

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

VICINITY MAP

# LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT S-6175 CONTRACT NO. 20-4533 HOWARD COUNTY, MARYLAND

BILL OF MATERIALS

ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANUFACTURER / SUPPLIER
8" DIP SEWER	91 LF	95 LF	CL54 DIP	ATLANTIC STATES
30" PVC OR FRP SEWER	16 LF	16 LF	DR-25	J.M. EAGLE
36" PVC OR FRP SEWER	3963 LF	3,960 LF	DR-25	J.M. EAGLE
42" FRP	371 LF	371 LF		HOBAS
5" DIA. PRECAST MANHOLES	10 EA.	10 EA		ATLANTIC
5" DIA DOGHOUSE MANHOLES	2 EA.	1 EA		ATLANTIC
8" DIA. PRECAST MANHOLES	3 EA.	3 EA		ATLANTIC
8" DIA. DOGHOUSE MANHOLES	1 EA.	1 EA		ATLANTIC
10" DIA. PRECAST MANHOLES	3 EA.	3 EA		ATLANTIC
5" DIA. MH ADDITIONAL DEPTH	84 V.F.	84 VF		ATLANTIC
8" DIA. MH ADDITIONAL DEPTH	41 V.F.	41 VF		ATLANTIC
10" DIA. MH ADDITIONAL DEPTH	30 V.F.	30 VF		ATLANTIC
72" DIA. STEEL LINER PLATE	355 L.F.			NOT USED

SHEET INDEX	
NO.	DESCRIPTION
1	TITLE SHEET
2	OVERALL PROFILE SHEET
3	GENERAL NOTES
4	PLAN AND PROFILE OF A SEWER MAIN
5	PLAN AND PROFILE OF A SEWER MAIN
6	PLAN AND PROFILE OF A SEWER MAIN
7	PLAN AND PROFILE OF A SEWER MAIN
8	PLAN AND PROFILE OF A SEWER MAIN
9	EROSION AND SEDIMENT CONTROL PLAN
10	EROSION AND SEDIMENT CONTROL PLAN
11	EROSION AND SEDIMENT CONTROL PLAN
12	EROSION AND SEDIMENT CONTROL PLAN
13	STREAM CROSSING DETAILS
14	EROSION AND SEDIMENT CONTROL DETAILS
15	EROSION AND SEDIMENT CONTROL DETAILS
16	CONSTRUCTION DETAILS
17	CONSTRUCTION DETAILS
18	BYPASS PUMPING PLAN (MH-311 TO MH-312)

NAME OF UTILITY CONTRACTOR : AMERICAN INFRASTRUCTURE

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

CHECKBOX
AS-BUILT DATE
SURVEY AND DRAFTING DIVISION

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

*David H. Johnson* 5/8/09  
 DEVELOPER DATE

BY THE ENGINEER :

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

*David A. Vanderbeek* 5/8/09  
 ENGINEER DATE

PROFESSIONAL CERTIFICATION :

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

*David A. Vanderbeek*  
 DAVID A. VANDERBEEK, P.E.

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Jack H. Slab* 5/12/09  
 DIRECTOR OF PUBLIC WORKS DATE

*David H. Johnson* 5/8/09  
 CHIEF, BUREAU OF ENGINEERING DATE

*John C. Slab* 5/12/09  
 CHIEF, BUREAU OF UTILITIES DATE

*David H. Johnson* 5/8/09  
 CHIEF, UTILITY DESIGN DIVISION DATE

**GMB**  
 GEORGE, MILES & BUHR, LLC  
 ARCHITECTS & ENGINEERS  
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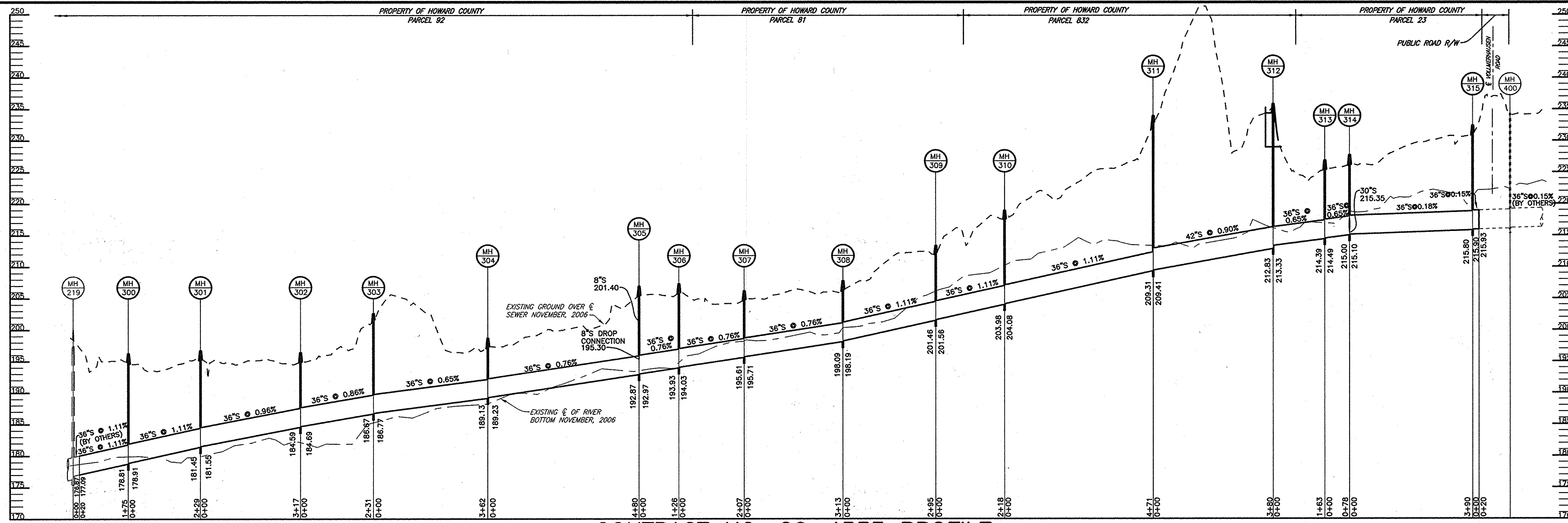
DES: D.A.V.	
DRN: M.A.D.	
CHK: W.B.F.	
DATE: 5/8/09	
BY NO.	REVISION
DATE	600 SCALE MAP NO. 47
	BLOCK NO. 4 & 10

TITLE SHEET

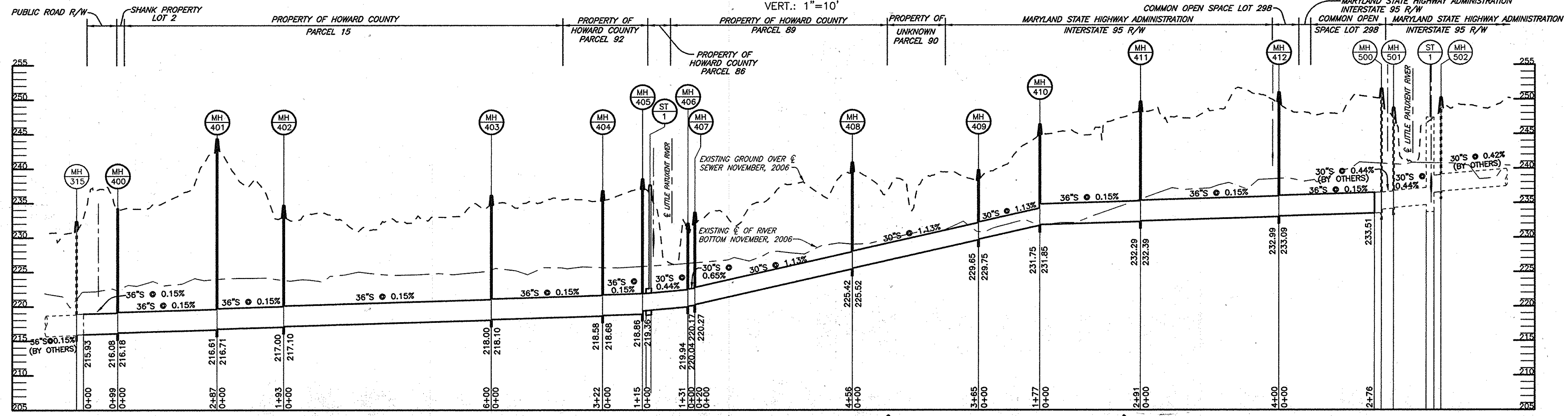
LITTLE PATUXENT  
 PARALLEL INTERCEPTOR SEWER  
 CAPITAL PROJECT NO. S-6175  
 CONTRACT NO. 20-4533  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 1 OF 18

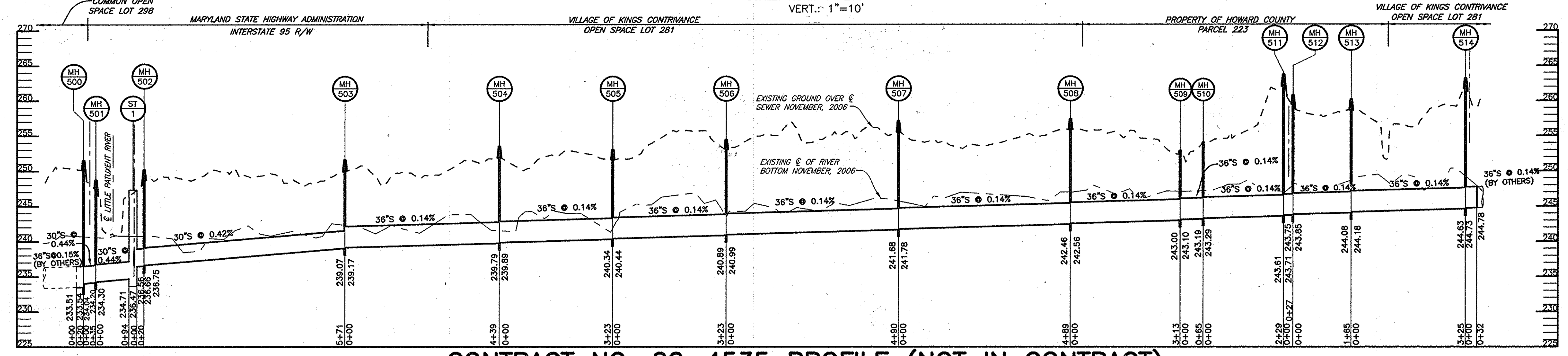
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**CONTRACT NO. 20-4533 PROFILE** \* NOTE: SEE SHEETS 4, 5, 6, 7 & 8 FOR AS-BUILT INFORMATION  
 SCALE: HOR.: 1"=200'  
 VERT.: 1"=10'



**CONTRACT NO. 20-4534 PROFILE (NOT IN CONTRACT)**  
 SCALE: HOR.: 1"=200'  
 VERT.: 1"=10'



**CONTRACT NO. 20-4535 PROFILE (NOT IN CONTRACT)**  
 SCALE: HOR.: 1"=200'  
 VERT.: 1"=10'

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

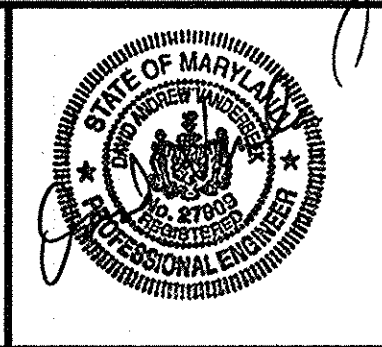
*Jan 7* 5/8/09  
 DIRECTOR OF PUBLIC WORKS DATE

*Paul D. Johnson* 5/8/09  
 CHIEF, BUREAU OF ENGINEERING DATE

*Steve C. Chen* 5/8/09  
 CHIEF, BUREAU OF UTILITIES DATE

*Of Dan Rice* 5/8/09  
 CHIEF, UTILITY DESIGN DIVISION DATE

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DES: D.A.V.			
DRN: M.A.D.			
CHK: W.B.F.			
DATE: 5/8/09	BY	NO.	REVISION

OVERALL PROFILE SHEET

600 SCALE MAP NO. 47

BLOCK NO. 4 & 10


LITTLE PATUXENT  
 PARALLEL INTERCEPTOR SEWER  
 CAPITAL PROJECT NO. S-6175  
 CONTRACT NO. 20-4533  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 2 OF 18

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**GENERAL NOTES**

- Approximate locations of existing mains are shown. The contractor shall take all necessary precautions to protect existing mains and services and maintain uninterrupted service. Any damage incurred shall be repaired immediately to the satisfaction of the Engineer at the Contractor's expense.
- Topographic field surveys were performed during October and November, 2006, by C.C. Johnson and Malhorta, pc.
- Horizontal and Vertical Survey Controls:  
The coordinates shown on the drawings are based on Maryland State Reference System NAD '83/91 as projected by Howard County Geodetic Control Station No. LPS-95b, LPS-102, LPS-103 and 42ED. All vertical controls are based on NAVD '88. Vertical Controls on the drawings are based on Howard County Geodetic Control Station No. LPS-95b, LPS-102 and 42ED.  
LPS-95b - N 536819.70, E 1359849.94, Elev. 195.05  
LPS-102 - N 534676.62, E 1360784.80, Elev. 149.32  
LPS-103 - N 539918.59, E 1359775.48, Elev. None  
42ED - N 546494.25, E 1358095.09, Elev. 286.765
- All pipe elevations shown are invert elevations unless otherwise noted on the plans.
- Clear all utilities by a minimum of 12 inches. Clear all poles by 5'-0" minimum or tunnel as required unless otherwise noted. The owner has contacted the utility companies and has made arrangements for bracing of poles as shown on the drawings. In the event the contractor's work requires the bracing of additional poles, any cost incurred by the owner for the bracing of additional poles or damages shall be deducted from monies owed the contractor. The contractor shall coordinate with the utility companies to schedule the bracing of the poles.
- For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The contractor shall have a copy of Volume IV on the job.
- Where test pits have been made on existing utilities, they are noted by the symbol  at the locations of the test pits. A note or notes containing the results of the test pit or pits is included on the drawings. Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the contractor two weeks in advance of construction operations at his own expense.
- The contractor shall notify the following utility companies or agencies at least five working days before starting work shown on these plans:  
AT&T 1-800-252-1133  
BGE (Construction Services) 410-850-4620  
BGE (Emergency) 410-685-1400  
Bureau of Utilities 410-313-4900  
Colonial Pipeline Co. 410-795-1390  
Miss Utility 1-800-257-7777  
State Highway Administration 410-531-5533  
Verizon 1-800-743-0033 / 410-224-9210
- The contractor shall install tree protection fence along the limit of disturbance (LOD) for the entire project. In areas where Super Silt Fence (SSF) is required along the LOD, tree protection fence is not also required to be furnished and installed. Trees within the temporary construction strips and temporary construction easements shall not be removed or damaged by the contractor. Shrubs within the temporary construction strips and temporary construction easements shall be protected from damage to the maximum extent possible.
- The contractor shall remove trees, stumps and roots along the line of excavation. Payment for such removal shall be included in the Lump Sum prices bid for Tree Removal and Clearing and Grubbing.
- The contractor shall notify the Bureau of Highways, Howard County, at 410-313-7450 at least five working days before open cutting or boring/jacking of any County road for laying water/sewer mains or house connections. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code.
- Spoil from trenching operations is to be placed on the uphill side of the trench.
- The contractor shall be responsible for acquiring any additional staging and/or stockpile areas that he deems necessary.
- The contractor shall be responsible for repairing and replacing any existing fences, signs, concrete curb, driveways, paving, curb and gutter pan, walkways, etc., damaged or removed during construction. All disturbed areas shall be returned to their original or better condition.
- MDE Permit Tracking No. 20076408/07-NT-3268.

**SEWER NOTES**

- Sewer mains for stream crossings shall be CL 54 DIP with lining. All other sewer mains shall be AWWA C-905 PVC or FRP unless otherwise noted.
- All manholes shall be 5'-0", 8'-0" or 10'-0" inside diameter as noted in the Structure Schedule.
- Manholes designated W.T. in profile shall have watertight frames and covers. Where watertight manhole frames and covers are used, set top of manhole with embedded frame 1'-6" above finished grade unless otherwise noted on the drawings.
- The existing sewer shall remain in service at all times and be protected during construction.
- Final connection of the proposed sewer main to the existing system shall not be completed until all downstream sewer contracts are accepted by the County and the contractor has received written permission from the County.
- Provide pipe joint five feet from the face at each side of all proposed manholes when installing FRP sewer mains.

**STRUCTURE SCHEDULE**

STRUCTURE	TYPE	LOCATION	INV. IN	INV. OUT	RIM ELEV.	REMARKS	INVERT @ £ MH
MH-300	5' PRECAST MANHOLE	N 536122.18 E 1360170.49	178.01 (36")	178.01 (36")	196.3	SEE DETAIL SHEET 16	178.82
MH-301	5' PRECAST MANHOLE	N 536342.35 E 1360188.52	181.56 (36")	181.45 (36")	196.6	SEE DETAIL SHEET 16	181.39
MH-302	5' PRECAST MANHOLE	N 536622.88 E 1359977.55	184.69 (36")	184.59 (36")	196.7	SEE DETAIL SHEET 16	184.00
MH-303	5' PRECAST MANHOLE	N 536842.26 E 1359885.64	186.77 (36")	186.67 (36")	202.6	SEE DETAIL SHEET 16	186.29
MH-304	5' PRECAST MANHOLE	N 537202.44 E 1359896.64	189.23 (36")	189.13 (36")	199.7	SEE DETAIL SHEET 16	188.66
MH-305	8' PRECAST MANHOLE	N 537683.10 E 1359830.66	201.40 (8")	192.97 (36")	206.6	SEE DETAIL SHEET 16	193.05
MH-306	5' PRECAST MANHOLE	N 537808.44 E 1359823.56	194.03 (36")	193.93 (36")	207.3	SEE DETAIL SHEET 16	194.17
MH-307	5' PRECAST MANHOLE	N 537998.04 E 1359742.04	195.74 (36")	195.64 (36")	207.2	SEE DETAIL SHEET 16	195.81
MH-308	5' PRECAST MANHOLE	N 538228.62 E 1359528.99	198.19 (36")	198.09 (36")	207.8	SEE DETAIL SHEET 16	198.35
MH-309	8' PRECAST MANHOLE	N 538478.87 E 1359373.64	201.56 (36")	201.46 (36")	218.7	SEE DETAIL SHEET 16	201.73
MH-310	5' PRECAST MANHOLE	N 538688.88 E 1359442.11	204.08 (36")	203.98 (36")	218.9	SEE DETAIL SHEET 16	203.97
MH-311	5' PRECAST MANHOLE	N 538978.63 E 1359815.75	209.44 (42")	209.34 (36")	224.3	SEE DETAIL SHEET 16	209.64
MH-312	10' PRECAST MANHOLE	N 539204.57 E 1360117.09	213.33 (36")	212.83 (42")	233.5	SEE DETAIL SHEET 16	213.73
MH-313	5' PRECAST MANHOLE	N 539367.86 E 1360102.77	214.49 (36")	214.39 (36")	226.5	SEE DETAIL SHEET 16	214.65
MH-314	10' PRECAST MANHOLE	N 539438.63 E 1360077.44	215.35 (30")	215.10 (36")	227.7	SEE DETAIL SHEET 16	215.03
MH-315	10' PRECAST MANHOLE	N 539768.76 E 1359880.11	215.00 (36")	215.00 (36")	232.2	SEE DETAIL SHEET 16	215.84
MH-316	8' DOGHOUSE MANHOLE	N 539439.98 E 1360046.66	216.4(EX.27")	215.60 (30")	226.2	SEE DETAIL SHEET 17	
MH-317	5' DOGHOUSE MANHOLE	N 537687.74 E 1359869.22	EXISTING (8")	EXISTING (8")	215.5	SEE DETAIL SHEET 17	
BP-1	5' DOGHOUSE MANHOLE	N 539999.1 E 1359853	EXISTING(27")	EXISTING(27")	222.0	SEE DETAIL SHEETS 17 & 18	

NOT USED

NOTE: LOCATION OF MANHOLES IS GIVEN AT CENTER OF STRUCTURE. RIM ELEVATION IS SET 1'-6" ABOVE EXISTING GROUND PER STD. DETAIL G-5.41, EXCEPT BP-1 WHICH SHALL BE SET 2'-0" ABOVE EXISTING GROUND.

**TRAVERSE TABLE**

NO.	LOCATION
KCI-44	N 535733.49 E 1360008.13
KCI-45	N 536026.47 E 1360147.32
KCI-46	N 536286.26 E 1360111.03
KCI-47	N 536595.18 E 1359589.90
LPS-95b	N 536819.70 E 1359849.94
KCI-49	N 537069.34 E 1359854.63
KCI-50	N 537352.20 E 1359860.74
KCI-51	N 567638.57 E 1359809.54
KCI-52	N 537826.56 E 1359811.21
KCI-53	N 538046.45 E 13599678.89
KCI-54	N 538217.40 E 1359537.79
KCI-55	N 538444.95 E 1359461.38
KCI-56	N 538651.63 E 1359496.68
KCI-57	N 538805.87 E 1359518.17
KCI-58	N 538876.47 E 1359787.50
KCI-59	N 539079.69 E 1359801.76
KCI-60	N 539226.09 E 1360089.45
KCI-61	N 539548.55 E 1359944.28
KCI-62	N 539652.40 E 1359982.41
LPS-103	N 539918.59 E 1359775.48

**LEGEND**

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

**PHASING OF SEWER INSTALLATION**

- The following suggested sequence of construction is not a complete list of tasks or work required to complete the contract requirements. The sequence of construction may be modified or revised at the request of the contractor with the approval of the county prior to the start of construction.
- Construction will proceed in a manner which will minimize earth disturbance and the time and extent of open excavation and will generally proceed in the following sequence:
- Test pit to determine the exact size, location and elevation of the Ex. 8-inch sewer at MH-317, the Ex. 27-inch sewer at MH-316, and the Ex. 27-inch sewer at MH-BP-1.
  - Install "Doghouse" MH-317 over Ex. 8-inch sewer, core Ex. MH-1272 and install the temporary 8-inch sewer from MH-317 to Ex. MH-1272. Temporary 8-inch sewer shall be sealed into Ex. MH-1272 with a Link-Seal, or equal.
  - Place Mix. No. 6 concrete in MH-317 to centerline of existing pipe to form channel and bench, remove top section of existing sewer pipe and open to temporary pipe channel. Divert flow from MH-317 to MH-1272 via the temporary 8-inch sewer and plug the outlet to the existing outgoing 8-inch sewer. Provide bypass pumping (not shown in plan) of the Ex. 8-inch sewer as necessary to remove the ex. sewer section in the manhole, divert flows to the temporary pipe and provide a temporary plug for removal by others in the existing outgoing pipe. Abandon Ex. 8-inch sewer at MH-1272. Remove section of ex. 8-inch pipe from about five feet outside of MH-317 to about five feet outside of MH-1272.
  - Install 36-inch sanitary sewer from Station 0+20 just south of MH-300 towards MH-305.
  - Install drop connection at MH-305 and install 8-inch sewer from MH-317 to MH-305. The 8-inch sewer from MH-317 to MH-305 shall remain plugged and the flow diverted through the temporary 8-inch sewer to Ex. MH-1272. The diversion will be removed by others following completion of this contract.
  - Install 36-inch sanitary sewer from MH-305 toward MH-311.
  - Install "Doghouse" MH-BP-1 over Ex. 27-inch sewer, place Mix. No. 6 concrete in manhole to centerline of pipe to form channel and bench, remove top section of existing sewer pipe. Modify Ex. MH-1278A. Install bypass pumping system for tunneling work and verify proper operation of the system. The bypass system-discharge pipes shall be sealed into MH-BP-1 with non-shrink grout and the openings in the manhole for these pipes shall be plugged when the work is complete. The bypass pumping system may remain idle during the tunneling work and is intended as an emergency system in case of a failure of the existing sewerage system.
  - Install shafts and 72-inch steel liner plate tunnel.
  - Install 42-inch FRP sewer in tunnel from MH-311 to MH-312. Install MH-311 and connect to 36-inch sanitary sewer to the south.
  - Install "Doghouse" MH-316 over Ex. 27-inch sewer leaving the existing pipe in-tact within MH-316. The bench and channel will be constructed by others following completion of this contract.
  - Install 30-inch sanitary sewer from MH-316 to MH-314. This 30-inch sanitary sewer shall be provided with a temporary plug within the pipe for removal by others.
  - Install 36-inch sanitary sewer from MH-312 to just north of MH-315.
  - Restore all disturbed areas to original condition or better.
- Note: It is anticipated that Item Nos. 2 through 6 will proceed simultaneously with Item Nos. 7 through 12.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

Director of Public Works: *Janet L. ...* 5/18/09  
 Chief, Bureau of Engineering: *Richard S. ...* 5/18/09  
 Chief, Bureau of Utilities: *Stacy C. ...* 5/18/09  
 Chief, Utility Design Division: *Ed ...* 5/18/09

**GMB**  
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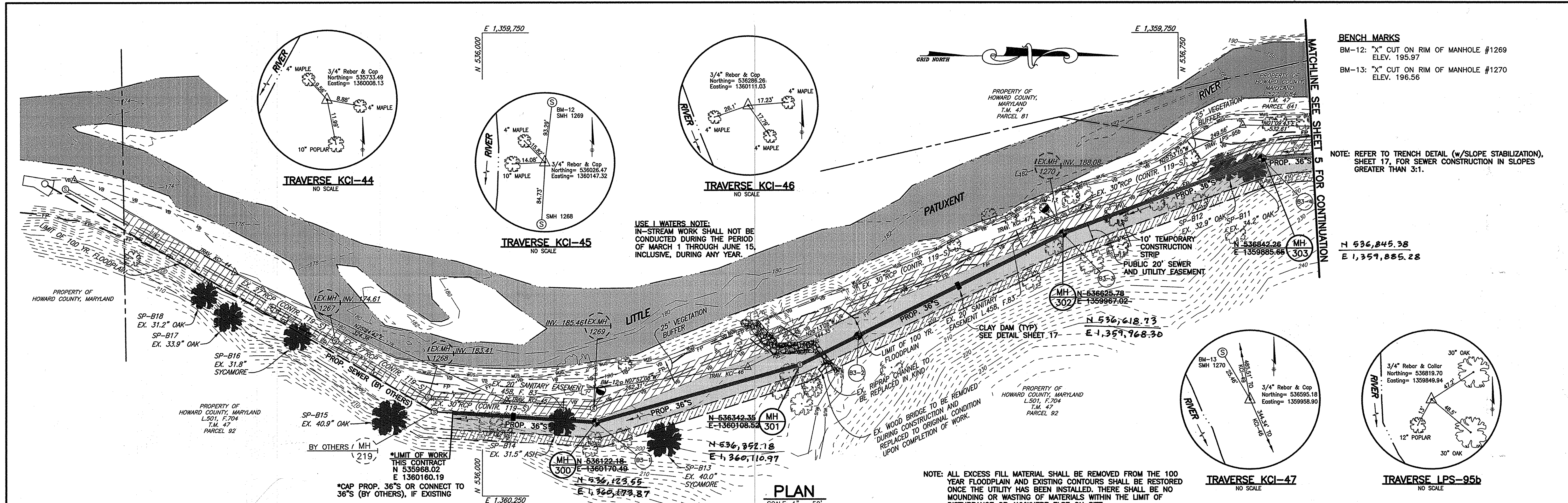
**GENERAL NOTES**

600 SCALE MAP NO. 47 BLOCK NO. 4 & 10

**LITTLE PATUXENT  
 PARALLEL INTERCEPTOR SEWER**  
 CAPITAL PROJECT NO. S-6175  
 CONTRACT NO. 20-4533  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

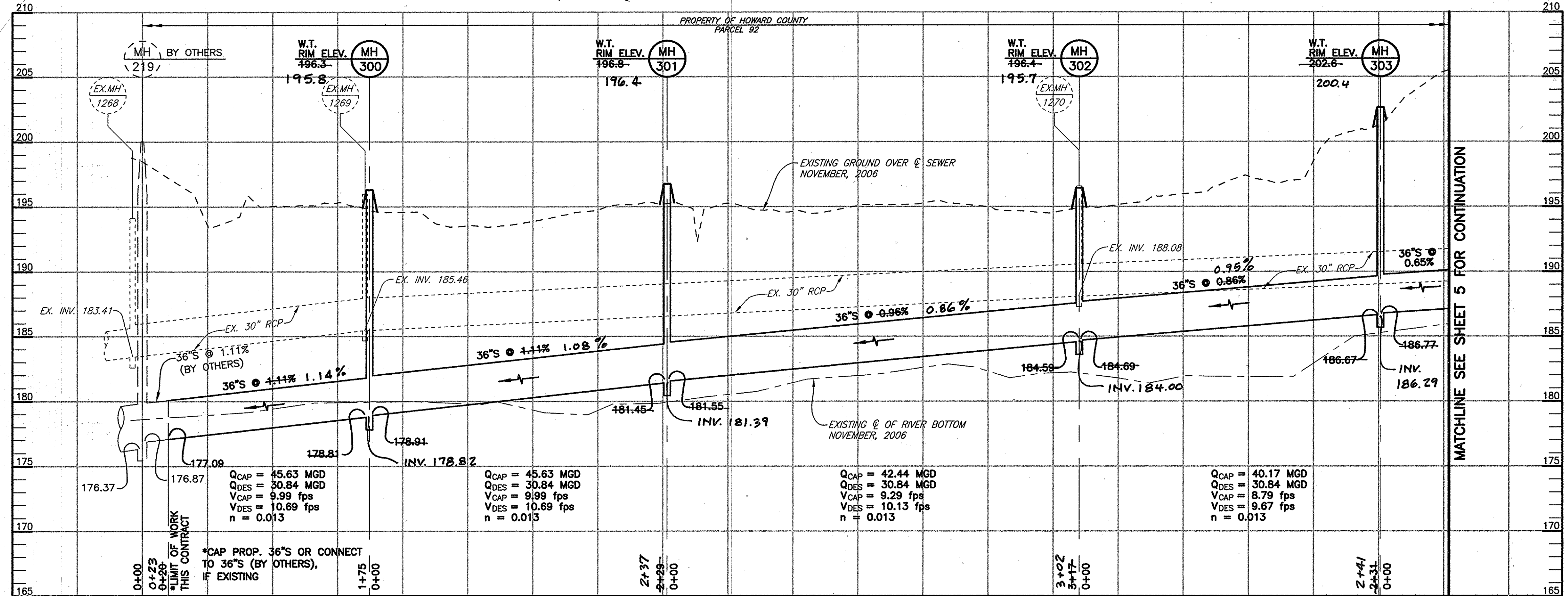
SHEET 3 OF 18



**BENCH MARKS**  
 BM-12: "X" CUT ON RIM OF MANHOLE #1269  
 ELEV. 195.97  
 BM-13: "X" CUT ON RIM OF MANHOLE #1270  
 ELEV. 196.56

