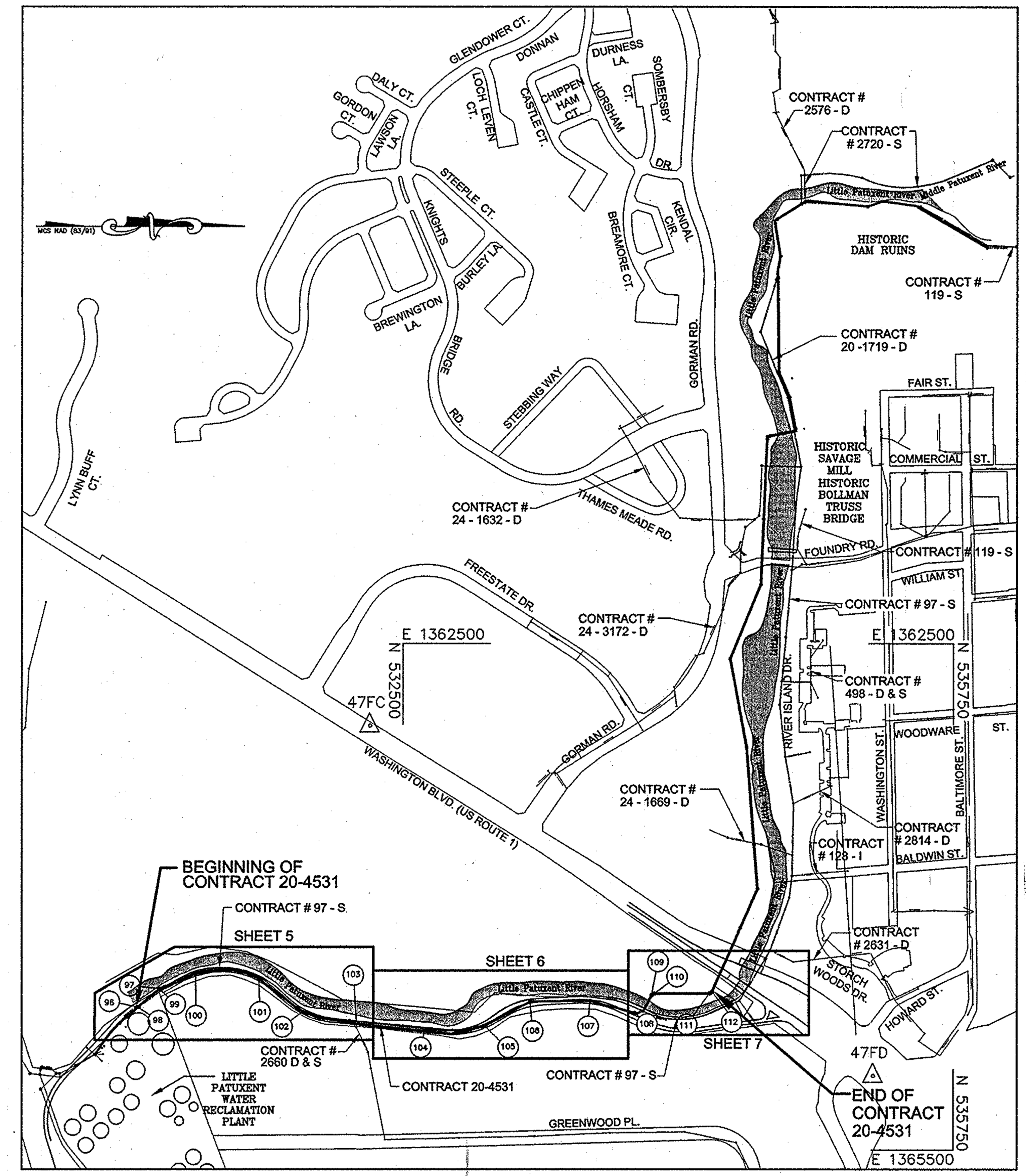

VICINITY MAP
SCALE : 1"=600'

HOWARD COUNTY GEODETIC SURVEY CONTROL
HO. CO. MONUMENT 47FC ELEV. 186.429 N 532305.0496 E 1362985.1295
HO. CO. MONUMENT 47FD ELEV. 201.247 N 535277.4137 E 1365059.7231

QUANTITIES

ITEMS	QUANTITIES ESTIMATED	AS-BUILTS		
		QUANTITIES	TYPE	MANUFACTURER/ SUPPLIER
36-INCH FRP	10 L.F.	X	X	X
36-INCH RCP	8 L.F.	X	X	X
42-INCH FRP	3,700 L.F.	3638 L.F.	FRP	HOBAS
42-INCH RCP	30 L.F.	N/A	N/A	N/A
54-INCH STEEL CASING	85 L.F.	85 L.F.		
MITERED BEND	9 EA.	9 EA.	FRP	HOBAS
72-INCH MANHOLE	17 EA.	17 EA.	PRECAST	ATLANTIC
DIVERSION STRUCTURE	1 EA.	1 EA.		POUR IN PLACE

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER

CAPITAL PROJECT NO. S-6175

CONTRACT NO. 20-4531

HOWARD COUNTY, MARYLAND

12/9/10
AS-BUILT

NAME OF UTILITY CONTRACTOR :

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

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

7/22/08
HOWARD SOIL CONSERVATION DISTRICT — 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. __________ EXPIRATION DATE: __________

DEVELOPER'S CERTIFICATION

"I/WE CERTIFY THAT ALL THE DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THIS CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A MARYLAND DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT"

7/1/08
BUREAU OF ENGINEERING — DATE
DEPARTMENT OF PUBLIC WORKS

ENGINEER'S CERTIFICATION

"I CERTIFY THAT THIS PLAN OF EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICABLE 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"

6/24/08
PATTON HARRIS RUST & ASSOCIATES, INC.
8818 CENTRE PARK DRIVE, COLUMBIA, MD 21045

SHEET INDEX

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2	GENERAL NOTES
3	COMPOSITE PROFILE A
4	COMPOSITE PROFILE B
5	PLAN AND PROFILE
6	PLAN AND PROFILE
7	PLAN AND PROFILE
8	MISCELLANEOUS DETAILS
9	MODIFICATIONS TO EX. MH-8504 STRUCTURE – DETAILS
10	DIVERSION STRUCTURE NO. 1 – PLAN AND SECTIONS
11	DIVERSION STRUCTURE NO.1–STRUCTURAL DETAILS
12	DIVERSION STRUCTURE NO.1–STRUCTURAL DETAILS
13	SEDIMENT & EROSION CONTROL – PLAN
14	SEDIMENT & EROSION CONTROL – PLAN
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19	FLOW METER – SYMBOLS AND ABBREVIATIONS
20	FLOW METER – SITE PLAN
21	FLOW METER – RISER DIAGRAM & WIRE CONDUIT SCHEDULE
22	FLOW METER – DETAILS
23	BYPASS PUMPING PLAN – EX MH-8504
24	BYPASS PUMPING PLAN – DS-1
25	STREAM CROSSING – PLAN AND DETAILS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

Patton Harris Rust & Associates, Inc.
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PH R+A
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Columbia, MD 21045
T 410.997.8900
F 410.997.9282

STATE OF MARYLAND — PROFESSIONAL ENGINEER
6/24/08

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.	R.J.C.	AS-BUILT	11/30/10
JUNE, 2008	BY NO.	REVISION	DATE

TITLE SHEET

600' SCALE MAP 47 & 48 — BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 1 OF 25

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GENERAL NOTES

1. Approximate location of existing sewer mains are shown. The contractor shall take all necessary precautions to protect existing sewer 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.
2. All horizontal controls are based on Maryland State Reference System NAD '83/'91.
3. All vertical controls are based on NAVD 88, and are iron bars and caps or PK nails.
4. All pipe elevations shown are invert elevations unless otherwise noted on the plans.
5. 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.
6. For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Detail for Construction (Latest Edition). The contractor shall have a copy of Volume IV on the job.
7. 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 (Contractor Services)	410–850–4620
BGE (Emergency)	410–685–1400
Howard County DPW 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

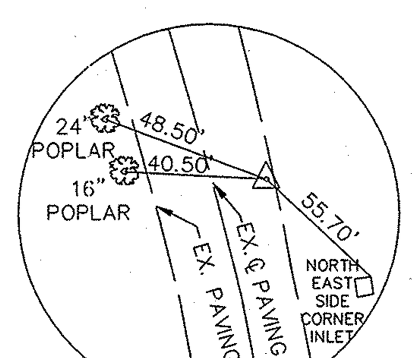
8. Trees and shrubs are to be protected from damage to the maximum extent. Trees and shrubs located within the construction strip are not to be removed or damaged by the contractor.
9. The contractor shall remove trees, stumps and roots along the line of excavation. Payment for trees greater than 12–inch diameter removed shall be per each as indicated in the schedule of prices. All other clearing and grubbing shall be incidental to the price bid for furnish and installing the sewer.
10. The contractor shall notify the Howard County DPW Bureau of Highways at 410–313–7450 at least five working days before open cutting or boring/jacking of any County road for laying sewer mains. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code.
11. The existing utilities shown are from the best available records and shall be verified by the contractor prior to construction. All existing utilities shall be test pitted / located as necessary and in advance of the proposed construction to properly make all required utility crossings and/or connections. Any discrepancies or utility conflicts shall be immediately reported to the Engineer. Any damage done to the utilities due to this operation shall be repaired immediately at the contractors expense.
12. 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.
13. All construction shall be done in accordance with the latest Howard County Standard Details and Specifications, including all addenda, unless otherwise noted on the Drawings or in the Specifications.
14. The contractor shall be responsible for cleaning up all dust and mud on all roads due to vehicles arriving and leaving the job site on a daily basis and as directed by the Engineer.
15. All work shall comply with the approved Sediment and Erosion Control Plan shown on the Drawings and all applicable provisions of the "1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control" issued jointly by the Maryland Department of the Environment and the Natural Resources Conservation Services.
16. The Contractor shall be responsible for repairing and replacing any existing fences, 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.
17. It shall be distinctly understood that failure to mention specifically any work which would normally be required to complete the Project shall not relieve the Contractor of his responsibility to complete such work.
18. Topographic field survey was performed in September, 2006 By Patton Harris Rust & Assoc. Inc.
19. Contractor shall be responsible for securing staging and stockpile areas. A possible area that may be available is indicated on the plans.
20. If rock blasting is used, the contractor shall submit blasting plans to MDE for approval and use.
21. For this project, the State Of Maryland Department of the Environment (MDE), permit tracking number is 07–NT–3268.
22. Bentonite clay dams shall be installed along pipe alignment every 1,000 L.F., see sheet 8 for detail.

SEWER NOTES

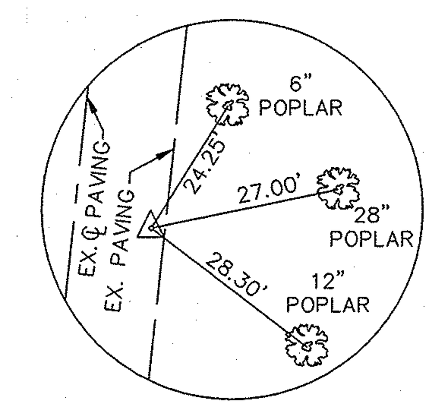
1. All sewer mains shall be fiberglass reinforced pipe (FRP), unless otherwise noted.
2. All manholes shall be 6'–0" inside diameter unless otherwise noted.
3. Manholes shown with 12" and 16" walls are for brick manholes only.
4. Manhole frames and covers shall be watertight as per Howard County Detail G–5.52 except that manhole frame and cover shall be 30" diameter.
5. Manholes shall be 18 inches above ground in unpaved areas, unless otherwise noted. See Howard County detail G–5.41, "Manhole special backfill" for details.
6. Manholes shall be as per "72" precast sanitary manhole" on sheet 8.
7. Bentonite clay shall be applied a minimum 9" around the pipe for existing manholes and structures.
8. Provide pipe joint 5–feet from the face of each side of all proposed manholes.

MANHOLE SCHEDULE

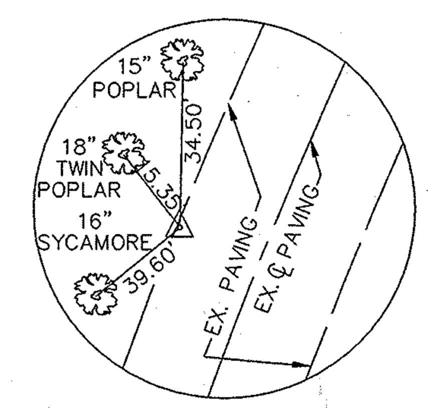
STRUCTURE	TYPE	STANDARD DETAIL	LOCATION	INV. OUT	INV. IN	TOP	REMARKS
MH–96	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 530941.43 E 1364632.16	113.70	113.92	126.6	
MH–97	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 531062.85 E 1364546.35	113.80	113.85	127.3	
MH–98	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 530942.51 E 1364656.62	113.48	113.51	126.2	
MH–99	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 530989.77 E 1364611.16	113.69	113.67	126.9	
MH–100	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 531270.45 E 1364452.93	113.98	114.04	130.4	
MH–101	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 531660.50 E 1364491.46	114.46	114.55	130.9	
MH–102	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 531905.38 E 1364682.67	115.12	115.27	129.4	
MH–103	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 532228.84 E 1364749.52	115.56	115.70	131.3	
MH–104	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 532629.14 E 1364788.16	116.18	116.24	131.9	
MH–105	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 532985.10 E 1364768.71	116.69	116.76	130.9	
MH–106	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 533253.84 E 1364621.13	117.27	117.29	132.4	
MH–107	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 533605.99 E 1364617.56	117.76	117.86	134.2	
MH–108	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 533873.24 E 1364691.27	118.24	118.34	137.9	
MH–109	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 533969.36 E 1364584.08	118.88	119.00	134.0	
MH–110	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 533982.42 E 1364574.69	118.94	119.06	135.1	
MH–111	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 534312.77 E 1364572.78	120.28	120.34	136.2	
MH–112	6' PRECAST MANHOLE	SEE SEWER NOTE 6	N 534327.10 E 1364567.63	120.55	120.61	136.3	



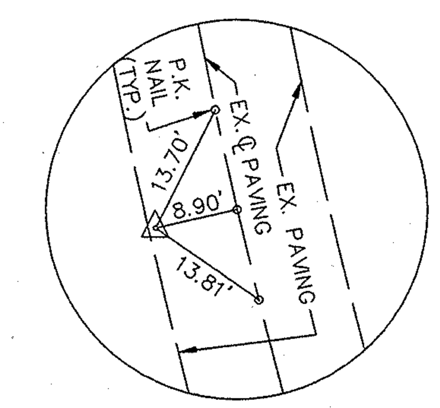
TRAVERSE #302 (P.K. NAIL)
ELEV.=131.92
N 532902.2300
E 1364803.0100



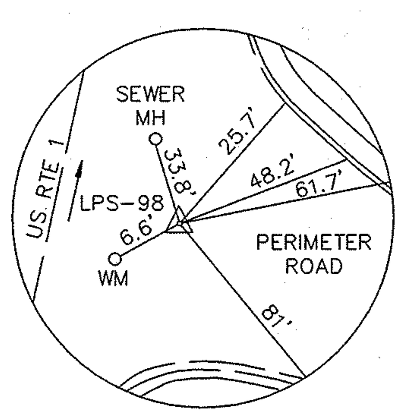
TRAVERSE #303 (P.K. NAIL)
ELEV.=131.97
N 532490.3600
E 1364788.0700



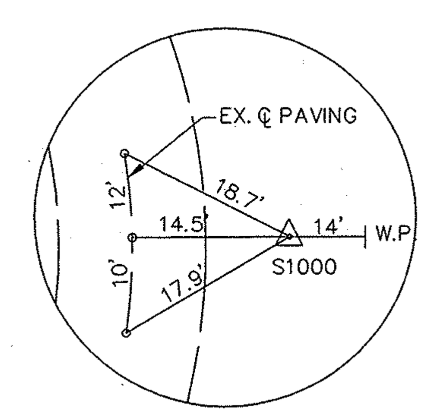
TRAVERSE #306 (P.K. NAIL)
ELEV.=130.98
N 531602.7300
E 1364457.9800



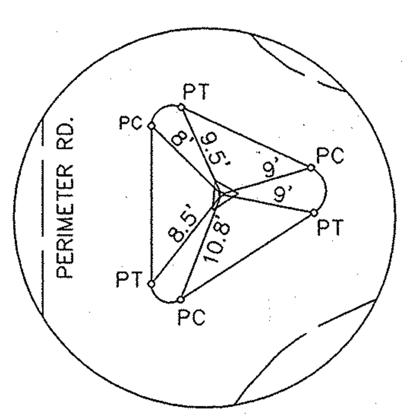
TRAVERSE #307 (P.K. NAIL)
ELEV.=130.65
N 531311.9400
E 1364442.0500



TRAVERSE #LPS–98 (RR SPIKE)
ELEV.=169.19
N 534716.9000
E 1364708.3100



TRAVERSE #S1000 (3/4" REBAR)
ELEV.=141.40
N 534084.5000
E 1364801.0400



TRAVERSE #S1006 (3/4" REBAR)
ELEV.=127.69
N 531015.7000
E 1364617.4100

LEGEND

EXISTING

- 100 YR FLOODPLAIN
- INTERIOR CONTOUR
- INDEX CONTOUR
- CABLE
- CURB AND GUTTER
- ELECTRIC
- FENCE
- GAS
- GUARDRAIL
- OVERHEAD WIRE
- PROPERTY LINE
- ROAD – CENTERLINE
- ROAD – EDGE OF DIRT, GRAVEL
- ROAD – EDGE OF MACADAM
- RIGHT OF WAY LINE (R/W)
- SANITARY SEWER
- STORM DRAIN
- STREAM EDGE
- TELEPHONE
- TREELINE
- FENCE, STONE, BRICK OR CONC. WALL
- WATER MAIN
- WETLAND BOUNDARY
- FIRE HYDRANT
- MANHOLE, ELECTRIC
- MANHOLE, GAS
- MANHOLE, TELEPHONE
- MANHOLE, SANITARY SEWER
- MANHOLE, STORM DRAIN
- MANHOLE, WATER
- VERIZON/BGE POLE
- SIGN
- TREE
- TREE TO BE REMOVED

PROPOSED

- LOD — LIMIT OF DISTURBANCE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- TP — TREE PROTECTION FENCE
- SB — STREAM BUFFER
- RIGHT OF WAY (R/W)
- INTERCEPTOR SEWER
- PROPERTY LINE
- DRAINAGE & UTILITY R/W
- TEMPORARY CONSTRUCTION AREA
- TRAVERSE STATION
- B1–1 — SOIL BORING
- TP NO. — TEST PIT
- MANHOLE, SANITARY SEWER
- ABANDON
- REMOVE
- FRP — FIBERGLASS REINFORCED PIPE

PHASING OF SEWER INSTALLATION

The following 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 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:

1. Install 42–inch parallel sanitary sewer from just north of MH–96 to MH–97 and towards Ex. MH–1241 without interrupting existing sewers and flows. Pressure test section of sewer.
2. Install 42" sanitary sewer from just outside of MH–99 to MH–108. Pressure test this section of sewer prior to accepting flows.
3. Install 42–inch sewer from the diversion structure to MH–112. See sheet 13 for river crossing details.
4. Install temporary bypass pumping (BP) from Ex. MH–1242 to Ex. MH 3733, or to the head of the plant. Bypass pumping shall proceed in accordance to special provisions of the specifications, section 22.3.2 and sheet 23.
5. Demolish and permanently remove existing diversion structure at Ex. MH–8504 and install MH–96 and MH–98 as shown on sheet 9. Connect MH–96 and MH–98 to Ex. 36 inch and Ex. 42–inch sanitary sewer respectively and new 42 inch sewer.
6. Remove Ex. MH–8505 and associated piping. Connect Ex. 42 inch sewer to New 42 inch sewer and install MH–99. Connect Ex. MH–1241 to New 42 inch sewer and complete connection between MH–97 and MH–99.
7. Install proposed flow meter at MH–96 and MH–98 as shown on Sheets 19, 20, 21 and 22.
8. Upon pressure testing and approval of the new connections discontinue bypass pumping and resume normal operation.
9. Install temporary BP from Ex. MH–1247 to Ex. MH–1245 in accordance to special provisions of the specifications section 22.3.2 and sheet 24.
10. Remove Ex. MH–1246 in its entirety and construct diversion structure as shown in detail on sheet 11.
11. Discontinue BP and resume normal flow through the proposed diversion structure.
12. Restore all disturbed areas to original conditions.

12/9/10
AS–BUILT

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. __________ EXPIRATION DATE: __________

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

Patton Harris Rust & Associates, Inc.
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8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
F 410.997.9282

6/24/08

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.				
JUNE, 2008	R.J.C.	AS–BUILT	11/30/10	
	BY	NO.	REVISION	DATE

GENERAL NOTES

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S–6175
CONTRACT NO. 20–4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

PROFILE

HORIZONTAL: 1"=200'
VERTICAL: 1"=5'

PROFESSIONAL CERTIFICATION

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12/9/10
AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	7/3/08 DATE	CHIEF, BUREAU OF ENGINEERING	7/1/08 DATE
CHIEF, BUREAU OF UTILITIES	7/2/08 DATE	CHIEF, UTILITY DESIGN DIVISION	7-1-08 DATE

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COMPOSITE PROFILE A

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 3 OF 25

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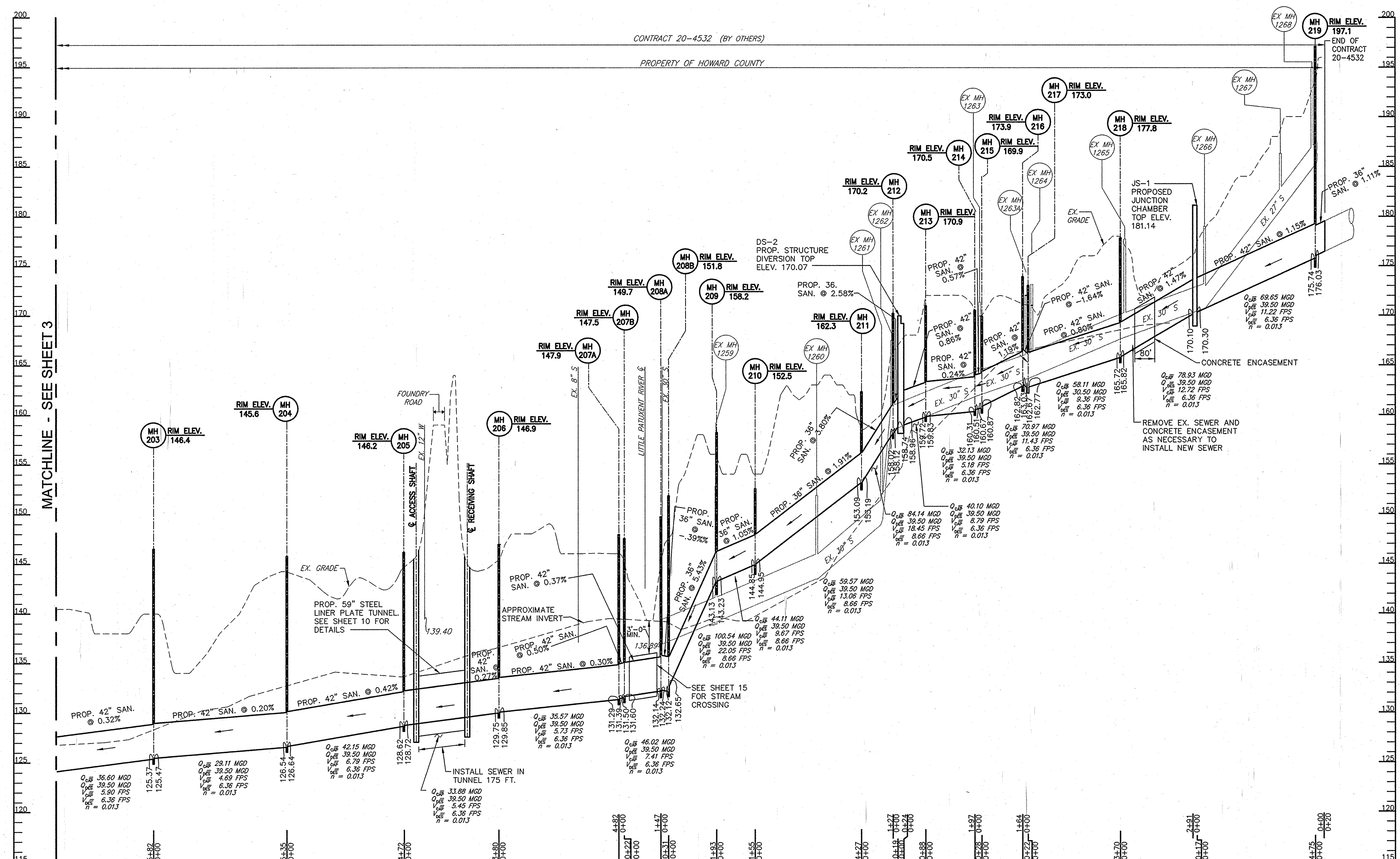

PROFILE

HORIZONTAL: 1'=200'
VERTICAL: 1'=5'

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LICENSE NO. ________ EXPIRATION DATE: ________

12/9/10

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

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6/24/08

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.	R.J.C.	AS-BUILT	11/30/10
JUNE, 2008	BY NO.	REVISION	DATE

COMPOSITE PROFILE B

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 4 OF 25

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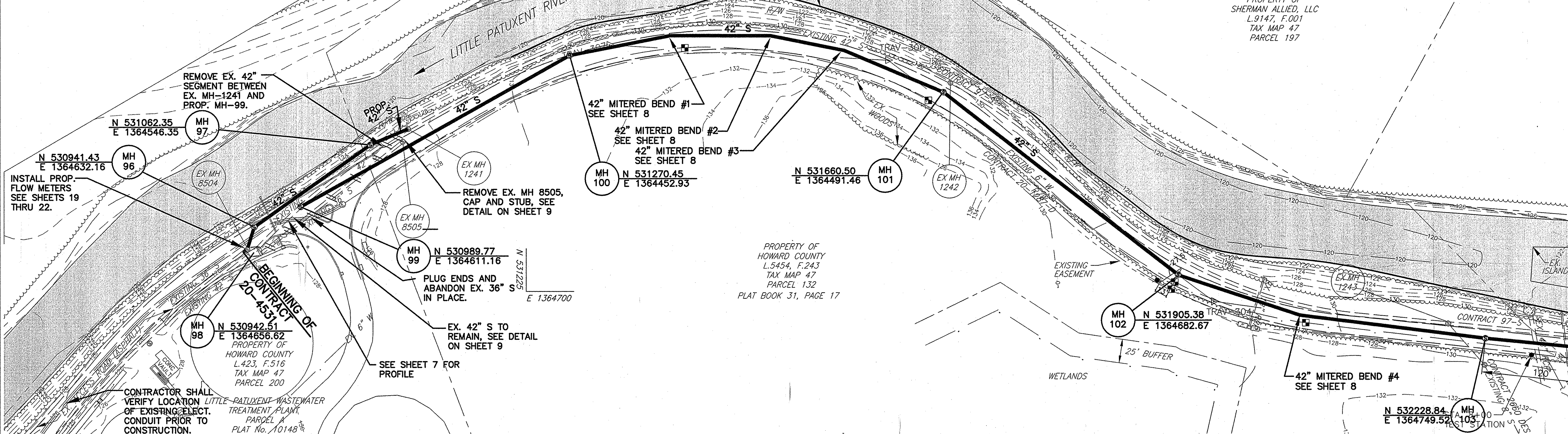
RESTORATION SCHEDULE

MH 96 TO MH 97	PAVING P4, CURB & GUTTER, SEED & MULCH
MH 97 TO MH 99	CURB & GUTTER, SEED & MULCH
MH 99 TO MH 105	PAVING P4
MH 105 TO DIV. STRUC.	PAVING P4, SEED & MULCH
DIV. STRCT TO MH 109	STREAM CROSSING
MH 109 TO MH 112	SEED & MULCH



PLAN
1"=50'

PROFILE
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

NOTE: MH 98 CONSTRUCTED AS ACCESS MANHOLE, BUILT ON TOP OF EXISTING STRUCTURE.

PROFESSIONAL CERTIFICATION

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LICENSE NO. ________ EXPIRATION DATE: ________

12/9/10

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 7/3/08 DATE — CHIEF, BUREAU OF ENGINEERING 7/1/08 DATE

CHIEF, BUREAU OF UTILITIES 7/2/08 DATE — CHIEF, UTILITY DESIGN DIVISION 7-1-08 DATE

Patton Harris Rust & Associates, Inc.
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DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.			
JUNE, 2008	R.J.C.	AS-BUILT	11/30/10
	BY NO.	REVISION	DATE

PLAN AND PROFILE

600' SCALE MAP 47 & 48 — BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 5 OF 25

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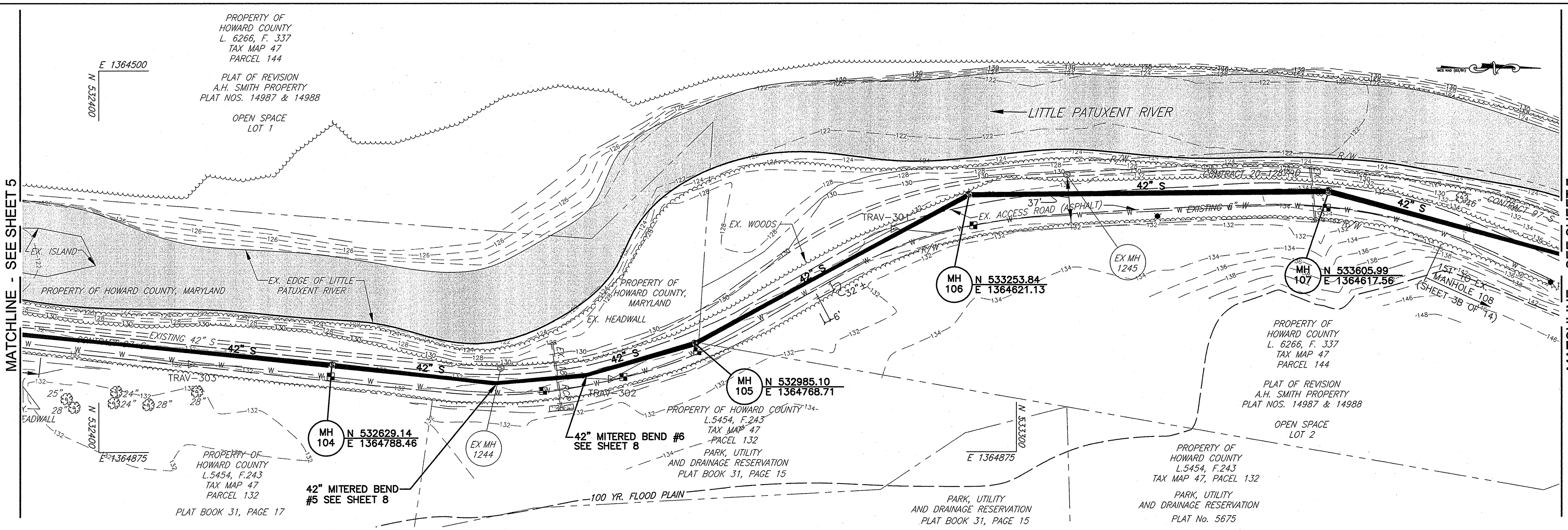

PLAN

1"=50'

PROFILE

HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

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. __________ EXPIRATION DATE: __________

12/9/10

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	7/3/08 DATE	CHIEF, BUREAU OF ENGINEERING	7/1/08 DATE
CHIEF, BUREAU OF UTILITIES	7/2/08 DATE	CHIEF, UTILITY DESIGN DIVISION	7-1-08 DATE

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
F 410.997.9282

6/24/08

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.				
OCT., 2009	RG.C.C.	AS-BUILT		11/30/10
	BY	NO.	REVISION	DATE

PLAN AND PROFILE

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 6 OF 25

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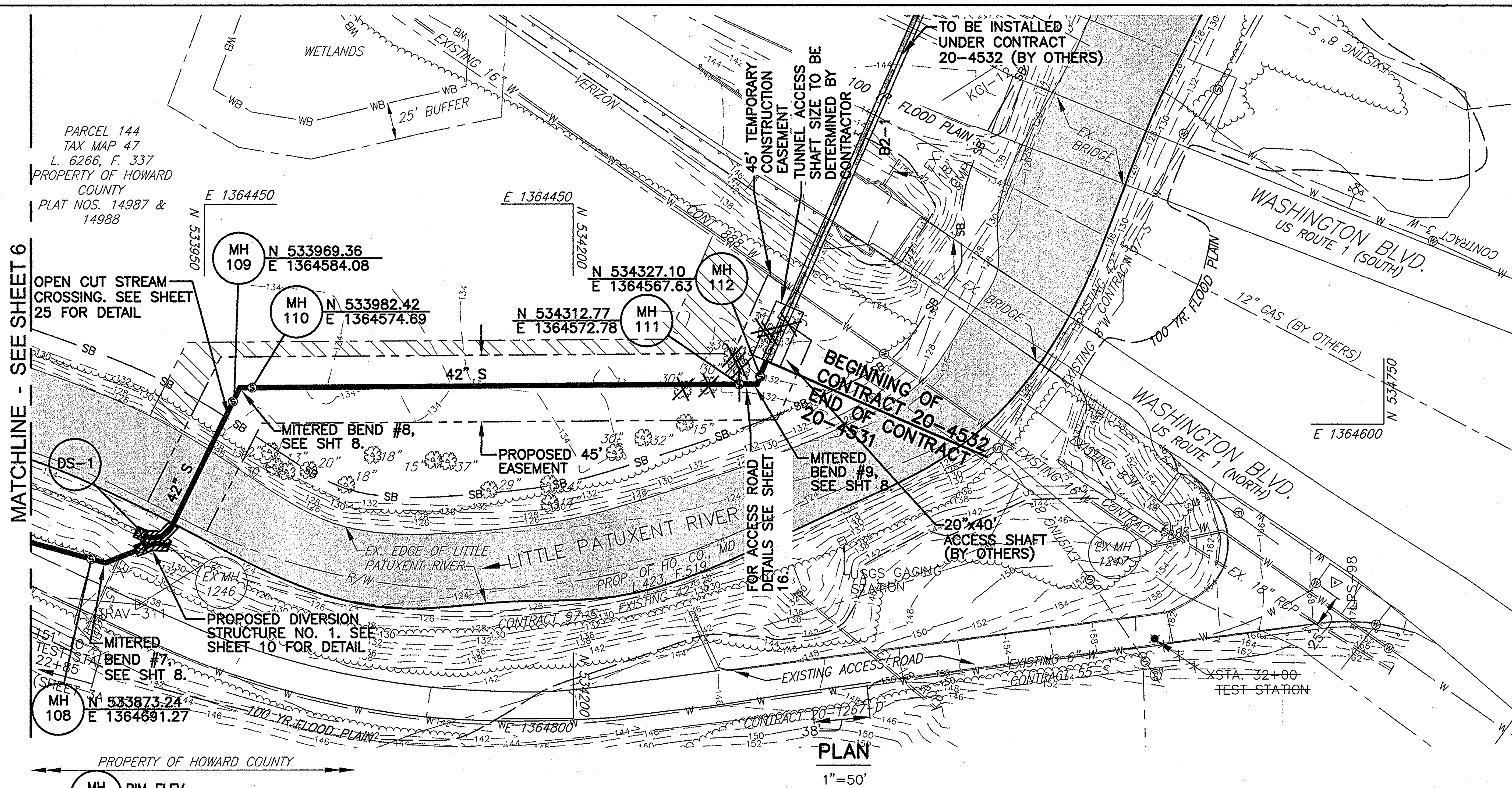
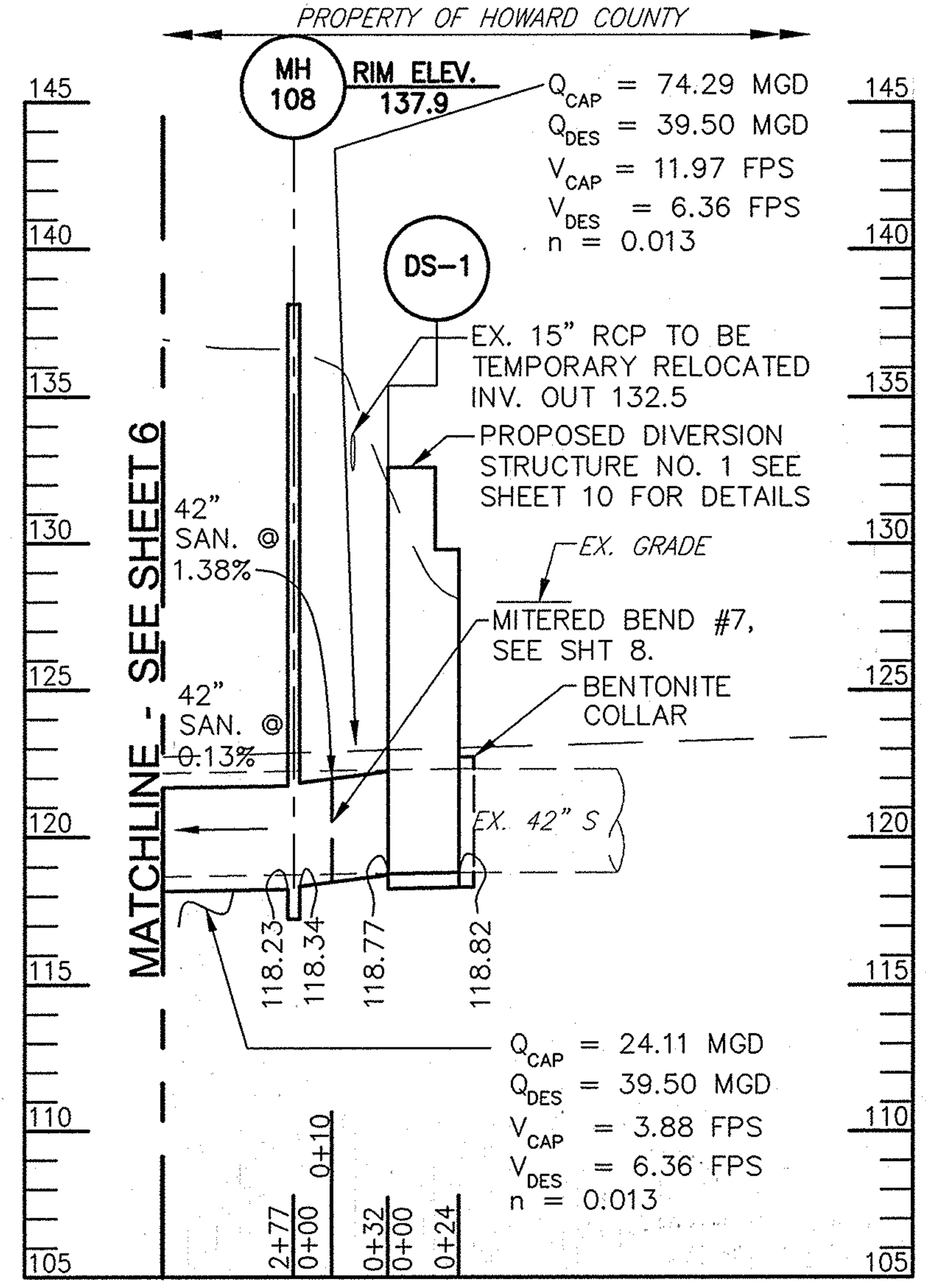
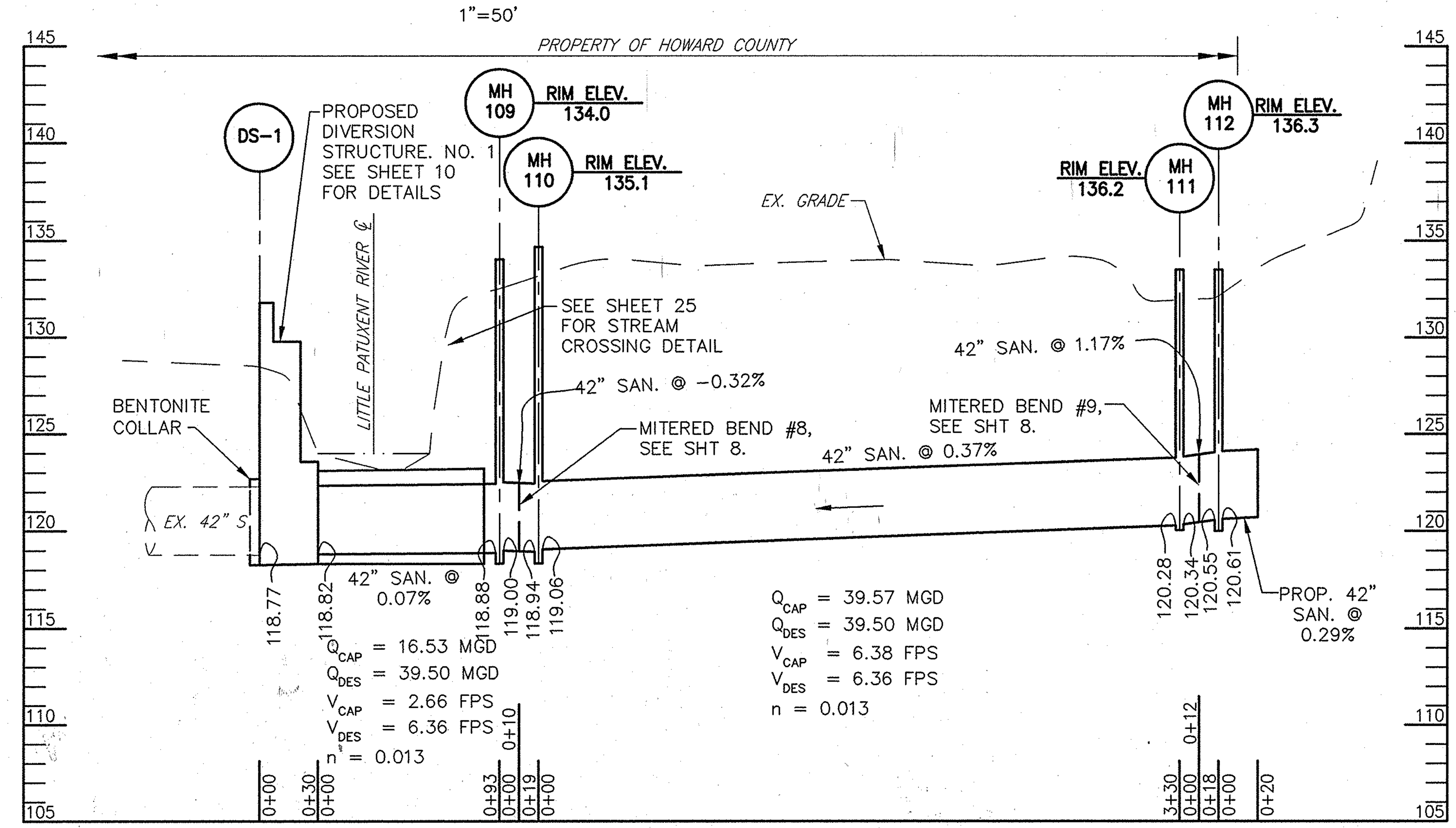




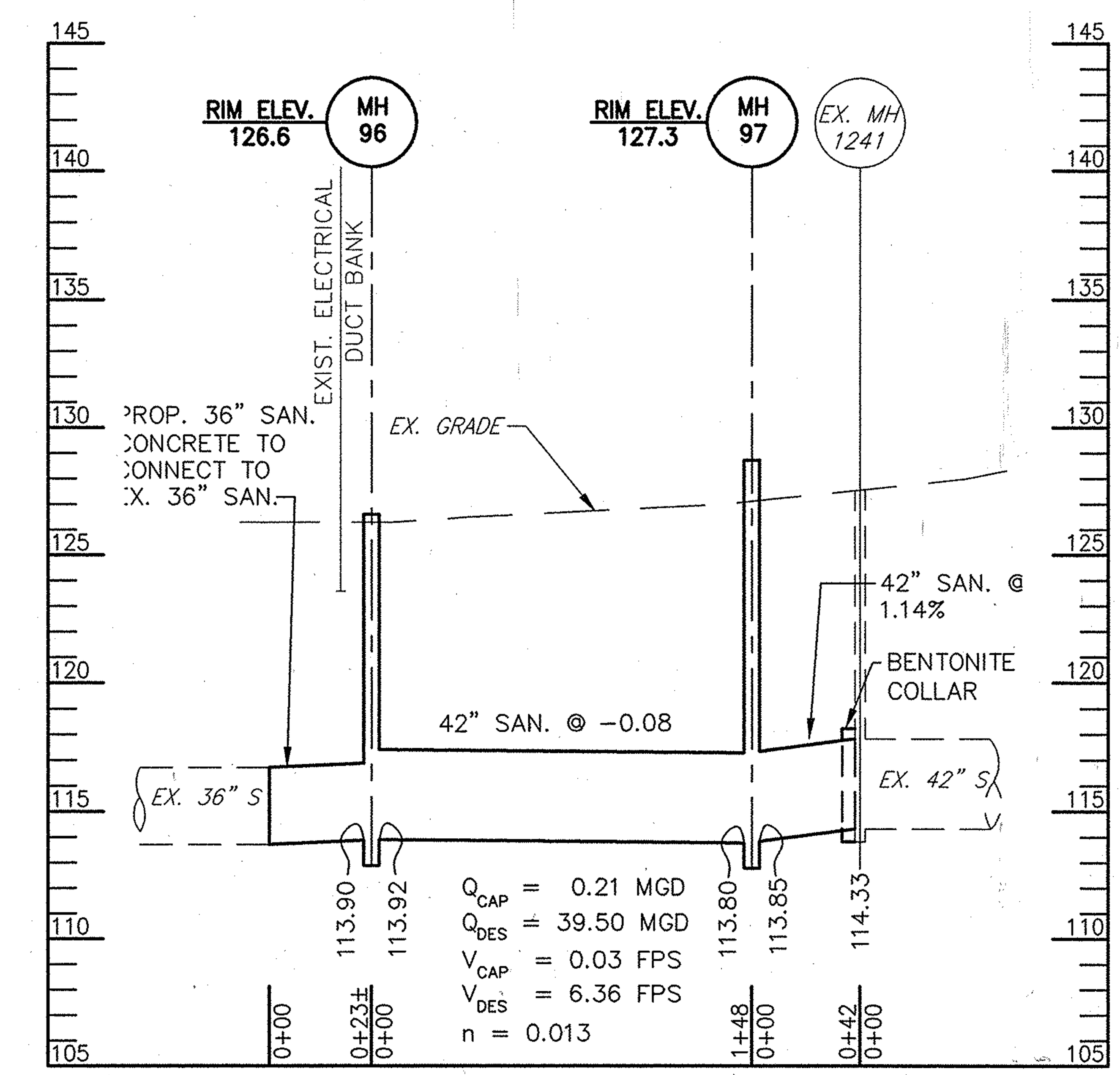
PROFILE A

HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



PROFILE B

HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



PROFILE C

HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

PROFESSIONAL CERTIFICATION

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12/3/10
AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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CHIEF, BUREAU OF UTILITIES	7/2/08 DATE	CHIEF, UTILITY DESIGN DIVISION	7-1-08 DATE

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6/24/08

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.	R.J.C.	~~AS-BUILT~~		11/30/10
OCT., 2009	BY NO.	REVISION		DATE

PLAN AND PROFILE

600' SCALE MAP 47 & 48 — BLOCK 1843 & 1942

LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 7 OF 25

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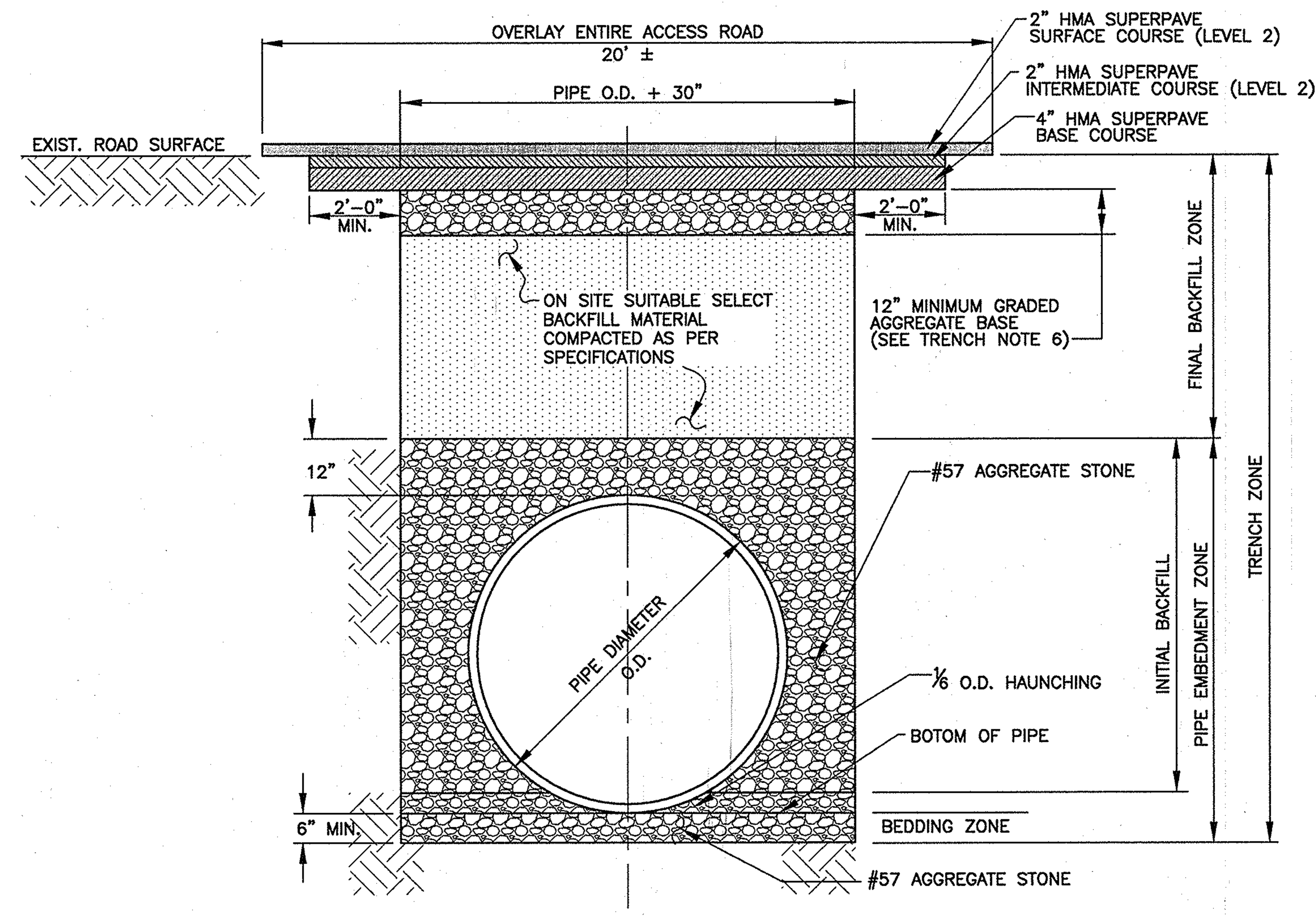
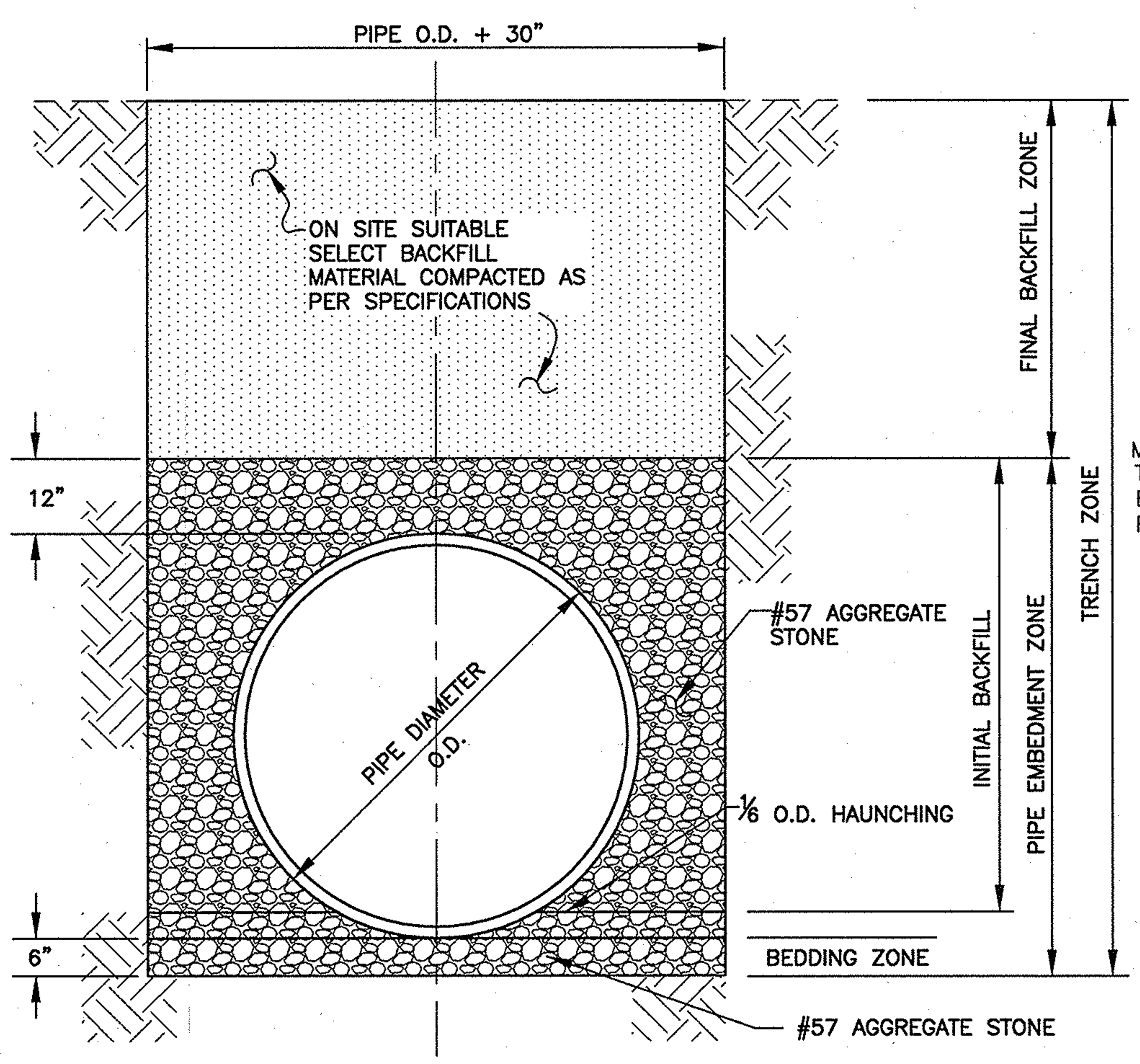


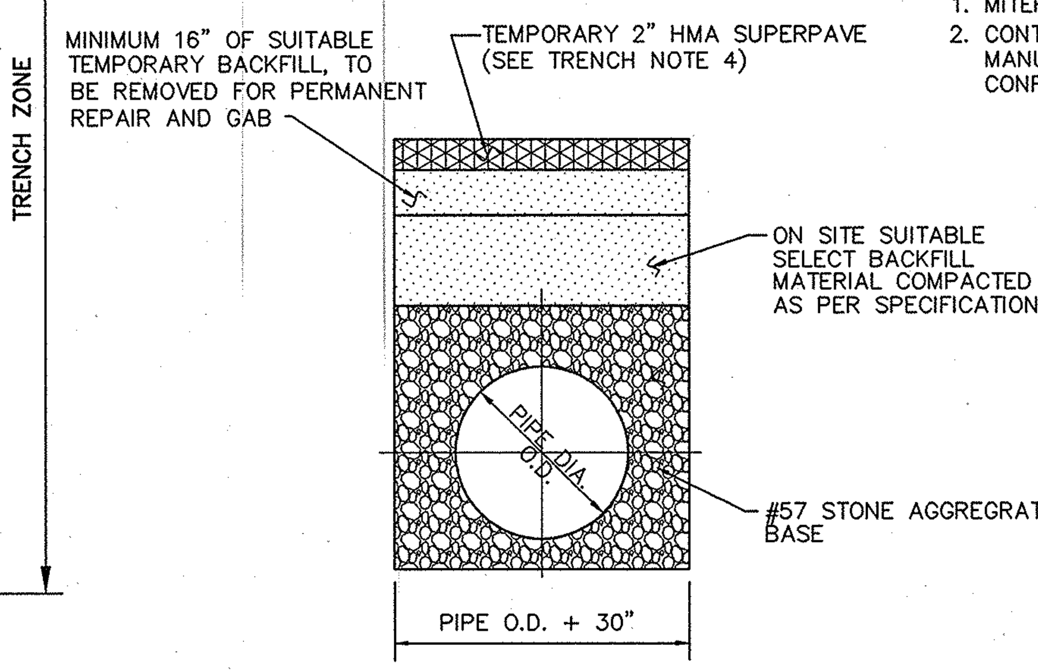
TRENCH DETAIL (ACCESS ROAD)

(FOR FRP INSTALLATION)
SCALE: N.T.S.



TRENCH DETAIL (UNPAVED)

(FOR FRP INSTALLATION)
SCALE: N.T.S.



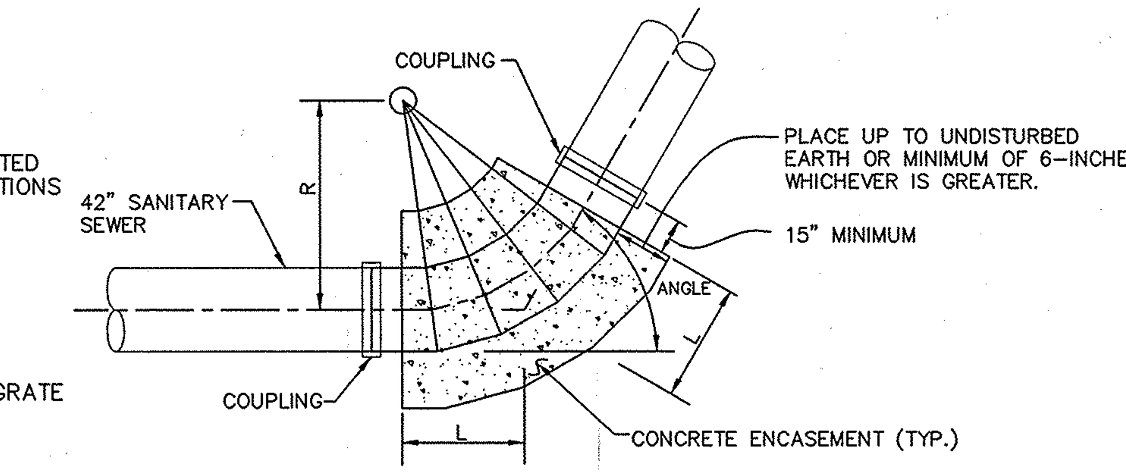
TEMPORARY PAVING DETAIL

(FOR FRP INSTALLATION)
SCALE: N.T.S.

PROPOSED MITERED PIPE BENDS

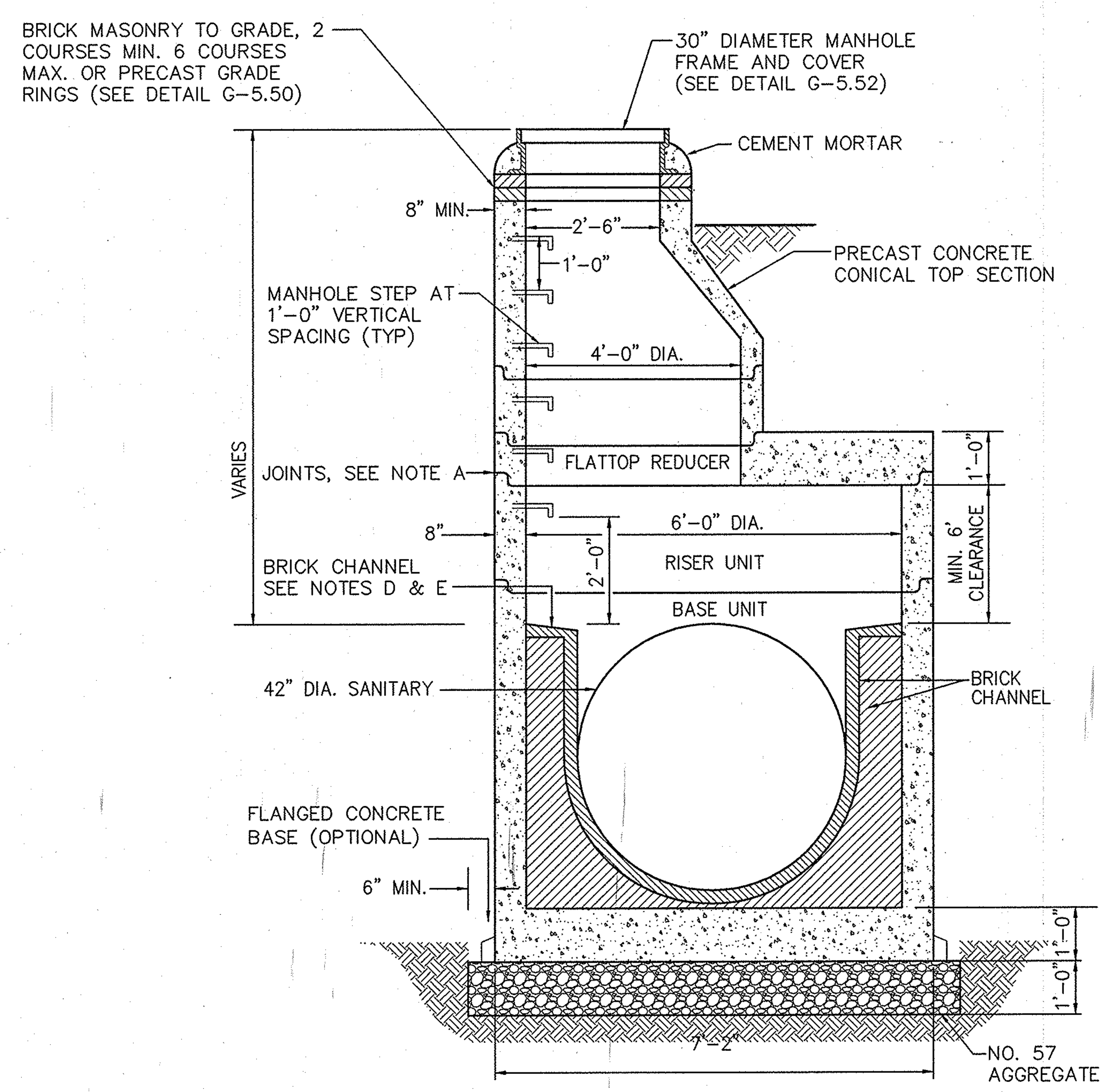
BEND #	LOCATION	ANGLE	R	L	NO. OF MITERS
1	0+92 N OF MH-100	11'-15'-0"	8.75'	0.86'	1
2	2+14 N OF MH-100	11'-15'-0"	8.75'	0.86'	1
3	2+93 N OF MH-100	11'-15'-0"	8.75'	0.86'	1
4	1+34 N OF MH-102	11'-15'-0"	8.75'	0.86'	1
5	1+63 N OF MH-104	11'-15'-0"	8.75'	0.86'	1
6	2+52 N OF MH-104	11'-15'-0"	8.75'	0.86'	1
7	0+10 N OF MH-108	36'-31'-2"	8.75'	2.89'	3
8	0+10 N OF MH-109	62'-50'-12"	8.75'	5.34'	5
9	0+10 N OF MH-111	66'-04'-01"	8.75'	5.69'	5

NOTE:
1. MITER ANGLES SHALL NOT EXCEED 15'.
2. CONTRACTOR SHALL CONFIRM REQUIRED DIMENSIONS OF MITERED BENDS WITH MANUFACTURER PRIOR TO CONSTRUCTION. MINIMUM LENGTH OF RADII SHALL CONFORM TO HOWARD COUNTY DESIGN REQUIREMENTS.



TYPICAL MITER BEND DETAIL

SCALE: N.T.S.



72" PRE-CAST SANITARY MANHOLE

SCALE: N.T.S.

TRENCH NOTES:

1) SAW CUT FULL DEPTH ALL JOINTS OF EXISTING CONCRETE, BITUMINOUS, AND BASE PAVEMENTS.
2) AGGREGATE SUB-BASE WIDTH SHALL BE THE ACTUAL TRENCH WIDTH.
3) STEEL PLATE TO BE PLACED OVER OPEN TRENCH UNTIL SUCH TIME THAT TEMPORARY PAVING IS COMPLETED.
4) TEMPORARY PAVING FOR UTILITY TRENCH REPAIR SHALL CONSIST OF 2" OF HMA HOT PATCH, SO THAT THE SURFACE IS FLUSH WITH THE ADJOINING PAVING SURFACES. IF ANY SETTLEMENT OCCURS, THE CONTRACTOR SHALL REFILL WITH PROPER MATERIAL AND RESTORE SAID PAVING AS SPECIFIED.
5) DAMPEN AND COMPACT GRADED AGGREGATE BASE TO MINIMUM 95% MOD AASHTO DENSITY BEFORE PLACING HOT MIX ASPHALT.
6) HOT MIX ASPHALT PAVEMENT REPAIR THICKNESS SHALL BE EQUAL TO THE EXISTING PAVING SECTION OR AS APPROVED BY DPW. THE MINIMUM PAVING PATCH SHALL CONSIST OF 2" HMA SUPERPAVE SURFACE COURSE INSTALLED AS AN OVERLAY OF THE ENTIRE ROADWAY AND 2" HMA SUPERPAVE INTERMEDIATE COURSE OVER 4" HMA SUPERPAVE BASE COURSE. GRADED AGGREGATE SUB-BASE SHALL BE PLACED AND COMPACTED IN 6" MINIMUM COMPACTED THICKNESS LAYERS WITH A TOTAL MINIMUM DEPTH OF 12 INCHES.
7) SEE UTILITY TRENCH ROADWAY REPAIRING, DETAIL G-4.01.

72" PRE-CAST SANITARY MANHOLE NOTES:

A SEE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON DETAIL G-5.11.

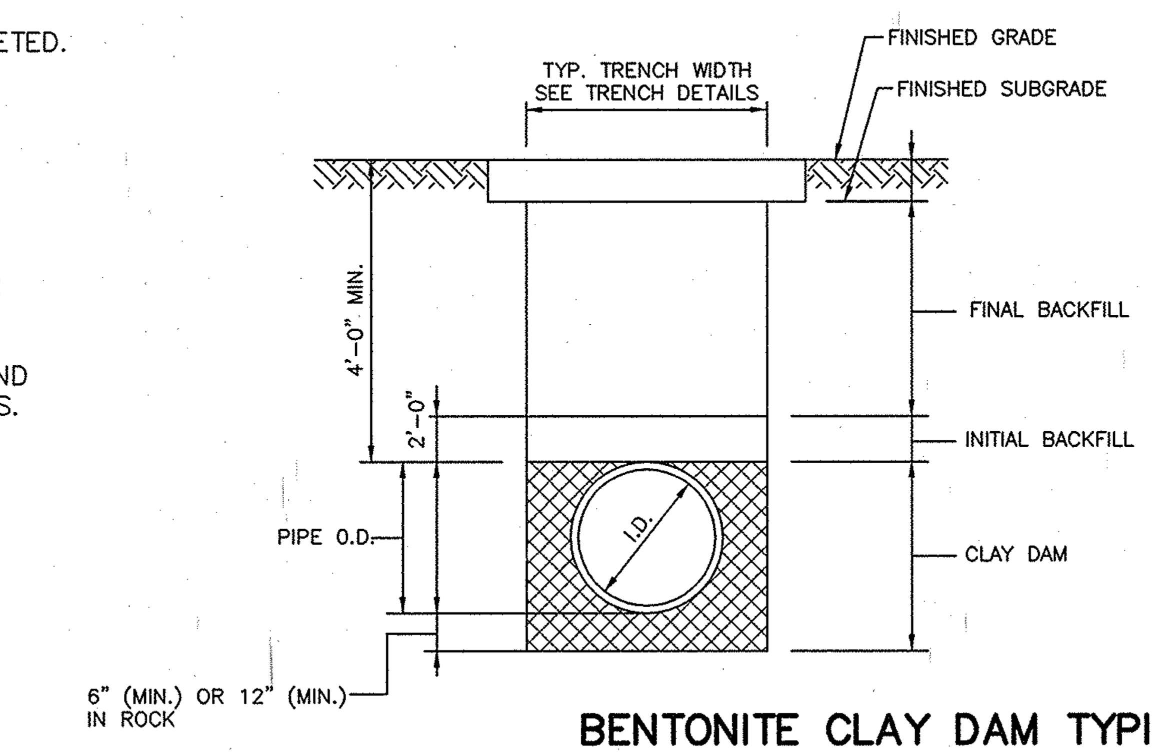
B MANHOLE DESIGN SPECIFICATIONS SHALL CONFORM TO "PRECAST REINFORCED CONCRETE MANHOLE SECTION A.S.T.M. DESIGNATION C-478, LATEST REVISIONS.

C 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 "O" RING RUBBER GASKETS MEETING A.S.T.M. C-443 AND C-361 OR APPROVED EQUAL. ANY EXCESSIVE OPENINGS WITHIN THE JOINTS SHALL BE FILLED USING A NON-SHRINK GROUT FILLER.

D BENCH AND CHANNEL TO BE CONSTRUCTED OF ONE COURSE OF BRICK ON EDGE. BENCH TO SLOPE A MINIMUM OF 1 INCH PER FOOT TOWARDS CHANNEL.

E BENCH HEIGHT ABOVE PIPE INVERT TO BE EQUAL TO DIAMETER OF THE OUTGOING PIPE OR AS DIRECTED BY THE ENGINEER.

F CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING MINIMUM REQUIREMENT FOR REINFORCING. REINFORCING SHALL BE DESIGNED BY A LICENSED STRUCTURAL ENGINEER REGISTERED IN THE STATE OF MARYLAND. REINFORCING SHOP DRAWINGS SHALL BE SUBMITTED AND APPROVED PRIOR TO MANUFACTURE OF MANHOLES.

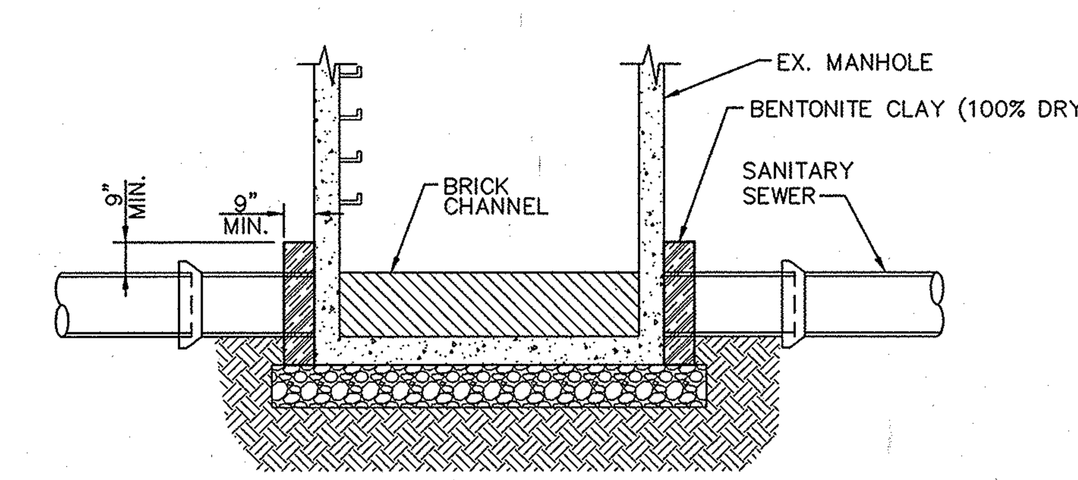


BENTONITE CLAY DAM TYPICAL PIPE BEDDING DETAIL

SCALE: N.T.S.

CLAY DAM NOTES

1. CLAY DAM SHALL BE INSTALLED AT INTERVALS NO GREATER THAN 1,000 FEET AND AS SHOWN ON WETLAND RESTORATION PLAN.
2. CLAY DAM LENGTH SHALL BE 2 FEET ALONG THE PIPE AXIS, AND SHALL BE PLACED FROM UNDERCUT SUBGRADE OR TRENCH SUBGRADE UP TO THE PIPE SPRINGLINE.
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. INITIAL AND FINAL BACKFILL SHALL BE PLACED FROM THE PIPE SPRINGLINE UP TO FINISH SUBGRADE. SEE TRENCH DETAILS.



BENTONITE CLAY PLACEMENT DETAIL FOR EX. MANHOLES & STRUCTURES

SCALE: N.T.S.

