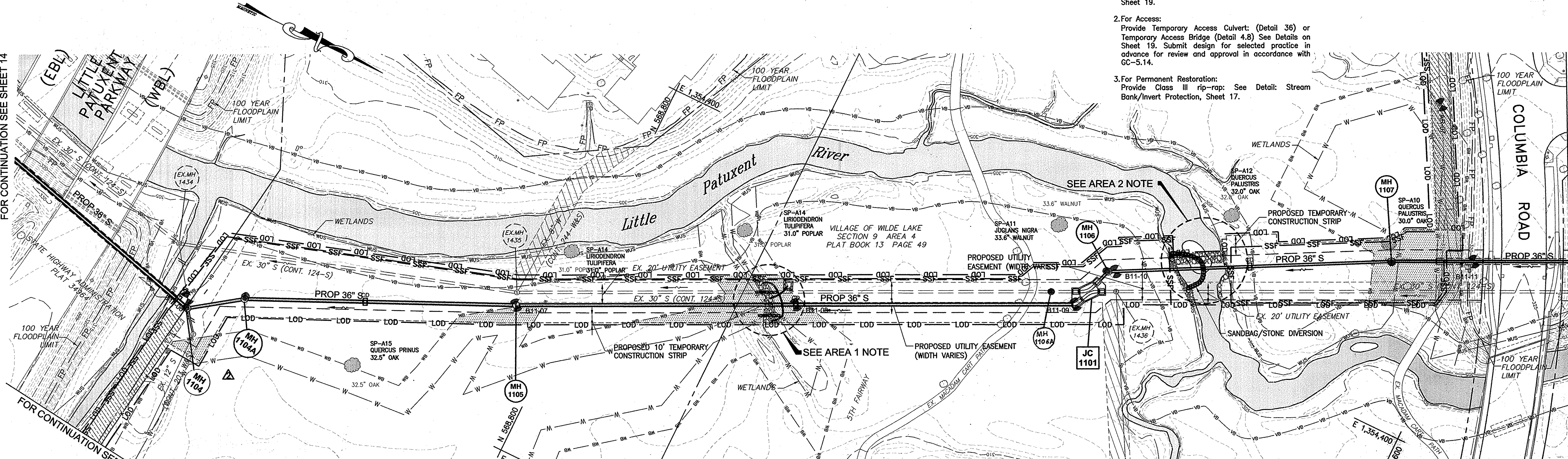
CAPITAL PROJECT S-6175
 CONTRACT NO. 20-4541

ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

AS-BUILT DATE 04-26-12

Plotted by: (jca) on 08/26/11 9:23 AM by: (jca) on 08/26/11 9:23 AM P:\Projects\11-2000-Little Patuxent Interceptor\CAD\CD\Section 9 Area 4 - ESC - PLAN SHEET.dwg
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Scale: 1" = 50'
Date: 04-26-12
Author: (jca) on 08/26/11 9:23 AM
Project: 11-2000-Little Patuxent Interceptor\CD\Section 9 Area 4 - ESC - PLAN SHEET.dwg
Job No: 11-2000-Little Patuxent Interceptor\CD\Section 9 Area 4 - ESC - PLAN SHEET.dwg

- AREA 2 NOTE:**
- Contractor to Install:**
1. For Pipe Construction: Provide Sandbag/Stone Diversion: See Detail 1.5 on Sheet 19.
2. For Access: Provide Temporary Access Culvert: (Detail 36) or Temporary Access Bridge (Detail 4.8) See Details on Sheet 19. Submit design for selected practice in advance for review and approval in accordance with GC-5.14.
3. For Permanent Restoration: Provide Class III rip-rap: See Detail: Stream Bank/Invert Protection, Sheet 17.

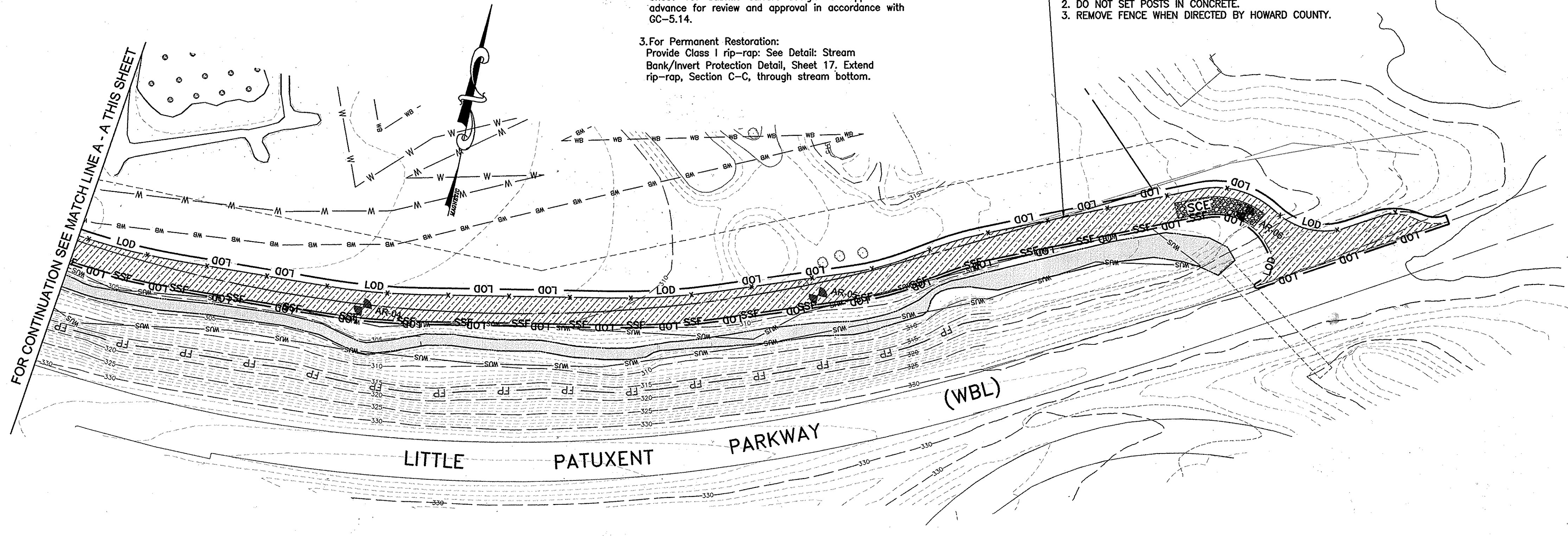
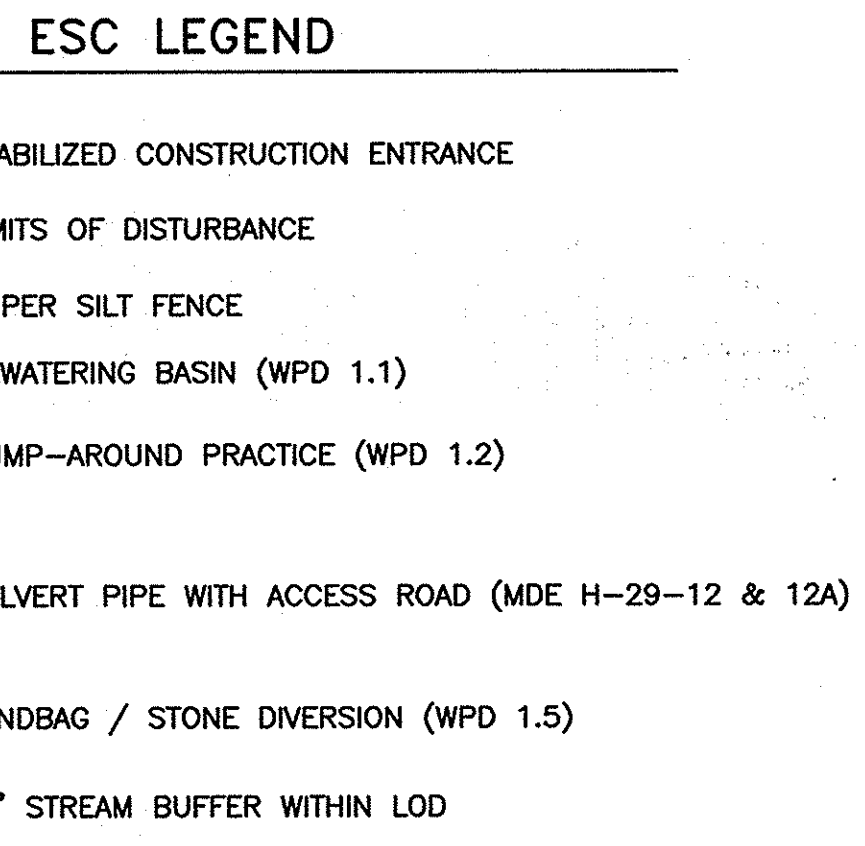


NOTE:
THE LOD IS COINCIDENT WITH THE PROPOSED UTILITY EASEMENT LINE AND SHOWN FIVE (5) FEET OUTSIDE THE ACTUAL LIMIT OF DISTURBANCE FOR CLARITY

- AREA 1 NOTE:**
- Contractor to Install:**
1. For Pipe Construction: Provide Pump around Practice: See Detail 1.2 on Sheet 19.
2. For Access: Provide Temporary Access Culvert: See Detail 36 on Sheet 19. Submit culvert design for approval in advance for review and approval in accordance with GC-5.14.
3. For Permanent Restoration: Provide Class III rip-rap: See Detail: Stream Bank/Invert Protection Detail, Sheet 17. Extend rip-rap, Section C-C, through stream bottom.

- NOTE:**
- PROVIDE A 6' HIGH TEMPORARY CHAIN LINK FENCE WITH HUNTER GREEN VERTICAL SLATS THE ENTIRE LENGTH OF THE ACCESS ROAD ON THE NORTH SIDE. SEE STANDARD DETAILS G7.22, G7.24, G7.25, AND G7.26.
 - DO NOT SET POSTS IN CONCRETE.
 - REMOVE FENCE WHEN DIRECTED BY HOWARD COUNTY.

- RESTORATION NOTES:**
- NON-TIDAL WETLANDS AND ASSOCIATED NON-TIDAL WETLAND BUFFERS WITHIN THE LIMITS OF DISTURBANCE (LOD) HAVE BEEN SHADDED 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 FLOODPLAIN" ON SHEET 19.
 - FOR GROUND PREPARATION, SOIL MODIFICATIONS, DISTURBED AREAS OUTSIDE OF THE WETLAND AND WETLAND BUFFER AREAS, REFER TO SHEET 17. 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.
 - SHADING (SEE LEGEND THIS SHEET) DENOTES AREAS OF NON-TIDAL WETLANDS AND BUFFER WITHIN THE LOD



PLAN
SCALE: 1" = 50'

DATE 04-26-12 AS-BUILTS

ESC
3 OF 7
SCALE:
SHOWN
SHEET
15 OF 19

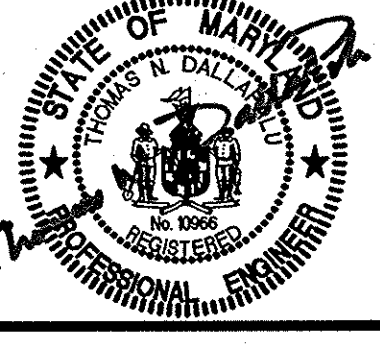
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John A. H. [Signature] 9/25/11
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/25/11
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 9/26/11
CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2962
410.265.9500
FAX: 410.265.8875



DES:	LAL			
DRN:	CD	LAL	REVISED ALIGNMENT MH 1102 THRU MH 1104A	9/23/11
CHK:	TND		(ORIGINAL ALIGNMENT NOT SHOWN FOR CLARITY)	
DATE:	1.17.11	BY:	NO.	