**NOTE:** REFER TO TRENCH DETAIL (w/SLOPE STABILIZATION), SHEET 17, FOR SEWER CONSTRUCTION IN SLOPES GREATER THAN 3:1.

N 536,845.38  
 E 1,359,885.28



G:\DRAWINGS\2012\LITTLE\_PATUXENT\_SEWER\DWG\CURRENT\CONTRACT\_303-04-PLAN.dwg, 5/7/2009 11:16:59 PM, HP DesignPlot 1055281 by HP.pcd

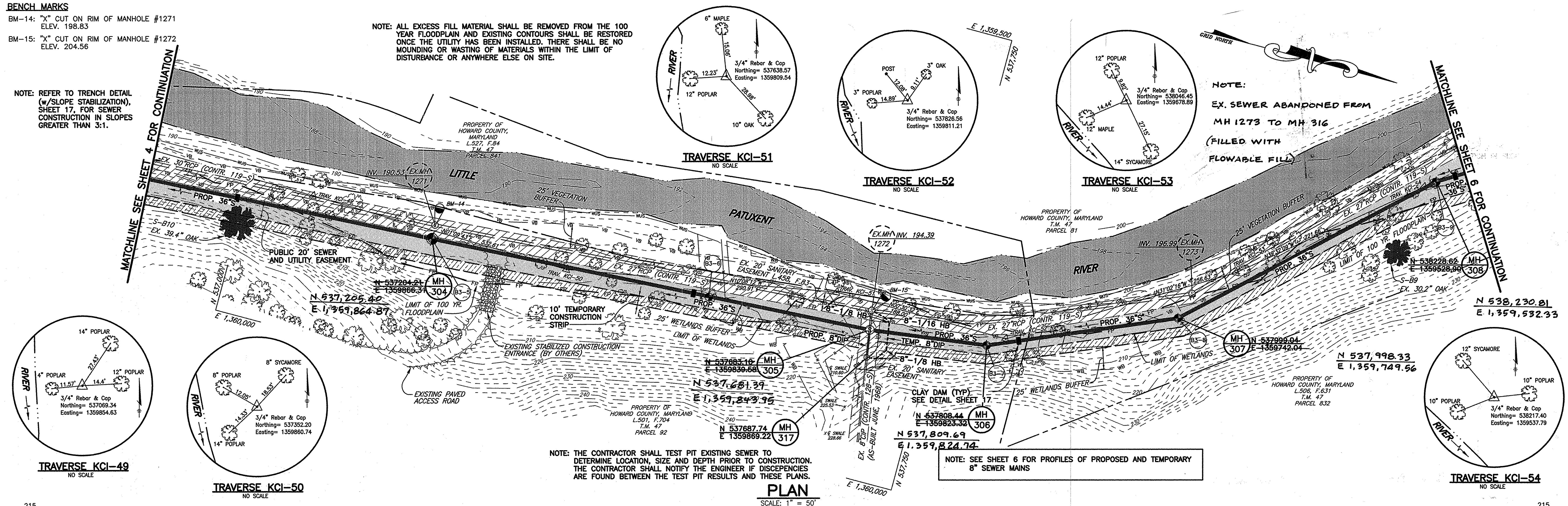
<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>[Signature]</i> 5/8/09 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>[Signature]</i> 5/8/09 CHIEF, BUREAU OF ENGINEERING DATE</p> <p><i>[Signature]</i> 5/8/09 CHIEF, BUREAU OF UTILITIES DATE</p>	<p><b>GMB</b></p> <p>GEORGE, MILES &amp; BUHR, LLC ARCHITECTS &amp; ENGINEERS SAUSBURY • BALTIMORE • LEVISTON • SEAFORD • YORK</p> <p>www.gmbnet.com</p>	<p>DES: D.A.V.</p> <p>DRN: M.A.D.</p> <p>CHK: W.B.F.</p> <p>DATE: 5/8/09</p>	<p><b>PLAN AND PROFILE OF A SEWER MAIN</b></p> <p>600 SCALE MAP NO. 47</p> <p>BLOCK NO. 4 &amp; 10</p>	<p>LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4533 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 4 OF 18</p>
--	--	--	--	---	--

**BENCH MARKS**  
 BM-14: "X" CUT ON RIM OF MANHOLE #1271  
 ELEV. 198.83  
 BM-15: "X" CUT ON RIM OF MANHOLE #1272  
 ELEV. 204.56

NOTE: REFER TO TRENCH DETAIL (w/ SLOPE STABILIZATION), SHEET 17, FOR SEWER CONSTRUCTION IN SLOPES GREATER THAN 3:1.

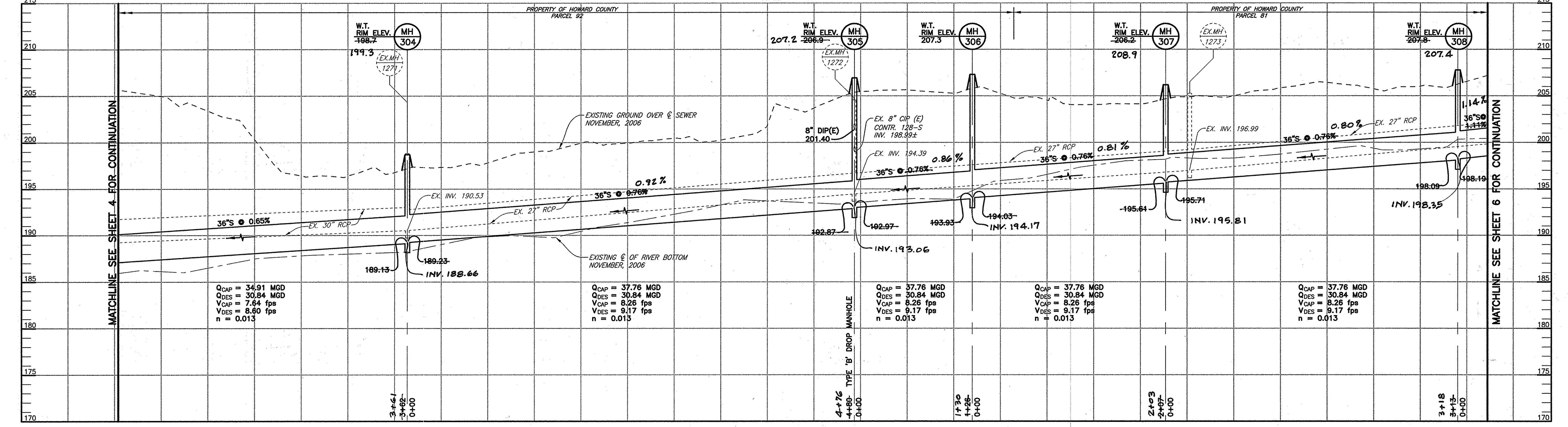
NOTE: ALL EXCESS FILL MATERIAL SHALL BE REMOVED FROM THE 100 YEAR FLOODPLAIN AND EXISTING CONTOURS SHALL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. THERE SHALL BE NO MOUNDING OR WASTING OF MATERIALS WITHIN THE LIMIT OF DISTURBANCE OR ANYWHERE ELSE ON SITE.

NOTE:  
 EX. SEWER ABANDONED FROM MH 1273 TO MH 316 (FILLED WITH FLOWABLE FILL)



NOTE: THE CONTRACTOR SHALL TEST PIT EXISTING SEWER TO DETERMINE LOCATION, SIZE AND DEPTH PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF DISCREPANCIES ARE FOUND BETWEEN THE TEST PIT RESULTS AND THESE PLANS.

NOTE: SEE SHEET 6 FOR PROFILES OF PROPOSED AND TEMPORARY 8" SEWER MAINS



DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Janet A. Stalos* 5/8/09  
 DIRECTOR OF PUBLIC WORKS DATE  
 CHIEF, BUREAU OF ENGINEERING

*John C. Lee* 5/8/09  
 CHIEF, BUREAU OF UTILITIES DATE  
 CHIEF, UTILITY DESIGN DIVISION

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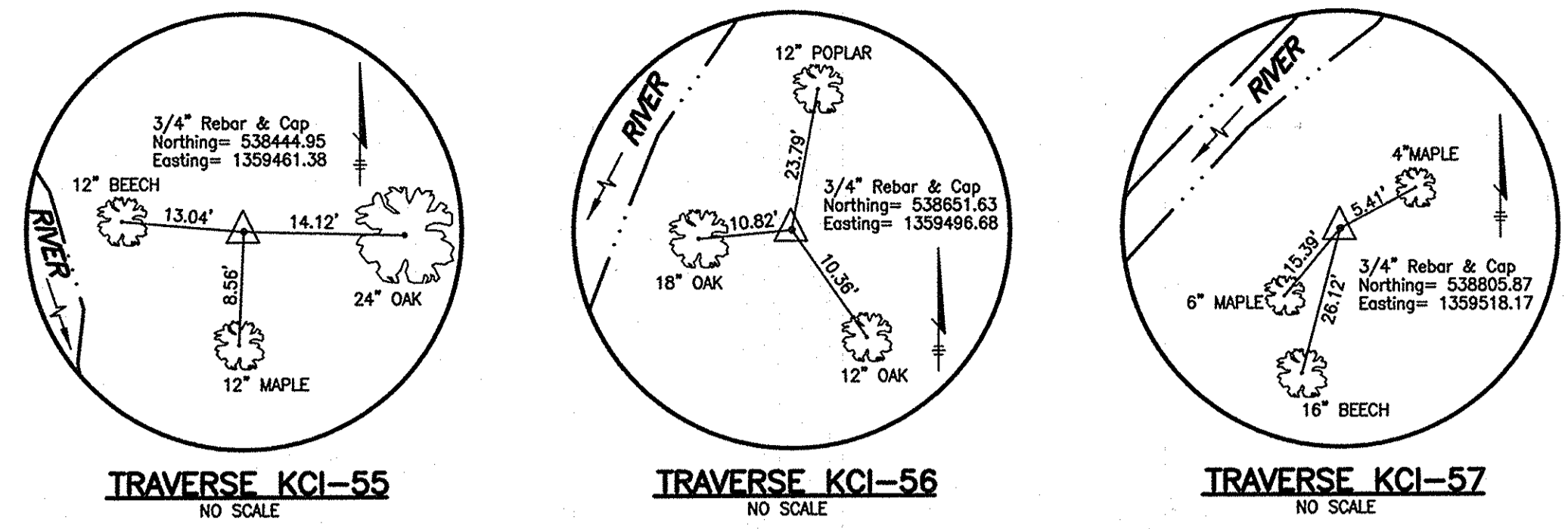
DES: D.A.V.	
DRN: M.A.D.	
CHK: W.B.F.	
DATE: 5/8/09	
BY: NO.	REVISION

PLAN AND PROFILE OF A SEWER MAIN

SCALE MAP NO. 47 BLOCK NO. 4 & 10

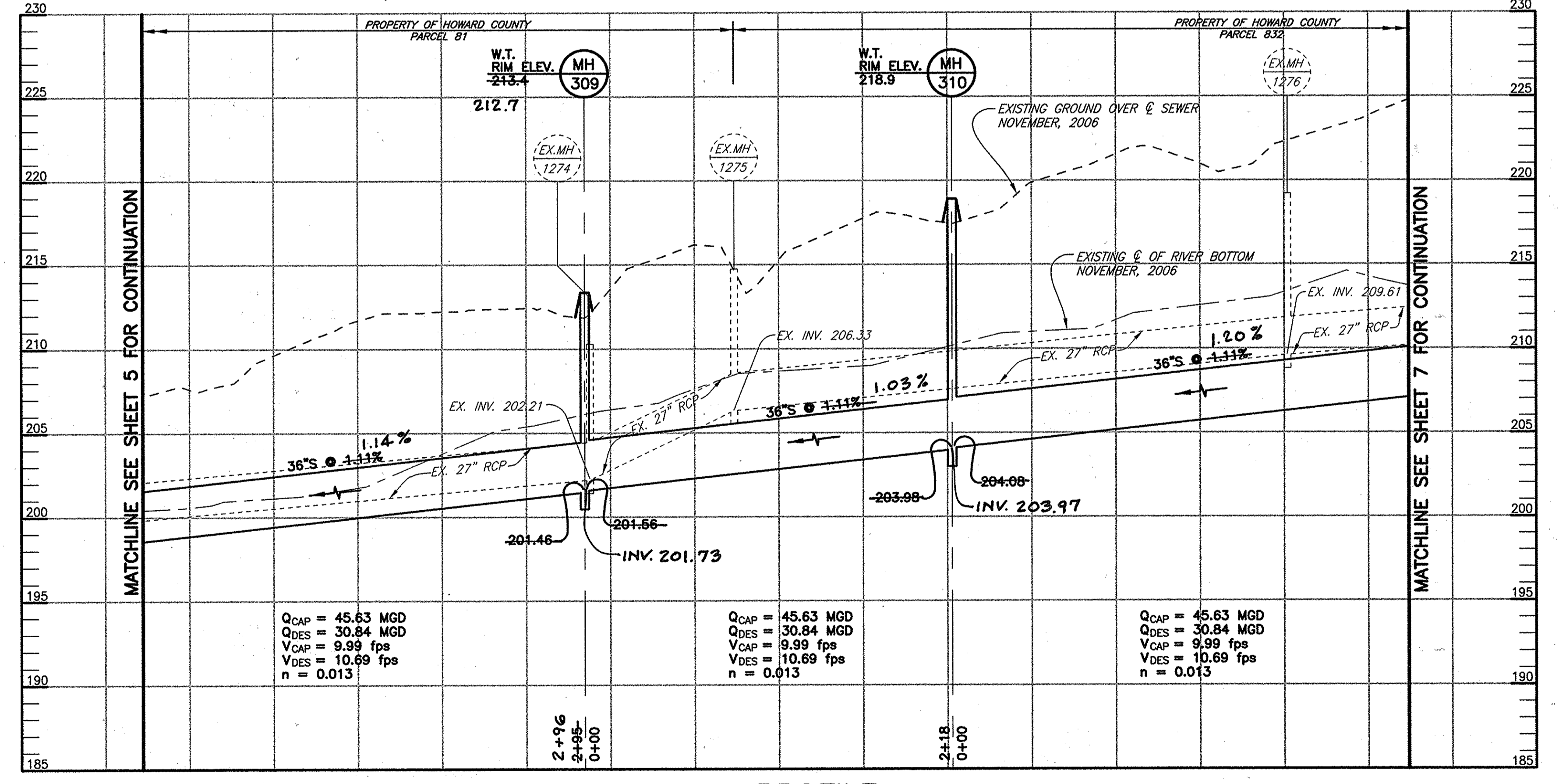
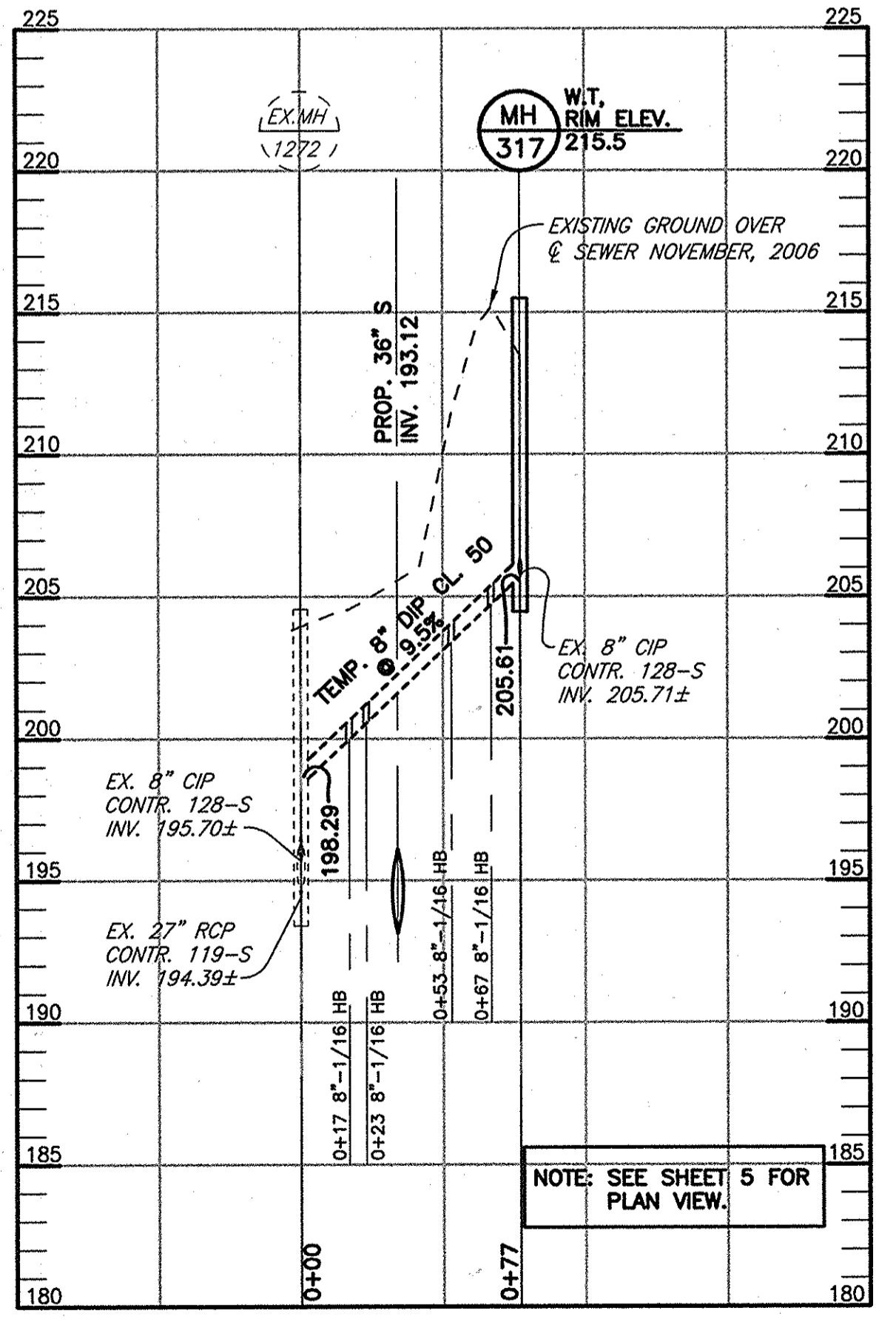
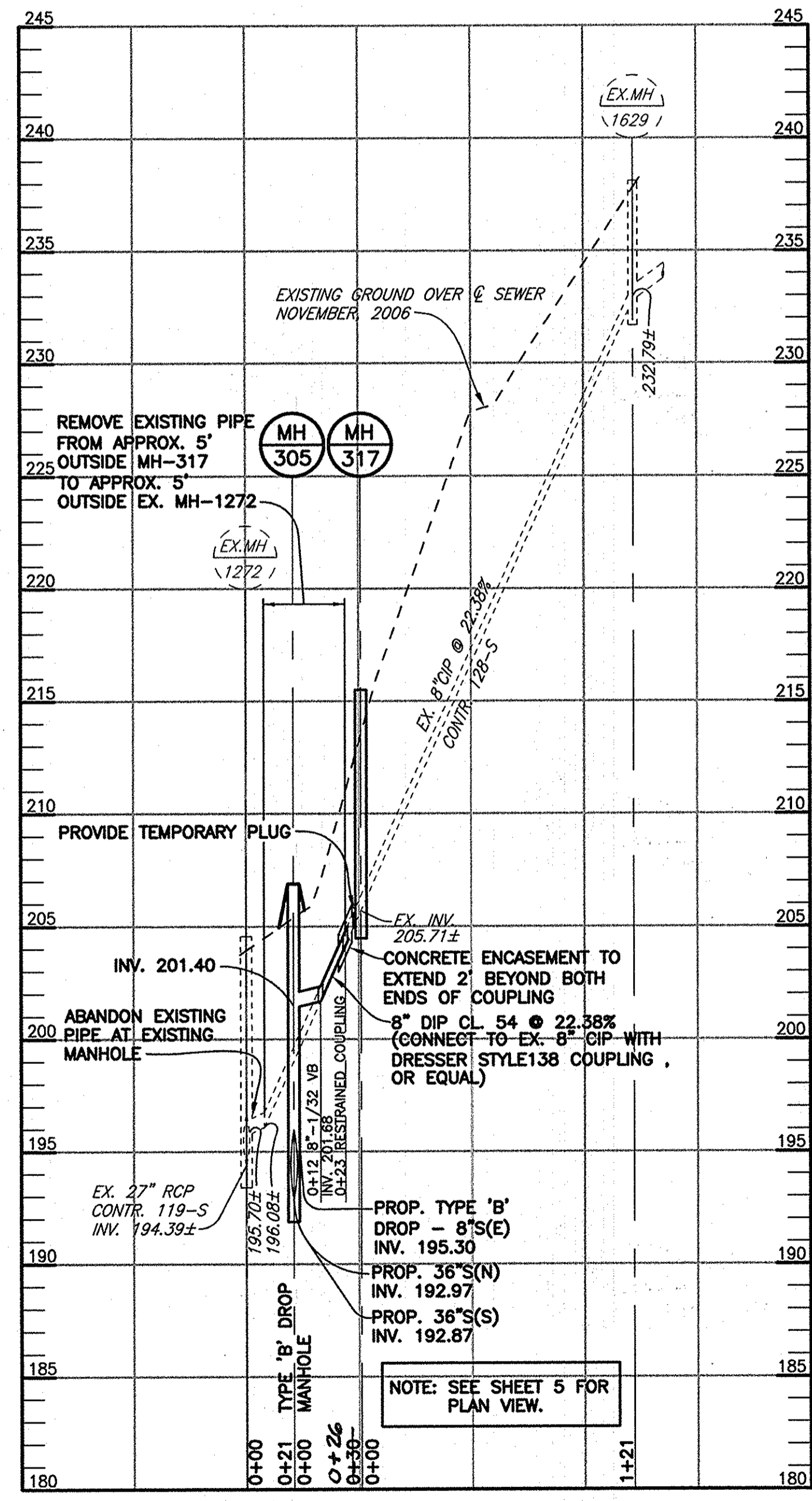
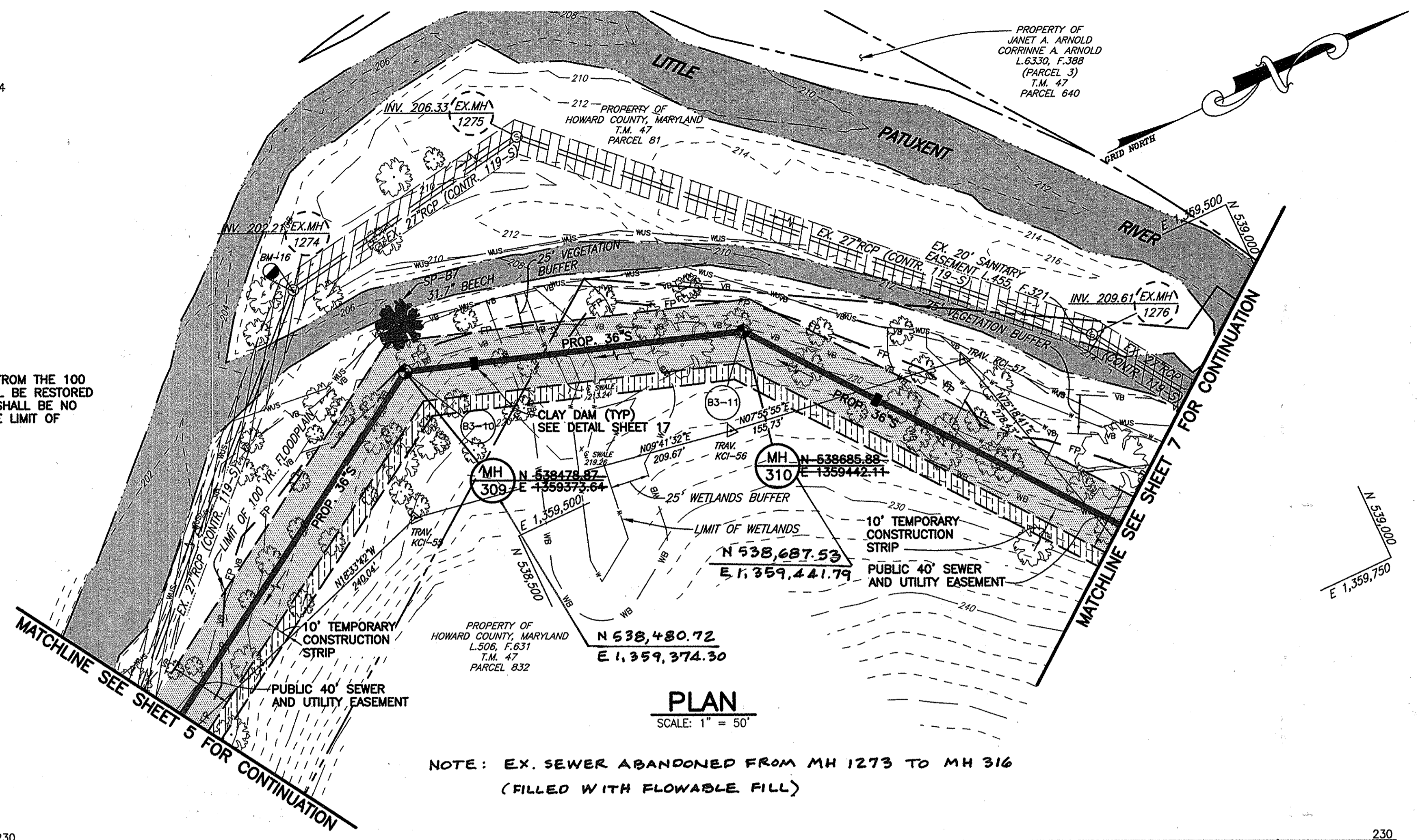
LITTLE PATUXENT  
 PARALLEL INTERCEPTOR SEWER  
 CAPITAL PROJECT NO. S-6175  
 CONTRACT NO. 20-4533  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 5 OF 18



**BENCH MARK**  
BM-16: "X" CUT ON RIM OF MANHOLE #1274  
ELEV. 210.29

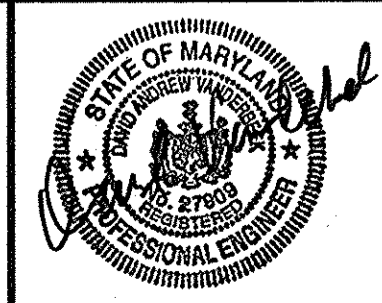
NOTE: ALL EXCESS FILL MATERIAL SHALL BE REMOVED FROM THE 100 YEAR FLOODPLAIN AND EXISTING CONTOURS SHALL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. THERE SHALL BE NO MOUNDING OR WASTING OF MATERIALS WITHIN THE LIMIT OF DISTURBANCE OR ANYWHERE ELSE ON SITE.



