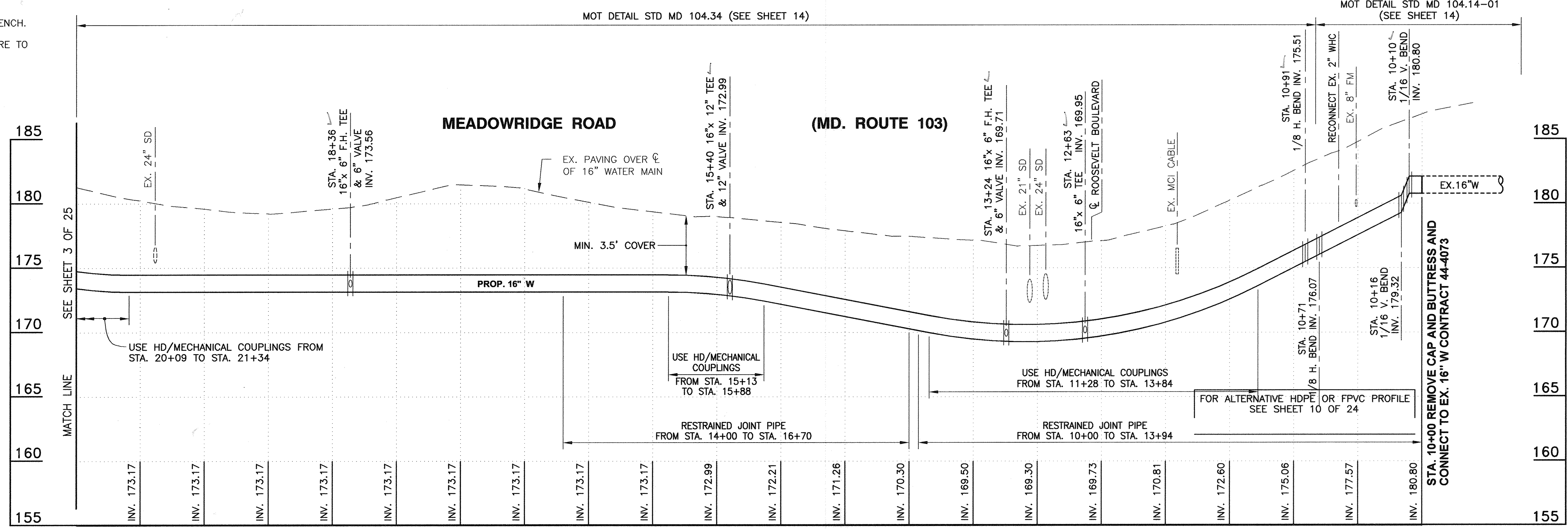


PLAN  
SCALE: 1" = 50'

- UTILITY NOTES:**
- CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF THE TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWN SLOPE OF) THE TRENCH.
  - PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
  - ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

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  - THE MAXIMUM ALLOWED DEFLECTION AT THE HIGH DEFLECTION COUPLING IS 3" WITH 1.5" ON EACH SIDE.



PROFILE  
SCALE: HORIZ. 1" = 50'  
VERT. 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. 28770, EXPIRATION DATE: MAY 14, 2011  
*[Signature]*  
Signature of Engineer: *[Signature]* Date: 09-20-10

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

Director of Public Works: *[Signature]* DATE: 10/15/10  
Chief, Bureau of Utilities: *[Signature]* DATE: 10/15/10

Chief, Bureau of Engineering: *[Signature]* DATE: 9/25/10  
Chief, Utility Design Division: *[Signature]* DATE: 9/25/10

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2002  
410.285.9500  
FAX: 410.285.8875

DES:	AZW	BY:	NO.	REVISIONS	DATE
DRN:	AZW				
CHK:	ATB				
DATE:					

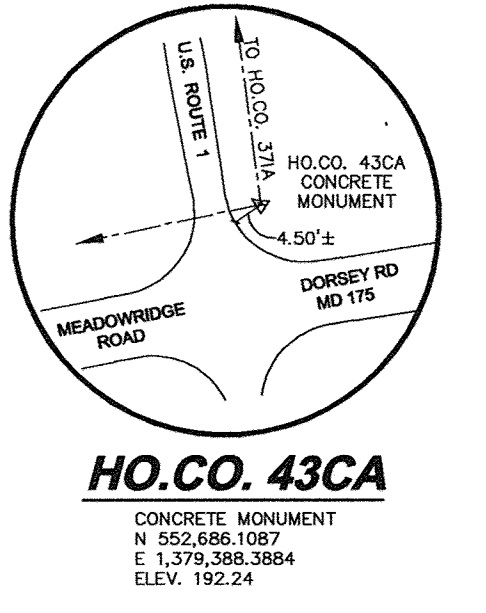
**PLAN AND PROFILE**

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

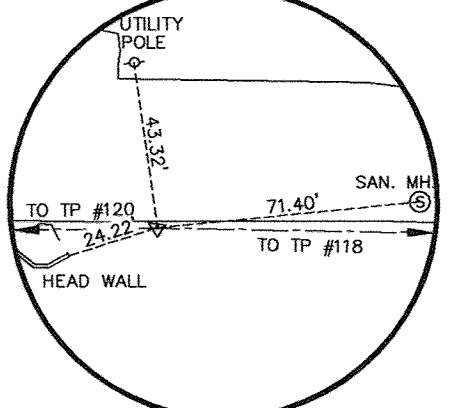
**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

ELECTION DISTRICT NO. 1  
HOWARD COUNTY, MARYLAND

SCALE: SHOWN  
SHEET 2 OF 25

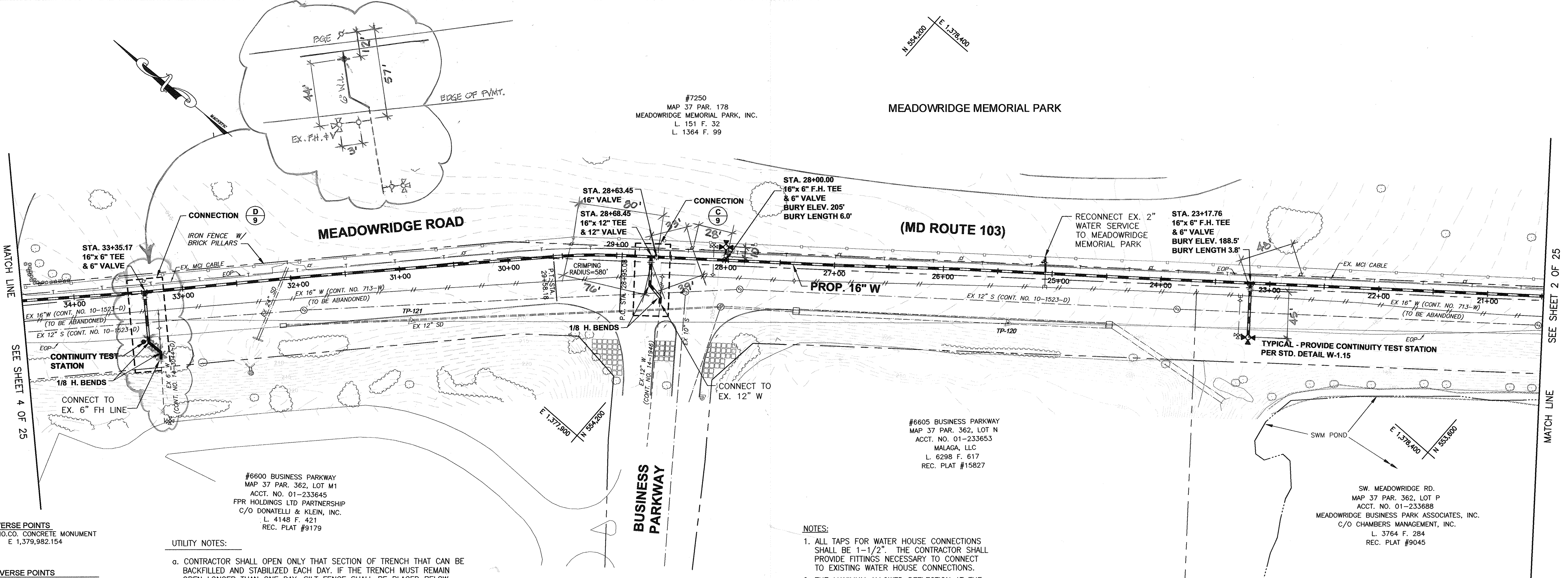
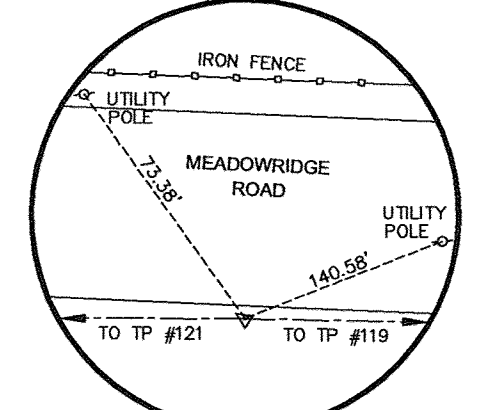
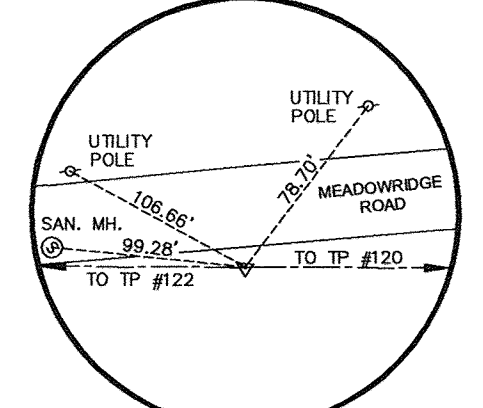


HO. CO. 43CA  
CONCRETE MONUMENT  
N 552,686.1087  
E 1,379,388.3884  
ELEV. 192.24



TP #119  
IRON ROD SET  
N 553,927.799  
E 1,378,604.098  
ELEV. 178.750





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

**BENCH MARKS**

B.M. #1 HOWARD CO. CONTROL PT. 371A STAMPED DISC ON TOP OF CONCRETE MONUMENT  
ELEV. 195.76  
N 553,315.147 E 1,379,982.154

**TRAVERSE POINTS**

371A HO.CO. CONCRETE MONUMENT  
N 553,315.147 E 1,379,982.154

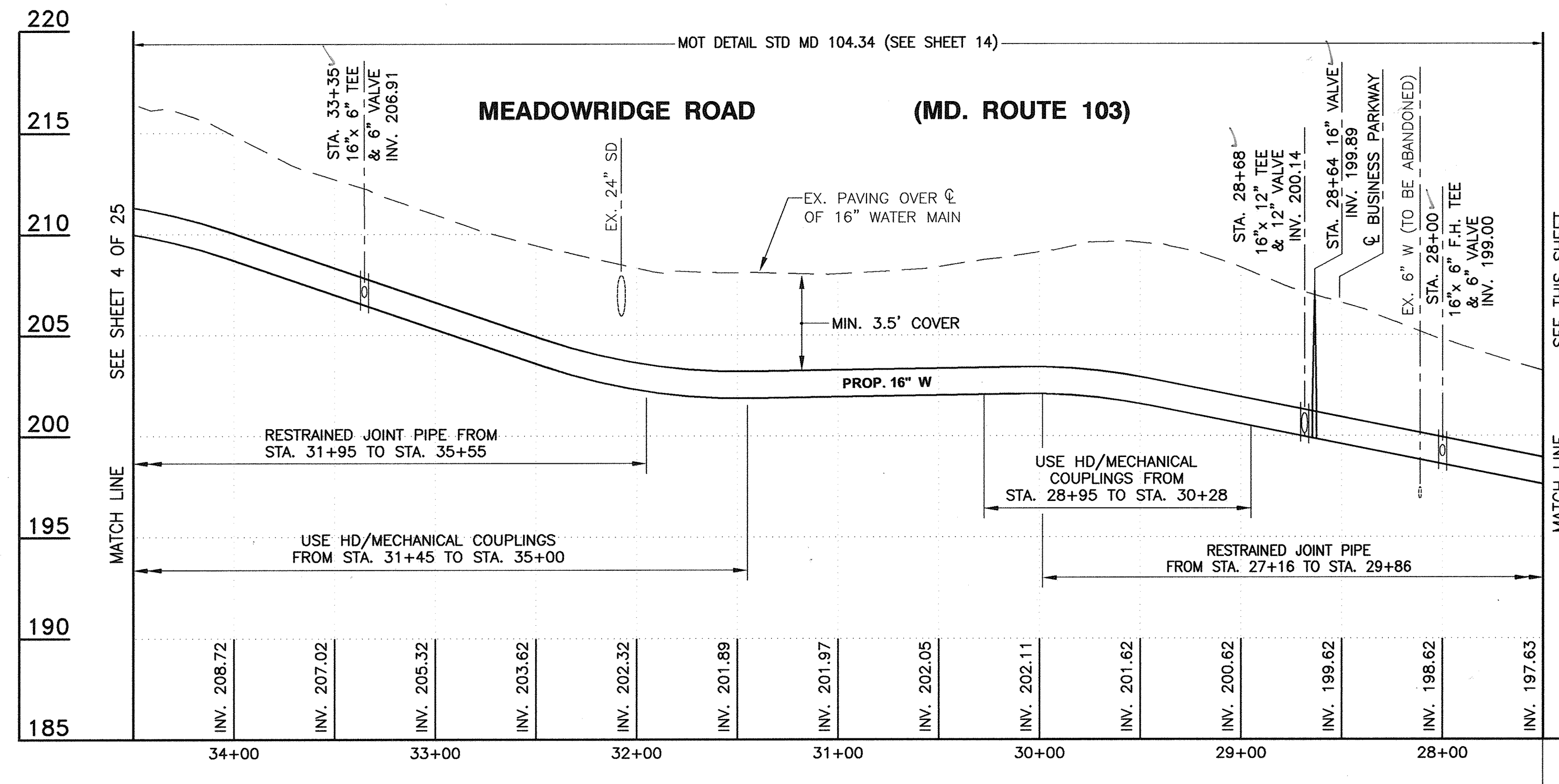
**BENCH MARKS**

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ELEV. 192.24  
N 552,686.1087 E 1,379,388.3884

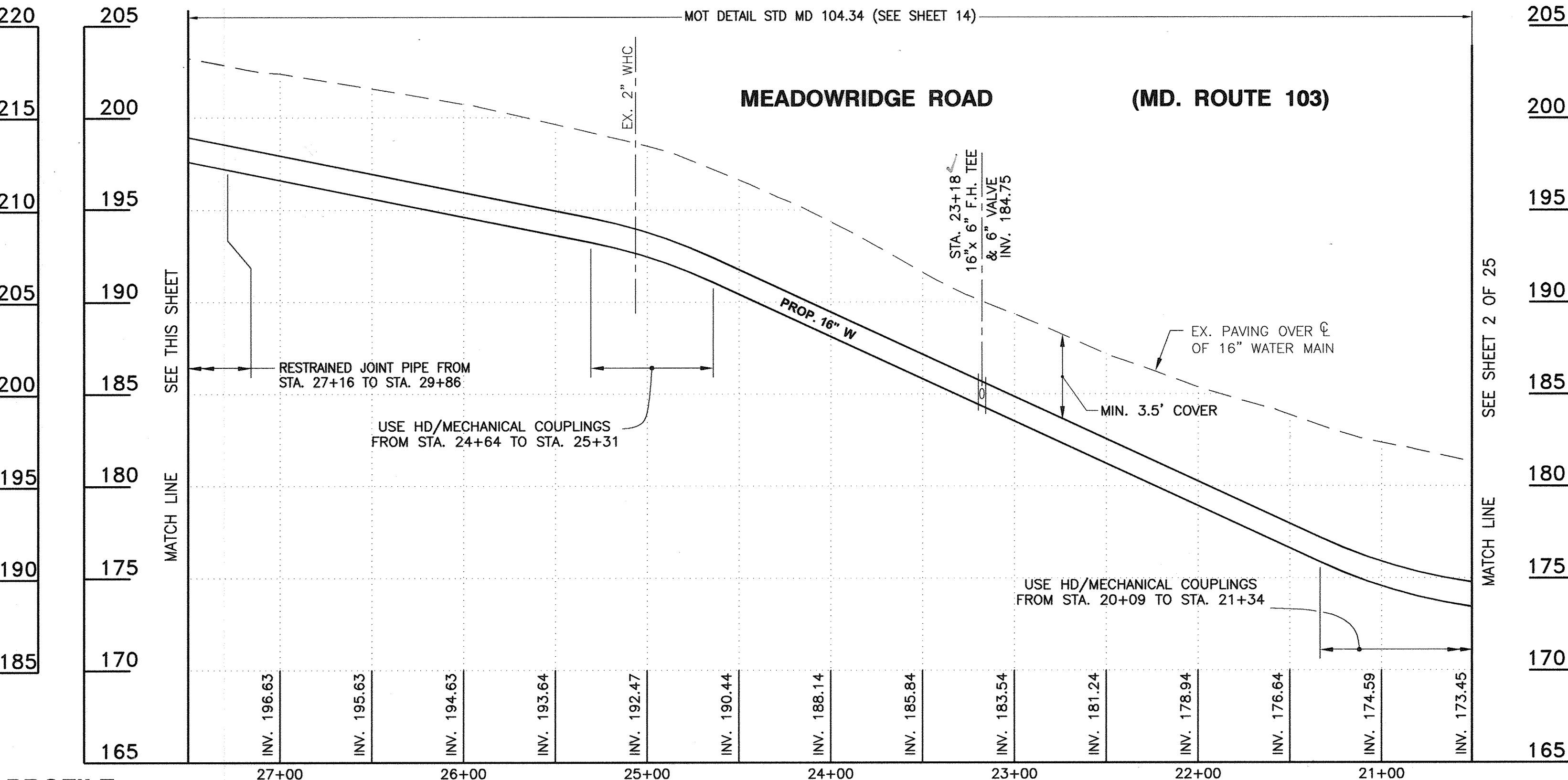
**TRAVERSE POINTS**

43CA HO.CO. CONCRETE MONUMENT  
N 552,686.1087 E 1,379,388.3884

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



**PROFESSIONAL CERTIFICATION**

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*[Signature]*  
Signature of Engineer

07-20-10  
Date

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

*[Signature]* 10/6/10  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 9/28/10  
CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 9/28/10  
CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
Dewberry & Davis LLC

3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.265.9500  
FAX 410.265.8875

**STATE OF MARYLAND**  
PROFESSIONAL ENGINEER

DES: AZW			
DRN: AZW			
CHK: ATB			
DATE:			
BY:	NO.	REVISIONS	DATE

**PLAN AND PROFILE**

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

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 3 OF 25



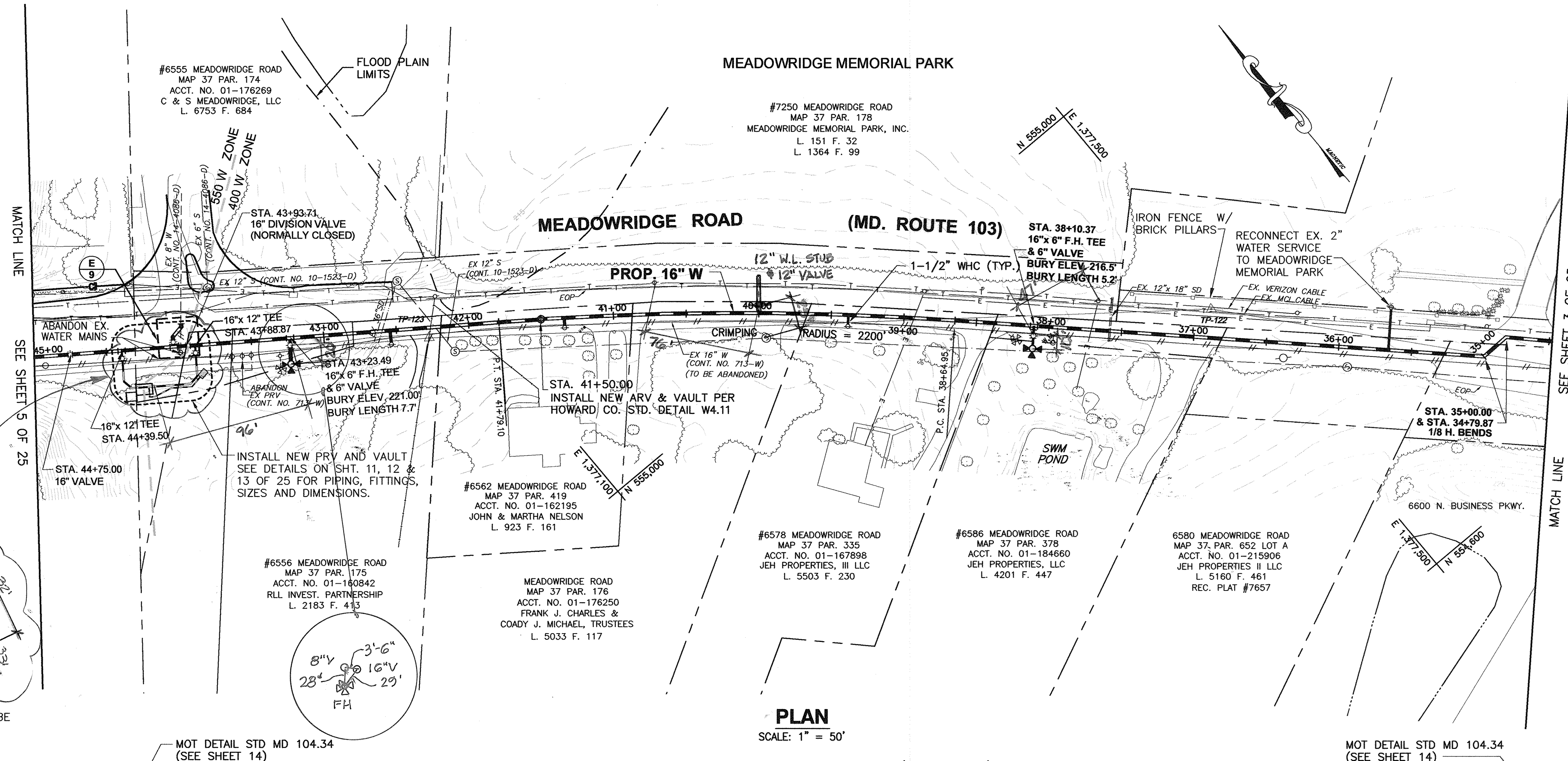
**BENCH MARKS**  
 B.M. #1 ELEV. 195.76  
 HOWARD COUNTY CONTROL PT. 371A STAMPED  
 DISC ON TOP OF CONCRETE MONUMENT

**BENCH MARKS**  
 BM-2 ELEV. 192.24  
 HOWARD COUNTY CONTROL PT. 43CA STAMPED  
 DISC ON TOP OF CONCRETE MONUMENT  
 N 552,686.1087, E 1,379,982.3884

**TRAVERSE POINTS**  
 371A HOWARD COUNTY CONCRETE MONUMENT  
 N 553,315.147 E 1,379,982.154

**TRAVERSE POINTS**  
 43CA HOWARD COUNTY CONCRETE MONUMENT  
 N 552,686.1087, E 1,379,982.3884

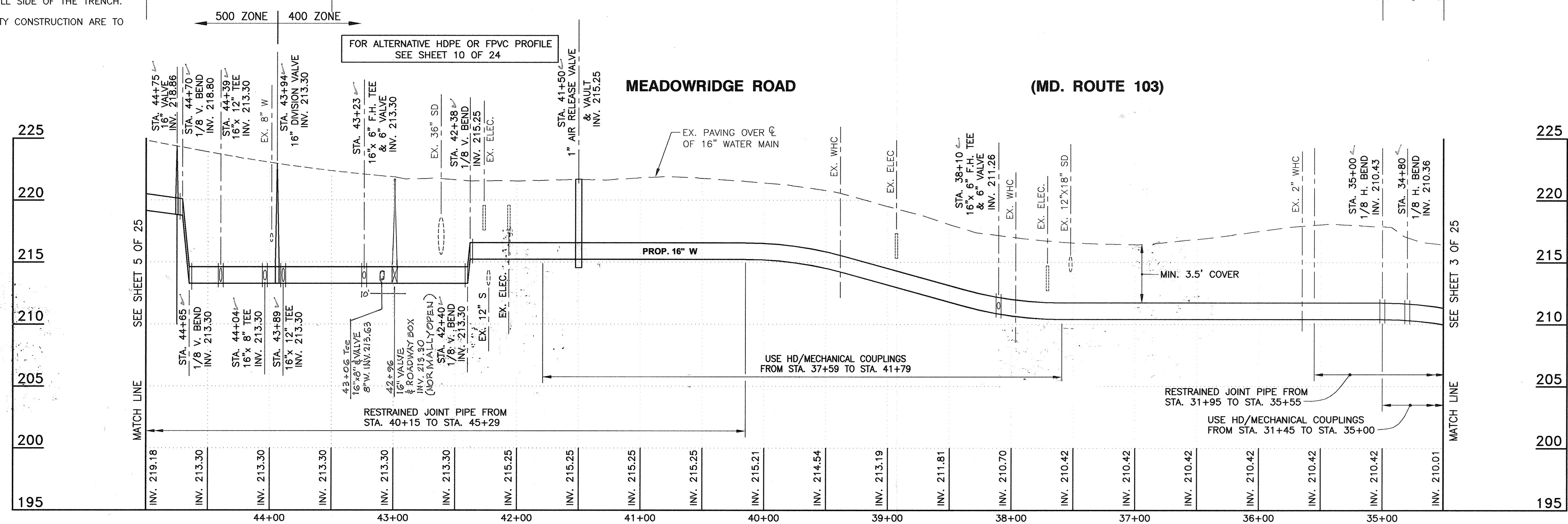
TRAVERSE DATA			
D&D TRAV. PT.	NORTHING	EASTING	ELEV.
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DEWBERRY #118 IRON ROD SET	N 553,086.26	E 1,378,948.89	177.67
DEWBERRY #119 IRON ROD SET	N 553,527.76	E 1,378,604.10	178.75
DEWBERRY #120 IRON ROD SET	N 553,968.65	E 1,378,236.77	198.88
DEWBERRY #121 IRON ROD SET	N 554,383.36	E 1,377,879.12	208.63
DEWBERRY #122 IRON ROD SET	N 554,833.42	E 1,377,493.02	216.13
DEWBERRY #123 MAG NAIL	N 555,163.90	E 1,377,067.69	221.66
DEWBERRY #124 ROD AND CAP	N 555,518.80	E 1,376,565.22	234.22
DEWBERRY #130 ROD AND CAP	N 555,974.92	E 1,376,026.93	263.65
DEWBERRY #131 HO.CO.MON.#37HC	N 556,364.08	E 1,375,513.20	270.82
DEWBERRY #133 ROD AND CAP	N 557,012.81	E 1,374,905.64	299.76
DEWBERRY #134 ROD AND CAP	N 557,203.52	E 1,374,740.54	296.62
DEWBERRY #135 ROD AND CAP	N 557,716.81	E 1,374,540.16	274.28
DEWBERRY #136 ROD AND CAP	N 558,104.57	E 1,374,343.86	299.74
DEWBERRY #137 ROD AND CAP	N 558,704.16	E 1,374,396.80	326.64
DEWBERRY #138 ROD AND CAP	N 559,299.14	E 1,374,455.76	334.69
DEWBERRY #139 MAG NAIL	N 559,230.13	E 1,374,568.43	331.26



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

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

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 Signature of Engineer: [Signature] Date: 09-20-10

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND  
 Director of Public Works: [Signature] DATE: 10/15/10  
 Chief, Bureau of Engineering: [Signature] DATE: 9/22/10  
 Chief, Bureau of Utilities: [Signature] DATE: 10/14/10  
 Chief, Utility Design Division: [Signature] DATE: 9/22/10

**Dewberry**  
 Dewberry & Davis LLC  
 3108 LORD BALTIMORE DRIVE  
 SUITE 110  
 BALTIMORE, MD 21244-2062  
 410.265.9500  
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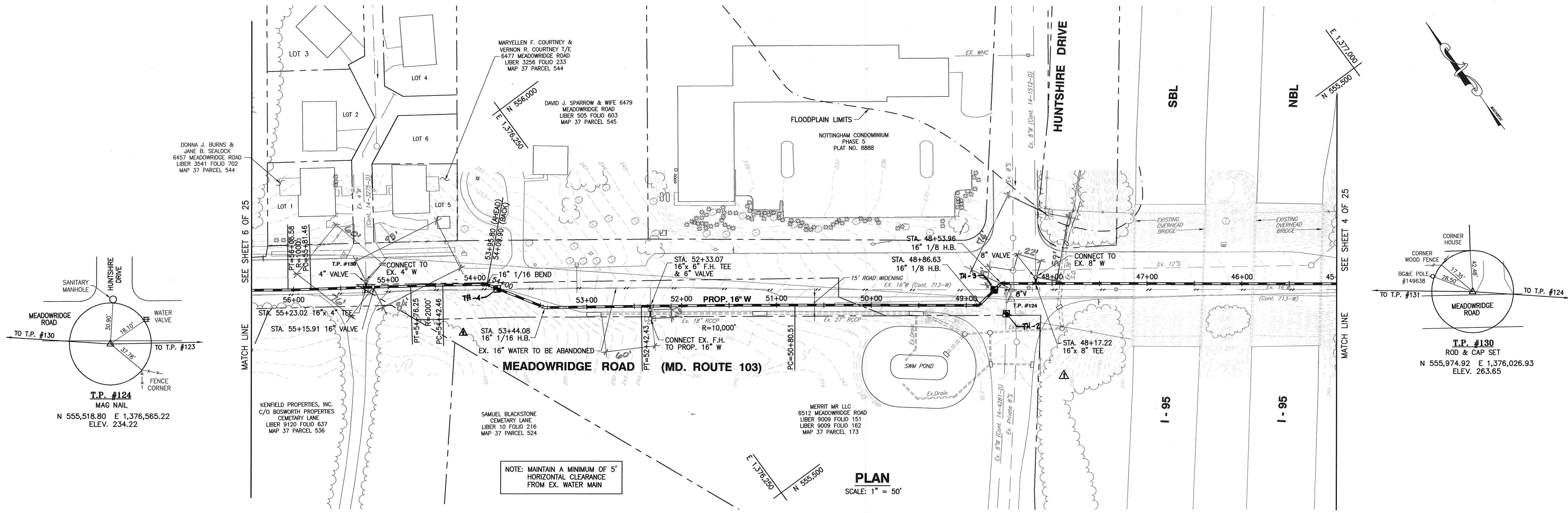
DES:	AZW
DRN:	AZW
CHK:	ATB
DATE:	
BY:	
NO.:	
REVISIONS:	
DATE:	

**PLAN AND PROFILE**  
 600' SCALE MAP NO. 37, 43  
 BLOCK NO. 5, 23

**MEADOWRIDGE ROAD**  
**WATER MAIN REPLACEMENT**  
 CAPITAL PROJECT W-8249  
 CONTRACT 44-4164  
 ELECTION DISTRICT NO. 1  
 HOWARD COUNTY, MARYLAND

SCALE: SHOWN  
 SHEET 4 OF 25





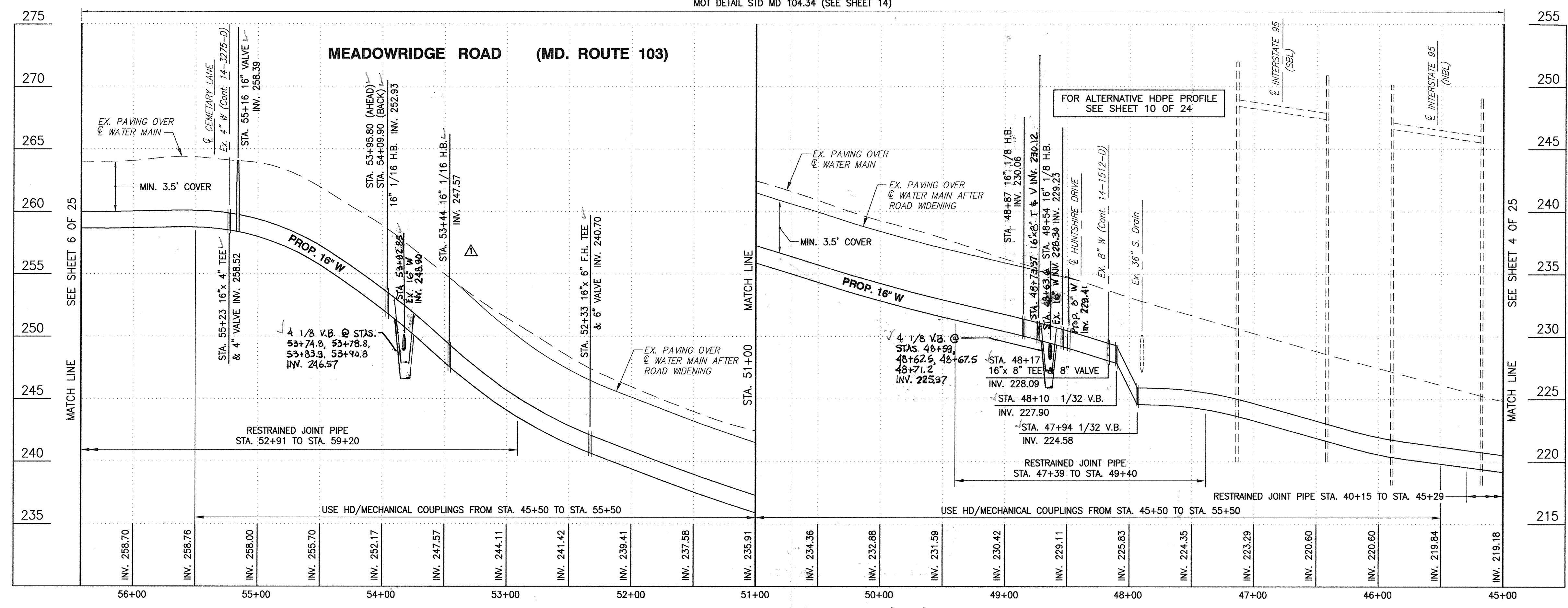
**PLAN**  
SCALE: 1" = 50'

MOT DETAIL STD MD 104.34 (SEE SHEET 14)

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**TEST PIT NOTES**  
AT TH-2 - TIE IN TO EXISTING 8" WATER MAIN 5' EAST THE 8" V.B. EXISTING INVERT FROM DESIGN PLANS, NOT AS-BUILTS. CONTRACTOR TO VERIFY INVERT AND ADJUST CONNECTION ACCORDINGLY.  
AT TH-4 - IF TEST PITTING FINDS 8" MINIMUM CLEARANCE BETWEEN PROPOSED 16" MAIN AND EXISTING 16" MAIN, USE ORIGINAL PROFILE. IF LESS THAN 8", USE ALTERNATIVE SHOWN.