12/3/10
AS-BUILT

PROFESSIONAL CERTIFICATION

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

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6/24/08

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.	R.J.C.	AS-BUILT	11/30/10
OCT., 2009	BY NO.	REVISION	DATE

MISCELLANEOUS DETAILS

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 8 OF 25

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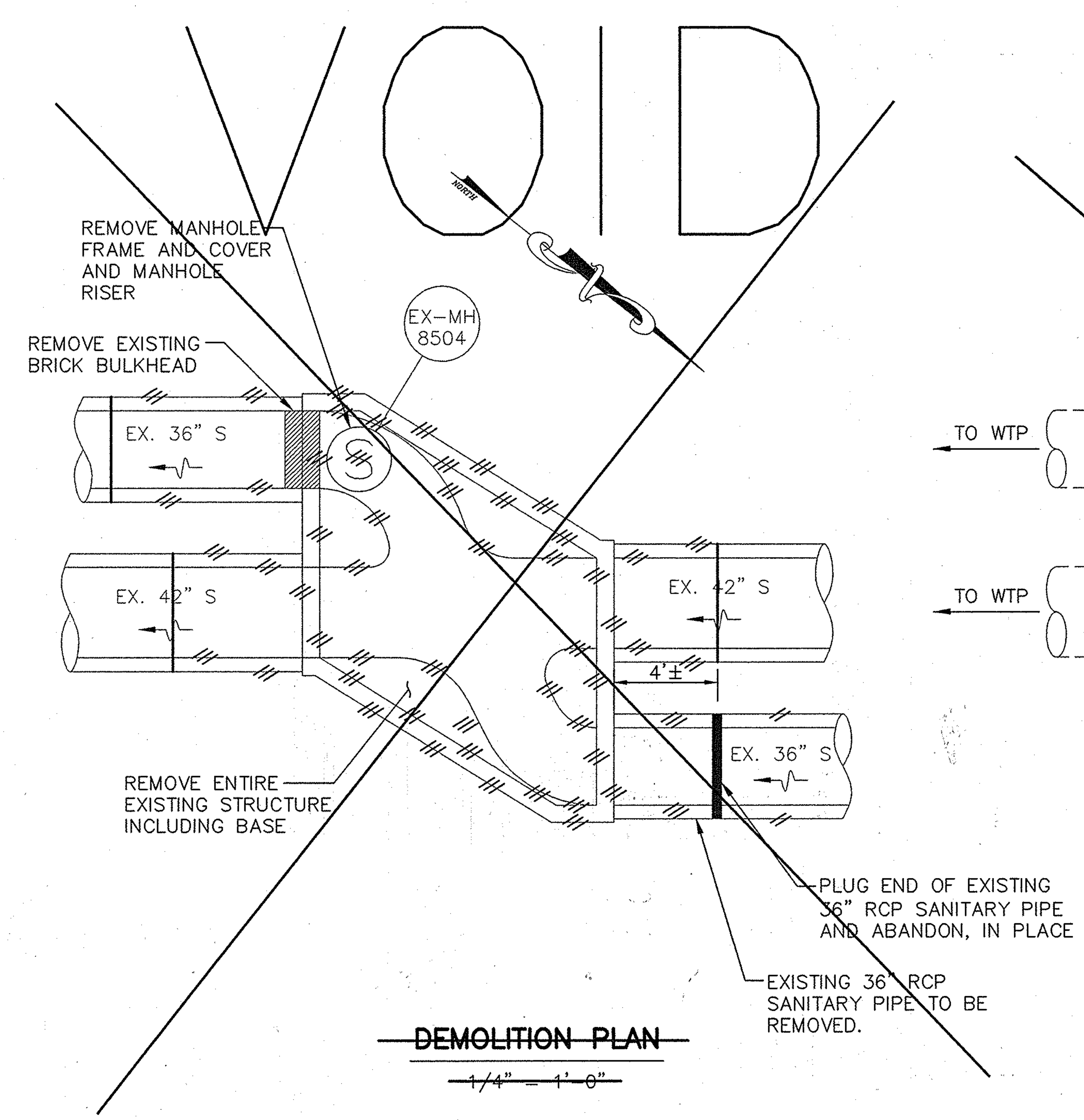
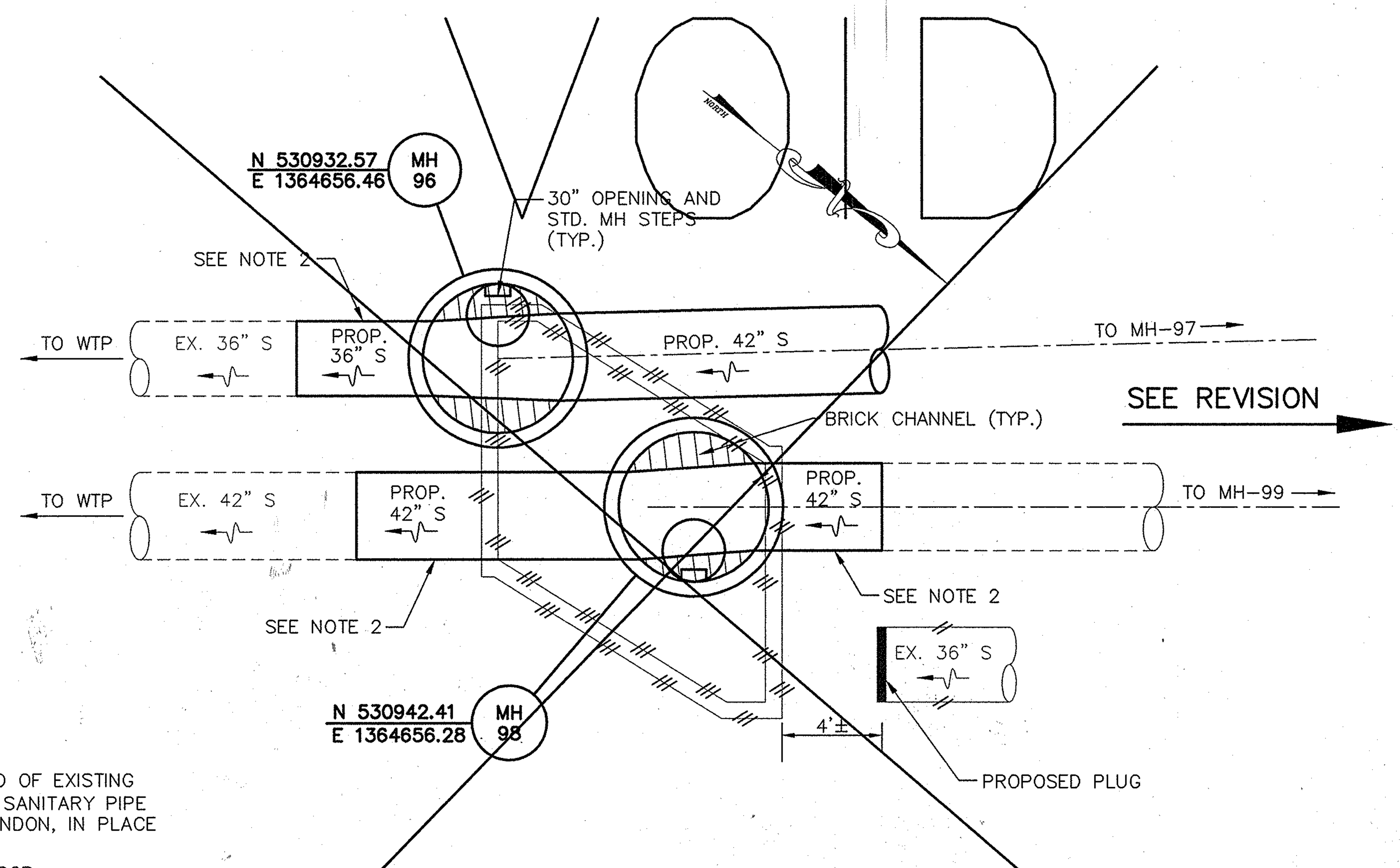
NOTES:

1. CONTRACTOR SHALL REMOVE THE EXISTING STRUCTURE IN ITS ENTIRETY.
2. CONTRACTOR SHALL REMOVE THE EXISTING SEWER PIPE TO THE NEAREST JOINT. CONTRACTOR SHALL USE CONCRETE PIPE TO CONNECT THE EXISTING SEWER PIPE TO PROPOSED MH's 96, 98 & 99.
3. CONTRACTOR SHALL TAKE PARTICULAR CARE NOT TO DROP ANY DEBRIS INTO OPERATING SEWER.
4. SEE SHEET 23 FOR BYPASS PUMP DETAILS.



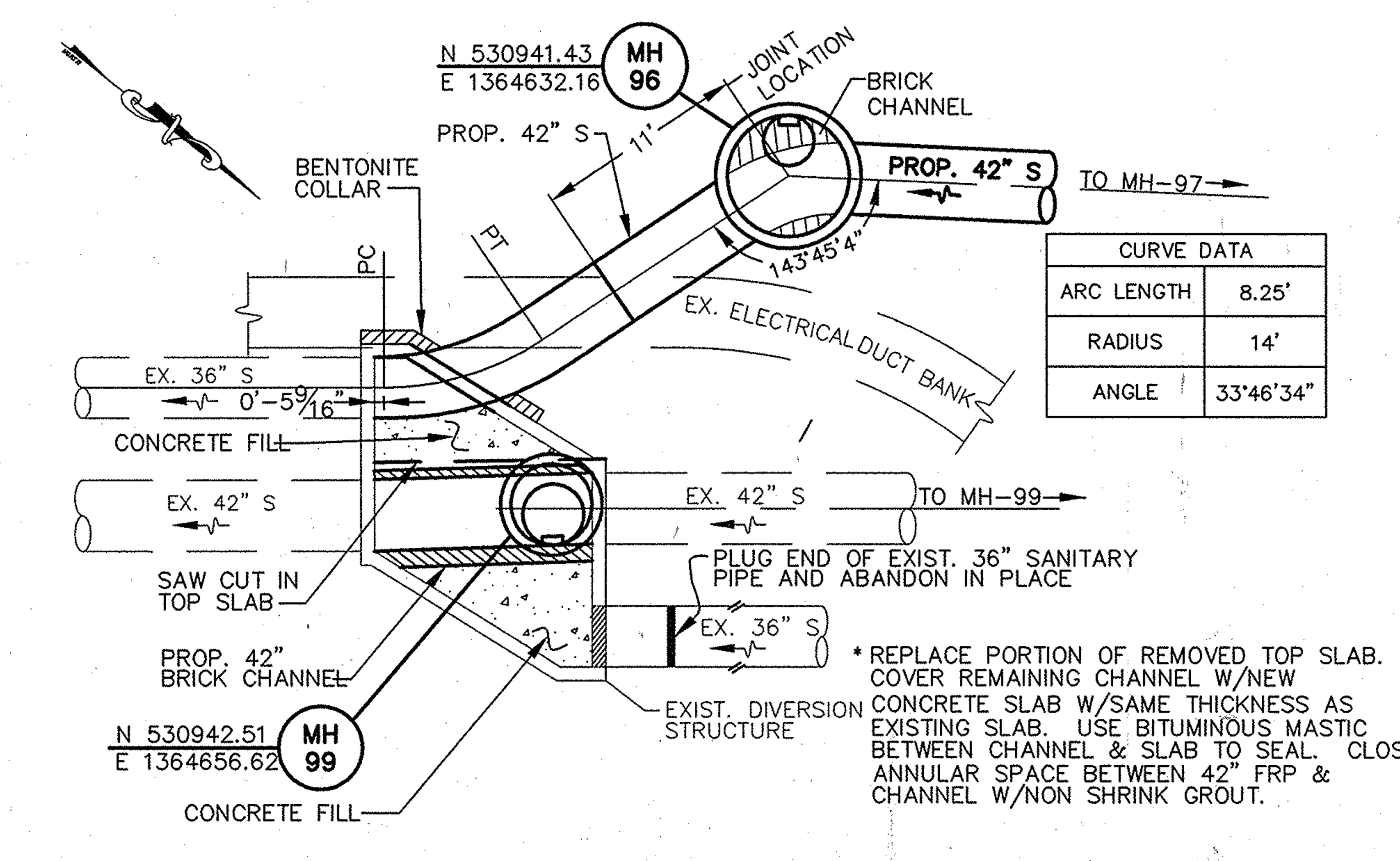
~~DEMOLITION PLAN~~

~~1/4" = 1'-0"~~



~~PROPOSED MH-96 AND MH-97 CONNECTION DETAIL~~

~~1/4" = 1'-0"~~



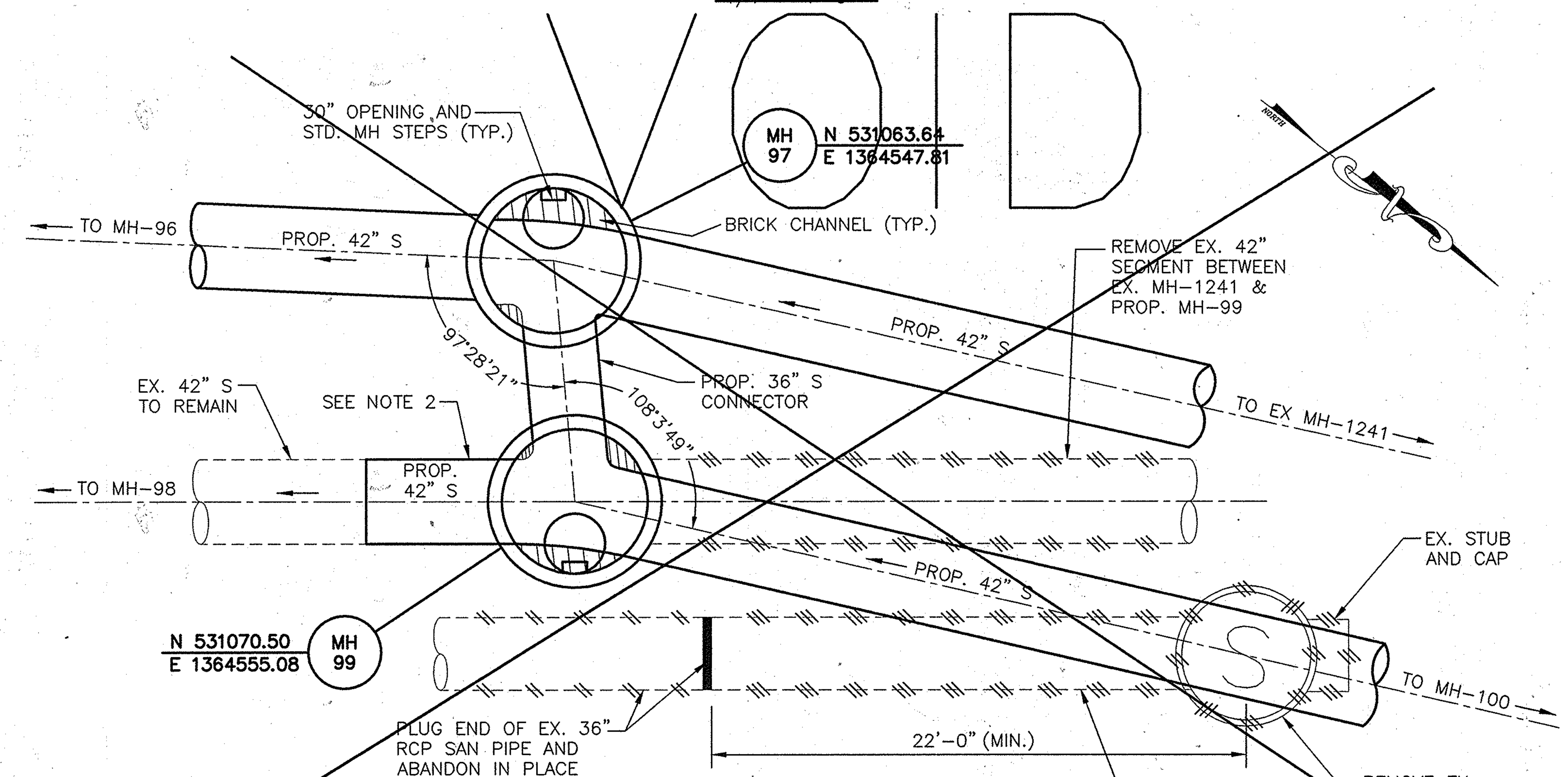
CURVE DATA	
ARC LENGTH	8.25'
RADIUS	14'
ANGLE	33°46'34"

REVISED DIVERSION STRUCTURE

CONNECTION DETAIL

~~1/4" = 1'-0"~~

N.T.S.



~~PROPOSED MH-97 AND MH-99 CONNECTION DETAIL~~

~~1/4" = 1'-0"~~

12/9/10

AS-BUILT

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HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND — PROFESSIONAL ENGINEER

6/24/08

DES: R.A.				
DRN: D.K.S.				
CHK: G.C.L.				
OCT., 2009	R.J.C.	AS-BUILT		11/30/10
	BY	NO.	REVISION	DATE

MODIFICATIONS OF
EX. STRUCTURE/ MH-8504
DETAILS

600' SCALE MAP 47 & 48 — BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 9 OF 25

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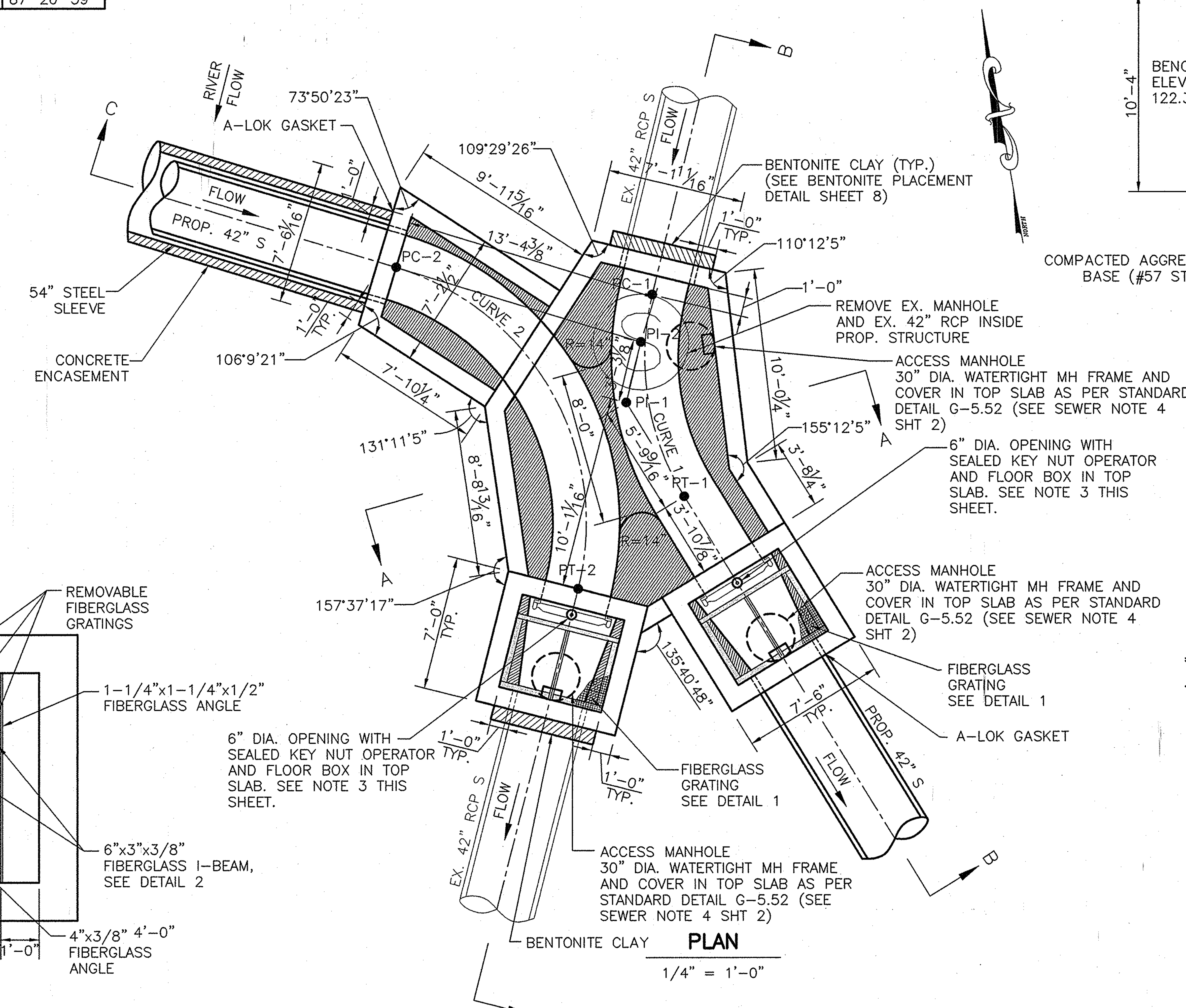
CURVE DATA				
STATION	RADIUS	T	L	Δ
CURVE 1	14'	5.80'	11.00'	45° 0' 0"
CURVE 2	14'	13.37'	21.34'	87° 20' 59"

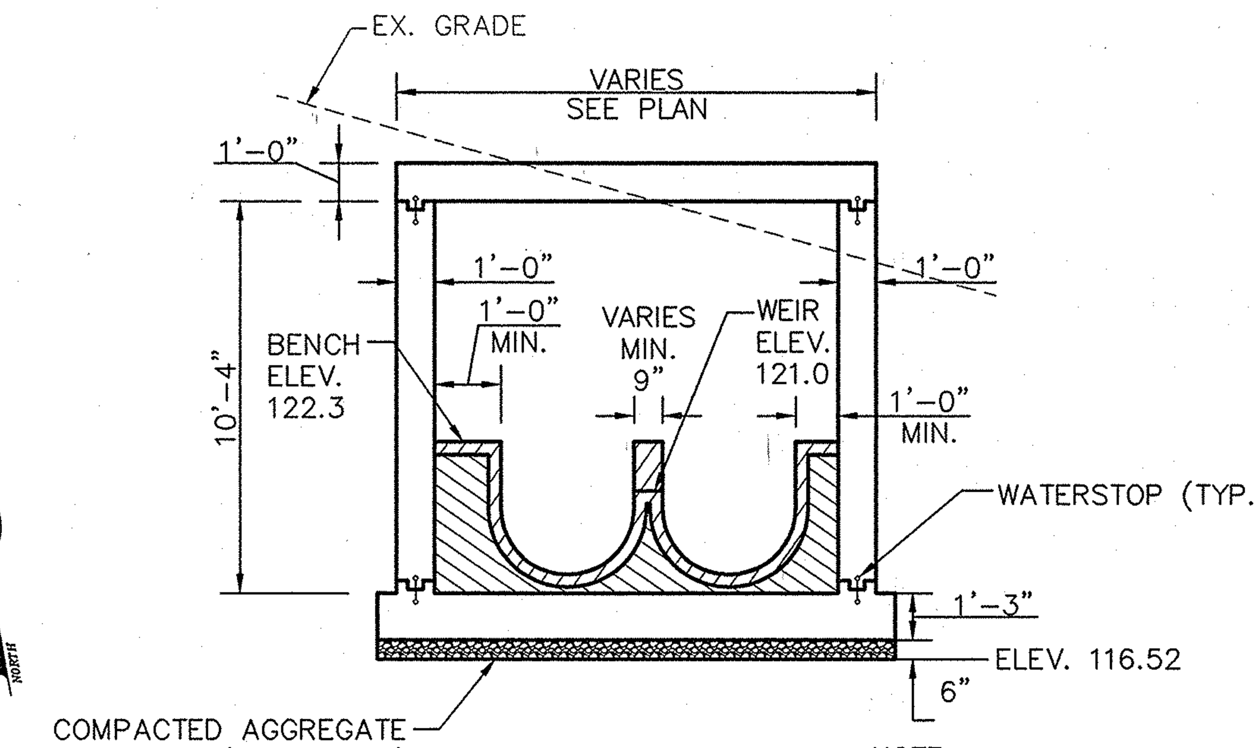
CURVE STAKEOUT		
	NORTHING	EASTING
PC-1	533924.27	1364681.99
PI-1	533918.95	1364679.67
PT-1	533913.55	1364681.80
PC-2	533927.99	1364669.05
PI-2	533921.94	1364680.97
PT-2	533909.76	1364675.50

NOTES:

1. SEE SHEET 24 FOR BYPASS PUMP DETAILS.
2. REMOVE EX. MH 1246 IN ITS ENTIRETY.
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.
4. FOR STRUCTURAL DETAILS SEE SHEETS 11 AND 12.
5. A-LOK GASKETS SHALL BE USED AT PIPE ENTRY/EXIT POINTS OF THE DIVERSION STRUCTURE, AS INDICATED ON DRAWINGS.
6. SLUICE GATES SHALL BE FONTAINE SERIES 20 MODEL 202-WALL MOUNTED (COMPLETE WITH WALL THIMBLE) AND NON-RISING STEM (NR1) OR APPROVED EQUAL.
7. TOP SLABS ABOVE SLUICE GATES SHALL BE REMOVABLE. LIFT HOOKS SHALL BE INSTALLED IN TOP SLABS, SEE DETAIL 2 SHEET 11. JOINT BETWEEN TOP SLAB AND WALLS SHALL BE SEALED WITH A BITUMINOUS MASTIC OR EQUIVALENT.

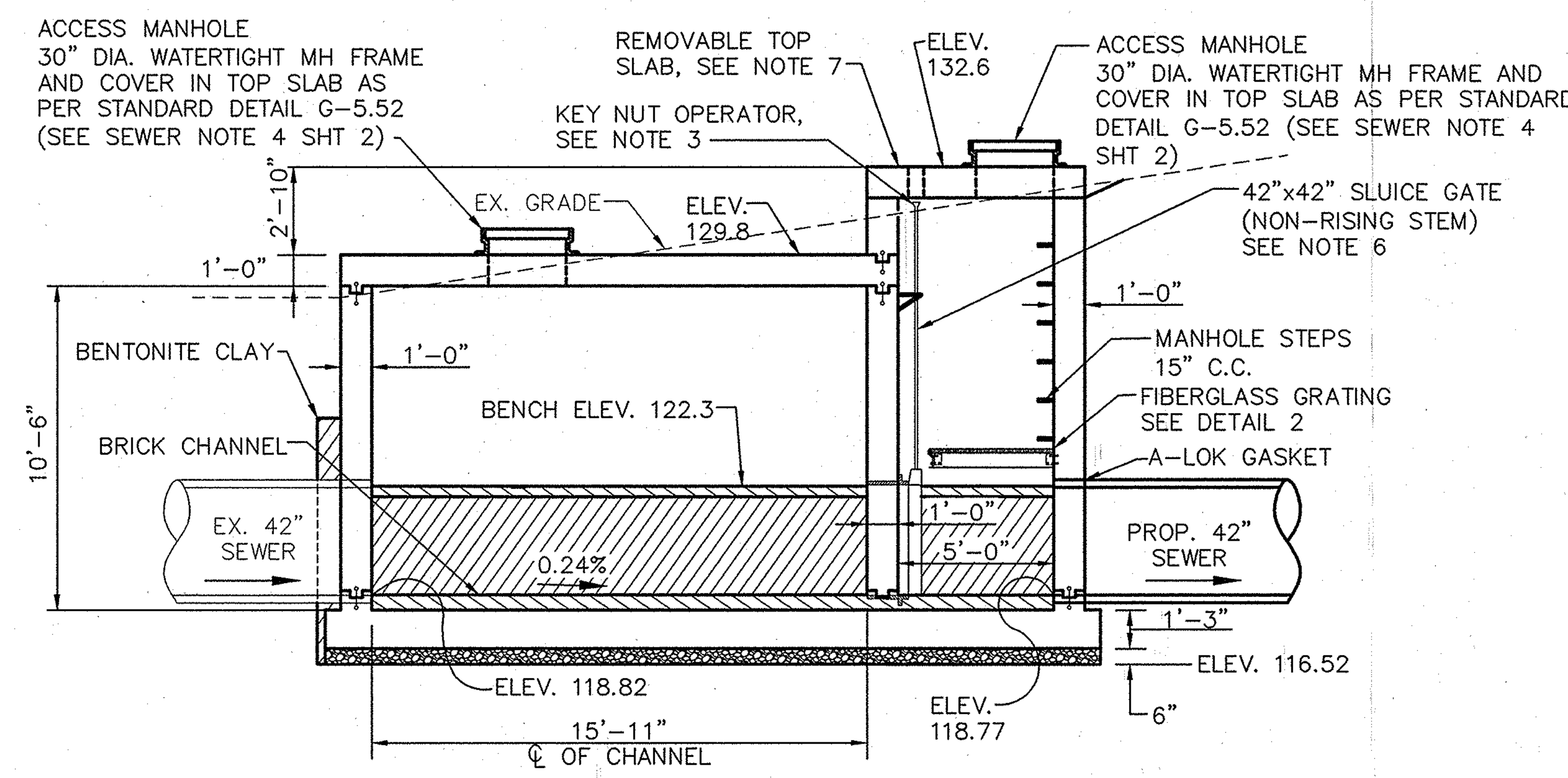


PLAN
1/4" = 1'-0"

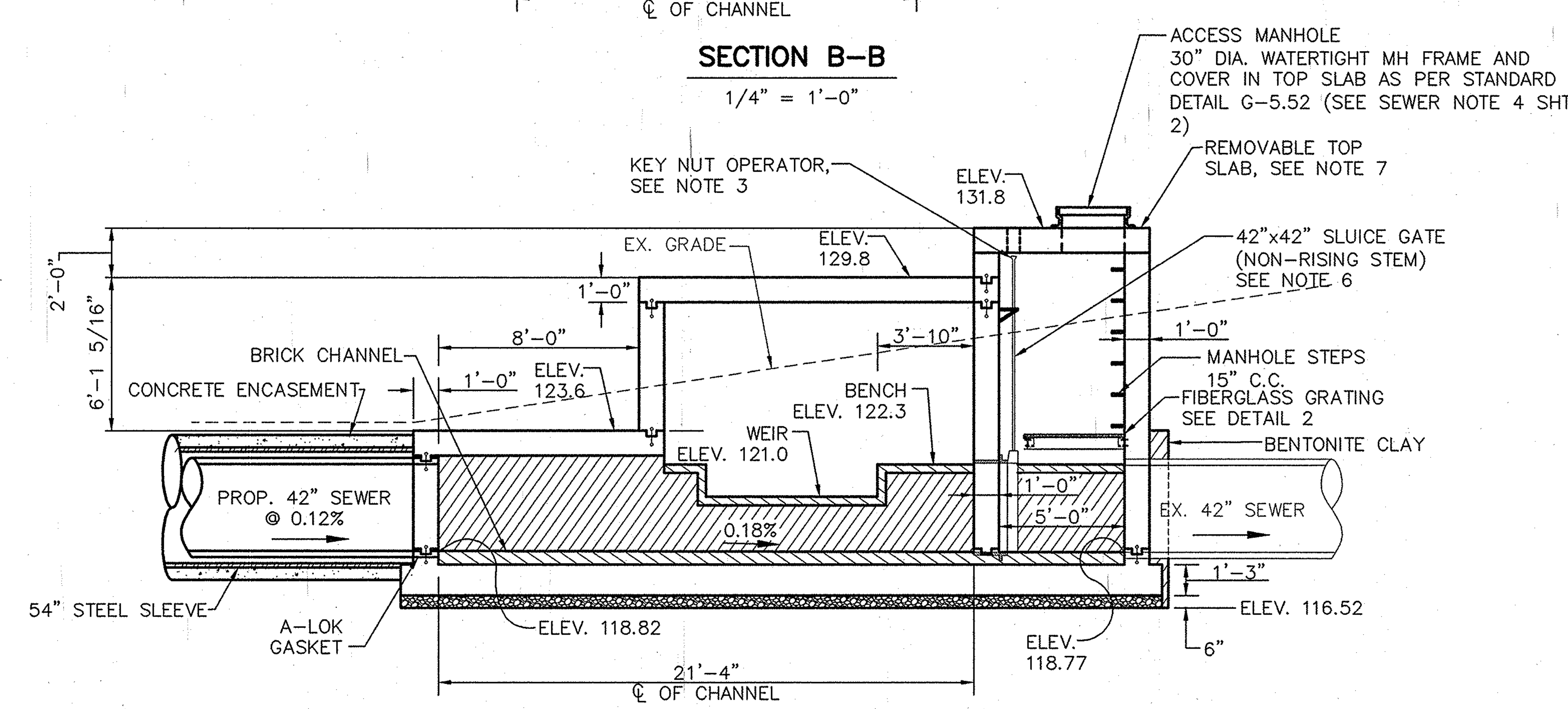


SECTION A-A
1/4" = 1'-0"

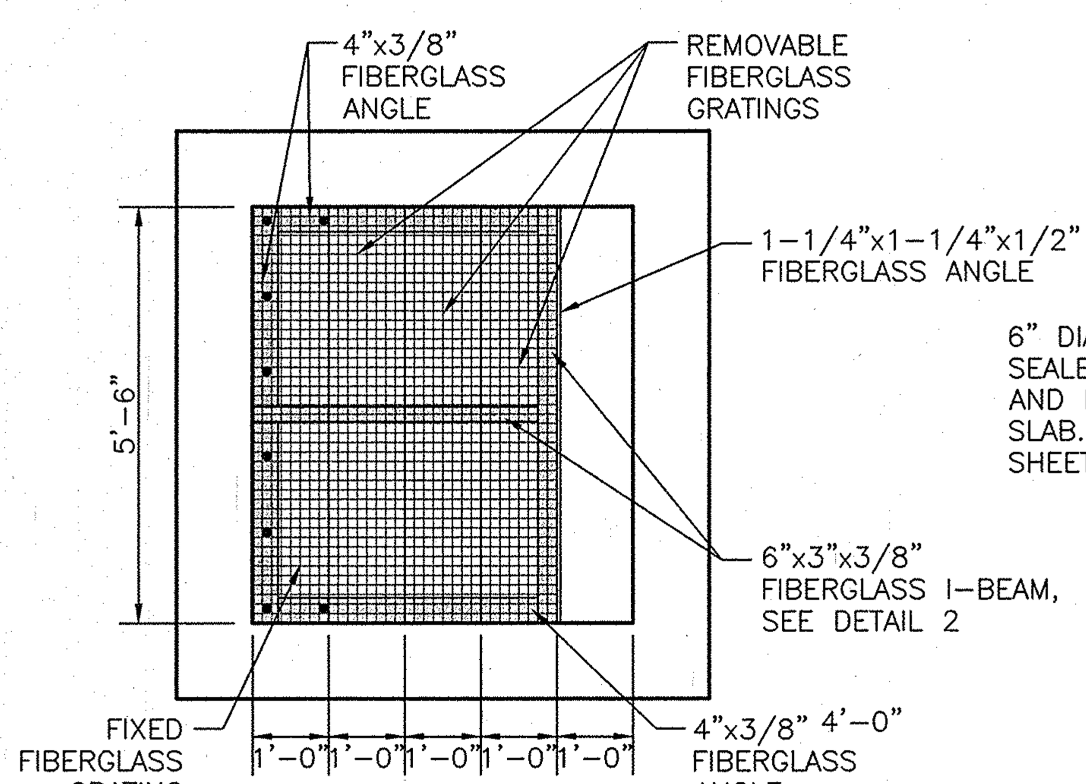
NOTE: BACKGROUND OMITTED FOR CLARITY



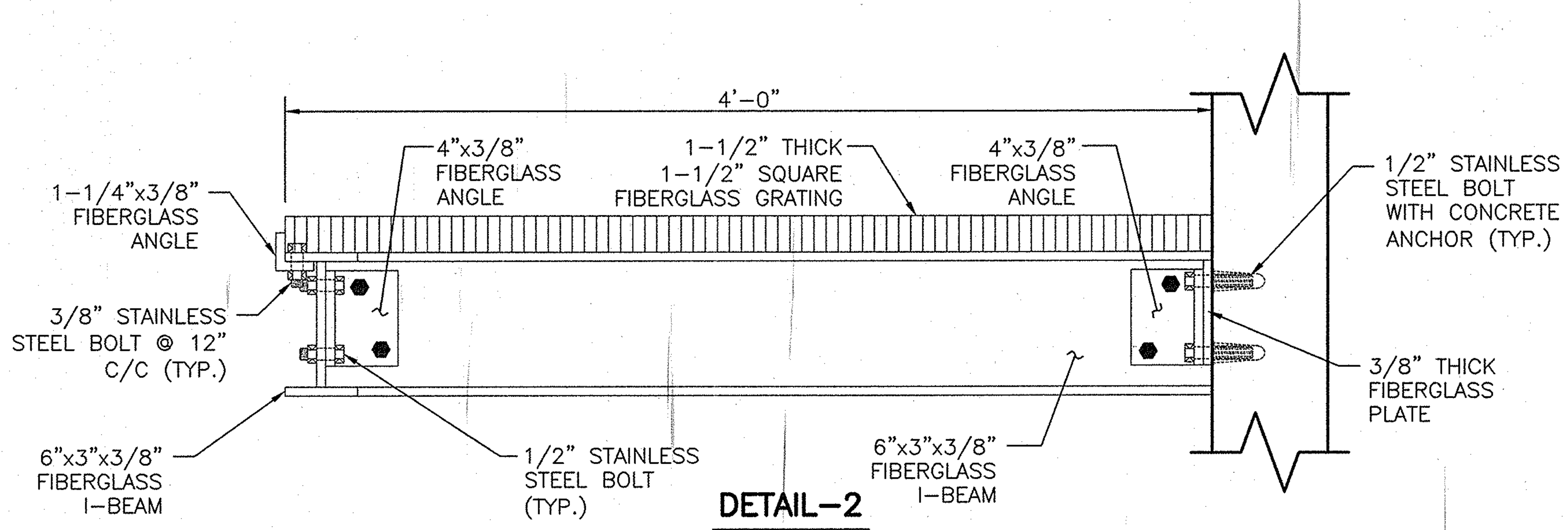
SECTION B-B
1/4" = 1'-0"



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



DETAIL-1
1/2" = 1'-0"



DETAIL-2
NOT TO SCALE

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12/3/10 AS-BUILT

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HOWARD COUNTY, MARYLAND

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CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

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STATE OF MARYLAND PROFESSIONAL ENGINEER
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OCT., 2009	BY	NO.	REVISION	DATE

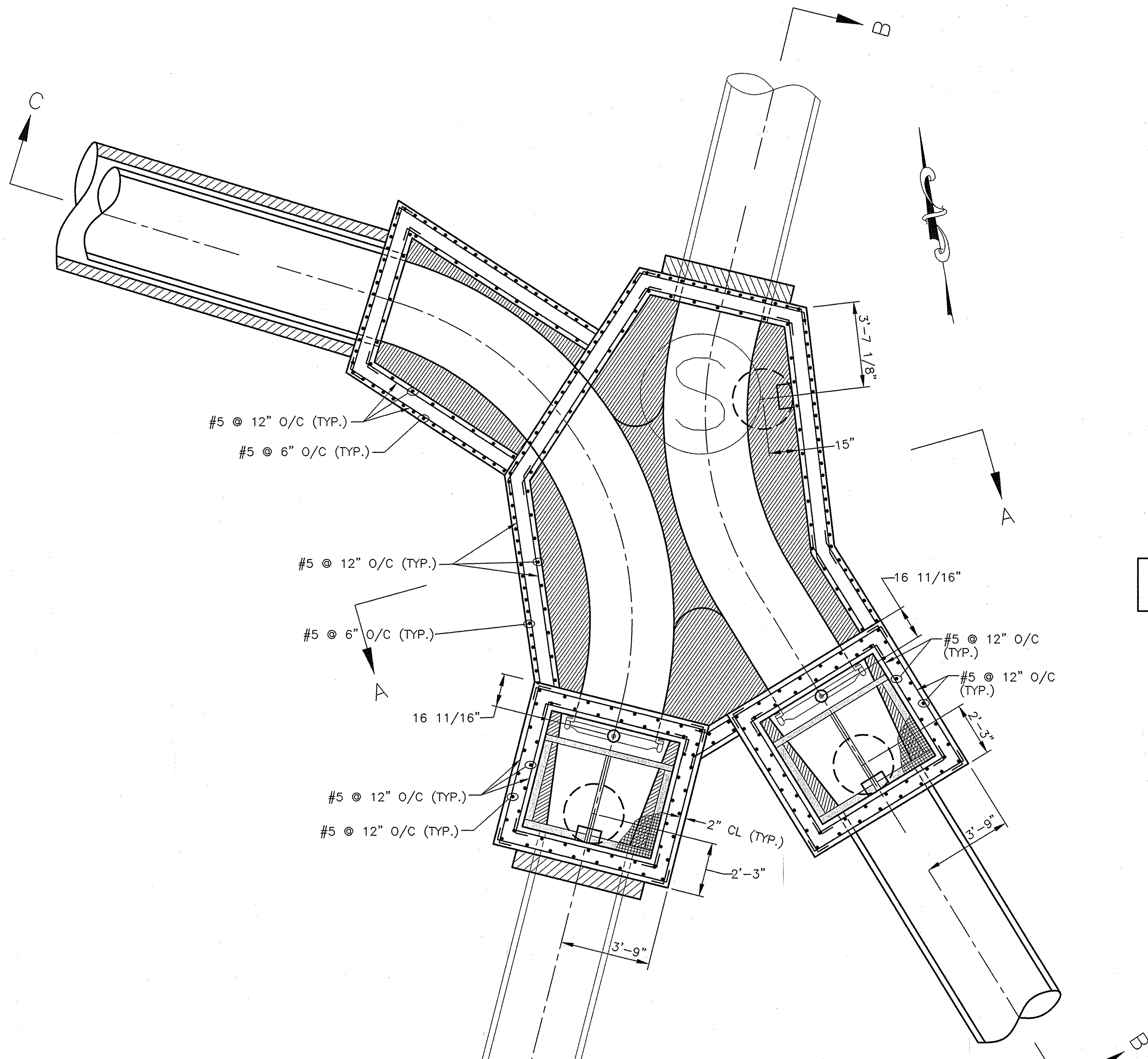
DIVERSION STRUCTURE NO. 1
PLAN & SECTIONS

600' SCALE MAP 47 & 48 BLOCK 1843 & 1942

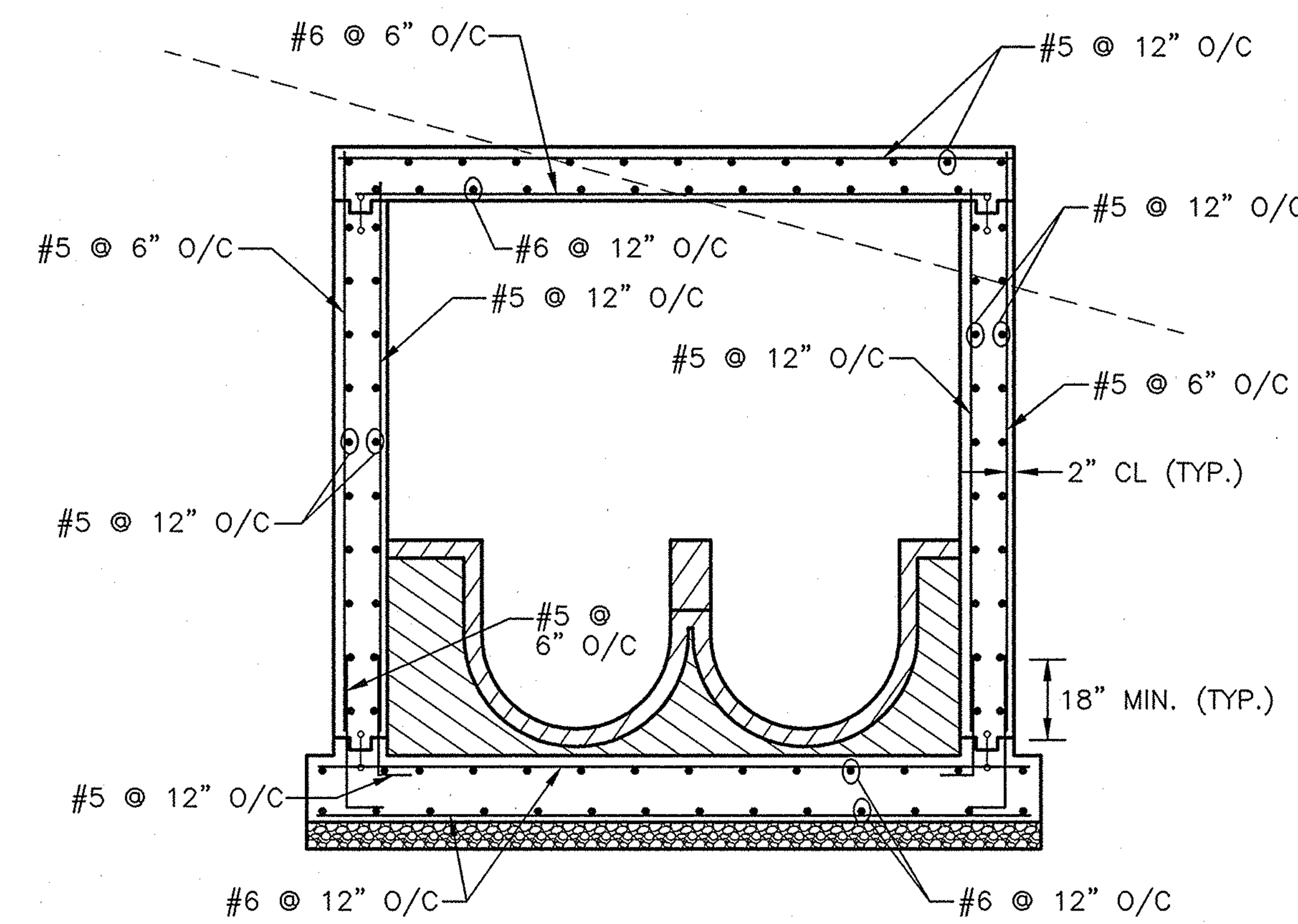
LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 10 OF 25



PLAN
3/8" = 1'-0"

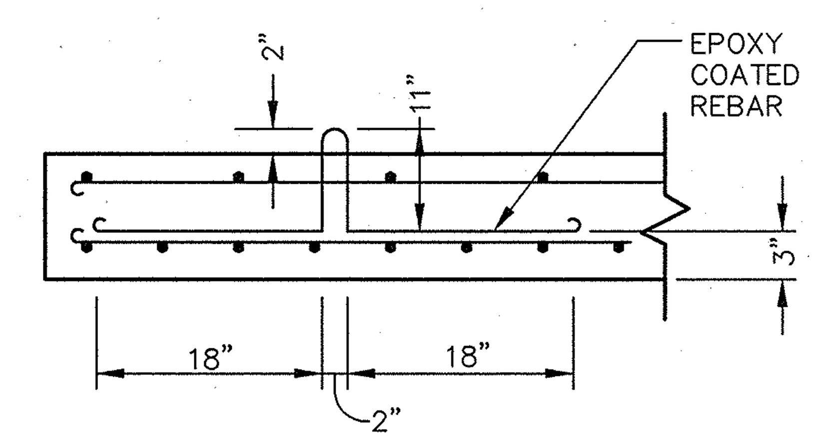


SECTION A–A
3/8" = 1'-0"

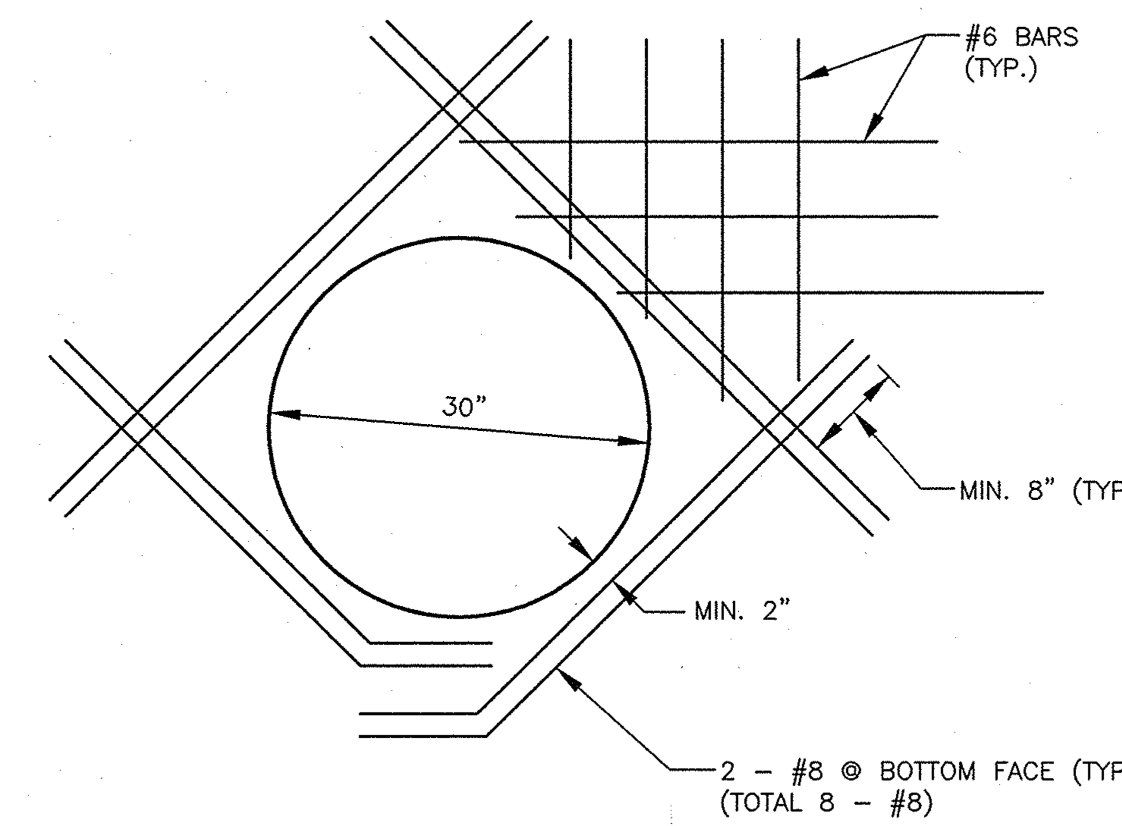
NOTE:
BACKGROUND OMITTED FOR CLARITY

NOTES:

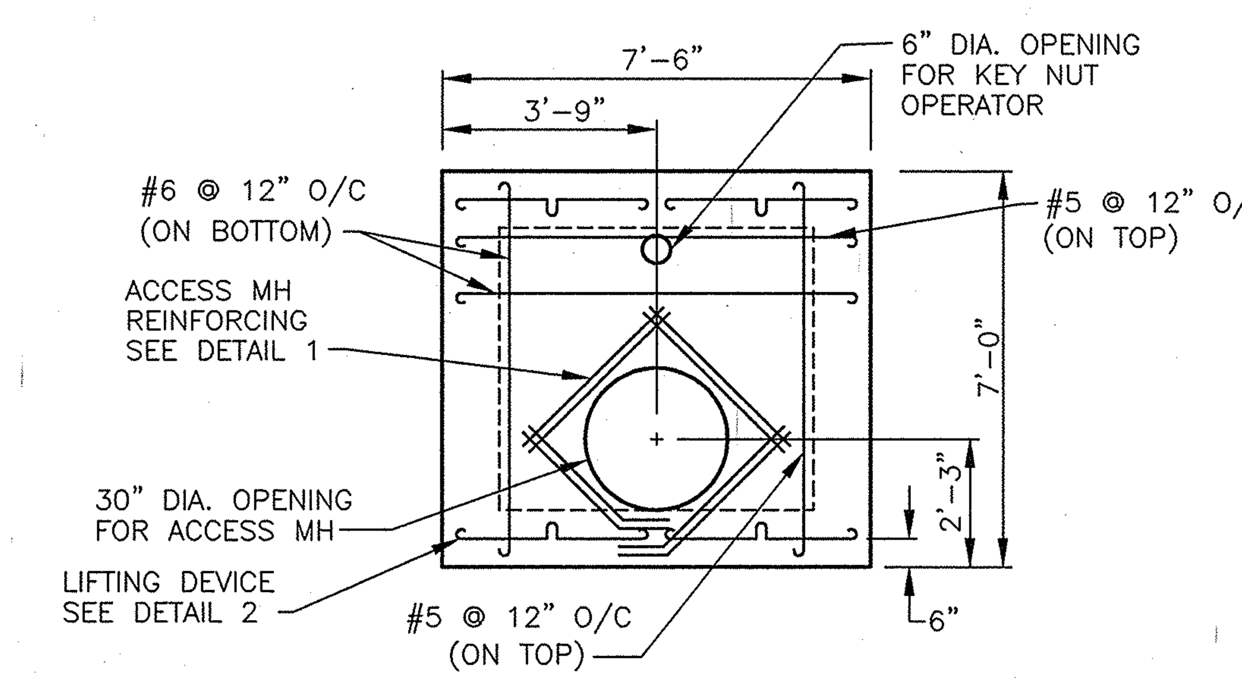
1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4,000 psi @ 28 DAYS.
2. STEEL SHALL HAVE A YIELD STRENGTH OF 60,000 psi.
3. STEEL REINFORCING SHALL HAVE A MINIMUM CLEARANCE OF 2" AND SHALL CONFORM TO ASTM A615, GRADE 60.
4. LAP LENGTH SHALL HAVE BE A MINIMUM OF 24".



DETAIL 2 – LIFTING DEVICE
NOT TO SCALE



DETAIL 1 – MANHOLE OPENING
NOT TO SCALE



PLAN – REMOVABLE TOP SLAB
SCALE: 3/8" = 1'-0"

12/3/10
AS–BUILT

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. ________ EXPIRATION DATE: ________

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
F 410.997.9282

6/24/08

DES: R.A.				
DRN: D.K.S.				
CHK: G.C.L.				
	R.J.C.	AS–BUILT		11/30/10
OCT., 2009	BY NO.	REVISION		DATE

DIVERSION STRUCTURE NO. 1
STRUCTURAL DETAILS

600' SCALE MAP 47 & 48 BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S–6175
CONTRACT NO. 20–4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 11 OF 25

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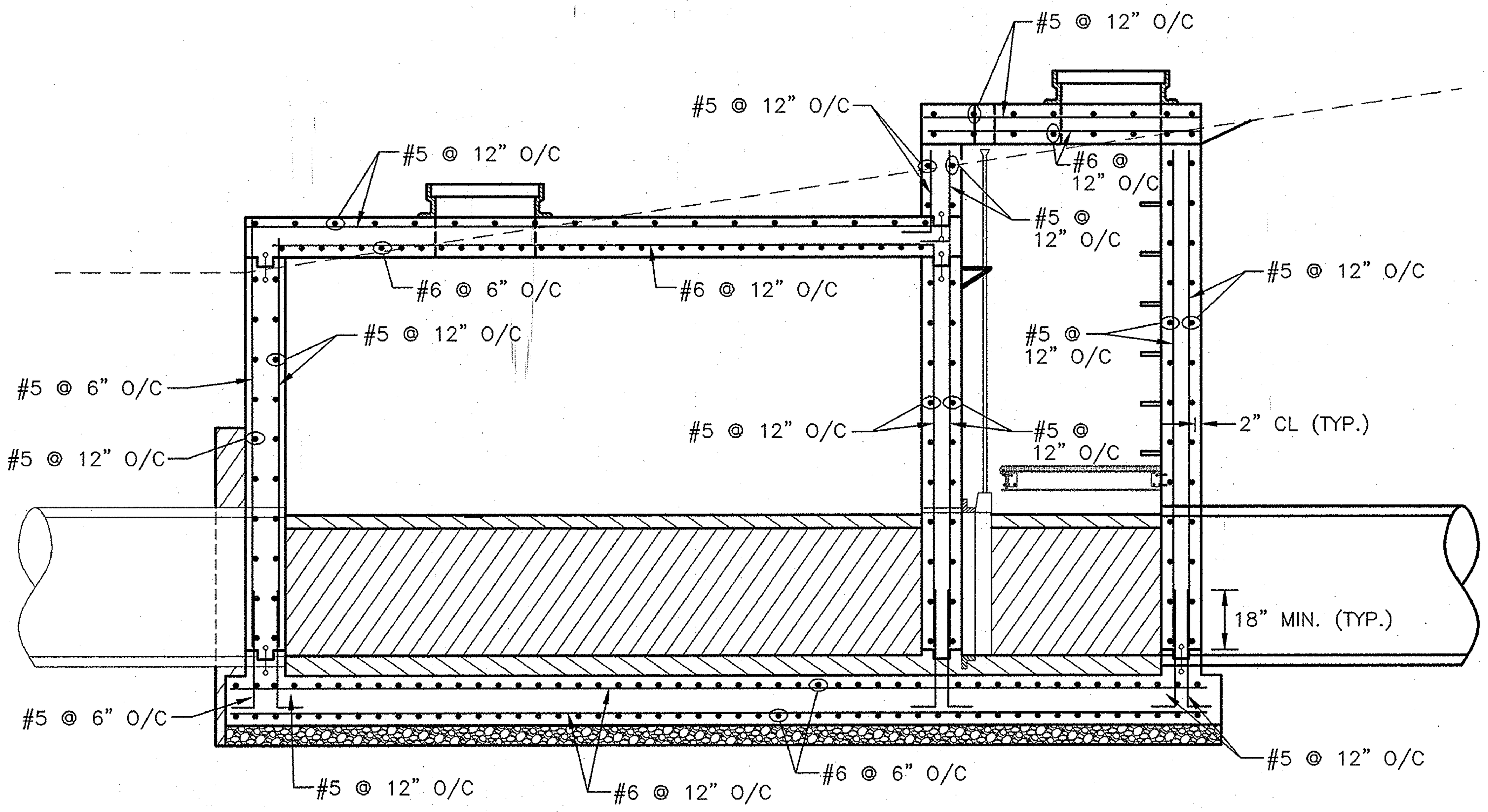
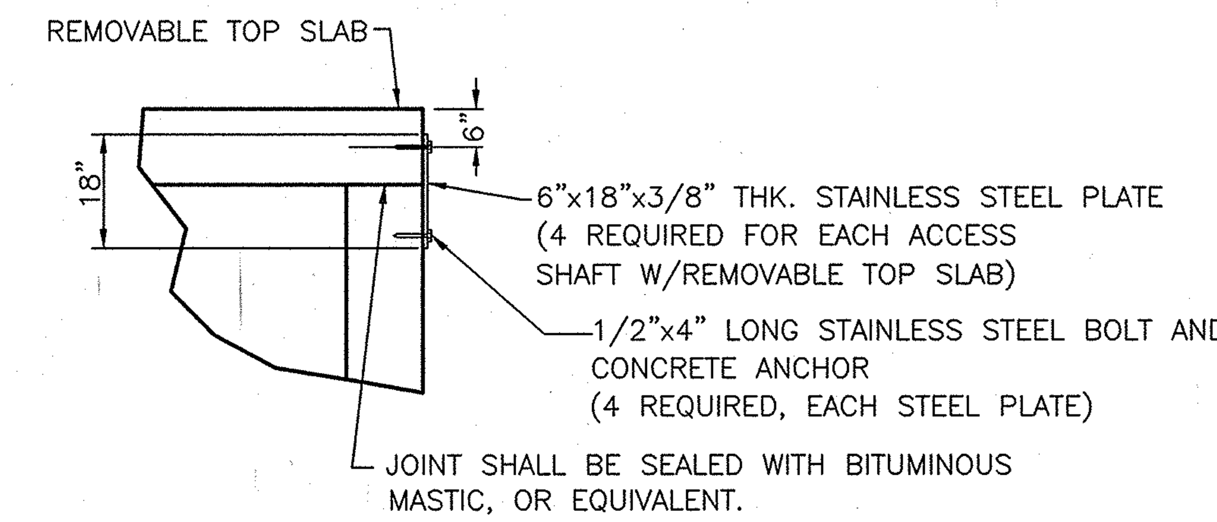


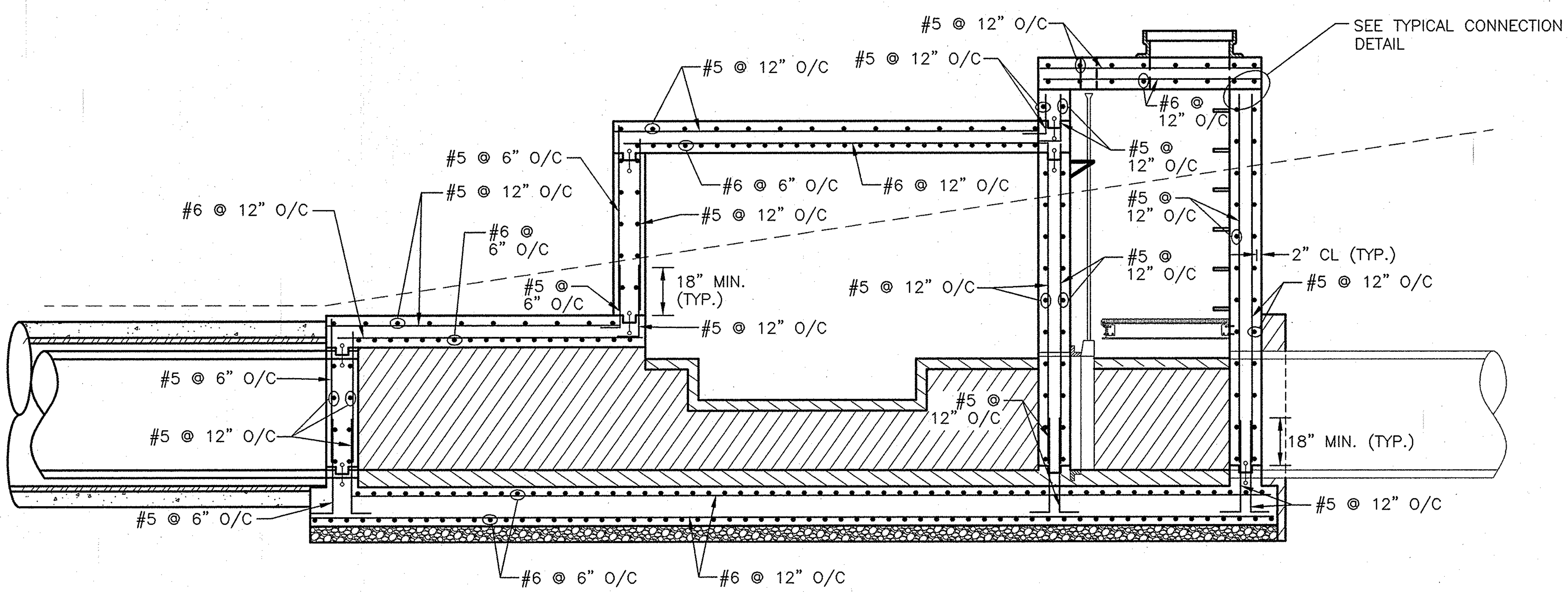
SECTION B–B

3/8" = 1'–0"



CONNECTION DETAIL

NO SCALE



SECTION C–C

3/8" = 1'–0"

PROFESSIONAL CERTIFICATION

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12/9/10

AS–BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	7/3/08 DATE	CHIEF, BUREAU OF ENGINEERING	7/1/08 DATE
CHIEF, BUREAU OF UTILITIES	7/2/08 DATE	CHIEF, UTILITY DESIGN DIVISION	7-1-08 DATE

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OCT., 2009	BY NO.	REVISION		DATE

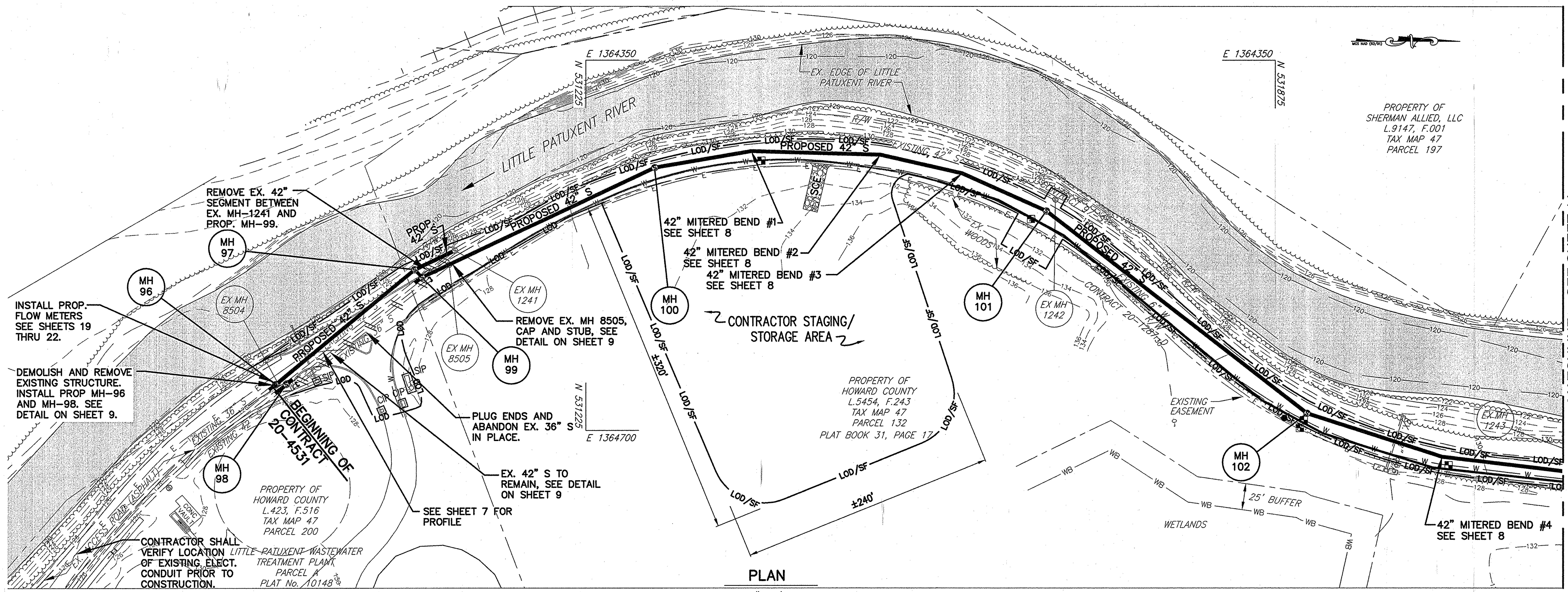
DIVERSION STRUCTURE NO. 1
STRUCTURAL DETAILS

600' SCALE MAP 47 & 48 BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S–6175
CONTRACT NO. 20–4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 12 OF 25



PLAN

1"=50'

NOTE:

1. ALL EXCESS FILL MATERIAL WILL BE REMOVED FROM THE 100-YEAR FLOODPLAIN AND EXISTING CONTOURS WILL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. AS SUCH, THERE WILL BE NO "MOUNDING" OR "WASTING" OF MATERIALS WITHIN THE LOD.

12/9/10

AS-BUILT

PROFESSIONAL CERTIFICATION

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LICENSE NO. ________ EXPIRATION DATE: ________

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 7/3/08 — CHIEF, BUREAU OF ENGINEERING — DATE 7/1/08

CHIEF, BUREAU OF UTILITIES — DATE 7/2/08 — CHIEF, UTILITY DESIGN DIVISION — DATE 7-1-08

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6/24/08

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.			
OCT., 2009	R.J.C.	AS-BUILT	11/30/10
	BY NO.	REVISION	DATE

SEDIMENT & EROSION CONTROL PLAN

600' SCALE MAP 47 & 48 — BLOCK 1843 & 1942

LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 13 OF 25

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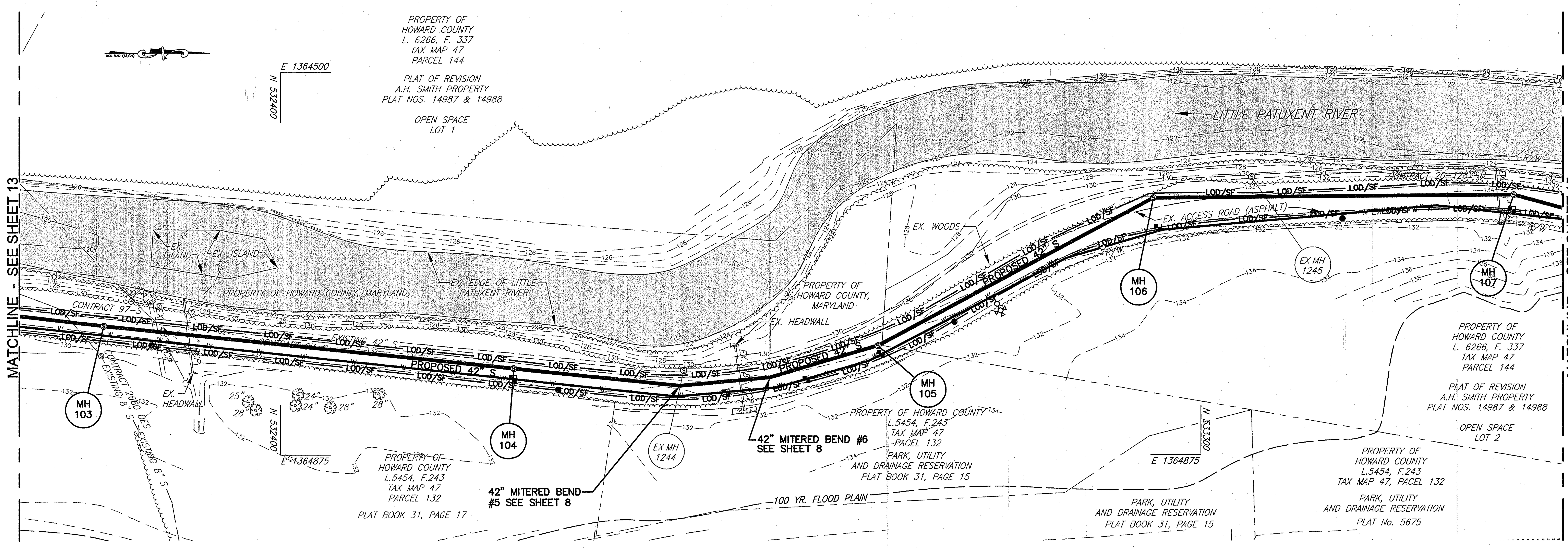

PLAN
1"=50'

NOTE:

1. ALL EXCESS FILL MATERIAL WILL BE REMOVED FROM THE 100-YEAR FLOODPLAIN AND EXISTING CONTOURS WILL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. AS SUCH, THERE WILL BE NO "MOUNDING" OR "WASTING" OF MATERIALS WITHIN THE LOD.

12/9/10
AS-BUILT

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LICENSE NO. __________ EXPIRATION DATE: __________

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

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STATE OF MARYLAND PROFESSIONAL ENGINEER
6/24/08

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CHK: G.C.L.				
	R.J.C.		AS-BUILT	11/30/10
OCT., 2009	BY	NO.	REVISION	DATE

SEDIMENT & EROSION CONTROL PLAN

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 14 OF 25

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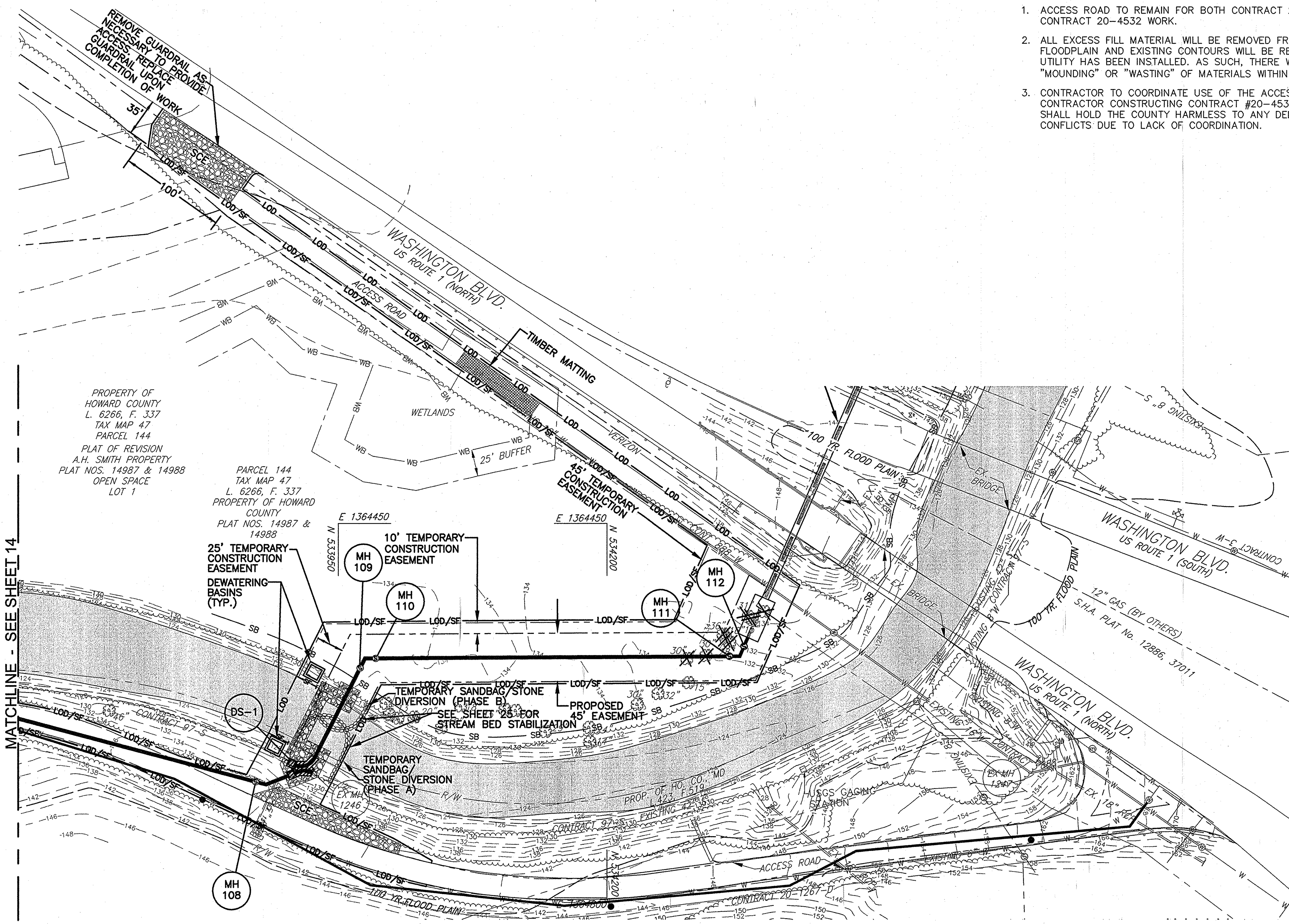
NOTES:

1. ACCESS ROAD TO REMAIN FOR BOTH CONTRACT 20-4531 AND CONTRACT 20-4532 WORK.
2. ALL EXCESS FILL MATERIAL WILL BE REMOVED FROM THE 100-YEAR FLOODPLAIN AND EXISTING CONTOURS WILL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. AS SUCH, THERE WILL BE NO "MOUNDING" OR "WASTING" OF MATERIALS WITHIN THE LOD.
3. CONTRACTOR TO COORDINATE USE OF THE ACCESS ROAD W/ THE CONTRACTOR CONSTRUCTING CONTRACT #20-4532. CONTRACTOR SHALL HOLD THE COUNTY HARMLESS TO ANY DELAYS OR CONFLICTS DUE TO LACK OF COORDINATION.



PLAN
1"=50'

PROFESSIONAL CERTIFICATION

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LICENSE NO. __________ EXPIRATION DATE: __________

12/9/10

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

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STATE OF MARYLAND — PROFESSIONAL ENGINEER

6/24/08

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.				
OCT., 2009	R.J.C.		AS-BUILT	11/30/10
	BY	NO.	REVISION	DATE

SEDIMENT & EROSION CONTROL PLAN

600' SCALE MAP 47 & 48 — BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 15 OF 25

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UTILITY NOTES

1. CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

GRADING NOTE

1. NO ADJUSTMENT OR CHANGES IN GRADE WILL BE PERMITTED.
2. THE CONTRACTOR SHALL STABILIZE THE SITE AT THE END OF EACH DAY'S WORK.