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

Director of Public Works: *Janet A. Arnold* 5/8/09  
 Chief, Bureau of Engineering: *Richard L. Seaman* 5/8/09  
 Chief, Bureau of Utilities: *Steve Chen* 5/8/09  
 Chief, Utility Design Division: *Ed DeLeon* 5/8/09

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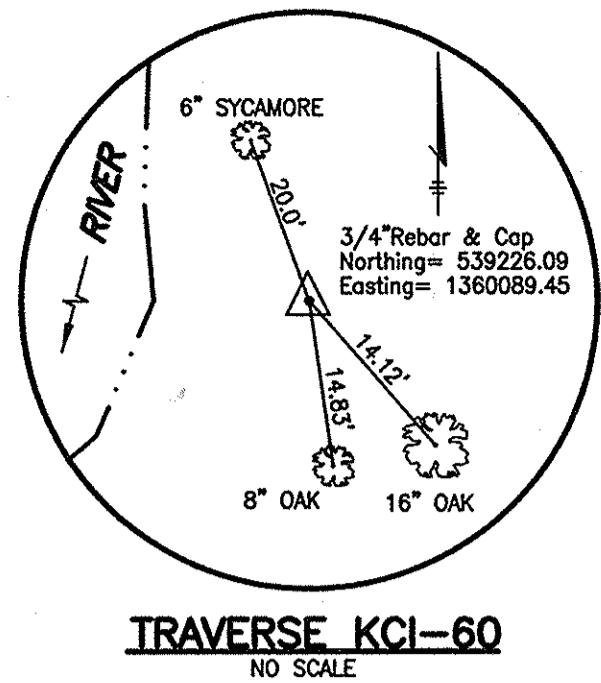
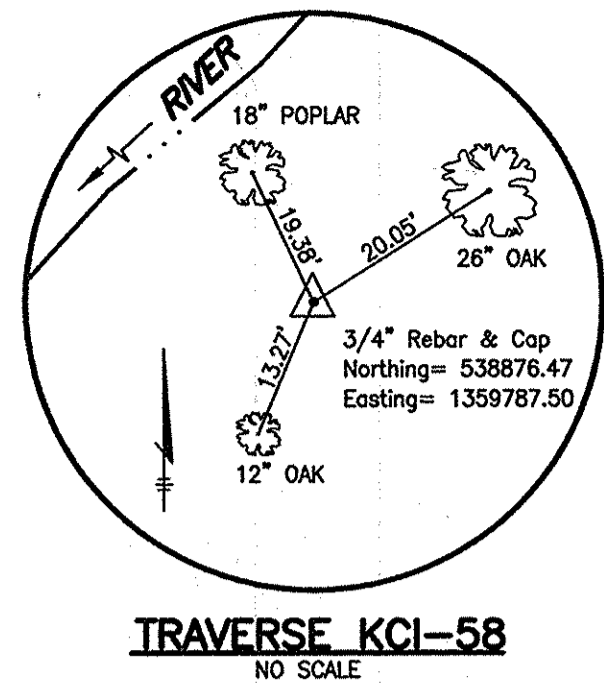
DES: D.A.V.	
DRN: M.A.D.	
CHK: W.B.F.	
DATE: 5/8/09	
BY: NO.	REVISION

PLAN AND PROFILE OF  
A SEWER MAIN

600 SCALE MAP NO. 47 BLOCK NO. 4 & 10

LITTLE PATUXENT  
PARALLEL INTERCEPTOR SEWER  
CAPITAL PROJECT NO. S-6175  
CONTRACT NO. 20-4533  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 6 OF 18

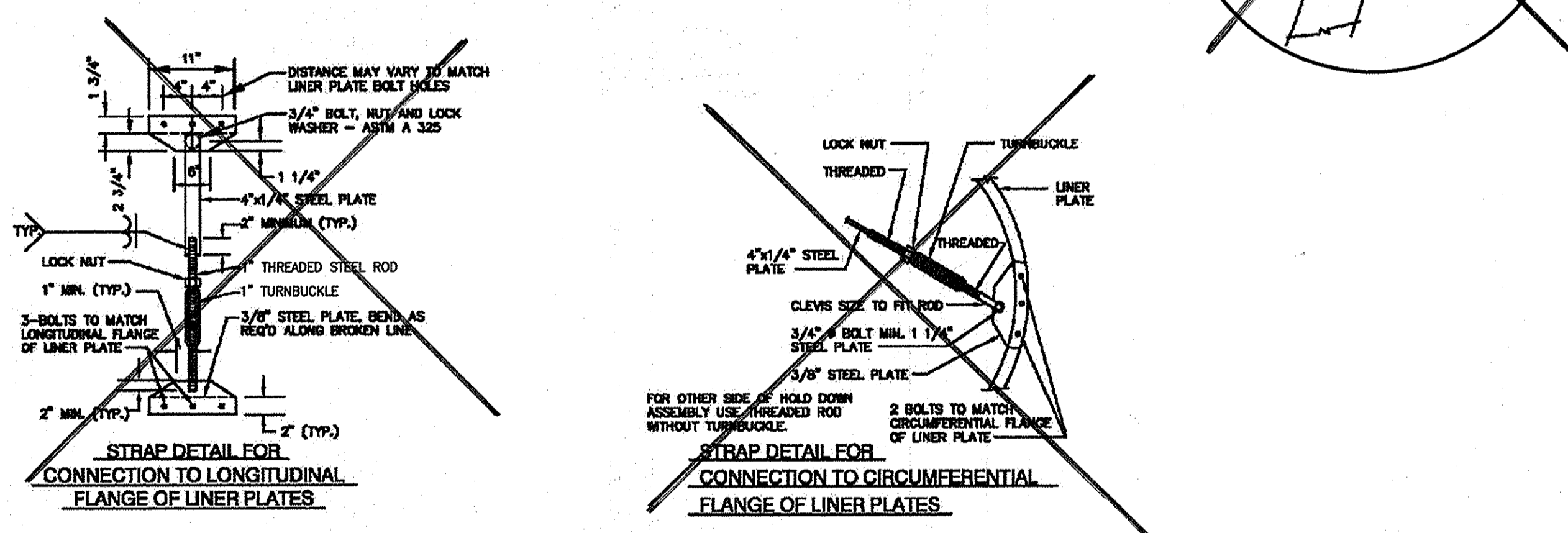
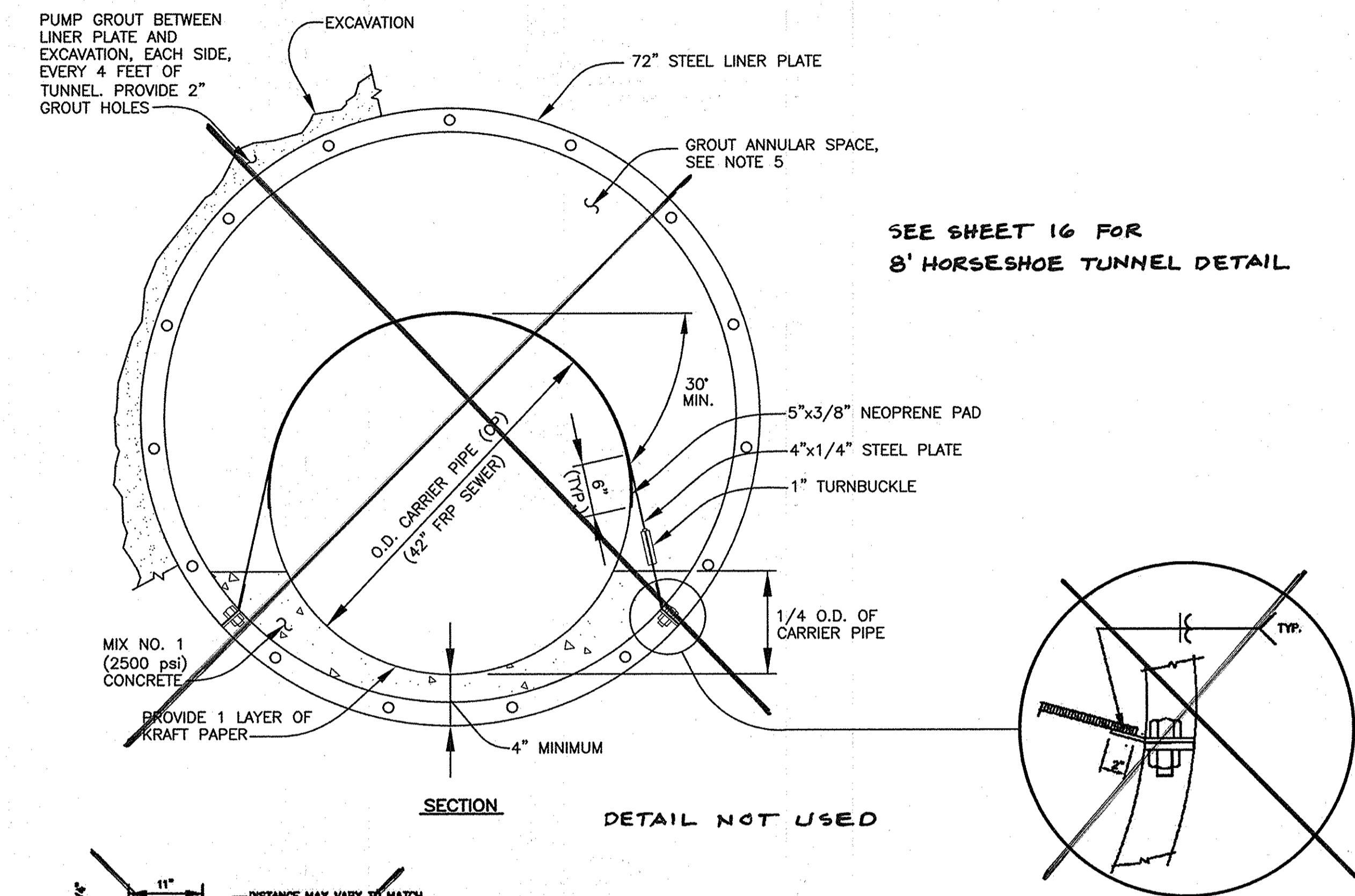
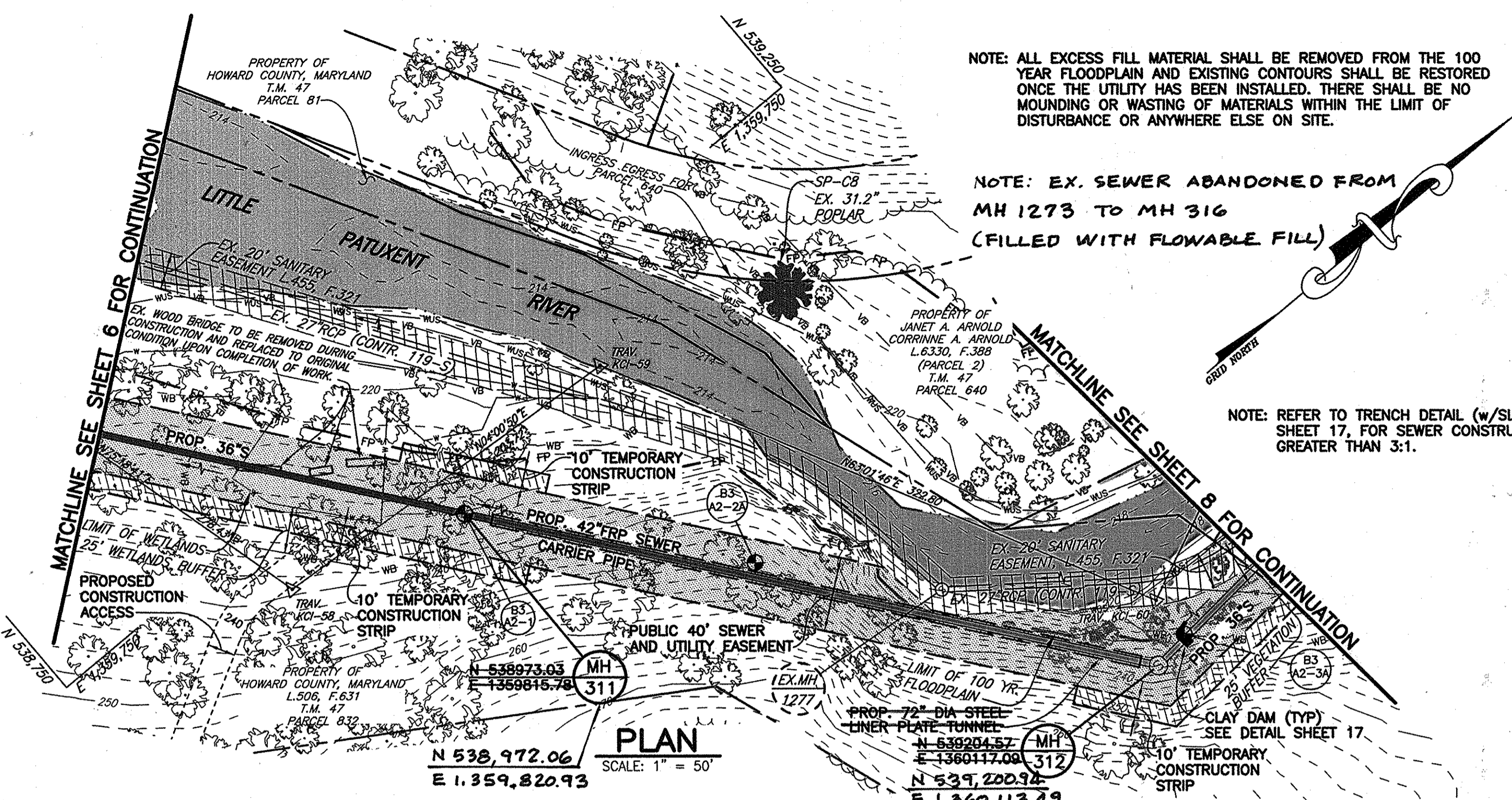


F 1,359,500  
N 538,720

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

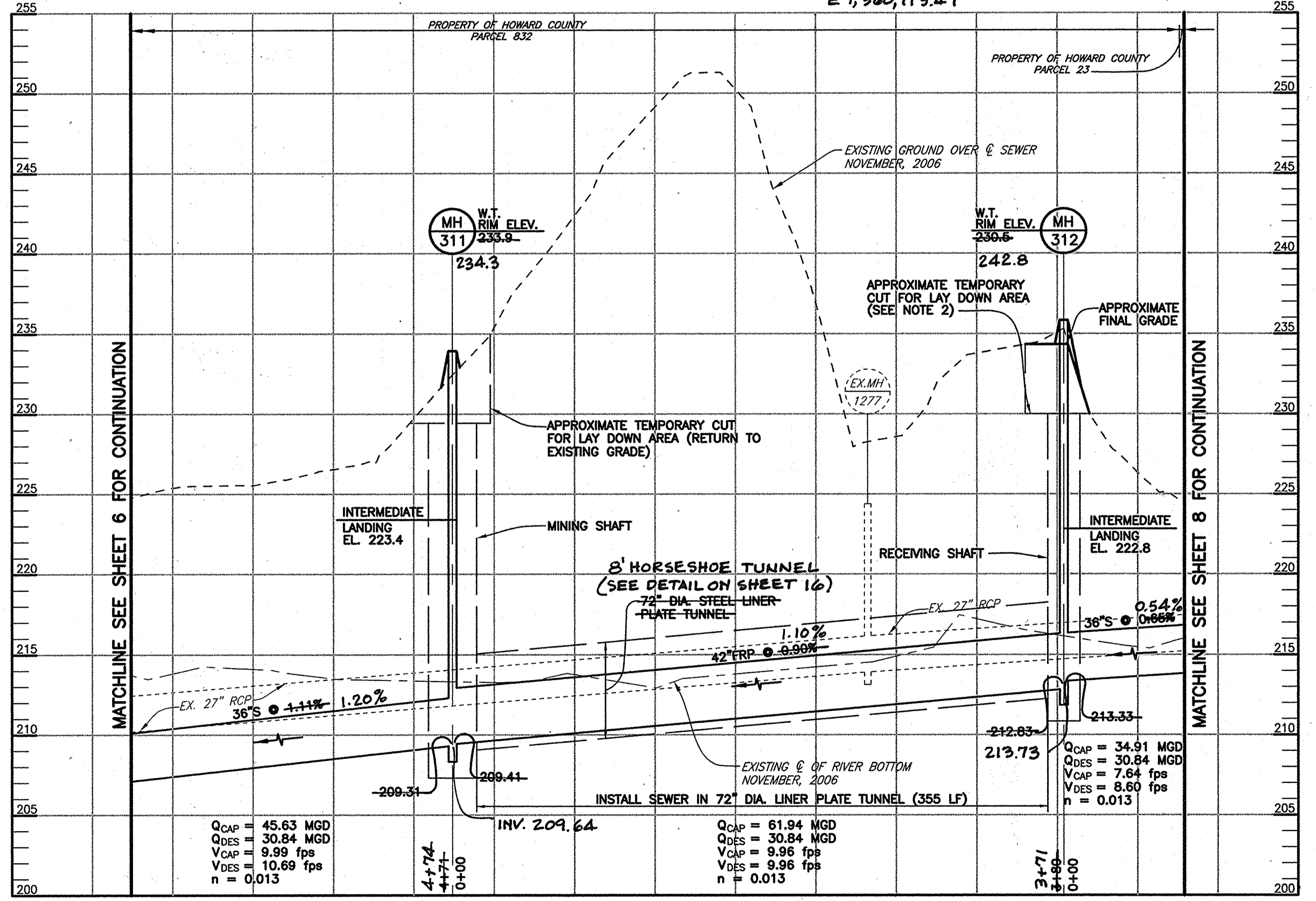
NOTE: EX. SEWER ABANDONED FROM MH 1273 TO MH 316 ( FILLED WITH FLOWABLE FILL )

NOTE: REFER TO TRENCH DETAIL (w/SLOPE STABILIZATION), SHEET 17, FOR SEWER CONSTRUCTION IN SLOPES GREATER THAN 3:1.



- NOTES:
- MINIMUM 12" THICK BRICK BULKHEADS SHALL BE PROVIDED AT EACH END OF THE TUNNEL TO FILL THE SPACE BETWEEN THE CARRIER PIPE AND THE STEEL LINER PLATE.
  - STEEL LINER PLATES SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATION SECTION 963. THE MINIMUM THICKNESS OF THE LINER PLATE SHALL BE 12 GAGE (0.1046").
  - NO WELDING OR CUTTING WILL BE PERMITTED IN THE FIELD.
  - HOLD DOWN ASSEMBLY/STRAP STEEL SHALL BE ASTM A-36, HOT DIPPED GALVANIZED AND SHOP COATED WITH COAL TAR EPOXY. A MINIMUM OF ONE PER PIPE LENGTH AND ONE LOCATED TWO FEET INSIDE EACH END OF TUNNEL. ADDITIONAL STRAPS SHALL BE INSTALLED IF REQUIRED BY THE PIPE MANUFACTURER.
  - ANNULAR SPACE IN LINER PLATE TUNNEL SHALL BE FILLED WITH GROUT, WITH A MINIMUM COMPRESSIVE STRENGTH OF 100 PSI, WITHIN 24 HOURS AFTER A SUCCESSFUL PRESSURE TEST OF THE CARRIER PIPE. CARRIER PIPE SHALL BE FILLED WITH WATER AND CAPPED AT BOTH ENDS DURING GROUTING OPERATION.

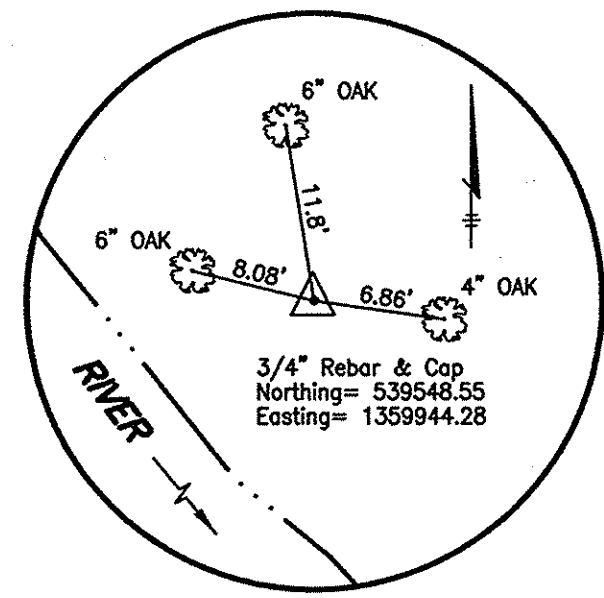
**HOLD DOWN ASSEMBLY FOR STEEL LINER PLATE**  
NO SCALE



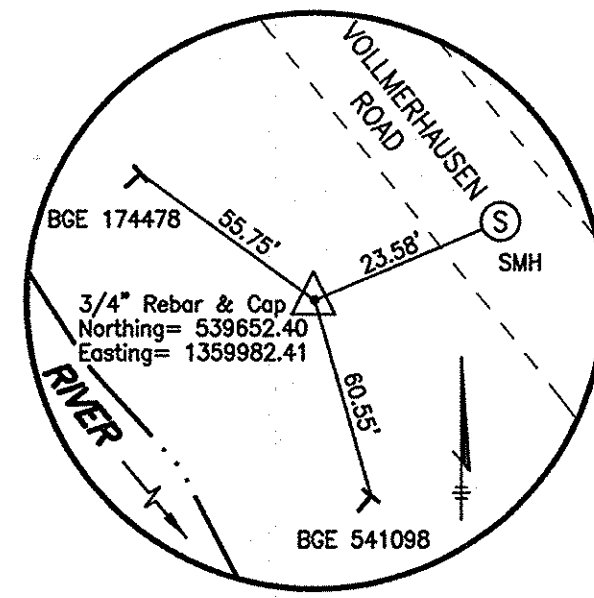
- NOTES:
- SHAFTS SHALL BE BACKFILLED IN ACCORDANCE WITH THE TRENCH DETAIL ON SHEET 17.
  - LAY DOWN AREA AT THE RECEIVING SHAFT SHALL BE MINIMIZED AS MUCH AS POSSIBLE. AREA SHALL BE RETURNED TO EXISTING GRADE AND STABILIZED UTILIZING EXISTING ROCKS/BOULDERS w/AGGREGATE FILL SET AT A MAXIMUM 2' HOR. : 1' VERT. GRADE.

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

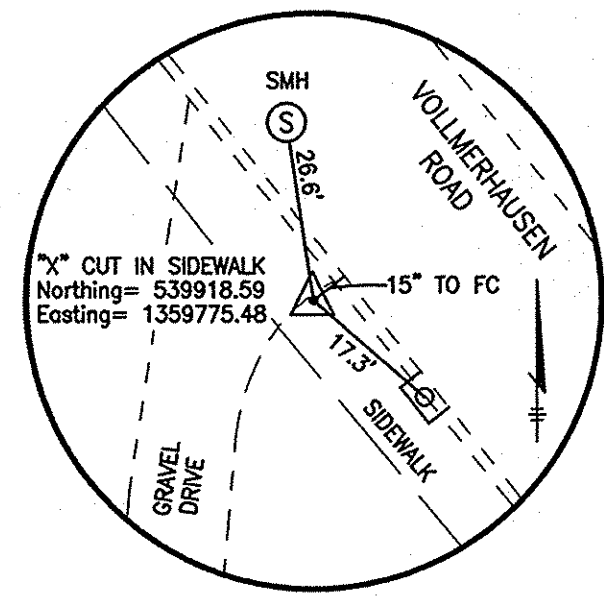
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>Jan 7. 6</i> 5/9/09 DIRECTOR OF PUBLIC WORKS DATE <i>Robert L. Johnson</i> 5/8/09 CHIEF, BUREAU OF ENGINEERING DATE		 GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS SALESBURY • BALTIMORE • LEWIS • SEAFORD • YORK www.gmbnet.com		DES: D.A.V. DRN: M.A.D. CHK: W.B.F. DATE: 5/8/09		<b>PLAN AND PROFILE OF A SEWER MAIN</b>		SCALE AS SHOWN SHEET 7 OF 18	
<i>John C. Brown</i> 5/8/09 CHIEF, BUREAU OF UTILITIES DATE <i>Chris DeRosa</i> 5/8/09 CHIEF, UTILITY DESIGN DIVISION DATE		 ROBERT L. JOHNSON PROFESSIONAL ENGINEER STATE OF MARYLAND LICENSE NO. 11410		DATE: 5/8/09 BY NO. REVISION DATE		600 SCALE MAP NO. 47 BLOCK NO. 4 & 10		LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4533 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	



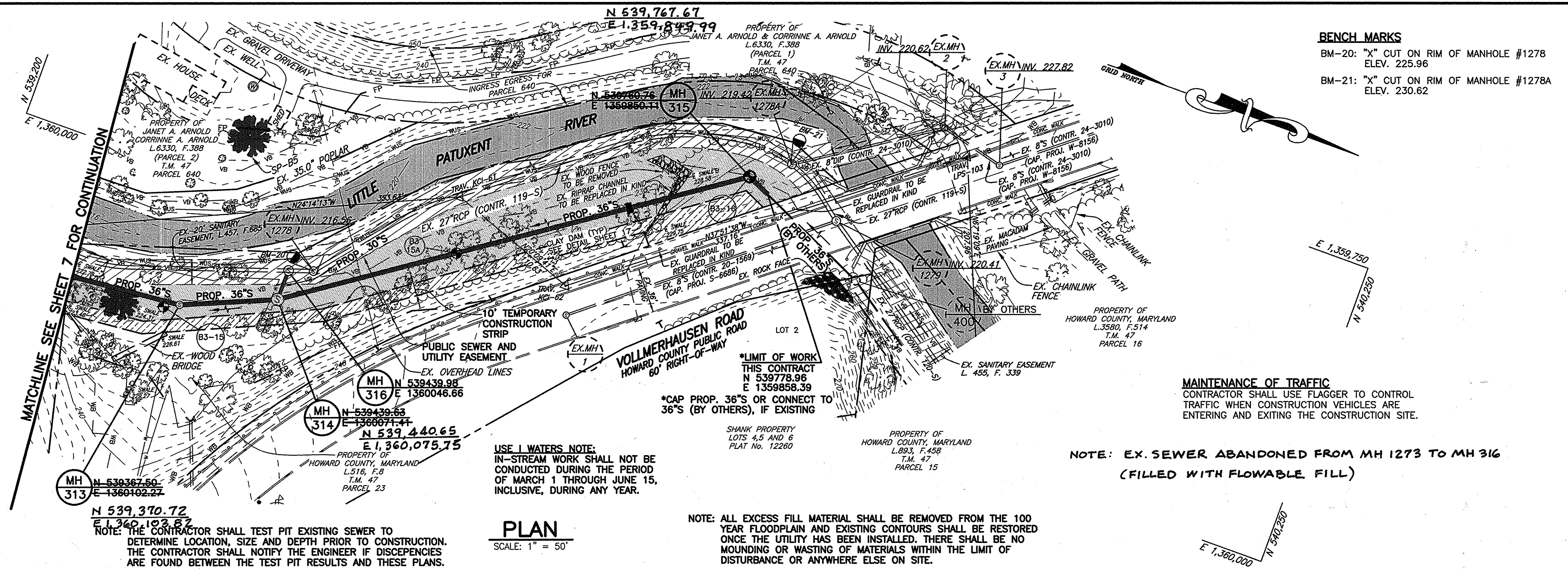
TRAVERSE KCI-61  
NO SCALE



TRAVERSE KCI-62  
NO SCALE



TRAVERSE LPS-103  
NO SCALE



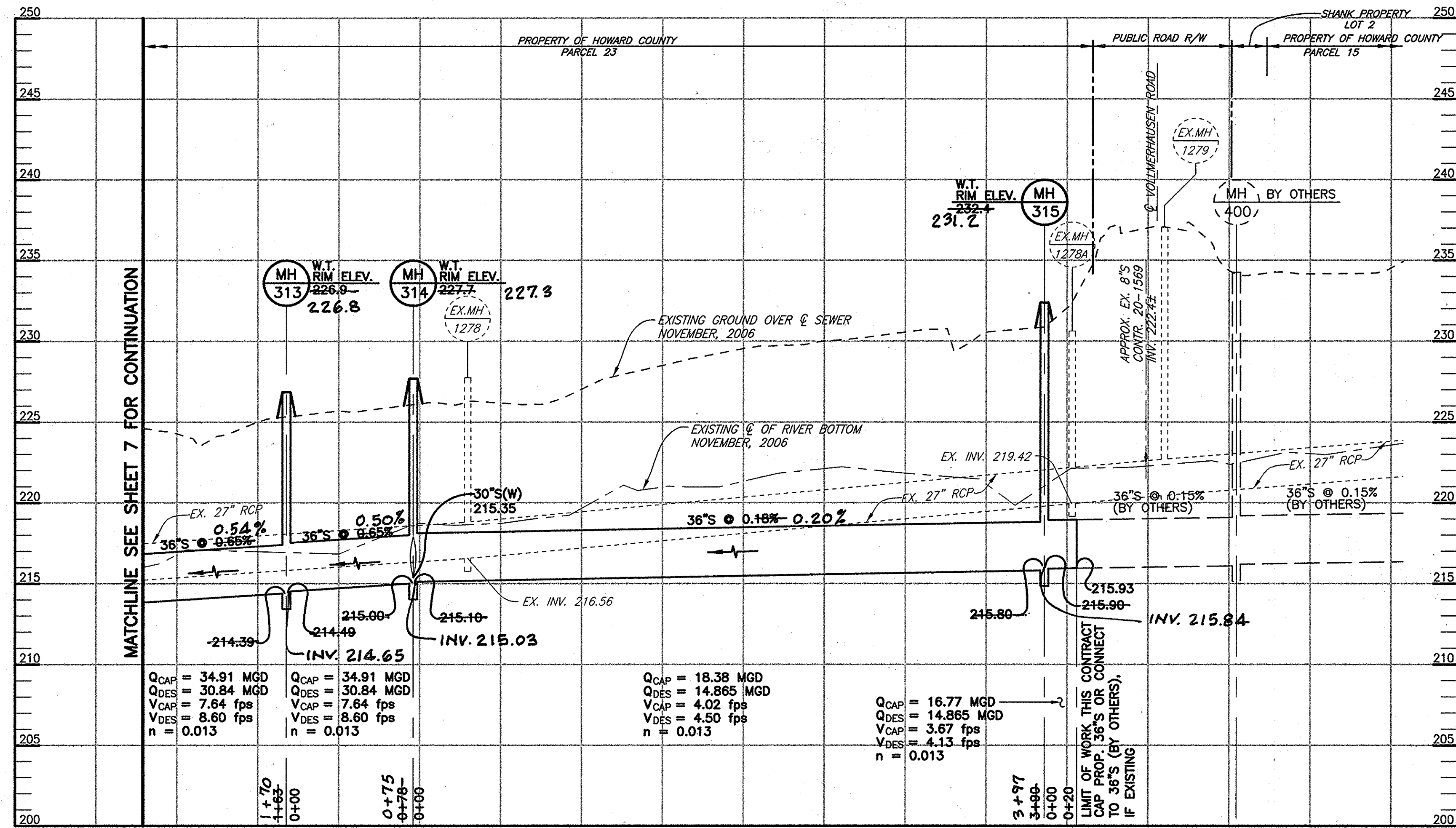
**BENCH MARKS**  
BM-20: "X" CUT ON RIM OF MANHOLE #1278  
ELEV. 225.96  
BM-21: "X" CUT ON RIM OF MANHOLE #1278A  
ELEV. 230.62

**MAINTENANCE OF TRAFFIC**  
CONTRACTOR SHALL USE FLAGGER TO CONTROL TRAFFIC WHEN CONSTRUCTION VEHICLES ARE ENTERING AND EXITING THE CONSTRUCTION SITE.

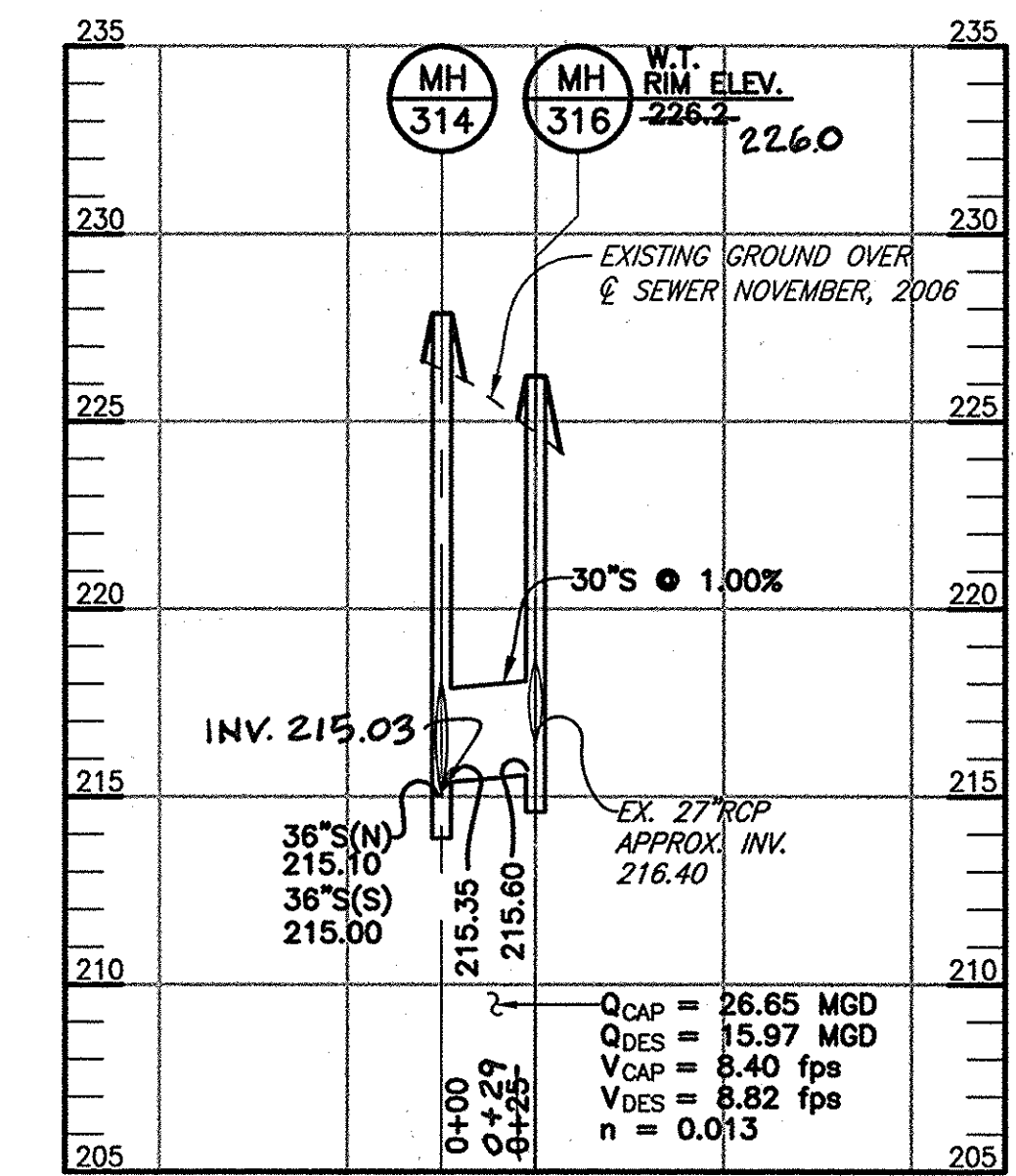
**USE I WATERS NOTE:**  
IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.

