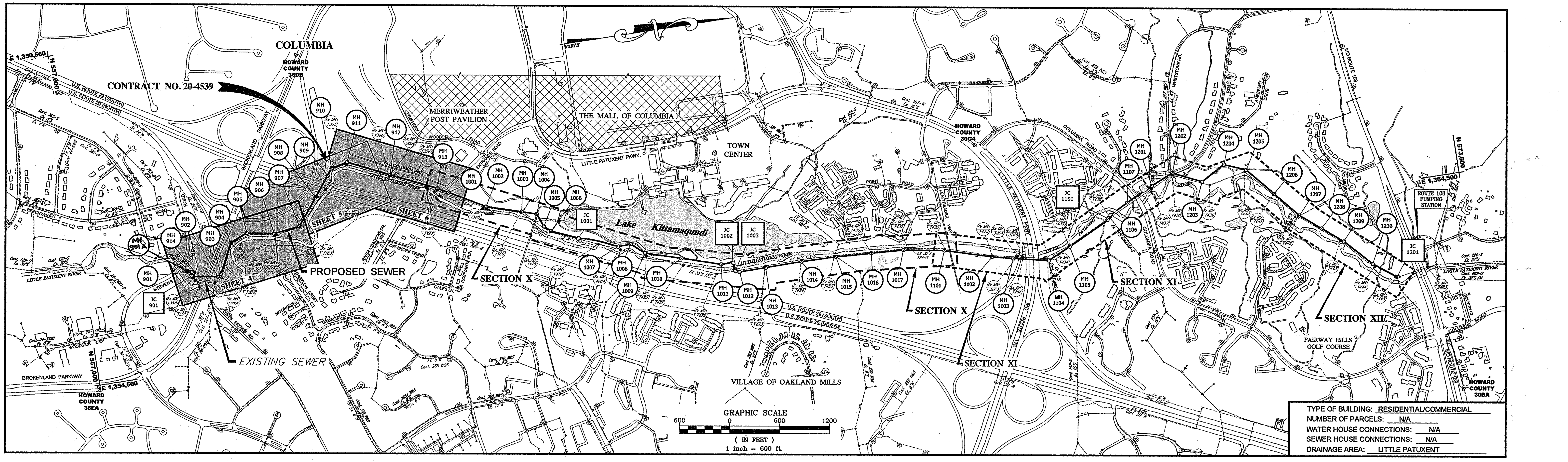


TYPE OF BUILDING: RESIDENTIAL/COMMERCIAL
NUMBER OF PARCELS: N/A
WATER HOUSE CONNECTIONS: N/A
SEWER HOUSE CONNECTIONS: N/A
DRAINAGE AREA: LITTLE PATUXENT

VICINITY MAP
SCALE : 1" = 600'

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

HOWARD COUNTY, MARYLAND

INDEX OF SHEETS

BILL OF MATERIALS

ITEM	ESTIMATED QUANTITY	MATERIAL	AS-BUILT QUANTITY	SUPPLIER
8" SEWER	17 LF	PVC	17 LF	DIAMOND PLASTICS
18" SEWER	18 LF	PVC	18 LF	" "
36" SEWER	5 LF	DIP CL 54	5 LF	
36" SEWER	3,696 LF	PVC-FRP	3696 LF	DIAMOND PLASTICS
72" STEEL CASING	514 LF	STEEL	514 LF	
4' MANHOLE	1 EA.	CONC/BRICK	1 EA	ATLANTIC CONC
5' MANHOLE	9 EA.	CONC/BRICK	9 EA	" "
6' MANHOLE	4 EA.	CONC/BRICK	4 EA	" "
4' ADDITIONAL MH	3 VF	CONC/BRICK		" "
5' ADDITIONAL MH	57 VF	CONC/BRICK		" "
6' ADDITIONAL MH	33 VF	CONC/BRICK		" "
JUNCTION CHAMBER	1 EA.	CONC/BRICK	1 EA	SHCUSTER
BY-PASS PIPING	LS		LS	

NAME OF UTILITY CONTRACTOR :
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.

HOWARD SOIL CONSERVATION DISTRICT — DATE 12/14/09

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IIN 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.

DEVELOPER — DATE 12/10/09

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REFERENTS 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.

ENGINEER — DATE 12-09-09

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. 15512, EXPIRATION DATE AUGUST 28, 2011.

R. JOSEPH BURNS, III — DATE 12-09-09

AS-BUILTS 2-29-2012

ESC 1 OF 8

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/14/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09 WD

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

STATE OF MARYLAND — JOSEPH BURNS — No. 15512 — REGISTERED PROFESSIONAL ENGINEER

DES: CD/LAL				
DRN: CD				
CHK: RJB				
DATE: 12/7/09	BY	NO.	REVISIONS	DATE

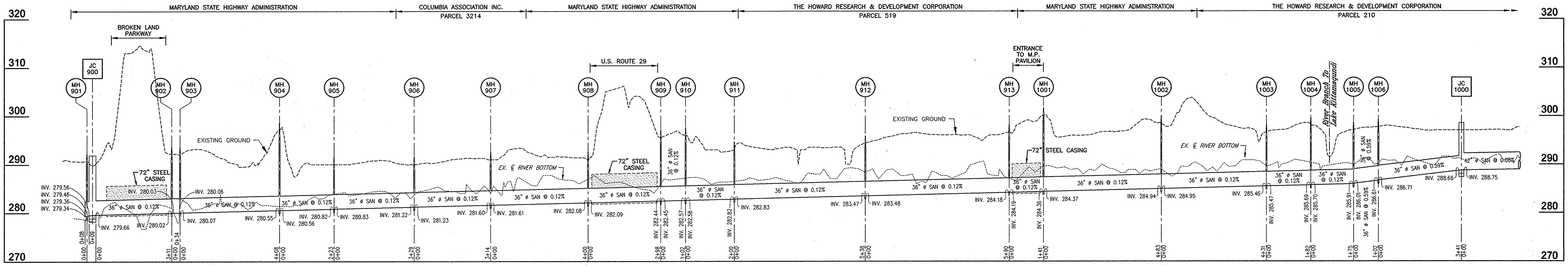
TITLE SHEET

600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN



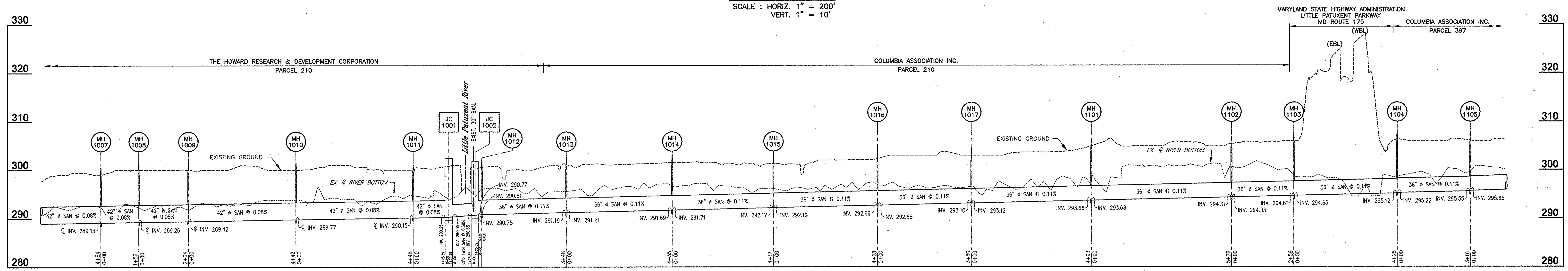
CONTRACT NO. 20-4539

CONTRACT NO. 20-4540 (NOT IN CONTRACT)

SEE SHEETS 4 - 6 FOR AS BUILT INFORMATION

PROFILE

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

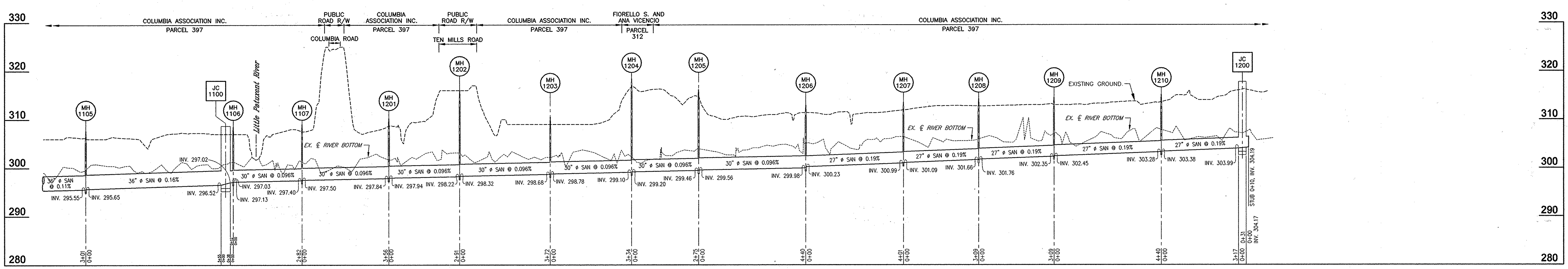


CONTRACT NO. 20-4540 (NOT IN CONTRACT)

CONTRACT NO. 20-4541 (NOT IN CONTRACT)

PROFILE

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



CONTRACT NO. 20-4541 (NOT IN CONTRACT)

CONTRACT NO. 20-4542 (NOT IN CONTRACT)

PROFILE

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

AS-BUILTS 2-29-2012

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/11/09	CHIEF, BUREAU OF ENGINEERING	DATE 12/10/09
CHIEF, BUREAU OF UTILITIES	DATE 12/11/09	CHIEF, UTILITY DESIGN DIVISION	DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

STATE OF MARYLAND — ROBERT JOSEPH BURNS — REGISTERED PROFESSIONAL ENGINEER

DES: CD/LAL
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

OVERALL PROFILE

600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 2 OF 19

GENERAL NOTES

1. Approximate location of existing sanitary sewer mains are shown. The Contractor shall take all necessary precautions to protect existing sanitary sewer 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. 36 EA. All vertical control are based on NAVD 88. Vertical controls provided on the drawings are B.M. 30 BA and B.M. 36 EA.
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. In the event the Contractor's work requires the bracing of additional poles, any cost incurred by the owner for the bracing of additional poles or damages shall be deducted from monies owed the Contractor. The Contractor shall coordinate with the utility companies to schedule the bracing of the poles.)
6. For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The Contractor shall have a copy of Volume IV on the job.
7. All existing utilities shall be test pitted/located as necessary and in advance of the proposed construction, in order to properly make all required utility crossings and/or connections. Any discrepancies or utility conflicts shall be immediately reported to the Engineer. Where test pits have been made on existing utilities, they are noted by the symbol ▚ 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 sanitary sewer 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/sanitary 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, golf cart paths, 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 and 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 Specifications.
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.

SANITARY SEWER MAIN NOTES

1. All sanitary sewer mains shall be FRP or PVC SDR 25 unless otherewise noted. For pipe to manhole and junction chamber connections, see sheet 7.
2. Distances shown for the sanitary sewer main in profile are along the centerline of the pipe from manhole centerline to manhole centerline. Estimate 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.

HOWARD COUNTY GEODETIC SURVEY CONTROL

CONTROL NO.	COORDINATES		ELEVATION
	NORTHING	EASTING	
30BA	N 573,149.0857	E 1,357,083.1827	397.124
30G4	N 567,815.2315	E 1,353,271.2411	360.234
36DB	N 559,940.8266	E 1,350,945.589	344.632
36DA	N 560,849.3435	E 1,350,037.4477	363.635
36EA	N 556,986.8135	E 1,354,535.2071	354.849

TRAVERSE TABLE

NO.	LOCATION	
KCI–215	N 558,017.72	E 1,353,093.30
KCI–216	N 558,250.74	E 1,353,305.40
KCI–217	N 558,429.68	E 1,353,388.24
LPS–15	N 558,462.31	E 1,353,453.01
KCI–220	N 558,639.76	E 1,353,641.69
KCI–221	N 558,866.84	E 1,353,374.43
KCI–222	N 558,783.12	E 1,353,217.52
KCI–223	N 558,907.19	E 1,353,034.33
KCI–225	N 559,414.93	E 1,353,051.00
KCI–226	N 559,681.09	E 1,352,983.21
KCI–227	N 559,905.90	E 1,352,711.75
KCI–228	N 560,080.77	E 1,352,554.62
KCI–229	N 560,299.70	E 1,352,318.33
KCI–230	N 560,586.72	E 1,352,444.11
KCI–231	N 560,801.61	E 1,352,548.30
KCI–232	N 561,067.13	E 1,352,659.37
KCI–233	N 561,361.99	E 1,352,813.97
LPS–12	N 561,761.78	E 1,352,647.07
KCI–538	N 561,882.76	E 1,353,103.80
KCI–537	N 562,313.29	E 1,353,242.49
KCI–536	N 562,563.90	E 1,353,487.40
KCI–535	N 562,854.26	E 1,353,632.47
KCI–534	N 563,261.94	E 1,353,787.40
KCI–533	N 563,536.01	E 1,353,853.57
LPS–10	N 563,818.90	E 1,353,966.39
LPS–09	N 564,332.70	E 1,354,093.03
KCI–530	N 564,572.15	E 1,354,332.85
KCI–529	N 565,139.40	E 1,354,327.57
KCI–528	N 565,672.89	E 1,354,326.35
KCI–527	N 566,148.50	E 1,354,342.94
KCI–526	N 566,546.94	E 1,354,361.92
KCI–525	N 566,980.63	E 1,354,406.68
LPS–07	N 567,364.97	E 1,354,478.56
KCI–522	N 567,730.00	E 1,354,597.26
KCI–521	N 568,074.60	E 1,354,669.36
KCI–520	N 568,451.37	E 1,354,755.74
KCI–519	N 568,804.24	E 1,354,624.94
KCI–518	N 569,311.34	E 1,354,377.54
LPS–05	N 569,479.21	E 1,353,979.70
KCI–517	N 569,616.98	E 1,354,393.16
KCI–516	N 569,821.76	E 1,354,121.65
KCI–515	N 570,073.28	E 1,354,000.00
LPS–04	N 570,268.59	E 1,353,973.08
KCI–512	N 570,483.98	E 1,354,166.85
LPS–03	N 570,800.41	E 1,354,209.87
KCI–509	N 570,962.71	E 1,354,088.58
KCI–508	N 571,165.07	E 1,354,309.39
KCI–507	N 571,374.40	E 1,354,541.07
KCI–506	N 571,565.56	E 1,354,761.51
KCI–505	N 571,824.43	E 1,354,999.29
KCI–504	N 572,028.28	E 1,355,174.38
KCI–503	N 572,235.57	E 1,355,386.06
KCI–502	N 572,541.95	E 1,355,640.90
KCI–501	N 572,771.68	E 1,355,567.27
LPS–01	N 572,796.86	E 1,355,364.85

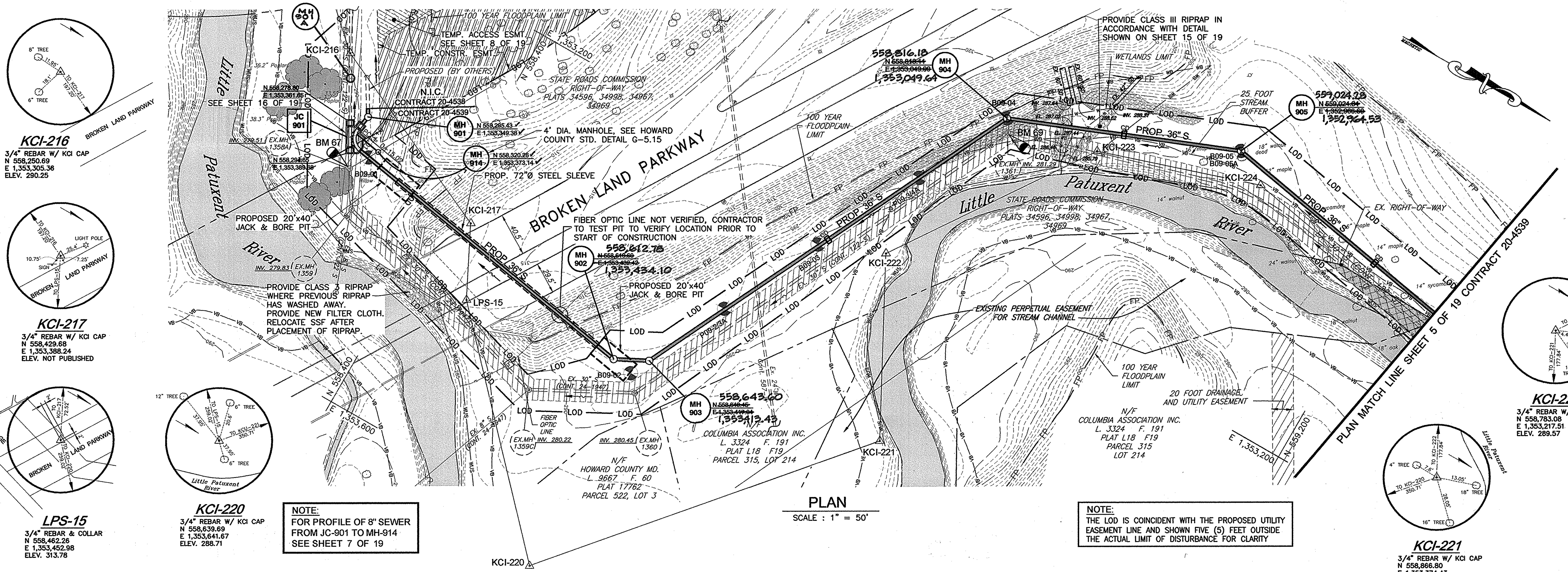
STRUCTURE SCHEDULE

STRUCTURE	TYPE	LOCATION	INV. IN	INV. OUT	RIM ELEV.
MH–901	6' PRECAST MANHOLE	N 558,295.43 ✓ E 1,353,349.38 ✓	279.46 ✓	279.36 ✓	292.25 ✓
MH–902	5' PRECAST MANHOLE	N ~~558,610.60~~ 558,612.78 E ~~1,353,432.42~~ 1,353,434.10	~~280.03~~ 279.87	~~280.02~~ 279.81	~~293.58~~ 292.85
MH–903	5' PRECAST MANHOLE	N ~~558,640.45~~ 558,643.60 E ~~1,353,417.04~~ 1,353,413.43	~~280.07~~ 279.83	~~280.06~~ 279.75	~~293.48~~ 293.94
MH–904	6' PRECAST MANHOLE	N ~~558,818.44~~ 558,816.18 E ~~1,353,049.99~~ 1,353,049.64	~~280.56~~ 280.40	~~280.55~~ 280.37	~~298.50~~ 298.39
MH–905	5' PRECAST MANHOLE	N ~~559,024.64~~ 559,024.28 E ~~1,352,966.60~~ 1,352,964.53	~~280.83~~ 280.74	~~280.82~~ 280.67	~~291.50~~ 292.44
MH–906	5' PRECAST MANHOLE	N ~~559,358.52~~ 559,344.27 E ~~1,353,025.04~~ 1,353,024.98	~~281.23~~ 281.04	~~281.22~~ 281.03	~~291.50~~ 292.18
MH–907	6' PRECAST MANHOLE	N ~~559,660.32~~ 559,658.95 E ~~1,352,983.00~~ 1,352,985.39	~~281.61~~ 281.22	~~281.60~~ 281.17	~~292.50~~ 293.26
MH–908	5' PRECAST MANHOLE	N ~~559,905.70~~ 559,911.23 E ~~1,352,668.06~~ 1,352,662.84	~~282.09~~ 282.07	~~282.08~~ 282.03	~~292.50~~ 294.22
MH–909	5' PRECAST MANHOLE	N ~~560,088.62~~ 560,090.14 E ~~1,352,432.75~~ 1,352,431.95	~~282.45~~ 282.38	~~282.44~~ 282.32	~~297.00~~ 296.49
MH–910	6' PRECAST MANHOLE	N ~~560,151.17~~ 560,151.83 E ~~1,352,352.25~~ 1,352,350.91	~~282.68~~ 282.66	~~282.57~~ 282.63	~~297.34~~ 297.61
MH–911	5' PRECAST MANHOLE	N ~~560,345.98~~ 560,346.99 E ~~1,352,308.54~~ 1,352,308.34	~~282.83~~ 283.05	~~282.82~~ 283.00	~~294.49~~ 295.09
MH–912	5' PRECAST MANHOLE	N ~~560,831.97~~ 560,828.32 E ~~1,352,540.46~~ 1,352,041.46	~~283.48~~ 283.56	~~283.47~~ 283.40	~~295.85~~ 295.68
MH–913	5' PRECAST MANHOLE	N ~~561,367.78~~ 561,367.91 E ~~1,352,788.56~~ 1,352,190.40	~~284.19~~ 284.31	~~284.18~~ 284.27	~~298.14~~ 297.93
MH–914	4' PRECAST MANHOLE	N 558,320.26 ✓ E 1,353,373.14 ✓	~~283.60~~ 284.12	~~283.59~~ 283.96	~~292.60~~ 292.72
JC–90~~X~~ 1	JUNCTION CHAMBER	N 558,278.80 E 1,353,361.65 N 558,294.65 E 1,353,389.68	*EX. 279.63* ~~279.66~~ 279.63 (36") ~~281.93~~ 281.95 (8")	*EX. 279.56* ~~279.56~~ 279.39 (36")	291.86 ✓

LEGEND

- EX. BUILDING
- EX. UNDERGROUND CABLE
- EX. UNDERGROUND ELECTRIC
- 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 7)
- 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 2-29-2012



BENCH MARK BM-67
MANHOLE # 1358A ELEV. 290.40
PUNCH HOLE ON MANHOLE RIM
N 558,317 E 1,353,389

BENCH MARK BM-69
MANHOLE # 1361 ELEV. 291.65
PUNCH HOLE ON MANHOLE RIM
N 558,828 E 1,353,054

NOTE:
FOR PROFILE OF 8" SEWER FROM JC-901 TO MH-914 SEE SHEET 7 OF 19

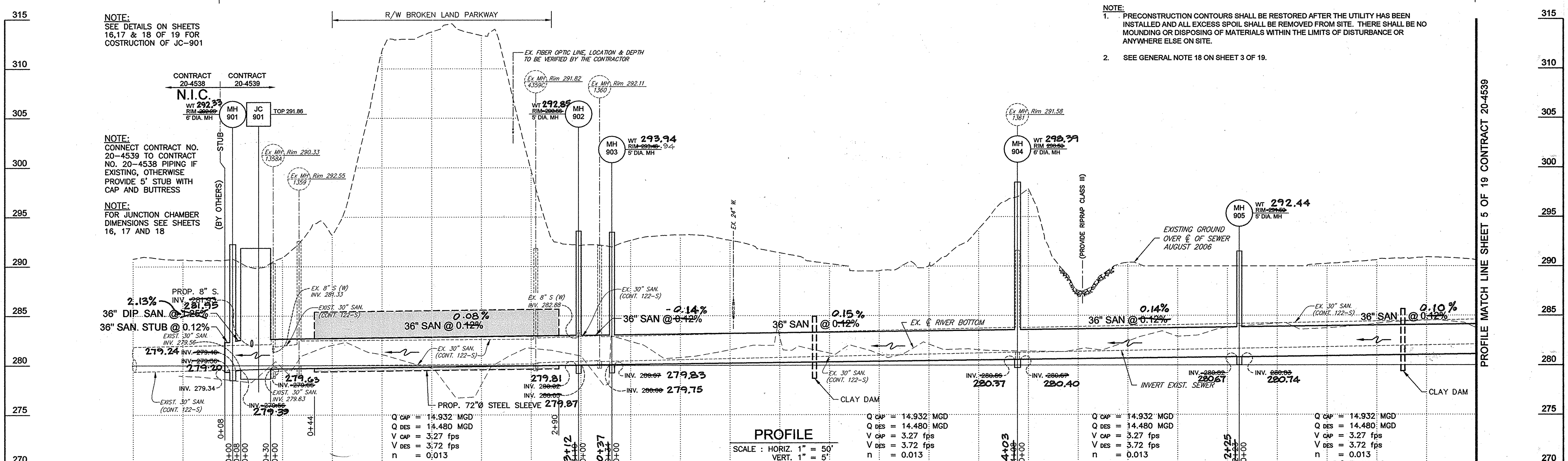
NOTE:
THE LOD IS COINCIDENT WITH THE PROPOSED UTILITY EASEMENT LINE AND SHOWN FIVE (5) FEET OUTSIDE THE ACTUAL LIMIT OF DISTURBANCE FOR CLARITY

NOTE:
1. PRECONSTRUCTION CONTOURS SHALL BE RESTORED AFTER THE UTILITY HAS BEEN INSTALLED AND ALL EXCESS SPOIL SHALL BE REMOVED FROM SITE. THERE SHALL BE NO MOUNDING OR DISPOSING OF MATERIALS WITHIN THE LIMITS OF DISTURBANCE OR ANYWHERE ELSE ON SITE.
2. SEE GENERAL NOTE 18 ON SHEET 3 OF 19.

NOTE:
SEE DETAILS ON SHEETS 16,17 & 18 OF 19 FOR COSTRUCTION OF JC-901

NOTE:
CONNECT CONTRACT NO. 20-4539 TO CONTRACT NO. 20-4538 PIPING IF EXISTING, OTHERWISE PROVIDE 5' STUB WITH CAP AND BUTTRESS

NOTE:
FOR JUNCTION CHAMBER DIMENSIONS SEE SHEETS 16, 17 AND 18



AS-BUILTS 2-29-2012

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DIRECTOR OF PUBLIC WORKS 12/11/09 DATE CHIEF, BUREAU OF ENGINEERING 12/10/09 DATE CHIEF, BUREAU OF UTILITIES 12/11/09 DATE CHIEF, UTILITY DESIGN DIVISION 12/10/09 DATE	Dewberry Dewberry & Davis LLC 3106 LORD BALTIMORE DRIVE SUITE 100 BALTIMORE, MD 21244-2662 410.265.9500 FAX: 410.265.8875	STATE OF MARYLAND ROBERT JOSEPH BURNS No. 15582 REGISTERED PROFESSIONAL ENGINEER	DES: CD/LAL DRN: CD CHK: RJB DATE: 12/9/09

BY	NO.	REVISIONS	DATE

PLAN AND PROFILE SHEET

600' SCALE MAP NO. 37, 43 BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE: SHOWN

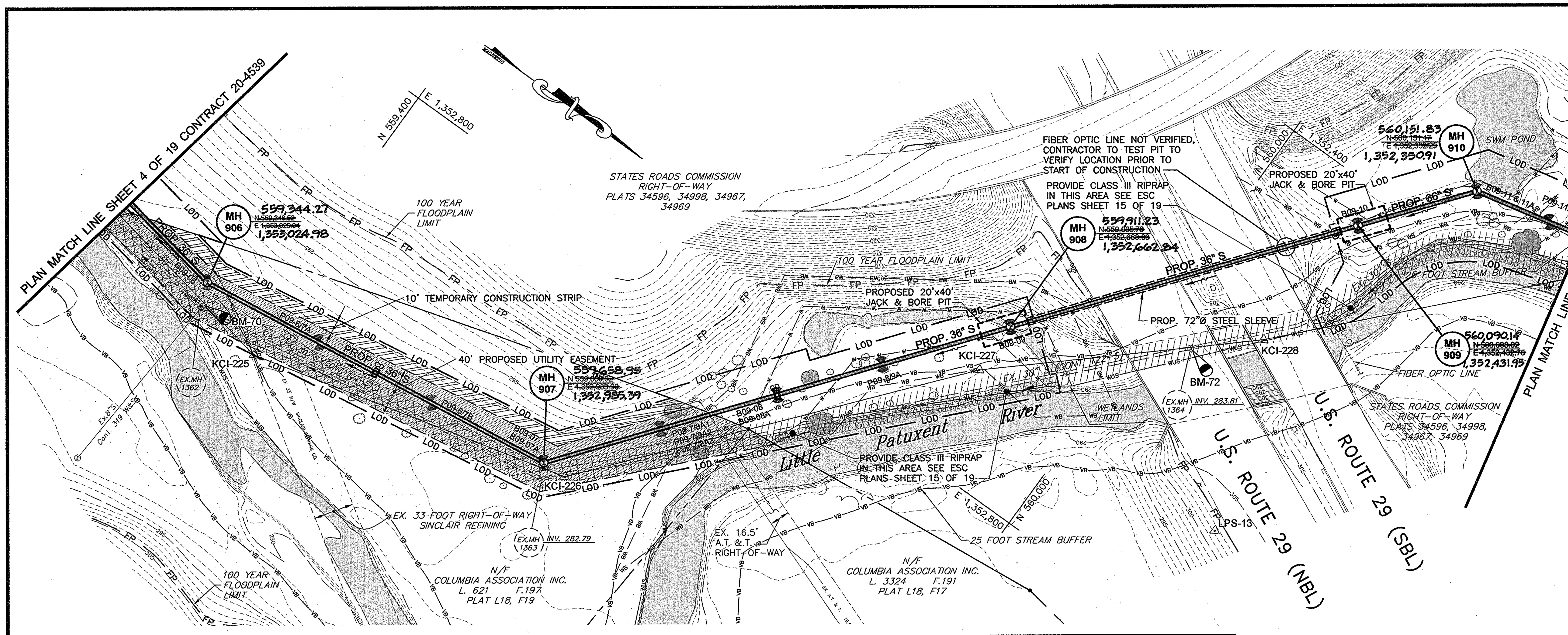
SHEET 4 OF 19

BENCH MARK BM-70

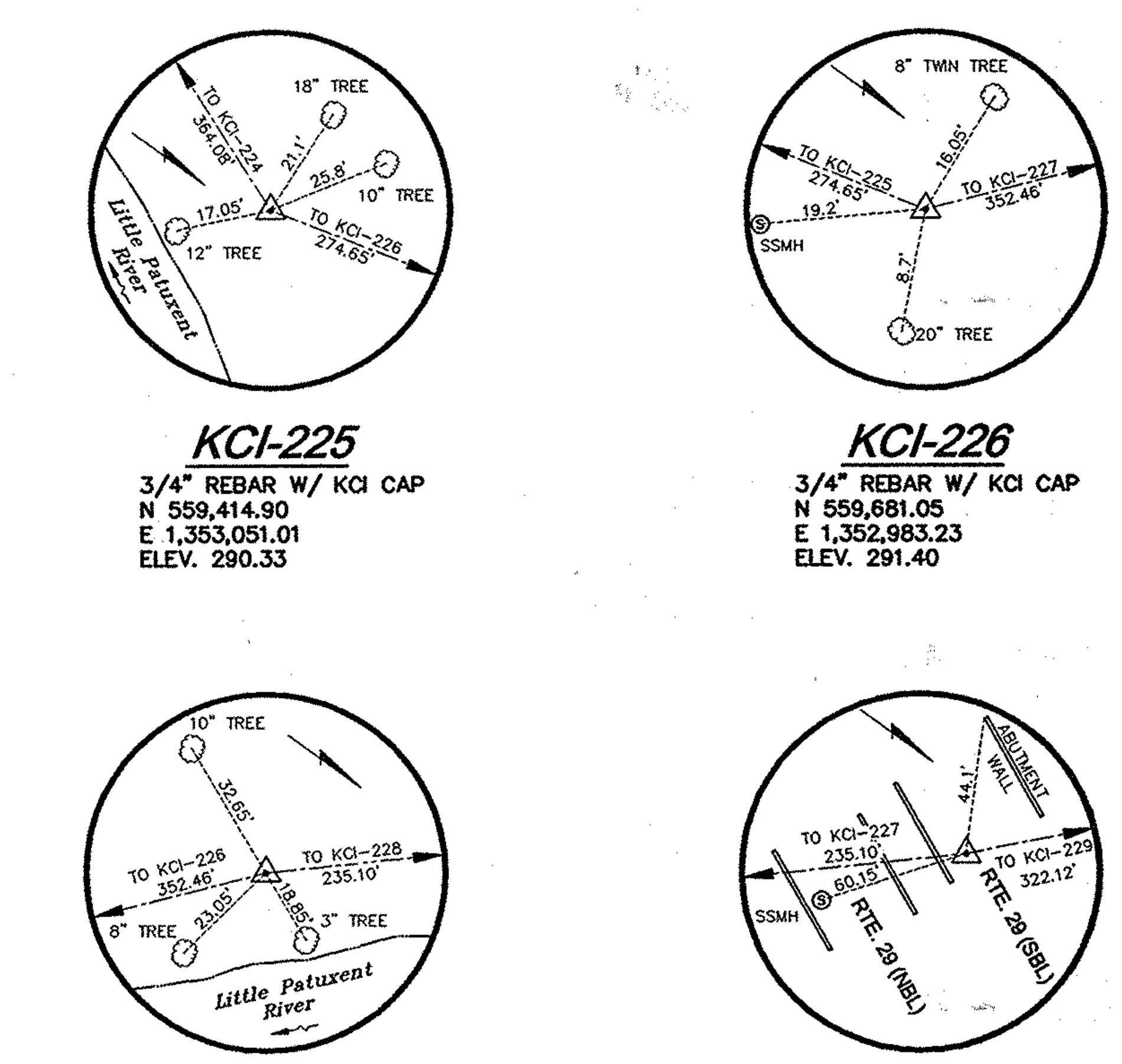
MANHOLE # 1362 ELEV. 291.05
PUNCH HOLE ON MANHOLE RIM
N 559,358 E 1,353,042

BENCH MARK BM-72

MANHOLE # 1364 ELEV. 293.70
PUNCH HOLE ON MANHOLE RIM
N 560,057 E 1,352,559



PLAN MATCH LINE SHEET 4 OF 19 CONTRACT 20-4539
PLAN MATCH LINE SHEET 6 OF 19 CONTRACT 20-4539
N 559,400
E 1,352,800
STATES ROADS COMMISSION RIGHT-OF-WAY PLATS 34596, 34998, 34967, 34969
100 YEAR FLOODPLAIN LIMIT
MH 906
559,344.27
1,353,024.98
10' TEMPORARY CONSTRUCTION STRIP
PROP. 36" S
BM-70
KCI-225
40' PROPOSED UTILITY EASEMENT
MH 907
559,658.95
1,352,985.39
KCI-226
FIBER OPTIC LINE NOT VERIFIED, CONTRACTOR TO TEST PIT TO VERIFY LOCATION PRIOR TO START OF CONSTRUCTION
PROVIDE CLASS III RIPRAP IN THIS AREA SEE ESC PLANS SHEET 15 OF 19
MH 908
559,911.23
1,352,662.84
PROPOSED 20'x40' JACK & BORE PIT
KCI-227
PROP. 72"Ø STEEL SLEEVE
BM-72
KCI-228
MH 909
560,090.14
1,352,431.95
FIBER OPTIC LINE
MH 910
560,151.83
1,352,350.91
SWM POND
PROP. 36" S
25 FOOT STREAM BUFFER
Little Patuxent River
WETLANDS LIMIT
EX.MH 1364 INV. 283.81
EX.MH 1362
EX.MH 1363 INV. 282.79
EX. 33 FOOT RIGHT-OF-WAY SINCLAIR REFINING
EX. 16.5' A.T. & T. RIGHT-OF-WAY
N/F COLUMBIA ASSOCIATION INC. L. 621 F.197 PLAT L18, F19
N/F COLUMBIA ASSOCIATION INC. L. 3324 F.191 PLAT L18, F17
E 1,352,800
N 560,000
STATES ROADS COMMISSION RIGHT-OF-WAY PLATS 34596, 34998, 34967, 34969
U.S. ROUTE 29 (NBL)
U.S. ROUTE 29 (SBL)
LPS-13
LOD
FP



KCI-225
3/4" REBAR W/ KCI CAP
N 559,414.90
E 1,353,051.01
ELEV. 290.33

KCI-226
3/4" REBAR W/ KCI CAP
N 559,681.05
E 1,352,983.23
ELEV. 291.40

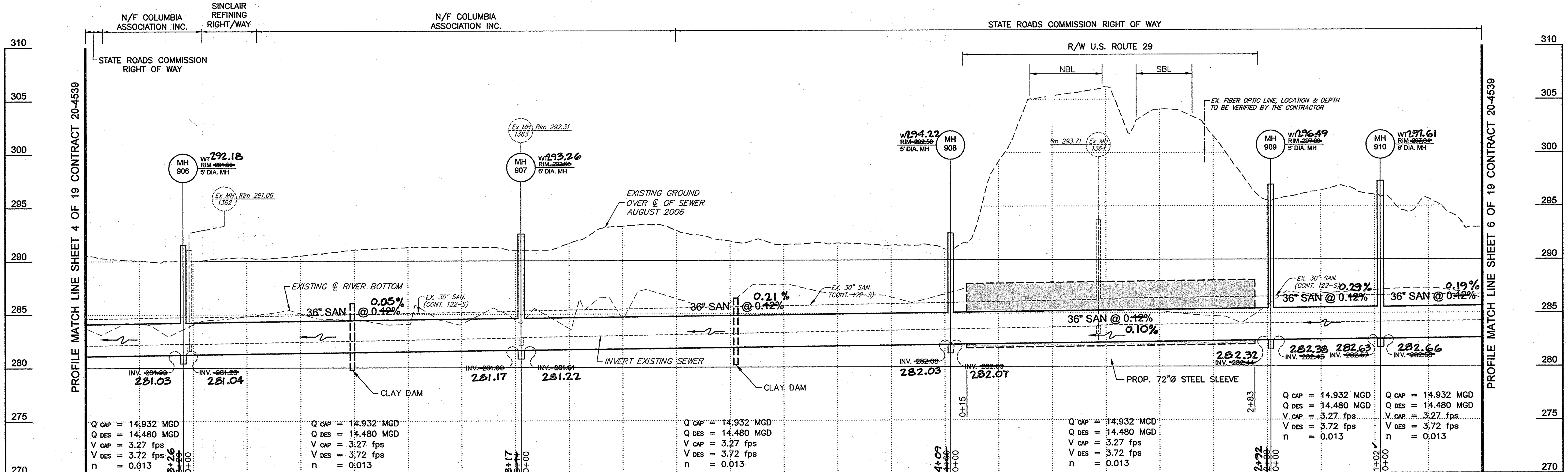
KCI-227
3/4" REBAR W/ KCI CAP
N 559,905.87
E 1,352,711.77
ELEV. 292.16

KCI-228
3/4" REBAR W/ KCI CAP
N 560,080.75
E 1,352,554.64
ELEV. 291.52

PLAN
SCALE : 1" = 50'

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:
1. PRECONSTRUCTION CONTOURS SHALL BE RESTORED AFTER THE UTILITY HAS BEEN INSTALLED AND ALL EXCESS SPOIL SHALL BE REMOVED FROM SITE. THERE SHALL BE NO MOUNDING OR DISPOSING OF MATERIALS WITHIN THE LIMITS OF DISTURBANCE OR ANYWHERE ELSE ON SITE.
2. SEE GENERAL NOTE 18 ON SHEET 3 OF 19.