SEDIMENT AND EROSION CONTROL GENERAL NOTES

1. THE CONTRACTOR SHALL STAKE THE LIMITS OF THE DISTURBED AREAS AND NOTIFY HOWARD COUNTY BUREAU OF ENGINEERING CONSTRUCTION INSPECTION DIVISION (410-313-1810) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK.
2. REFER TO "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN.
3. 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.
4. AT THE END OF EACH WORKING DAY, ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT IN OPERATIONAL CONDITION.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING SOD, TEMPORARY SEEDING, AND MULCHING (SEC. G). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHED OF GRASSES.
6. DUST CONTROL WILL BE PROVIDED FOR ALL DISTURBED AREAS. REFER TO "1994 MARYLAND STANDARD SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", PG H-30-1, FOR ACCEPTABLE METHODS AND SPECIFICATIONS FOR DUST CONTROL.
7. 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 COUNRT SEDIMENT CONTROL INSPECTOR.
8. SITE ANALYSIS:

AREA DISTURBED	4.00 ACRES
AREA TO BE REPAVED	1.50 ACRES
AREA TO BE VEGATATIVELY STABILIZED	2.50 ACRES
TOTAL CUT	10,000 CU. YARDS
TOTAL FILL	10,000 CU. YARDS

OFFSITE WASTE AREA LOCATIONS TO HAVE ACTIVE GRADING PERMIT.

9. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
10. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
11. SITE GRADING WILL BEGIN ONLY AFTER PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN FUNCTIONING CONDITION.
12. CUT AND FILL QUANTITIES PROVIDED UNDER SITE ANALYSIS DO NOT REPRESENT BID QUANTITIES. THESE QUANTITIES DO NOT DISTINGUISH BETWEEN TOPSOIL, STRUCTURAL FILL OT EMBANKMENT MATERIAL, NOR DO THEY REFLECT CONSIDERATION OF UNDERCUTTING OR REMOVAL OR UNSUITABLE MATERIAL. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITE CONDITIONS WHICH MAY AFFECT THE WORK.
13. EXISTING UTILITIES HAVE BEEN LOCATED FROM THE BEST INFORMATION AVAILABLE AND ARE APPROXIMATE ONLY.

SEQUENCE OF CONSTRUCTION

		WORK DAYS
1)	NOTIFY HOWARD COUNTY BUREAU OF ENGINEERING, CONSTRUCTION INSPECTION DIVISION (410-313-1810) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ON-SITE AND OBTAIN GRADING PERMIT.	(1 DAY)
2)	CLEAR AND GRUB FOR SEDIMENT AND EROSION CONTROL MEASURES OR DEVICES ONLY.	(10 DAYS)
3)	INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES AND DEVICES INCLUDING STABILIZED CONSTRUCTION ENTRANCE.	(10 DAYS)
4)	NOTIFY HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS UPON COMPLETION OF SAID INSTALLATION.	(1 DAY)
5)	WITH THE APPROVAL OF THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION, CLEAR AND GRUB THE REMAINDER OF THE SITE.	(8 DAYS)
6)	COMMENCE EXCAVATION AND INSTALLATION OF SEWER MANHOLES/PIPES. OPEN TRENCH SHALL BE LIMITED TO THREE (1) PIPE LENGTH OR THAT LENGTH OF TRENCH WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF THE WORKING DAY.	(150 DAYS)
7)	STABILIZE ALL DISTURBED AREAS.	(8 DAYS)
8)	WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE STABILIZED CONSTRUCTION ENTRANCE.	(3 DAYS)
9)	FOLLOWING APPROVAL FROM THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION, REMOVE ALL REMAINING SEDIMENT CONTROL MEASURES AND STABILIZE ANY REMAINING AREAS.	(6 DAYS)

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

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

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

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

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

CONSTRUCTION AND MATERIAL SPECIFICATIONS

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

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

III. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
  I. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION – SECTION I – VEGETATIVE STABILIZATION METHODS AND MATERIALS.

IV. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:
  i. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
    a. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.
    b. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
    c. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
    d. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

NOTE: TOPSOIL SUBSTITUTES TO AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY MAY BE USED IN LIEU OF NATURAL TOPSOIL.
  I. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION – SECTION I – VEGETATIVE STABILIZATION METHODS AND MATERIALS.

V. TOPSOIL APPLICATION
  I. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.
  II. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" – 8" HIGHER IN ELEVATION.
  III. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" – 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
  IV. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.
  V. ALTERNATIVE FOR PERMANENT SEEDING – INSTEAD OF APPLYING THE FULL AMOUNTS OF LIME AND COMMERCIAL FERTILIZER, COMPOSTED SLUDGE AND AMENDMENTS MAY BE APPLIED AS SPECIFIED BELOW:
    I. COMPOSTED SLUDGE MATERIAL FOR USE AS A SOIL CONDITIONER FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES SHALL BE TESTED TO PRESCRIBE AMENDMENTS AND FOR SITE HAVING DISTURBED AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
      a. COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS THAT ARE PERMITTED (AT THE TIME OF ACQUISITION OF THE COMPOST) BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UNDER COMAR 26.04.06.
      b. COMPOSTED SLUDGE SHALL CONTAIN AT LEAST 1 PERCENT NITROGEN, 1.5 PERCENT PHOSPHORUS, AND 0.2 PERCENT POTASSIUM AND HAVE A PH OF 7.0 TO 8.0. IF COMPOST DOES NOT MEET THESE REQUIREMENTS, THE APPROPRIATE CONSTITUENTS MUST BE ADDED TO MEET THE REQUIREMENTS PRIOR TO USE.
      c. COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON/1,000 SQUARE FEET.
      d. COMPOSTED SLUDGE SHALL BE AMENDED WITH A POTASSIUM FERTILIZER APPLIED AT THE RATE OF 4 LB/1,000 SQUARE FEET, AND 1/3 THE NORMAL LIME APPLICATION RATE.

REFERENCES: GUIDELINE SPECIFICATIONS, SOIL PREPARATION AND SODDING. MD-VA, PUB. #1, COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF MARYLAND AND VIRGINIA POLYTECHNIC INSTITUTES. REVISED 1973.

20.0 VEGETATIVE STABILIZATION

SECTION I VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. SITE PREPARATION

i. INSTALL SEDIMENT AND EROSION 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 ANALYSIS.
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 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 MATERIAL SHALL BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED) WHICH CONTAINS AT LEAST 50 % TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE SHALL BE GROUND TO SUCH FINENESS THAT AT LEAST 50 % WILL PASS THROUGH A #100 MESH SIEVE AND 98-100 % WILL PASS THROUGH A #20 MESH SIEVE.
iv. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3-5" OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

C. SEEDBED PREPARATION:

i. TEMPORARY SEEDING
  a. SEEDBED PREPARATION SHALL CONSIST OF LOOSENING SOIL, AT A DEPTH OF 3-6" 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 ROUGHEST CONDITION. SLOPED AREA (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 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 SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION 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
    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 STANDARDS AND SPECIFICATIONS FOR TOPSOIL.
  b. AREAS PREVIOUSLY GRADED IN CONFORMANCE WITH THE DRAWINGS SHALL BE MAINTAINED IN A TRUE AND EVEN GRADE, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3-5" TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREA AND TO CREATE HORIZONTAL EROSION CHECK SLOTS TO PREVENT TOPSOIL FROM SLIDING DOWN A SLOPE.
  c. APPLY SOIL AMENDMENTS AS PER SOIL TEST OR AS INCLUDED ON THE PLANS.
  d. MIX SOIL AMENDMENTS INTO THE TOP 3-5" OF TOPSOIL BY DISKING OR OTHER SUITABLE MEANS. LAWN AREAS SHOULD BE RAKED TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS SUCH AS 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 (GREATER 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 INOCULATION FOR TREATING LEGUME SEEDS IN THE MIXTURE SHALL BE A PURE CULTURE OF NITROGEN-FIXING BACTERIA PREPARED ESPECIALLY 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 75-80F 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 AMOUNTS WILL NOT EXCEED THE FOLLOWING: NITROGEN, MAXIMUM OF 100 LB 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. DRYSEEDING: THIS INCLUDES USE OF CONVENTIONAL, DROP OR BROADCAST SPREADERS.
  a. SEED SPREAD DRY SHALL BE INCORPORATED INTO THE SUBSOIL. AT THE RATES PRESCRIBED FOR TEMPORARY OR PERMANENT SEEDING. 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 A 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 WHAT WILL BE PHYTO-TOXIC.
  f. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH TO APPROXIMATELY 10 MM. DIAMETER APPROXIMATELY 1MM, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6% MAXIMUM AND WATER HOLDING CAPACITY OF 90% MINIMUM.
  NOTE: ONLY STERILE STRAW MULCH SHOULD BE USED IN AREA 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 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 25 TONS/ACRE.
iii. WOOD CELLULOSE FIBER USED A S A MULCH SHALL BE APPLIED AT A NET DRY WEIGHT OF 1,500 LBS/ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LBS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

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 THE SOIL SURFACE. A MINIMUM OF TWO (2) INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD BE USED ON THE CONTOUR IF POSSIBLE.
ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. THE FIBER BINDER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750 LBS/ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LBS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
iii. APPLICATION OF LIQUID BINDERS SHOULD BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. THE REMAINDER OF AREA SHOULD APPEAR UNIFORM AFTER BINDER APPLICATION. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL BE USED AT RATES RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH.
iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4-15 FEET WIDE AND 300-3,000 FEET LONG.

SECTION II TEMPORARY SEEDING

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

i. SEEDBED PREPARATION : LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
ii. SOIL AMENDMENTS : APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS. PER 1000 SQ.FT.).
iii. SEEDING : FOR PERIODS MARCH 1 THRU APRIL 30 AND FROM AUGUST 15 THRU NOVEMBER 15, SEED WITH 2-1/2 BUSHELS PER ACRE OF ANNUAL RYE (3.2 LBS. PER 1000 SQ.FT.). FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS (0.07 LBS. PER 1000 SQ.FT.). FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.
iv. MULCHING : APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS. PER 1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GAL. PER ACRE (5 GAL. PER 1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT. OR HIGHER, USE 347 GAL. PER ACRE (8 GAL. PER 1000 SQ.FT.) FOR ANCHORING.

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

SECTION III PERMANENT SEEDING

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

i. SEEDBED PREPARATION : LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
ii. SOIL AMENDMENTS : IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES :
  a. PREFERRED – APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS. PER 1000 SQ.FT.) AND 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS. PER 1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS. PER 1000 SQ.FT.).
  b. ACCEPTABLE – APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS. PER 1000 SQ.FT.) AND 1000 LBS. PER ACRE 10-10-10 FERTILIZER (23 LBS. PER 1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.
iii. SEEDING : FOR THE PERIOD MARCH 1 THRU APRIL 30 AND FROM AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1000 SQ.FT.) KENTUCKY 31 TALL FESCUE AND 2 LBS. PER ACRE(0.05 LBS. PER 1000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OCTOBER 16 THRU FEBRUARY 28, PROTECT SITE BY ONE OF THE FOLLOWING OPTIONS :
  a. 2 TONS PER ACRE OF WELL ANCHORED MULCH STRAW AND SEED AS SOON AS POSSIBLE IN THE SPRING.
  b. USE SOD.
  c. SEED WITH 60 LBS. PER ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE WELL ANCHORED STRAW.
iv. MULCHING : APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS. PER 1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE(5 GALLONS PER 1000 SQUARE FEET) OF EMULSIFIED ASPHALT ON FLAT AREAS; ON SLOPES 8 FEET OR HIGHER, USE 347 GALLONS PER ARCE(8 GALLONS PER 1000 SQUARE FEET) FOR ANCHORING.
v. MAINTENANCE : INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

SECTION IV SOD

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 SHALL BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND TIGHTLY WEDGED AGAINST EACH OTHER. LATERAL JOINTS SHALL BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
iii. WHEREVER POSSIBLE, SOD SHALL BE LAID WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. SOD SHALL BE ROLLED AND TAMPED, PEGGED OR OTHERWISE SECURED TO PREVENT SLIPPAGE ON SLOPES AND TO ENSURE SOLID CONTACT BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
iv. SOD SHALL BE WATERED IMMEDIATELY FOLLOWING ROLLING OR TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD SHALL BE COMPLETED WITHIN EIGHT HOURS.

C. SOD MAINTENANCE

i. IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHALL BE PERFORMED DAILY OR AS OFTEN AS NECESSARY DURING THE FIRST WEEK AND IN SUFFICIENT QUANTITIES TO MAINTAIN MOIST SOIL TO A DEPTH OF 4". WATERING SHOULD BE DONE DURING THE HEAT OF THE DAY TO PREVENT WILTING.
ii. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN 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.

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.

Temporary Seeding Summary

Seed Mixture (Hardines Zone 7a) From Table 26					Fertilizer Rate (10-10-10)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
	BARLEY	122	2/1 – 4/30 8/15 – 10/15	1" – 2"	600 lb/ac (15 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)
	RYE	140	2/1 – 4/30 8/15 – 11/30	1" – 2"		
	BARLEY AND FOXTAIL MILLET	150	2/1 – 10/15	1"		

Permanent Seeding

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

Permanent Seeding Summary

Seed Mixture (Hardines Zone 7a) From Table 25					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	*Seeding Dates	Seeding Depths	N	P205	K20	
1	TALL FESCUE (75%) CANADA BLUEGRASS (10%) KENTUCKY BLUEGRASS (10%) REDTOP (5%)	150	3/1 – 5/15 8/15 – 11/15	1/4"-1/2"	90 lb/ac (2.0 lb/ 1000 sf)	175 lb/ac (4 lb/ 1000 sf)	175 lb/ac (4 lb/ 1000 sf)	2 tons/ac (100 lb/ 1000 sf)
3	TALL FESCUE (85%) PRENNIAL RYEGRASS (10%) KENTUCKY BLUEGRASS (5%)	125 15 10	3/1 – 5/15 8/15 – 11/15	1/4"-1/2"				

*BETWEEN THE DATES OF 5/16 – 8/14, ADD 2 LBS. PER ACRE OF WEEPING LOVEGRASS OR 10 LBS. PER ACRE OF MILLET TO SEED MIXTURES 1 OR 3.

12/9/10 [signature] AS-BUILT

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. ____________ EXPIRATION DATE: ____________

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[signature] 7/3/08 [signature] 7/1/08
DIRECTOR OF PUBLIC WORKS — DATE — CHIEF, BUREAU OF ENGINEERING — DATE

[signature] 7/2/08 [signature] 7-1-08
CHIEF, BUREAU OF UTILITIES — DATE — CHIEF, UTILITY DESIGN DIVISION — DATE

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STATE OF MARYLAND — FRANK H. DONALD... — PROFESSIONAL ENGINEER
6/24/08

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.	R.J.C.	AS-BUILT	11/30/10
OCT., 2009	BY NO.	REVISION	DATE

SEDIMENT & EROSION CONTROL NOTES

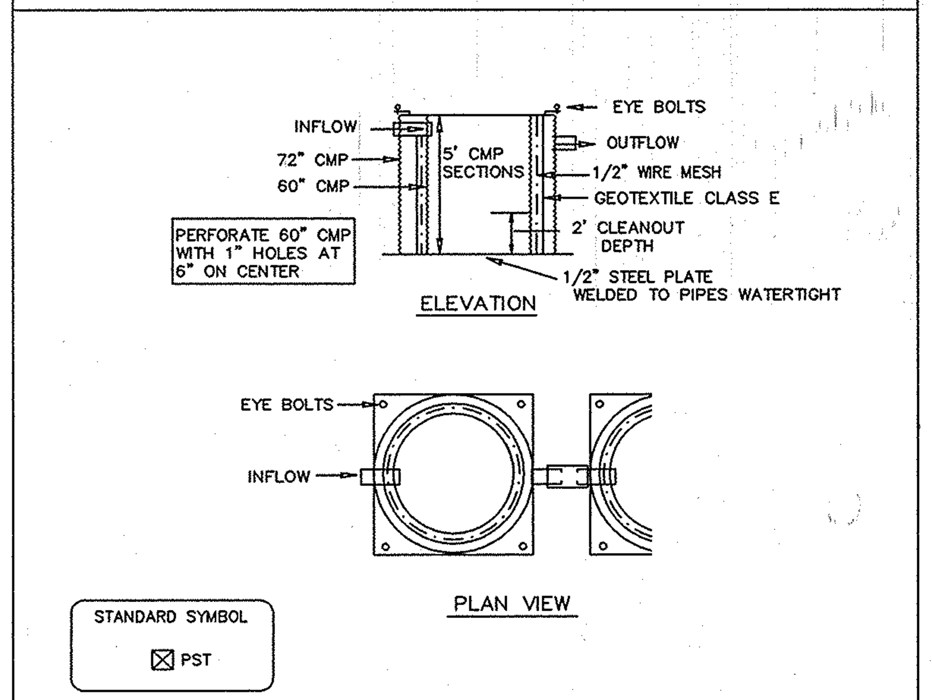
600' SCALE MAP 47 & 48 — BLOCK 1843 & 1942

LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 16 OF 25

DETAIL 21 – PORTABLE SEDIMENT TANK



STANDARD SYMBOL

PST

Construction Specifications

1. The following formula should be used in determining the storage volume of the sediment tank: 1 cubic foot of storage for each gallon per minute of pump discharge capacity.

2. An example of a typical sediment tank is shown above. Other container designs can be used if the storage volume is adequate and approval is obtained from the local approving agency.

3. Tanks may be connected in series.

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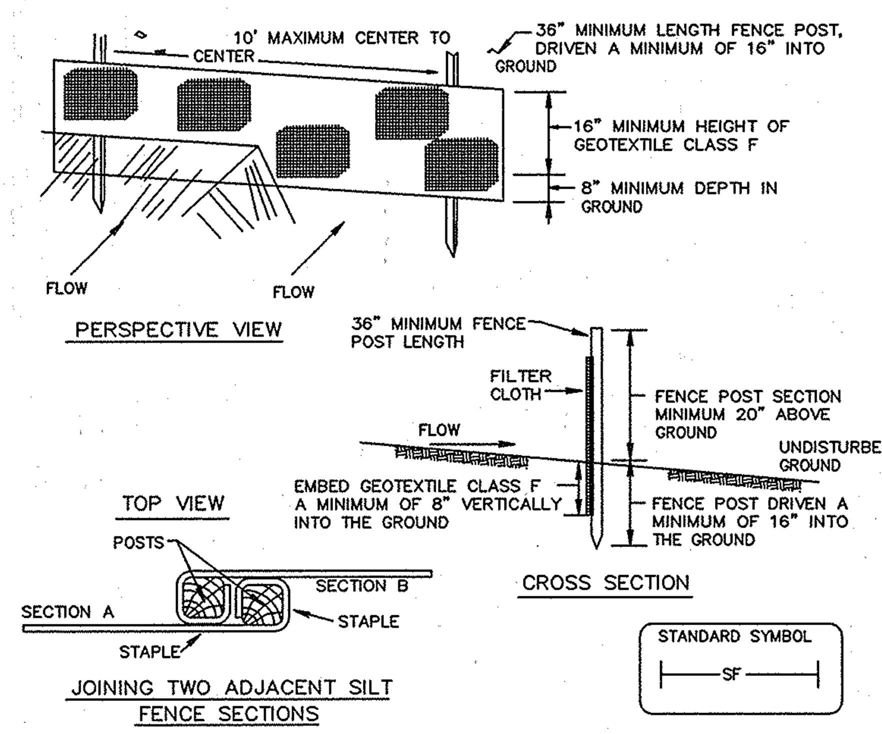
DETAIL 22 – SILT FENCE



STANDARD SYMBOL

SF

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 weighting 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 ft ²/ 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.

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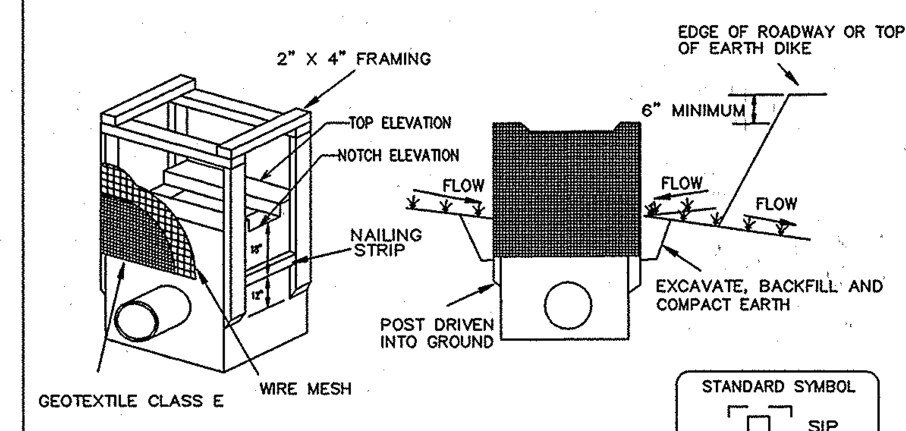
DETAIL 23A – STANDARD INLET PROTECTION



STANDARD SYMBOL

SIP

MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Excavate completely around the inlet to a depth of 18" below the notch elevation.

2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 23A. The top of the frame (weir) must be 6" below adjacent roadways where flooding and safety issues may arise.

3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must meet and overlap at a post.

4. Stretch the Geotextile Class E tightly over the wire mesh with the geotixtile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, then fastened down.

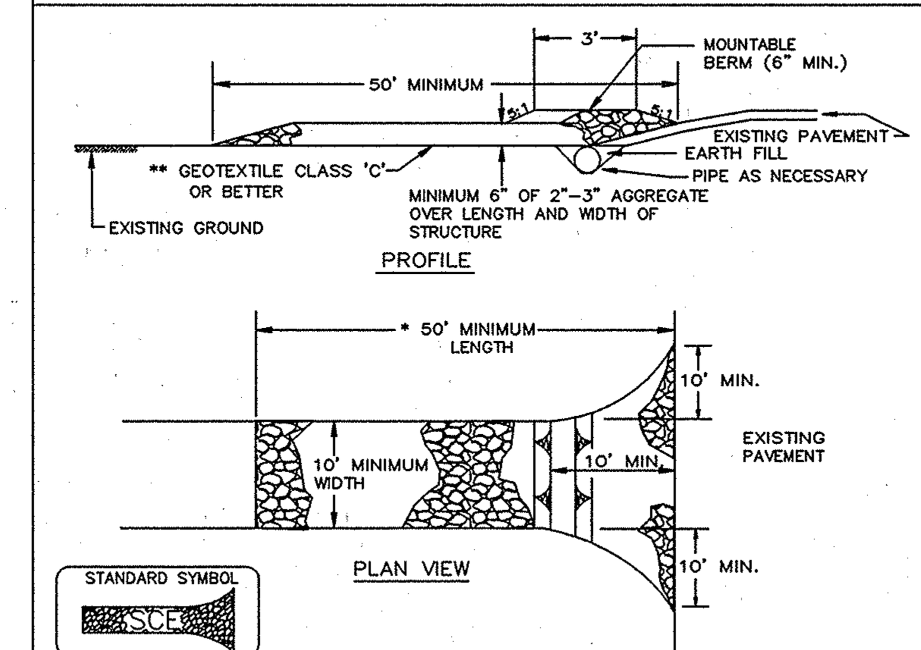
5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.

6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame.

7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

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

DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE



STANDARD SYMBOL

SCE

Construction Specification

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.

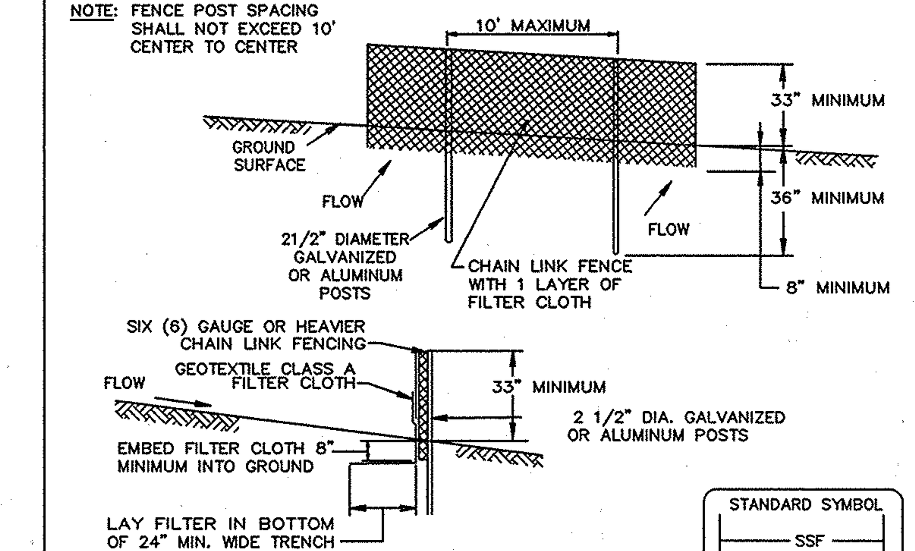
5. Surface Water – all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE 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.

6. 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 33 – SUPER SILT FENCE

NOTE: FENCE POST SPACING SHALL NOT EXCEED 10' CENTER TO CENTER



STANDARD SYMBOL

SSF

Construction Specifications

1. 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.

2. The posts do not need to be set in concrete.

3. 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.

4. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

5. Filter cloth shall be embedded a minimum of 8" into the ground.

6. When two sections of geotextile fabric adjoin each other, they shall be overlapped by 6" and folded.

7. 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 MODIFIED	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Maryland Department of the Environment
Best Management Practices for Working in Nontidal Wetlands, the Nontidal Wetland Buffer, Waters of the State and the 100-Year Floodplain

1. No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

2. Place materials in a location and manner that does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

3. Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.

4. Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

5. Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.

6. Rectify any nontidal wetlands, wetland buffers, waterways, or 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 multiflorum*), Millet (*Setaria italica*), Barley (*Hordeum sp.*), Oats (*Uniola sp.*), and/or Rye (*Secale cereale*). These species will allow for the 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 the classification of the stream:

   Use I waters: In-stream work shall not be conducted during the period March 1 through June 15, inclusive, during any year.

10. Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.

11. Culverts shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.

SILT FENCE

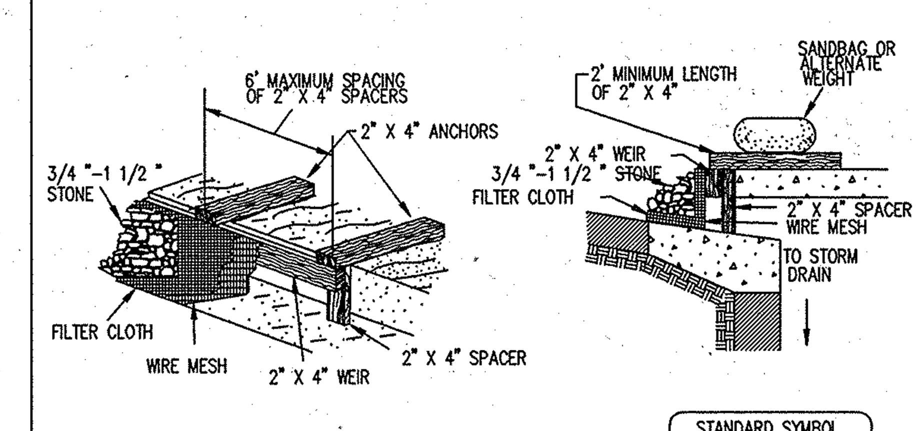
Silt Fence Design Criteria

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

DETAIL 23C – CURB INLET PROTECTION



STANDARD SYMBOL

CIP

MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4') to the 2" x 4" weir (measuring throat length plus 2') as shown on the standard drawing.

2. Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.

3. Securely nail the 2" X 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).

4. Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.

5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.

6. Form the 1/2" x 1/2" wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean 3/4" x 1 1/2" stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.

7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.

8. Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

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

GEOTEXTILE FABRICS

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH PSI. MIN.
A	0.30**	250	500
B	0.60	200	320
C	0.30	200	320
D	0.60	90	145
E	0.30	90	145
F(SILT FENCE)	0.40 – 0.80#	90	190

*US STD SIEVE CW-02215 **0.50 mm MAX. FOR SUPER SILT FENCE

The properties shall be determined in accordance with the following procedures:

– Apparent opening size MSMT 323

– Grab tensile strength ASTM D 1682: 4x8" specimen, 1x2" clamps,
12"/min stain rate in both principal directions of geotextile fabric.

– Burst strength ASTM D 3786

The fabric shall be inert to commonly encountered chemicals and hydrocarbons, and will be rot and mildew resistant. It shall be manufactured from fibers consisting of long chin synthetic polymers, and composed of a minimum of 85% by weight of polyolephins, polyesters, or polyamides. The geotextile fabric shall resist deterioration from ultraviolet exposure.

In addition, Classes A through E shall have a 0.01 cm./sec. minimum permeability when tested in accordance with MSMT 507, and an apparent minimum elongation of 20 percent (20%) when tested in accordance with the grab strength requirements listed above.

Silt Fence
Class F geotextile fabrics for silt fence shall have a 50 lb./in. minimum tensile strength and a 20 lb./in. minimum tensile modulus when tested in accordance with MSMT 509. The material shall also have a 0.3 gal./ft.2/min. flow rate and seventy-five percent (75%) minimum filtering efficiency when tested in accordance with MSMT 322.

Geotextile fabrics used in the construction of silt fence shall resist deterioration from ultraviolet exposure. The fabrics shall contain sufficient amounts of ultraviolet ray inhibitors and stabilizers to provide a minimum of 12 months of expected usable construction life at a temperature range of 0 to 120 degrees F.

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

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. __________ EXPIRATION DATE: __________

12/9/10

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	7/3/08 DATE	CHIEF, BUREAU OF ENGINEERING	7/1/08 DATE
CHIEF, BUREAU OF UTILITIES	7/2/08 DATE	CHIEF, UTILITY DESIGN DIVISION	7-1-08 DATE

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
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PROFESSIONAL ENGINEER NO. 8148 REGISTERED

6/24/08

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.	R.J.C.		AS-BUILT	11/30/10
OCT., 2009	BY	NO.	REVISION	DATE

SEDIMENT & EROSION CONTROL DETAILS

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 17 OF 25

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PLAN
1"=100'

LEGEND

- TEMPORARY SIGN FOR TRAFFIC CONTROL
- DIRECTION OF TRAFFIC
- VMS MESSAGE BOARD
- BARRELS
- TEMPORARY JERSEY BARRIER
- GUARD RAIL

12/9/10
AS-BUILT

PROFESSIONAL CERTIFICATION

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

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6/24/08

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.				
OCT., 2009	R.J.C.		AS-BUILT	11/30/10
	BY	NO.	REVISION	DATE

TRAFFIC CONTROL
U.S. ROUTE 1 (NORTH)

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 18 OF 25

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SYMBOLS

SINGLE LINE DIAGRAM

- CIRCUIT BREAKER
- AMMETER
- VOLTMETER
- AMMETER
- VOLTMETER
- 3 CURRENT TRANSFORMER, QUANTITY INDICATED
- 3 POTENTIAL TRANSFORMER, QUANTITY INDICATED
- UTILITY METERING
- POWER TRANSFORMER
- MAGNETIC MOTOR STARTER, NEMA SIZE INDICATED RV=REDUCED VOLTAGE STARTING, FV=FULL VOLTAGE STARTING 2S, 2W=2 SPEED, 2 WINDING
- FUSE
- DRAW-OUT TYPE EQUIPMENT
- GROUND-SYSTEM OR EQUIPMENT
- ETM ELAPSED TIME METER
- OVERLOAD RELAY
- M MOTOR OPERATED VALVE, MOV

GROUNDING

- GROUND ROD
- BOND TO REINFORCING STEEL
- —G— GROUNDING CABLE OR GROUND LOOP COUNTERPOISE

SWITCHES

- Sa SWITCH, SINGLE POLE -"a" INDICATE DEVICE CONTROLLED
- S3 SWITCH, THREE WAY
- Sp SWITCH, WITH RED PILOT LIGHT
- SM MANUAL MOTOR STARTER
- PUSHBUTTON

RECEPTACLE & MISCELLANEOUS

ALL OUTLETS ARE WALL MOUNTED ±18" AFF (UNLESS OTHERWISE NOTED)

- WP WEATHERPROOF (GFI) DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE FLOOR MOUNT FLUSH
- J JUNCTION BOX
- T THERMOSTAT-WALL MOUNTED (MOUNT 4'-6" AFF, UON)

EQUIPMENT

STANDARD MOUNTED HEIGHT OF HAND-OPERATED EQUIPMENT IS +/- 5' ABOVE FLOOR, UON.

- NON-FUSED NEMA 4x 3 POLE 30A DISCONNECT SWITCH, UON
- ENCLOSED MAGNETIC STARTER, UON
- F FUSED DISCONNECT SWITCH, SIZE AS INDICATED
- CONTROL STATION AS INDICATED
- MOTOR
- M MOTOR

CONDUIT AND WIRE (SEE NOTE 2)

- 0001 CONDUIT NUMBER – SEE CONDUIT AND CONDUCTOR SCHEDULE
- HOMERUN INDICATES NUMBER OF #12 CONDUCTORS AND GROUND (UON) LP-X (X-DENOTES CIRCUIT NUMBER IN PANEL LP)
- CONDUIT OR CONDUCTOR – EXPOSED
- CONDUIT OR CONDUCTOR – DIRECT BURIAL, IN SLAB, OR CONCEALED
- CONDUIT OR CONDUCTOR – TURNING UP
- CONDUIT OR CONDUCTOR – TURNING DOWN
- FLEXIBLE CONDUIT
- CONDUIT STUB-OUT WITH CAP

LIGHTING

- EXIT LIGHT – ARROWS INDICATE DIRECTION AND FACES
- EMERGENCY LIGHTING UNIT – WALL MOUNTED
- HID FIXTURE – WALL MOUNTED
- HID FIXTURE – POLE MOUNTED

MISCELLANEOUS

3 / X-X CALL-OUT FOR DETAIL OR SECTION. "3" INDICATES NUMERICAL ORDER ON DETAIL DWG. "X-X" INDICATES DRAWING SHEET REFERENCED.

SCHEMATIC DIAGRAM

N.O.	N.C.	
		CONTACT
		TIMED CONTACT CONTACT ACTION RETARDED ON DE-ENERGIZATION
		TIMED CONTACT CONTACT ACTION RETARDED ON ENERGIZATION
		PUSHBUTTON SINGLE CIRCUIT MOMENTARY CONTACT
		PUSHBUTTON SINGLE CIRCUIT LOCK – OUT
		LIMIT SWITCH

ABBREVIATIONS

	@	AT
A	A	AMPERE
	A/C	AIR CONDITIONER
	AC	ALTERNATING CURRENT
	AFF	ABOVE FINISHED FLOOR
	AFG	ABOVE FINISHED GRADE
	AHU	AIR HANDLING UNIT
	AL	ALUMINUM
	APS	APPLICATION PROGRAM SUPPLIER
	ATS	AUTOMATIC TRANSFER SWITCH
	AWG	AMERICAN WIRE GAUGE
B	BKR	BREAKER
	BLDG	BUILDING
	BW	BACKWASH
C	/C	CONDUCTOR
	C	CONDUIT
	CB	CIRCUIT BREAKER
	CJ	CONTROL JOINT
	CKT	CIRCUIT
	CLG	CEILING
	CMU	CONCRETE MASONRY UNIT
	COL	COLUMN
	CONC	CONCRETE
	CONT	CONTINUATION/CONTINUED
	CPT	CONTROL POWER TRANSFORMER
D	DC	DIRECT CURRENT
	DWG	DRAWING
E	E.F.	EACH FACE
	EF	EXHAUST FAN
	EMT	ELECTRICAL METALLIC TUBING
	ETM	ELAPSED TIME METER
	EWH	ELECTRIC WATER HEATER
	EXP	EXPANSION
	EXIST or EX	EXISTING
F	F	FEEDER
	F/D	FLOOR DRAIN
	FE	FLOW SENSOR
	FIN	FINISHED
	FIT	FLOW INDICATING TRANSMITTER
	FVNR	FULL VOLTAGE NON-REVERSING
G	G	GROUND
	GFI	GROUND FAULT INTERRUPTER
	GND	GROUND
H	HH	HAND HOLE
	HORIZ.	HORIZONTAL
	HP	HIGH POINT
	HT	HEAT TRACE
I	I/O	INPUT / OUTPUT
	ISS	INSTRUMENTATION SYSTEM SUPPLIER
J	J-BOX	JUNCTION BOX
	JT	JOINT
L	LG	LONG
	LP	LOW POINT
	LTS	LIGHTS
M	MAX	MAXIMUM
	MCB	MAIN CIRCUIT BREAKER
	MECH	MECHANICAL
	MH	MANHOLE
	MIN	MINIMUM
	MISC	MISCELLANEOUS

ABBREVIATIONS

N	N	NEUTRAL
	NEC	NATIONAL ELECTRICAL CODE
	NTS	NOT TO SCALE
O	OH	OVERHEAD
	OL	OVERLOAD
	O.C.	ON-CENTER
P	P	POLE
	P/E	PHOTO ELECTRIC CELL
	PIT	PRESSURE INDICATING TRANSMITTER
	PL	PLATE
	PM	POWER MONITOR
	PNL	PANEL
	PS	POWER SUPPLY (BATTERY BACKED POWER PACK)
	PVC	POLYVINYL CHLORIDE
	PWR	POWER
Q	QTY	QUANTITY
R	R	RADIUS
	RD	ROOF DRAIN
	RECEPT	RECEPTACLE
	REINF	REINFORCING
	RELO	RELOCATE
	RGS	RIGID GALVANIZED STEEL
	RTU	REMOTE TERMINAL UNIT
	RVAT	REDUCED VOLTAGE AUTO TRANSFORMER
	RVSS	REDUCED VOLTAGE SOLID STATE
S	S/C	SIGNAL / CONTROL
	SF	SUPPLY FAN
	SHT	SHEET
	SPD	SURGE PROTECTION DEVICE
	SPST	SINGLE POLE SINGLE THROW
	SS	SURGE SUPPRESSOR
	SSM	SOLID STATE METERING
	SST	STAINLESS STEEL
	STP	SHIELDED TWISTED PAIR
	STL	STEEL
	SW	STILLING WELL
T	TYP	TYPICAL
U	UG	UNDERGROUND
	UH	UNIT HEATER
	UL	UNDERWRITERS LABORATORIES
	UON	UNLESS OTHERWISE NOTED
V	V	VOLT
	VERT	VERTICAL
	VFD	VARIABLE FREQUENCY DRIVE
	V.P.	VENT PIPE
W	W/	WITH
	WP	WEATHERPROOF
X	XFER	TRANSFER
	XFMR	TRANSFORMER

NOTES:

1. NOT ALL SYMBOLS / ABBREVIATIONS USED ON DRAWINGS.
2. PROVIDE MINIMUM 3/4"c WITH (2)-#12+#12GND IN CONDUIT, UON.
3. NOT ALL PAVING, GRADES, CONCRETE, AND OTHER SURFACES ARE SHOWN ON ELECTRICAL DRAWINGS. REFER TO OTHER CONTRACT DRAWINGS FOR TYPE OF MATERIALS AND LOCATIONS, AS THIS MAY BE REQUIRED TO PERFORM ELECTRICAL WORK.
4. PROVIDE AND INSTALL GROUND LOOP AROUND ALL NEW STRUCTURES AND BUILDINGS. REFER TO SPECIFICATION SECTION 16450 FOR REQUIREMENTS.
5. THE CONTRACTOR SHALL PERFORM COORDINATION FOR THE WORK IDENTIFIED ON THESE DRAWINGS AND OTHER CONTRACT DOCUMENTS.

12/3/10

AS-BUILT

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. ________ EXPIRATION DATE: ________

HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS
2141 PRIEST BRIDGE DRIVE, SUITE #8
CROFTON, MARYLAND 21114
(410) 451-7335

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 7/3/08 — CHIEF, BUREAU OF ENGINEERING — DATE 7/1/08

CHIEF, BUREAU OF UTILITIES — DATE 7/2/08 — CHIEF, UTILITY DESIGN DIVISION — DATE 7-1-08

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STATE OF MARYLAND — PROFESSIONAL ENGINEER — REGISTERED

DES: W.K				
DRN: W.K				
CHK: G.C.L.				
	R.J.C.	AS-BUILT		11/30/10
OCT., 2009	BY	NO.	REVISION	DATE

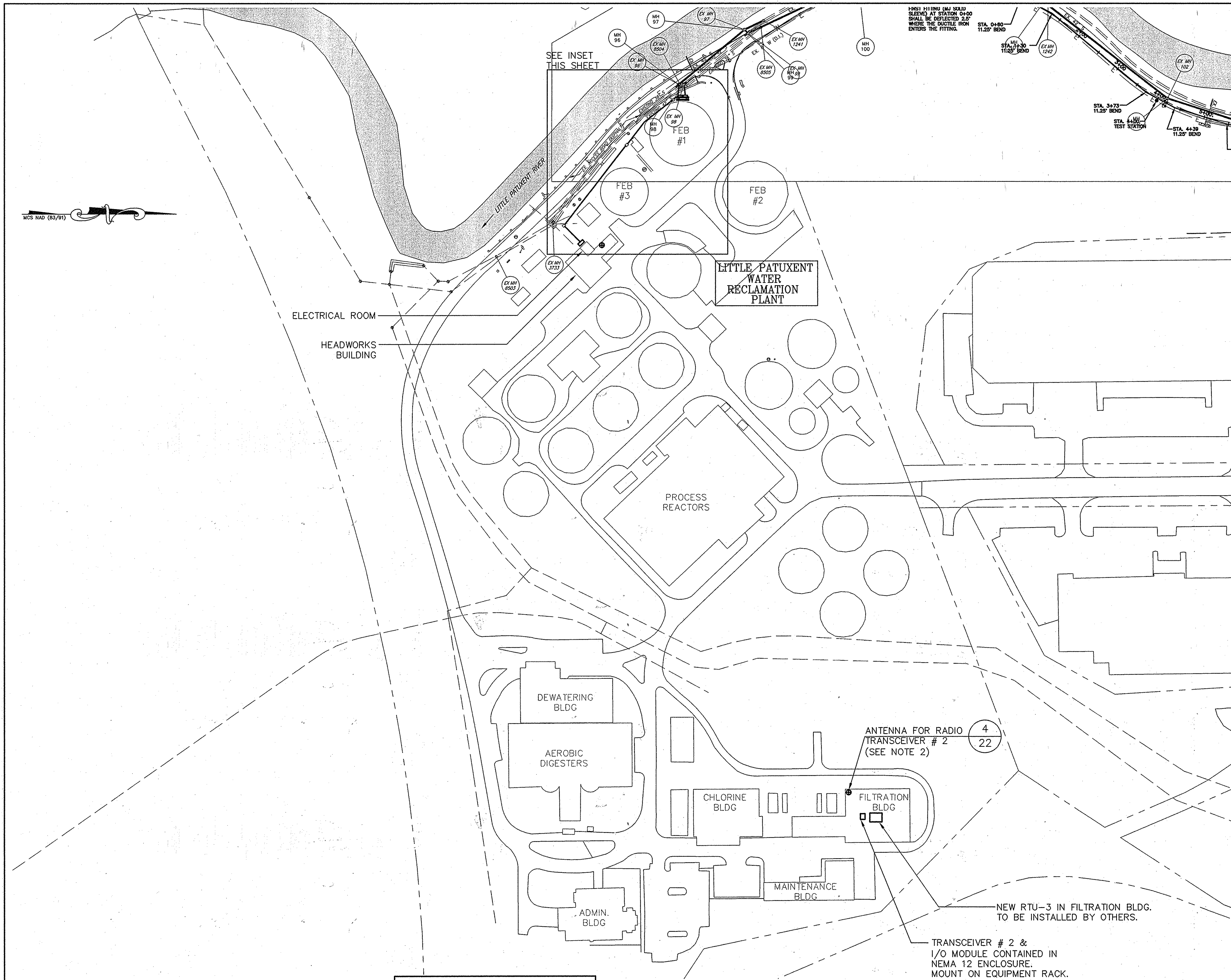
FLOW METER
SYMBOLS AND ABBREVIATIONS

600' SCALE MAP 47 & 48 — BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

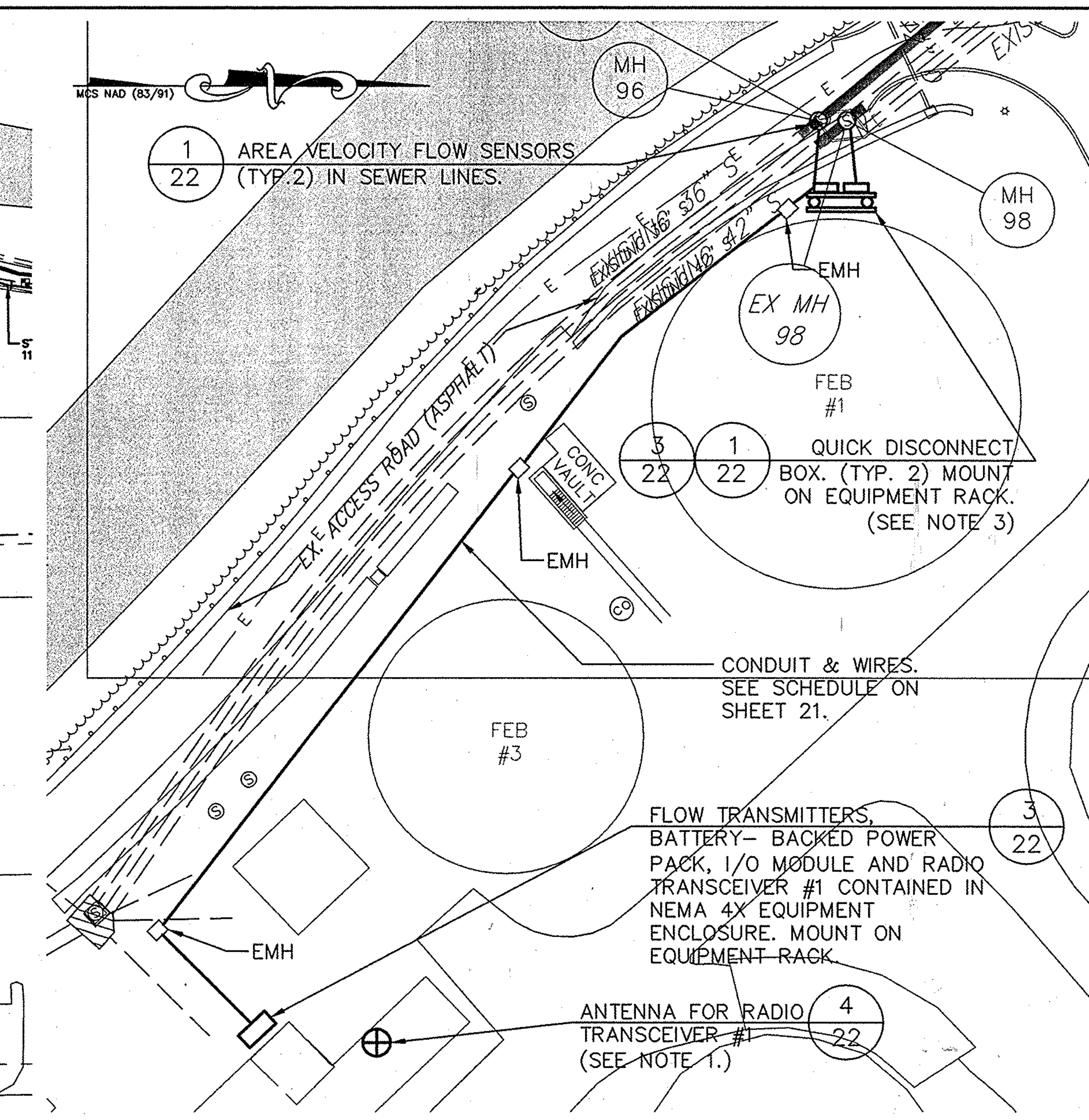
SCALE AS SHOWN

SHEET 19 OF 25



SITE PLAN

1" = 100'



SITE PLAN INSET

1" = 40'

NOTES:

1. MOUNT ANTENNA FOR RADIO TRANSCEIVER #1 AT ROOF TOP OF HEAD WORKS BUILDING AS SHOWN ON SHEET 22, DETAIL 4. ROUTE ANTENNA CABLE ALONG WALLS AND SUPPORT EVERY 12" MINIMUM FROM ANTENNA TO NEMA 4X EQUIPMENT ENCLOSURE. SUPPORT ANTENNA CABLE WITH SST SINGLE HOLE STRAPS, AND HARDWARE. ANTENNA CABLE SHALL ENTER RADIO TRANSCEIVER ENCLOSURE FROM BOTTOM.
2. MOUNT ANTENNA FOR RADIO TRANSCEIVER #2 AT ROOF TOP OF FILTRATION BUILDING AS SHOWN ON SHEET 22, DETAIL 4. ROUTE CABLE FROM ANTENNA ALONG SOUTHWALL OF BUILDING. SUPPORT CABLE EVERY 12" MINIMUM FROM ANTENNA TO POINT OF WALL ENTRY. SECURE WITH SST SINGLE HOLE STRAPS, AND HARDWARE. CORE DRILL WALL OPENING TO ROUTE ANTENNA CABLE IN 1" RGS CONDUIT FOR ENTRY INTO ELECTRICAL ROOM TO NEMA 12 ENCLOSURE CONTAINING RADIO TRANSCEIVER #2. SEAL OPENING WATER TIGHT WITH GROUT AFTER INSTALLATION. ANTENNA CABLE AND CONDUIT SHALL ENTER RADIO TRANSCEIVER ENCLOSURE FROM TOP.
3. MOUNT QUICK DISCONNECT BOX (TYP. 2) ON EQUIPMENT RACK AT A LOCATION ON FEB TANK #1, CLOSEST TO MANHOLES WHERE FLOW SENSORS ARE INSTALLED. MAX LENGTH OF FLOW SENSOR CABLES TO QUICK DISCONNECT BOXES SHALL NOT EXCEED 75-FT. REFERENCE CODED NOTE 3, SHEET 21.

12/9/10

AS-BUILT

PROFESSIONAL CERTIFICATION

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LICENSE NO. __________ EXPIRATION DATE: __________

HARTWELL ENGINEERING, INC.
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2141 PRIEST BRIDGE DRIVE, SUITE #8
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(410) 451-7335

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

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STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER

DES: WK				
DRN: WK/NCT				
CHK: G.C.L.				
OCT., 2009	R.J.C.	AS-BUILT		11/30/10
	BY	NO.	REVISION	DATE

FLOW METER
SITE PLAN

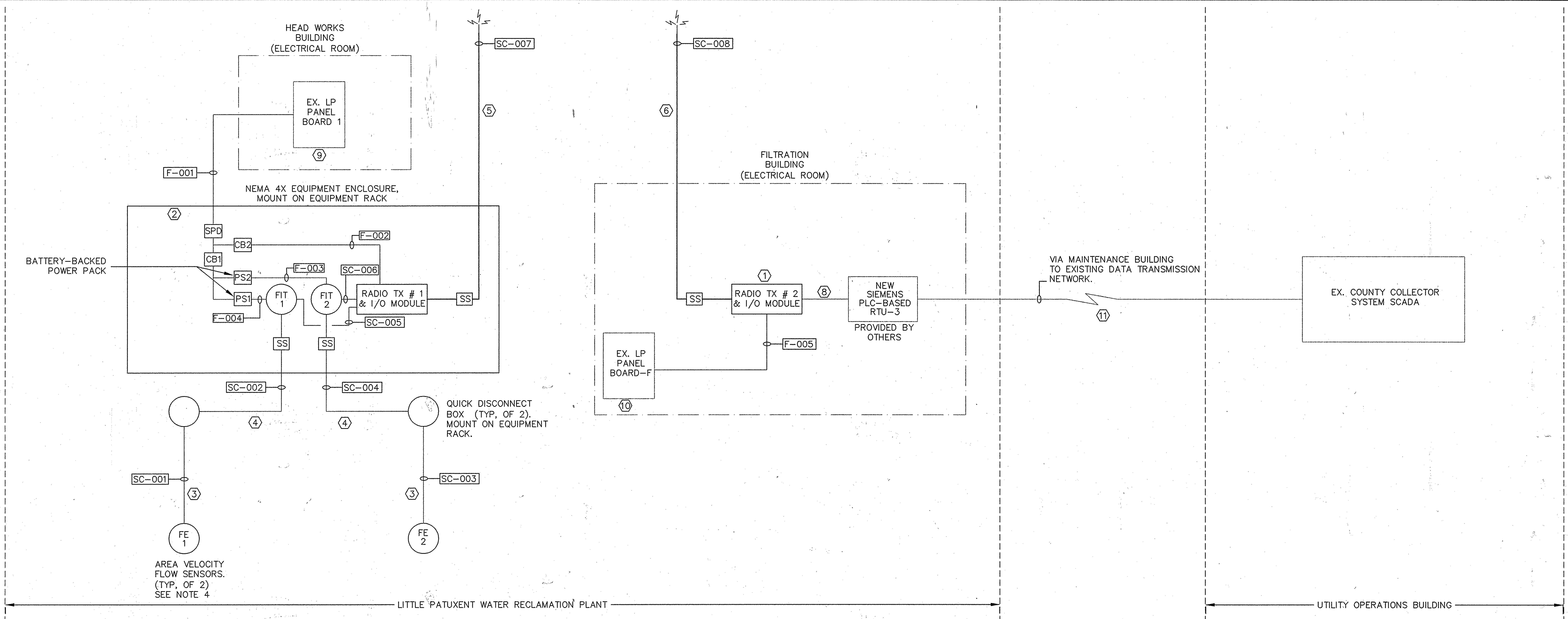
600' SCALE MAP 47 & 48 BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 20 OF 25

P:\project\14794\1-0\Env\Plans\Contract 1\20--Flow Meter -- Site Plan.dwg, 11/30/2010 2:35:03 PM, TDS600.pc3



FLOW METER CONNECTION & SIGNAL TRANSFER – RISER DIAGRAM

GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR FLOW METER, BATTERY-BACKED POWER PACKS, RADIO TRANSCEIVER AND I/O DEVICE REQUIREMENTS.
2. INSTALL AREA VELOCITY FLOW SENSORS IN SEWER LINES AS SHOWN ON SHEET 22, DETAIL 1 AND PER THE MANUFACTURER'S INSTRUCTIONS.

CODED NOTES:

1. NEMA 12 ENCLOSURE CONTAINING RADIO TRANSCEIVER # 2 AND I/O MODULE MOUNTED ON EQUIPMENT RACK NEXT TO RTU-3 IN FILTRATION BUILDING ELECTRICAL ROOM.
2. MINIMUM DIMENSION FOR NEMA 4X EQUIPMENT ENCLOSURE IS 42" X 24" X 18". MOUNT INTERNAL COMPONENTS ON BACK PANEL WITH SST HARDWARE. INSTALL WINDOW KIT ON DOOR ASSEMBLY OF EQUIPMENT ENCLOSURE FOR VISIBILITY OF FLOW TRANSMITTERS.
3. FLOW SENSOR CABLES PARTIALLY INSTALLED IN CONDUIT AS SHOWN ON DWG SHEET 22, DETAIL 1. LENGTH OF CABLE SHALL NOT EXCEED 75-FT.
4. MANUFACTURER'S CABLE INTERCONNECTING QUICK DISCONNECT BOX AND FLOW TRANSMITTER. INSTALL IN CONDUIT BURIED MIN 30-INCH BELOW GRADE. SIZE CONDUIT TO ACCOMODATE CABLE CONNECTORS. CABLE LENGTH SHALL NOT EXCEED 900-FT.
5. ANTENNA CABLE LENGTH FOR TRANSCEIVER # 1 SHALL BE MINIMUM 120-FT.
6. ANTENNA CABLE LENGTH FOR TRANSCEIVER # 2 SHALL BE MINIMUM 140-FT.
7. CABLES IN ENCLOSURE, MOUNT IN WIRE WAY.
8. CONDUIT AND WIRES TO RTU-3 TO BE INSTALLED BY CONTRACTOR PROVIDING RTU.
9. PROVIDE AND INSTALL TWO (2) 20-AMP, 120 VOLTS, 1 PHASE CB IN EX LP PANEL BOARD-1 AS POWER SOURCE FOR BATTERY-BACKED POWER PACKS AND RADIO TRANSCEIVER # 1.
10. EX PANEL BOARD-F IN FILTRATION BUILDING ELECTRICAL ROOM. PROVIDE 20-AMP, 120 VOLTS, 1 PHASE CB IN PANEL BOARD AS POWER SOURCE FOR RADIO TRANSCEIVER # 2.
11. COMMUNICATION AND SCADA WORK BY OTHERS.

FEEDER SCHEDULE – POWER

FEEDER #	FROM	TO	WIRE TYPE & SIZE	CONDUIT	REMARKS
F-001	EX. LP PANEL BOARD-1	NEMA 4X EQUIPMENT ENCLOSURE	(2)-#10 + #12G	¾"	
F-002	CIRCUIT BREAKER, CB2	RADIO TRANSCEIVER # 1	(2)-#12 + 12G		7
F-003	BATTERY-BACKED POWER PACK-PS2	FLOW TRANSMITTER FIT2	MANUFACTURER'S CABLE		7
F-004	BATTERY-BACKED POWER PACK-PS1	FLOW TRANSMITTER FIT1	MANUFACTURER'S CABLE		7
F-005	EX. LP PANEL BOARD-F	RADIO TRANSCEIVER # 2	(2)-#12 + #12G	¾"	

CONTROL / SIGNAL SCHEDULE

FEEDER #	FROM	TO	WIRE TYPE & SIZE	CONDUIT	REMARKS
SC-001	FLOW SENSOR 1	QUICK DISCONNECT BOX 1	MANUFACTURER'S CABLE	¾"	3
SC-002	QUICK DISCONNECT BOX 1	FIT 1 IN EQUIPMENT CABINET	MANUFACTURER'S CABLE	2"	4
SC-003	FLOW SENSOR 2	QUICK DISCONNECT BOX 2	MANUFACTURER'S CABLE	¾"	3
SC-004	QUICK DISCONNECT BOX 2	FLOW TRANSMITTER FIT2	MANUFACTURER'S CABLE	2"	4
SC-005	FLOW TRANSMITTER FIT 1	I/O MODULE	(1)-#18 TSP		7
SC-006	FLOW TRANSMITTER FIT 2	I/O MODULE	(1)-#18 TSP		7
SC-007	RADIO TRANSCEIVER ANTENNA	RADIO TRANSCEIVER # 1	MANUFACTURER'S CABLE		5
SC-008	RADIO TRANSCEIVER ANTENNA	RADIO TRANSCEIVER # 2	MANUFACTURER'S CABLE		6

12/3/10 AS-BUILT

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. __________ EXPIRATION DATE: __________

HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS
2141 PRIEST BRIDGE DRIVE, SUITE #8
CROFTON, MARYLAND 21114
(410) 451-7335

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	7/3/08 DATE	CHIEF, BUREAU OF ENGINEERING	7/1/08 DATE
CHIEF, BUREAU OF UTILITIES	7/2/08 DATE	CHIEF, UTILITY DESIGN DIVISION	7-1-08 DATE

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STATE OF MARYLAND PROFESSIONAL ENGINEER

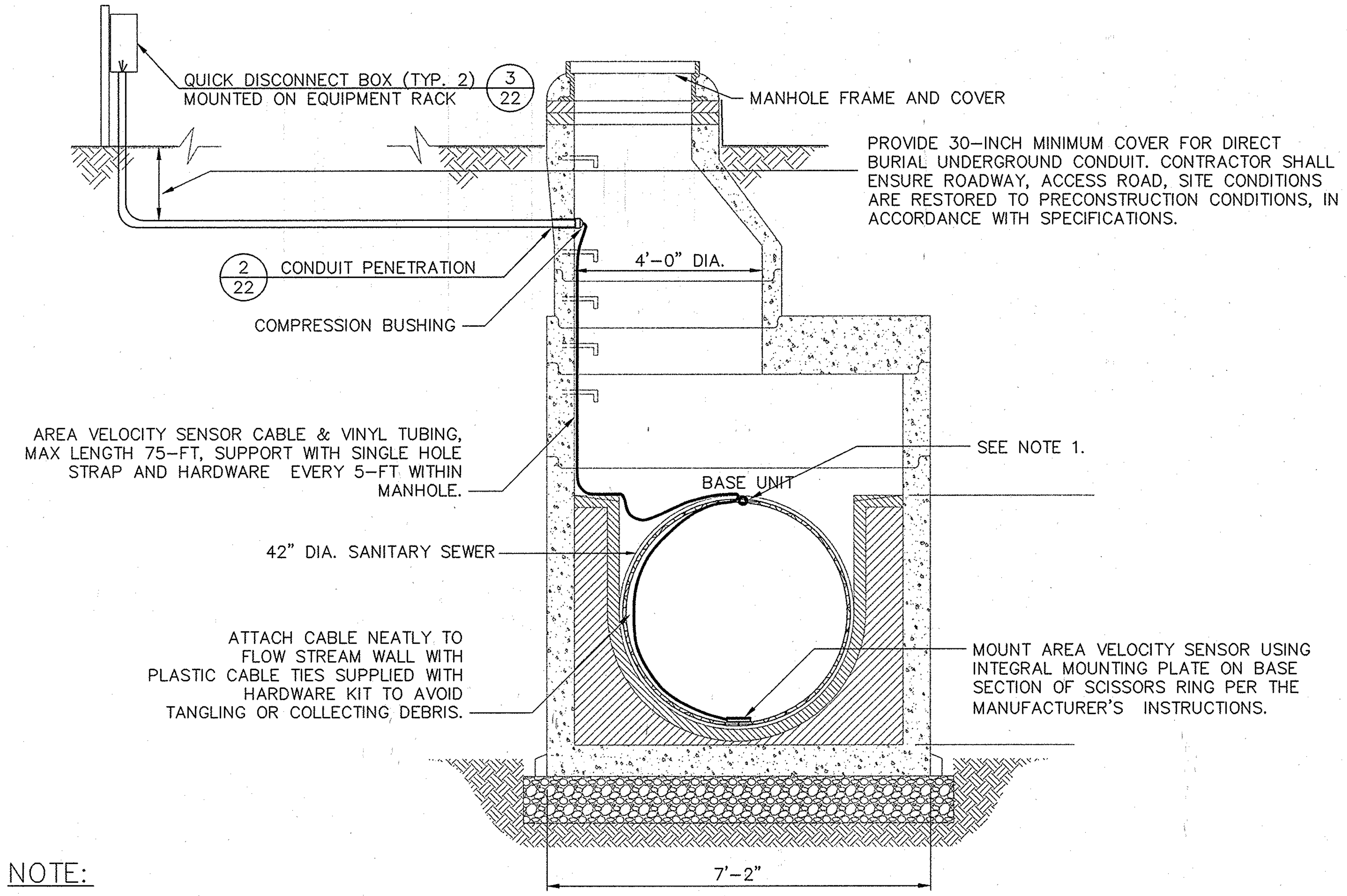
DES: W.K			
DRN: W.K			
CHK: G.C.L.			
	R.J.C.	AS-BUILT	11/30/10
OCT., 2009	BY NO.	REVISION	DATE

FLOW METER RISER DIAGRAM & WIRE CONDUIT SCHEDULE

600' SCALE MAP 47 & 48 BLOCK 1843 & 1942

LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

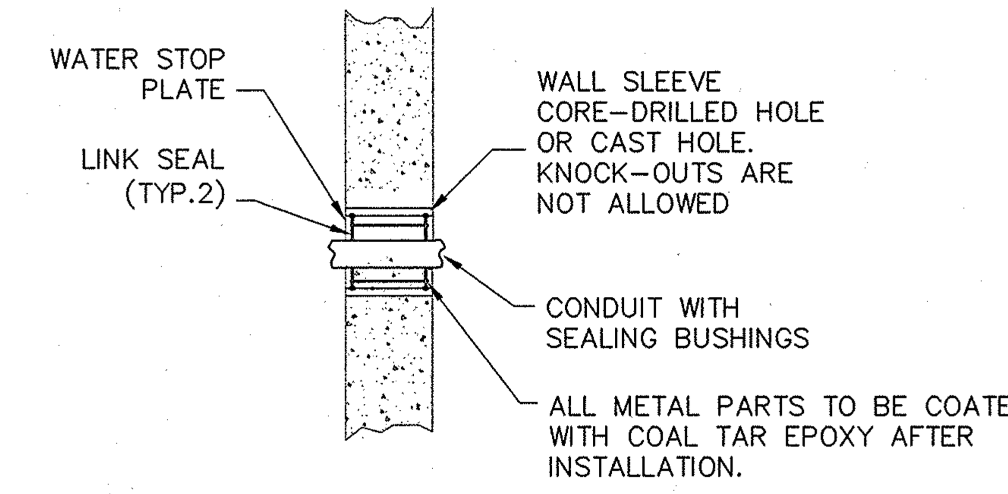
SCALE AS SHOWN



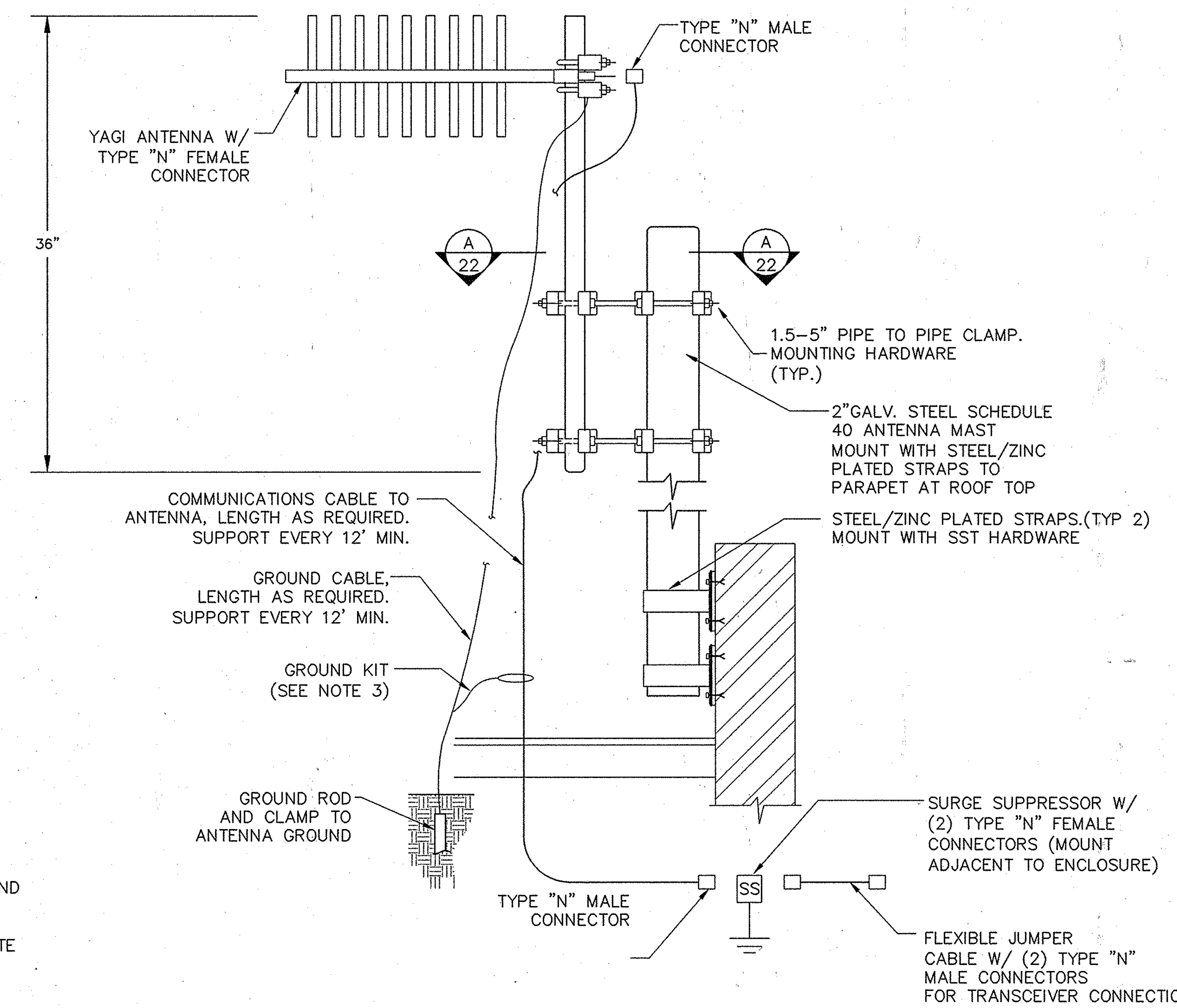
NOTE:

1. INSTALL SCISSORS RING IN SEWER LINES PER THE MANUFACTURER'S INSTRUCTIONS.

1/20 **FLOW SENSOR INSTALLATION DETAILS**
SCALE: NTS (TYP. 2)



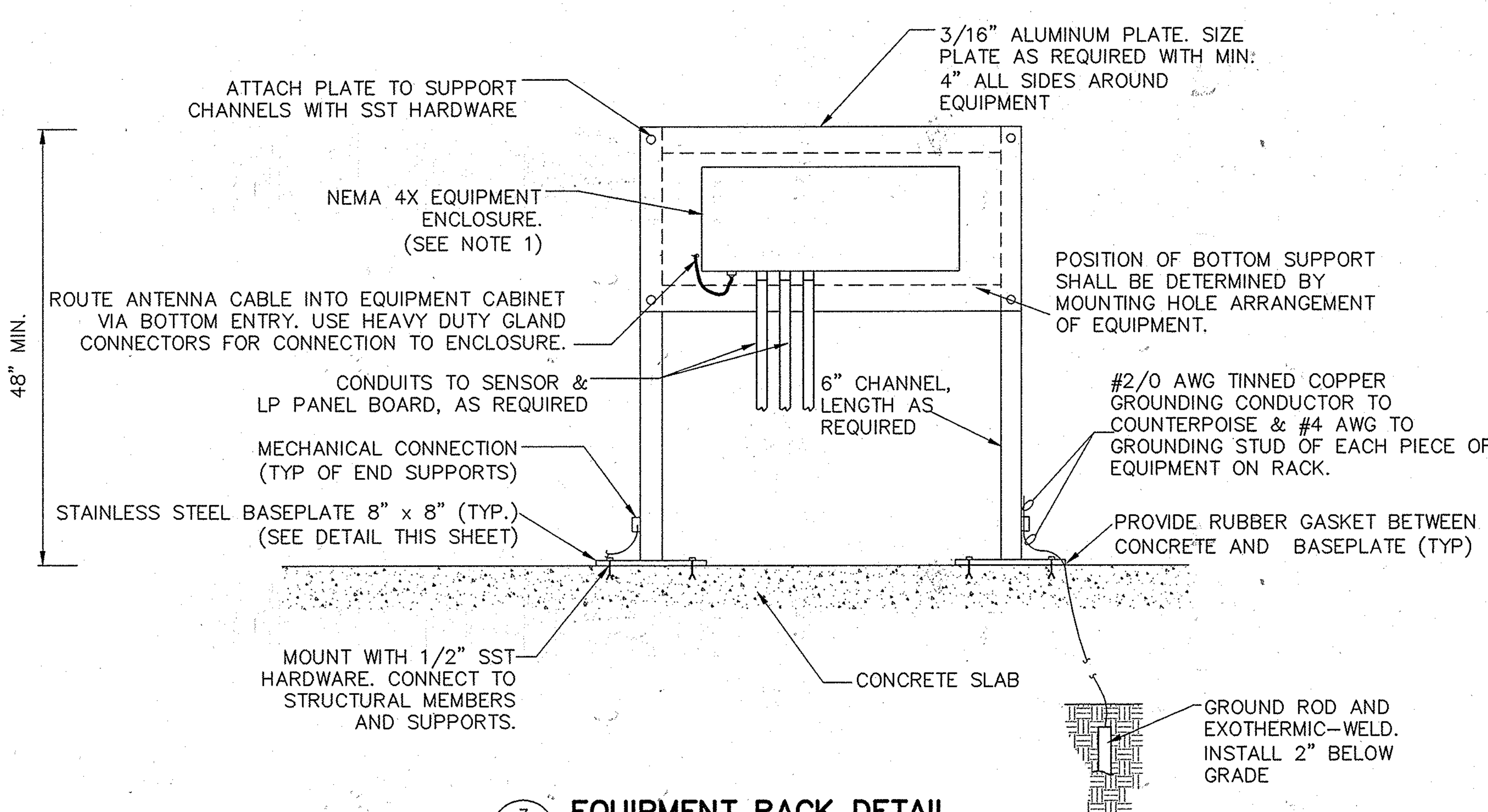
2/20 **CONDUIT PENETRATION DETAIL**
SCALE: NTS



4/20 **ANTENNA INSTALLATION DETAIL**
SCALE: NTS (TYP. FOR OMNI ANTENNA)

NOTES:

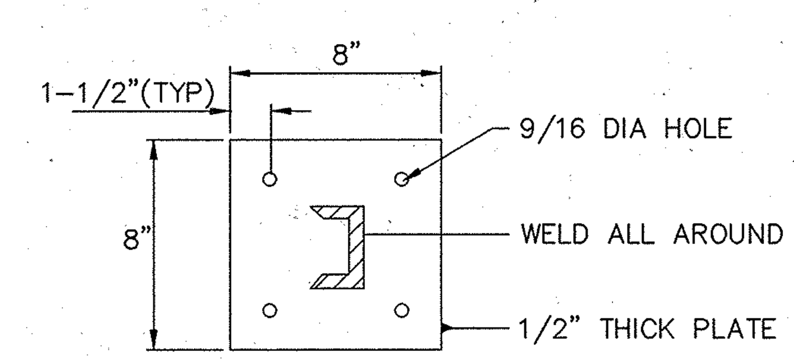
1. INSTALL ANTENNAS PER MANUFACTURERS RECOMMENDATIONS.
2. SUPPORT ANTENNAS ON PIPE MOUNTED ON STEEL STRAPS TO PARAPET OF ROOF TOP.
3. INSTALL GROUNDING KITS FOR GROUNDING OF ANTENNA CABLE AND CONNECT TO GROUND WITH #4 BARE COPPER GROUND WIRE.



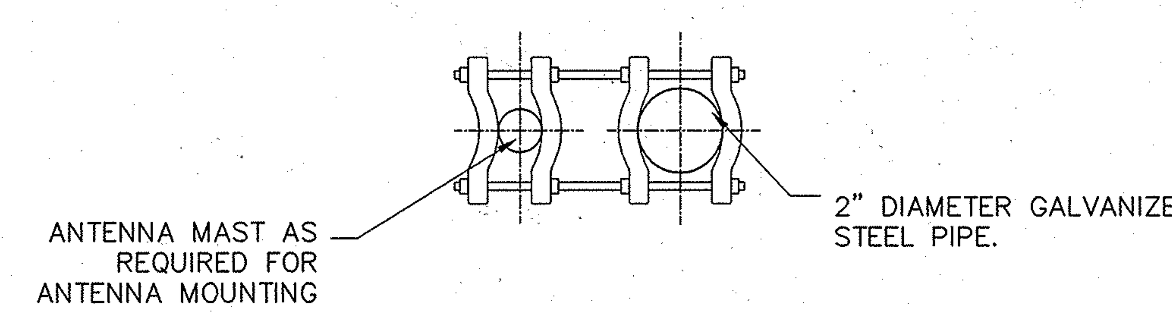
3/20 **EQUIPMENT RACK DETAIL**
SCALE: NTS

NOTE:

1. USE SIMILAR EQUIPMENT RACK TO MOUNT QUICK DISCONNECT BOXES, AND NEMA 12 EQUIPMENT ENCLOSURE CONTAINING TRANSCEIVER #2 AND I/O MODULE.