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

**PLAN**  
SCALE: 1" = 50'



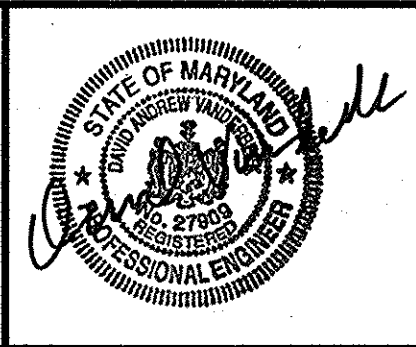
**PROFILE**  
SCALE: HOR.: 1" = 50'  
VERT.: 1" = 5'



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

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
Jan T. ... 5/9/09  
Stalin Chern 5/8/09  
DATE DATE  
CHIEF, BUREAU OF UTILITIES CHIEF, UTILITY DESIGN DIVISION

**GMB**  
GEORGE, MILES & BUHR, LLC  
ARCHITECTS & ENGINEERS  
BALTIMORE • LEWIS • SEAFORD • YORK  
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DES: D.A.V.	
DRN: M.A.D.	
CHK: W.B.F.	
DATE: 5/8/09	
BY	NO.
REVISION	
DATE	

**PLAN AND PROFILE OF A SEWER MAIN**  
600 SCALE MAP NO. 47  
BLOCK NO. 4 & 10

**LITTLE PATUXENT  
PARALLEL INTERCEPTOR SEWER**  
CAPITAL PROJECT NO. S-6175  
CONTRACT NO. 20-4533  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 8 OF 18

G:\DRAWINGS\2006\212\_LITTLE\_PATUXENT\_SEWER\DWG\CURRENT\Comm\_30c-18-PLAN.dwg, 5/7/2009 12:20:14 PM, HP DesignJah 1050CM by HP.pcd



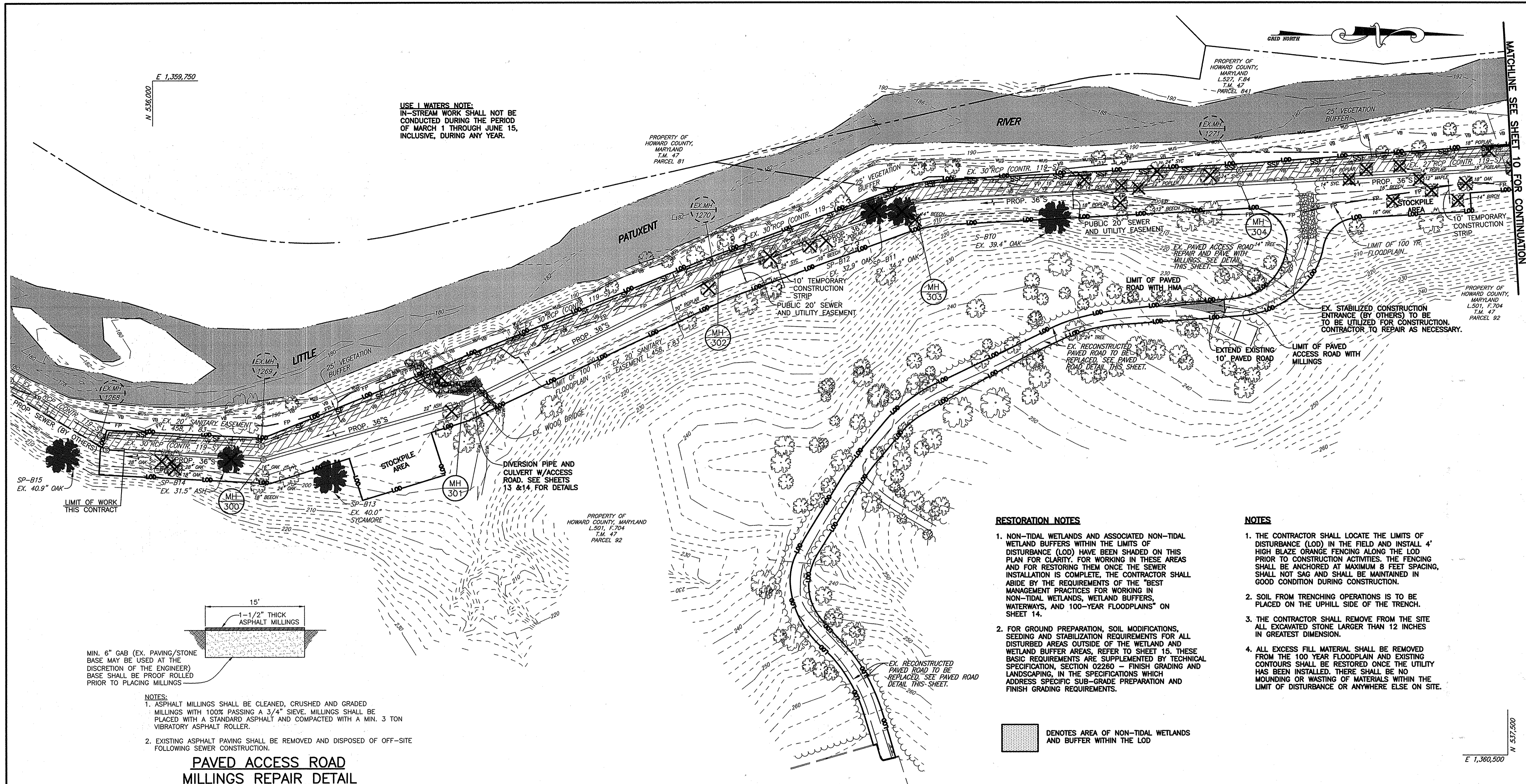
E 1,359,750  
N 536,000

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

PROPERTY OF HOWARD COUNTY, MARYLAND  
T.M. 47  
PARCEL 81

PROPERTY OF HOWARD COUNTY, MARYLAND  
L.527, F.84  
T.M. 47  
PARCEL 84

MATCHLINE SEE SHEET 10 FOR CONTINUATION

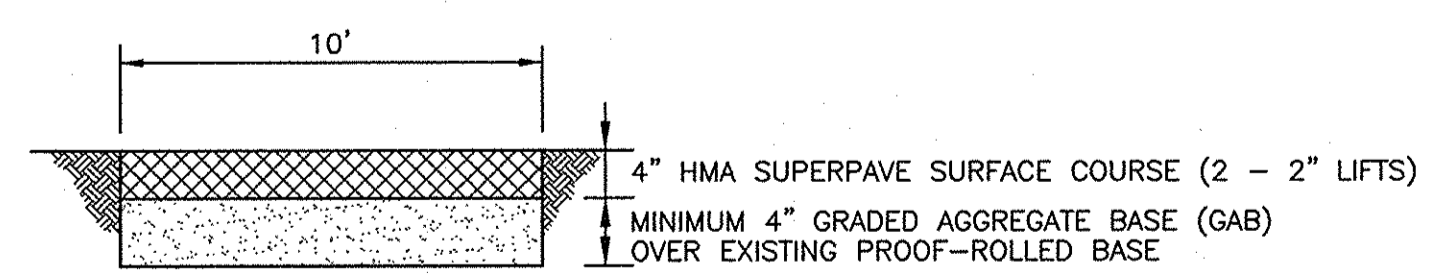


MIN. 6" GAB (EX. PAVING/STONE BASE MAY BE USED AT THE DISCRETION OF THE ENGINEER) BASE SHALL BE PROOF ROLLED PRIOR TO PLACING MILLINGS

**NOTES:**

- ASPHALT MILLINGS SHALL BE CLEANED, CRUSHED AND GRADED MILLINGS WITH 100% PASSING A 3/4" SIEVE. MILLINGS SHALL BE PLACED WITH A STANDARD ASPHALT AND COMPACTED WITH A MIN. 3 TON VIBRATORY ASPHALT ROLLER.
- EXISTING ASPHALT PAVING SHALL BE REMOVED AND DISPOSED OF OFF-SITE FOLLOWING SEWER CONSTRUCTION.

**PAVED ACCESS ROAD MILLINGS REPAIR DETAIL**  
NO SCALE



NOTE: EXISTING ASPHALT PAVING SHALL BE REMOVED AND DISPOSED OF OFF-SITE FOLLOWING SEWER CONSTRUCTION.

**PAVED ROAD DETAIL**  
NO SCALE

**RESTORATION NOTES**

- NON-TIDAL WETLANDS AND ASSOCIATED NON-TIDAL WETLAND BUFFERS WITHIN THE LIMITS OF DISTURBANCE (LOD) HAVE BEEN SHADED ON THIS PLAN FOR CLARITY. FOR WORKING IN THESE AREAS AND FOR RESTORING THEM ONCE THE SEWER INSTALLATION IS COMPLETE, THE CONTRACTOR SHALL ABIDE BY THE REQUIREMENTS OF THE "BEST MANAGEMENT PRACTICES FOR WORKING IN NON-TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS" ON SHEET 14.
- FOR GROUND PREPARATION, SOIL MODIFICATIONS, SEEDING AND STABILIZATION REQUIREMENTS FOR ALL DISTURBED AREAS OUTSIDE OF THE WETLAND AND WETLAND BUFFER AREAS, REFER TO SHEET 15. THESE BASIC REQUIREMENTS ARE SUPPLEMENTED BY TECHNICAL SPECIFICATION, SECTION 02260 - FINISH GRADING AND LANDSCAPING, IN THE SPECIFICATIONS WHICH ADDRESS SPECIFIC SUB-GRADE PREPARATION AND FINISH GRADING REQUIREMENTS.

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

**NOTES**

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

NOTE: THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND REPLACING ANY EXISTING FENCES, SIGNS, CONCRETE CURB, DRIVEWAYS, PAVING, CURB AND GUTTER PAN, WALKWAYS, ETC., DAMAGED OR REMOVED DURING CONSTRUCTION. ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ORIGINAL OR BETTER CONDITION.

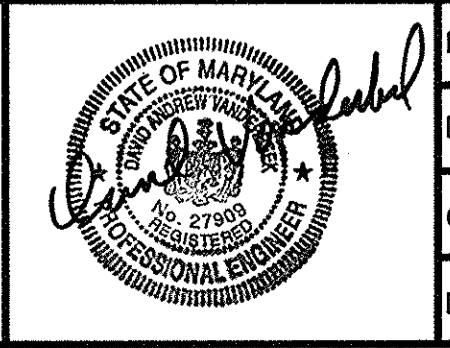
**PLAN**  
SCALE: 1" = 50'

E 1,360,500  
N 537,500

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>John A. ...</i> DIRECTOR OF PUBLIC WORKS	<i>Robert ...</i> CHIEF, BUREAU OF ENGINEERING
DATE: 5/8/09	DATE: 5/8/09
<i>John ...</i> CHIEF, BUREAU OF UTILITIES	<i>...</i> CHIEF, UTILITY DESIGN DIVISION
DATE: 5/13/09	DATE: 5/13/09

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



DES: D.A.V.			
DRN: M.A.D.			
CHK: W.B.F.			
DATE: 5/8/09	BY:	NO.:	REVISION:

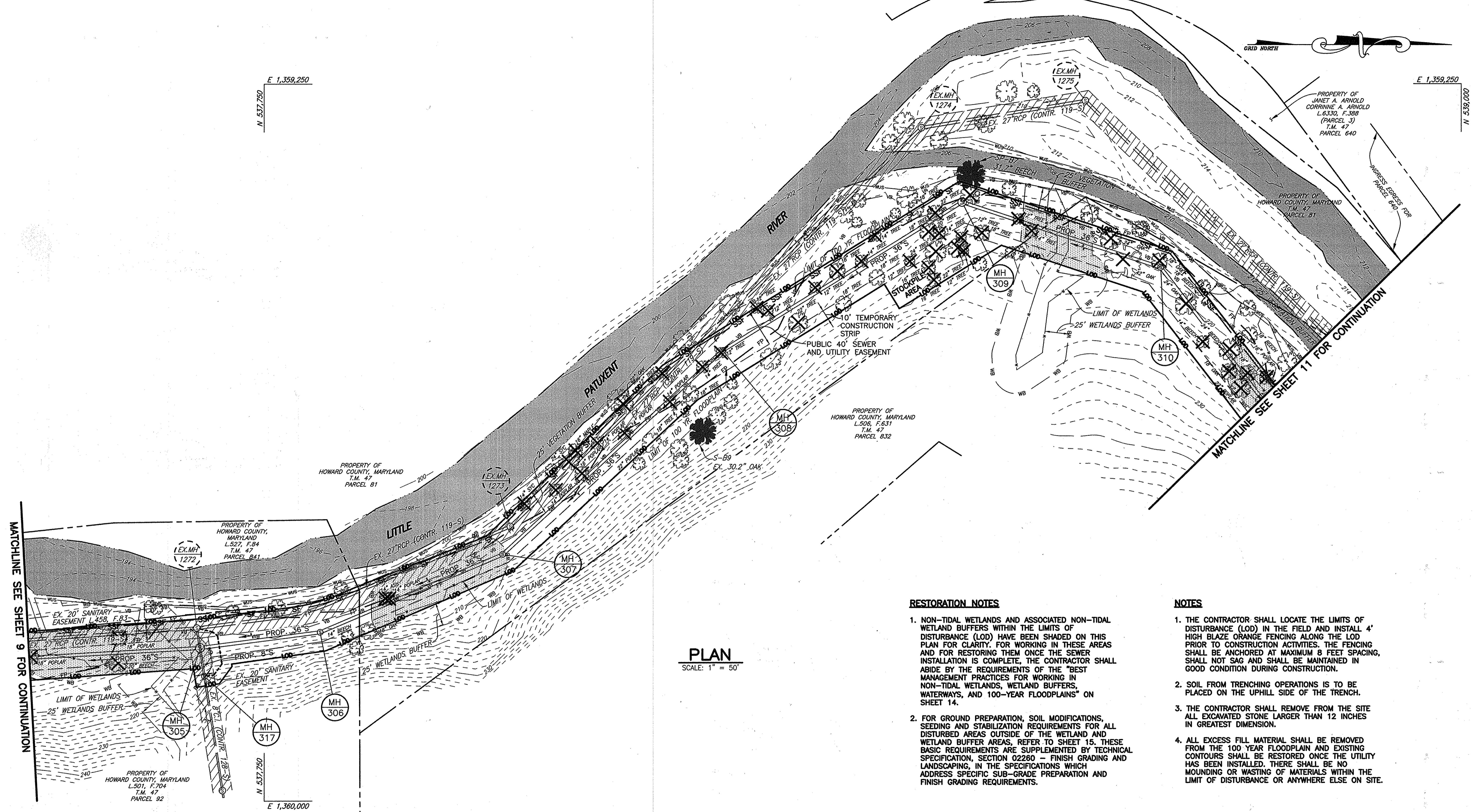
EROSION AND SEDIMENT CONTROL PLAN		DATE:	600 SCALE MAP NO. 47	BLOCK NO. 4 & 10
		DATE:		

LITTLE PATUXENT  
PARALLEL INTERCEPTOR SEWER  
CAPITAL PROJECT NO. S-6175  
CONTRACT NO. 20-4533  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 9 OF 18

MATCHLINE SEE SHEET 9 FOR CONTINUATION

MATCHLINE SEE SHEET 11 FOR CONTINUATION



**PLAN**  
SCALE: 1" = 50'

**RESTORATION NOTES**

1. NON-TIDAL WETLANDS AND ASSOCIATED NON-TIDAL WETLAND BUFFERS WITHIN THE LIMITS OF DISTURBANCE (LOD) HAVE BEEN SHADED ON THIS PLAN FOR CLARITY. FOR WORKING IN THESE AREAS AND FOR RESTORING THEM ONCE THE SEWER INSTALLATION IS COMPLETE, THE CONTRACTOR SHALL ABIDE BY THE REQUIREMENTS OF THE "BEST MANAGEMENT PRACTICES FOR WORKING IN NON-TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS" ON SHEET 14.
2. FOR GROUND PREPARATION, SOIL MODIFICATIONS, SEEDING AND STABILIZATION REQUIREMENTS FOR ALL DISTURBED AREAS OUTSIDE OF THE WETLAND AND WETLAND BUFFER AREAS, REFER TO SHEET 15. THESE BASIC REQUIREMENTS ARE SUPPLEMENTED BY TECHNICAL SPECIFICATION, SECTION 02260 - FINISH GRADING AND LANDSCAPING, IN THE SPECIFICATIONS WHICH ADDRESS SPECIFIC SUB-GRADE PREPARATION AND FINISH GRADING REQUIREMENTS.

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

**NOTES**

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

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*John C. ...* 5/8/09  
DIRECTOR OF PUBLIC WORKS DATE

*Paul ...* 5/8/09  
CHIEF, BUREAU OF ENGINEERING DATE

*John C. ...* 5/8/09  
CHIEF, BUREAU OF UTILITIES DATE

*John ...* 5/8/09  
CHIEF, UTILITY DESIGN DIVISION DATE

**GMB**  
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BALTIMORE • BALTIMORE • LEWES • SEAFORD • YORK  
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DES: D.A.V.					
DRN: M.A.D.					
CHK: W.B.F.					
DATE: 5/8/09	BY	NO.	REVISION	DATE	

**EROSION AND SEDIMENT CONTROL PLAN**

600 SCALE MAP NO. 47 BLOCK NO. 4 & 10

**LITTLE PATUXENT  
PARALLEL INTERCEPTOR SEWER**  
CAPITAL PROJECT NO. S-6175  
CONTRACT NO. 20-4533  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

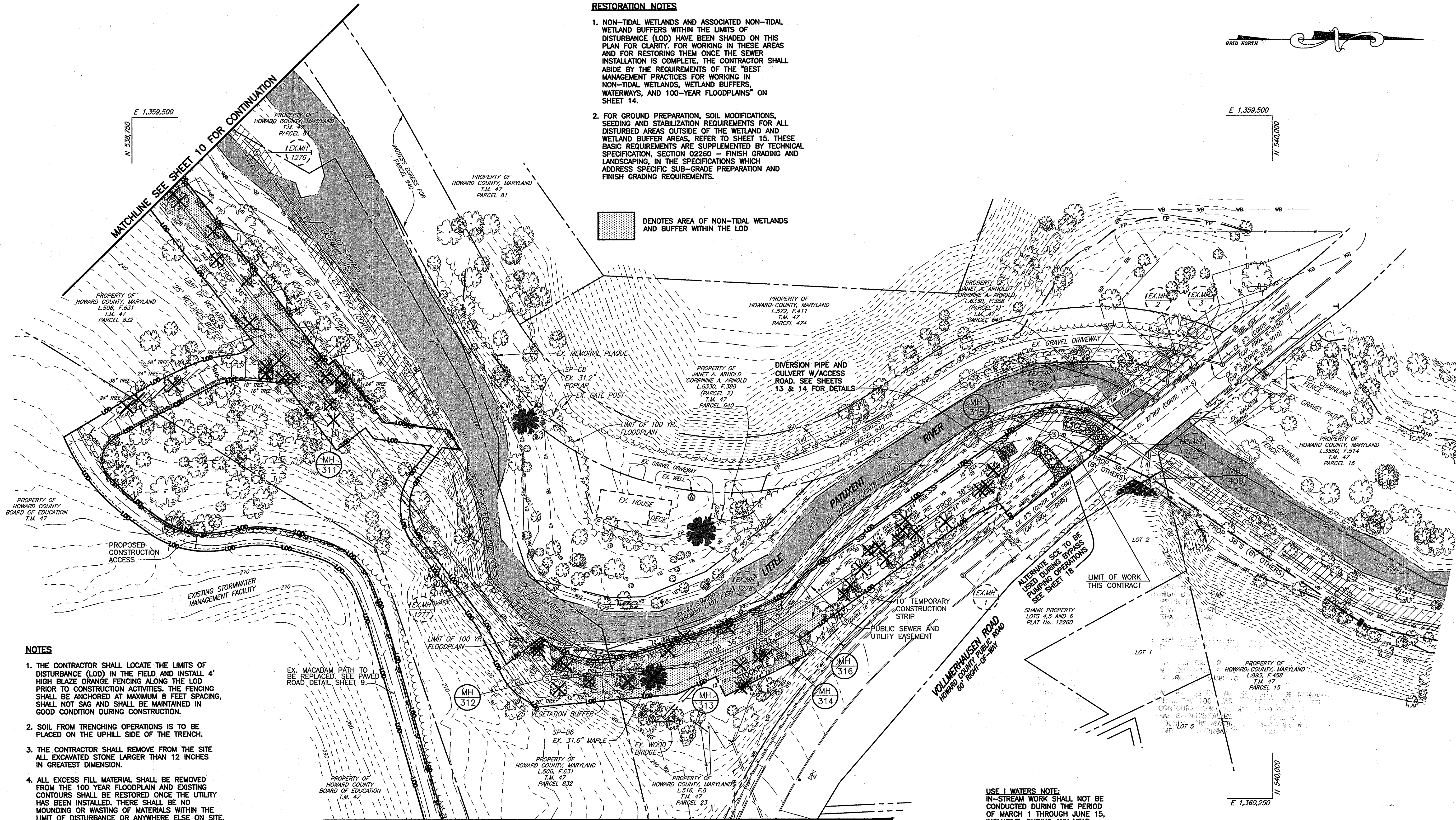
SCALE AS SHOWN  
SHEET 10 OF 18

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**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 14.
2. FOR GROUND PREPARATION, SOIL MODIFICATIONS, SEEDING AND STABILIZATION REQUIREMENTS FOR ALL DISTURBED AREAS OUTSIDE OF THE WETLAND AND WETLAND BUFFER AREAS, REFER TO SHEET 15. THESE BASIC REQUIREMENTS ARE SUPPLEMENTED BY TECHNICAL SPECIFICATION, SECTION 02260 - FINISH GRADING AND LANDSCAPING, IN THE SPECIFICATIONS WHICH ADDRESS SPECIFIC SUB-GRADE PREPARATION AND FINISH GRADING REQUIREMENTS.

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



**NOTES**





1. THE CONTRACTOR SHALL LOCATE THE LIMITS OF DISTURBANCE (LOD) IN THE FIELD AND INSTALL 4' HIGH BLAZE ORANGE FENCING ALONG THE LOD PRIOR TO CONSTRUCTION ACTIVITIES. THE FENCING SHALL BE ANCHORED AT MAXIMUM 8 FEET SPACING, SHALL NOT SAG AND SHALL BE MAINTAINED IN GOOD CONDITION DURING CONSTRUCTION.
2. SOIL FROM TRENCHING OPERATIONS IS TO BE PLACED ON THE UPHILL SIDE OF THE TRENCH.
3. THE CONTRACTOR SHALL REMOVE FROM THE SITE ALL EXCAVATED STONE LARGER THAN 12 INCHES IN GREATEST DIMENSION.
4. ALL EXCESS FILL MATERIAL SHALL BE REMOVED FROM THE 100 YEAR FLOODPLAIN AND EXISTING CONTOURS SHALL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. THERE SHALL BE NO MOUNDING OR WASTING OF MATERIALS WITHIN THE LIMIT OF DISTURBANCE OR ANYWHERE ELSE ON SITE.
5. PROPOSED CONSTRUCTION ACCESS FROM THE EXISTING MACADAM PATH TO THE SEWER EASEMENT - REMOVE ANY STONE USED FOR TEMPORARY STABILIZATION DURING CONSTRUCTION, RESTORE WITH TOPSOIL AND PERMANENTLY STABILIZE THE AREA WITH SEED AND MULCH OR SOD.

EX. MACADAM PATH TO BE REPLACED, SEE PAVED ROAD DETAIL SHEET 9.

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

**PLAN**  
SCALE: 1" = 50'

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

 5/9/09  
 DIRECTOR OF PUBLIC WORKS DATE  
 5/8/09  
 CHIEF, BUREAU OF ENGINEERING DATE  
 5/8/09  
 CHIEF, BUREAU OF UTILITIES DATE  
 5/8/09  
 CHIEF, UTILITY DESIGN DIVISION DATE

**GMB**

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



DES: D.A.V.

DRN: M.A.D.

CHK: W.B.F.

DATE: 5/8/09

BY NO.

REVISION

EROSION AND SEDIMENT  
CONTROL PLAN

600 SCALE MAP NO. 47 BLOCK NO. 4 & 10

LITTLE PATUXENT  
PARALLEL INTERCEPTOR SEWER  
CAPITAL PROJECT NO. S-6175  
CONTRACT NO. 20-4533  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

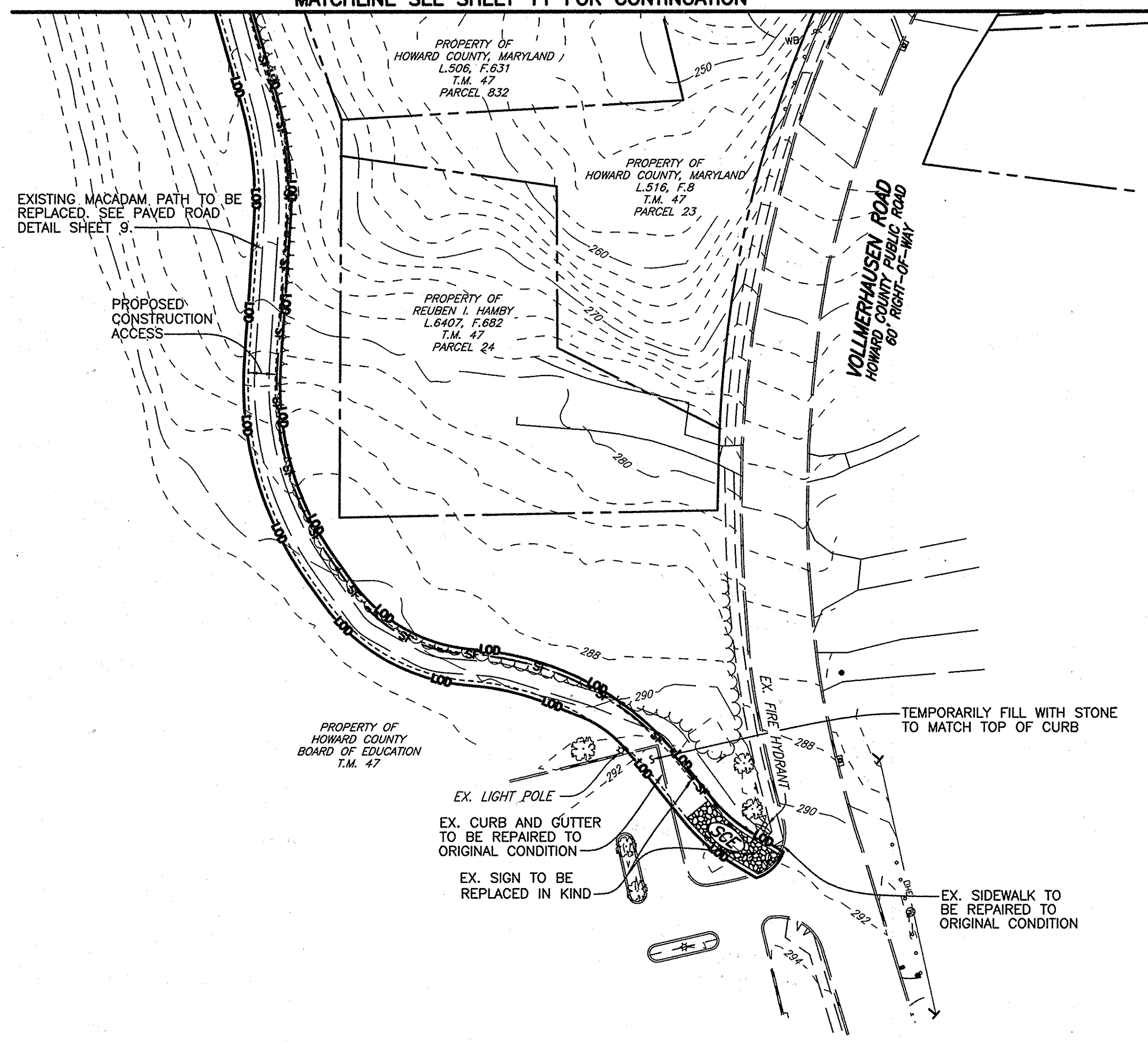
SHEET  
11 OF 18



E 1,360,250  
N 539,750

E 1,360,250  
N 539,750

MATCHLINE SEE SHEET 11 FOR CONTINUATION



E 1,360,750  
N 539,750

**NOTES**

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

**PLAN**  
SCALE: 1" = 50'

**NOTES:**

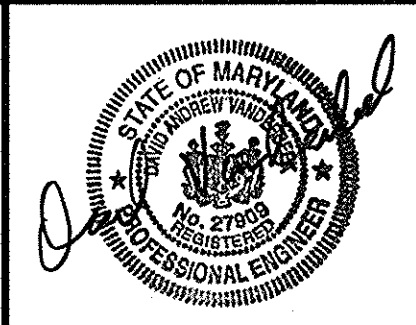
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND REPLACING ANY EXISTING FENCES, SIGNS, CONCRETE CURB, DRIVEWAYS, PAVING, CURB AND GUTTER PAN, WALKWAYS, ETC., DAMAGED OR REMOVED DURING CONSTRUCTION. ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ORIGINAL OR BETTER CONDITION.
2. NO PARKING OF CONSTRUCTION VEHICLES OR CONTRACTOR EMPLOYEE VEHICLES ON THE SCHOOL PARKING LOT.
3. THIS ACCESS ROAD IS LOCATED WITHIN THE PROPERTY OF THE PATUXENT MIDDLE SCHOOL. THE USE OF THIS ACCESS ROAD SHALL NOT BE ALLOWED BETWEEN 6:30 AM AND 8:30 AM AND BETWEEN 1:30 PM AND 3:30 PM. THIS RESTRICTION SHALL BE IN EFFECT DURING ALL WEEKDAYS (MONDAY TO FRIDAY) DURING THE SCHOOL YEAR (APPROXIMATELY AUGUST 31, 2009 TO JUNE 16, 2010).