N/F COLUMBIA ASSOCIATION INC.
SINCLAIR REFINING RIGHT/WAY
N/F COLUMBIA ASSOCIATION INC.
STATE ROADS COMMISSION RIGHT OF WAY
STATE ROADS COMMISSION RIGHT OF WAY
R/W U.S. ROUTE 29
NBL
SBL
EX. FIBER OPTIC LINE, LOCATION & DEPTH TO BE VERIFIED BY THE CONTRACTOR
PROFILE MATCH LINE SHEET 4 OF 19 CONTRACT 20-4539
PROFILE MATCH LINE SHEET 6 OF 19 CONTRACT 20-4539
MH 906 RIM 292.18 5' DIA. MH
MH 907 RIM 293.26 6' DIA. MH
MH 908 RIM 294.22 5' DIA. MH
MH 909 RIM 296.49 5' DIA. MH
MH 910 RIM 297.61 6' DIA. MH
Ex. MH Rim 291.06 1362
Ex. MH Rim 292.31 1363
Rim 293.71 Ex. MH 1364
EXISTING GROUND OVER ℄ OF SEWER AUGUST 2006
EXISTING ℄ RIVER BOTTOM
EX. 30" SAN. (CONT. 122-S)
36" SAN @ 0.05%
36" SAN @ 0.21%
36" SAN @ 0.10%
36" SAN @ 0.29%
36" SAN @ 0.19%
INVERT EXISTING SEWER
CLAY DAM
CLAY DAM
PROP. 72"Ø STEEL SLEEVE
INV. 281.03
INV. 281.04
INV. 281.17
INV. 281.22
INV. 282.03
INV. 282.07
INV. 282.32
INV. 282.38
INV. 282.63
INV. 282.66
Q CAP = 14.932 MGD
Q DES = 14.480 MGD
V CAP = 3.27 fps
V DES = 3.72 fps
n = 0.013
310
305
300
295
290
285
280
275
270

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

AS-BUILTS 2-29-2012

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 12/11/09 DATE
CHIEF, BUREAU OF ENGINEERING 12/10/09 DATE
CHIEF, BUREAU OF UTILITIES 12/11/09 DATE
CHIEF, UTILITY DESIGN DIVISION 12/10/09 DATE

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

STATE OF MARYLAND — PROFESSIONAL ENGINEER

DES: CD/LAL
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

PLAN AND PROFILE SHEET

600' SCALE MAP NO. 37, 43 BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 5 OF 19


BENCH MARK BM-73
MANHOLE # 1365 ELEV. 294.33
PUNCH HOLE ON MANHOLE RIM
N 560,382 E 1,352,337
BENCH MARK BM-74
MANHOLE # 1366 ELEV. 294.97
PUNCH HOLE ON MANHOLE RIM
N 560,817 E 1,352,551
KCI-229
3/4" REBAR W/ KCI CAP
N 560,299.68
E 1,352,318.35
ELEV. 292.78
KCI-230
3/4" REBAR W/ KCI CAP
N 560,586.69
E 1,352,444.13
ELEV. 293.19
KCI-231
3/4" REBAR W/ KCI CAP
N 560,801.58
E 1,352,548.32
ELEV. 293.95
KCI-232
3/4" REBAR W/ KCI CAP
N 561,067.09
E 1,352,659.39
ELEV. 296.08
KCI-233
3/4" REBAR W/ KCI CAP
N 561,067.09
E 1,352,659.39
ELEV. 297.11
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
463/196
CONTRACT 20-4539
CONTRACT 20-4540
N.I.C.
EX. 20' SEWER EASEMENT
EX. 15' C&P TELEPHONE EASEMENT
1388/635 PRIVATE
ENTRANCE TO MERRIWEATHER POST PAVILION
PROVIDE CLASS I RIPRAP IN ACCORDANCE WITH DETAIL SHOWN ON SHEET 15 OF 19
PROPOSED UTILITY EASEMENT
WETLANDS LIMIT
100 YEAR FLOODPLAIN LIMIT
PROVIDE TEMP. DIVERSION FOR EX. 15" S THROUGH MH 912 TO EX. MH 1366, SEE DETAIL ON SHT. 7
40' PROPOSED UTILITY EASEMENT
10' TEMPORARY CONSTRUCTION STRIP
TEMPORARY ACCESS EASEMENT
PROP. 18" SEWER SEE CROSSOVER DET. ON SHEET 7
25' VEGETATION BUFFER
PROP. 36" S
Little Patuxent River
PROVIDE CLASS III RIPRAP SEE ESC PLANS SHEET 15 OF 19
SPOT ELEV. 289.75±
EX. 20' EASEMENT
PROVIDE CLASS III RIPRAP IN ACCORDANCE WITH DETAIL SHOWN ON SHEET 15 OF 19
TEST PIT EX. SEWER MAINS TO CONFIRM ELEVATIONS BEFORE ORDERING MANHOLE.
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
L 4118 F 16
L 5289 F 330
PLAT 14054
PARCEL 519
LOT 2
SHA RIGHT-OF-WAY LINE
STATES ROADS COMMISSION RIGHT-OF-WAY
PLATS 34596, 34998, 34967, 34969
N/F
STATE HIGHWAY ADMINISTRATION
DEPT. OF TRANSPORTATION
L 4094 F 636
PLAT 12740
PARCEL 517
PLAN MATCH LINE SHEET 5 OF 19 CONTRACT 20-4539
FOR CONTINUATION SEE CONTRACT 20-4540 DRAWINGS
NOTE:
1. PRECONSTRUCTION CONTOURS SHALL BE RESTORED AFTER THE UTILITY HAS BEEN INSTALLED AND ALL EXCESS SPOIL SHALL BE REMOVED FROM SITE. THERE SHALL BE NO MOUNDING OR DISPOSING OF MATERIALS WITHIN THE LIMITS OF DISTURBANCE OR ANYWHERE ELSE ON SITE.
2. SEE GENERAL NOTE 18 ON SHEET 3 OF 19.
PLAN
SCALE : 1" = 50'
NOTE:
THE LOD IS COINCIDENT WITH THE PROPOSED UTILITY EASEMENT LINE AND SHOWN FIVE (5) FEET OUTSIDE THE ACTUAL LIMIT OF DISTURBANCE FOR CLARITY
LPS-13
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
STATE ROADS COMMISSION RIGHT-OF-WAY
SOUTH ENTRANCE MERRIWEATHER POST PAVILLION
PROFILE MATCH LINE SHEET 5 OF 19 CONTRACT 20-4539
INTERMITTENT STREAM (PROVIDE RIPRAP CLASS I)
PERENNIAL STREAM (PROVIDE RIPRAP CLASS III)
EX. GROUND OVER ℄ OF SEWER AUGUST 2006
EX. ℄ RIVER BOTTOM
NOTE:
CONNECT CONTRACT NO. 20-4539 TO CONTRACT NO. 20-4540 PIPING IF EXISTING, OTHERWISE PROVIDE 5' STUB WITH CAP AND BUTTRESS
36" SAN @ 0.12%
CLAY DAM
PROVIDE TEMP. DIVERSION FOR EX. 15" S THROUGH MH 912 TO EX. MH 1366 SEE DETAIL ON SHT. 7
Q CAP = 14.932 MGD
Q DES = 14.480 MGD
V CAP = 3.27 fps
V DES = 3.72 fps
n = 0.013
Q CAP = 14.932 MGD
Q DES = 12.747 MGD
V CAP = 3.27 fps
V DES = 3.72 fps
n = 0.013
Q CAP = 14.932 MGD
Q DES = 12.740 MGD
V CAP = 3.27 fps
V DES = 3.72 fps
n = 0.013
PROFILE
SCALE : HORIZ. 1" = 50'
VERT. 1" = 5'
FOR CONTINUATION SEE CONTRACT 20-4540 DRAWINGS
AS-BUILTS 2-29-2012

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/11/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

DES: CD/LAL
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

PLAN AND PROFILE SHEET

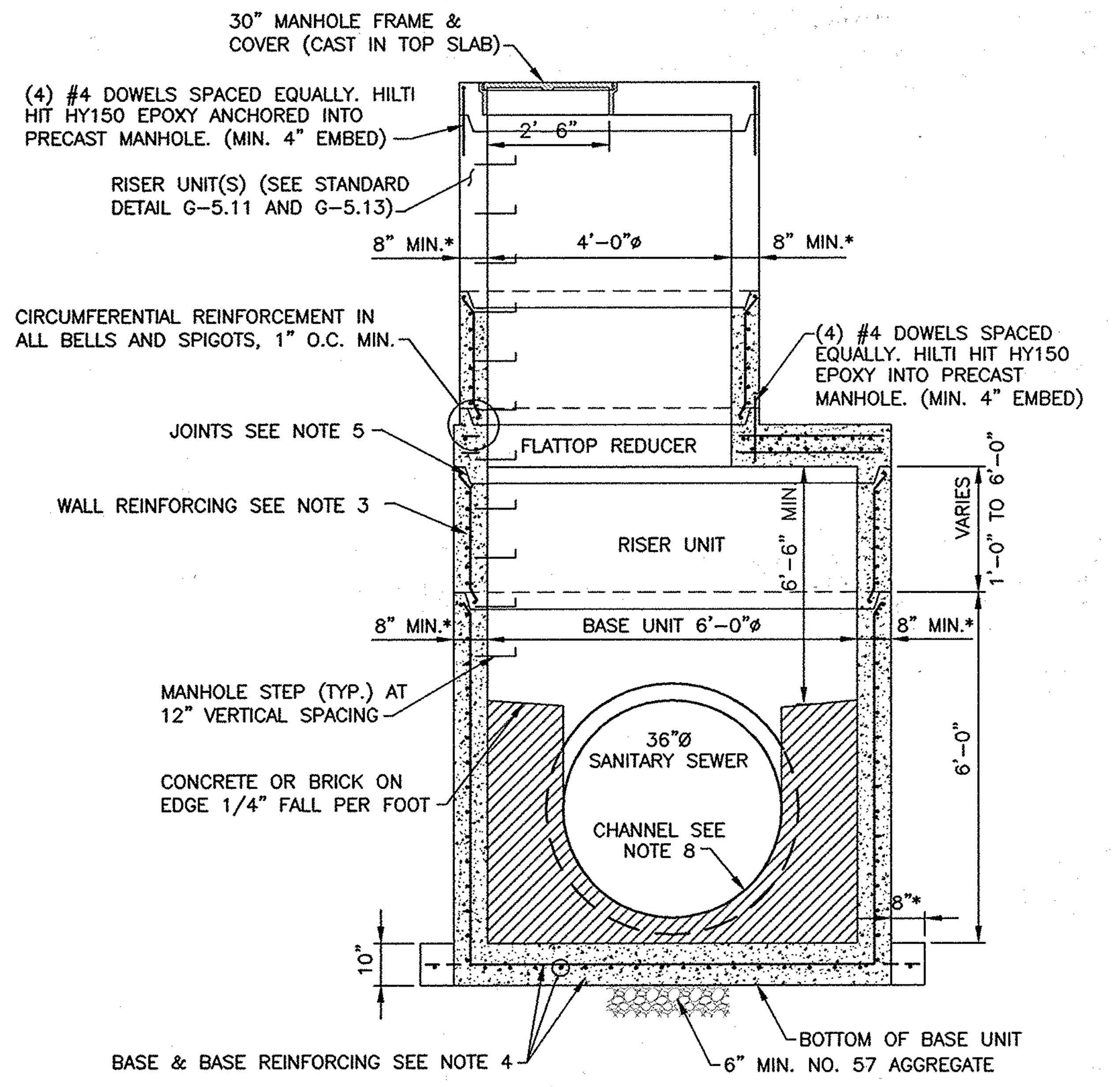
600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN



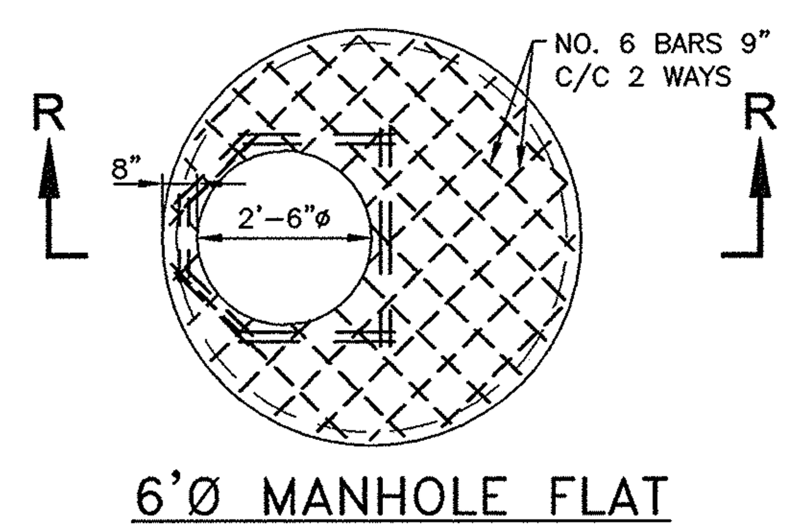
ELEVATION VIEW

* DIMENSIONS TO BE CONFIRMED BY THE MANUFACTURER.

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

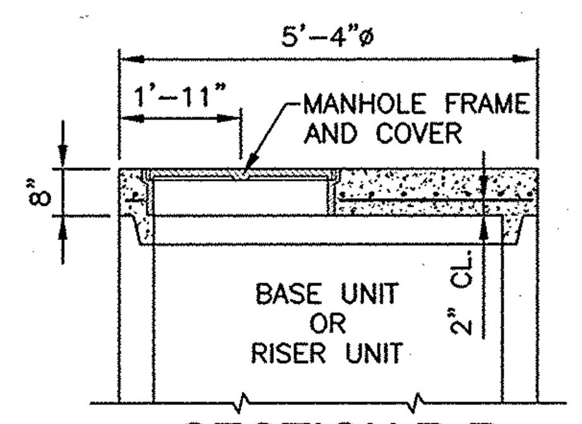
6'-0" DIAMETER PRECAST MANHOLE

NOT TO SCALE
(SEE "5'-0" & 6'-0" DIAMETER MANHOLE NOTES" ON THIS SHEET)



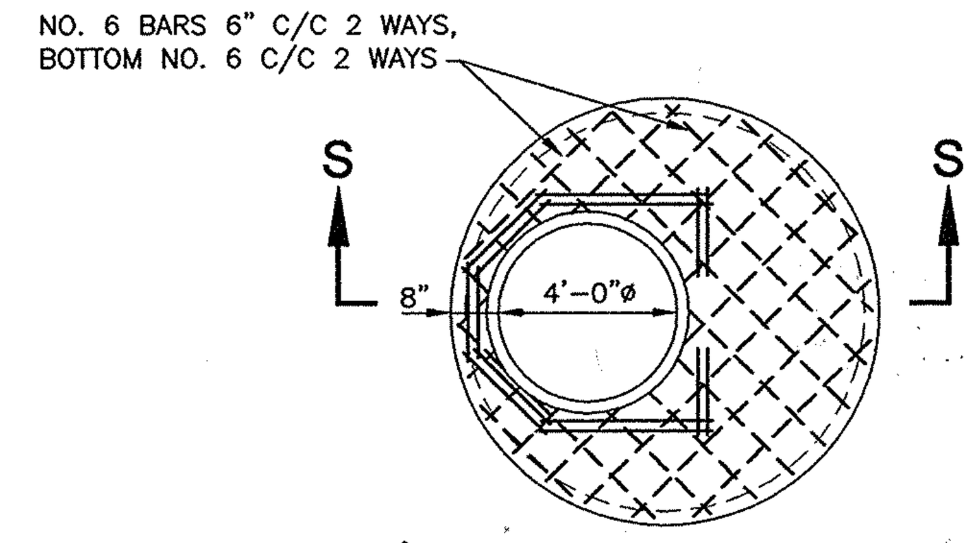
6'Ø MANHOLE FLAT TOP SLAB PLAN

(SHOWN WITHOUT FRAME & COVER



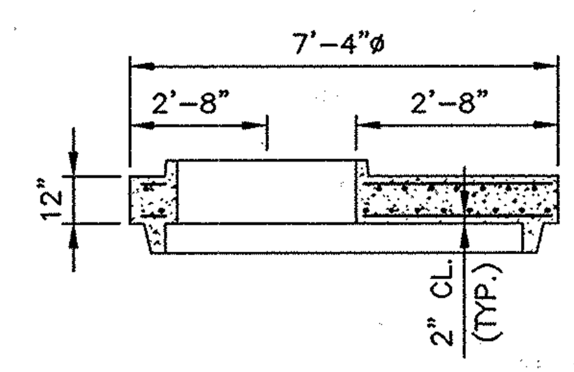
SECTION R-R

NOT TO SCALE



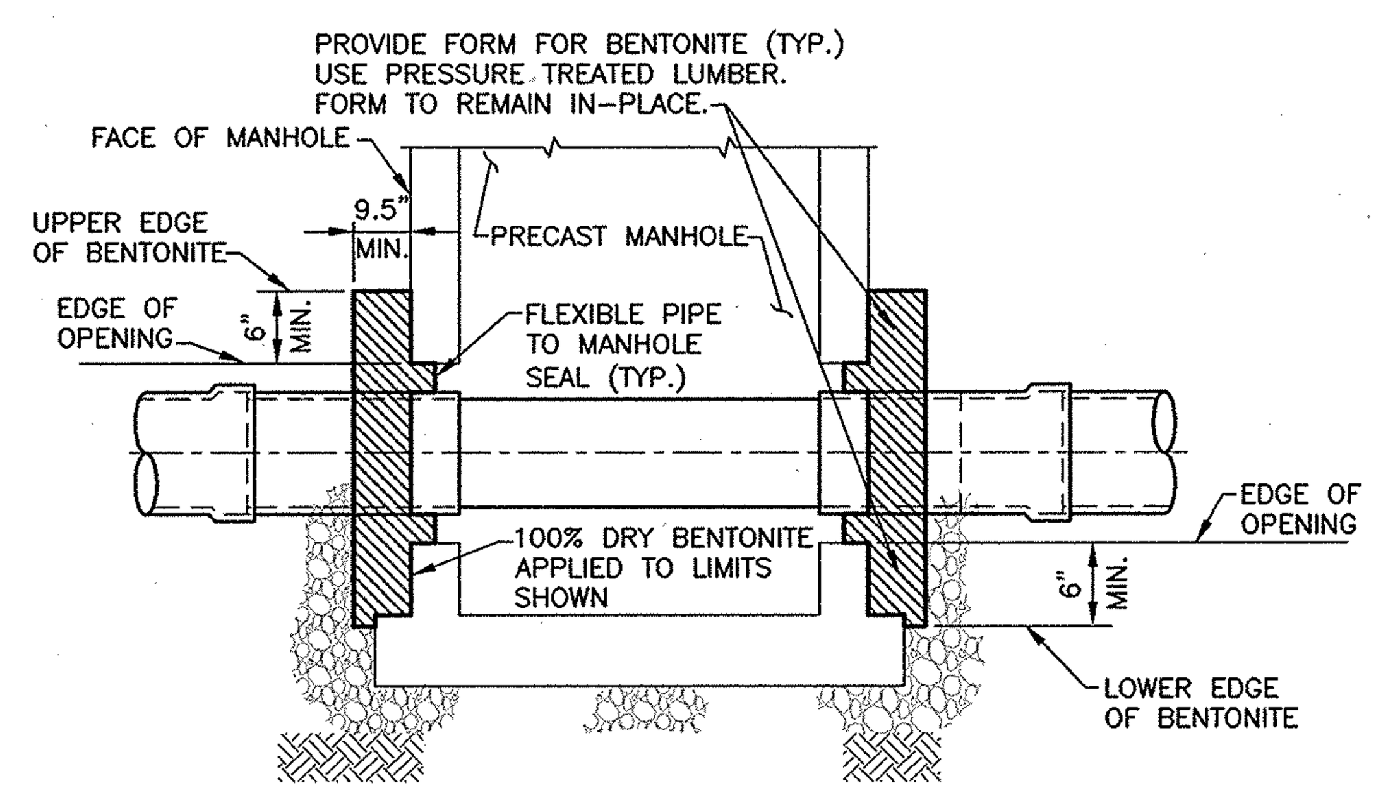
6'Ø MANHOLE FLATTOP REDUCER

NOT TO SCALE



SECTION S-S

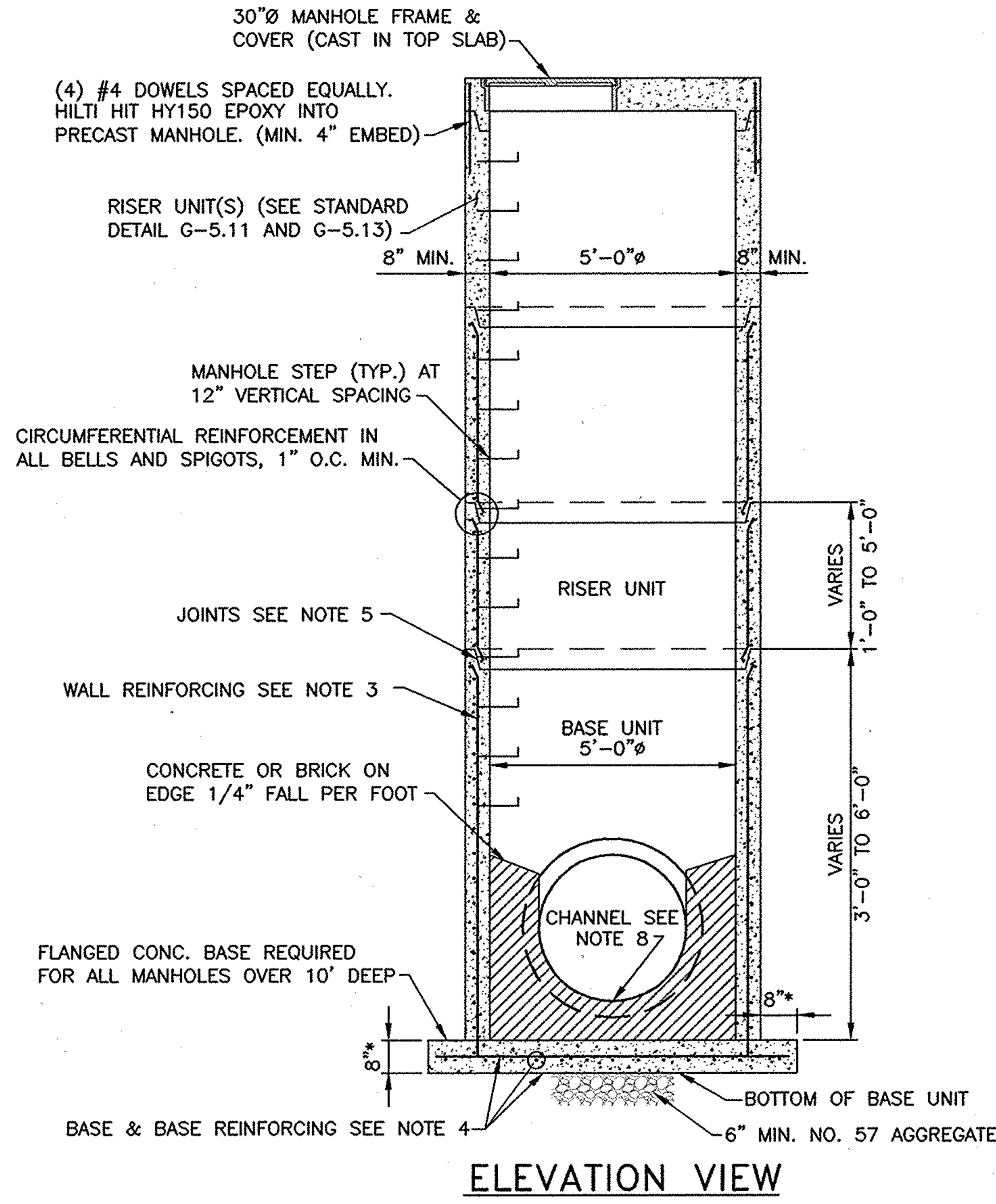
NOT TO SCALE



ELEVATION VIEW

PIPE TO MANHOLE & JUNCTION CHAMBER CONNECTIONS

NOT TO SCALE



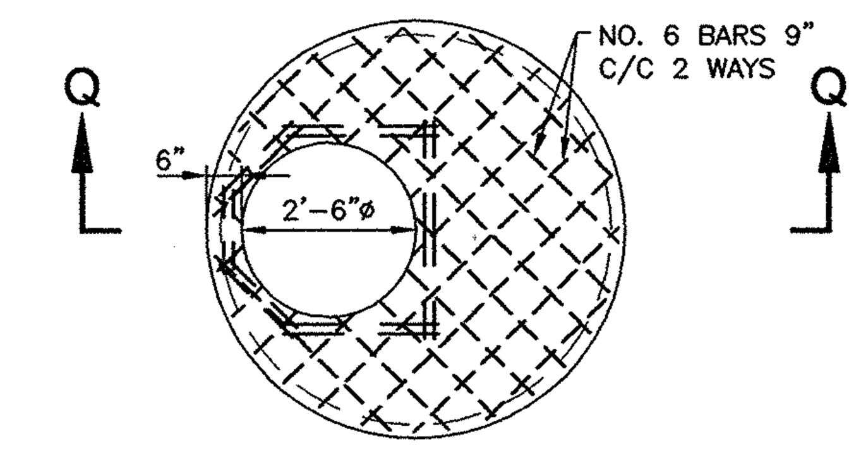
ELEVATION VIEW

* DIMENSIONS TO BE CONFIRMED BY THE MANUFACTURER.

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

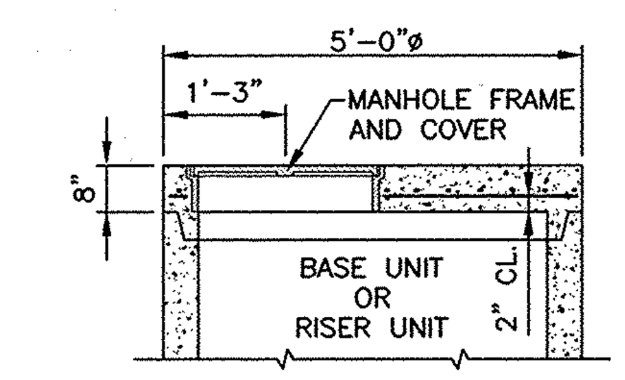
5'-0" DIAMETER PRECAST MANHOLE

NOT TO SCALE



5'Ø MANHOLE FLAT TOP SLAB PLAN

(SHOWN WITHOUT FRAME & COVER

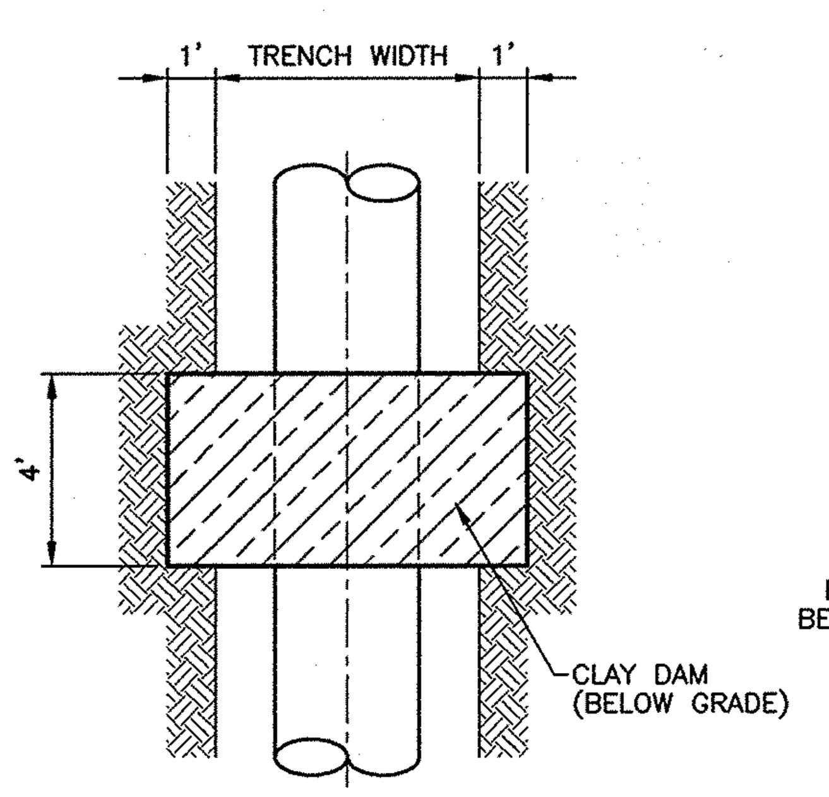


SECTION Q-Q

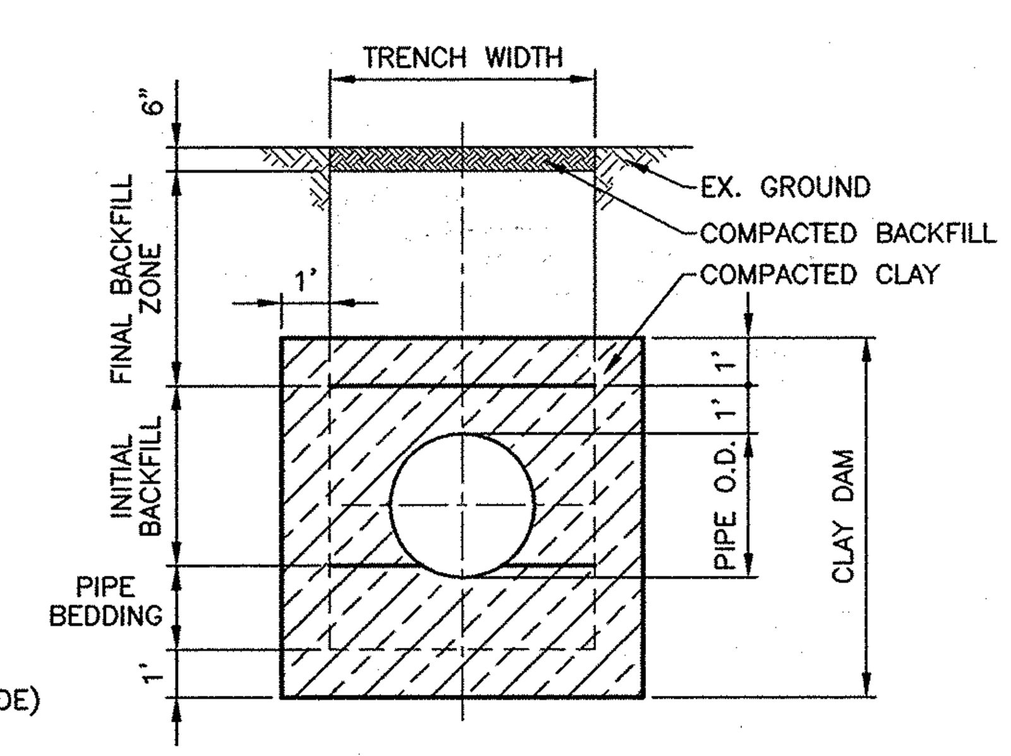
NOT TO SCALE

5'-0" & 6'-0" DIAMETER MANHOLE NOTES:

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C-478 AND THE GENERAL NOTES APPLICABLE TO PRECAST MANHOLES ON STANDARD DETAIL G-5.11.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.23 IN^2/FT. FOR THE 60" Ø MANHOLES AND 0.28 IN^2/FT FOR THE 72" Ø MANHOLES, RESPECTIVELY. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185 AND A-82. REINFORCEMENT BARS SHALL MEET ASTM A-615, GRADE 60.
4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.23 IN^2/FT. FOR THE 60" Ø MANHOLES AND 0.28 IN^2/FT FOR THE 72" Ø MANHOLES, RESPECTIVELY. THE BASE SHALL BE MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT USING RUBBER O-RING GASKETS ASTM A-361 & C-443.
6. MINIMUM DISTANCE BETWEEN PIPE OPENINGS IN MANHOLE WALL SHALL BE 12 INCHES.
7. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
8. MIX NO. 2 PRECAST CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED AND SHALL SLOPE TOWARD OUTLET AS DIRECTED BY THE ENGINEER.
9. NO MORE THAN 1' RISER SECTION MAY BE USED PER MANHOLE.
10. MANHOLE INTERIOR LINER REQUIRED. REFER TO "SANITARY SEWER MANHOLES" SECTION OF THE SPECIAL PROVISIONS.