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*(Signature)*  
Signature of Engineer Date: 09-20-10

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

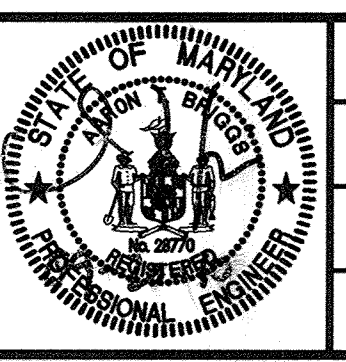
Director of Public Works: *(Signature)* 10/15/10  
Date: 9/28/10

Chief, Bureau of Engineering: *(Signature)* 9/28/10  
Date: 9/28/10

Chief, Bureau of Utilities: *(Signature)* 10/15/10  
Date: 9/28/10

Chief, Utility Design Division: *(Signature)* 9/28/10  
Date: 9/28/10

**Dewberry**  
Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2682  
410.285.9500  
FAX: 410.285.8875



DES:	AZW	FIELD MODIFICATIONS	
DRN:	AZW		
CHK:	ATB		
DATE:			
BY	NO.	REVISIONS	DATE

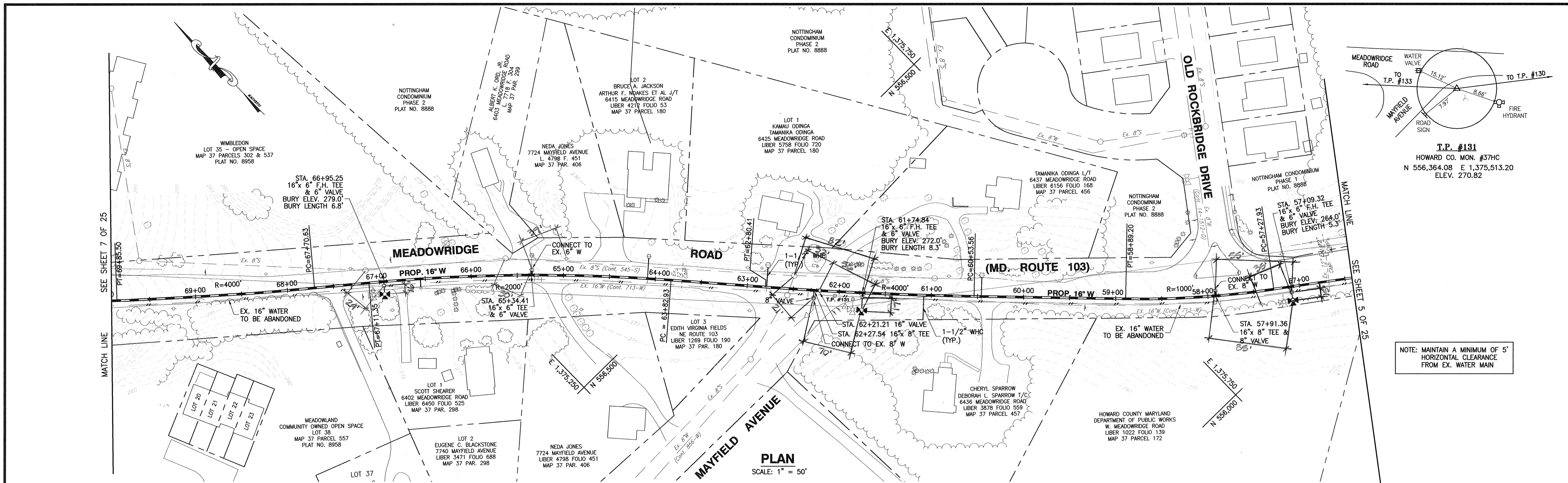
**PLAN AND PROFILE**

600' SCALE MAP NO. 37, 43  
BLOCK NO. 5, 23  
ELECTION DISTRICT NO. 1  
HOWARD COUNTY, MARYLAND

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

SCALE: SHOWN  
SHEET 5 OF 25



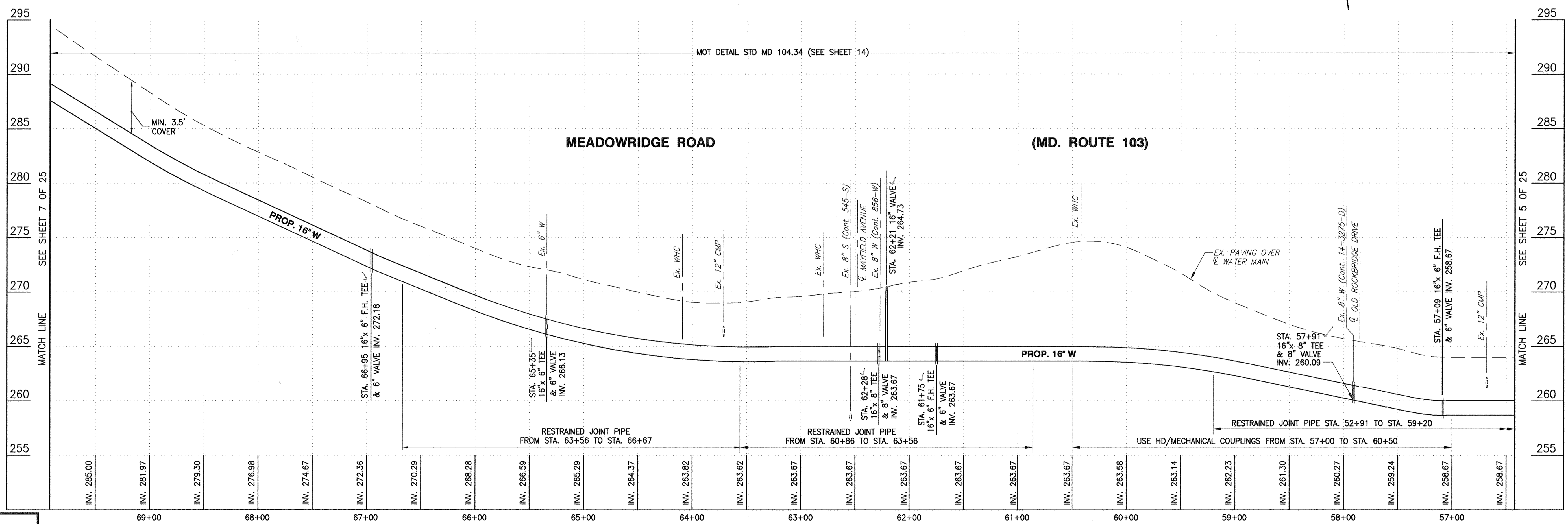


**PLAN**  
SCALE: 1" = 50'

NOTE: MAINTAIN A MINIMUM OF 5' HORIZONTAL CLEARANCE FROM EX. WATER MAIN

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*[Signature]* 09-28-10  
Signature of Engineer Date

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

*[Signature]* 9/28/10  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 9/28/10  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 9/28/10  
CHIEF, UTILITY DESIGN DIVISION DATE

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410.265.9500  
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DES:	AZW
DRN:	AZW
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DATE:	
BY:	NO.
REVISIONS:	
DATE:	

**PLAN AND PROFILE**

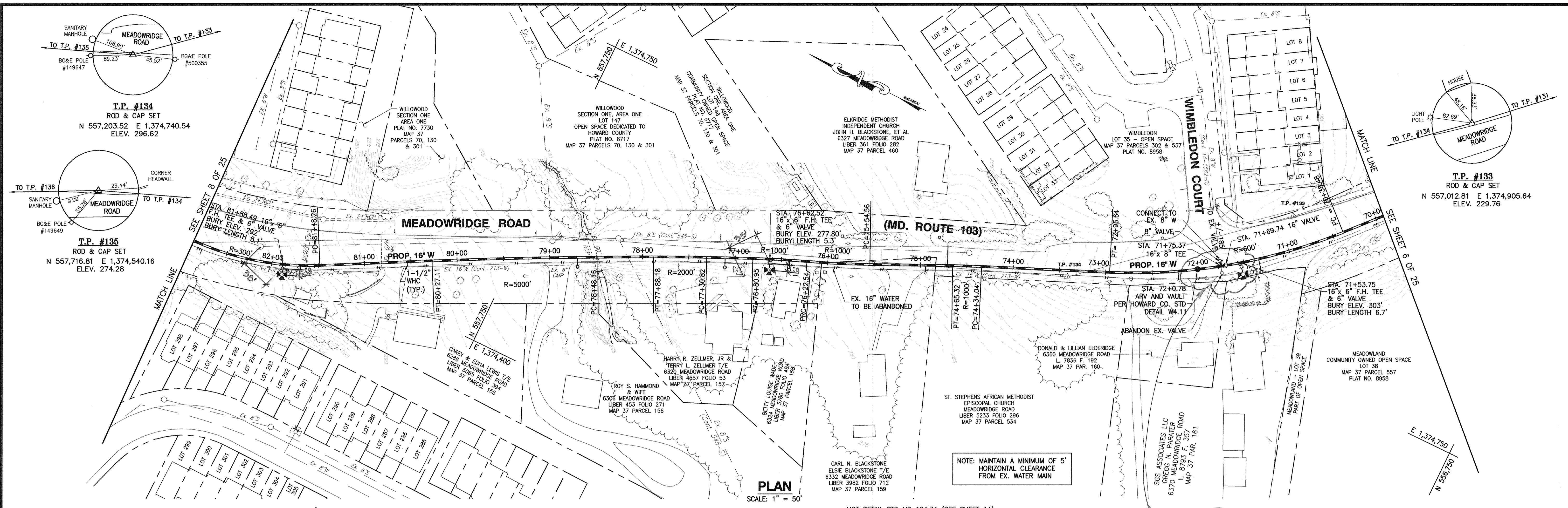
600' SCALE MAP NO. 37, 43  
BLOCK NO. 5, 23  
ELECTION DISTRICT NO. 1

**MEADOWRIDGE ROAD**  
WATER MAIN REPLACEMENT  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

SCALE: SHOWN  
SHEET 6 OF 25

HOWARD COUNTY, MARYLAND





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

MOT DETAIL STD MD 104.34 (SEE SHEET 14)

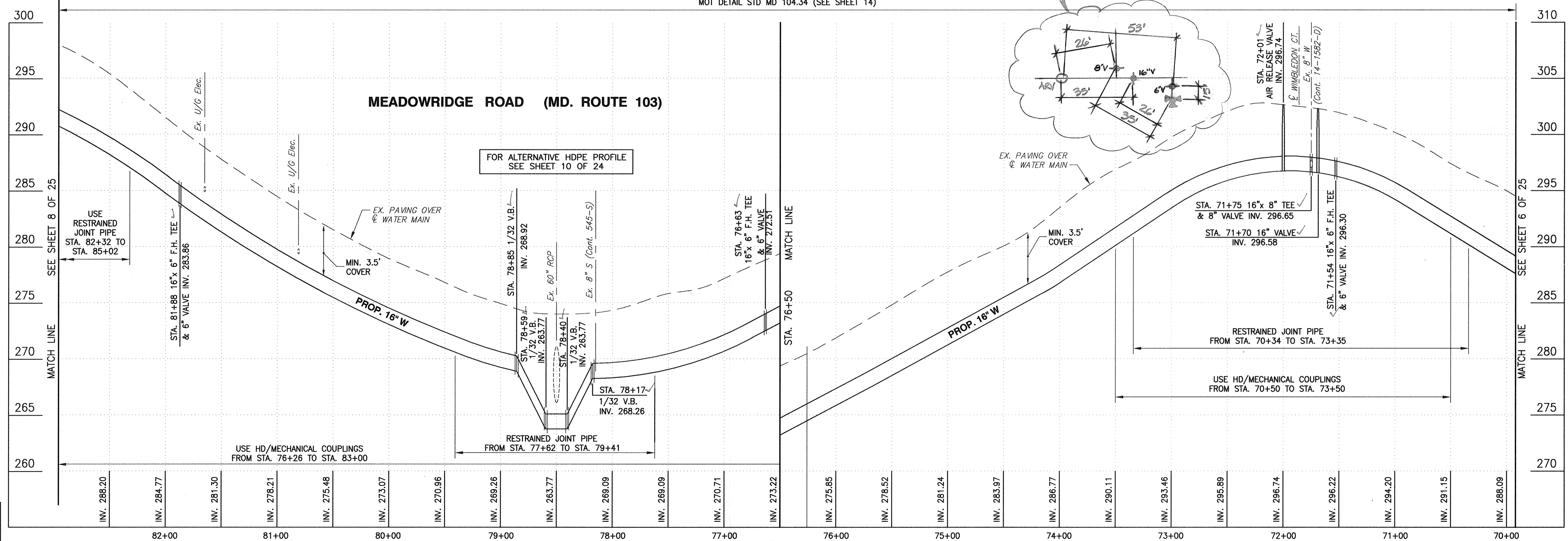
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Signature of Engineer Date

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

*[Signature]* DATE 2/28/10  
DIRECTOR OF PUBLIC WORKS

*[Signature]* DATE 2/28/10  
CHIEF, BUREAU OF UTILITIES

*[Signature]* DATE 2/28/10  
CHIEF, UTILITY DESIGN DIVISION

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DES:	AZW	BY:		NO.		REVISIONS	DATE
DRN:	AZW	BY:		NO.			
CHK:	ATB	BY:		NO.			
DATE:		BY:		NO.			

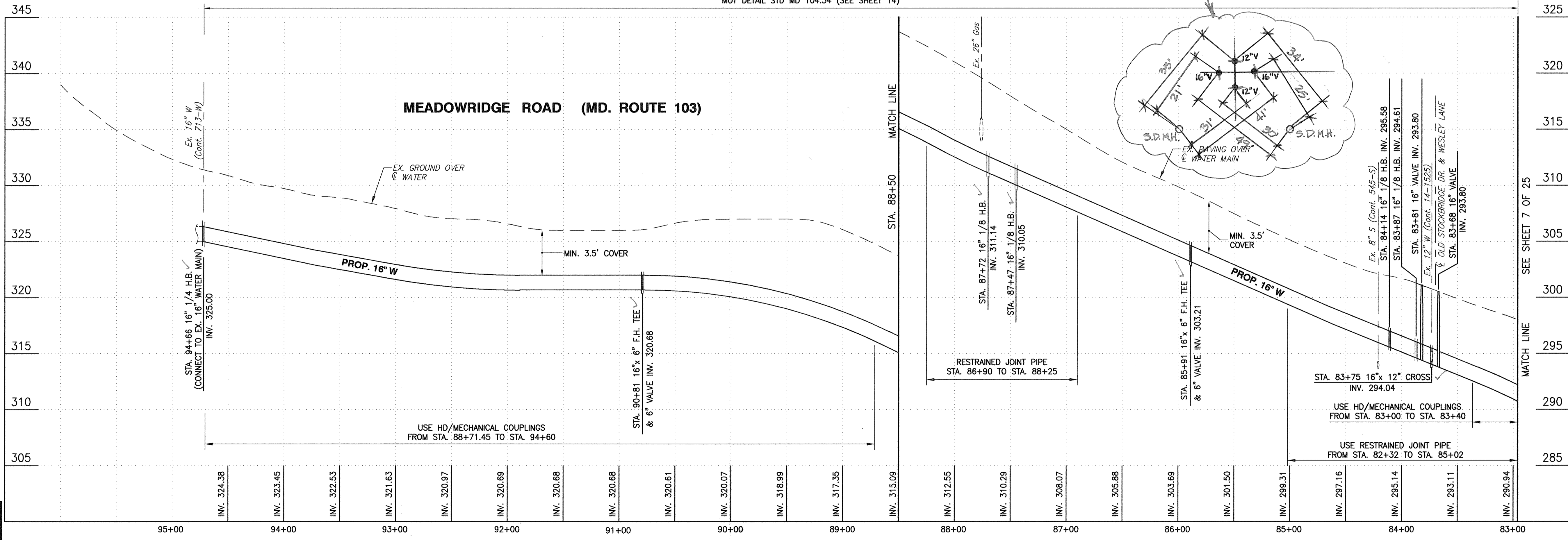
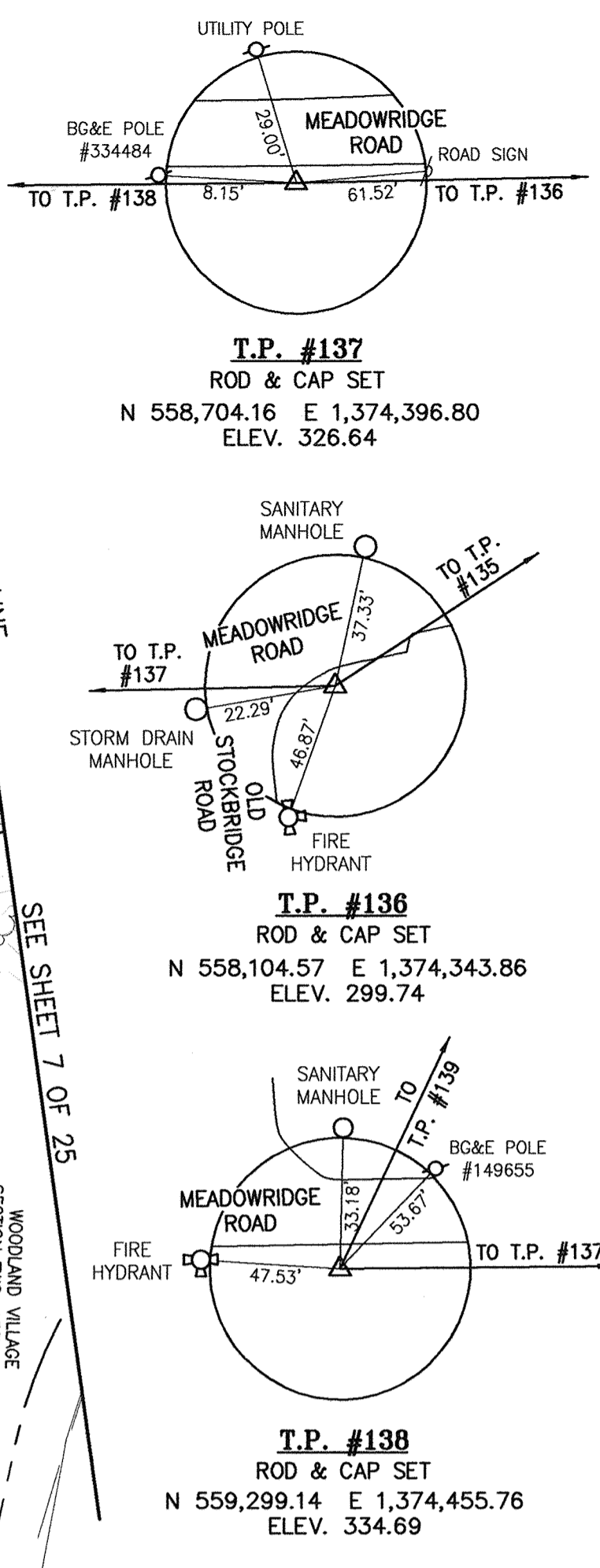
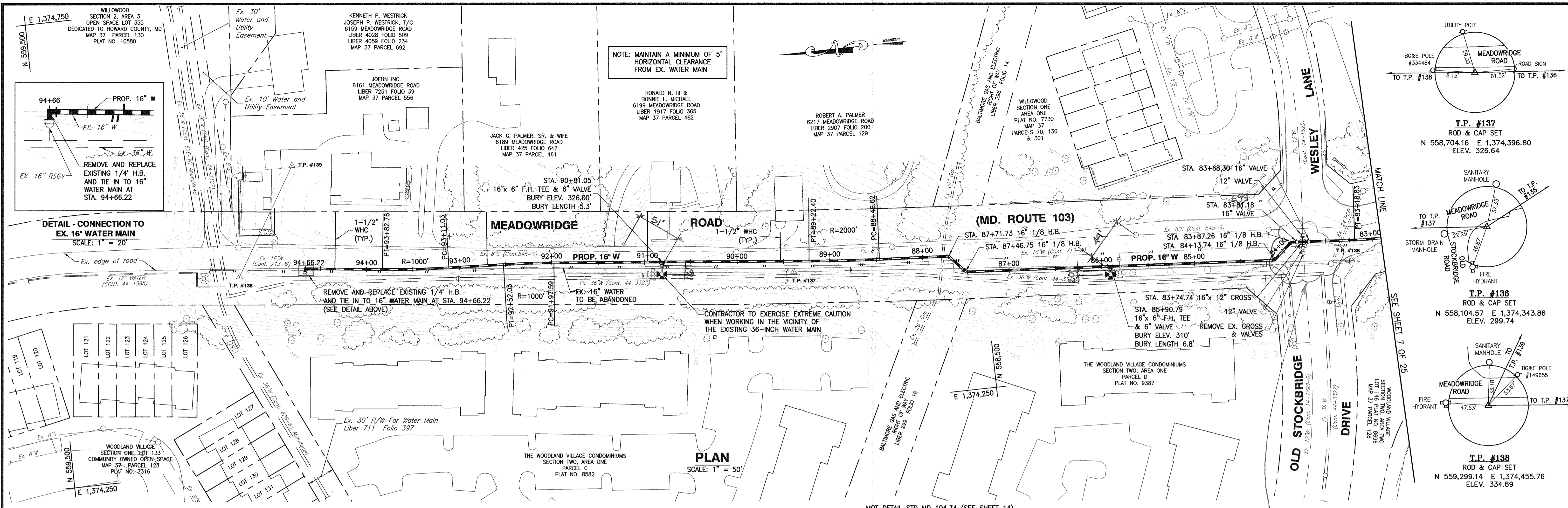
**PLAN AND PROFILE**

600' SCALE MAP NO. 37, 43  
BLOCK NO. 5, 23  
ELECTION DISTRICT NO. 1

**MEADOWRIDGE ROAD**  
**WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

SCALE: SHOWN  
SHEET 7 OF 25





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Signature of Engineer

09-20-10  
Date

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HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 9/25/10

Chief, Bureau of Utilities: *[Signature]* DATE: 9/25/10

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DES: AZW					
DRN: AZW					
CHK: ATB					
DATE:	BY:	NO.	REVISIONS	DATE	

**PLAN AND PROFILE**

600' SCALE MAP NO. 37, 43

BLOCK NO. 5, 23

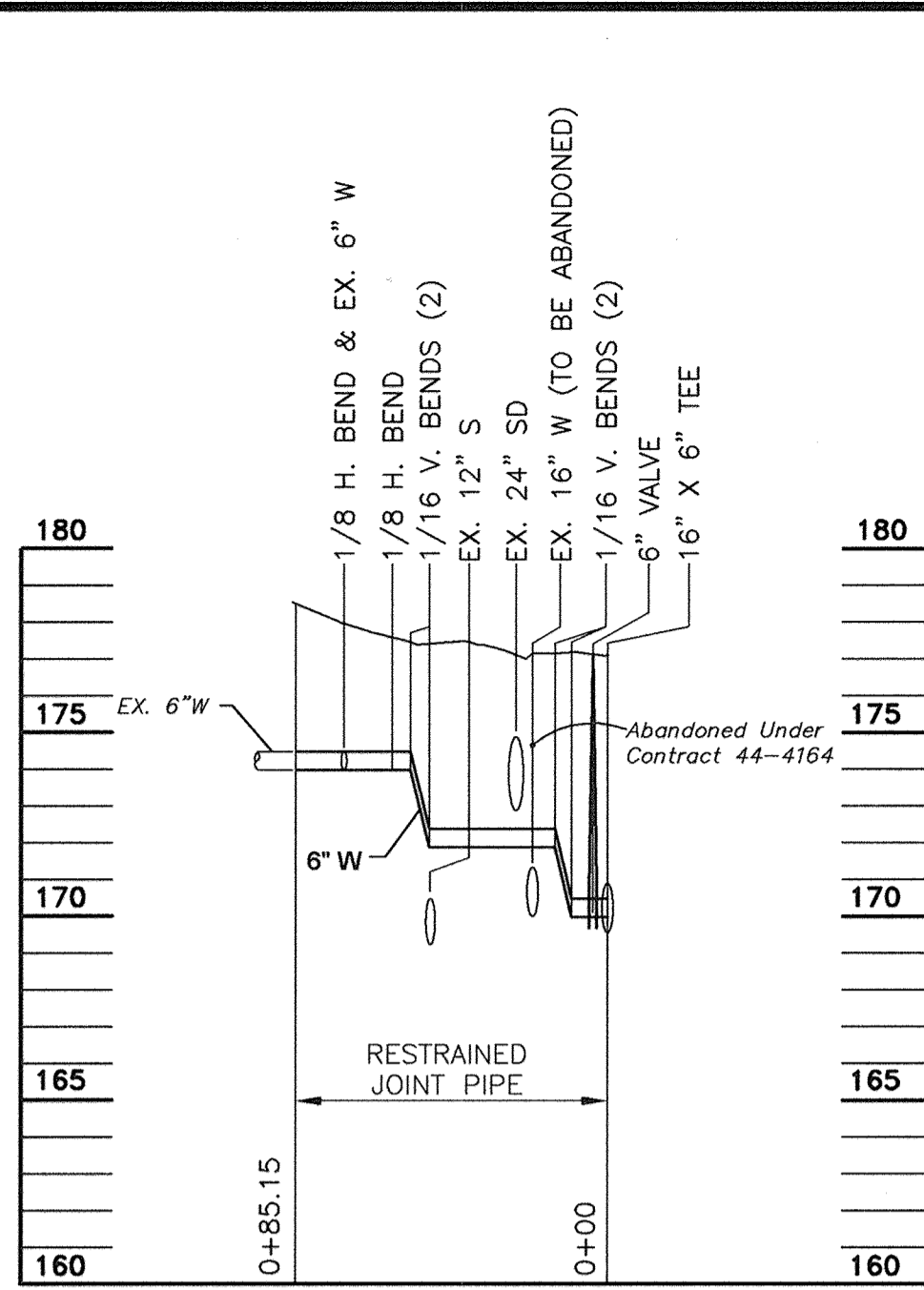
ELECTION DISTRICT NO. 1

HOWARD COUNTY, MARYLAND

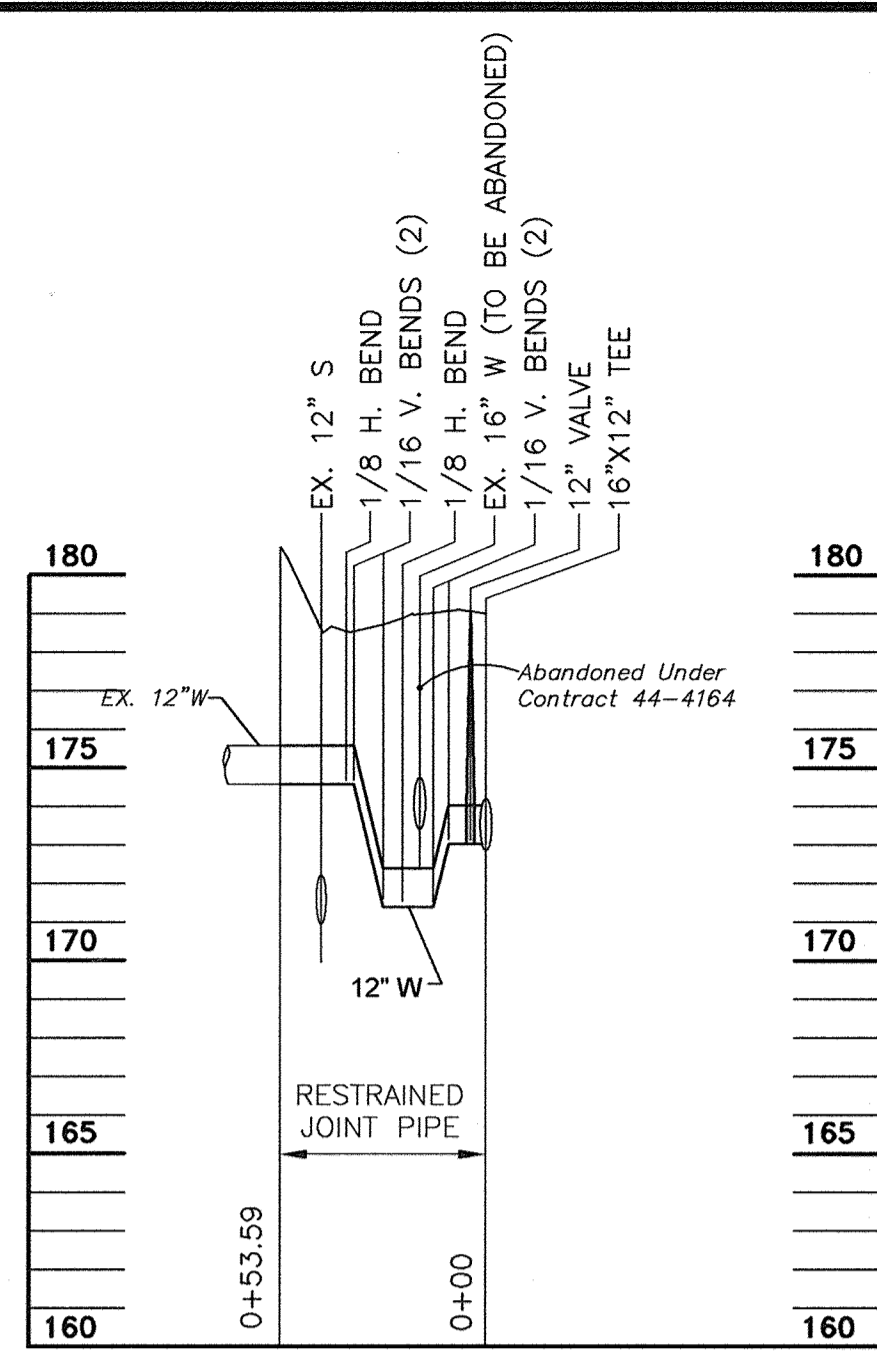
SCALE: SHOWN

SHEET 8 OF 25

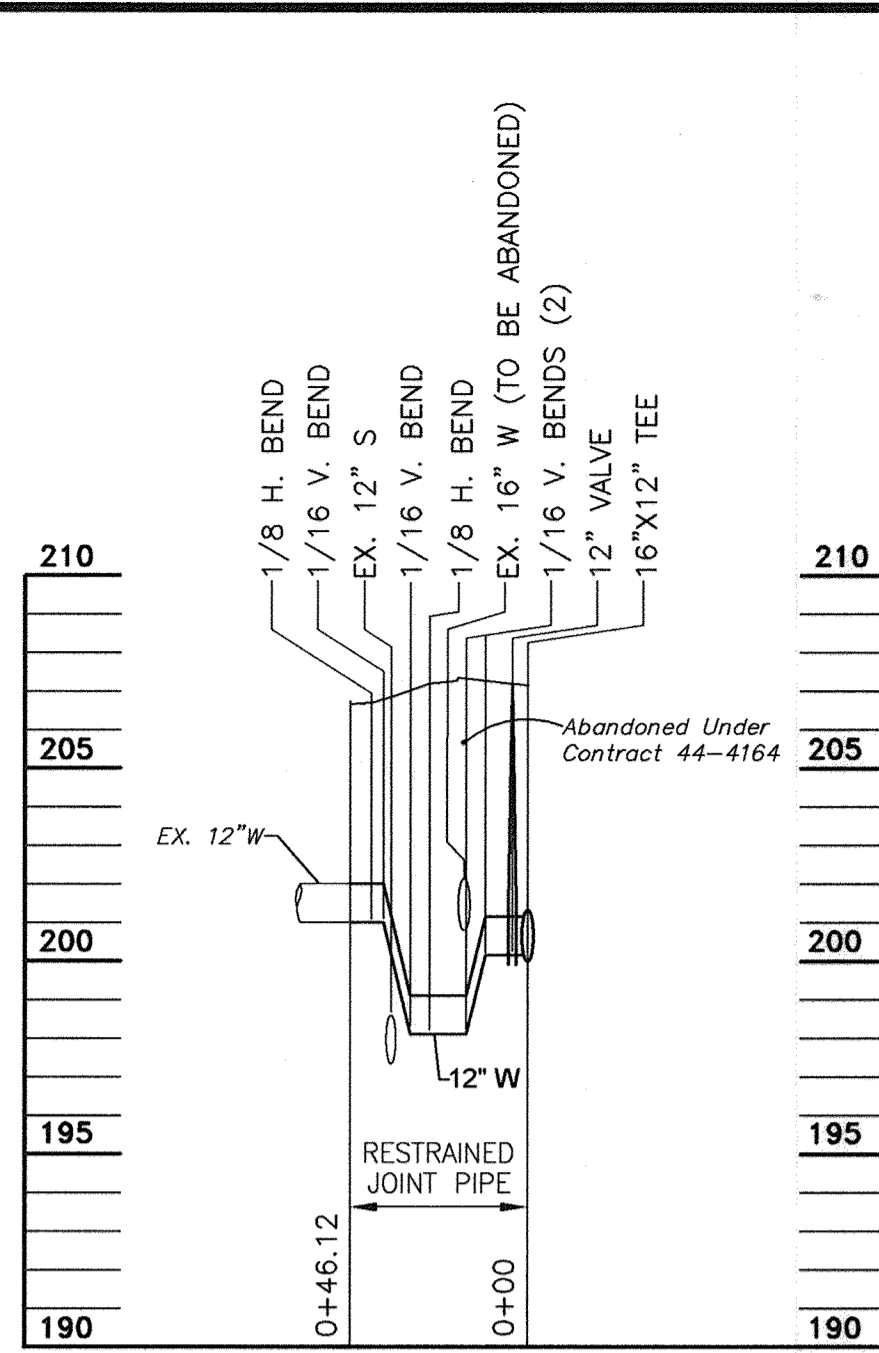




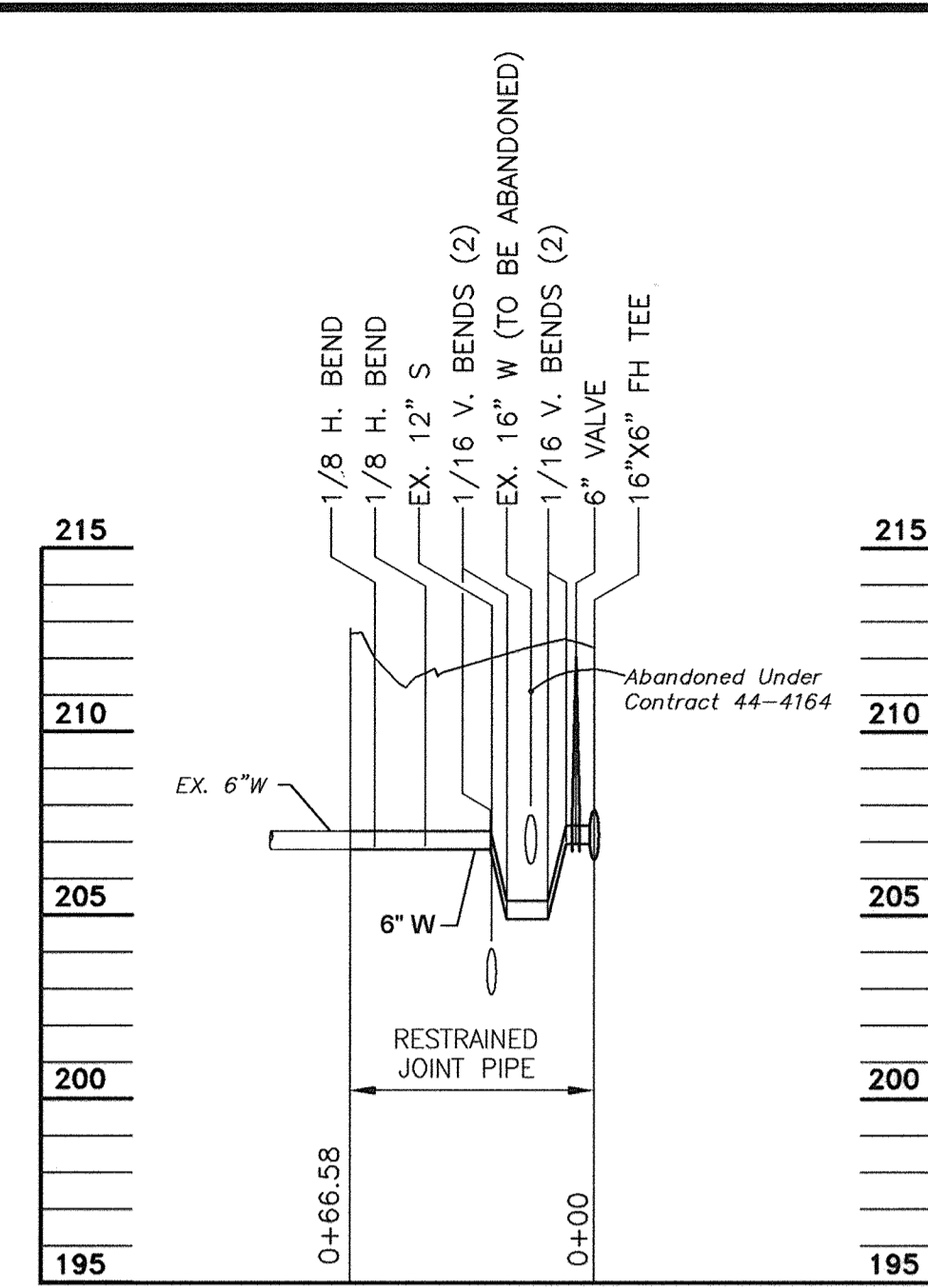
**CONNECTION A**  
 6" W TIE-IN STA. 12+63.3 ✓  
 SCALE: 1" = 50' H.  
 1" = 5' V.



