

HOWARD COUNTY

DEPARTMENT OF PUBLIC WORKS

ELLCOTT CITY, MARYLAND 21043

QUANTITIES				
ITEM	UNIT	ESTIMATE	AS-BUILT	SUPPLIER
16" C905 PVC/20" O.D. HDPE WATER MAIN	L.F.	8416	8515	DIAMOND PLASTICS
16" DIP WATER MAIN	L.F.	50		
16" VALVE	EA.	8	8	American Flow Control
16" PLUG AND BUTTRESS	EA.	1	1	Tyler Union
16" ARV AND VAULT	EA.	2	2	Clu-Vol
16" DIVISION VALVE	EA.	1		
12" C900 PVC/12" I.D. HDPE WATER MAIN	L.F.	98	196	Diamond Plastics
12" VALVE	EA.	6	6	American Flow Control
12" BYPASS D.I.P. CLASS 54	L.F.	98		
12" REDUCED PORT PRV AND VAULT	EA.	1	1	Various
8" PRESSURE RELIEF VALVE	EA.	1	1	Clu-Vol
8" C900 PVC/8" I.D. HDPE WATER MAIN	L.F.	36	118	Diamond Plastics
8" D.I.P. CLASS 54	L.F.	46		
8" VALVE	EA.	4	5	American Flow Control
8" TIDEFLEX CHECK VALVE	EA.	1	1	ProCo
FIRE HYDRANT AND 6" VALVE	EA.	15	15	American Flow Control
6" VALVE	EA.	3	3	American Flow Control
6" WATER MAIN D.I.P. CLASS 54	L.F.	260		
6" C900 PVC/6" I.D. HDPE WATER MAIN	L.F.	198	164	Diamond Plastics
4" VALVE	EA.	1	1	American Flow Control
1-1/2" WATER SERVICE	L.F.	800	508	Mueller
2" WATER SERVICE	L.F.	115	61	Mueller
4" C900 PVC/4" I.D. HDPE WATER MAIN	L.F.	5	20	Diamond Plastics

NOTE:
Quantities in this table are solely for record purposes. Contractor shall not rely on the quantities in the table and shall use his/her own takeoff to establish materials and quantities needed for this project.

NOTE:
FOR WATER STAKEOUT TABLE, SEE SHEET 11.

SURVEY CONTROL

B.M. #1
HOWARD CO. CONTROL PT. 37A
STAMPED DISC ON TOP OF CONCRETE MONUMENT
NAD 83 (Adj 1991): N 553,315.147 E 1,379,822.154
NGVD 29: EL. 195.785'

B.M. #2
HOWARD CO. CONTROL PT. 43CA
STAMPED DISC ON TOP OF CONCRETE MONUMENT
NAD 83 (Adj 1991): N 552,686.1087 E 1,379,388.3884
NGVD 29: EL. 192.391'

B.M. #3
HOWARD CO. CONTROL PT. 37HC
STAMPED DISC ON TOP OF CONCRETE MONUMENT
NAD 83 (Adj 1991): N 556,364.0818 E 1,375,513.1976
NGVD 29: EL. 270.820'

B.M. #4
HOWARD CO. CONTROL PT. 37HA
STAMPED DISC ON TOP OF CONCRETE MONUMENT
NAD 83 (Adj 1991): N 556,446.3917 E 1,373,465.9485
NGVD 29: EL. 284.467'

INDEX OF SHEETS

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9	LATERAL CONNECTION PROFILES, PAVING DETAILS AND CONTINUITY TEST STATION DETAILS
10	ALTERNATE HDPE OR FPVC PROFILES
11	PRESSURE REDUCING VALVE VAULT SITE PLAN AND WATER STAKEOUT TABLE
12	PRESSURE REDUCING VALVE VAULT
13	EXISTING PRESSURE REDUCING VALVE VAULT DEMOLITION PLAN
14	CATHODIC PROTECTION DETAILS
15	TRAFFIC CONTROL PLAN
16	ELECTRICAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS, SCHEDULES
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25	SEDIMENT AND EROSION CONTROL NOTES AND DETAILS

NAME OF UTILITY CONTRACTOR:

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 219 OF THE SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.

HOWARD SOIL CONSERVATION DISTRICT CERTIFICATION:
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT (SCD).

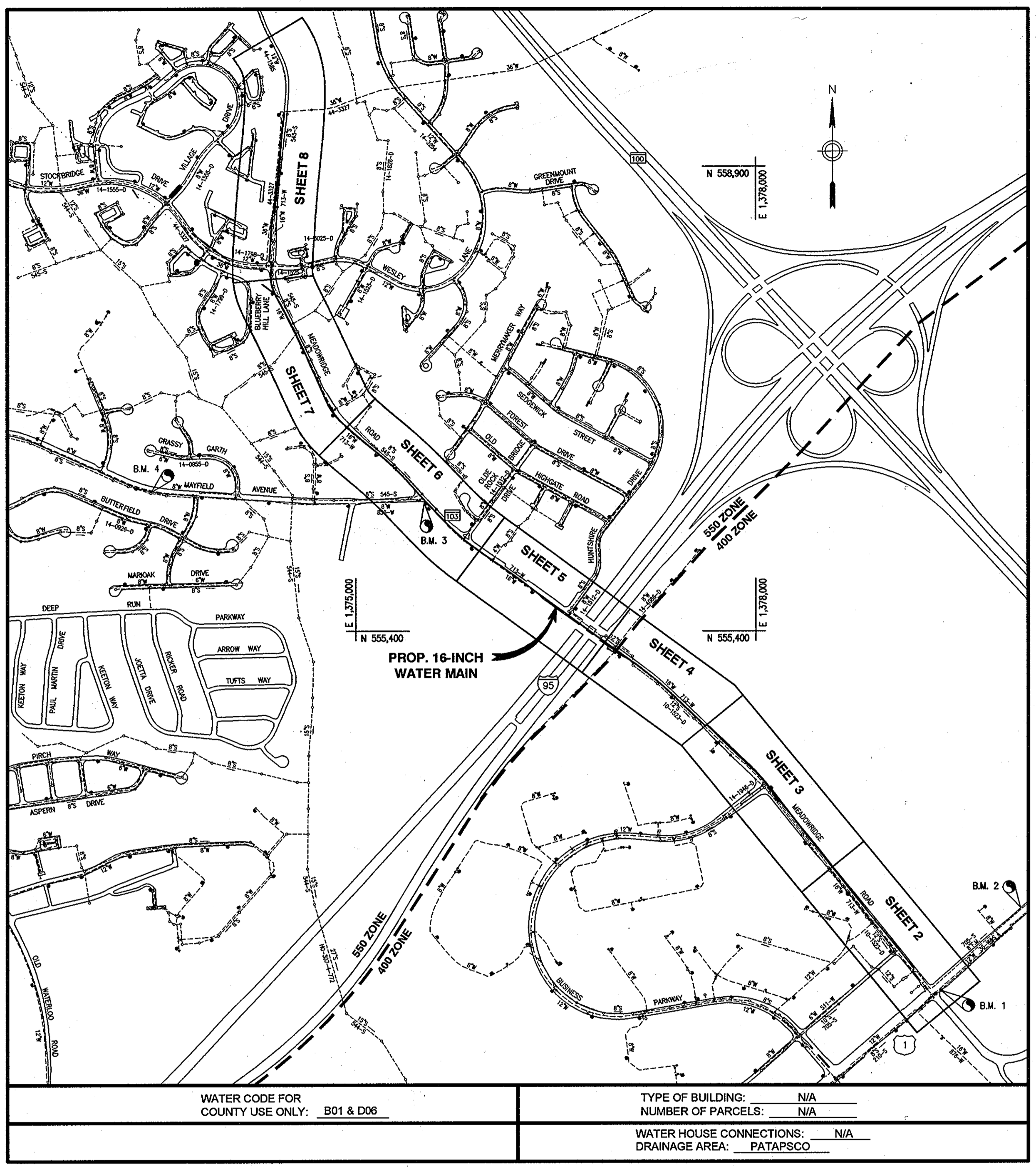
John K. Klotter 10/7/10
Howard Soil Conservation District Date

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

John J. ... MD. NO. 28770 09-20-10
Signature of Engineer - Registration Number Date

PROFESSIONAL CERTIFICATION
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28770, EXPIRATION DATE: MAY 14, 2011

John J. ... 09-20-10
Signature of Engineer Date



MEADOWRIDGE ROAD

WATER MAIN REPLACEMENT

CAPITAL PROJECT W-8249

CONTRACT NO. 44-4164

- GENERAL NOTES**
- Approximate location of existing mains are shown. The Contractor shall take all necessary precautions to protect existing mains and services and maintain uninterrupted service. Any damage incurred shall be repaired immediately to the satisfaction of the Engineer by the Contractor at the Contractor's expense.
 - Topographic field surveys were performed on September 2005 by Dewberry & Davis LLC.
 - Horizontal and Vertical Survey Controls:
The coordinates shown on the drawings are based on Maryland State Reference System NAD 83/91 as projected by Howard County Geodetic Control Stations Howard Co. B.M. U-25 and Howard Co. B.M. 37HC. All vertical controls are based on NAVD 29.
 - All pipe elevations shown are invert elevations unless otherwise noted on the plans.
 - Clear all utilities by a minimum of 12". Clear all poles by 5'-0" minimum or tunnel as required unless otherwise noted. The owner has contacted the utility companies and has made arrangements for bracing of poles as shown on the drawings. In the event the Contractor's work requires the bracing of additional poles, any cost incurred by the owner for the bracing of additional poles or damages shall be deducted from monies owed the Contractor. The Contractor shall coordinate with the utility companies to schedule the bracing of the poles.
 - For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The Contractor shall have a copy of Volume IV on the job.
 - All existing utilities shall be test pitted/located as necessary and in advance of the proposed construction, in order to properly make all required utility crossings and/or connections. Any discrepancies or utility conflicts shall be immediately reported to the Engineer. Where test pits have been made on existing utilities, they are noted by the symbol [] at the location of the test pit. A note or notes containing the results of the test pit or pits is included on the drawings or specifications. Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the Contractor two (2) weeks in advance of construction operations at his own expense.
 - Contractor shall notify the following utility companies or agencies at least five (5) working days before starting work shown on these plans:
AT&T 1-800-252-1133
BGE - Contractor Services 410-637-8713
BGE - Emergency 410-685-0123
State Highway Administration 410-531-5533
Bureau of Utilities (DPW) 410-313-4900
Verizon 1-800-743-0033
Colonial Pipeline Co. 410-795-1390
Miss Utility 1-800-257-7777
 - Trees and shrubs are to be protected from damage to the maximum extent. Trees and shrubs located within the construction strip are not to be removed or damaged by the Contractor.
 - Contractor shall remove trees, stumps and roots along the line of excavation. Payment for such removal shall be included in the unit price bid for construction of the main.
 - The Contractor shall notify the Howard County Bureau of Highways at (410) 313-7450 at least five (5) working days before any open cut, boring/jacking or trenchless installation operation of any county roads for laying water/sewer mains or house connections. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code.
 - The Contractor is responsible for contacting the various businesses and coordinating his work activities so as not to negatively impact connected customers. The installation of water main shall cause a minimum of disturbance to the existing businesses and notification to the businesses of any "interruptions of service" shall be the responsibility of the Contractor. The County requires that the Contractor notify each business affected, by letter or with door tags, of the impending service interruption at least 48 hours in advance of the planned interruption. In the event of an unplanned interruption, the Contractor will be responsible for notifying the businesses by "door to door" canvassing.
 - The Contractor shall provide all necessary lines, grades and elevations, and cut sheets shall be prepared based on the lines and grades shown on the Contract drawings.

- WATER MAIN NOTES**
- Except as indicated on the Plans and noted below, all public water mains shall be polyvinyl chloride (PVC) pipe meeting the requirements of AWWA C900 DR14 or C905 DR 21 Pressure Class 200 and the Howard County Design Manual Volume IV-Standard Specifications and Details for Construction and all subsequent amendments thereto. Alternately, High Density Polyethylene (HDPE) pipe must be DR-9 with a 200 psi working pressure rating with an inside diameter equal to that of the PVC pipe specified on the plans and in the specifications. All fittings for PVC shall be ductile iron with an epoxy coating. Unless otherwise noted on the plans or in the specifications, seventeen (17) pound sacrificial anodes shall be installed on all metallic fittings and 8" and smaller valves used with PVC water mains in accordance with Volume IV, Standard Specifications and Details for Construction. For 12" valves and larger, two seventeen (17) pound sacrificial anodes shall be installed. Magnesium anodes shall be installed on all valves and ductile iron fittings including restraints and harnesses. Zinc anodes shall be installed on all stainless steel fittings and saddles used with PVC mains. All "tees" used with PVC mains shall be ductile iron.
 - All Ductile Iron Pipes to be used on the public water system shall be Thickness Class 54. Ductile iron fittings shall meet the requirements of the Howard County Design Manual Volume IV-Standard Specifications and Details for Construction and shall be exterior epoxy coated in accordance with AWWA C116.
 - Tops of water mains shall have a minimum of 3'-6" of cover unless otherwise noted.
 - Distances shown for the water main are along the centerline of the pipe.
 - All fire hydrant valves and mainline valves shall be strapped to tees where applicable, otherwise see Howard County Standard Specifications.
 - All fittings shall be restrained joints, unless otherwise provided for on the drawings.
 - Fire hydrants shall be set to the bury line elevations shown on the drawings. All fire hydrants shall be installed in accordance with Howard County Standard Details. Soil around the fire hydrant shall be compacted in accordance with Section 1000 and Section 1005 of the Howard County Standard Specifications.
 - The Contractor shall not operate any water main valves on the existing water system.
 - Existing PRV Vault to be abandoned as per Sheet 13 of 25 and mechanical items from the existing vault shall be removed and returned to:
Howard County Bureau of Utilities
8250 Old Montgomery Road
Columbia, MD. 21045
410-313-4900
 - The Contractor shall notify the Howard County Bureau of Utilities at least fifteen (15) days prior to any water main shut downs.
 - All water house connections shall be copper, meeting the requirements of and constructed in accordance with the Howard County Design Manual Volume IV-Standard Specifications and Details for Construction.
 - All water mains constructed in fill areas shall be restrained Ductile Iron Pipe Class 54, meeting the requirements of and constructed in accordance with the Howard County Design Manual Volume IV-Standard Specifications and Details for Construction.
 - All water mains within casing pipes shall be restrained Ductile Iron Pipe Class 54, meeting the requirements of and constructed in accordance with the Howard County Design Manual IV-Standard Specifications and Details for Construction.
 - The following note is added to Howard County Standard Detail W2.22, Buttresses and Anchorage for Vertical Bends: "When anchoring PVC pipe, the strapping in contact with the pipe surface shall be 1-inch wide by 1/4-inch thick steel. The remaining portion of the strap shall be reinforcing bar sized in accordance with the pertinent chart shown on the detail".
 - Close valve at Station 44+75 before connecting to existing main.
 - All roadway valve boxes on existing 16-inch main are to be removed.
 - The contractor shall return all salvaged fire hydrants, frames and covers, valves and roadway boxes to the Bureau of Utilities at 8250 Montgomery Rd, Columbia, MD 21045
 - All PVC or HDPE pipe must be installed with continuous tracer wire taped to the pipe and terminating at continuity test stations, located adjacent to all the fire hydrants (See Standard Detail W-1.15).

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

John J. ... 9/28/10
Signature of Developer Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. ... 10/5/10
DIRECTOR OF PUBLIC WORKS DATE

John J. ... 9/28/10
CHIEF, BUREAU OF ENGINEERING DATE

John J. ... 9/28/10
CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2682
410.285.9500
FAX: 410.285.9875



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

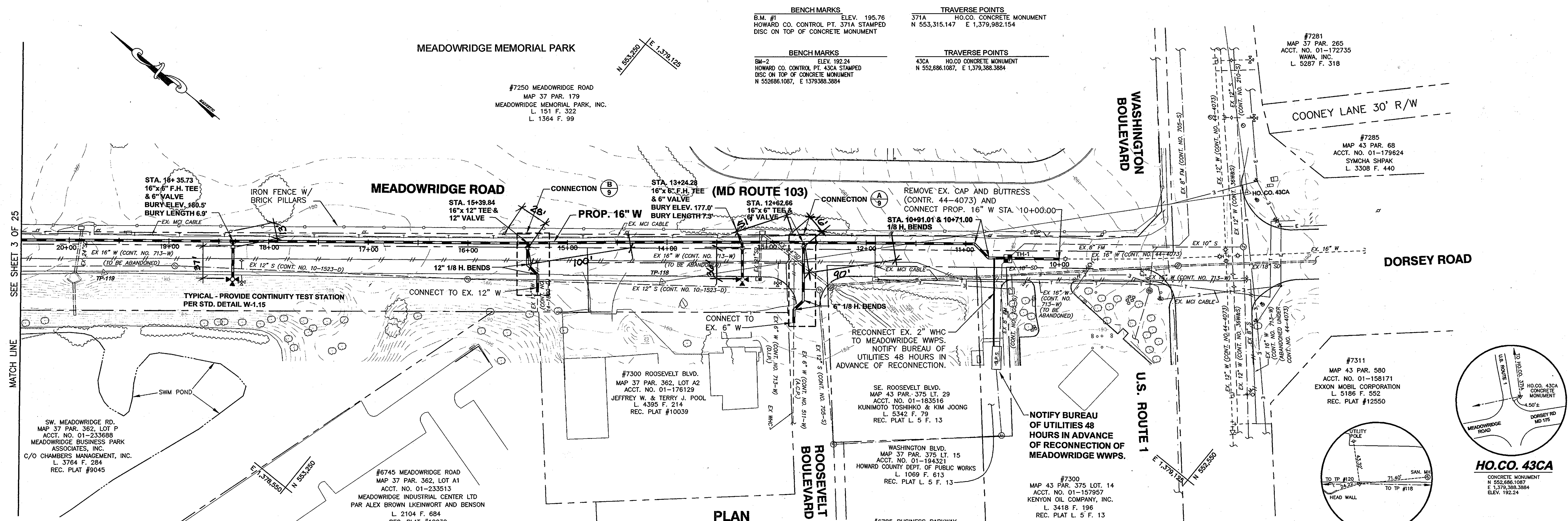
TITLE SHEET

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

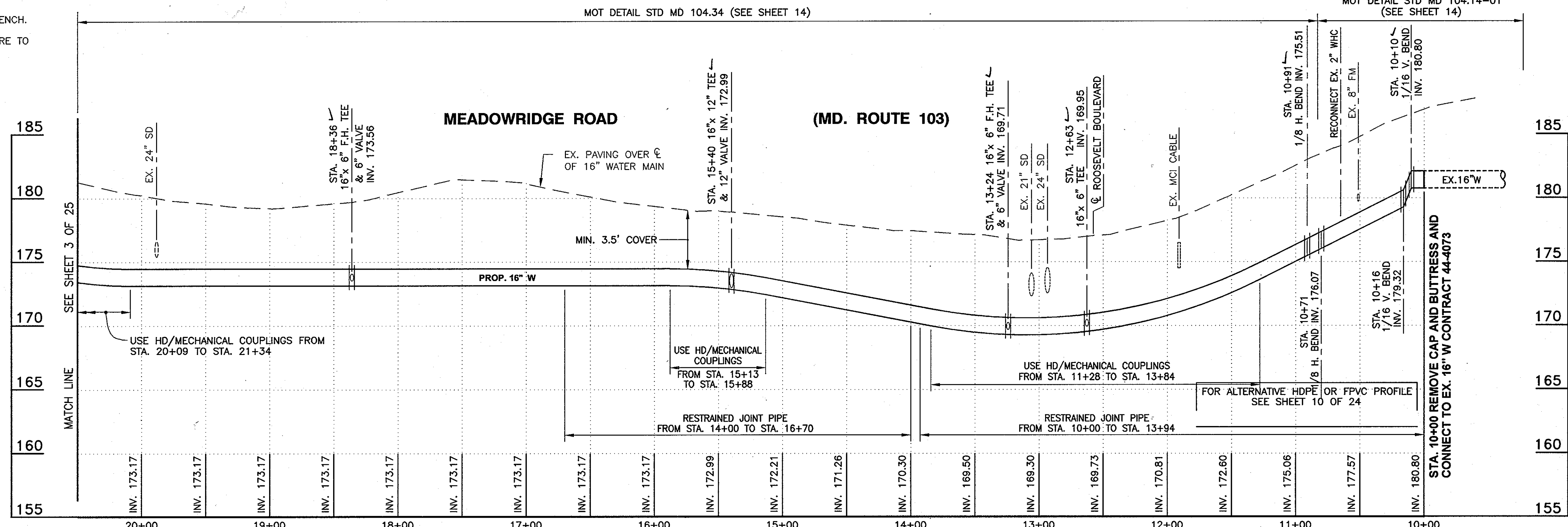
SCALE: SHOWN
SHEET 1 OF 25



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.