PLAN VIEW



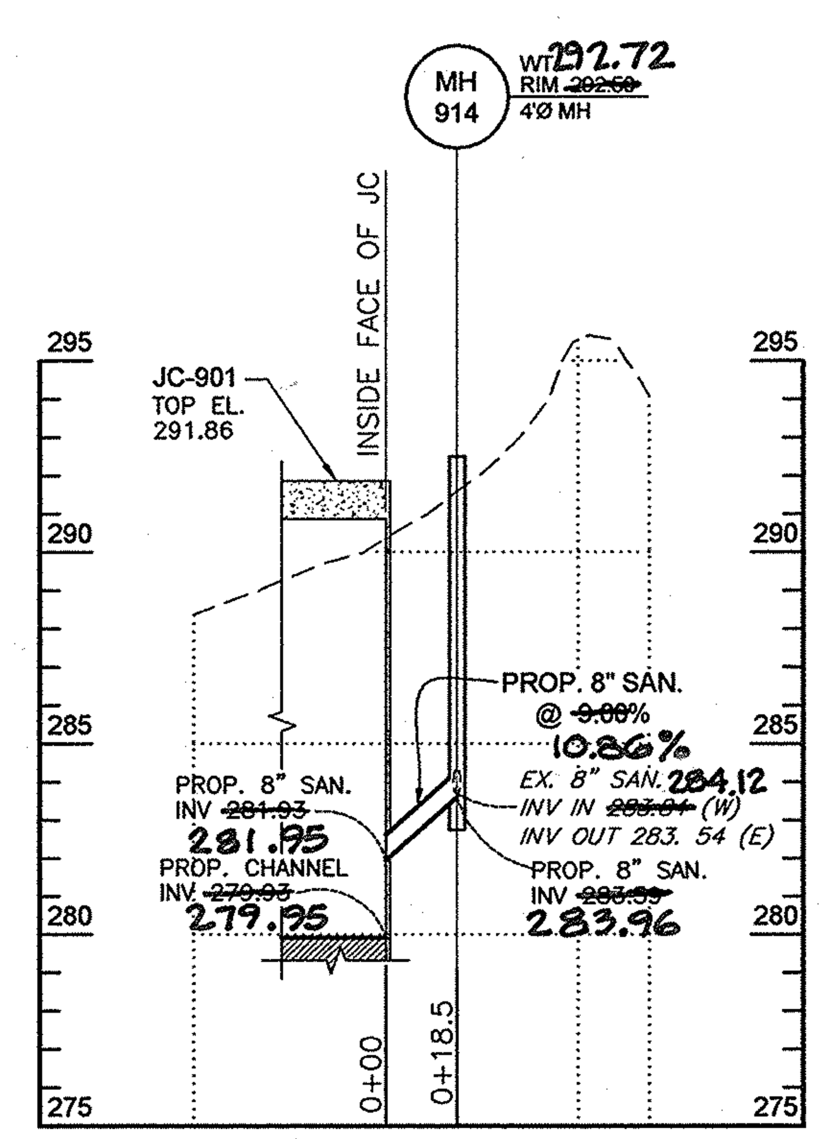
ELEVATION VIEW

CLAY DAM NOTES:

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

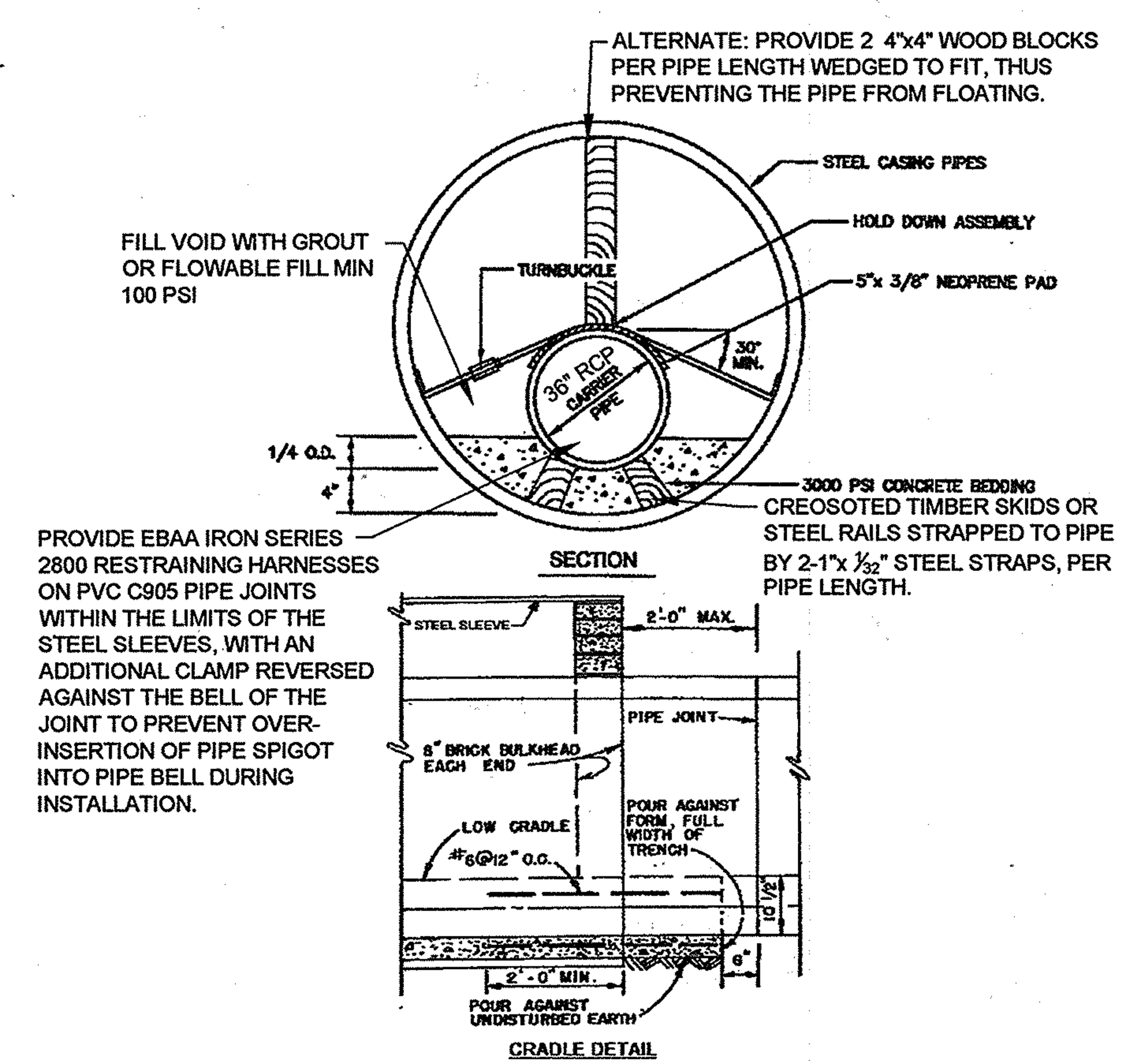
CLAY DAM TYPICAL PIPE BEDDING DETAIL

NOT TO SCALE



PROFILE

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



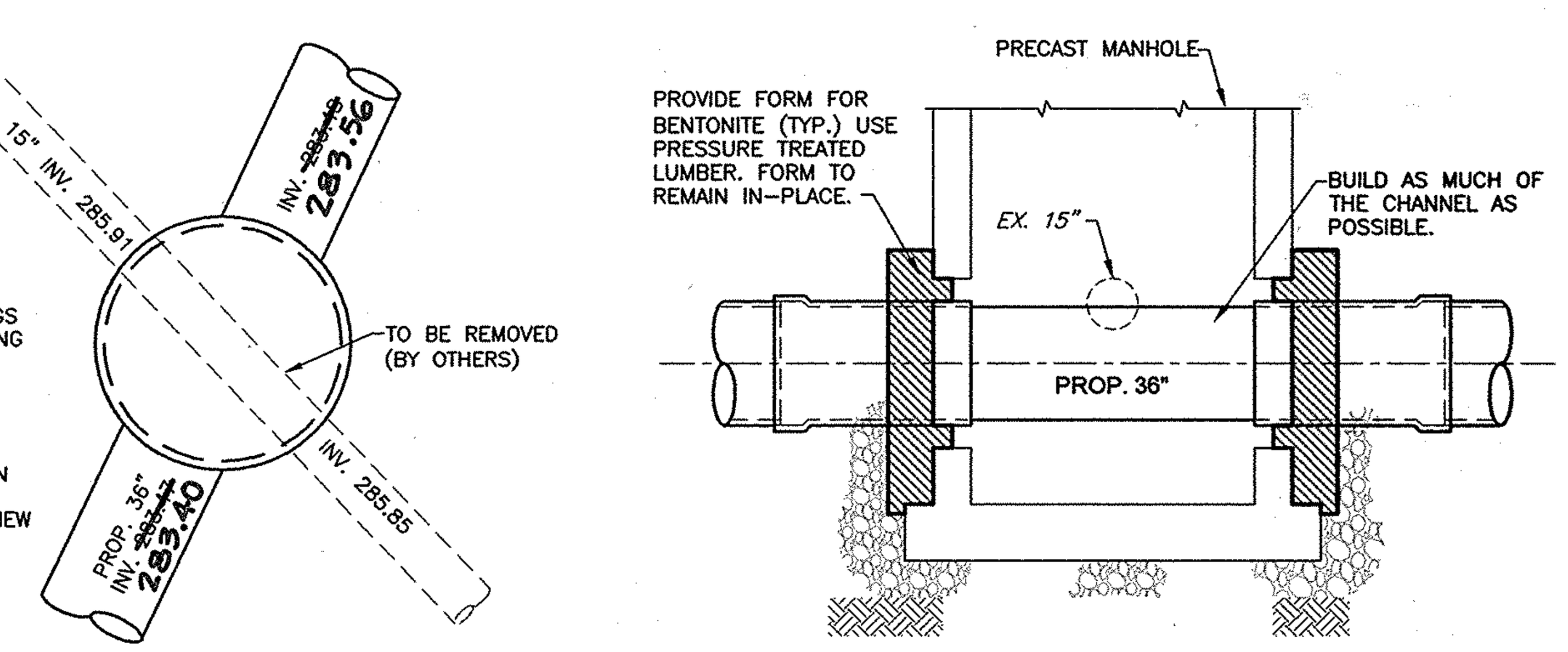
1. STEEL SLEEVE TO CONFORM TO LATEST AASHTO DESIGN SPECIFICATION.
2. ALL STRAPS AND OTHER EXPOSED STEEL TO BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A 123, ALL GALVANIZED SURFACES TO BE TREATED WITH A VINYL WASH PRIMER AND COATED WITH KOPPERS BITUMASTIC 300M, TNEMATAR 46-413 OR EQUAL.
3. A JOINT IN THE MAIN PIPE TO BE PROVIDED WITHIN 2 FEET OF EACH OUTSIDE END OF CASING.
4. 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.
5. STEEL CASING INSTALLED BY JACKING 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.

72" STEEL SLEEVE DETAIL

NOT TO SCALE

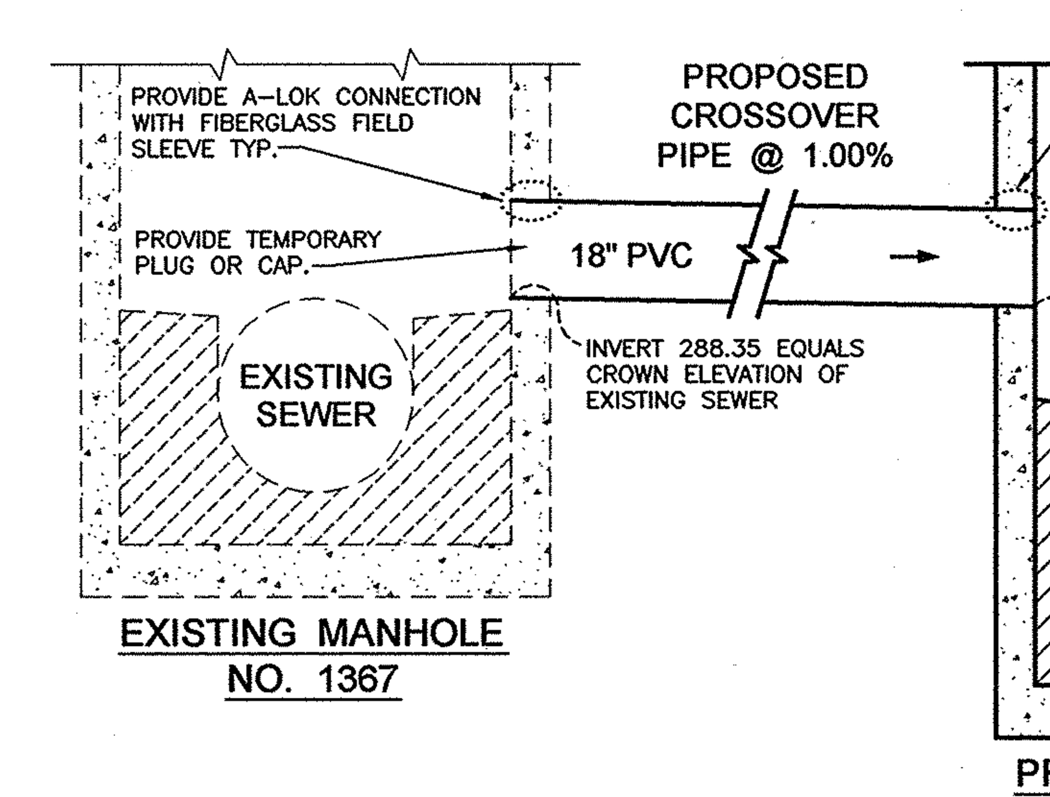
NOTES:

1. TEMPORARILY REMOVE EX. 15" SANITARY SEWER AND RE-LAY 15" PIPE THROUGH PRE-CAST OPENINGS IN MH-912 AS NECESSARY, KEEPING A STRAIGHT ALIGNMENT.
2. SEAL PIPE TO MANHOLE OPENINGS WITH NON-SHRINK GROUT.
3. REMOVAL OF TEMPORARY DIVERSION THROUGH MANHOLE WILL BE BY OTHERS WHEN ALL DOWNSTREAM NEW SEWER IS PLACED IN-SERVICE



15" TEMPORARY DIVERSION THROUGH MANHOLE 912

NOT TO SCALE

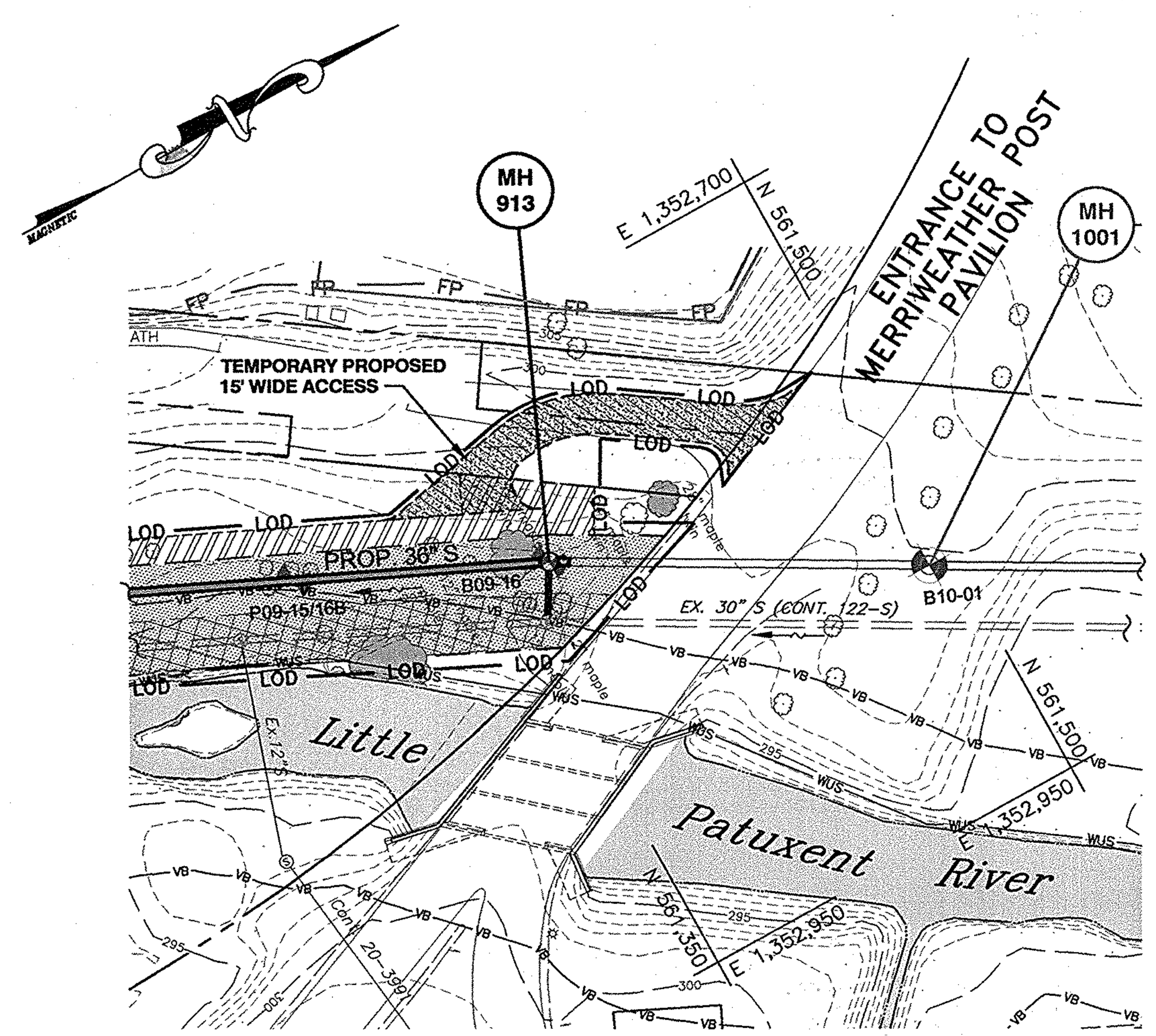


CROSSOVER CONNECTION DETAIL

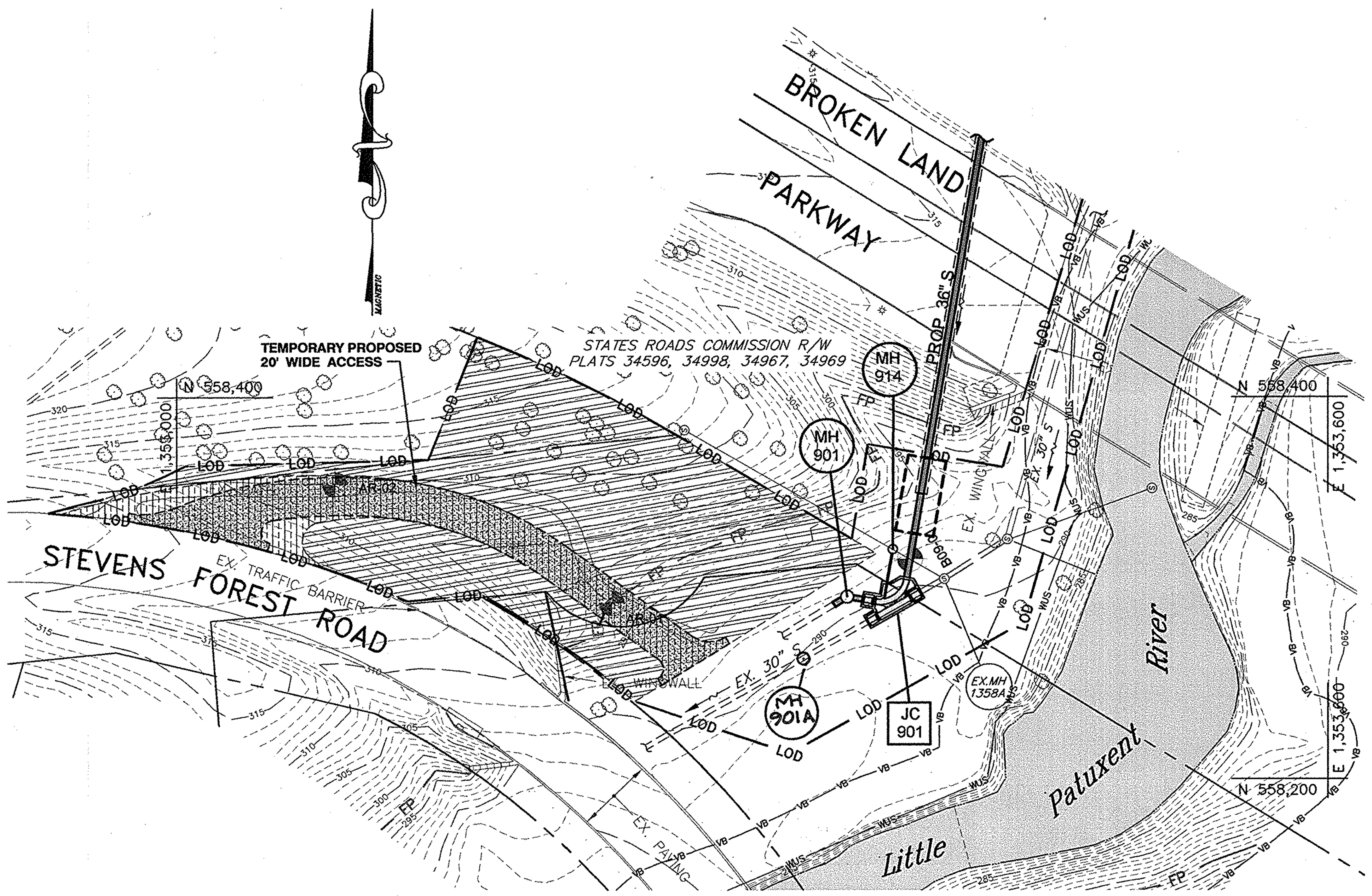
NOT TO SCALE

AS-BUILTS 2-29-2012

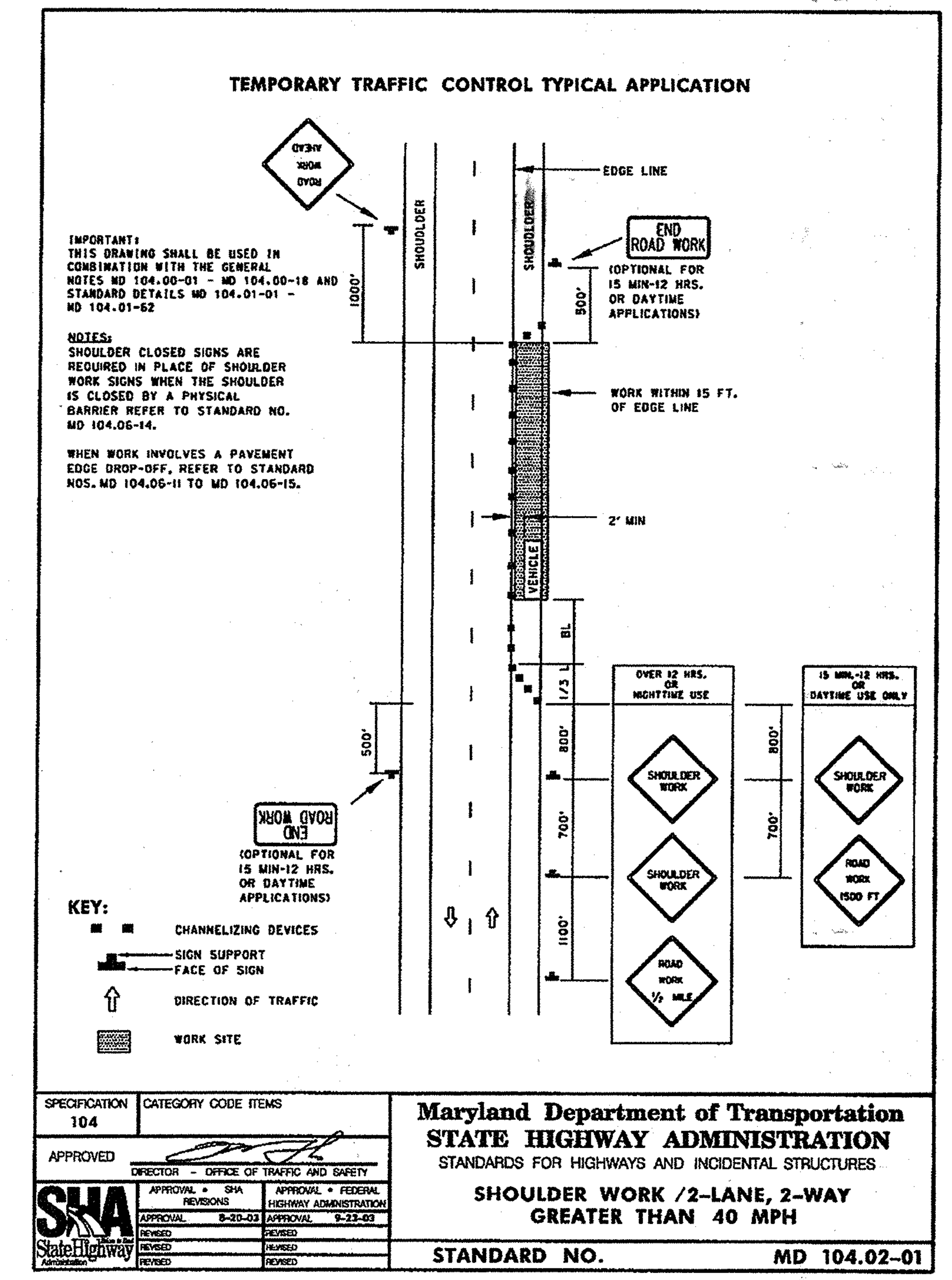
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	Dewberry Dewberry & Davis LLC 3106 LORD BALTIMORE DRIVE SUITE 100 BALTIMORE, MD 21244-2662 410.265.9500 FAX: 410.265.8875	DES: CD/LAL DRN: CD CHK: RJB DATE: 12/9/09	MISCELLANEOUS DETAILS	LITTLE PATUXENT PARALLEL INTERCEPTOR CAPITAL PROJECT S-6175 CONTRACT NO. 20-4539	SCALE: SHOWN SHEET 7 OF 19
DIRECTOR OF PUBLIC WORKS 12/16/09 DATE / CHIEF, BUREAU OF ENGINEERING 12/10/09 DATE / CHIEF, BUREAU OF UTILITIES 12/11/09 DATE / CHIEF, UTILITY DESIGN DIVISION 12/10/09 DATE		BY / NO. / REVISIONS / DATE	600' SCALE MAP NO. 37, 43 BLOCK NO. 5, 23	ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND	

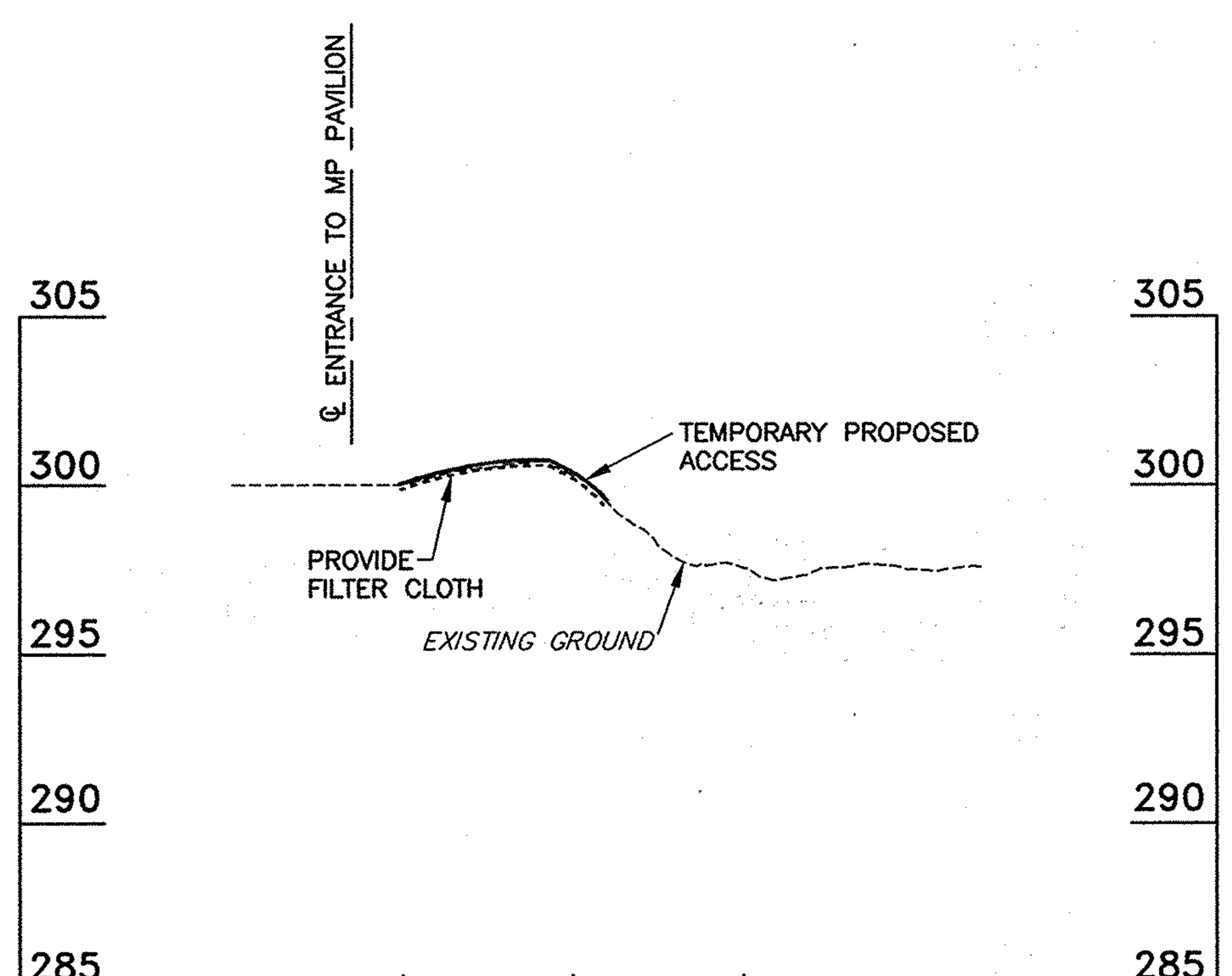


PLAN
SCALE : 1" = 50'