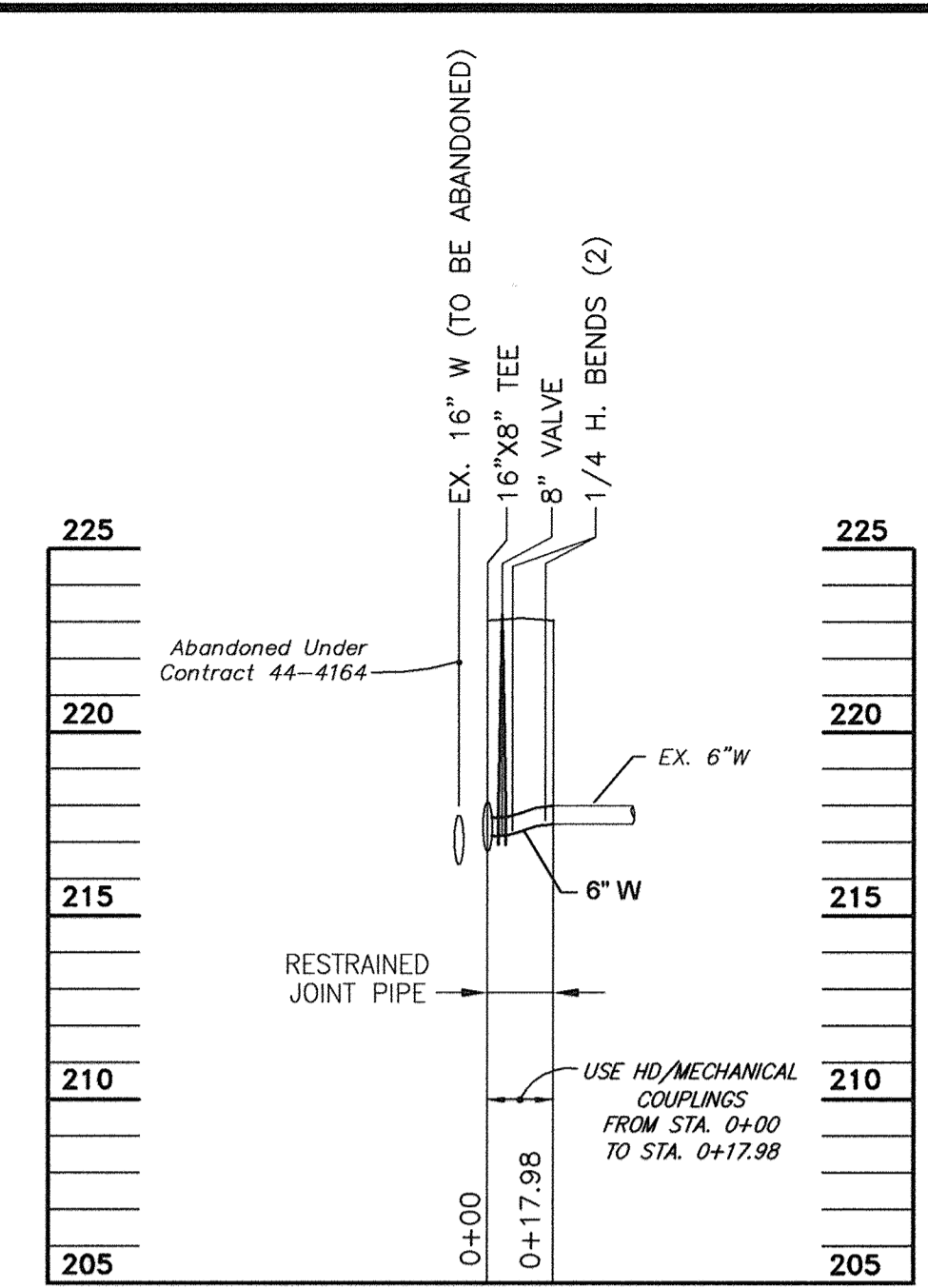
**CONNECTION B**  
 12" W TIE-IN STA. 15+40 ✓  
 SCALE: 1" = 50' H.  
 1" = 5' V.



**CONNECTION C**  
 12" W TIE-IN STA. 28+68 ✓  
 SCALE: 1" = 50' H.  
 1" = 5' V.

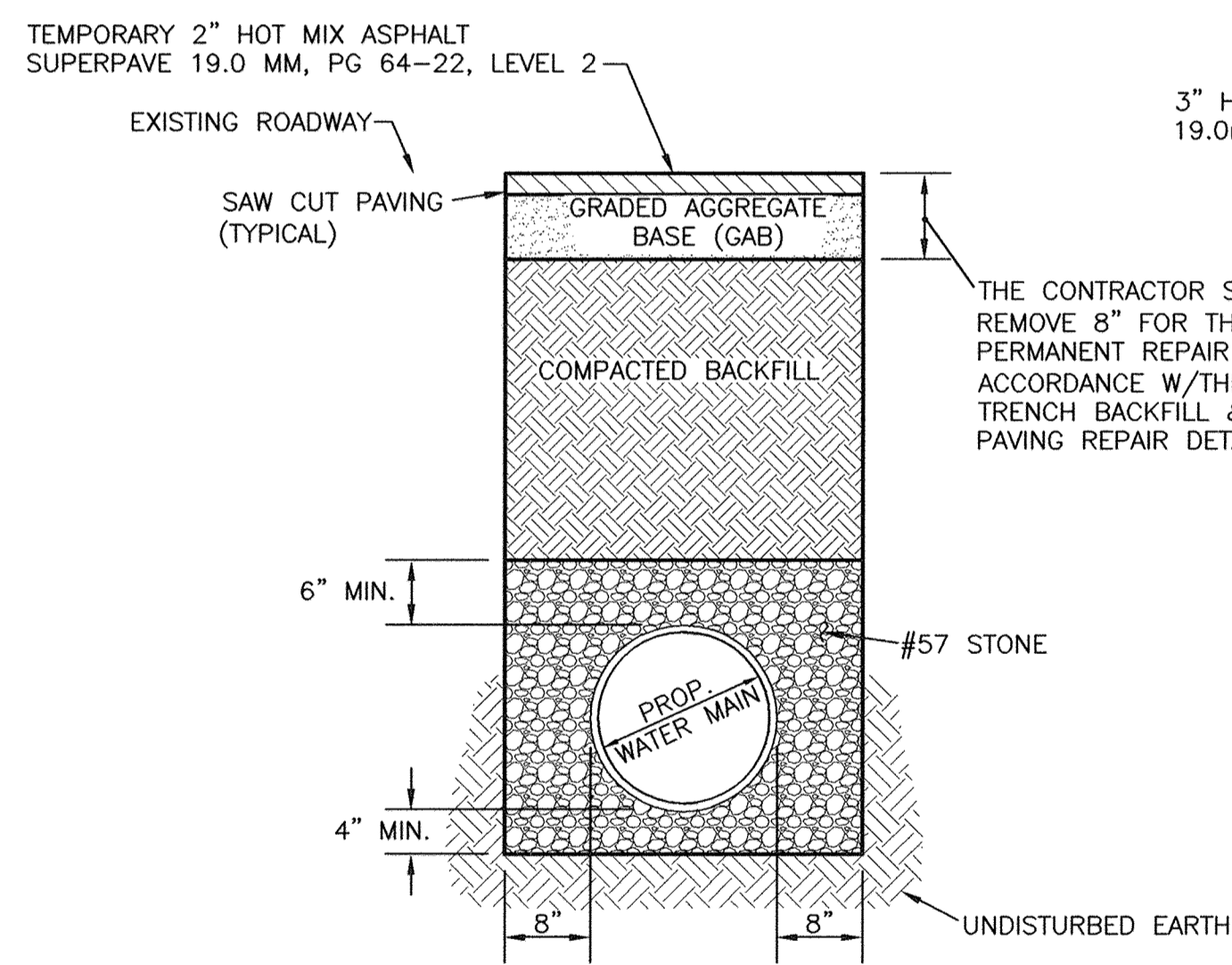


**CONNECTION D**  
 6" FH CROSSING AT STA. 33+35 ✓  
 SCALE: 1" = 50' H.  
 1" = 5' V.

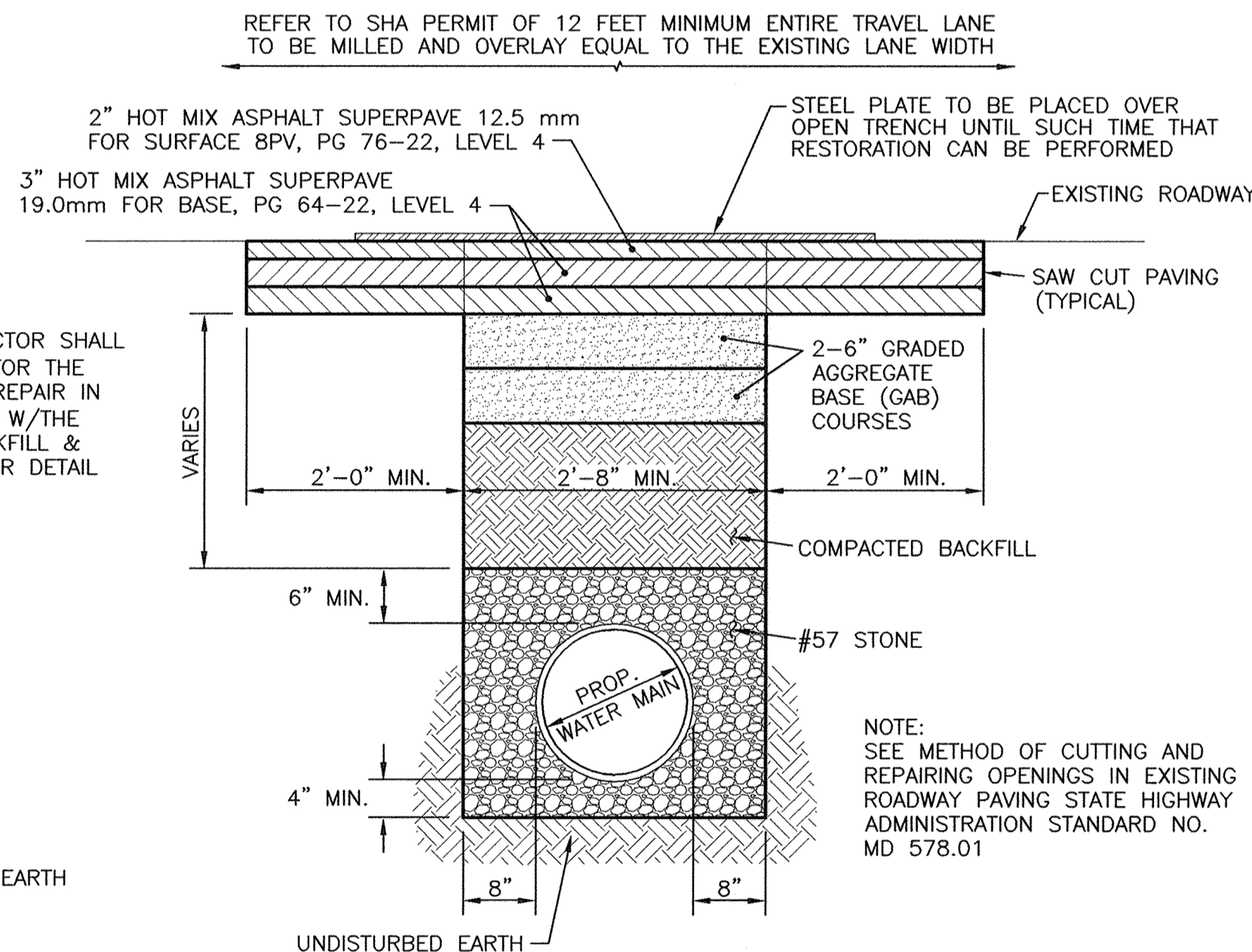


**CONNECTION E**  
 RELOCATED 8" W AT STA. 44+04 ✓  
 SCALE: 1" = 50' H.  
 1" = 5' V.

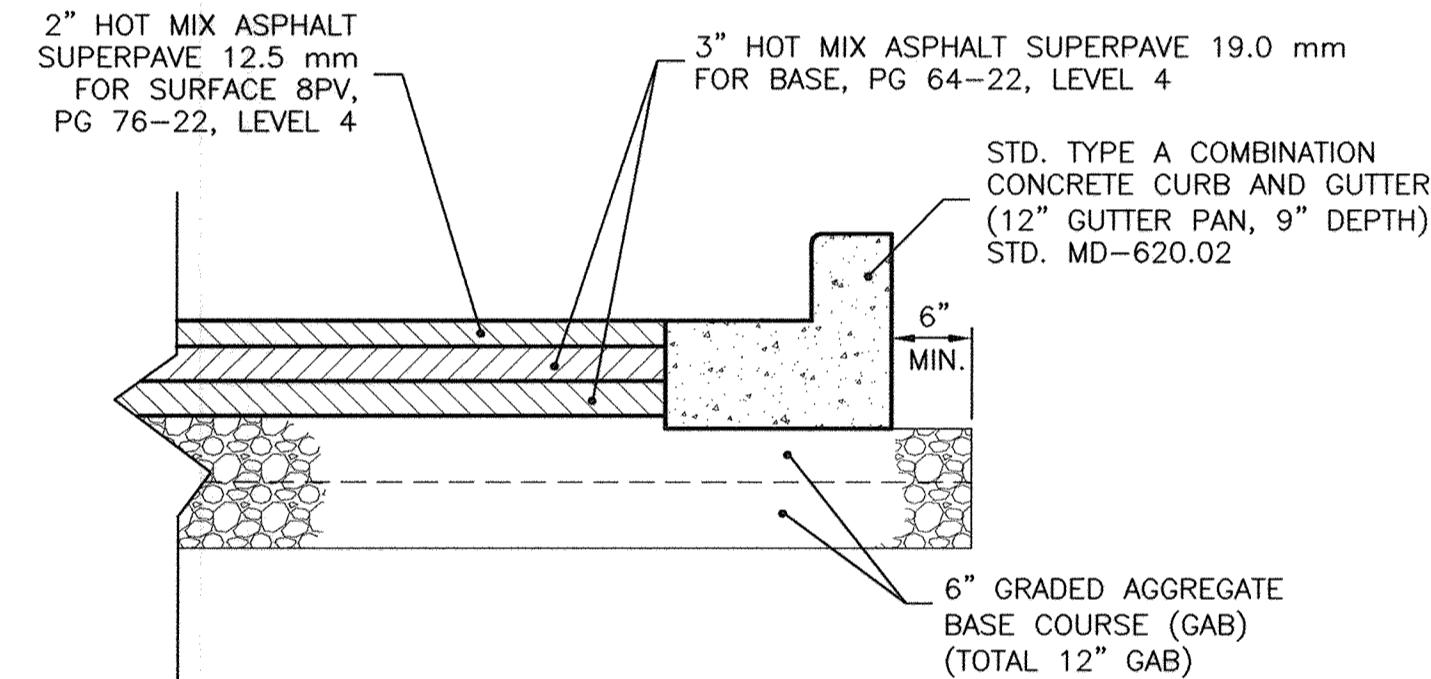
**NOTE**  
 TEMPORARY PAVING FOR UTILITY TRENCH REPAIR SHALL CONSIST OF GRADED AGGREGATE BASE (GAB) WITH 2" OF BITUMINOUS CONCRETE SURFACE MATERIAL, SO THAT THE SURFACE IS FLUSH WITH THE ADJOINING PAVING SURFACES. IF ANY SETTLEMENT OCCURS, THE CONTRACTOR SHALL REFILL WITH PROPER MATERIAL AND RESTORE SAID PAVING AS ABOVE SPECIFIED.



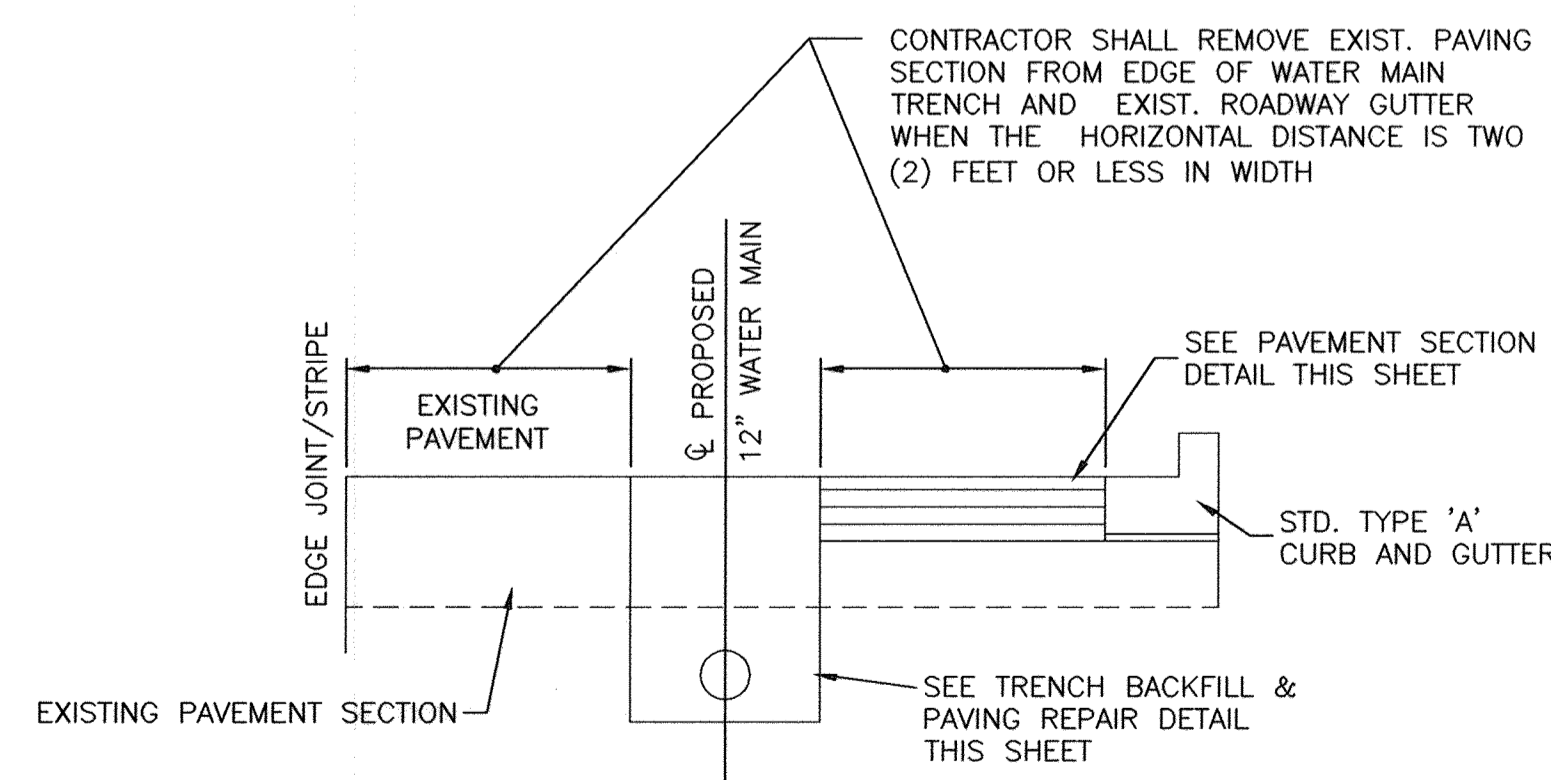
**TEMPORARY PAVING DETAIL**  
 SCALE: 3/4" = 1'-0"



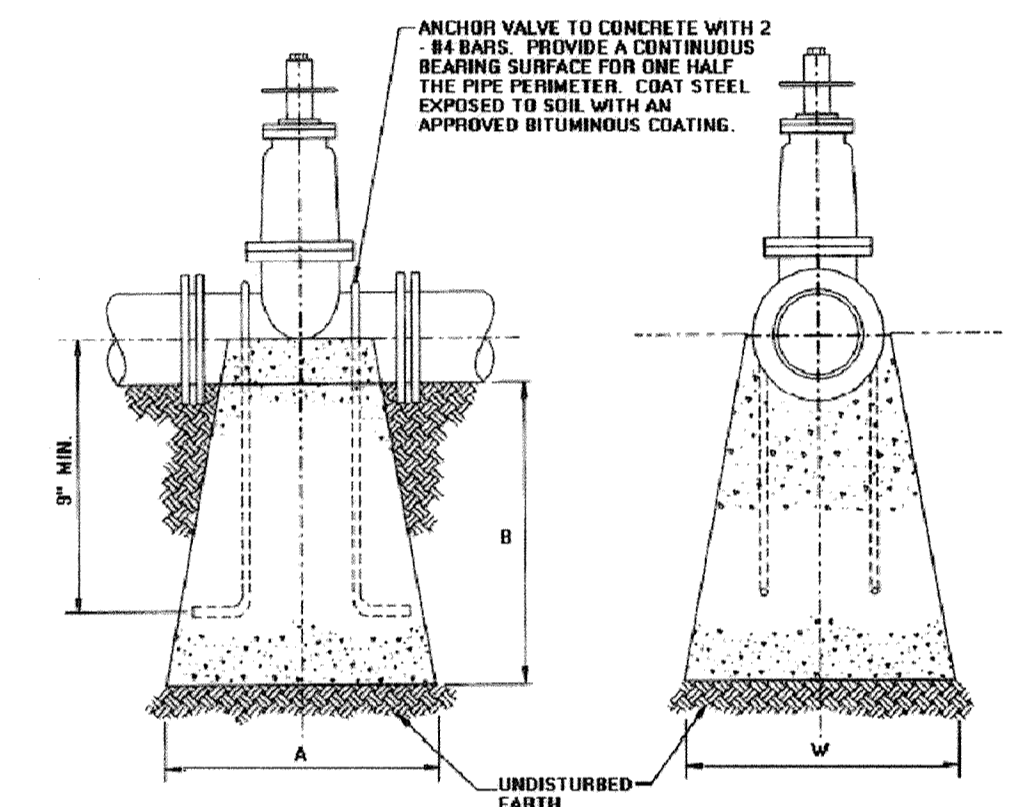
**TRENCH BACKFILL & PAVING REPAIR**  
 SCALE: 3/4" = 1'-0"



**PAVING SECTION DETAIL**  
 NOT TO SCALE



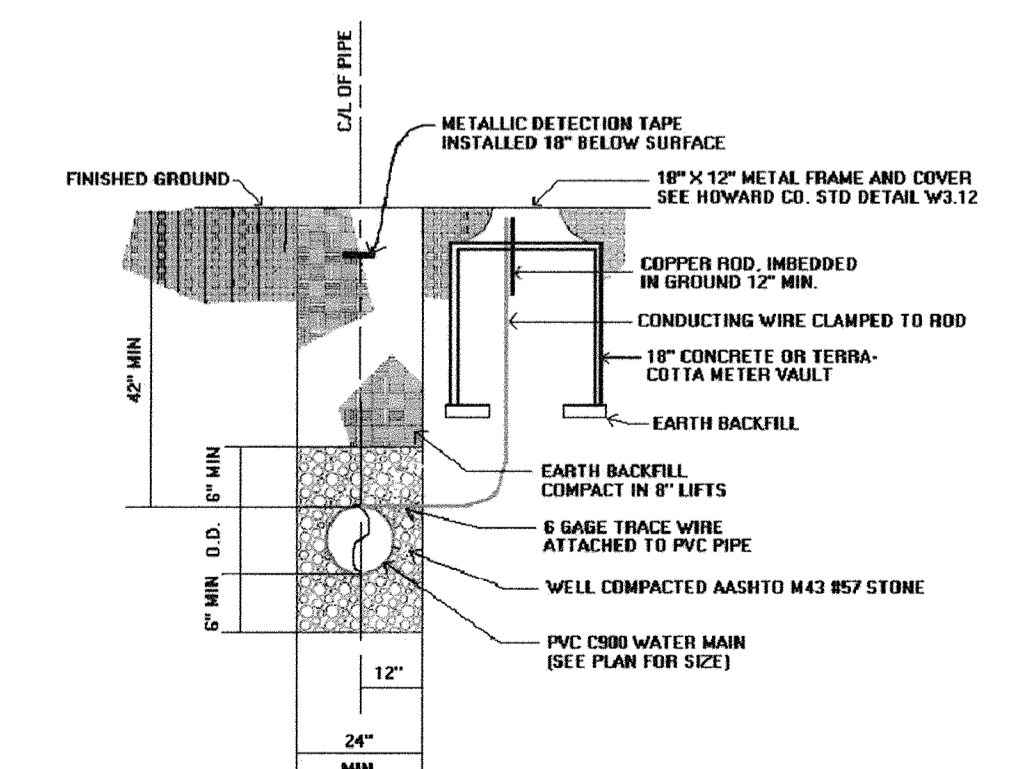
**PAVING DETAIL**  
 NOT TO SCALE



PIPE SIZE	A	B	W
4"	5"	1'-0"	1'-0"
6"	10"	1'-5"	1'-0"
8"	1'-0"	2'-0"	2'-0"
12"	1'-0"	2'-0"	3'-0"

ALL CONCRETE TO BE MIX NO. 2

**ANCHORAGES FOR VALVES WITH PVC PIPE**  
 NOT TO SCALE

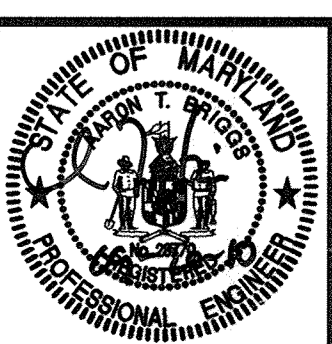


**CONTINUITY TEST STATION AND METALLIC DETECTION TAPE DETAIL**  
 NOT TO SCALE

**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. 28770, EXPIRATION DATE: MAY 14, 2011  
 Signature of Engineer: [Signature] Date: 09-20-10

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND  
 DIRECTOR OF PUBLIC WORKS: [Signature] DATE: 10/25/10  
 CHIEF, BUREAU OF UTILITIES: [Signature] DATE: 10/14/10  
 CHIEF, BUREAU OF ENGINEERING: [Signature] DATE: 9/25/10  
 CHIEF, UTILITY DESIGN DIVISION: [Signature] DATE: [Signature]

**Dewberry**  
 Dewberry & Davis LLC  
 3106 LORD BALTIMORE DRIVE  
 SUITE 110  
 BALTIMORE, MD 21244-2682  
 410.285.9500  
 FAX: 410.285.8875



DES:	AZW			
DRN:	AZW			
CHK:	ATB			
DATE:				
BY:	NO.	REVISIONS	DATE	

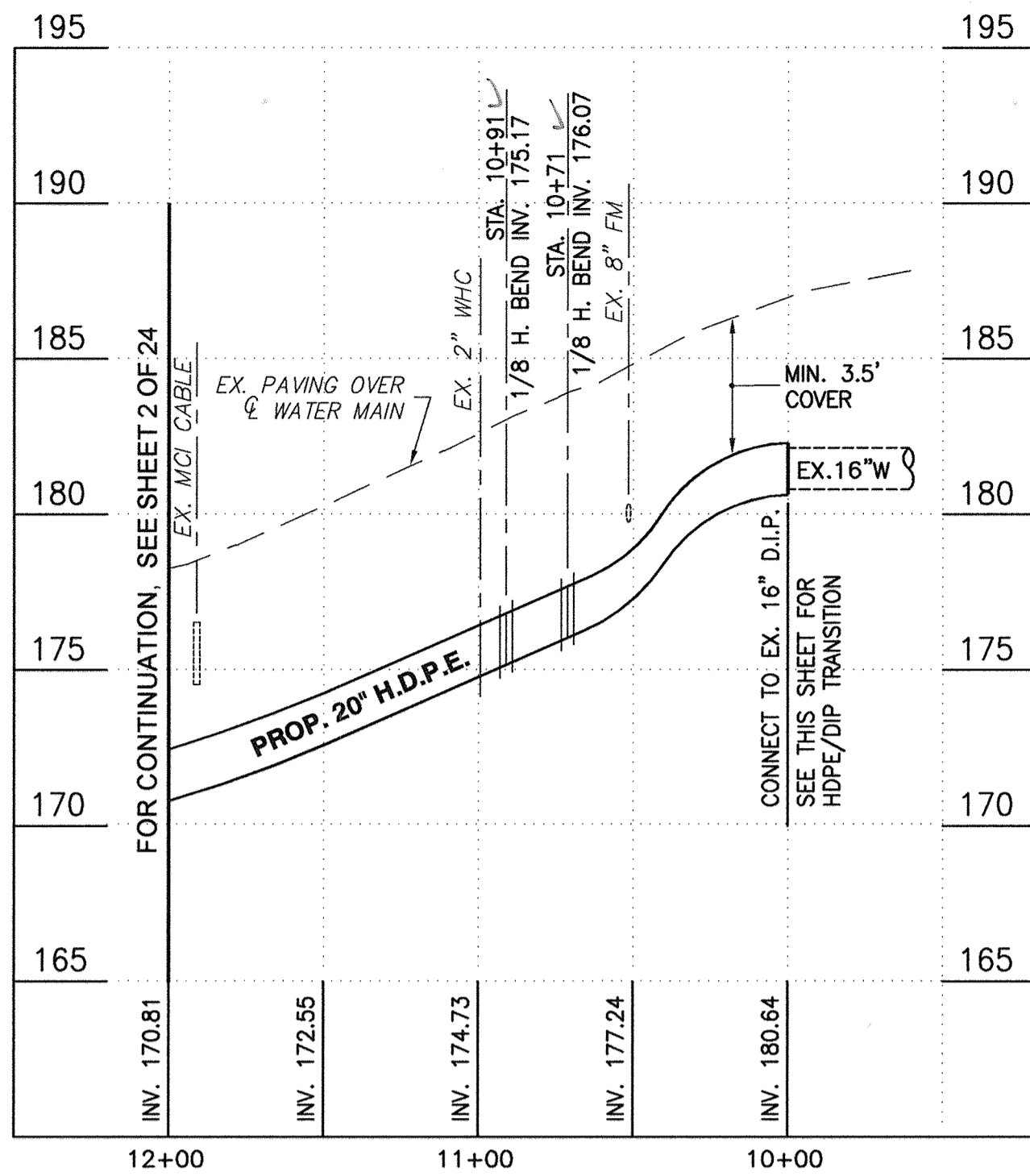
**LATERAL CONNECTION PROFILES, PAVING DETAILS AND CONTINUITY TEST STATION DETAILS**  
 600' SCALE MAP NO. 37, 43 BLOCK NO. 5, 23