- NOTES:**
- ALL TAPS FOR WATER CONNECTIONS SHALL BE 1-1/2". THE CONTRACTOR SHALL PROVIDE FITTINGS NECESSARY TO CONNECT TO EXISTING WATER HOUSE CONNECTIONS.
 - 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 of Engineer 09-20-10 Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: *Signature* 10/26/10 DATE
Chief, Bureau of Engineering: *Signature* 9/28/10 DATE
Chief, Bureau of Utilities: *Signature* 10/14/10 DATE
Chief, Utility Design Division: *Signature* 9/28/10 DATE

Dewberry
Dewberry & Davis LLC
3109 LORD BALTIMORE DRIVE
SUITE 110
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410.265.9500
FAX: 410.265.9875

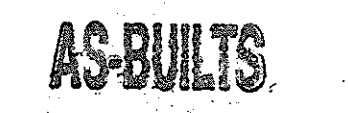


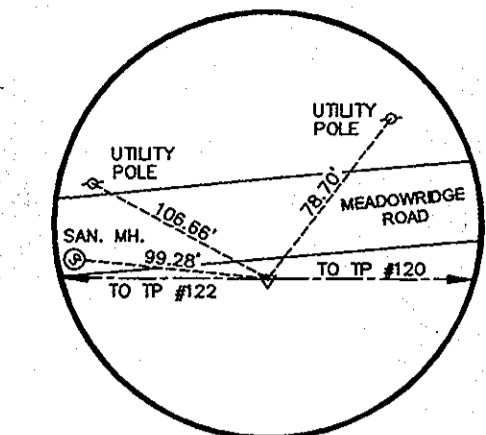
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DRN:	AZW
CHK:	ATB
DATE:	
BY:	
NO.:	
REVISIONS:	
DATE:	

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

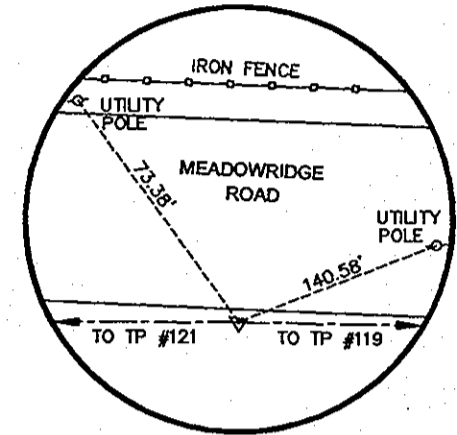
SCALE: SHOWN
SHEET 2 OF 25





TP #121

IRON ROD SET
N 554,383.364
E 1,377,879.115
ELEV. 208.625



TP #120

IRON ROD SET
N 553,968.850
E 1,376,236.771
ELEV. 198.875

BENCHMARKS
B.M. #1 ELEV. 195.76
HOWARD CO. CONTROL PT. 371A STAMPED
DISC ON TOP OF CONCRETE MONUMENT

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

BENCHMARKS
BM-2 ELEV. 192.24
HOWARD CO. CONTROL PT. 43CA STAMPED
DISC ON TOP OF CONCRETE MONUMENT
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

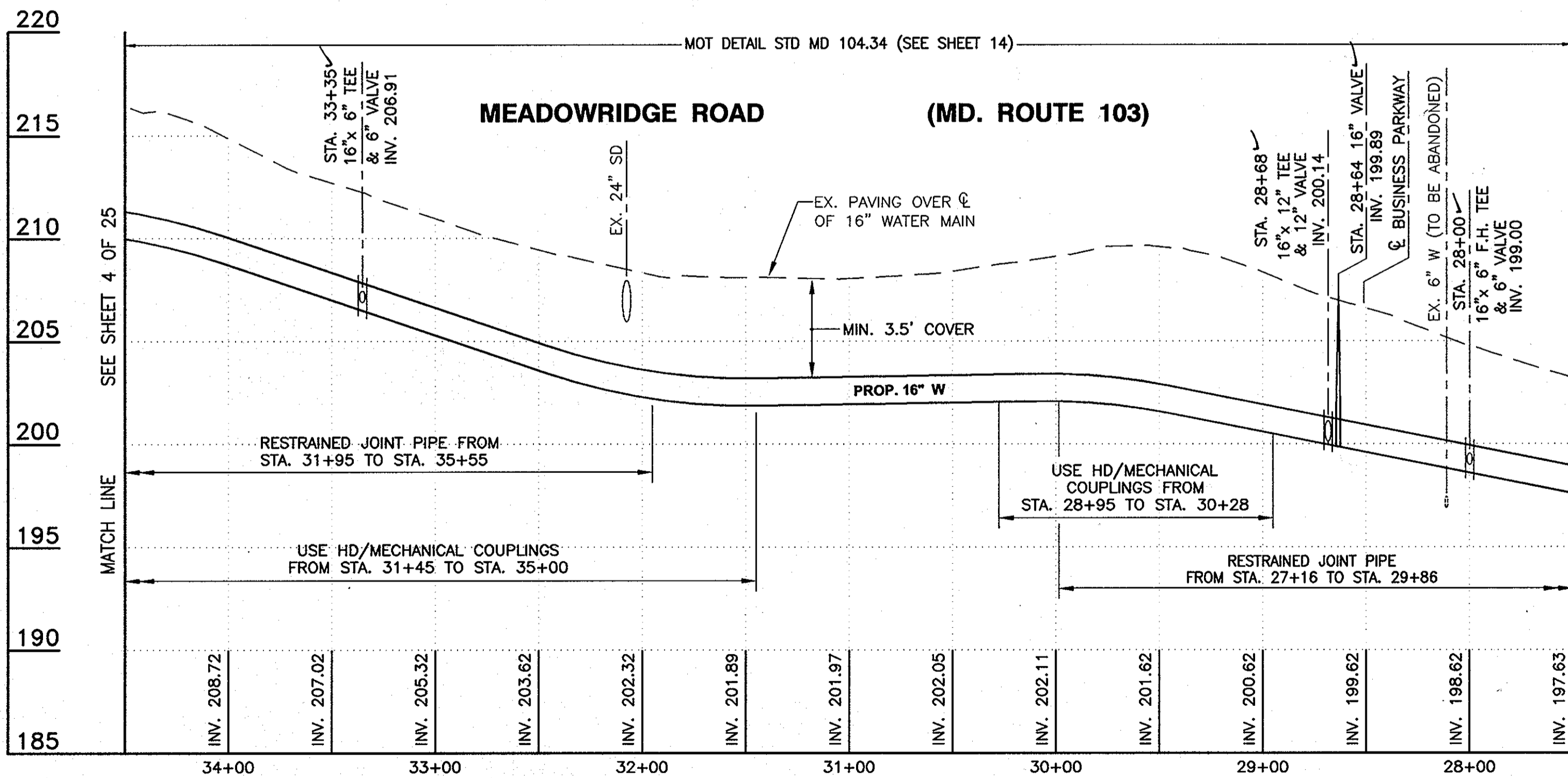
UTILITY NOTES:

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

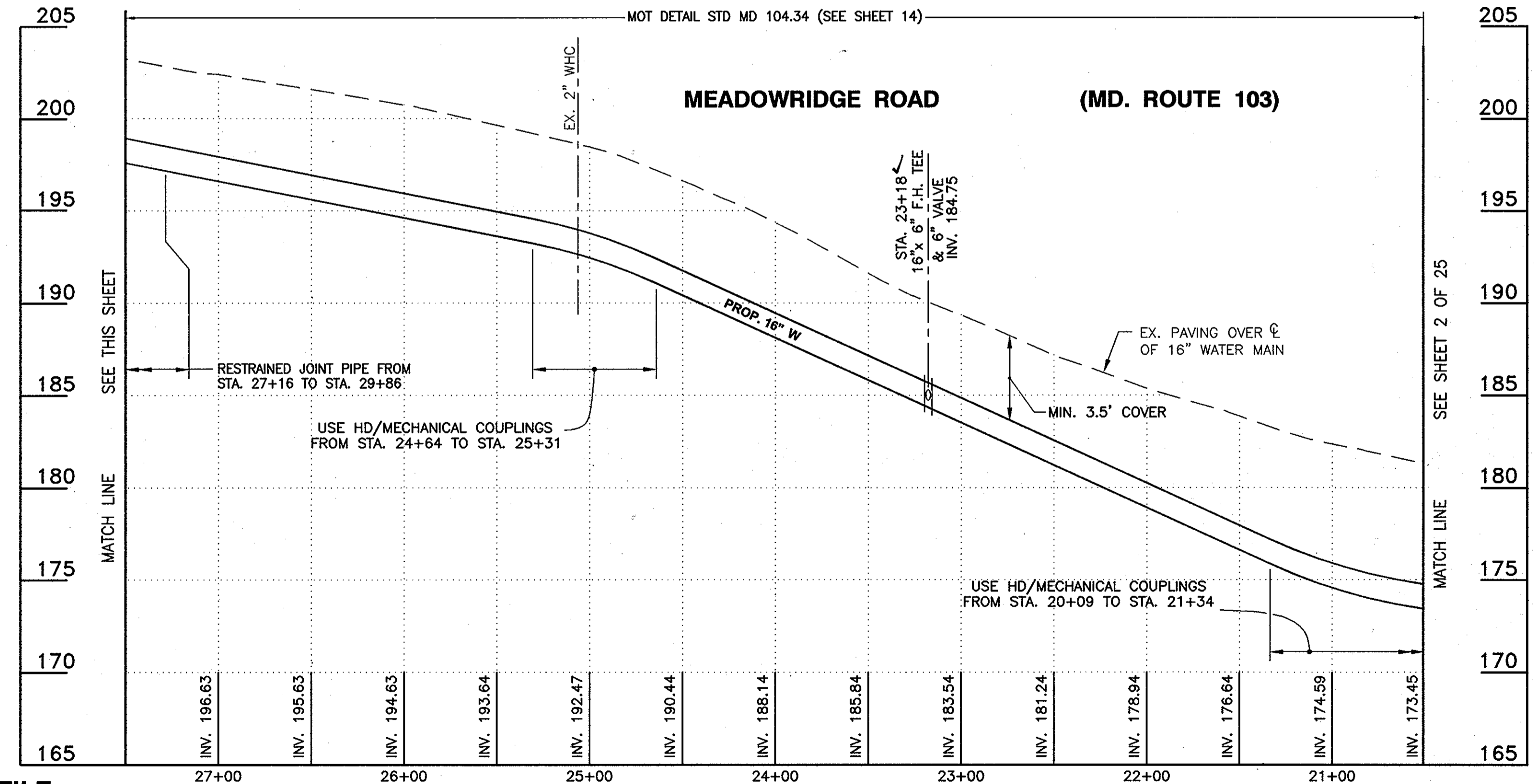
NOTES:

- ALL TAPS FOR WATER HOUSE CONNECTIONS SHALL BE 1-1/2". THE CONTRACTOR SHALL PROVIDE FITTINGS NECESSARY TO CONNECT TO EXISTING WATER HOUSE CONNECTIONS.
- THE MAXIMUM ALLOWED DEFLECTION AT THE HIGH DEFLECTION COUPLING IS 3" WITH 1.5" ON EACH SIDE.

PLAN
SCALE: 1" = 50'



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] 09-20-10
Signature of Engineer 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

3106 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2682
410.285.8500
FAX 410.285.8875



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

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

SCALE:
SHOWN

SHEET
3 OF 25

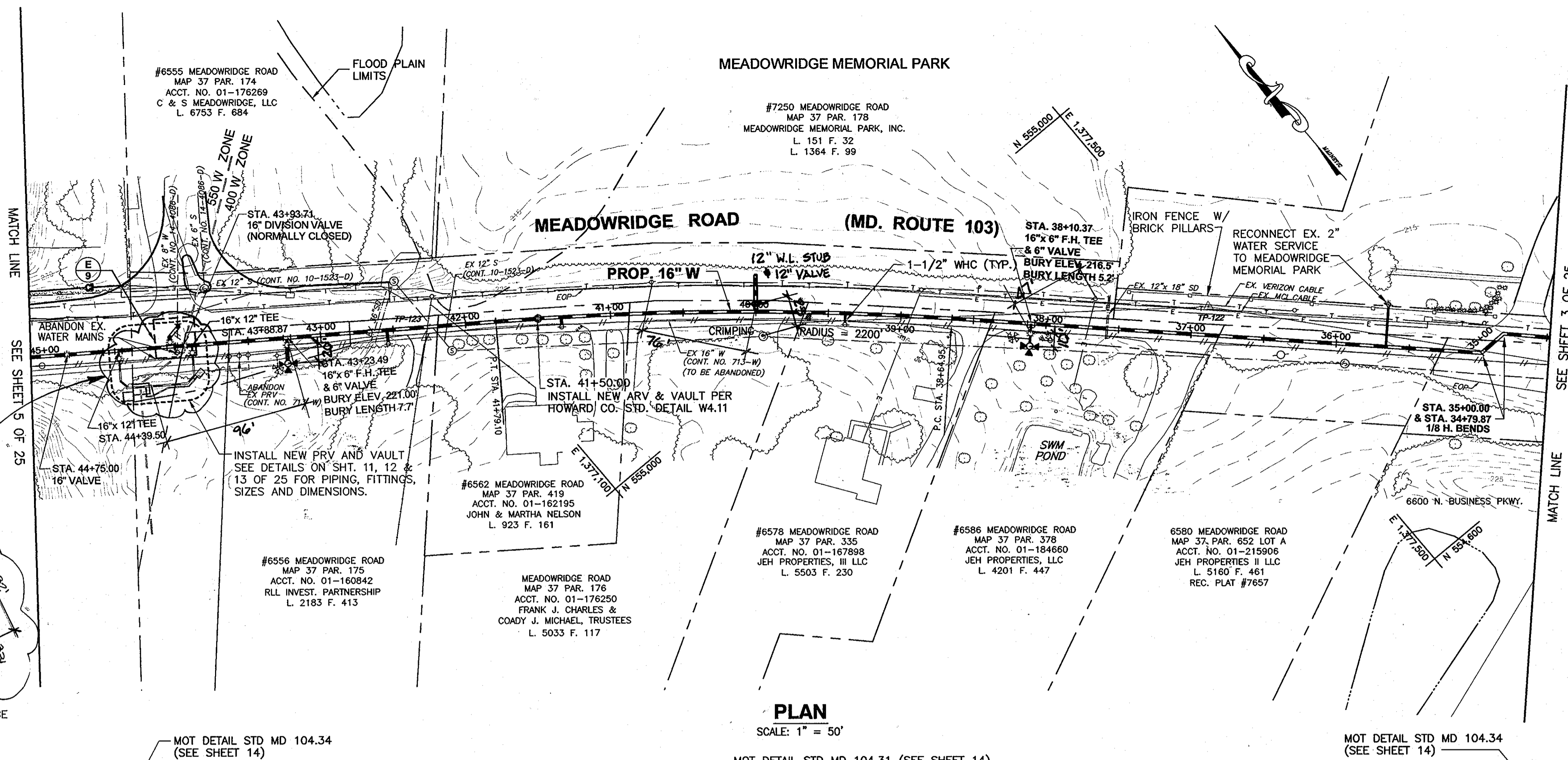
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 DISC ON TOP OF CONCRETE MONUMENT

BENCH MARKS
 BM-2 ELEV. 192.24
 HOWARD COUNTY CONTROL PT. 43CA STAMPED
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TRAVERSE POINTS
 371A HOWARD COUNTY CONCRETE MONUMENT
 N 553,315.147 E 1,379,982.154

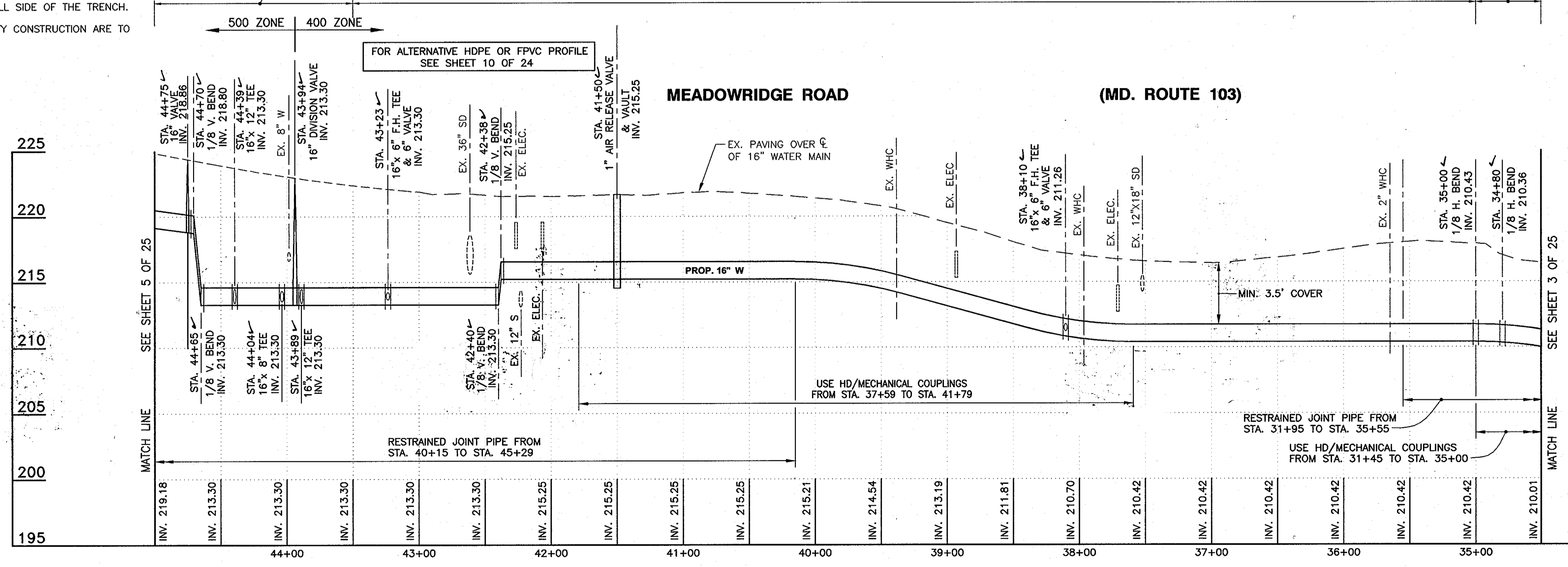
TRAVERSE POINTS
 43CA HOWARD COUNTY CONCRETE MONUMENT
 N 552,686.1087, E 1,379,982.3884

TRAVERSE DATA			
D&D TRAV. PT.	NORTHING	EASTING	ELEV.
DEWBERRY #113 HO.CO.MON.#43CA	N 552,686.11	E 1,379,388.39	192.24
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



- 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.

- NOTES:**
- ALL TAPS FOR WATER HOUSE CONNECTIONS SHALL BE 1-1/2". THE CONTRACTOR SHALL PROVIDE FITTINGS NECESSARY TO CONNECT TO EXISTING WATER HOUSE CONNECTIONS.
 - THE MAXIMUM ALLOWED DEFLECTION AT THE HIGH DEFLECTION COUPLING IS 3" WITH 1.5" ON EACH SIDE.