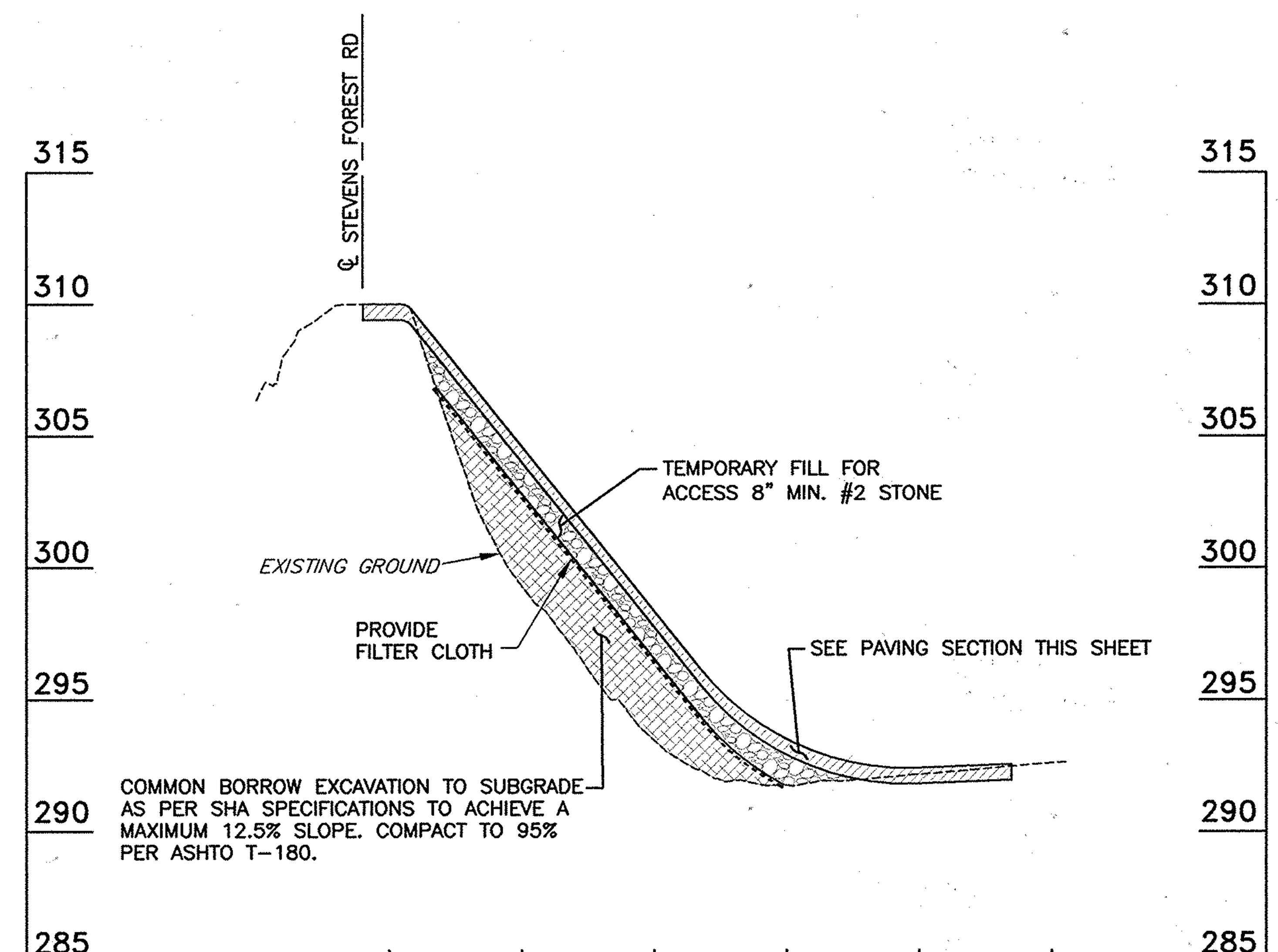

BROKEN LAND PARKWAY
TEMPORARY PROPOSED 20' WIDE ACCESS
STATES ROADS COMMISSION R/W PLATS 34596, 34998, 34967, 34969
STEVENS FOREST ROAD
EX. TRAFFIC BARRIER
PROP 36" S
EX. 30" S
MH 914
MH 901
MH 901A
JC 901
EX.MH 1358A
N 558,400
N 558,200
E 1,353,600
E 1,353,900
Little Patuxent River
LOD
FP

PLAN
SCALE : 1" = 50'

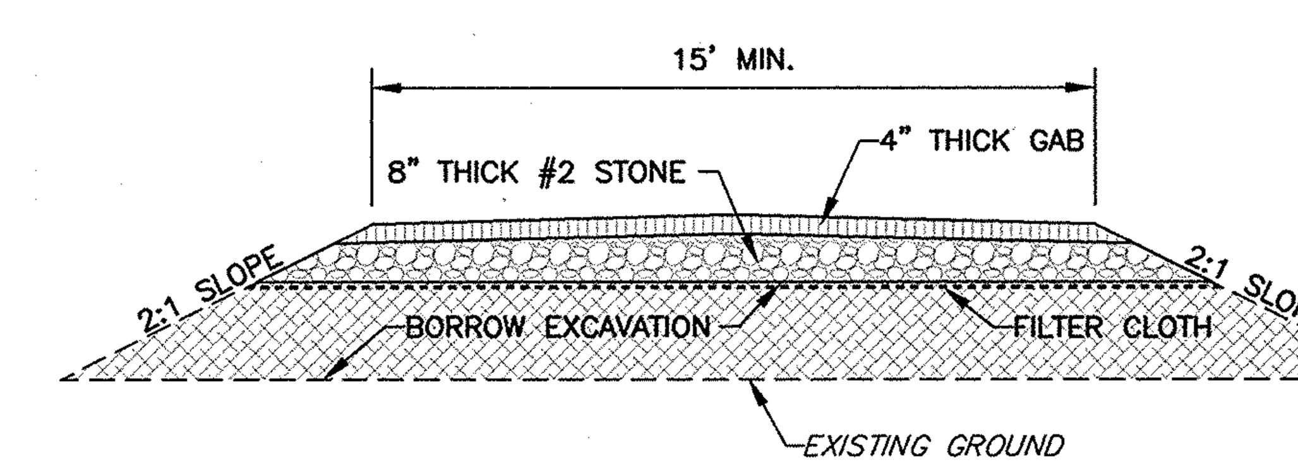

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION
IMPORTANT: THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-62
NOTES:
SHOULDER CLOSED SIGNS ARE REQUIRED IN PLACE OF SHOULDER WORK SIGNS WHEN THE SHOULDER IS CLOSED BY A PHYSICAL BARRIER REFER TO STANDARD NO. MD 104.06-14.
WHEN WORK INVOLVES A PAVEMENT EDGE DROP-OFF, REFER TO STANDARD NOS. MD 104.06-11 TO MD 104.06-15.
EDGE LINE
END ROAD WORK
(OPTIONAL FOR 15 MIN-12 HRS. OR DAYTIME APPLICATIONS)
WORK WITHIN 15 FT. OF EDGE LINE
2' MIN
SHOULDER
VEHICLE
OVER 12 HRS. OR NIGHTTIME USE
15 MIN-12 HRS. OR DAYTIME USE ONLY
SHOULDER WORK
ROAD WORK 1/2 MILE
ROAD WORK (500 FT)
KEY:
CHANNELIZING DEVICES
SIGN SUPPORT FACE OF SIGN
DIRECTION OF TRAFFIC
WORK SITE
SPECIFICATION 104
CATEGORY CODE ITEMS
APPROVED
DIRECTOR - OFFICE OF TRAFFIC AND SAFETY
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
SHOULDER WORK /2-LANE, 2-WAY GREATER THAN 40 MPH
STANDARD NO. MD 104.02-01



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


℄ STEVENS FOREST RD
TEMPORARY FILL FOR ACCESS 8" MIN. #2 STONE
EXISTING GROUND
PROVIDE FILTER CLOTH
SEE PAVING SECTION THIS SHEET
COMMON BORROW EXCAVATION TO SUBGRADE AS PER SHA SPECIFICATIONS TO ACHIEVE A MAXIMUM 12.5% SLOPE. COMPACT TO 95% PER ASHTO T-180.
315
310
305
300
295
290
285
0+00
0+50
1+00
1+50
2+00
2+50

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



PAVING SECTION
SCALE : NONE

AS-BUILTS 2-29-2012

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND			
DIRECTOR OF PUBLIC WORKS	12/11/09 DATE	CHIEF, BUREAU OF ENGINEERING	12/10/09 DATE
CHIEF, BUREAU OF UTILITIES	12/11/09 DATE	CHIEF, UTILITY DESIGN DIVISION	12/10/09 DATE

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

DES: CD/LAL
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

MAINTENANCE OF TRAFFIC AND ACCESS ROAD PLANS

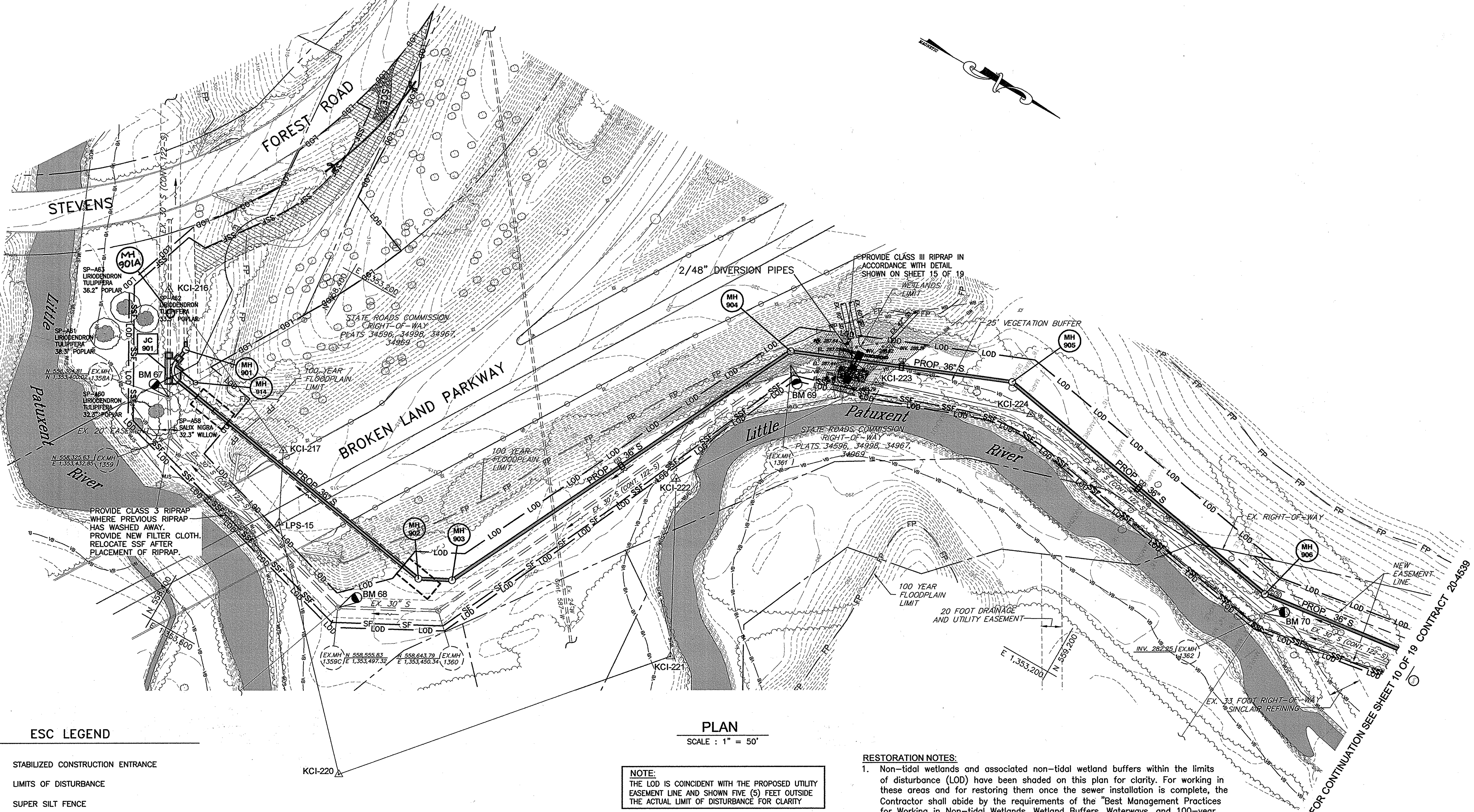
600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 8 OF 19



PLAN
SCALE : 1" = 50'

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

- SCE — STABILIZED CONSTRUCTION ENTRANCE
- LOD — LIMITS OF DISTURBANCE
- SSF — SUPER SILT FENCE
- DEWATERING BASIN (WPD 1.1)
- PUMP-AROUND PRACTICE (WPD 1.2)
- CULVERT PIPE WITH ACCESS ROAD (WPD 1.3)
- SANDBAG / STONE DIVERSION (WPD 1.5)
- WETLANDS AND WETLANDS 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 Floodplains" on Sheet 13.
2. For ground preparation, soil modifications, disturbed areas outside of the wetland and wetland buffer areas, refer to Sheet 12. These basic requirements are supplemented by Technical Specification, Section 02260-"Finish Grading and Landscaping," in the specifications, which address specific sub-grade preparation and finish grading requirements.
3. Shading (see legend this sheet) denotes areas of non-tidal wetlands and buffer within the LOD.

AS-BUILTS 2-29-2012

ESC 2 OF 8

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/14/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8675

STATE OF MARYLAND — ROBERT JOSEPH BURNS — REGISTERED PROFESSIONAL ENGINEER

DES: CD/LAL
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

EROSION AND SEDIMENT CONTROL PLAN

600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 9 OF 19

PLAN
SCALE : 1" = 50'

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

RESTORATION NOTES:

1. Non–tidal wetlands and associated non–tidal wetland buffers within the limits of disturbance (LOD) have been shaded on this plan for clarity. For working in these areas and for restoring them once the sewer installation is complete, the Contractor shall abide by the requirements of the "Best Management Practices for Working in Non–tidal Wetlands, Wetland Buffers, Waterways, and 100–year Floodplains" on Sheet 13.
2. For ground preparation, soil modifications, disturbed areas outside of the wetland and wetland buffer areas, refer to Sheet 12. These basic requirements are supplemented by Technical Specification, Section 02260–"Finish Grading and Landscaping," in the specifications, which address specific sub–grade preparation and finish grading requirements.
3. Shading (see legend this sheet) denotes areas of non–tidal wetlands and buffer within the LOD.

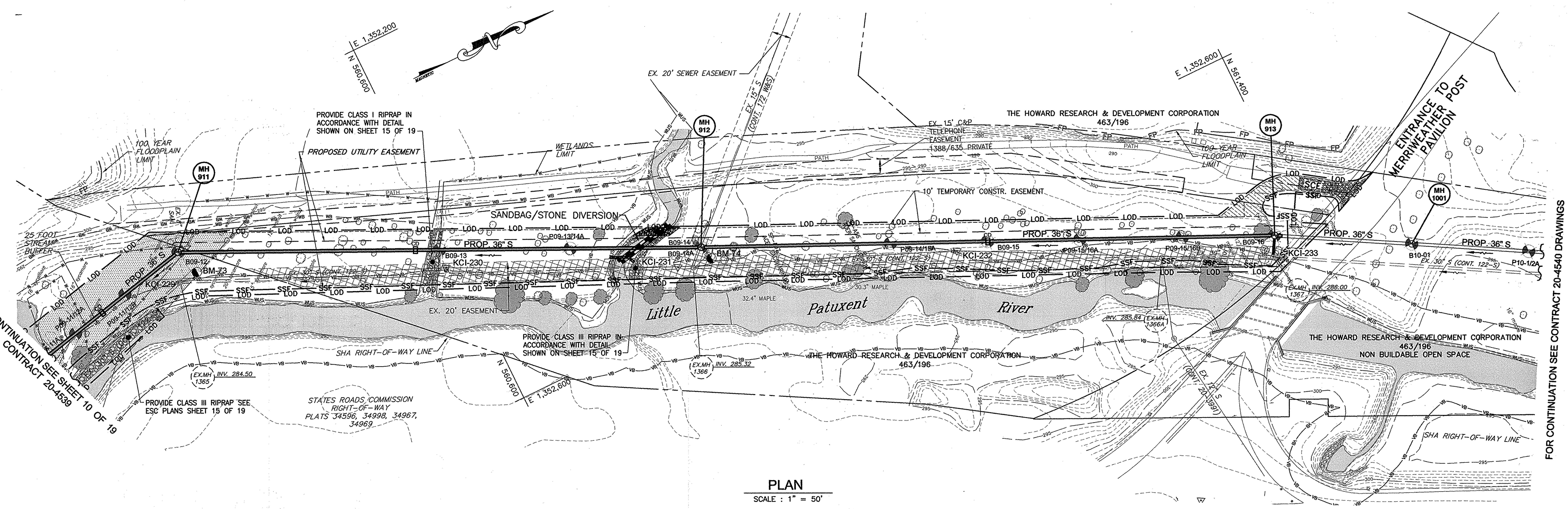
ESC LEGEND

- SCE — STABILIZED CONSTRUCTION ENTRANCE
- — LOD — LIMITS OF DISTURBANCE
- — SSF — SUPER SILT FENCE
- DEWATERING BASIN (WPD 1.1)
- PUMP–AROUND PRACTICE (WPD 1.2)
- CULVERT PIPE WITH ACCESS ROAD (WPD 1.3)
- SANDBAG / STONE DIVERSION (WPD 1.5)
- WETLANDS AND WETLANDS BUFFER WITHIN LOD

AS-BUILTS 2-29-2012

ESC 3 OF 8

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	Dewberry Dewberry & Davis LLC 3106 LORD BALTIMORE DRIVE SUITE 100 BALTIMORE, MD 21244-2662 410.265.9500 FAX: 410.265.8875	DES: CD/LAL DRN: CD CHK: RJB DATE: 12/9/09	BY / NO. / REVISIONS / DATE	EROSION AND SEDIMENT CONTROL PLAN 600' SCALE MAP NO. 37, 43 BLOCK NO. 5, 23	LITTLE PATUXENT PARALLEL INTERCEPTOR CAPITAL PROJECT S-6175 CONTRACT NO. 20-4539 ELECTION DISTRICT NO. 5 HOWARD COUNTY, MARYLAND	SCALE: SHOWN SHEET 10 OF 19
DIRECTOR OF PUBLIC WORKS 12/11/09 DATE; CHIEF, BUREAU OF ENGINEERING 12/10/09 DATE; CHIEF, BUREAU OF UTILITIES 12/11/09 DATE; CHIEF, UTILITY DESIGN DIVISION 12/10/09 DATE						



PLAN
SCALE : 1" = 50'

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

RESTORATION NOTES:

1. Non–tidal wetlands and associated non–tidal wetland buffers within the limits of disturbance (LOD) have been shaded on this plan for clarity. For working in these areas and for restoring them once the sewer installation is complete, the Contractor shall abide by the requirements of the "Best Management Practices for Working in Non–tidal Wetlands, Wetland Buffers, Waterways, and 100–year Floodplains" on Sheet 13.
2. For ground preparation, soil modifications, disturbed areas outside of the wetland and wetland buffer areas, refer to Sheet 12. These basic requirements are supplemented by Technical Specification, Section 02260–"Finish Grading and Landscaping," in the specifications, which address specific sub-grade preparation and finish grading requirements.
3. Shading (see legend this sheet) denotes areas of non–tidal wetlands and buffer within the LOD.

ESC LEGEND

- SCE — STABILIZED CONSTRUCTION ENTRANCE
- — LOD — LIMITS OF DISTURBANCE
- — SSF — SUPER SILT FENCE
- DEWATERING BASIN (WPD 1.1)
- PUMP–AROUND PRACTICE (WPD 1.2)
- CULVERT PIPE WITH ACCESS ROAD (WPD 1.3)
- SANDBAG / STONE DIVERSION (WPD 1.5)
- WETLANDS AND WETLANDS BUFFER WITHIN LOD

AS-BUILTS 2-29-2012

ESC 4 OF 8

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/1/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/1/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

DES: CD/LAL
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

EROSION AND SEDIMENT CONTROL PLAN

600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 11 OF 19

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Section I – Vegetative Stabilization Methods and Materials

A. Site Preparation

i. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.

ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.

iii. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.

ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.

iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98–100% will pass through a #20 mesh sieve.

iv. Incorporate lime and fertilizer into the top 3– 5" of soil by disking or other suitable means.

C. Seedbed Protection

i. Temporary Seeding

a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.

b. Apply fertilizer and lime as prescribed on the plans.

c. Incorporate lime and fertilizer into the top 3 – 5" of soil by disking or other suitable means.

ii. Permanent Seeding

a. Minimum soil conditions required for permanent vegetative establishment:

1. Soil pH shall be between 6.0 and 7.0.
2. Soluble salts shall be less than 500 parts per million (ppm).
3. The soil shall contain less than 40% clay but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or serecia lespedeza is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.
4. Soil shall contain 1.5% minimum organic matter by weight.
5. Soil must contain sufficient pore space to permit adequate root penetration.
6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.

b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 – 5 " to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.

c. Apply soil amendments as per soil tests or as included on the plans.

d. Mix soil amendments into the top 3 – 5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1"– 3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications

i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re–testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.

Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.

ii. Inoculant – The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen–fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75–80° F. can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding

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

a. If fertilizer is being applied at the time of seeding, the application rate amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P205 (phosphorous): 200 lbs/ac; K20 (potassium); 200 lbs/ac.

b. Lime – use only ground agricultural limestone, (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.

a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

iii. Drill or Cultipacker Seeding : Mechanized seeders that apply and cover seed with soil.

a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. Mulch Specifications (In order of preference)

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

ii. Wood Cellulose Fiber Mulch (WCFM)

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

b. WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.

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

d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter–like ground cover, on application having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.

e. WCFM material shall contain no elements or compounds at concentration levels that will be phyto–toxic.

f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.

Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

G. Mulching Seeded Areas – Mulch shall be applied to all seeded areas immediately after seeding.

i. If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.

ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.

iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water,and the mixture shall contain a maximum of of 50 lbs. of wood cellulose fiber per 100 gallons water.

H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:

i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.

ii. Wood Cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. The remainder of area should be appear uniform after binder application. Synthetic binders– such as Acrylic DLR (Agro–Tack), DCA–70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.

iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

I. Incremental Stabilization – Cut Slopes

i. All cut slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15'.

ii. Construction sequence (refer to Figure 4 below):

a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
b. Perform phase 1 excavation, dress and stabilize.
c. Perform phase 2 excavation, dress, and stabilize. Overseed phase I areas as necessary.
d. Perform final phase excavation, dress, and stabilize. Overseed previously seeded areas as necessary.

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

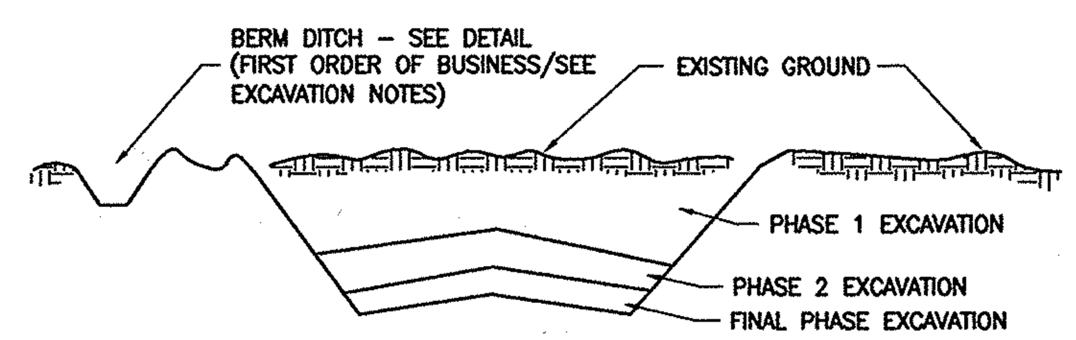


Figure 4 Incremental Stabilization – Cut

J. Incremental Stabilization of Embankments – Fill Slopes

i. Embankments shall be constructed in lifts as prescribed on the plans.

ii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15', or when the grading operation cease as prescribed in the plans.

iii. At the end of each day, temporary berms and pipe slope drains should be constructed along the top edge of the embankment to intercept surface runoff and convey it down the slope in a non–erosive manner to a sediment trapping device.

iv. Construction sequence: Refer to Figure 5 (below):

a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct Slope Silt Fence on low side of fill as shown in Figure 4, unless other methods shown on the plans address this area.
b. Place phase 1 embankment, dress and stabilize.
c. Place phase 2 embankment, dress and stabilize.
d. Place final phase embankment, dress and stabilize. Overseed previously seeded areas as necessary.

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

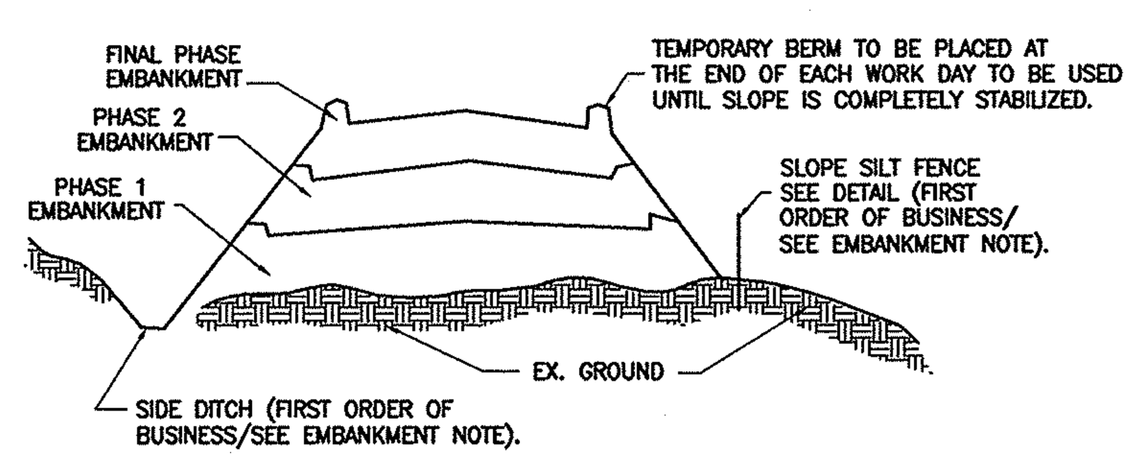


Figure 5 Incremental Stabilization – Embankment Fill
Comply with MD 378 Specifications.

Section II – Temporary Seeding

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

A. Seed Mixtures – Temporary Seeding

i. Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Temporary Seeding Summary below, along with application rates, seeding dates and seeding depths. If this Summary is not put on the plans and completed, then Table 26 must be put on the plans.

ii. For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

TEMPORARY SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 6b) FROM TABLE 26					FERTILIZER RATE (10–10–10)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
	ANNUAL RYEGRASS	50 LB/AC	3/1 – 4/30 8/15 – 11/1	1/4"–1/2"	600 LB/AC (15 LB/ /1000 SF)	2 TONS/AC (100 LB /1000 SF)
	MILLET	50 LB/AC	5/1 – 8/14	1/2"		

Section III: Permanent Seeding

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

A. Seed Mixtures – Permanent Seeding

i. Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Permanent Seed Summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this Summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or athetic treatment may be found in USDA–SCS Technical Field Office Guide, Section 342 – Critical Area Planting. For special lawn maintenance areas, see Section IV Sod and V Turfgrass.

ii. For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in.

iii. For areas receiving low maintenance, apply ureaform fertilizer (46–0–0) at 3 1/2 lbs/1000 sq. ft. (150 lbs/ac), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

PERMANENT SEEDING SUMMARY

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

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

A. General specifications

i. Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.

ii. Sod shall be machine cut at a uniform soil thickness of 3/4", plus or minus 1/4", at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads and torn or uneven ends will not be acceptable.

iii. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.

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

v. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.

B. Sod Installation

i. During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.

ii. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggers to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.

iii. Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.

iv. Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any piece of sod shall be completed within eight hours.

C. Sod Maintenance

i. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4". Watering should be done during the heat of the day to prevent wilting.

ii. After the first week, sod watering is required as necessary to maintain adequate moisture content.

iii. The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3" unless otherwise specified.

Section IV – Turfgrass Establishment

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

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

A. Permanent Seeding

i. Kentucky Bluegrass – Full sun mixture – For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of three bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.

ii. Kentucky Bluegrass/Perennial Rye – Full sun mixture – For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.

iii. Tall Fescue/Kentucky Bluegrass – Full sun mixture – For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; certified Tall Fescue Cultivars 95–100%, certified Kentucky Bluegrass Cultivars 0 – 5%. Seeding rate: 5 to 8 lb/1000 sf. One or more cultivars may be blended.

iv. Kentucky Bluegrass/Fine Fescue – Shade Mixture – For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; certified Kentucky Bluegrass Cultivars 30–40% and certified Fine Fescue and 60–70%. Seeding rate: 1 1/2 – 3 lbs/1000 square feet. A minimum of 3 Kentucky bluegrass cultivars must be chosen, with each cultivar ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.

Note: Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication, Agronomy Mimeo #77, "Turfgrass Cultivar Recommendations for Maryland".

B. Ideal times of seeding

Western MD: March 15 – June 1, August 1 – October 1 (Hardiness Zones – 5b, 6a)

Central MD: March 1 – May 15, August 15 – October 15 (Hardiness Zone – 6b)

Southern MD, Eastern Shore: March 1 – May 15, August 15 – October 15 (Hardiness Zones – 7a,7b)

C. Irrigation

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

D. Repairs and Maintenance

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

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

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

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

iv. Maintenance fertilizer rates for permanent seedings are shown in table 24. For lawns and other medium to high maintenance turfgrass areas, refer to the University of Maryland publication "Lawn Care n Maryland" Bulletin No. 171.

SEDIMENT CONTROL GENERAL NOTES

1. A minimum of 48 hours notice must be given to Howard County Construction Inspection Division, Sediment Control Division prior to the start of any construction. 410–313–1855.

2. All vegetative and structural practices are to be installed according to the provisions of the plan and are to be in conformance with the most current Maryland Standards and Specifications for Soil Erosion and Sediment Control and revisions thereto.

3. Following initial soil disturbance or re–disturbance, permanent or temporary stabilization shall be completed within; a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.

4. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control for permanent seeding (Sec. III), sod (Sec. III) 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.

5. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.

6. Site Analysis — Site is defined as areas involving any improvement.

Total Area of Site	5.0 Acres
Area Disturbed	5.0 Acres
Area to be paved	0 Sq. Yds.
Area to be Vegetatively Stabilized	5.0 Sq. Yds.
Total Cut	12,500 Cu. Yds.
Total Fill	11,500 Cu. Yds.
Offsite waste/borrow area location	To be determined by contractor.

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

8. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.

9. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

10. Trenches for the construction of utilities is limited to that which shall be back–filled and stabilized by the end of each work day.

11. Spoil from trench excavation shall be place on the uphill side of the excavation.

12. Site grading will begin only after all perimeter sediment control measures have been installed and are in a functioning condition.