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Jan 7* 5/8/09  
DIRECTOR OF PUBLIC WORKS DATE

*Paul H. Johnson* 5/8/09  
CHIEF, BUREAU OF ENGINEERING DATE

**GMB**  
GEORGE, MILES & BUHR, LLC  
ARCHITECTS & ENGINEERS  
SAUSURRY • BALTIMORE • LEWES • SEAFORD • YORK  
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DES: D.A.V.			
DRN: M.A.D.			
CHK: W.B.F.			
DATE: 5/8/09	BY	NO.	REVISION

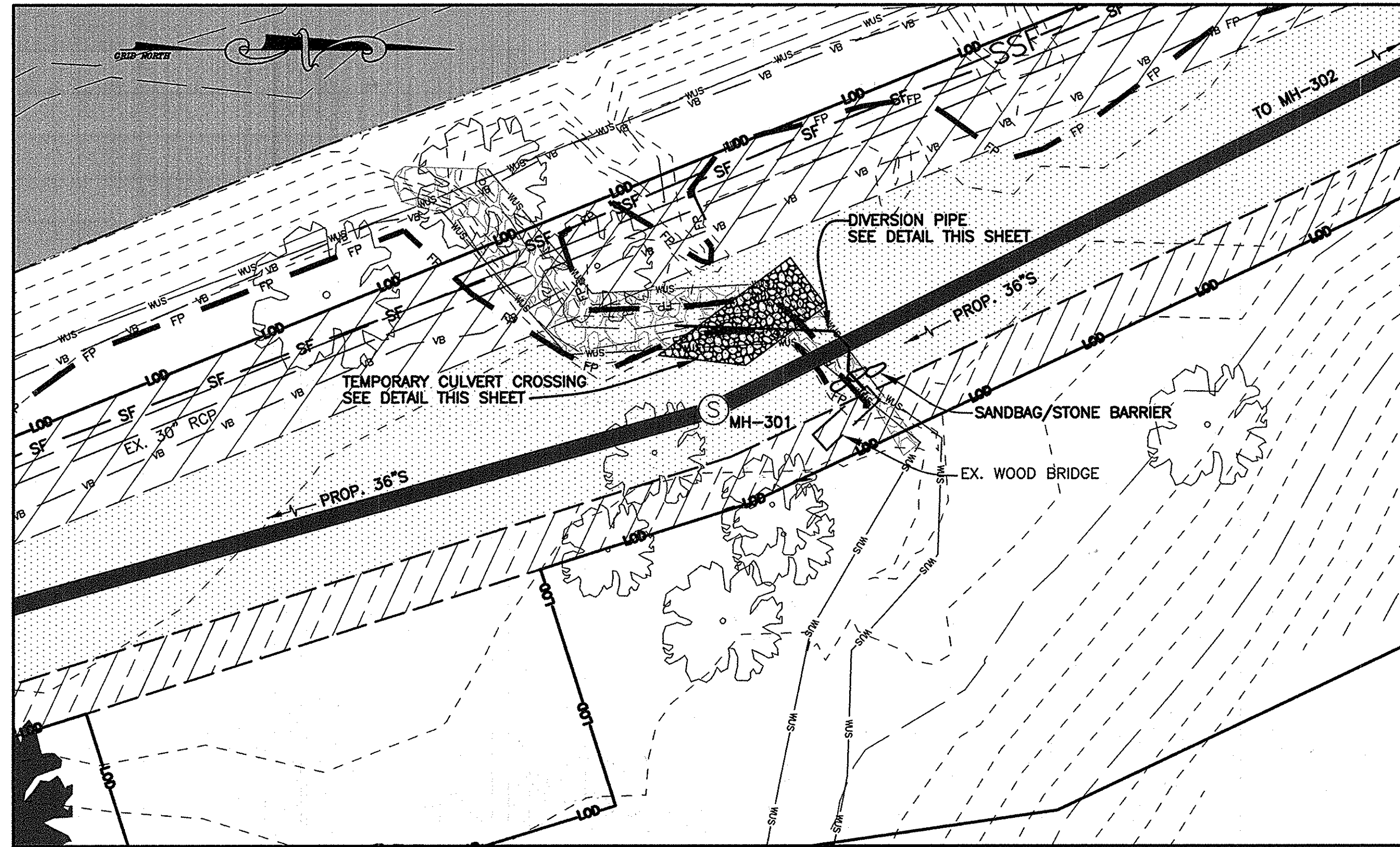
**EROSION AND SEDIMENT CONTROL PLAN**

600 SCALE MAP NO. 47 BLOCK NO. 4 & 10

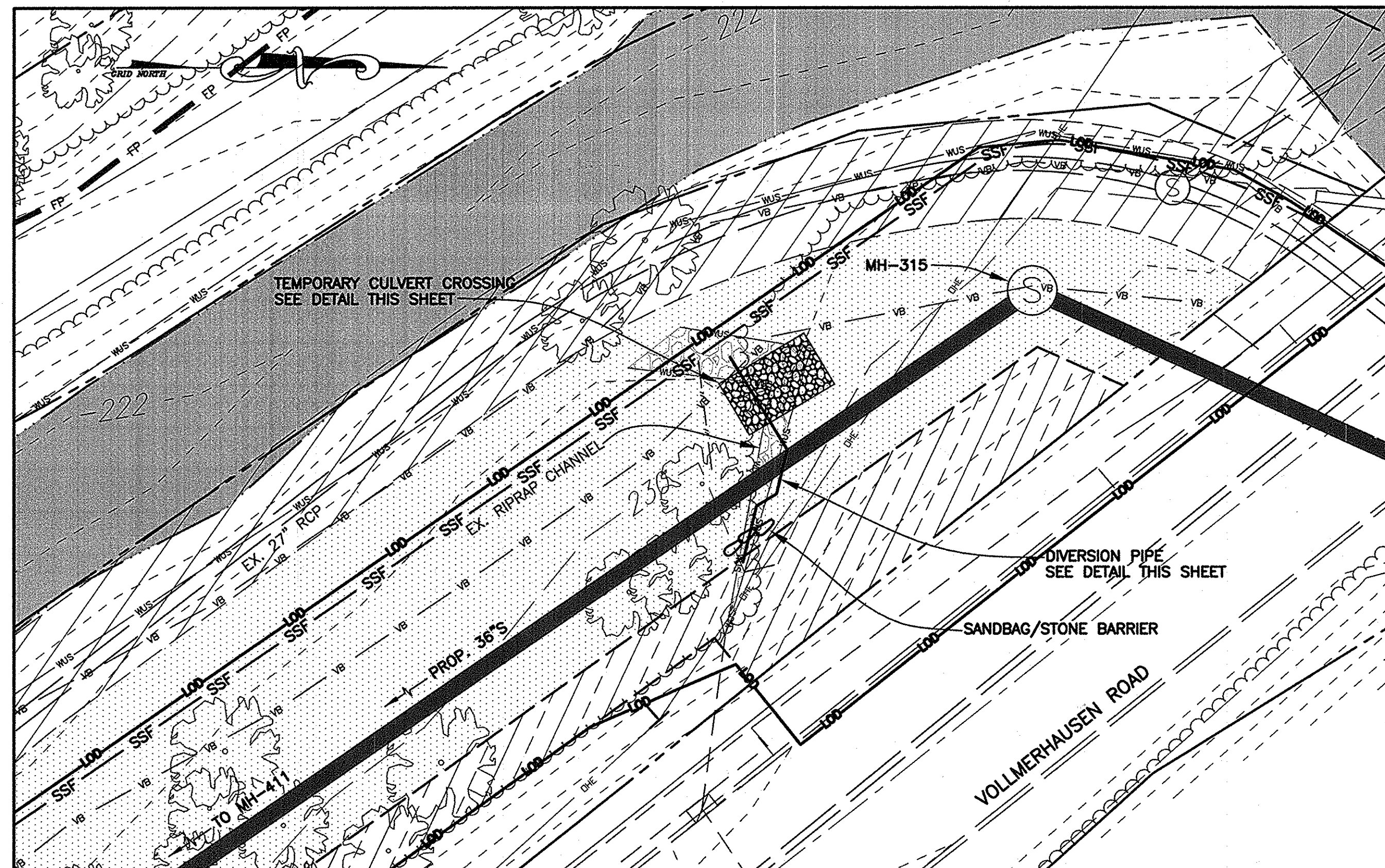
**LITTLE PATUXENT  
PARALLEL INTERCEPTOR SEWER**  
CAPITAL PROJECT NO. S-6175  
CONTRACT NO. 20-4533  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 12 OF 18

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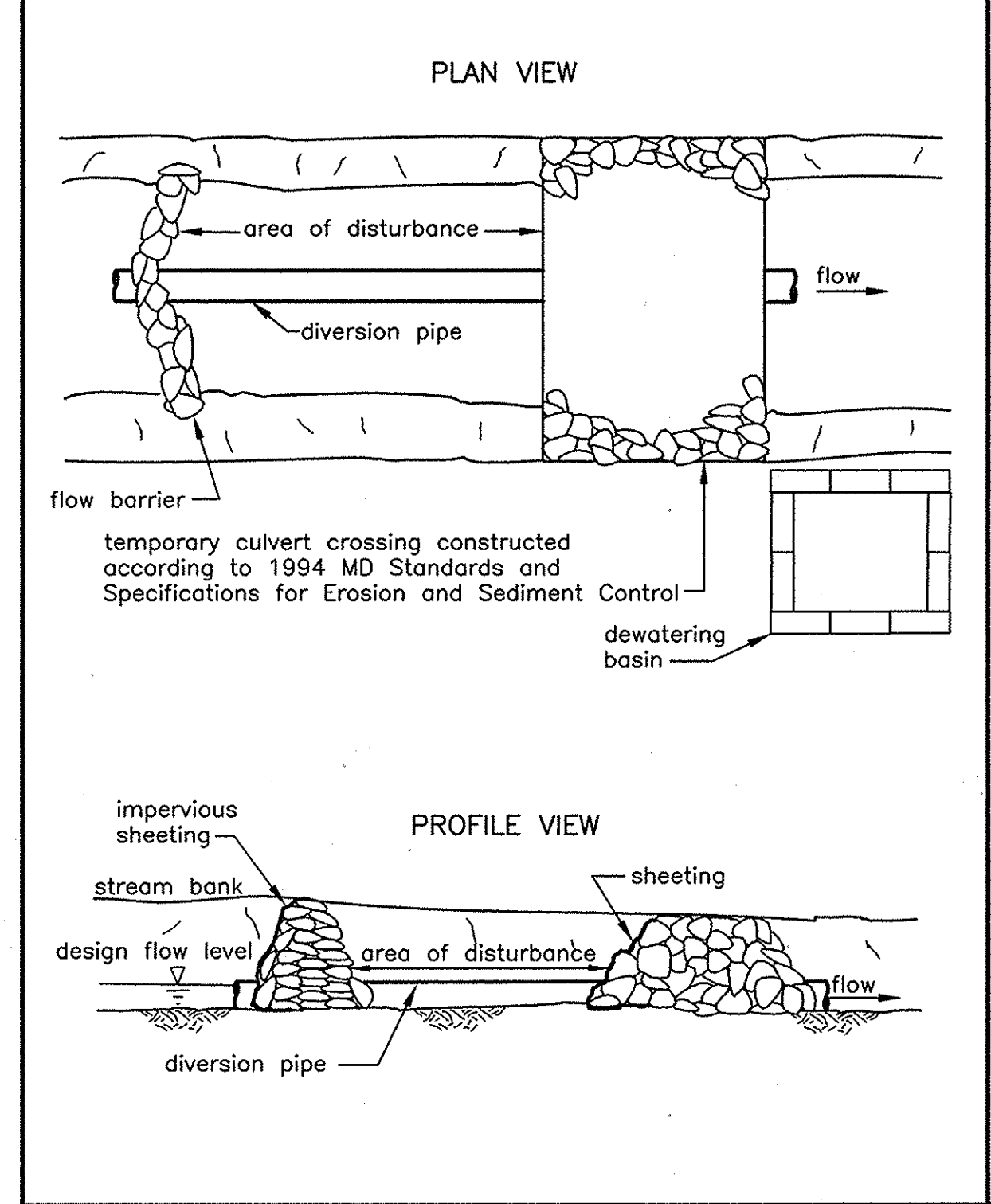


**STREAM CROSSING PLAN — MH-301 TO MH-302**  
SCALE: 1"=20'



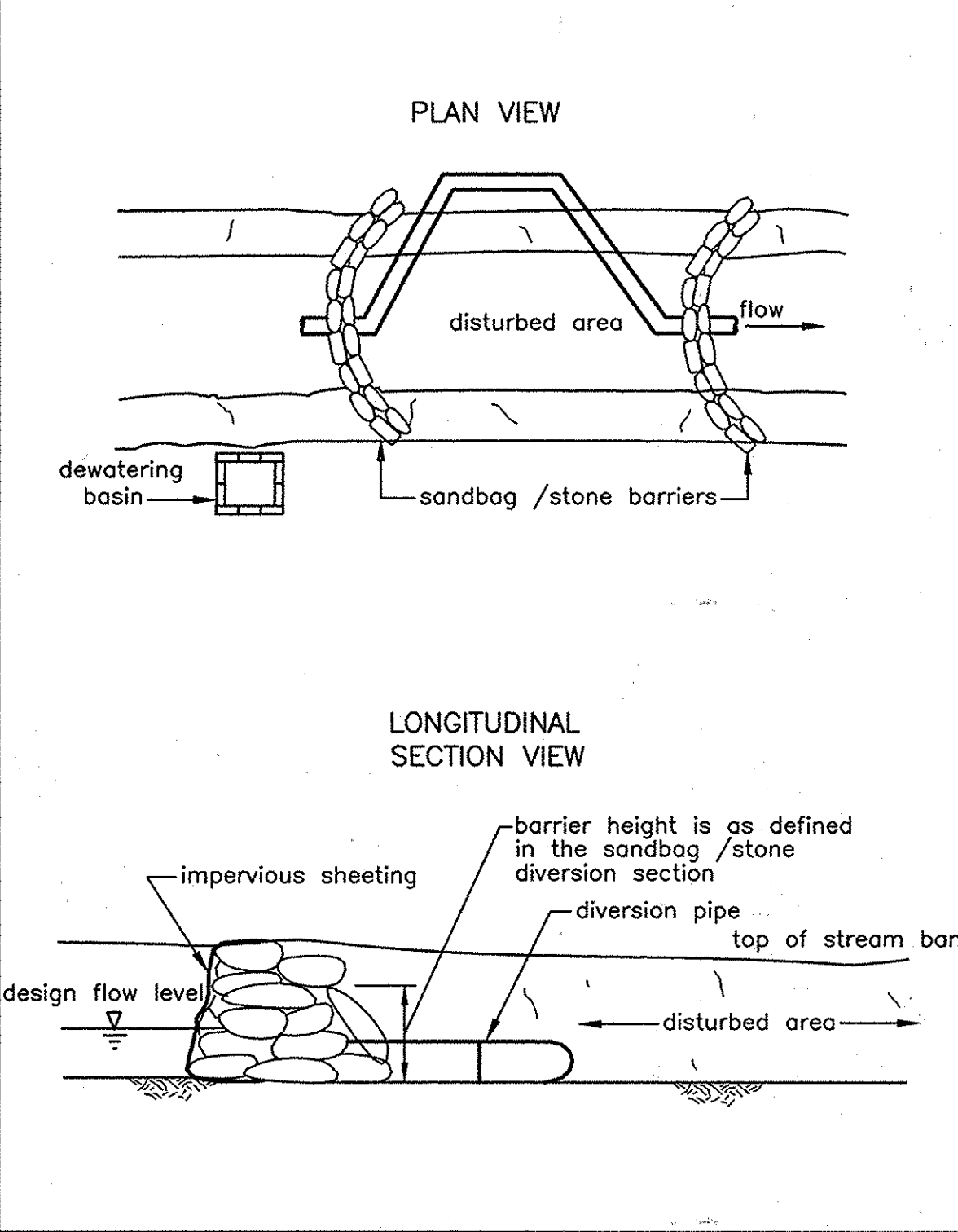
**STREAM CROSSING PLAN — MH-314 TO MH-315**  
SCALE: 1"=20'

**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



**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

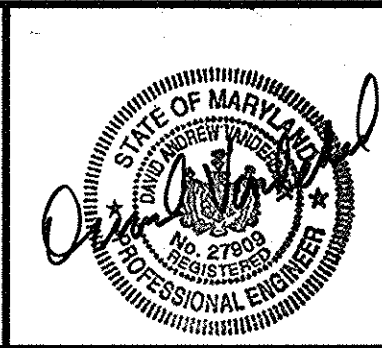
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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND


 5/8/09  
 DIRECTOR OF PUBLIC WORKS DATE  

 5/8/09  
 CHIEF, BUREAU OF ENGINEERING DATE


 5/8/09  
 CHIEF, BUREAU OF UTILITIES DATE  

 5/8/09  
 CHIEF, UTILITY DESIGN DIVISION DATE

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DES: D.A.V.			
DRN: M.A.D.			
CHK: W.B.F.			
DATE: 5/8/09	BY	NO.	REVISION

**STREAM CROSSING DETAILS**

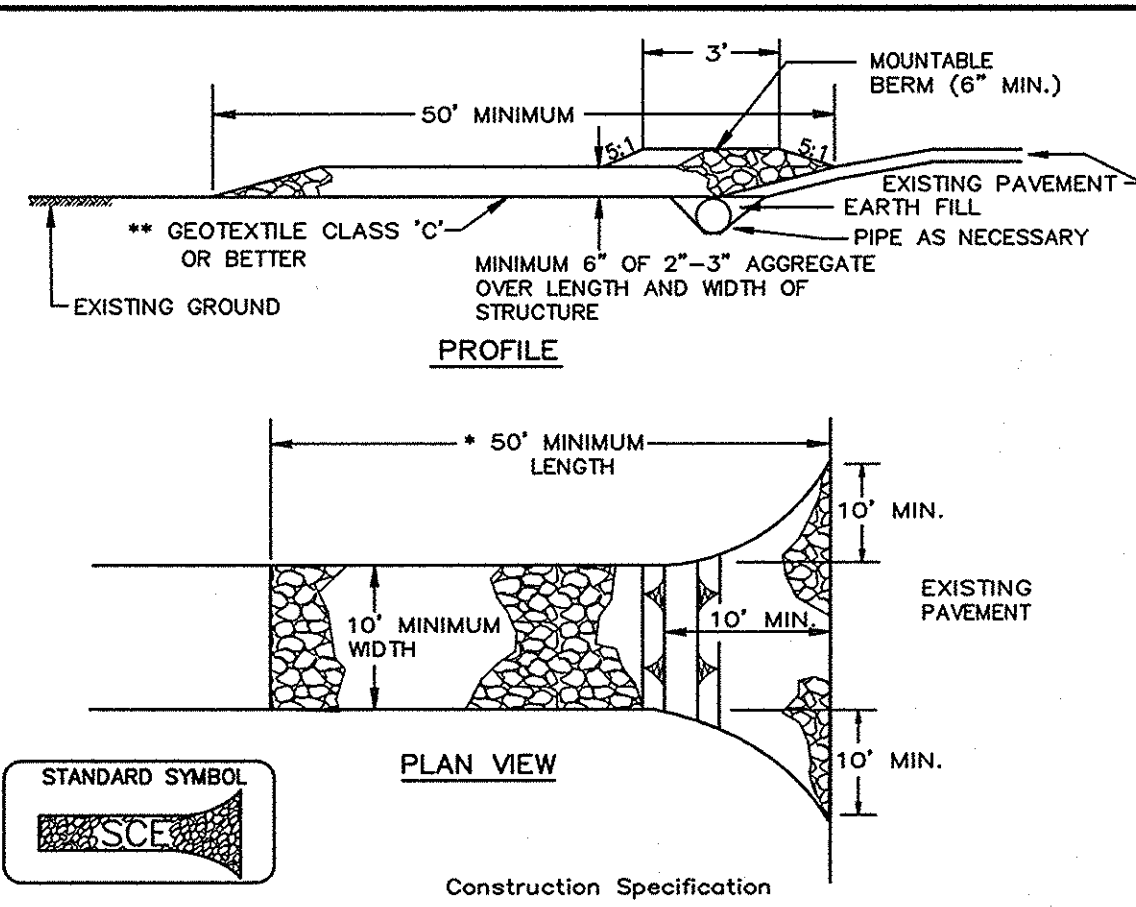
600 SCALE MAP NO. 47 BLOCK NO. 4 & 10

**LITTLE PATUXENT  
PARALLEL INTERCEPTOR SEWER**  
 CAPITAL PROJECT NO. S-6175  
 CONTRACT NO. 20-4533  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 13 OF 18

AS-BUILT: 1-31-2012

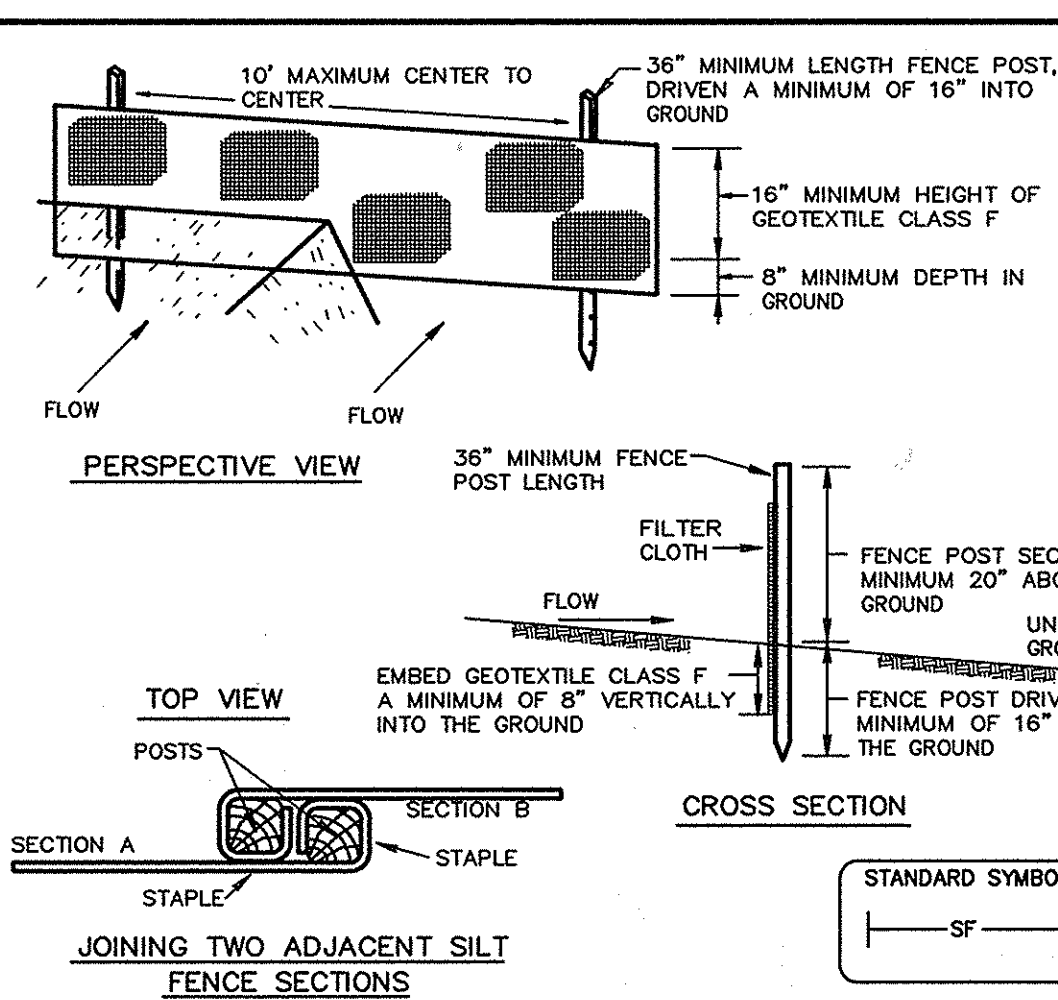
DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



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

DETAIL 22 - SILT FENCE



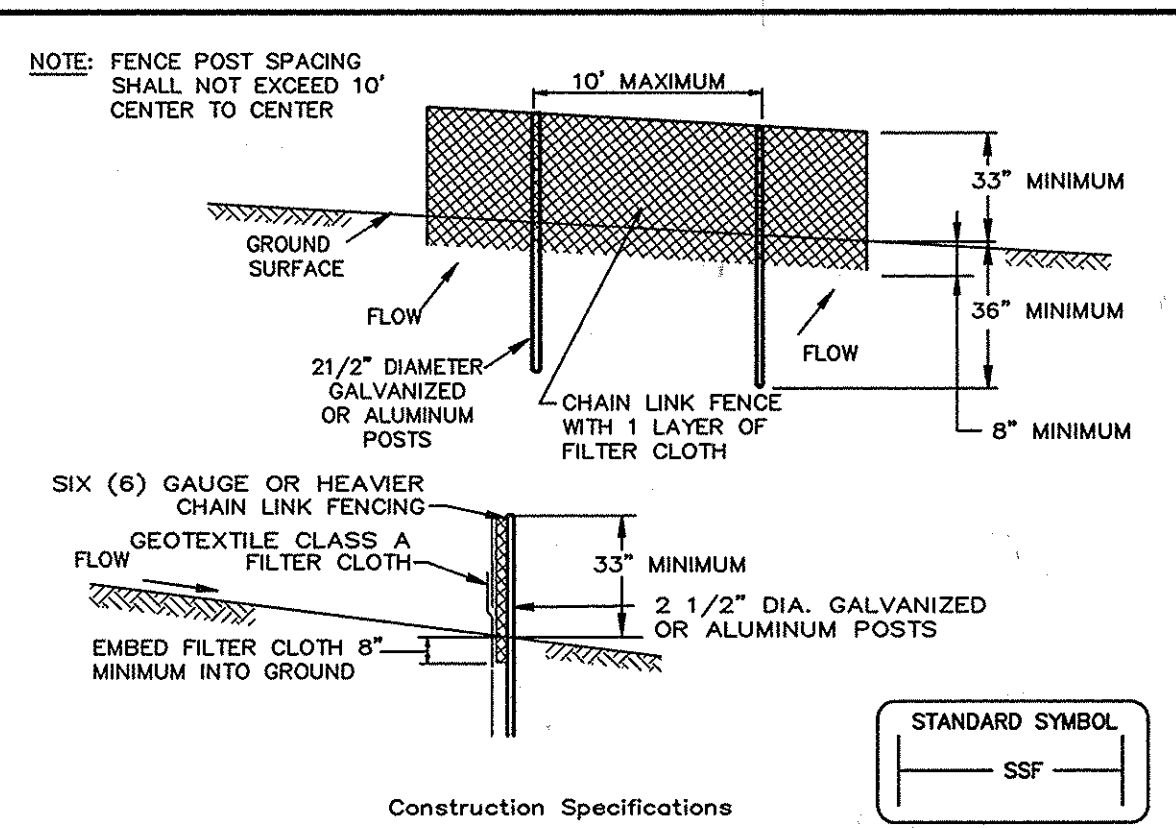
- Construction Specifications
- Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pound per linear foot.
  - Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

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

- Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
- 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

DETAIL 33 - SUPER SILT FENCE



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

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

STANDARD SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
- 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 STEEPER THAN 3:1. B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SO2, TEMPORARY SEEDING, AND MULCHING (SEC. C). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMSSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:
 

TOTAL AREA OF SITE	6.7 ACRES
AREA DISTURBED	6.7 ACRES
AREA TO BE ROOFED OR PAVED	0.4 ACRES
AREA TO BE VEGETATIVELY STABILIZED	6.3 ACRES
TOTAL CUT	11,933 CU. YARDS
TOTAL FILL	11,933 CU. YARDS

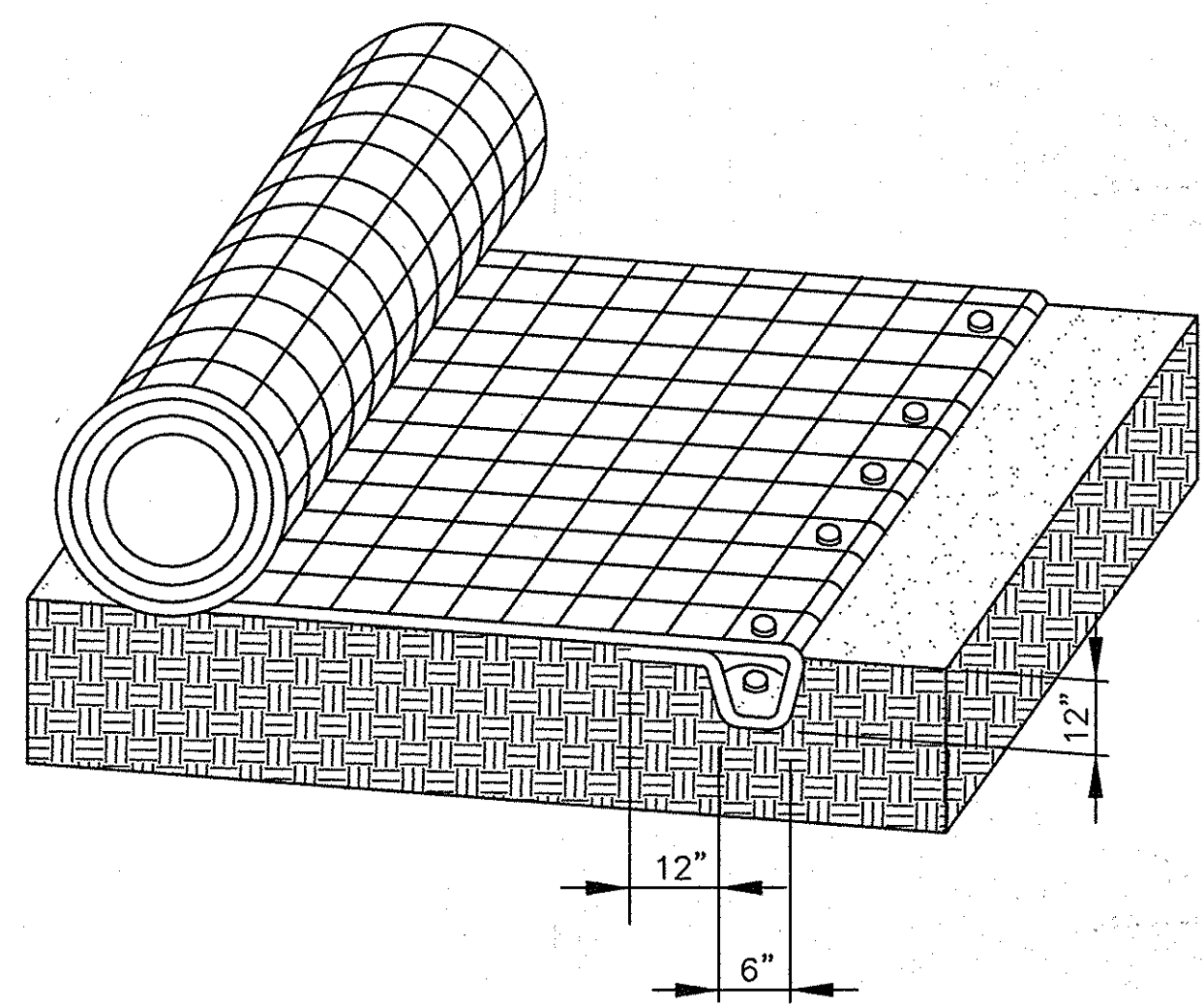
 OFFSITE WASTE AREA LOCATION TO HAVE ACTIVE GRADING PERMIT
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THAT WHICH SHALL BE BACKFILLED AND STABILIZED WITHIN ONE WORKING DAY.
- SITE GRADING WILL BEGIN ONLY AFTER ALL PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN A FUNCTIONING CONDITION.
- SEDIMENT WILL BE REMOVED FROM TRAPS WHEN ITS DEPTH REACHES CLEAN OUT ELEVATION SHOWN ON THE PLANS.
- 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.