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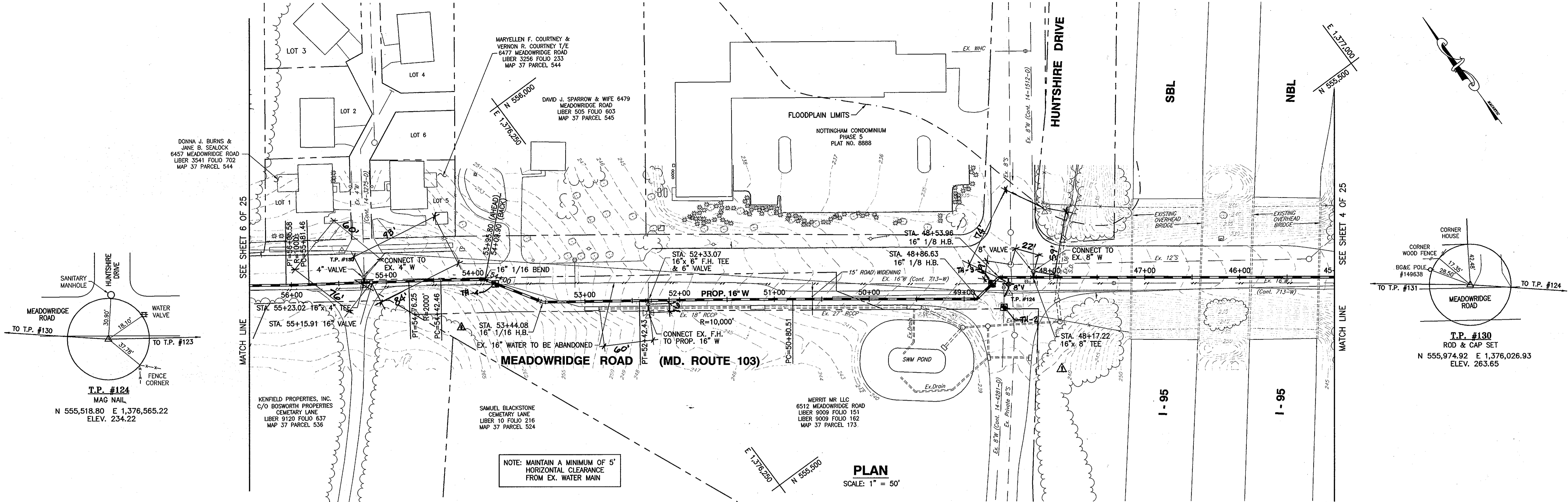
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DRN:	AZW
CHK:	ATB
DATE:	
BY:	
NO.:	
REVISIONS:	
DATE:	

PLAN AND PROFILE

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

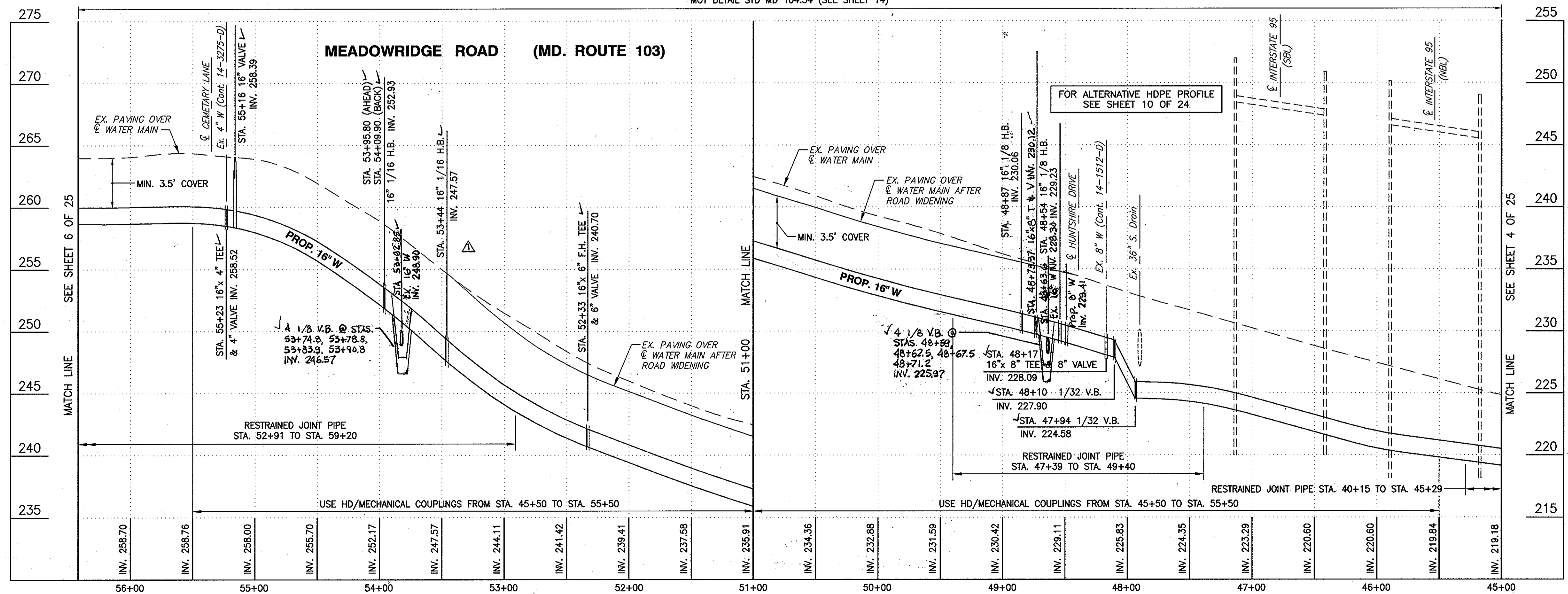
MEADOWRIDGE ROAD
WATER MAIN REPLACEMENT
 CAPITAL PROJECT W-8249
 CONTRACT 44-4164
 HOWARD COUNTY, MARYLAND

SCALE: SHOWN
 SHEET 4 OF 25



- 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.

- NOTES:**
- ALL TAPS FOR WATER HOUSE CONNECTIONS SHALL BE 1-1/2". THE CONTRACTOR SHALL PROVIDE FITTINGS NECESSARY TO CONNECT TO EXISTING WATER HOUSE CONNECTIONS.
 - THE MAXIMUM ALLOWED DEFLECTION AT THE HIGH DEFLECTION COUPLING IS 3" WITH 1.5" ON EACH SIDE.
- TEST PIT NOTES**
- AT TH-2 - THE 8" TO EXISTING 8" WATER MAIN 5' PAST THE 2" V.B. EXISTING INVERT FROM DESIGN PLANS. NOT AS-BUILTS. CONTRACTOR TO VERIFY INVERT AND ADJUST CONNECTION ACCORDINGLY.
- AT TH-4 - IF TEST PITS FINDS 8" MINIMUM CLEARANCE BETWEEN PROPOSED 16" MAIN AND EXISTING 16" MAIN, USE ORIGINAL PROFILE. IF LESS THAN 6", USE ALTERNATIVE SHOWN.



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] 09-20-10
 Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/26/10
 Chief, Bureau of Engineering: *[Signature]* 9/28/10
 Chief, Bureau of Utilities: *[Signature]* 10/14/10
 Chief, Utility Design Division: *[Signature]* 9/28/10

Dewberry
 Dewberry & Davis LLC
 3106 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2662
 410.285.8500
 FAX: 410.285.8875



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

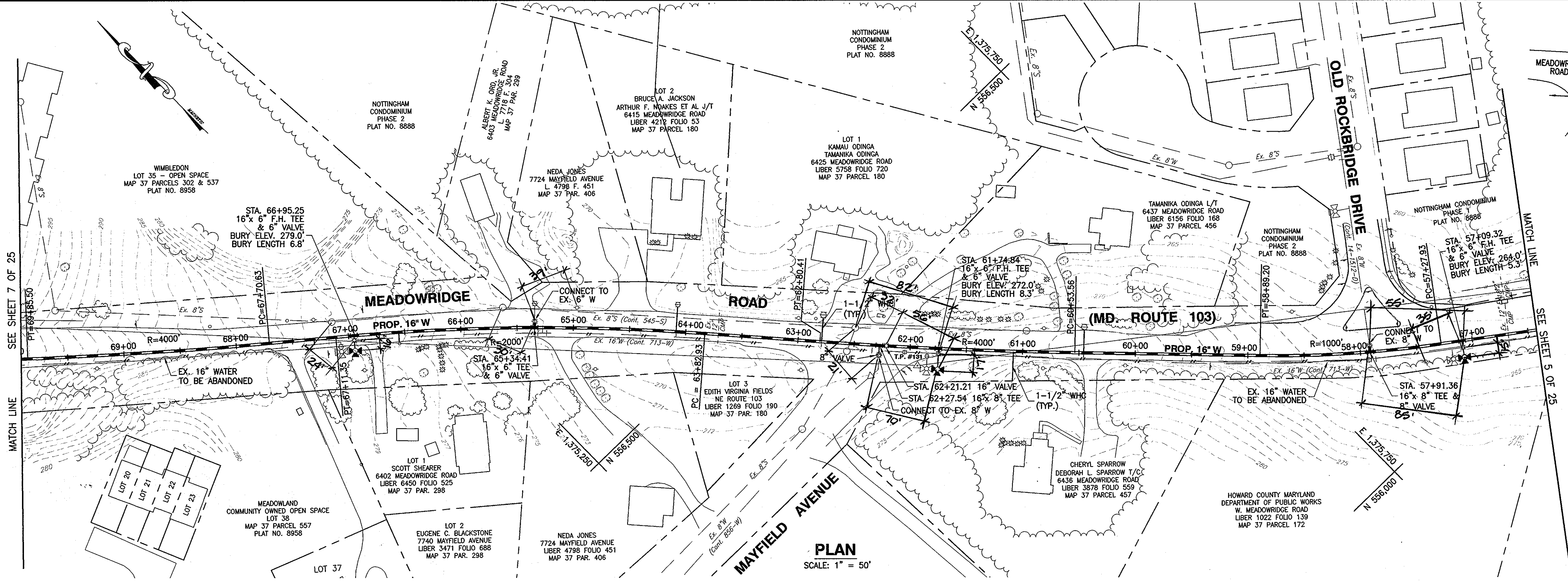
PLAN AND PROFILE

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

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

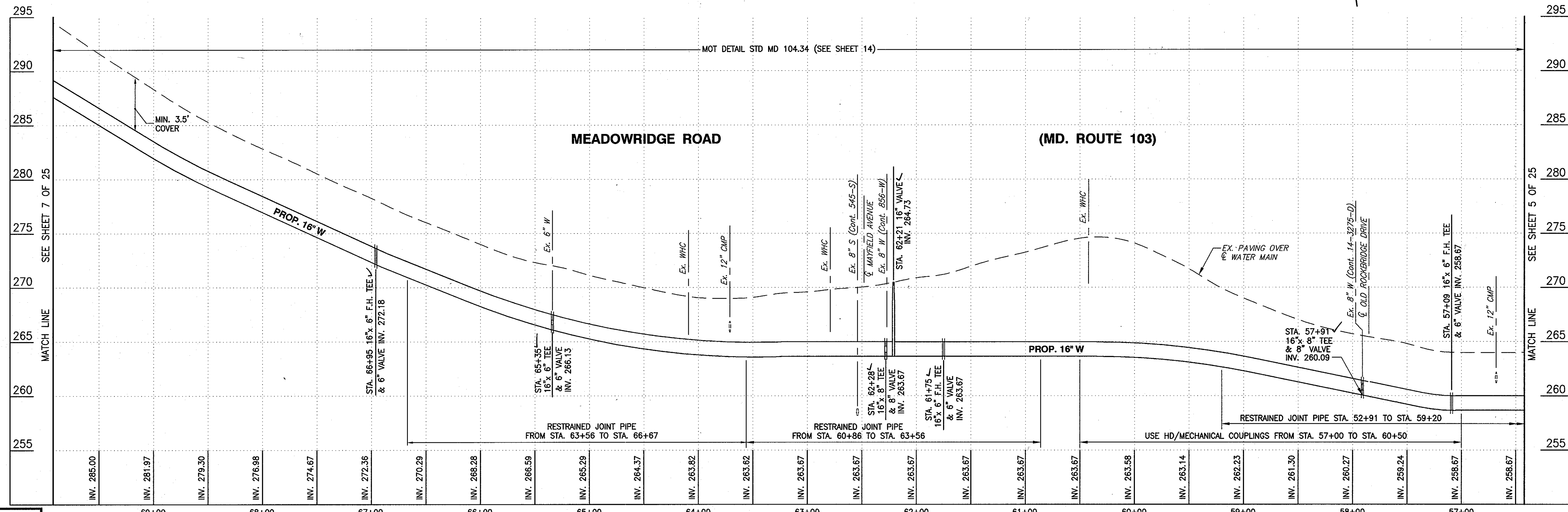
ELECTION DISTRICT NO. 1
 HOWARD COUNTY, MARYLAND

SCALE: SHOWN
 SHEET 5 OF 25



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

- 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.
- NOTES:**
- ALL TAPS FOR WATER HOUSE CONNECTIONS SHALL BE 1-1/2". THE CONTRACTOR SHALL PROVIDE FITTINGS NECESSARY TO CONNECT TO EXISTING WATER HOUSE CONNECTIONS.
 - THE MAXIMUM ALLOWED DEFLECTION AT THE HIGH DEFLECTION COUPLING IS 3" WITH 1.5" ON EACH SIDE.

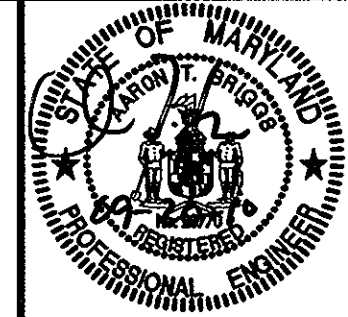


PROFESSIONAL CERTIFICATION
 I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 28770, EXPIRATION DATE: MAY 14, 2011
 Signature of Engineer: *[Signature]* Date: 09-20-10

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

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

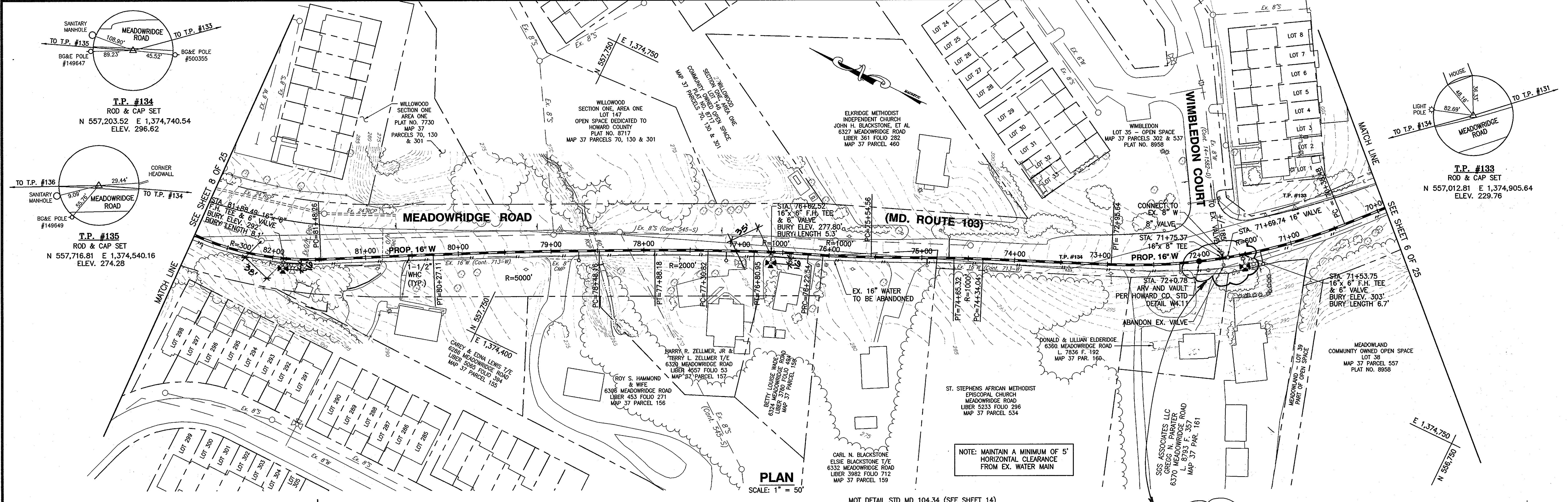
Dewberry
 Dewberry & Davis LLC
 3100 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2882
 410.285.9500
 FAX: 410.295.6875



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 6 OF 25



PLAN
SCALE: 1" = 50'

MOT DETAIL STD MD 104.34 (SEE SHEET 14)

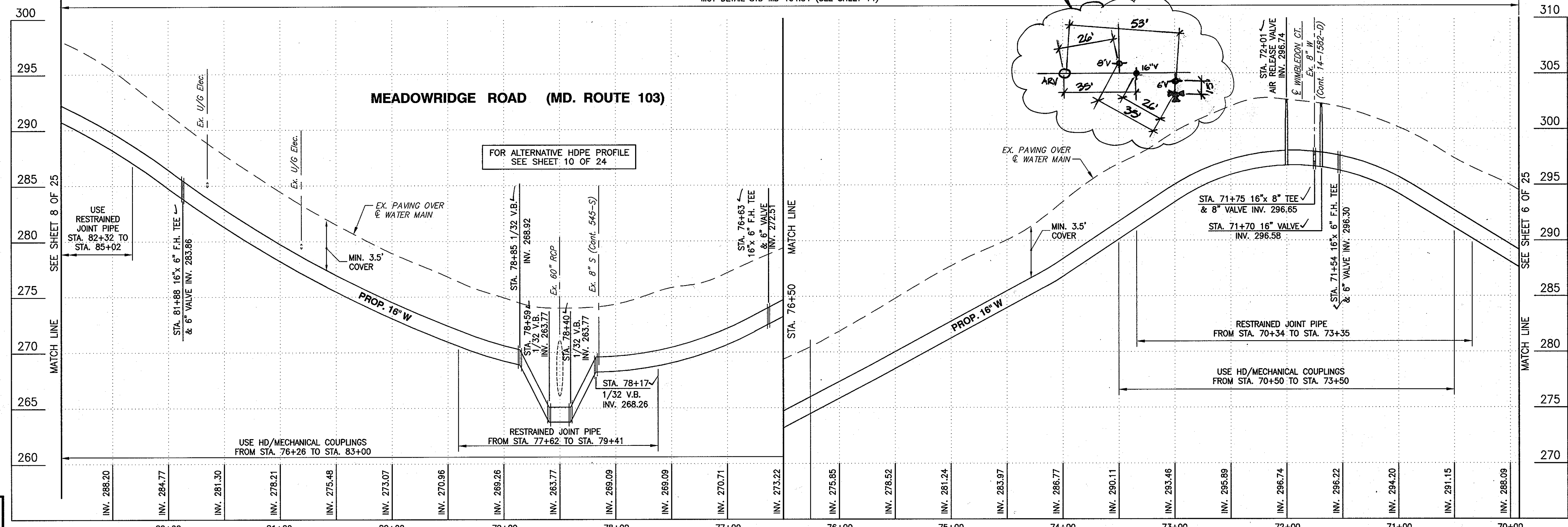
NOTE: MAINTAIN A MINIMUM OF 5' HORIZONTAL CLEARANCE FROM EX. WATER MAIN

UTILITY NOTES:

- a. 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.
- b. PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
- c. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

NOTES:

- 1. ALL TAPS FOR WATER HOUSE CONNECTIONS SHALL BE 1-1/2". THE CONTRACTOR SHALL PROVIDE FITTINGS NECESSARY TO CONNECT TO EXISTING WATER HOUSE CONNECTIONS.
- 2. 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
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[Signature]
Signature of Engineer
09-20-10
Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS
DATE
CHIEF, BUREAU OF UTILITIES
DATE

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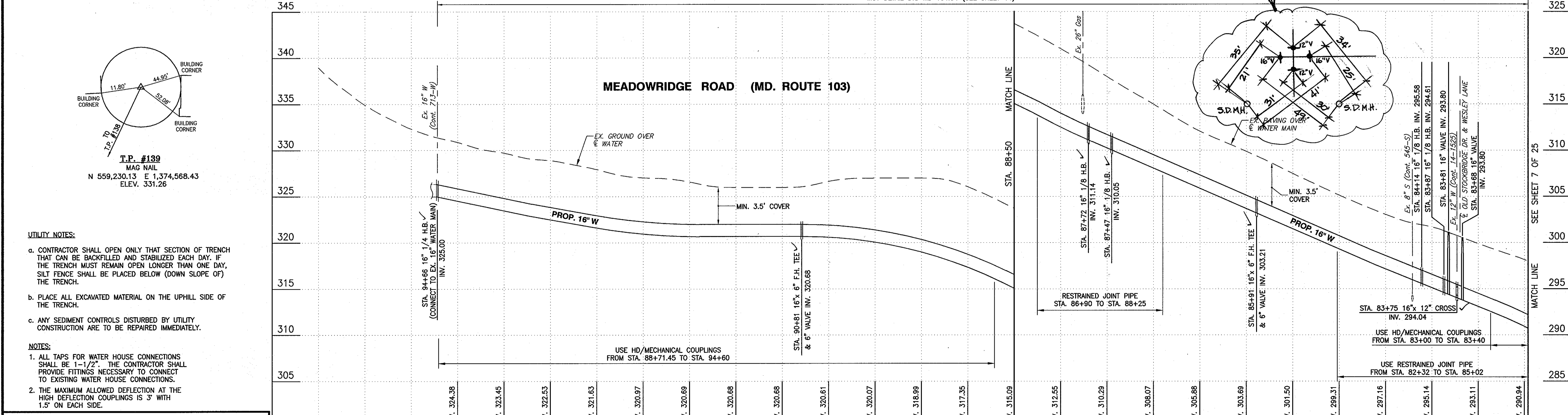
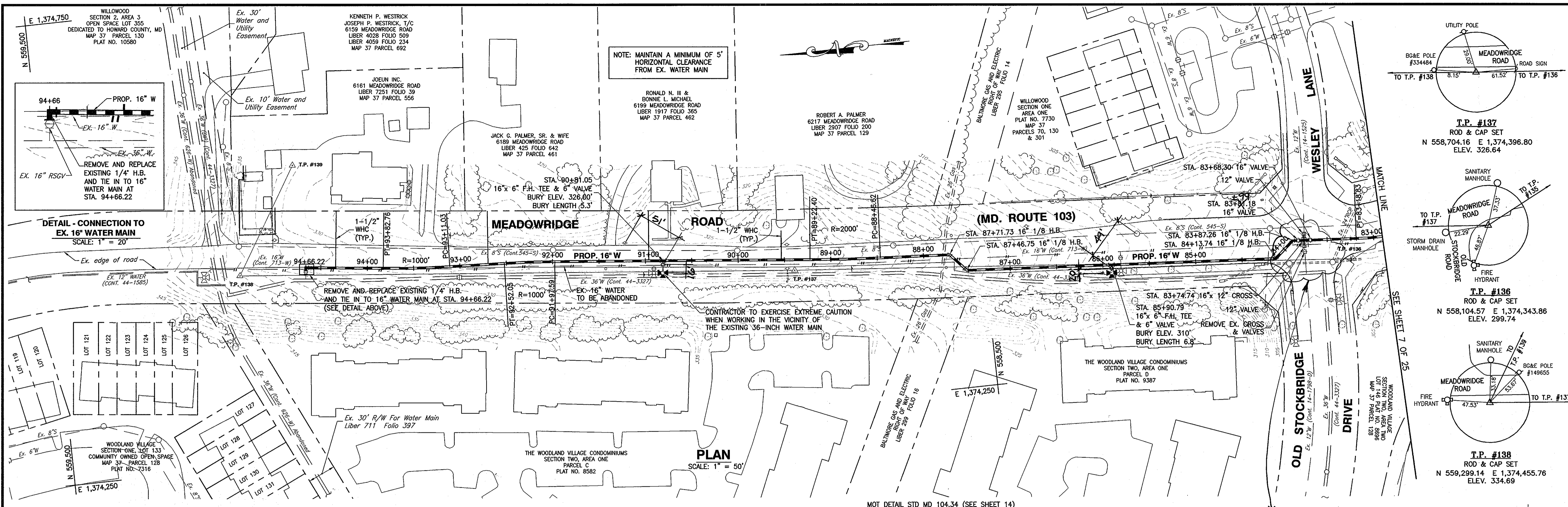


DES:	AZW
DRN:	AZW
CHK:	ATB
DATE:	
BY:	NO.
REVISIONS:	
DATE:	

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
7 OF 25



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.