BASEPLATE DETAIL
SCALE: NTS



A/22 **SECTION**
SCALE: NTS

12/9/10
AS-BUILT

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HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

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STATE OF MARYLAND PROFESSIONAL ENGINEER

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DRN: W.K				
CHK: G.C.L.				
	R.J.C.		AS-BUILT	11/30/10
OCT., 2009	BY	NO.	REVISION	DATE

FLOW METER DETAILS

600' SCALE MAP 47 & 48 BLOCK 1843 & 1942

LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

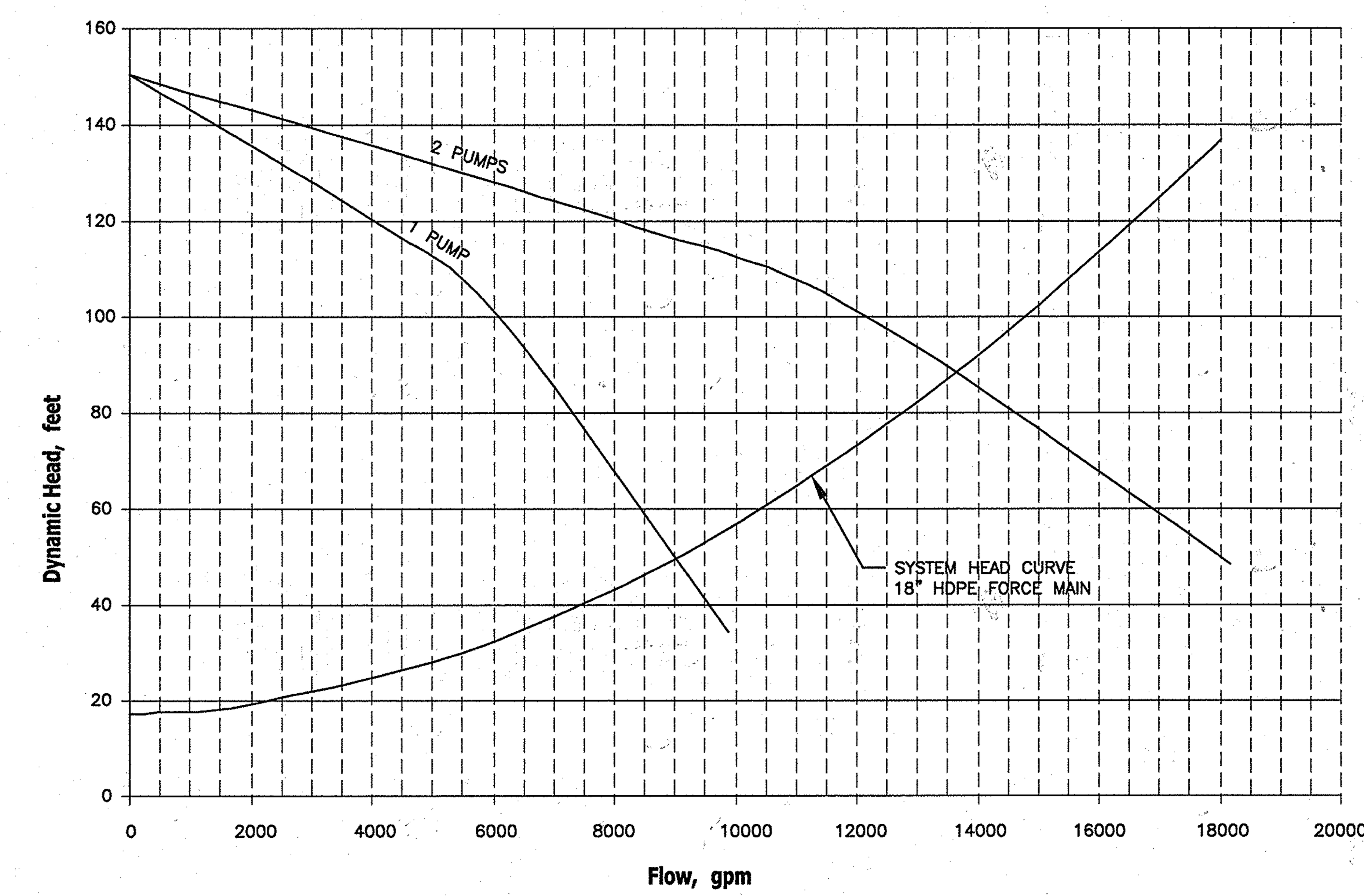
SCALE AS SHOWN

SHEET 22 OF 25

BYPASS PUMPING PLAN FOR EX. MH-8504

1"=50'

LITTLE PATUXENT RIVER

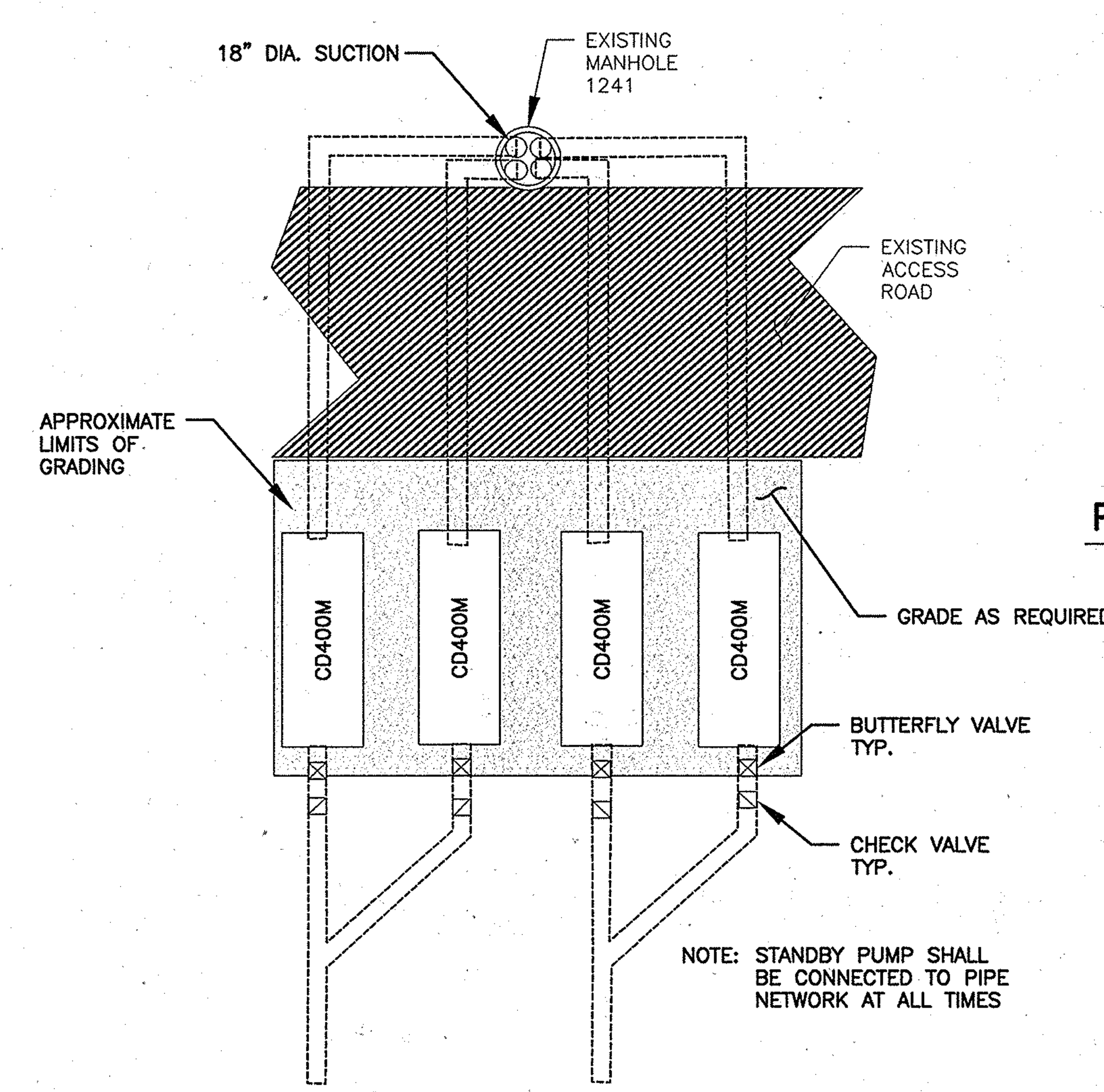


CURVE DATA

NOT TO SCALE

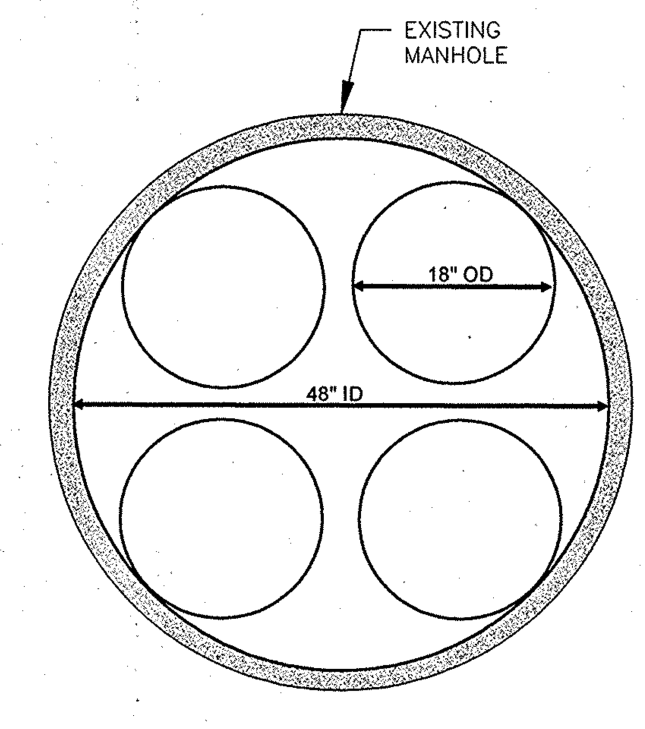
SYSTEM CONFIGURATION

3-GODWIN (CD400M) DRY-PRIME PUMPS (OR APPROVED EQUAL)
2-18" HDPE DISCHARGE PIPE
4TH PUMP AS STANDBY



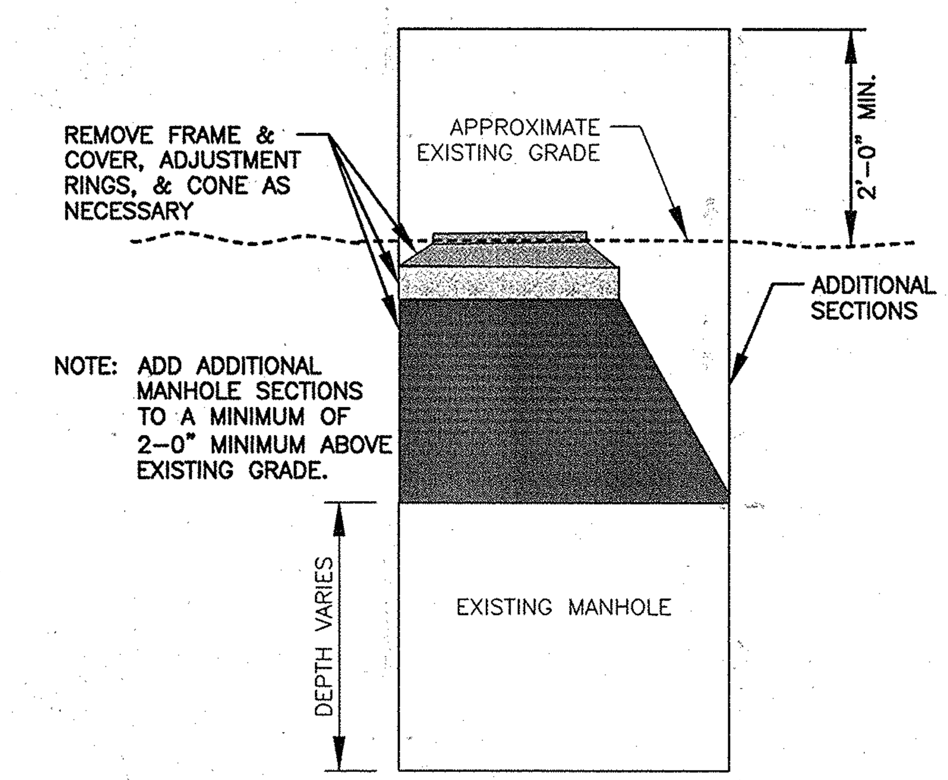
PUMP LAYOUT SCHEMATIC

NOT TO SCALE



POINT OF SUCTION / DISCHARGE

NOT TO SCALE



MODIFICATIONS TO EXISTING MANHOLE

NOT TO SCALE

NOTES:

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

12/9/10 AS-BUILT

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

7/3/08	DIRECTOR OF PUBLIC WORKS / DATE	7/1/08	CHIEF, BUREAU OF ENGINEERING / DATE
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STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER
6/24/08

DES: C.H.			
DRN: D.K.S.			
CHK: G.C.L.			
	R.J.C.	AS-BUILT	11/30/10
OCT., 2009	BY NO.	REVISION	DATE

BYPASS PUMPING PLAN
EX MH-8504

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
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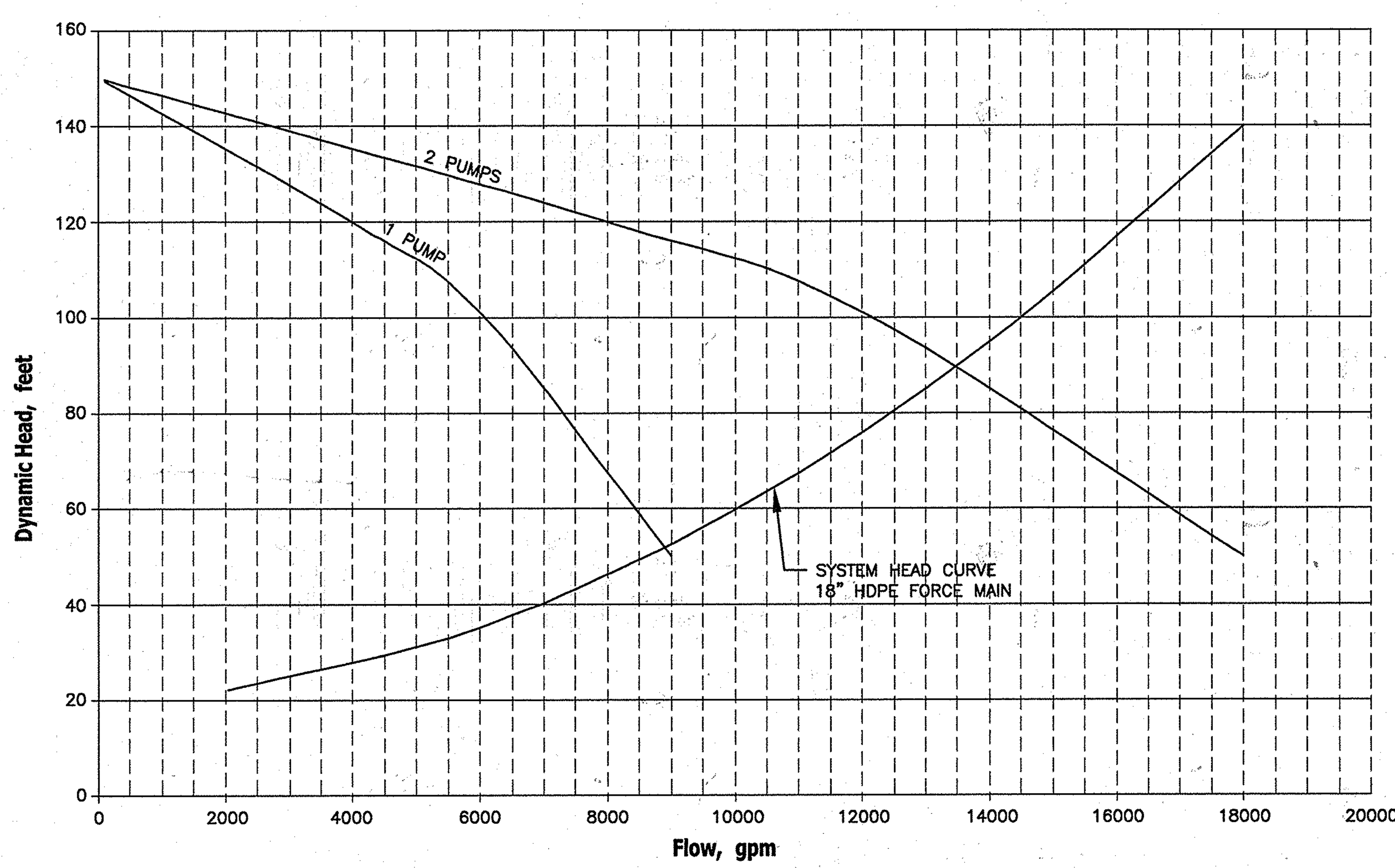
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 23 OF 25

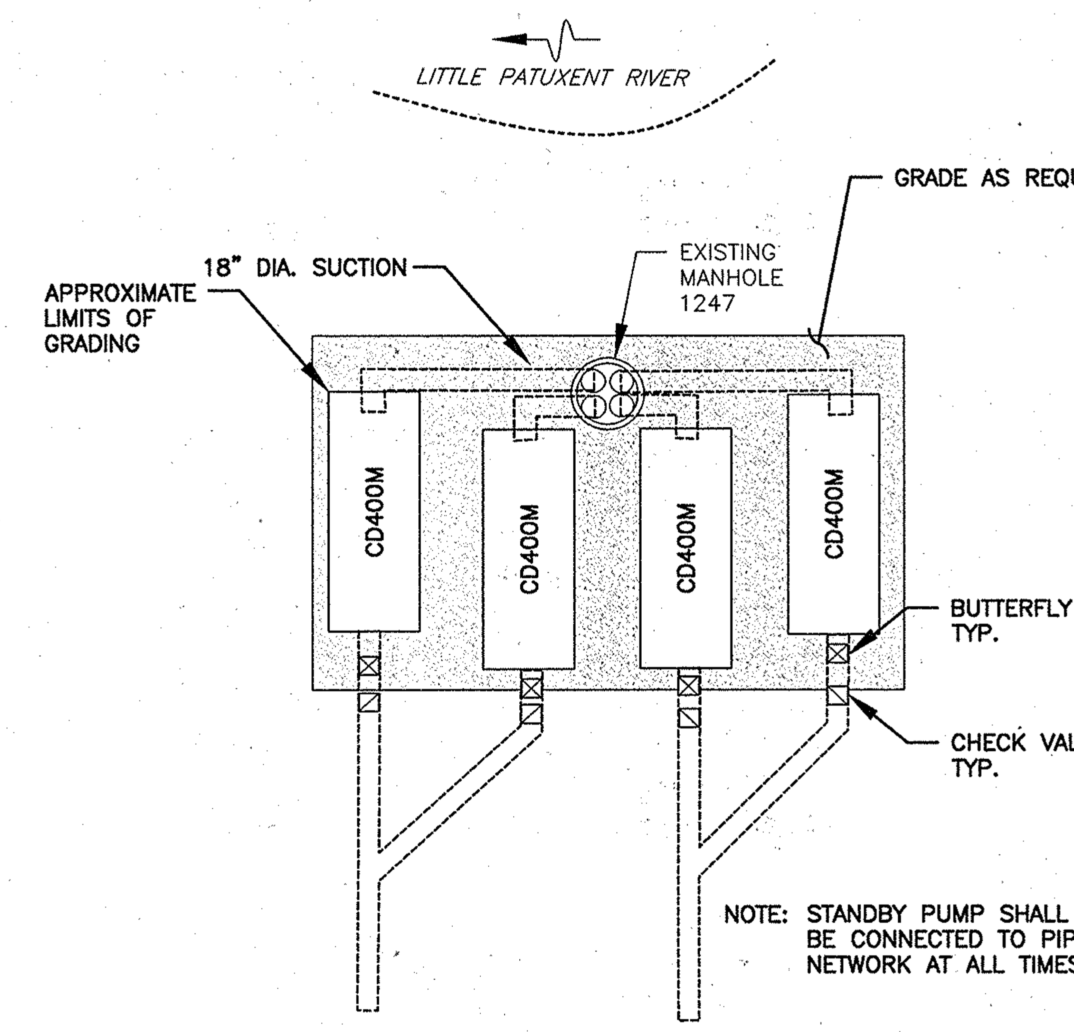
BYPASS PUMPING PLAN FOR DS-1

1"=50'



CURVE DATA

NOT TO SCALE



PUMP LAYOUT SCHEMATIC

NOT TO SCALE

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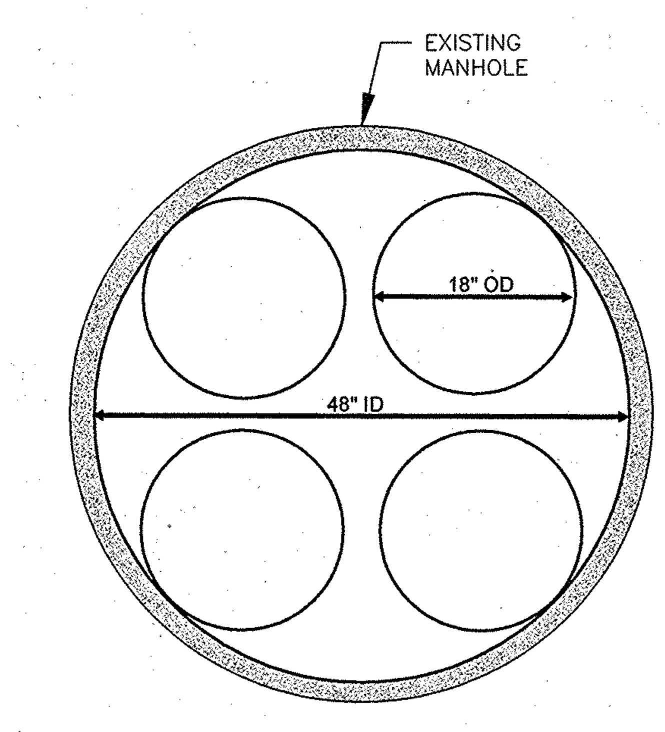
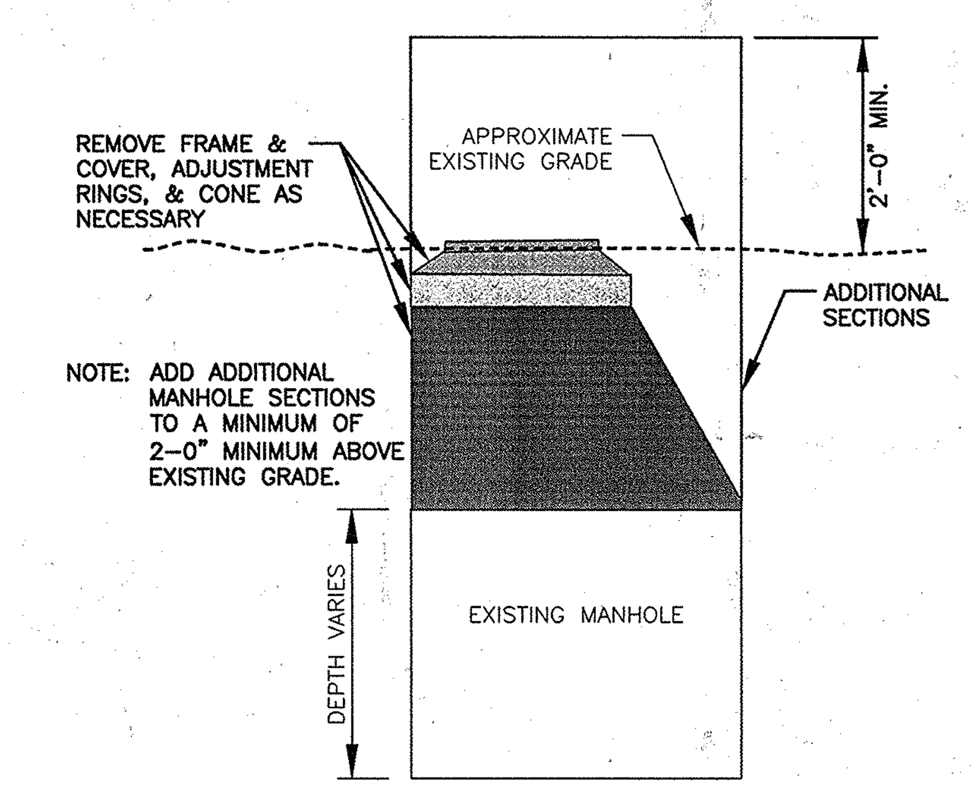
4TH PUMP AS STANDBY



POINT OF SUCTION / DISCHARGE

NOT TO SCALE



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6/24/08

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OCT., 2009	R.J.C.	AS-BUILT	11/30/10
	BY NO.	REVISION	DATE

BYPASS PUMPING PLAN
DS-1

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 24 OF 25

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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*

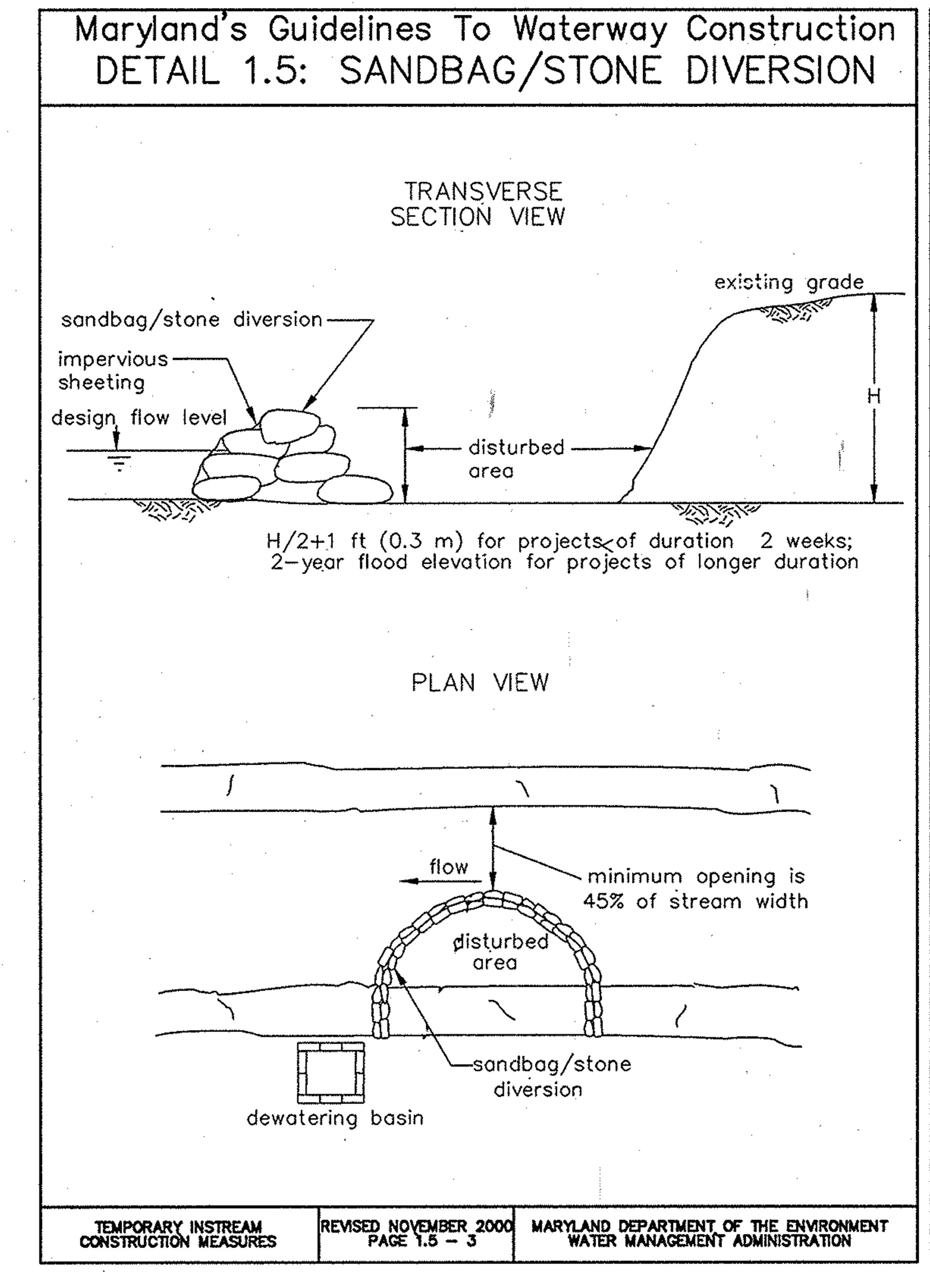
PAGE 1.5 - 1

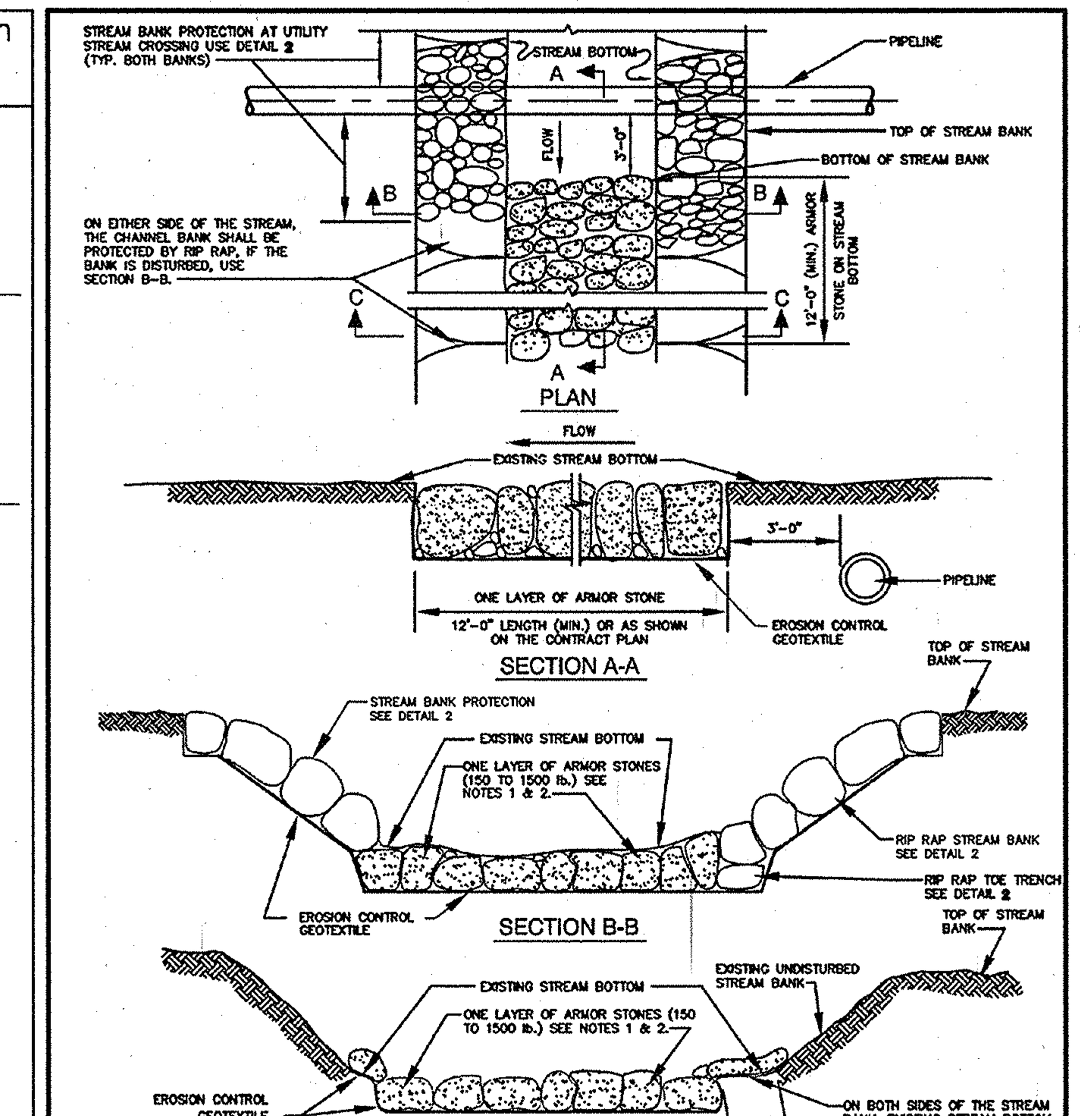
MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

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

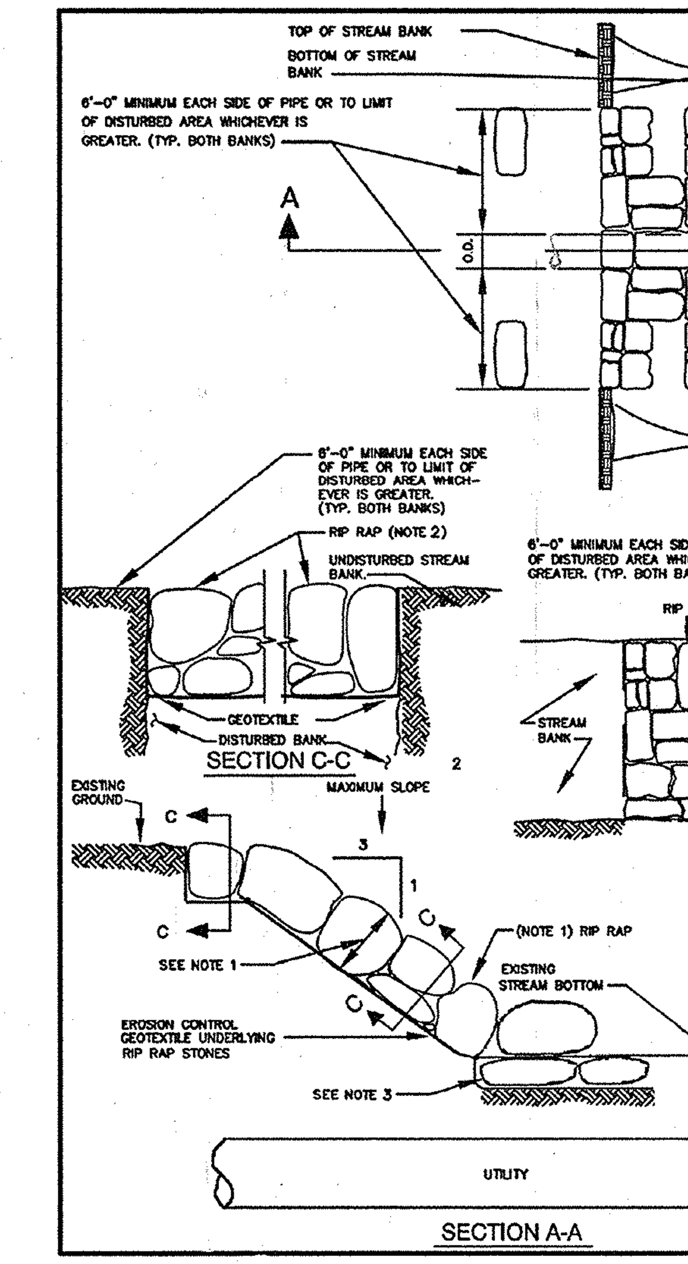




NOTES:

1. ARMOR STONES SHALL BE PLACED IN A MANNER TO PROVIDE A RELATIVELY EVEN STREAM BOTTOM WITH THE TOP OF STONE AT OR BELOW THE ORIGINAL STREAM BOTTOM.
2. ARMOR STONE SHALL BE REASONABLY WELL-GRADED FROM THE SMALLEST TO THE LARGEST SIZE SPECIFIED.
3. ARMOR STONES SHALL BE SPECIFICALLY SELECTED AND PLACED WITH THE FLAT SIDE UP.
4. COLOR OF RIP RAP SHALL BE SELECTED TO MATCH EXISTING STONE IN ~~STREAM.~~ (WHITE STONE AS PRODUCED BY LAFARGE TEXAS ~~QUARRY~~ SHALL NOT BE ACCEPTABLE)

DETAIL 1
STREAM INVERT PROTECTION AT CROSSING
NO SCALE



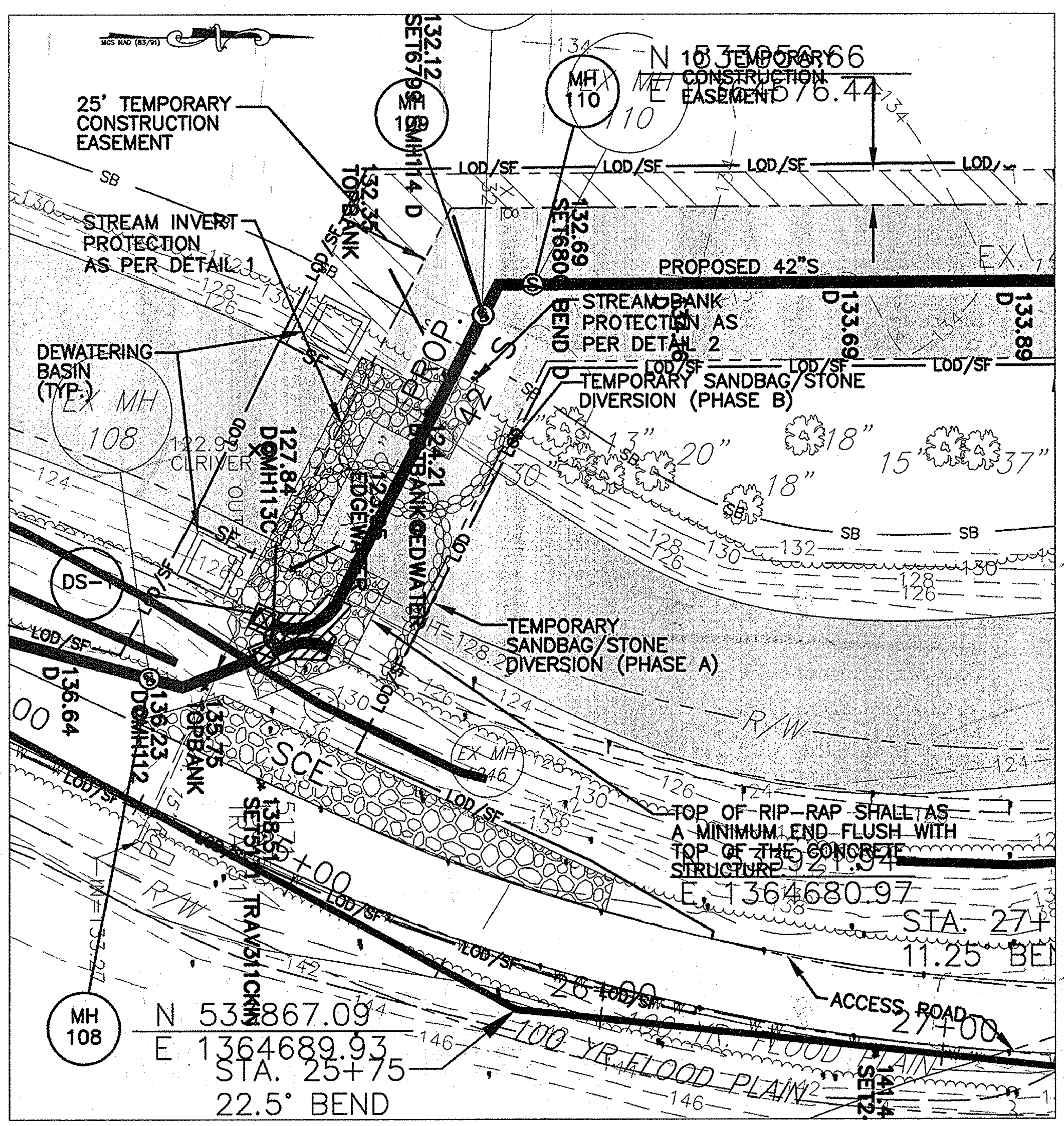
NOTES:

1. RIPRAP SHALL BE CLASS III UNGROUTED STONE. THE TYPICAL THICKNESS IS THE GREATER OF: 12 INCHES (30 cm), THE UPPER LIMIT OF D_{100}, AND 1.5 TIMES THE UPPER LIMIT OF D_{50}, MEDIAN STONE SIZE, D_{50}, SHALL BE BASED ON BANKFULL DISHCHARGE.
2. TOP OF THE RIPRAP SHALL BE FLUSH WITH THE EXISTING UNDISTURBED STREAM BANK.
3. MINIMUM TOE TRENCH DEPTH BELOW CHANNEL INVERT SHALL BE DESIGNED BASED ON SITE CHARACTERISTICS AND TO PREVENT FAILURE DUE TO SCOUR.

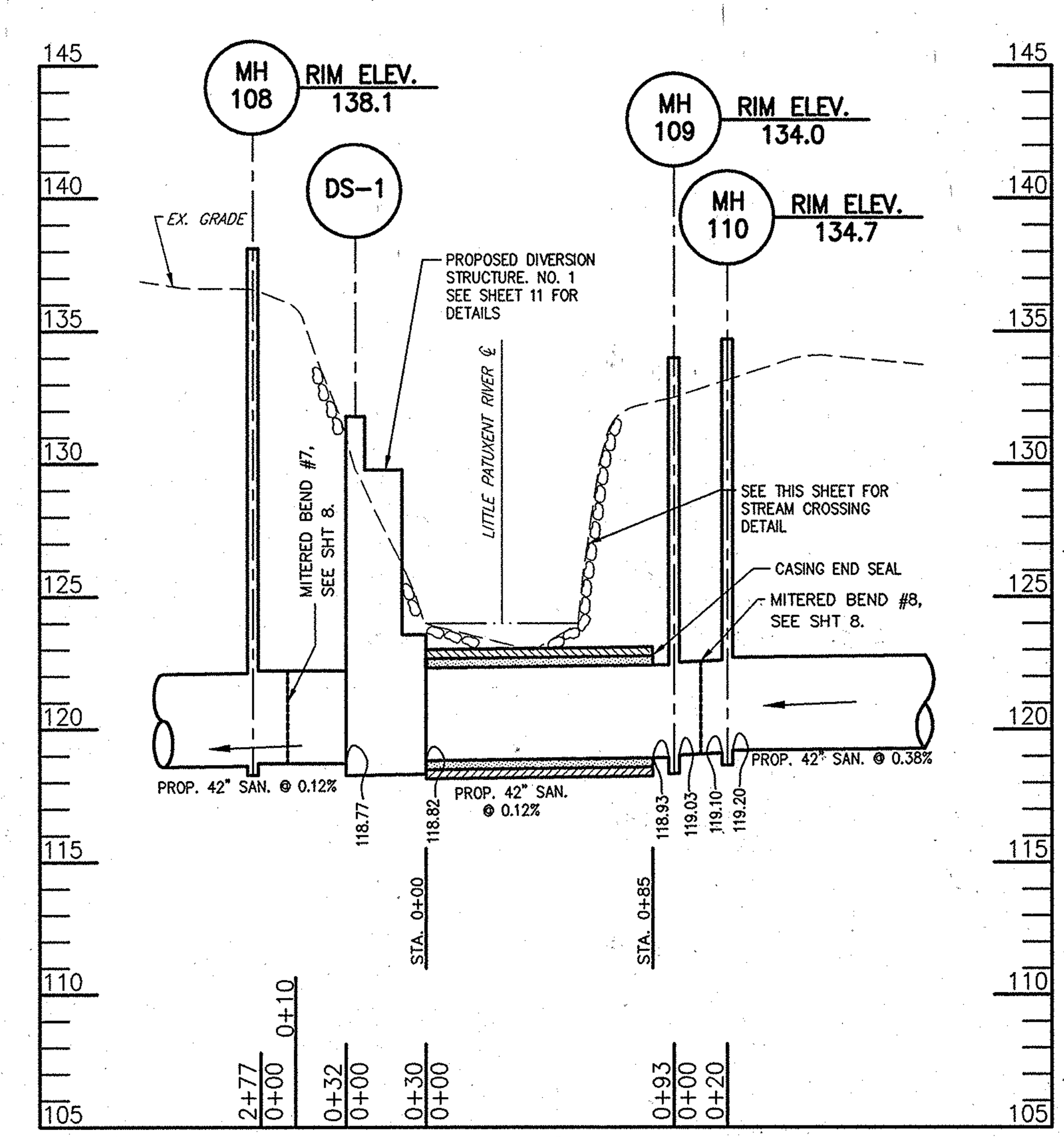
DETAIL 2
STREAM BANK PROTECTION AT CROSSING
NO SCALE

STREAM CROSSING NOTES:

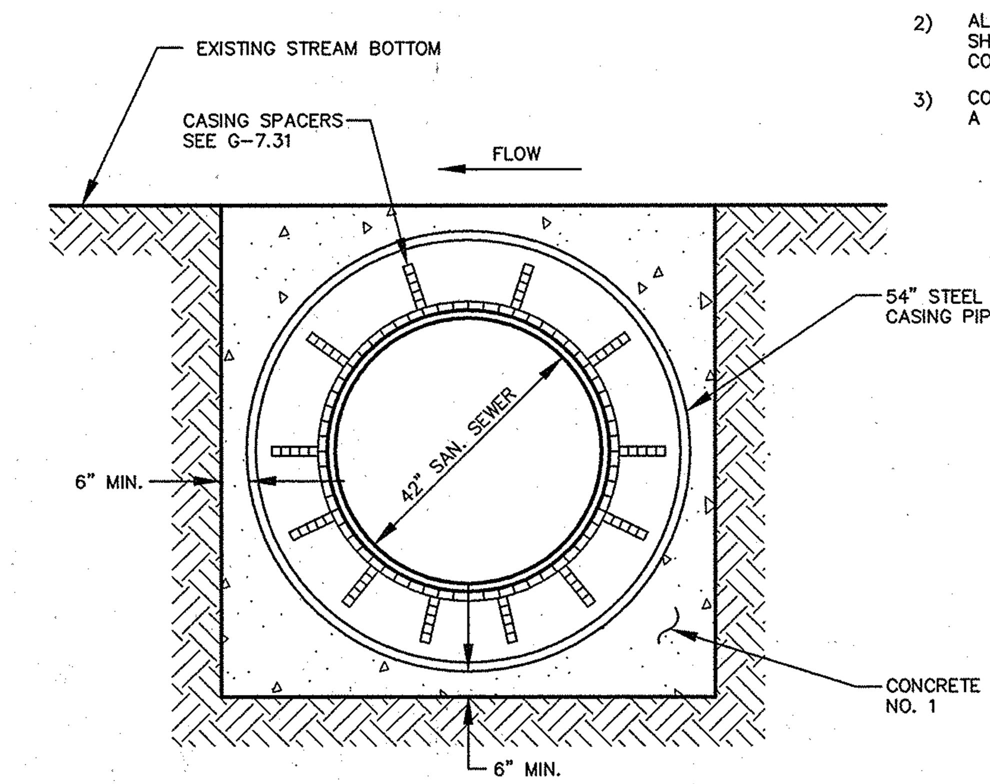
1) STREAM CROSSING SHALL BE INSTALLED IN ACCORDANCE WITH MGCW STANDARD 1.5. PHASE A WILL OCCUR FROM STATION 0+00 (DS–1) TO STATION 0+27. PHASE B WILL OCCUR FROM STATION 0+27 TO STATION 0+93 (MH–109).
2) ALL MEASURES NECESSARY FOR INSTALLATION OF THE SEWER MAIN ACROSS THE STREAMS SHALL BE REMOVED ONLY UPON STREAM STABILIZATION AND APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.
3) CONTRACTOR TO PUMP THE WATER FROM THE DISTURBED AREA FOR EACH STREAM CROSSING VIA A PUMP AND HOSE TO THE DEWATERING BASIN IN ORDER THAT WORK MAY PROCEED IN THE DRY.



STREAM CROSSING DETAIL
1"=30'



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



NOTES:

1. STEEL CASING PIPE TO BE 54"ø x ½" THICK WITH CEMENT MORTAR LINING ON INSIDE.
2. 42" FRP AND 54" STEEL PIPE SHALL BE INSTALLED USING THE OPEN CUT METHOD.
3. CONCRETE SHALL BE POURED AGAINST UNDISTURBED EARTH. REMOVE TRENCH SHEETING BEFORE POURING CONCRETE.
4. CASING SPACERS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
5. CONTRACTOR SHALL PREVENT FLOTATION OF CARRIER PIPE WHILE CONCRETE CURES.
6. CASING END SEAL SHALL BE PER HOWARD COUNTY SPECIFICATIONS.
7. SEE STD. SPECIFICATION SECTIONS 912 AND 963.

DETAIL 3
STREAM ENCASEMENT DETAIL
SCALE: NO SCALE

12/9/10
AS–BUILT

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. ________ EXPIRATION DATE: ________

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 7/3/08	CHIEF, BUREAU OF ENGINEERING	DATE 7/1/08
CHIEF, BUREAU OF UTILITIES	DATE 7/2/08	CHIEF, UTILITY DESIGN DIVISION	DATE 7-1-08

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
F 410.997.9282

STATE OF MARYLAND — FRANK N. DONALDSON — REGISTERED PROFESSIONAL ENGINEER
6/24/08

DES: R.W.			
DRN: B.K.B.			
CHK: G.C.L.	R.J.C.	AS-BUILT	11/30/10
OCT., 2009	BY NO.	REVISION	DATE

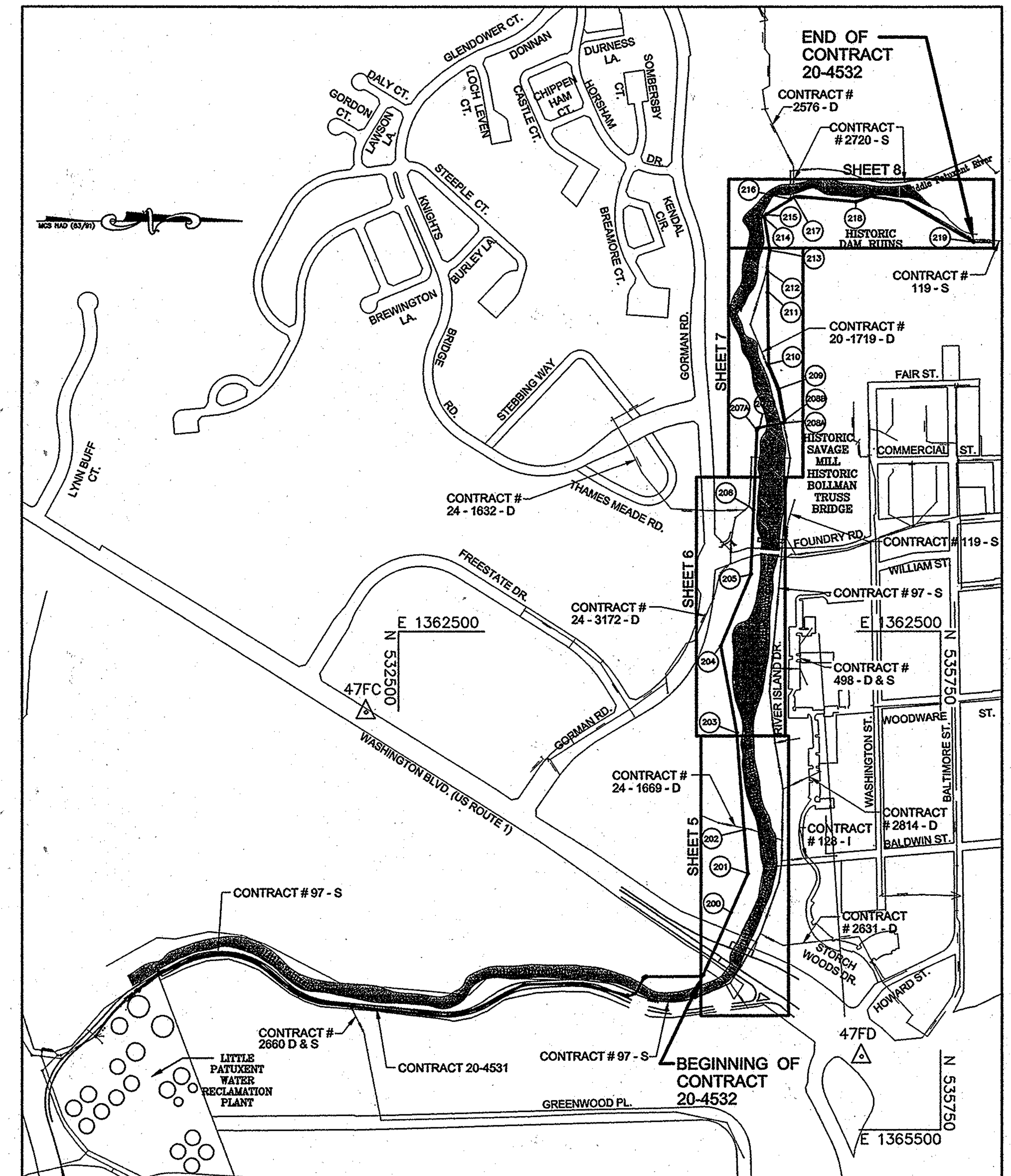
STREAM CROSSING
PLAN & DETAILS

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL SEWER INTERCEPTOR
CAPITAL PROJECT S–6175
CONTRACT NO. 20–4531
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 25 OF 25



VICINITY MAP

SCALE : 1"=600'

HOWARD COUNTY GEODETIC SURVEY CONTROL
HO. CO. MONUMENT 47FC ELEV. 186.429 N 532305.0496 E 1362985.1295
HO. CO. MONUMENT 47FD ELEV. 201.247 N 535277.4137 E 1365059.7231

QUANTITIES

ITEMS	QUANTITIES ESTIMATED	AS-BUILTS		
		QUANTITIES	TYPE	MANUFACTURER/ SUPPLIER
42-INCH SEWER	4521 L.F.	4526.5± L.F.	FRP	HOBAS
36-INCH SEWER	943 L.F.	920 L.F.	FRP	HOBAS
72-INCH MANHOLE	22 EA.	22 EA.	PRE-CAST	ATLANTIC MH
DIVERSION STRUCTURE	1 EA.	1 EA.	CONCRETE	
JUNCTION CHAMBER	1 EA.	1 EA.	CONCRETE	
MITERED BEND	3 EA.	4 EA.	FRP	HOBAS
54-INCH STEEL CASING	126 L.F.	126± L.F.	STEEL	NORTHWEST PIPE CO.
59-INCH STEEL LINER PLATE TUNNEL	450 L.F.	450± L.F.	STEEL	BRADSHAW

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER

CAPITAL PROJECT NO. S-6175

CONTRACT NO. 20-4532

HOWARD COUNTY, MARYLAND

AS-BUILT 8/18/10

NAME OF UTILITY CONTRACTOR :

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

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

9/22/08

HOWARD SOIL CONSERVATION DISTRICT 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. 8146 EXPIRATION DATE: 10/8/11

DEVELOPER'S CERTIFICATION

"I/WE CERTIFY THAT ALL THE DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THIS CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A MARYLAND DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT"

12/12/08

BUREAU OF ENGINEERING DATE
DEPARTMENT OF PUBLIC WORKS

ENGINEER'S CERTIFICATION

"I CERTIFY THAT THIS PLAN OF EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICABLE 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"

PATTON HARRIS RUST & ASSOCIATES, INC.
8818 CENTRE PARK DRIVE, COLUMBIA, MD 21045

SHEET INDEX

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

12/16/08 — DIRECTOR OF PUBLIC WORKS, DATE
12/12/08 — CHIEF, BUREAU OF ENGINEERING, DATE
12/12/08 — CHIEF, BUREAU OF UTILITIES, DATE
12/11/08 — CHIEF, UTILITY DESIGN DIVISION, DATE

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STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — NO. 8146
8/8/11

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.			
	R.J.C.	AS-BUILT	12/10
DECEMBER, 2008	BY NO.	REVISION	DATE

TITLE SHEET

600' SCALE MAP 47 | BLOCK 10, 16, 17 ,& 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 1 OF 27

GENERAL NOTES

1. Approximate location of existing sewer mains are shown. The contractor shall take all necessary precautions to protect existing sewer 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.
2. All horizontal controls are based on Maryland State Reference System NAD '83/'91.
3. All vertical controls are based on NAVD 88, and are iron bars and caps or PK nails.
4. All pipe elevations shown are invert elevations unless otherwise noted on the plans.
5. 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 any poles that may be compromised during construction.
   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 Detail for Construction (Latest Edition). The contractor shall have a copy of Volume IV on the job.
7. 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 (Contractor Services)	410–850–4620
BGE (Emergency)	410–685–1400
Howard County DPW 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

8. Trees and shrubs are to be protected from damage to the maximum extent. Trees and shrubs located within the temporary construction easement are not to be removed or damaged by the contractor.
9. The contractor shall remove trees, stumps and roots along the line of excavation. Payment for such removal shall be made per each as indicated in the schedule of prices.
10. The contractor shall notify the Howard County DPW Bureau of Highways at 410–313–7450 at least five working days before open cutting or boring/jacking of any County road for laying sewer mains. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code.
11. The existing utilities shown are from the best available records and shall be verified by the contractor prior to construction. All existing utilities shall be test pitted / located as necessary and in advance of the proposed construction to properly make all required utility crossings and/or connections. Any discrepancies or utility conflicts shall be immediately reported to the Engineer. Any damage done to the utilities due to this operation shall be repaired immediately at the contractors expense.
12. All construction shall be done in accordance with the latest Howard County Standard Details and Specifications, including all addenda, unless otherwise noted on the Drawings or in the Specifications.
13. The contractor shall be responsible for cleaning up all dust and mud on all roads due to vehicles arriving and leaving the job site on a daily basis and as directed by the Engineer.
14. All work shall comply with the approved Sediment and Erosion Control Plan shown on the Drawings and all applicable provisions of the "1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control" issued jointly by the Maryland Department of the Environment and the Natural Resources Conservation Services.
15. The Contractor shall be responsible for repairing and replacing any existing fences, 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.
16. It shall be distinctly understood that failure to mention specifically any work which would normally be required to complete the Project shall not relieve the Contractor of his responsibility to complete such work.
17. Topographic field survey was performed in September, 2006 By Patton Harris Rust & Assoc. Inc.
18. Contractor shall be responsible for securing staging and stockpile areas. A possible area that may be available is indicated on the plans.
19. For this project, the State Of Maryland Department of the Environment (MDE), permit tracking number is 07–NT–3268.
20. If rock blasting is used in the river, the contractor shall submit blasting plans to MDE for approval and use.
21. Bentonite clay dams shall be installed along pipe alignment every 500 L.F., see sheet 9 for detail.
22. Sewer flows shall not be introduced to the new sewer pipe unless directed by the County.

SEWER NOTES

1. All sewer mains shall be fiberglass reinforced pipe (FRP), unless otherwise noted.
2. All manholes shall be 6'–0" inside diameter unless otherwise noted.
3. Manhole frame and covers shall be 30" in diameter, watertight and flush with the tops of the manhole top. See sheet 9 for details.
4. Manholes shall be 18 inches above ground in unpaved areas, unless otherwise noted. See Howard County detail G–5.41, "Manhole special backfill" for details.
5. Manholes shall be as per "72" precast sanitary manhole" on sheet 9.
6. Bentonite clay shall be applied a minimum 9" around the pipe openings to ex. structures and existing manholes receiving new pipes.
7. Provide pipe joint 5–feet from the face of each side of all proposed manholes.

MANHOLE SCHEDULE

STRUCTURE	TYPE	STANDARD DETAIL	LOCATION	INV. OUT	INV. IN	TOP	REMARKS	
MH–200	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534494.45 E 1364186.94	122.12	122.22	137.8	AS–BUILT 6/3/10 (MH–200 to MH–205)	
MH–201	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534596.29 E 1363953.38	122.79	122.89	137.8		
MH–202	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534571.04 E 1363694.48	123.43	123.53	139.5		
MH–203	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534526.48 E 1363114.34	125.37	125.47	145.4		
MH–204	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534435.31 E 1362586.99	126.54	126.64	145.6		
MH–205	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534615.79 E 1362150.33	128.62	128.72	146.2		
MH–206	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534629.10 E 1361770.51	129.75	129.85	146.9	℄ INVERT	129.75
MH–207A	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534648.45 E 1361289.19	131.29	131.39	147.9		131.34
MH–207B	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534659.17 E 1361273.59	131.50	131.60	147.5		131.55
MH–208A	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534803.82 E 1361247.72	132.14	132.24	149.7		132.19
MH–208B	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534814.89 E 1361225.63	132.12	132.65	151.8		132.60
MH–209	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534784.27 E 1361034.58	143.13	143.23	158.2		143.18
MH–210	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534721.47 E 1360892.35	144.85	144.95	152.5		144.90
MH–211	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534714.13 E 1360465.77	153.09	153.19	162.3		153.14
MH–212	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534712.41 E 1360339.16	158.02	158.12	170.2		158.07
MH–213	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534711.13 E 1360207.96	159.72	159.83	170.9		159.77
MH–214	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534699.92 E 1360010.98	160.31	160.51	170.5		160.41
MH–215	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534713.04 E 1359989.50	160.67	161.87	169.9		160.77
MH–216	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534851.25 E 1359901.54	162.82	163.03	173.9		162.92
MH–217	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 534868.98 E 1359888.68	162.67	162.77	173.0		162.70
MH–218	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 535238.41 E 1359915.13	165.72	165.82	177.8		165.69
MH–219	6' PRECAST MANHOLE	SEE SEWER NOTE 5	N 535948.78 E 1360160.54	175.93	176.03	197.1	℄ INVERT	175.84

RESTORATION SCHEDULE

100 FT EAST OF MH200 TO 100 FT WEST OF MH205	SEED AND MULCH
150 FT EAST OF MH206 TO MH207B	SEED AND MULCH
MH 207B TO MH208A	RIVER CROSSING
MH208A TO DIVERSION STRUCTURE	SEED AND MULCH
DIVERSION STRUCTURE TO MH213	SEED AND MULCH
MH213 TO MH 214	SEED AND MULCH
MH214 TO JUNCTION CHAMBER	SEED AND MULCH
JUNCTION CHAMBER TO MH219	SEED AND MULCH

TABLE OF COORDINATES

TRAVERSE STATIONS

NAME	NORTHING	EASTING	ELEVATION
TRAV–307	531311.94	136442.05	130.65
TRAV–306	531602.71	1364458.00	130.98
TRAV–304	531942.53	1364710.57	129.18
TRAV–303	532490.36	1364788.36	131.97
TRAV–302	532902.23	1364803.01	131.92
TRAV–301	533179.72	1364655.40	132.02
TRAV–311	533.905.81	1364722.25	138.50
KCI–12	534492.73	1364353.50	–
KCI–13	534562.11	1364249.04	–
KCI–14	534643.67	1364072.96	–
KCI–15	534666.64	1363902.61	–
KCI–16	534652.28	1363802.29	–
KCI–17	534607.94	1363679.20	–
KCI–18	534512.21	1363579.17	–
KCI–19	534565.33	1363469.53	140.92
KCI–20	534531.22	1363322.41	–
KCI–21	534542.11	1363141.68	–
KCI–22	534511.90	1362951.00	–
KCI–23	534471.60	1362722.01	–

TABLE OF COORDINATES

TRAVERSE STATIONS

NAME	NORTHING	EASTING	ELEVATION
KCI–24	534461.67	1362538.54	–
KCI–25	534604.20	1362409.93	–
KCI–26	534651.73	1362171.96	–
KCI–27	534565.90	1362045.01	159.98
KCI–30	534522.51	1361807.72	–
KCI–31	534591.91	1361759.98	–
KCI–32	534619.22	1361607.15	154.10
KCI–33	534651.51	1361440.79	154.11
KCI–34	534654.06	1361177.25	145.37
LPS–102	534676.62	1360784.80	149.43
KCI–36	534600.00	1360529.42	150.10
KCI–37	534698.77	1360080.78	169.75
KCI–38	534743.80	1359964.03	–
KCI–39	534868.47	1359887.72	173.13
KCI–40	535102.75	1359907.73	175.72
DAM–11	535225.18	1359908.50	–
KCI–43	535560.64	1359908.23	–
KCI–44	535733.49	1360008.13	–

LEGEND

EXISTING

	100 YR FLOODPLAIN
148	INTERIOR CONTOUR
150	INDEX CONTOUR
C C	CABLE
	CURB AND GUTTER
E E	ELECTRIC
	FENCE
	GAS
	GUARDRAIL
OHW	OVERHEAD WIRE
	PROPERTY LINE
	ROAD – CENTERLINE
	ROAD – EDGE OF DIRT, GRAVEL
	ROAD – EDGE OF MACADAM
	RIGHT OF WAY LINE (R/W)
	SANITARY SEWER
	STORM DRAIN
	STREAM EDGE
T T	TELEPHONE
	TREELINE
	FENCE, STONE, BRICK OR CONC. WALL
W W	WATER MAIN
WB WB	WETLAND BOUNDARY
	FIRE HYDRANT
	MANHOLE, ELECTRIC
	MANHOLE, GAS
	MANHOLE, TELEPHONE
	MANHOLE, SANITARY SEWER
	MANHOLE, STORM DRAIN
	MANHOLE, WATER
	VERIZON/BGE POLE
	SIGN
	TREE
	TREE TO BE REMOVED

PROPOSED

LOD LOD	LIMIT OF DISTURBANCE
SF SF	SILT FENCE
SSF SSF	SUPER SILT FENCE
TP TP	TREE PROTECTION FENCE
SB SB	STREAM BUFFER
R/W	RIGHT OF WAY (R/W)
	INTERCEPTOR SEWER
	PROPERTY LINE
	DRAINAGE & UTILITY R/W
	TEMPORARY CONSTRUCTION AREA
	TRAVERSE STATION
B2–1	SOIL BORING
TP NO.	TEST PIT
	MANHOLE, SANITARY SEWER
	ABANDON
	REMOVE
FRP	FIBERGLASS REINFORCED PIPE

PHASING OF SEWER MANHOLES / PIPE INSTALLATION

The following 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 start of construction.

1. Install 275 feet of 72–inch steel liner plate tunnel and 42–inch carrier pipe beneath US Route 1. Connect carrier pipe to existing 42–inch stub at MH–112 from Contract 20–4531.
2. Simultaneously continue installation of 42–inch sewer from MH 200 to MH–205.
3. Install 175 feet of 72–inch steel liner plate tunnel and 42–inch carrier pipe beneath Foundry Rd. Connect carrier pipe to existing 42–inch pipe at MH–205.
4. Continue installation of 42–inch sewer to MH–208B. (This includes the river crossing between MH–207B and MH–208A.) See sheet 15 for river crossing details.
5. Install 36–inch sewer interceptor to MH 212. Pressure test sewer prior to accepting flows.
6. Install temporary gravity bypass from temporary doghouse MH–3 to Ex MH–1261. This shall be done in accordance to the special provisions of the specifications paragraph 20 and Sheets 23 and 24.
7. Construct diversion structure and remove ex. 30–inch sewer and install proposed 42–inch sewer in same trench from the diversion structure to junction structure.
8. Construct junction chamber and after approval, Connect ex. 30–inch sewer.
9. Remove gravity bypass system.
10. Continue installation of 42–inch sewer from the junction structure to stub north of MH–219 (Limit of contract 20–4532.)
11. Pressure test sewer from Junction Structure to MH–219.
12. Restore all disturbed areas to existing conditions.