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
 CAPITAL PROJECT W-8249  
 CONTRACT 44-4164  
 ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

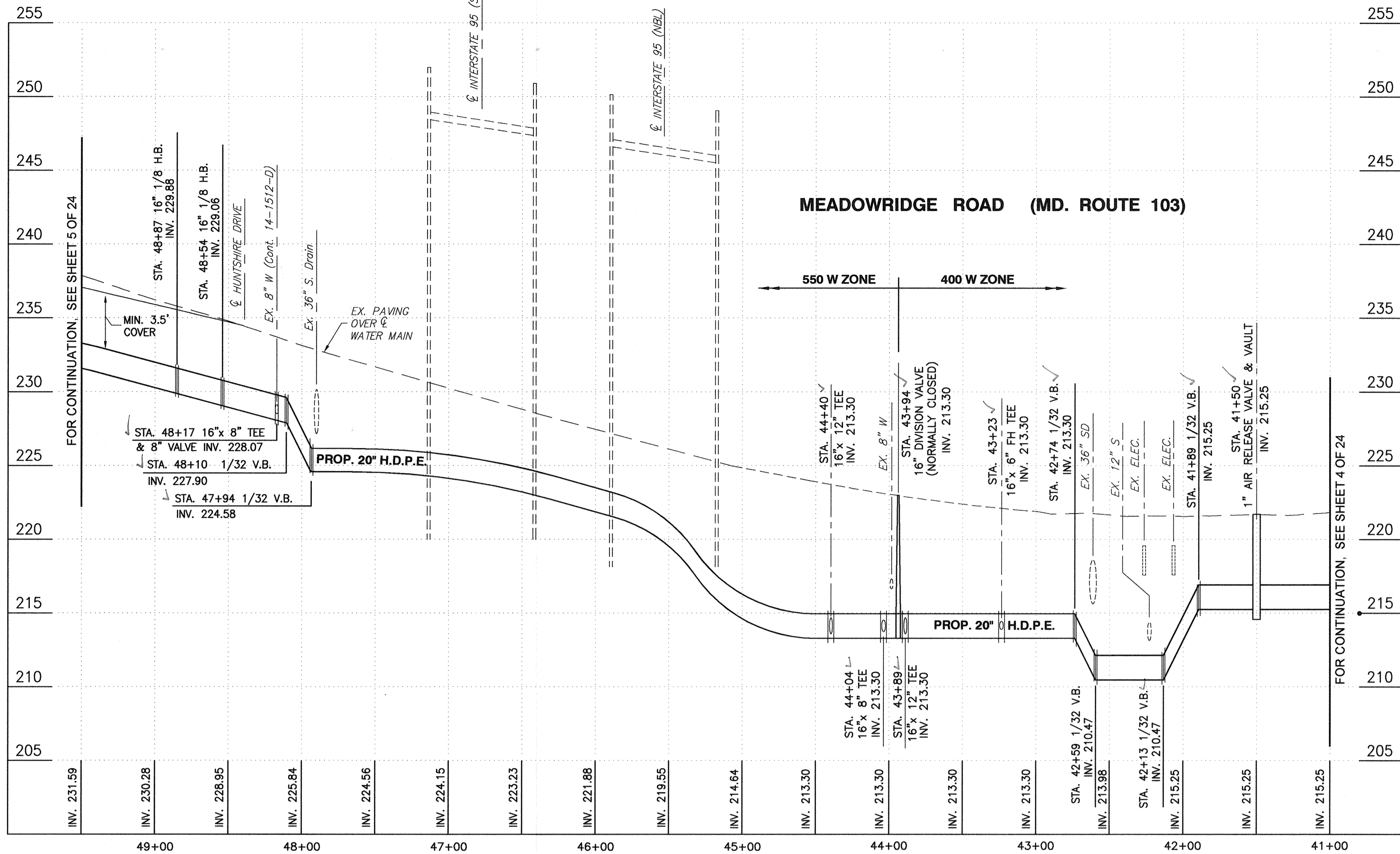
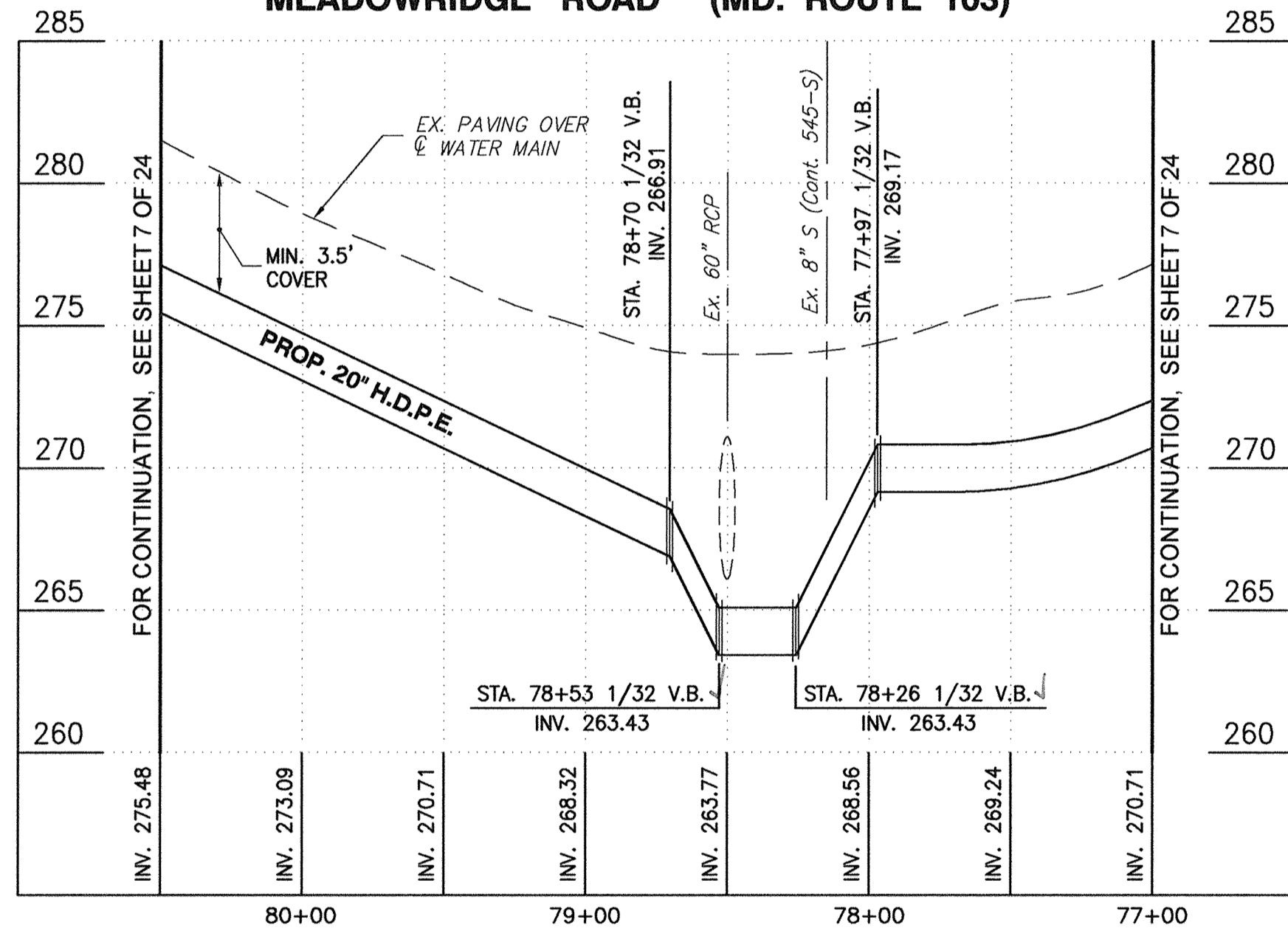
SCALE: SHOWN  
 SHEET 9 OF 25



MEADOWRIDGE ROAD (MD. ROUTE 103)

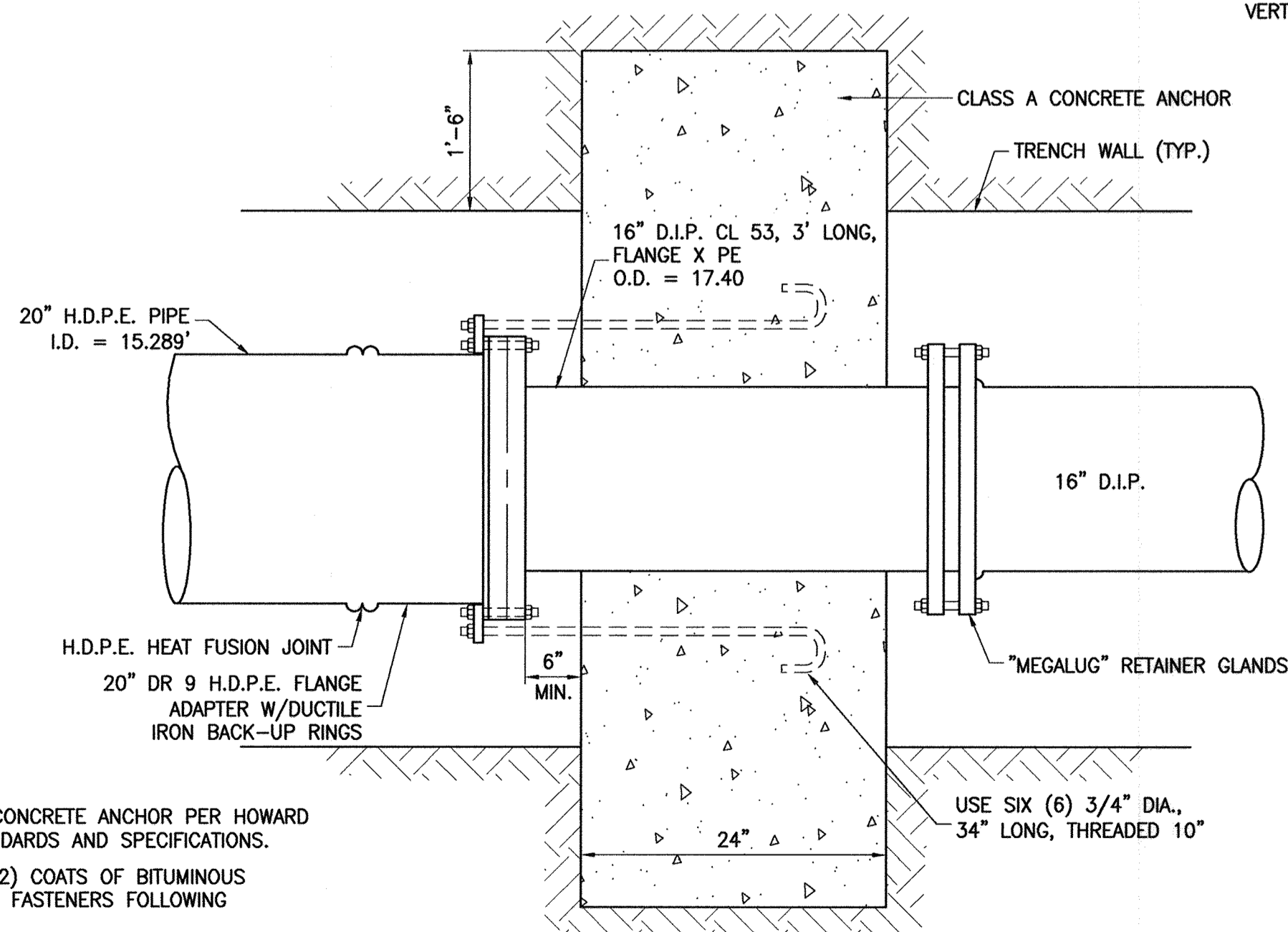


MEADOWRIDGE ROAD (MD. ROUTE 103)

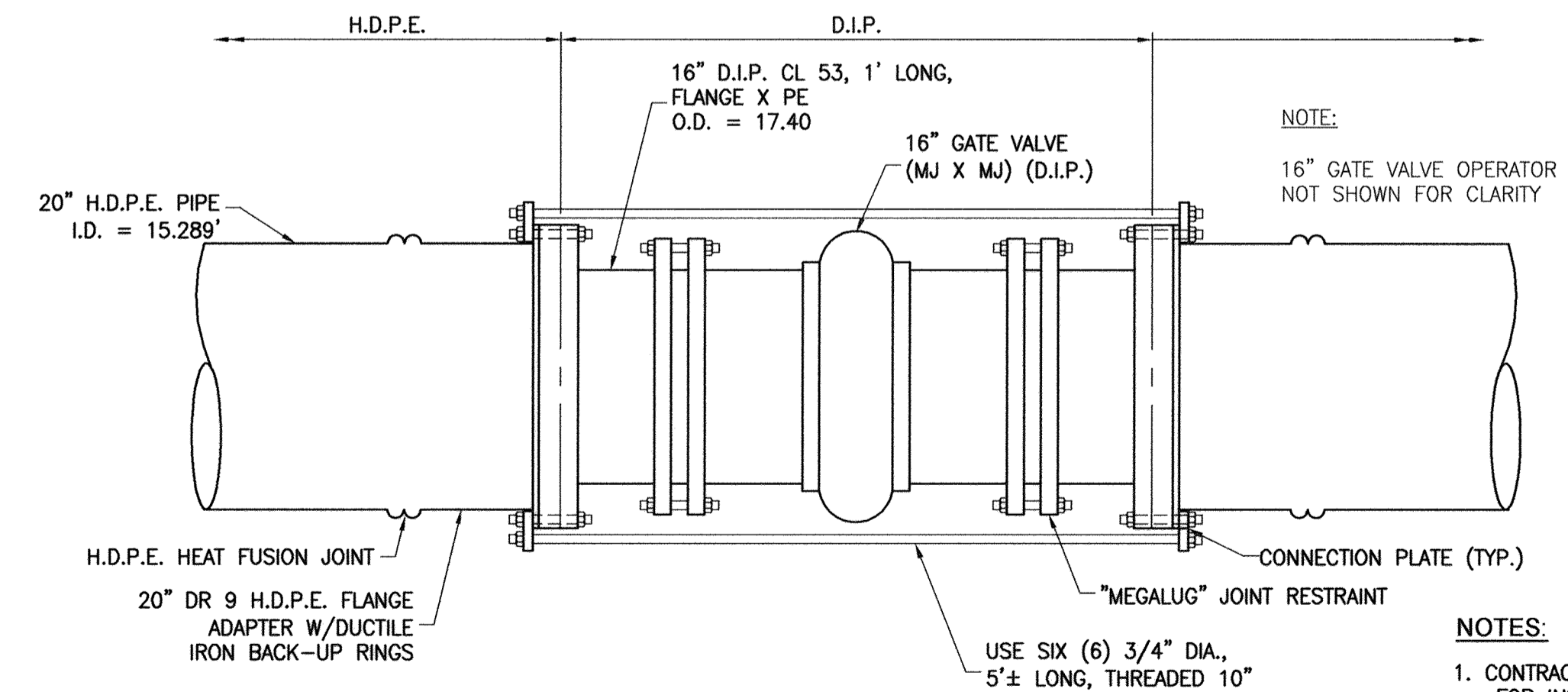


NOTE: IF CONTRACTOR INSTALLS H.D.P.E. OR F.P.V.C. PIPE, THESE PROFILES SHALL BE FOLLOWED IN LIEU OF THE P.V.C. PROFILES SHOWN ON SHEETS 2, 4, 5, & 7.

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



**DETAIL - H.D.P.E./D.I.P. TRANSITION**  
NOT TO SCALE



**DETAIL - H.D.P.E./D.I.P. TRANSITION**  
**16" VALVES**  
NOT TO SCALE

- NOTES:
- CONTRACTOR TO USE SIMILAR TRANSITION FOR INSTALLATION OF D.I.P. FITTINGS.
  - APPLY TWO (2) COATS OF BITUMINOUS PAINT TO ALL FASTENERS FOLLOWING INSTALLATION.
  - ADD TWO 20 POUND PREPACKAGED MAGNESIUM ANODES AND INSTALL AS SHOWN IN STANDARD DETAIL C-5.01

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*[Signature]*  
Signature of Engineer

09-20-10  
Date

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

*[Signature]* 10/5/10  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 9/25/10  
CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 9/25/10  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 9/25/10  
CHIEF, UTILITY DESIGN DIVISION DATE

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DRN:	AZW				
CHK:	ATB				
DATE:					
BY	NO.	REVISIONS	DATE		

ALTERNATE HDPE OR FPVC PROFILES

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

**MEADOWRIDGE ROAD**  
**WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 10 OF 25

AS-BUILTS

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 PLOTTER: [unclear]  
 PLOTTING: [unclear]





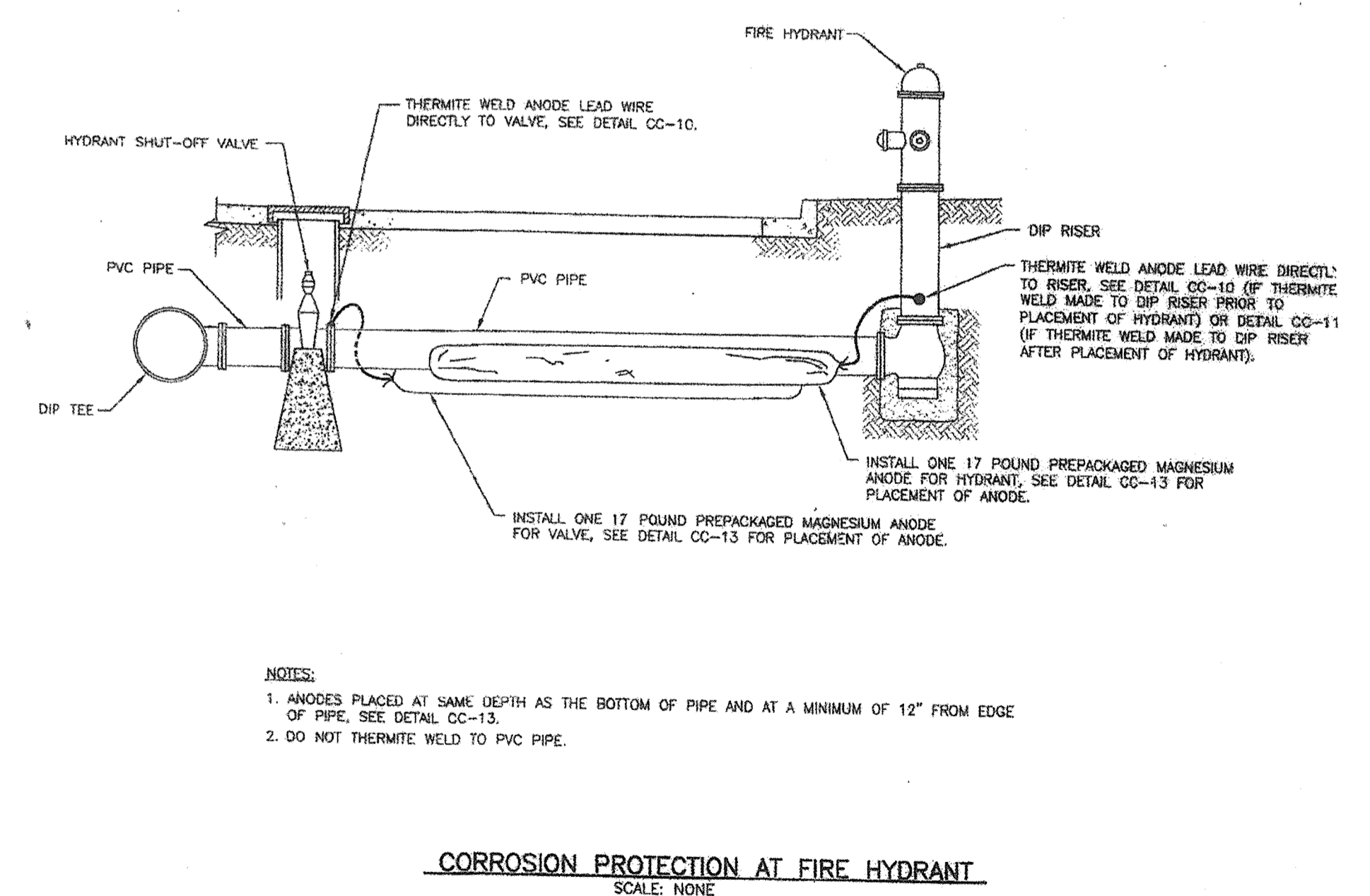
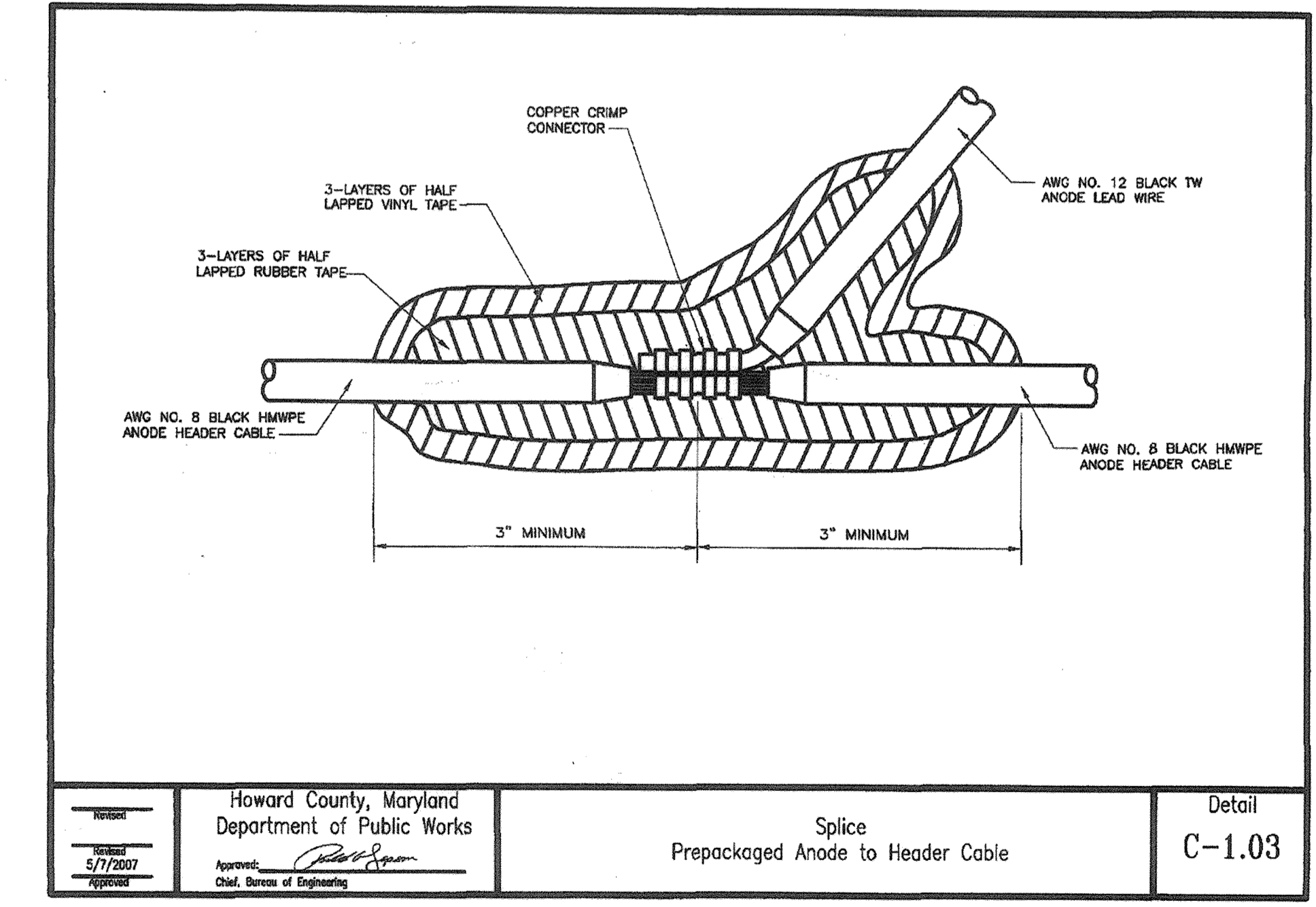
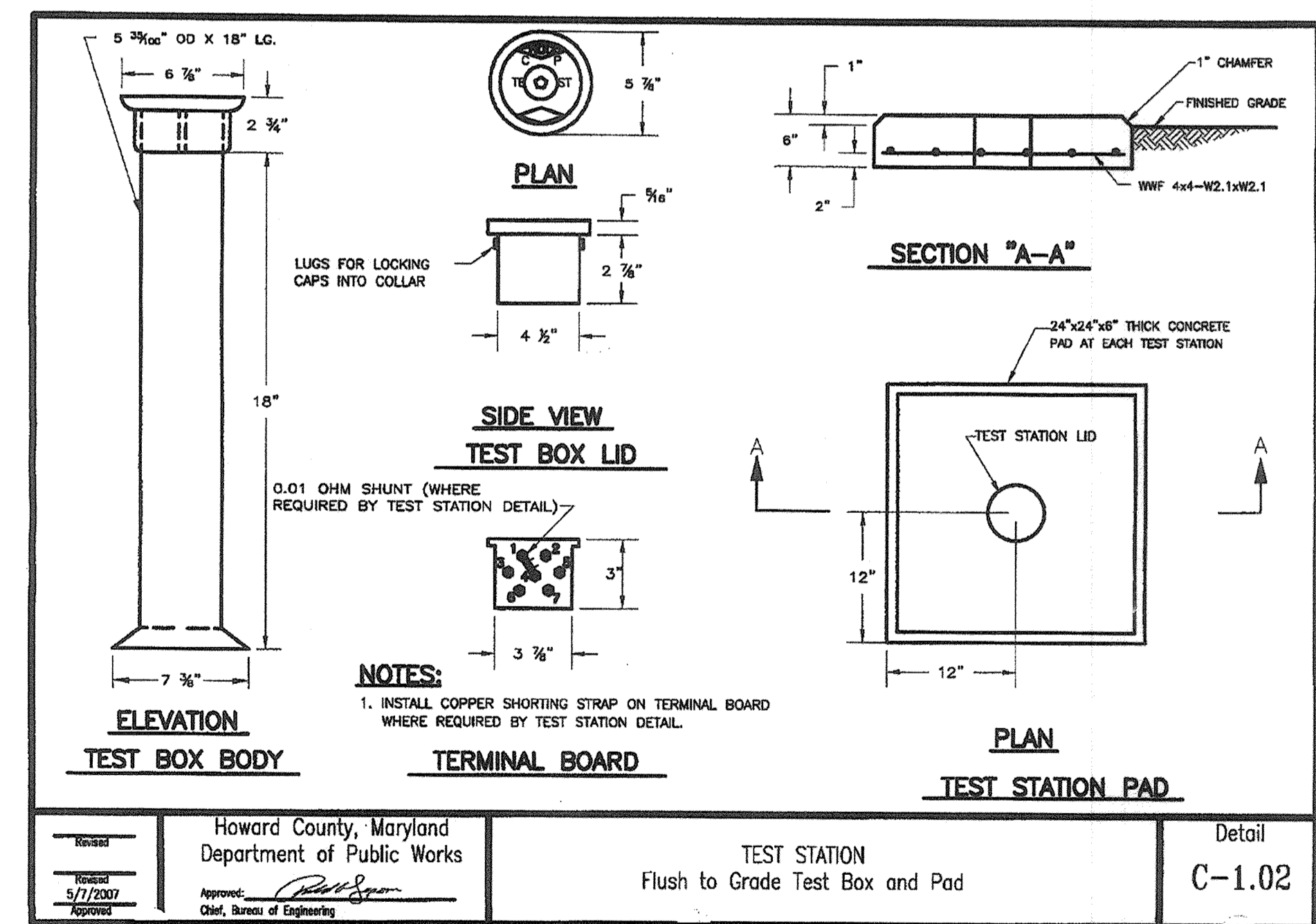
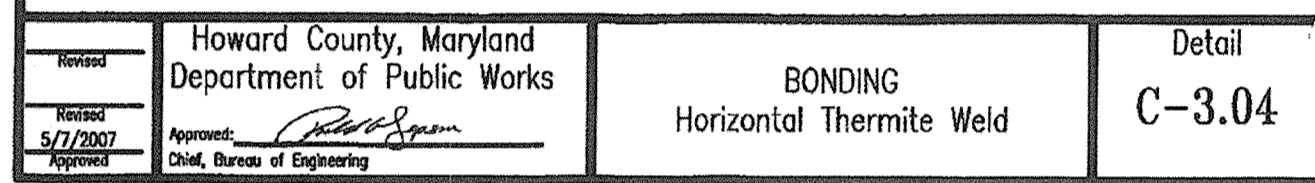
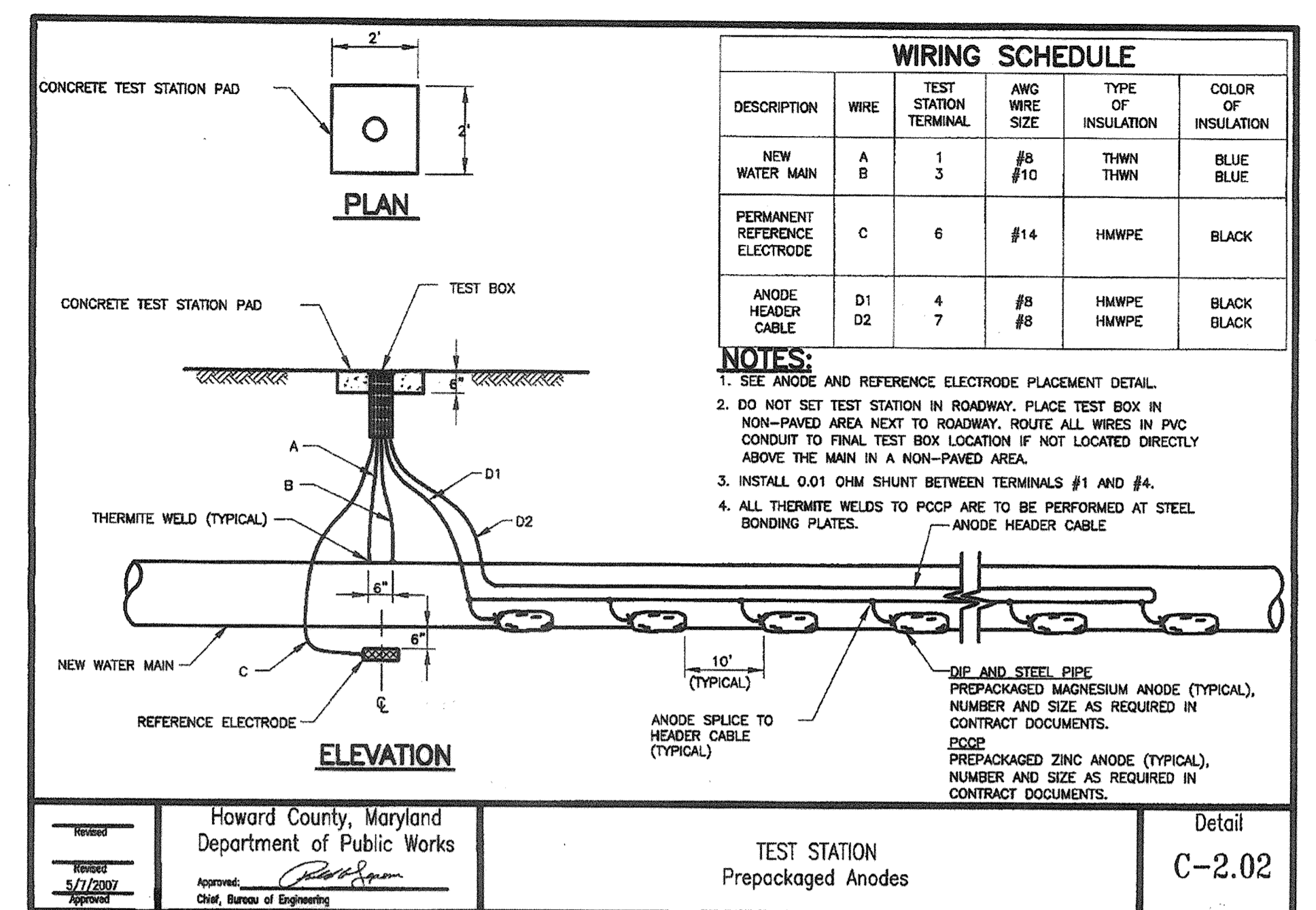
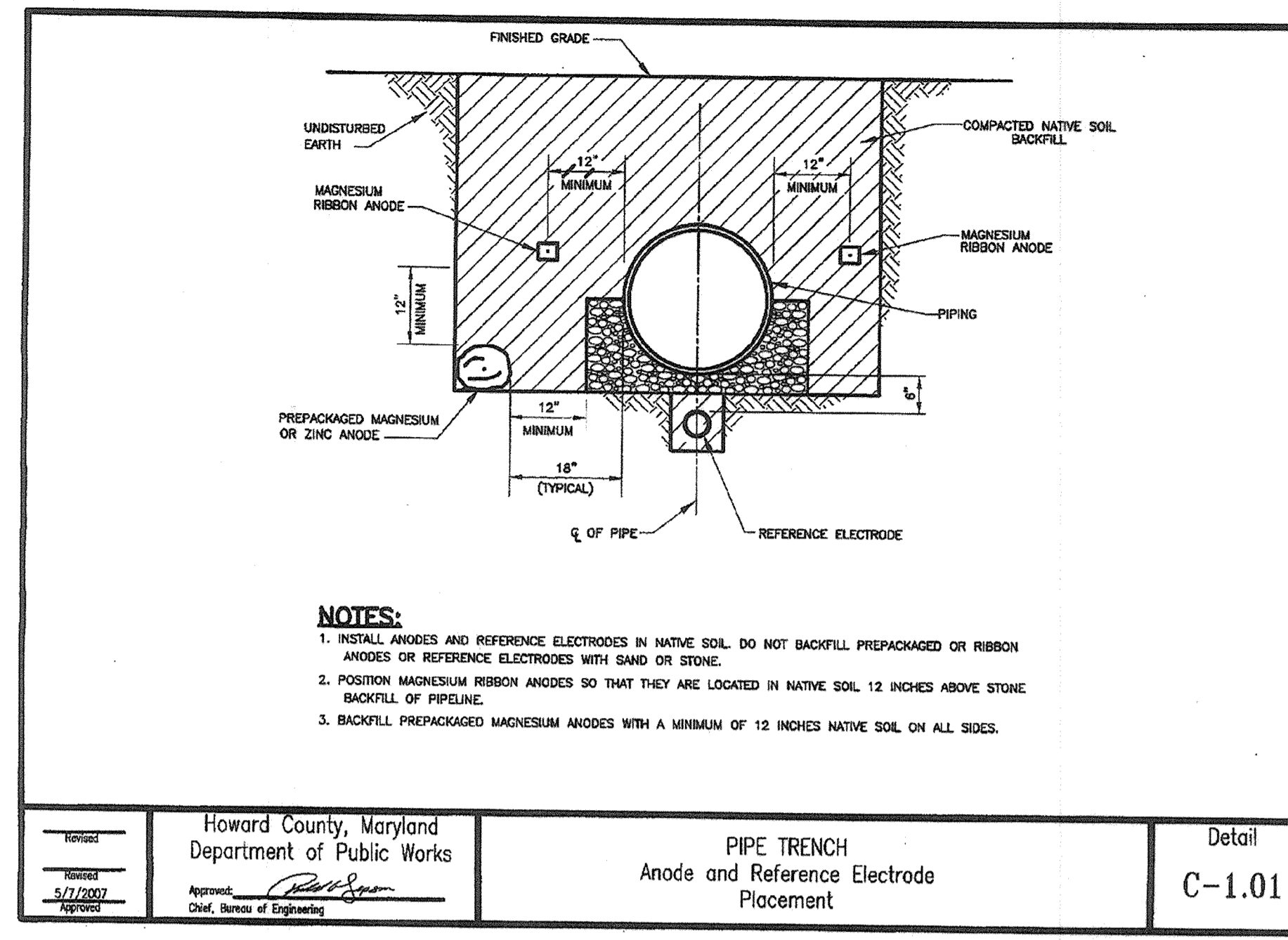
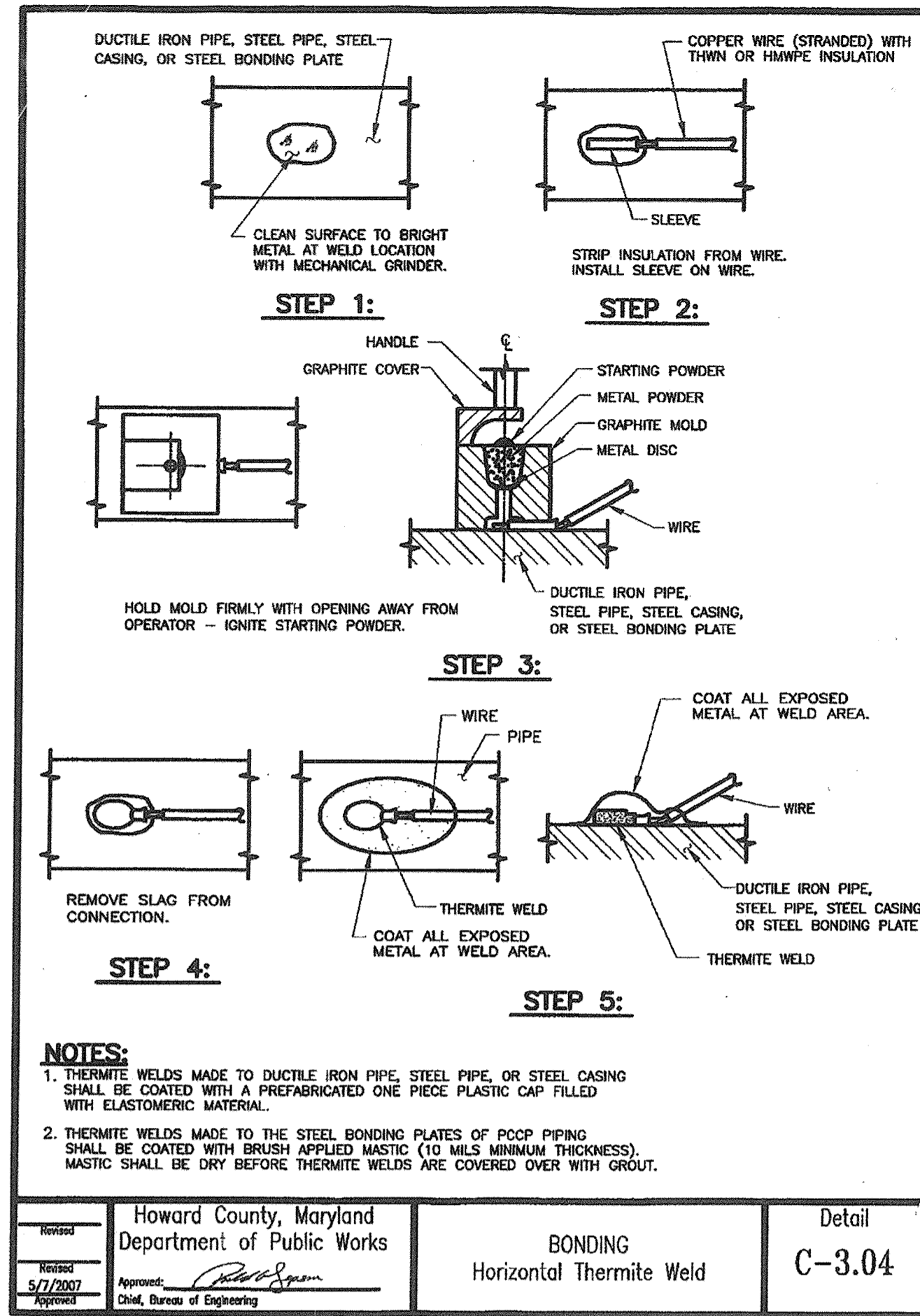