NOTES:

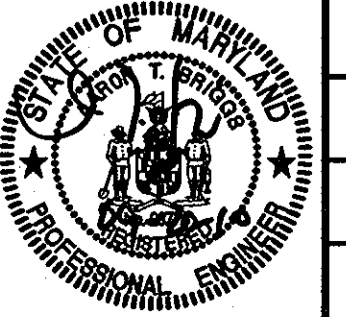
- ALL TAPS FOR WATER HOUSE CONNECTIONS SHALL BE 1-1/2". THE CONTRACTOR SHALL PROVIDE FITTINGS NECESSARY TO CONNECT TO EXISTING WATER HOUSE CONNECTIONS.
- THE MAXIMUM ALLOWED DEFLECTION AT THE HIGH DEFLECTION COUPLINGS IS 3" WITH 1.5" ON EACH SIDE.

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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: 9/28/10
 Chief, Bureau of Engineering: [Signature] DATE: 9/28/10
 Chief, Bureau of Utilities: [Signature] DATE: [Signature]
 Chief, Utility Design Division: [Signature] DATE: R/D

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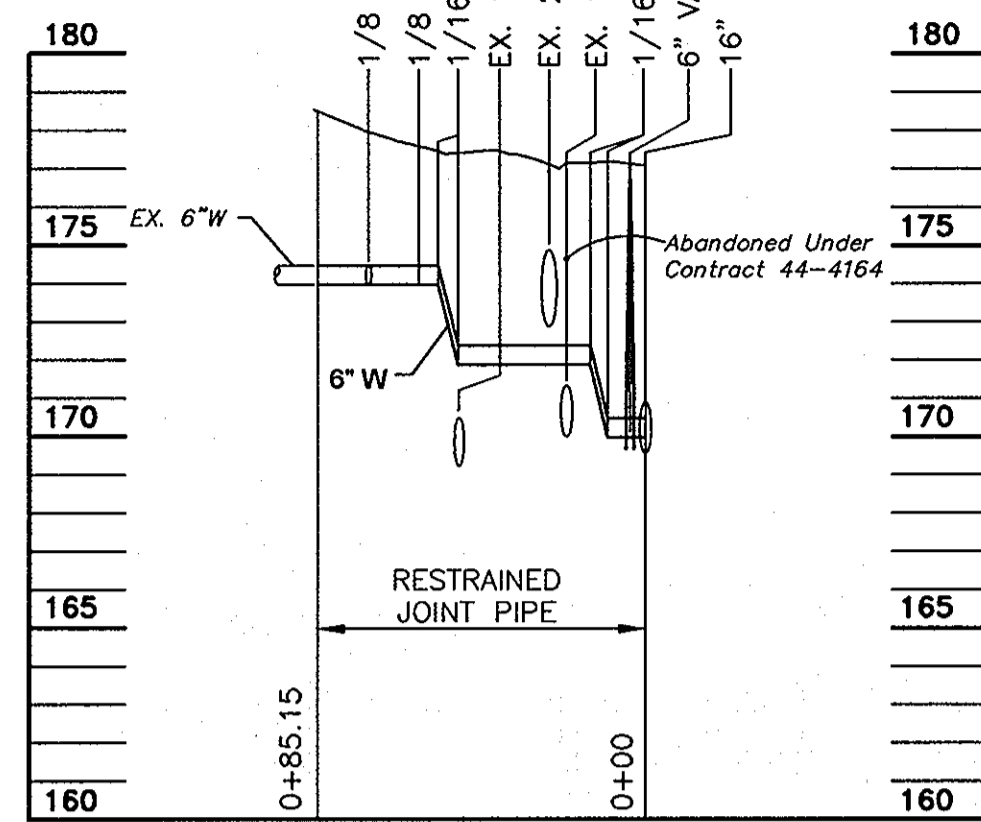
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DRN:	AZW
CHK:	ATB
DATE:	
BY:	NO.
REVISIONS:	
DATE:	

PLAN AND PROFILE

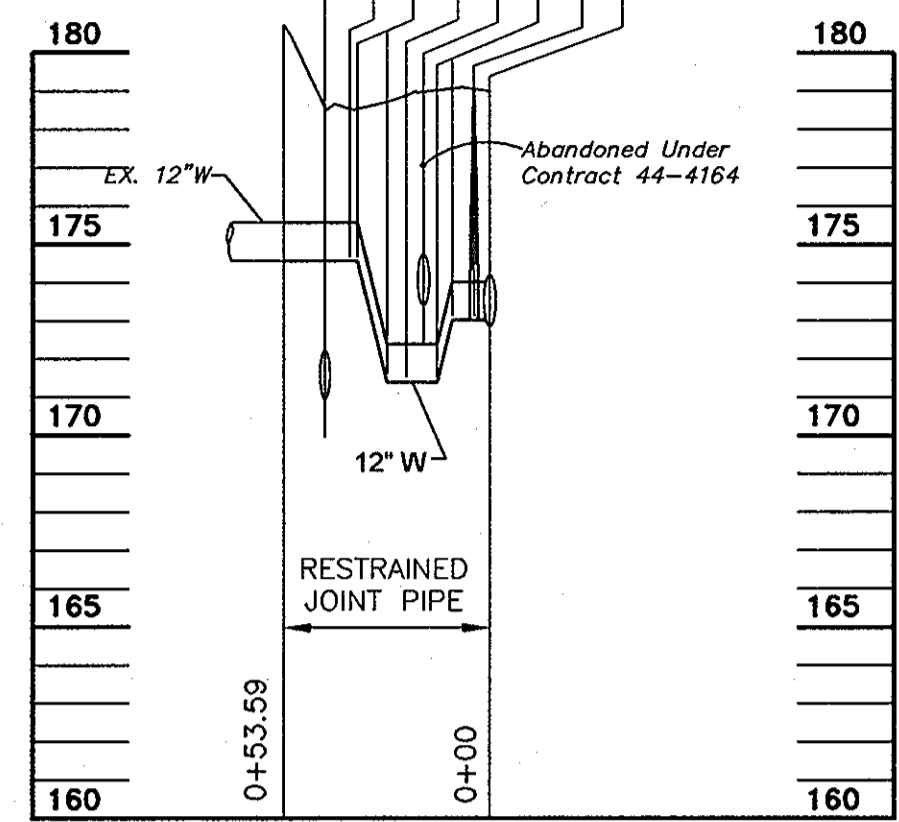
60' SCALE MAP NO. 37, 43
 BLOCK NO. 5, 23
 ELECTION DISTRICT NO. 1
 HOWARD COUNTY, MARYLAND

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

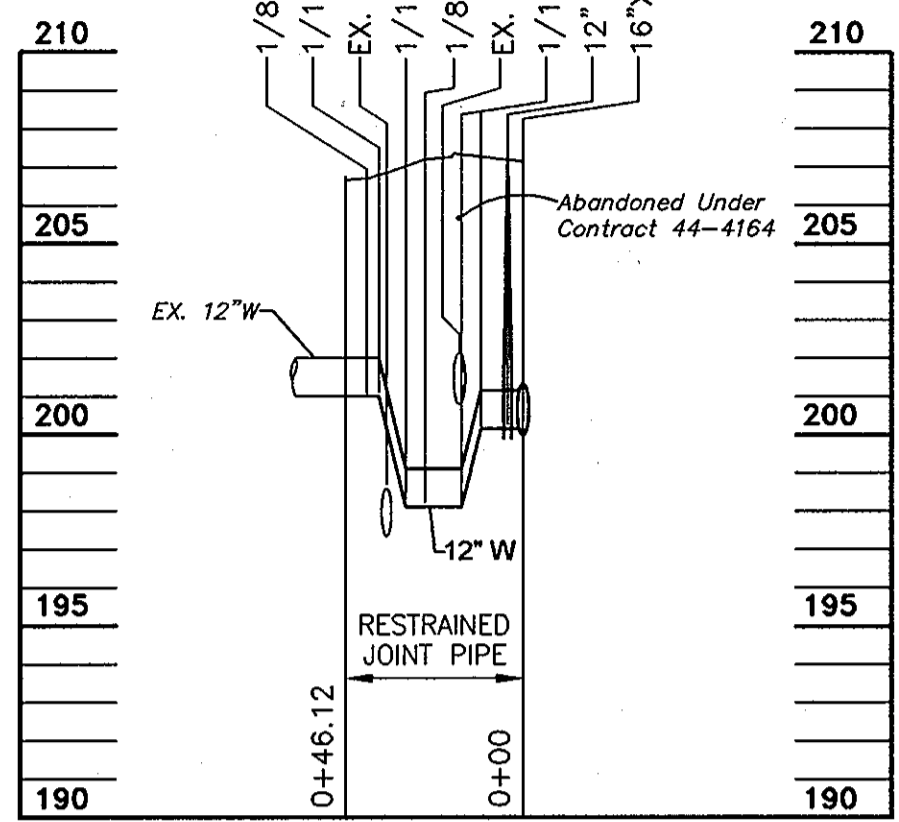
SCALE: SHOWN
 SHEET 8 OF 25



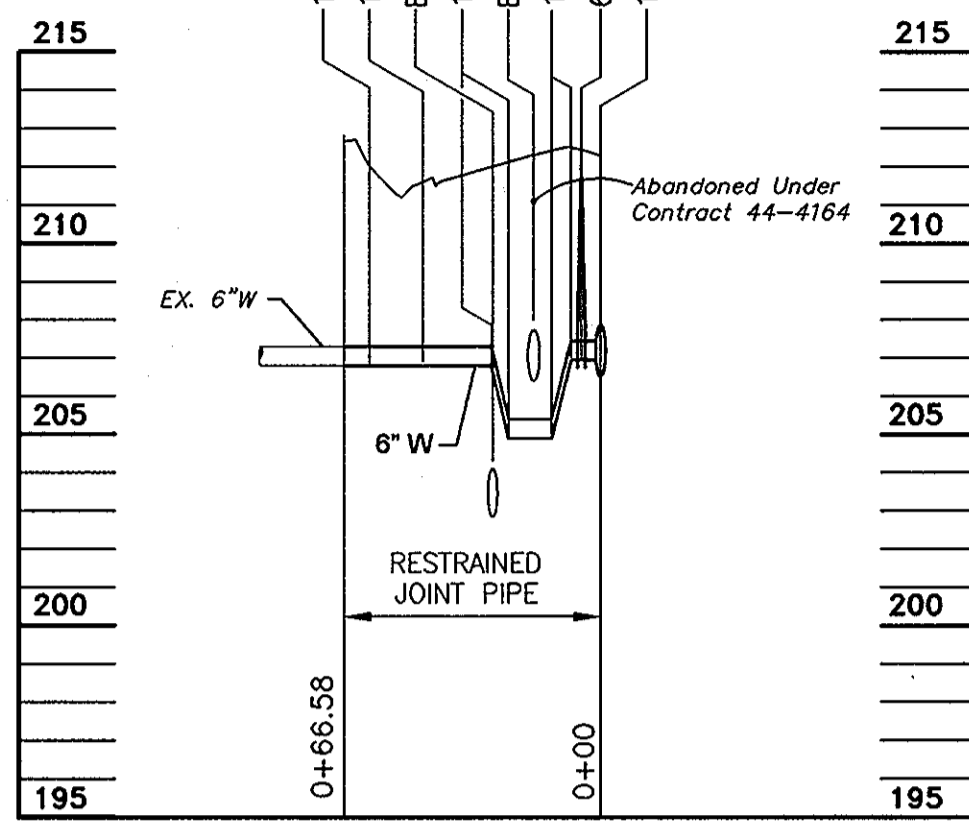
CONNECTION A
 6" W TIE-IN STA. 12+63.3
 SCALE: 1" = 50' H.
 1" = 5' V.



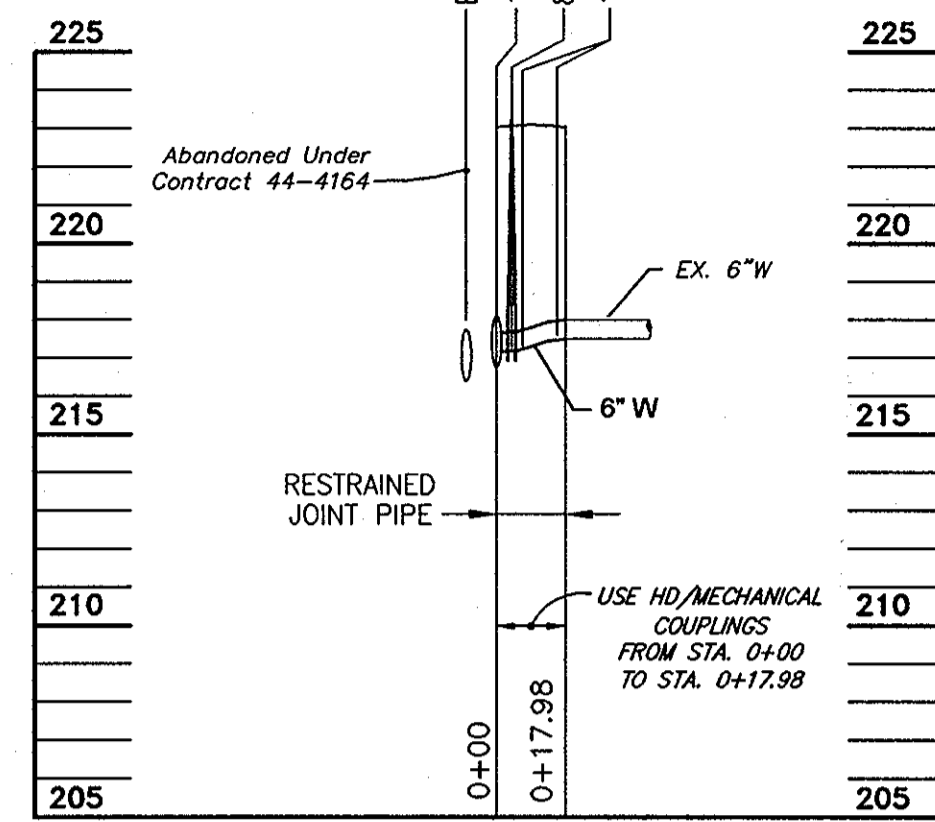
CONNECTION B
 12" W TIE-IN STA. 15+40
 SCALE: 1" = 50' H.
 1" = 5' V.



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

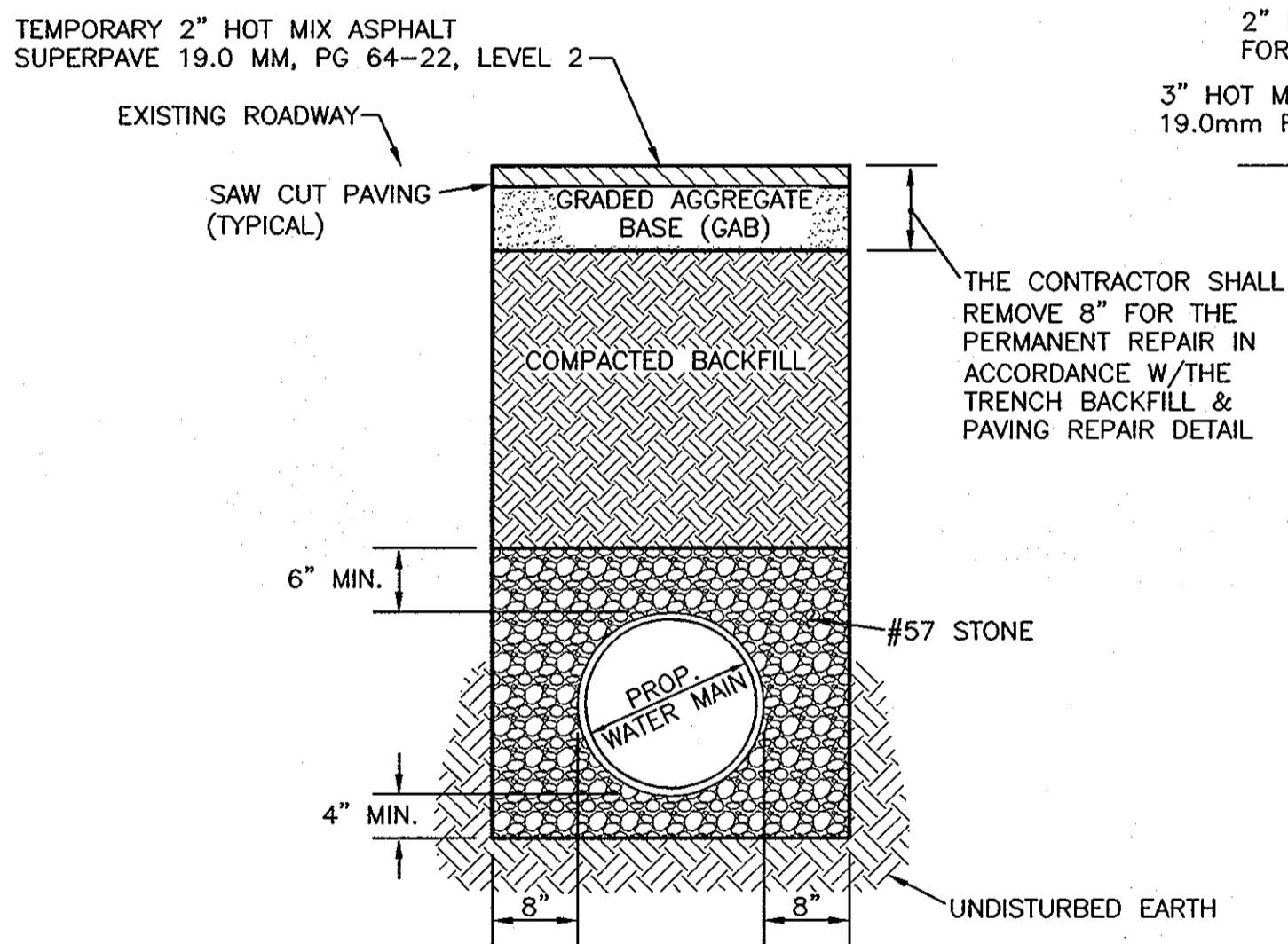


CONNECTION D
 6" FH CROSSING AT STA. 33+35.3
 SCALE: 1" = 50' H.
 1" = 5' V.