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

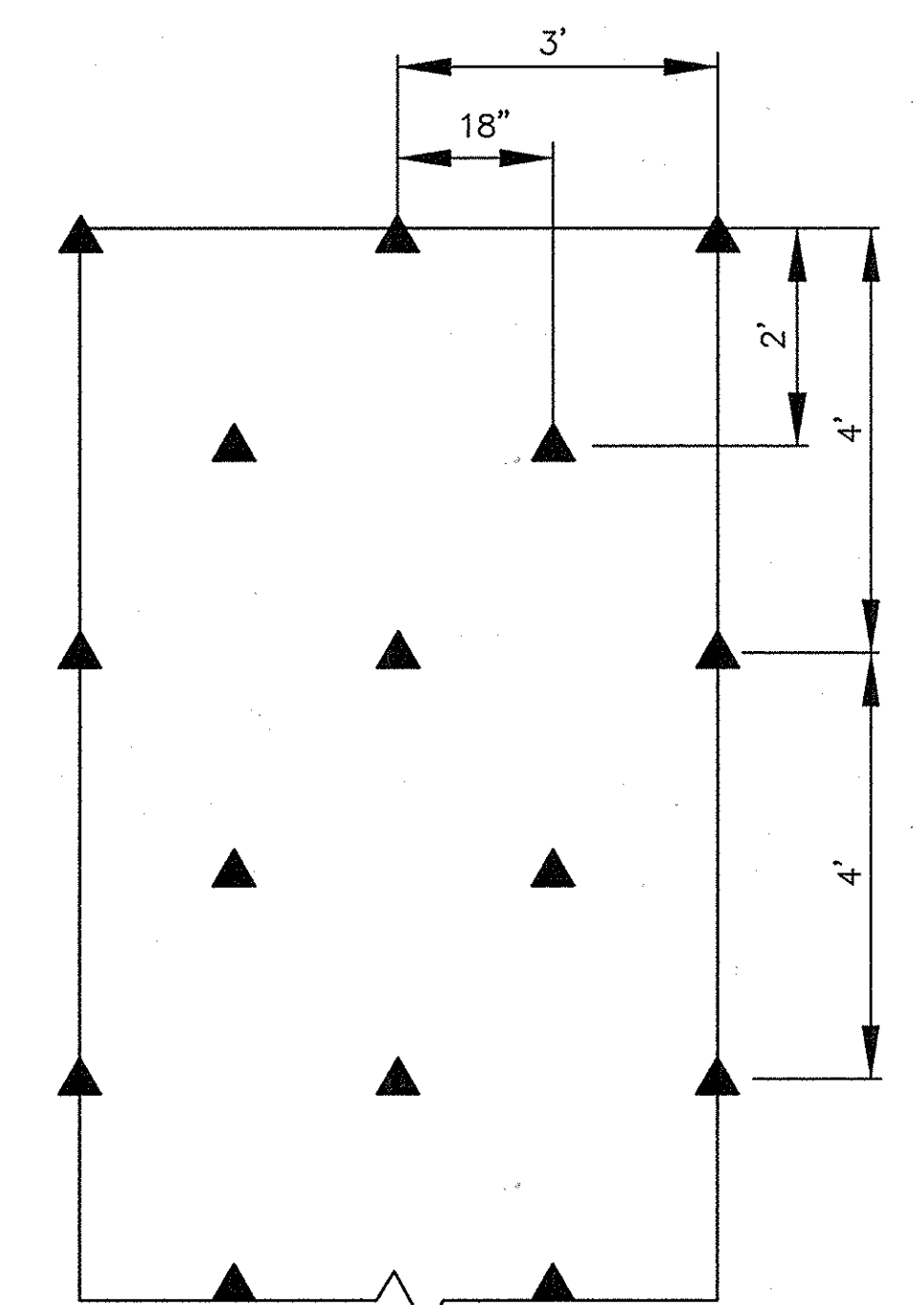
- No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
- 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.
- Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year flood plain in excess of that lost under the originally authorized structure or fill.
- Rectify any nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year flood plain temporarily impacted by any construction.
- All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (*Lolium multiflorum*), Millet (*Setaria italica*), Barley (*Hordeum sp.*), Oats (*Avena 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.
- After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
- To protect aquatic species, in-stream work is prohibited as determined by classification of the stream:
  - Use 1 waters: In-stream work shall not be conducted during the period of March 1 through June 15, inclusive, during any year.
- Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
- Culverts shall be constructed and any riprap placed so as not to obstruct the movement of the aquatic species, unless the purpose of the activity is to impound water.

SEQUENCE OF CONSTRUCTION

- Notify Miss Utility (1-800-257-7777) at least 48 hours prior to beginning work.
- Notify Howard County Department of Inspections, Licenses and Permits (410-313-1855) at least 48 hours prior to beginning work on-site and obtain grading permit. (1 day)
- Clear and grub for sediment and erosion control measures or devices only. (10 days)
- Install all sediment and erosion control measures and devices including stabilized construction entrance(s). (14 days)
- Notify Howard County Department of Inspections, Licenses and Permits upon completion of the installation work noted above. (1 day)
- With the approval of the Howard County Department of Inspections, Licenses and Permits, clear and grub the remainder of the site and stabilize immediately. (21 days)
- 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. 10. Stabilize work area at the end of each work day. (413 days)
- Connect to existing utilities where applicable. (7 days)
- With permission from the Sediment Control Inspector, remove stabilized construction entrance(s). (2 days)
- Stabilize all disturbed areas. (21 days)
- Following approval from the Howard County Department of Inspections, Licenses and Permits Inspector, remove all remaining sediment control measures and stabilize any remaining areas. (10 days)



EROSION CONTROL MATTING ANCHOR TRENCH NO SCALE

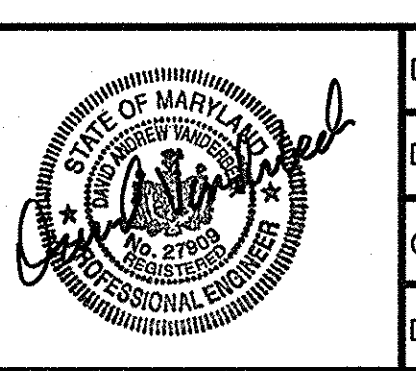


- NOTES:
- ANCHOR PATTERN (2 ANCHORS/SQ.YD)
  - "U" SHAPED WIRE STAPLES, METAL GEOTEXTILE PINS, TRIANGULAR WOODEN OR PLASTIC STAKES CAN BE USED TO ANCHOR TRMs TO THE GROUND SURFACE.
  - CONTRACTOR SHALL INSTALL AND ANCHOR EROSION CONTROL MATTING PER MANUFACTURERS RECOMMENDATIONS AND GUIDELINES.

EROSION CONTROL MATTING ANCHOR PATTERN NO SCALE

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  
 Director of Public Works: *Janet K...* 5/8/09  
 Chief, Bureau of Engineering: *Paul J. ...* 5/8/09  
 Chief, Bureau of Utilities: *Stefan C. ...* 5/8/09  
 Chief, Utility Design Division: *...* 5/8/09

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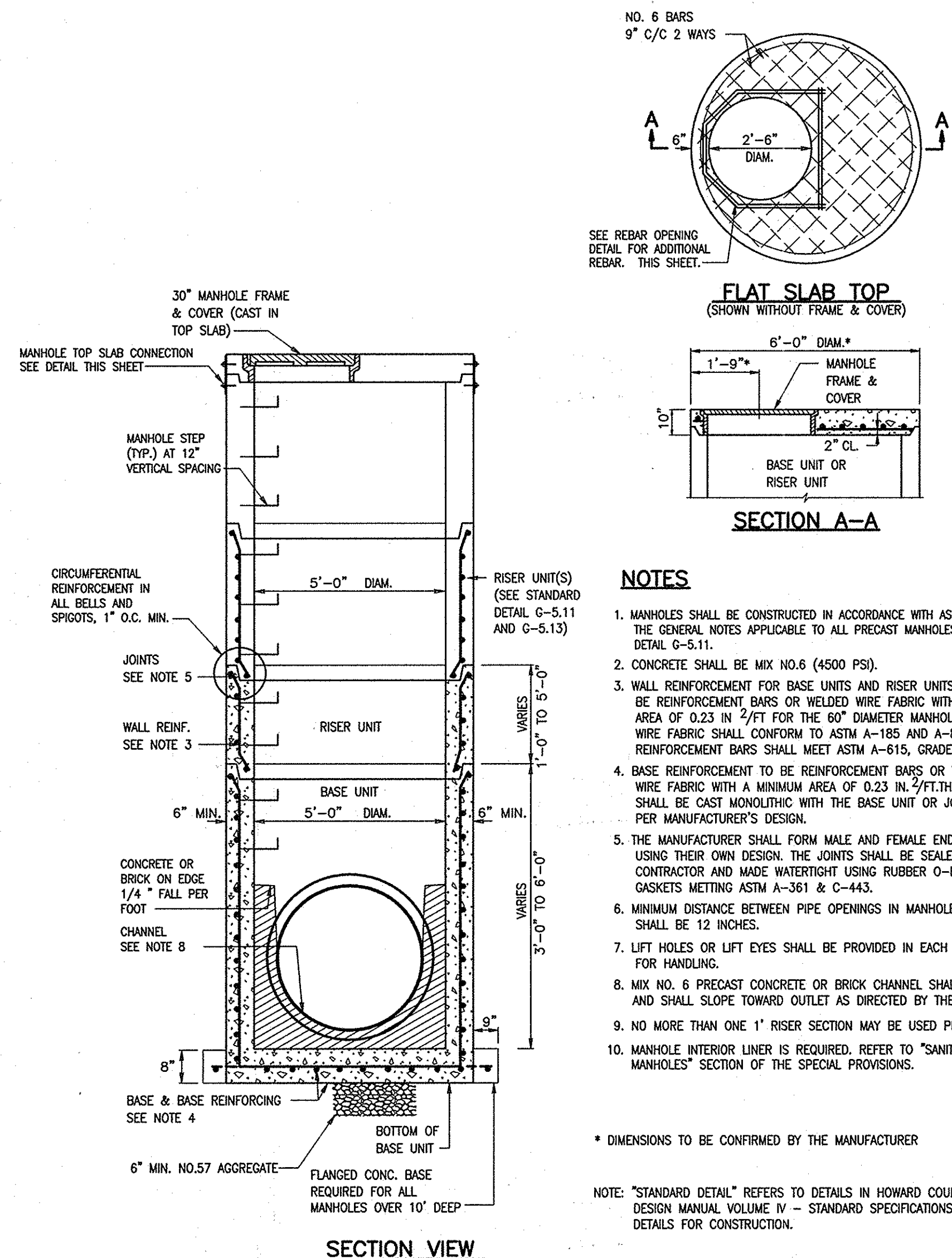
DES: D.A.V.			
DRN: M.A.D.			
CHK: W.B.F.			
DATE: 5/8/09	BY	NO.	REVISION

EROSION AND SEDIMENT CONTROL DETAILS  
 600 SCALE MAP NO. 47 BLOCK NO. 4 & 10

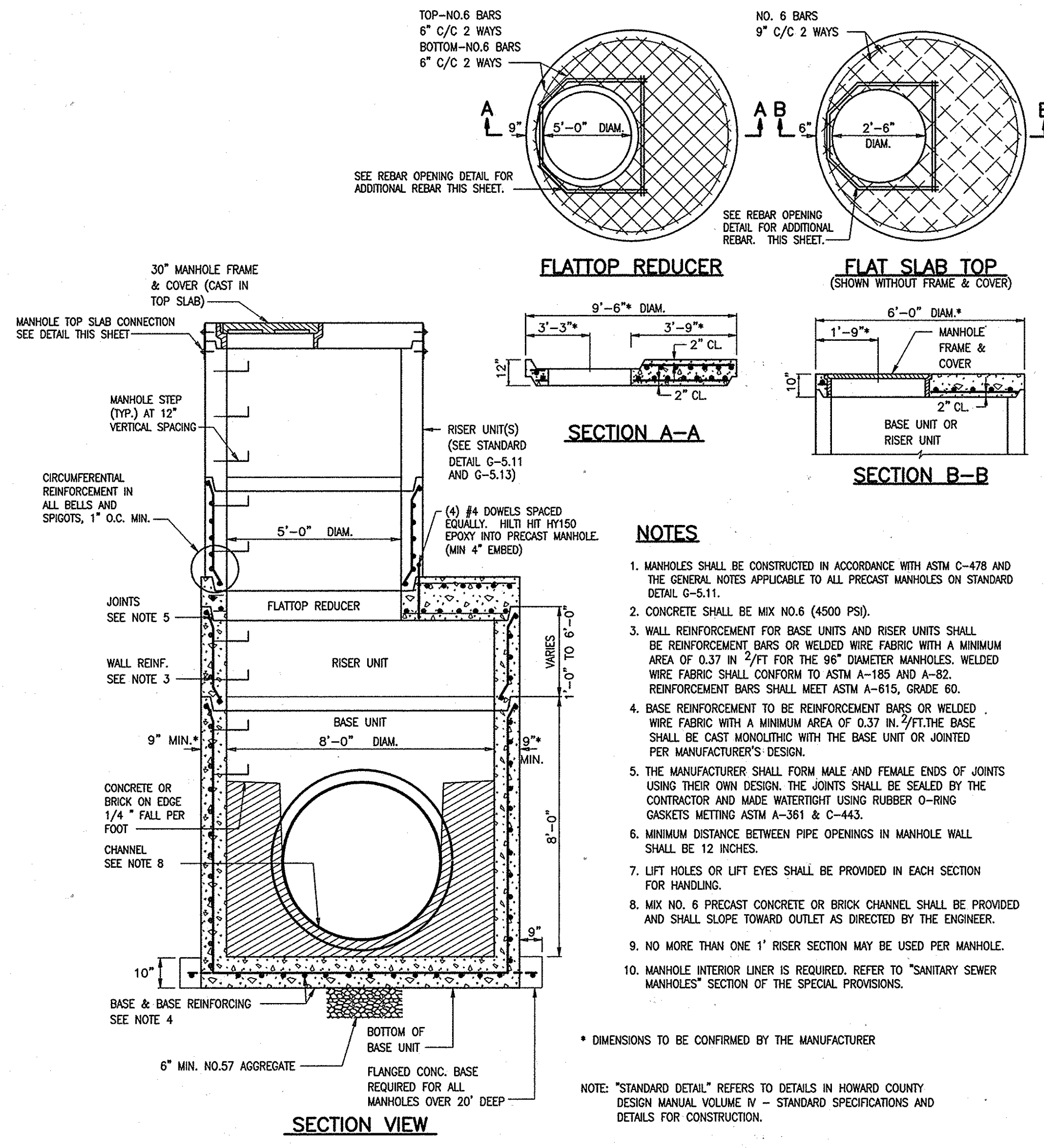
LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER  
 CAPITAL PROJECT NO. S-6175  
 CONTRACT NO. 20-4533  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 SCALE AS SHOWN  
 SHEET 14 OF 18

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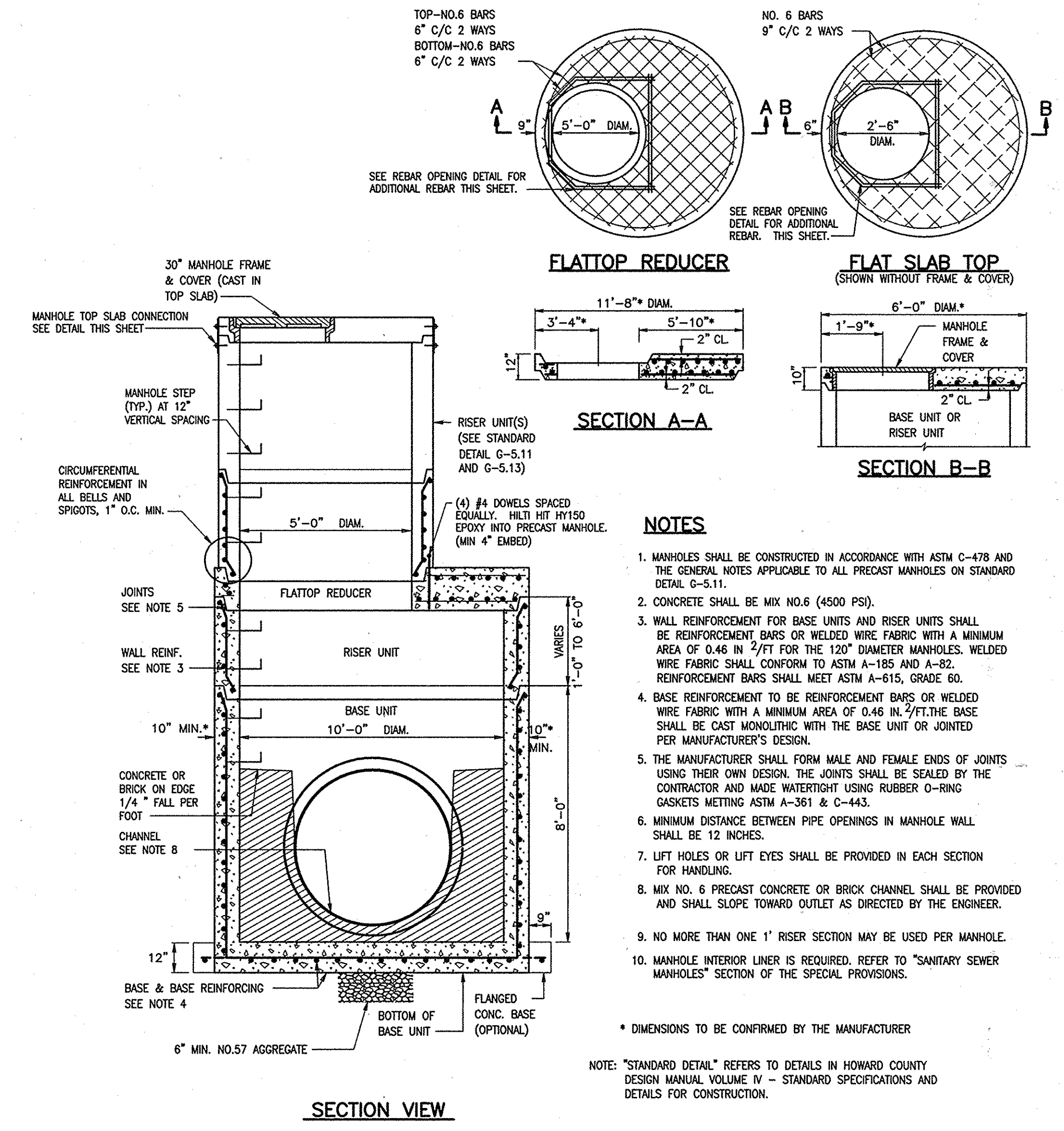




**5'-0" DIAMETER PRECAST MANHOLE**  
NO SCALE



**8'-0" DIAMETER PRECAST MANHOLE**  
NO SCALE



**10'-0" DIAMETER PRECAST MANHOLE**  
NO SCALE

**NOTES**

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

\* DIMENSIONS TO BE CONFIRMED BY THE MANUFACTURER

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

**NOTES**

- MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C-478 AND THE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON STANDARD DETAIL G-5.11.
- CONCRETE SHALL BE MIX NO.6 (4500 PSI).
- WALL REINFORCEMENT FOR BASE UNITS AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.37 IN <sup>2</sup>/FT FOR THE 96" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185 AND A-82. REINFORCEMENT BARS SHALL MEET ASTM A-615, GRADE 60.
- BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.37 IN <sup>2</sup>/FT. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
- THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER TIGHT USING RUBBER O-RING GASKETS MEETING ASTM A-361 & C-443.
- MINIMUM DISTANCE BETWEEN PIPE OPENINGS IN MANHOLE WALL SHALL BE 12 INCHES.
- LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
- MIX NO. 6 PRECAST CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED AND SHALL SLOPE TOWARD OUTLET AS DIRECTED BY THE ENGINEER.
- NO MORE THAN ONE 1' RISER SECTION MAY BE USED PER MANHOLE.
- MANHOLE INTERIOR LINER IS REQUIRED. REFER TO "SANITARY SEWER MANHOLES" SECTION OF THE SPECIAL PROVISIONS.

\* DIMENSIONS TO BE CONFIRMED BY THE MANUFACTURER

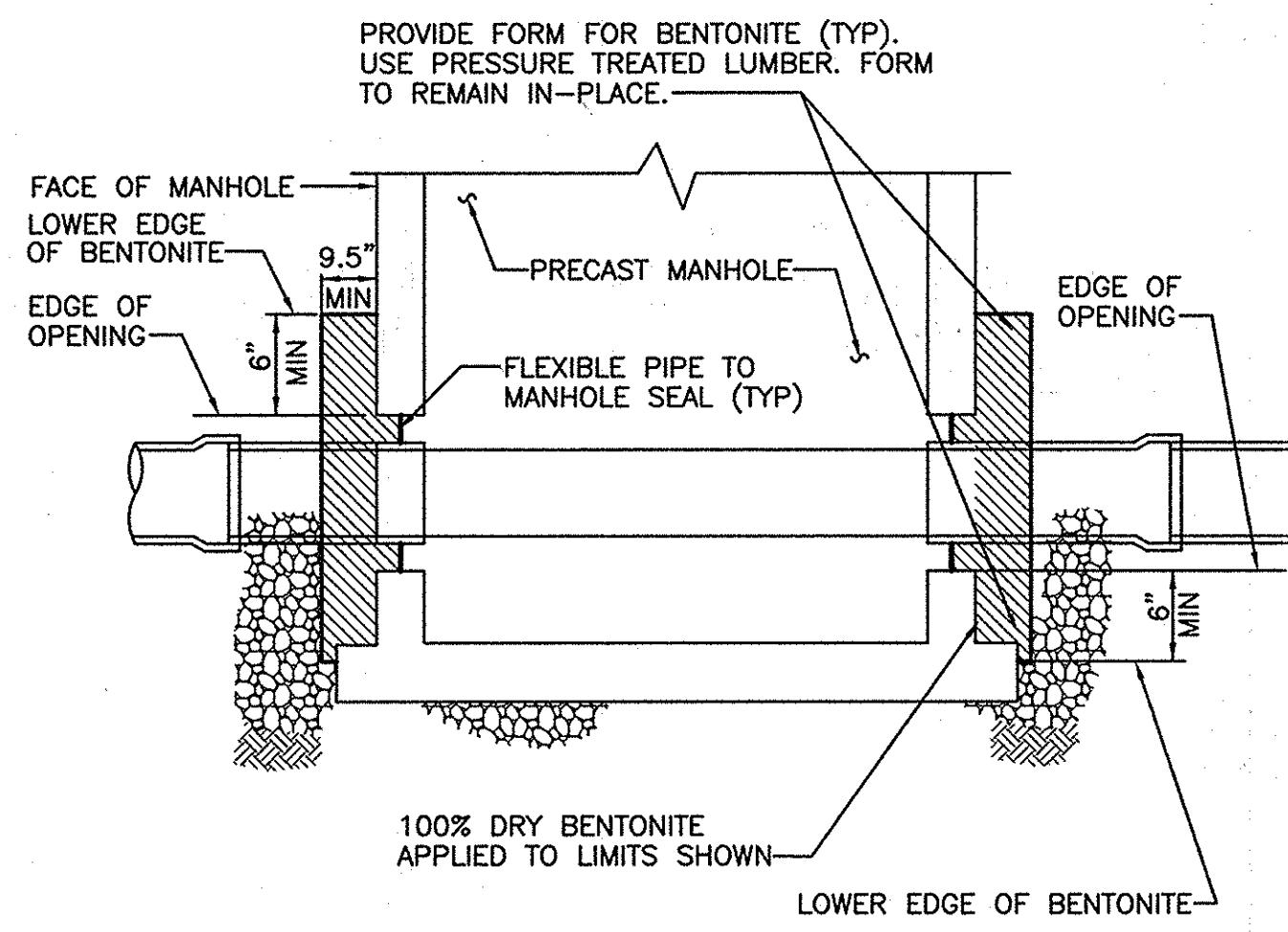
NOTE: "STANDARD DETAIL" REFERS TO DETAILS IN HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.

**NOTES**

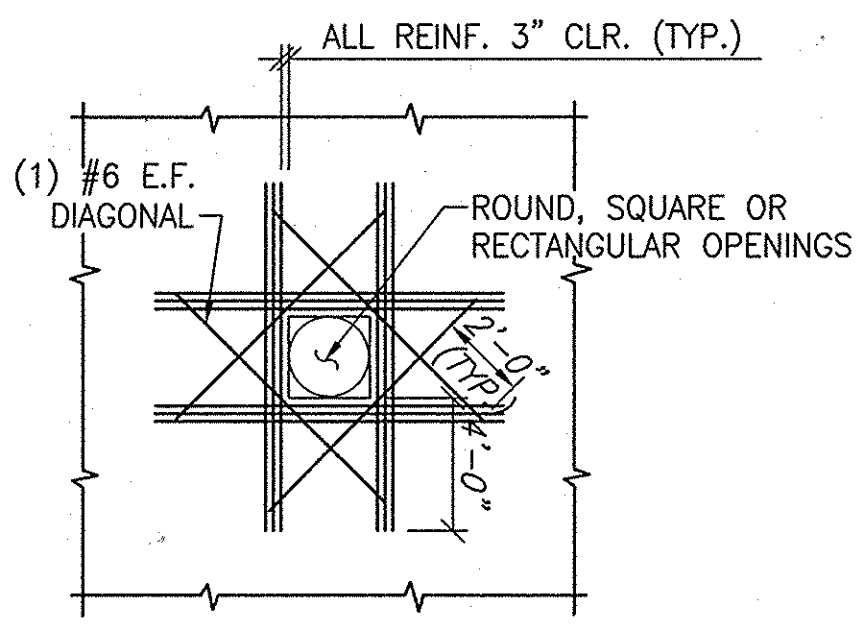
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- CONCRETE SHALL BE MIX NO.6 (4500 PSI).
- WALL REINFORCEMENT FOR BASE UNITS AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.46 IN <sup>2</sup>/FT FOR THE 120" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185 AND A-82. REINFORCEMENT BARS SHALL MEET ASTM A-615, GRADE 60.
- BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.46 IN <sup>2</sup>/FT. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
- THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER TIGHT USING RUBBER O-RING GASKETS MEETING ASTM A-361 & C-443.
- MINIMUM DISTANCE BETWEEN PIPE OPENINGS IN MANHOLE WALL SHALL BE 12 INCHES.
- LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
- MIX NO. 6 PRECAST CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED AND SHALL SLOPE TOWARD OUTLET AS DIRECTED BY THE ENGINEER.
- NO MORE THAN ONE 1' RISER SECTION MAY BE USED PER MANHOLE.
- MANHOLE INTERIOR LINER IS REQUIRED. REFER TO "SANITARY SEWER MANHOLES" SECTION OF THE SPECIAL PROVISIONS.