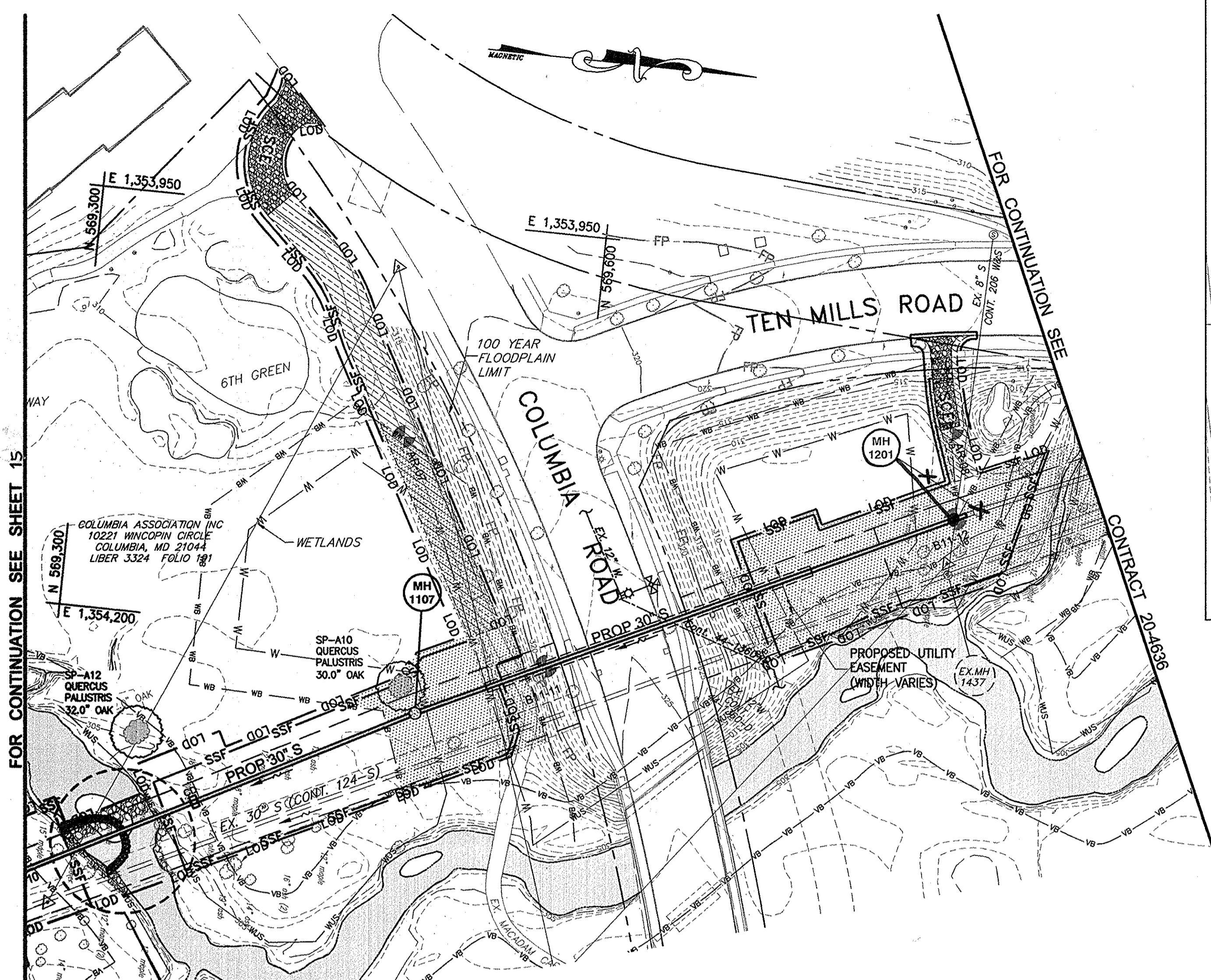
NO.	REVISIONS	DATE

EROSION AND SEDIMENT CONTROL PLAN

600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND



PLAN
SCALE: 1" = 50'

SEE AREA 2 NOTE ON SHEET 15

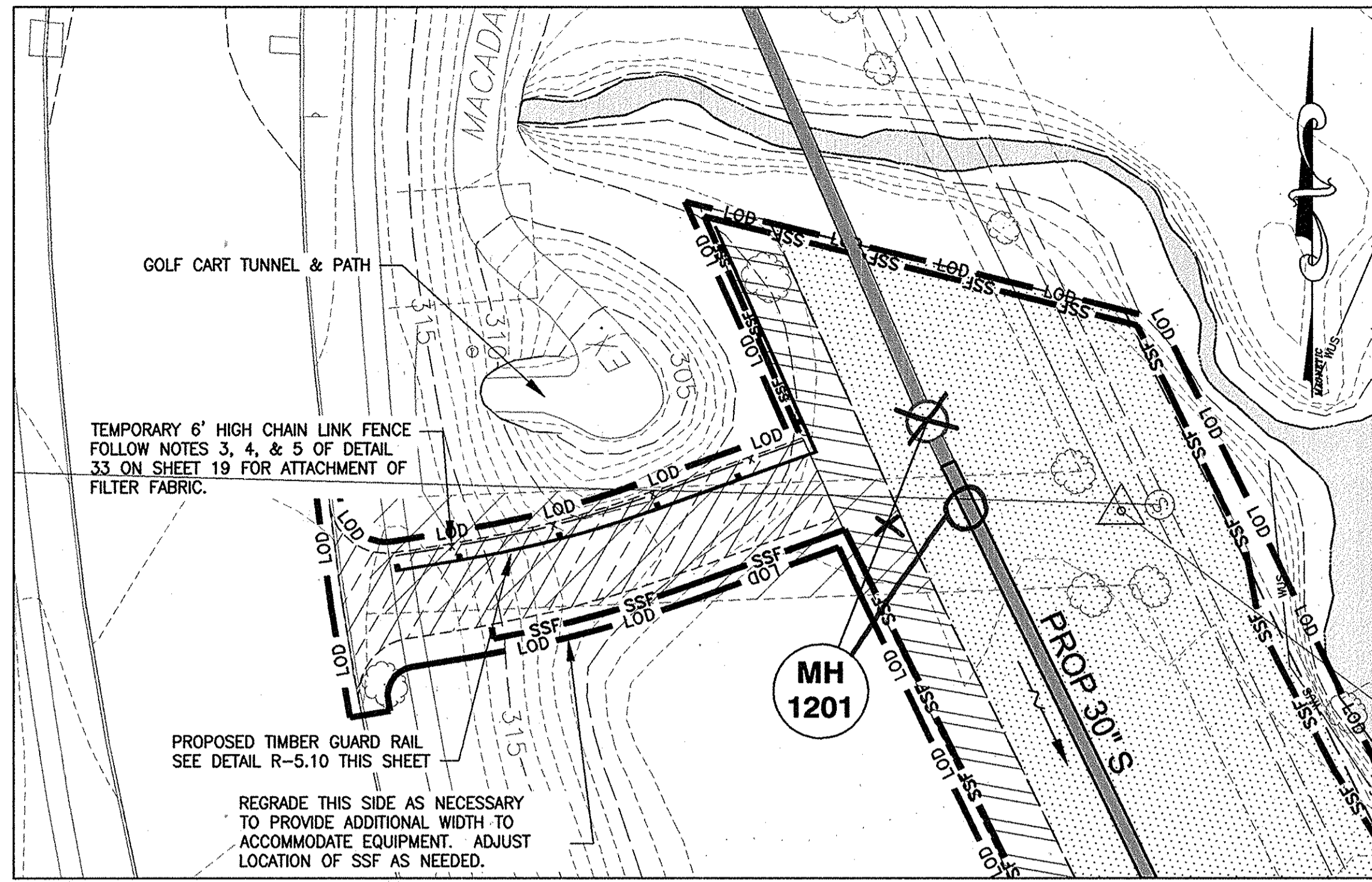
NOTE:
THE LOD IS COINCIDENT WITH THE PROPOSED UTILITY EASEMENT LINE AND SHOWN FIVE (5) FEET OUTSIDE THE ACTUAL LIMIT OF DISTURBANCE FOR CLARITY

ESC LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- LIMITS OF DISTURBANCE
- SUPER SILT FENCE
- DEWATERING BASIN (WPD 1.1)
- PUMP-AROUND PRACTICE (WPD 1.2)
- CULVERT PIPE WITH ACCESS ROAD (MDE H-29-12 & 12A)
- SANDBAG / STONE DIVERSION (WPD 1.5)
- 25' STREAM BUFFER WITHIN LOD

RESTORATION NOTES:

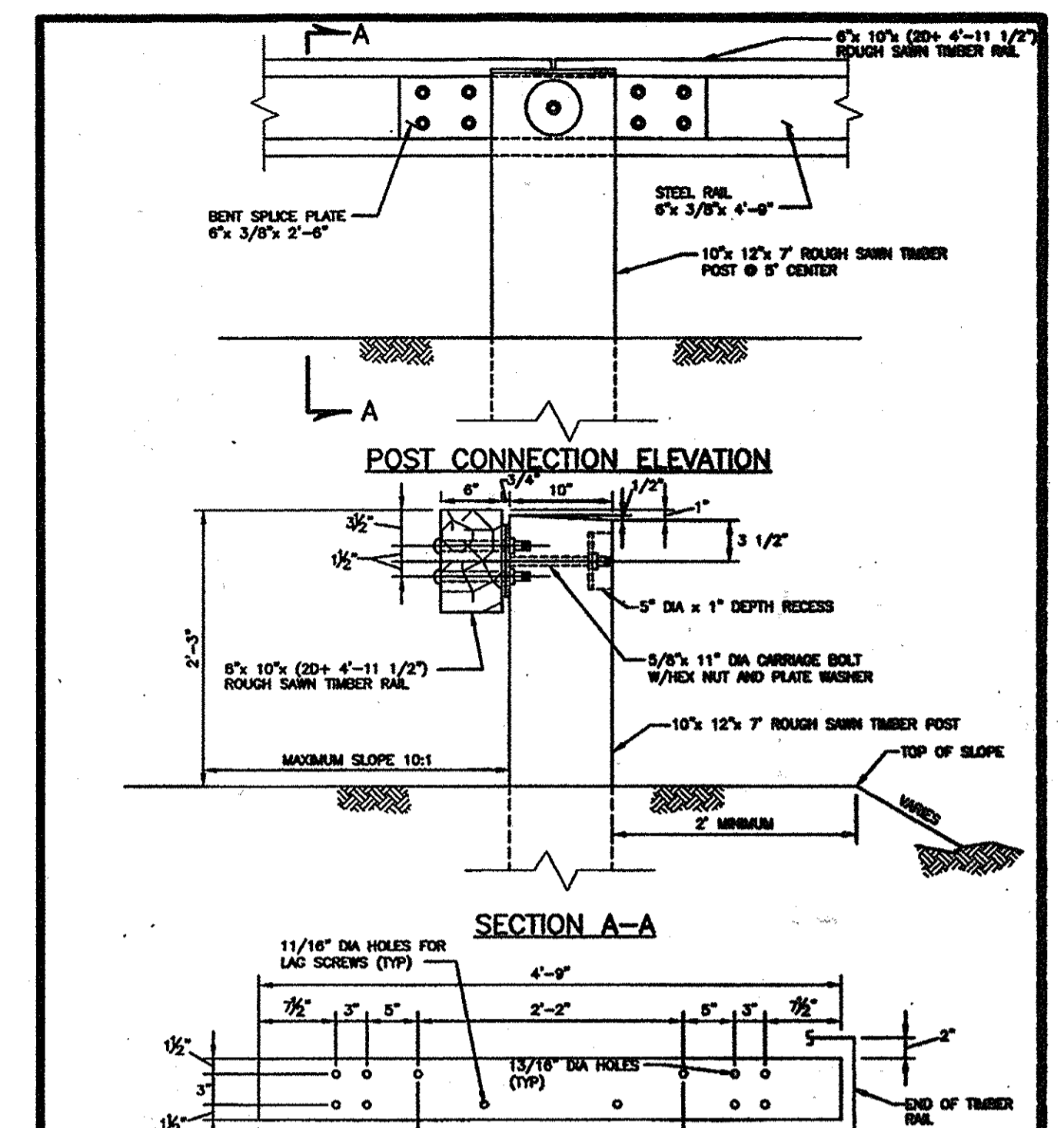
1. NON-TIDAL WETLANDS AND ASSOCIATED NON-TIDAL WETLAND BUFFERS WITHIN THE LIMITS OF DISTURBANCE (LOD) HAVE BEEN SHADED ON THIS PLAN FOR CLARITY. FOR WORKING IN THESE AREAS AND FOR RESTORING THEM ONCE THE SEWER INSTALLATION IS COMPLETE, THE CONTRACTOR SHALL ABIDE BY THE REQUIREMENTS OF THE "BEST MANAGEMENT PRACTICES FOR WORKING IN NON-TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAIN" ON SHEET 19.
2. FOR GROUND PREPARATION, SOIL MODIFICATIONS, DISTURBED AREAS OUTSIDE OF THE WETLAND AND WETLAND BUFFER AREAS, REFER TO SHEET 17. THESE BASIC REQUIREMENTS ARE SUPPLEMENTED BY TECHNICAL SPECIFICATION, SECTION 02280-"FINISH GRADING AND LANDSCAPING," IN THE SPECIFICATIONS, WHICH ADDRESS SPECIFIC SUB-GRADE PREPARATION AND FINISH GRADING REQUIREMENTS.
3. SHADING (SEE LEGEND THIS SHEET) DENOTES AREAS OF NON-TIDAL WETLANDS AND BUFFER WITHIN THE LOD.



PLAN FOR ACCESS ROAD GUARD RAIL
SCALE: 1" = 20'

NOTES:

1. PROVIDE ACCESS ROAD.
2. PROVIDE PERMANENT HEAVY DUTY TIMBER GUARD RAIL ON NORTH SIDE OF ACCESS ROAD AND SCE, SEE DETAIL R-5.10 THIS SHEET.
3. PROVIDE TEMPORARY 6' HIGH CHAIN LINK FENCE WITH HUNTER GREEN VERTICAL SLATS ON NORTH SIDE OF GUARD RAIL. SEE HOWARD COUNTY STANDARD DETAIL.

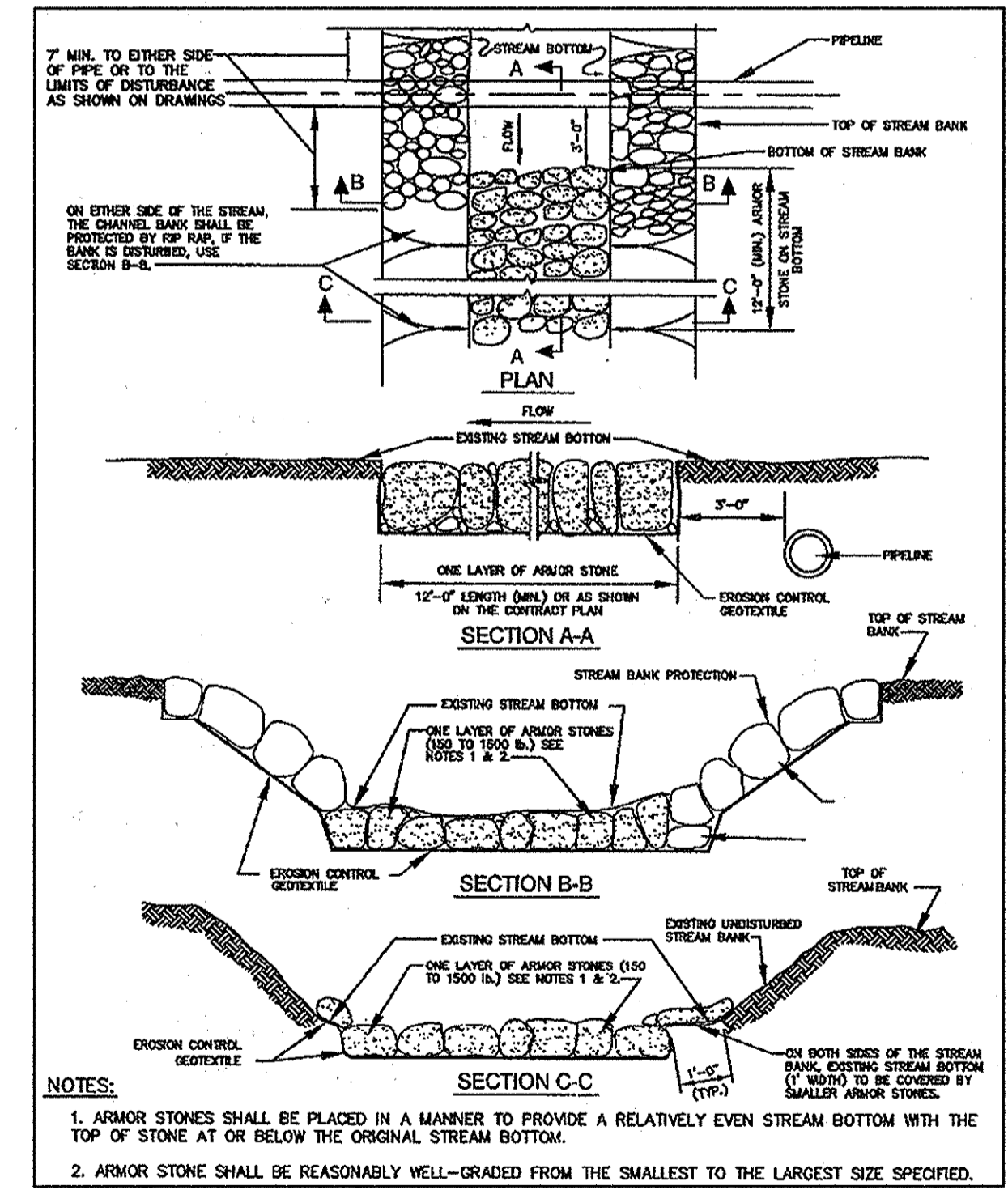


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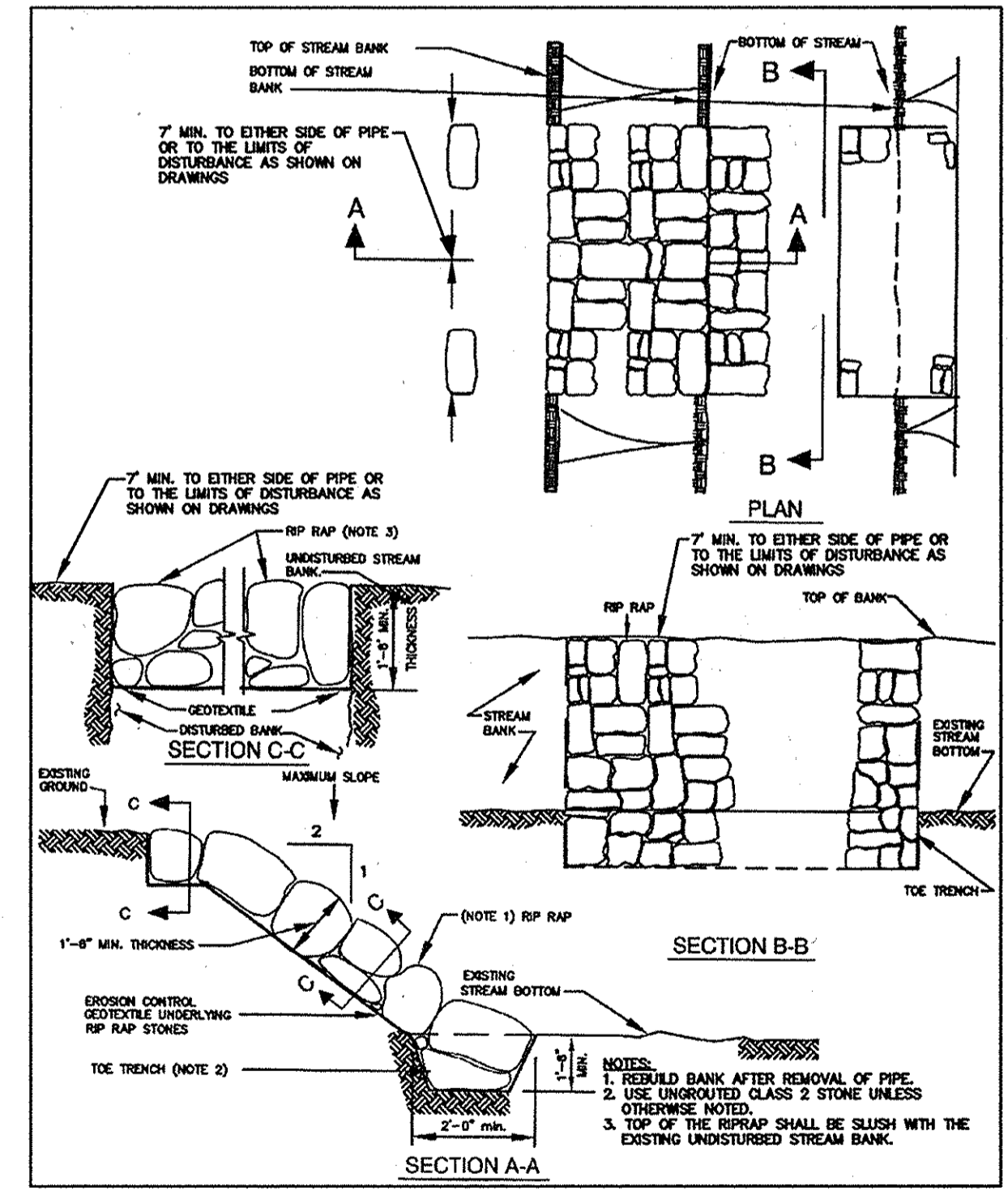
1. SEE DETAIL R-5.08 FOR PLAN VIEW OF BARBECODE INSTALLATION.
2. INSTALL SIGNS (M-1(2)) "END OF ROAD MARKED" BEHIND BARBECODE. SIGNS TO BE INSTALLED 12' APART MINIMUM 2 SIGNS PER LOCATION.