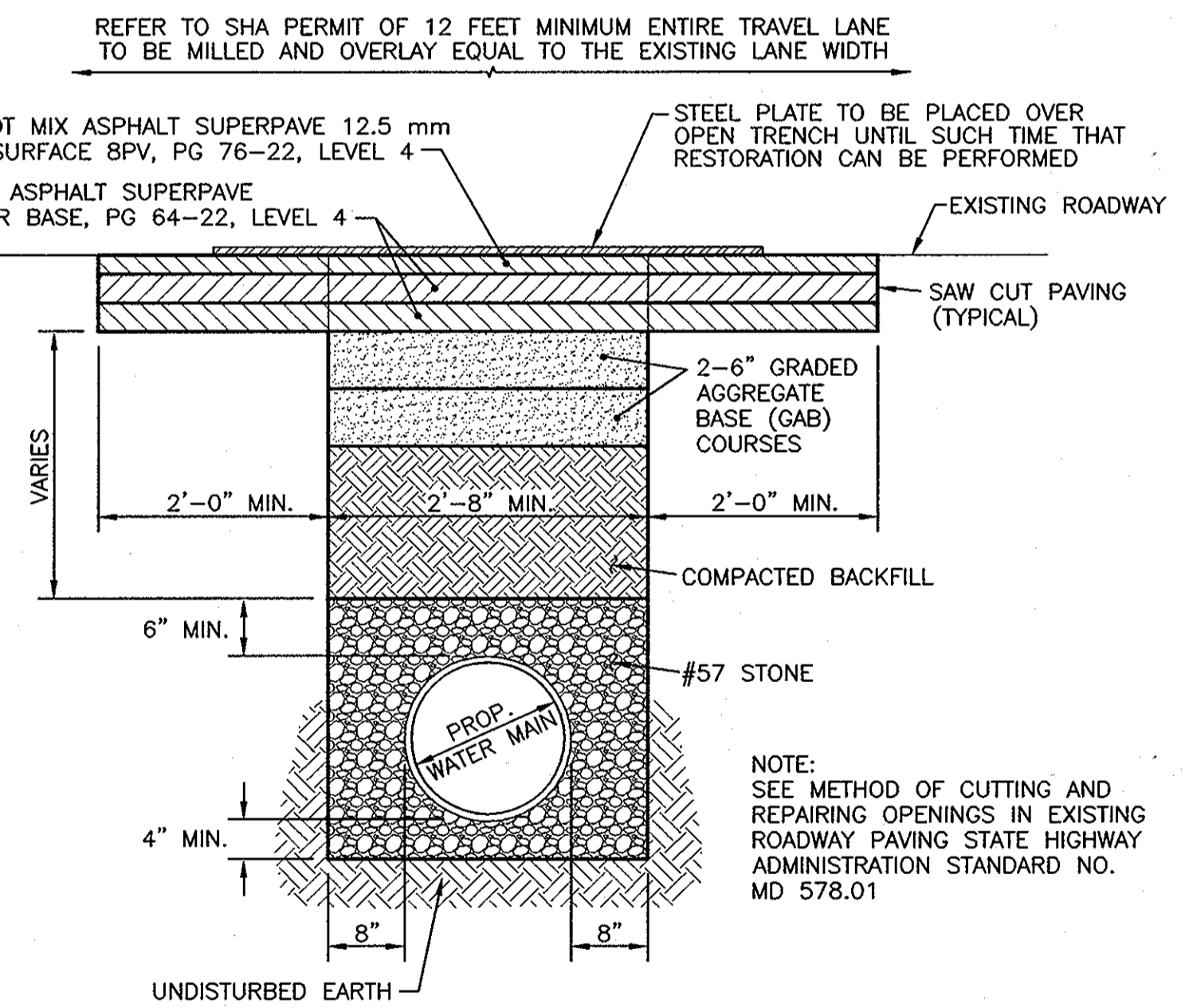


CONNECTION E
 RELOCATED 8" W AT STA. 44+04
 SCALE: 1" = 50' H.
 1" = 5' V.

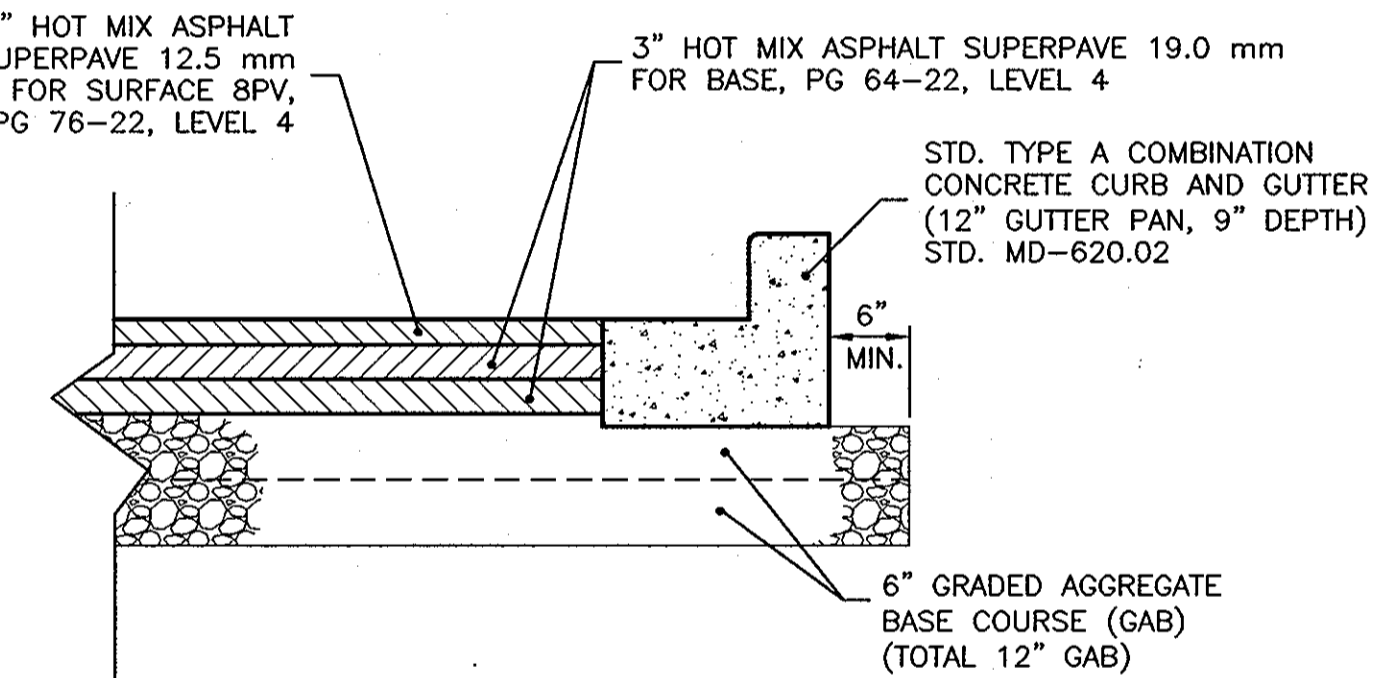
NOTE
 TEMPORARY PAVING FOR UTILITY TRENCH REPAIR SHALL CONSIST OF GRADED AGGREGATE BASE (GAB) WITH 2" OF BITUMINOUS CONCRETE SURFACE MATERIAL, SO THAT THE SURFACE IS FLUSH WITH THE ADJOINING PAVING SURFACES. IF ANY SETTLEMENT OCCURS, THE CONTRACTOR SHALL REFILL WITH PROPER MATERIAL AND RESTORE SAID PAVING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



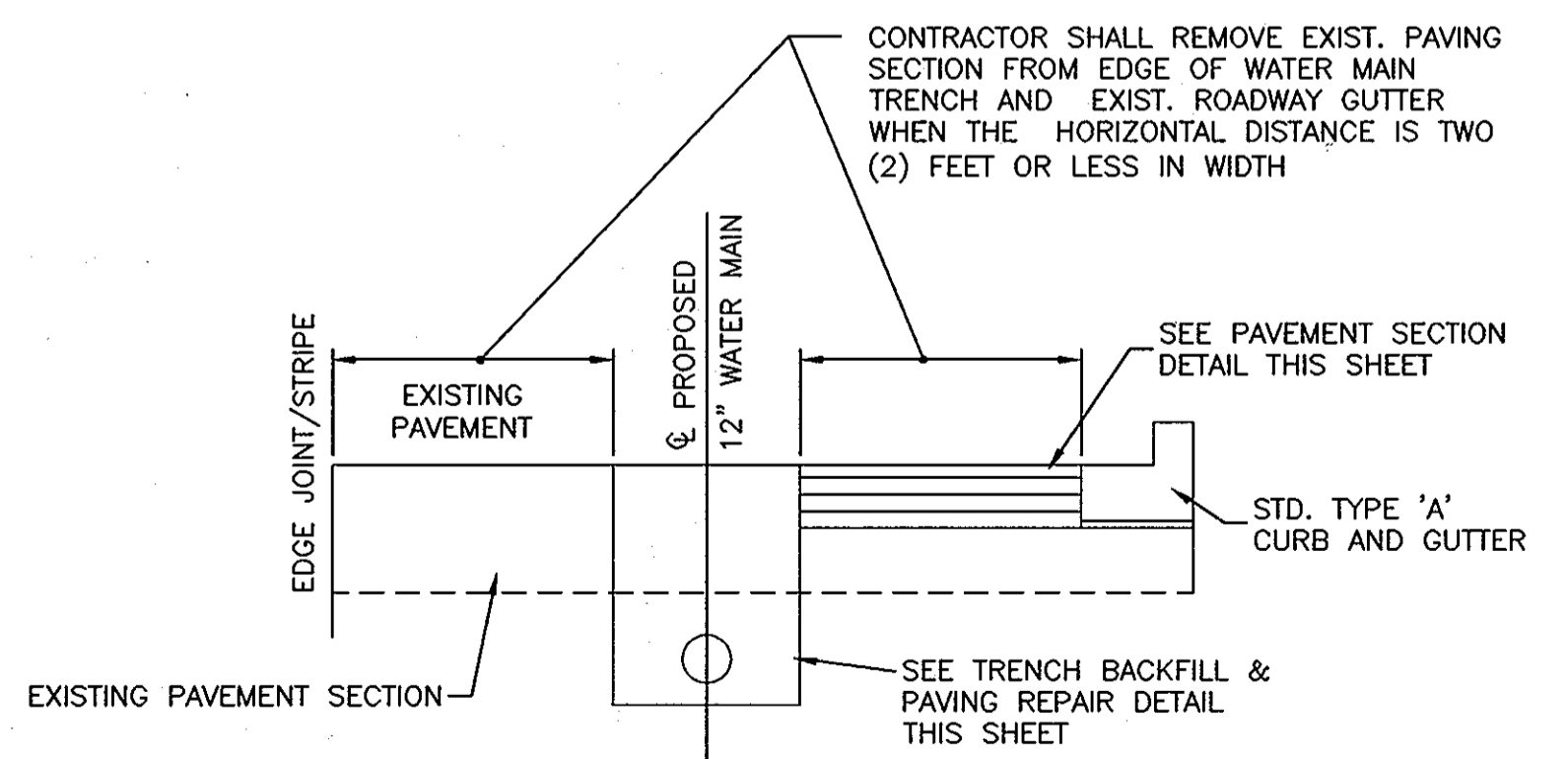
TEMPORARY PAVING DETAIL
 SCALE: 3/4" = 1'-0"



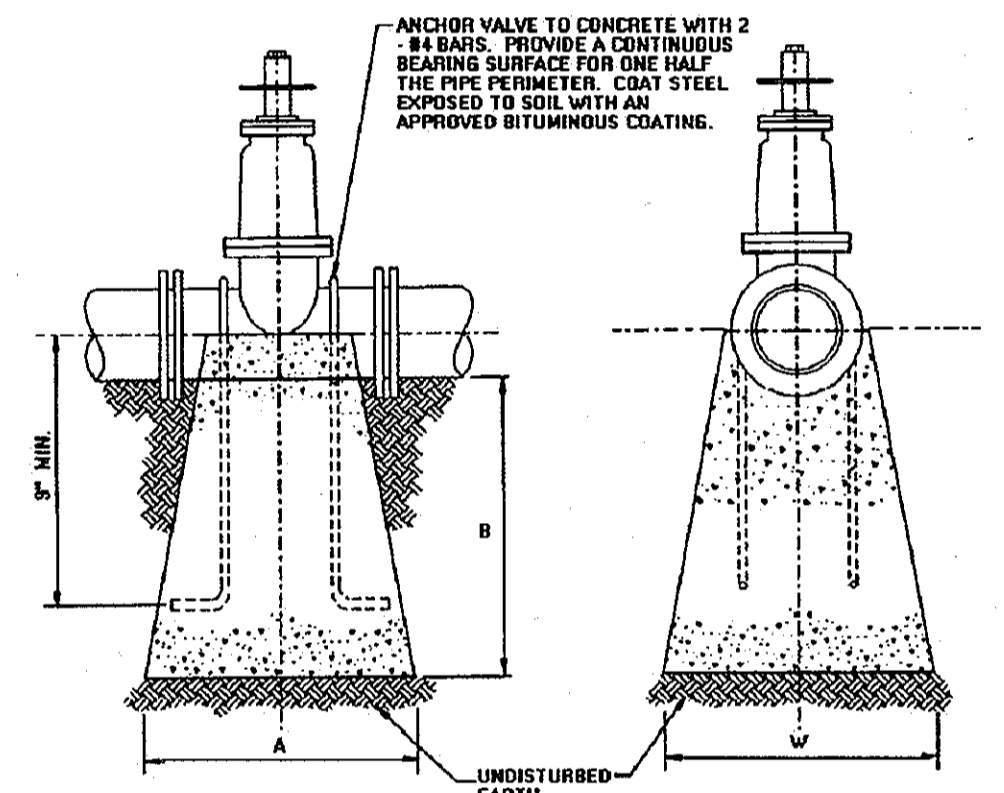
TRENCH BACKFILL & PAVING REPAIR
 SCALE: 3/4" = 1'-0"



PAVEMENT SECTION DETAIL
 NOT TO SCALE

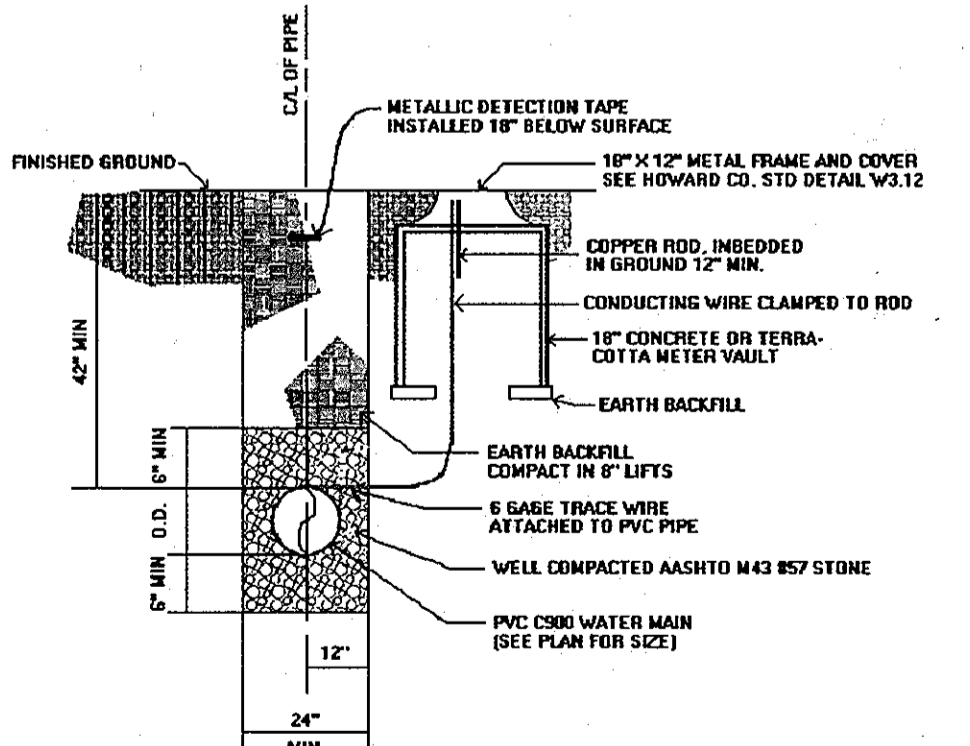


PAVING DETAIL
 NOT TO SCALE



PIPE SIZE	A	B	W
4"	9"	1'-0"	1'-0"
6"	10"	1'-6"	1'-0"
8"	1'-0"	2'-0"	2'-0"
12"	1'-0"	2'-0"	3'-0"

ANCHORAGES FOR VALVES WITH PVC PIPE
 NOT TO SCALE



CONTINUITY TEST STATION AND METALLIC DETECTION TAPE DETAIL
 NOT TO SCALE

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

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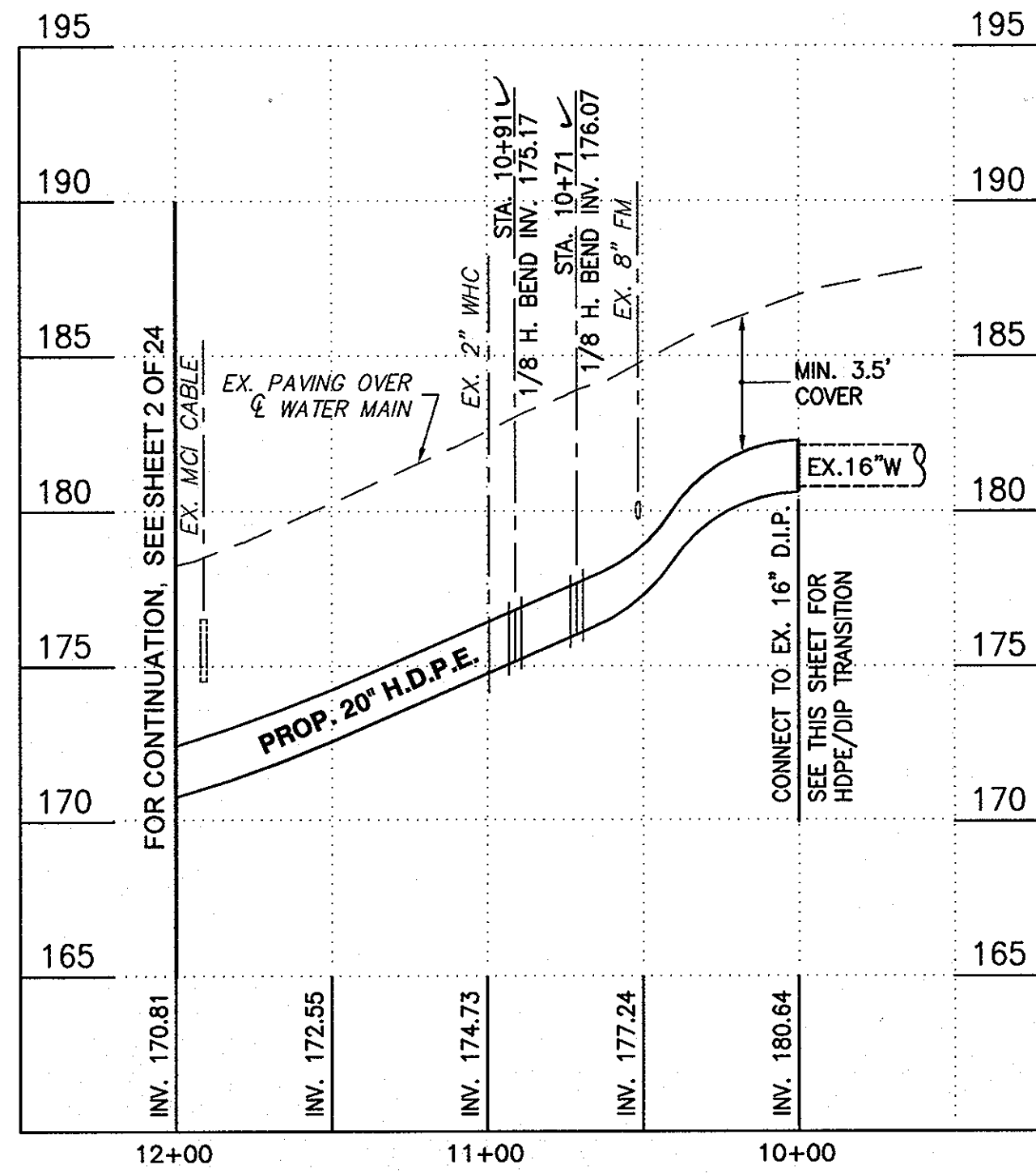
DES:	AZW		
DRN:	AZW		
CHK:	ATB		
DATE:			
BY:			
NO.:			
REVISIONS:			
DATE:			