\* DIMENSIONS TO BE CONFIRMED BY THE MANUFACTURER

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

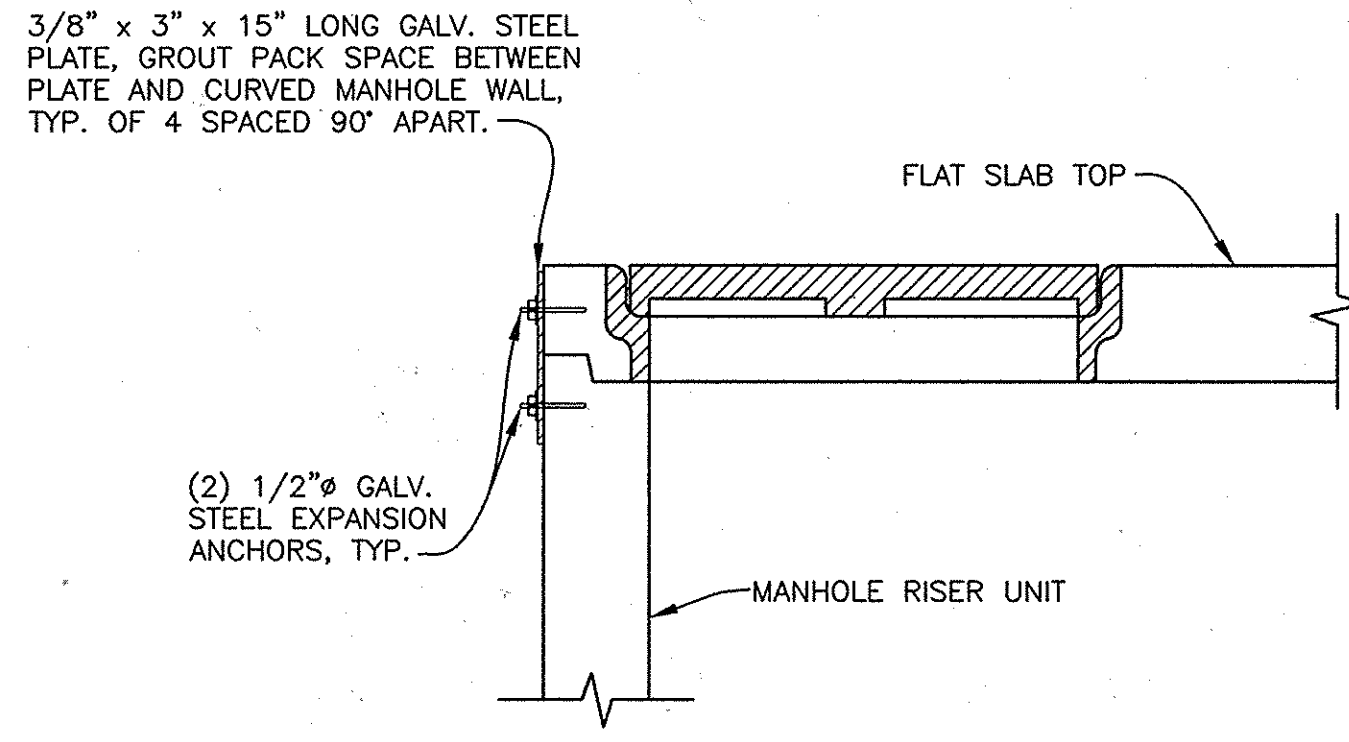


**PIPE TO MANHOLE CONNECTION**  
NO SCALE

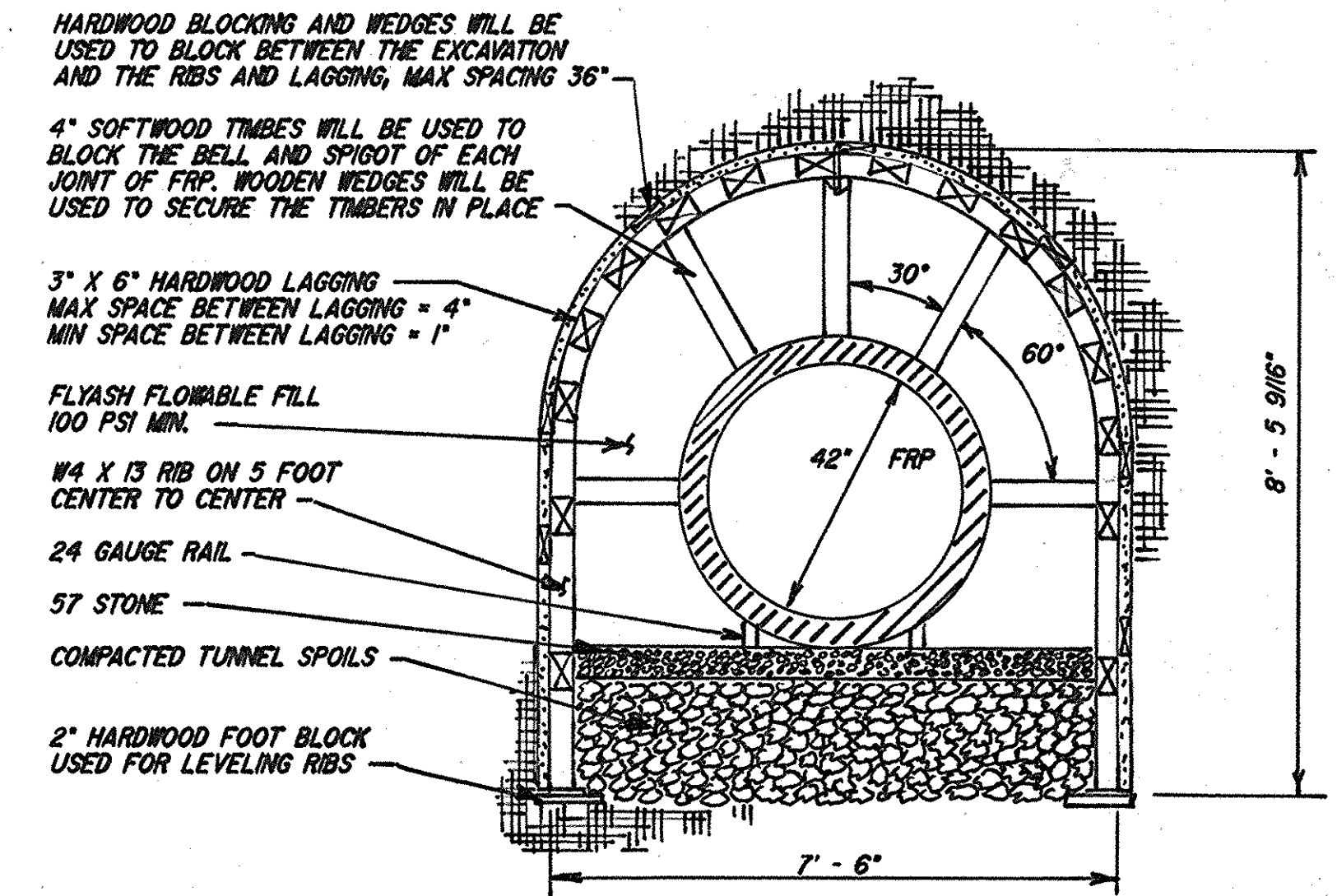


- NOTE:**
- PROVIDE ADDITIONAL REINFORCING, (MINIMUM OF ONE-HALF THE NUMBER OF PRINCIPLE REINFORCING, BARS BEING INTERRUPTED BY THE OPENING AT EACH FACE ON EACH SIDE).
  - FOR OPENINGS LESS THAN 12" DIA., NO ADDITIONAL REINFORCING IS REQUIRED PROVIDED, NO REINFORCING IS INTERRUPTED BY THE OPENING.

**REBAR OPENING DETAIL**  
NO SCALE



**MANHOLE SLAB TOP CONNECTION**  
NO SCALE



**8' HORSESHOE TUNNEL DETAIL**

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS	<i>[Signature]</i> 5/8/09 CHIEF, BUREAU OF ENGINEERING
<i>[Signature]</i> CHIEF, BUREAU OF UTILITIES	<i>[Signature]</i> 5/8/09 CHIEF, UTILITY DESIGN DIVISION

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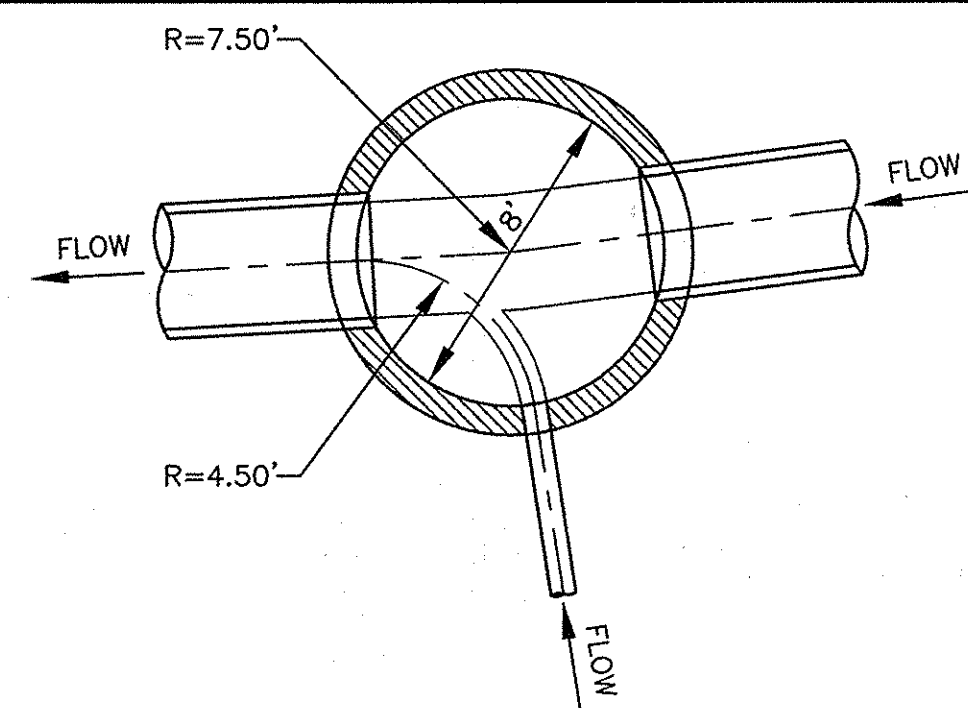
DES: D.A.V.	
DRN: M.A.D.	
CHK: W.B.F.	
DATE: 5/8/09	
BY NO.	REVISION
	DATE

CONSTRUCTION DETAILS	
600 SCALE MAP NO. 47	BLOCK NO. 4 & 10

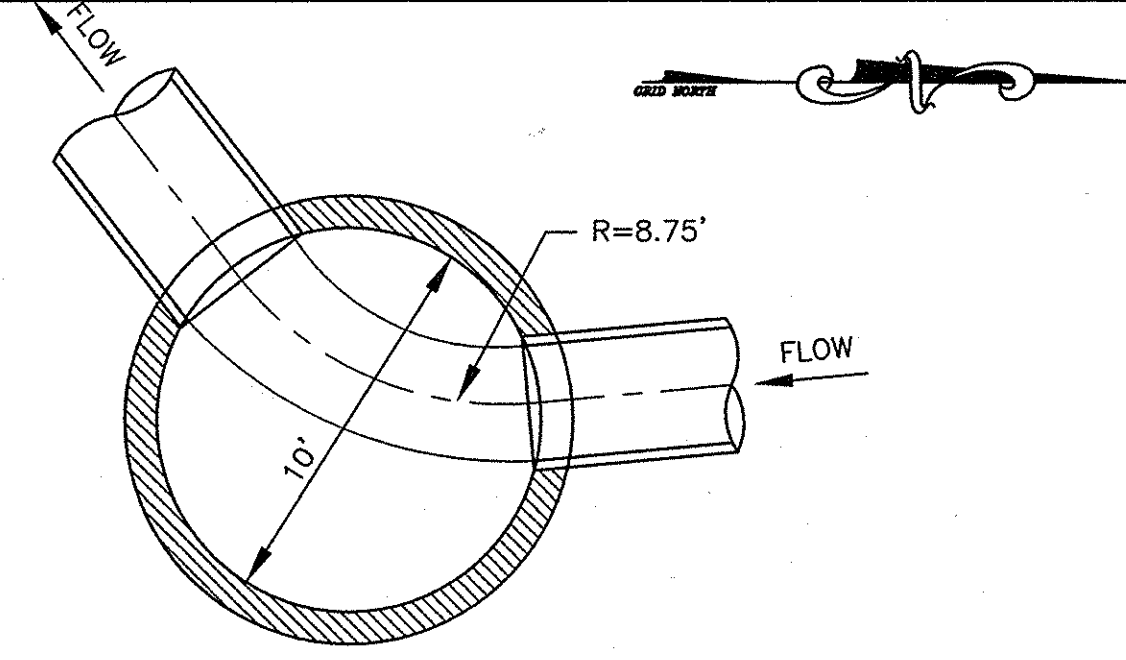
LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4533 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
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SCALE AS SHOWN
SHEET 16 OF 18

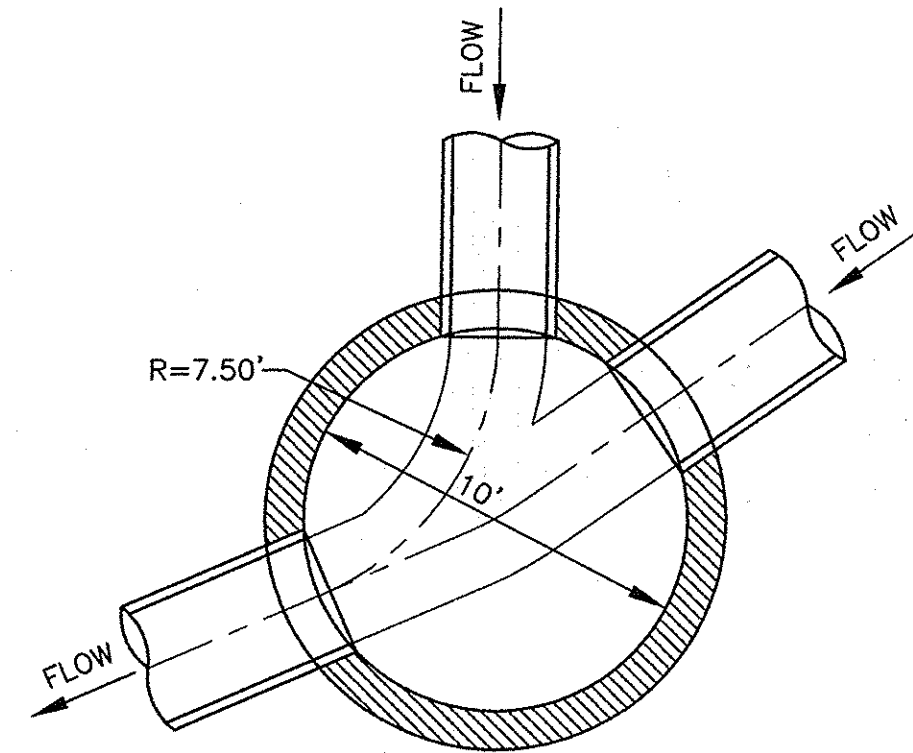




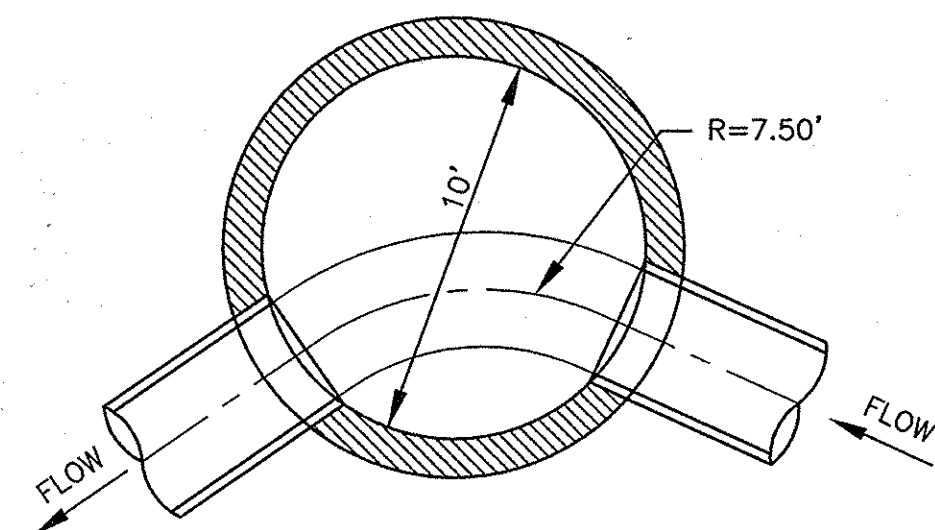
**PLAN - MH 305**



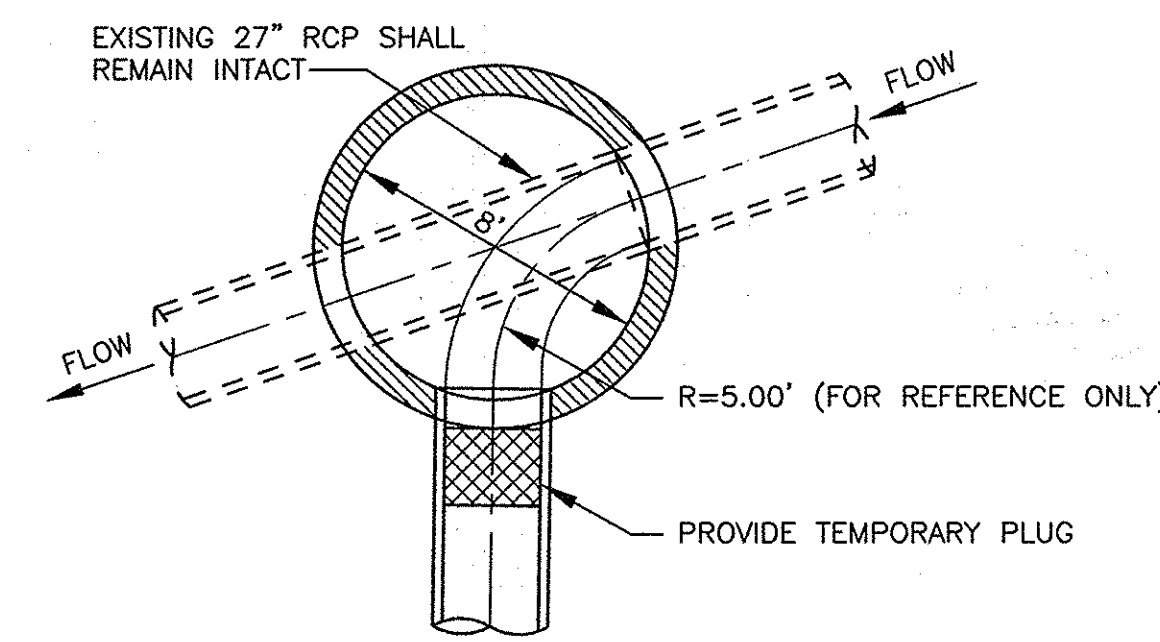
**PLAN - MH 312**



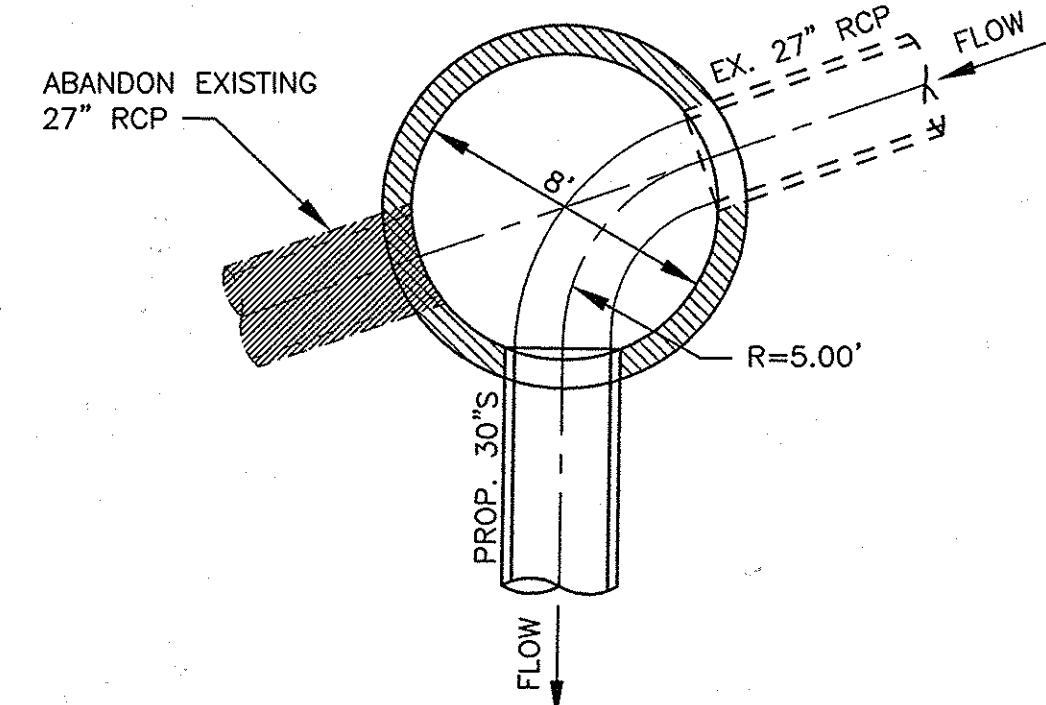
**PLAN - MH 314**



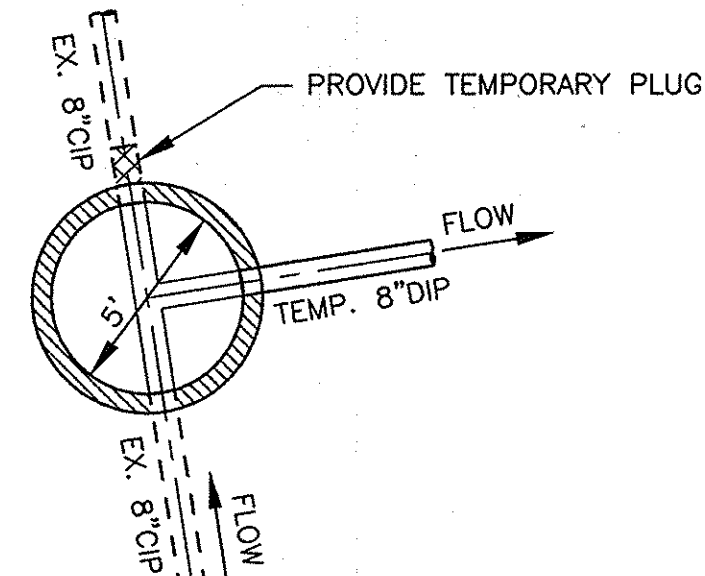
**PLAN - MH 315**



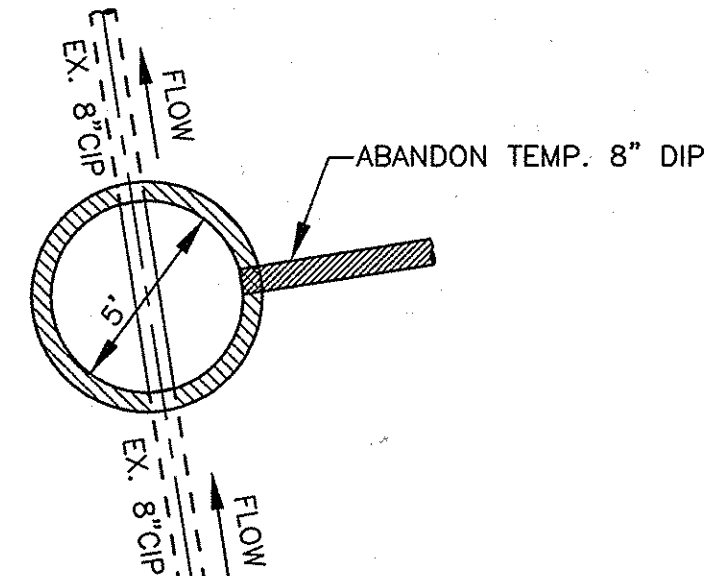
**INTERMEDIATE PLAN - MH 316**



**FINAL PLAN - MH 316 (BY OTHERS)**



**INTERMEDIATE PLAN - MH 317**



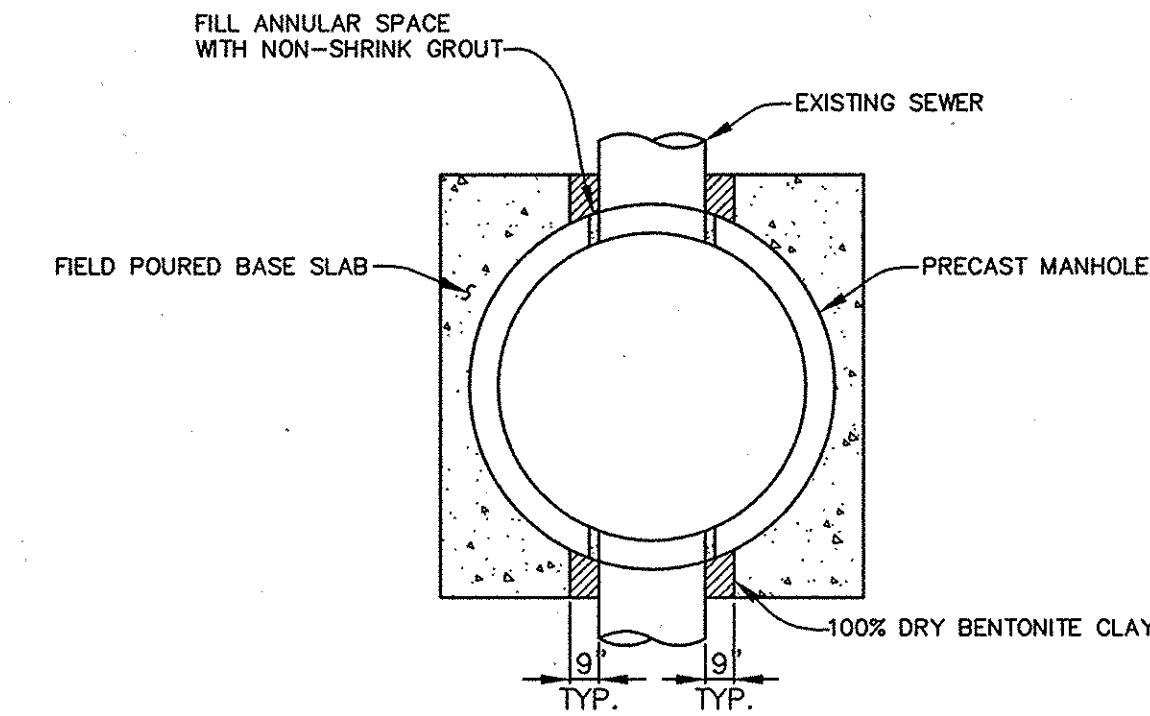
**FINAL PLAN - MH 317 (BY OTHERS)**

**NOTES:**

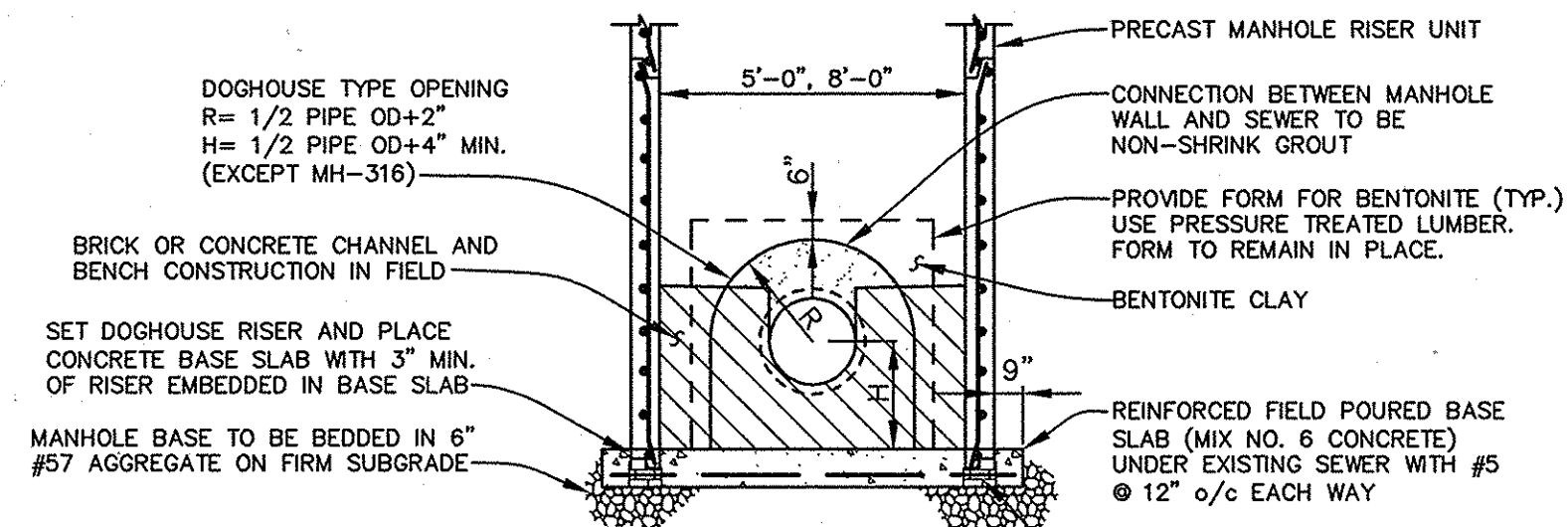
1. THE CENTERLINE OF ALL PIPES ENTERING A MANHOLE SHALL INTERSECT WITHIN 1"± OF THE LONGITUDINAL AXIS OF THE MANHOLE BARREL (CENTER).
2. MANHOLE CHANNEL AND BENCH SHALL BE PRECAST OR FORMED USING SEWER BRICK (ASTM DESIGNATION C32-73, GRADE SM, SIZE NO. 1).
3. CHANNEL SHALL PROVIDE SMOOTH HYDRAULIC TRANSITION BETWEEN PIPES.
4. MINIMUM CENTERLINE CHANNEL RADIUS SHALL BE 2.5 x OUTLET PIPE DIAMETER, EXCEPT FOR MH 316, WHICH SHALL BE 2.0 x OUTLET PIPE DIAMETER.

**MANHOLE CHANNEL CONFIGURATION DETAILS**

SCALE: 1" = 5'



**PLAN**



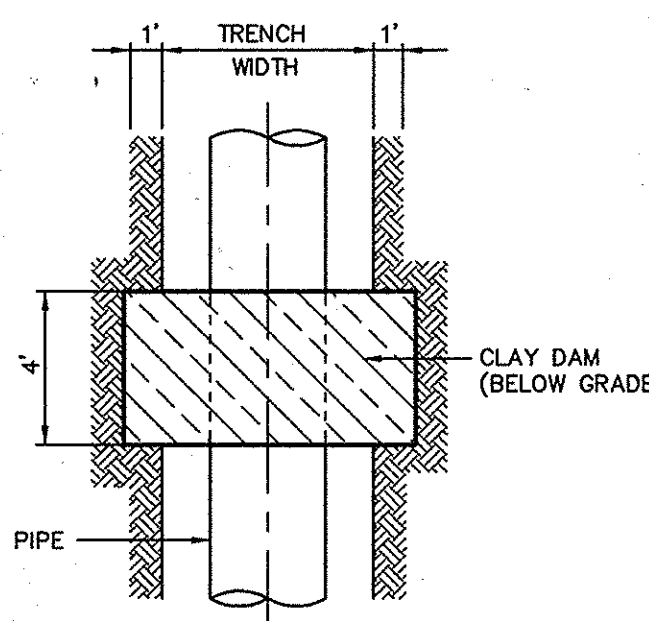
**ELEVATION**

**NOTES:**

1. SEE 5'-0" DIAMETER PRECAST MANHOLE AND 8'-0" DIAMETER PRECAST MANHOLE DETAILS ON SHEET 16.
2. OUTSIDE EDGE OF MANHOLE TO BE NOT LESS THAN 2'-0" FROM ANY EXISTING PIPE JOINT.