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. 8146 EXPIRATION DATE: 10/6/11

AS–BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/16/08	CHIEF, BUREAU OF ENGINEERING	DATE 12/12/08
CHIEF, BUREAU OF UTILITIES	DATE 12/12/08	CHIEF, UTILITY DESIGN DIVISION	DATE 12/11/08

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T 410.997.8900
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STATE OF MARYLAND — H. DONALDSON — NO. 8146 — REGISTERED PROFESSIONAL ENGINEER

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.	R.J.C.	AS–BUILT		12/10
DECEMBER, 2008	BY	NO.	REVISION	DATE

GENERAL NOTES

600' SCALE MAP 47 | BLOCK 10, 16, 17 ,& 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S–6175
CONTRACT NO. 20–4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 2 OF 27

PROFILE
HORIZONTAL: 1'=200'
VERTICAL: 1'=5'

QDES & VDES
CALCULATED FROM
MANNING'S EQUATION

PROFESSIONAL CERTIFICATION
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LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/16/08	CHIEF, BUREAU OF ENGINEERING	DATE 12/12/08
CHIEF, BUREAU OF UTILITIES	DATE 12/12/08	CHIEF, UTILITY DESIGN DIVISION	DATE 12/11/08

Patton Harris Rust & Associates, Inc.
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T 410.997.8900
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DES: C.H.
DRN: K.L.B.
CHK: G.C.L.
DECEMBER, 2008

BY	NO.	REVISION	DATE
R.J.C.		AS-BUILT	12/10

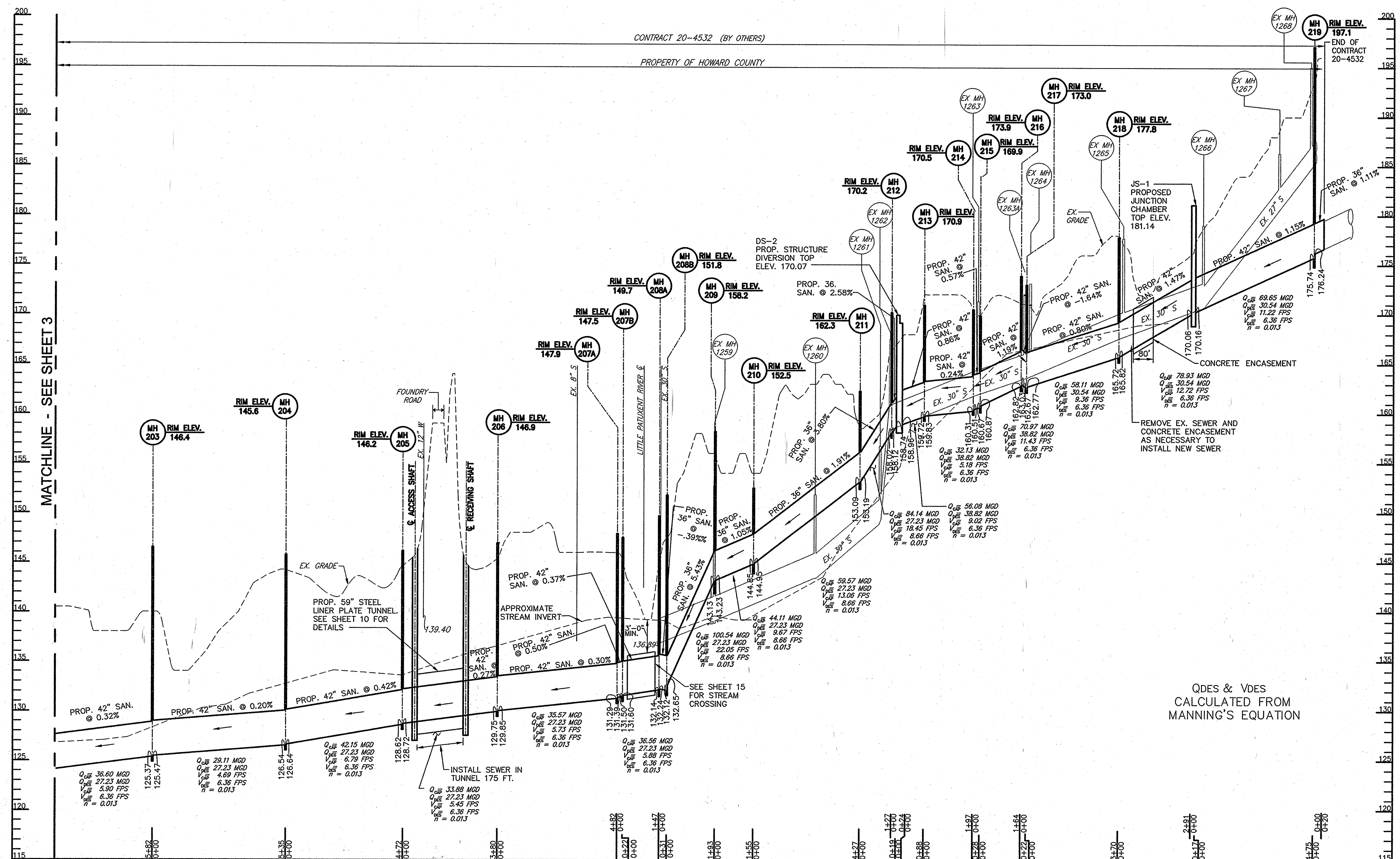
COMPOSITE PROFILE A

600' SCALE MAP 47 — BLOCK 10, 16, 17, & 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 3 OF 27



PROFILE

HORIZONTAL: 1'=200'
VERTICAL: 1'=5'

PROFESSIONAL CERTIFICATION

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LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/16/08
CHIEF, BUREAU OF ENGINEERING — DATE 12/12/08
CHIEF, BUREAU OF UTILITIES — DATE 12/12/08
CHIEF, UTILITY DESIGN DIVISION — DATE 12/11/08

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
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T 410.997.8900
F 410.997.9282

STATE OF MARYLAND — PROFESSIONAL ENGINEER — NO. 8146 — 8/8/11

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.	R.J.C.	AS-BUILT	12/10
DECEMBER, 2008	BY NO.	REVISION	DATE

COMPOSITE PROFILE B

600' SCALE MAP 47 — BLOCK 10, 16, 17 ,& 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 4 OF 27

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PROFILE
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

AS-BUILT

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. 8146 EXPIRATION DATE: 10/8/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/16/08 DATE	CHIEF, BUREAU OF ENGINEERING	12/12/08 DATE
CHIEF, BUREAU OF UTILITIES	12/12/08 DATE	CHIEF, UTILITY DESIGN DIVISION	12/11/08 DATE

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DES: C.H.
DRN: K.L.B.
CHK: G.C.L.
DECEMBER, 2008

BY	NO.	REVISION	DATE
R.J.C.		AS-BUILT	12/10

PLAN AND PROFILE

600' SCALE MAP 47 | BLOCK 10, 16, 17, & 18

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 5 OF 27

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. 8146 EXPIRATION DATE: 10/8/11

QDES & VDES CALCULATED FROM MANNING'S EQUATION

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/16/08	CHIEF, BUREAU OF ENGINEERING	DATE 12/12/08
CHIEF, BUREAU OF UTILITIES	DATE 12/12/08	CHIEF, UTILITY DESIGN DIVISION	DATE 12/11/08

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
F 410.997.9282

STATE OF MARYLAND PROFESSIONAL ENGINEER
6/6/11

DES: C.H.
DRN: K.L.B.
CHK: G.C.L.
DECEMBER, 2008

BY	NO.	REVISION	DATE
R.J.C.		AS-BUILT	12/10

PLAN AND PROFILE

600' SCALE MAP 47 | BLOCK 10, 16, 17 ,& 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 6 OF 27

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/16/08 DATE	CHIEF, BUREAU OF ENGINEERING	12/12/08 DATE
CHIEF, BUREAU OF UTILITIES	12/12/08 DATE	CHIEF, UTILITY DESIGN DIVISION	12/11/08 DATE

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STATE OF MARYLAND · PROFESSIONAL ENGINEER
8/8/11

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.	R.J.C.	AS-BUILT		12/10
DECEMBER, 2008	BY NO.	REVISION		DATE

PLAN AND PROFILE

600' SCALE MAP 47 — BLOCK 10, 16, 17, & 18

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER
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CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 7 OF 27

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LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

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HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 12/16/08
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CHIEF, BUREAU OF UTILITIES — DATE 12/12/08
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PLAN AND PROFILE

600' SCALE MAP 47 — BLOCK 10, 16, 17 ,& 18

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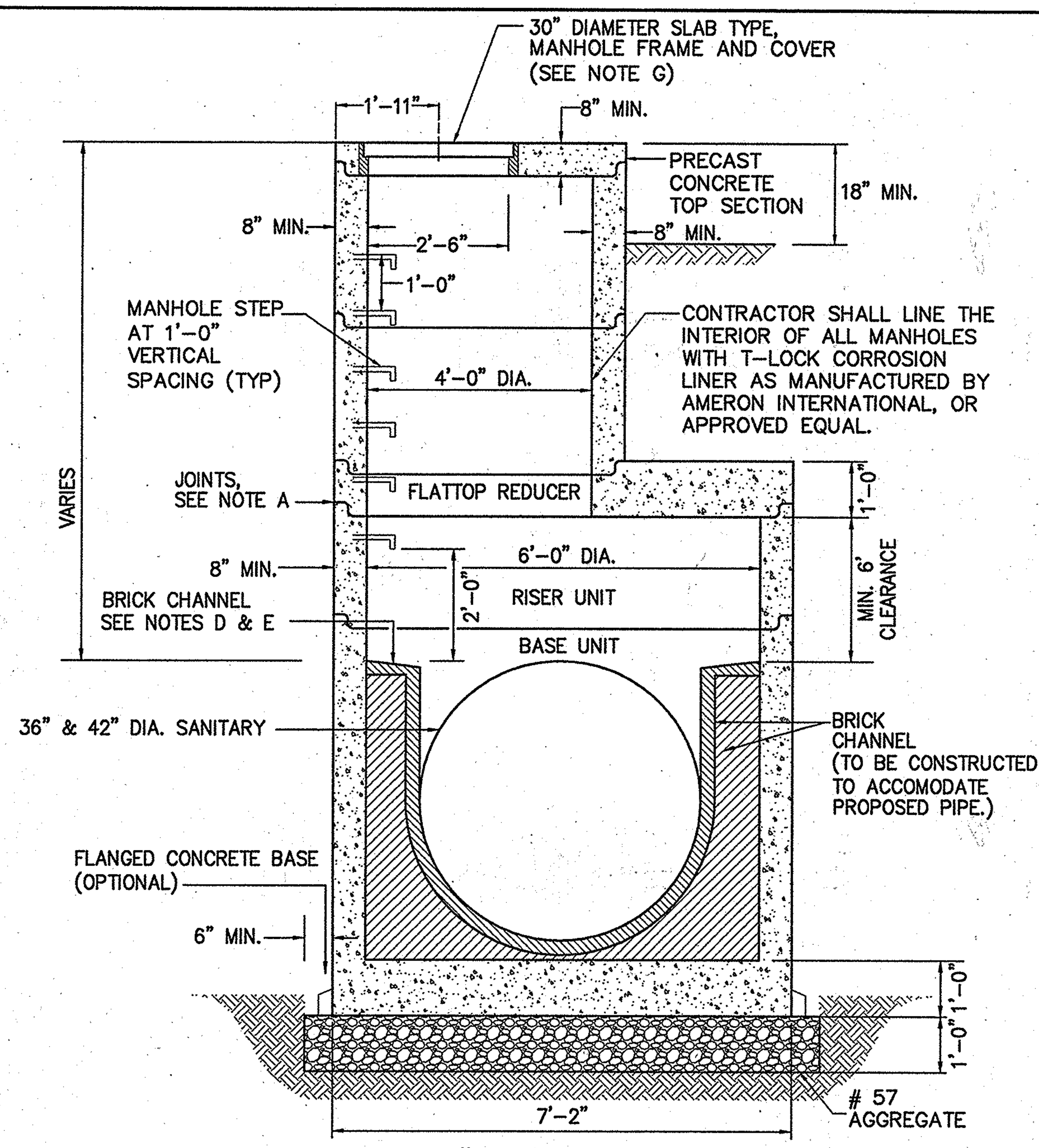
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

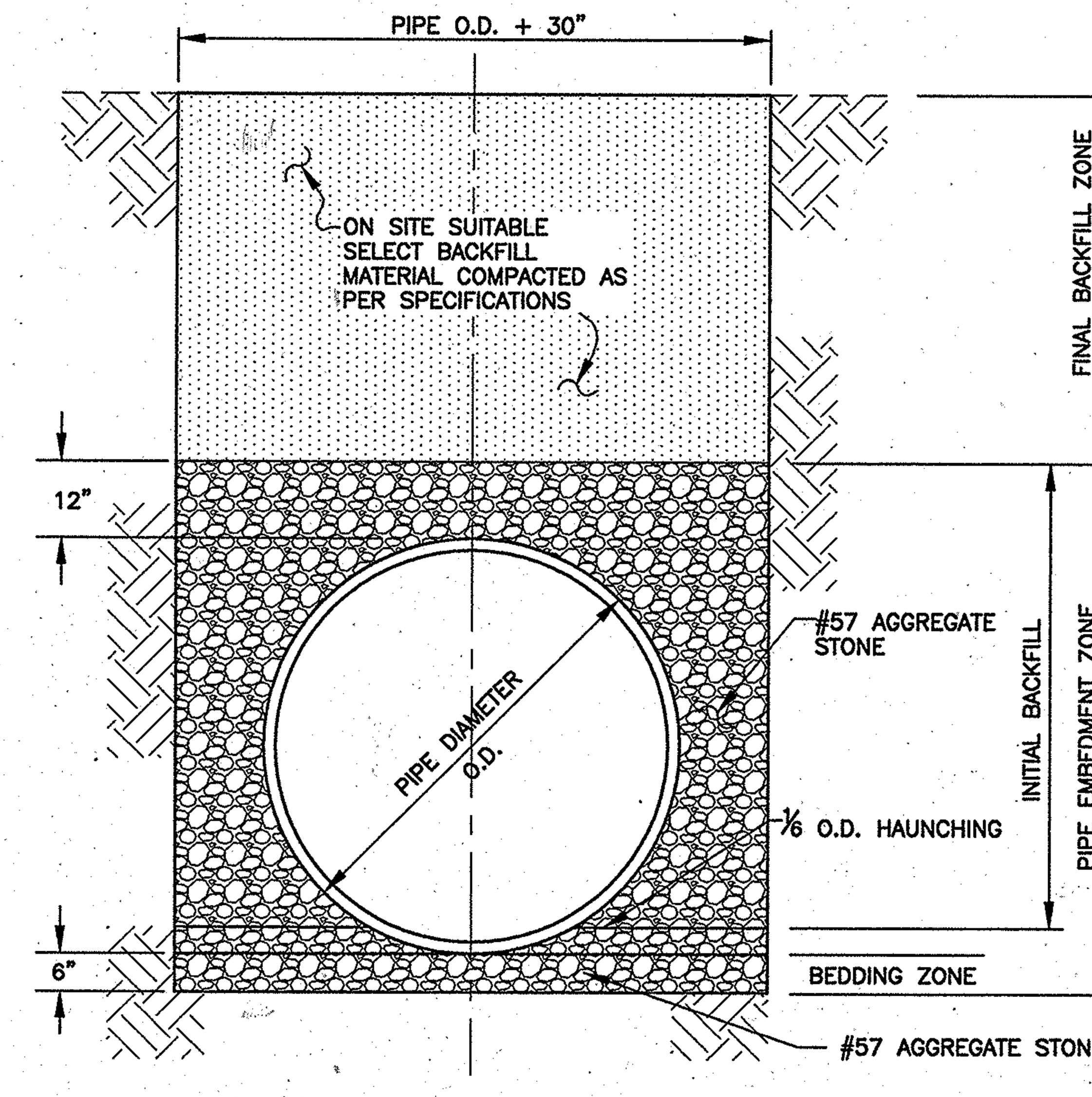
SCALE AS SHOWN

SHEET 8 OF 27



72" PRE-CAST SANITARY MANHOLE

SCALE: N.T.S.

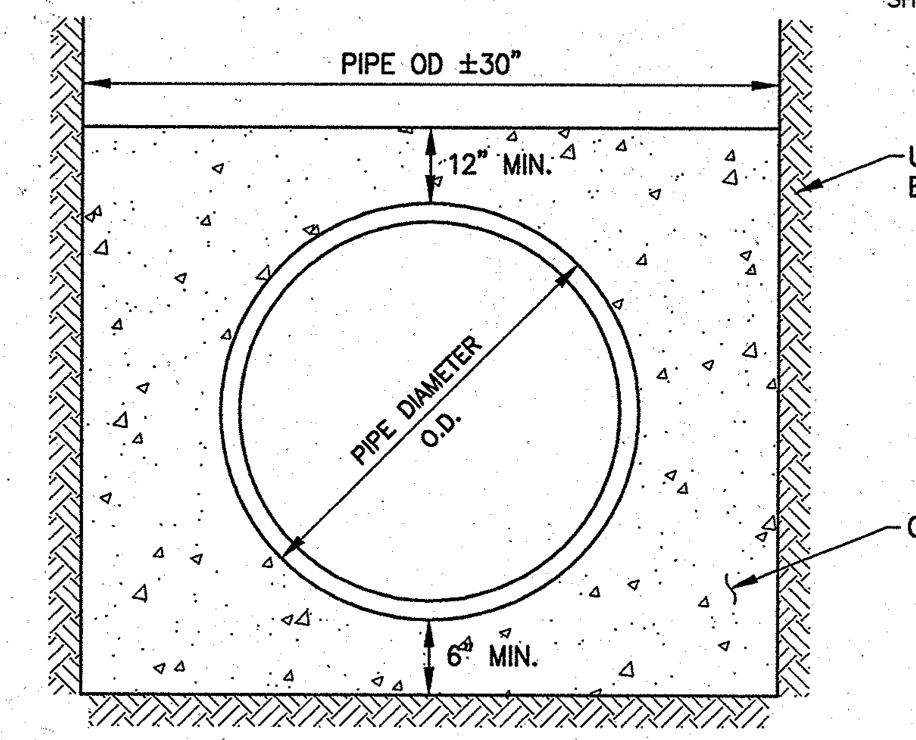


TRENCH DETAIL (UNPAVED)

SCALE: N.T.S.

TRENCH NOTES:

1.) STEEL PLATE TO BE PLACED OVER OPEN TRENCH UNTIL PIPE HAS BEEN INSTALLED AND BACKFILLED.



CONCRETE ENCASEMENT DETAIL

SCALE: N.T.S.

NOTES:

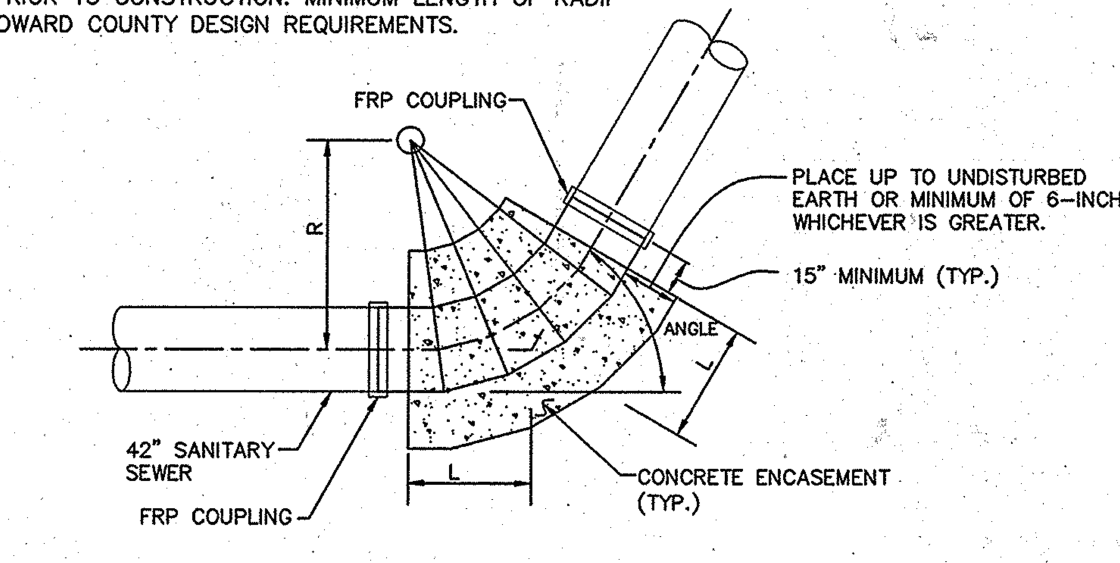
1.) POUR CONCRETE AGAINST UNDISTURBED EARTH. REMOVE TRENCH SHEETING BEFORE POURING CONCRETE.

2.) CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI @ 28 DAYS.

PROPOSED MITERED PIPE BENDS

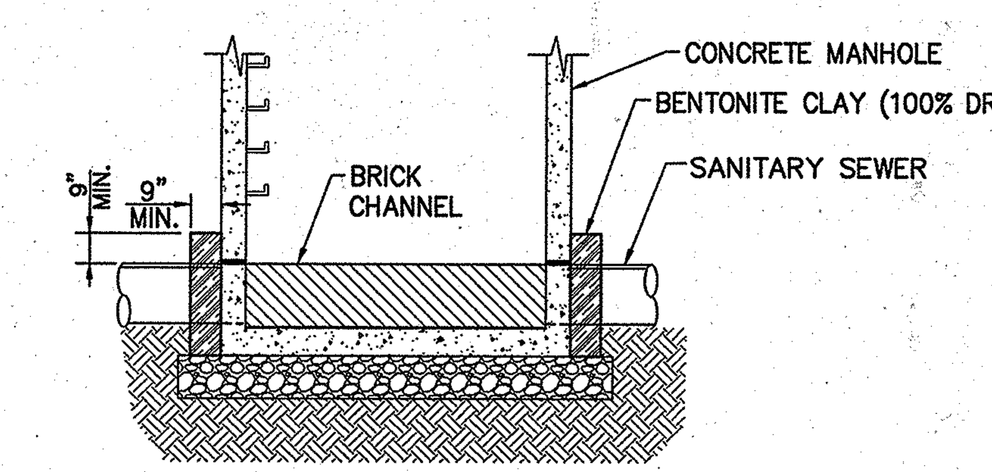
BEND #	LOCATION	ANGLE	R	L	NO. OF MITERS
1	15' WEST OF MH 207A	76°-36'-40"	8.75'	6.91'	6
2	15' SOUTH OF MH 208A	88°-47'-41"	8.75'	8.72'	6
3	15' WEST OF MH 215	67°-00'-02"	8.75'	5.79'	5

NOTE:
1. MITER ANGLES SHALL NOT EXCEED 15 DEGREES.
2. CONTRACTOR SHALL CONFIRM REQUIRED DIMENSIONS OF MITERED BENDS WITH MANUFACTURER PRIOR TO CONSTRUCTION. MINIMUM LENGTH OF RADII SHALL CONFORM TO HOWARD COUNTY DESIGN REQUIREMENTS.



TYPICAL MITER BEND DETAIL

SCALE: N.T.S.



BENTONITE CLAY PLACEMENT FOR EX. MANHOLES & STRUCTURES DETAILS

SCALE: N.T.S.

NOTE:

1.) CLAY RING APPLIES TO EX. MANHOLES AND EX. STRUCTURES AS SHOWN ON THE DRAWING OR IN THE SPECIFICATIONS.

72" PRE-CAST SANITARY MANHOLE NOTES:

A.) SEE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON DETAIL G-5.11.

B.) MANHOLE DESIGN SPECIFICATIONS SHALL CONFORM TO "PRECAST REINFORCED CONCRETE MANHOLE SECTION A.S.T.M. DESIGNATION C-478, LATEST REVISIONS.

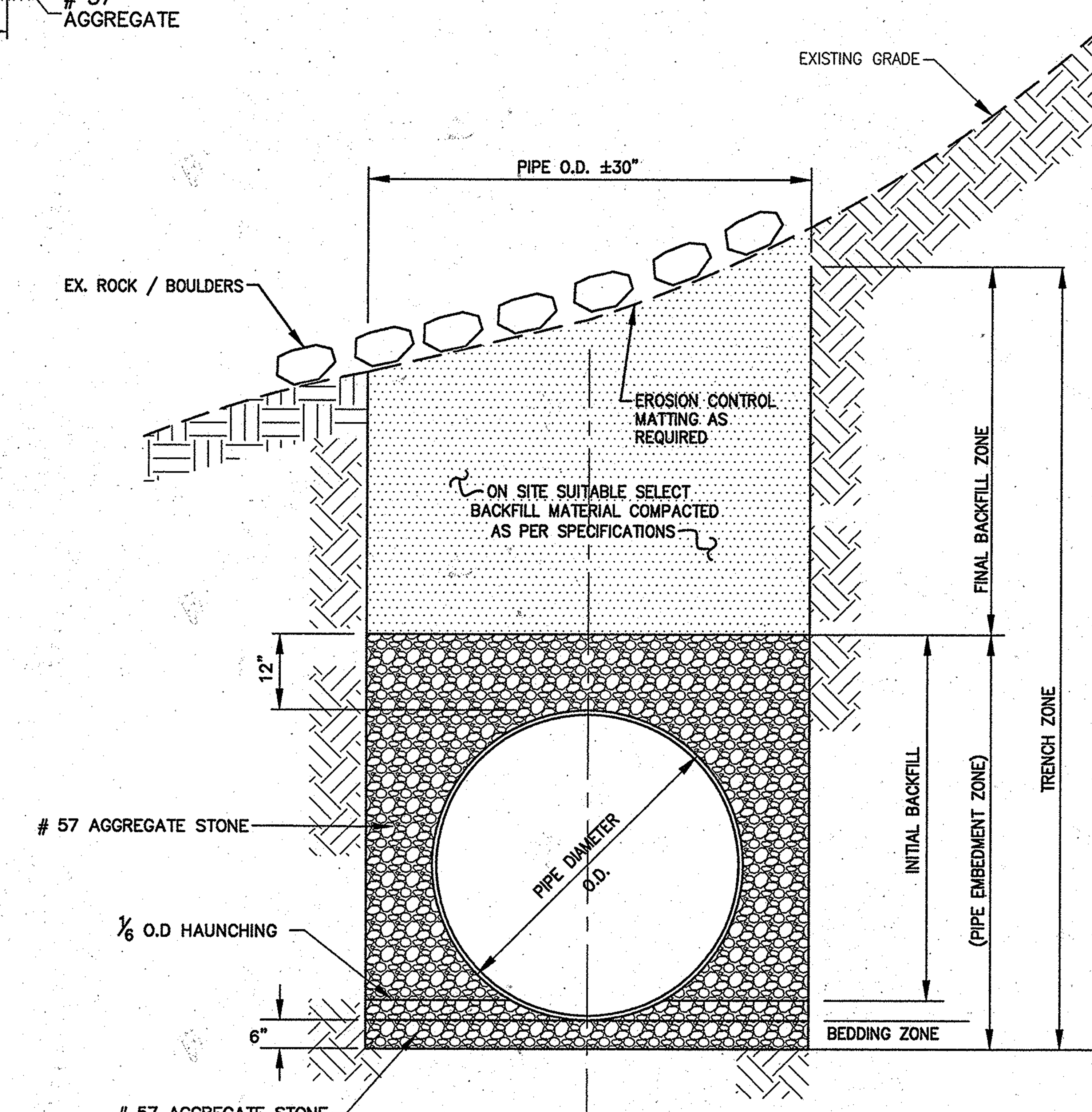
C.) THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER TIGHT USING "O" RING RUBBER GASKETS MEETING A.S.T.M. C-443 AND C-361 OR APPROVED EQUAL. ANY EXCESSIVE OPENINGS WITHIN THE JOINTS SHALL BE FILLED USING A NON-SHRINK GROUT FILLER.

D.) BENCH AND CHANNEL TO BE CONSTRUCTED OF ONE COURSE OF BRICK ON EDGE. BENCH TO SLOPE A MINIMUM OF 1 INCH PER FOOT TOWARDS CHANNEL.

E.) BENCH HEIGHT ABOVE PIPE INVERT TO BE EQUAL TO DIAMETER OF THE OUTGOING PIPE OR AS DIRECTED BY THE ENGINEER.

F.) CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING MINIMUM REQUIREMENT FOR REINFORCING. REINFORCING SHALL BE DESIGNED BY A LICENSED STRUCTURAL ENGINEER REGISTERED IN THE STATE OF MARYLAND. REINFORCING SHOP DRAWINGS SHALL BE SUBMITTED AND APPROVED PRIOR TO MANUFACTURE OF MANHOLES.

G.) MANHOLE FRAME AND COVER SHALL BE PER MODEL B-6077 SOLID LID, FURNISHED BOLTED DOWN AND WATERTIGHT, AS MANUFACTURED BY BARRY PATTERN AND FOUNDRY OR APPROVED EQUAL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE FRAME AND COVER FOR APPROVAL.



TRENCH DETAIL (W/ SLOPE STABILIZATION)

SCALE: N.T.S.

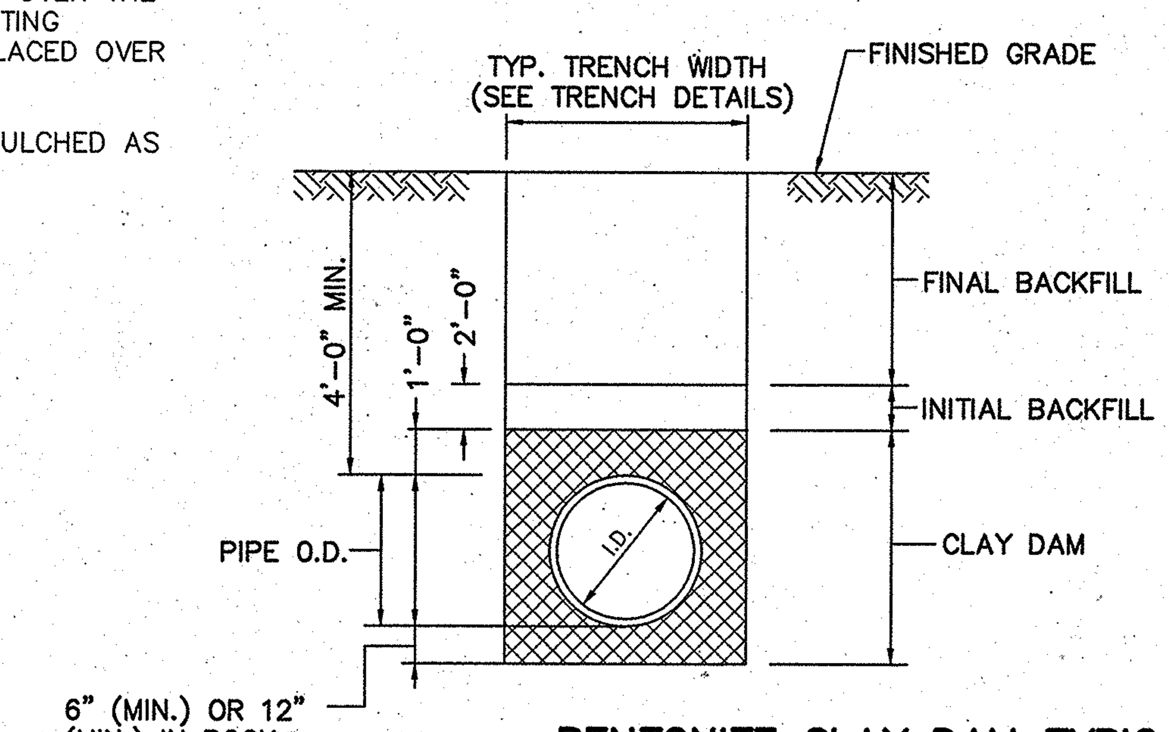
NOTES:

1.) GRADE SHALL BE RETURNED TO EXISTING CONDITION AFTER CONSTRUCTION.

2.) ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH EROSION CONTROL MATTING (LANDLOK 450 OR APPROVED EQUAL). SEE SHEET 22 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.

4.) AREA SHALL BE SEEDED AND MULCHED AS PER SHEET 21.



BENTONITE CLAY DAM TYPICAL PIPE BEDDING DETAIL

SCALE: N.T.S.

CLAY DAM NOTES

1.) CLAY DAM SHALL BE INSTALLED AT INTERVALS NO GREATER THAN 1,000 FEET AND AS SHOWN ON WETLAND RESTORATION PLAN.

2.) CLAY DAM LENGTH SHALL BE 2 FEET ALONG THE PIPE AXIS, AND SHALL BE PLACED FROM UNDERCUT SUBGRADE OR TRENCH SUBGRADE UP TO 12" ABOVE THE CROWN OF THE PIPE.

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.) INITIAL AND FINAL BACKFILL SHALL BE PLACED FROM THE PIPE SPRINGLINE UP TO FINISH SUBGRADE. SEE TRENCH DETAIL.

PROFESSIONAL CERTIFICATION

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LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

12/16/08 — DIRECTOR OF PUBLIC WORKS — DATE
12/12/08 — CHIEF, BUREAU OF ENGINEERING — DATE
12/12/08 — CHIEF, BUREAU OF UTILITIES — DATE
12/11/08 — CHIEF, UTILITY DESIGN DIVISION — DATE

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STATE OF MARYLAND — NO. 8146 — PROFESSIONAL ENGINEER
9/8/11

DES: C.H.
DRN: K.L.B.
CHK: G.C.L.
DECEMBER, 2008

BY	NO.	REVISION	DATE
R.J.C.		AS-BUILT	12/10

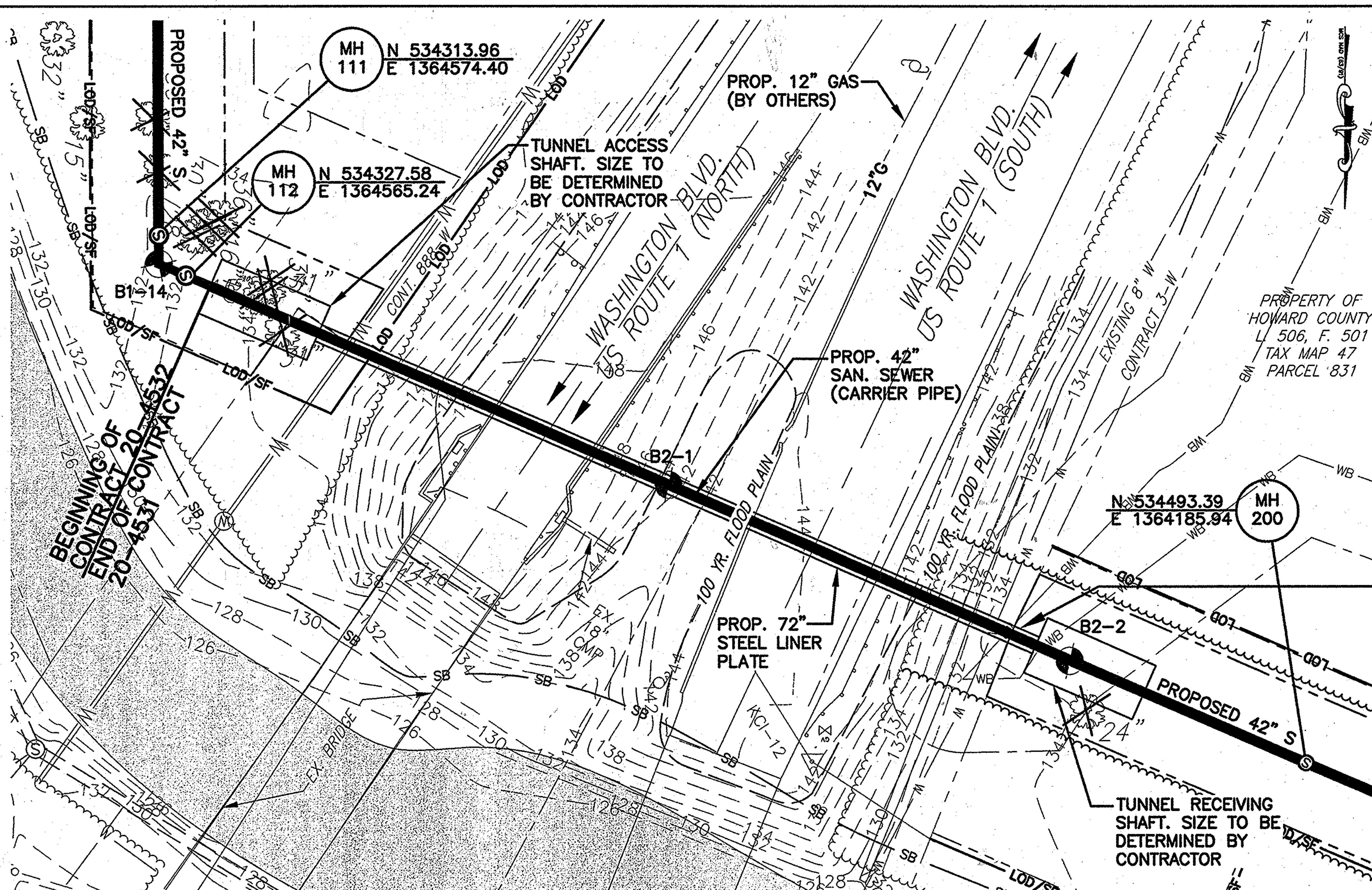
MISCELLANEOUS DETAILS

600' SCALE MAP 47 — BLOCK 10, 16, 17, & 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

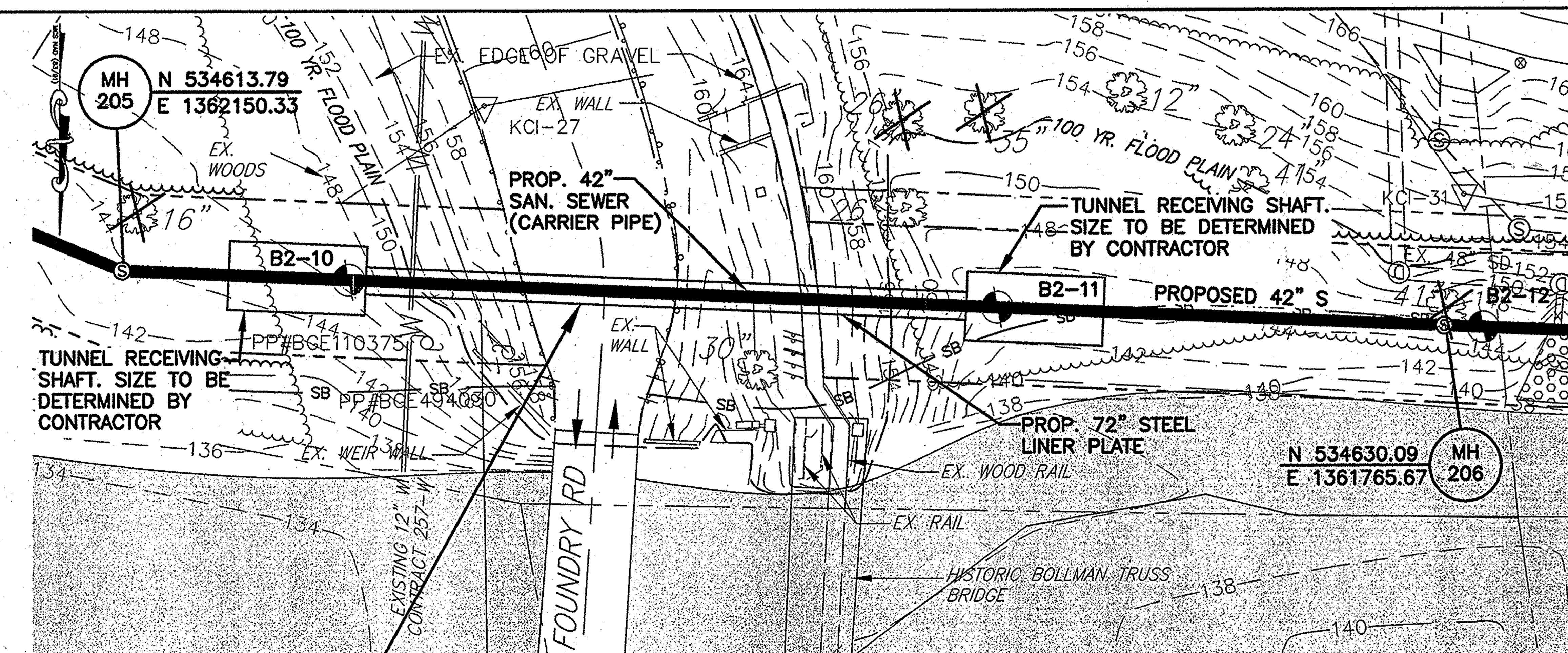
SHEET 9 OF 27



U.S. ROUTE 1 – PLAN

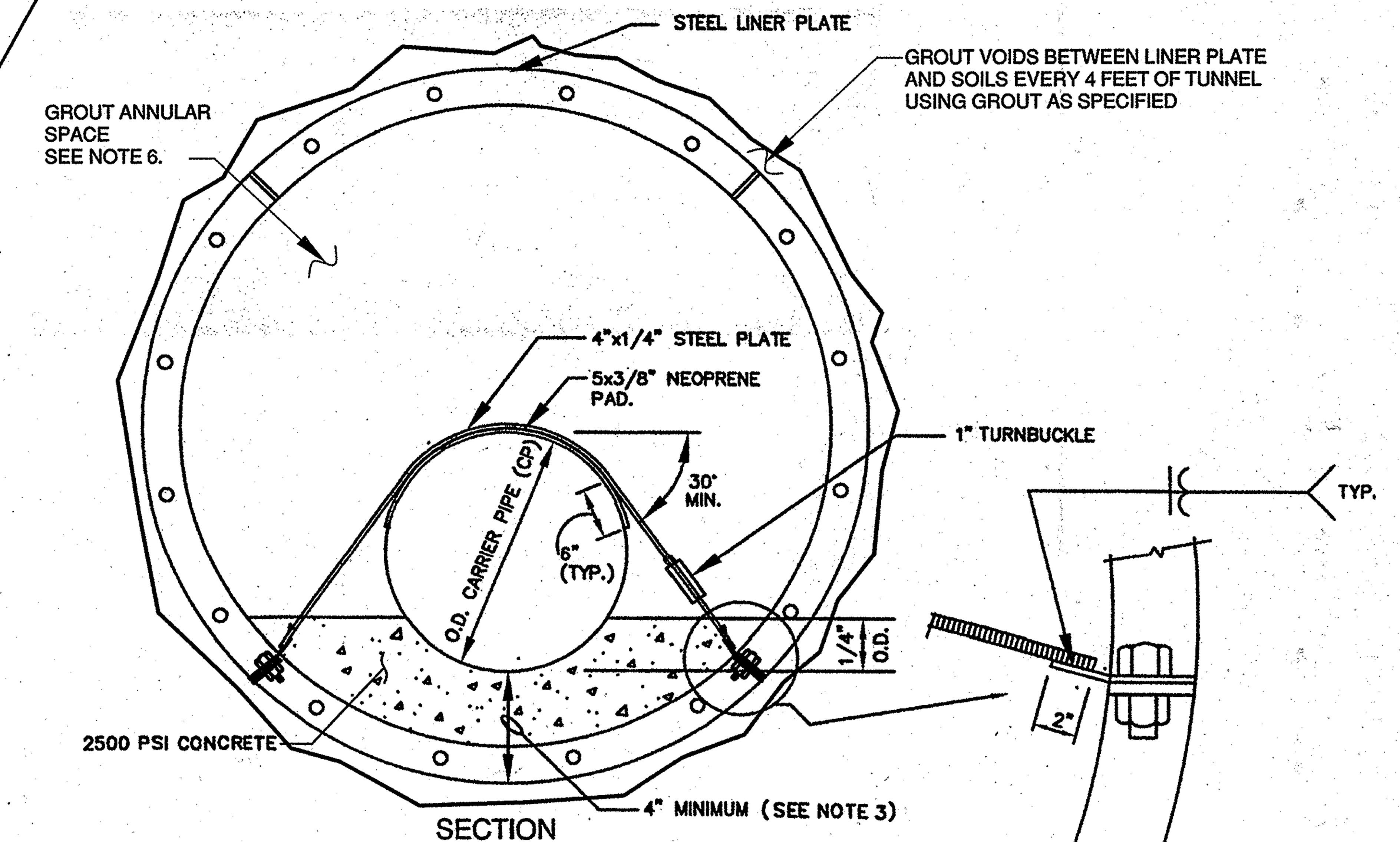
1"=30'

INSTALL SETTLEMENT MARKERS AT INTERVALS OF 25 FEET FROM THE FACE OF THE ACCESS SHAFT TO RECEIVING SHAFT, AND AT 10 AND 20 FEET INTERVALS FROM THE TUNNEL CENTER LINE. SEE SPECIFICATIONS.

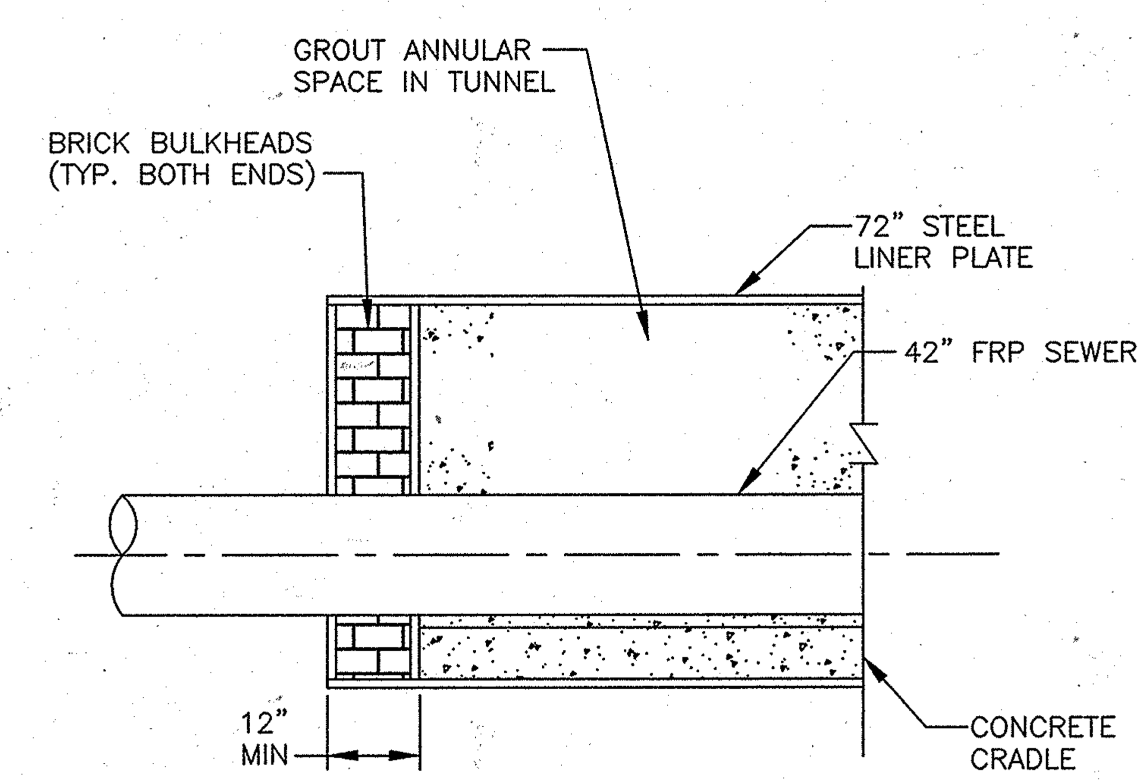


FOUNDRY ROAD – PLAN

1"=30'



SECTION

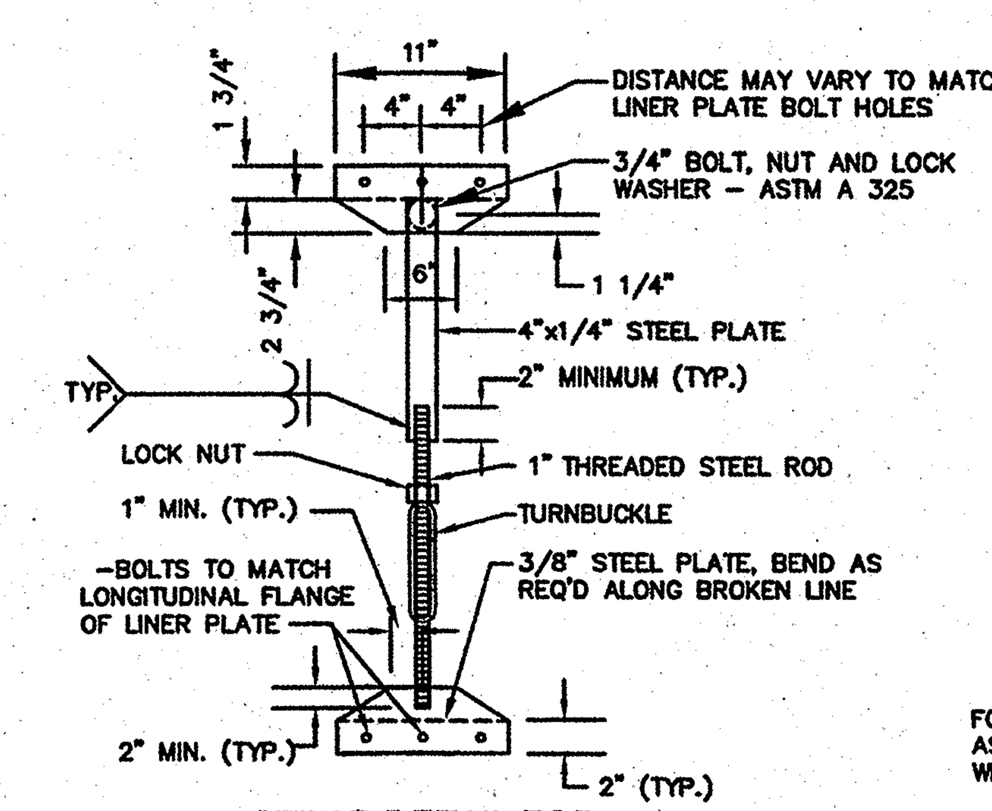


BULKHEAD END SEAL

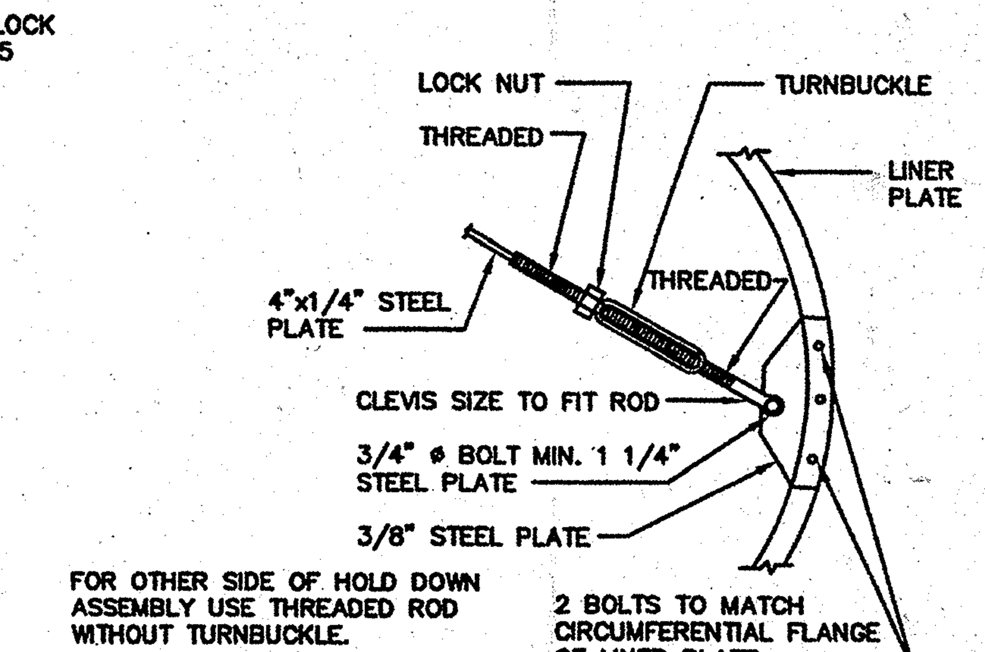
NO SCALE

NOTES:

1. ALL STEEL LINER PLATES SHALL CONFORM TO ASTM A1011, ASTM A139 (36,000) AND AASHTO M167.
2. THE MINIMUM THICKNESS OF THE LINER PLATE SHALL BE 12 GAGE (0.1046").
3. CONTRACTOR SHALL PROVIDE MINIMUM 4" OF CONCRETE BETWEEN LINER PLATE AND BOTTOM OF CARRIER PIPE.
4. THE TUNNEL SHALL MEET THE REQUIREMENTS OF THE MARYLAND STATE HIGHWAY ADMINISTRATION MASTER PUBLIC UTILITY PERMIT ISSUED FOR THIS PROJECT.
5. NO WELDING OR CUTTING WILL BE PERMITTED IN THE FIELD.
6. ANNULAR SPACE IN LINER PLATE TUNNEL SHALL BE FILLED W/ GROUT, WITH A MINIMUM COMPRESSIVE STRENGTH OF 100 psi. AFTER A SUCCESSFUL PRESSURE TEST OF THE CARRIER PIPE.
7. SEE HOWARD COUNTY STD. SPECIFICATION SECTIONS 905, 963, 1000 & 1012.



STRAP DETAIL FOR CONNECTION TO LONGITUDINAL FLANGE OF LINER PLATES



STRAP DETAIL FOR CONNECTION TO CIRCUMFERENTIAL FLANGE OF LINER PLATES

AS–BUILT

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8/8/11

DES: C.H.				
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CHK: G.C.L.				12/10
DECEMBER, 2008	BY	NO.	REVISION	DATE

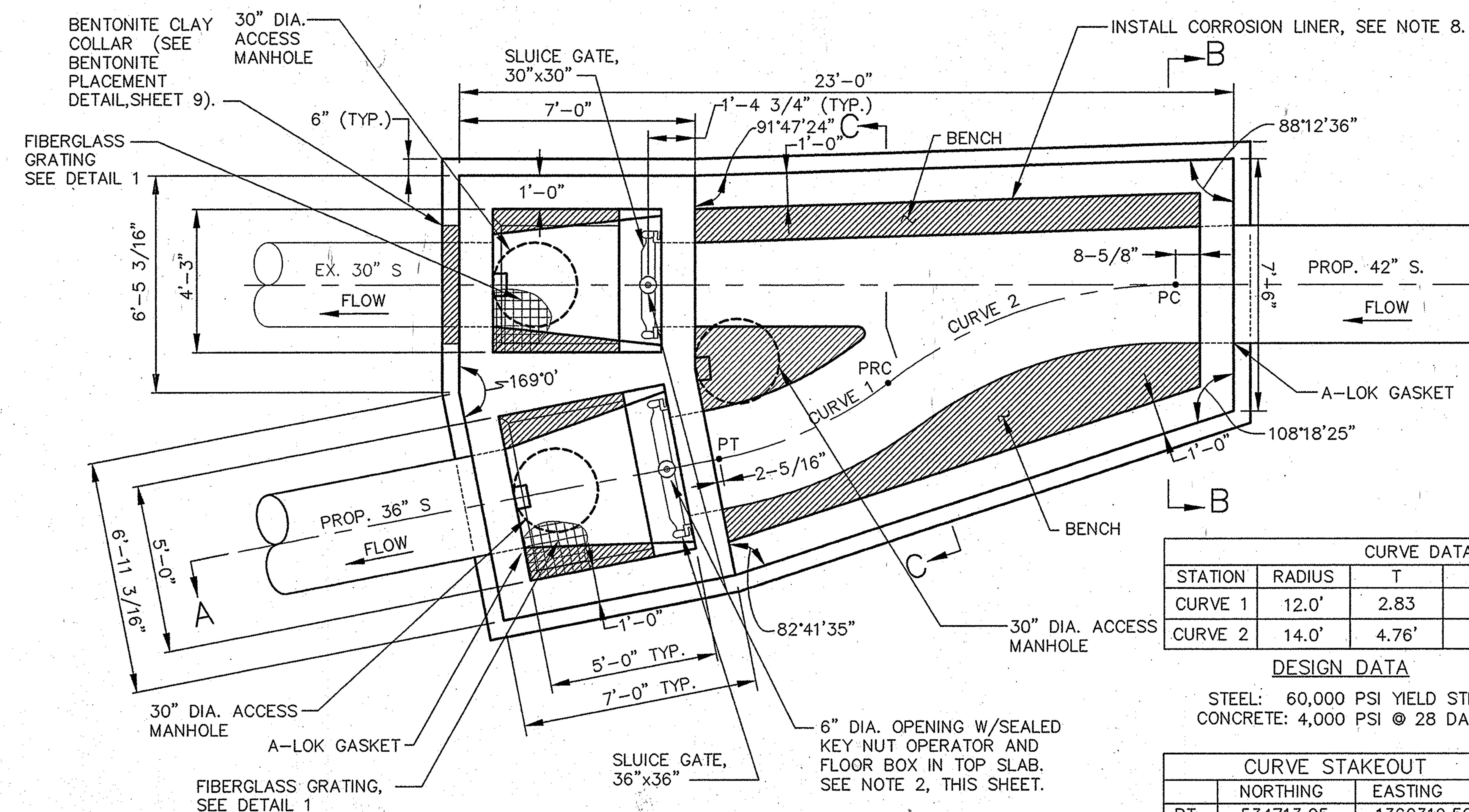
TUNNEL PLAN AND DETAILS

600' SCALE MAP 47 | BLOCK 10, 16, 17, & 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S–6175
CONTRACT NO. 20–4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 10 OF 27



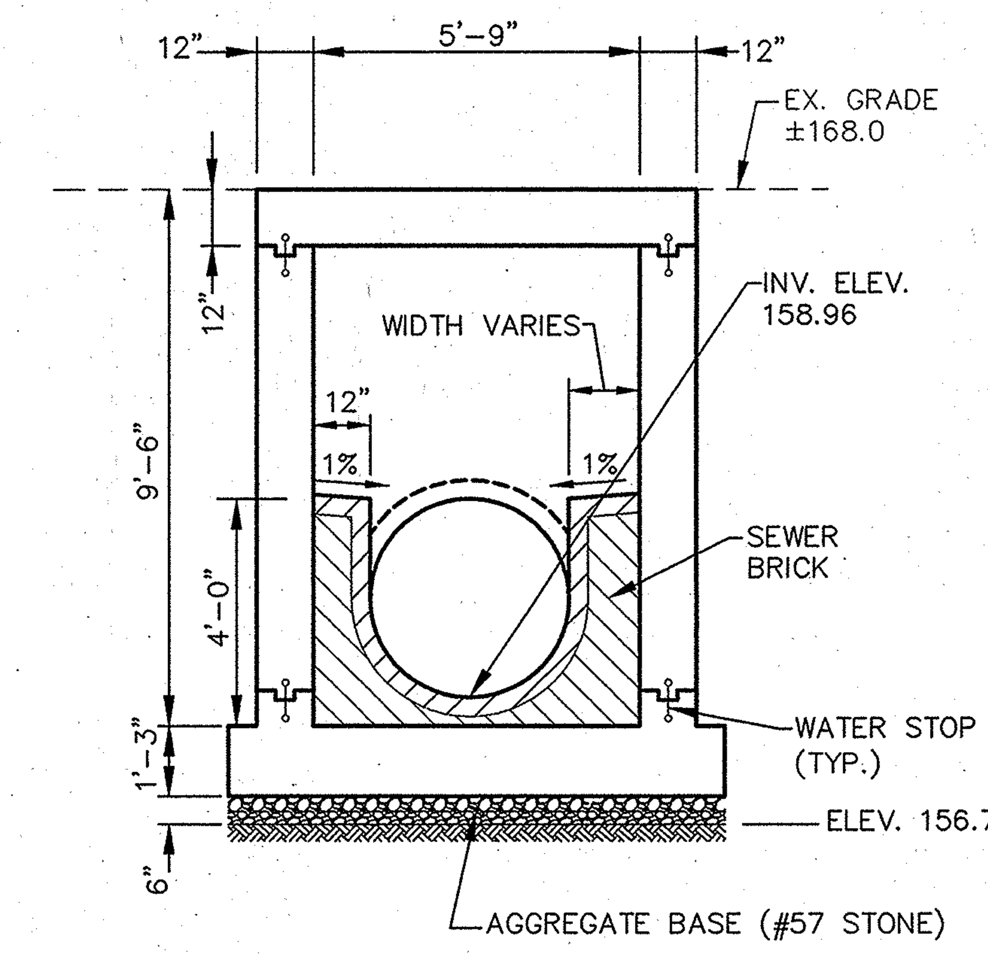
PLAN
3/8"=1'-0"

CURVE DATA				
STATION	RADIUS	T	L	Δ
CURVE 1	12.0'	2.83	5.56'	26°-35'-18"
CURVE 2	14.0'	4.76'	9.18'	37°-35'-18"

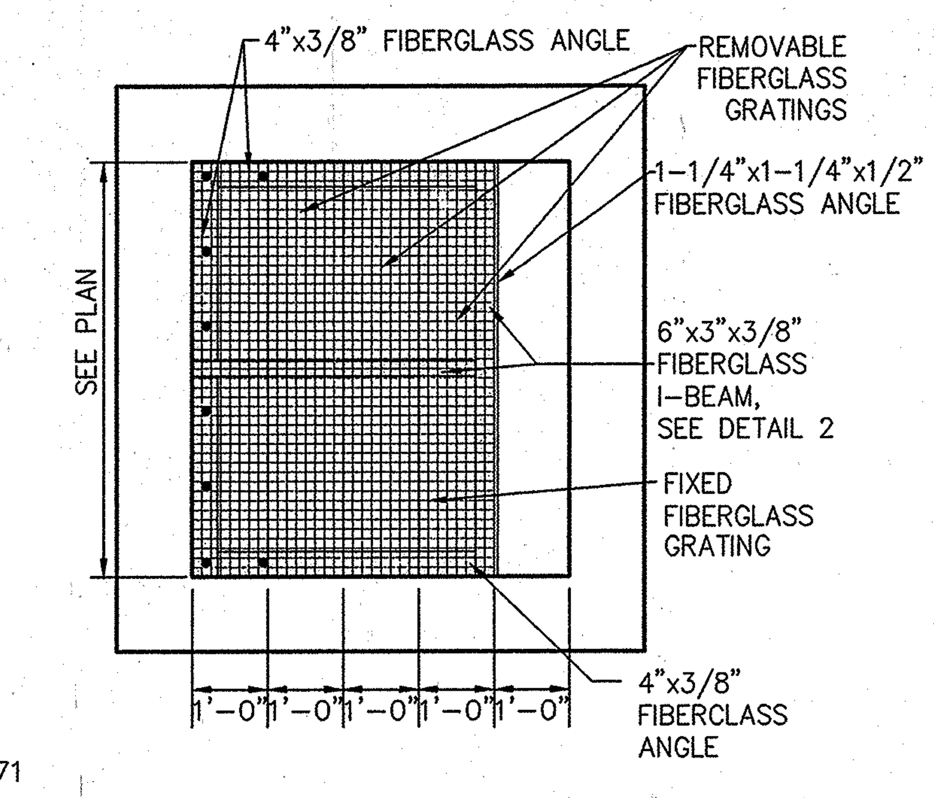
DESIGN DATA

STEEL: 60,000 PSI YIELD STRENGTH
CONCRETE: 4,000 PSI @ 28 DAYS.

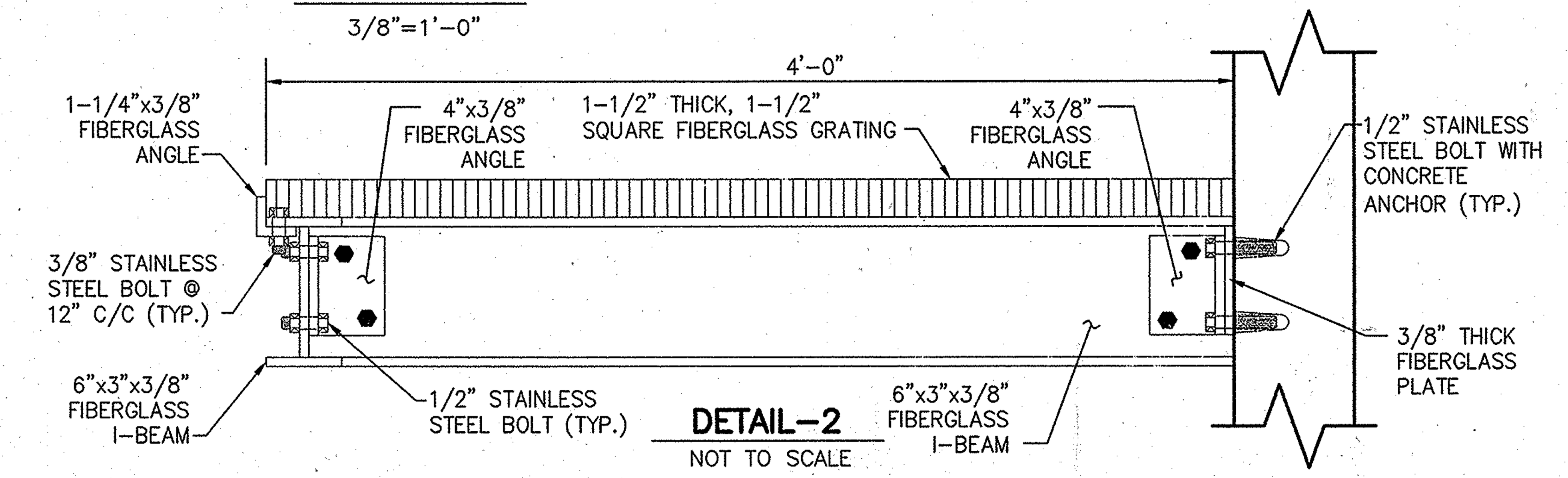
	CURVE STAKEOUT	
	NORTHING	EASTING
PT	534713.05	1360319.50
PRC	534711.69	1360314.14
PC	534710.35	1360305.22



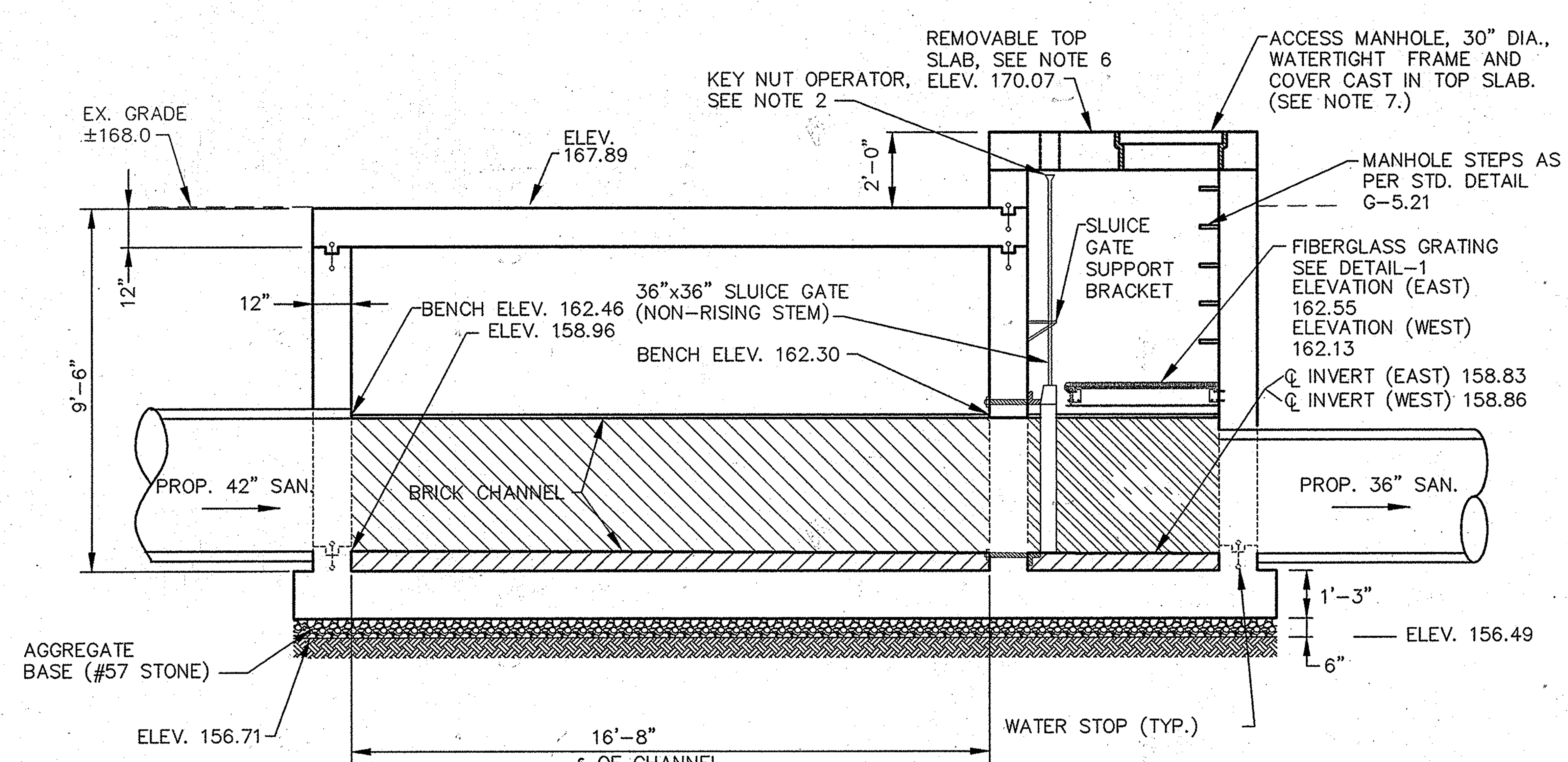
SECTION B-B
3/8"=1'-0"



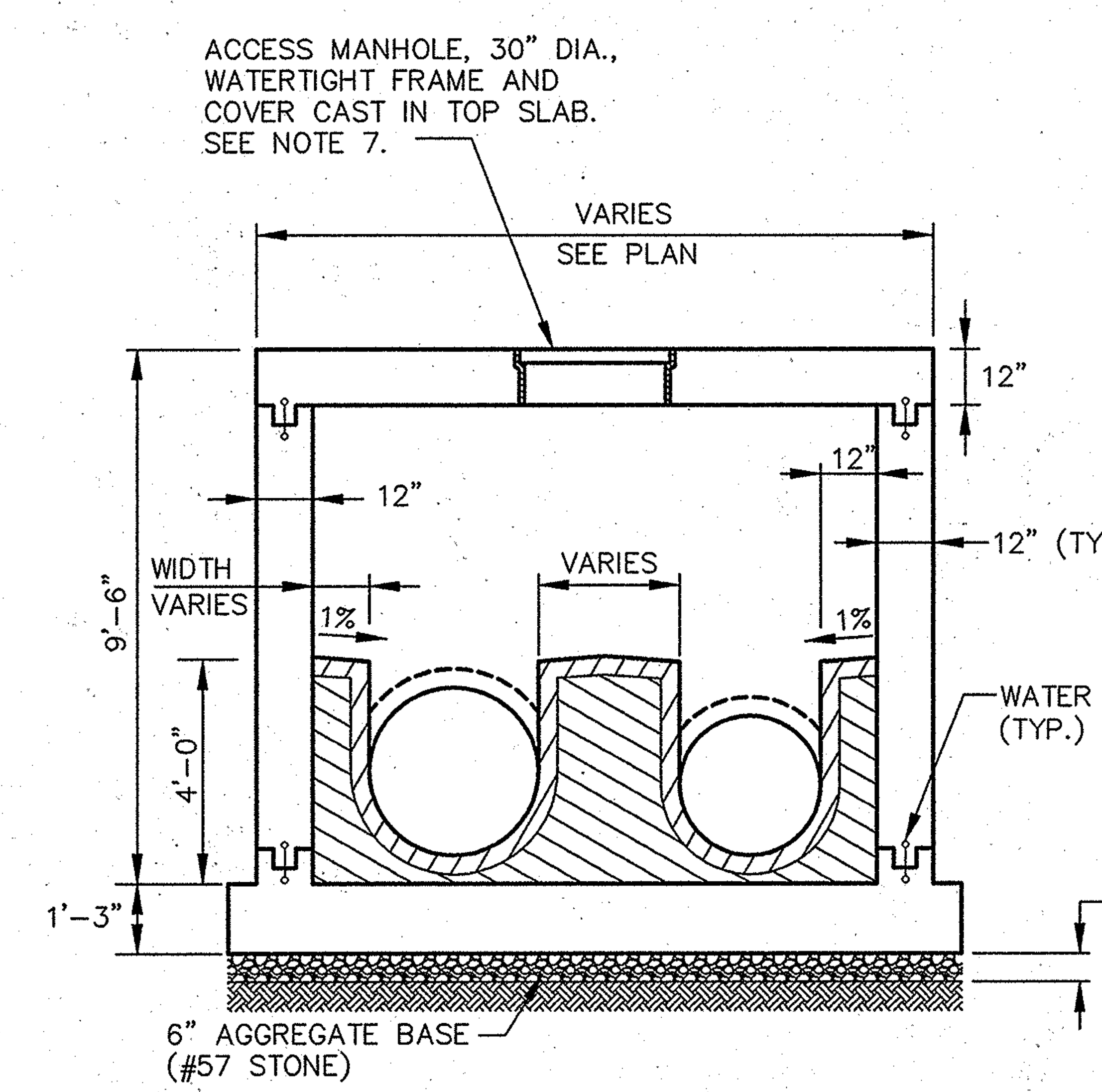
DETAIL-1
NOT TO SCALE



DETAIL-2
NOT TO SCALE



SECTION A-A
3/8"=1'-0"



SECTION C-C
3/8"=1'-0"

NOTES:

1. SEE SHEETS 23 AND 24 FOR GRAVITY BYPASS DETAILS.
2. GROUND LEVEL POSITION INDICATOR SHALL BE A SEALED UNIT WITH A STAINLESS STEEL FLOOR BOX. KEY NUT OPERATOR AND OPERATOR AND POSITION INDICATOR SHALL BE GPI-S SERIES AS MANUFACTURED BY DYNATORQUE, INC., OR APPROVED EQUAL.
3. FOR STRUCTURAL DETAILS SEE SHEET 12.
4. A-LOK GASKETS SHALL BE USED AT PIPE ENTRY/EXIT POINTS OF THE DIVERSION STRUCTURE, WHERE INDICATED ON DRAWINGS.
5. SLUICE GATES SHALL BE FONTAINE SERIES 20 MODEL 202-WALL MOUNTED (COMPLETED WITH WALL THIMBLE) AND NON-RISING STEM (NR1) OR APPROVED EQUAL.
6. TOP SLABS ABOVE SLUICE GATES SHALL BE REMOVABLE. LIFT HOOKS SHALL BE INSTALLED IN TOP SLABS, SEE DETAIL 2 SHEET 12. JOINT BETWEEN TOP SLAB AND WALLS SHALL BE SEALED WITH A BITUMINOUS MASTIC OR EQUIVALENT.
7. MANHOLE FRAME AND COVER SHALL BE PER MODEL B-6077 SOLID LID, FURNISHED BOLTED DOWN AND WATERTIGHT, AS MANUFACTURED BY BARRY PATTERN AND FOUNDRY OR APPROVED EQUAL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE FRAME AND COVER FOR APPROVAL.
8. CONTRACTOR SHALL LINE THE INTERIOR OF THE STRUCTURE WITH T-LOCK CORROSION LINER AS MANUFACTURED BY AMERON INTERNATIONAL, OR APPROVED EQUAL.

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R.J.C.		AS-BUILT	12/10

DIVERSION STRUCTURE
PLAN & SECTIONS

600' SCALE MAP 47
BLOCK 10, 16, 17 ,& 18

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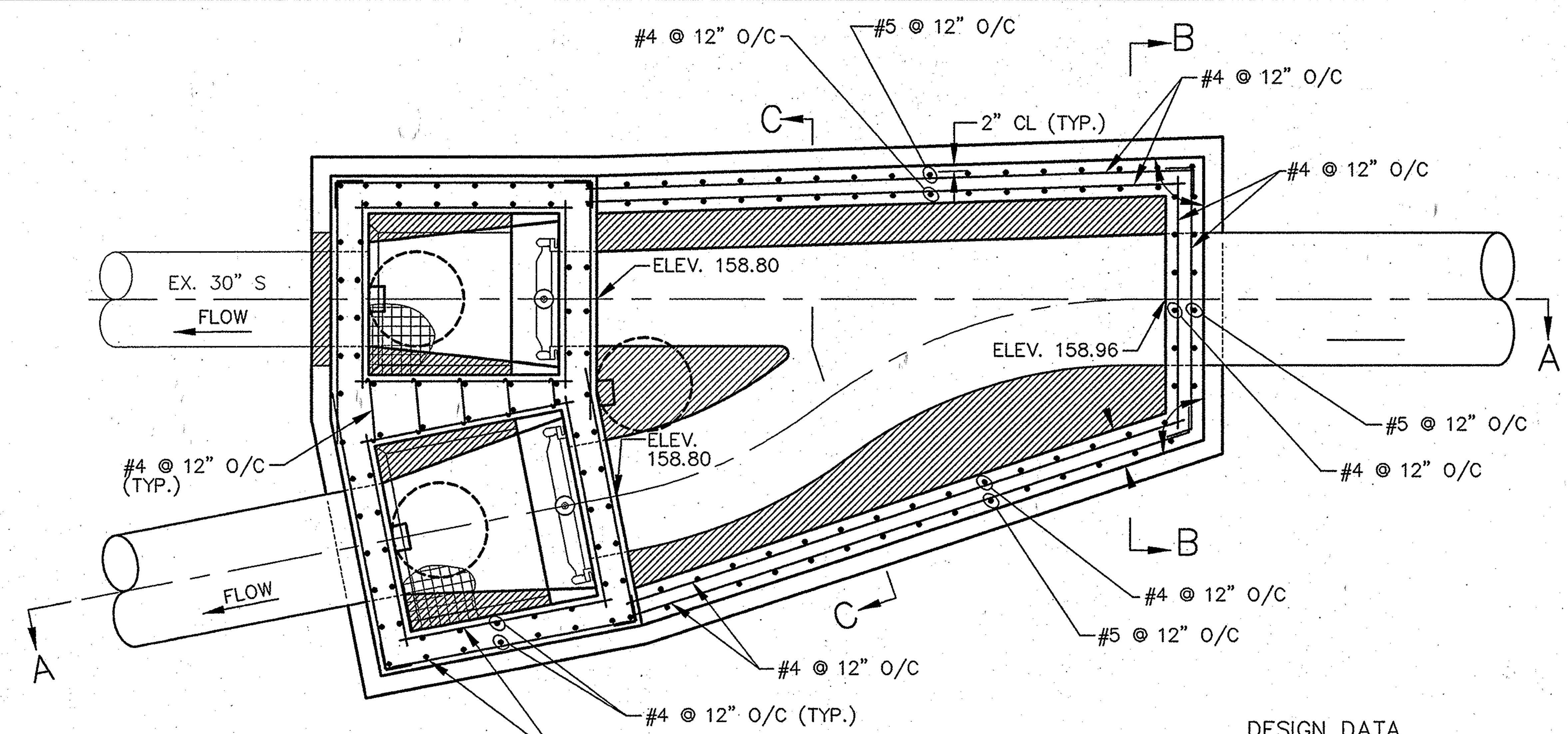
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 11 OF 27

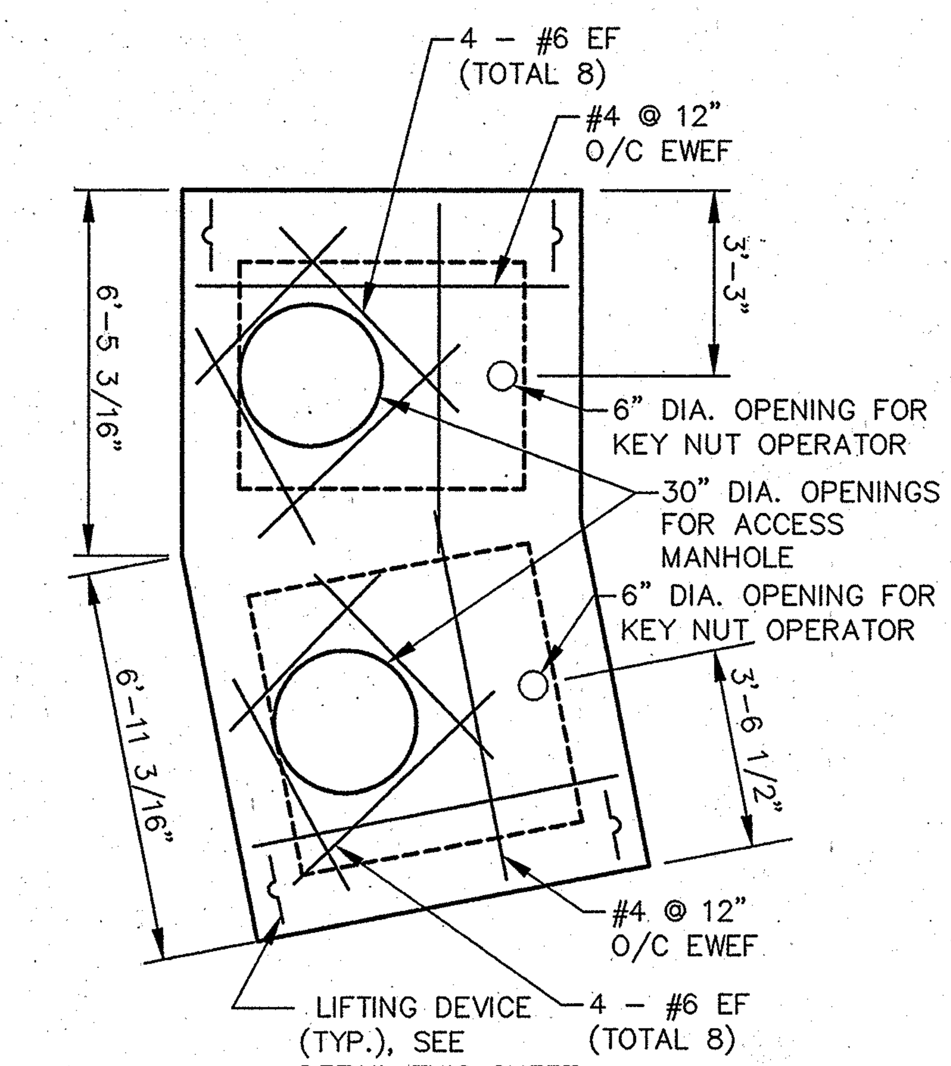


PLAN

3/8"=1'-0"

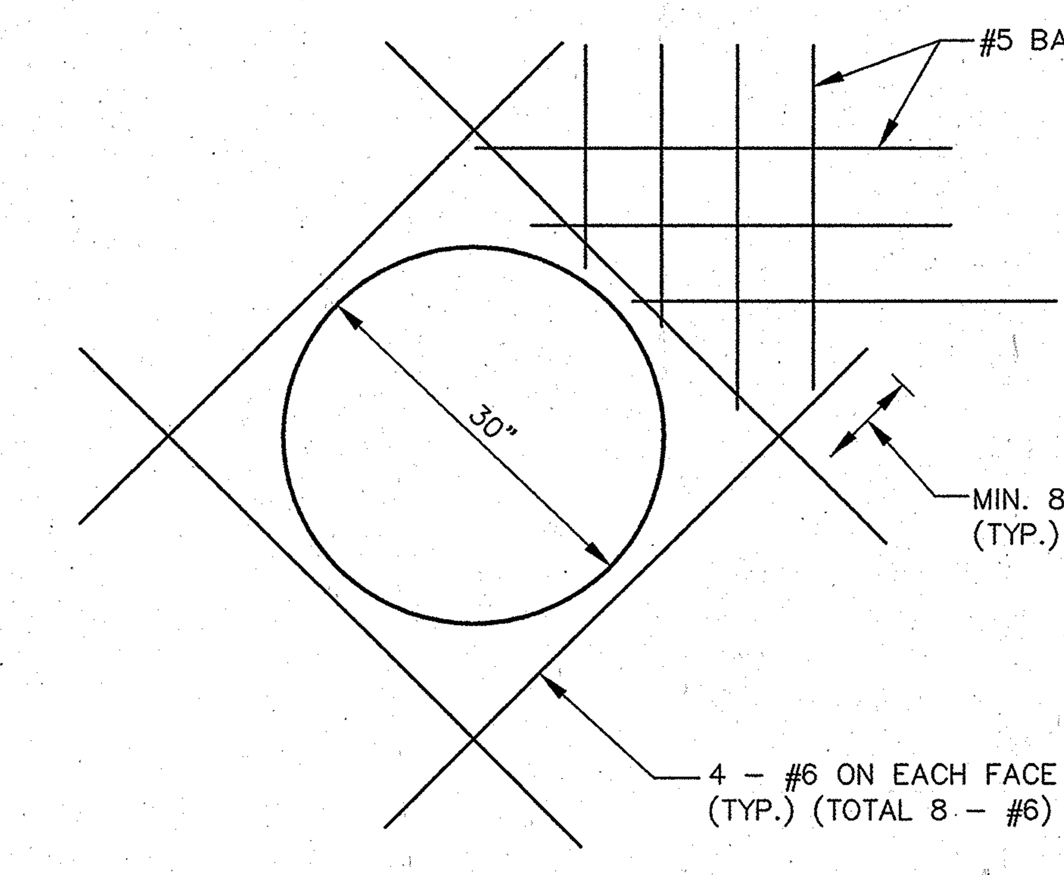
DESIGN DATA

STEEL: 60,000 PSI YIELD STRENGTH
CONCRETE: 4,000 PSI @ 28 DAYS.