STEEL RAIL DETAIL
6" x 3/8" x 4'-9"

Howard County, Maryland Department of Public Works 1/12/2012 Chief, Bureau of Engineering	TIMBER GUARD RAIL Type B	Detail R-5.10
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STREAM INVERT PROTECTION
NO SCALE



STREAM BANK PROTECTION
NO SCALE

DETAIL: STREAM BANK/ INVERT PROTECTION

AS-BUILTS DATE 04-26-12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS
 DATE 1/31/12

CHIEF, BUREAU OF ENGINEERING
 DATE 1/20/11

CHIEF, BUREAU OF UTILITIES
 DATE 1/31/11

CHIEF, UTILITY DESIGN DIVISION
 DATE 1/20/11

Dewberry
Dewberry & Davis LLC

3109 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2692
410.265.9500
FAX: 410.265.8875



DES: LAL			
DRN: CD			
CHK: TND			
DATE: 1.17.11	BY NO.	REVISIONS	DATE

EROSION AND SEDIMENT CONTROL PLAN

600' SCALE MAP NO. 30
BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

ELECTION DISTRICT NO. 5
HOWARD COUNTY, MARYLAND

ESC 4 OF 7
SCALE: SHOWN
SHEET 16 OF 19

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Section I - Vegetative Stabilization Methods and Materials

- A. Site Preparation**
- Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
 - Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
 - Schedule required soil tests to determine soil amendment composition and application rates for areas having disturbed areas over 5 acres.
- B. Soil Amendments (Fertilizer and Lime Specifications)**
- Soil tests must be performed to determine the exact rates 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.
 - Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.
 - 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 a fineness that at least 50% will pass through a #100 mesh sieve and 98-100% will pass through a #20 mesh sieve.
 - Incorporate lime and fertilizer into the top 3" - 5" of soil by disking or other suitable means.

- C. Seeded Protection**
- Temporary Seeding**
 - Seeded preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or 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.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3" - 5" of soil by disking or other suitable means.
 - Permanent Seeding**
 - Minimum soil conditions required for permanent vegetative establishment:
 - Soil pH shall be between 6.0 and 7.0.
 - Soluble salts shall be less than 500 parts per million (ppm).
 - The soil shall contain less than 40% clay but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception in ill loesses or sandy loessoids is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.
 - Soil shall contain 1.5% minimum organic matter by weight.
 - Soil must contain sufficient pore space to permit adequate root penetration.
 - If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
 - Areas previously graded in conformance with the drawings shall be maintained in true and even grade, then excavated otherwise loosened to a depth of 3" - 5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
 - Apply soil amendments as per soil tests or as included on the plans.
 - 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 seeded preparation, loosen surface soil by disking 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. Seeded loosening may not be necessary on newly disturbed areas.

- D. Seed Specifications**
- All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to retesting by a recognized seed laboratory. All seed 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.
 - Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75-80° F. can weaken bacteria and make the inoculant less effective.

- E. Methods of Seeding**
- Hydroseeding:** Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder or a cultipacker seeder.
 - 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 (phosphorus); 200 lbs/ac; K20 (potassium); 200 lbs/ac.
 - Lime - use only ground agricultural limestones, (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.
 - Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
 - Dry Seeding:** This includes use of conventional drop or broadcast spreaders.
 - 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.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
 - Drill or Cultipacker Seeding:** Mechanized seeders that apply and cover seed with soil.
 - Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seeded must be firm after planting.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

- F. Mulch Specifications (In order of preference)**
- Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
 - Wood Cellulose Fiber Mulch (WCFM)
 - WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
 - WCFM, including dye, shall contain no germination or growth inhibiting factors.
 - WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - WCFM material shall contain no elements or compounds at concentration levels that will be phytotoxic.
 - WCFM must conform to the following physical requirements: fiber length to approximately 10 mm, diameter approximately 1 mm, pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.
- Note:** Only sterile straw mulch should be used in areas where one species of grass is desired.

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

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

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

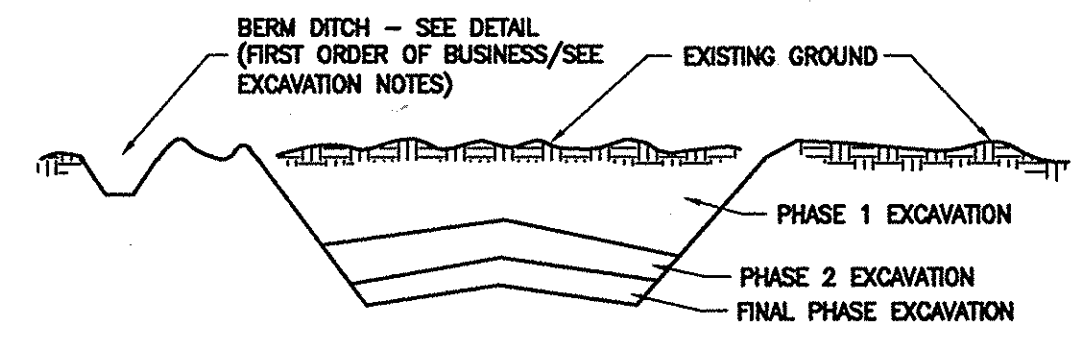


Figure 4 Incremental Stabilization - Cut

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

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

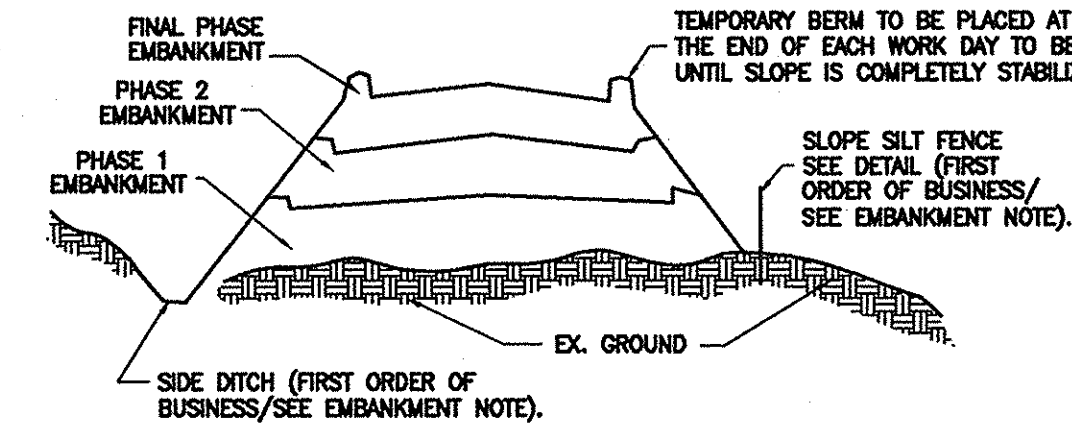


Figure 5 Incremental Stabilization - Embankment Fill Comply with MD 378 Specifications.

Section II - Temporary Seeding

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

A. Seed Mixtures - Temporary Seeding

- Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant 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.
- 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						
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-10-10)	LIME RATE
	ANNUAL RYEGRASS	50 LB/AC	3/1 - 4/30 8/15 - 11/1	1/4" - 1/2"	600 LB/AC (15 LB / 1000 SF)	2 TONS/AC (100 LB / 1000 SF)
	MILLET	50 LB/AC	5/1 - 8/14	1/2"		

Section III: Permanent Seeding

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

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

PERMANENT SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 6b) FROM TABLE 25						FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20		
1	CREEPING RED FESCUE (30%) CHEWING FESCUE (30%) ROUGH BLUE GRASS (20%) CATALPA PERENNIAL RYEGRASS (20%)	200	3/1 - 5/15 AND 8/15 - 10/15	1"	90 LB/AC (2 LB / 1000 SF)	175 LB/AC (4 LB / 1000 SF)	175 LB/AC (4 LB / 1000 SF)	2 TONS/AC (100 LB / 1000 SF)	

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

- A. General specifications**
- Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.
 - Sod shall be machine cut at a uniform soil thickness of 3/4" plus or minus 1/4", at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads or torn or uneven ends will not be acceptable.
 - Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
 - Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
 - Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.

- B. Sod Installation**
- During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.
 - The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
 - Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.
 - Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any piece of sod shall be completed within eight hours.

- C. Sod Maintenance**
- In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4". Watering should be done during the heat of the day to prevent wilting.
 - After the first week, sod watering is required as necessary to maintain adequate moisture content.
 - The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3" unless otherwise specified.

Section IV - Turfgrass Establishment

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

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

- A. Permanent Seeding**
- Kentucky Bluegrass - Full sun mixture -** For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of three bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
 - Kentucky Bluegrass/Perennial Rye - Full sun mixture -** For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Rye/Cultivars/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.
 - Tall Fescue/Kentucky Bluegrass - Full sun mixture -** For use in drought prone areas and/or for areas receiving low to medium maintenance in full sun to medium shade. Recommended mixture includes: certified Tall Fescue Cultivars 95-100%, certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding rate: 5 to 8 lb/1000 sq. ft. One or more cultivars may be blended.
 - Kentucky Bluegrass/Fine Fescue - Shade Mixture -** For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: certified Kentucky Bluegrass Cultivars 30-40% and certified Fine Fescue and 60-70%. Seeding rate: 1 1/2 - 3 lbs/1000 square feet. A minimum of 3 Kentucky bluegrass cultivars must be chosen, with each cultivar ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
- Note:** Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication, Agronomy Mimeo #77, "Turfgrass Cultivar Recommendations for Maryland".