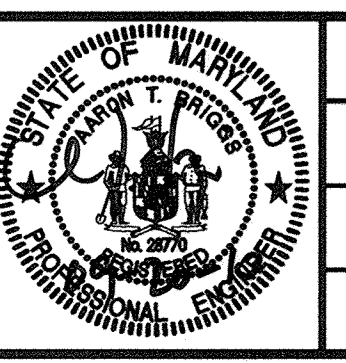
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 Signature of Engineer: [Signature] Date: 09-20-10

**GROUND BED SCHEDULE**

GROUND BED NUMBER	NUMBER OF ANODES	STATION NO.	TEST STATION NUMBER	MAGNESIUM ANODE SIZE
16" WATER MAIN				
1	6	44+26	1	50 lb

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND  
 Director of Public Works: [Signature] Date: 10/25/10  
 Chief, Bureau of Utilities: [Signature] Date: 10/14/10

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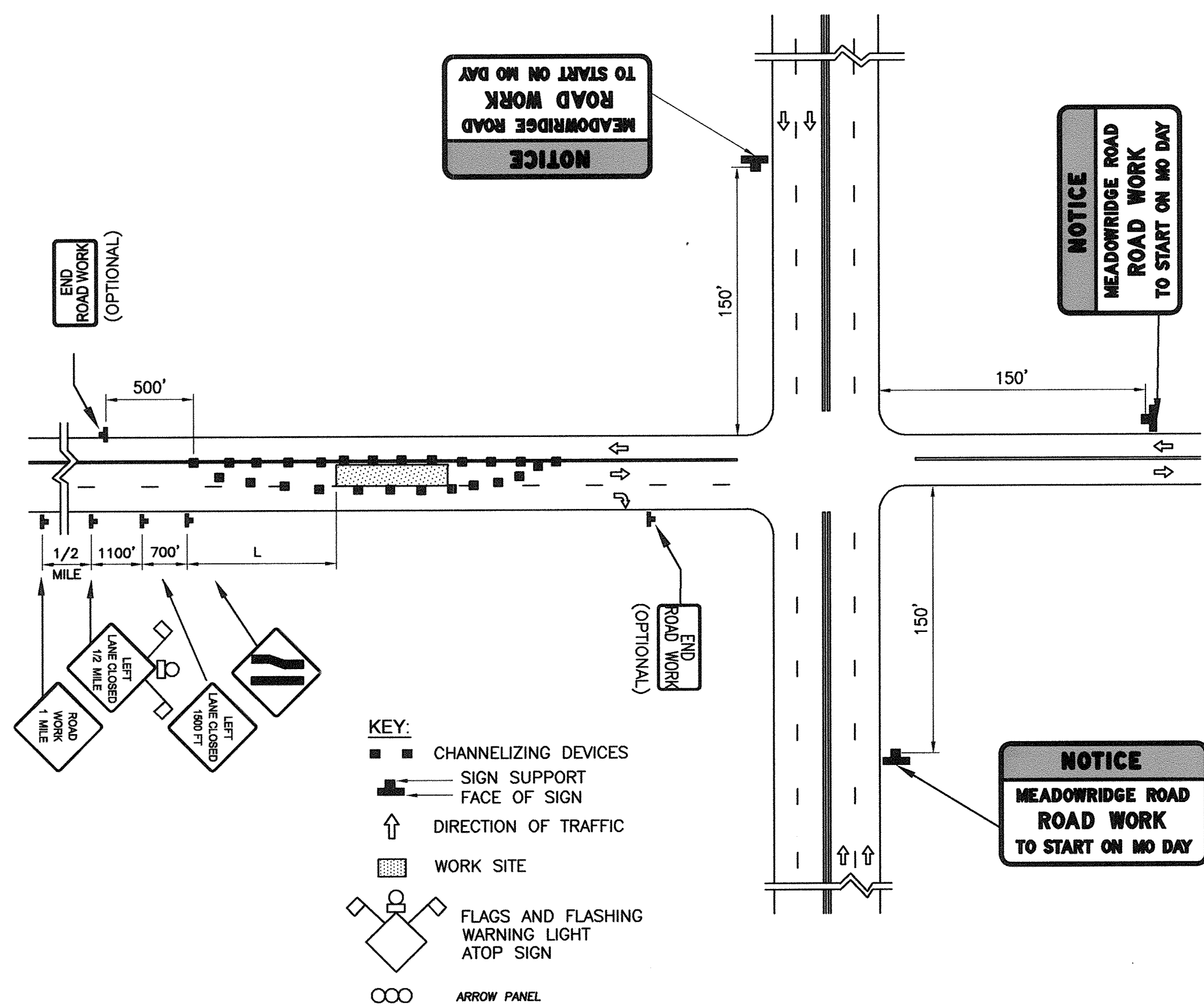
**CATHODIC PROTECTION DETAILS**  
 600' SCALE MAP NO. 37, 43  
 BLOCK NO. 5, 23

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
 CAPITAL PROJECT W-8249  
 CONTRACT 44-4164  
 ELECTION DISTRICT NO. 1  
 HOWARD COUNTY, MARYLAND

SCALE: SHOWN  
 SHEET 14 OF 25

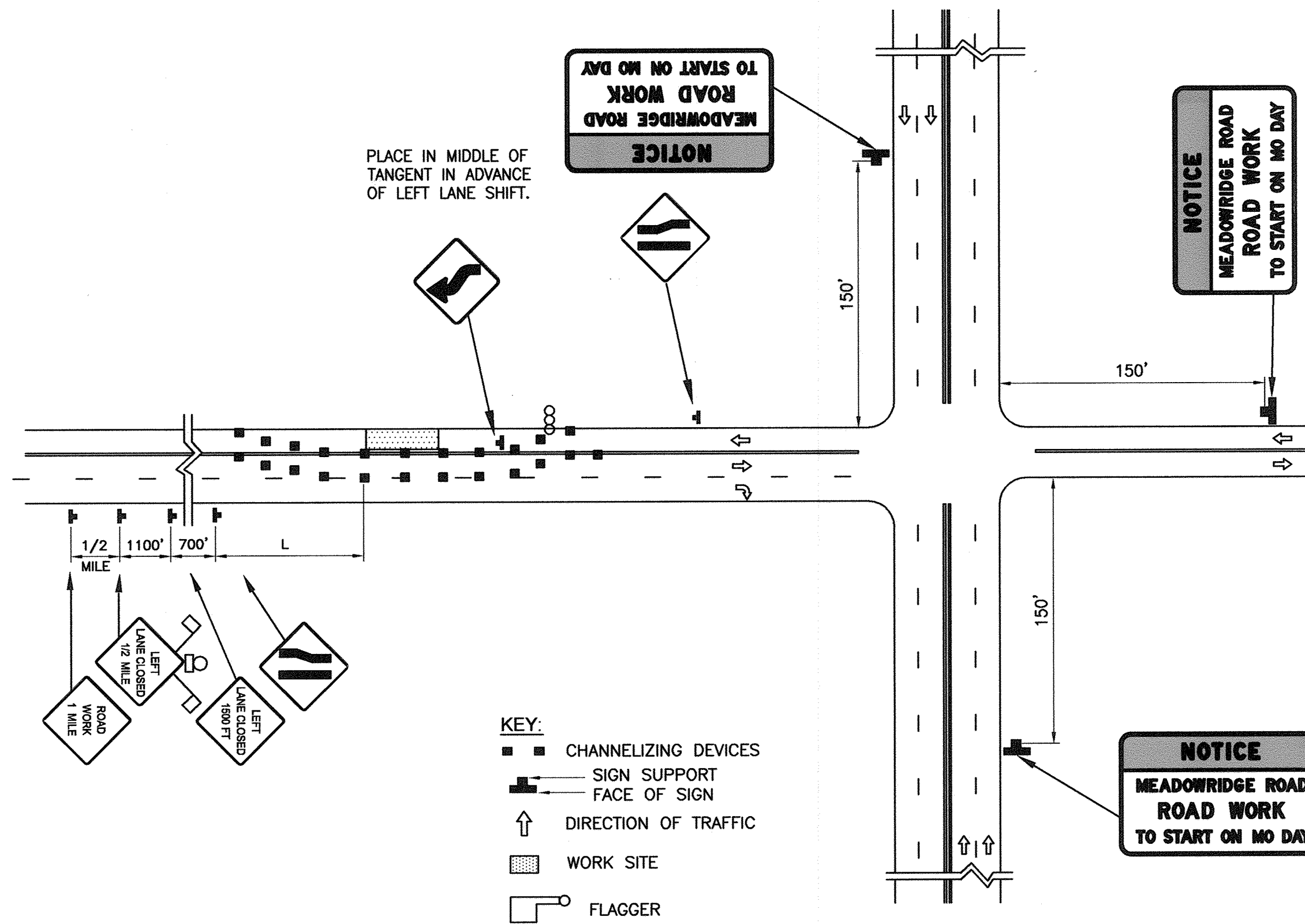


**TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION - NO. 1**



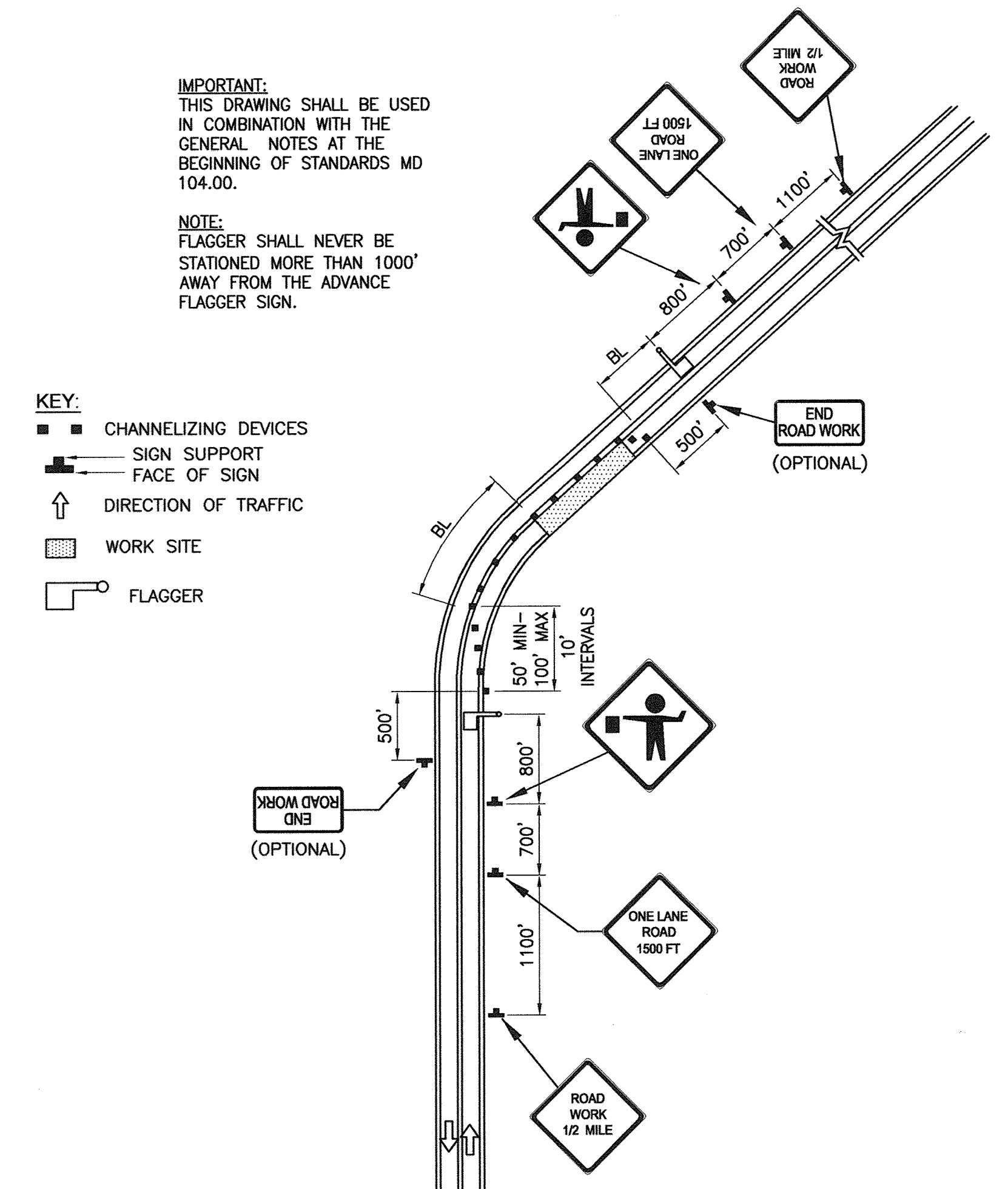
**CENTER LANE CLOSURE/ 3-LANE, 2-WAY  
GREATER THAN 40 MPH/ 15 MIN - 12 HRS. OR NIGHTTIME ONLY  
STANDARD NO. MD 104.14-01**

**TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION - NO. 2**



**LANE SHIFT LEFT OR RIGHT/ 3-LANE, 2-WAY  
GREATER THAN 40 MPH/ 15 MIN - 12 HRS. OR NIGHTTIME ONLY  
STANDARD NO. MD 104.34**

**TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION - NO. 3**



**FLAGGING OPERATION/ 2-LANE, 2-WAY  
GREATER THAN 40 MPH/ 15 MIN - 12 HRS. OR NIGHTTIME ONLY  
STANDARD NO. MD 104.31-01**

**GENERAL NOTES - MAINTENANCE OF TRAFFIC**

- G1. THE CONTRACTOR SHALL CONFORM TO THE TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATIONS AND OTHER TEMPORARY TRAFFIC CONTROL STANDARDS FOUND IN THE "STATE OF MARYLAND, DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION, BOOK OF STANDARDS, HIGHWAY AND INCIDENTAL STRUCTURES". THE TYPICAL APPLICATIONS THAT ARE MOST PERTINENT TO THIS PROJECT ARE INCLUDED IN THE PROJECT PLANS, BUT THE CONTRACTOR IS RESPONSIBLE TO FOLLOW ALL STANDARDS FOUND IN THIS BOOK OF STANDARDS.
- G2. WORK ON U.S. ROUTE 1 (WASHINGTON BOULEVARD) SHALL BE COMPLETED AS A NIGHT OPERATION. WORK ON OLD WASHINGTON ROAD SHALL BE COMPLETED AS A NIGHT OPERATION. THE WORK ON OLD WASHINGTON ROAD WILL REQUIRE THE USE OF A FLAGGER.
- G3. WHEN THE CONTRACTOR IS PERFORMING NIGHT OPERATIONS ON U.S. ROUTE 1, CONTRACTOR SHALL REMOVE ALL TRAFFIC CONTROL DEVICES AT THE END OF EACH NIGHT OF WORK AND REPLACE THEM BEFORE THE NEXT NIGHT OF WORK BEGINS.
- G4. THE CONTRACTOR SHALL CONTINUOUSLY PROVIDE ACCESS TO ALL EXITS, INTERSECTING ROADS, DRIVEWAYS AND ENTRANCES ALONG U.S. ROUTE 1 AND OLD WASHINGTON ROAD DURING THE COURSE OF THE PROJECT.
- G5. THE CONTRACTOR SHALL BACKFILL THE TRENCH IMMEDIATELY AFTER THE INSTALLATION OF A SECTION OF PIPE. THE CONTRACTOR SHALL NOT LEAVE AN OPEN TRENCH UNATTENDED.
- G6. ANY EXCAVATED AREA NOT BACKFILLED AT THE END OF A WORK-DAY/WORK-NIGHT MUST BE COVERED WITH STEEL PLATES AS PER MARYLAND STATE HIGHWAY ADMINISTRATION STANDARDS.
- G7. THE DIMENSIONS FOR THE TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATIONS SHALL BE CALCULATED USING FORMULAS AND CRITERIA FOUND IN THE STATE OF MARYLAND, DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION, BOOK OF STANDARDS, HIGHWAY AND INCIDENTAL STRUCTURES, SECTION 100, STANDARD NO. MD104.00-13 AND STANDARD NO MD 104.00-09. THE FORMULAS TO BE USED ARE AS FOLLOWS:

TRANSITION AREA TAPER LENGTH (L) = WS

WHERE: L = MINIMUM LENGTH OF TAPER  
S = NUMERICAL VALUE OF PREVAILING TRAVEL SPEED OR SPEED LIMIT (MPH), WHICHEVER IS HIGHER,  
PRIOR TO WORK STARTING = MPH  
W = WIDTH OF OFFSET (FEET)

BUFFER AREA LENGTH (BL) = \_\_\_' (MIN)

TERMINATION AREA TAPER (L) = \_\_\_' (MIN)

MAINTENANCE OF TRAFFIC REFERENCE TABLE	
TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION NO.	APPROXIMATE LOCATION(S) TO USE SPECIFIED TYPICAL TEMPORARY TRAFFIC CONTROL APPLICATION
1	MD ROUTE 103 (MEADOWRIDGE ROAD) FROM STA 10+00 TO STA 10+83
2	MD ROUTE 103 (MEADOWRIDGE ROAD) FROM STA 10+83 TO STA 35+00
3	MD ROUTE 103 (MEADOWRIDGE ROAD) FROM STA 35+00 TO STA 43+50
2	MD ROUTE 103 (MEADOWRIDGE ROAD) FROM STA 43+50 TO STA 95+55

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Signature of Engineer: *[Signature]* Date: 09-20-10

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

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

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DES: AZW				
DRN: AZW				
CHK: ATB				
DATE:	BY:	NO.	REVISIONS	DATE

**TRAFFIC CONTROL PLAN**

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

**MEADOWRIDGE ROAD  
WATER MAIN REPLACEMENT  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164**

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE: SHOWN  
SHEET 15 OF 25



**ELECTRICAL SYMBOLS**

- POINT OF CONNECTION TO DEVICE AND CIRCUIT RUN. HASH MARKS INDICATE NUMBER OF CONDUCTORS EXCEPT GROUNDS. ARROW HEADS INDICATE NUMBER OF CIRCUITS. SOLID LINE INDICATES WIRING EXPOSED OR CONCEALED ABOVE CEILING. BROKEN LINE INDICATES WIRING BELOW GRADE OR FLOOR SLAB.
- LIGHTING SWITCH, FLUSH MOUNTED  
WP INDICATES WEATHERPROOF  
M INDICATES HORSEPOWER RATED  
3 INDICATES THREE WAY
- LIGHTING SWITCH, SURFACE MOUNTED
- 20 AMP DUPLEX CONVENIENCE RECEPTACLE, FLUSH MOUNTED  
WP INDICATES WEATHERPROOF  
GFCI INDICATES PERSONNEL GROUND FAULT PROTECTION
- DUPLEX RECEPTACLE, SURFACE MOUNTED
- POWER RECEPTACLE, TYPE AS NOTED
- 20AMP SINGLE OUTLET RECEPTACLE  
XP INDICATES EXPLOSION PROOF-PROVIDE 2 PLUGS FOR EACH RECEPTACLE.
- CEILING SURFACE MOUNTED OR PENDANT MOUNTED FLUORESCENT LIGHTING FIXTURE. LETTER INDICATES TYPE.
- POLE MOUNTED OUTDOOR AREA LIGHT. ARROW INDICATES STREET SIDE ON NON-SYMMETRICAL LIGHT DISTRIBUTION
- ELECTRIC MOTOR, HP, VOLTAGE, PHASE AS INDICATED
- HEAVY DUTY SAFETY SWITCH, POLES AND RATING AS NOTED  
NF- NON FUSED  
F- FUSED  
NEMA ENCLOSURE AS NOTED
- MAGNETIC STARTER, NEMA 1 ENCLOSURE AND HOA SWITCH UNLESS NOTED
- COMBINATION MAGNETIC STARTER, NEMA 1 ENCLOSURE, HOA SWITCH, AND NON-FUSED DISCONNECT UNLESS NOTED
- JUNCTION OR PULL BOX, UNLESS INDICATED OR SPECIFIED USE TYPE AS REQUIRED BY THE NEC FOR THE APPLICATION
- CONDUIT OR CABLE TURN DOWN
- CONDUIT OR CABLE TURN UP
- HEAVY DUTY CONTROL STATION, TYPE AS NOTED
- LINE VOLTAGE THERMOSTAT WITH THERMOMETER AND MANUAL RANGE ADJUSTMENT  
C-COOLING THERMOSTAT  
H-HEATING THERMOSTAT
- PHASE
- CONNECT TO EXISTING
- FAN SPEED CONTROL STATION
- CONDUIT SEALING FITTING
- SMOKE/HEAT DETECTOR

**SCHEDULE OF ELECTRICAL EQUIPMENT**

**LIGHT FIXTURE A-** 2X40 WATT LAMP INDUSTRIAL WET LOCATION FLUORESCENT. CEILING SURFACE MOUNTED, PRISMATIC POLYCARBONATE LENS, ALUMINUM CONSTRUCTION, 120V, LITHONIA EISC OR EQUAL.

**SPACE HEATER-** 500 WATT, 120 VOLT WALL MOUNT ELECTRIC CONVECTOR WITH THERMOSTAT. MOUNT ON 1 1/2" STAINLESS STEEL ELECTRICAL CHANNEL STANDOFFS FROM WALL. MOUNT UP 3', CHROMOLOX HVT-1251 OR EQUAL.

**DEHUMIDIFIER-** REFRIGERATION TYPE RATED 51 POUNDS PER DAY AT 80 F/60% RH, 120 VAC CORD AND PLUG CONNECTED WITH BUILT IN HUMIDISTAT AND RUN TIME METER. PIPE TO DRIP INTO SUMP. EBAC CD 60 OR EQUAL.

**FLOOD FLOAT-** REED SWITCH TYPE DESIGNED FOR DRY WELL APPLICATIONS. CORROSION RESISTANT, NEMA 4X CONSTRUCTION COMPLETE WITH JUNCTION BOX AND MOUNTING ACCESSORIES. CONTEGRA MODEL FS 202 OR EQUAL.

**CONTROL PANEL-** NEMA 4X STAINLESS FLOOR MOUNT PANEL ENCLOSURE, 62" HIGH X 48" WIDE X 18" DEEP. EQUAL TO HOFFMAN A62H48 COMPLETE WITH THE FOLLOWING:  
- FIELD FABRICATED SUN SHIELD  
- 400 WATT HEATER WITH INTEGRAL THERMOSTAT  
- TWO 160 CFM SUPPLY FILTER FAN PACKAGES  
- TWO 9"X10" LOUVERED EXHAUST GRILLES WITH ALUMINUM MESH FILTERS  
- LF16M24 FLUORESCENT LIGHT KIT.  
ANCHOR ENCLOSURE TO CONCRETE FOUNDATION WITH 3/8" X 4" MIN. EMBEDMENT STAINLESS STEEL CONCRETE EXPANSION ANCHORS. PROVIDE MOUNTING SHELF FOR UPS BATTERIES AND PIVOTING 19" MOUNTING RACK FOR UPS.

**ELECTRICAL ABBREVIATIONS**

- A, AMP AMPERE
- AFF ABOVE FINISHED FLOOR
- AIC SYMMETRICAL AMPERE INTERRUPTING RATING
- AL ALUMINUM
- ANCH ANCHOR
- APPROX APPROXIMATE
- BLD BUILDING
- BRKR CIRCUIT BREAKER
- C CONDUIT
- CKT CIRCUIT
- CL CENTERLINE
- CO COMPANY
- CONC CONCRETE
- CONT CONTROL
- CT CURRENT TRANSFORMER
- CTR CONTROL
- DIA DIAMETER
- DN DOWN
- DP DEEP
- DWG DRAWING
- EA EACH
- EC EMPTY CONDUIT
- ELEC, ELECT'L ELECTRICAL
- EMBED EMBEDMENT DEPTH
- ENCL ENCLOSURE
- EQ EQUAL
- EQUIP EQUIPMENT
- EXIST EXISTING
- EXP EXPANSION
- FC FOOTCANDLE
- FR FROM
- GALV GALVANIZED
- GFCI GROUND FAULT CIRCUIT INTERRUPTER (5 MILLIAMPERE SENSITIVITY)
- GND GROUND
- H HIGH
- HP HORSEPOWER
- HT HEATER
- KAIC 1000 AIC
- KVA KILOVOLT-AMPERES
- KW KILOWATTS
- L ANGLE, LENGTH
- LOC LOCATION
- LTS LIGHTS
- MAT'L MATERIAL
- MECH MECHANICAL
- MCB MAIN CIRCUIT BREAKER
- MTD MOUNTED
- NEC NATIONAL ELECTRICAL CODE
- NTS NOT TO SCALE
- OD OUTSIDE DIAMETER
- OH, OHE OVERHEAD ELECTRICAL
- OPN'G OPENING
- P POLE OR PHASE
- PLATE PLATE
- PNL, PANEL CIRCUIT BREAKER PANELBOARD
- PRI PRIMARY VOLTAGE (ABOVE 600 VOLTS)
- PWR POWER
- QTY QUANTITY
- RCP REACTOR CONTROL PANEL
- RECEPT RECEPTACLE
- RO'D REQUIRED
- RQMT'S REQUIREMENTS
- SEC SECONDARY VOLTAGE (600 VOLTS OR LESS)
- SPR STANDARD PRACTICE RECOMMENDATION, SIZE FOR CRUSHED STONE
- SS STAINLESS STEEL
- STA STATION, AS IN PUMP STATION
- STR STRUCTURE
- SVC SERVICE
- SURF SURFACE
- SW SWITCH
- T TRANSFORMER
- TEL TELEPHONE
- THRU THROUGH
- TRANS, TRANSF TRANSFORMER OR TRANSFER
- TSTAT THERMOSTAT
- TYP TYPICAL
- UG, UGE UNDERGROUND ELECTRICAL
- UT, UGT UNDERGROUND TELEPHONE
- V VOLTS
- VAC VOLTS A.C.
- W WIDE OR WIRE
- W/ WITH
- WW WIREWAY
- XP EXPLOSION PROOF (CLASS I DIVISION I GROUP D UNLESS NOTED)

**ELECTRICAL DEMOLITION NOTES**

1. THE CONTRACTOR SHALL REMOVE EXISTING WORK AS CALLED FOR ON THE DRAWINGS OR AS REQUIRED TO CLEAR THE AREAS OF NEW CONSTRUCTION.
2. WHERE EXISTING EQUIPMENT IS TO BE RELOCATED, CARE SHALL BE TAKEN TO PREVENT DAMAGE DURING THE REMOVAL AND REINSTALLATION. WHERE DAMAGE OCCURS, THE EQUIPMENT SHALL BE REPLACED OR REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
3. ALL EQUIPMENT REMOVED THAT IS NOT BEING REUSED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STORED OR DISPOSED OF AS DIRECTED.
4. EXCEPT AS OTHERWISE NOTED, ALL EXISTING ELECTRICAL WORK WHICH WILL NOT BE RENDERED OBSOLETE AND WHICH MAY BE DISTURBED DUE TO ANY CHANGES REQUIRED BY THIS WORK SHALL BE RESTORED TO ITS ORIGINAL OPERATING CONDITION. OTHER ELECTRICAL WORK OR MATERIAL RENDERED OBSOLETE SHALL BE ABANDONED WHERE CONCEALED AND REMOVED WHERE EXPOSED. OLD UNUSED WIRING SHALL BE REMOVED FROM THE ABANDONED (CONCEALED) CONDUITS. ANY CONDUITS STUBBED OUT OF CONCRETE SURFACE SHALL BE CUT INTO SURFACE AND PATCHED.
5. WHERE EXISTING ELECTRICAL WORK INTERFERES WITH NEW WORK AND WHERE SUCH INSTALLATIONS ARE TO REMAIN IN USE THE INSTALLATIONS SHALL BE DISCONTINUED AND RELOCATED AND/OR RECONNECTED TO COORDINATE WITH THE WORK INDICATED ON THE DRAWINGS AND AS SPECIFIED.
6. WHERE EXISTING RACEWAYS THAT ARE NOT TO BE REUSED INTERFERE WITH NEW WORK, THESE RACEWAYS SHALL BE REMOVED BACK TO THE NEAREST JUNCTION BOX OR PULLBOX AND THE OPENINGS BLANKED.
7. EXISTING RACEWAYS AND/OR WIRING MAY BE REUSED WHERE PRACTICABLE.
8. ALL WORK SHALL BE PERFORMED IN SUCH A MANNER TO CREATE MINIMAL POWER OUTAGES FOR THE OWNER. ALL SUCH OUTAGES SHALL BE CAREFULLY COORDINATED WITH THE OWNER SO THAT POWER TO ESSENTIAL SERVICES CAN BE MAINTAINED.
9. CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF CIRCUITS SERVING MULTIPLE ITEMS OF WHICH ONE OR MORE ARE BEING DEMOLISHED. CONDUCTORS AND CONDUITS FOR THOSE ITEMS BEING DEMOLISHED SHALL BE REMOVED AS FAR AS PRACTICABLE.
10. ALL EQUIPMENT INDICATED TO REMAIN IN PLACE SHALL REMAIN IN NORMAL OPERATION AT ALL TIMES DURING CONSTRUCTION. IF ANY CIRCUIT WIRING FEEDING THIS EQUIPMENT IS DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL REPLACE WITH NEW WIRING OF THE SAME SIZE AND TYPE AT NO COST TO HOWARD COUNTY.
11. WHERE EXISTING FLUORESCENT AND INCANDESCENT LIGHTING FIXTURES ARE INDICATED TO BE REMOVED, REMOVE FIXTURE, ALL MOUNTING APPURTENANCES, AND ALL BRANCH CIRCUIT WIRING FROM THE CONNECTION AT THE CIRCUIT BREAKER PANEL WHERE THE FIXTURE IS CONTROLLED BY SWITCH, REMOVE THE WIRING, CONDUIT AND SWITCH.