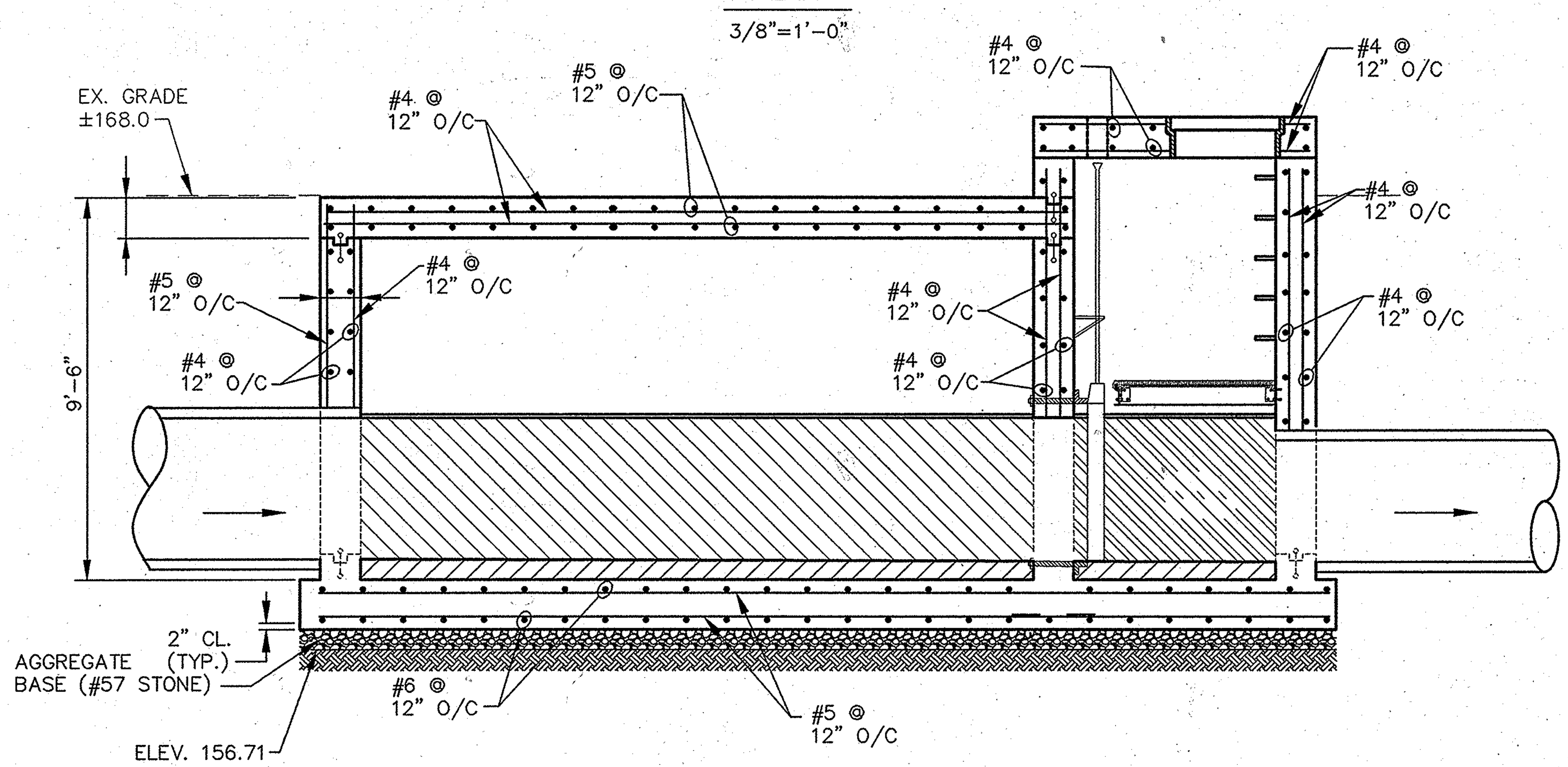
PLAN – REMOVABLE TOP SLAB

3/8"=1'-0"



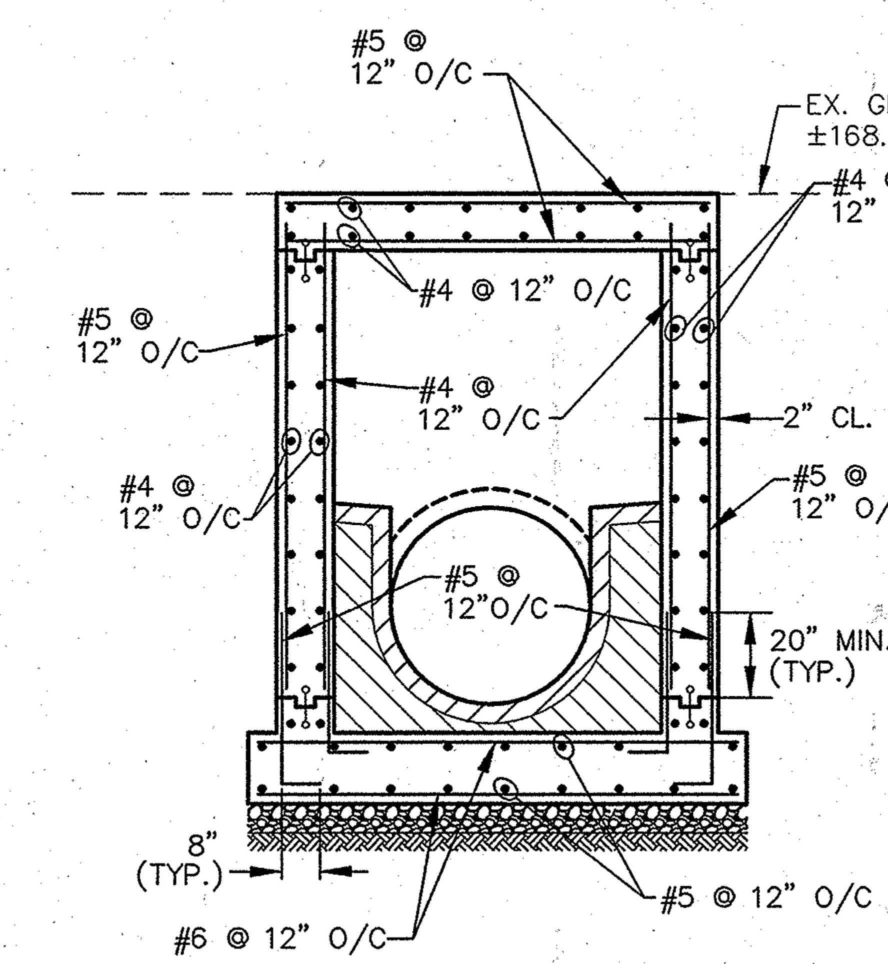
DETAIL 3 – MANHOLE OPENING

NOT TO SCALE



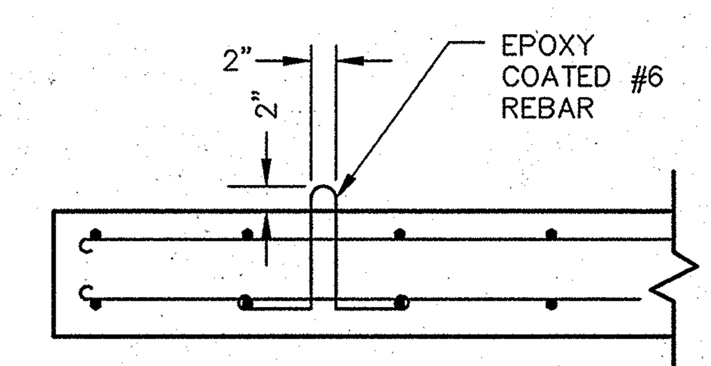
SECTION A–A

3/8"=1'-0"



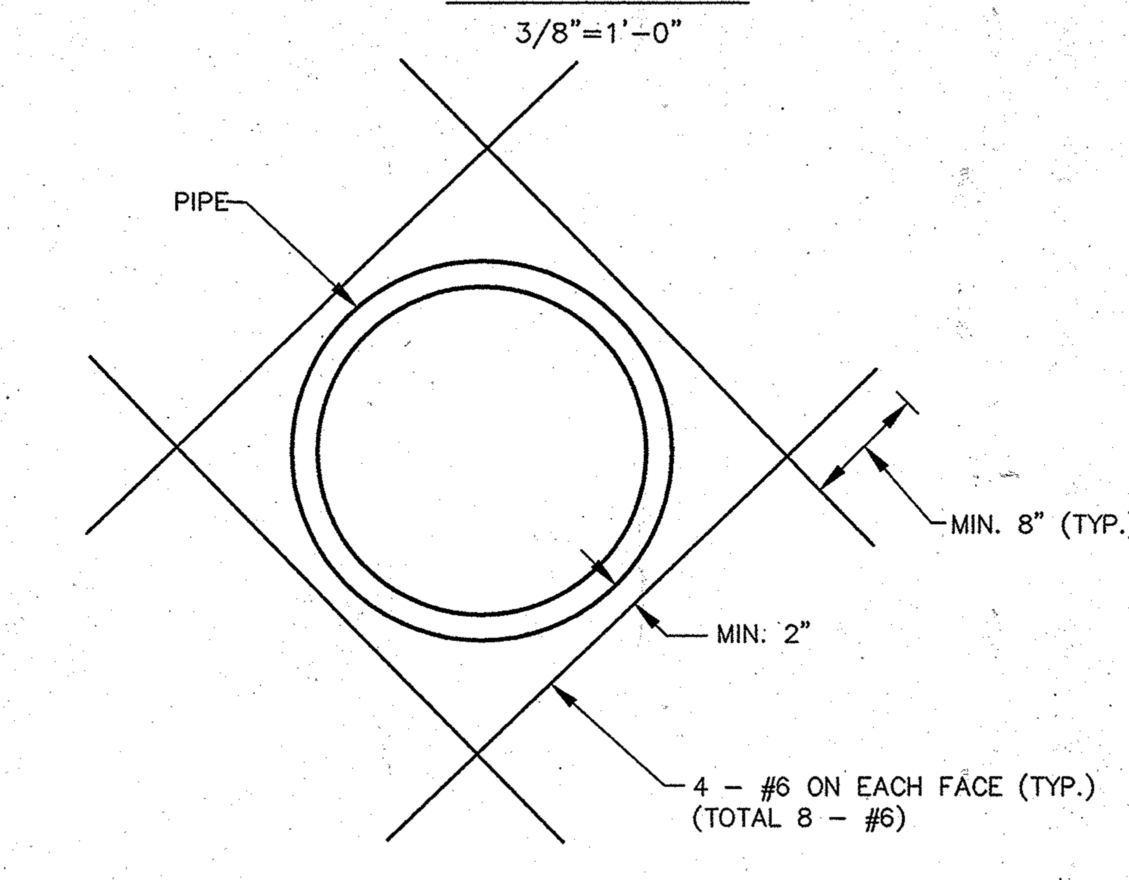
SECTION B–B

3/8"=1'-0"



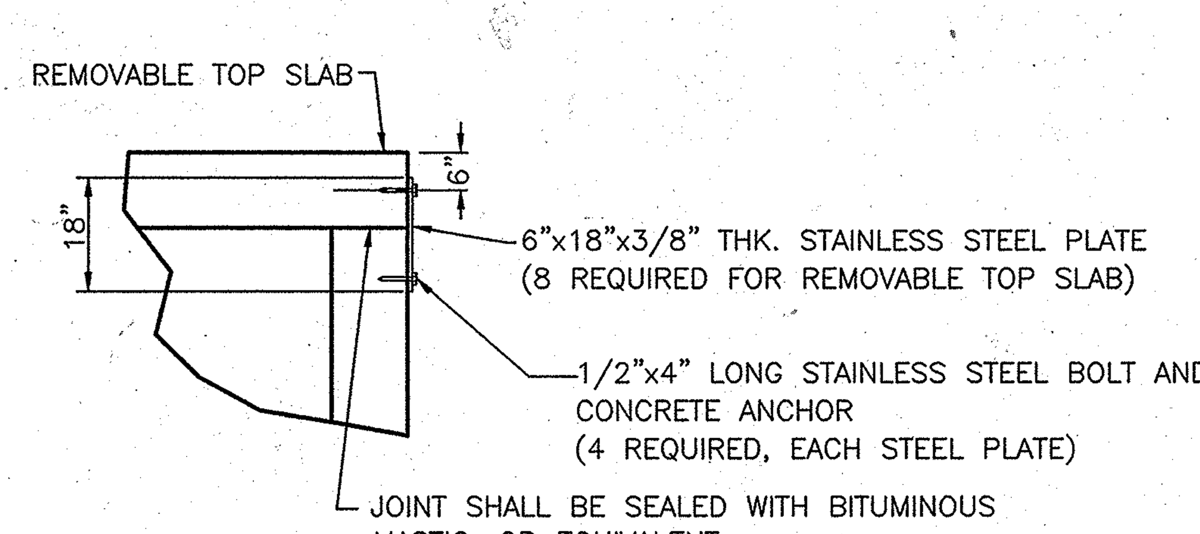
DETAIL 2 – LIFTING DEVICE

NOT TO SCALE



DETAIL 1 – PIPE OPENING IN WALL

NOT TO SCALE



CONNECTION DETAIL

NOT TO SCALE

NOTES:

1.) CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4,000 psi @ 28 DAYS.
2.) STEEL SHALL HAVE A YIELD STRENGTH OF 60,000 psi.
3.) STEEL REINFORCING SHALL HAVE A MINIMUM CLEARANCE OF 2" AND SHALL CONFORM TO ASTM A615, GRADE 60.
4.) LAP LENGTH SHALL HAVE BE A MINIMUM OF 20".

AS–BUILT

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. 8146 EXPIRATION DATE: 10/8/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/16/08 DATE	CHIEF, BUREAU OF ENGINEERING	12/12/08 DATE
CHIEF, BUREAU OF UTILITIES	12/12/08 DATE	CHIEF, UTILITY DESIGN DIVISION	12/11/08 DATE

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
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STATE OF MARYLAND
NO. 8146
REGISTERED PROFESSIONAL ENGINEER
6/8/11

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.	R.J.C.	AS-BUILT	12/10
DECEMBER, 2008	BY NO.	REVISION	DATE

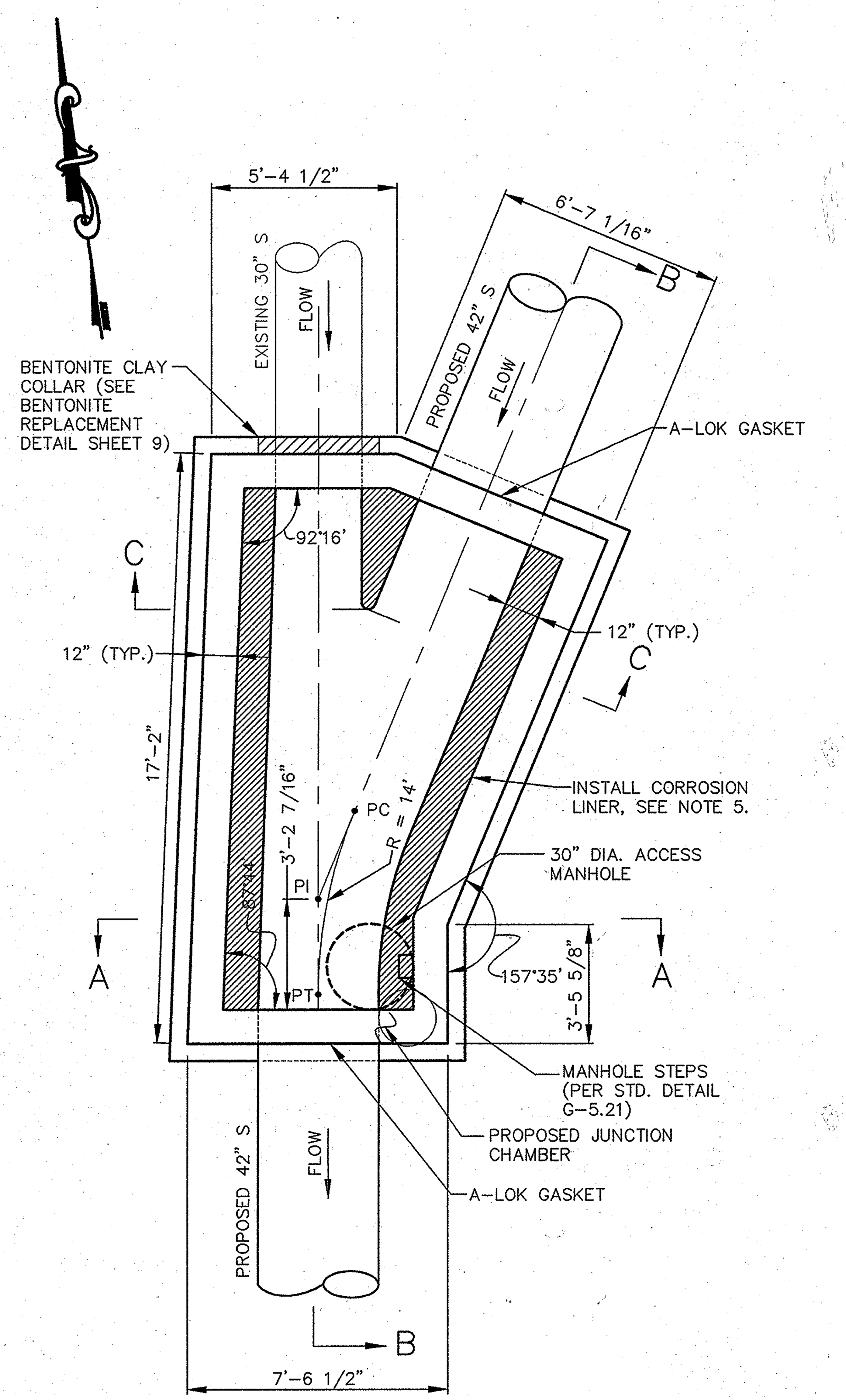
DIVERSION STRUCTURE
STRUCTURAL DETAILS

600' SCALE MAP 47 | BLOCK 10, 16, 17 ,& 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

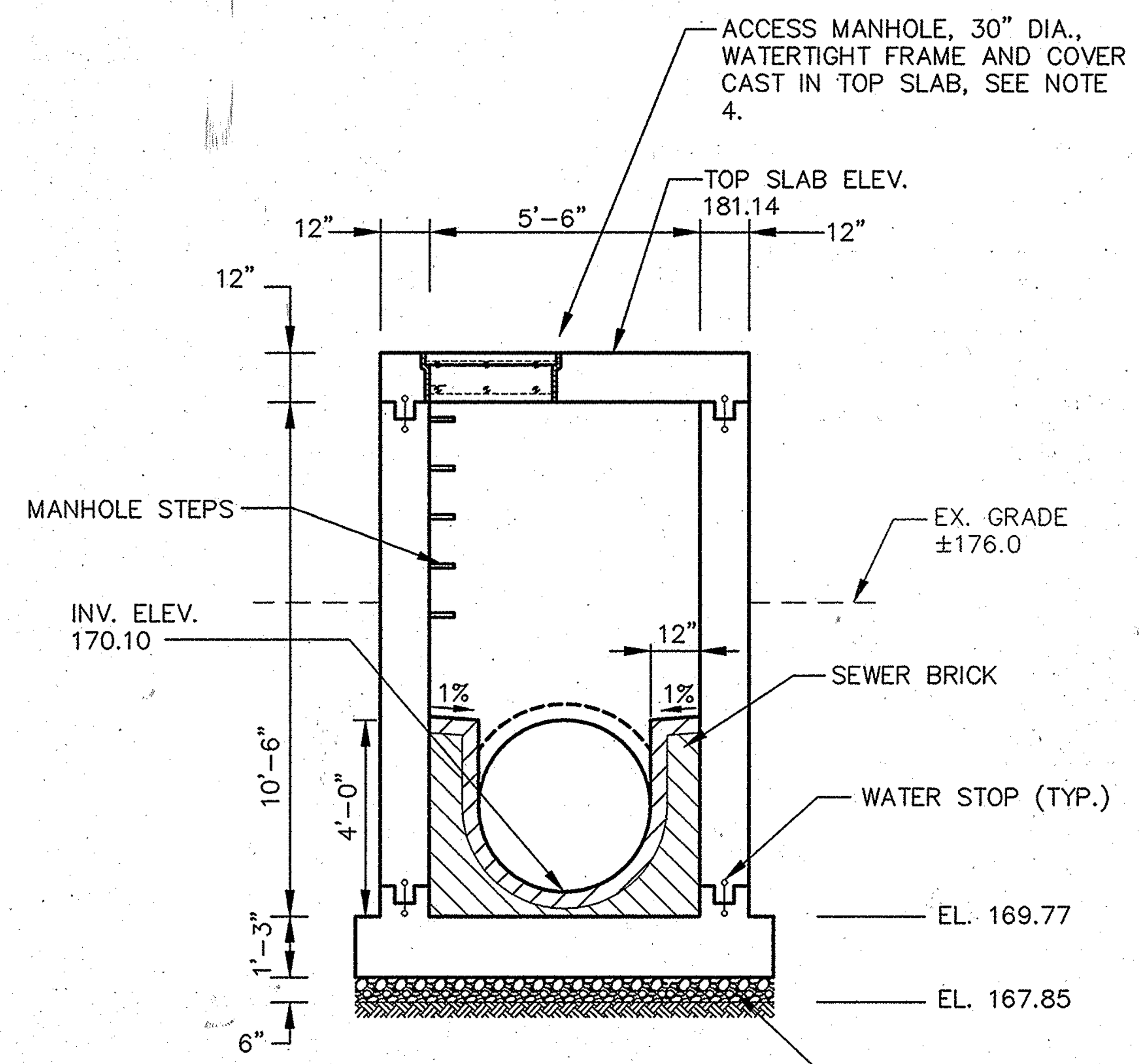
SCALE AS SHOWN

SHEET 12 OF 27



PLAN

3/8"=1'-0"

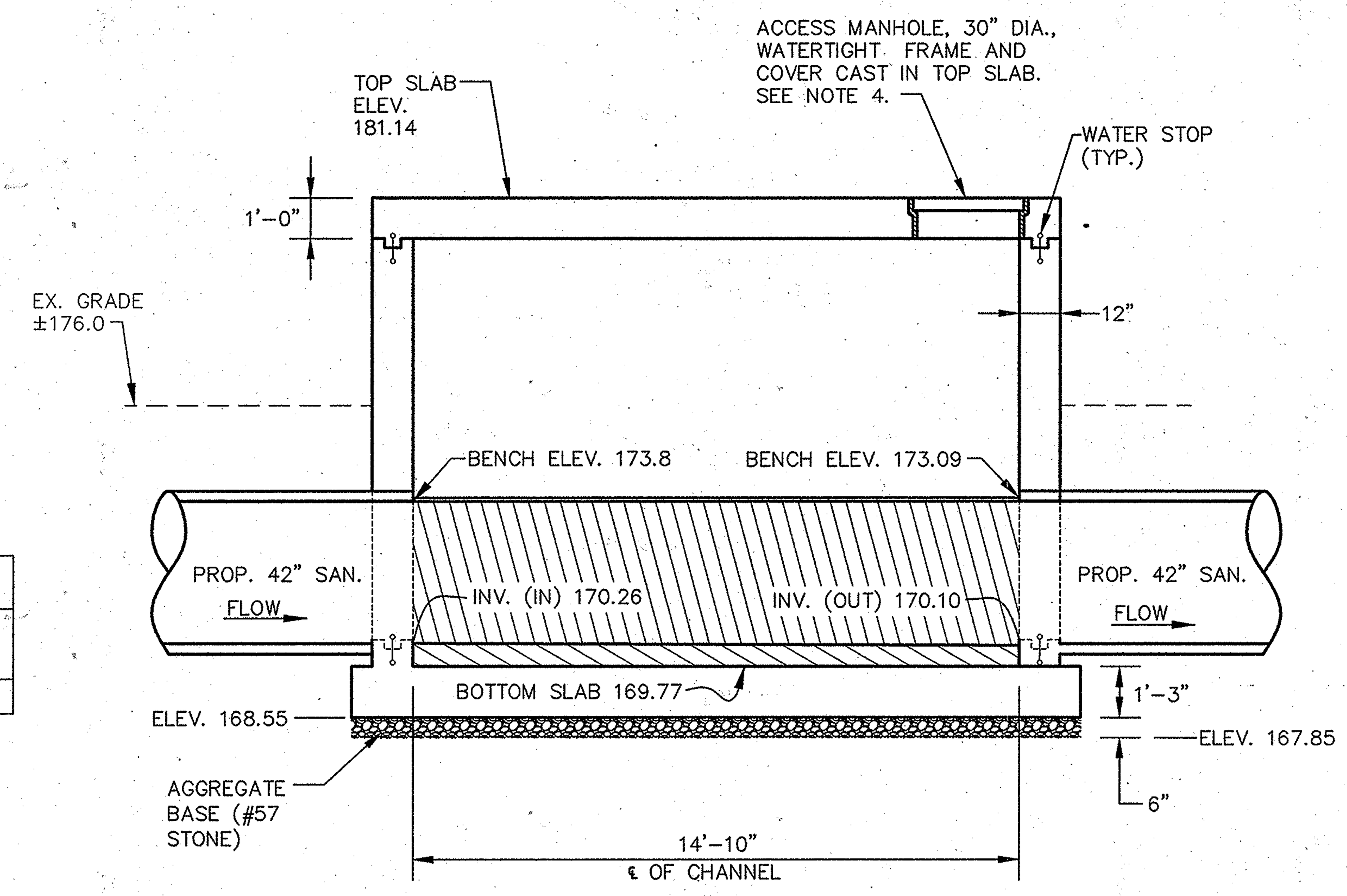


SECTION A–A

3/8"=1'-0"

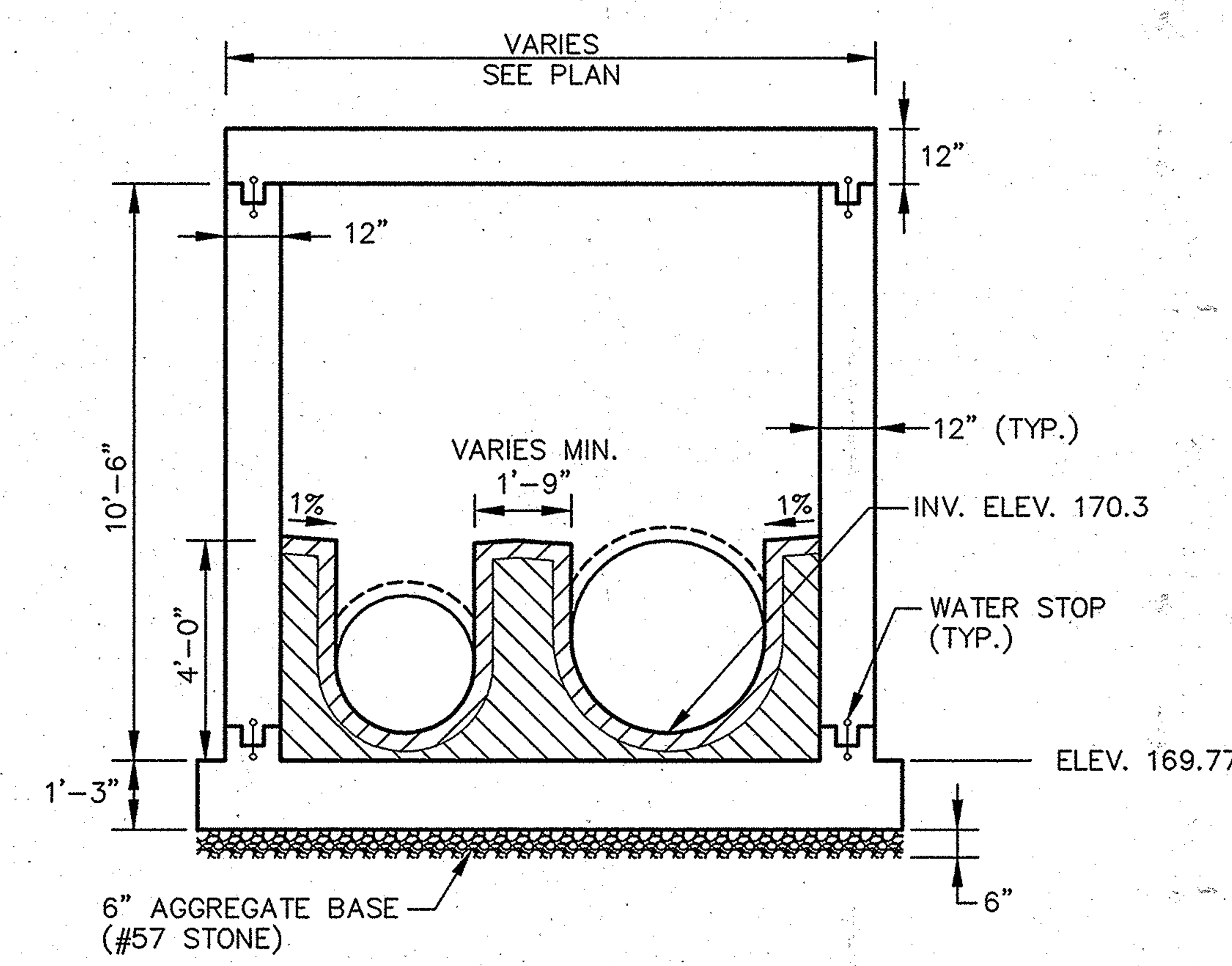
NOTES:

1. SEE SHEETS 23 AND 24 FOR GRAVITY BYPASS DETAILS.
2. FOR STRUCTURAL DETAILS SEE SHEET 14.
3. A-LOK GASKETS SHALL BE USED AT PIPE ENTRY/EXIT POINTS OF THE DIVERSION STRUCTURE, WHERE INDICATED ON DRAWINGS.
4. MANHOLE FRAME AND COVER SHALL BE PER MODEL B-6077 SOLID LID, FURNISHED BOLTED DOWN AND WATERTIGHT, AS MANUFACTURED BY BARRY PATTERN AND FOUNDRY OR APPROVED EQUAL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE FRAME AND COVER FOR APPROVAL.
5. CONTRACTOR SHALL LINE THE INTERIOR OF THE STRUCTURE WITH T-LOCK CORROSION LINER AS MANUFACTURED BY AMERON INTERNATIONAL, OR APPROVED EQUAL.



SECTION B–B

3/8"=1'-0"



SECTION C–C

3/8"=1'-0"

CURVE DATA				
STATION	RADIUS	TANGENT	LENGTH	INCLUDED ANGLE
CURVE 1	14.0'	2.77'	5.44'	22°24'41"

CURVE STAKEOUT		
	NORTHING	EASTING
PT	N 534493.39	E 1364185.94
PI	N 534594.60	E 1363954.45
PC	N 534573.16	E 1363691.36

PROFESSIONAL CERTIFICATION

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LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 12/16/08 DATE — CHIEF, BUREAU OF ENGINEERING 12/12/08 DATE

CHIEF, BUREAU OF UTILITIES 12/12/08 DATE — CHIEF, UTILITY DESIGN DIVISION 12/11/08 DATE

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STATE OF MARYLAND — PROFESSIONAL ENGINEER

DES: C.H.
DRN: K.L.B.
CHK: G.C.L.
DECEMBER, 2008

BY	NO.	REVISION	DATE
R.J.C.		AS-BUILT	12/10

JUNCTION CHAMBER
PLAN & SECTIONS

600' SCALE MAP 47 — BLOCK 10, 16, 17 ,& 18

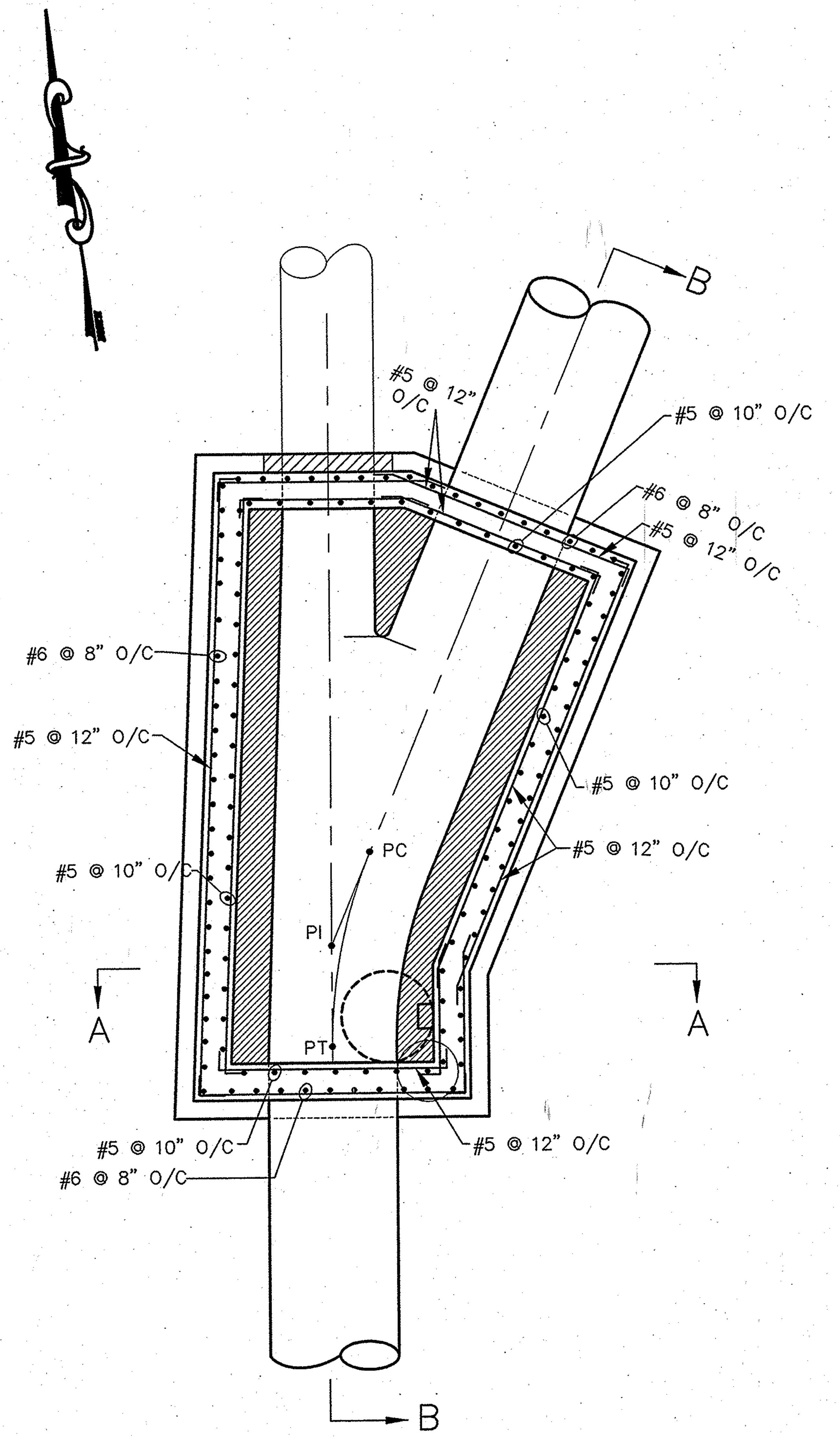
LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 13 OF 27

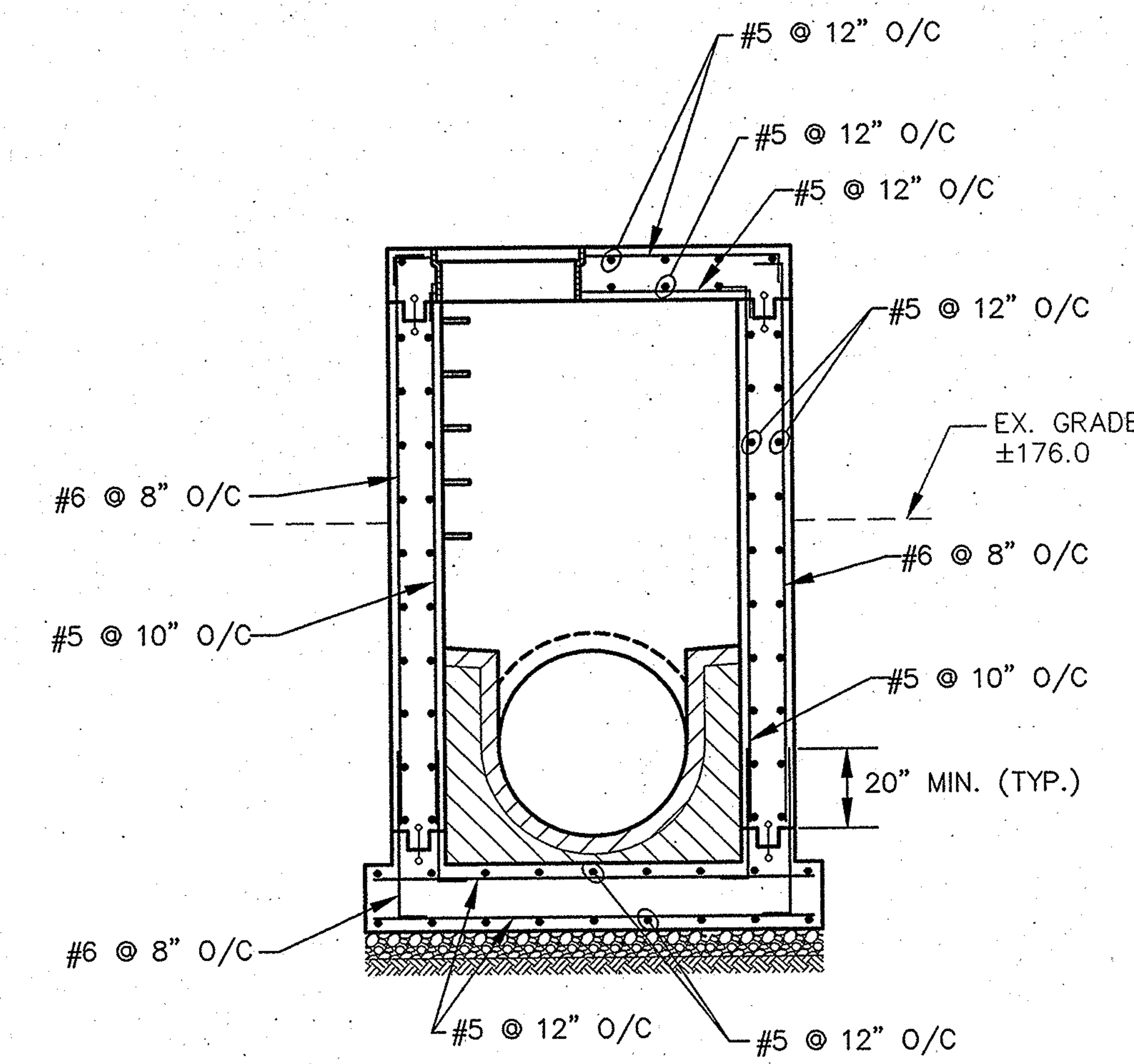
NOTES:

1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4,000 psi @ 28 DAYS.
2. STEEL SHALL HAVE A YIELD STRENGTH OF 60,000 psi.
3. STEEL REINFORCING SHALL HAVE A MINIMUM CLEARANCE OF 2" AND SHALL CONFORM TO ASTM A615, GRADE 60.
4. LAP LENGTH SHALL HAVE BE A MINIMUM OF 24".



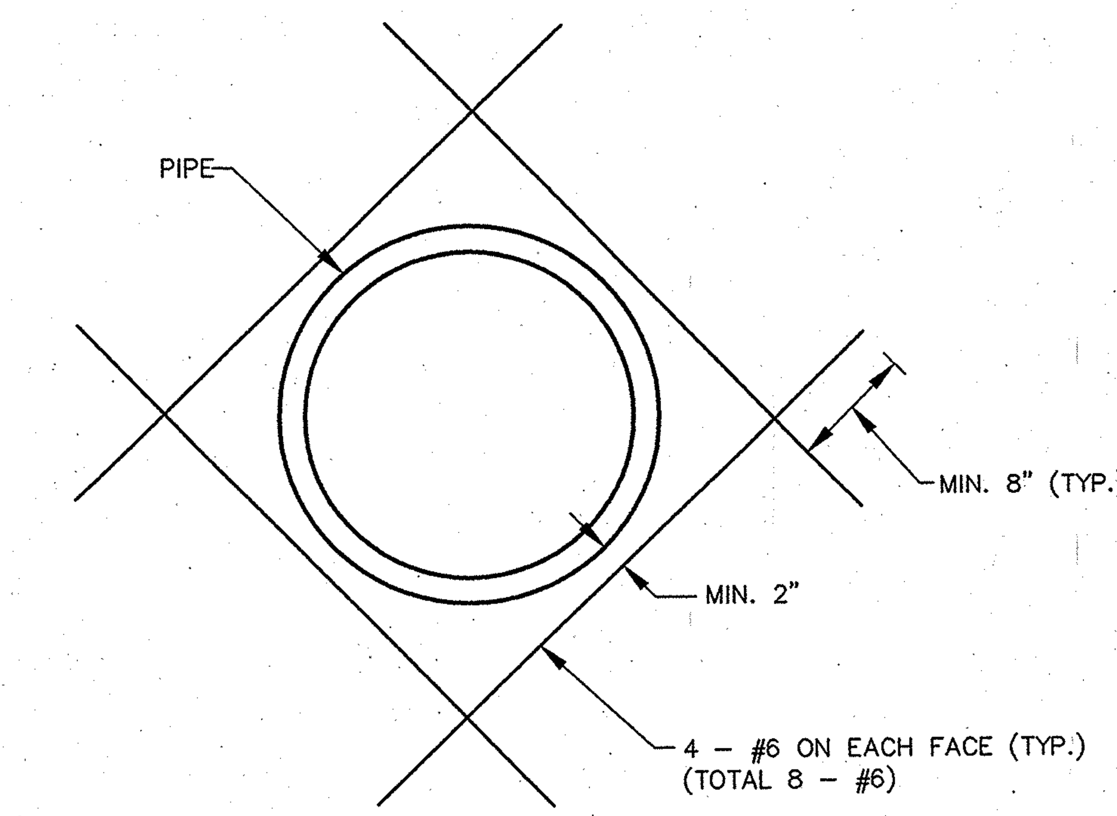
PLAN

3/8"=1'-0"



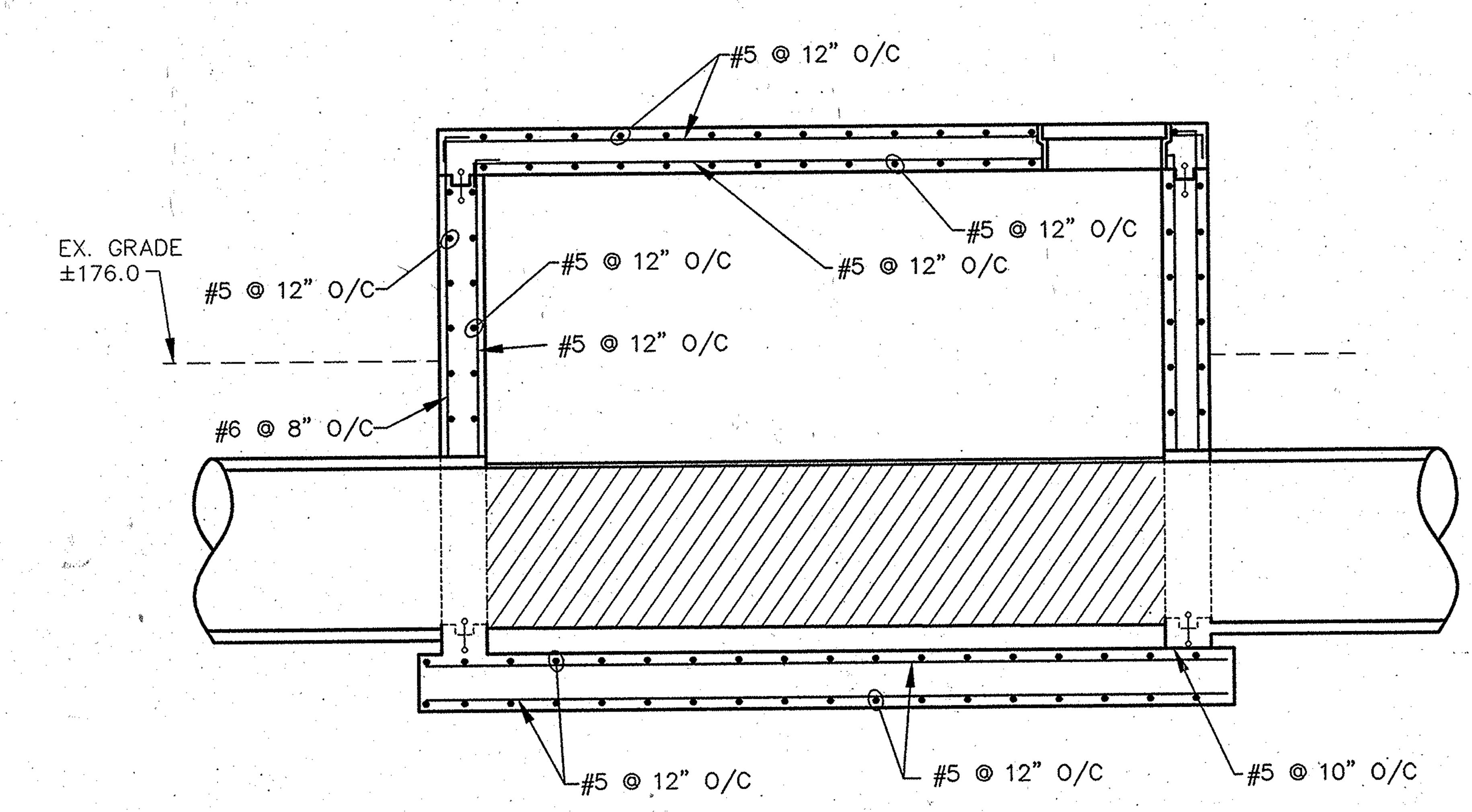
SECTION A–A

3/8"=1'-0"



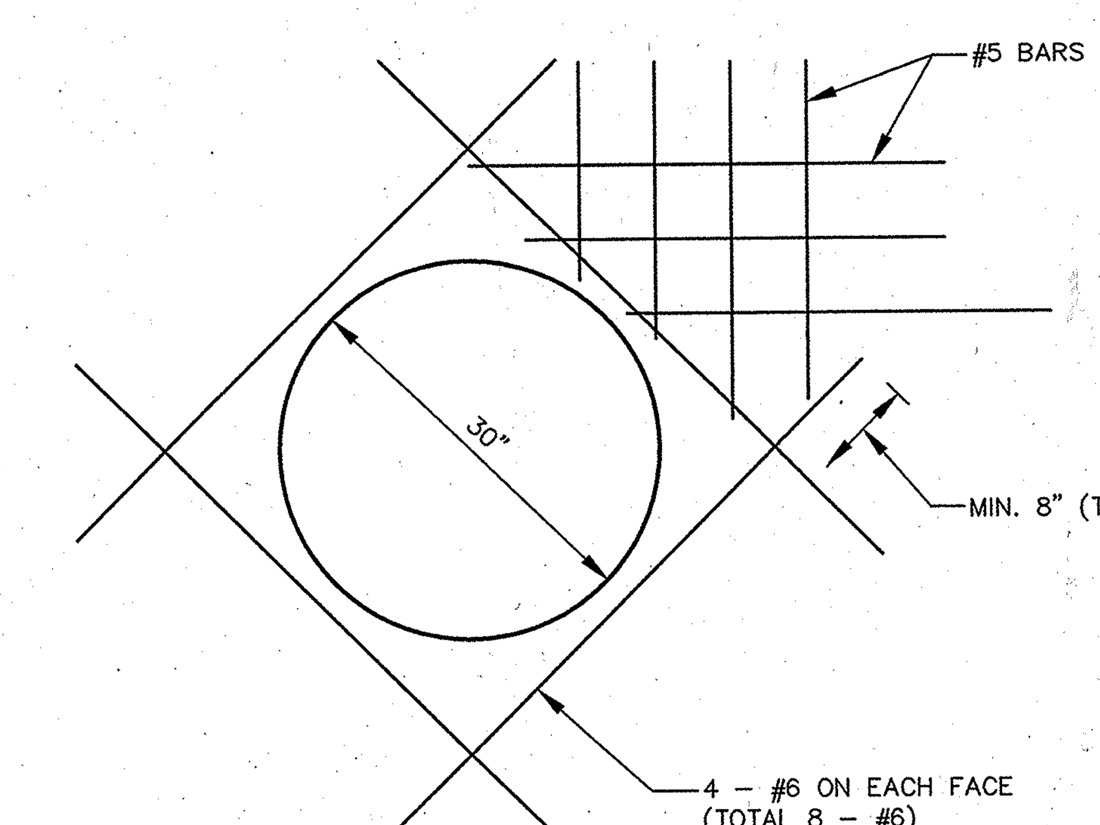
DETAIL 1 – PIPE OPENING IN WALL

NOT TO SCALE



SECTION B–B

3/8"=1'-0"



DETAIL 2 – MANHOLE OPENING

NOT TO SCALE

PROFESSIONAL CERTIFICATION

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AS-BUILT

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HOWARD COUNTY, MARYLAND

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DECEMBER, 2008	BY	NO.	REVISION	DATE

JUNCTION CHAMBER
STRUCTURAL DETAILS

600' SCALE MAP 47 | BLOCK 10, 16, 17 ,& 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 14 OF 27

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

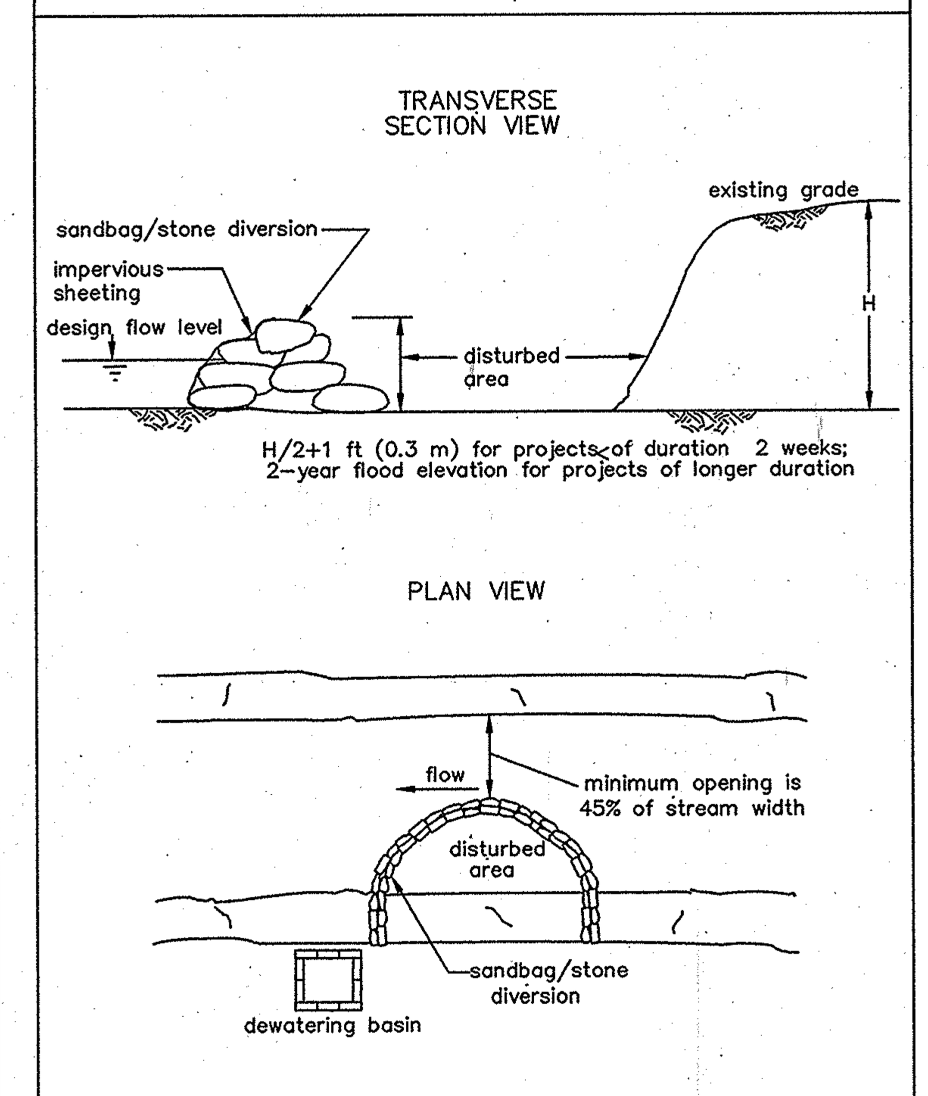
MGWC 1.5: Sandbag/Stone Channel Diversion

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.

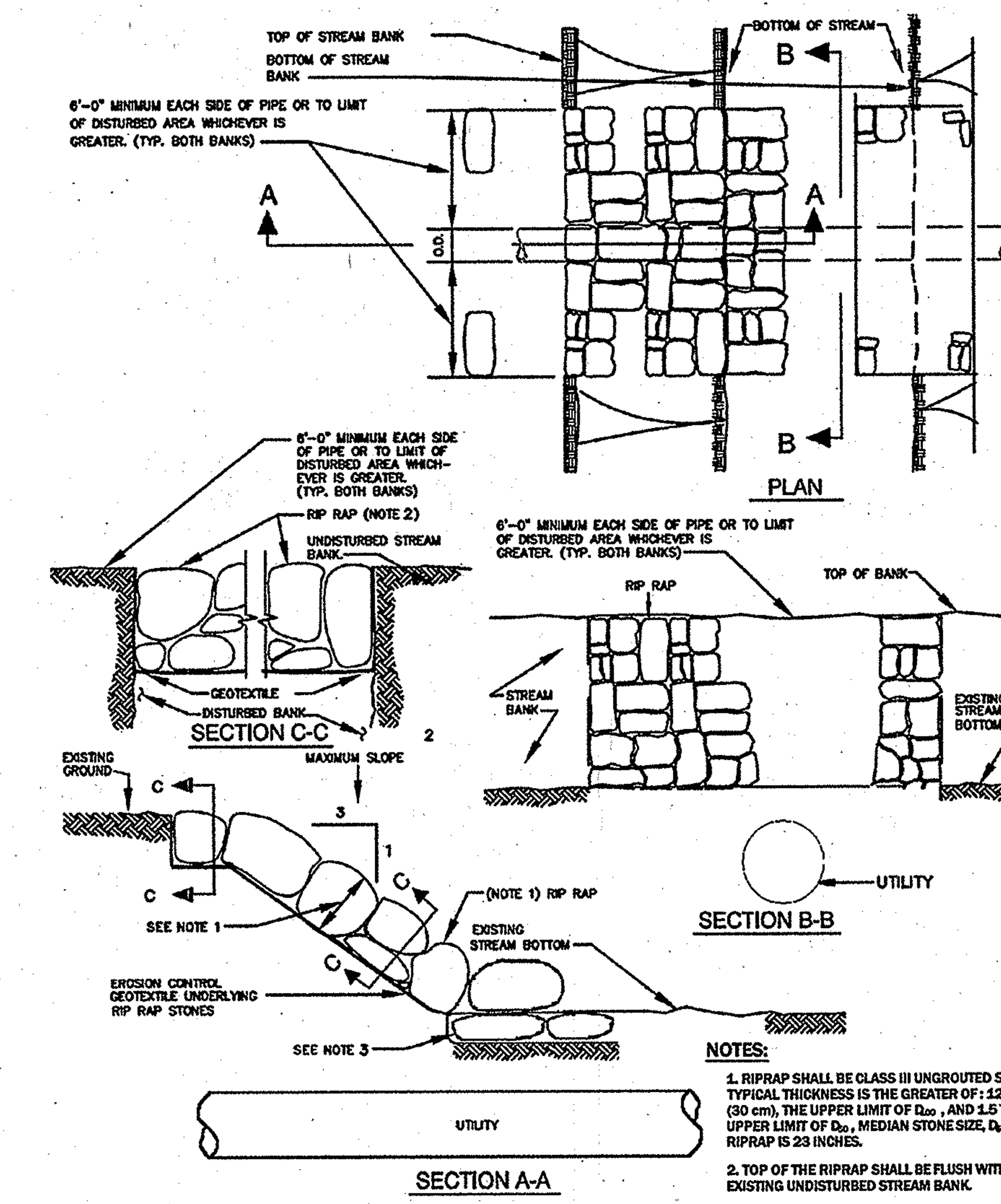
Temporary Instream Construction Measures — *Maryland Department of the Environment, Waterway Construction Guidelines, Revised November 2000*

PAGE 1.5 - 2

Maryland'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



NOTES:

1. RIPRAP SHALL BE CLASS III UNGROUTED STONE. THE TYPICAL THICKNESS IS THE GREATER OF: 12 INCHES (30 cm), THE UPPER LIMIT OF D_{100}, AND 1.5 TIMES THE UPPER LIMIT OF D_{50}, MEDIAN STONE SIZE, D_{50} CLASS III RIPRAP IS 23 INCHES.
2. TOP OF THE RIPRAP SHALL BE FLUSH WITH THE EXISTING UNDISTURBED STREAM BANK.
3. MINIMUM TOE TRENCH DEPTH BELOW CHANNEL INVERT SHALL BE 48" TO PREVENT UNDERMINING DUE TO SCOUR.

DETAIL 1
STREAM BANK PROTECTION AT CROSSING
NO SCALE

NOTES:

1) STREAM CROSSING SHALL BE INSTALLED IN ACCORDANCE WITH MGCW STANDARD 1.5. PHASE A WILL OCCUR FROM STATION 0+00 (MH207B) TO STATION 0+67. PHASE B WILL OCCUR FROM STATION 0+67 TO STATION 1+37 (MH-208A).

2) ALL MEASURES NECESSARY FOR INSTALLATION OF THE SEWER MAIN ACROSS THE STREAMS SHALL BE REMOVED ONLY UPON STREAM STABILIZATION AND APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.

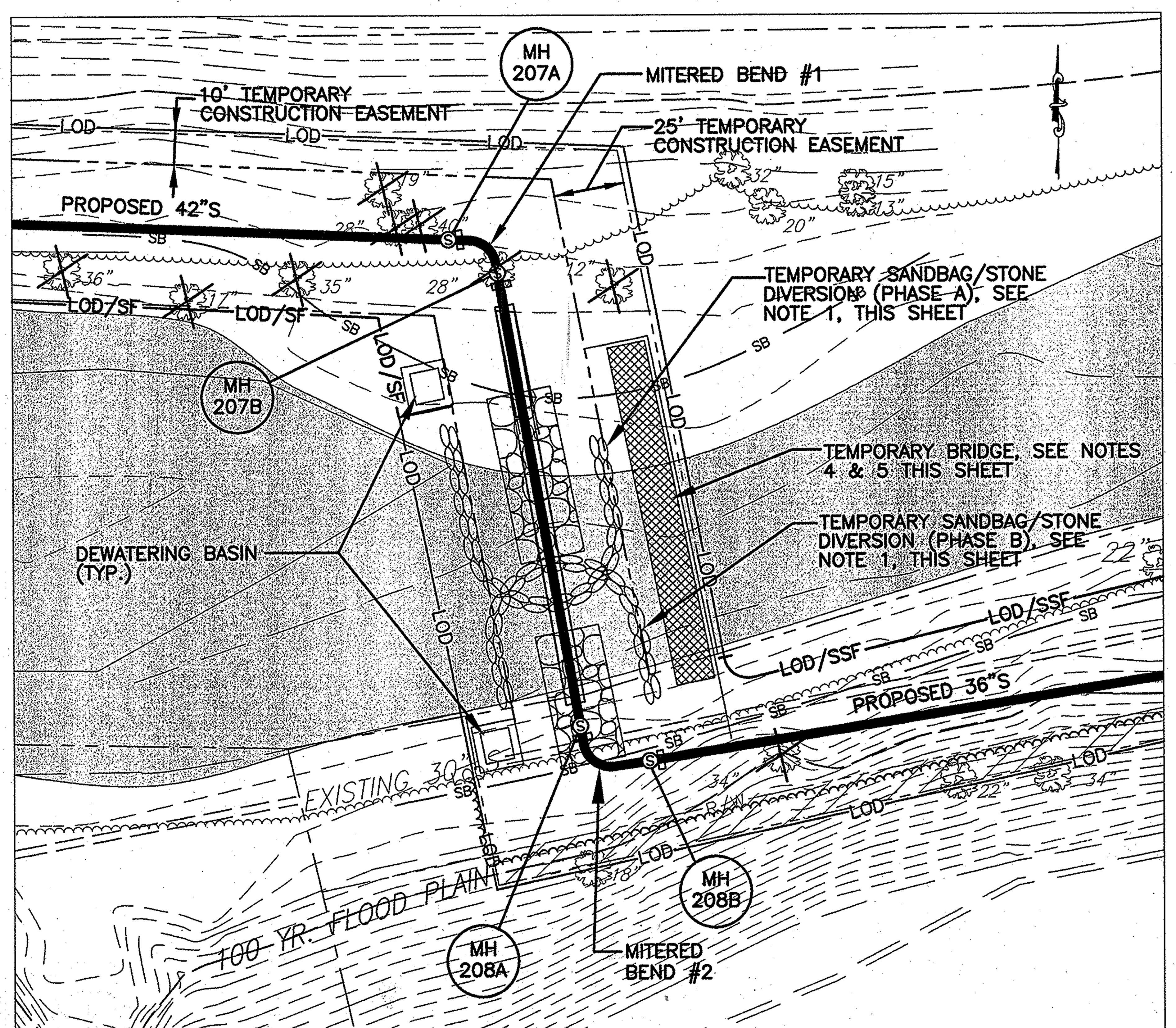
3) CONTRACTOR TO PUMP THE WATER FROM THE DISTURBED AREA FOR EACH STREAM CROSSING VIA PUMPS AND HOSES TO THE DEWATERING BASIN IN ORDER THAT WORK MAY PROCEED IN THE DRY. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE PUMPS AND HOSES WITH THE CAPACITIES NEEDED TO KEEP THE WORK AREA DRY DURING CONSTRUCTION, WITHOUT ADDITIONAL EXPENSE TO THE COUNTY.

4) CONTRACTOR TO PROVIDE A TEMPORARY BRIDGE FOR CROSSING THE STREAM DURING CONSTRUCTION. BRIDGE TO BE RATED FOR HS20 LOADING AND SPAN TO COVER RIVER WIDTH AT CROSSING. PARTIAL OR FULL FILLING IN OF RIVER SHALL NOT BE ALLOWED.

5) THE BRIDGE WOULD BE SUBJECT TO THE APPROVAL OF THE HOWARD SOIL CONSERVATION DISTRICT, MARYLAND DEPT. OF THE ENVIRONMENT AND THE USCOE PRIOR TO INSTALLATION.

6) IN-STREAM WORK SHALL NOT BE CONDUCTED BETWEEN MARCH 1ST AND JUNE 15TH INCLUSIVE, DURING ANY YEAR.

7) STONE FOR STREAM RESTORATION SHALL BE DARK OR GRAY IN COLOR, SO AS TO MATCH EXISTING NATIVE STONE. WHITE (TEXAS QUARRY) STONE SHALL NOT BE ACCEPTABLE FOR STREAM RESTORATION.



STREAM CROSSING DETAIL
1"=30'

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.

DEVELOPER ____ DATE

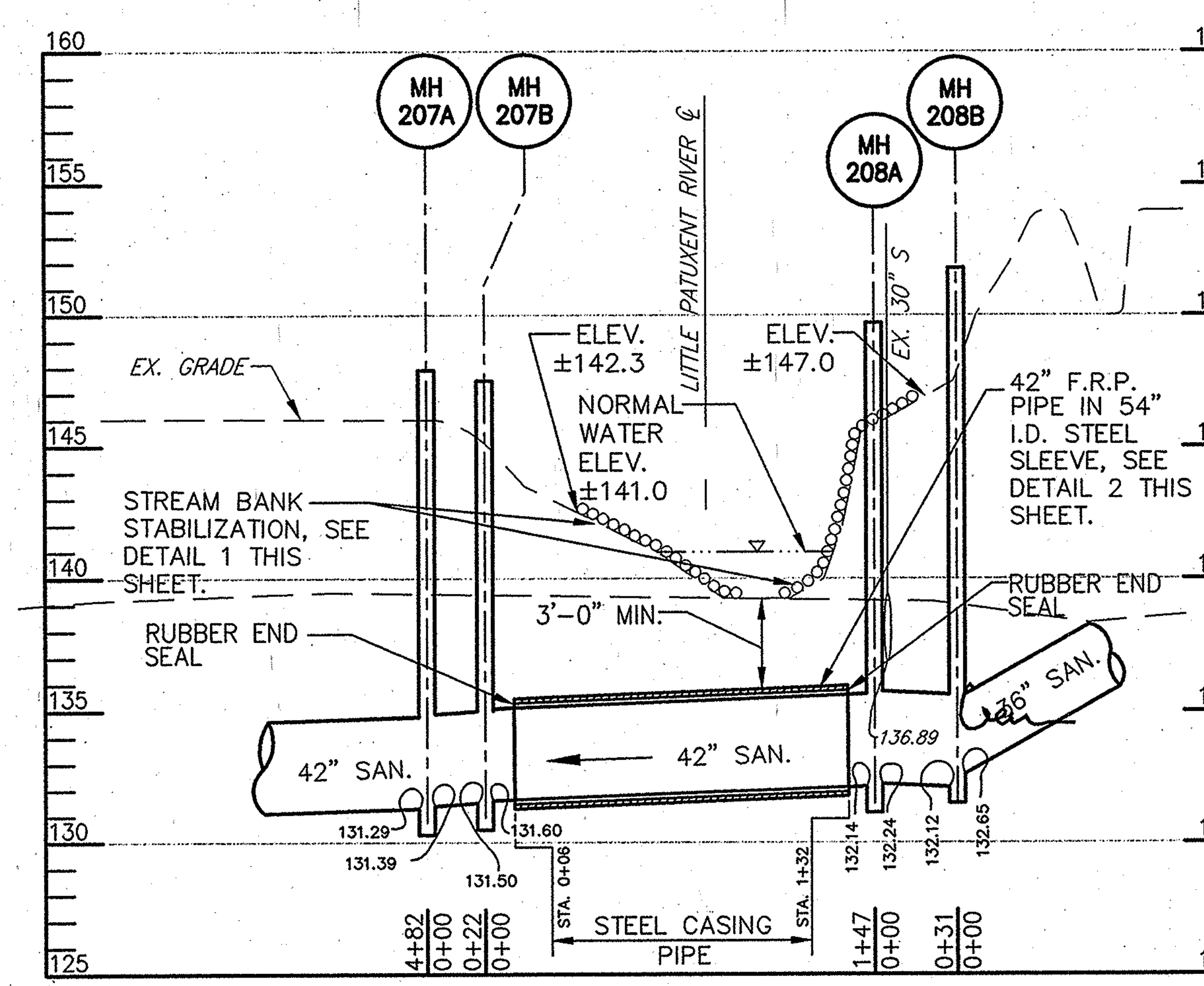
BY THE ENGINEER :

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.

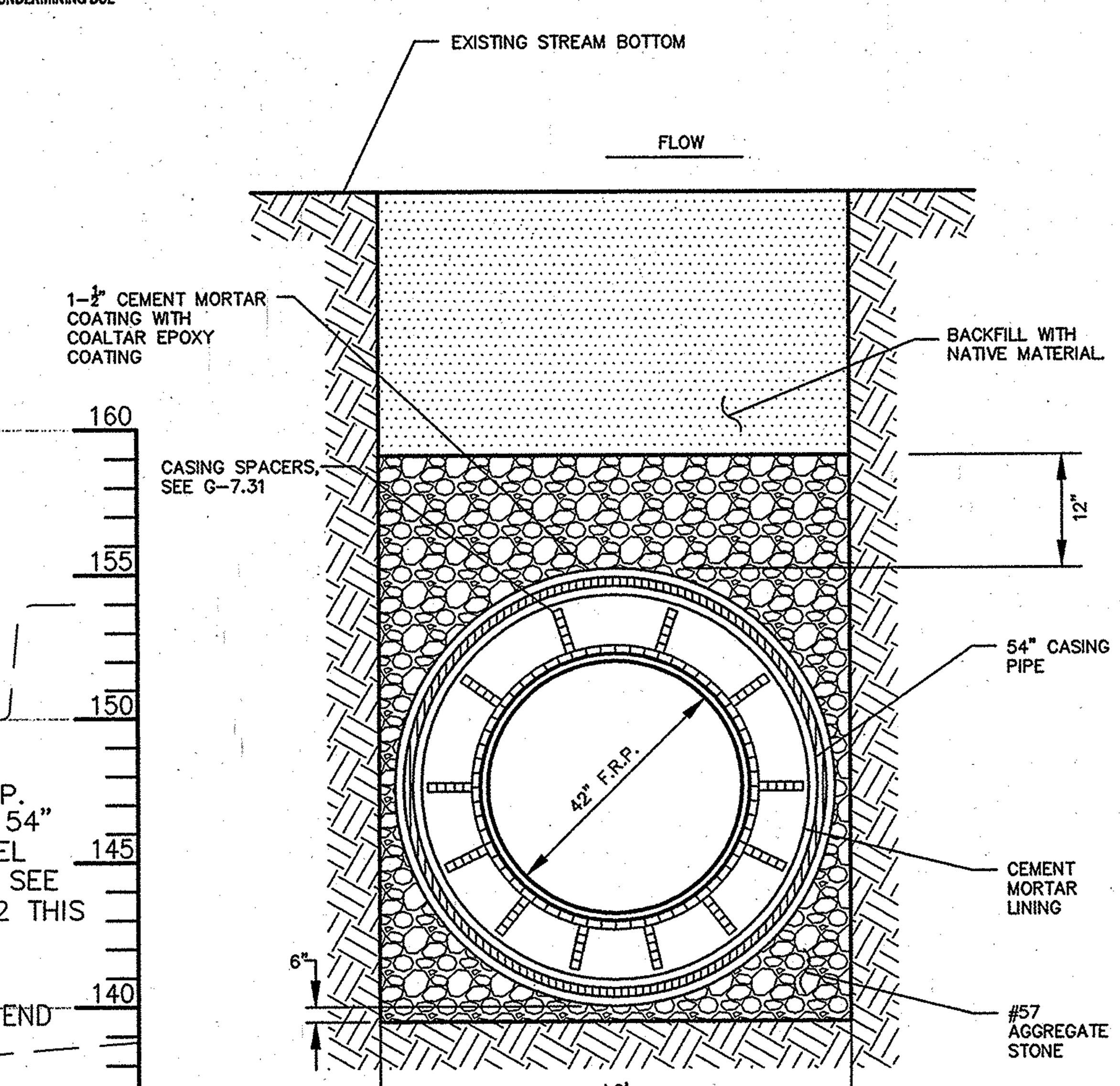
ENGINEER ____ DATE

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

HOWARD SOIL CONSERVATION DISTRICT ____ DATE



PROFILE - STREAM CROSSING
MH 207A TO MH 208B
SCALE: 1"=50' HORIZ
1"=5' VERT.