13. 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 2-29-2012

ESC 5 OF 8

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/11/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX 410.265.8875

STATE OF MARYLAND — ROBERT JOSEPH BURNS III — No. 15062 — REGISTERED PROFESSIONAL ENGINEER

DES: CD/LAL
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

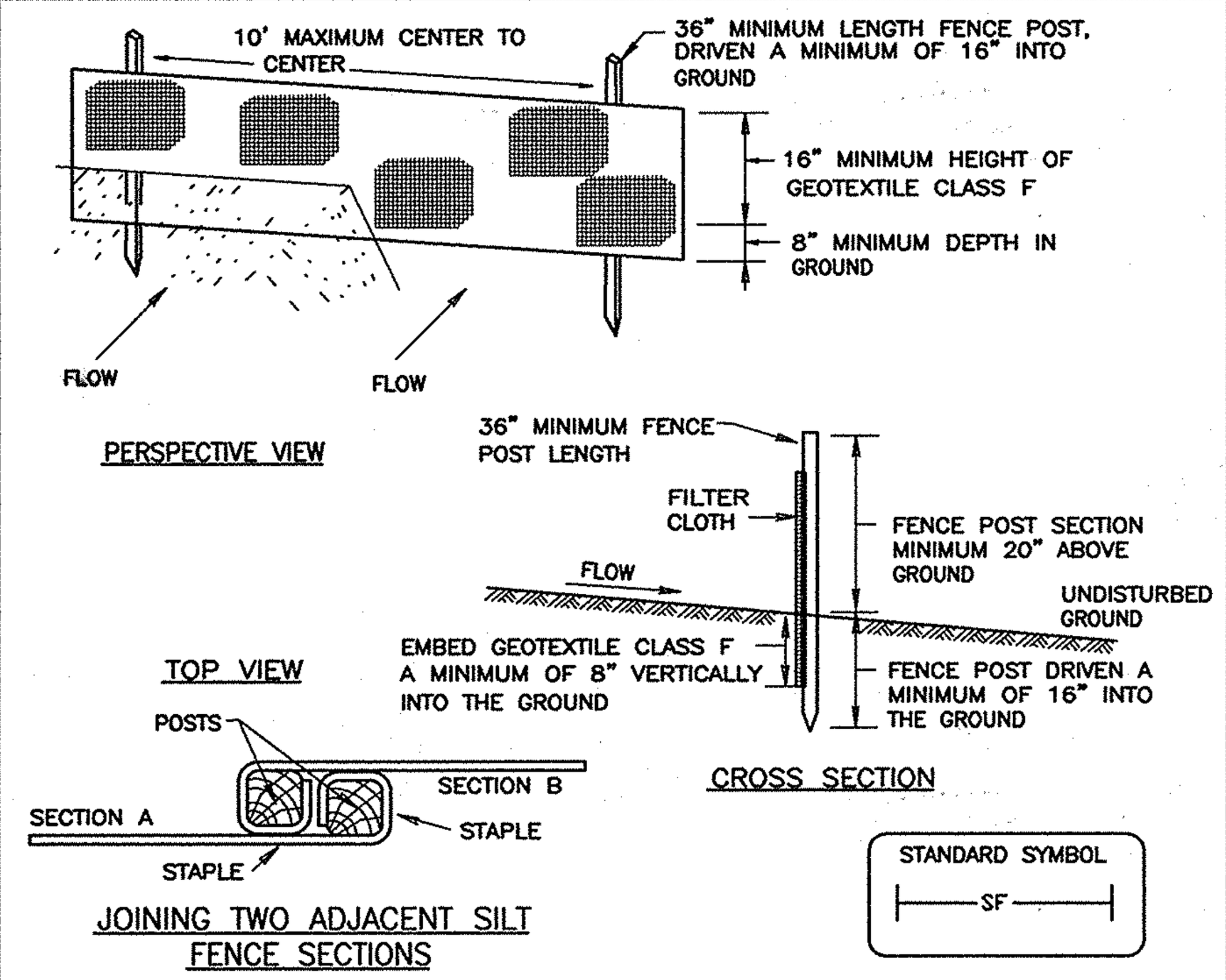
600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN

DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (minimum) cut, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pond per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 15 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

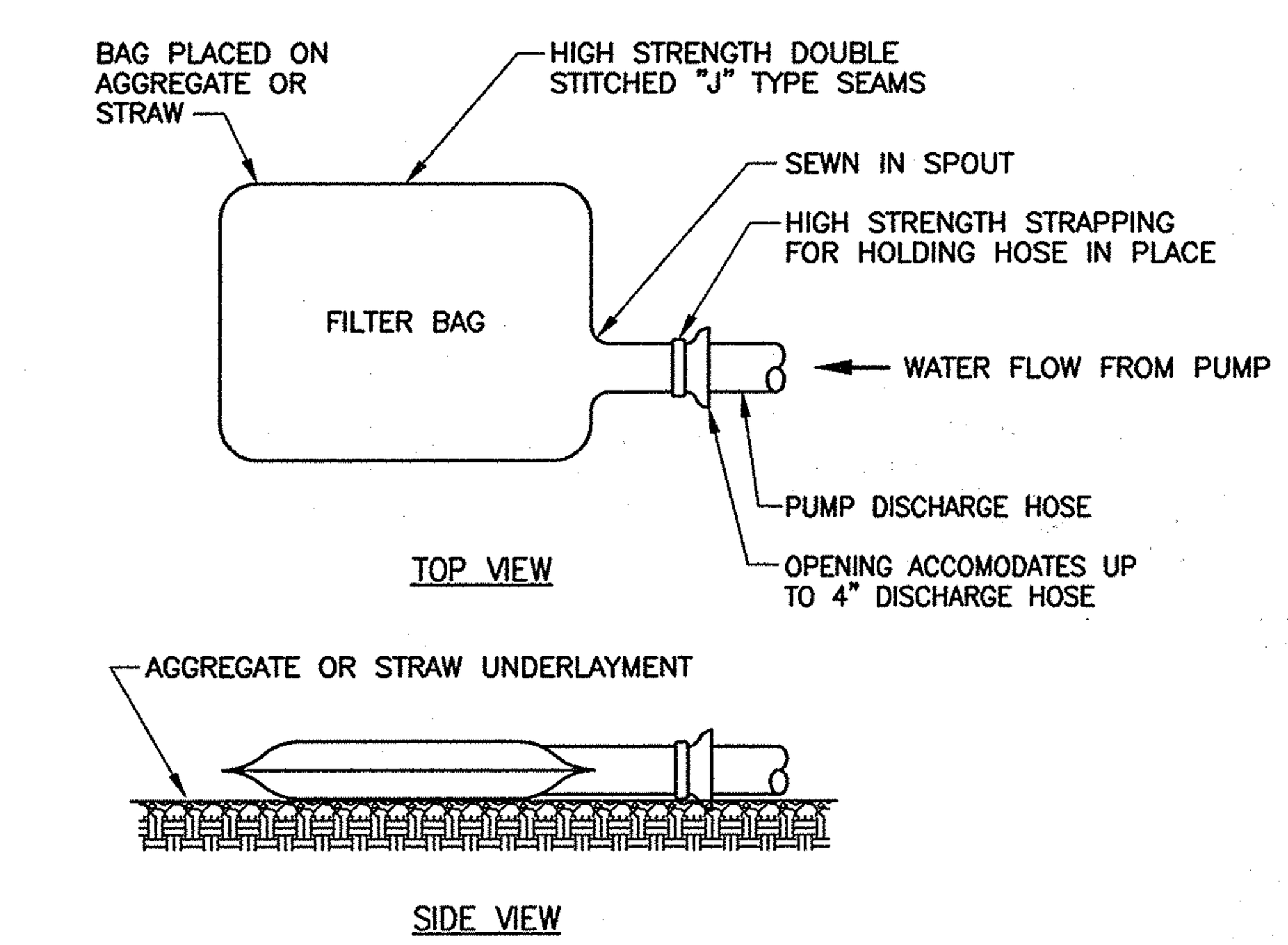
SILT FENCE

Silt Fence Design Criteria

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

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

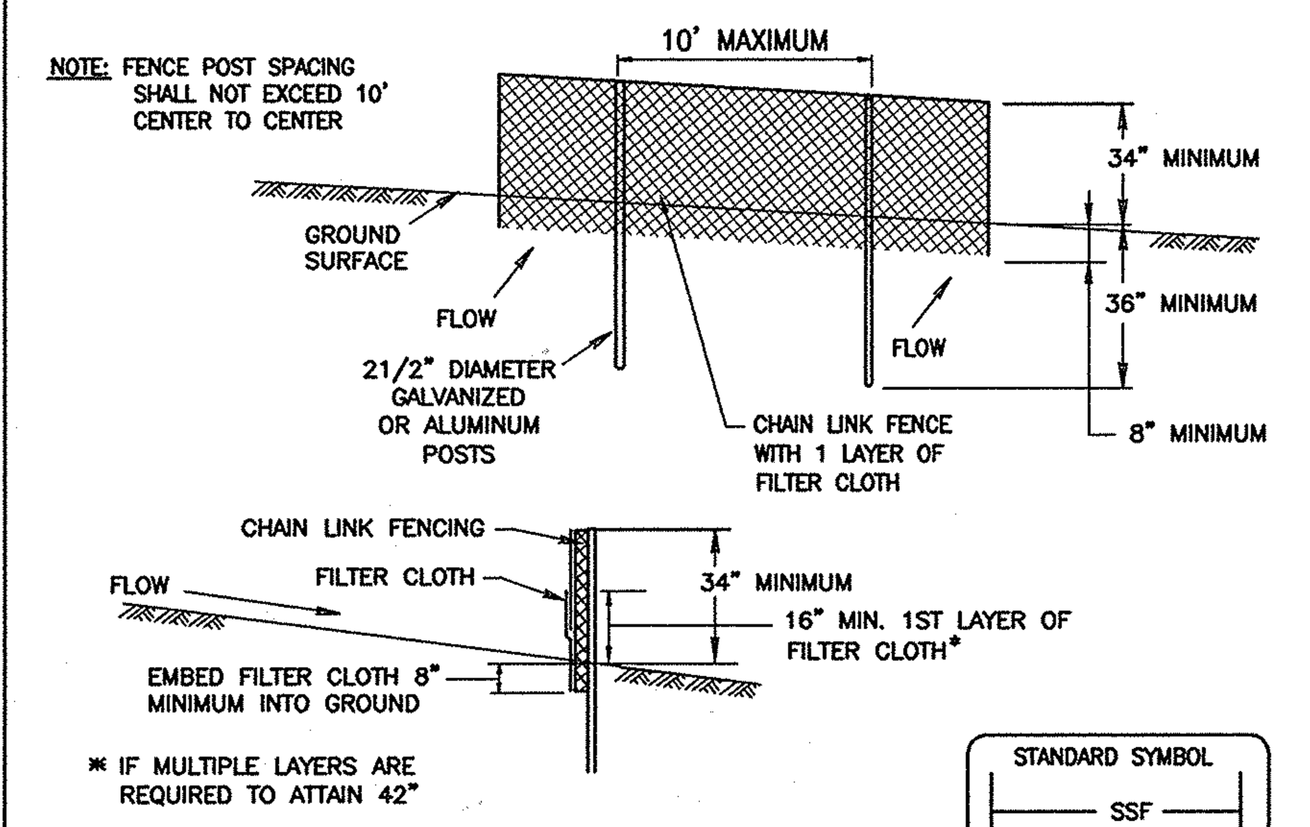
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 15 - 3A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



FILTER BAG

NOT TO SCALE

DETAIL 33 - SUPER SILT FENCE



Construction Specifications

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

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

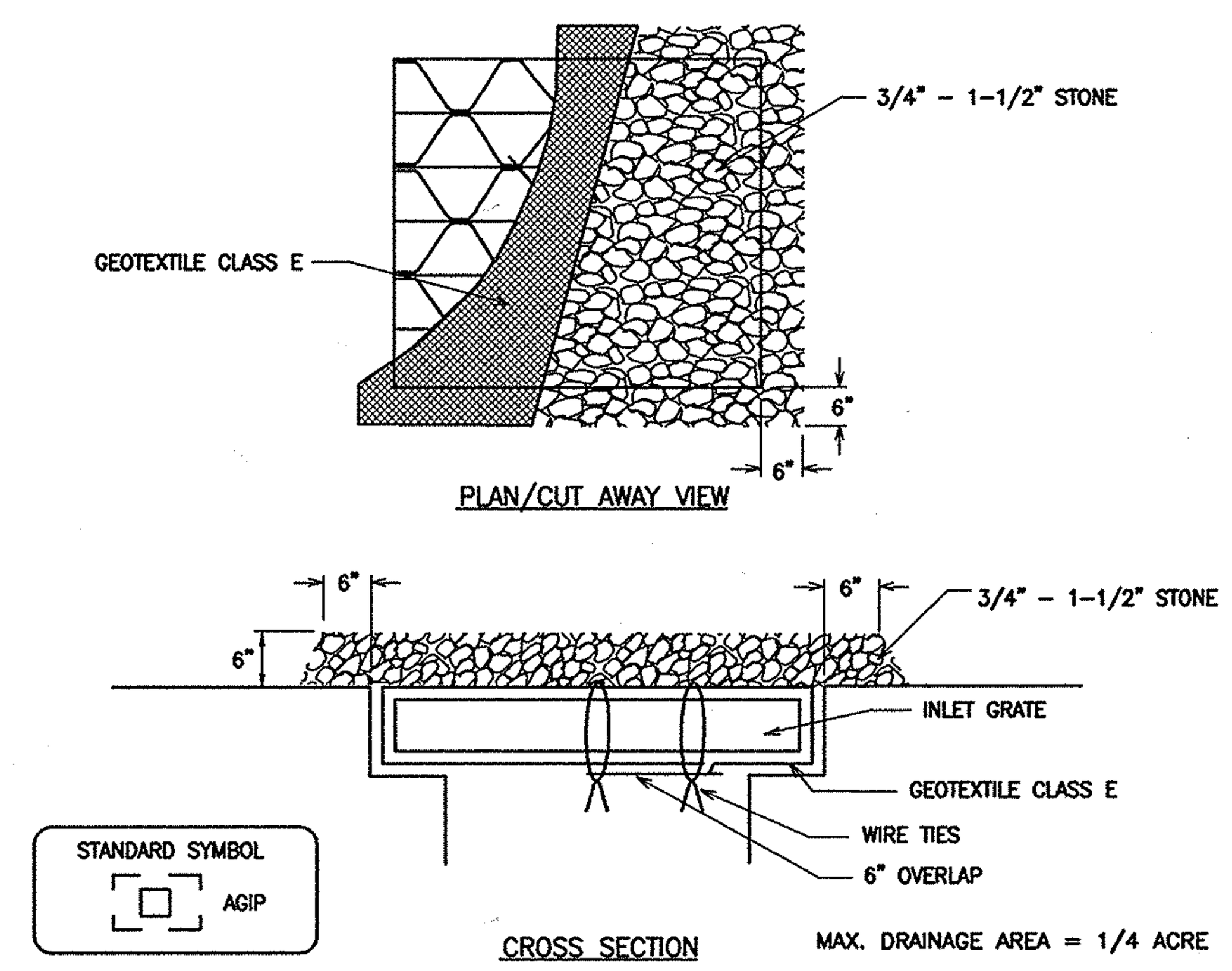
SUPER SILT FENCE

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

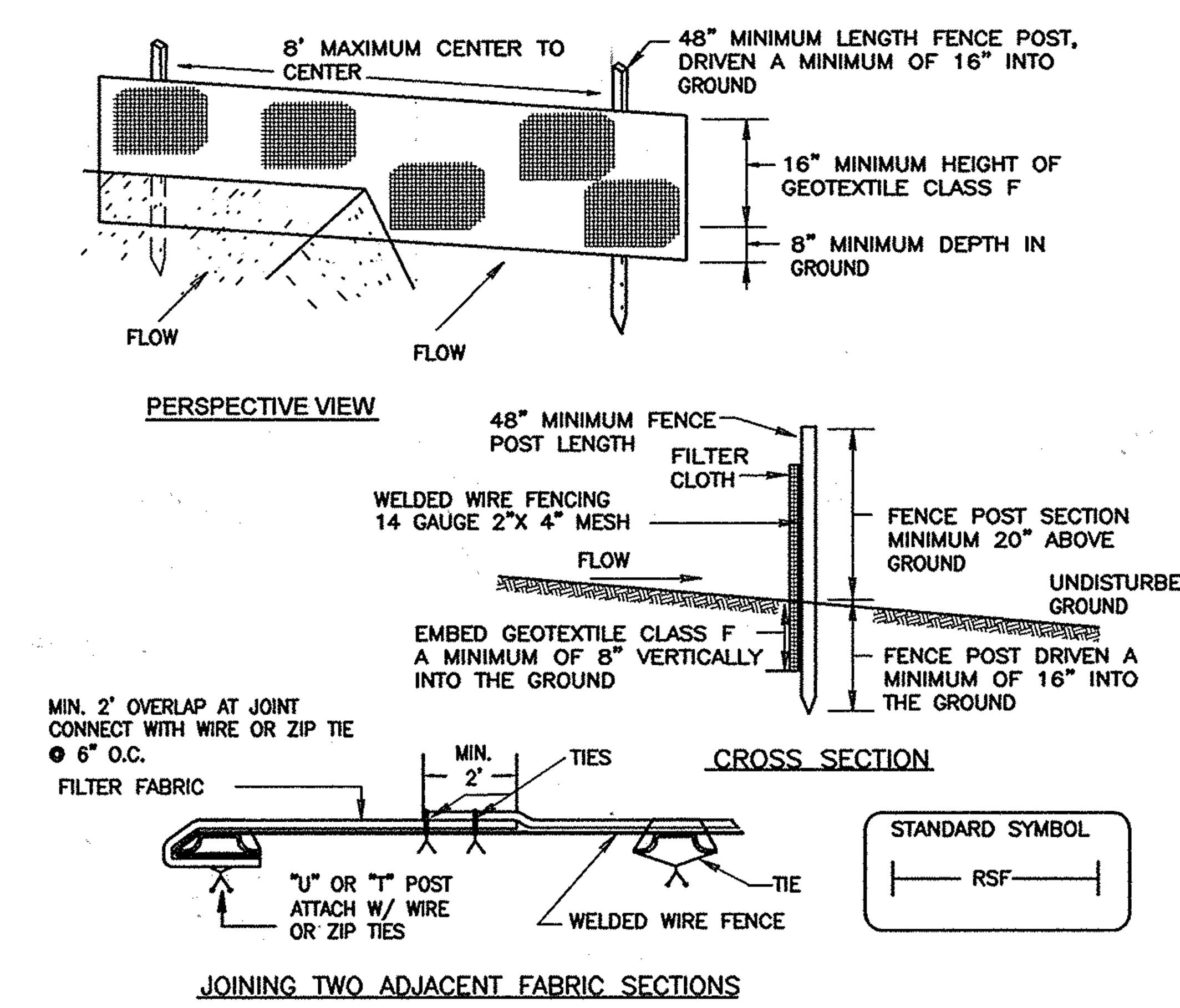
DETAIL 23B - AT GRADE INLET PROTECTION



Construction Specifications

1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
2. Place 3/4" to 1-1/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 16 - 5A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



Construction Specifications

1. Metal fence post shall be a minimum of 48" long driven 16" minimum into the ground. Post shall be standard T or U section weighting not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or zip ties at top and mid section and shall meet the following requirements for geotextile Class F:

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

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

Silt Fence Design Criteria

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

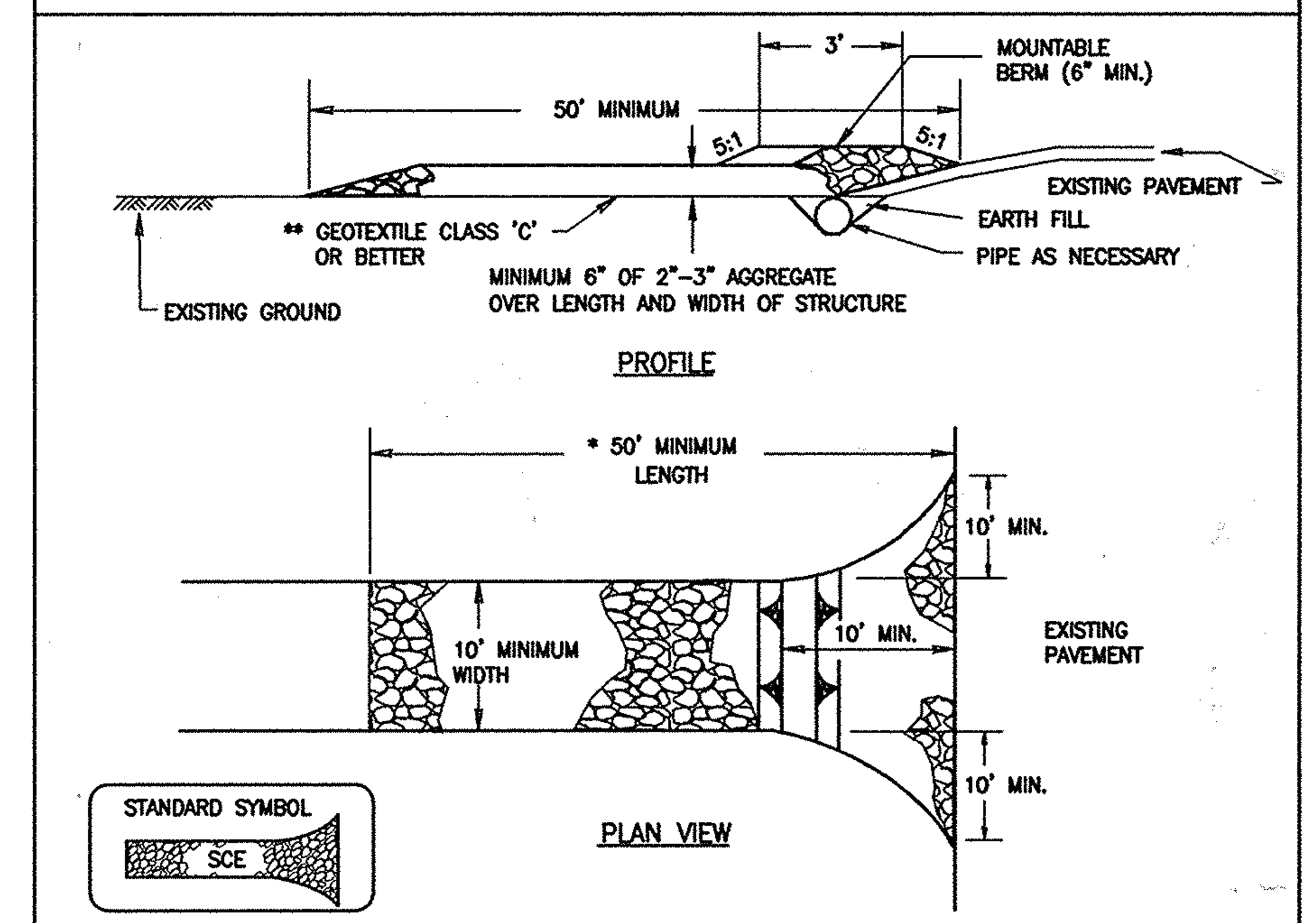
Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

REINFORCED SILT FENCE

PROJECT SEQUENCE OF CONSTRUCTION

1. Notify Miss Utility (1-800-257-7777) at least 48 hours prior to beginning work.
2. Notify Howard County Construction Inspection Division (1-410-313-3800) at least 48 hours prior to beginning work on-site and obtain grading permit.
3. Clear and grub for sediment and erosion control measures or devices only. (7 days)
4. Install all sediment and erosion control measures or devices including stabilized construction entrance(s). (10 days)
5. Notify Howard County Construction Inspection Division upon completion of the installation work noted above. (1 day)
6. With the approval of the Howard County Construction Inspection Division, clear and grub the remainder of the site and stabilize immediately. (21 days)
7 Begin excavation and installation of utilities. Work shall be limited to that which can be backfilled and stabilized in one day per Standard Sediment Control Note No. 11. Stabilize work area at the end of each work day. (295 days)
8. Connect to existing utilities where applicable. (7 days)
9. With permission from the Sediment Control Inspector, remove stabilized construction entrance(s). (2 days)
10. Stabilize all disturbed areas. (14 days)
11. Following approval from the Howard County Construction Inspection Division Inspector, remove all remaining sediment control measures and stabilize any remaining areas. (7 days)

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



Construction Specifications

1. Length - minimum of 50' (*30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe Pipe has to be sized according to the drainage. When the SCE located at a high spot and has no drainage to convey a pipe will not be is necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 17 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

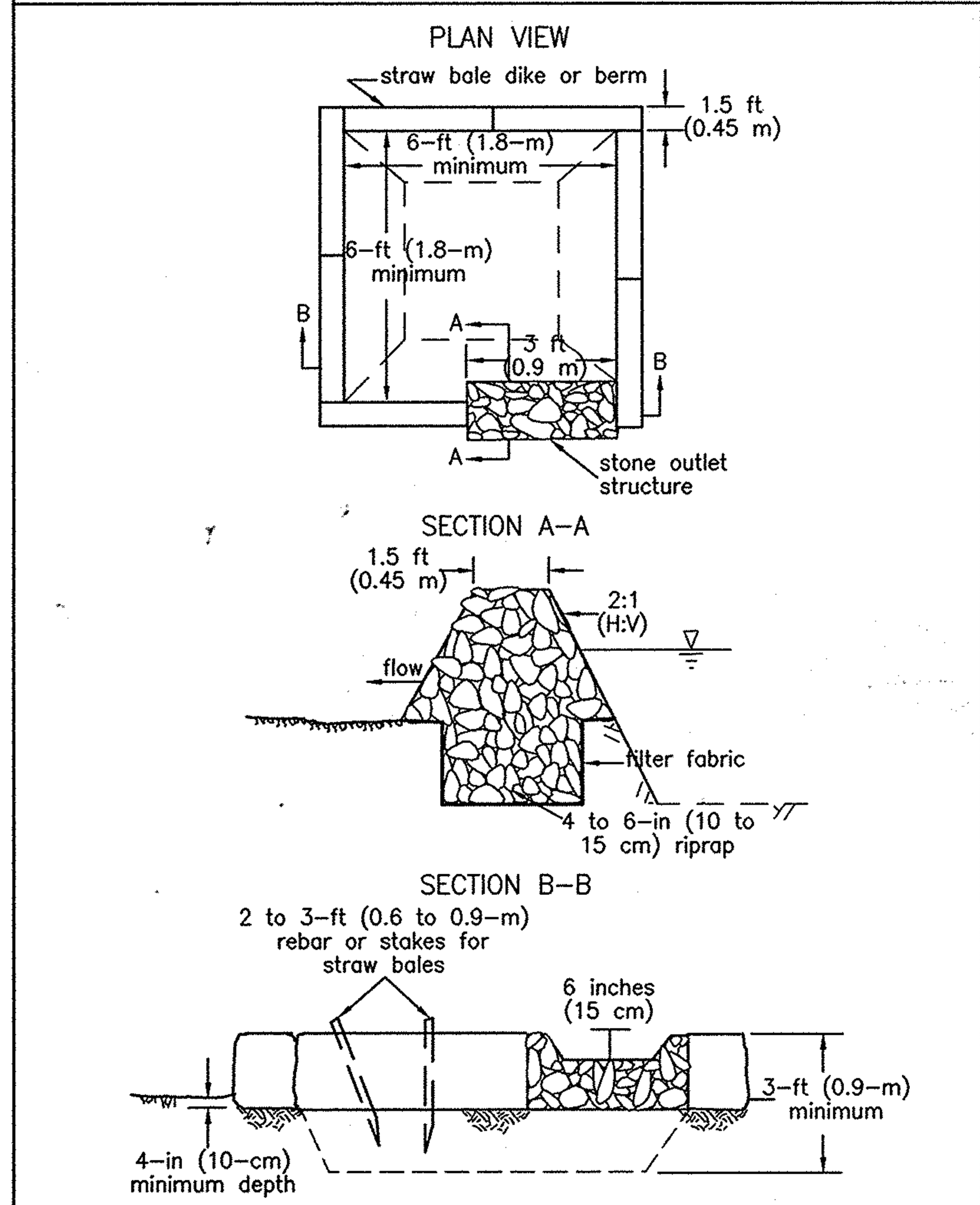
BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

1. No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetlands buffers, waterways, or the 100-year floodplain.
2. Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or 100-year floodplain.
3. 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.
4. Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
5. Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, waterways, or permanent modification of the 100-year floodplain in excess of that lost under the orisinally authorized structure or fill.
6. Rectify any nontidal wetlands, nontidal wetland buffers,waterways, or the 100-year floodplain temporarily impacted by any construction.
7. All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (Lolium multiflorium), Millet (Setaria italica), Barley (Hordeum sp.), Oats (Uniola sp.), and/or Rye (Secale cereale). These species will allow for stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division. Kentucky 31 fescue shall not be utilized in wetland or buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been completed.
8. After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
9. To protect aquatic species, in-stream work is prohibited as determined by classification of the stream:
   Use 1 waters: in-stream work shall not be conducted during the period of March 1 through June 15, inclusive, during any year.
10. Stormwater runoff from impervious surfases shall be controlled to prevent the washing of debris into the waterway.
11. Culverts shall be constructed and any riprap placed so as not to obstruct the movement of the aquatic species, unless the purpose of the activity is to impound water.

AS-BUILTS 2-29-2012

ESC 6 OF 8

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



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.1 – 2	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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.

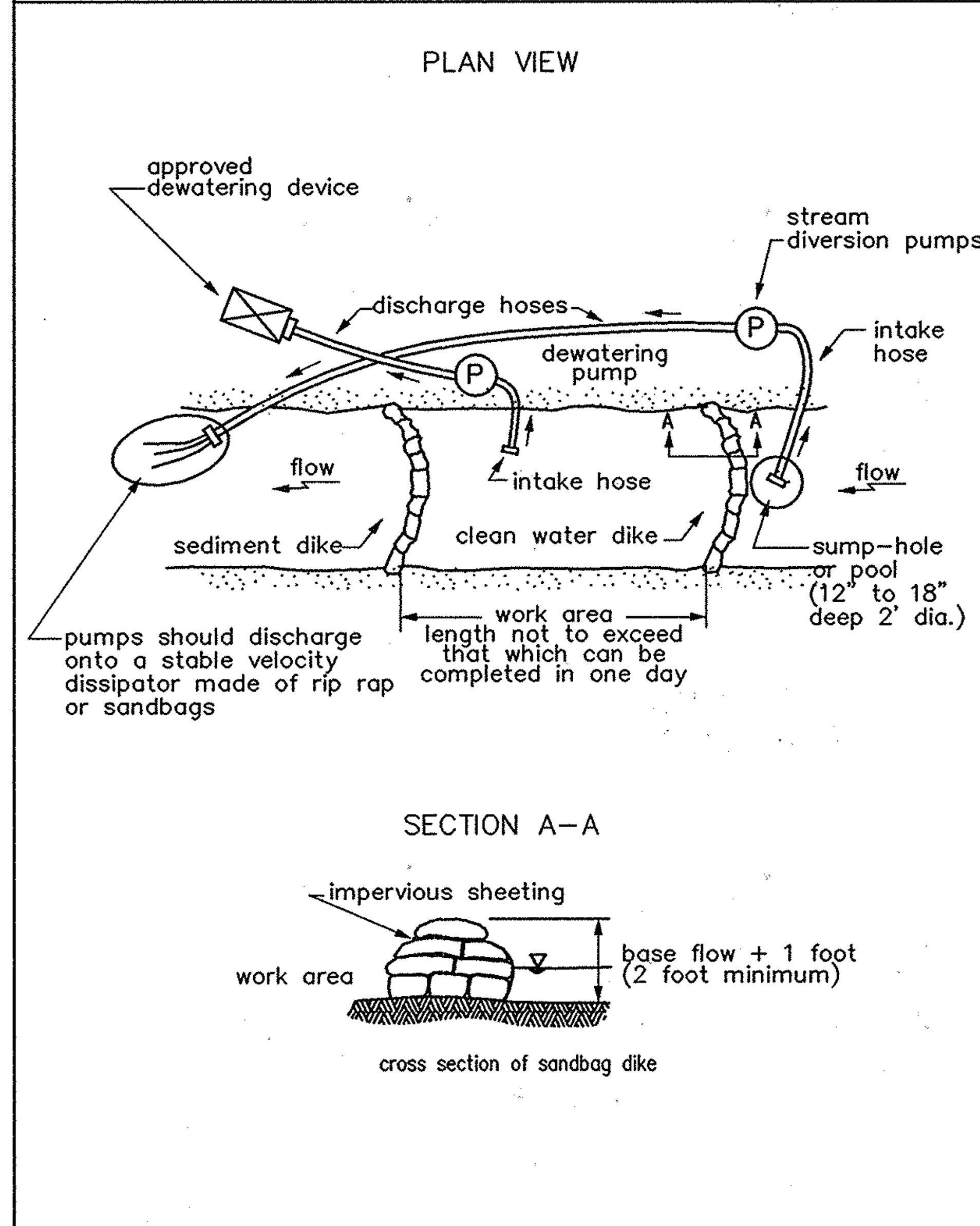
All erosion and sediment control devices should be installed as the first order of business according to a plan approved by the Water Management Administration (WMA) or local authority. Dewatering basins should be constructed as follows (refer to Detail 1.1):

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.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.1 - 1

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



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.2 – 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.2 - 1

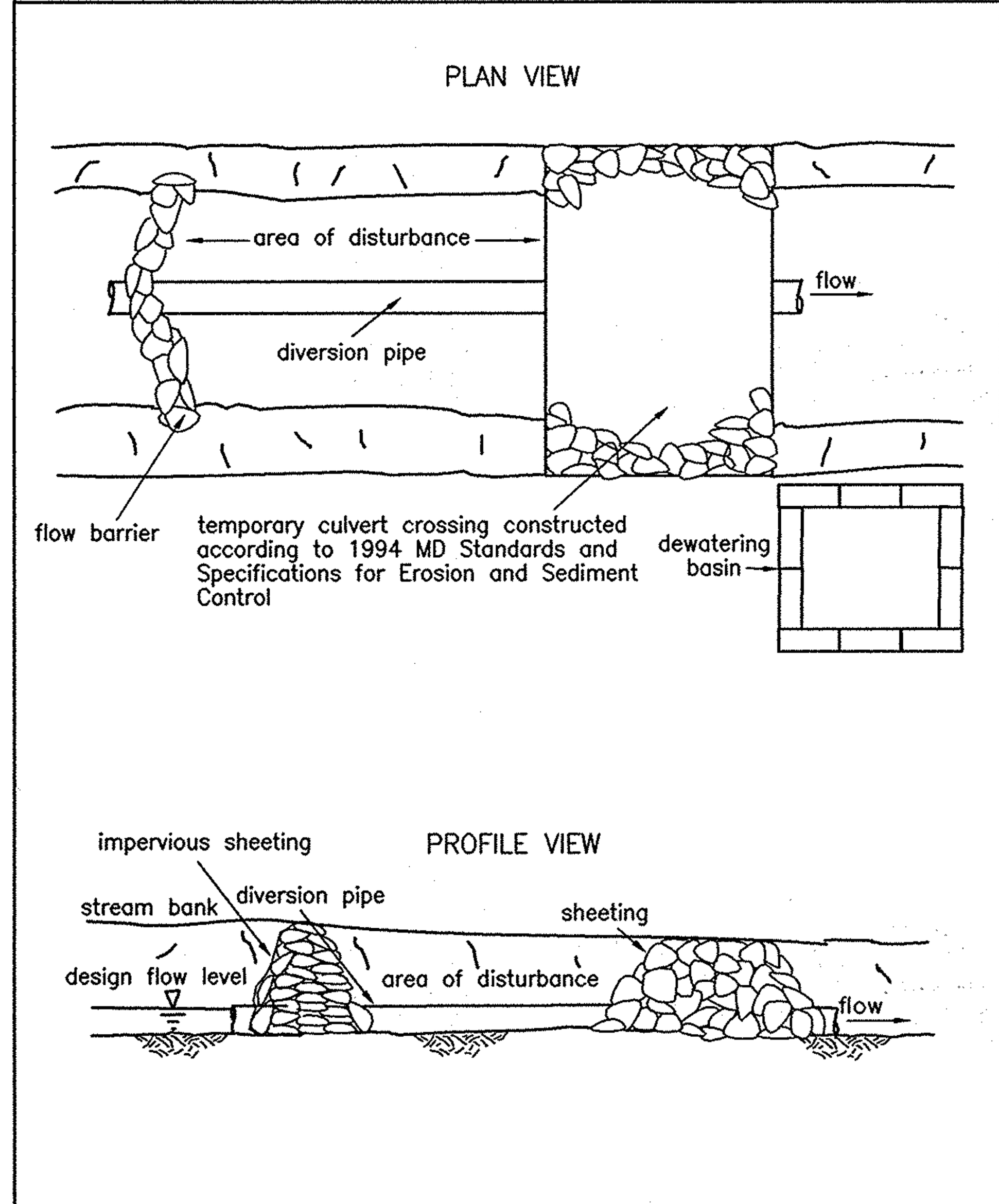
MGWC 1.2: PUMP-AROUND PRACTICE

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. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
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.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.2 - 2

Maryland's Guidelines To Waterway Construction
DETAIL 1.3: CULVERT PIPE W/ ACCESS ROAD



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.3 – 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 1.3: CULVERT PIPE WITH ACCESS ROAD

Temporary measure for providing access to stream enhancement sites

DESCRIPTION

The work should consist of installing a culvert pipe and associated access road for the purpose of erosion control when construction activities occur within the stream corridor.