- B. Ideal times of seeding**
- Western MD: March 15 - June 1, August 1 - October 1 (Hardiness Zones - 5b, 6a)
Central MD: March 1 - May 15, August 15 - October 15 (Hardiness Zone - 6b)
Southern MD, Eastern Shore: March 1 - May 15, August 15 - October 15 (Hardiness Zones - 7a,7b)

- C. Irrigation**
- If soil moisture is deficient, supply new seedlings with adequate water for plant growth (23/64" 0 1" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

D. Repairs and Maintenance

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

SEDIMENT CONTROL GENERAL NOTES

- A minimum of 48 hours notice must be given to Howard County Construction Inspection Division, Sediment Control Division prior to the start of any construction. 410-313-1855.
- All vegetative and structural practices are to be installed according to the provisions of the plan and are to be in conformance with the most current Maryland Standards and Specifications for Soil Erosion and Sediment Control and revisions thereto.
- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within; a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control for permanent seeding (Sec. III), sod (Sec. II) temporary seeding (Sec. II) and mulching (Sec. I). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Analysis**
Site is defined as areas involving any improvement.
Total Area of Site: 3.95 Acres
Area Disturbed: 3.95 Acres
Area to be paved: 0 Sq. Yds.
Area to be Vegetatively Stabilized: 19,114 Sq. Yds.
Total Cut: 7802 Cu. Yds.
Total Fill: 7802 Cu. Yds.
Offsite waste/borrow area location: To be determined by contractor.
- Any sediment control practices which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
- Trenches for the construction of utilities is limited to that which shall be back-filled and stabilized by the end of each work day.
- Spoil from trench excavation shall be placed on the uphill side of the excavation.
- Site grading will begin only after all perimeter sediment control measures have been installed and are in a functioning condition.
- 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.

AS-BUILTS DATE 04-26-12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS: [Signature] 1/23/11
CHIEF, BUREAU OF UTILITIES: [Signature] 1/23/11

CHIEF, BUREAU OF ENGINEERING: [Signature] 1/23/11
CHIEF, UTILITY DESIGN DIVISION: [Signature] 1/23/11

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EROSION AND SEDIMENT CONTROL NOTES & DETAILS

REVISIONS: [Table with columns for NO., DATE, and REVISIONS]

600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

MGWC 1.1: DEWATERING BASINS

Temporary measure for filtering sediment-laden water

DESCRIPTION

The work should consist of installing dewatering basins jointly with channel diversion measures to filter sediment-laden water from in-stream construction sites before the water re-enters the downstream reach.

EFFECTIVE USES & LIMITATIONS

Undersized dewatering basins will not adequately filter sediment-laden water from the construction site.

MATERIAL SPECIFICATIONS

Materials for dewatering basins should meet the following requirements:

- **Riprap:** Riprap should be washed and have a diameter ranging from 4 to 6 inches (10 to 15 centimeters).
- **Filter Cloth:** Filter cloth should be a woven or non-woven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric should be inert to commonly encountered chemicals, hydro-carbons, ultraviolet light, and mildew and should be rot resistant.
- **Straw Bales/Silt Fence:** Straw bales should meet the criteria as specified in the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control.

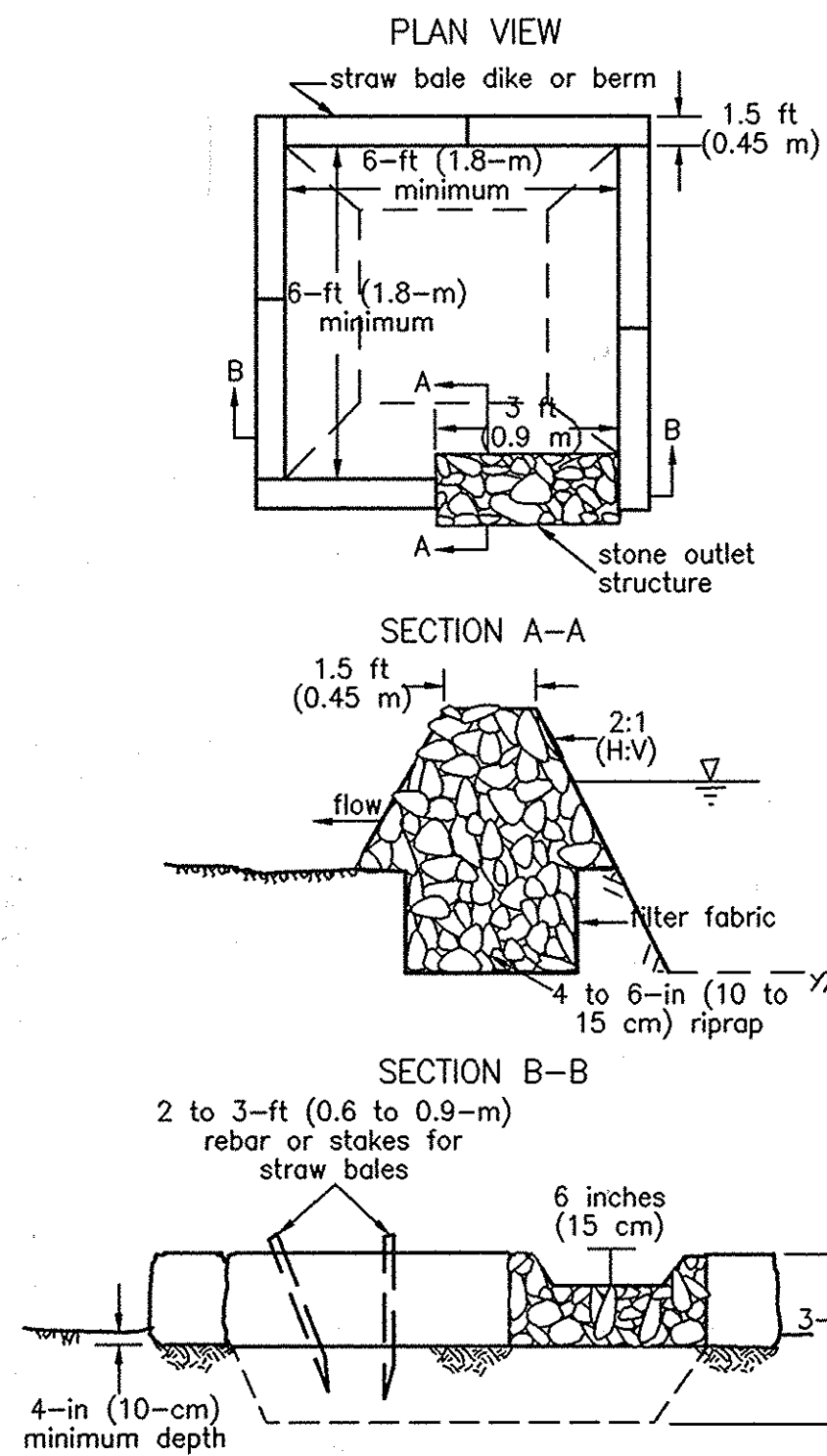
INSTALLATION GUIDELINES

Due to the danger of overtopping by events greater than the design flow, dewatering basins require a vegetative buffer strip to filter sediment-laden overflow. A 50-foot (15-meter) minimum grass-covered buffer width is required for slopes less than 20 degrees (1:2.7) when right-of-way is not limited. For slopes greater than 20 degrees, basins should have a 100-foot (30-meter) minimum buffer width when practical.

All erosion and sediment control devices should be installed as the first order of business according to a plan approved by the Water Management Administration (WMA) or local authority. Dewatering basins should be constructed as follows (refer to Detail 1.1):

1. Excavated subsoil and topsoil should be stored separately and replaced in their natural order. Additionally, the excavated sediments should be prevented from entering the waterway by using sediment perimeter controls or other measures.
2. The dewatering basin should have a minimum depth of 3 feet (1 meter) where basin depth is measured from the top of the straw bales to the bottom of the excavation.
3. Once the dewatering basin becomes filled to one-half of the excavated depth, accumulated sediment should be removed and disposed of in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
4. Sediment control devices should remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal. All disturbed ground contours should be returned to their original condition unless otherwise approved by the WMA or local authority.

**Maryland's Guidelines To Waterway Construction
DETAIL 1.1: DEWATERING BASINS**



MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

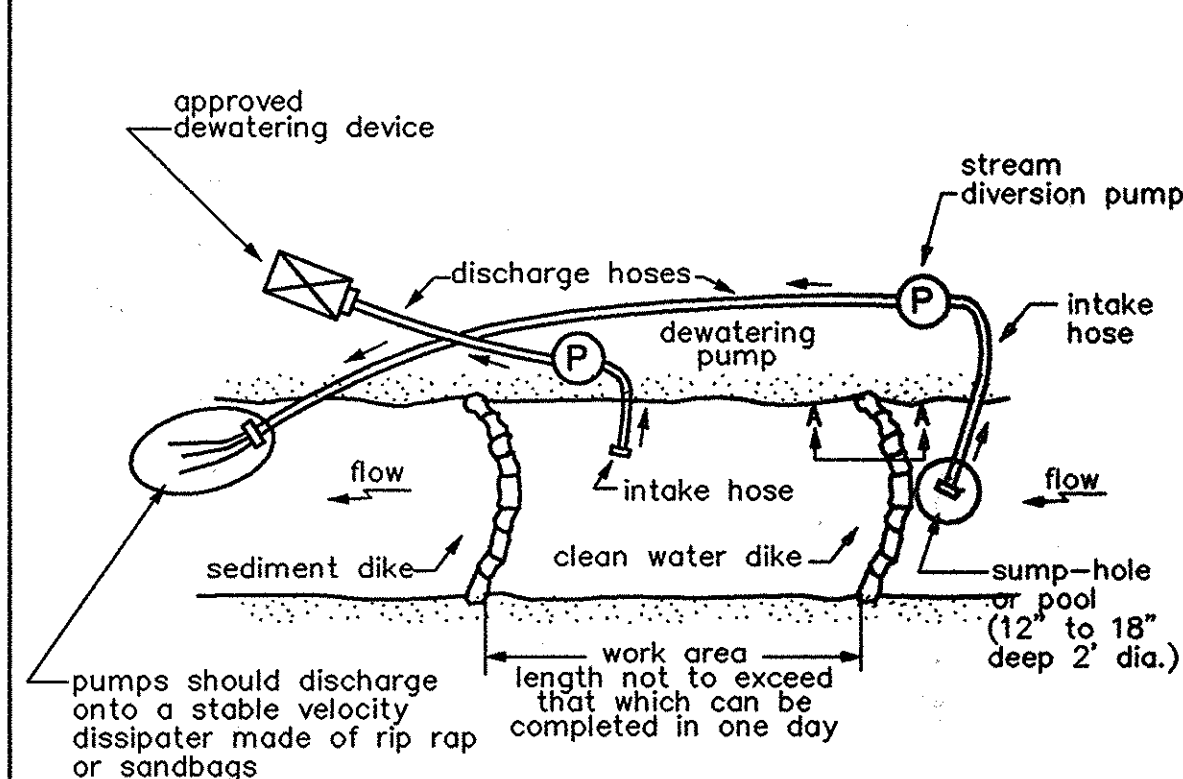
1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