NOTES:

1. STEEL CASING PIPE TO BE 54" I.D. x ½" THICK WITH CEMENT MORTAR LINING ON INSIDE.
2. 42" F.R.P. AND 54" STEEL PIPE SHALL BE INSTALLED USING THE OPEN CUT METHOD.
3. CASING SPACERS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
4. CONTRACTOR SHALL PREVENT FLOTATION OF CARRIER PIPE DURING INSTALLATION.
5. CONTRACTOR TO SEAL ENDS OF STEEL CASING W/ RUBBER END SEALS AS PER HOCO DETAIL G-7.31.
6. STEEL CASING PIPE SHALL CONFORM TO ASTM A1011, ASTM A1018 AND ASTM A139 GRADE B (36,000).
7. CEMENT MORTAR LINING SHALL CONFORM TO AWWA C200.

DETAIL 2
SECTION STREAM CROSSING
SCALE: NO SCALE

AS-BUILT

PROFESSIONAL CERTIFICATION

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LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 12/16/08 DATE — CHIEF, BUREAU OF ENGINEERING 12/12/08 DATE

CHIEF, BUREAU OF UTILITIES 12/12/08 DATE — CHIEF, UTILITY DESIGN DIVISION 12/11/08 DATE

Patton Harris Rust & Associates, Inc.
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8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
F 410.997.9282

STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — No. 8146 — 8/8/11

DES: C.H.				
DRN: B.K.B.				
CHK: G.C.L.				12/10
DECEMBER, 2008	BY	NO.	REVISION	DATE

STREAM CROSSING
PLAN & DETAILS

600' SCALE MAP 47 — BLOCK 10, 16, 17, & 18

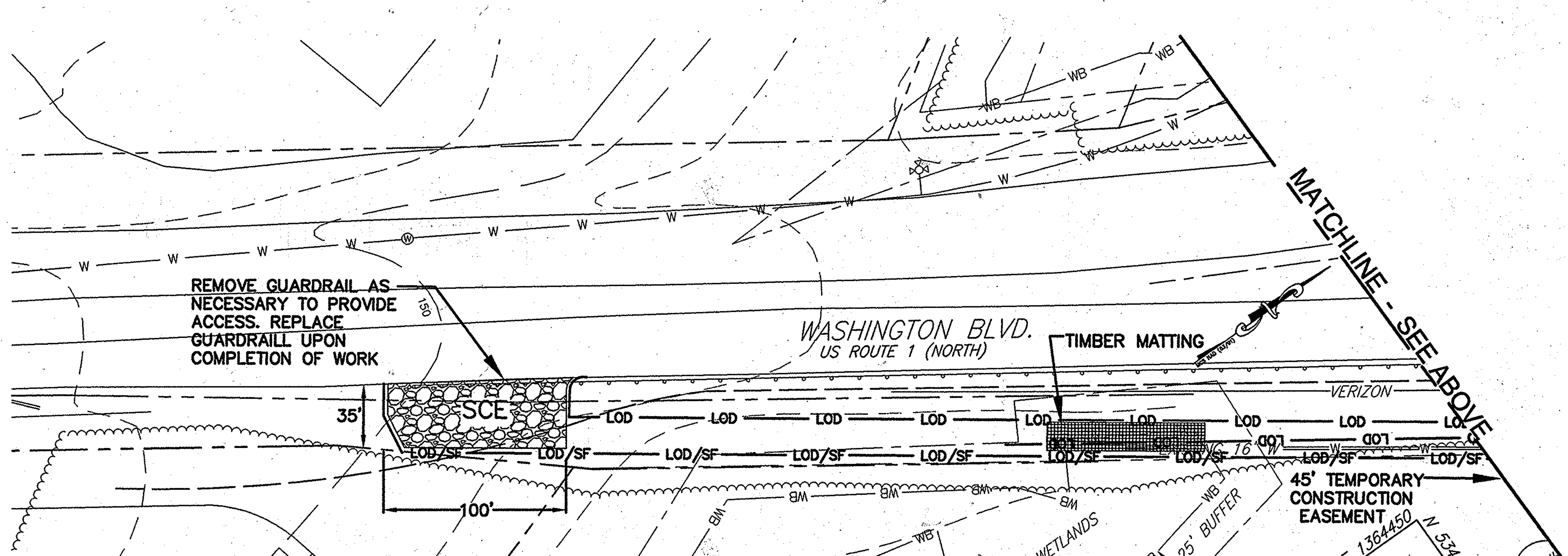
LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 15 OF 27

PLAN

1"=50'



PLAN

1"=50'

NOTES:

1. CONTRACTOR TO COORDINATE INSTALLATION, USE AND REMOVAL OF THE ACCESS ROAD W/ THE CONTRACTOR CONSTRUCTING CONTRACT #20-4531. COMPENSATION WILL NOT BE GIVEN TO THE CONTRACTOR FOR DELAYS, INCONVIENCES OR DAMAGE SUSTAINED DUE TO LACK OF COORDINATION BETWEEN CONTRACTORS.
2. ALL EXCESS FILL MATERIAL WILL BE REMOVED FROM THE 100-YEAR FLOODPLAIN AND EXISTING CONTOURS WILL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. AS SUCH, THERE WILL BE NO "MOUNDING" OR "WASTING" OF MATERIALS WITHIN THE LOD.

AS-BUILT

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. 8146 EXPIRATION DATE: 10/8/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

12/16/08 DIRECTOR OF PUBLIC WORKS	DATE	12/12/08 CHIEF, BUREAU OF ENGINEERING	DATE
12/12/08 CHIEF, BUREAU OF UTILITIES	DATE	12/11/08 CHIEF, UTILITY DESIGN DIVISION	DATE

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STATE OF MARYLAND PROFESSIONAL ENGINEER NO. 8146 REGISTERED

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.				12/10
DECEMBER, 2008	BY	NO.	REVISION	DATE

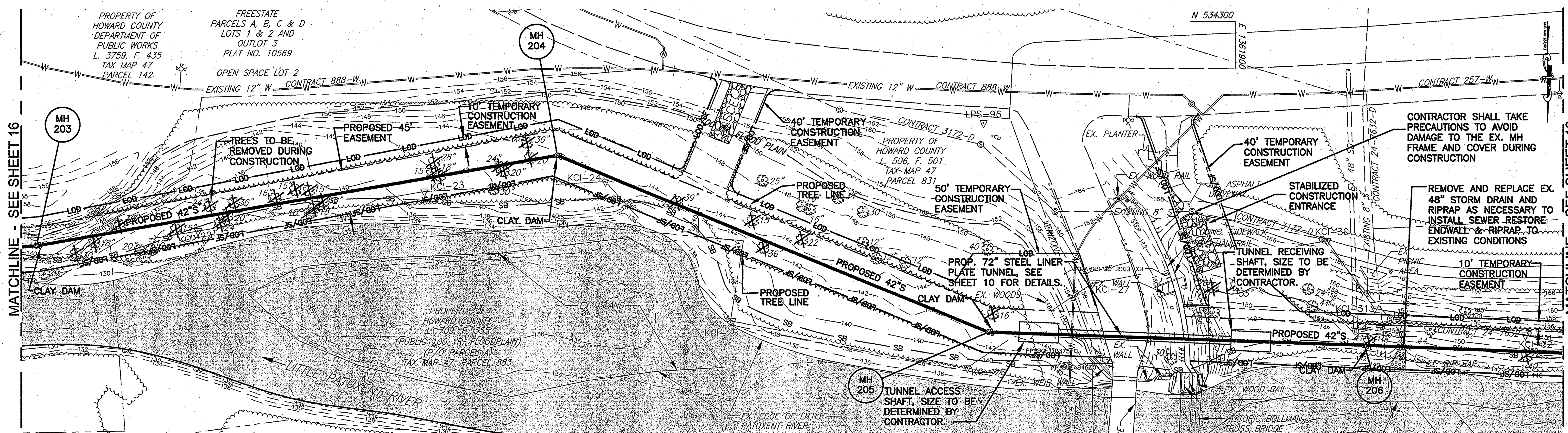
SEDIMENT & EROSION CONTROL PLAN

600' SCALE MAP 47 — BLOCK 10, 16, 17, & 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 16 OF 27



PLAN

1"=50'

NOTES:

1. ALL EXCESS FILL MATERIAL WILL BE REMOVED FROM THE 100-YEAR FLOODPLAIN AND EXISTING CONTOURS WILL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. AS SUCH, THERE WILL BE NO "MOUNDING" OR "WASTING" OF MATERIALS WITHIN THE LOD.

PROFESSIONAL CERTIFICATION

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AS-BUILT

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HOWARD COUNTY, MARYLAND

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CHIEF, BUREAU OF UTILITIES	DATE 12/12/08	CHIEF, UTILITY DESIGN DIVISION	DATE 12/11/08

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STATE OF MARYLAND PROFESSIONAL ENGINEER

8/8/11

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SEDIMENT & EROSION CONTROL PLAN

600' SCALE MAP 47 — BLOCK 10, 16, 17, & 18

LITTLE PATUXENT
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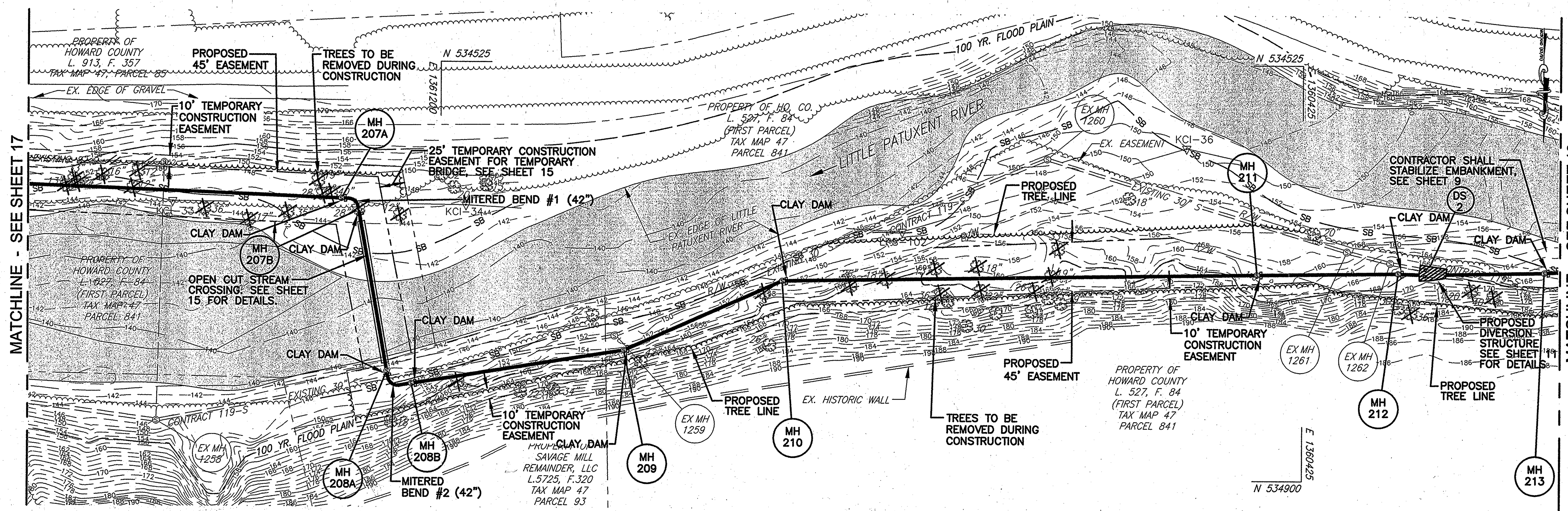
SCALE AS SHOWN

SHEET 17 OF 27



PLAN

1"=50'

NOTES:

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STATE OF MARYLAND PROFESSIONAL ENGINEER
8/8/11

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.			12/10
DECEMBER, 2008	BY NO.	REVISION	DATE

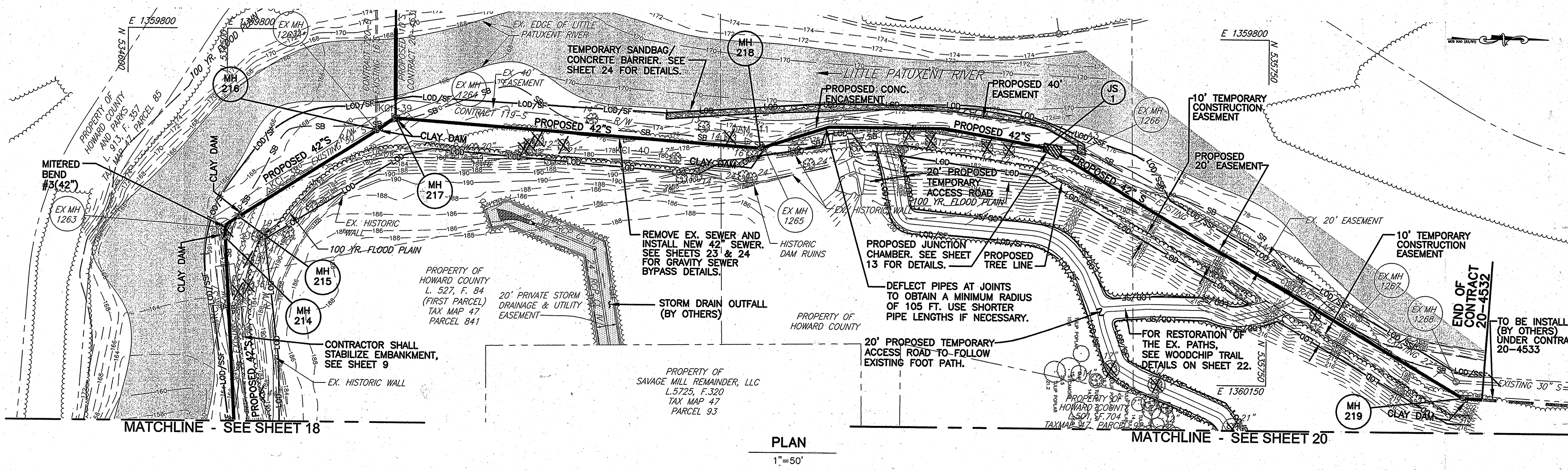
SEDIMENT & EROSION CONTROL PLAN

600' SCALE MAP 47 | BLOCK 10, 16, 17, & 18

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 18 OF 27



PLAN
1"=50'

NOTES:

1. ALL EXCESS FILL MATERIAL WILL BE REMOVED FROM THE 100-YEAR FLOODPLAIN AND EXISTING CONTOURS WILL BE RESTORED ONCE THE UTILITY HAS BEEN INSTALLED. AS SUCH, THERE WILL BE NO "MOUNDING" OR "WASTING" OF MATERIALS WITHIN THE LOD.

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. 8146 EXPIRATION DATE: 10/8/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/16/08 DATE	CHIEF, BUREAU OF ENGINEERING	12/12/08 DATE
CHIEF, BUREAU OF UTILITIES	12/12/08 DATE	CHIEF, UTILITY DESIGN DIVISION	12/11/08 DATE

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
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Columbia, MD 21045
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DES: C.H.
DRN: K.L.B.
CHK: G.C.L.
DECEMBER, 2008

BY	NO.	REVISION	DATE
R.J.C.		AS-BUILT	12/10

AS-BUILT

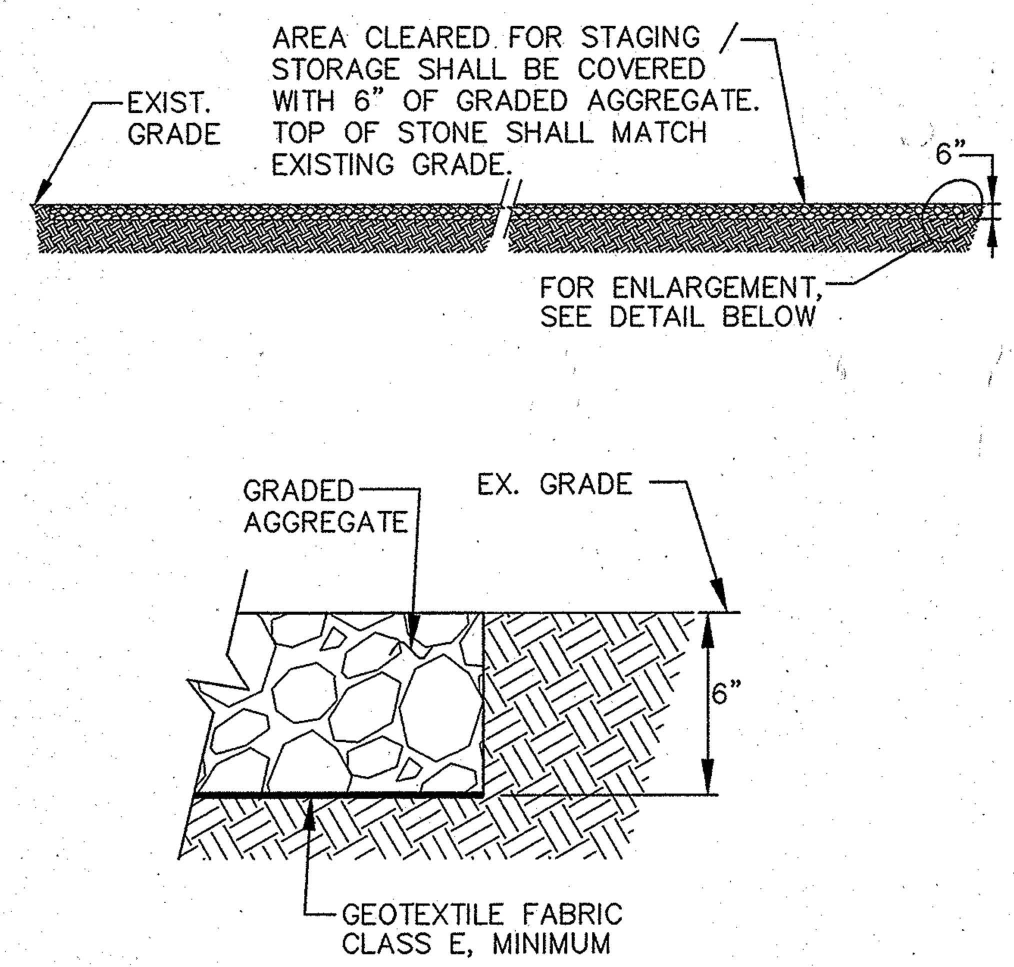
SEDIMENT & EROSION CONTROL PLAN

600' SCALE MAP 47 | BLOCK 10, 16, 17 ,& 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 19 OF 27

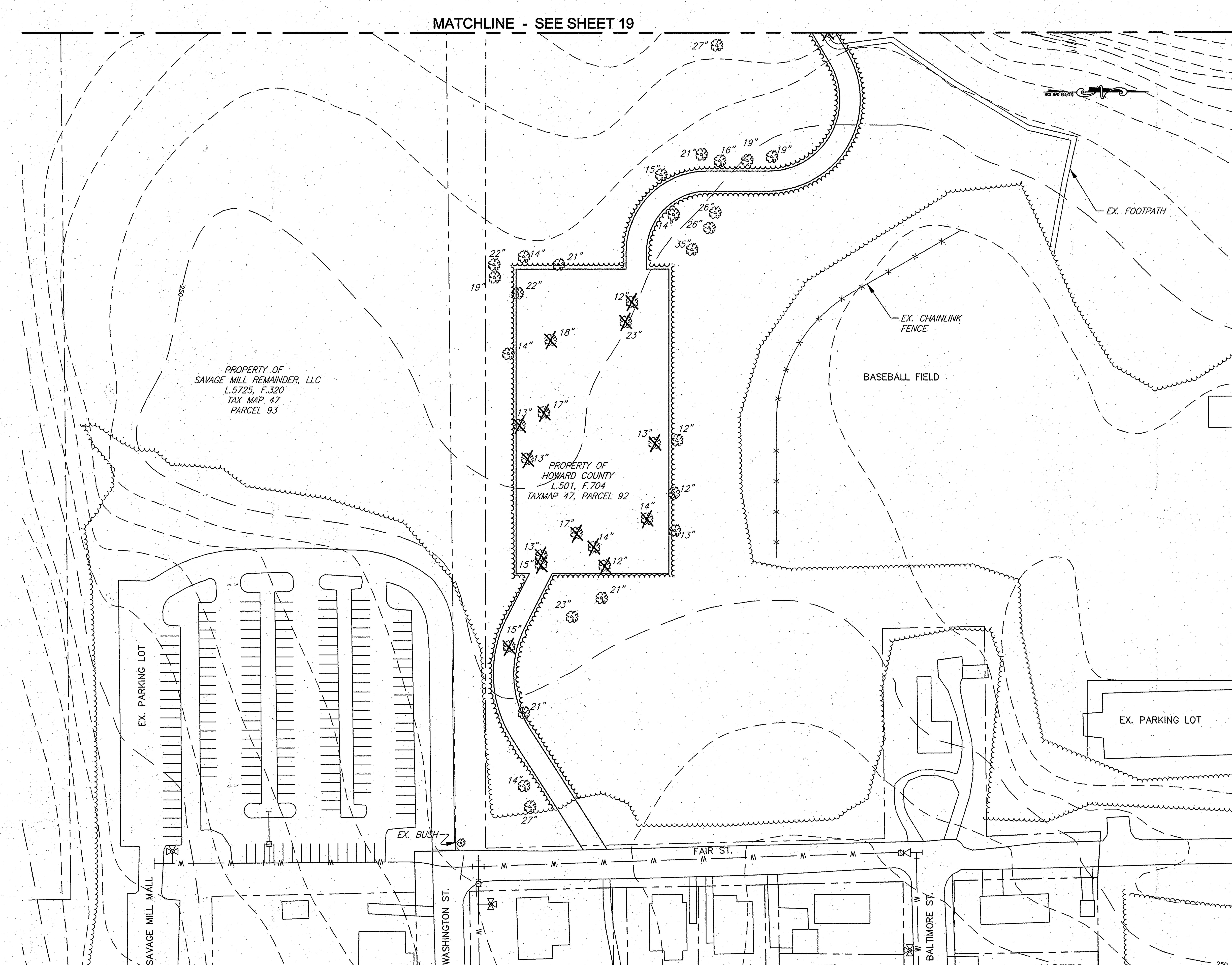


STAGING AREA

NOT TO SCALE

NOTES:

1. PAVING SHALL HAVE POSITIVE DRAINAGE WITH NO PONDING.
2. ON COMPLETION OF CONSTRUCTION, REGRADE AND COMPACT PAVED AREA. ADD ADDITIONAL AGGREGATE IF NECESSARY.
3. ALL ARMORING OF ACCESS ROAD SHALL BE PLACED ON FILTER FABRIC AND REMOVED ON COMPLETION.
4. STABILIZED ROADS AS DETAILED ELSEWHERE.



PLAN

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AS-BUILT

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. 8146 EXPIRATION DATE: 10/8/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/12/08	CHIEF, BUREAU OF ENGINEERING	DATE 12/12/08
CHIEF, BUREAU OF UTILITIES	DATE 12/12/08	CHIEF, UTILITY DESIGN DIVISION	DATE 12/11/08

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STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER NO. 8146

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.				
DECEMBER, 2008	BY	NO.	REVISION	DATE 12/10

SEDIMENT & EROSION CONTROL PLAN

600' SCALE MAP 47 | BLOCK 10, 16, 17, & 18

LITTLE PATUXENT
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SCALE AS SHOWN

SHEET 20 OF 27

UTILITY NOTES

1. CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

GRADING NOTE

1. NO ADJUSTMENT OR CHANGES IN GRADE WILL BE PERMITTED.
2. THE CONTRACTOR SHALL STABILIZE THE SITE AT THE END OF EACH DAY'S WORK.

SEDIMENT AND EROSION CONTROL GENERAL NOTES

1. THE CONTRACTOR SHALL STAKE THE LIMITS OF THE DISTURBED AREAS AND NOTIFY THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION (313-1855) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK.
2. REFER TO "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN.
3. 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.
4. AT THE END OF EACH WORKING DAY, ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT IN OPERATIONAL CONDITION.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING SOD, TEMPORARY SEEDING, AND MULCHING (SEC. G). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHED OF GRASSES.
6. DUST CONTROL WILL BE PROVIDED FOR ALL DISTURBED AREAS. REFER TO "1994 MARYLAND STANDARD SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", PG H-30-1, FOR ACCEPTABLE METHODS AND SPECIFICATIONS FOR DUST CONTROL.
7. 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.
8. SITE ANALYSIS:

AREA DISTURBED	10.90 ACRES
AREA TO BE VEGATATIVELY STABILIZED	10.90 ACRES
TOTAL CUT	15,000 CU. YARDS
TOTAL FILL	15,000 CU. YARDS

OFFSITE WASTE AREA LOCATIONS TO HAVE ACTIVE GRADING PERMIT.

9. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
10. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
11. SITE GRADING WILL BEGIN ONLY AFTER PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN FUNCTIONING CONDITION.
12. CUT AND FILL QUANTITIES PROVIDED UNDER SITE ANALYSIS DO NOT REPRESENT BID QUANTITIES. THESE QUANTITIES DO NOT DISTINGUISH BETWEEN TOPSOIL, STRUCTURAL FILL OT EMBANKMENT MATERIAL, NOR DO THEY REFLECT CONSIDERATION OF UNDERCUTTING OR REMOVAL OR UNSUITABLE MATERIAL. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITE CONDITIONS WHICH MAY AFFECT THE WORK.
13. EXISTING UTILITIES HAVE BEEN LOCATED FROM THE BEST INFORMATION AVAILABLE AND ARE APPROXIMATE ONLY.

SEQUENCE OF CONSTRUCTION

1)	NOTIFY HOWARD COUNTY BUREAU OF ENGINEERING, CONSTRUCTION INSPECTION DIVISION (410-313-1810) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ON-SITE AND OBTAIN GRADING PERMIT.	1 DAY
2)	CLEAR AND GRUB FOR SEDIMENT AND EROSION CONTROL MEASURES OR DEVICES ONLY.	20 DAYS
3)	INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES AND DEVICES INCLUDING STABILIZED CONSTRUCTION ENTRANCE.	25 DAYS
4)	NOTIFY HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS UPON COMPLETION OF SAID INSTALLATION.	1 DAY
5)	WITH THE APPROVAL OF THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION, CLEAR AND GRUB THE REMAINDER OF THE SITE.	25 DAYS
6)	COMMENCE EXCAVATION AND INSTALLATION OF SEWER INTERCEPTOR. OPEN TRENCH SHALL BE LIMITED TO THREE (3) PIPE LENGTHS OR THAT LENGTH OF TRENCH WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF THE WORKING DAY.	350 DAYS
7)	STABILIZE ALL DISTURBED AREAS.	21 DAYS
8)	WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE STABILIZED CONSTRUCTION ENTRANCE.	6 DAYS
9)	FOLLOWING APPROVAL FROM THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION, REMOVE ALL REMAINING SEDIMENT CONTROL MEASURES AND STABILIZE ANY REMAINING AREAS.	10 DAYS

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

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

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

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

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

CONSTRUCTION AND MATERIAL SPECIFICATIONS

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

II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
   i. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 11" IN DIAMETER.
   ii. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
   iii. WHERE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

III. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
   I. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

IV. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:
   i. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
      a. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.
      b. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
      c. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
      d. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

NOTE: TOPSOIL SUBSTITUTES TO AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY MAY BE USED IN LIEU OF NATURAL TOPSOIL.
   I. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

V. TOPSOIL APPLICATION
   I. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.
   II. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" - 8" HIGHER IN ELEVATION.
   III. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" - 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
   IV. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.
   V. ALTERNATIVE FOR PERMANENT SEEDING - INSTEAD OF APPLYING THE FULL AMOUNTS OF LIME AND COMMERCIAL FERTILIZER, COMPOSTED SLUDGE AND AMENDMENTS MAY BE APPLIED AS SPECIFIED BELOW:
      I. COMPOSTED SLUDGE MATERIAL FOR USE AS A SOIL CONDITIONER FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES SHALL BE TESTED TO PRESCRIBE AMENDMENTS AND FOR SITE HAVING DISTURBED AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
         a. COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS THAT ARE PERMITTED (AT THE TIME OF ACQUISITION OF THE COMPOST) BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UNDER COMAR 26.04.06.
         b. COMPOSTED SLUDGE SHALL CONTAIN AT LEAST 1 PERCENT NITROGEN, 1.5 PERCENT PHOSPHORUS, AND 0.2 PERCENT POTASSIUM AND HAVE A PH OF 7.0 TO 8.0. IF COMPOST DOES NOT MEET THESE REQUIREMENTS, THE APPROPRIATE CONSTITUENTS MUST BE ADDED TO MEET THE REQUIREMENTS PRIOR TO USE.
         c. COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON/1,000 SQUARE FEET.
         d. COMPOSTED SLUDGE SHALL BE AMENDED WITH A POTASSIUM FERTILIZER APPLIED AT THE RATE OF 4 LB/1,000 SQUARE FEET, AND 1/3 THE NORMAL LIME APPLICATION RATE.

REFERENCES: GUIDELINE SPECIFICATIONS, SOIL PREPARATION AND SODDING. MD-VA, PUB. #1, COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF MARYLAND AND VIRGINIA POLYTECHNIC INSTITUTES. REVISED 1973.

20.0 VEGETATIVE STABILIZATION

SECTION I VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. SITE PREPARATION

i. INSTALL SEDIMENT AND EROSION 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 ANALYSIS.
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 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 MATERIAL SHALL BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED) WHICH CONTAINS AT LEAST 50 % TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE SHALL BE GROUND TO SUCH FINENESS THAT AT LEAST 50 % WILL PASS THROUGH A #100 MESH SIEVE AND 98-100 % WILL PASS THROUGH A #20 MESH SIEVE.
iv. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3-5" OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

C. SEEDBED PREPARATION:

i. TEMPORARY SEEDING
   a. SEEDBED PREPARATION SHALL CONSIST OF LOOSENING SOIL, AT A DEPTH OF 3-6" 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 ROUGHEST CONDITION. SLOPED AREA (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 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 SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION 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
      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 STANDARDS AND SPECIFICATIONS FOR TOPSOIL.
   b. AREAS PREVIOUSLY GRADED IN CONFORMANCE WITH THE DRAWINGS SHALL BE MAINTAINED IN A TRUE AND EVEN GRADE, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3-5" TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREA AND TO CREATE HORIZONTAL EROSION CHECK SLOTS TO PREVENT TOPSOIL FROM SLIDING DOWN A SLOPE.
   c. APPLY SOIL AMENDMENTS AS PER SOIL TEST OR AS INCLUDED ON THE PLANS.
   d. MIX SOIL AMENDMENTS INTO THE TOP 3-5" OF TOPSOIL BY DISKING OR OTHER SUITABLE MEANS. LAWN AREAS SHOULD BE RAKED TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS SUCH AS 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 (GREATER 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 INOCULATION FOR TREATING LEGUME SEEDS IN THE MIXTURE SHALL BE A PURE CULTURE OF NITROGEN-FIXING BACTERIA PREPARED ESPECIALLY 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 75-80F 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 AMOUNTS WILL NOT EXCEED THE FOLLOWING: NITROGEN, MAXIMUM OF 100 LB 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. DRYSEEDING: THIS INCLUDES USE OF CONVENTIONAL, DROP OR BROADCAST SPREADERS.
   a. SEED SPREAD DRY SHALL BE INCORPORATED INTO THE SUBSOIL. AT THE RATES PRESCRIBED FOR TEMPORARY OR PERMANENT SEEDING. 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 A 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 WHAT WILL BE PHYTO-TOXIC.
   f. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH TO APPROXIMATELY 10 MM. DIAMETER APPROXIMATELY 1MM, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6% MAXIMUM AND WATER HOLDING CAPACITY OF 90% MINIMUM.
   NOTE: ONLY STERILE STRAW MULCH SHOULD BE USED IN AREA 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 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 25 TONS/ACRE.
iii. WOOD CELLULOSE FIBER USED A S A MULCH SHALL BE APPLIED AT A NET DRY WEIGHT OF 1,500 LBS/ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LBS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

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 THE SOIL SURFACE. A MINIMUM OF TWO (2) INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD BE USED ON THE CONTOUR IF POSSIBLE.
ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. THE FIBER BINDER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750 LBS/ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LBS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
iii. APPLICATION OF LIQUID BINDERS SHOULD BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. THE REMAINDER OF AREA SHOULD APPEAR UNIFORM AFTER BINDER APPLICATION. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL BE USED AT RATES RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH.
iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4-15 FEET WIDE AND 300-3,000 FEET LONG.

SECTION II TEMPORARY SEEDING

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

i. SEEDBED PREPARATION : LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
ii. SOIL AMENDMENTS : APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS. PER 1000 SQ.FT.).
iii. SEEDING : FOR PERIODS MARCH 1 THRU APRIL 30 AND FROM AUGUST 15 THRU NOVEMBER 15, SEED WITH 2-1/2 BUSHELS PER ACRE OF ANNUAL RYE (3.2 LBS. PER 1000 SQ.FT.). FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS (0.07 LBS. PER 1000 SQ.FT.). FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.
iv. MULCHING : APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS. PER 1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GAL. PER ACRE (5 GAL. PER 1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT. OR HIGHER, USE 347 GAL. PER ACRE (8 GAL. PER 1000 SQ.FT.) FOR ANCHORING.

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

SECTION III PERMANENT SEEDING

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

i. SEEDBED PREPARATION : LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
ii. SOIL AMENDMENTS : IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES :
   a. PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS. PER 1000 SQ.FT.) AND 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS. PER 1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS. PER 1000 SQ.FT.).
   b. ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS. PER 1000 SQ.FT.) AND 1000 LBS. PER ACRE 10-10-10 FERTILIZER (23 LBS. PER 1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.
iii. SEEDING : FOR THE PERIOD MARCH 1 THRU APRIL 30 AND FROM AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1000 SQ.FT.) KENTUCKY 31 TALL FESCUE AND 2 LBS. PER ACRE(0.05 LBS. PER 1000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OCTOBER 16 THRU FEBRUARY 28, PROTECT SITE BY ONE OF THE FOLLOWING OPTIONS :
   a. 2 TONS PER ACRE OF WELL ANCHORED MULCH STRAW AND SEED AS SOON AS POSSIBLE IN THE SPRING.
   b. USE SOD.
   c. SEED WITH 60 LBS. PER ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE WELL ANCHORED STRAW.
iv. MULCHING : APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS. PER 1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE(5 GALLONS PER 1000 SQUARE FEET) OF EMULSIFIED ASPHALT ON FLAT AREAS; ON SLOPES 8 FEET OR HIGHER, USE 347 GALLONS PER ARCE(8 GALLONS PER 1000 SQUARE FEET) FOR ANCHORING.
v. MAINTENANCE : INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

SECTION IV SOD

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 SHALL BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND TIGHTLY WEDGED AGAINST EACH OTHER. LATERAL JOINTS SHALL BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
iii. WHEREVER POSSIBLE, SOD SHALL BE LAID WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. SOD SHALL BE ROLLED AND TAMPED, PEGGED OR OTHERWISE SECURED TO PREVENT SLIPPAGE ON SLOPES AND TO ENSURE SOLID CONTACT BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
iv. SOD SHALL BE WATERED IMMEDIATELY FOLLOWING ROLLING OR TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD SHALL BE COMPLETED WITHIN EIGHT HOURS.

C. SOD MAINTENANCE

i. IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHALL BE PERFORMED DAILY OR AS OFTEN AS NECESSARY DURING THE FIRST WEEK AND IN SUFFICIENT QUANTITIES TO MAINTAIN MOIST SOIL TO A DEPTH OF 4". WATERING SHOULD BE DONE DURING THE HEAT OF THE DAY TO PREVENT WILTING.
ii. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN 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.

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.

Temporary Seeding Summary

Seed Mixture (Hardines Zone 7a) From Table 26					Fertilizer Rate (10-10-10)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
	BARLEY	122	2/1 - 4/30 8/15 - 10/15	1" - 2"	600 lb/ac (15 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)
	RYE	140	2/1 - 4/30 8/15 - 11/30	1" - 2"		
	BARLEY AND FOXTAIL MILLET	150	2/1 - 10/15	1"		

Permanent Seeding

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

Permanent Seeding Summary

Seed Mixture (Hardines Zone 7a) From Table 25					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	*Seeding Dates	Seeding Depths	N	P205	K20	
1	TALL FESCUE (75%) CANADA BLUEGRASS (10%) KENTUCKY BLUEGRASS (10%) REDTOP (5%)	150	3/1 - 5/15 8/15 - 11/15	1/4"-1/2"	90 lb/ac (2.0 lb/ 1000 sf)	175 lb/ac (4 lb/ 1000 sf)	175 lb/ac (4 lb/ 1000 sf)	2 tons/ac (100 lb/ 1000 sf)
3	TALL FESCUE (85%) PRENNIAL RYEGRASS (10%) KENTUCKY BLUEGRASS (5%)	125 15 10	3/1 - 5/15 8/15 - 11/15	1/4"-1/2"				

*BETWEEN THE DATES OF 5/16 - 8/14, ADD 2 LBS. PER ACRE OF WEEPING LOVEGRASS OR 10 LBS. PER ACRE OF MILLET TO SEED MIXTURES 1 OR 3.

AS-BUILT

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. 8146 EXPIRATION DATE: 10/8/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

12/16/08 12/12/08
DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE

12/12/08 12/11/08
CHIEF, BUREAU OF UTILITIES DATE CHIEF, UTILITY DESIGN DIVISION DATE

Patton Harris Rust & Associates, Inc.
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STATE OF MARYLAND
PROFESSIONAL ENGINEER

DES: C.H.
DRN: K.L.B.
CHK: G.C.L.
DECEMBER, 2008

BY	NO.	REVISION	DATE
			12/10

SEDIMENT & EROSION CONTROL NOTES

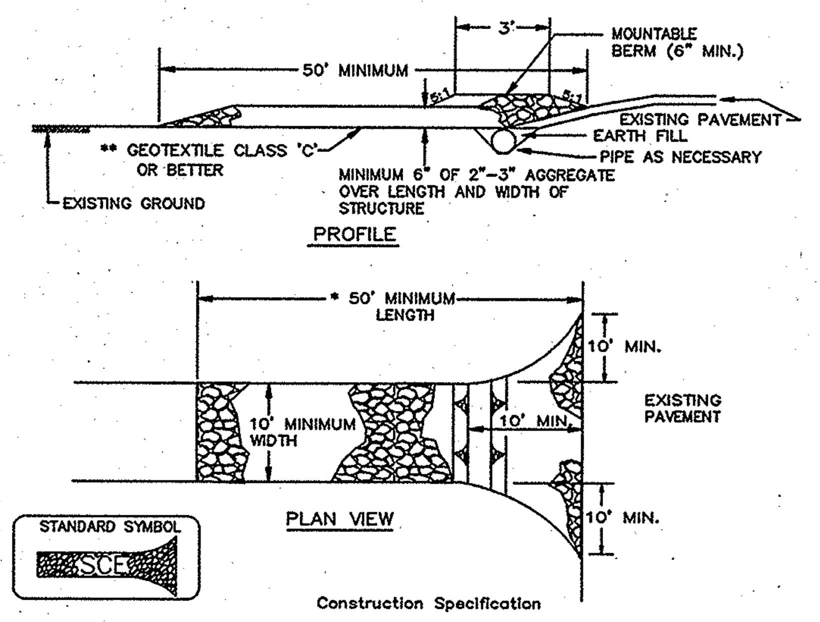
600' SCALE MAP 47 | BLOCK 10, 16, 17, & 18

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 21 OF 27

DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE



Construction Specification

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 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.

6. 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.

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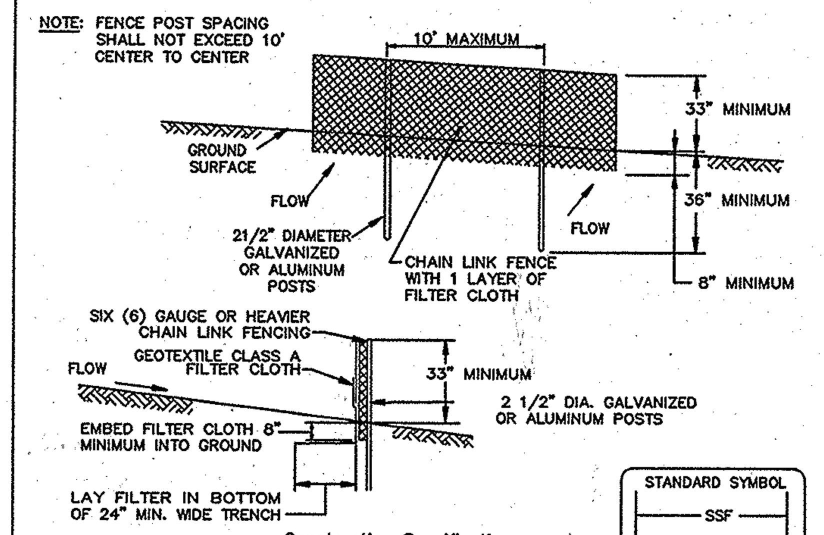
DETAIL 33 – SUPER SILT FENCE



Construction Specifications

1. 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.

2. The posts do not need to be set in concrete.

3. 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.

4. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

5. Filter cloth shall be embedded a minimum of 8" into the ground.

6. When two sections of geotextile fabric adjoin each other, they shall be overlapped by 6" and folded.

7. 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 .

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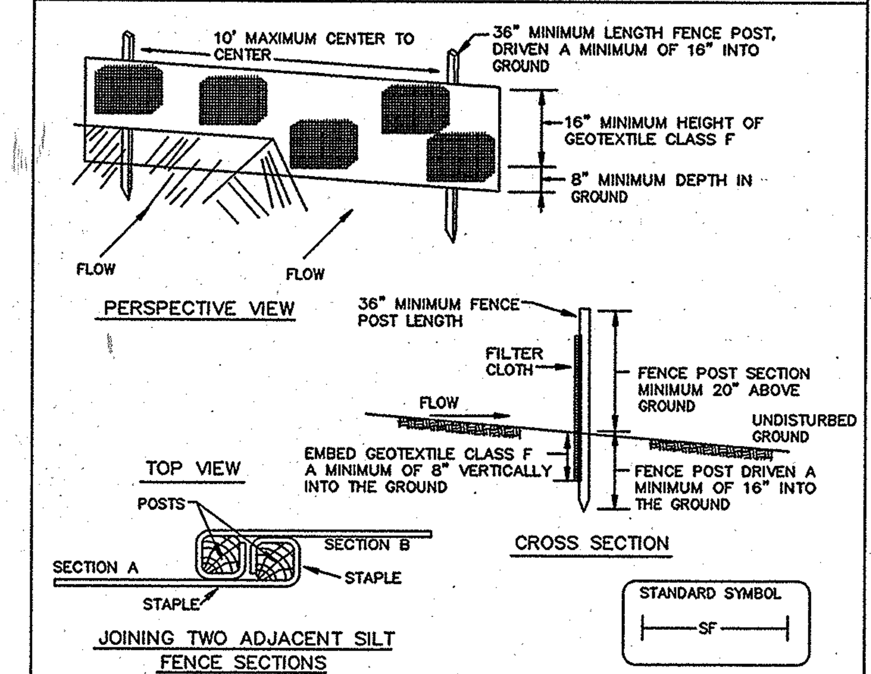
DETAIL 22 – SILT FENCE



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 weighting 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 ft ²/ 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.

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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.

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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

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GEOTEXTILE FABRICS

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH PSI. MIN.
A	0.30**	250	500
B	0.60	200	320
C	0.30	200	320
D	0.60	90	145
E	0.30	90	145
F(SILT FENCE)	0.40 – 0.80#	90	190

*US STD SIEVE CW–02215 **0.50 mm MAX. FOR SUPER SILT FENCE

The properties shall be determined in accordance with the following procedures:

– Apparent opening size MSMT 323

– Grab tensile strength ASTM D 1682: 4x8" specimen, 1x2" clamps,
12"/min stain rate in both principal directions of geotextile fabric.

– Burst strength ASTM D 3786

The fabric shall be inert to commonly encountered chemicals and hydrocarbons, and will be rot and mildew resistant. It shall be manufactured from fibers consisting of long chin synthetic polymers, and composed of a minimum of 85% by weight of polyolephins, polyesters, or polyamides. The geotextile fabric shall resist deterioration from ultraviolet exposure.

In addition, Classes A through E shall have a 0.01 cm./sec. minimum permeability when tested in accordance with MSMT 507, and an apparent minimum elongation of 20 percent (20%) when tested in accordance with the grab strength requirements listed above.

Silt Fence
Class F geotextile fabrics for silt fence shall have a 50 lb./in. minimum tensile strength and a 20 lb./in. minimum tensile modulus when tested in accordance with MSMT 509. The material shall also have a 0.3 gal./ft.2/min. flow rate and seventy–five percent (75%) minimum filtering efficiency when tested in accordance with MSMT 322.

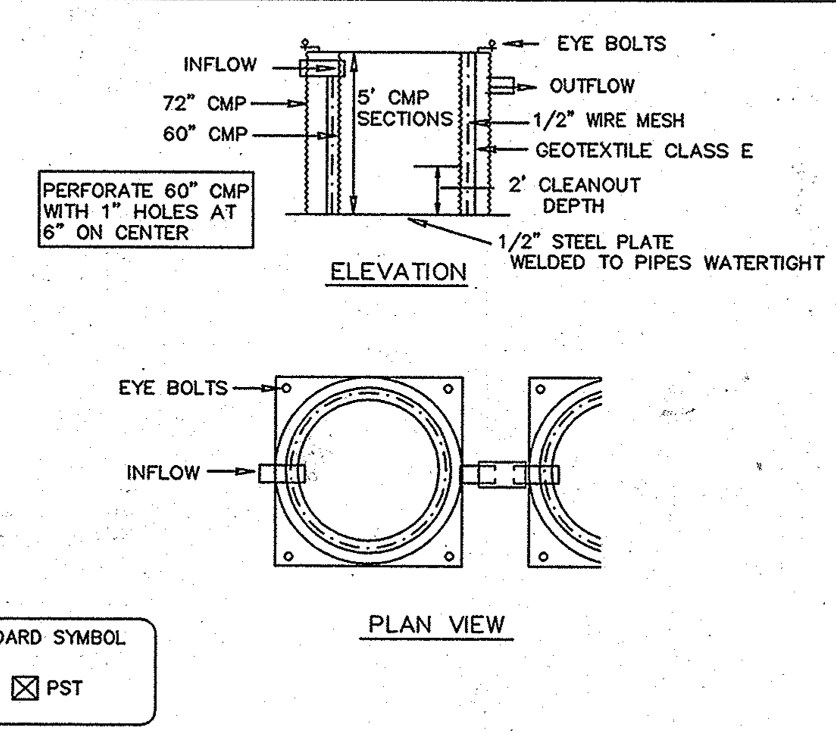
Geotextile fabrics used in the construction of silt fence shall resist deterioration from ultraviolet exposure. The fabrics shall contain sufficient amounts of ultraviolet ray inhibitors and stabilizers to provide a minimum of 12 months of expected usable construction life at a temperature range of 0 to 120 degrees F.

Maryland Department of the Environment
Best Management Practices for Working in Nontidal Wetlands, the Nontidal Wetland Buffer, Waters of the State and the 100-Year Floodplain

1. No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100–year floodplain.
2. Place materials in a location and manner that does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100–year floodplain.
3. Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
4. Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100–year floodplain.
5. Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100–year floodplain in excess of that lost under the originally authorized structure or fill.
6. Rectify any nontidal wetlands, wetland buffers, waterways, or 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 multiflorum*), Millet (*Setaria italica*), Barley (*Hordeum sp.*), Oats (*Uniola sp.*), and/or Rye (*Secale cereale*). These species will allow for the 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 the classification of the stream:

   Use I waters: In-stream work shall not be conducted during the period March 1 through June 15, inclusive, during any year.
10. Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
11. Culverts shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.

DETAIL 21 – PORTABLE SEDIMENT TANK



STANDARD SYMBOL

PST

Construction Specifications

1. The following formula should be used in determining the storage volume of the sediment tank: 1 cubic foot of storage for each gallon per minute of pump discharge capacity.

2. An example of a typical sediment tank is shown above. Other container designs can be used if the storage volume is adequate and approval is obtained from the local approving agency.

3. Tanks may be connected in series.

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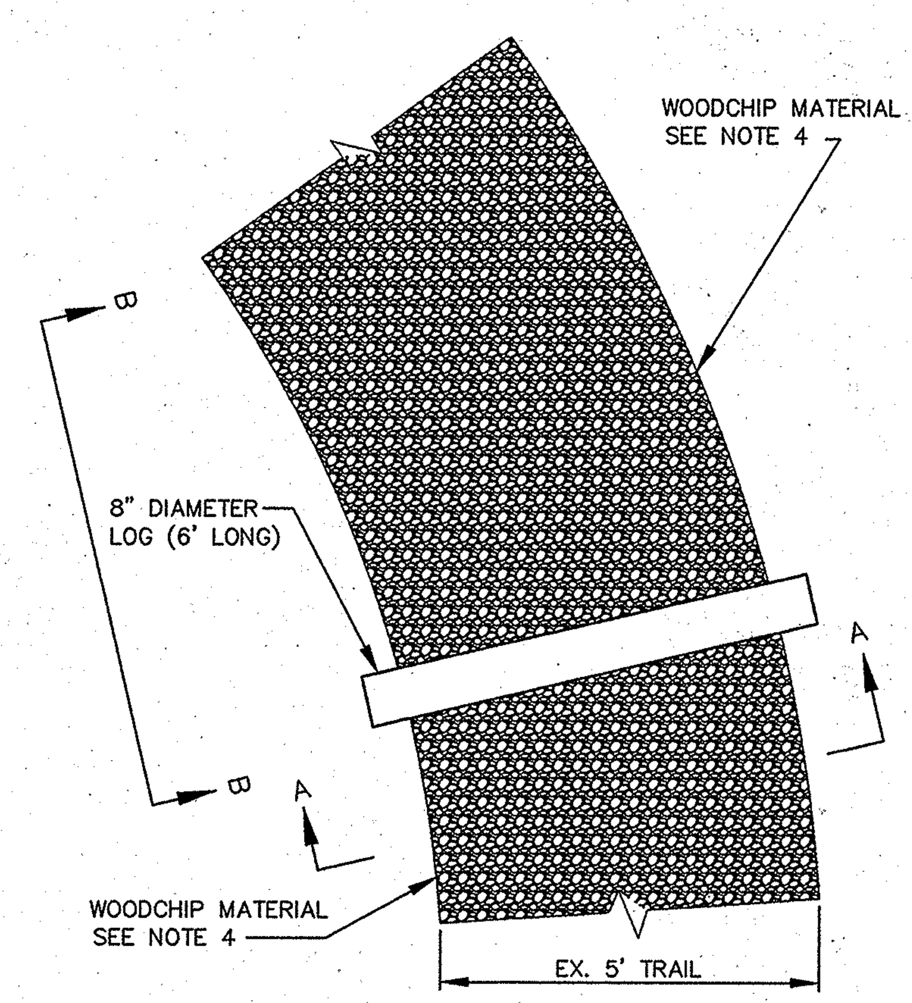
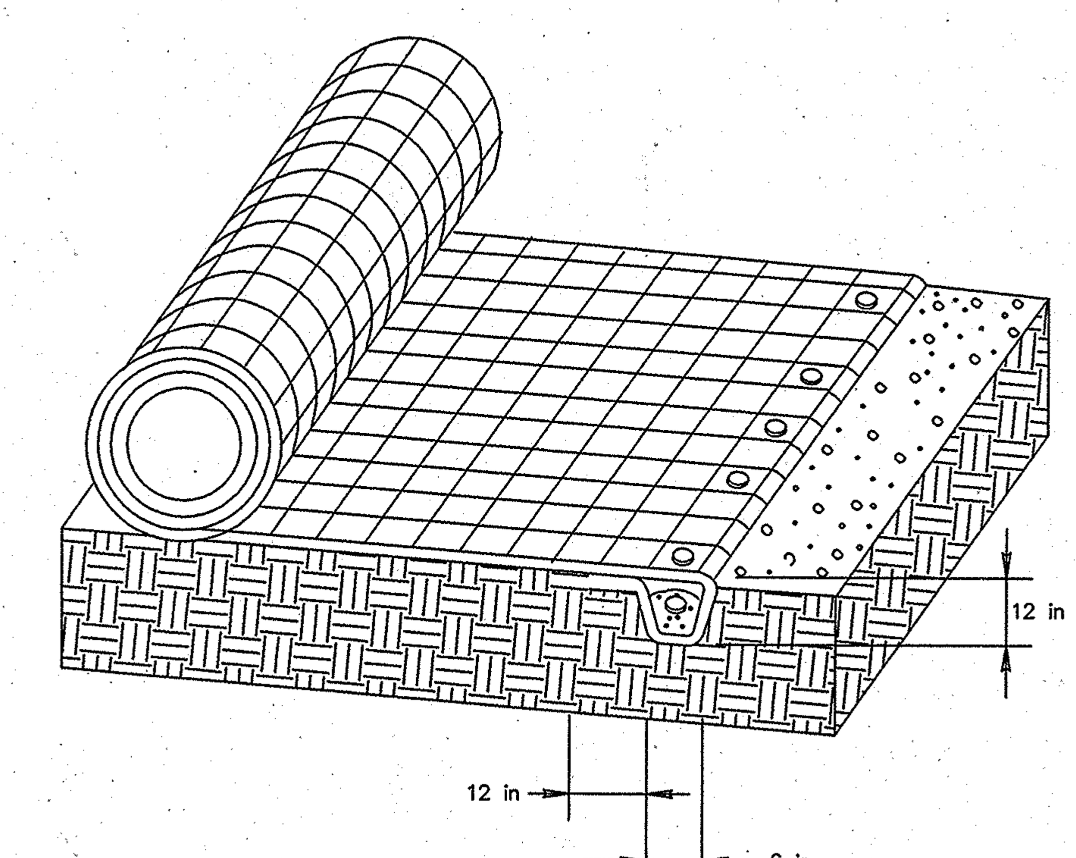


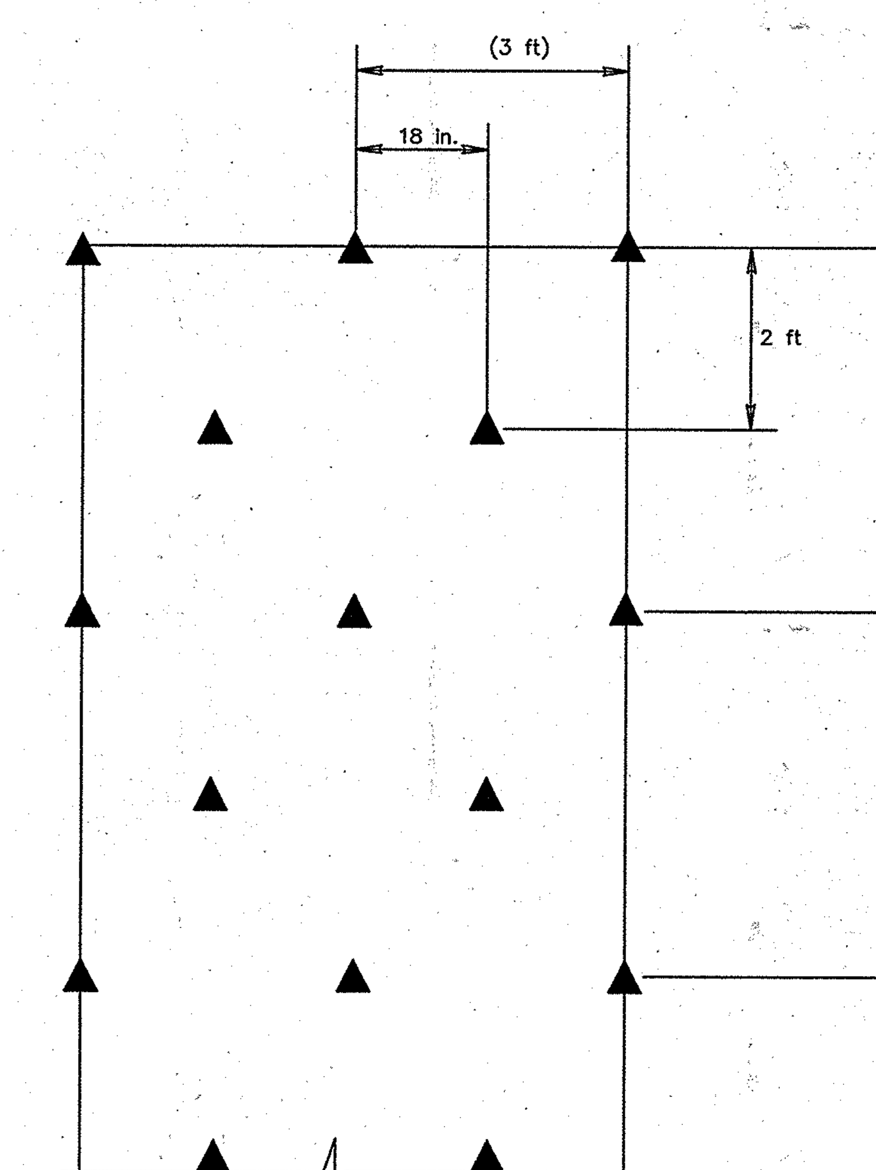
PLAN

NOT TO SCALE



EROSION CONTROL MATTING ANCHOR TRENCH

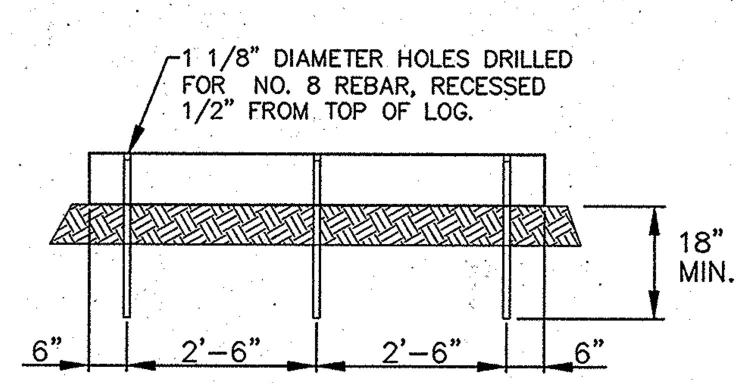
NOT TO SCALE



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

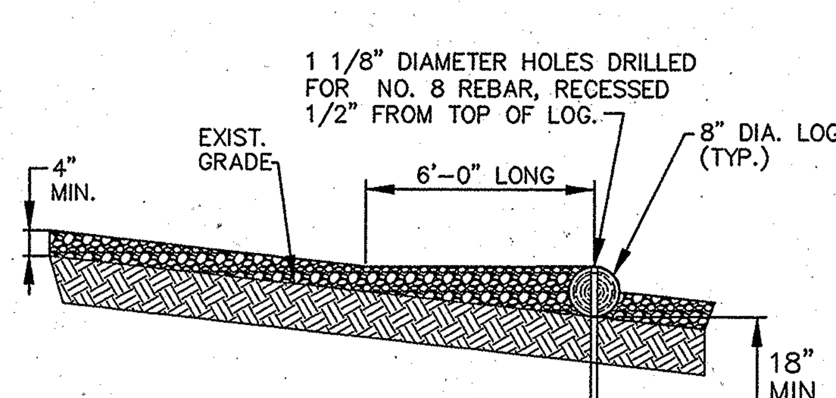
EROSION CONTROL MATTING ANCHOR PATTERN

NOT TO SCALE



SECTION A–A

NOT TO SCALE



SECTION B–B

NOT TO SCALE

NOTES:
1. LOGS TO BE PERPENDICULAR TO TRAIL.
2. BARK TO BE REMOVED FROM LOGS PRIOR TO INSTALLATION
3. LOG BARRIERS SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER.
4. DEPTH OF WOODCHIPS SHALL VARY FROM 4" MIN. TO 8" MAX.

WOODCHIP TRAIL WITH LOG BARRIER

NOT TO SCALE

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. 8146 EXPIRATION DATE: 10/8/11

AS–BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/16/08	CHIEF, BUREAU OF ENGINEERING	DATE 12/12/08
CHIEF, BUREAU OF UTILITIES	DATE 12/12/08	CHIEF, UTILITY DESIGN DIVISION	DATE 12/11/08

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
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STATE OF MARYLAND · REGISTERED PROFESSIONAL ENGINEER · NO. 8146 · 8/8/11

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.				
DECEMBER, 2008	BY	NO.	REVISION	DATE 12/10

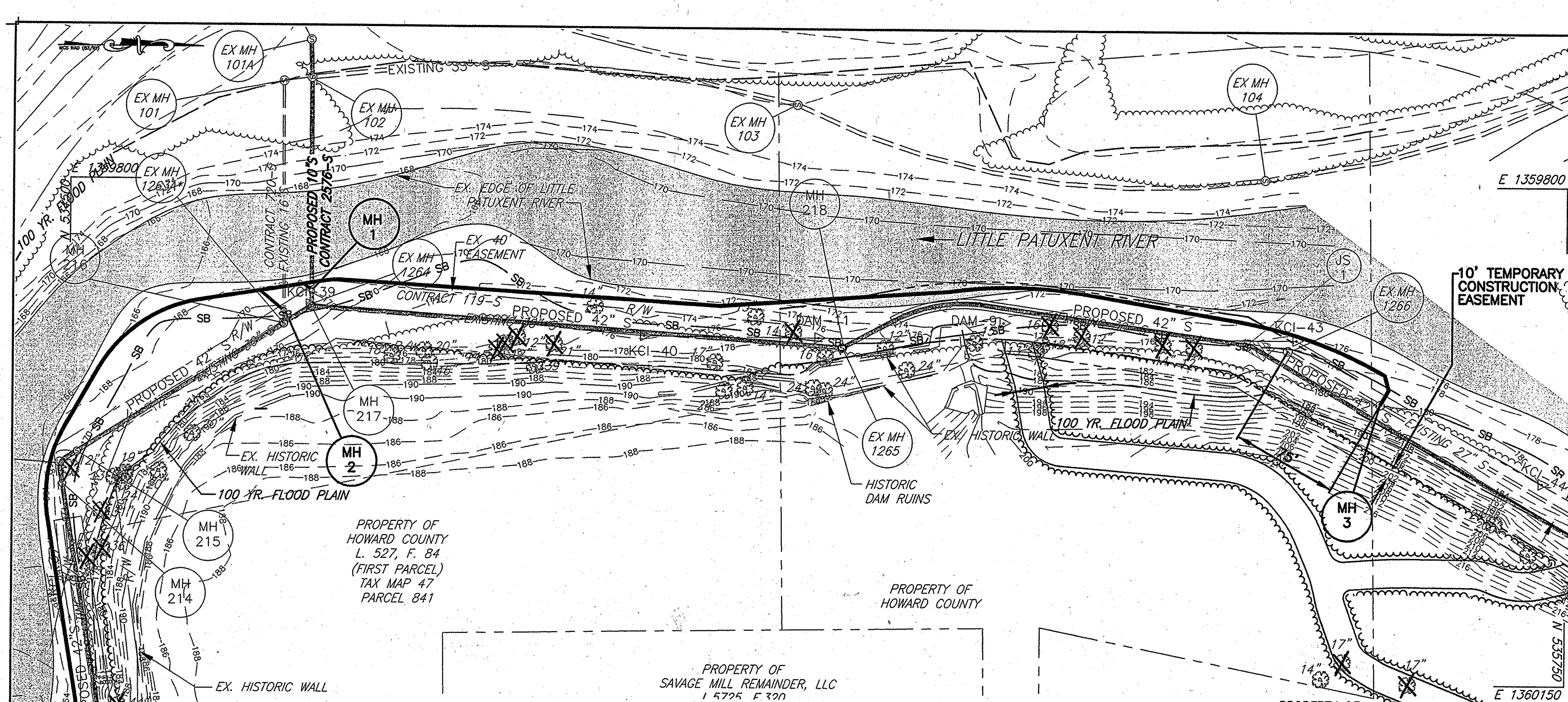
SEDIMENT & EROSION CONTROL DETAILS

600' SCALE MAP 47 | BLOCK 10, 16, 17, & 18

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S–6175
CONTRACT NO. 20–4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 22 OF 27



GRAVITY SEWER BYPASS PLAN

1"=50'

NOTES:

1.) PROPOSED DOGHOUSE MANHOLES (MH-1, MH-2 & MH-3) SHALL BE LOCATED PER THE CHART SHOWN BELOW. SEE SHEET 24 FOR DETAILS.

MANHOLE	EX. PIPE SIZE	NORTHING	EASTING	MANHOLE SIZE
MH-1	8"	534869.84	1359878.39	48" PRECAST
MH-2	16"	534850.39	1359892.01	48" PRECAST
MH-3	27"	535619.68	1359952.86	60" PRECAST

2.) EXISTING MANHOLES 101, 101A, 102, 103 AND 104 SHALL BE RAISED 5 FEET DURING BYPASS OPERATIONS TO PREVENT SURCHARGE OF THE EXISTING SEWER. THE CONTRACTOR SHALL BE RESPONSIBLE, INCLUDING PAYMENTS OF PENALTIES FOR ANY VIOLATIONS AND SPILLAGE OF SEWER.

3.) METHODS OF RAISING MANHOLES SHALL BE APPROVED BY ENGINEER PRIOR TO CONSTRUCTION.

4.) THE CONTRACTOR SHALL SUPPORT AND ANCHOR THE TEMPORARY PIPE TO PREVENT FLOTATION AND MOVEMENT. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

GRAVITY BYPASS PROFILE

HORIZONTAL: 1"=50'
VERTICAL: 1"=5'

PROFESSIONAL CERTIFICATION

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LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/16/08 DATE	CHIEF, BUREAU OF ENGINEERING	12/12/08 DATE
CHIEF, BUREAU OF UTILITIES	12/12/08 DATE	CHIEF, UTILITY DESIGN DIVISION	12/11/08 DATE

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STATE OF MARYLAND — No. 8146 — REGISTERED PROFESSIONAL ENGINEER

DES: C.H.			
DRN: K.L.B.			
CHK: G.C.L.	R.J.C.	AS-BUILT	12/10
DECEMBER, 2008	BY NO.	REVISION	DATE

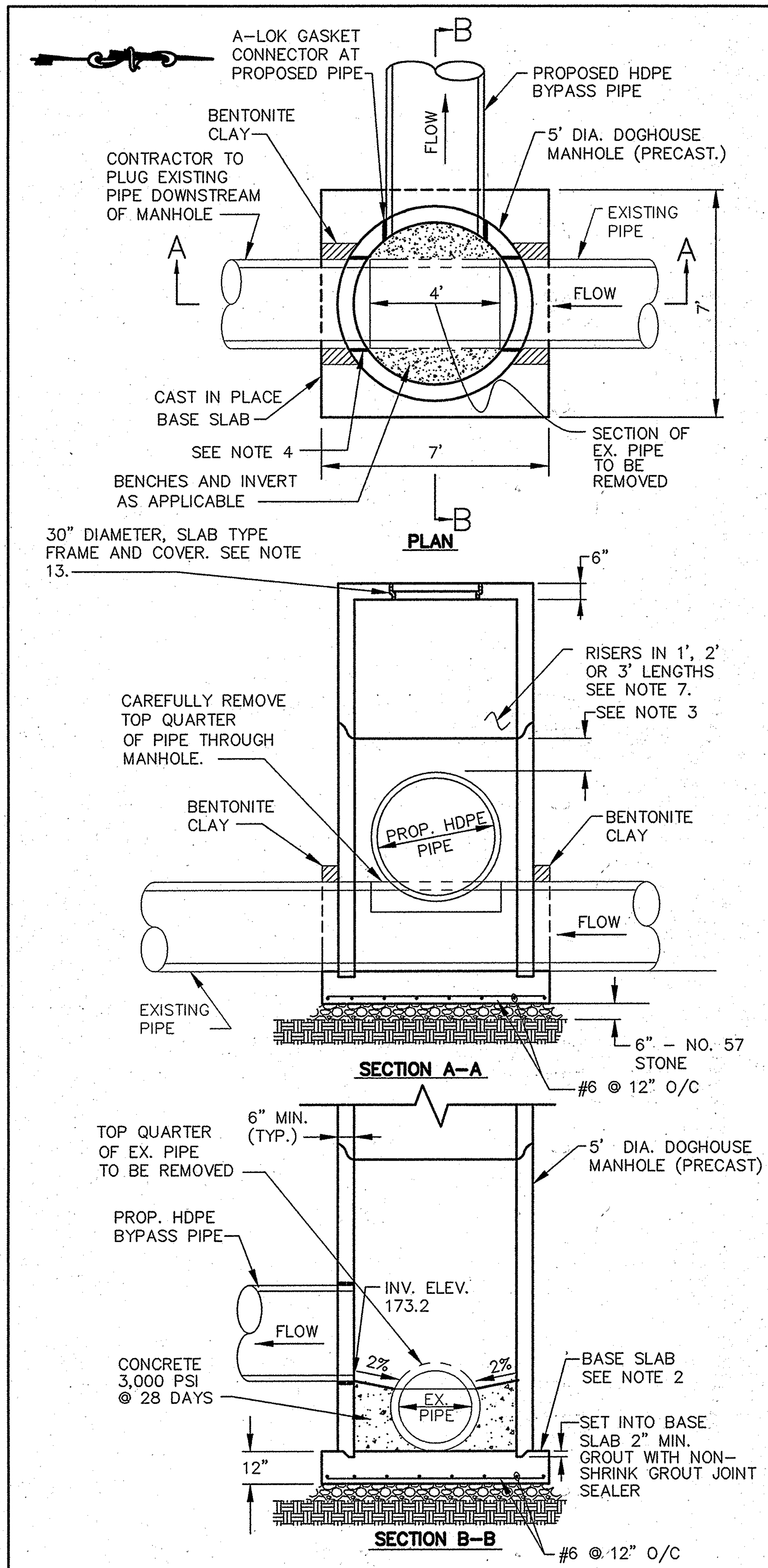
GRAVITY BYPASS PLAN AND PROFILE

600' SCALE MAP 47 | BLOCK 10, 16, 17 & 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

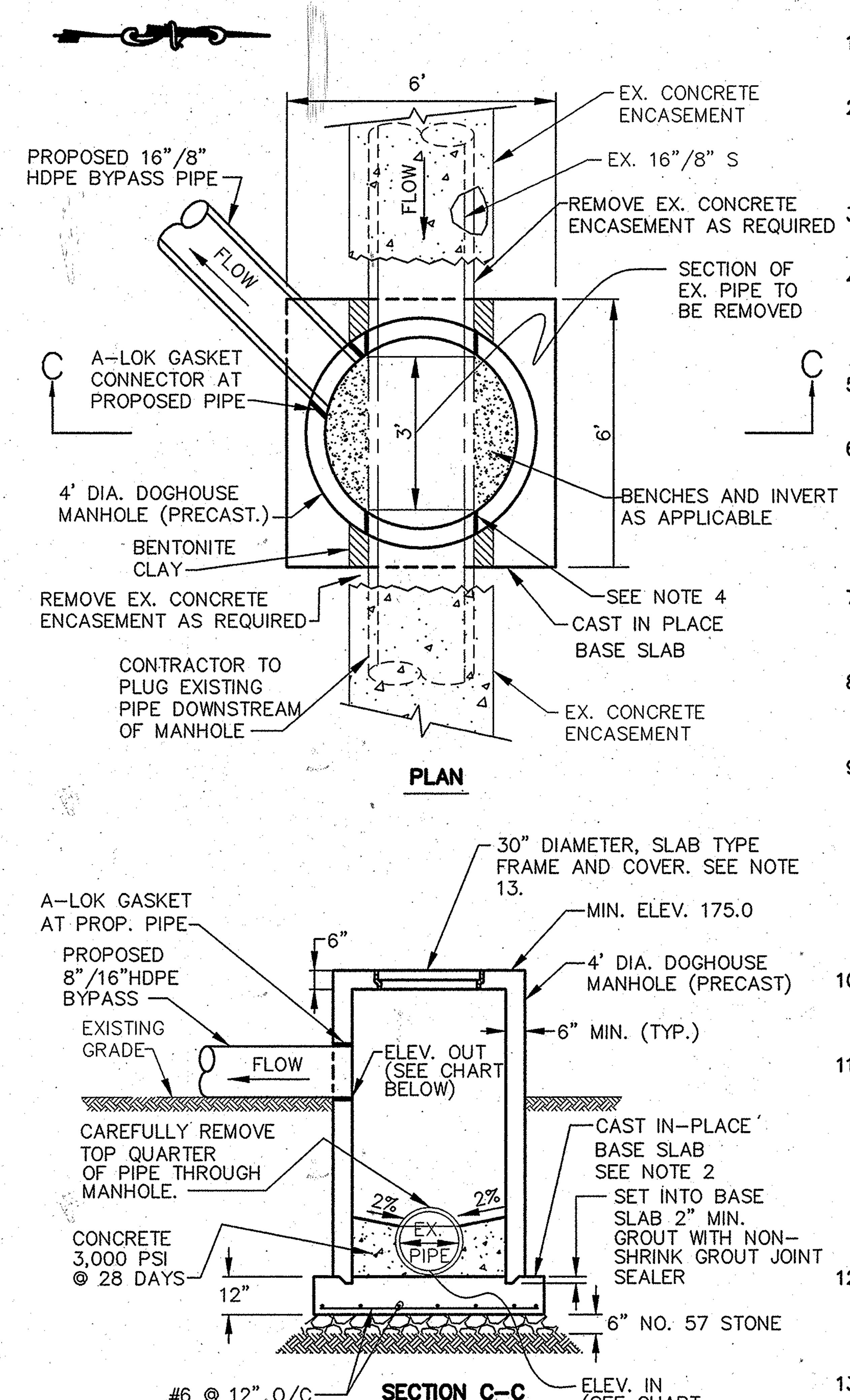
SCALE AS SHOWN

SHEET 23 OF 27



TEMPORARY DOGHOUSE MANHOLE, MH-3 ON EXISTING 27"S

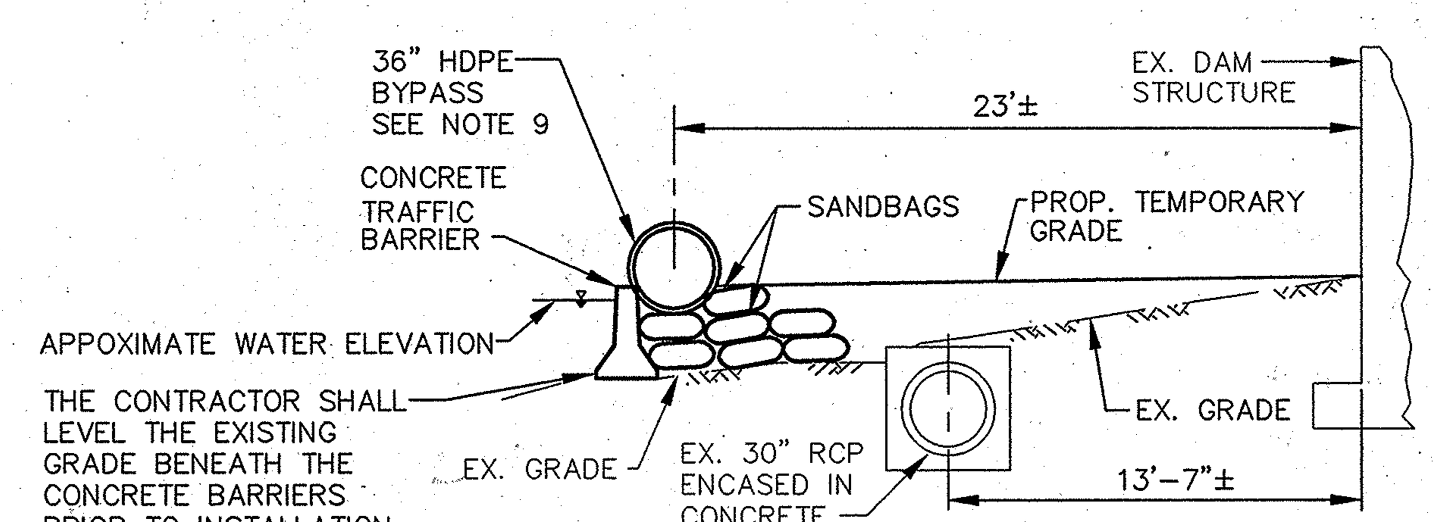
NOT TO SCALE



TEMPORARY DOGHOUSE MANHOLES (MH-1 & MH-2)

NOT TO SCALE

MH	ELEV. (OUT)	ELEV. (IN)
MH-1	170.0	165.3
MH-2	170.0	164.6



SECTION AT TEMPORARY SANDBAG/CONCRETE BARRIER

SCALE: 1" = 5'

GENERAL NOTES:

1.) PRECAST MANHOLE RISERS SHALL BE FURNISHED AS PER HOWARD COUNTY DETAIL G-5.13.