EFFECTIVE USES & LIMITATIONS

Culvert pipes with access roads can be used effectively for installation of utility lines at stream crossings.

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.

MATERIAL SPECIFICATIONS

Materials for culverts with temporary access roads should meet the following requirements:

- *Riprap*: Riprap should be sized to resist a stream's baseflow if the duration of the project is less than one month. Otherwise, the riprap should be design to resist bankfull discharge.
- *Sandbags*: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).
- *Sheeting*: Sheeting should consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

INSTALLATION GUIDELINES

All erosion and sediment control devices including mandatory dewatering basins should be installed 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 low flow conditions. Additionally, all excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA or local authority.

A culvert pipe with a temporary access road should be constructed as follows (refer to Detail 1.3):

1. Culverts should have a minimum capacity sufficient to convey the stream's base flow for projects with duration of 2 weeks or less. For projects of longer duration, culverts should have a capacity sufficient to convey the 2-year flow.
2. Sandbag or stone flow barriers should be sized and installed as detailed in MGWC 1.5: Sandbag/Stone Channel Diversion. The materials should be sized to withstand normal streamflow velocities.
3. All sediment laden flow from the construction site should be pumped to a dewatering basin built according to MGWC 1.1: Dewatering Basins prior to re-entering the stream.
4. Temporary culvert crossings should be constructed in accordance with the *1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control* (refer to *Section 4, Stream Crossings, Maryland's Guidelines to Waterway Construction*).

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.3 - 1

MGWC 1.3: CULVERT PIPE WITH ACCESS ROAD

5. Velocity dissipation measures should be provided at the outfall to prevent aggravated erosion of the stream channel. If riprap is utilized, it should be sized according to MGWC 2.1: Riprap.
6. Sediment control devices should remain in place until all disturbed areas have been stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.3 - 2

AS-BUILTS 2-29-2012

ESC 7 OF 8

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/11/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

STATE OF MARYLAND — ROBERT JOSEPH BURNS — PROFESSIONAL ENGINEER — REGISTERED

DES: CD/LAL		
DRN: CD		
CHK: RJB		
DATE: 12/9/09	BY	NO.	REVISIONS	DATE

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR

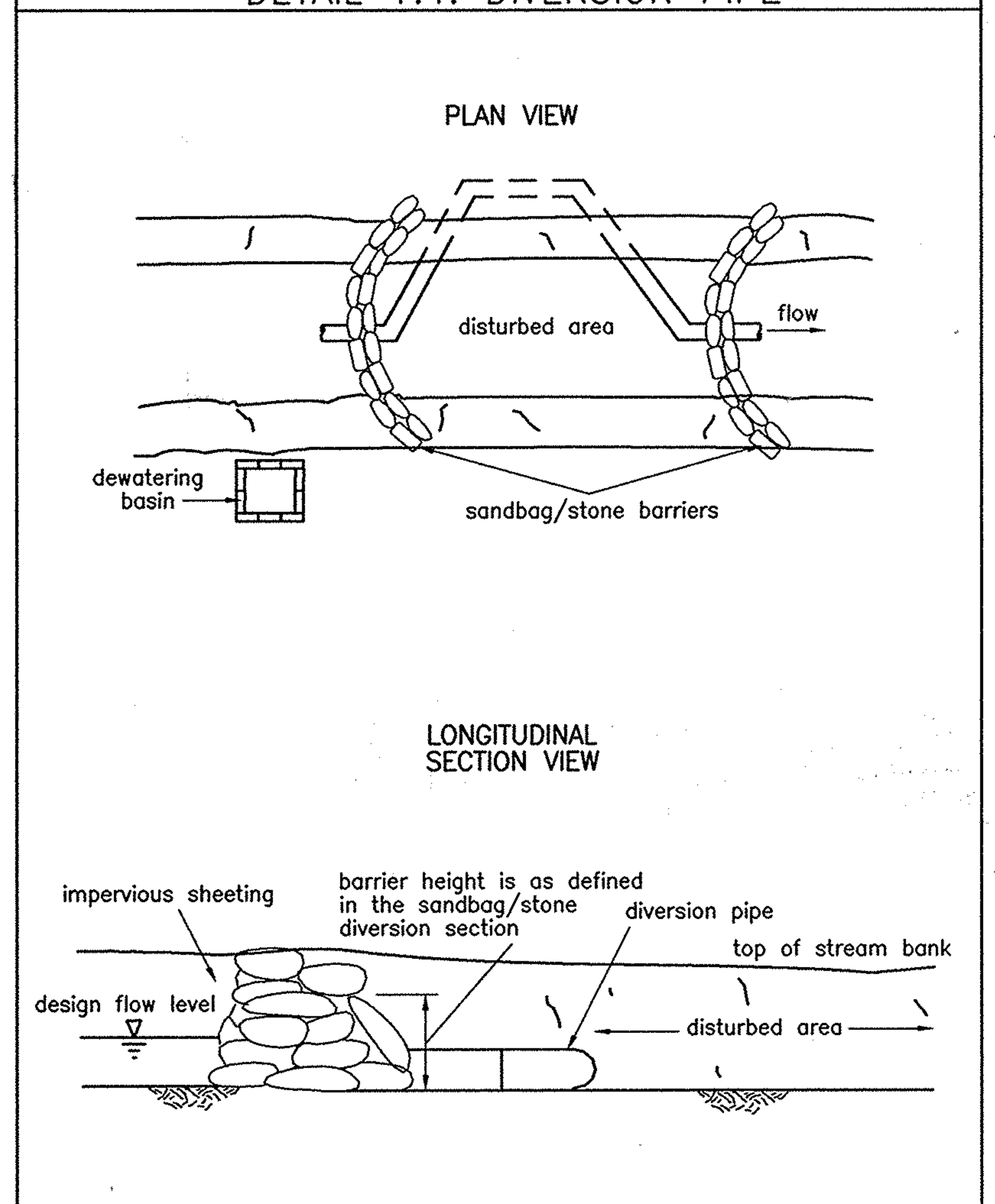
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 14 OF 19

Maryland's Guidelines To Waterway Construction
DETAIL 1.4: DIVERSION PIPE



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.4 – 2	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 1.4: Diversion Pipe

Temporary measure for dewatering in-channel construction sites

Description

The work should consist of installing flow diversion pipes in combination with sandbag or stone diversions when construction activities occur within the stream channel.

Effective Uses & Limitations

Diversion pipes with an insufficient flow capacity can cause the channel diversion to fail thereby resulting in severe erosion of the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low flow.

Material Specifications

Materials for stream diversions should meet the following requirements:

- *Riprap*: Stone should be washed and have a minimum diameter of 6 inches (15 centimeters).
- *Sandbags*: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).
- *Sheeting*: Sheeting should consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

Installation Guidelines

All erosion and sediment control devices including mandatory dewatering basins should be installed 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 low flow conditions. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

Diversion pipes with sandbag or stone barriers should be completed as follows (refer to Detail 1.4):

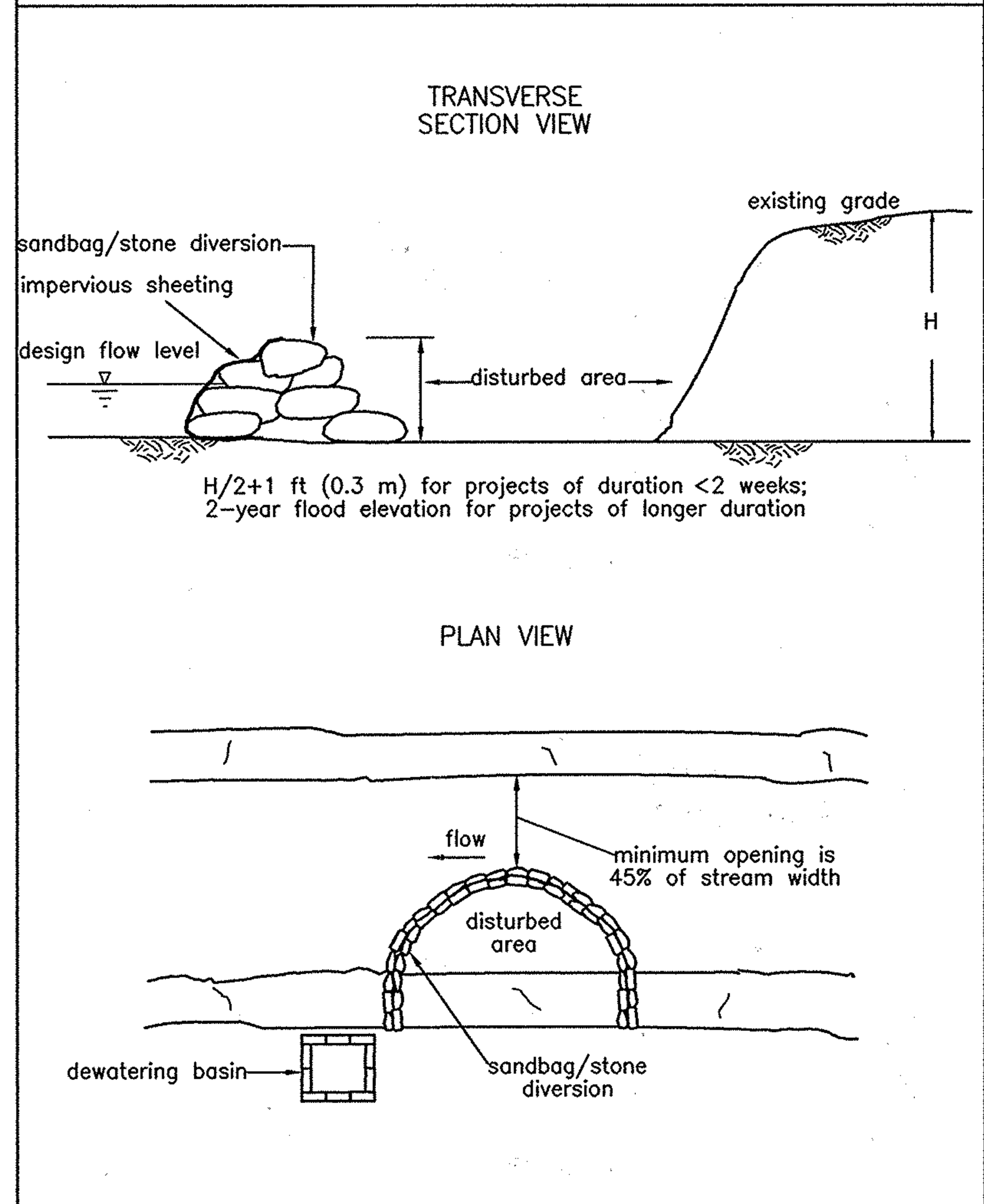
1. Sandbag/stone barriers should be sized and installed as detailed in MGWC 1.5: Sandbag/Stone Diversion. The materials should be sized to withstand baseflow velocities.
2. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
3. Sediment-laden water from the construction area should be pumped to a dewatering basin.
4. The diversion pipe should have a minimum capacity sufficient to convey the 2-year flow for projects with a duration of two weeks or greater. For projects of shorter duration, the capacity of the pipe can be reduced accordingly.
5. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.
6. Sediment control devices are to remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal.

TEMPORARY INSTREAM CONSTRUCTION MEASURES

MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATERWAY CONSTRUCTION GUIDELINES
REVISED NOVEMBER 2000

PAGE 1.4 - 1

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



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

MGWC 1.5: Sandbag/Stone Channel Diversion

Temporary measure for dewatering in-channel construction sites

Description

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

Effective Uses & Limitations

Diversions are used to isolate work areas from flow during the construction 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):

1. The diversion structure should be installed from upstream to downstream.
2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration 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.
3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
4. Sediment-laden water from the construction area should be pumped to a dewatering basin.

TEMPORARY INSTREAM CONSTRUCTION MEASURES

MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATERWAY CONSTRUCTION GUIDELINES
REVISED NOVEMBER 2000

PAGE 1.5 - 1

MGWC 1.5: Sandbag/Stone Channel Diversion

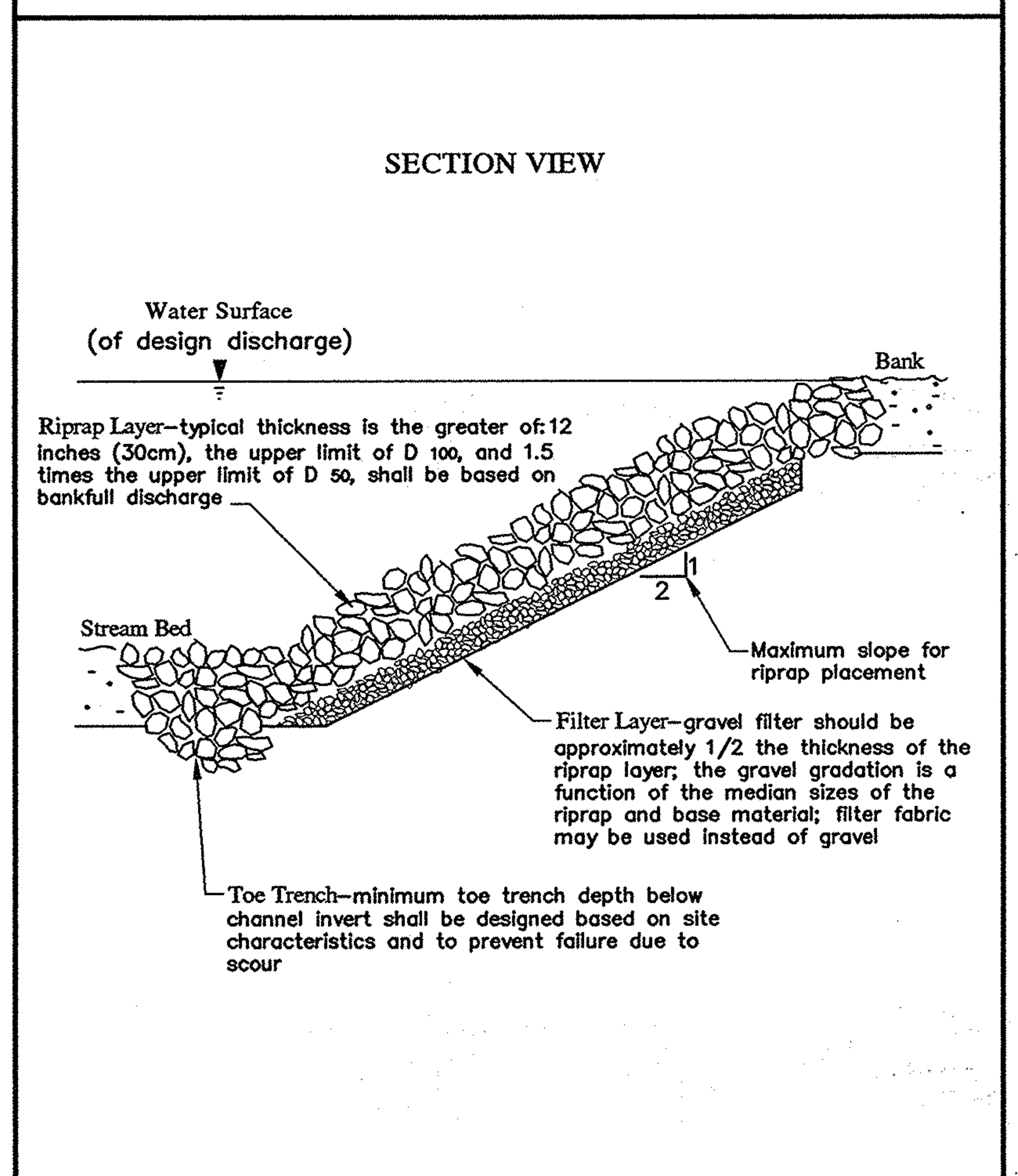
5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18-inch (0.45 meters) overlap.
6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed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

TEMPORARY INSTREAM CONSTRUCTION MEASURES

MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATERWAY CONSTRUCTION GUIDELINES
REVISED NOVEMBER 2000

PAGE 1.5 - 2

Maryland Guidelines to Waterway Construction
DETAIL 2.1: RIPRAP



SLOPE PROTECTION AND STABILIZATION TECHNIQUES	*REVISED NOVEMBER 2000 PAGE 2.1 - 4*	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 2.1: Riprap

Table 3.1b: Stone Gradations for Riprap Stone Classes

Class	Size	% Total Weight < Given Size
I	150 lb (70 kg)	100
	2 lb (1 kg)	10 max
II	700 lb (320 kg)	100
	20 lb (10 kg)	10 max
III	2000 lb (910 kg)	100
	40 lb (20 kg)	10 max

Uniform-grade riprap should incorporate angular rock to promote interlocking.

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. Once a slope stabilization project is initiated, preparation and placement of the riprap should immediately follow the initial disturbance to minimize the chances for further slope degradation. The recommended construction procedure for riprap is as follows beginning with initial slope preparations (refer to Detail 2.1):

1. The contractor should install all sediment and erosion control devices as the first order of business.
2. Excavation should be made in reasonably close conformity with the existing stream slope and bed.
3. All fill in the subgrade should be compacted to a density approximating that of the surrounding undisturbed material.
4. Provisions must be made to anchor the riprap at the stream bed so as to provide protection against undermining. If this cannot be accomplished by creating a toe trench, an alternative method of protection must receive prior written approval from the WMA or local authority.
5. The filter layer or blanket should be placed immediately after slope preparation.
   - The stone for granular filters should be spread in a uniform layer to the specified depth. Where more than one layer is employed, they should be spread such that there is minimal mixing.
   - When cloth filters are used, special care should be taken not to damage the fabric during riprap placement.
6. Riprap placement should begin with the toe. The larger stones, as specified by the design gradation, should be placed in the toe and along the perimeter of the slope and channel protection. The riprap should be placed with suitable equipment in such a manner as to produce a reasonably graded mass of stones with zero drop height. The placing of stones that cause extensive segregation is not allowed. Where appropriate, a low flow channel shall be constructed through the riprap.
7. Any excavation voids existing along the edges of the completed slope and channel protection should be backfilled and compacted.
8. All disturbed areas should be permanently stabilized in accordance with an approved sediment and erosion control plan.

Note: The use of rock vanes (MGWC 3.3: Rock Vanes) should be considered to redirect high-velocity flows at the toe.

SLOPE PROTECTION AND STABILIZATION TECHNIQUES

MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATERWAY CONSTRUCTION GUIDELINES
REVISED NOVEMBER 2000

PAGE 2.1 -2

AS-BUILTS 2-29-2012

ESC 8 OF 8

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/11/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

STATE OF MARYLAND — ROBERT JOSEPH BURNS — No. 15932 — REGISTERED PROFESSIONAL ENGINEER

DES: CD/LAL
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

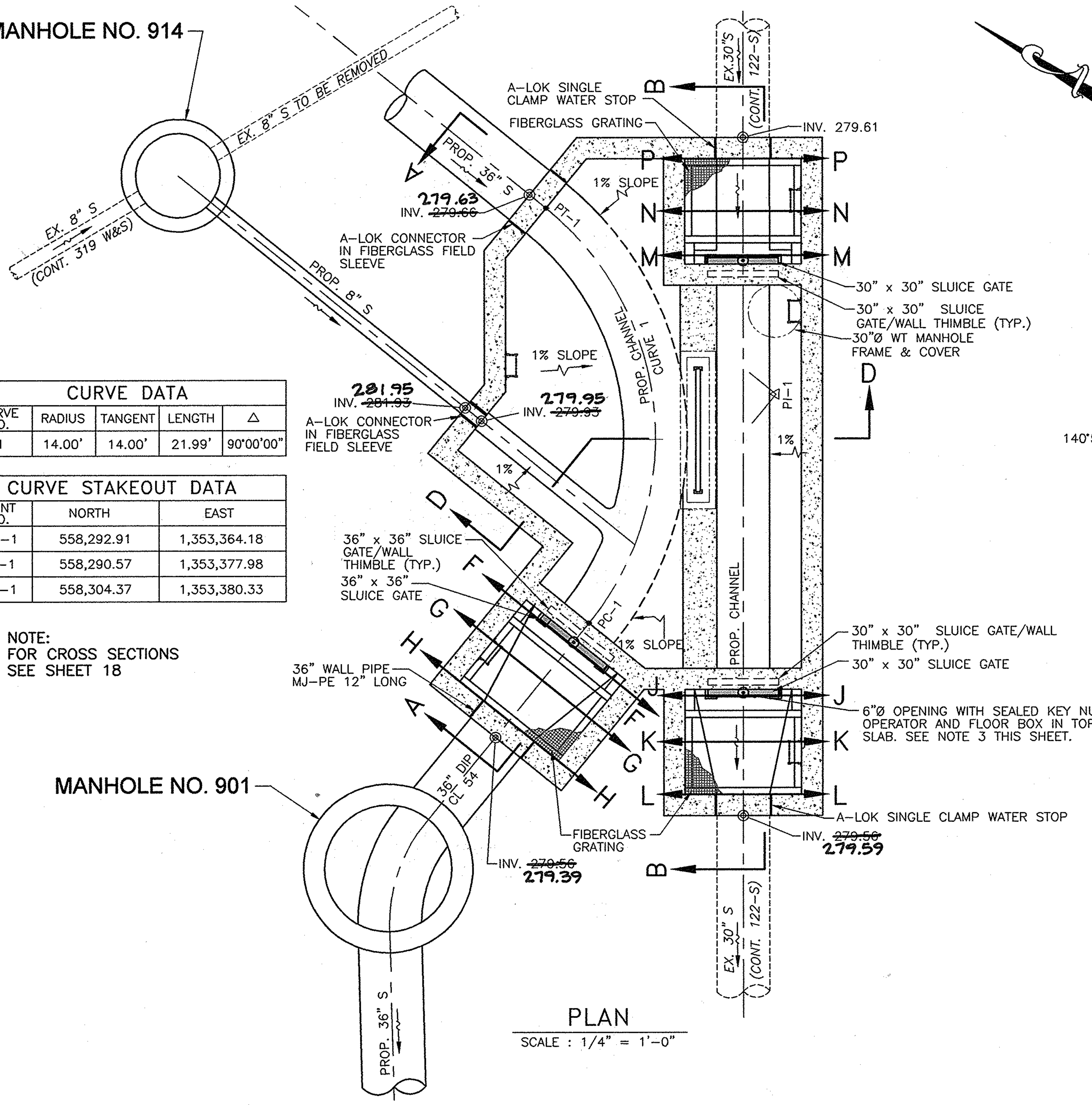
LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 15 OF 19

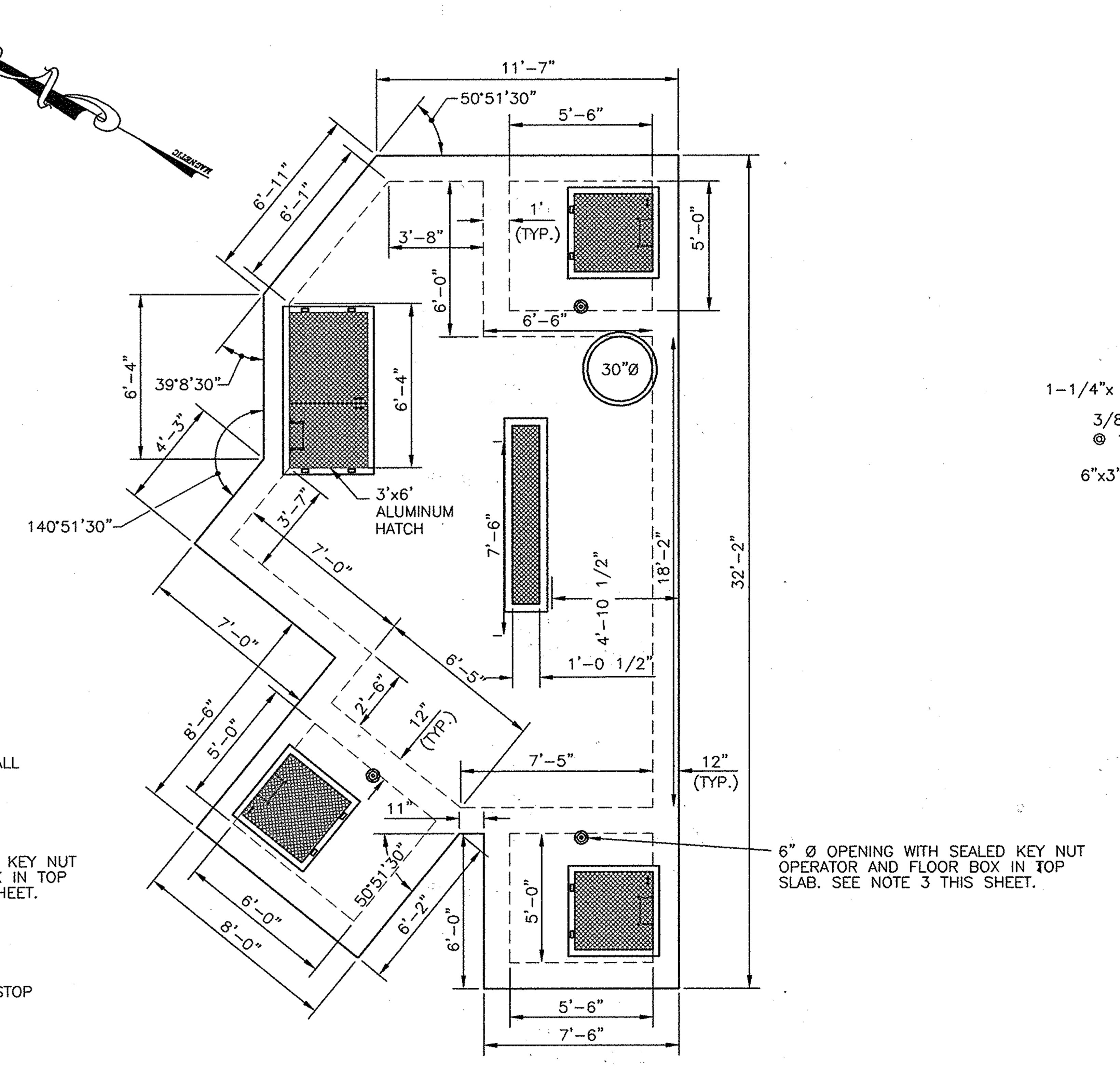


CURVE DATA				
CURVE NO.	RADIUS	TANGENT	LENGTH	Δ
1	14.00'	14.00'	21.99'	90°00'00"

CURVE STAKEOUT DATA		
POINT NO.	NORTH	EAST
PC-1	558,292.91	1,353,364.18
PI-1	558,290.57	1,353,377.98
PT-1	558,304.37	1,353,380.33

NOTE:
FOR CROSS SECTIONS
SEE SHEET 18

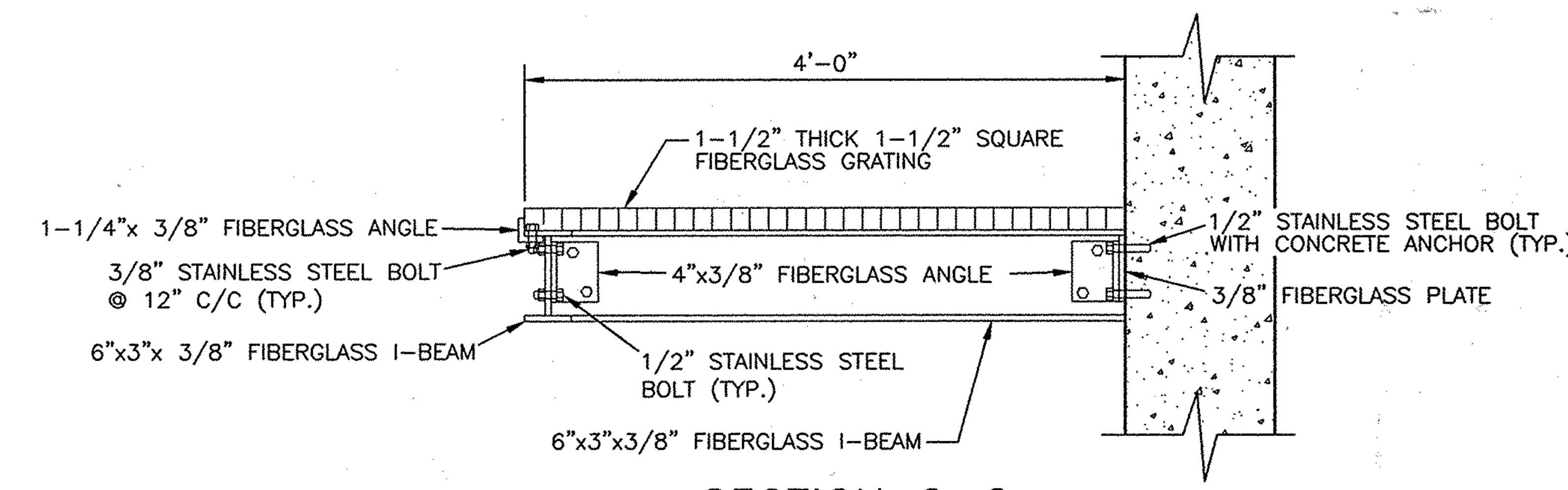
PLAN
SCALE : 1/4" = 1'-0"



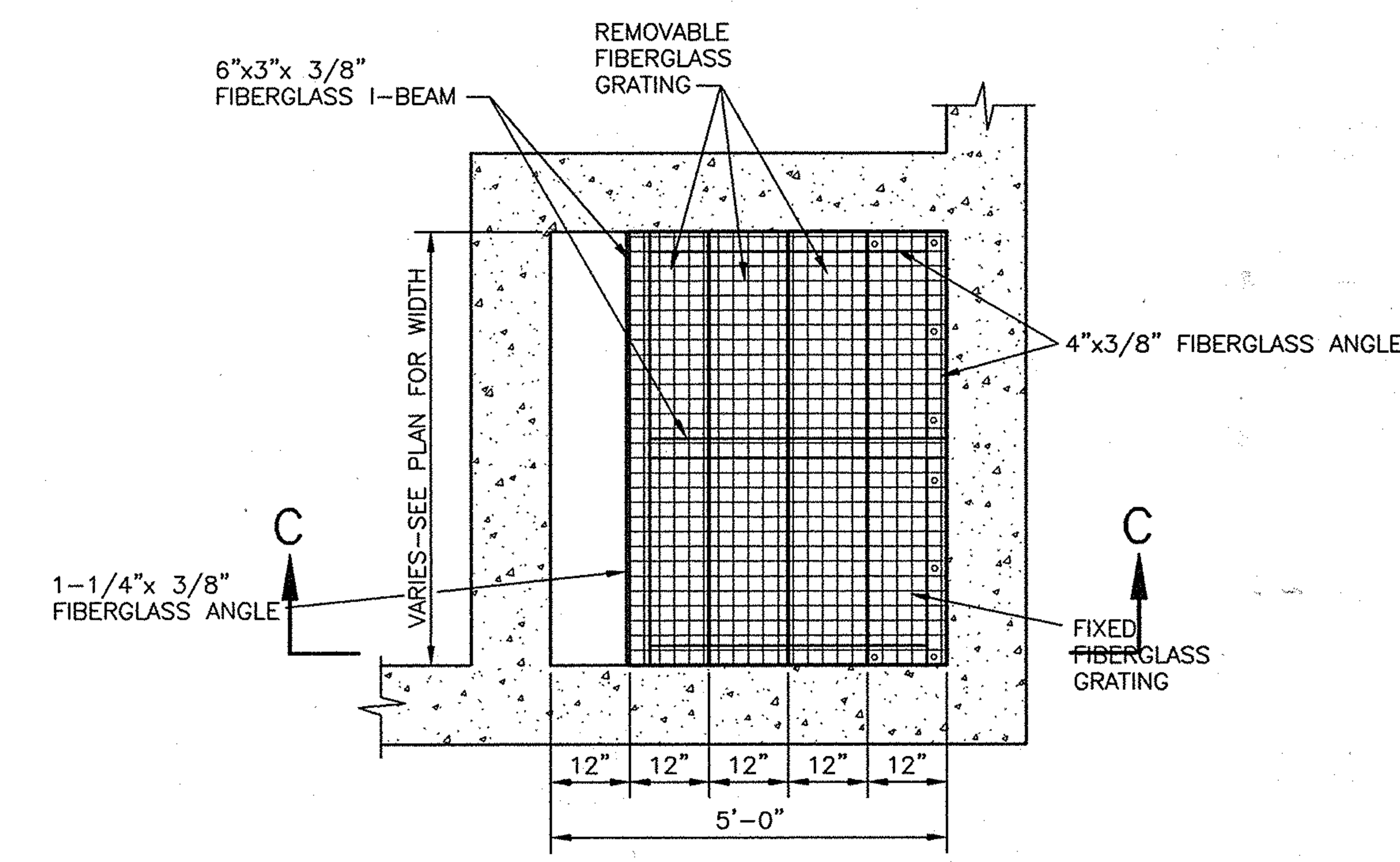
TOP SLAB PLAN
SCALE : 1/4" = 1'-0"

NOTES:

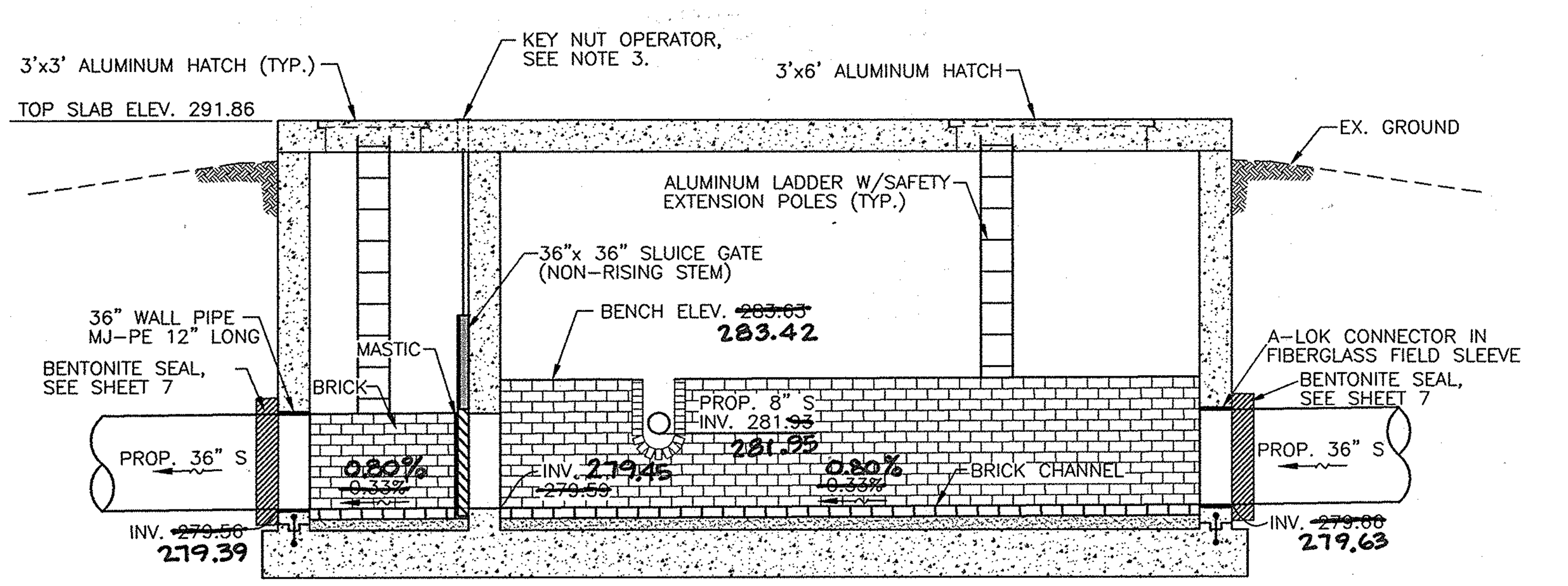
1. SLUICE GATES SHALL BE FONTAINE SERIES 20 MODEL 202-WALL MOUNTED (COMPLETE WITH WALL THIMBLE) AND NON-RISING STEM (NRI) OR APPROVED EQUAL.
2. A-LOK GASKETS SHALL BE USED AT PIPE ENTRY/EXIT POINTS OF THE DIVERSION STRUCTURE, AS INDICATED ON DRAWINGS.
3. GROUND LEVEL POSITION INDICATOR SHALL BE A SEALED 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.