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

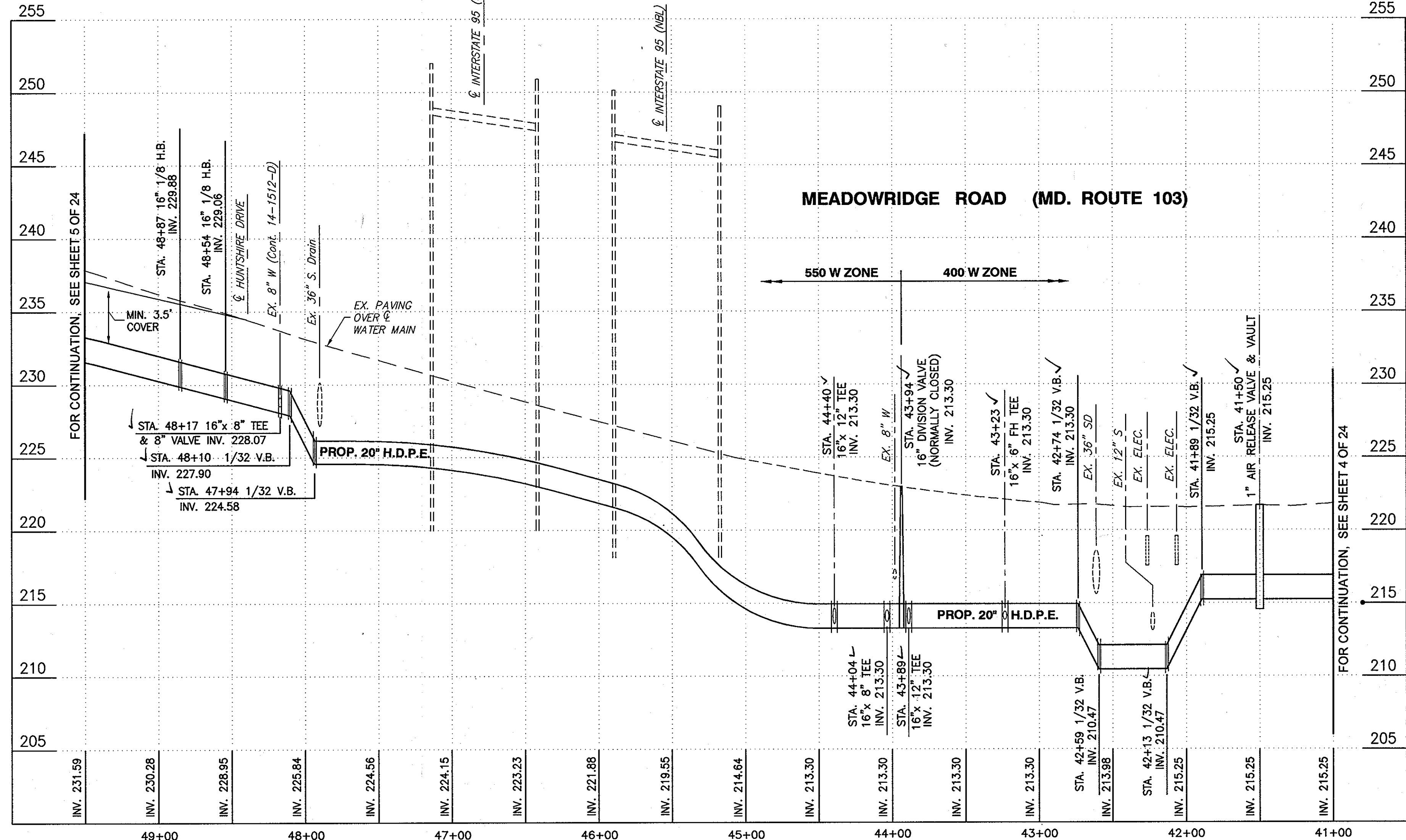
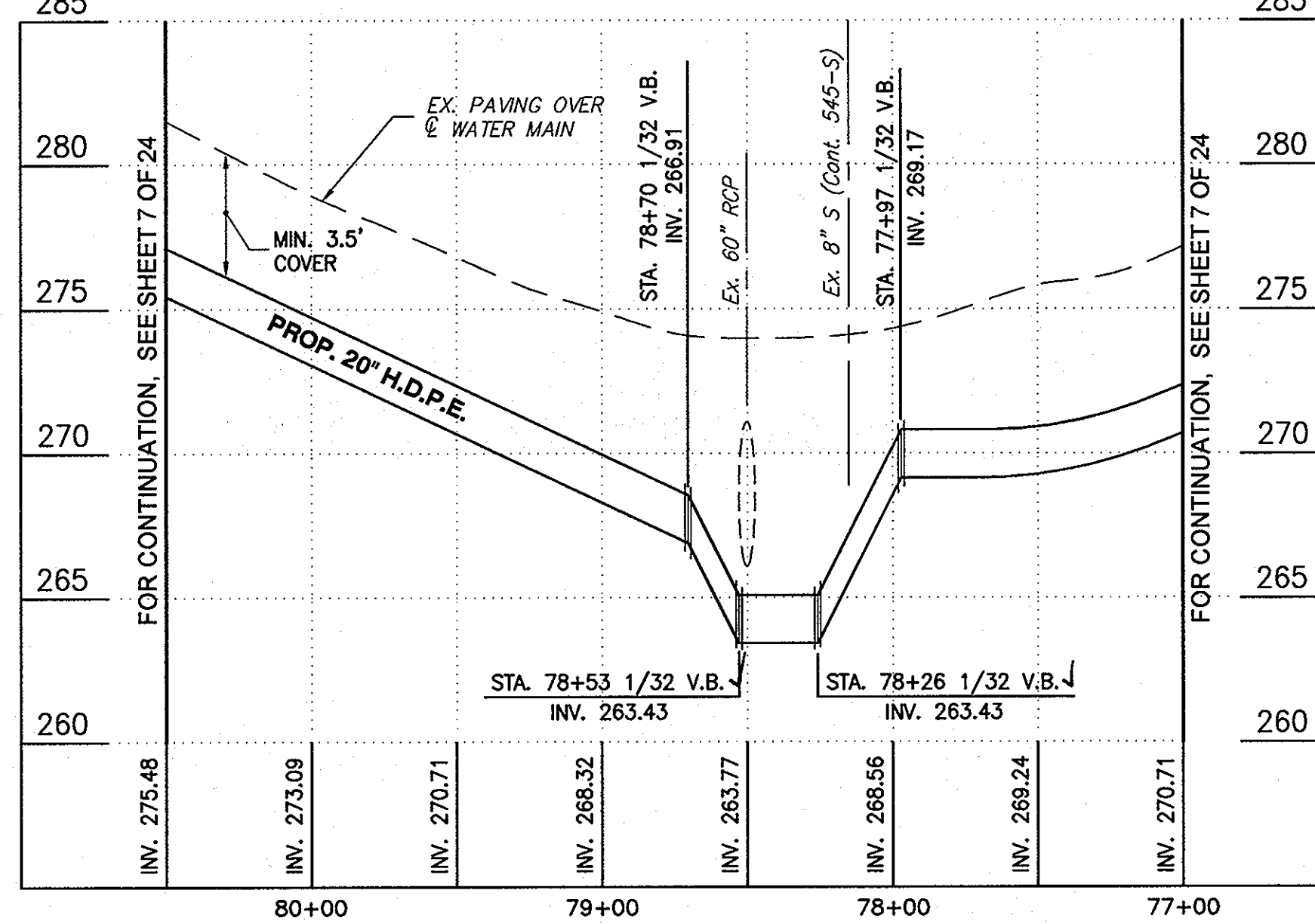
MEADOWRIDGE ROAD WATER MAIN REPLACEMENT
 CAPITAL PROJECT W-8249
 CONTRACT 44-4164
 ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE: SHOWN
 SHEET 9 OF 25

MEADOWRIDGE ROAD (MD. ROUTE 103)

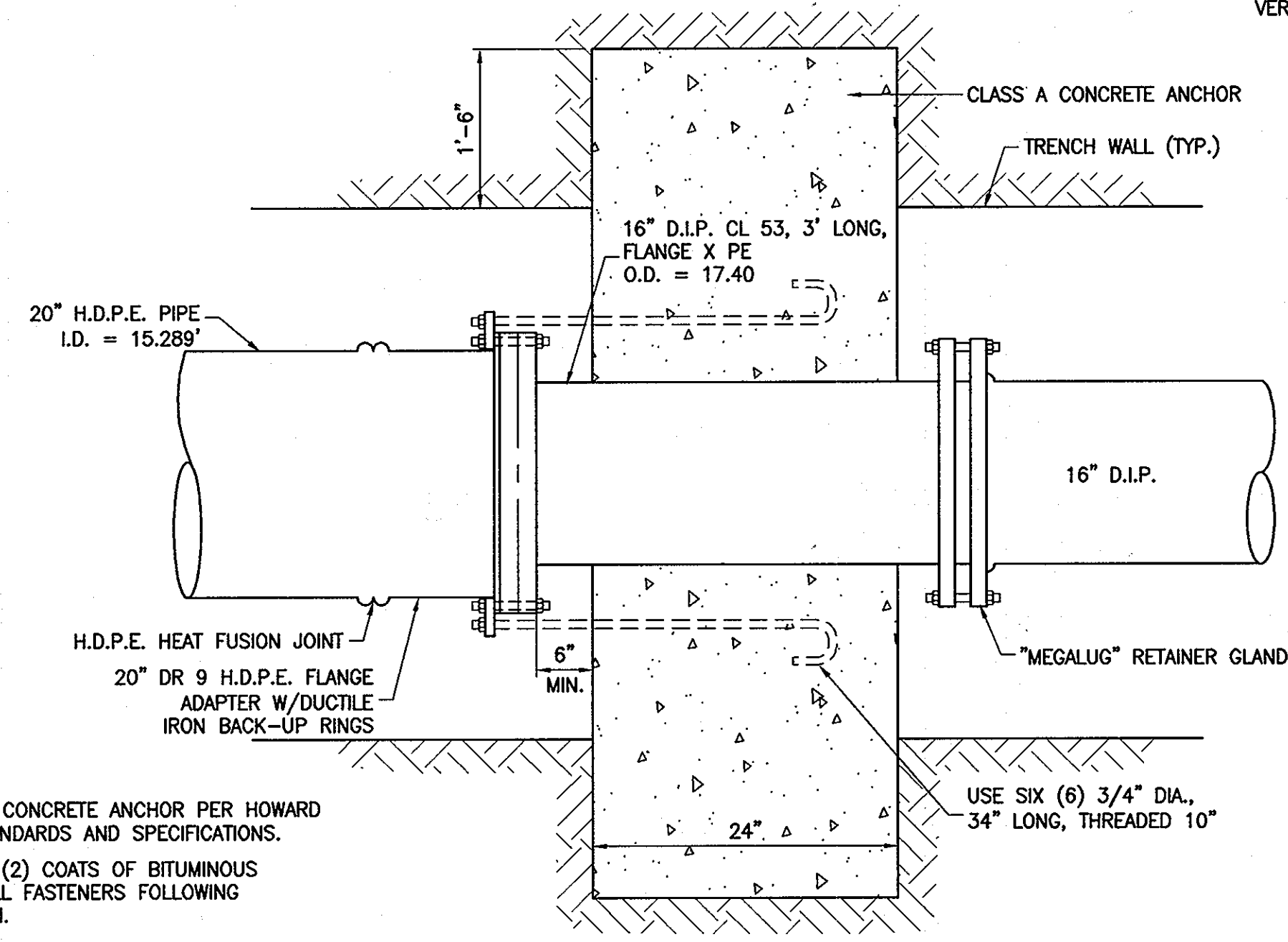


MEADOWRIDGE ROAD (MD. ROUTE 103)

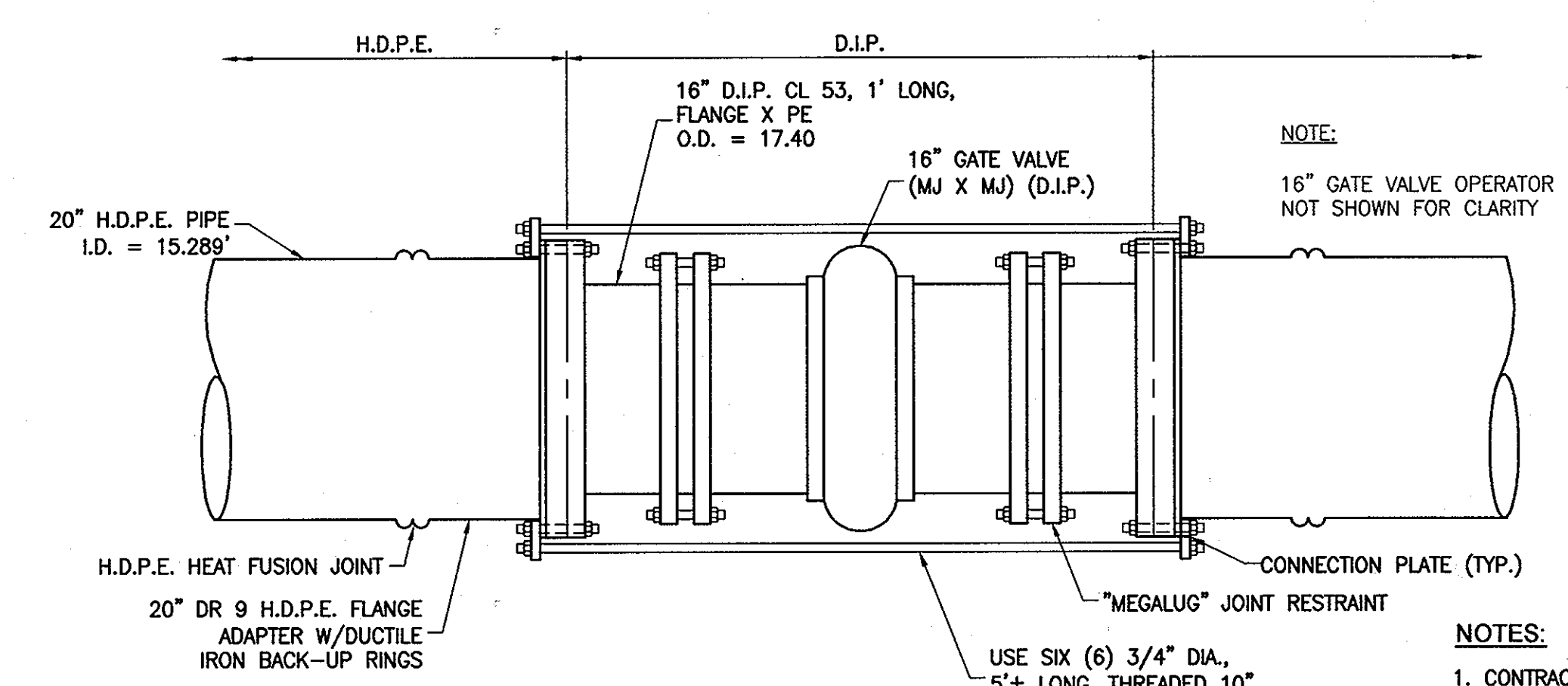


NOTE: IF CONTRACTOR INSTALLS H.D.P.E. OR F.P.V.C. PIPE, THESE PROFILES SHALL BE FOLLOWED IN LIEU OF THE P.V.C. PROFILES SHOWN ON SHEETS 2, 4, 5, & 7.

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] 09-20-10
Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS: *[Signature]* 10/15/10
CHIEF, BUREAU OF ENGINEERING: *[Signature]* 9/28/10
CHIEF, BUREAU OF UTILITIES: *[Signature]* 10/14/10
CHIEF, UTILITY DESIGN DIVISION: *[Signature]* 9/28/10

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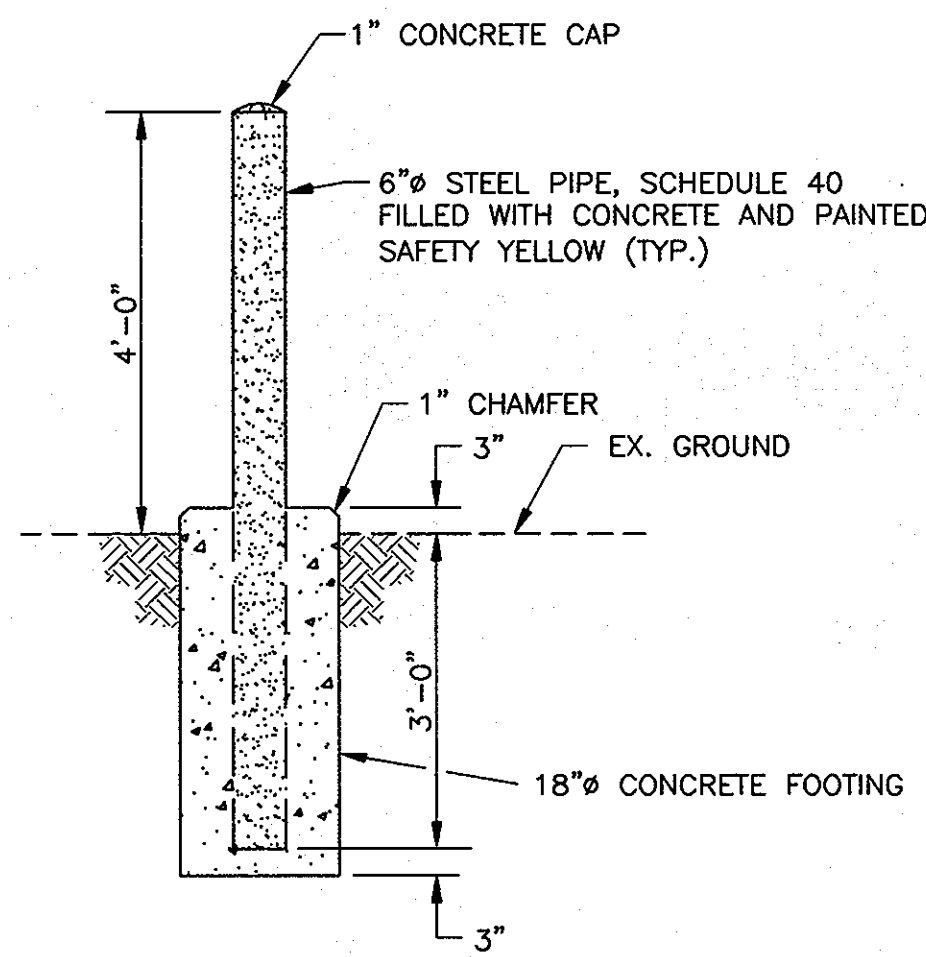
DES:	AZW
DRN:	AZW
CHK:	ATB
DATE:	
BY:	NO.
REVISIONS:	
DATE:	