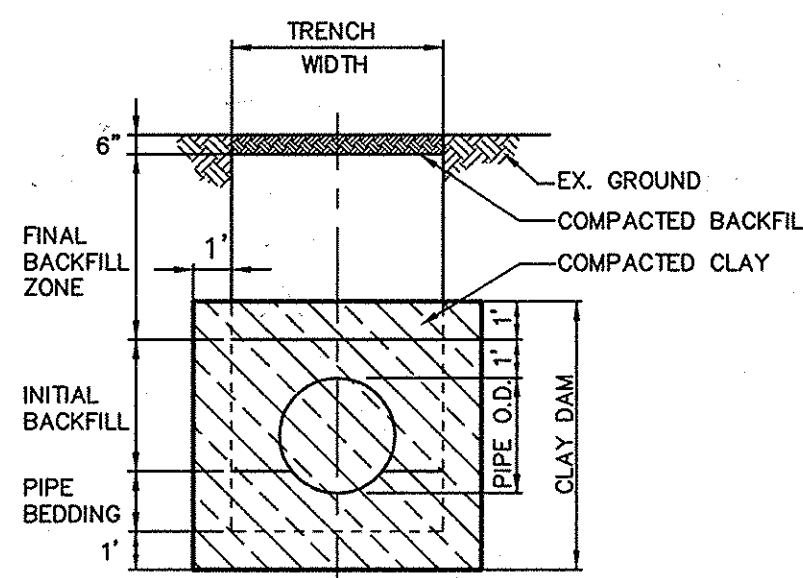
**PRECAST MANHOLE DOGHOUSE OVER EXISTING SEWER**

NO SCALE



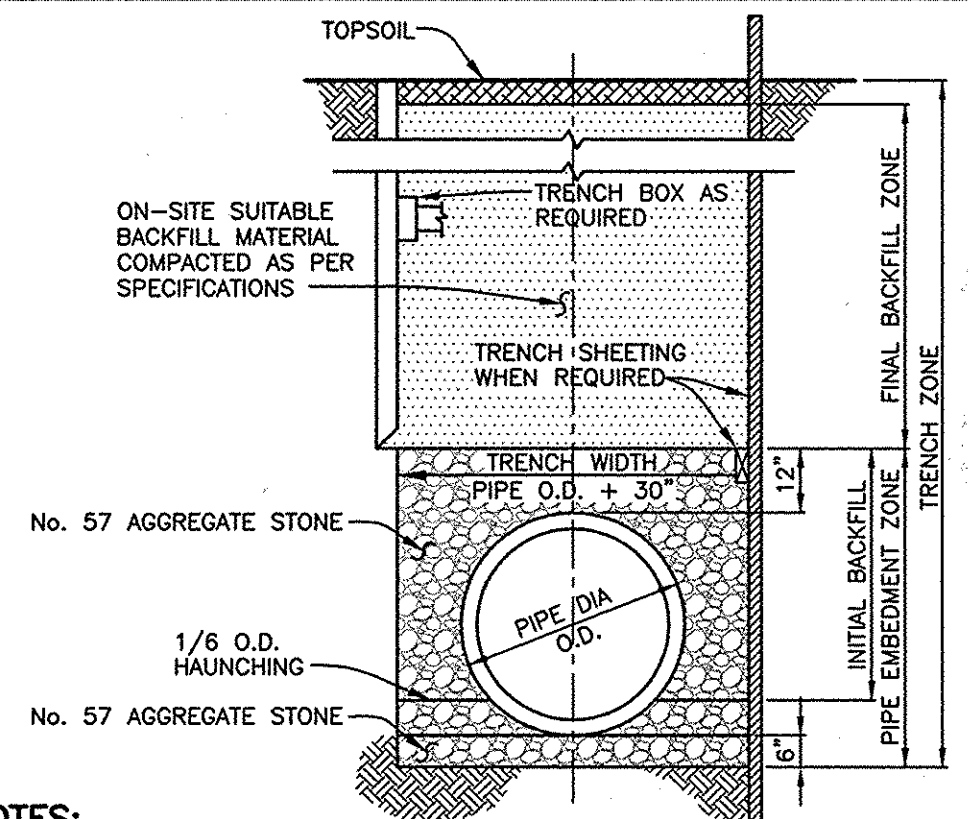
**CLAY DAM NOTES**

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



**CLAY DAM TYPICAL PIPE BEDDING DETAIL**

NO SCALE

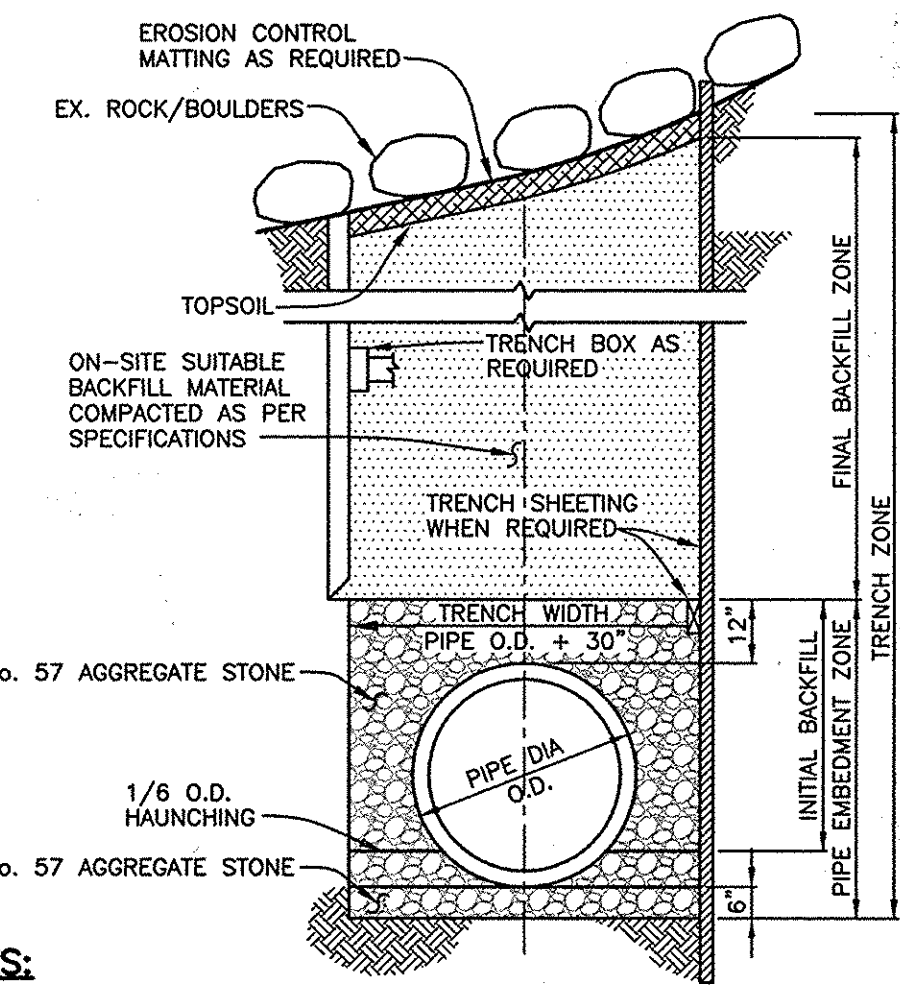


**NOTES:**

1. CONTRACTOR TO STRICTLY ADHERE TO SECTION 1000.03.05, "EXCAVATION AND SUBGRADE PREPARATION", OF THE STANDARD SPECIFICATIONS AND DETAILS OF CONSTRUCTION, VOLUME IV.
2. TRENCH BACKFILL IN THE FINAL BACKFILL ZONE, FROM 12 INCHES ABOVE THE CROWN OF PIPE TO 6 INCHES BELOW THE FINAL GRADE, SHALL CONSIST OF ON-SITE SUITABLE BACKFILL MATERIAL AS MUCH AS PRACTICABLE AND MAY, BEGINNING AT A DEPTH 24 INCHES ABOVE THE CROWN OF PIPE, CONTAIN STONES NO LARGER THAN 12 INCHES IN ANY DIMENSION.

**TRENCH DETAIL**

NO SCALE

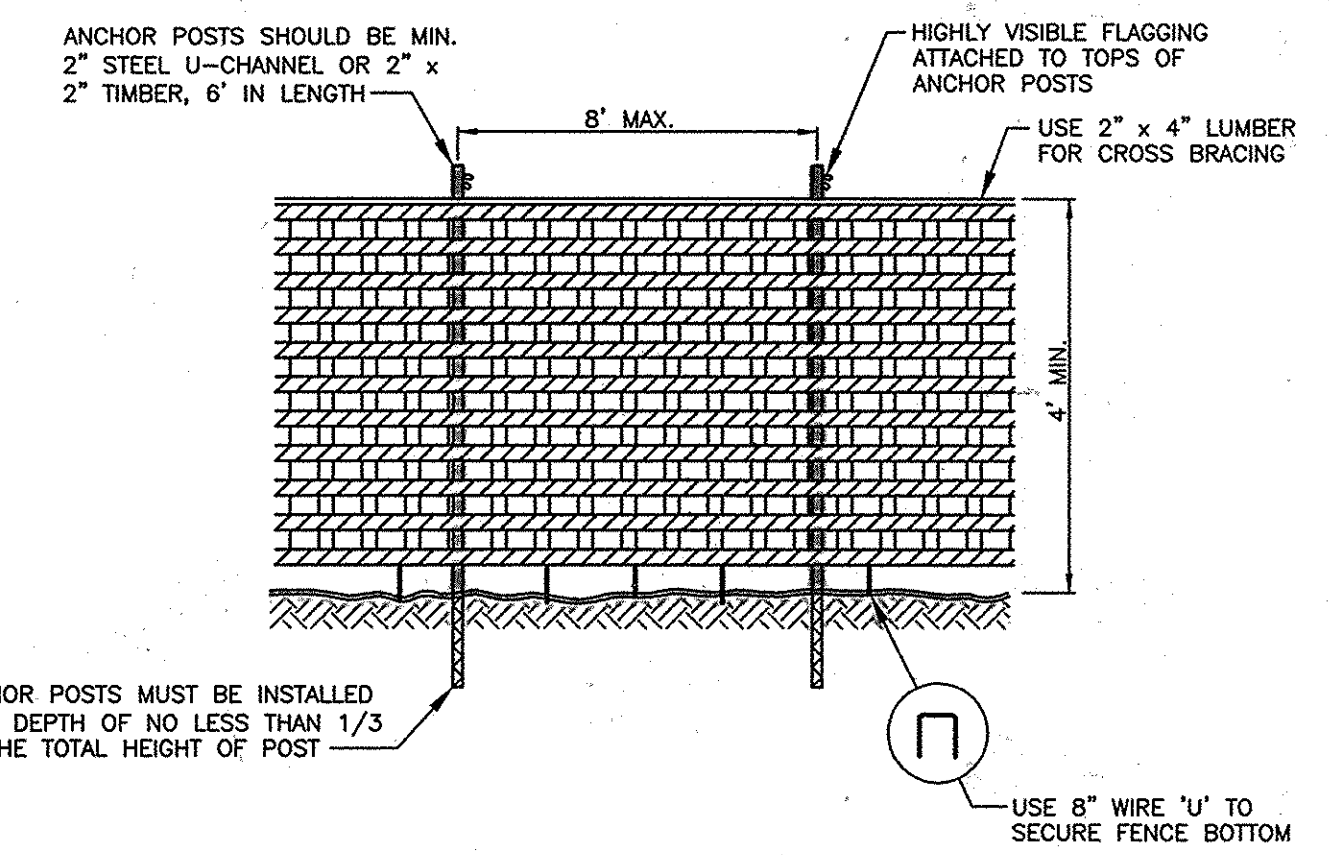


**NOTES:**

1. GRADE SHALL BE RETURNED TO EXISTING CONDITION AFTER CONSTRUCTION.
2. ANY SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH EROSION CONTROL MATTING (LANDLOK 450 OR APPROVED EQUAL). SEE SHEET 14 FOR ANCHORING REQUIREMENTS.
3. ROCK REMOVED DURING PIPE INSTALLATION SHALL BE PLACED AND SPREAD OVER THE DISTURBED AREA TO MIMIC EXISTING CONDITIONS. ROCK SHALL BE PLACED OVER EROSION CONTROL MATTING.

**TRENCH DETAIL (w/SLOPE STABILIZATION)**

NO SCALE



**NOTES:**

1. BLAZE ORANGE PLASTIC MESH FENCE FOR FOREST PROTECTION DEVICE ONLY.
2. FENCE BOUNDARIES SHALL BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
3. AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
4. DEVICE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

**TREE PROTECTION FENCE**

NO SCALE

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

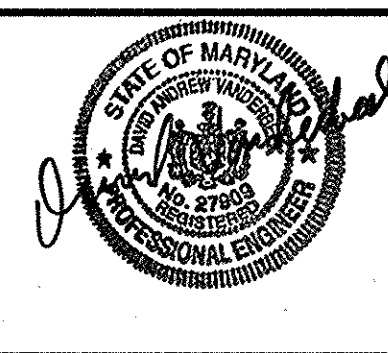
*John D. Slaba* 5/8/09  
DIRECTOR OF PUBLIC WORKS DATE

*Paul H. Johnson* 5/8/09  
CHIEF, BUREAU OF ENGINEERING DATE

*Steve Clem* 5/8/09  
CHIEF, BUREAU OF UTILITIES DATE

*Chris Lee* 5/8/09  
CHIEF, UTILITY DESIGN DIVISION DATE

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CHK: W.B.F.				
DATE: 5/8/09	BY	NO.	REVISION	DATE

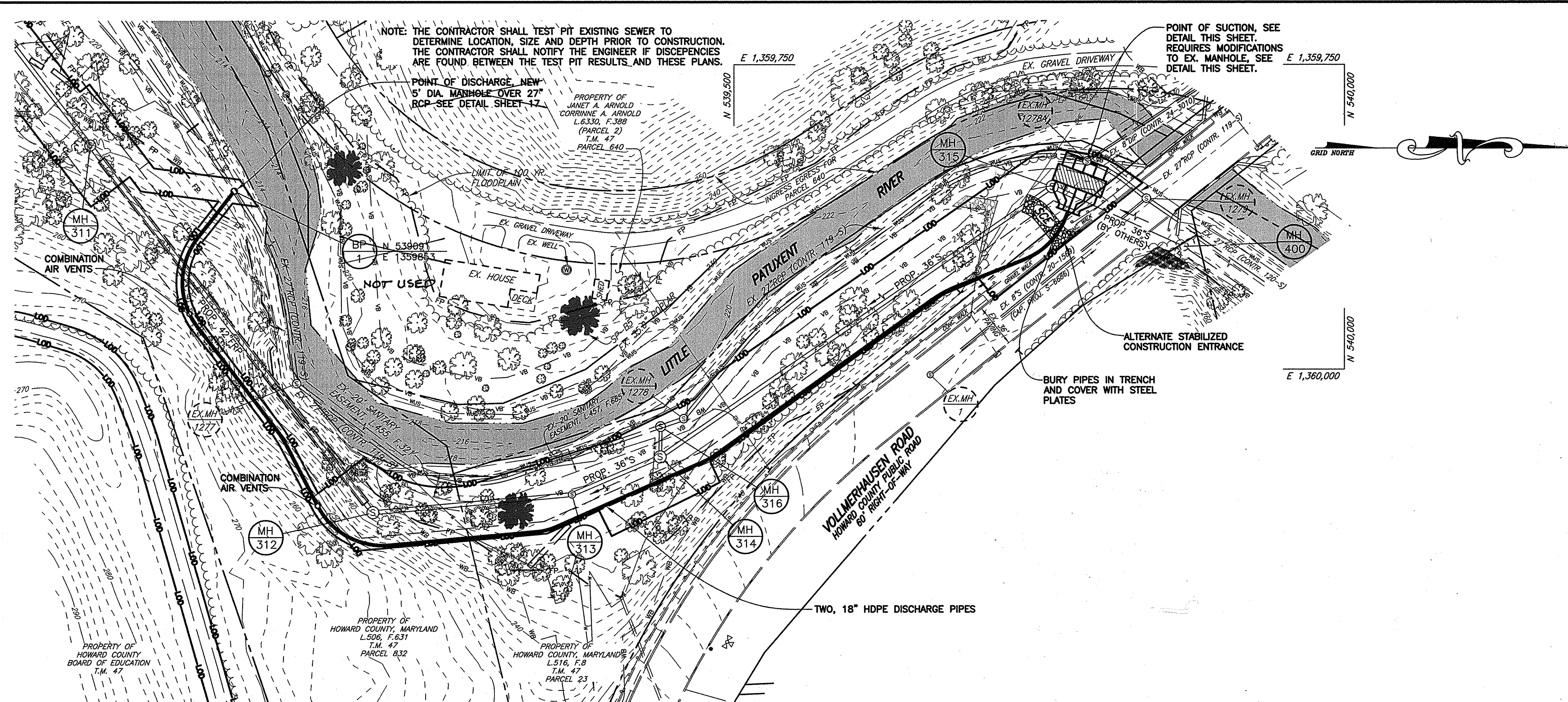
**CONSTRUCTION DETAILS**

600 SCALE MAP NO. 47 BLOCK NO. 4 & 10

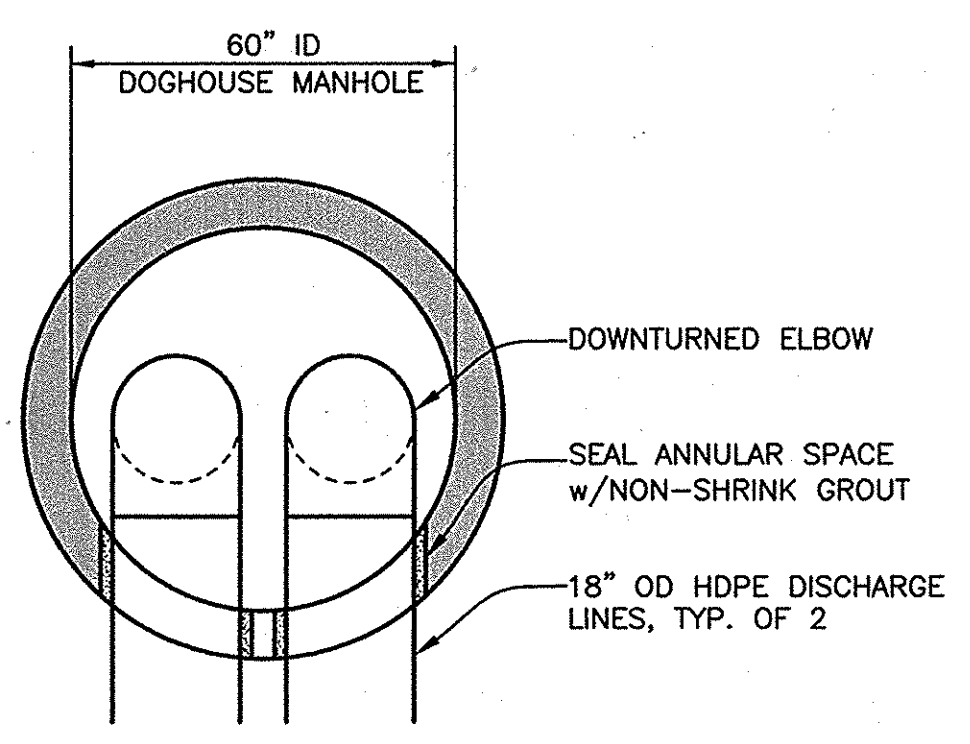
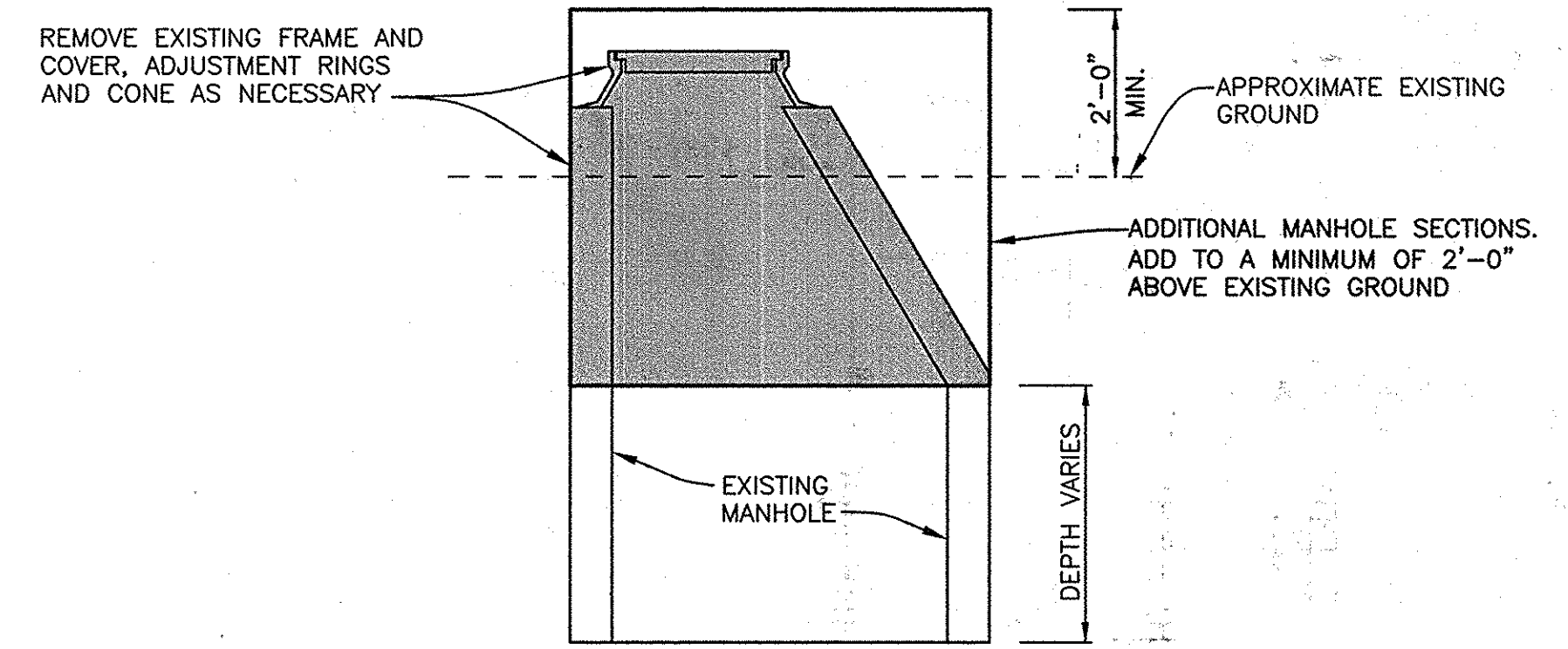
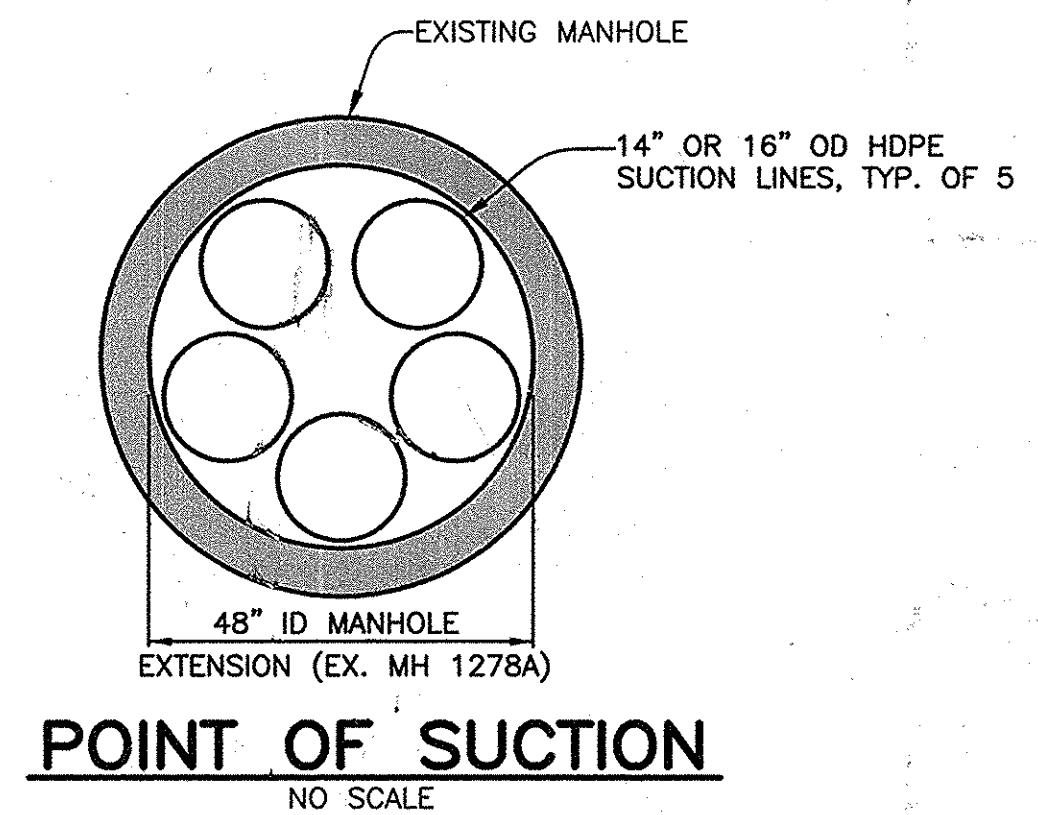
LITTLE PATUXENT  
PARALLEL INTERCEPTOR SEWER  
CAPITAL PROJECT NO. S-6175  
CONTRACT NO. 20-4533  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 17 OF 18

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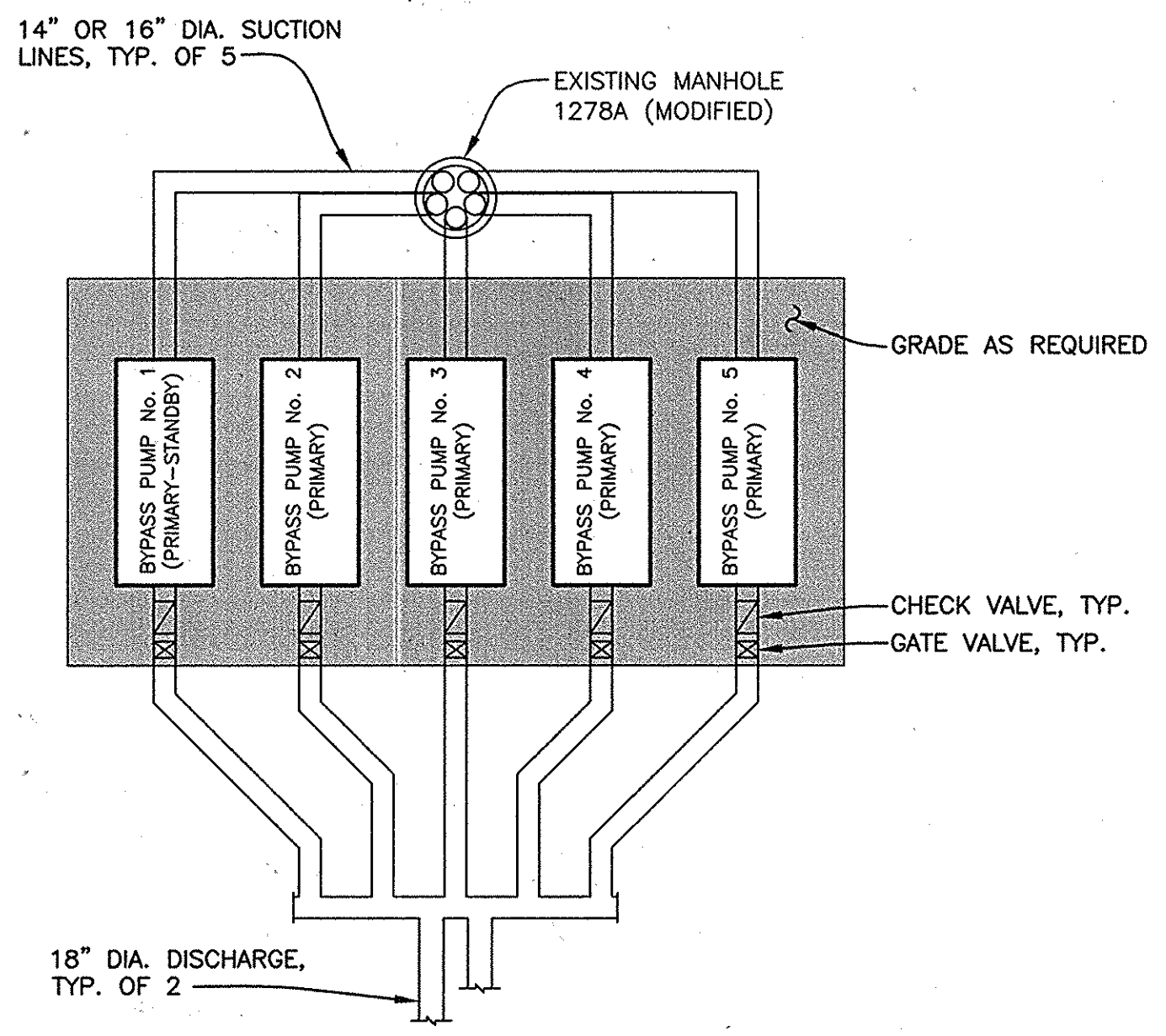


**PLAN**  
SCALE: 1" = 50'



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

**POINT OF DISCHARGE PROP. MANHOLE BP-1**  
NO SCALE



**NOTES:**

- STANDBY PUMP(S) SHALL BE CONNECTED AT ALL TIMES.
- PUMPS SHALL BE GODWIN DRI-PRIME MODEL CD 300M (OR APPROVED EQUAL).

**BYPASS PUMP SCHEMATIC LAYOUT**  
NO SCALE

- NOTES:**
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING, FURNISHING, INSTALLING, OPERATING AND MAINTAINING THE BYPASS SYSTEM, AS PER THE SPECIFICATIONS.
  - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS TO VERIFY DESIGN AND SIZING OF THE BYPASS SYSTEM.
  - THE CONTRACTOR SHALL BE RESPONSIBLE, INCLUDING PAYMENT OF PENALTIES, FOR ANY VIOLATIONS AND SPILLAGE OF SEWER.
  - EACH PUMP SHALL BE FITTED WITH AN INDIVIDUAL SUCTION PIPE. MANIFOLD SUCTION SHALL NOT BE ALLOWED.
  - NO STORMWATER SHALL BE ALLOWED TO ENTER POINT OF SUCTION MANHOLE.

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>John J. Slabe</i> 5/8/09 DIRECTOR OF PUBLIC WORKS DATE <i>Paul J. Gorman</i> 5/8/09 CHIEF, BUREAU OF ENGINEERING DATE <i>Steve Leman</i> 5/8/09 CHIEF, BUREAU OF UTILITIES DATE <i>Debra L. Pines</i> 5/8/09 CHIEF, UTILITY DESIGN DIVISION DATE		 GEORGE, MILES & BUHR, LLC ARCHITECTS & ENGINEERS SALISBURY • BALTIMORE • LEWES • SEAFORD • YORK www.gmbnet.com		 DES: D.A.V. DRN: M.A.D. CHK: W.B.F. DATE: 5/8/09		BYPASS PUMPING PLAN (TUNNELING MH 311 - MH 312)		LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER CAPITAL PROJECT NO. S-6175 CONTRACT NO. 20-4533 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 18 OF 18	
600 SCALE MAP NO. 47				BLOCK NO. 4 & 10				AS-BUILT: 1-31-2012			