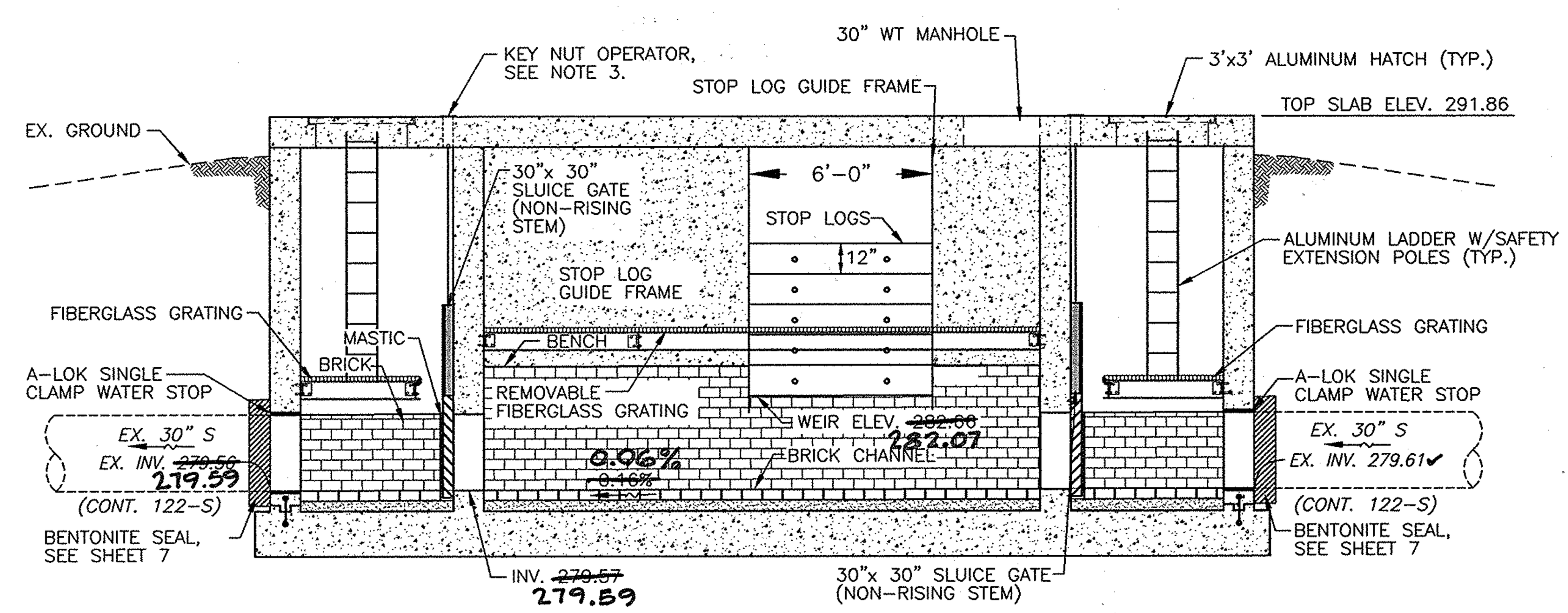
SECTION C–C
SCALE : 1" = 1'-0"



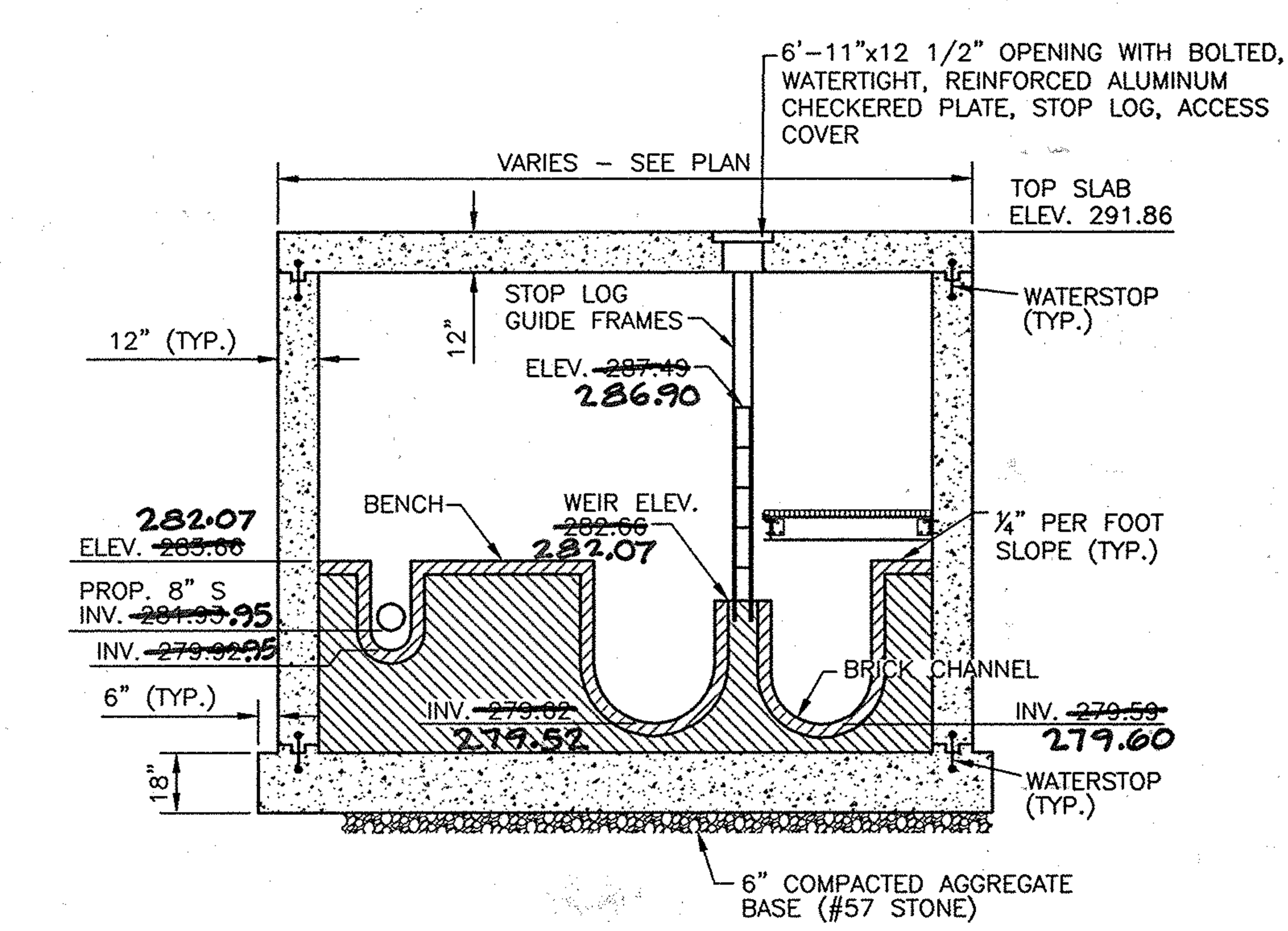
FIBERGLASS GRATING DETAIL
SCALE : 1/2" = 1'-0"



SECTION A – A
SCALE : 1/4" = 1'-0"



SECTION B – B
SCALE : 1/4" = 1'-0"



SECTION D – D
SCALE : 1/4" = 1'-0"

AS-BUILTS 2-29-2012

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/11/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

DES: YD
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

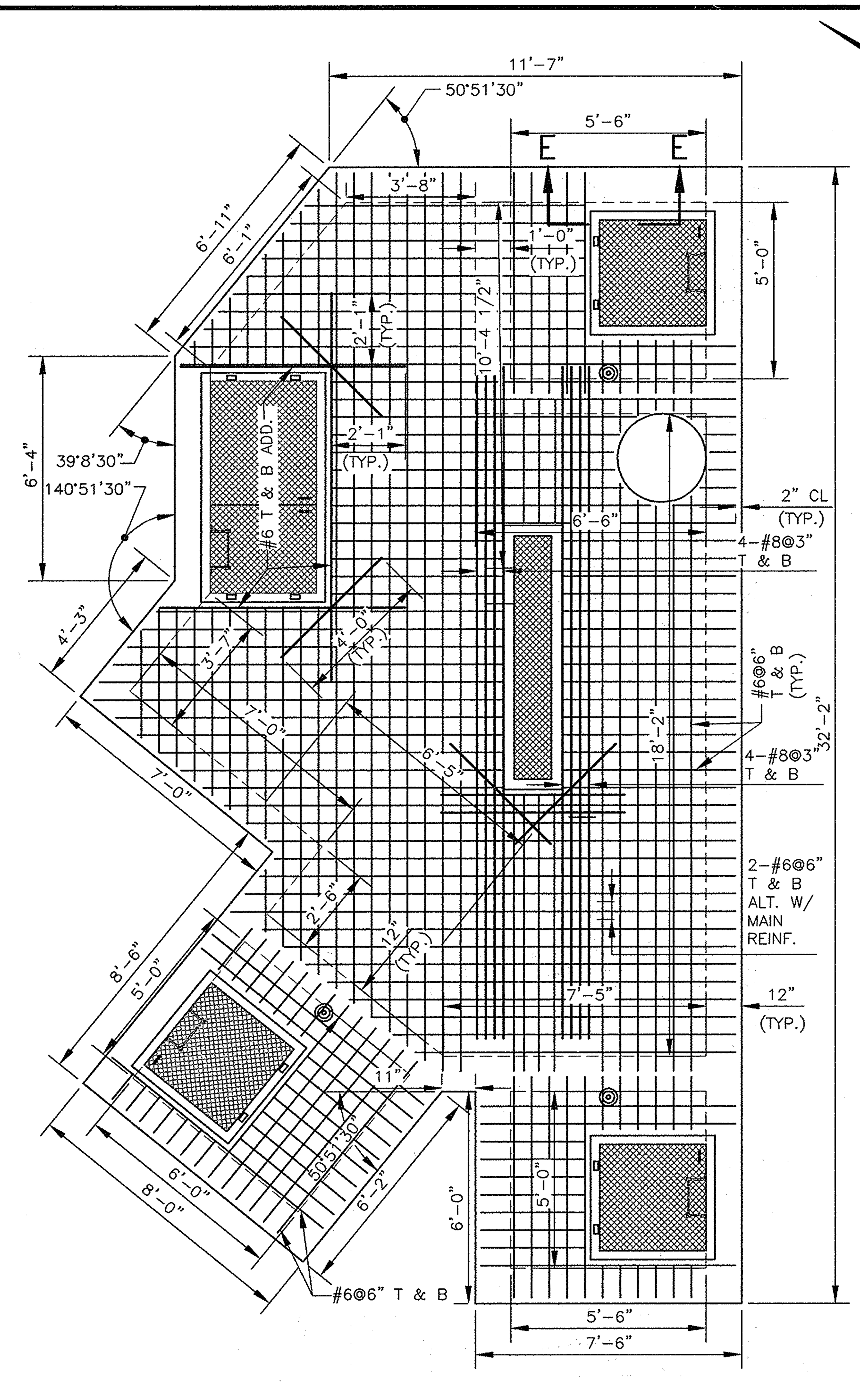
JUNCTION CHAMBER 901
PLAN, SECTIONS & DETAILS

600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN

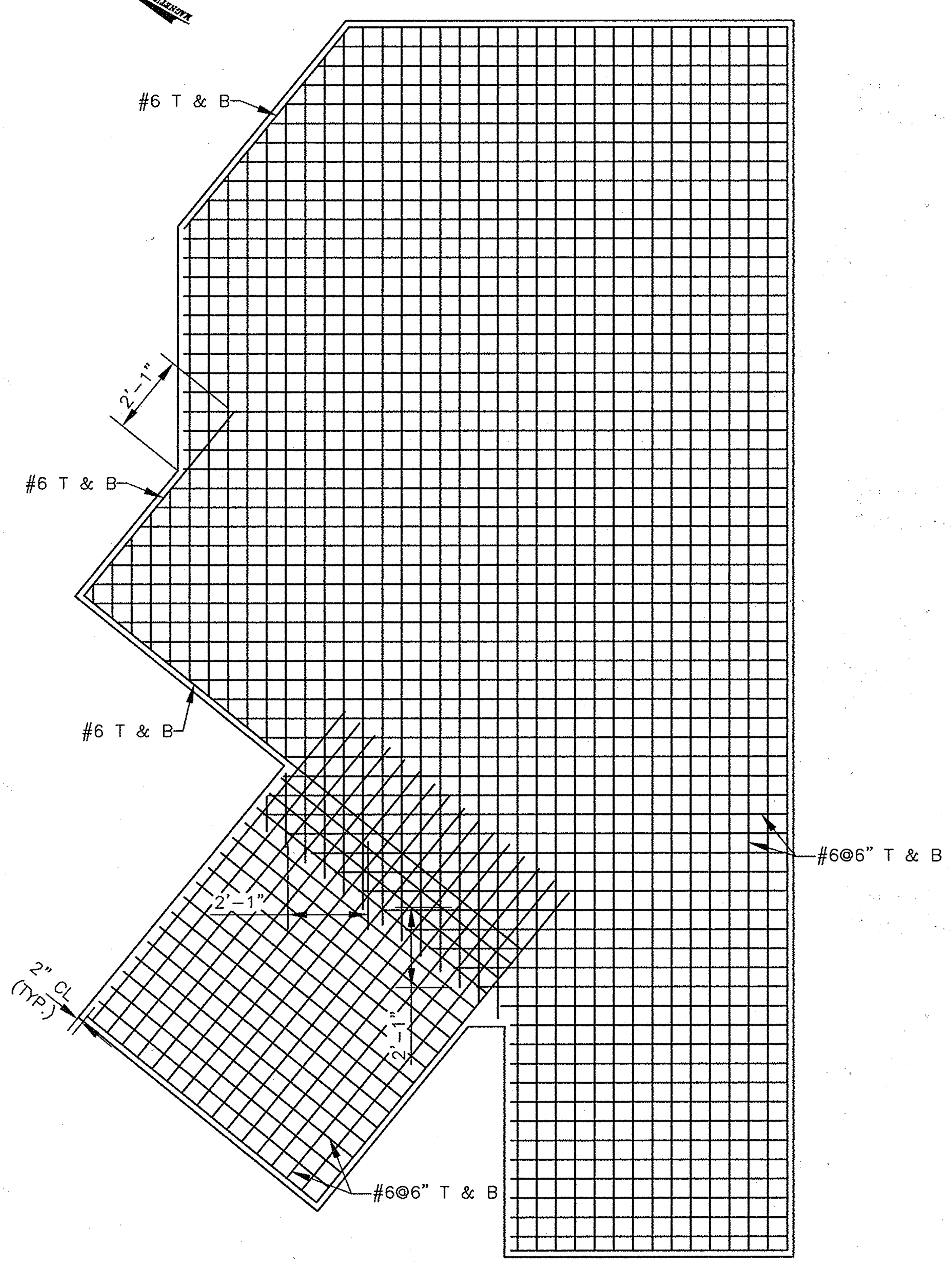


TOP SLAB PLAN

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

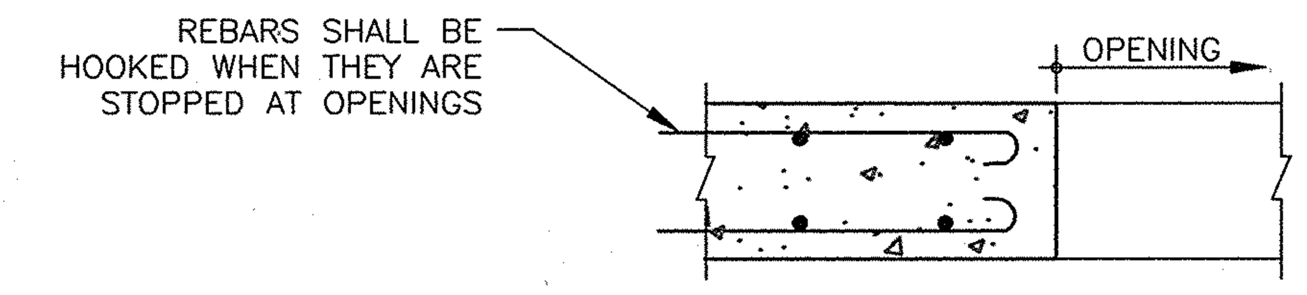
FOR SLAB OPENING DETAILS, SEE SHEET 18 OF 19

T & B = TOP AND BOTTOM



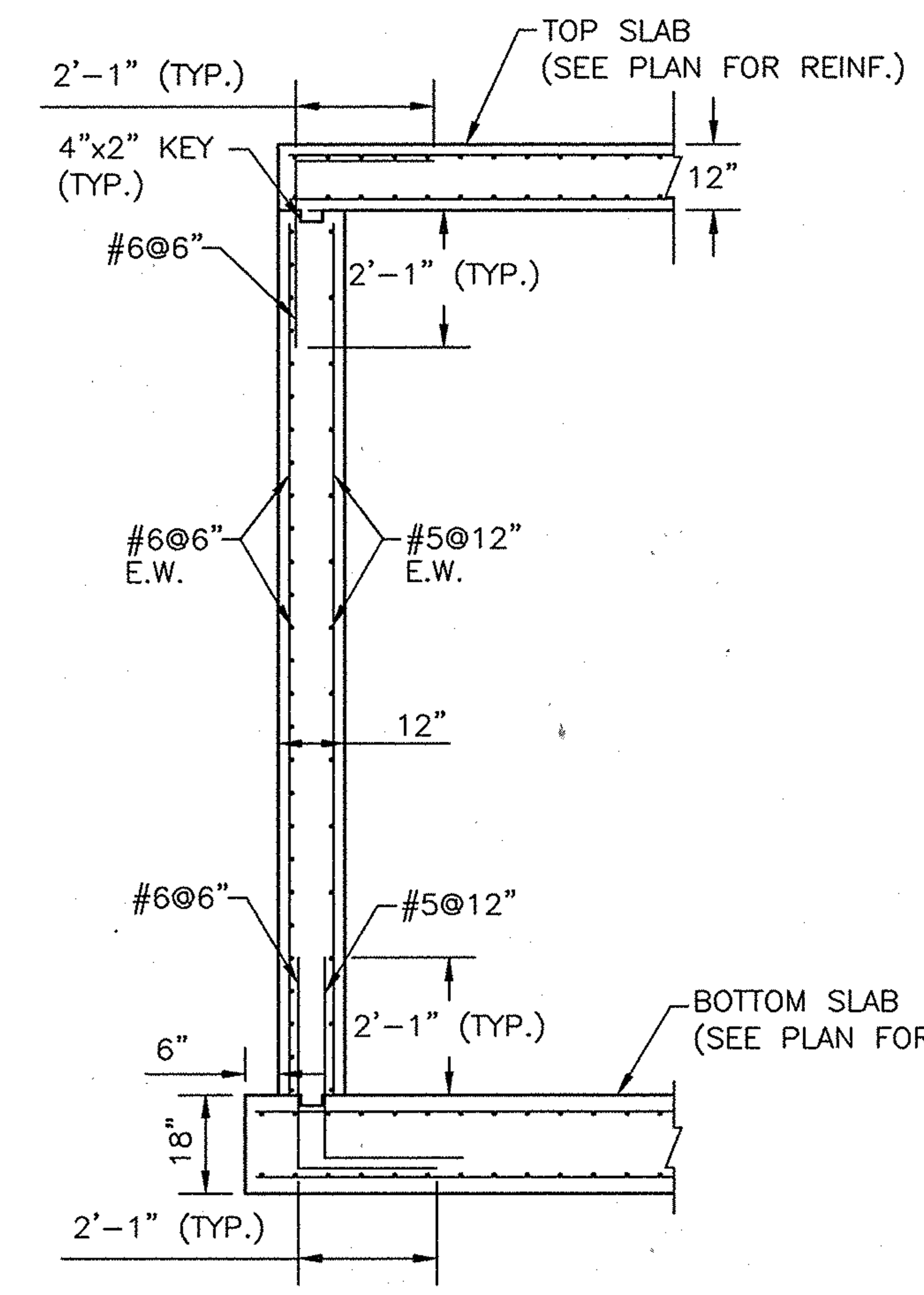
BOTTOM SLAB PLAN

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



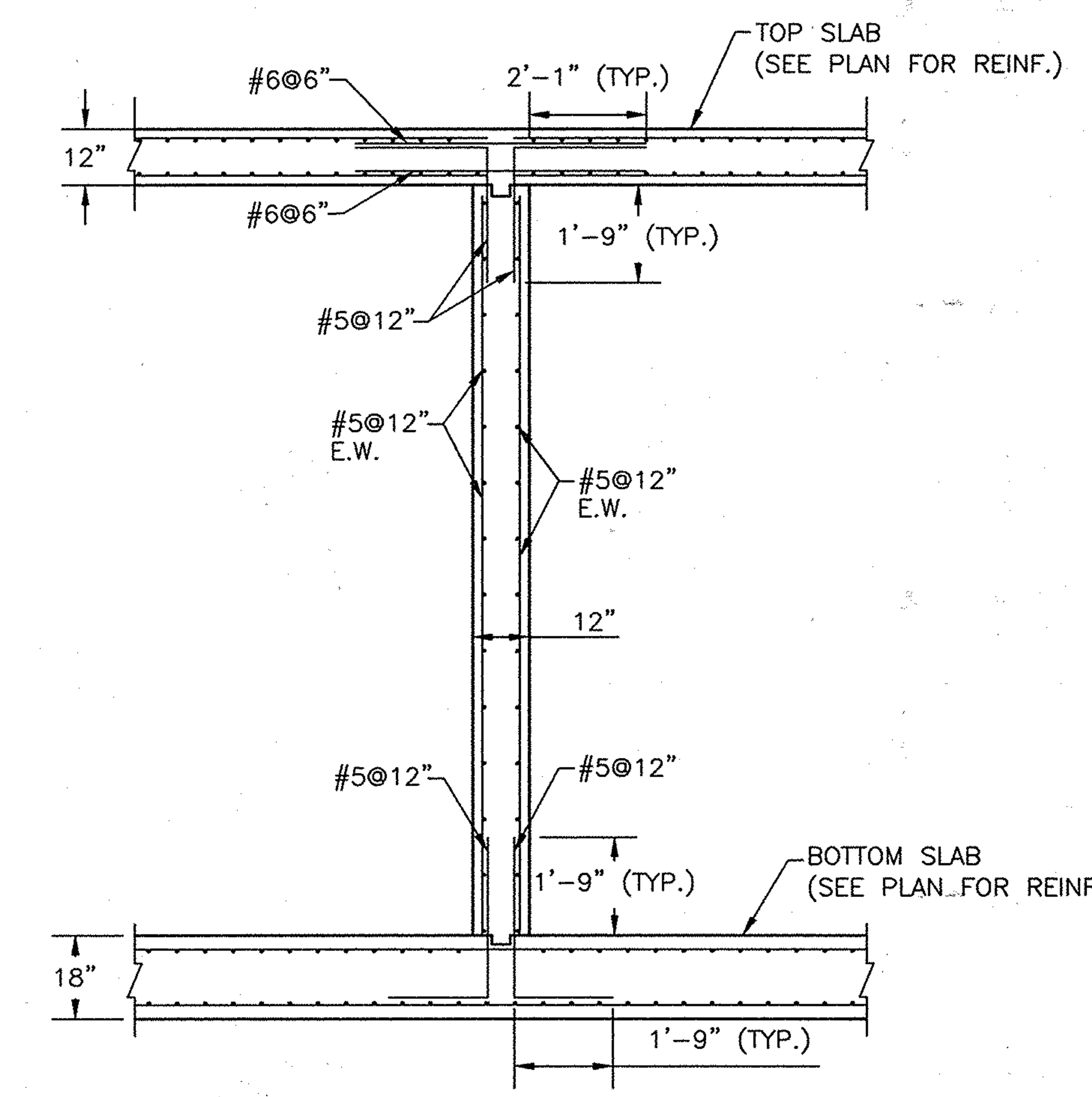
SECTION E–E

SCALE : NTS



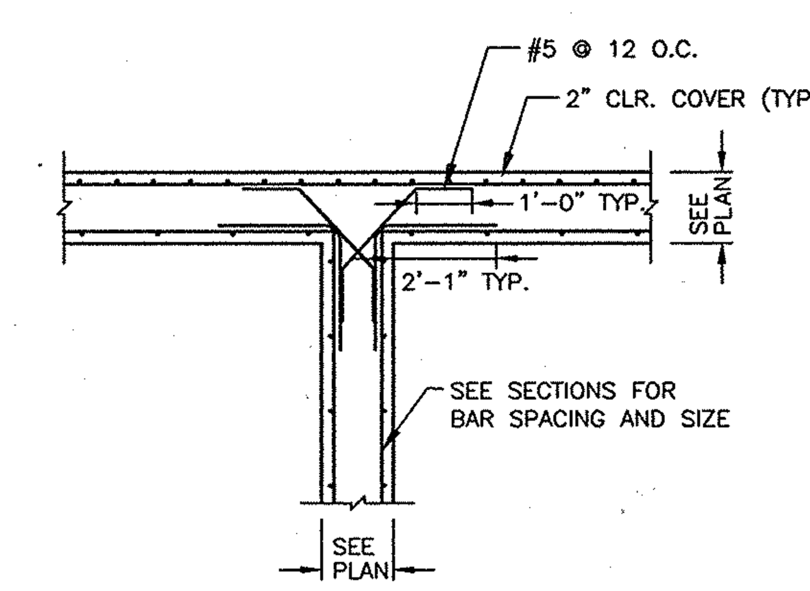
OUTER WALL TYPICAL SECTION

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



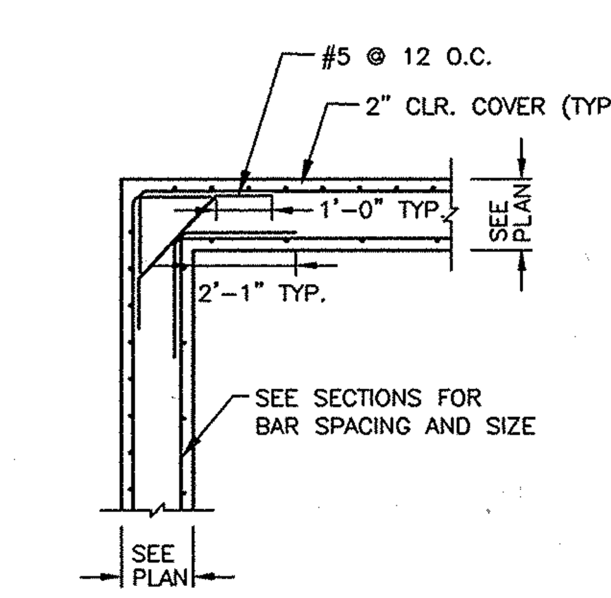
INNER WALL TYPICAL SECTION

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



TYPICAL INTERSECTION DETAIL

SCALE : NTS



TYPICAL CORNER DETAIL

SCALE : NTS

AS-BUILTS 2-29-2012

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/11/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875

DES: YD
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

JUNCTION CHAMBER 901 PLAN & DETAILS

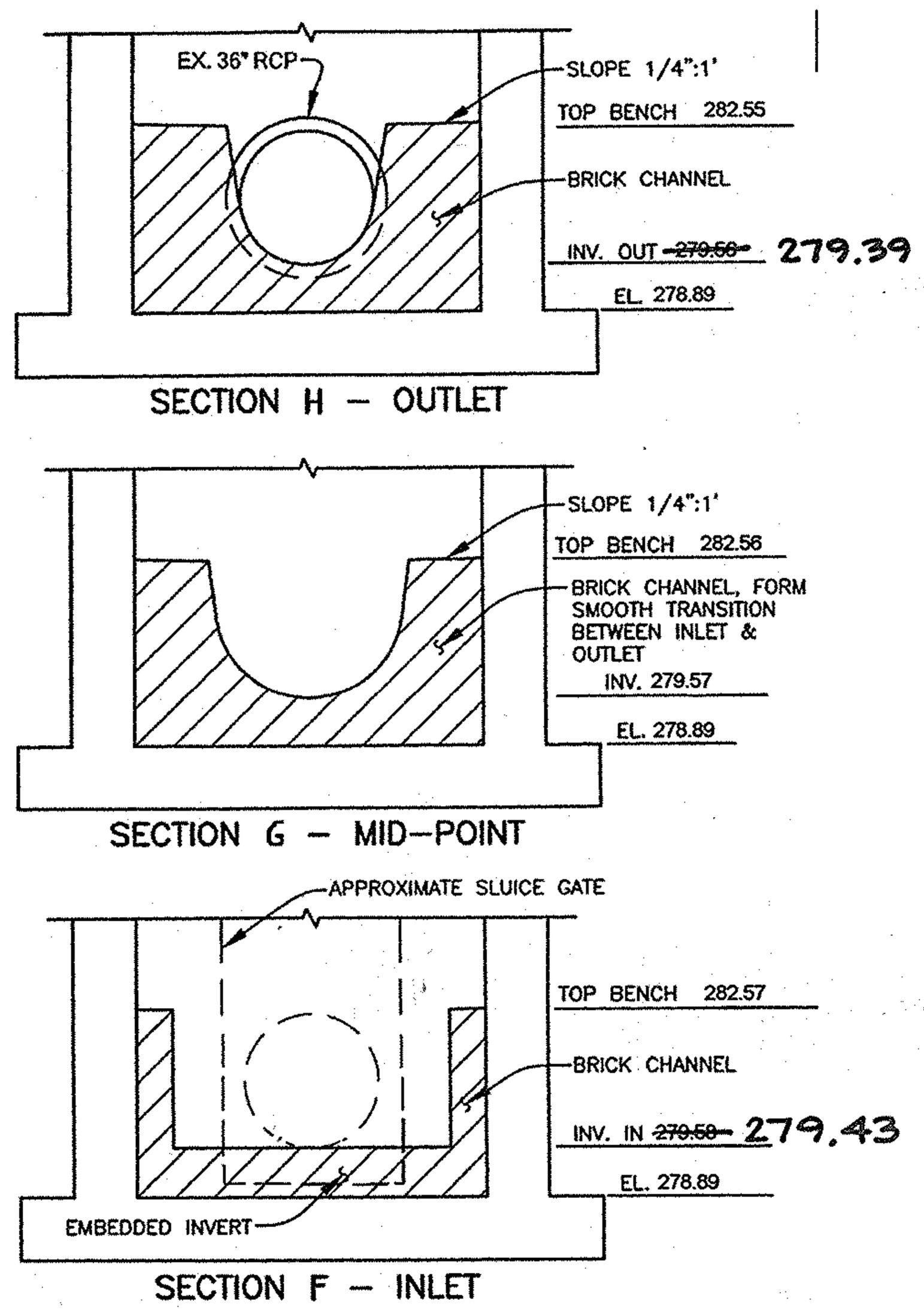
600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR

CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN



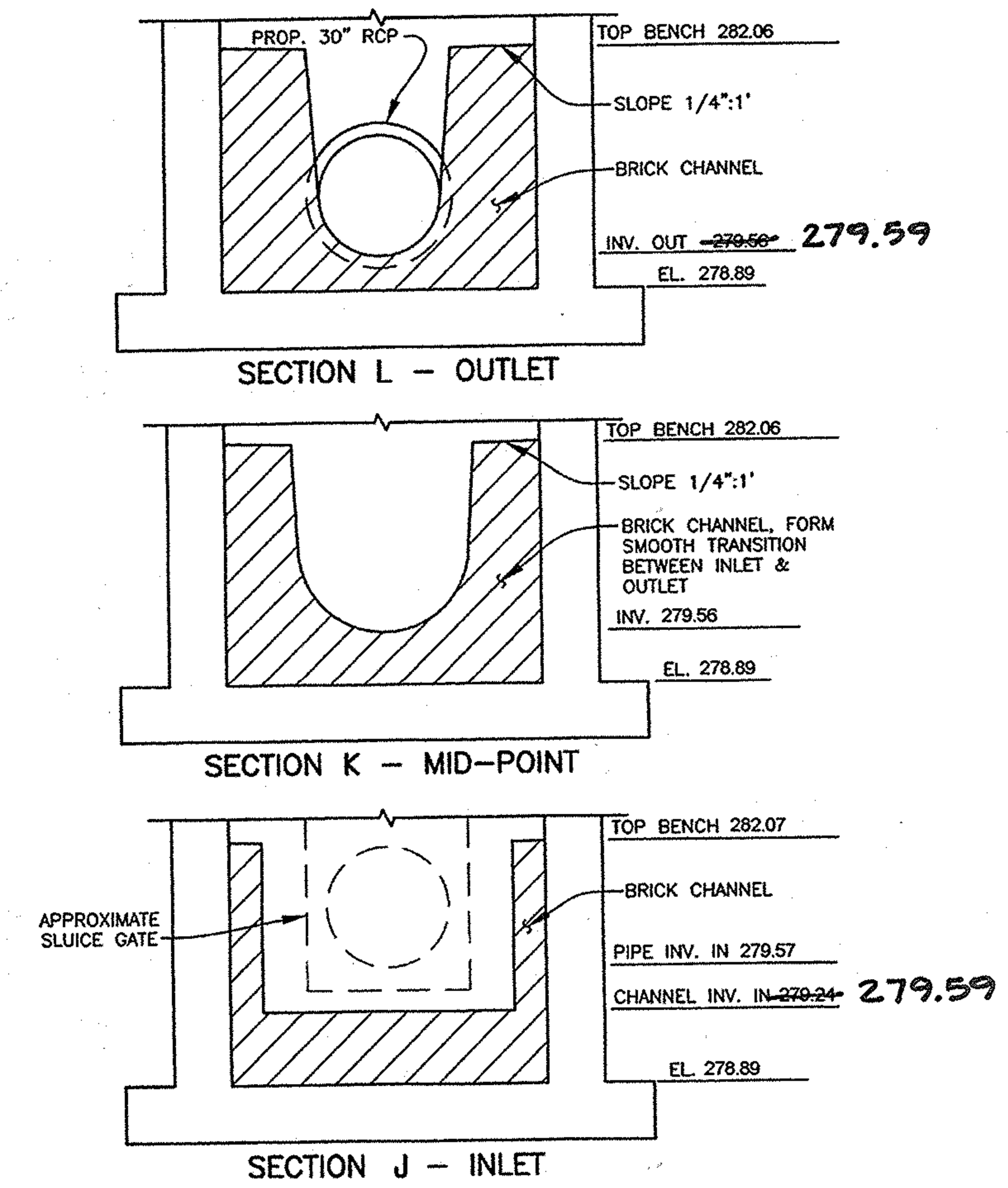
SECTION H – OUTLET

SECTION G – MID-POINT

SECTION F – INLET

CROSS SECTIONS

SCALE : NTS



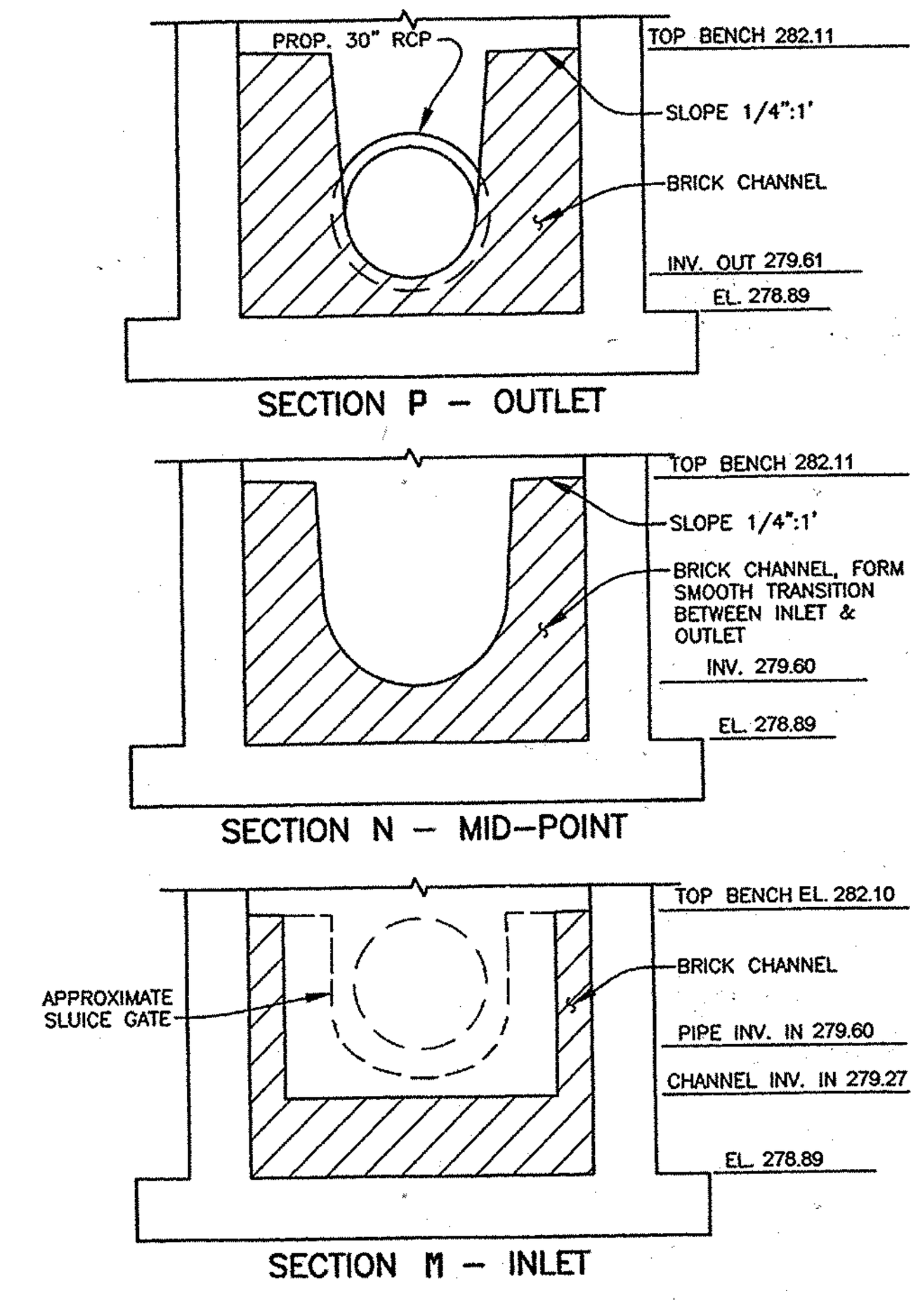
SECTION L – OUTLET

SECTION K – MID-POINT

SECTION J – INLET

CROSS SECTIONS

SCALE : NTS



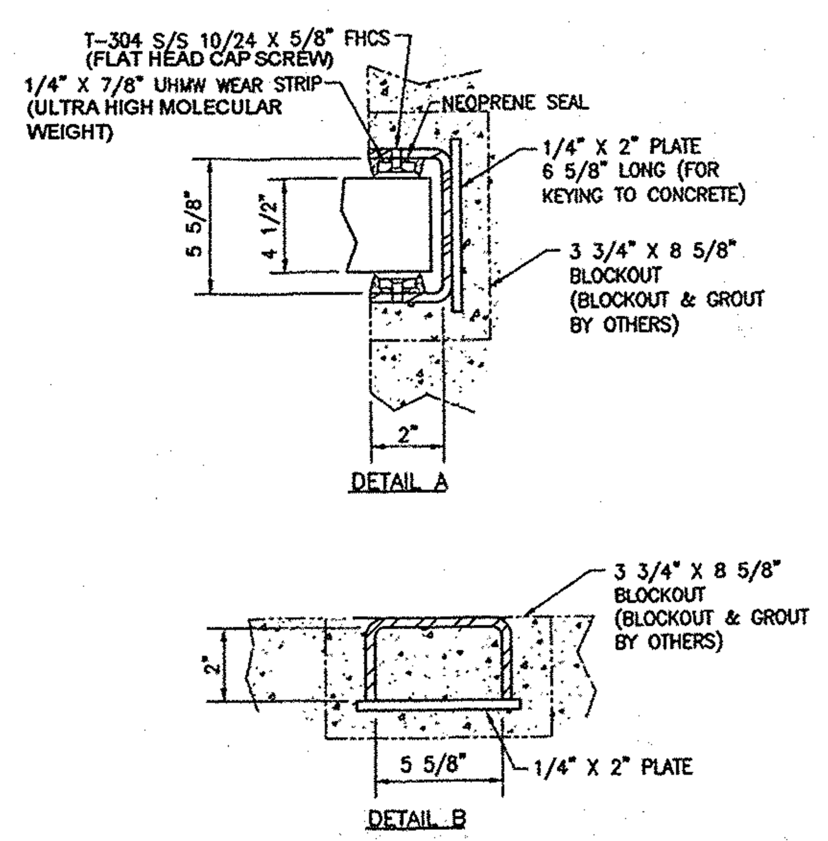
SECTION P – OUTLET

SECTION N – MID-POINT

SECTION M – INLET

CROSS SECTIONS

SCALE : NTS



STOP LOG GUIDE FRAME DETAILS

SCALE : NTS

DESIGN LOADS *

DEAD LOADS	—	ACTUAL WEIGHT OF STRUCTURE
WEIGHT OF SOIL	—	100 P.C.F. TO RESIST UPLIFT 120 P.C.F. DEAD LOAD
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	—	BASIC WIND SPEED - 90 MPH (EXPOSURE C)
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-350-01) "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 301-99) "SPECIFICAATIONS FOR STRUCTURAL CONCRETE"

ALL REINFORCEMENT SHALL CONFORM TO ASTM SPECIFICATION A615, DEFORMED, GRADE 60.

WELDED WIRE FABRIC SHALL CONFORM TO ASTM SPECIFICATION A185.

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

A. UNIFORMED CONCRETE BOTTOM BARS IN FOOTINGS AND SLABS ON EARTH OR GRAVEL - 3"

B. BEAMS, SLABS, COLUMNS AND WALLS, EXPOSED TO GROUND, WEATHER OR PROCESS LIQUID AFTER THE REMOVAL OF FORMS - 2"

C. BEAMS, COLUMNS AND PIERS NOT EXPOSED TO WEATHER OR PROCESS LIQUID - 1 ½"

D. STRUCTURAL SLABS NOT EXPOSED TO GROUND, WEATHER, PROCESS LIQUID OR TRUCK TRAFFIC - 1"

E. STRUCTURAL SLAB NOT EXPOSED TO GROUND, WEATHER OR PROCESS LIQUID, BUT SUBJECT TO TRUCK TRAFFIC:

TOP OF SLAB - 1 ½"

BOTTOM OF SLAB - 1"

ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED ¾" 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-66) "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 FOUNDED 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.

FOR MECHANICAL AND ELECTRICAL WORK TO BE INCORPORATED IN FOUNDATION WORK, SEE MECHANICAL AND ELECTRICAL DRAWINGS.

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 8".

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

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS AND DRAWINGS OF OTHER TRADES. 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.

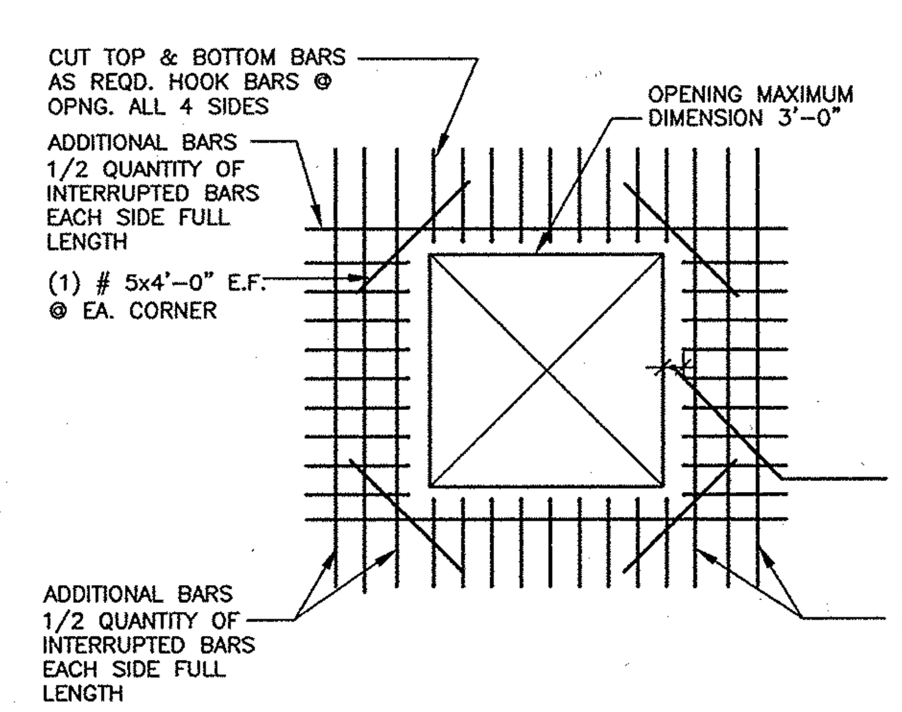
NO OPENINGS OR CHANGES IN SIZE, DIMENSION OR LOCATION SHALL BE MADE IN ANY STRUCTURAL ELEMENTS WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.

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.

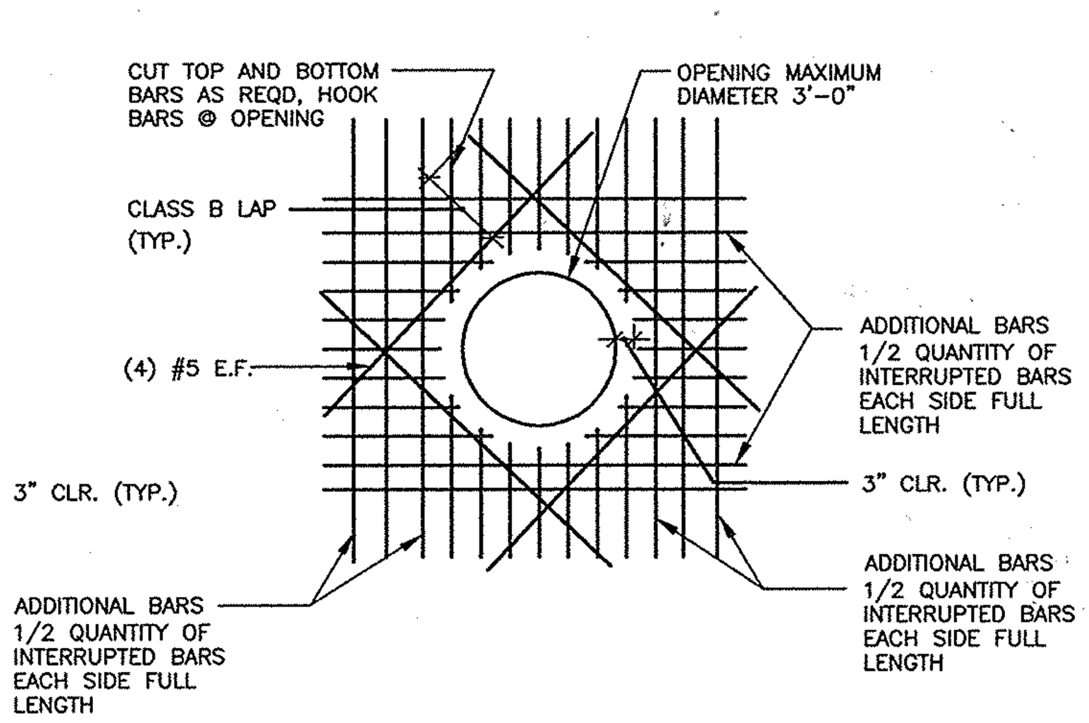
CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH NEW WORK IN AREAS AFFECTED BY EXISTING CONDITIONS. THE STRUCTURAL ENGINEER SHALL BE INFORMED IN WRITING OF CONFLICTS BETWEEN EXISTING AND PROPOSED NEW CONSTRUCTION.

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 WO RK.



WALL OR SLAB OPENING DETAIL

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



WALL OR SLAB OPENING DETAIL

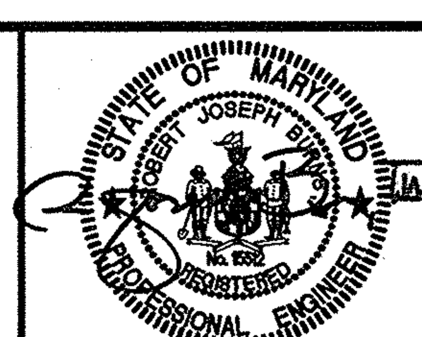
SCALE : NTS (3' ø MAX.)

AS-BUILTS 2-29-2012

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/11/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 100
BALTIMORE, MD 21244-2662
410.265.9500
FAX: 410.265.8875



DES: YD
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

JUNCTION CHAMBER 901 DETAILS

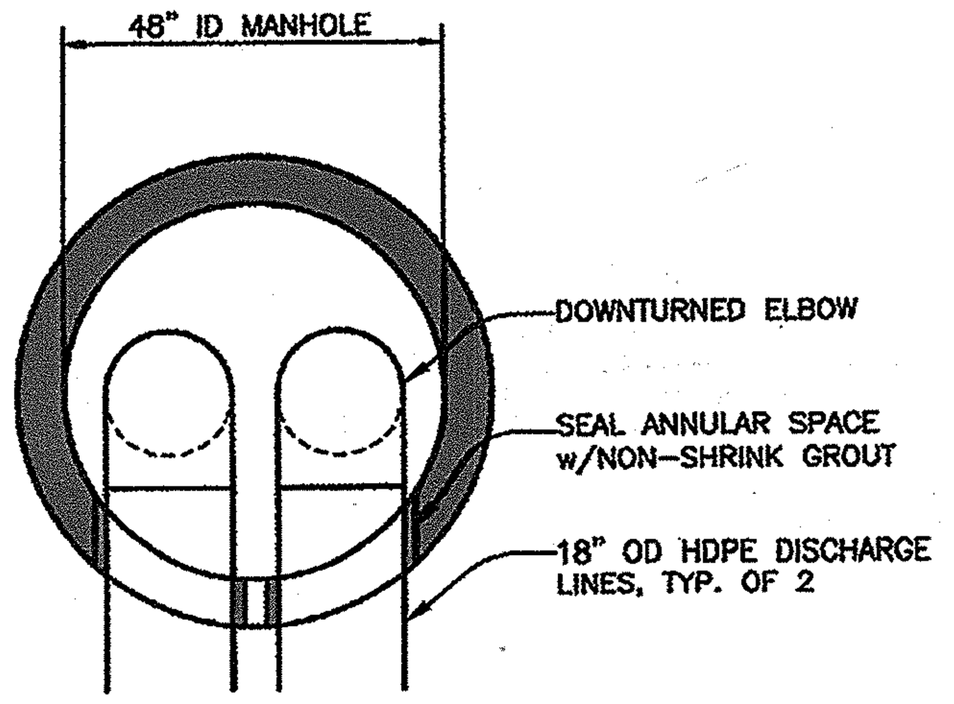
600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

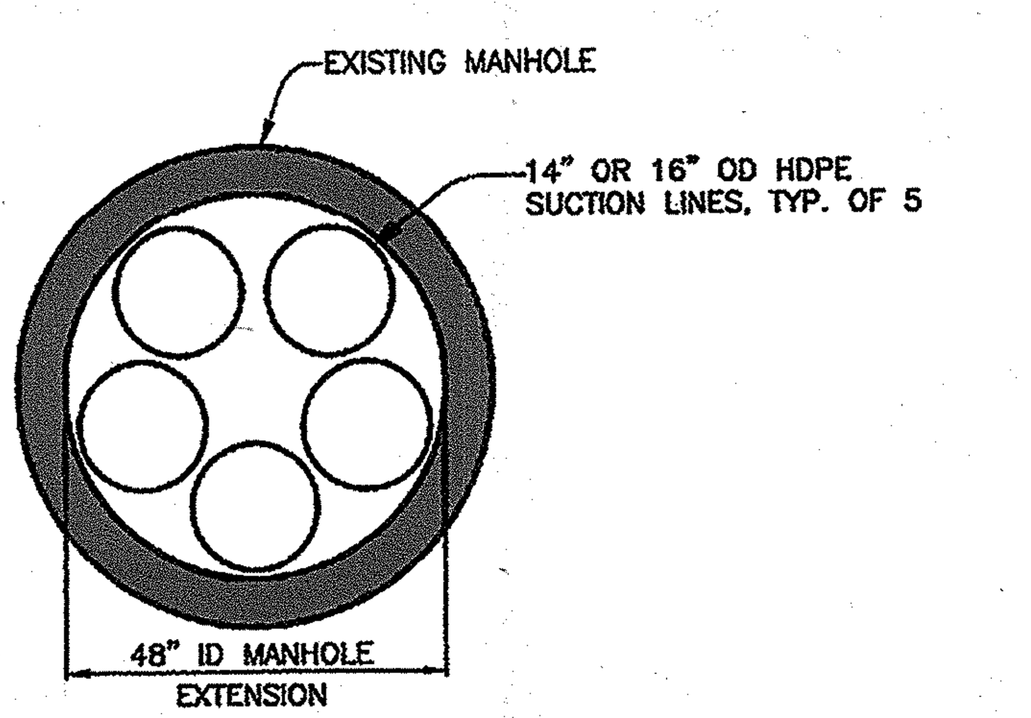
SCALE: SHOWN

SHEET 18 OF 19

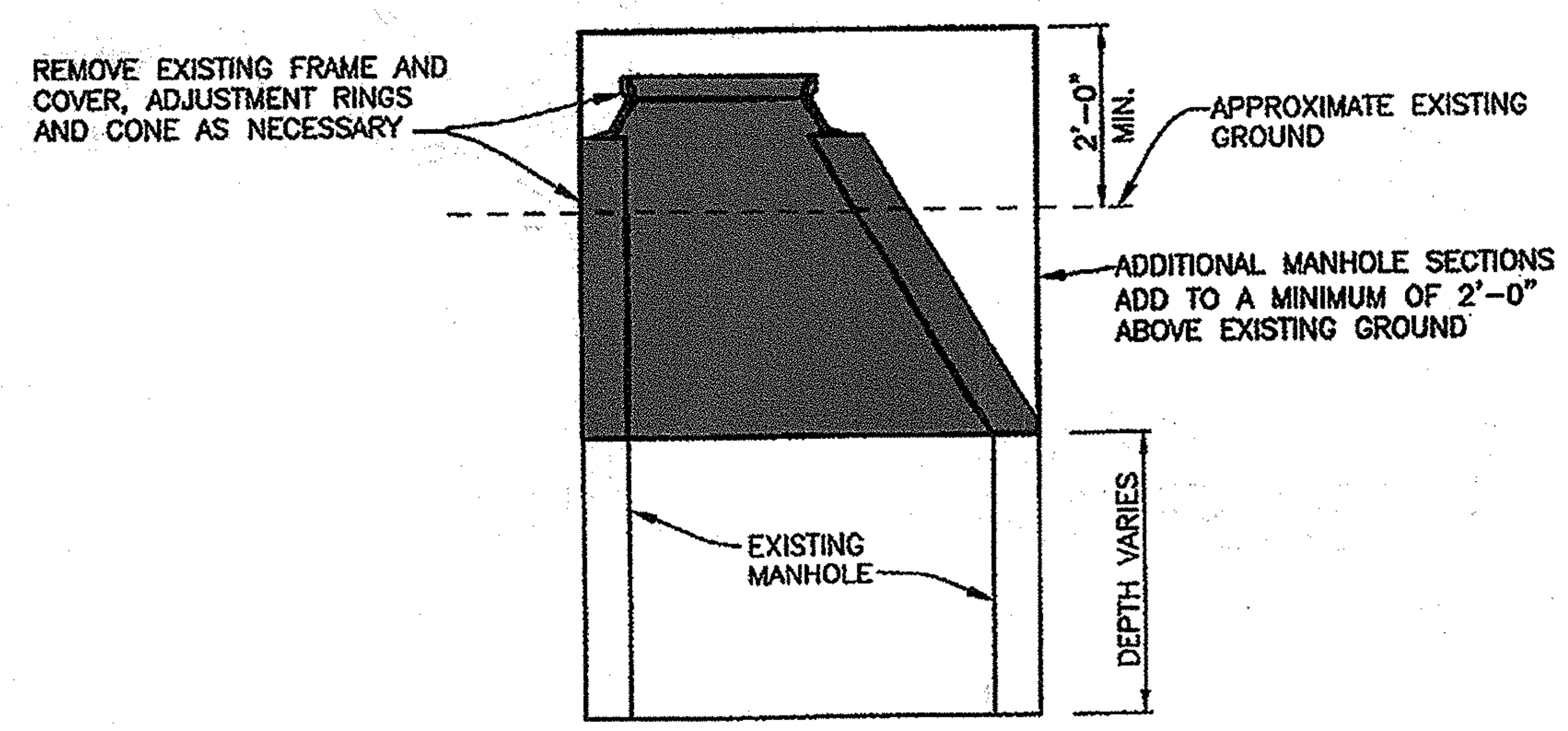


NOTE: HOLES IN MANHOLE WALL FOR DISCHARGE PIPES SHALL BE REPAIRED/ PLUGGED WHEN WORK IS COMPLETE.

POINT OF DISCHARGE
NO SCALE
(MANHOLE 1358)



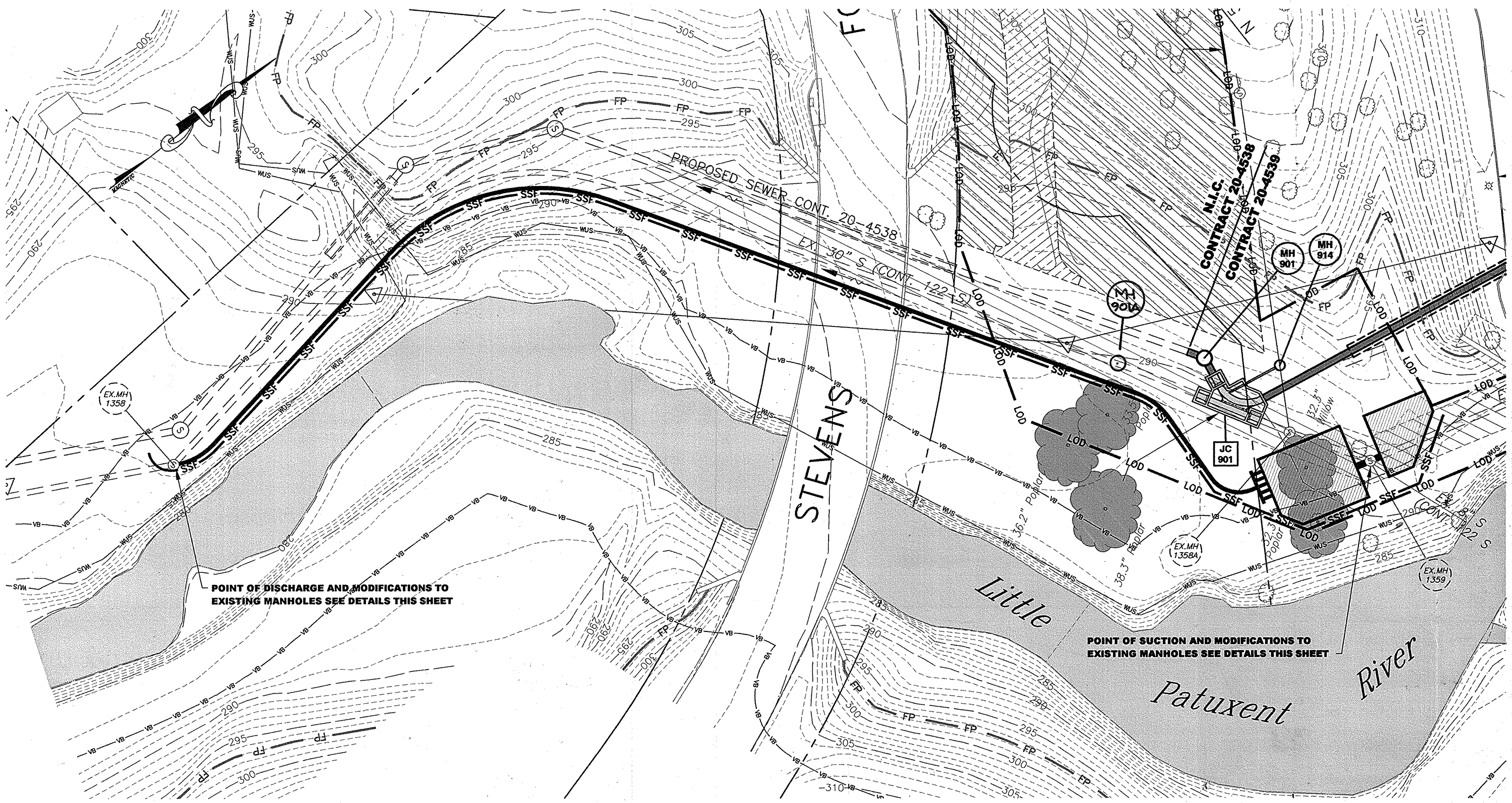
POINT OF SUCTION
NO SCALE
(MANHOLE 1359)



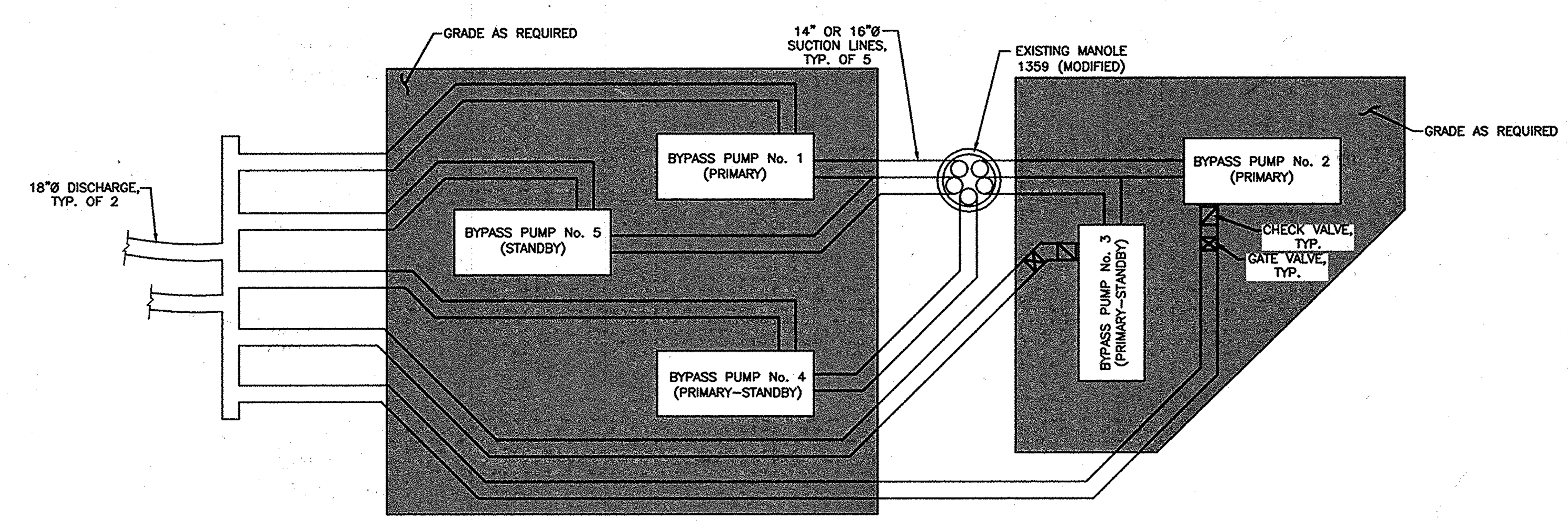
MODIFICATIONS TO EXISTING MANHOLES 1358 & 1359

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 SEWER.
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.



BYPASS PLAN
SCALE: 1"=30'



BYPASS PUMP SCHEMATIC LAYOUT

NOTES

1. STANDBY PUMP(S) SHALL BE CONNECTED AT ALL TIMES.
2. PUMPS SHALL BE GODWIN DRI-PRIME MODEL DPC 300 (OR APPROVED EQUAL).
3. PROTECTION FENCE SHALL BE INSTALLED ALONG NORTH SIDE OF PUMPS, SUCTION LINES AND DISCHARGE LINES AS A VISUAL BARRIER TO CONSTRUCTION TRAFFIC.

AS-BUILTS 2-29-2012

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/11/09
CHIEF, BUREAU OF ENGINEERING — DATE 12/10/09
CHIEF, BUREAU OF UTILITIES — DATE 12/11/09
CHIEF, UTILITY DESIGN DIVISION — DATE 12/10/09

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE SUITE 100 BALTIMORE, MD 21244-2662 410.265.9500 FAX: 410.265.8675

DES: CD/LAL
DRN: CD
CHK: RJB
DATE: 12/9/09

BY	NO.	REVISIONS	DATE

BYPASS PLAN AND DETAILS

600' SCALE MAP NO. 37, 43 — BLOCK NO. 5, 23

LITTLE PATUXENT PARALLEL INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4539

ELECTION DISTRICT NO. 5 — HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 19 OF 19