**GENERAL ELECTRICAL CONSTRUCTION NOTES**

- THE DRAWINGS INDICATE THE EXTENT AND GENERAL ARRANGEMENT OF THE ELECTRICAL SYSTEMS.
1. LOCATIONS OF LINES AND EQUIPMENT SHALL BE DETERMINED FROM ACTUAL FIELD CONDITIONS. THE OUTLINES OF THE CONSTRUCTION SHOWN ON THE ELECTRICAL DRAWINGS ARE INTENDED ONLY AS A GUIDE TO INDICATE RELATIVE LOCATIONS OF THE WORK. REFER TO THE APPLICABLE DRAWINGS OF OTHER TRADES AND THE EQUIPMENT SUPPLIER'S INSTALLATION DRAWINGS FOR EXACT LOCATIONS AND ARRANGEMENTS.
  2. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER RELATION OF HIS WORK TO THE FACILITY STRUCTURES AND TO THE WORK OF OTHER TRADES. NO ADDITIONAL COMPENSATION NOR EXTENSION OF COMPLETION TIME WILL BE GRANTED FOR EXTRA WORK CAUSED BY THE LACK OF COORDINATION.
  3. DUE TO MINOR DIFFERENCES IN VARIOUS MANUFACTURER'S EQUIPMENT CONNECTIONS AND MOTOR CURRENTS, THE ELECTRICAL CONTRACTOR SHALL COORDINATE HIS INSTALLATION WITH THAT EQUIPMENT ACTUALLY FURNISHED AND SHALL VERIFY THE CORRECT SIZES AND DETAILS OF INSTALLATION BEFORE ROUGHING IN.
  4. RECEPTACLES, SWITCHES, THERMOSTATS, AND OTHER SIMILAR ITEMS SHALL ALIGN VERTICALLY OR HORIZONTALLY WITH EACH OTHER, WITH THE STRUCTURE AND OTHER FEATURES THEREOF WHEN IT APPEARS OBVIOUS AND LOGICAL THAT THEY SHOULD. THE ELECTRICAL CONTRACTOR SHALL CONSULT WITH THE GENERAL CONSTRUCTION SUPERINTENDENT REGARDING THIS REQUIREMENT AND ALSO FOR THE LOCATION OF EQUIPMENT, DOOR SWINGS, BLOCK COURSING, ALIGNMENT OF THIS AND OTHER SIMILAR FEATURES BEFORE ROUGHING-IN FOR THESE COMPONENTS.
  5. ALL CONDUITS ENTERING UNDERGROUND STRUCTURES SHALL HAVE WATERTIGHT EXPANSION WALL SEALS.
  6. THE CORRECT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL CIRCUITS, ONLY THOSE WHERE CLARIFICATION IS NECESSARY. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL WIRES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON DRAWINGS OR NOT.
  7. ALL CONDUITS WITH WIRING ENTERING UNDERGROUND STRUCTURES WHERE WATER MIGHT ENTER THE CONDUIT AND DRAIN INTO THE STRUCTURE, SHALL BE FITTED WITH WATERTIGHT BUSHINGS WITH SEALING COMPOUND SUCH AS OZ/GEDNEY STYLE CSB.

**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. 13529, EXPIRATION DATE: JULY 9, 2011  
*David Wayne Klenn* 9/28/10  
Signature of Engineer Date

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

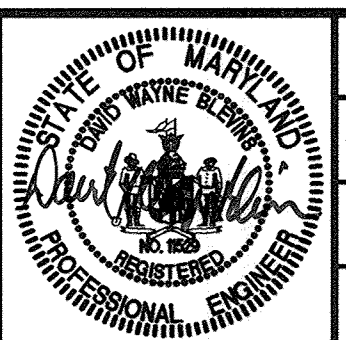
*Jan 7* 10/15/10  
DIRECTOR OF PUBLIC WORKS DATE

*Steve Allen* 10/15/10  
CHIEF, BUREAU OF UTILITIES DATE

*Paul Soren* 9/28/10  
CHIEF, BUREAU OF ENGINEERING DATE

*By Don* 9/28/10  
CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.265.8500  
FAX: 410.265.8875



DES: DWB			
DRN: DWB			
CHK: DWB			
DATE:	BY	NO.	REVISIONS

**ELECTRICAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, SCHEDULES**

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

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE: SHOWN

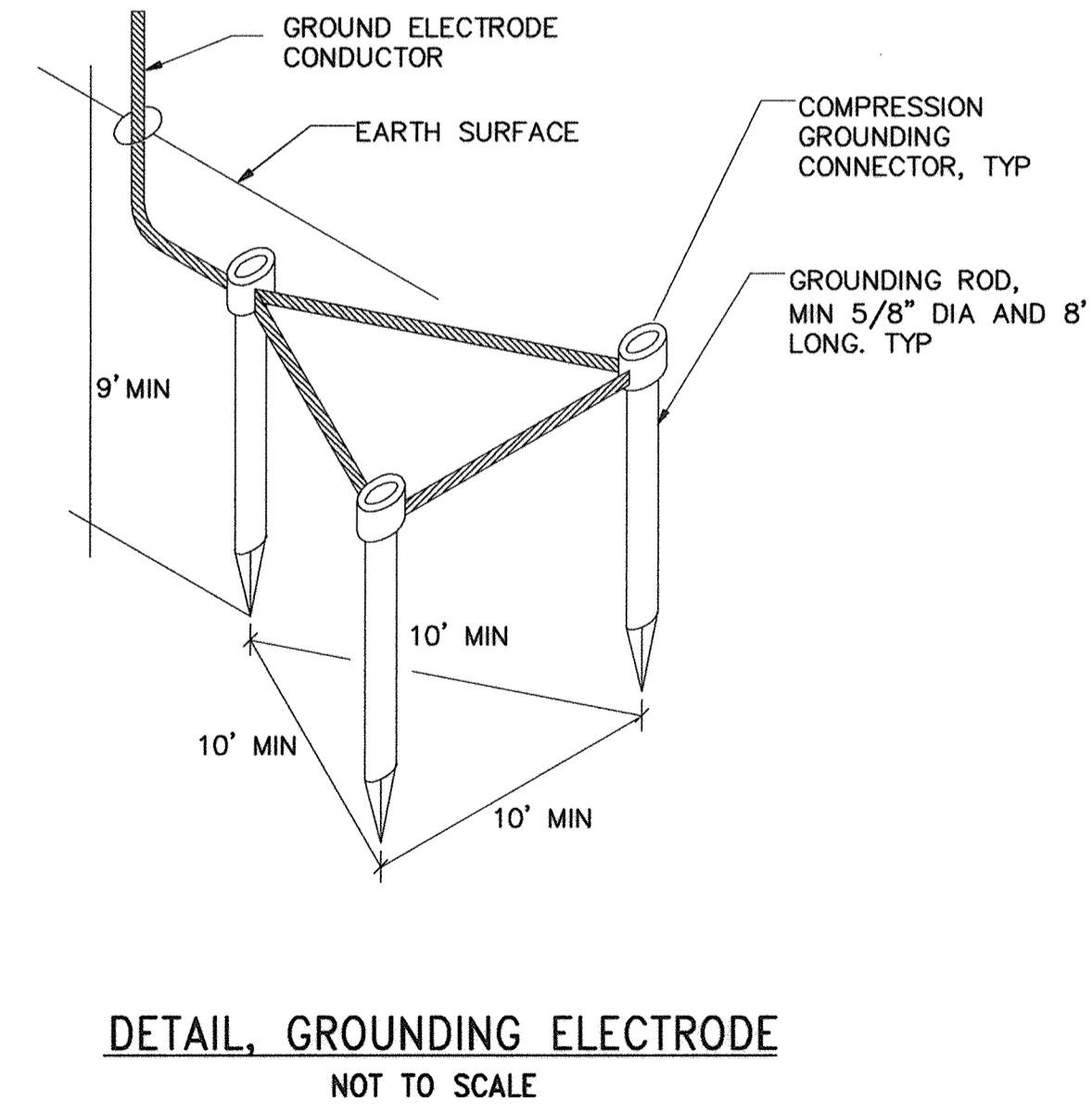
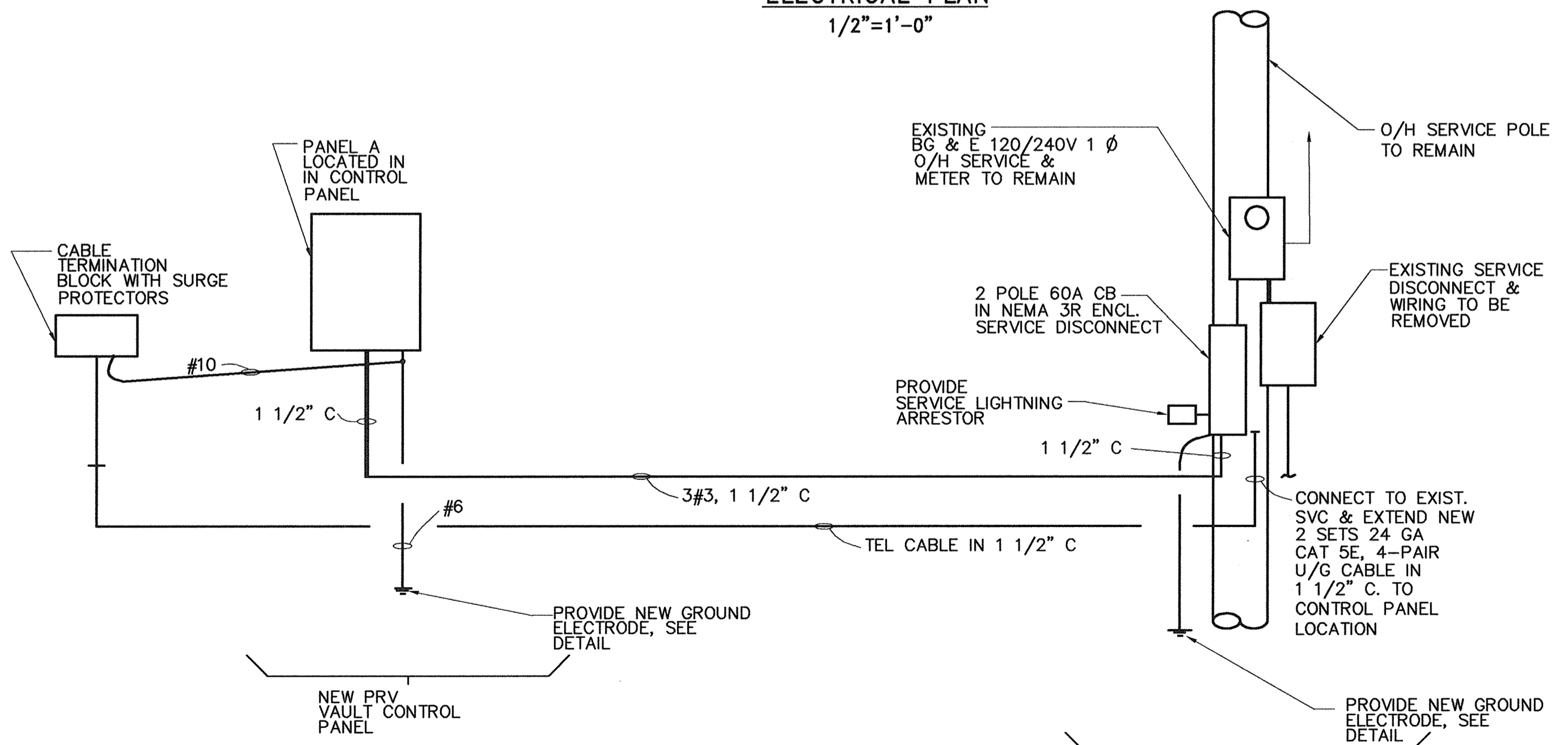
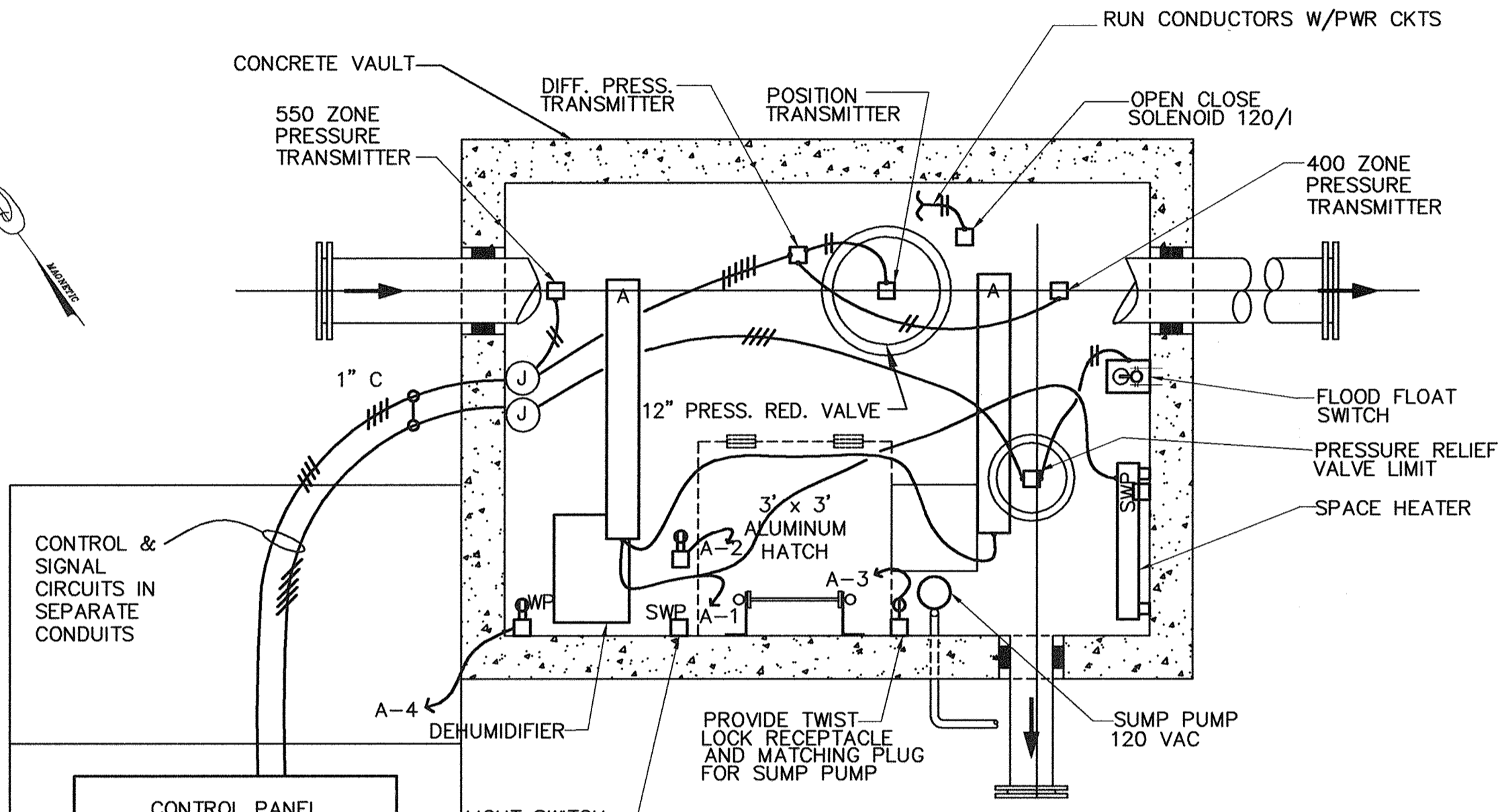
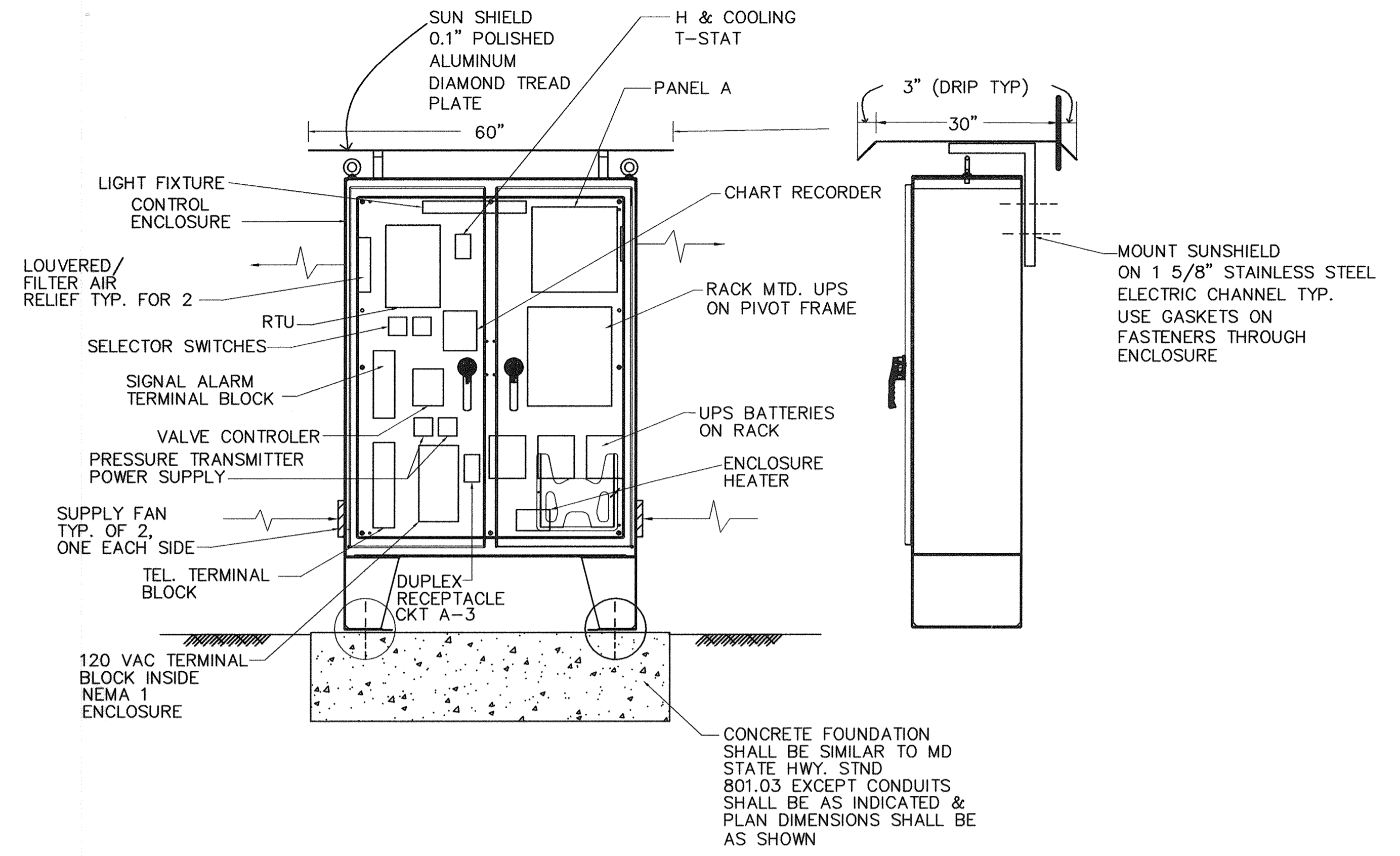
SHEET 16 OF 25



SUITABLE AS SERVICE ENTRANCE EQUIPMENT

PANEL SCHEDULE											
PANEL: A		100 AMPS, 60 AMP MCB				PHASE: 1					
POLE SPACE: 12		MOUNTING: SURFACE				WIRE: 3					
LOCATION: CONTROL PANEL		120/240 VOLTS				10 KAIC					
LOAD	KVA/PHASE	CIR/BKR	WIRE	CIR. NO.	CIR. NO.	WIRE	CIR/BKR	KVA/PHASE	LOAD		
LIGHTS, HEAT	.7	A	12	1	A	2	12	.84	DEHUMIDIFIER		
SUMP PUMP	1.1	B	12	3	B	4	12		VAULT RECEPTACLE (*)		
UPS	1.1	A	15	5	A	6	15	.7	HEAT, FAN, LIGHT		
SPARE		B	20	7	B	8			SPACE		
SPACE		A		9	A	10			SPACE		
SPACE		B		11	B	12			SPACE		

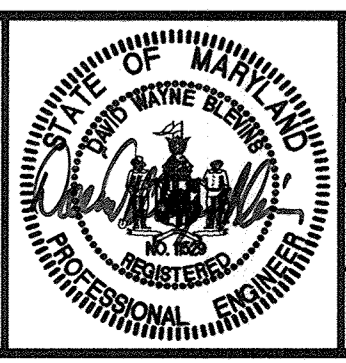
(\*) GFCI  
(\*\*) PROVIDE PADLOCK ON-OFF ATTACHMENT



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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. 11529, EXPIRATION DATE: JULY 9, 2011  
*David Wayne Allen* 7/20/10  
Signature of Engineer Date

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND  
Director of Public Works: *Steve Clemen* 10/14/10  
Chief, Bureau of Utilities  
Chief, Bureau of Engineering: *Robert Johnson* 7/20/10  
Chief, Utility Design Division: *RJD* 7/20/10

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.265.9500  
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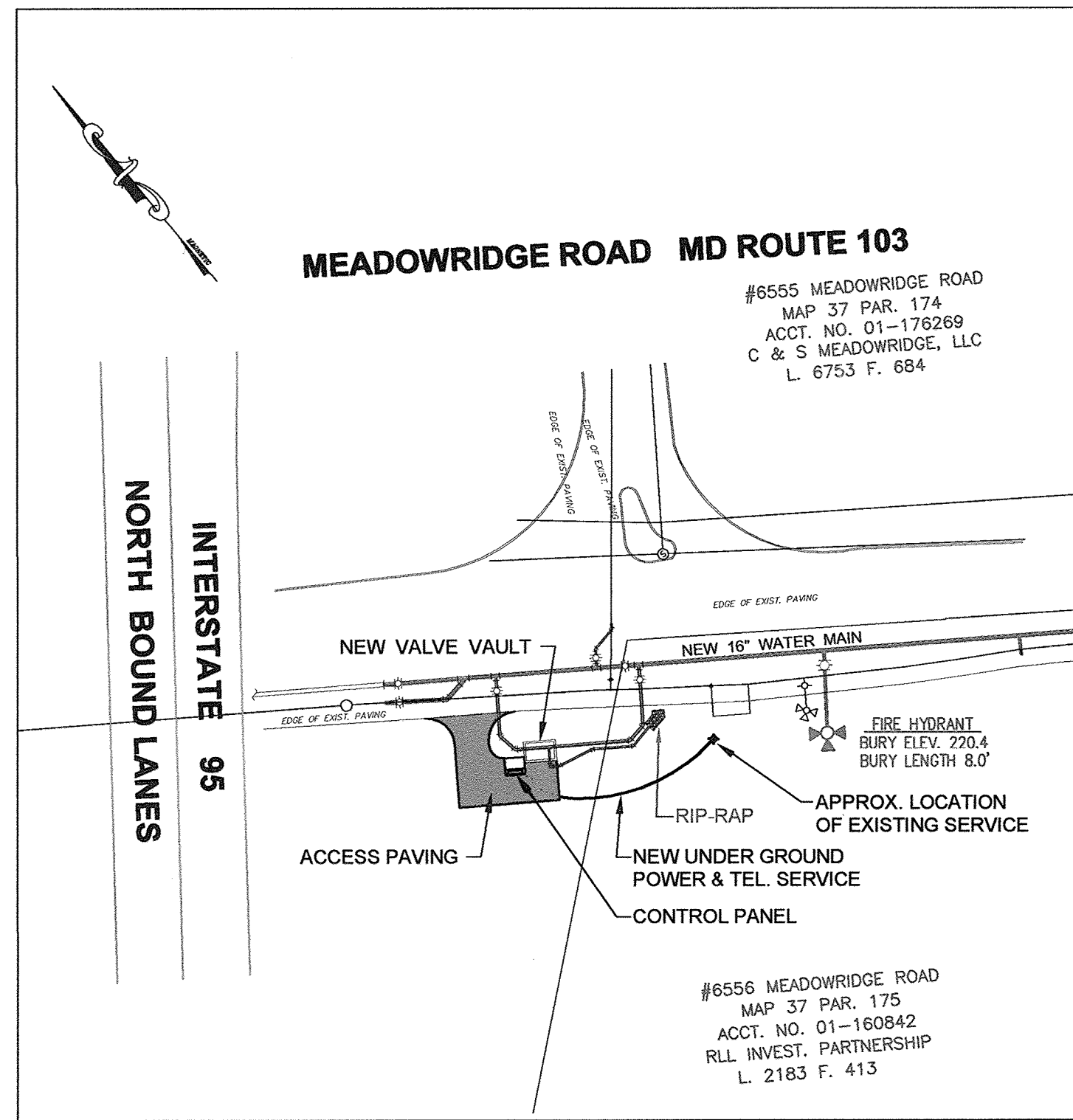
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DRN: DWB					
CHK: DWB					
DATE:	BY	NO.	REVISIONS	DATE	

**VALVE VAULT ELECTRICAL PLANS**  
60' SCALE MAP NO. 37, 43  
BLOCK NO. 5, 23

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164  
ELECTION DISTRICT NO. 1  
HOWARD COUNTY, MARYLAND

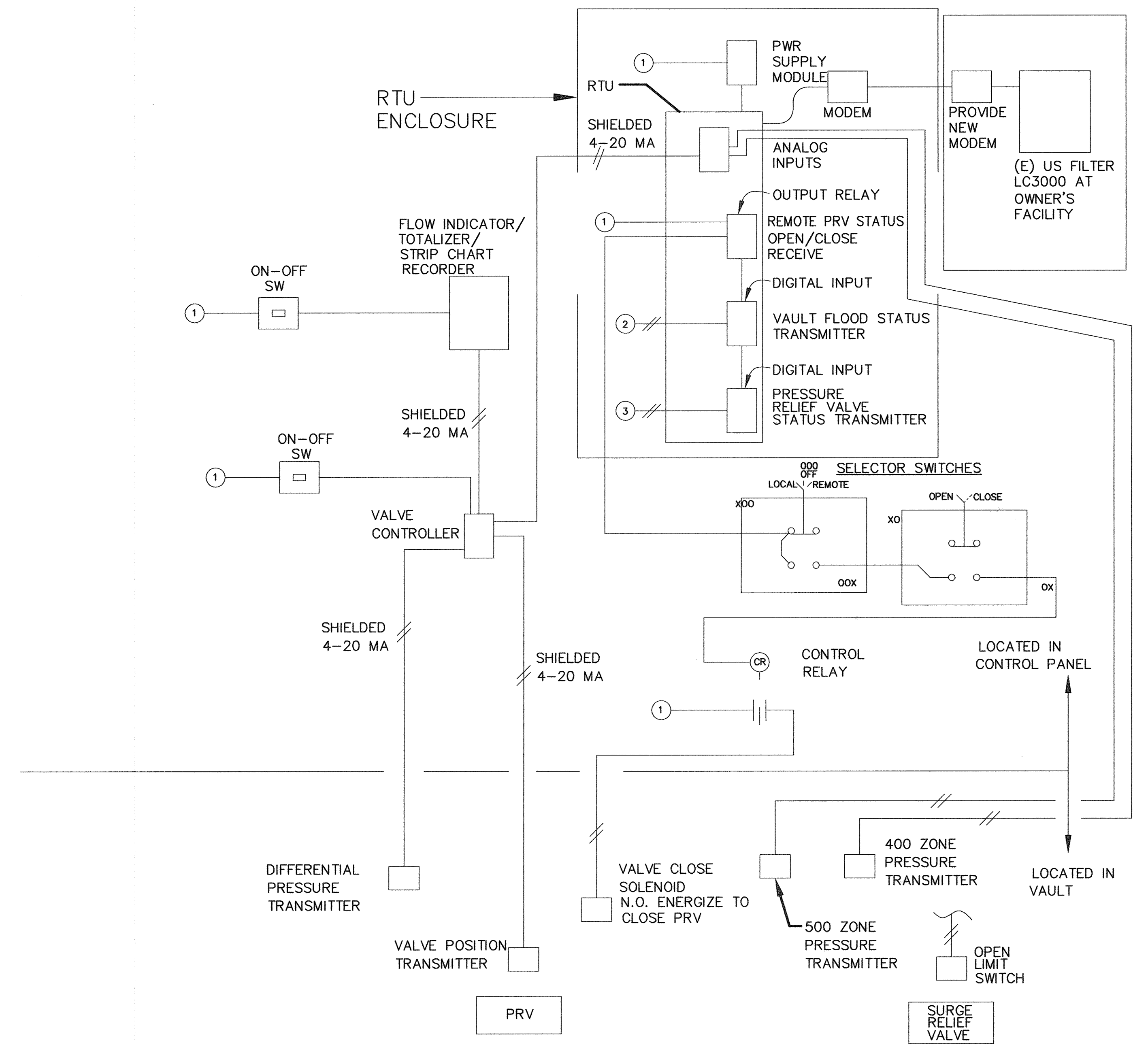
SCALE: SHOWN  
SHEET 17 OF 25





**ELECTRICAL SITE PLAN**

SCALE: 1" = 50'



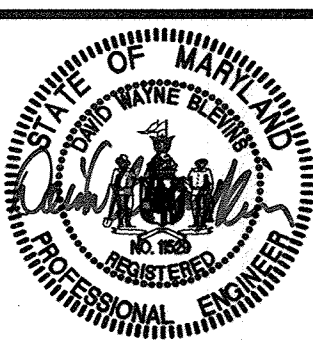
SCHEMATIC ARRANGEMENT PRV CONTROL  
NO SCALE

- ① -120 VAC FROM UPS
- ② -TO VAULT FLOOD SWITCH
- ③ -TO SURGE RELIEF VALVE OPEN LIMITS SWITCH

**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. 11529, EXPIRATION DATE: JULY 9, 2011  
*David H. Klein* 9/20/10  
Signature of Engineer Date

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND  
Director of Public Works: *John A. ...* DATE: 9/28/10  
Chief, Bureau of Engineering: *...* DATE: 9/28/10  
Chief, Utility Design Division: *...* DATE: 9/28/10

**Dewberry**  
Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2062  
410.285.9500  
FAX: 410.285.8875



DES: DWB				
DRN: DWB				
CHK: DWB				
DATE:				
BY	NO.	REVISIONS	DATE	

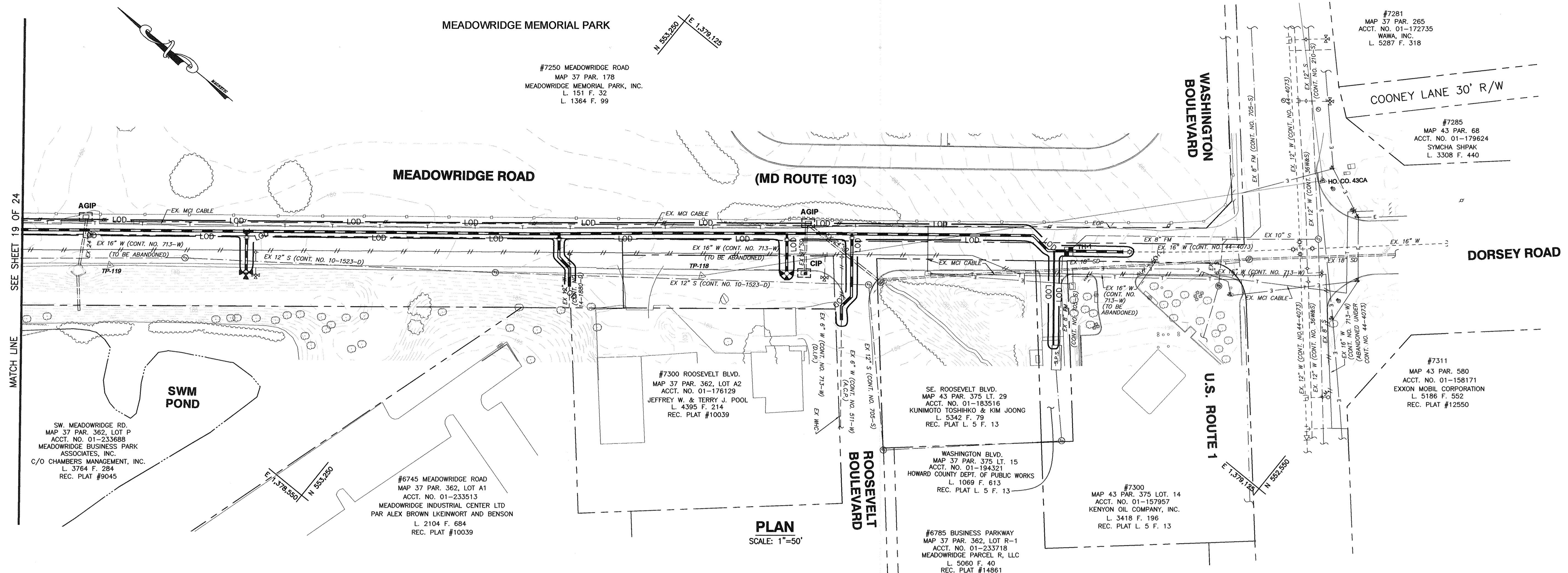
**ELECTRICAL SITE PLAN AND DETAILS**  
600' SCALE MAP NO. 37, 43  
BLOCK NO. 5, 23