ALTERNATE HDPE OR FPVC PROFILES
600' SCALE MAP NO. 37, 43
BLOCK NO. 5, 23

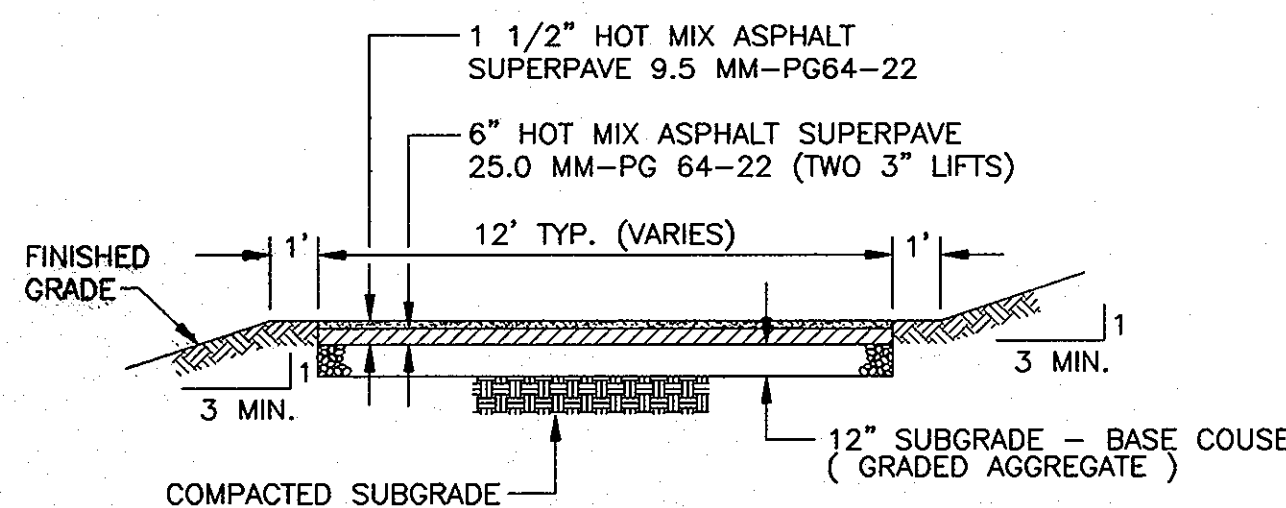
MEADOWRIDGE ROAD
WATER MAIN REPLACEMENT
CAPITAL PROJECT W-8249
CONTRACT 44-4164
ELECTION DISTRICT NO. 1
HOWARD COUNTY, MARYLAND

SCALE:
SHOWN
SHEET
10 OF 25

Plotted by: (cadd) on: Plot Date: Sep 22, 2010 - 11:30am
 Path: \\s:\projects\0802000_Meadowridge\1\CAD\Drawings\Util-Water\10-Profile.dwg
 User: jclark
 Plot Size: 36" x 48" (1:1)
 Plot Scale: 1" = 50'
 Plot Orientation: Landscape
 Plot Color: Black
 Plot Lineweight: 0.20
 Plot Linetype: Solid
 Plot Font: Arial, 10
 Plot Title: MEADOWRIDGE ROAD (MD. ROUTE 103)



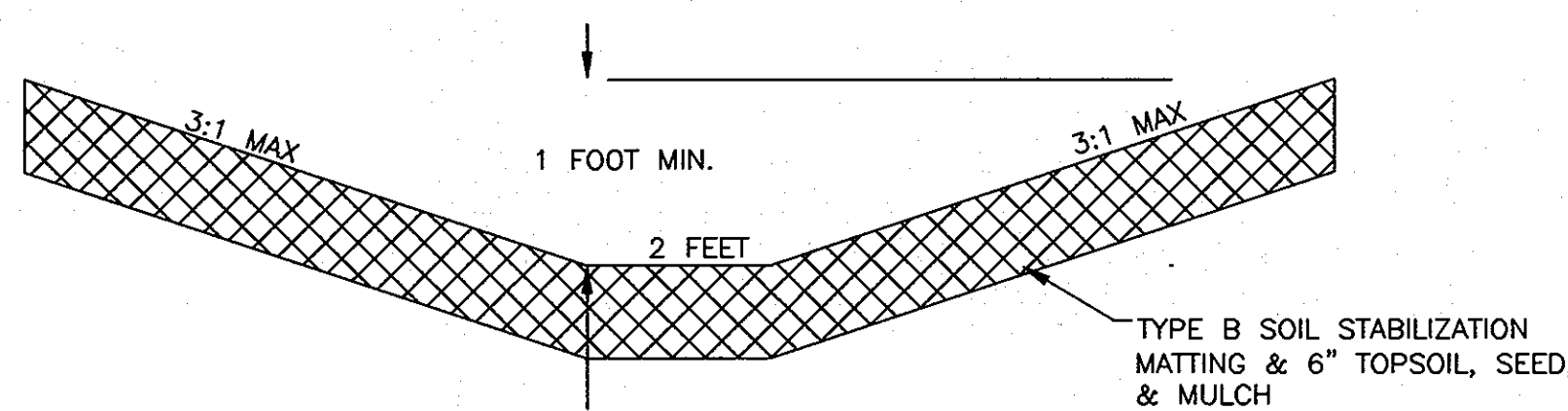
BOLLARD DETAIL
SCALE: None



NOTES:

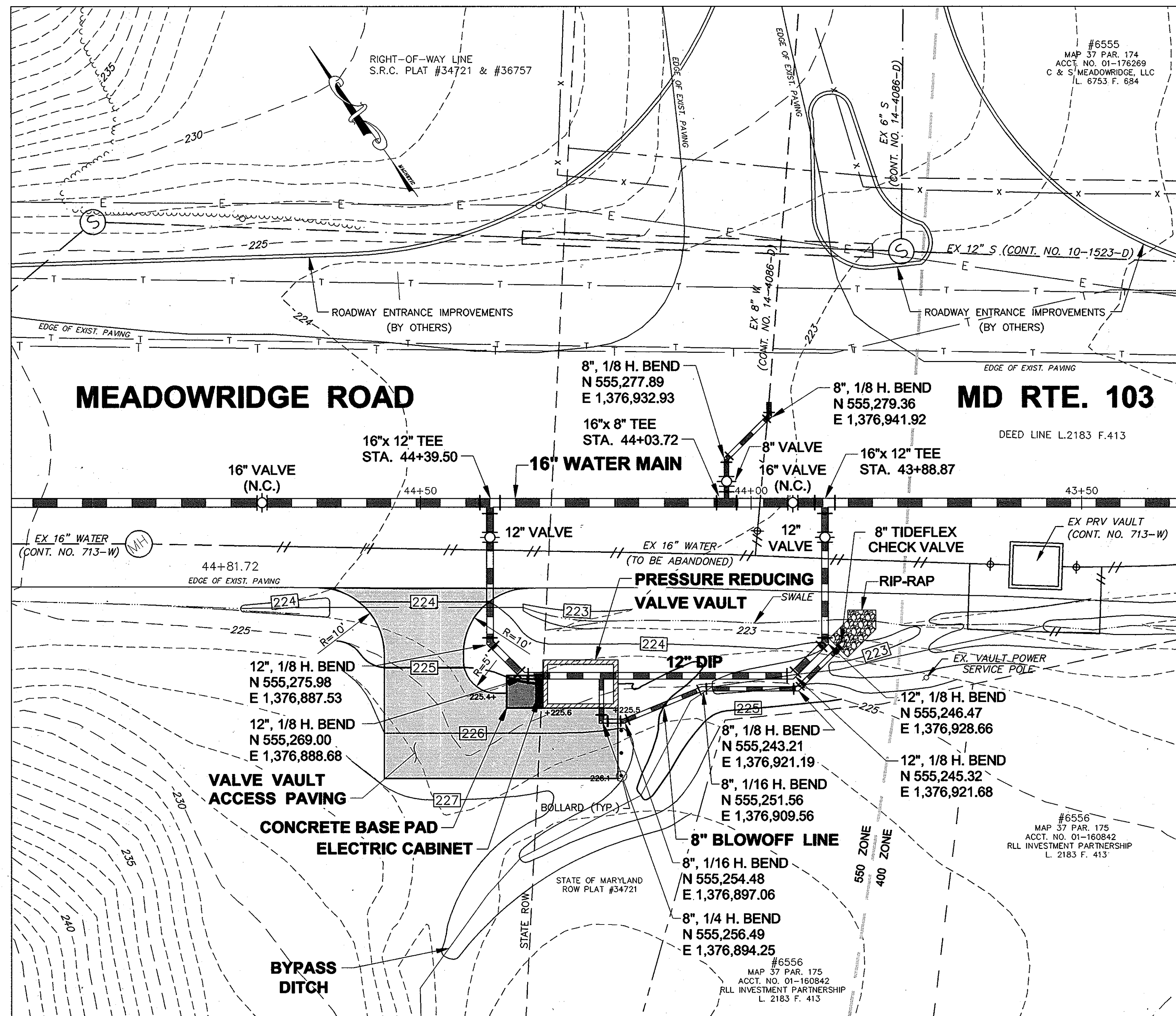
1. SLOPE ACCORDING TO PROPOSED CONTOURS
2. APPLY TACK COAT AT INTERFACE OF PROPOSED CONCRETE SIDEWALK AND PROPOSED BITUM. CONCRETE PAVING.
3. SUBGRADE SHALL BE COMPACTED TO 95% ASTM A-99B.
4. PROVIDE 2% CROSS SLOPE.

TYPICAL PAVEMENT SECTION
SCALE: None



TYPICAL SECTION OF BYPASS DITCH
SCALE: None

WATER STAKEOUT TABLE			
ITEM	STATION	NORTHING	EASTING
16" TE-IN	10+00.00	552,790.68	1,379,217.47
16" 1/8 HB	10+71.00	552,846.69	1,379,173.70
16" 1/8 HB	10+81.01	552,866.55	1,379,175.79
16" 6" F.H. TEE	12+62.66	553,000.69	1,379,069.19
16" 6" F.H. TEE	13+24.28	553,048.85	1,379,030.63
16" 12" TEE	15+39.84	553,215.85	1,378,894.59
16" 6" F.H. TEE	16+35.73	553,447.22	1,378,710.15
16" 6" F.H. TEE	23+17.76	553,824.67	1,378,410.34
16" 6" F.H. TEE	28+00.00	554,202.18	1,378,110.30
16" VALVE	28+63.43	554,251.95	1,378,070.94
16" x 12" TEE	28+68.43	554,255.78	1,378,067.88
PC	28+95.08	554,276.75	1,378,051.32
PT	29+58.18	554,323.65	1,378,009.16
16" 6" TEE	33+35.17	554,585.90	1,377,738.85
16" 1/8 HB	34+79.87	554,688.32	1,377,636.05
16" 1/8 HB	35+00.00	554,688.02	1,377,616.05
16" 6" F.H. TEE	38+10.37	554,902.94	1,377,392.19
PC	38+64.95	554,940.75	1,377,352.82
ARV	41+50.00	555,124.34	1,377,135.03
PT	41+79.10	555,141.46	1,377,111.50
16" 6" F.H. TEE	43+23.49	555,225.55	1,376,994.32
16" x 12" TEE	43+88.87	555,263.76	1,376,941.07
16" x 12" TEE	44+39.50	555,293.27	1,376,899.93
16" DIMENSION VALVE	43+93.71	555,266.57	1,376,937.14
16" VALVE	44+75.00	555,313.97	1,376,871.09
16" x 8" TEE	48+17.22	555,517.58	1,376,598.02
16" 1/8 HB	48+53.96	555,539.45	1,376,588.51
16" 1/8 HB	48+58.63	555,535.70	1,376,534.47
PC	50+80.51	555,650.08	1,376,378.42
16" 6" F.H. TEE	52+33.07	555,739.90	1,376,254.80
PT	52+42.43	555,745.42	1,376,247.56
16" 1/16 HB	53+44.08	555,804.61	1,376,184.91
16" 1/16 HB	53+95.80	555,860.50	1,376,130.14
PC	54+42.46	555,887.67	1,376,082.21
PT	54+78.25	555,907.11	1,376,064.57
16" VALVE	55+15.81	555,929.35	1,376,031.73
16" x 4" TEE	55+23.02	555,933.43	1,376,025.80
PC	55+81.46	555,966.91	1,375,978.02
PT	56+05.58	555,980.87	1,375,958.34
16" 6" F.H. TEE	57+09.32	556,041.81	1,375,874.39
PC	57+27.93	556,052.82	1,375,859.38
16" x 8" TEE	57+91.36	556,091.79	1,375,809.35
PT	58+89.20	556,157.75	1,375,757.15
PC	60+53.56	556,274.51	1,375,621.47
16" 6" F.H. TEE	61+74.84	556,361.94	1,375,557.43
16" VALVE	62+21.21	556,398.12	1,375,506.08
16" x 8" TEE	62+27.54	556,400.72	1,375,501.74
PT	62+80.41	556,440.10	1,375,466.46
PC	63+82.93	556,516.89	1,375,398.55
16" 6" TEE	65+34.41	556,626.55	1,375,293.97
16" 6" F.H. TEE	66+95.25	556,733.74	1,375,174.31
PT	67+11.39	556,744.00	1,375,161.81
PC	67+70.63	556,781.38	1,375,115.81
PT	69+85.50	556,921.32	1,374,952.79
PC	70+38.84	556,956.90	1,374,913.53
16" 6" F.H. TEE	71+53.75	557,041.92	1,374,836.12
16" VALVE	71+69.74	557,054.88	1,374,826.56
16" x 8" TEE	71+75.37	557,059.64	1,374,823.54
ARV	72+0.78	557,080.74	1,374,809.39
PT	72+85.64	557,164.56	1,374,785.20
PC	74+34.04	557,292.11	1,374,711.46
PT	74+65.32	557,320.25	1,374,687.75
PC	75+54.56	557,401.52	1,374,660.86
PRC	78+22.54	557,483.61	1,374,633.29
16" 6" F.H. TEE	78+62.62	557,500.60	1,374,618.11
PT	78+90.85	557,517.44	1,374,610.82
PC	77+30.82	557,582.81	1,374,589.94
PT	77+88.18	557,614.86	1,374,565.40
PC	78+48.16	557,668.51	1,374,538.97
PT	80+27.11	557,827.69	1,374,457.25
PC	81+48.28	557,934.36	1,374,400.06
16" 6" F.H. TEE	81+88.49	557,971.12	1,374,383.53
PT	83+18.83	558,099.13	1,374,365.28
16" VALVE	83+68.30	558,148.45	1,374,369.05
16" x 12" CROSS	83+74.74	558,155.11	1,374,369.57
16" VALVE	83+81.18	558,161.29	1,374,370.04
16" 1/8 HB	83+87.28	558,167.35	1,374,370.50
16" 1/8 HB	84+13.74	558,187.45	1,374,353.28
16" 6" F.H. TEE	85+90.79	558,364.07	1,374,365.64
16" 1/8 HB	87+46.75	558,519.64	1,374,376.75
16" 1/8 HB	87+71.73	558,536.09	1,374,395.54
PC	88+46.62	558,610.84	1,374,400.31
PT	89+22.40	558,686.35	1,374,406.57
16" 6" F.H. TEE	90+81.05	558,844.11	1,374,422.73
PC	91+97.59	558,960.12	1,374,434.50
PT	92+52.05	559,014.42	1,374,438.55
PC	93+11.03	559,073.33	1,374,441.33
PT	93+82.78	559,144.80	1,374,447.29
16" 1/4 HB	94+66.22	559,227.67	1,374,457.18



SITE PLAN
SCALE: 1" = 10'

AS-BUILTS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. ... 4/15/13
DIRECTOR OF PUBLIC WORKS DATE

Momas & Butler 4/9/13
CHIEF, BUREAU OF ENGINEERING DATE

... 4/9/13
CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
Dewberry & Davis LLC
3120 LORD BALTIMORE DRIVE
SUITE 211
BALTIMORE, MD 21244-2662
410.265.9620
FAX: 410.265.8875

DES:	SMS	LAL	Δ	VALVE VAULT AREA REVISED TO INCORPORATE	9/11
DRN:	SMS			DRAINAGE DITCH INSTEAD OF CULVERT	
CHK:	REN				
DATE:					

PRESSURE REDUCING VALVE VAULT SITE PLAN

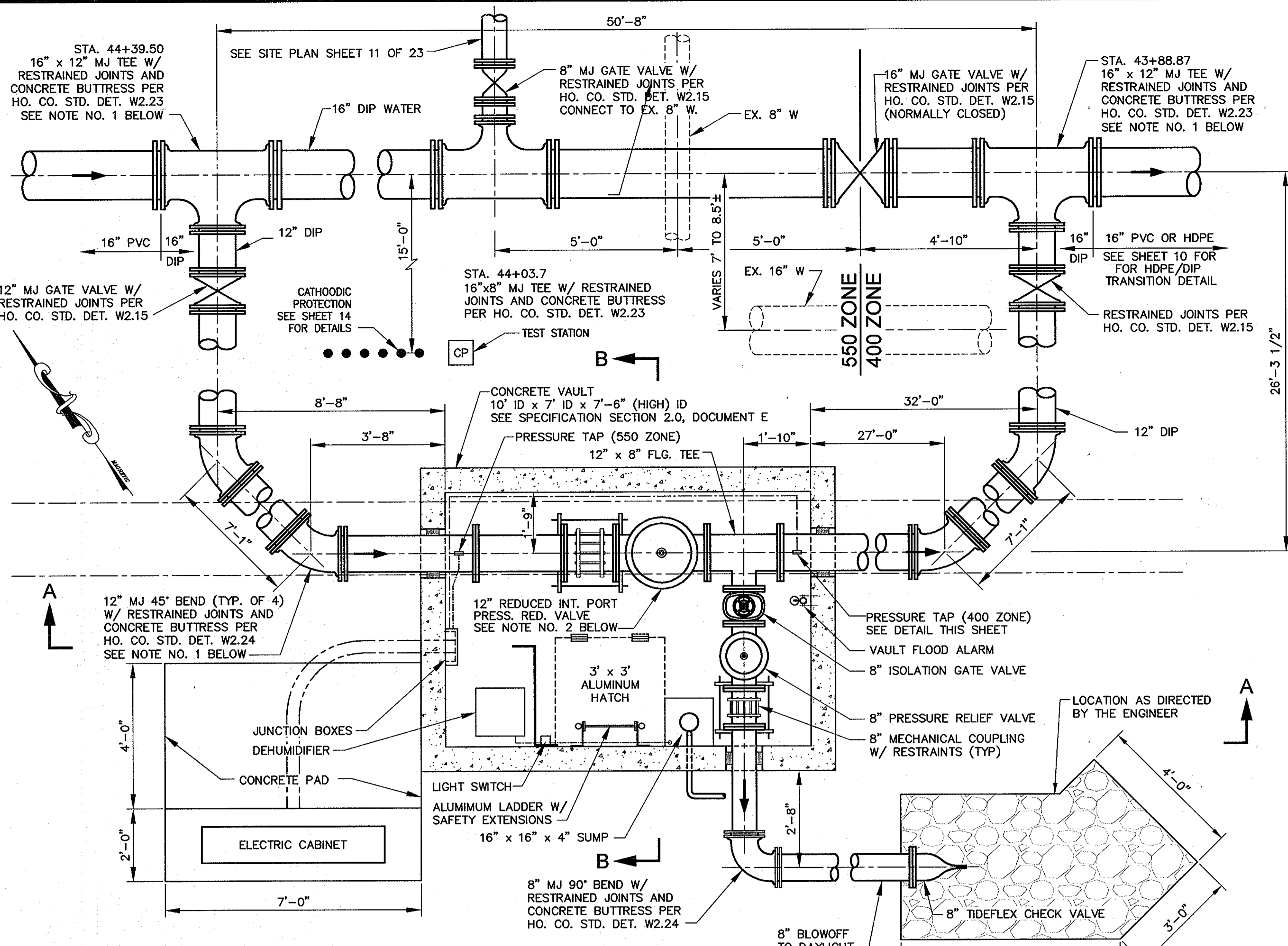
600' SCALE MAP NO. 37, 43 BLOCK NO. 5, 23