MGWC 1.2: PUMP-AROUND PRACTICE

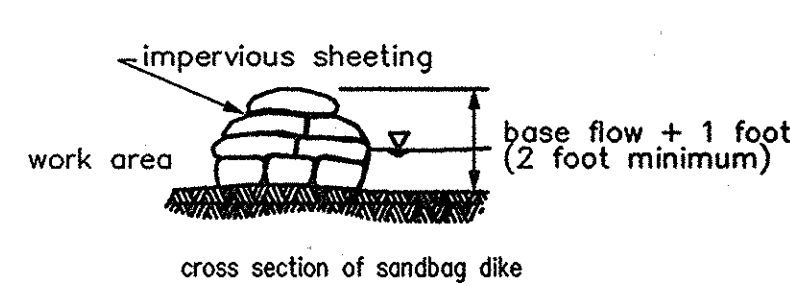
7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
8. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
9. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike.
11. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

**Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP-AROUND PRACTICE**

PLAN VIEW



SECTION A-A



MGWC 4.8: TEMPORARY ACCESS BRIDGE

Temporary stream crossing intended for minimum corridor disturbance

DESCRIPTION

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

EFFECTIVE USES & LIMITATIONS

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

MATERIAL SPECIFICATIONS

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

CONSTRUCTION SEQUENCE

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

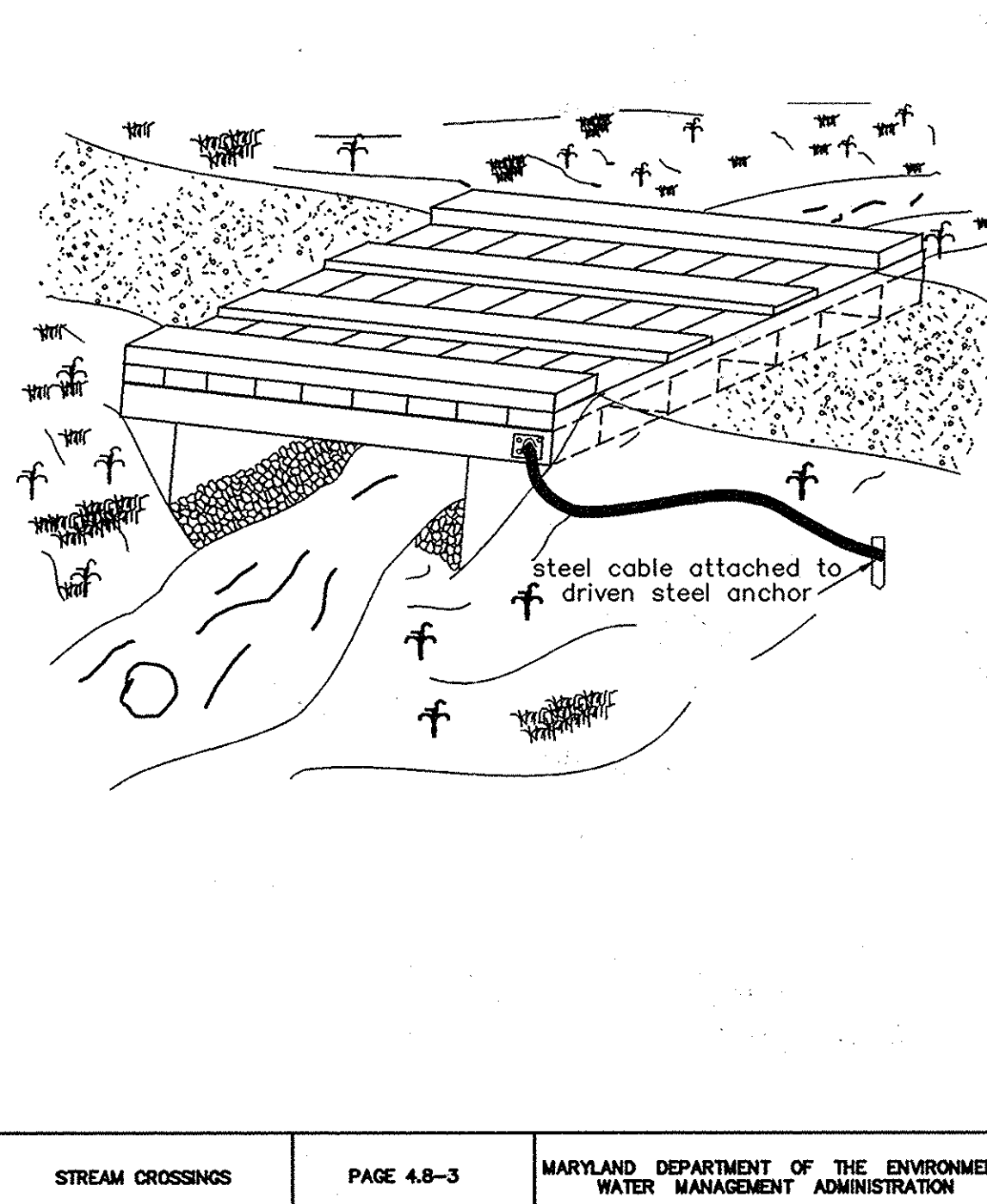
1. Abutments should be placed parallel to, and on, stable banks such that the structure is at or above bankfull depth to prevent the entrainment of floating materials and debris.
2. Temporary access bridges should be constructed to span the entire channel. If the bankfull channel width exceeds 8 feet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

MGWC 4.8: TEMPORARY ACCESS BRIDGE

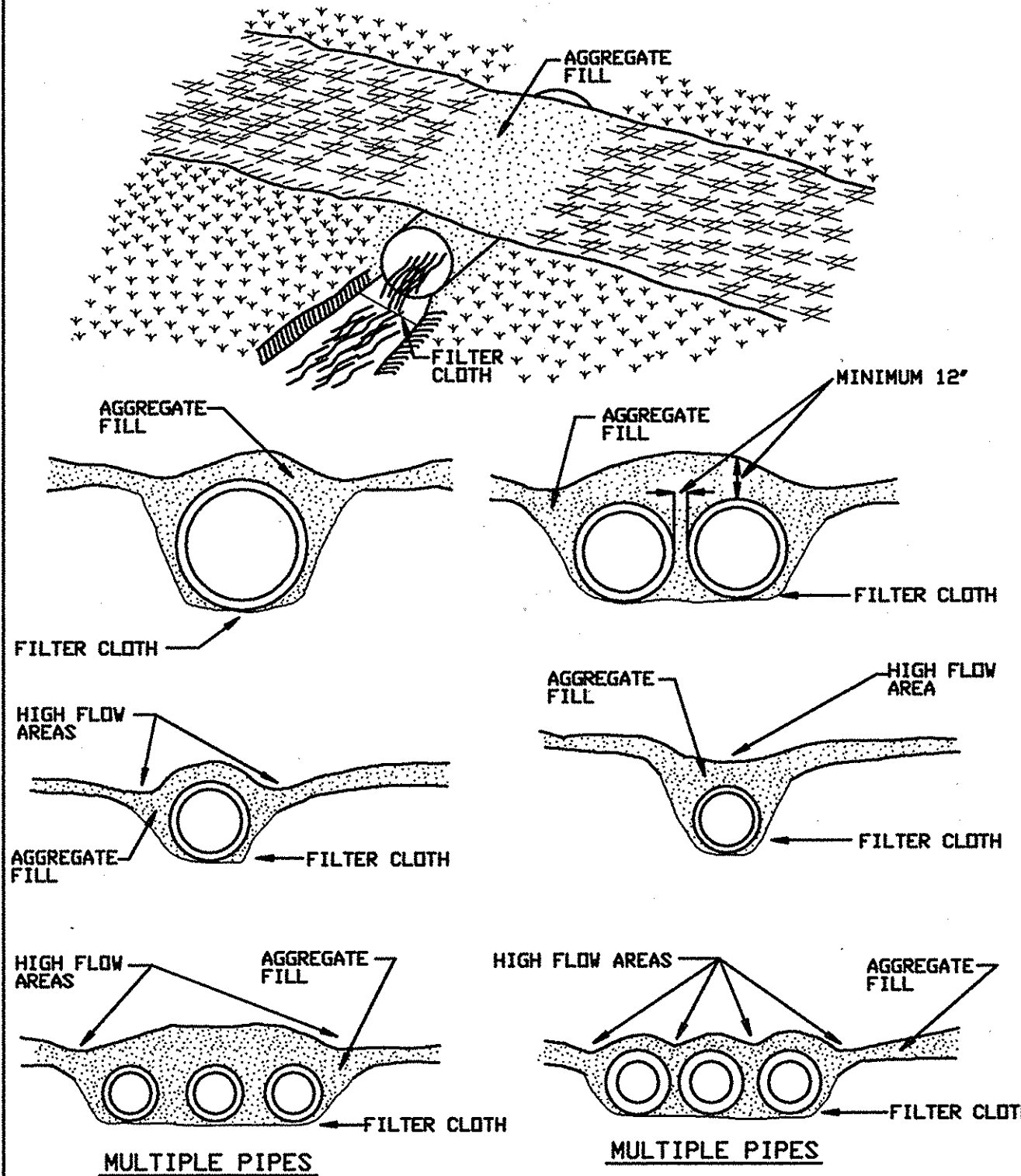
7. All areas disturbed during installation should be stabilized within 14 calendar days in accordance with a revegetation plan approved by the WMA.
8. Periodic inspection should be performed by the user to ensure that the bridge, streambed, and stream banks are maintained and not damaged.
9. Maintenance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

**Maryland Guidelines to Waterway Construction
DETAIL 4.8: TEMPORARY ACCESS BRIDGE**

SKETCH



DETAIL 36 - TEMPORARY ACCESS CULVERT



TEMPORARY ACCESS CULVERT

Construction Specifications

1. **Restrictions** - No construction or removal of a temporary access culvert will be permitted between October 1 through April 30 for Class III and Class IV Trout Waters or between March 1 through June 15 for non-trout waterways.
2. **Culvert Strength** - All culverts shall be strong enough to support their cross sectional area under maximum expected loads.
3. **Culvert Size** - The size of the culvert pipe shall be the largest pipe diameter that will fit into the existing channel without major excavation of the waterway channel or without major approach fills. If a channel width exceeds 3 feet, additional pipes may be used until the cross sectional area of the pipes is greater than 60 percent of the cross sectional area of the existing channel. In all cases, the pipe(s) shall be large enough to convey normal stream flows. Culverts that have a duration of 2 weeks or less will have a minimum capacity to convey the stream base flow.
4. **Culvert Length** - The culvert(s) shall extend a minimum of one foot beyond the upstream and downstream toe to the aggregate placed around the culvert. In no case shall the culvert exceed 40 feet in length.
5. **Filter Cloth** - Filter cloth shall be placed on the streambed and streambanks prior to placement of the pipe culvert(s) and aggregate. The filter cloth shall cover the streambed and extend a minimum six inches and a maximum one foot beyond the end of the culvert and bedding material. Filter cloth reduces settlement and improves crossing stability.
6. **Culvert Placement** - The invert elevation of the culvert shall be installed on the natural streambed grade to minimize interference with fish migration (free passage of fish).
7. **Culvert Protection** - The culvert(s) shall be covered with a minimum of one foot of aggregate. If multiple culverts are used they shall be separated by at least 12" of compacted aggregate fill.
8. **Stabilization** - All areas disturbed during culvert installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for Critical Area Stabilization With Permanent Seeding.