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164  
ELECTION DISTRICT NO. 1  
HOWARD COUNTY, MARYLAND

SCALE: SHOWN  
SHEET 18 OF 25

AS-BUILTS





SEE SHEET 19 OF 24  
MATCH LINE

PLAN  
SCALE: 1"=50'

- LEGEND**
- LOD— LIMIT OF DISTURBANCE
  - SF— SILT FENCE
  - CIP CURB INLET PROTECTION
  - AGIP AT GRADE INLET PROTECTION

- UTILITY NOTES**
1. CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF THE TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWN SLOPE OF) THE TRENCH.
  2. PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
  3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

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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. 28770, EXPIRATION DATE: MAY 14, 2011

*[Signature]* 09-20-10  
Signature of Engineer Date

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

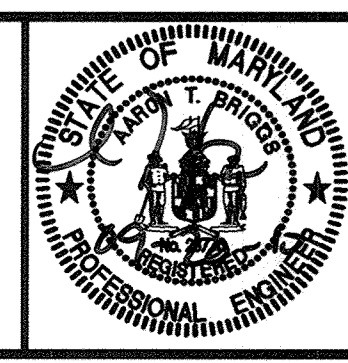
Director of Public Works: *[Signature]* 10/25/10  
Date: 10/25/10

Chief, Bureau of Engineering: *[Signature]* 9/25/10  
Date: 9/25/10

Chief, Bureau of Utilities: *[Signature]* 10/25/10  
Date: 10/25/10

Chief, Utility Design Division: *[Signature]* 9/25/10  
Date: 9/25/10

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Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2002  
410.265.9500  
FAX: 410.265.8875



DES: ARW					
DRN: ARW					
CHK: ATB					
DATE:					
BY	NO.	REVISIONS	DATE		

**SEDIMENT AND EROSION CONTROL PLAN**

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

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

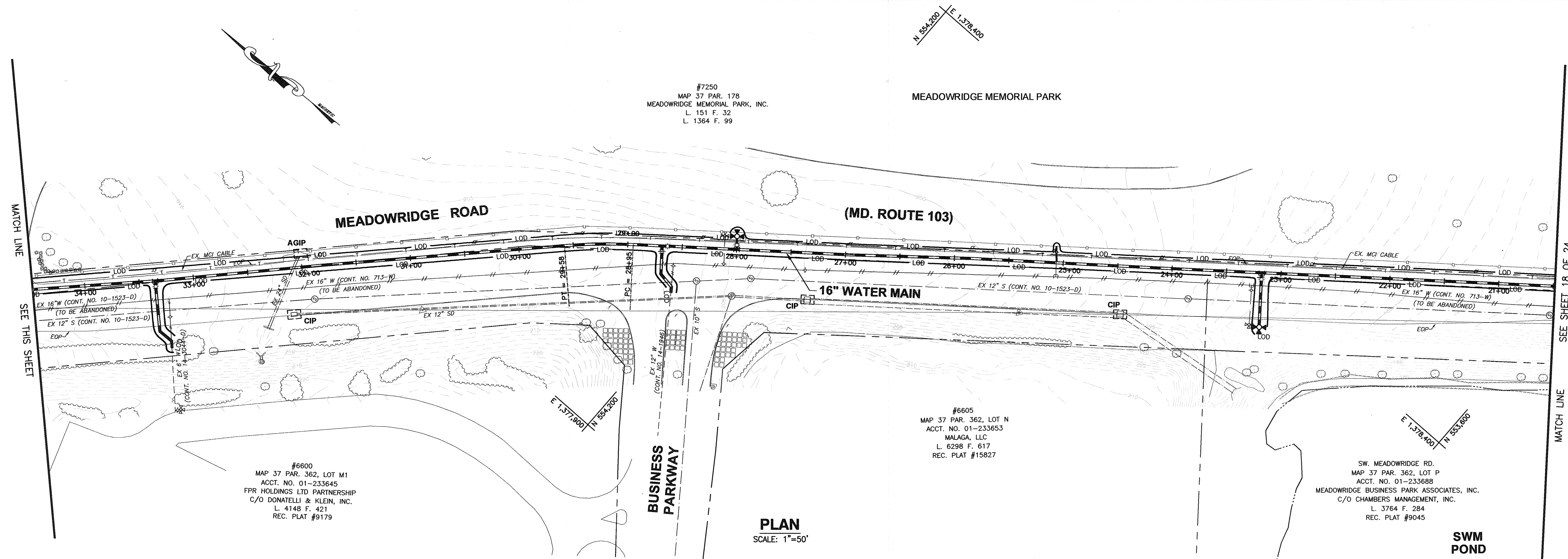
ELECTION DISTRICT NO. 1  
HOWARD COUNTY, MARYLAND

ES-1

SCALE: SHOWN

SHEET 19 OF 25





PLAN  
SCALE: 1"=50'

#6600  
MAP 37 PAR. 362, LOT M1  
ACCT. NO. 01-233645  
FPR HOLDINGS LTD PARTNERSHIP  
C/O DONATELLI & KLEIN, INC.  
L. 4148 F. 421  
REC. PLAT #9179

#6605  
MAP 37 PAR. 362, LOT N  
ACCT. NO. 01-233653  
MALAGA, LLC  
L. 6298 F. 617  
REC. PLAT #15827

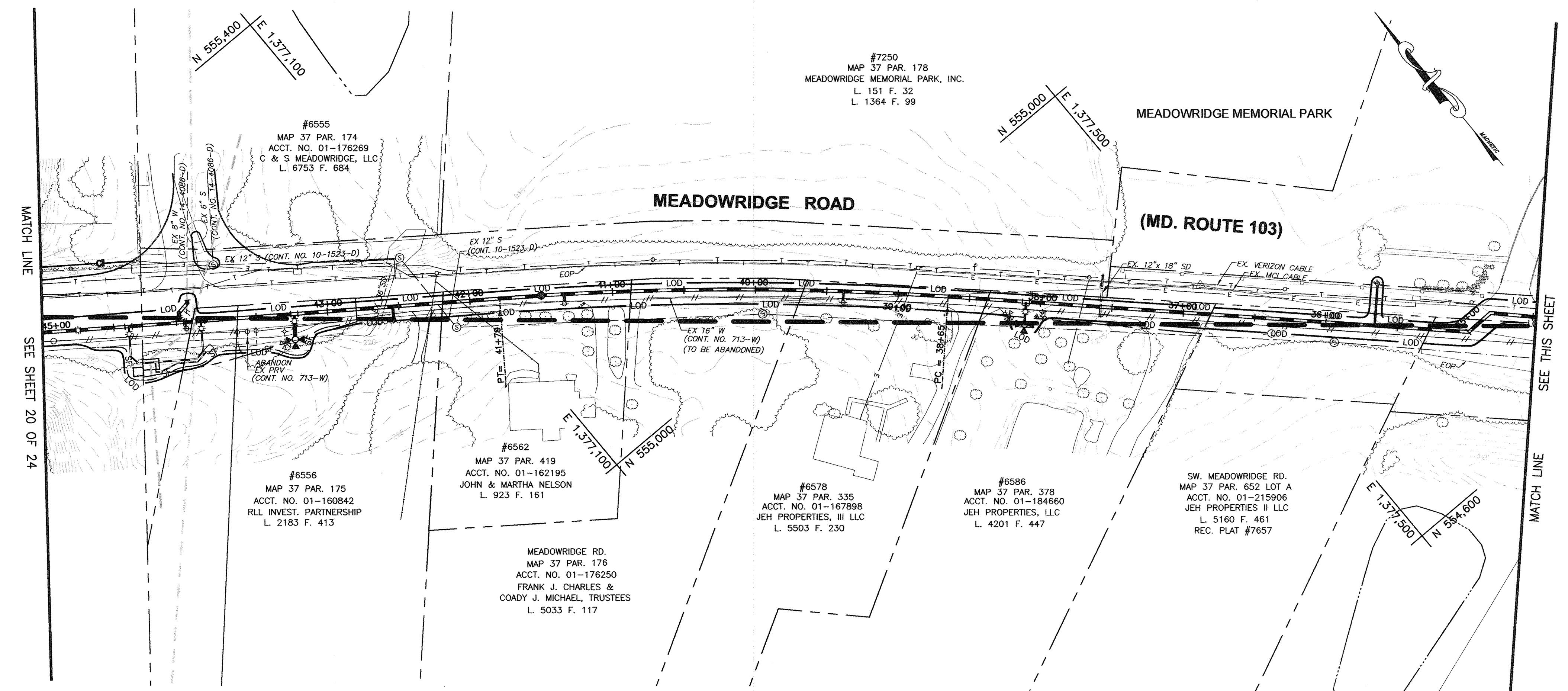
SW. MEADOWRIDGE RD.  
MAP 37 PAR. 362, LOT P  
ACCT. NO. 01-233688  
MEADOWRIDGE BUSINESS PARK ASSOCIATES, INC.  
C/O CHAMBERS MANAGEMENT, INC.  
L. 3764 F. 284  
REC. PLAT #9045

SWM POND

- LEGEND**
- LOD — LIMIT OF DISTURBANCE
  - SF — SILT FENCE
  - CIP CURB INLET PROTECTION
  - AGIP AT GRADE INLET PROTECTION

**UTILITY NOTES**

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2. PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.



PLAN  
SCALE: 1"=50'

#6555  
MAP 37 PAR. 174  
ACCT. NO. 01-176269  
C & S MEADOWRIDGE, LLC  
L. 6753 F. 684

#6556  
MAP 37 PAR. 175  
ACCT. NO. 01-160842  
RLL INVEST. PARTNERSHIP  
L. 2183 F. 413

#6562  
MAP 37 PAR. 419  
ACCT. NO. 01-162195  
JOHN & MARTHA NELSON  
L. 923 F. 161

MEADOWRIDGE RD.  
MAP 37 PAR. 176  
ACCT. NO. 01-176250  
FRANK J. CHARLES &  
COADY J. MICHAEL, TRUSTEES  
L. 5033 F. 117

#6578  
MAP 37 PAR. 335  
ACCT. NO. 01-167898  
JEH PROPERTIES, III LLC  
L. 5503 F. 230

#6586  
MAP 37 PAR. 378  
ACCT. NO. 01-184860  
JEH PROPERTIES, LLC  
L. 4201 F. 447

SW. MEADOWRIDGE RD.  
MAP 37 PAR. 552 LOT A  
ACCT. NO. 01-215906  
JEH PROPERTIES II LLC  
L. 5160 F. 461  
REC. PLAT #7657

**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. 28770, EXPIRATION DATE: MAY 14, 2011  
*[Signature]*  
Signature of Engineer  
09-20-10  
Date

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

Director of Public Works: *[Signature]* DATE: 2/25/10  
Chief, Bureau of Utilities: *[Signature]* DATE: 9/25/10  
Chief, Bureau of Engineering: *[Signature]* DATE: 2/25/10  
Chief, Utility Design Division: *[Signature]* DATE: 9/25/10

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.265.9500  
FAX 410.265.8875

Professional Engineer Seal: STATE OF MARYLAND, PROFESSIONAL ENGINEER

DES: ARW			
DRN: ARW			
CHK: ATB			
DATE:	BY	NO.	REVISIONS

**SEDIMENT AND EROSION CONTROL PLAN**

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

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

ELECTION DISTRICT NO. 1  
HOWARD COUNTY, MARYLAND

ES-2  
SCALE: SHOWN  
SHEET 20 OF 25



DONNA J. BURNS &  
JANE B. SEALOCK  
6457 MEADOWRIDGE ROAD  
LIBER 3541 FOLIO 702  
MAP 37 PARCEL 544

MARYELLEN F. COURTNEY &  
VERNON R. COURTNEY T/TC  
6417 MEADOWRIDGE ROAD  
LIBER 3256 FOLIO 233  
MAP 37 PARCEL 544

DAVID J. SPARROW & WIFE 6479  
MEADOWRIDGE ROAD  
LIBER 505 FOLIO 603  
MAP 37 PARCEL 545

NOTTINGHAM CONDOMINIUM  
PHASE 5  
PLAT NO. 8888

KENFIELD PROPERTIES, INC.  
C/O BOSWORTH PROPERTIES  
CEMETARY LANE  
LIBER 9120 FOLIO 637  
MAP 37 PARCEL 536

SAMUEL BLACKSTONE  
CEMETARY LANE  
LIBER 10 FOLIO 216  
MAP 37 PARCEL 524

MERRIT MR LLC  
6512 MEADOWRIDGE ROAD  
LIBER 9009 FOLIO 151  
LIBER 9009 FOLIO 162  
MAP 37 PARCEL 173

NOTTINGHAM  
CONDOMINIUM  
PHASE 2  
PLAT NO. 8888

LOT 2  
BRUCE A. JACKSON  
ARTHUR F. NOKES ET AL J/T  
6415 MEADOWRIDGE ROAD  
LIBER 4212 FOLIO 83  
MAP 37 PARCEL 180

NEDA JONES  
7724 MAYFIELD AVENUE  
L. 4798 F. 451  
MAP 37 PAR. 406

LOT 1  
KAMAU ODINGA  
TAMANKA ODINGA  
6425 MEADOWRIDGE ROAD  
LIBER 5758 FOLIO 720  
MAP 37 PARCEL 180

TAMANKA ODINGA L/T  
6437 MEADOWRIDGE ROAD  
LIBER 6156 FOLIO 168  
MAP 37 PARCEL 456

NOTTINGHAM  
CONDOMINIUM  
PHASE 2  
PLAT NO. 8888

LOT 1  
SCOTT SHEARER  
6402 MEADOWRIDGE ROAD  
LIBER 6450 FOLIO 525  
MAP 37 PAR. 298

LOT 2  
EUGENE C. BLACKSTONE  
7740 MAYFIELD AVENUE  
LIBER 3471 FOLIO 688  
MAP 37 PAR. 298

NEDA JONES  
7724 MAYFIELD AVENUE  
LIBER 4798 FOLIO 451  
MAP 37 PAR. 406

CHERYL SPARROW  
DEBORAH L. SPARROW T/CC  
6436 MEADOWRIDGE ROAD  
LIBER 3578 FOLIO 559  
MAP 37 PARCEL 457

HOWARD COUNTY MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
W. MEADOWRIDGE ROAD  
LIBER 1022 FOLIO 139  
MAP 37 PARCEL 172

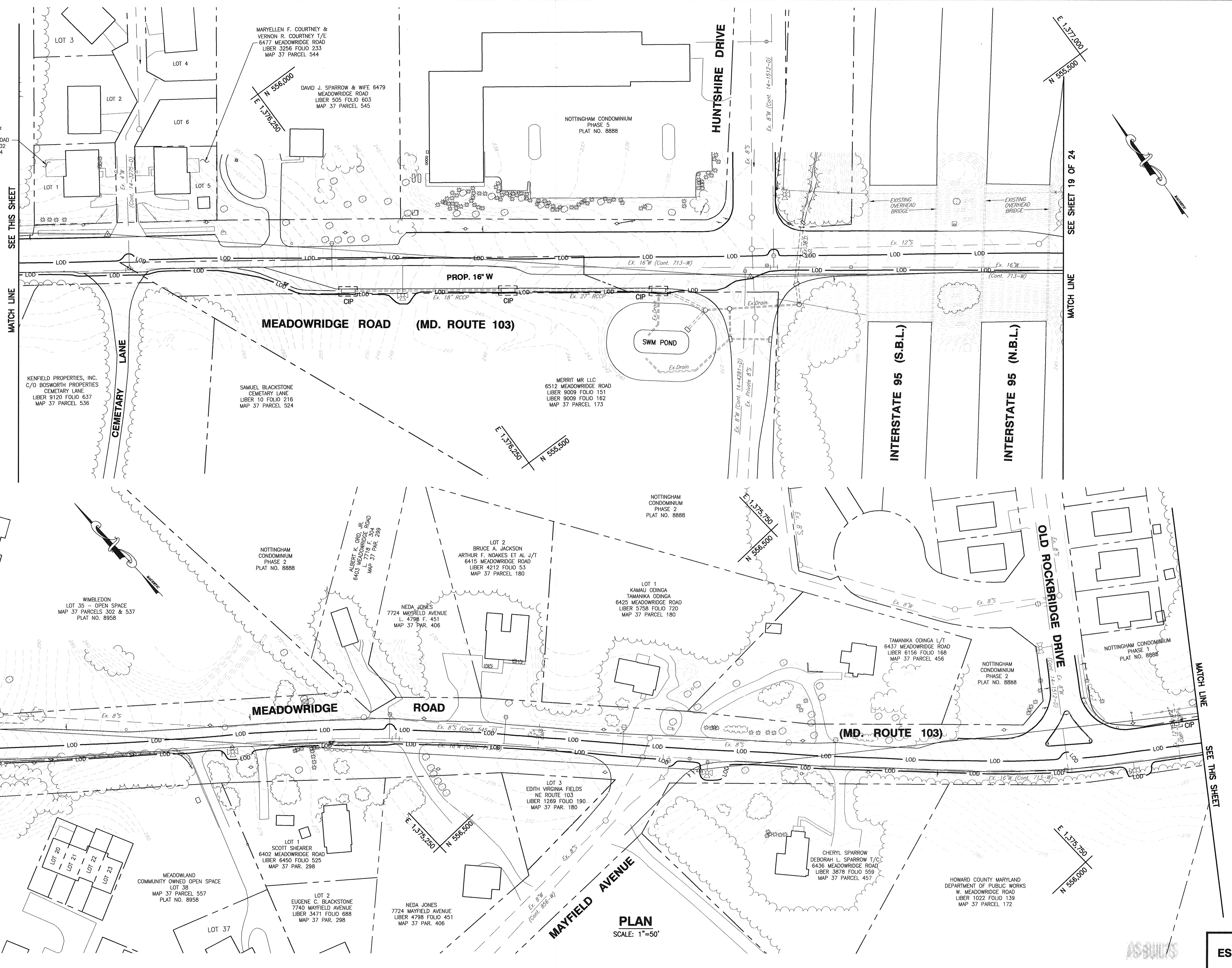
- LEGEND**
- LOD — LIMIT OF DISTURBANCE
  - SF — SILT FENCE
  - CIP CURB INLET PROTECTION
  - AGIP AT GRADE INLET PROTECTION

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  2. PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
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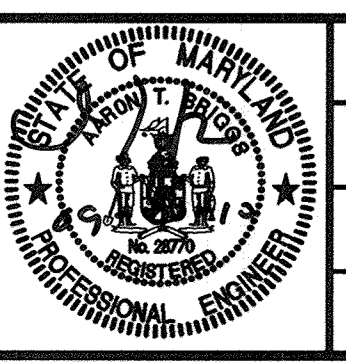
*[Signature]*  
Signature of Engineer      04-20-10      Date



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

Director of Public Works: *[Signature]* DATE: 9/28/10  
 Chief, Bureau of Engineering: *[Signature]* DATE: 9/28/10  
 Chief, Bureau of Utilities: *[Signature]* DATE: 9/28/10  
 Chief, Utility Design Division: *[Signature]* DATE: 9/28/10

**Dewberry**  
Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2082  
410.285.9500  
FAX: 410.285.8875



DES: ARW	BY:	NO.:	REVISIONS:	DATE:
DRN: ARW				
CHK: ATB				
DATE:				

**SEDIMENT AND EROSION CONTROL PLAN**

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

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

ELECTION DISTRICT NO. 1      HOWARD COUNTY, MARYLAND

ES-3

SCALE: SHOWN

SHEET 21 OF 26

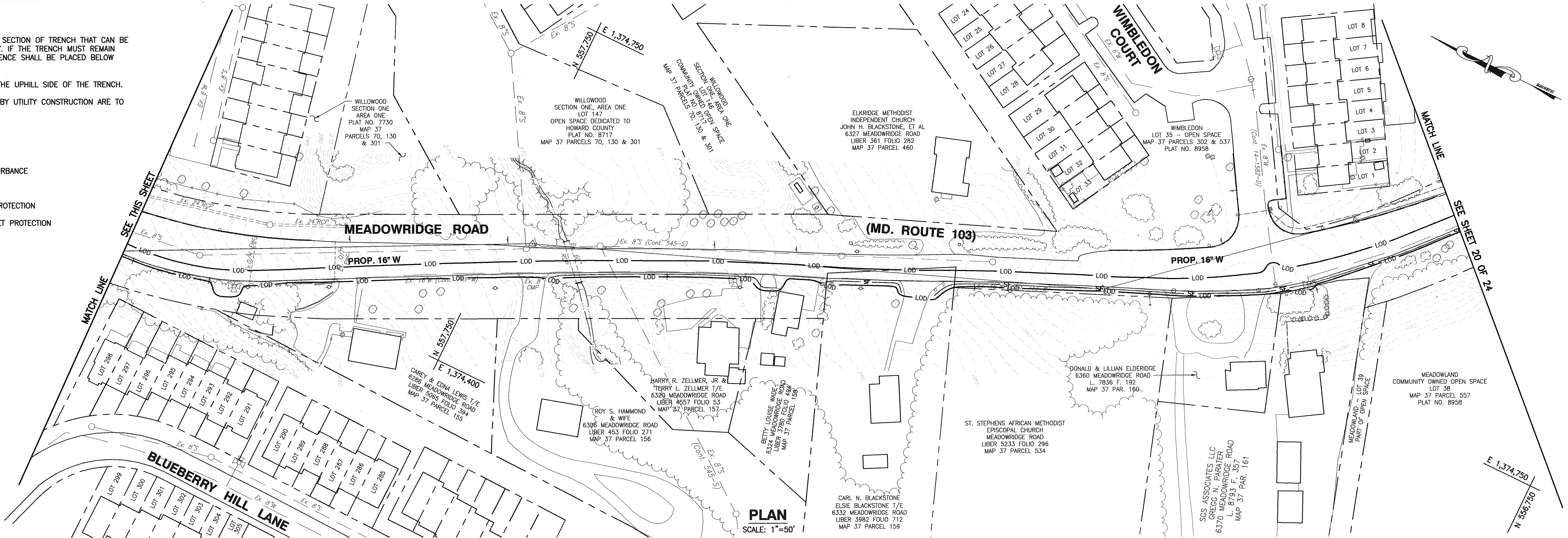


**UTILITY NOTES**

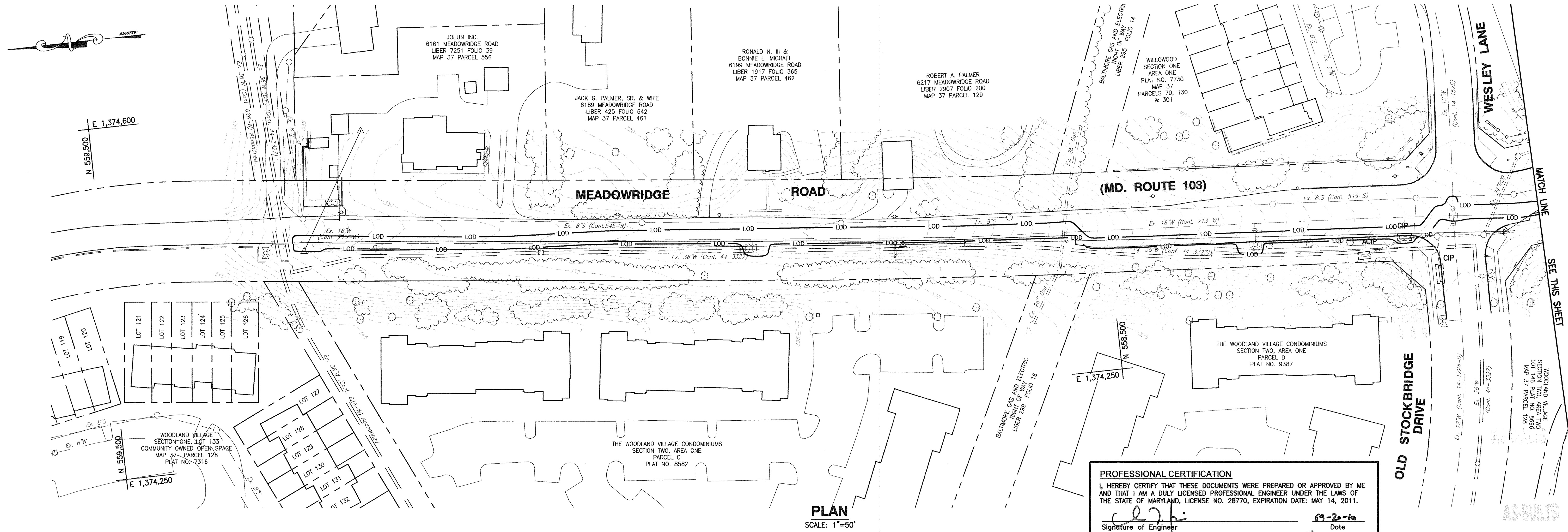
1. CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF THE TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWN SLOPE OF) THE TRENCH.
2. PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

**LEGEND**

- LOD — LIMIT OF DISTURBANCE
- SF — SILT FENCE
- CIP CURB INLET PROTECTION
- AGIP AT GRADE INLET PROTECTION



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



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

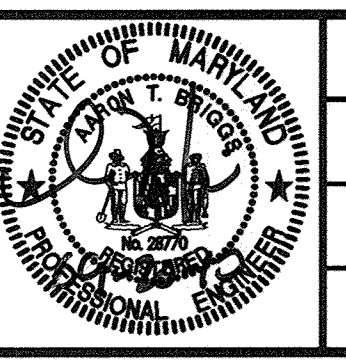
**PROFESSIONAL CERTIFICATION**  
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28770, EXPIRATION DATE: MAY 14, 2011.  
*[Signature]*  
Signature of Engineer  
Date: 9-22-10

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

Director of Public Works: *[Signature]* DATE: 9/22/10  
Chief, Bureau of Utilities: *[Signature]* DATE: 9/22/10

Chief, Bureau of Engineering: *[Signature]* DATE: 9/22/10  
Chief, Utility Design Division: *[Signature]* DATE: 9/22/10

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2002  
410.285.9500  
FAX: 410.285.8875



DES: ARW					
DRN: ARW					
CHK: ATB					
DATE:	BY	NO.	REVISIONS	DATE	

**SEDIMENT AND EROSION CONTROL PLAN**

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

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164

ELECTION DISTRICT NO. 1  
HOWARD COUNTY, MARYLAND

**ES-4**

SCALE: SHOWN

SHEET 22 OF 25



STANDARDS AND SPECIFICATIONS FOR  
VEGETATIVE STABILIZATION

Section I - Vegetative Stabilization Methods and Materials

- A. Site Preparation
- Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
  - Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
  - Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.
- B. Soil Amendments (Fertilizer and Lime Specifications)
- Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
  - Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warranty of the producer.
  - Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98-100% will pass through a #20 mesh sieve.
  - Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.

C. Seedbed Protection

- Temporary Seeding
  - Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or smoothed but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
  - Apply fertilizer and lime as prescribed on the plans.
  - Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.
- Permanent Seeding
  - Minimum soil conditions required for permanent vegetative establishment:
    - Soil pH shall be between 6.0 and 7.0.
    - Soluble salts shall be less than 500 parts per million (ppm).
    - The soil shall contain less than 40% clay but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if loess or serecia lespedeza is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.
    - Soil shall contain 1.5% minimum organic matter by weight.
    - Soil must contain sufficient pore space to permit adequate root penetration.
    - If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
  - Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 - 5" to permit banding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
  - Apply soil amendments as per soil tests or as included on the plans.
  - Mix soil amendments into the top 3 - 5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1 - 3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

- Seed Specifications
    - 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.

    - Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75-80° F. can weaken bacteria and make the inoculant less effective.
- E. Methods of Seeding
- Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.
    - If fertilizer is being applied at the time of seeding, the application rate amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P205 (phosphorus); 200 lbs/acre; K20 (potassium); 200 lbs/acre.
    - 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.
    - Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
  - Dry Seeding: This includes use of conventional drop or broadcast spreaders.
    - Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.
    - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
  - Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
    - Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
    - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

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

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

- Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.
  - If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
  - When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
  - Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons water.
- Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application 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:
  - A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
  - Wood Cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
  - Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. The remainder of area should be applied uniformly after binder application. Synthetic binders - such as Acrylic DLR (Agro-Tack), DCA-70, Petrosel, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
  - Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.
- Incremental Stabilization - Cut Slopes
  - All cut slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15'.
  - Construction sequence (refer to Figure 4 below):
    - Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
    - Perform phase 1 excavation, dress and stabilize. Overseed phase 1 areas as necessary.
    - Perform phase 2 excavation, dress, and stabilize. Overseed phase 2 areas as necessary.
    - Perform final phase excavation, dress, and stabilize. Overseed previously seeded areas as necessary.

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

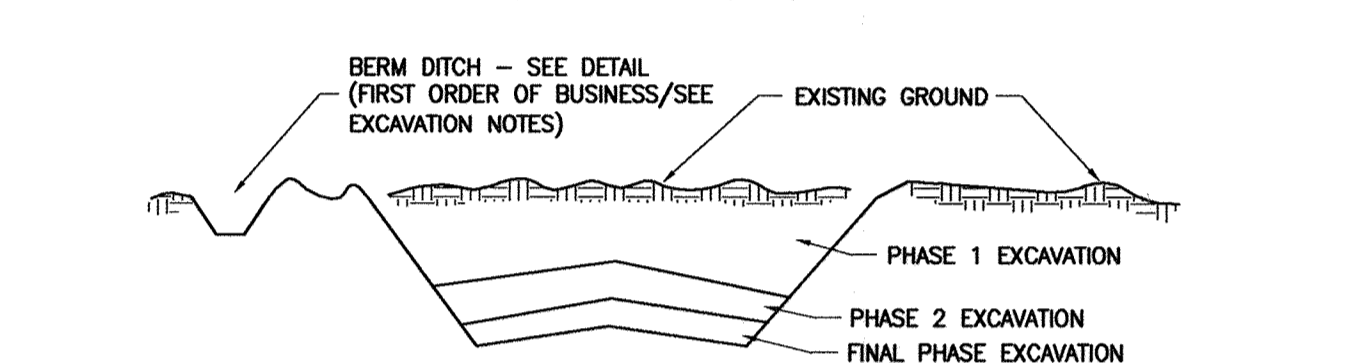


Figure 4 Incremental Stabilization - Cut

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

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

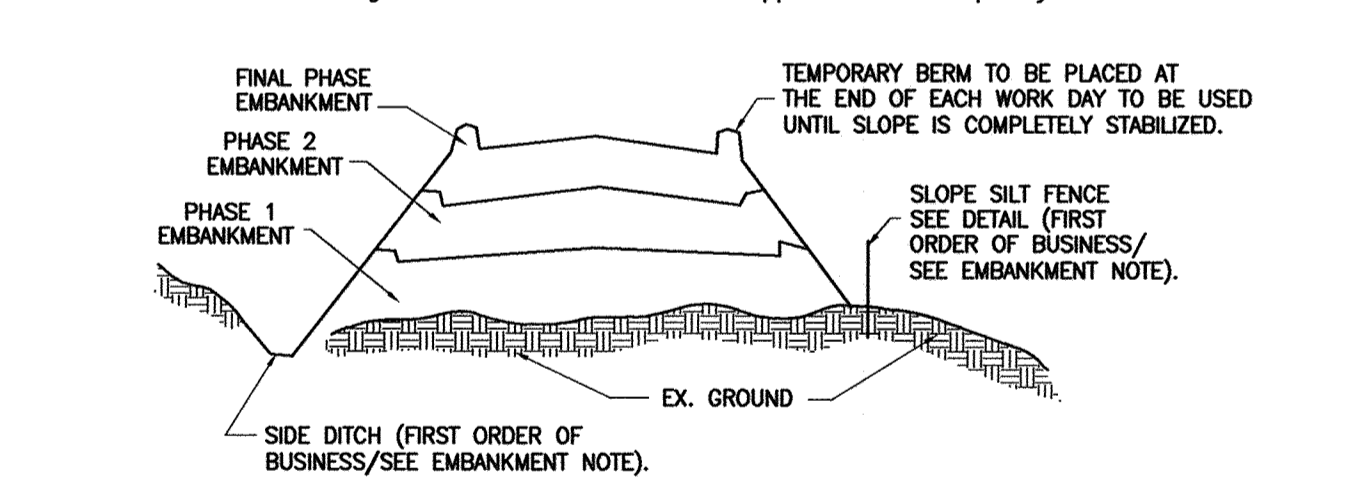


Figure 5 Incremental Stabilization - Embankment Fill Comply with MD 378 Specifications.

Section II - Temporary Seeding

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

A. Seed Mixtures - Temporary Seeding

- Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Temporary Seeding Summary below, along with application rates, seeding dates and seeding depths. If this Summary is not put on the plans and completed, then Table 26 must be put on the plans.
- For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

TEMPORARY SEEDING SUMMARY

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

Section III: Permanent Seeding

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

PERMANENT SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 6b - )				FERTILIZER RATE (10-20-20)			LIME RATE	
NO.	SPECIES	APPLICATION RATE(LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P205		K20
3	TALL FESCUE PERENNIAL RYE KY.BLUEGRASS	125 LB/AC 15 LB/AC 10 LB/AC	3/1 - 5/15 8/15 - 10/15	1/4"-1/2"	90 LB/AC (15 LB/1000 SF)	175 LB/AC (4 LB/1000 SF)	175 LB/AC (4 LB/1000 SF)	2 TONS/AC (100 LB/1000 SF)
7	TALL FESCUE WEEPING LOVEGRASS SERICEA LESPEDeza	110 LB/AC 3 LB/AC 20 LB/AC	3/1 - 10/15	1/4"-1/2"				

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

- A. General specifications
- Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.
  - Sod shall be machine cut at a uniform soil thickness of 3/4", plus or minus 1/4", at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads and torn or uneven ends will not be acceptable.
  - Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
  - Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
  - Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.
- B. Sod Installation
- During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.
  - The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and stretching. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
  - Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.
  - Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any piece of sod shall be completed within eight hours.
- C. Sod Maintenance
- In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4". Watering should be done during the heat of the day to prevent wilting.
  - After the first week, sod watering is required as necessary to maintain adequate moisture content.
  - The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3" unless otherwise specified.