2.) CONCRETE: BASE SLAB - COMPRESSIVE STRENGTH OF 3,000 PSI @ 28 DAYS (POURED-IN PLACE.) DOGHOUSE RISER - COMPRESSIVE STRENGTH OF 4,000 PSI @ 28 DAYS (PRECAST.)

3.) PROVIDE 12" MINIMUM CLEARANCE FROM PROPOSED PIPE AND FROM DOGHOUSE OPENING TOP(S) TO RISER JOINT.

4.) MINIMUM 1" CLEARANCE SHALL BE MAINTAINED BETWEEN PIPES AND PRECAST DOGHOUSE PIPE OPENINGS. OPENINGS SHALL BE GROUTED WITH NON-SHRINK GROUT JOINT FILLER.

5.) ALL REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60.

6.) PRECAST MANHOLE RISER JOINTS: THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR WON DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER TIGHT USING THE MANUFACTURERS RECOMMENDED ASTM OR ASSHTO APPROVED SEALANT.

7.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING, FURNISHING, INSTALLING, OPERATING AND MAINTAINING THE BYPASS SYSTEM, AS PER THE SPECIFICATIONS.

8.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR INCLUDING PAYMENT OF PENALTIES, FOR ANY VIOLATIONS AND SPILLAGE OF SEWAGE.

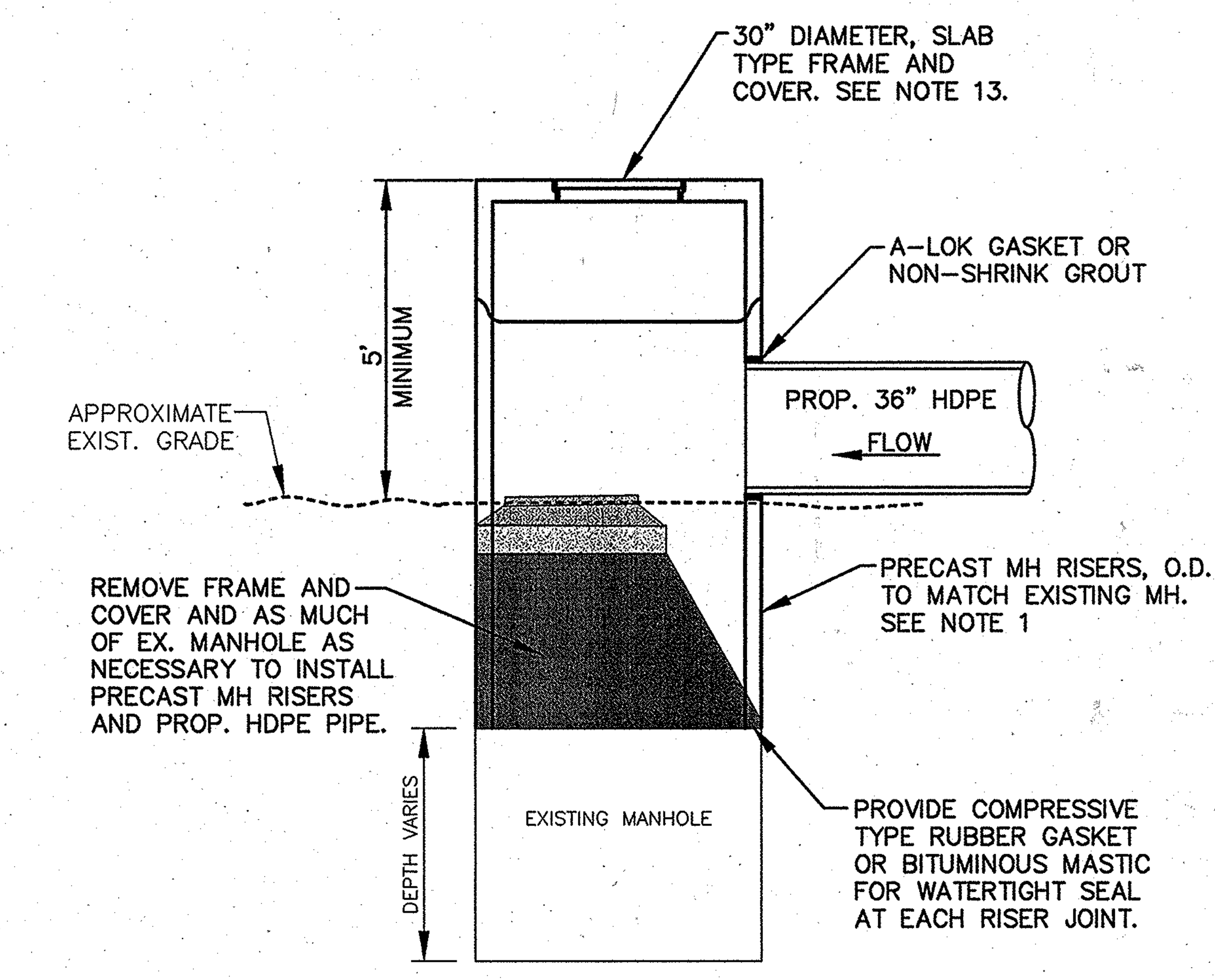
9.) THE CONTRACTOR SHALL SUPPORT AND ANCHOR THE PIPE TO PREVENT FLOTATION AND MOVEMENT DURING BYPASS OPERATIONS. CONTRACTOR SHALL ALSO ENSURE THAT PIPE MOVEMENT WILL NOT OCCUR AT THE MANHOLE CONNECTION. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN TO HOWARD COUNTY FOR APPROVAL PRIOR TO CONSTRUCTION. PRIOR TO ACCEPTING FLOWS, THE BYPASS SYSTEM SHALL BE INSPECTED & APPROVED BY THE COUNTY.

10.) CONTRACTOR SHALL VERIFY OUTSIDE DIAMETER AND MATERIAL OF THE EXISTING 16" AND 8" LATERALS PRIOR TO ORDERING MATERIAL.

11.) AFTER THE PROP. SEWER IS COMPLETED, AND THE BYPASS SYSTEM IS REMOVED, THE CONTRACTOR SHALL REPLACE THE TOP QUARTER OF THE EXISTING PIPE. DOGHOUSE MANHOLES SHALL BE REMOVED TO WITHIN 1 FOOT OF THE CROWN OF THE EXISTING PIPE. THE I.D. OF THE REMAINING DOGHOUSE MH SHALL BE FILLED WITH CONCRETE. ONCE CURED, THE REMAINDER OF THE DOGHOUSE MANHOLES SHALL BE BURIED AND BACKFILLED TO EXISTING GRADE.

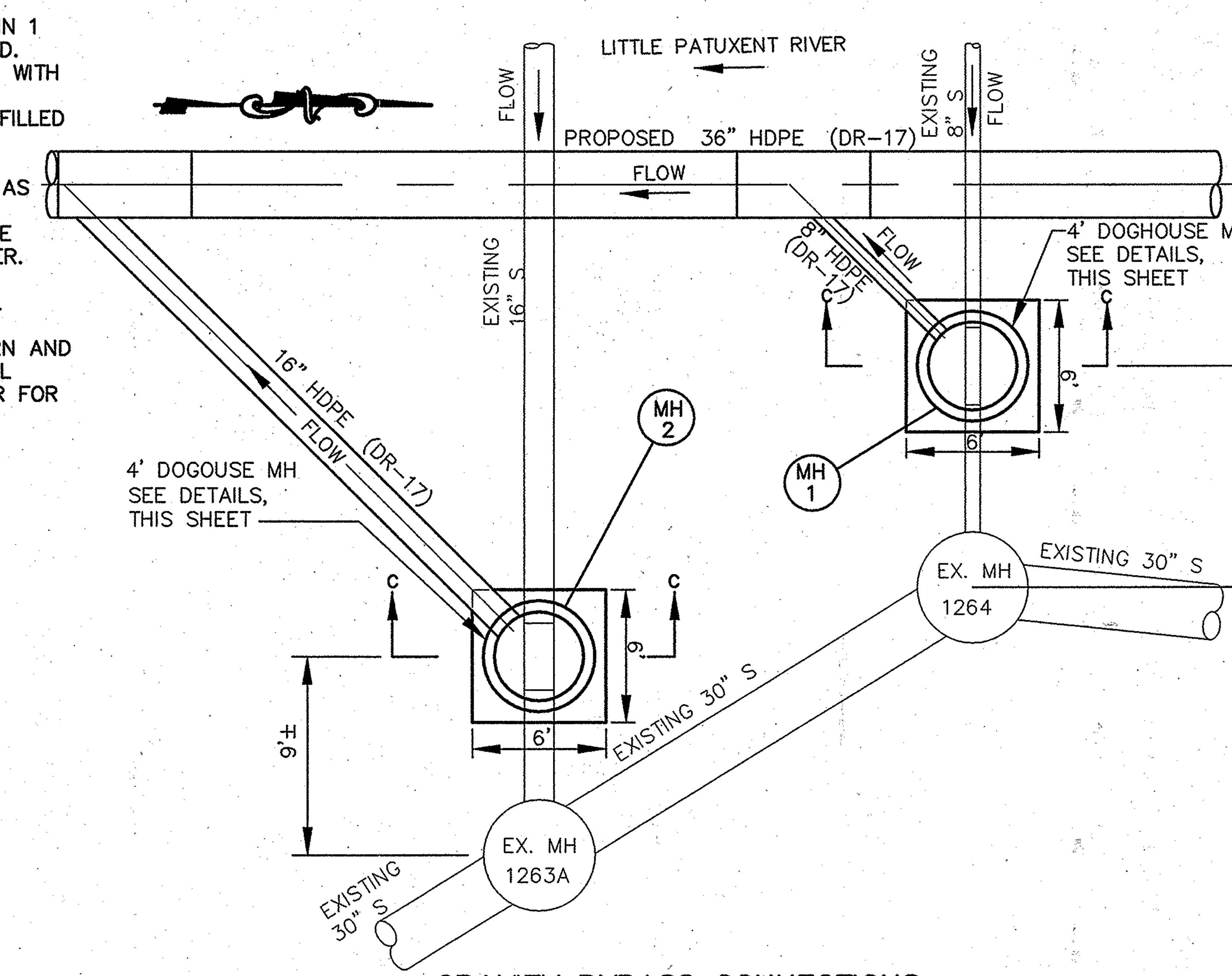
12.) PRECAST CONCRETE TRAFFIC BARRIERS SHALL BE AS PER MARYLAND STATE HIGHWAY STD. DETAIL MD 104.01-53. CONCRETE BARRIERS SHALL BE CAPABLE OF BEING INTERLOCKED WITH THE ADJACENT BARRIER.

13.) MANHOLE FRAME AND COVER SHALL BE PER MODEL B-6077 SOLID LID, FURNISHED BOLTED DOWN AND WATERTIGHT, AS MANUFACTURED BY BARRY PATTERN AND FOUNDRY OR APPROVED EQUAL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE FRAME AND COVER FOR APPROVAL.



MODIFICATIONS TO EXISTING MANHOLE - 1261

NOT TO SCALE



GRAVITY BYPASS CONNECTIONS FOR 8" AND 16" LATERAL SIPHON LINES

SCALE: 1" = 5'

AS-BUILT

PROFESSIONAL CERTIFICATION

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LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/16/08	CHIEF, BUREAU OF ENGINEERING	DATE 12/12/08
CHIEF, BUREAU OF UTILITIES	DATE 12/12/08	CHIEF, UTILITY DESIGN DIVISION	DATE 12/11/08

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PROFESSIONAL ENGINEER — STATE OF MARYLAND — NO. 8146

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.				
DECEMBER, 2008	BY	NO.	REVISION	DATE

12/10

GRAVITY BYPASS DETAILS

600' SCALE MAP 47 — BLOCK 10, 16, 17, & 18

LITTLE PATUXENT PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 24 OF 27

PLAN
1"=100'

NOTES:

1.) ALL SIGNS SHALL COMPLY WITH MUTCD STANDARDS.

2.) ALL WORK SHALL COMPLY WITH THE PERMIT REQUIREMENTS INCLUDED IN THE SPECIAL PROVISIONS.

3.) CONTRACTOR TO COORDINATE INSTALLATION USE AND REMOVAL OF THE ACCESS ROAD W/ THE CONTRACTOR CONSTRUCTING CONTRACT #20-4531. COMPENSATION WILL NOT BE GIVEN TO THE CONTRACTOR FOR DELAYS, INCONVIENCES OR DAMAGE SUSTAINED DUE TO LACK OF COORDINATION BETWEEN CONTRACTORS.

LEGEND

- TEMPORARY SIGN FOR TRAFFIC CONTROL
- DIRECTION OF TRAFFIC
- VMS MESSAGE BOARD
- BARRELS
- TEMPORARY JERSEY BARRIER
- GUARD RAIL

PROFESSIONAL CERTIFICATION

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LICENSE NO. 8146 EXPIRATION DATE: 10/8/11

AS-BUILT

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

12/16/08 DIRECTOR OF PUBLIC WORKS	DATE	12/12/08 CHIEF, BUREAU OF ENGINEERING	DATE
12/12/08 CHIEF, BUREAU OF UTILITIES	DATE	12/11/08 CHIEF, UTILITY DESIGN DIVISION	DATE

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STATE OF MARYLAND · REGISTERED PROFESSIONAL ENGINEER
8/8/11

DES: C.H.				
DRN: K.L.B.				
CHK: G.C.L.				12/10
DECEMBER, 2008	BY	NO.	REVISION	DATE

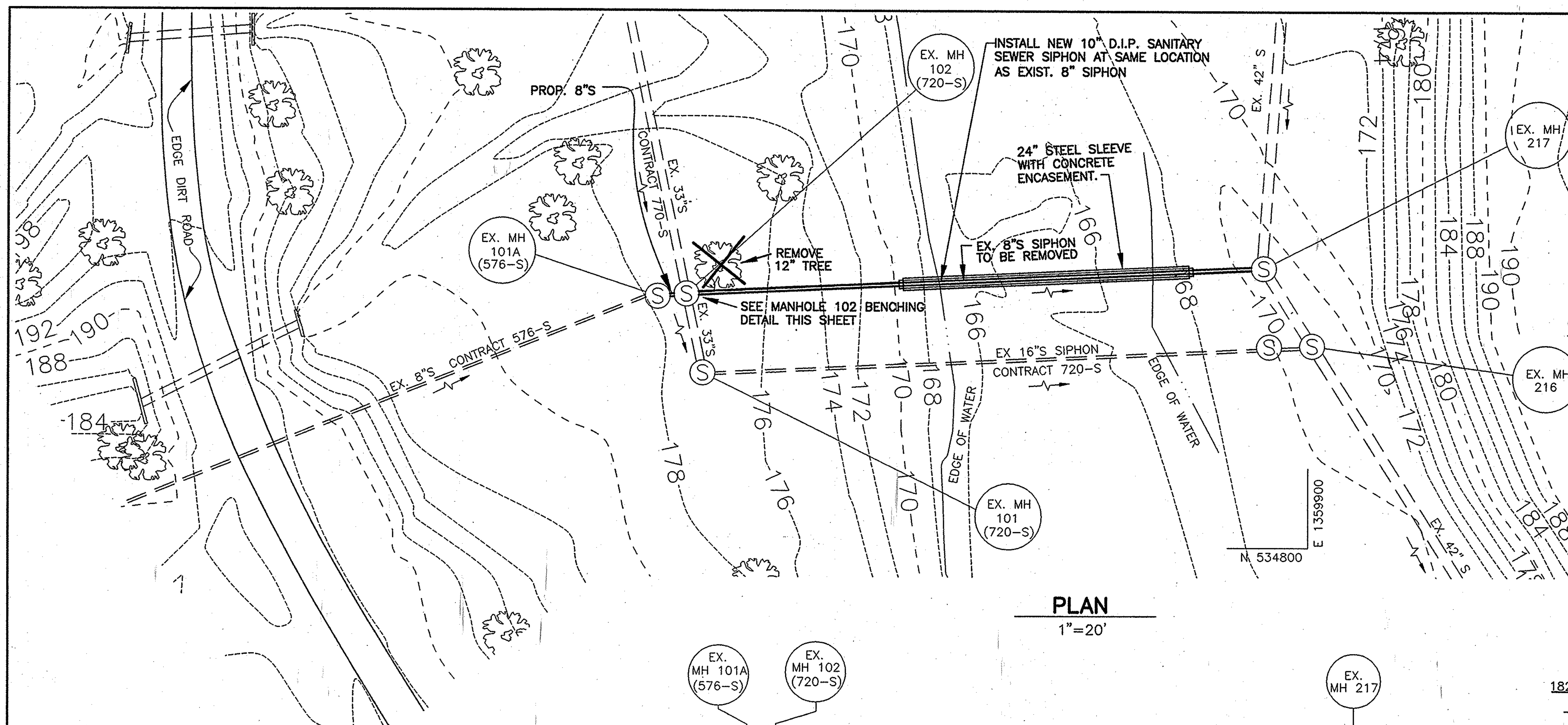
MAINTENANCE OF TRAFFIC
U.S. ROUTE 1

600' SCALE MAP 47 | BLOCK 10, 16, 17, & 18

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 25 OF 27

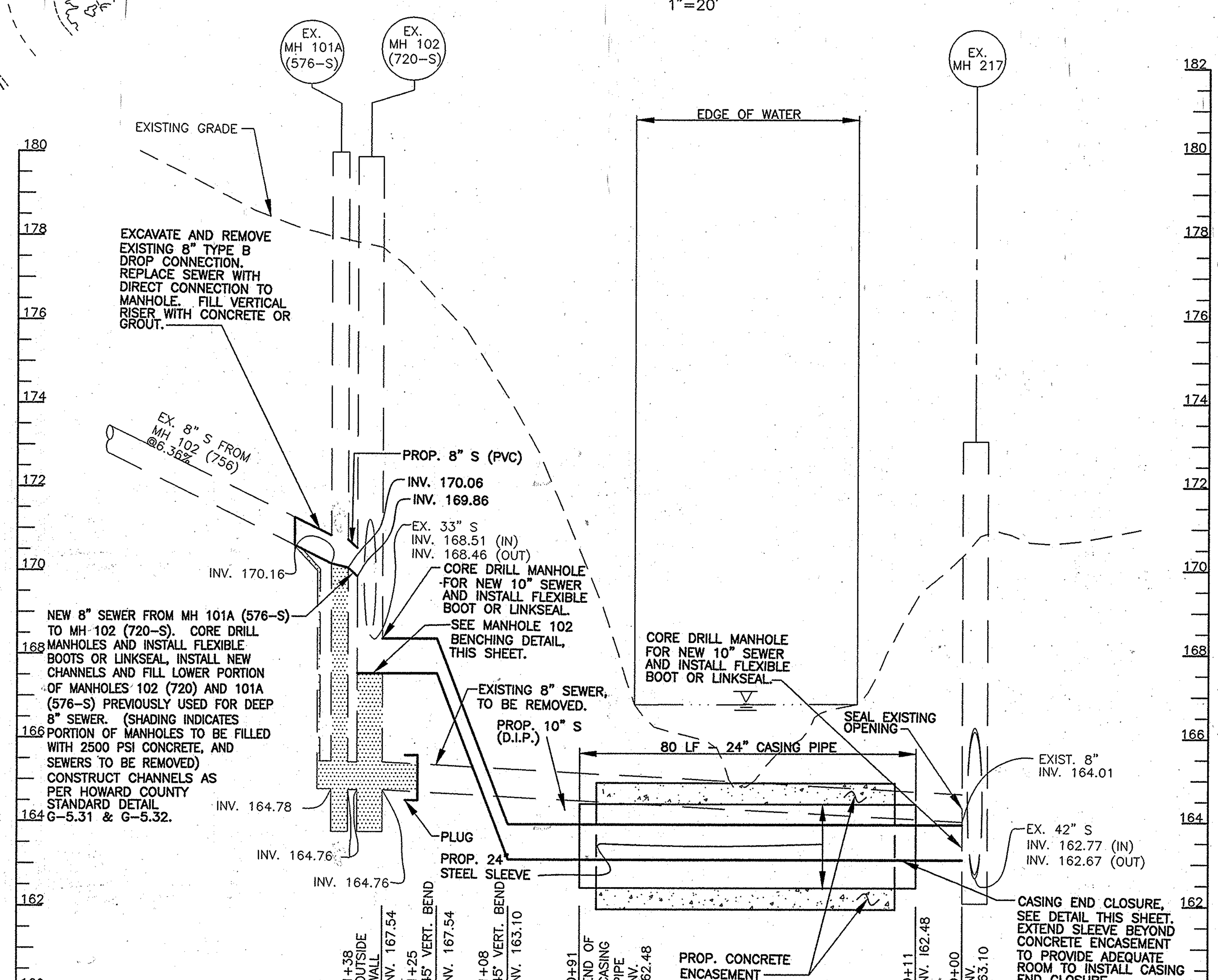


PLAN

1"=20'

ITEMS	AS-BUILTS QUANTITIES	AS-BUILTS TYPE	AS-BUILTS MANUFACTURER/ SUPPLIER
10" TYTON, CL56 w/PROTECTO 401	140 L.F.	DIP	U.S. PIPE
54-INCH STEEL CASING (CONCRETE LINED)	80 L.F.	STEEL	NORTHWEST PIPE CO.
16" 45° VERT. BENDS CL153	2 EA.	MJ DIP	FERGUSON ENTERPRISES
SPACER, SP S/5	12 EA.		FERGUSON ENTERPRISES

QUANTITIES



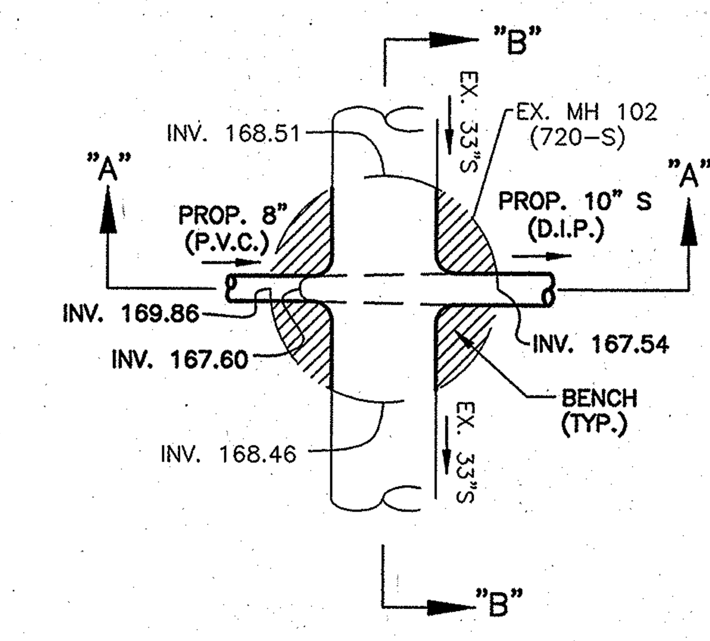
PROFILE

HORIZONTAL: 1"=20'
VERTICAL: 1"=2'

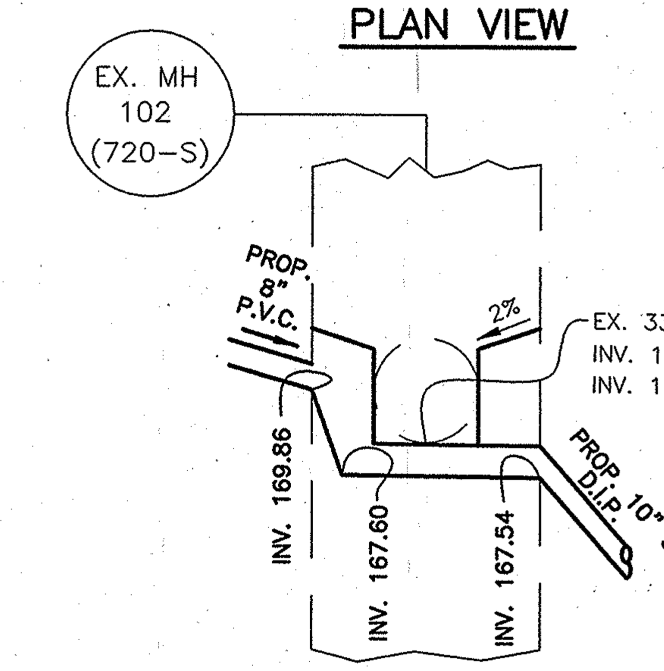
PROFESSIONAL CERTIFICATION

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.

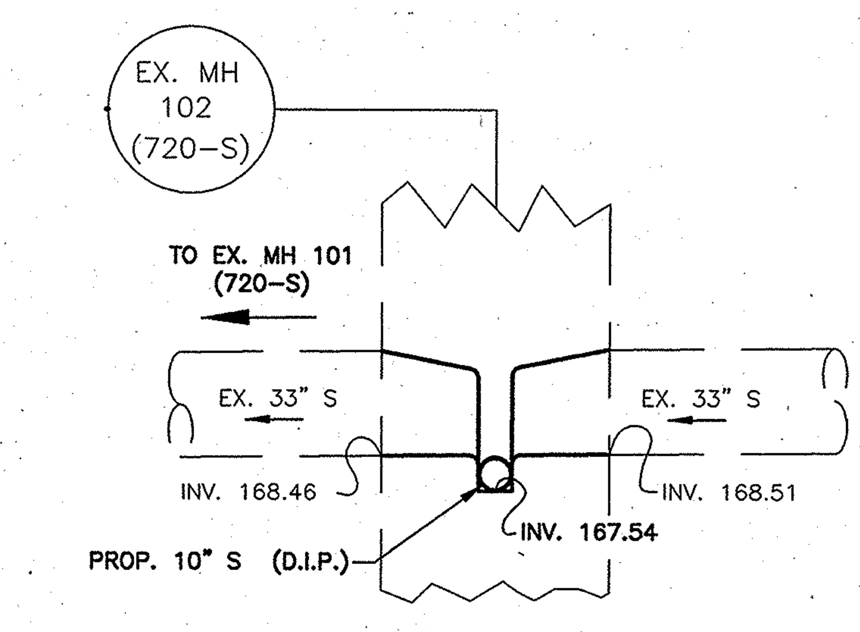
LICENSE NO. 20745 EXPIRATION DATE: 2-19-2013



PLAN VIEW



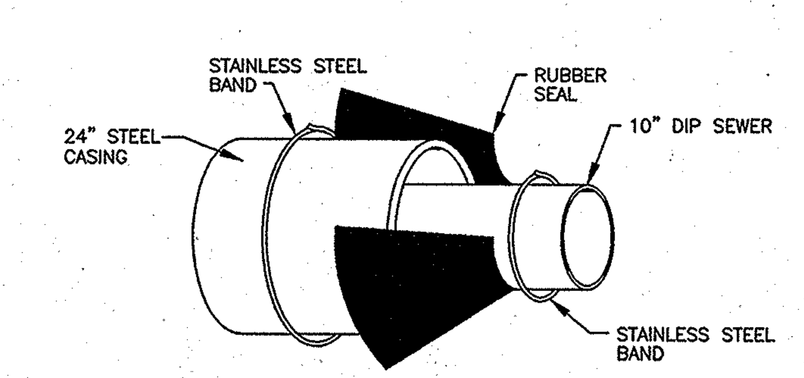
SECTION "A"



SECTION "B"

MANHOLE 102 BENCHING DETAIL

SCALE: 1/4"=1'0"



CASING END CLOSURE

SCALE: NO SCALE

SUGGESTED SEQUENCE OF CONSTRUCTION

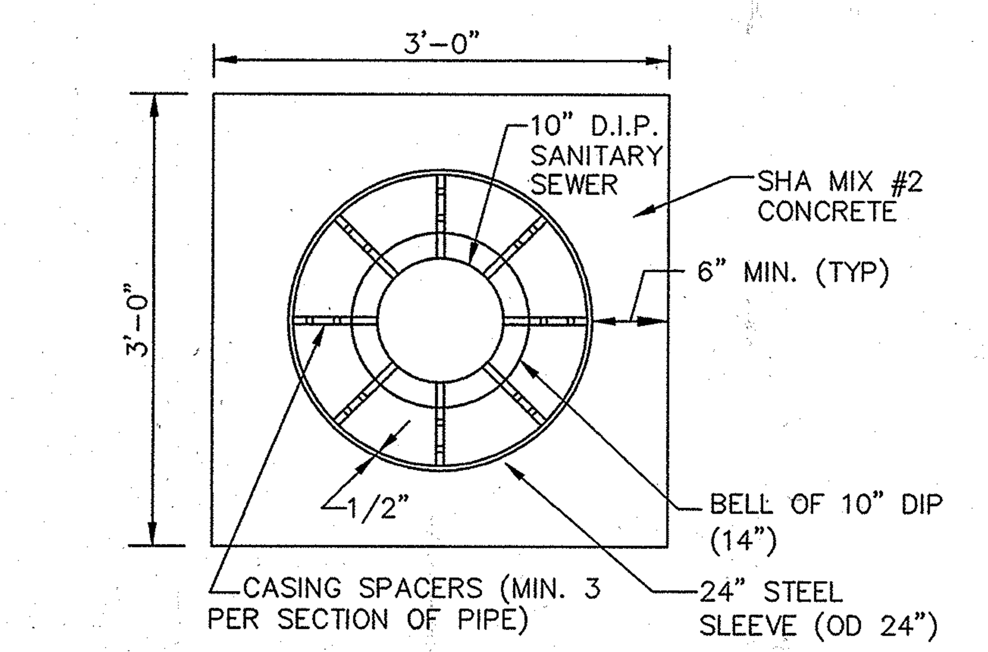
1. PLUG EXISTING 8" SEWERS IN MANHOLE 102 (720-S).
2. INSTALL FLOW THROUGH PLUG ON 33" SEWER IN MH 102 (720-S).
3. INSTALL TEMPORARY BYPASS PUMP AND PIPING FOR 8" SEWER UPSTREAM OF MANHOLE 101A (576-S).
4. PLUG EXISTING 8" SEWER IN MANHOLE 217.
5. INSTALL FLOW THROUGH PLUG ON 42" SEWER IN MANHOLE 217.
6. REMOVE SLUDGE/CLEAN MANHOLE 101A (576-S), MANHOLE 102 (720-S) AND MANHOLE 217.
7. CORE DRILL MANHOLE 101A (576-S) FOR NEW 8" SEWER, CORE DRILL MANHOLE 102 (720-S) FOR NEW 8" SEWER AND NEW 10" SEWER. CORE DRILL MANHOLE 217 FOR NEW 10" SEWER.
8. REMOVE EXISTING 8" DIP SIPHON, INSTALL NEW 10" SIPHON AND NEW 8" SEWER. SEE STREAM CROSSING PLAN AND DETAILS ON SHEET 2.
9. FILL LOWER PORTION OF MANHOLE 101A (576-S) AND MANHOLE 102 (720-S) WITH 2500 PSI CONCRETE. INSTALL BRICK CHANNELS FOR NEW 8" SEWER AND NEW 10" SIPHON.
10. REMOVE SEWER FLOW PLUGS FROM MANHOLE 102 (720-S) AND MANHOLE 217.
11. REMOVE TEMPORARY BYPASS PUMPING AND PLUG FROM 8" SEWER.
12. RESTORE SITE.

NOTES:

1. SEE SHEET 2 FOR STREAM CROSSING DETAILS.
2. ALL PIPE SHALL BE D.I.P. CLASS 54 UNLESS OTHERWISE NOTED ON THE PLAN, MEETING THE REQUIREMENTS OF AWWA C151. PIPE SHALL BE RESTRAINED JOINT TR FLEX PIPE WITH PROTECTO 401 LINING BY U.S. PIPE OR EQUAL.
3. JOINT DEFLECTION SHALL NOT EXCEED 3 DEGREES.
4. ALL PIPE, STONE AND CONCRETE ENCASEMENT SHALL BE INSTALLED ON FIRM, STABLE GROUND.

LEGEND

EX MH 102 (720-S) — (720-S) IS CONTRACT NUMBER (TYPICAL)



NOTES:

1. STEEL CASING PIPE TO BE 24"ø x 1/2" THICK WITH CEMENT MORTAR LINING ON INSIDE.
2. 10" DIP AND 24" STEEL PIPE SHALL BE INSTALLED USING THE OPEN CUT METHOD.
3. CONCRETE SHALL BE POURED AGAINST UNDISTURBED EARTH. REMOVE TRENCH SHEETING BEFORE POURING CONCRETE.
4. CASING SPACERS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
5. CONTRACTOR SHALL PREVENT FLOTATION OF CARRIER PIPE WHILE CONCRETE CURES.
6. CASING END SEAL SHALL BE PER HOWARD COUNTY SPECIFICATIONS.
7. SEE STD. SPECIFICATION SECTIONS 912 AND 963.

SLEEVE & ENCASEMENT DETAIL

SCALE: NO SCALE

AS-BUILT 3/21/11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	12/16/08 DATE	CHIEF, BUREAU OF ENGINEERING	12/12/08 DATE
CHIEF, BUREAU OF UTILITIES	12/12/08 DATE	CHIEF, UTILITY DESIGN DIVISION	12/11/08 DATE

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DES: B.G.W.
DRN: R.J.C.
CHK: G.C.L.
SEPTEMBER, 2010

BY	NO.	REVISION	DATE

10" REPLACEMENT INVERTED SIPHON
PLAN AND PROFILE

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 1 OF 2

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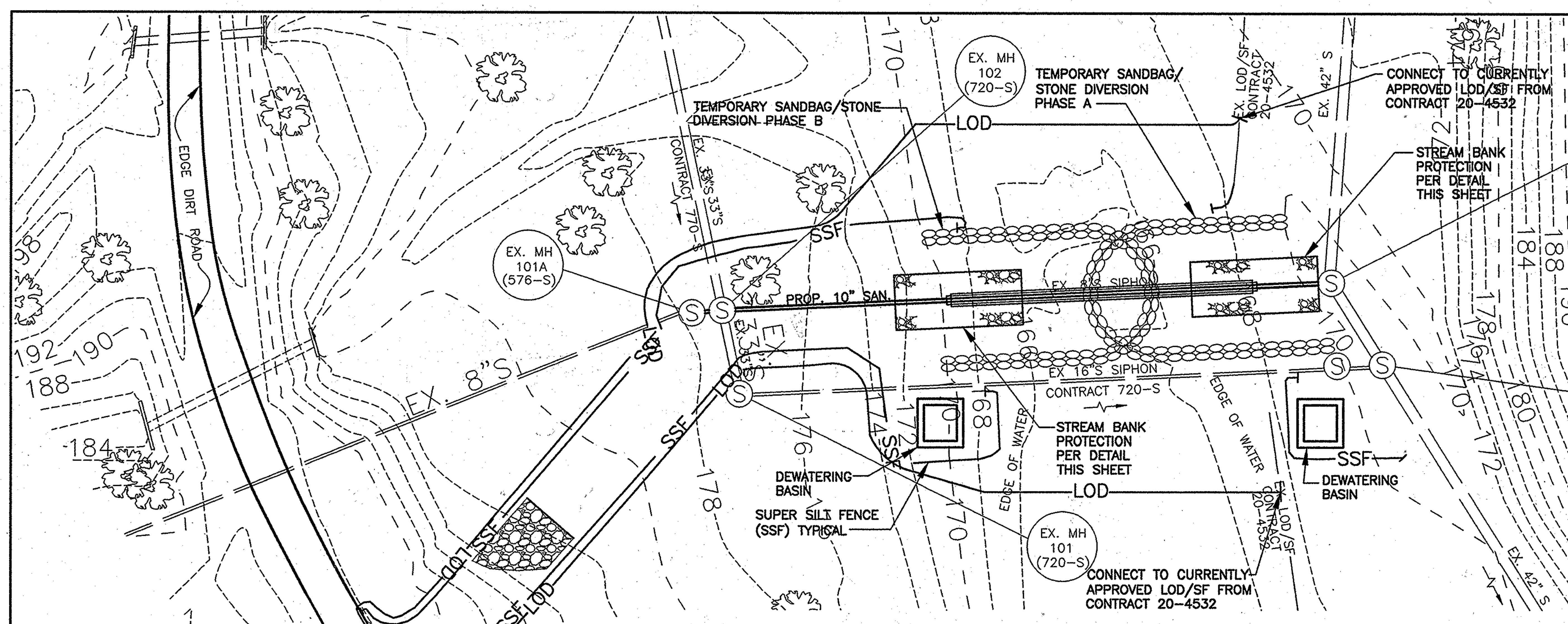
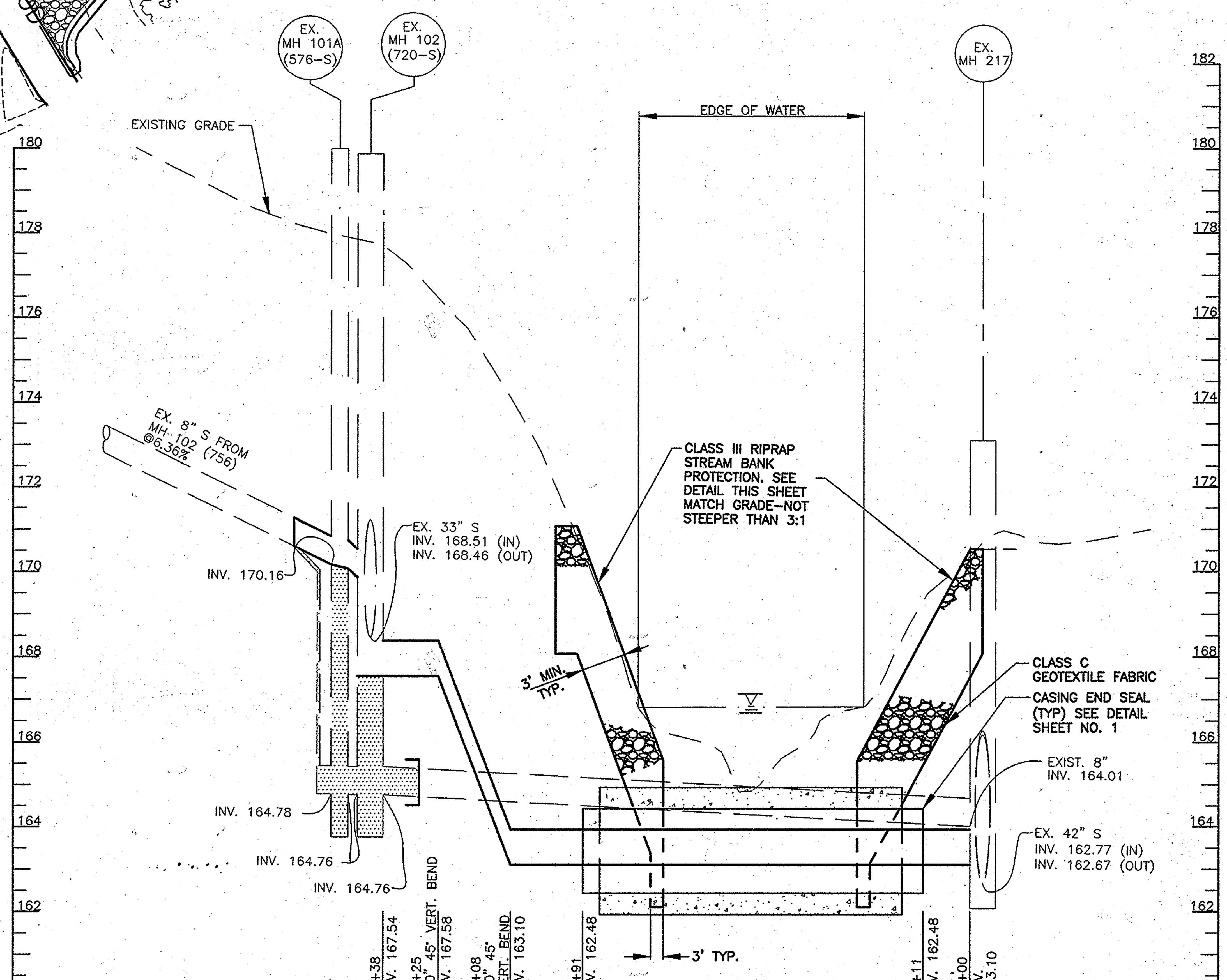
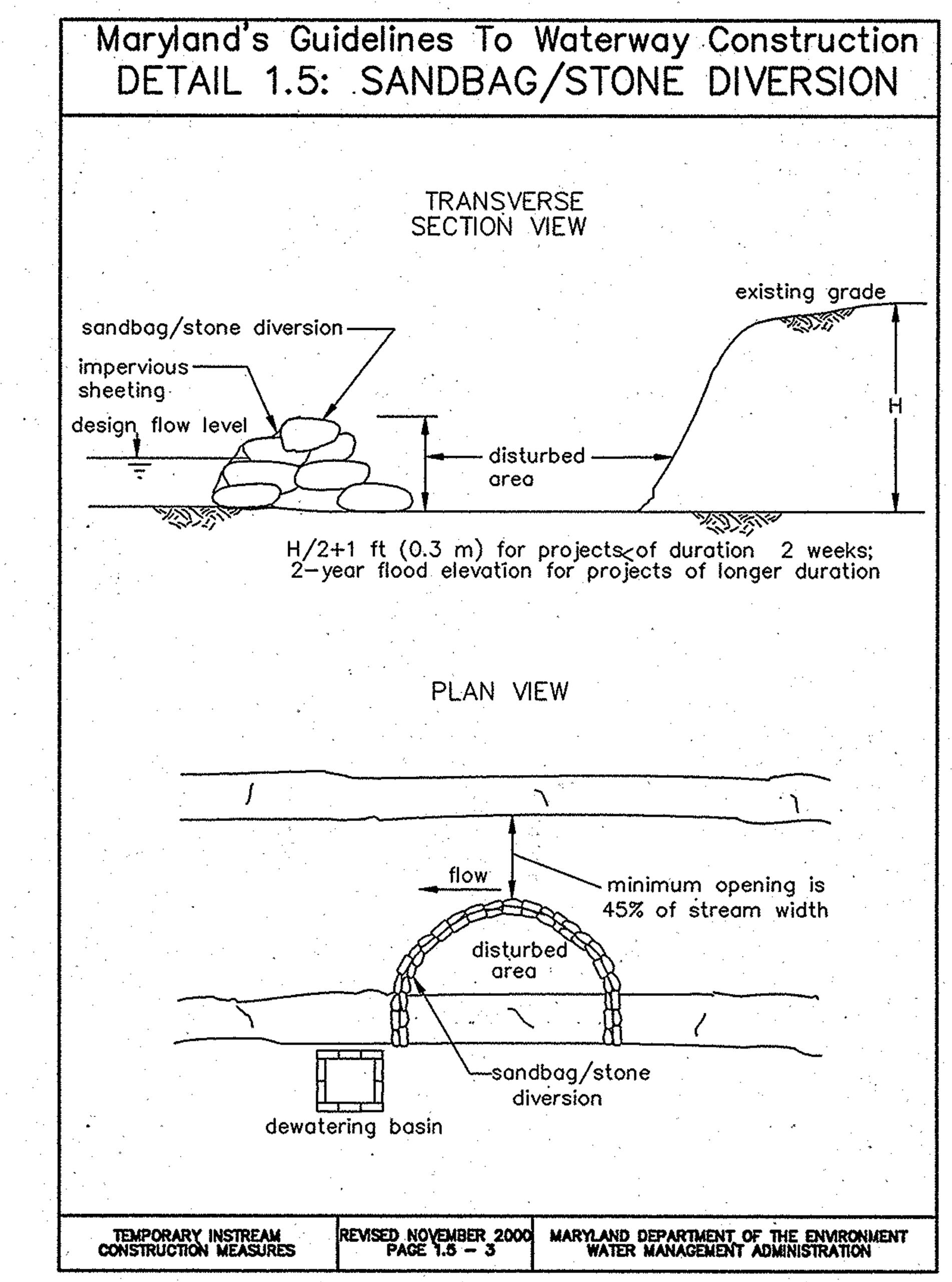


STREAM CROSSING DETAIL
1"=20'



PROFILE - STREAM CROSSING
SCALE: 1"=20' HORIZ
1"=2' VERT.



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*

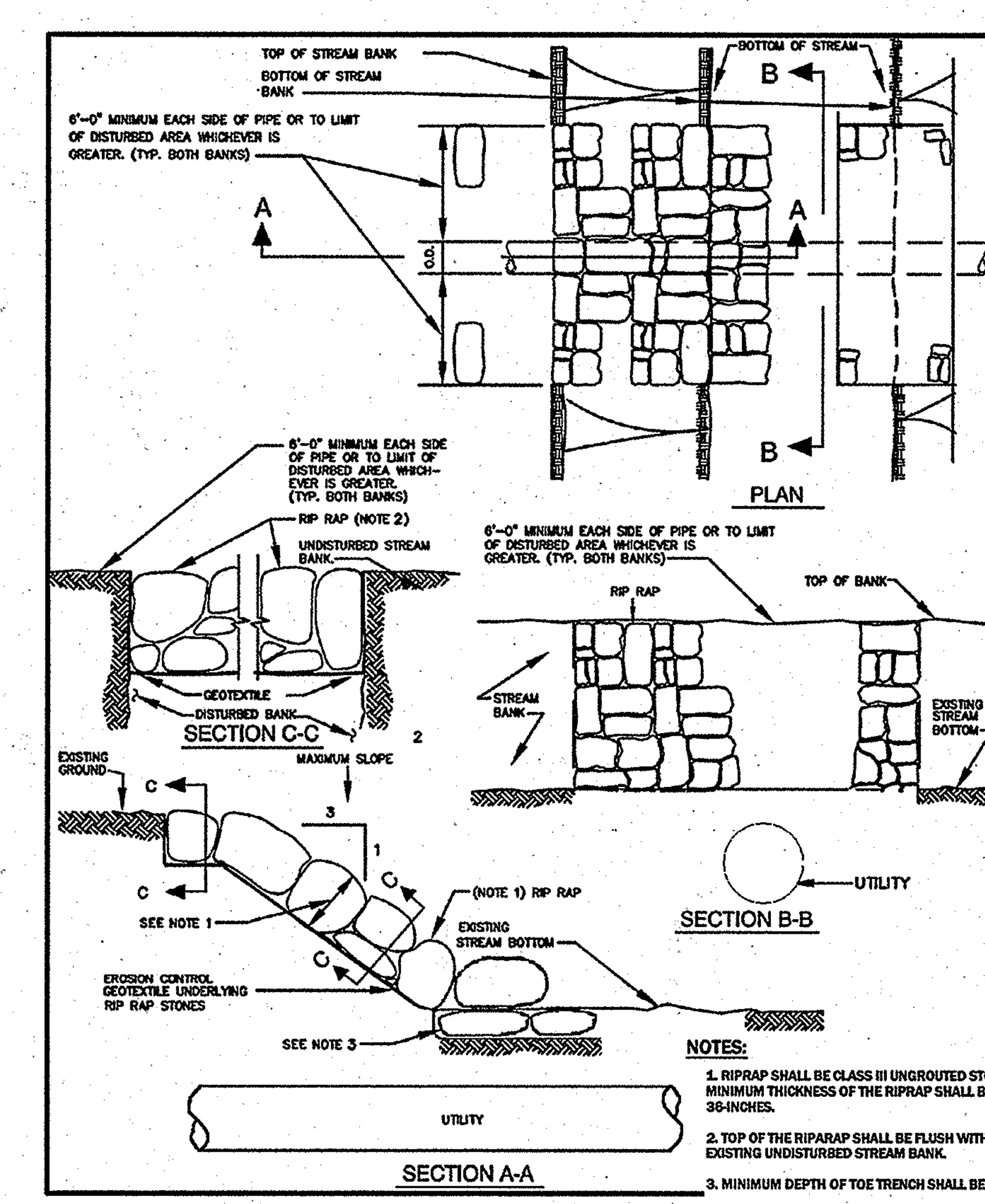
PAGE 1.5 - 1

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



DETAIL
STREAM BANK PROTECTION AT CROSSING
NO SCALE

STREAM CROSSING NOTES:

1) STREAM CROSSING SHALL BE INSTALLED IN ACCORDANCE WITH MGCW STANDARD 1.5. PHASE A WILL OCCUR FROM STATION 0+00 (EX. MH 217) TO STATION 0+45. PHASE B WILL OCCUR FROM STATION 0+45 TO STATION 0+90.
2) ALL EROSION CONTROL MEASURES NECESSARY FOR INSTALLATION OF THE SEWER MAIN ACROSS THE STREAM SHALL BE REMOVED ONLY UPON STREAM STABILIZATION AND APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.
3) CONTRACTOR TO PUMP THE WATER FROM THE DISTURBED AREA FOR EACH STREAM CROSSING VIA A PUMP AND HOSE TO THE DEWATERING BASIN IN ORDER THAT WORK MAY PROCEED IN THE DRY.
4) RIPRAP SHALL MATCH EXISTING NATIVE STONE. TEXAS QUARRY WHITE STONE SHALL NOT BE ACCEPTABLE.

AS-BUILT 3/21/11

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. 20745 EXPIRATION DATE: 2-19-2013

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 12/16/08	CHIEF, BUREAU OF ENGINEERING	DATE 12/12/08
CHIEF, BUREAU OF UTILITIES	DATE 12/12/08	CHIEF, UTILITY DESIGN DIVISION	DATE 12/11/08

Patton Harris Rust & Associates, Inc.
Engineers. Surveyors. Planners. Landscape Architects.
8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
F 410.997.9282

STATE OF MARYLAND GRAEME CLIFFORD LANE NO. 20745 REGISTERED PROFESSIONAL ENGINEER

DES: B.G.W.				
DRN: R.J.C.				
CHK: G.C.L.				
SEPTEMBER, 2010	BY	NO.	REVISION	DATE

10" REPLACEMENT INVERTED SIPHON
STREAM CROSSING DETAILS

600' SCALE MAP 47 & 48 | BLOCK 1843 & 1942

LITTLE PATUXENT
PARALLEL INTERCEPTOR SEWER
CAPITAL PROJECT S-6175
CONTRACT NO. 20-4532
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 2 OF 2

P:\project\16331\1-0\Env\Plans\AS-BUILTS\Stream Crossing Plan & Details AB.dwg, 7/27/2011 8:58:21 AM, TDS600.pc3

RIVERS CORPORATE PARK
SITE DEVELOPMENT PLAN
PARCELS 'A-2', 'C-5' and 'C-6'

SIXTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

ASBUILTS

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF ENGINEERING/CONTSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48-HOURS PRIOR TO ANY EXCAVATION WORK.
4. PROJECT BACKGROUND:
   LOCATION: TAX MAP 37
   ZONING: NT-EC, IND
   ELECTION DISTRICT: 6TH ELECTION DISTRICT
   SECTION/AREA: 1/2
   SITE AREA: 30.2± AC. FOR PARCEL A-2, C-5 & C-6 PER PLAT No. 22711/13 (F-14-059)

   APPROVED DEPT. OF PLANNING & ZONING REFERENCE FILE Nos.:
   FDP-184-A-IV, F-84-02, F-95-115, GP-85-19, SDP-85-089, SDP-95-069, SDP-06-115, F-08-163, GP-09-06, WP-10-152, F-11-035 AND F-14-059
5. TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTC). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
6. ALL PLAN DIMENSIONS ARE TO THE FACE OF CURB OR FACE OF BUILDING UNLESS OTHERWISE NOTED. DIMENSIONS ARE MEASURED PERPENDICULAR OR RADIALLY BETWEEN ITEMS UNLESS OTHERWISE NOTED.
7. EXISTING TOPOGRAPHY AND FEATURES WERE DERIVED FROM SDP-95-069, AVAILABLE PUBLIC RECORDS AND FROM SURVEY BY GUTSCHICK, LITTLE & WEBER, P.A. DONE IN JANUARY, 2006.
8. COORDINATES ARE BASED ON HOWARD COUNTY GEODETIC CONTROL STA. Nos. 2840 AND 1386.
9. 7205 RIVERWOOD DRIVE IS SERVED BY PUBLIC WATER AND SEWER UNDER CONTRACT No. 24-4589-D. A WATER METER IS LOCATED IN-SIDE EACH BUILDING. THE BUILDING SHALL BE EQUIPPED WITH AN AUTOMATIC SPRINKLER SYSTEM.
10. STORMWATER MANAGEMENT (FOR QUANTITY AND QUALITY) IS PROVIDED BY AN EXISTING ON-SITE (ON PARCEL A-2) FACILITY BUILT UNDER GP-85-19 AND SDP-85-089 AND UPGRADED UNDER GP-09-06. A DRYWELL AND STORMCEPTOR IS PROVIDED UNDER THIS SDP. BOTH THE POND AND THE DRYWELL SYSTEM ARE PRIVATELY OWNED & MAINTAINED.
11. EXCEPT FOR THE STORM DRAIN SYSTEMS THAT IS WITHIN THE PUBLIC STORM DRAIN & UTILITY EASEMENT, ALL OTHER ON-SITE STORM DRAIN SYSTEMS PROPOSED UNDER THIS SDP ARE PRIVATE.
12. THE EXISTING UTILITIES SHOWN HEREIN WERE DERIVED FROM AVAILABLE PUBLIC RECORDS, THE CONTRACTOR MUST HAND DIG TEST PITS AT ALL UTILITY CROSSINGS AND CONNECTION POINTS TO VERIFY EXACT LOCATION PRIOR TO ANY CONSTRUCTION.
13. ALL PROPOSED RAMPS SHALL BE IN ACCORDANCE WITH CURRENT A.D.A. STANDARDS. MAXIMUM SIDEWALK CROSS SLOPE SHALL BE (2%) TWO PERCENT. PROVIDE A MINIMUM OF (5x5) FIVE BY FIVE FOOT LEVEL LANDING (2% MAX.) AT THE TOP AND BOTTOM OF ALL RAMPS AND BUILDING INGRESS/EGRESS POINTS.
14. ALL DRIVEWAYS AND PARKING LOTS ARE PRIVATELY OWNED AND MAINTAINED.
15. ANY DAMAGE TO COUNTY OWNED RIGHT-OF-WAY TO BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
16. TRENCH BEDDING FOR STORM DRAINAGE STRUCTURES SHALL BE IN ACCORDANCE WITH HOWARD COUNTY STANDARD G2.01. CLASS "C" BEDDING, UNLESS OTHERWISE NOTED.
17. CURB GUTTER PAN SHALL BE PITCHED TO CONFORM TO THE ADJACENT DRAINAGE PATTERN OF THE ADJOINING PAVING FOR VEHICULAR USE.
18. ALL CURB FILLETS ARE 5' RADIUS UNLESS NOTED OTHERWISE. SPOT ELEVATIONS ALONG CURB LINE ARE FOR THE FLOW LINE AT PTs, PCs & CORNERS, UNLESS NOTED OTHERWISE.
19. THERE ARE NO KNOWN GRAVE SITES OR CEMETERIES ON THIS SITE.
20. ALL OUTSIDE LIGHTING SHALL COMPLY WITH ZONING REGULATION SECTION 134 WHICH REQUIRES LIGHTS TO BE INSTALLED TO DIRECT/REFLECT LIGHT DOWNWARDS AND INWARDS ON SITE AWAY FROM ALL ADJOINING PUBLIC STREETS AND RESIDENTIAL AREAS.
21. THIS SITE DEVELOPMENT PLAN IS EXEMPT FROM THE FOREST CONSERVATION ORDINANCE IN ACCORDANCE WITH SUBDIVISION SECTION 16.1202(B)(1)(v), BECAUSE THIS PARCEL IS A PART OF A PLANNED UNIT DEVELOPMENT WHICH HAD PRELIMINARY DEVELOPMENT PLAN APPROVAL AND 50% OR MORE OF THE LAND WAS RECORDED AND SUBSTANTIALLY DEVELOPED BEFORE DECEMBER 31, 1992.
22. LANDSCAPING HAS BEEN PROVIDED FOR PHASE 1 AND PHASE 2 TO SATISFY SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL AS FOLLOWS:
    PHASE 1 - THE FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING (SEE SHEETS 13 & 14) IN THE AMOUNT OF $11,520.00 (FOR 54 SHRUBS & 33 SHADE TREES) WAS POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT.
    PHASE 2 - AN ADDITIONAL FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING (SEE SHEET 23) IN THE AMOUNT $2,100.00 (FOR 7 SHADE TREES). THE TOTAL FINANCIAL SURETY AMOUNT FOR PHASE 1 AND PHASE 2 IS $13,620.00.
23. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN REQUIRED WETLANDS, STREAMS OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN. THERE ARE NO FLOODPLAINS, STREAM BUFFERS OR REGULATED WETLANDS WITHIN 22' OF THE PROPOSED L.O.D.
24. PARCELS SHOWN HEREON (PARCEL A-2 AND C-5) ARE SUBJECT TO RESTRICTIVE COVENANTS RECORDED IN THE HOWARD COUNTY LAND RECORDS IN LIBER 1083 FOLIO 392.
25. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE)-3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
26. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)." A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.
27. THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, DATED 04/02/08, AND APPROVED ON 05/01/08.
28. PHASE 1 - COUNCIL RESOLUTION NO. 108-2006 IS A RESOLUTION TO CLOSE A PORTION OF RIVERWOOD DRIVE (TO STATION 62+22±). PASSED 10/3/2006.
    PHASE 2 - COUNCIL RESOLUTION NO. 156-2012 IS A RESOLUTION TO CLOSE A PORTION OF RIVERWOOD DRIVE (TO STATION 66+28±). PASSED 12/3/2012.
29. SPECIFICATIONS FOR LEED (LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN) FOR 7205 RIVERWOOD DRIVE BUILIDING:
    - PROVIDE SITEWORK MATERIALS MANUFACTURED AND OF PRIMARY RAW MATERIALS EXTRACTED/RECOVERED WITHIN A 500-MILE RADIUS OF THE PROJECT SITE
    - PROVIDE RC-6 RECYCLED CONCRETE FOR SUB-BASE AND FILL IN LOCATIONS APPROVED BY THE GEOTECHNICAL ENGINEER, EXCEPT BENEATH THE BUILDING SLAB.
    - PROVIDE A MINIMUM OF 95% RECYCLED-CONTENT STEEL REINFORCING MATERIALS.
    - SUBMIT LOCATION OF PRODUCT MANUFACTURED AND EXTRACTION/RECOVERY OF PRIMARY RAW MATERIALS.
    - SUBMIT RECYCLED-CONTENT DATA, DESIGNATING PERCENTAGES OF POST-INDUSTRIAL AND CONSUMER RECYCLED MATERIALS.
    - RECYCLE OR SALVAGE WASTE CONCRETE, PAVING AND STEEL MATERIALS IN ACCORDANCE WITH DIVISION 1 (CONSTRUCTION WASTE MANAGEMENT) REQUIREMENTS OF THE PROJECT SPEC.

APPROVED
PLANNING BOARD OF HOWARD COUNTY

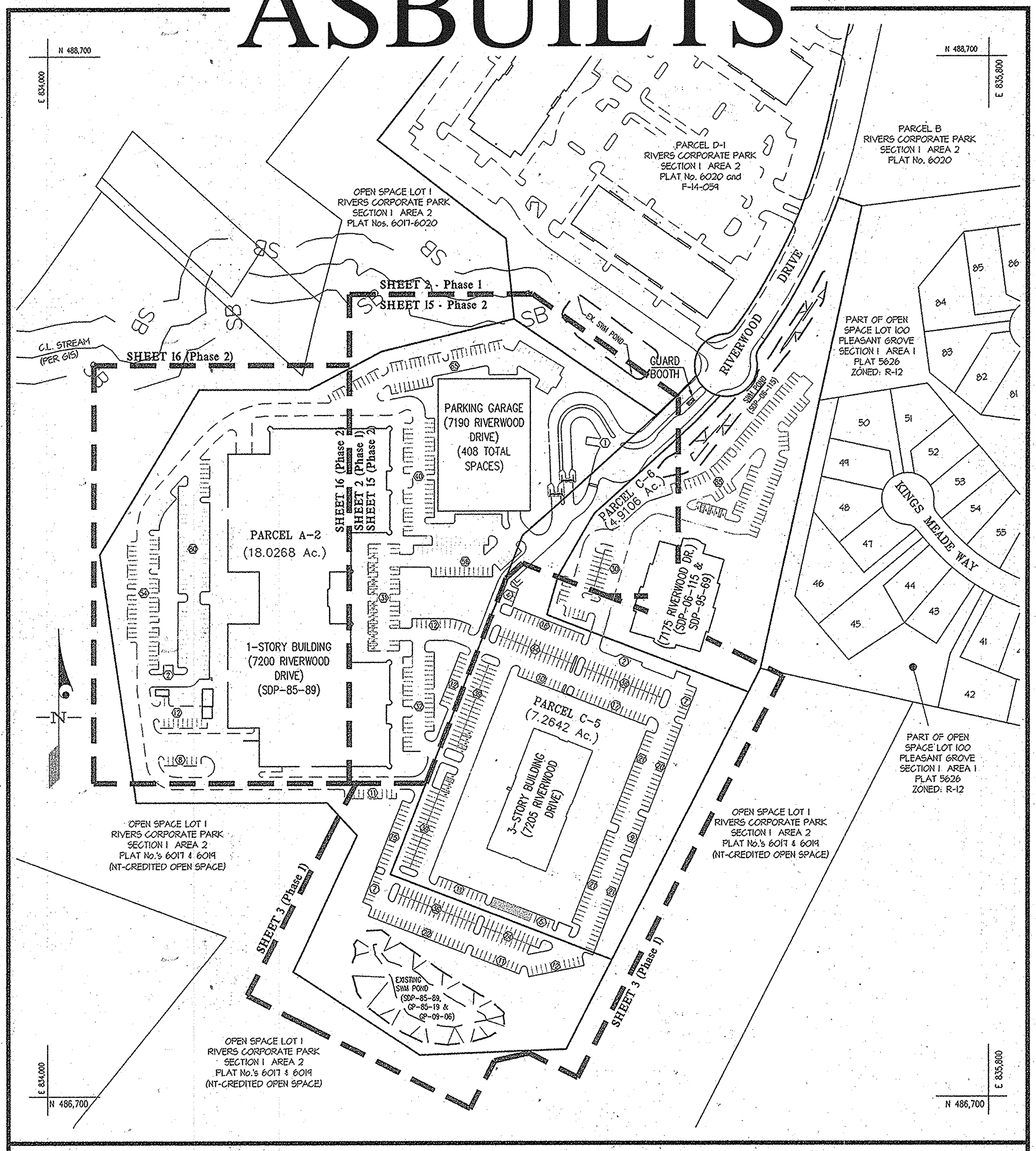
DATE JANUARY 16, 2014

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director — Date 6/3/14
Chief, Division of Land Development — Date 6-02-14
Chief, Development Engineering Division — Date 4.7.14

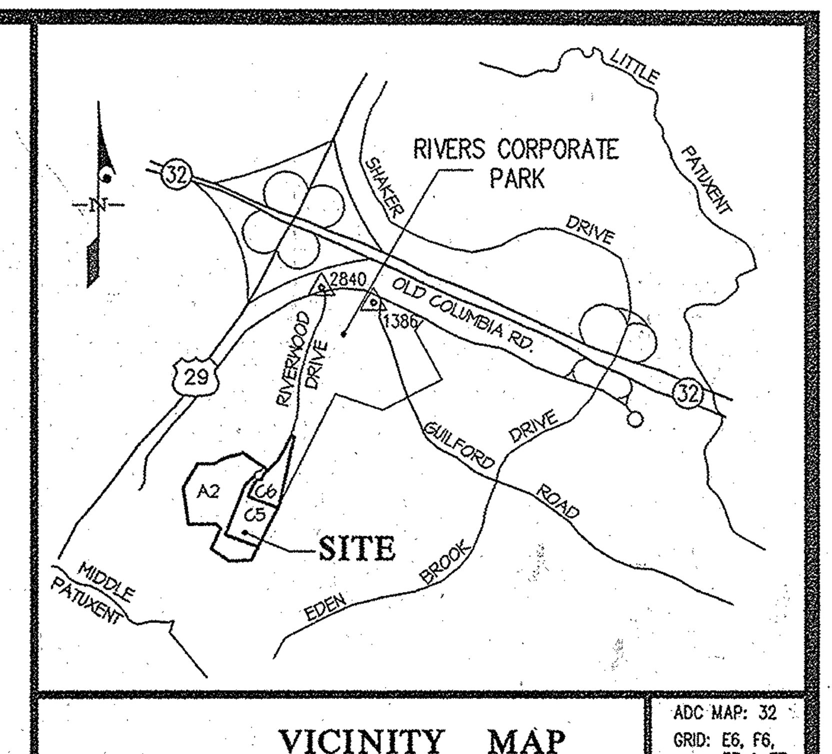
WP-10-152
ON JUNE 17, 2010 THE PLANNING DIRECTOR APPROVED REQUEST TO WAIVE SUBDIVISION SECTION(s):
1. 16.156(O)(1)(i), AND GRANTED A ONE (1) YEAR DEADLINE DATE EXTENSION FROM JUNE 17, 2010 UNTIL JUNE 17, 2011 TO APPLY FOR A BUILDING PERMIT TO INITIATE CONSTRUCTION ON THE SITE PER APPROVED SDP-08-092, AND;
2. 16.156(O)(1)(ii) AND GRANTED A TWO (2) YEAR DEADLINE DATE EXTENSION FROM JUNE 17, 2010 UNTIL JUNE 17, 2012 TO APPLY FOR THE BUILDING PERMITS FOR ALL OF THE CONSTRUCTION AUTHORIZED BY THE APPROVED SITE DEVELOPMENT PLAN.

APPROVAL OF THIS WAIVER PETITION IS SUBJECT TO COMPLIANCE WITH THE FOLLOWING CONDITIONS OF APPROVAL:
1. THE PETITIONER SHALL APPLY FOR BUILDING PERMITS TO INITIATE CONSTRUCTION ON THE SITE PER SDP-08-092 BY THE EXTENDED DEADLINE DATE OF JUNE 17, 2011, OR THE APPROVAL OF SDP-08-092 SHALL EXPIRE, AND;
2. THE PETITIONER SHALL APPLY FOR THE BUILDING PERMITS FOR ALL CONSTRUCTION AUTHORIZED BY THE APPROVED SITE DEVELOPMENT PLAN, SDP-08-092, BY THE EXTENDED DEADLINE DATE OF JUNE 17, 2012, OR THE APPROVAL OF SDP-08-092 SHALL EXPIRE.



SITE OVERVIEW
SCALE: 1" = 150'

CONTROL DESCRIPTIONS
2840
CONC. MON.
N 489908.22
E 835443.93
ELV. 342.27
1386
CONC. MON.
N 489553.51
E 836824.07
ELV. 364.41



VICINITY MAP
1" = 2000'
ADC MAP: 32
GRID: E6, F6, E7 & F7

SHEET INDEX

SITE ANALYSIS DATA CHART

1. GENERAL SITE DATA
   A. PRESENT ZONING: NT-EC, IND PER FDP 184-A-IV
   B. PROPOSED USE OF SITE OR STRUCTURES: GENERAL OFFICE USE
2. AREA TABULATION
   A. SITE AREA: 18.0268 ACRES (Parcel A-2)
      7.2642 ACRES (Parcel C-5)
      4.9106 ACRES (Parcel C-6)
      30.2016 ACRES (Total)
   B. AREA OF THIS PLAN SUBMISSION: 9.3± ACRES (PHASE ONE LIMIT OF DISTURBANCE, REDEVELOPED AREA)
      5.2± ACRES (PHASE TWO LIMIT OF DISTURBANCE, REDEVELOPED AREA)
   C. LIMIT OF DISTURBED AREA BY THIS SDP: 9.3± ACRES (PHASE ONE)
      5.2± ACRES (PHASE TWO)
   D. BUILDING AREA:
      1. 7200 RIVERWOOD DRIVE BUILDING (160,400 SF) & PARKING GARAGE (45,016 S.F.) = 205,416 S.F. (PARCEL A-2)
      2. 7205 RIVERWOOD DRIVE BUILDING (3-story @ 29,765 s.f. each floor) & GUARDHOUSE (130 S.F.) = 89,425 S.F. (PARCEL C-5)
      3. 7175 RIVERWOOD DRIVE BUILDING (PARCEL C-6) (SEE SDP-06-115)
   E. BUILDING COVERAGE OF SITE: 11.87% (PER SDP-95-69)
      1. 7200 RIVERWOOD DRIVE BUILDING & PARKING GARAGE (4.72 / 18.0268 x 100) = 26.2± % OF PARCEL A-2
      2. 7205 RIVERWOOD DRIVE BUILDING & GUARDHOUSE (0.69/ 7.2642 x 100) = 9.5± % OF PARCEL C-5
      3. 7175 RIVERWOOD DRIVE BUILDING (PARCEL C-6) (SEE SDP-06-115)
   F. TOTAL PAVED SURFACES (BITUMINOUS PAVEMENTS, SIDEWALKS, PARKING GARAGE, ETC.) WITHIN REDEVELOPED AREA:
      5.2± AC. OR 56%± OF THE REDEVELOPED AREA (PHASE 1)
      3.47± AC. OR 67%± OF THE REDEVELOPED AREA (PHASE 2)
3. OPEN SPACE DATA
   A. OPEN SPACE REQUIRED ON SITE: N/A
   B. OPEN SPACE PROPOSED: N/A

PARKING TABULATION

1. TOTAL NUMBER OF PARKING SPACES REQUIRED
   (at 3.3 spaces/1000 s.f. of general office uses per Sec. 133.D.3.a. of the zoning regulations):

   7200 RIVERWOOD DRIVE BUILDING (PARCEL A-2) (160.400 x 3.3) = 530 spaces
   7205 RIVERWOOD DRIVE BUILDING (PARCEL C-5) (89.295 x 3.3) = 295 spaces
   7175 RIVERWOOD DRIVE BUILDING (PARCEL C-6) (26320/1000 x 3.3) = 87 SPACES
   TOTAL = 912 spaces

2. NUMBER OF PARKING SPACES PROVIDED:

	(Parcel A-2) BUILDING	(Parcel C-5) BUILDING	(Parcel C-6) BUILDING	TOTAL	
9'x18' - 90° PARKING SPACES	528	302	110	940	
REGULAR HANDICAP SPACES	9	4	3	16	
VAN ACCESSIBLE HANDICAP SPACES	6	4	2	12	
8'x22' - PARALLEL PARKING SPACES	0	2	0	2	
GARAGE PARKING SPACES	404 ~~408~~*	0	0	~~408~~	404
TOTAL PARKING PROVIDED	947 ~~451~~	312	115	~~1378~~	1374

* INCLUDES 3 VAN ACCESSIBLE HANDICAP SPACES AND 6 REGULAR HANDICAP SPACES

ASBUILT SHEET 1 OF 3

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. 12975, Expiration Date: May 26 2016.

9/9/15
Date
Carl K. Gutschick
Professional Engineer
Maryland Reg. No. 12975

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: MAY 26, 2014.

ASBUILTS 3-28-14

STREET ADDRESS	
BUILDING (PARCEL A-2)	7200 RIVERWOOD DRIVE
PARKING GARAGE (PARCEL A-2)	7190 RIVERWOOD DRIVE
BUILDING (PARCEL C-5)	7205 RIVERWOOD DRIVE
GUARD BOOTH (PARCEL C-5)	7186 RIVERWOOD DRIVE
BUILDING (PARCEL C-6)	7175 RIVERWOOD DRIVE

SUBDIVISION NAME: RIVERS CORPORATE PARK			SECTION/AREA 1/2		PARCEL(S) A-2, C-5 & C-6
PLAT Nos. 11730, 20428/9 & 21387 & 22711/13	BLOCK 12	ZONING NT-EC, IND	TAX MAP 41	ELEC. DIST. 6	CENSUS TRACT 6062
WATER CODE: E16			SEWER CODE: 6440000		

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\06003\SDP\06003_01 CS.dwg | DES. mbt | DRN. KLP | CHK.

DATE	REVISION	BY	APP'R.
11-2013	SHOW NEW REAR PARKING, PARKING GARAGE and NEW VCP ENTRANCE W/NEW CUL-DE-SAC; UPDATE PARKING TABULATION	KLP	
10/25/2012	REVISE PARKING TABULATION	KLP	
11/2010	REV. BLDG. TO SINGLE BLDG. & REVISE PARKING & PARKING TABULATION CHART ACCORDINGLY; ADDED WP-10-152		

PREPARED FOR:
OWNER/DEVELOPER
COPT Riverwood, LLC
c/o COPT DEVELOPMENT SERVICES, LLC.
6711 COLUMBIA GATEWAY DRIVE, SUITE 300
COLUMBIA, MD 21046
Phone: 443-285-5400
Attn.: DAVID NORFOLK

(REVISED) COVER SHEET
RIVERS CORPORATE PARK
SECTION 1, AREA 2
PARCELS 'A-2', 'C-5' and 'C-6'
PLAT No. 11730, 20428-20429, 21387 and F-14-059
GUILFORD ELECTION DISTRICT No. 6 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT-EC, IND	06003
DATE	TAX MAP – GRID	SHEET
AUG. 2015 MARCH 2014	41 – 12	1 OF 23

ASBUILTS SDP-08-092