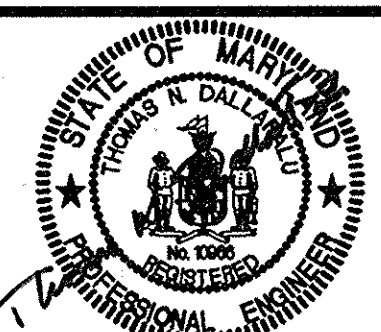
AS-BUILTS DATE 04-26-12

ESC 6 OF 7

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works DATE 1/3/11
Chief, Bureau of Engineering DATE 1/20/11
Chief, Bureau of Utilities DATE 1/21/11
Chief, Utility Design Division DATE 1/20/11

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DES: LAL			
DRN: CD			
CHK: TND			
DATE: 1.17.11	BY	NO.	REVISIONS

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541

SCALE: SHOWN
SHEET 18 OF 19

MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

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

EFFECTIVE USES & LIMITATIONS

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

MATERIAL SPECIFICATIONS

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

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

INSTALLATION GUIDELINES

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

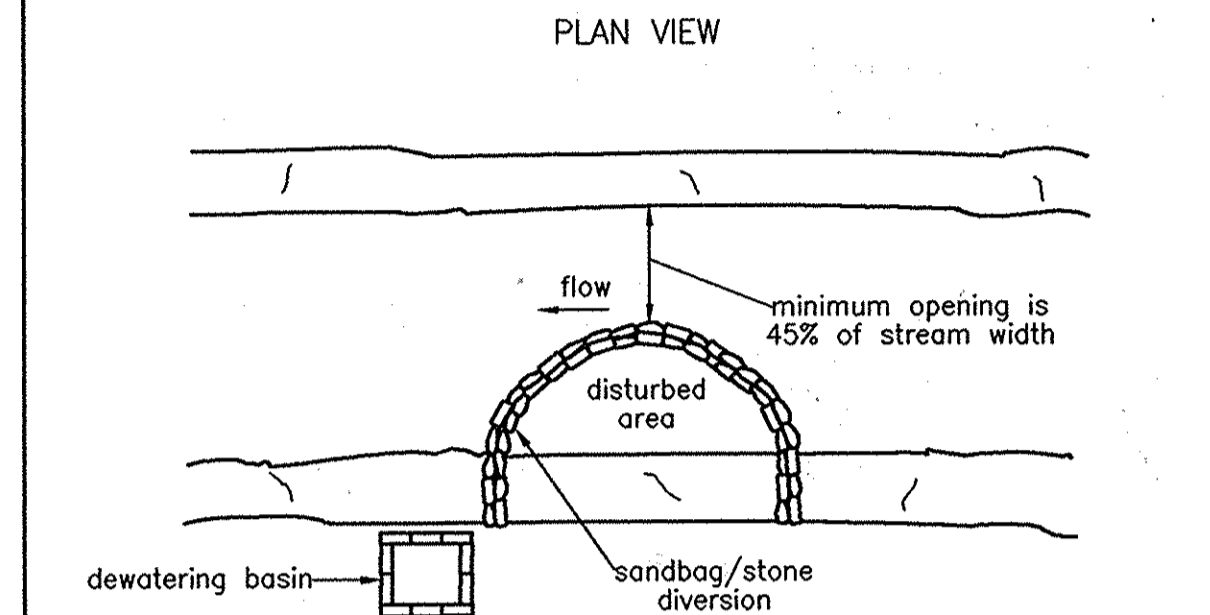
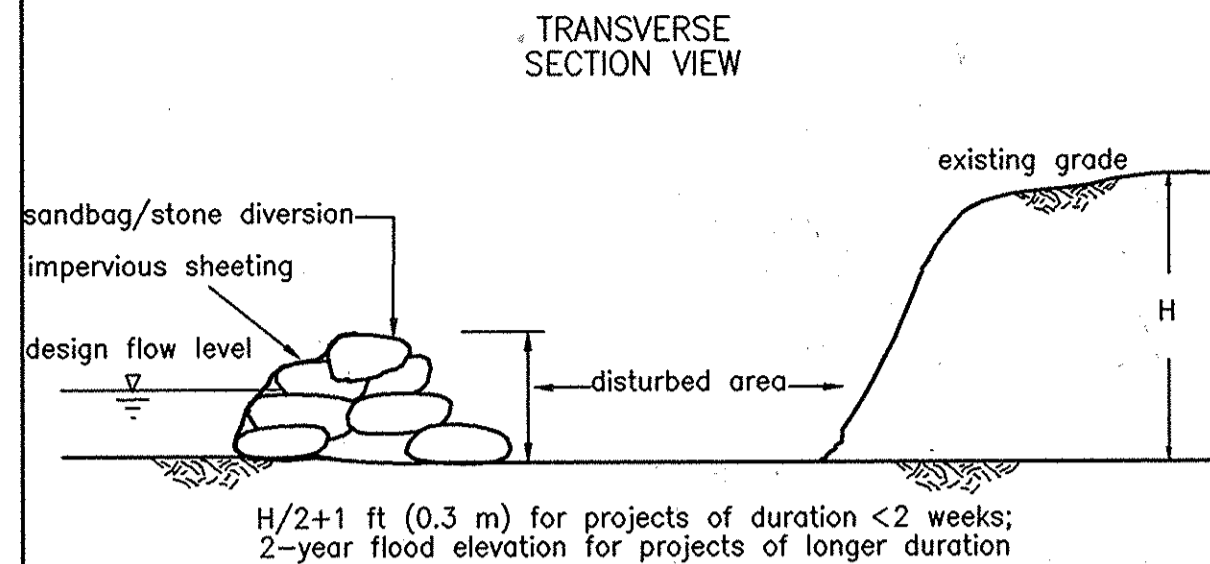
Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):

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

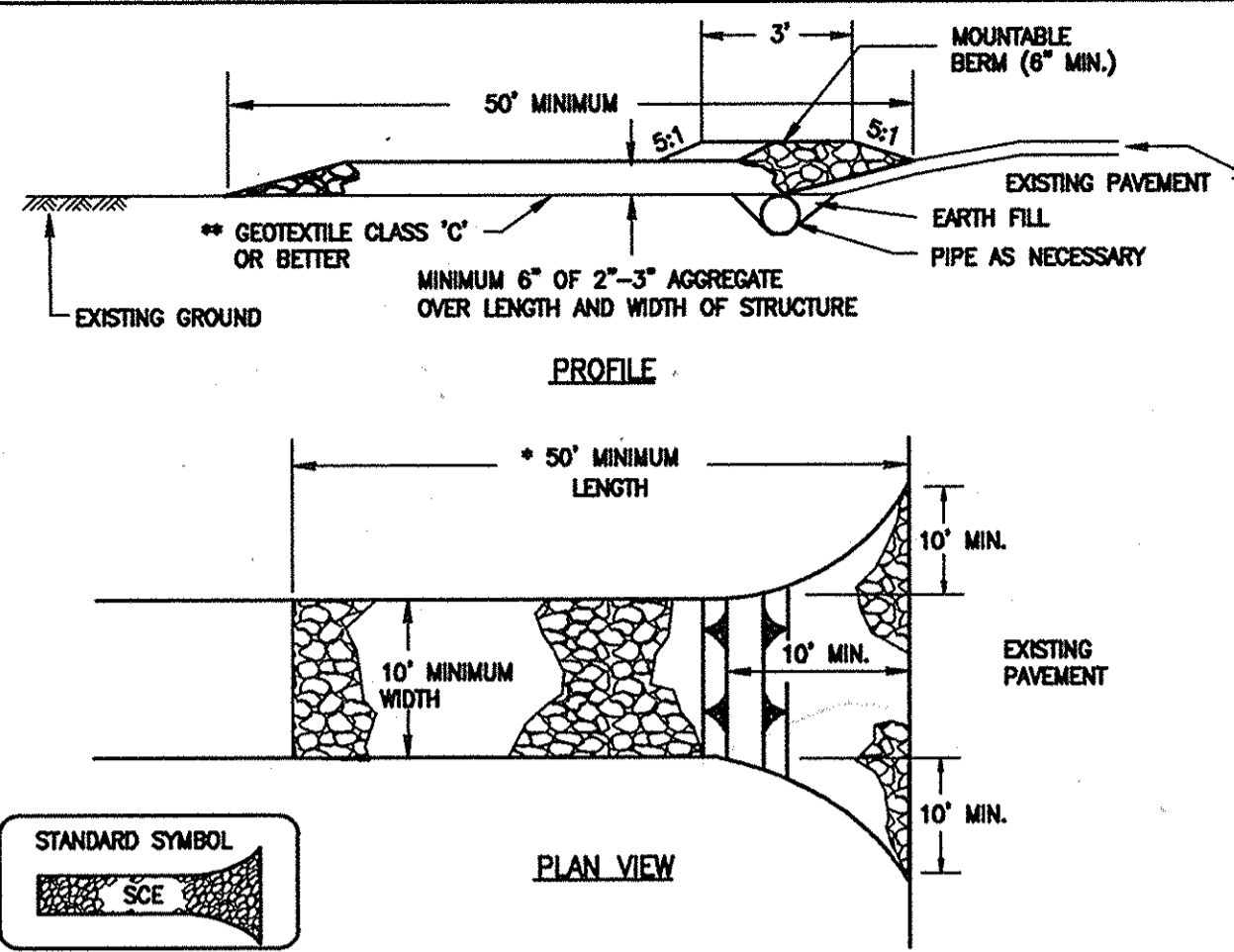
MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

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

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



DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



- Construction Specifications**
- Length - minimum of 50' (430' for single residence lot).
 - Width - 10' minimum, should be flared at the existing road to provide a turning radius.
 - Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
 - Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
 - Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
 - Location - A stabilized construction entrance shall be located at every point point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

PROJECT SEQUENCE OF CONSTRUCTION

- Notify Miss Utility (1-800-257-7777) at least 48 hours prior to beginning work.
- Notify Howard County Construction Inspection Division (1-410-313-3800) at least 48 hours prior to beginning work on-site and obtain grading permit.
- Clear and grub for sediment and erosion control measures or devices only. (7 days)
- Install all sediment and erosion control measures or devices including stabilized construction entrance(s). (10 days)
- Notify Howard County Construction Inspection Division upon completion of the installation work noted above. (1 day)
- With the approval of the Howard County Construction Inspection Division, clear and grub the remainder of the site and stabilize immediately. (21 days)
- 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. (___ days)
- Connect to existing utilities where applicable. (7 days)
- With permission from the Sediment Control Inspector, remove stabilized construction entrance(s). (2 days)
- Stabilize all disturbed areas. (14 days)
- Following approval from the Howard County Construction Inspection Division Inspector, remove all remaining sediment control measures and stabilize any remaining areas. (7 days)

BEST MANAGEMENT PRACTICES FOR WORKING IN NON-TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAIN

- No excess fill, construction material, or debris shall be stockpiled or stored in non-tidal wetlands, non-tidal wetlands buffers, waterways, or the 100-year floodplain.
- Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of non-tidal wetlands, non-tidal wetland buffers, waterways, or 100-year floodplain.
- Do not use 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.
- Place heavy equipment on mats or suitably operate the equipment to prevent damage to non-tidal wetlands, non-tidal wetland buffers, waterways, or the 100-year floodplain.
- Repair and maintain any serviceable structure or fill so there is no permanent loss of non-tidal wetlands, non-tidal wetland buffers, waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.
- Rectify any non-tidal wetlands, non-tidal wetland buffers, waterways, or the 100-year floodplain temporarily impacted by any construction.
- All stabilization in the non-tidal wetland and non-tidal 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 Non-Tidal 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.
- After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
- To protect aquatic species, in-stream work is prohibited as determined by classification of the stream:
Use 1 waters: in-stream work shall not be conducted during the period of March 1 through June 15, inclusive, during any year.
- Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
- 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.