Section IV - Turfgrass Establishment

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

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

- A. Permanent Seeding
- Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of three bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
  - Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Kentucky Bluegrass Cultivars/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.
  - Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: certified Tall Fescue Cultivars 95-100%, certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding rate: 5 to 8 lb/1000 sf. One or more cultivars may be blended.
  - Kentucky Bluegrass/Fine Fescue - Shade Mixture - For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: certified Kentucky Bluegrass Cultivars 30-40% and certified Fine Fescue and 60-70%. Seeding rate: 1 1/2 - 3 lbs/1000 square feet. A minimum of 3 Kentucky bluegrass cultivars must be chosen, with each cultivar ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
- Note: Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication, Agronomy Mimeo #77, "Turfgrass Cultivar Recommendations for Maryland".
- B. Ideal times of seeding
- Western MD: March 15 - June 1, August 1 - October 1 (Hardiness Zones - 5b, 6a)  
Central MD: March 1 - May 15, August 15 - October 15 (Hardiness Zone - 6b)  
Southern MD, Eastern Shore: March 1 - May 15, August 15 - October 15 (Hardiness Zones - 7a,7b)
- C. Irrigation
- If soil moisture is deficient, supply new seedlings with adequate water for plant growth (23/64" 0 1" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

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

SEDIMENT CONTROL GENERAL NOTES

- A minimum of 48 hours notice must be given to Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction. 410-313-1855.
- All vegetative and structural practices are to be installed according to the provisions of the plan and are to be in conformance with the most current Maryland Standards and Specifications for Soil Erosion and Sediment Control and revisions thereto.
- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within; a) 2 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control for permanent seeding (Sec. 51), sod (Sec. 54) temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Analysis \*
 

Site is defined as areas involving any improvement.	
Total Area of Site	5.29 Acres
Area Disturbed	5.29 Acres
Area to be paved	21,587 Sq. Yds.
Area to be Vegetatively Stabilized	0 Sq. Yds.
Total Cut	24,576 Cu. Yds.
Total Fill	23,146 Cu. Yds.
Offsite waste/borrow area location	To be determined by contractor.

- \* Quantities are estimated for the purpose of SEC Design only and shall not be relied upon by the contractor for the purpose of bidding.
- Any sediment control practices which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
  - Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
  - On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
  - Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each work day, whichever is shorter.
  - Spoil from trench excavation shall be place on the uphill side of the excavation.

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. 28770, EXPIRATION DATE: MAY 14, 2011.

Signature of Engineer: *[Signature]* Date: *09-20-10*

ES-5

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

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

**Dewberry**  
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**PROFESSIONAL ENGINEER**

DES: ARW						
DRN: ARW						
CHK: ATB						
DATE:						
BY	NO.					

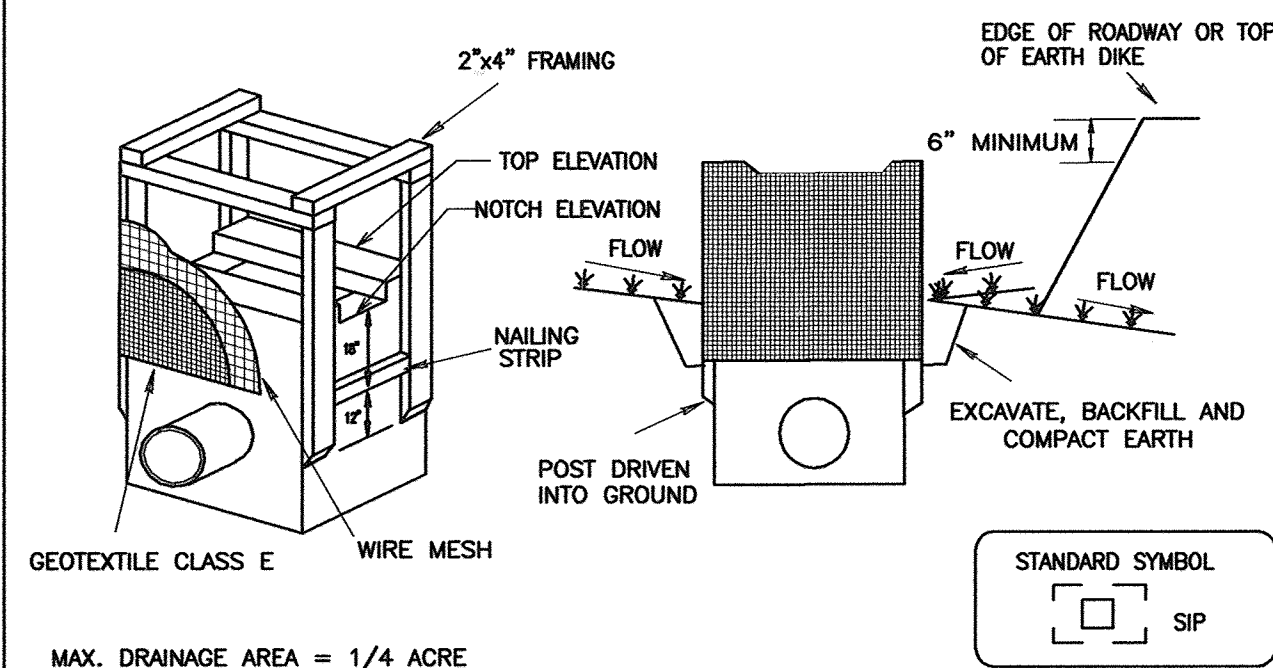
**SEDIMENT AND EROSION CONTROL NOTES**

600' SCALE MAP NO. 37, 43 BLOCK NO. 5, 23 ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE: SHOWN  
SHEET 23 OF 25



**DETAIL 23A - STANDARD INLET PROTECTION**



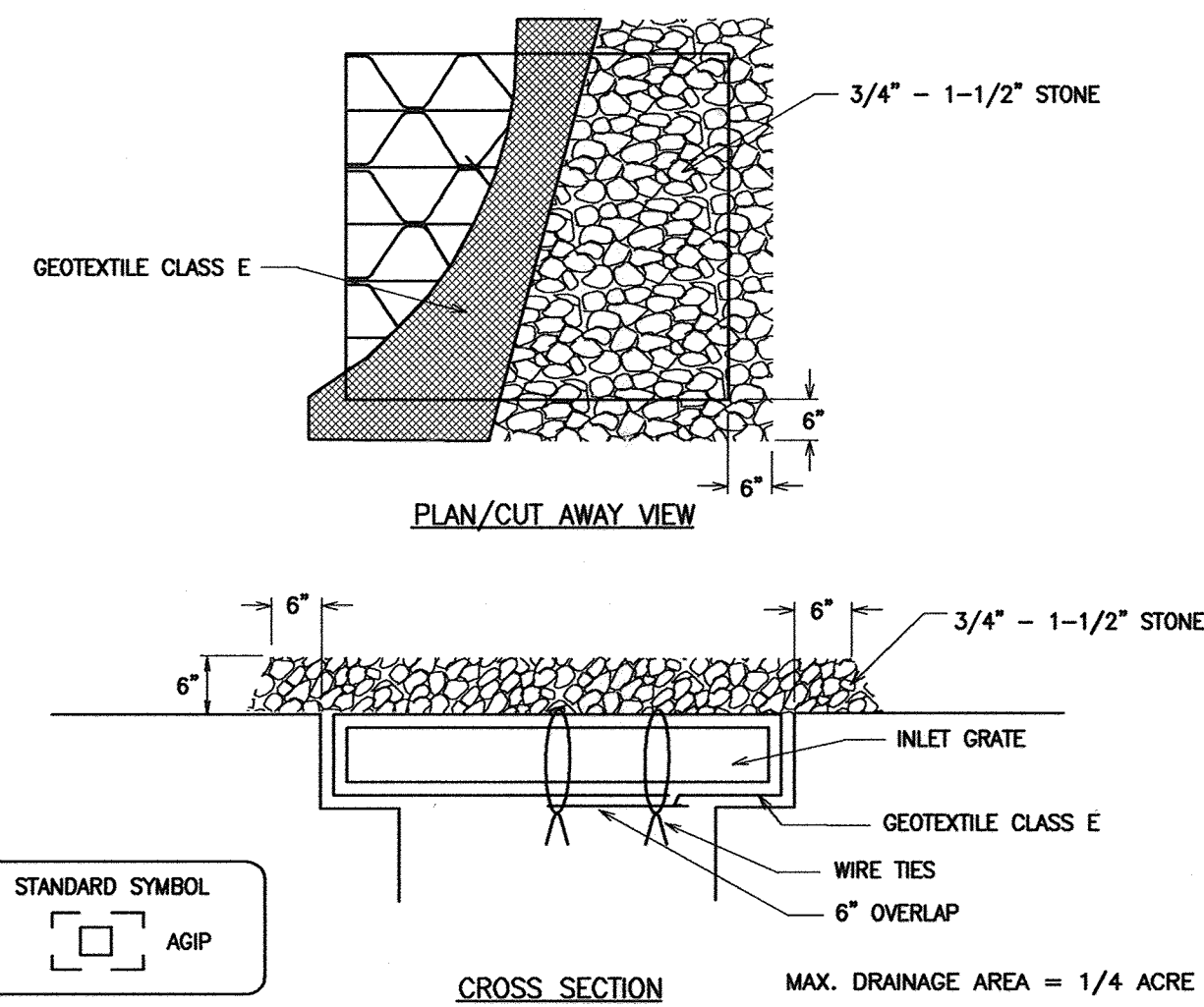
MAX. DRAINAGE AREA = 1/4 ACRE

**Construction Specifications**

- Excavate completely around the inlet to a depth of 18" below the notch elevation.
- 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.
- 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.
- Stretch the Geotextile Class E tightly over the wire mesh with the geotextile 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.
- 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.
- 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.
- 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 23B - AT GRADE INLET PROTECTION**



MAX. DRAINAGE AREA = 1/4 ACRE

**Construction Specifications**

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

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

**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

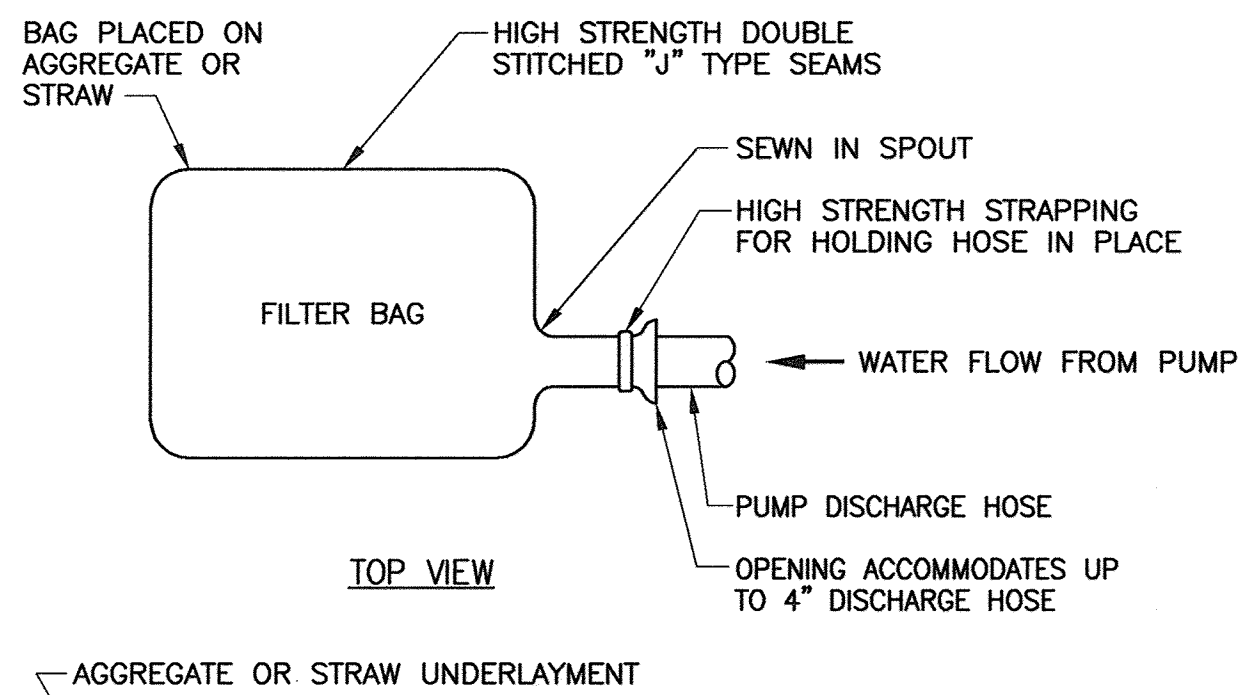
Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

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

**SUPER SILT FENCE**

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

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

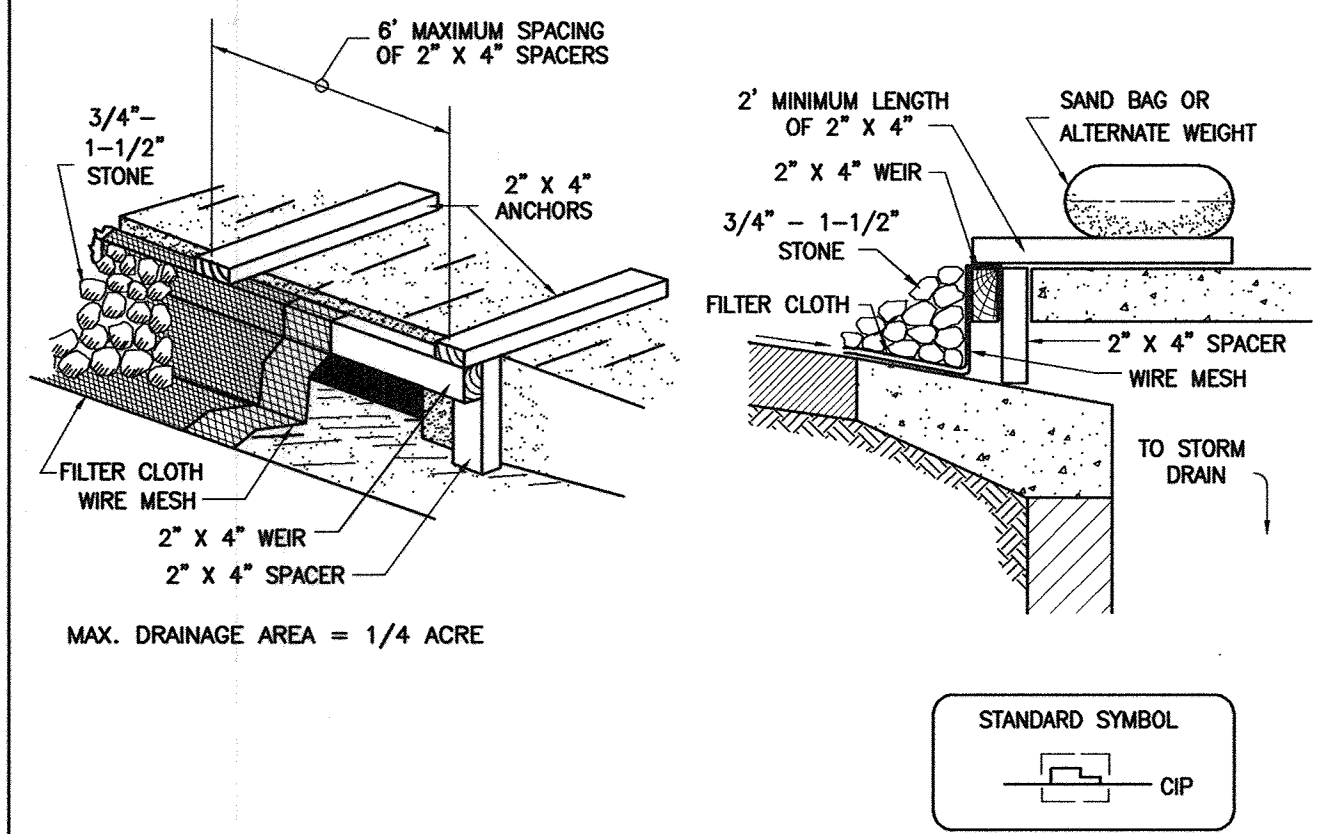


**Construction Specifications**

**Filter Bag**

NOT TO SCALE

**DETAIL 23C - CURB INLET PROTECTION (COG OR COS INLETS)**



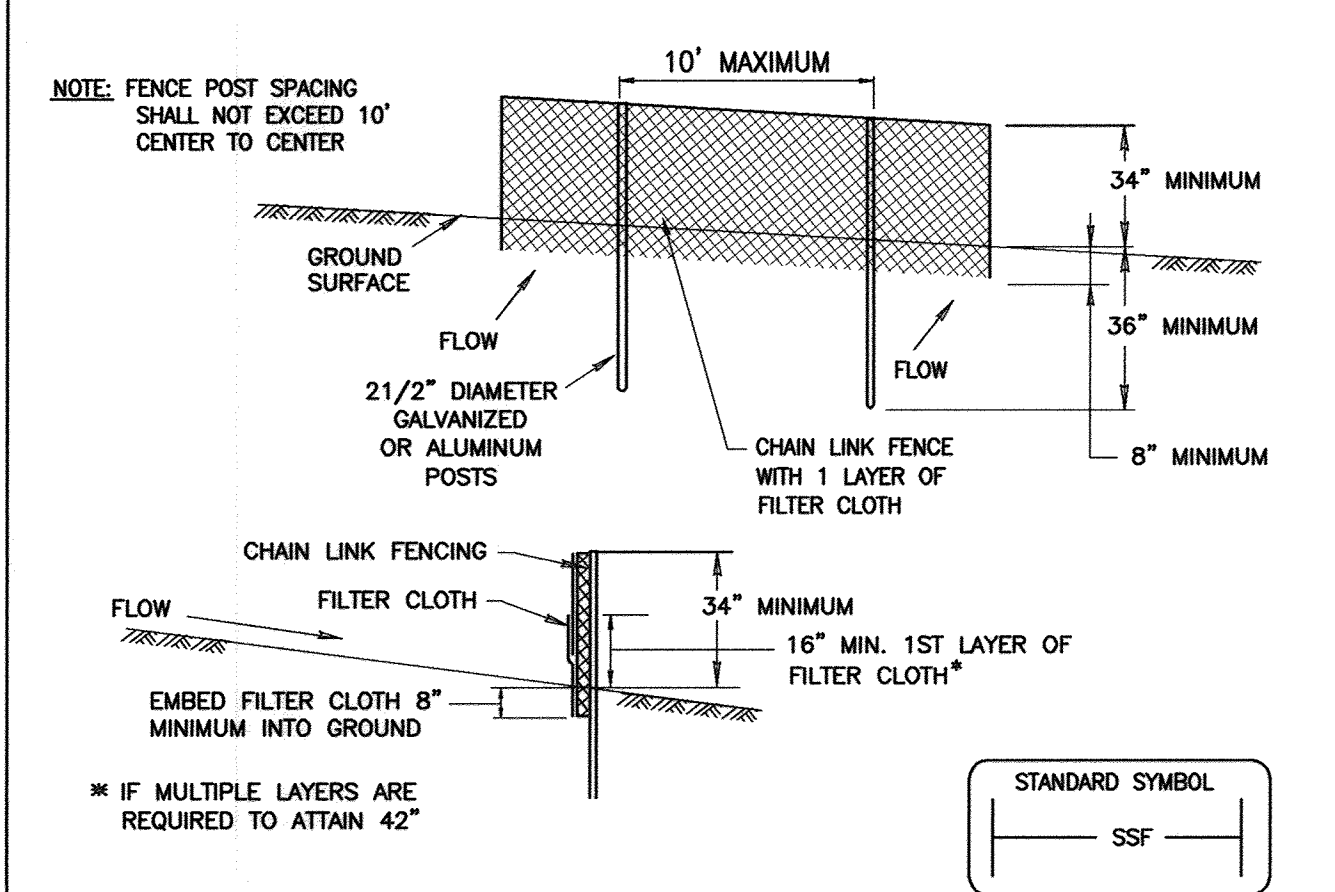
MAX. DRAINAGE AREA = 1/4 ACRE

**Construction Specifications**

- Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4") to the 2"x4" weir (measuring throat length plus 2") as shown on the standard drawing.
- 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"x4" weir.
- Securely nail the 2"x4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).
- Place the assembly against the inlet throat and nail (minimum 2' lengths of 2"x4" to the top of the weir at spacer locations). These 2"x4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.
- The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.
- Form the 1/2"x1/2" 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"x1-1/2" stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.
- This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.
- 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

**DETAIL 33 - SUPER SILT FENCE**



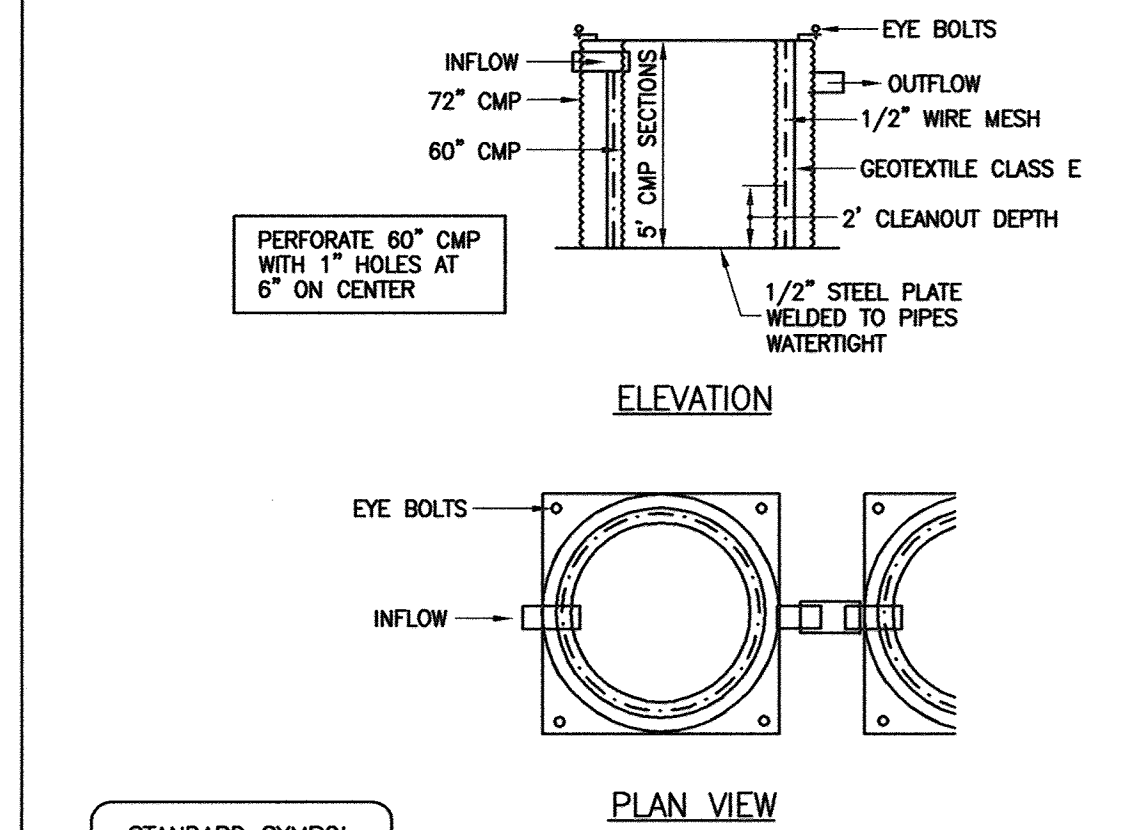
**Construction Specifications**

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

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

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

**DETAIL 21 - PORTABLE SEDIMENT TANK**



STANDARD SYMBOL  
PST

**Construction Specifications**

- 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.
- 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.
- Tanks may be connected in series.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE D-14-2 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**SEQUENCE OF OPERATION**

- Pre-construction meeting: Notify the Department of Inspections, Licenses and Permits (1-410-313-3800) at least 48 hours before commencing work. Work may not commence until the permittee or the responsible personnel have met on site with the sediment and erosion control inspector to review the approved plans.
- Contractor shall locate and procure all staging and stockpiling areas which shall be approved by project inspector.
- Conduct test pit operations. Present finalized schedule of work to the Engineer and Howard County Inspections, Licenses and Permits Division.
- Clear and grub those areas for installation of sediment and erosion perimeter controls.
- Install sediment control devices as required per the Plans. Obtain approval from the County Sediment and Erosion Control Inspector.
- Perform the following sequence for each day of utility construction operation.
  - Install silt fence downstream of area to be worked on a daily basis.
  - Clear and grub area where pipeline will be installed. Remove and salvage topsoil.
  - Excavate and install water main and appurtenances. Place backfill and compact.
  - Place topsoil, fine grade, seed and apply mulch to disturbed area.
  - Streets are to be swept free of dirt and debris.
- Direct all water pumped during trench dewatering operations to an approved portable sediment tank. Clean out tank when one-third (1/3) is filled with silt. Haul sediment to a County approved site.
- No excavated material shall be placed in the ditch adjacent to the existing roadway. The Contractor shall take precautions to prevent the disturbance of existing vegetated areas to the extent possible. Any existing vegetated areas disturbed as a result of the contractor's work operations shall be stabilized by the end of the work day.
- Stabilize the top of all trenches by the end of each work day. All excess stockpiled soil remaining after refilling of the trench(s) shall be removed from the surface and hauled from the site by the end of the working day. The Contractor shall be responsible for obtaining all permits for his off-site stockpile areas. The Contractor shall also adequately clean all dirt and mud off the roadways by the end of each working day.
- Permanently Stabilize any remaining disturbed areas as required.
- Remove any remaining sediment controls after prior approval from Howard County Inspections and Permits Division.

**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. 28770, EXPIRATION DATE: MAY 14, 2011.  
Signature of Engineer: *[Signature]* Date: 09-28-10

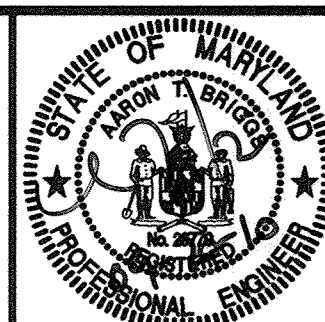
ES-6

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

Director of Public Works: *[Signature]* DATE: 10/3/10  
Chief, Bureau of Utilities: *[Signature]* DATE: 10/14/10  
Chief, Bureau of Engineering: *[Signature]* DATE: 2/25/10  
Chief, Utility Design Division: *[Signature]* DATE: 9/28/10

**Dewberry**  
Dewberry & Davis LLC

3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.285.9500  
FAX: 410.285.8875



DES: ARW

DRN: ARW

CHK: ATB

DATE:

BY NO.

REVISIONS

DATE

**SEDIMENT AND EROSION  
CONTROL DETAILS**

600' SCALE MAP NO. 37, 43

BLOCK NO. 5, 23

ELECTION DISTRICT NO. 1

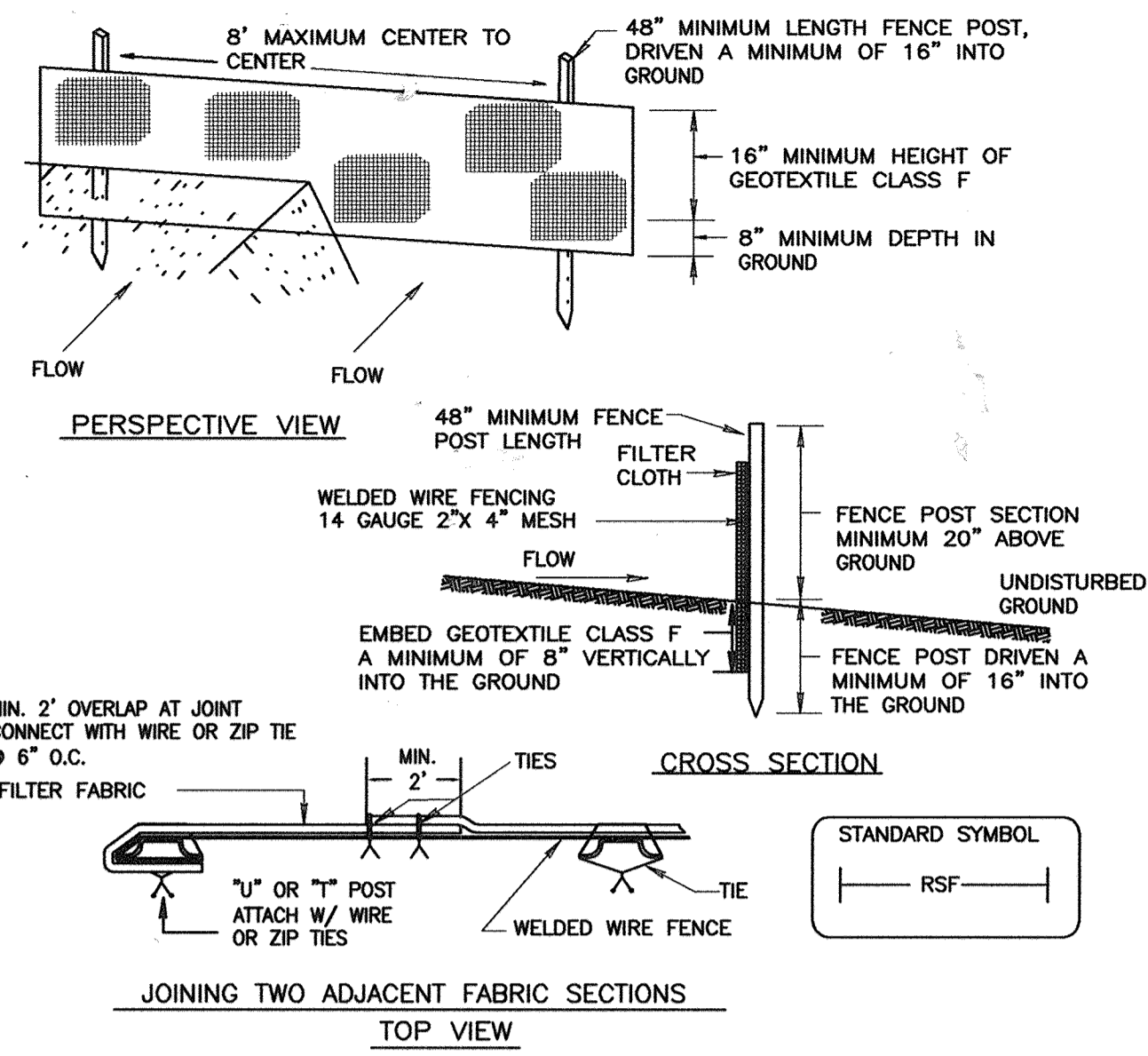
**MEADOWRIDGE ROAD  
WATER MAIN REPLACEMENT  
CAPITAL PROJECT W-8249  
CONTRACT 44-4164**

HOWARD COUNTY, MARYLAND

SCALE:  
SHOWN

SHEET  
24 OF 25





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

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft <sup>2</sup> / minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322
  - Where ends of geotextile fabric come together, they shall be overlapped, folded and wired tied or zip tied to prevent sediment bypass.
  - Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

**Silt Fence Design Criteria**

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

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

**REINFORCED SILT FENCE**

**PERMANENT SEEDING NOTES**

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

**Seedbed Preparation:** Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

**Soil Amendments:** In lieu of soil test recommendations, use one of the following schedules:

- Preferred** - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq. ft.)
- Acceptable** - Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil.

**Seeding** - For the periods March 1 - April 30, and August 1 - October 15, seed with 60 lbs/acre (1.4 lbs/1000 sq. ft.) of Kentucky 31 Tall Fescue. For the period May 1 - July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs/acre (.05 lbs/1000 sq. ft.) of weeping lovegrass. During the period of October 16 - February 28, protect site by **Option 1** - Two tons per acre of well anchored straw mulch and seed as soon as possible in the spring. **Option 2** - Use sod. **Option 3** - Seed with 60 lbs/acre Kentucky 30 Tall Fescue and mulch with 2 tons/acre well anchored straw.

**Mulching** - Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq. ft.) of unratted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq. ft.) for anchoring.

**Maintenance** - Inspect all seeding areas and make needed repairs, replacements and reseeds.

**TEMPORARY SEEDING NOTES**

Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.

**Seedbed preparation:** -- Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

**Soil Amendments:** -- Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).

**Seeding:** -- For periods March 1 - April 30 and from August 15 - October 15, seed with 2-1/2 bushel per acre of annual rye (3.2 lbs/1000 sq. ft.). For the period May 1 - August 14, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 sq. ft.). For the period November 16 - February 28, protect site by apply 2 tons/acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

**Mulching:** -- Apply 1-1/2 to 2 tons/acre (70 to 90 lbs/1000 sq. ft.) of unratted weed-free, small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 ft. or higher, use 348 gal. per acre (8gal/1000 sq. ft.) for anchoring.

Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.

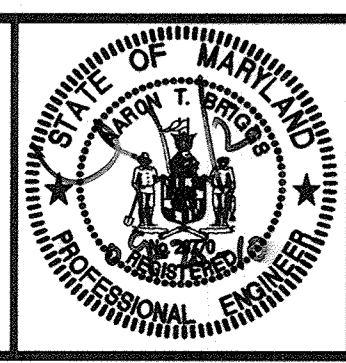
**PROFESSIONAL CERTIFICATION**  
 I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28770, EXPIRATION DATE: MAY 14, 2011.  
 Signature of Engineer: *[Signature]* Date: 09-28-10

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

DIRECTOR OF PUBLIC WORKS: *[Signature]* DATE: 10/5/10  
 CHIEF, BUREAU OF UTILITIES: *[Signature]* DATE: 10/10/10

CHIEF, BUREAU OF ENGINEERING: *[Signature]* DATE: 9/28/10  
 CHIEF, UTILITY DESIGN DIVISION: *[Signature]* DATE: 9/28/10

**Dewberry**  
 Dewberry & Davis LLC  
 3106 LORD BALTIMORE DRIVE  
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DES: ARW					
DRN: ARW					
CHK: ATB					
DATE:	BY:	NO.	REVISIONS	DATE	

**SEDIMENT AND EROSION CONTROL NOTES AND DETAILS**

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

**MEADOWRIDGE ROAD WATER MAIN REPLACEMENT**  
 CAPITAL PROJECT W-8249  
 CONTRACT 44-4164

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

AS-BUILTS ES-7

SCALE: SHOWN SHEET 25 OF 25