26.0 SUPER SILT FENCE

Definition

A temporary barrier of Geotextile Class F over chain link fence used to intercept sediment laden runoff from small drainage areas.

Purpose

To reduce runoff velocity and allow the deposition of transported sediment to occur. Limits imposed by ultraviolet light stability of the fabric will dictate the maximum period that the silt fence may be used.

- Super silt fence provides a barrier that can collect and hold debris and soil, preventing the material from entering critical areas, streams, ditches, etc.
- Super silt fence can be used where the installation of a dike would destroy sensitive areas, woods, wetlands, etc.
- Super silt fence should be placed as close to the contour as possible. No section of silt fence should exceed a grade of 5% for a distance of more than 50 feet.

Table 30. Design Criteria

Length of the flow contributing to Super Silt Fence shall conform to the following limitations:			
Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

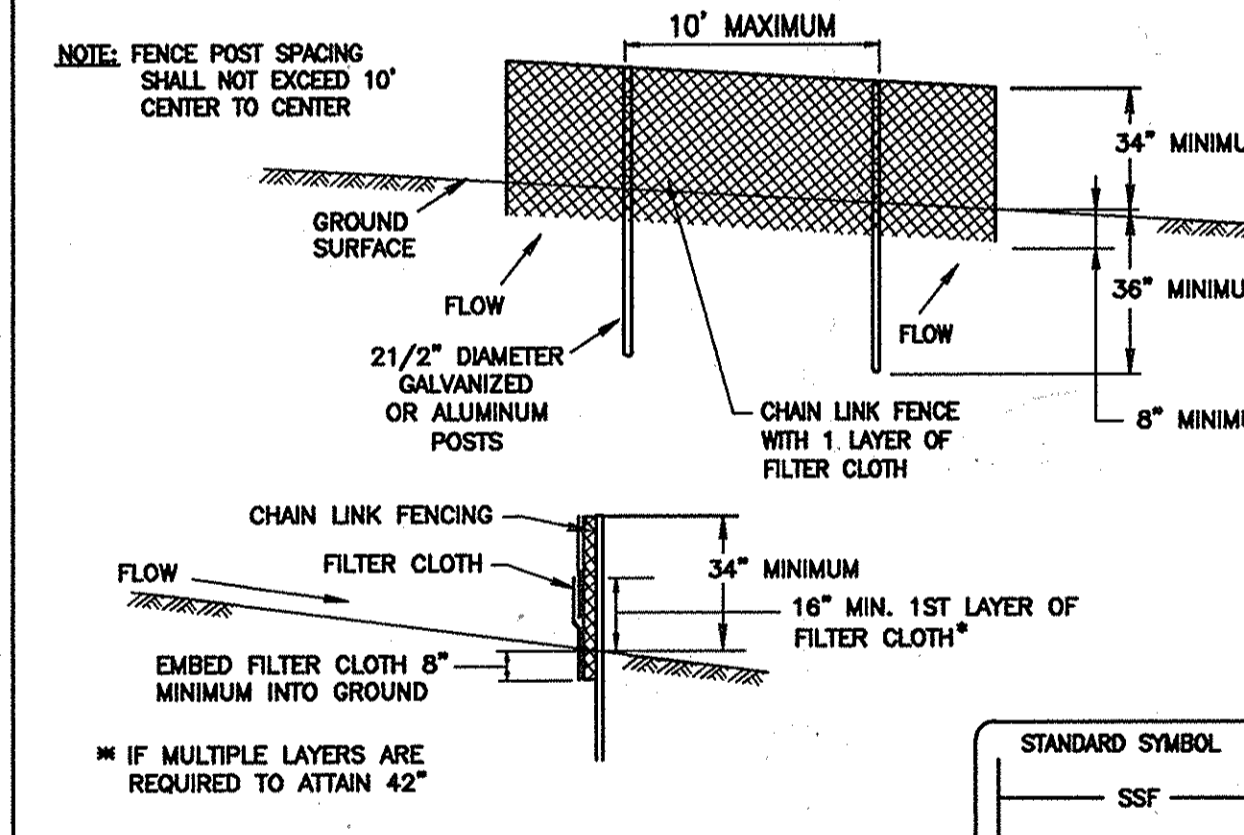
When ends of the geotextile fabric come together, the ends shall be overlapped, folded, and stapled to prevent sediment bypass.

Construction Specifications

- Fencing shall be 42 inches in height and constructed in accordance with the latest Maryland State Highway (SHA) Details for Chain Link Fencing. The SFA specification for a 6 foot fence shall be used, substituting 42 inch fabric and 6 foot length posts.
- Chain link fence shall be fastened securely to the fence posts with wire ties or staples. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
- Filter Cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
- Filter cloth shall be embedded a minimum of 8" into the ground.
- When two sections of geotextile fabric adjoin each other, they shall be overlapped by 6" and folded.
- Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
- Filter cloth shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lb/in. (min.)	Test: MSMT 509
Tensile Modulus	20 lb/in. (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft ² /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

DETAIL 33 - SUPER SILT FENCE



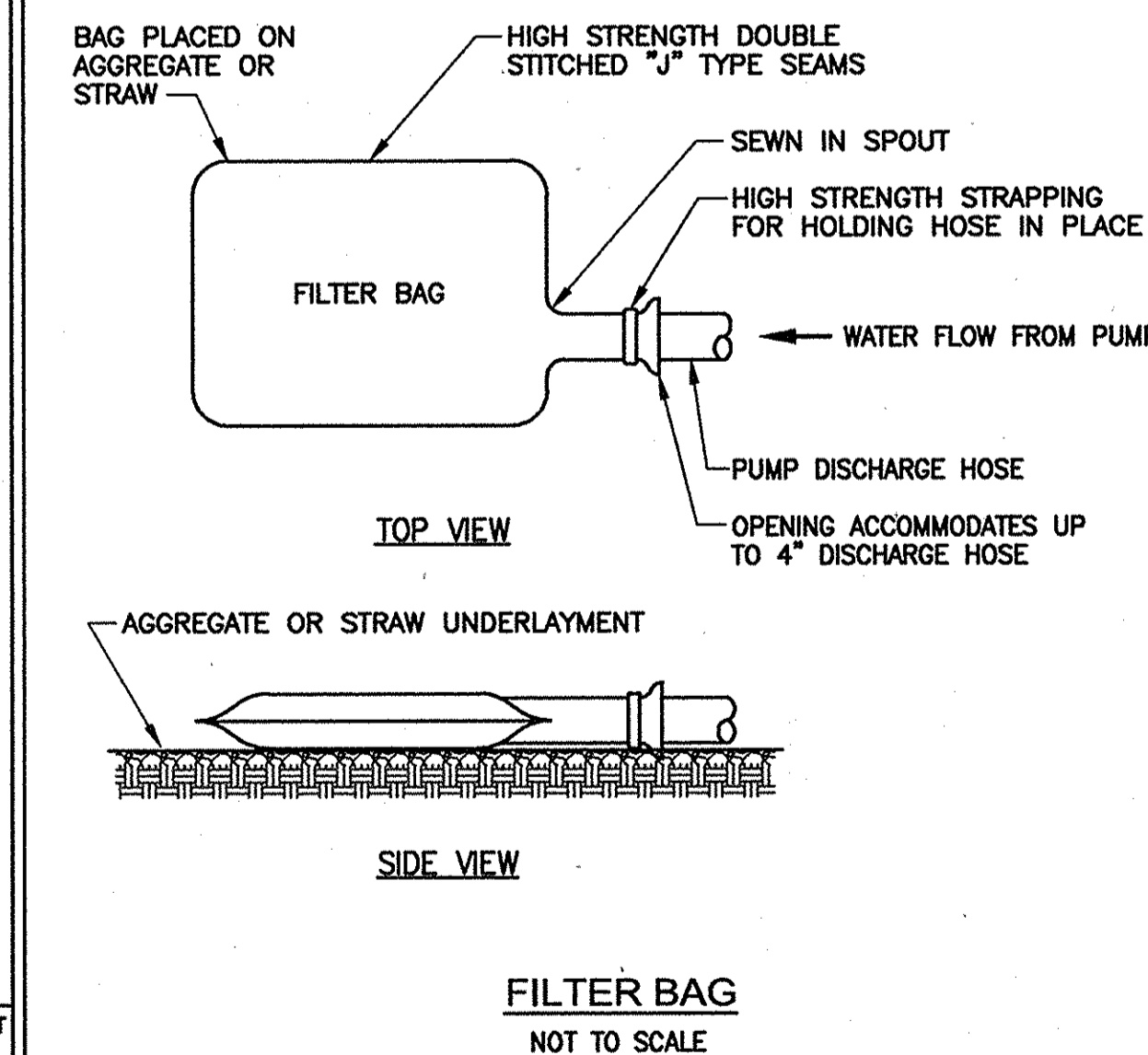
- Construction Specifications**
- Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
 - Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
 - Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
 - Filter cloth shall be embedded a minimum of 8" into the ground.
 - When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
 - Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
 - Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lb/in. (min.)	Test: MSMT 509
Tensile Modulus	20 lb/in. (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft ² /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

SUPER SILT FENCE

Design Criteria

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



AS-BUILTS DATE 04-26-12

ESC 7 OF 7

**DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND**

Director of Public Works DATE 1/20/11
Chief, Bureau of Engineering DATE 1/20/11
Chief, Bureau of Utilities DATE 1/20/11
Chief, Utility Design Division DATE 1/20/11

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Dewberry & Davis LLC

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DES:	LAL				
DRN:	CD				
CHK:	TND				
DATE:	1.17.11	BY	NO.	REVISIONS	DATE

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

600' SCALE MAP NO. 30 BLOCK NO. 14, 15, 21

**LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4541**

ELECTION DISTRICT NO. 5

HOWARD COUNTY, MARYLAND

SCALE: SHOWN
SHEET 19 OF 19