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

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

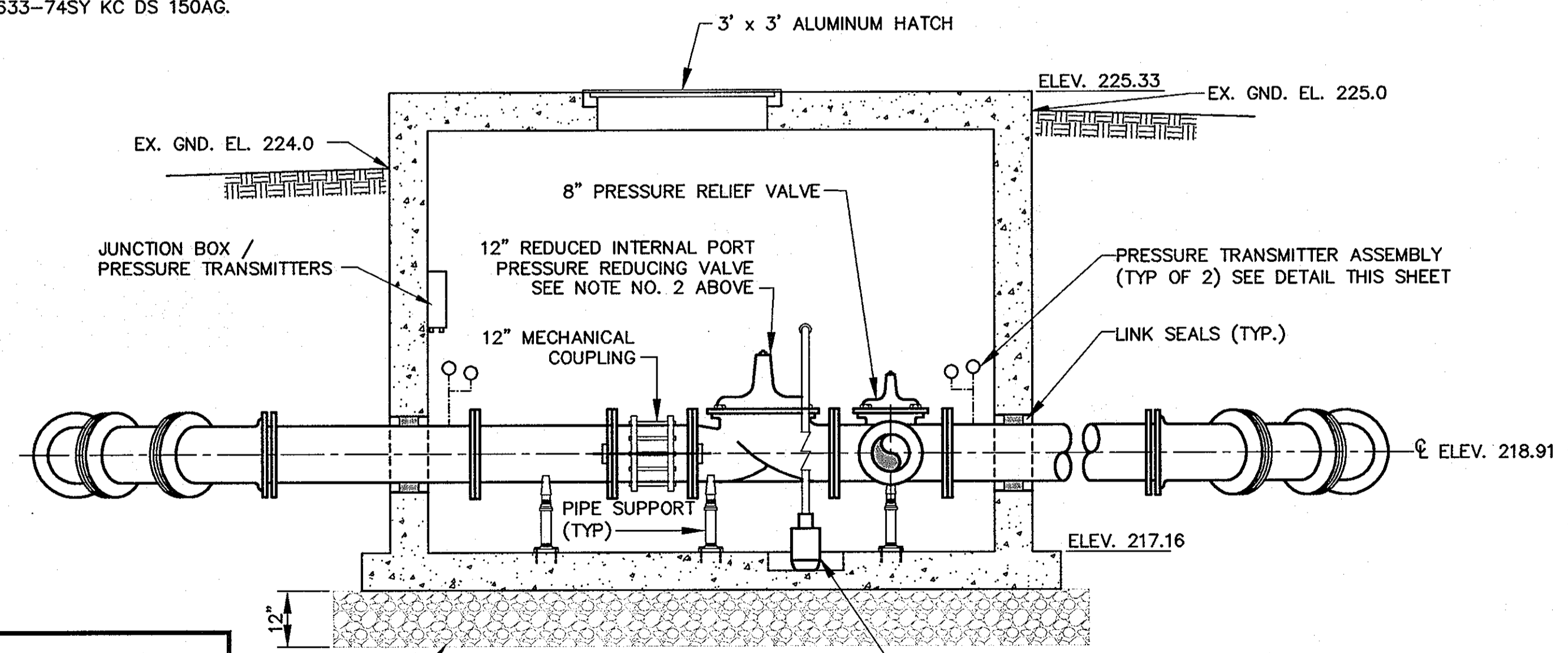
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SHEET 11 OF 25

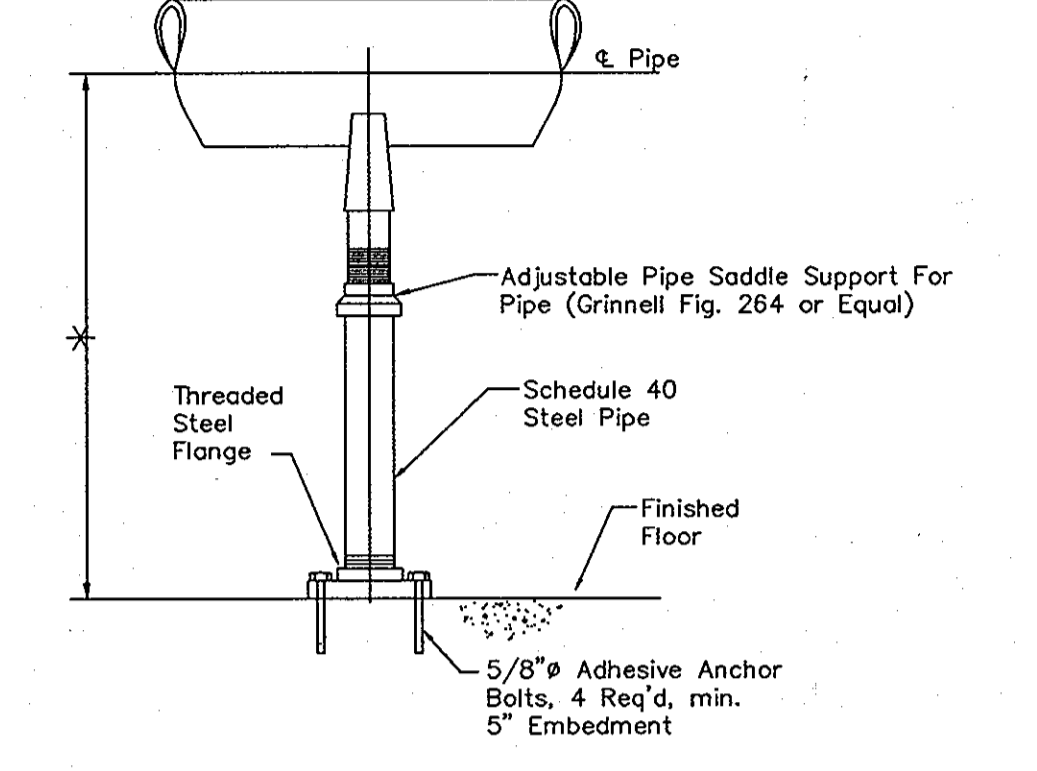
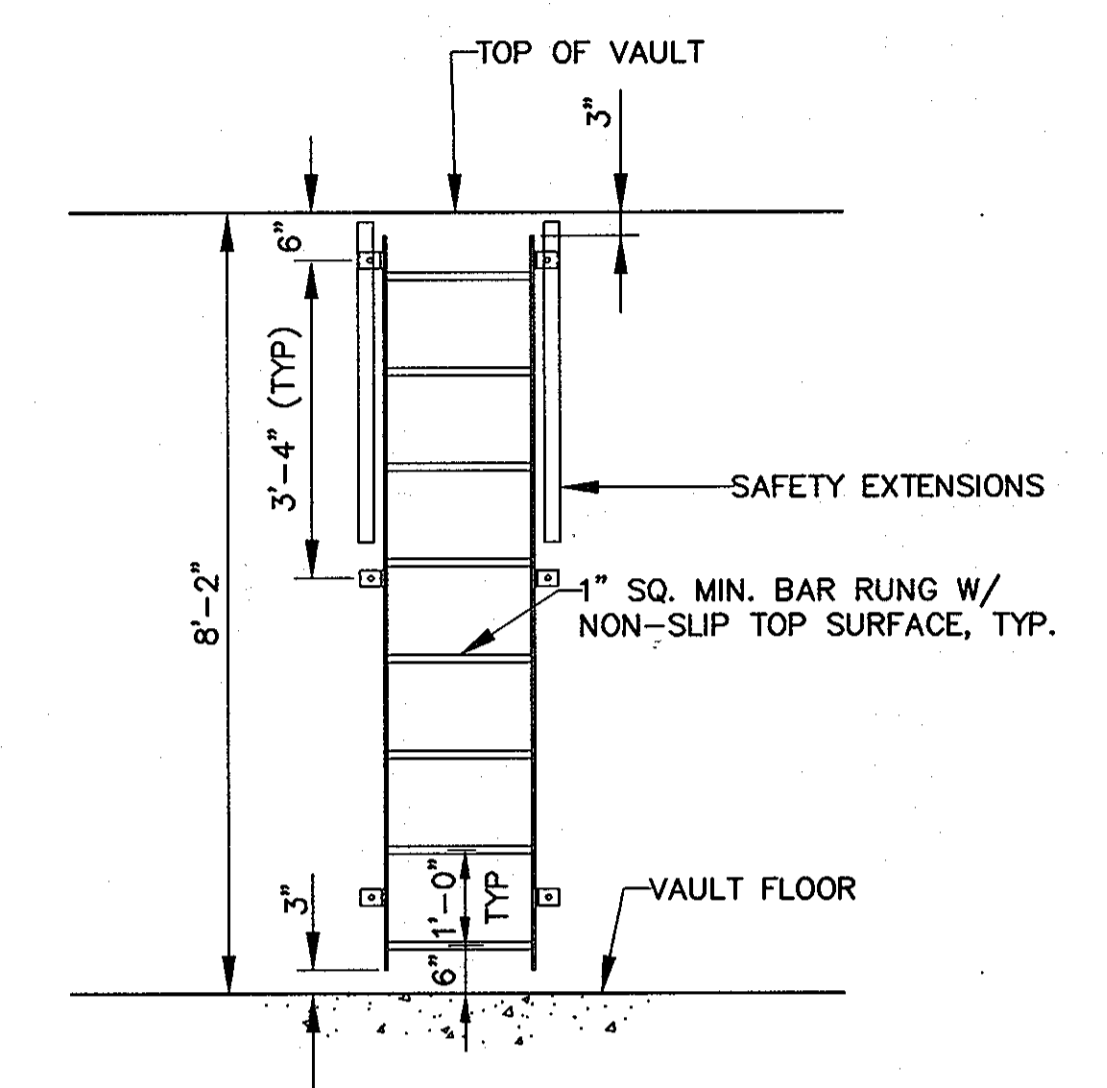
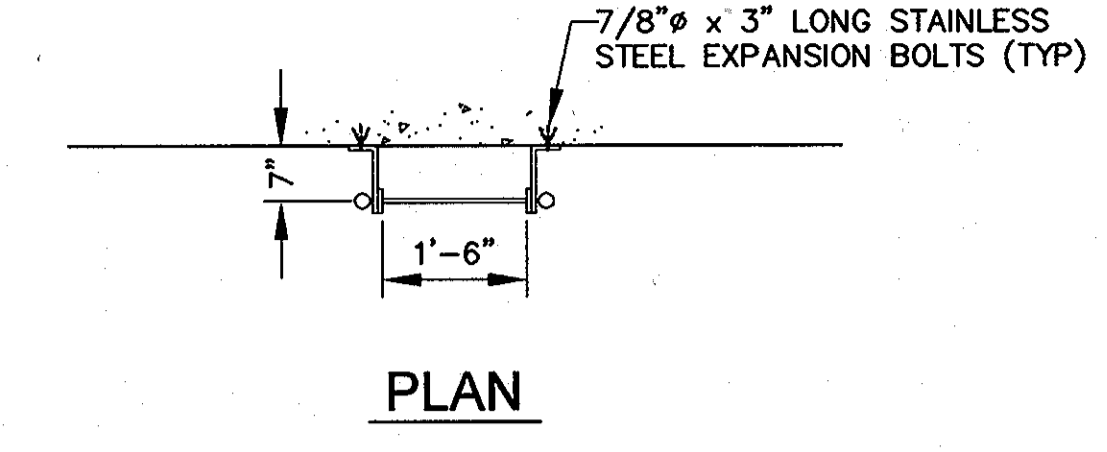


- PLAN NOTES:**
1. ROTATE 16"x 12" MJ TEES (2) & 12" MJ 45° BENDS (4) AS NECESSARY.
 2. 12" REDUCED INTERNAL PORT PRV SHALL BE CLA-VAL MODEL 12" 633-74SY KC DS 150AG.

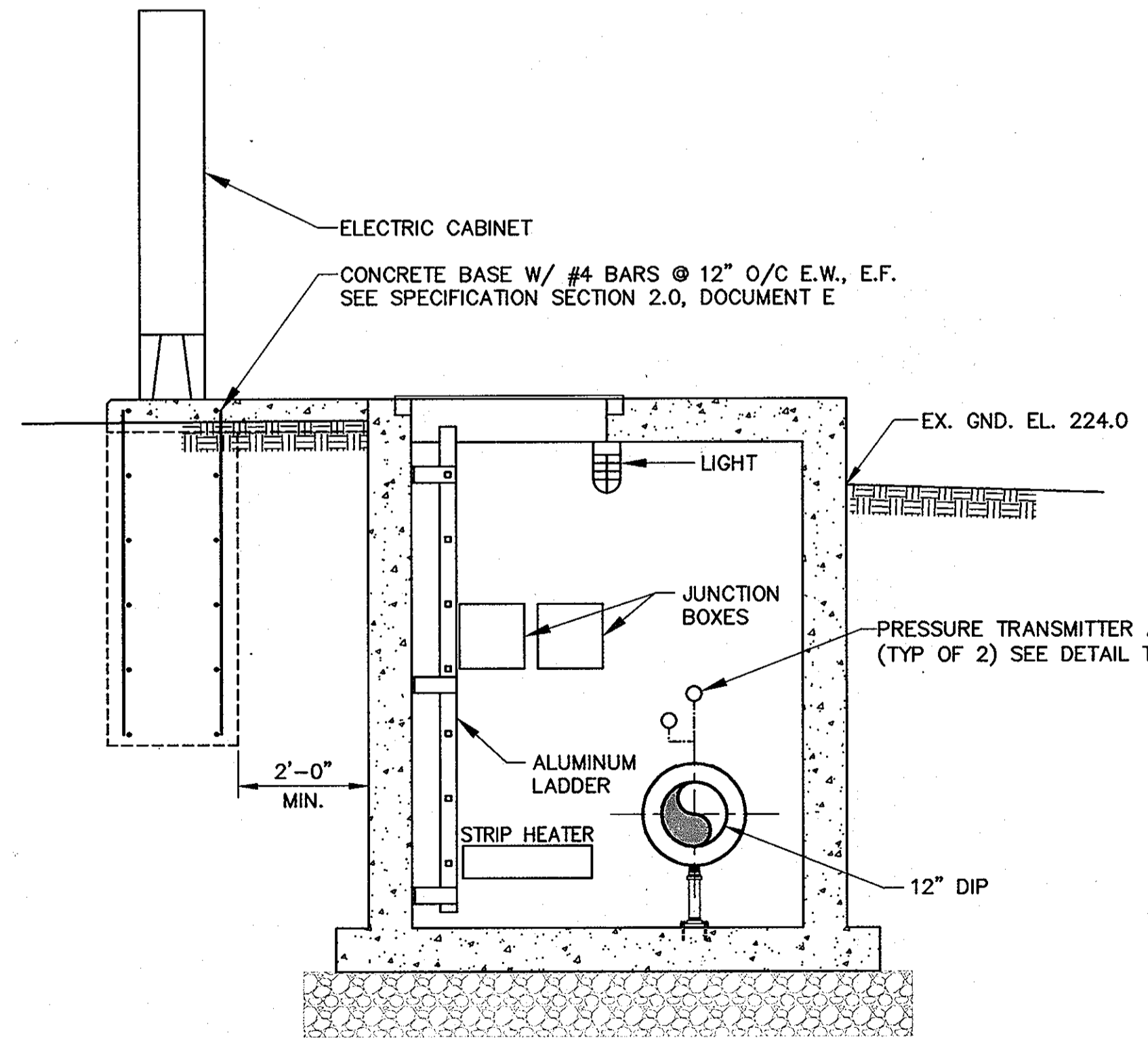
PLAN
SCALE: 1/2" = 1'-0"



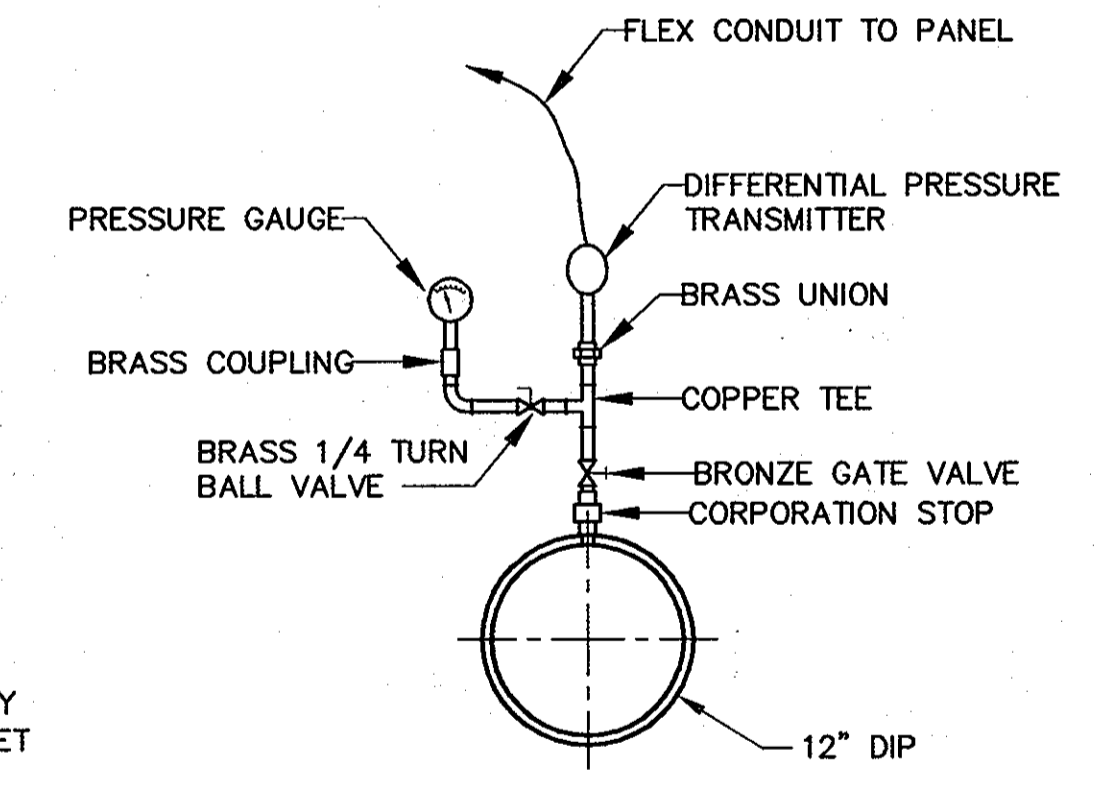
SECTION A-A
SCALE: 1/2" = 1'-0"



ADJUSTABLE PIPE SADDLE SUPPORT
NOT TO SCALE



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



DETAIL
HIGH / LOW PRESSURE TRANSMITTER
NOT TO SCALE (TWO REQUIRED)

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] 09-20-10
Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/6/10
Date: 10/6/10

Chief, Bureau of Engineering: *[Signature]* 9/28/10
Date: 9/28/10

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

Chief, Utility Design Division: *[Signature]* 9/28/10
Date: 9/28/10

Dewberry
Dewberry & Davis LLC
3100 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2682
410.285.9500
FAX: 410.258.8875



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

PRESSURE REDUCING VALVE VAULT

600' SCALE MAP NO. 37, 43

BLOCK NO. 5, 23

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

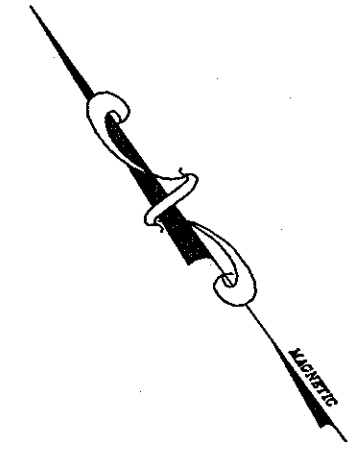
ELECTION DISTRICT NO. 1

HOWARD COUNTY, MARYLAND

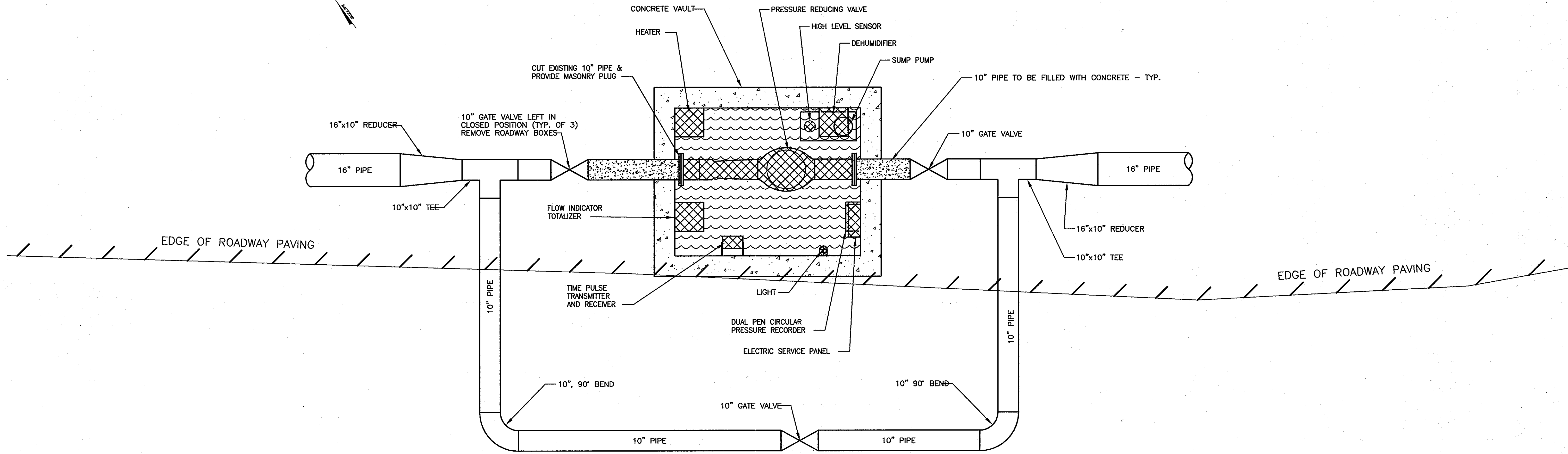
SCALE: SHOWN

SHEET 12 OF 25

Plotted by: (sps) on: 10/20/10 at: 10:37am
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 User: sps Date: 10/20/10 Time: 10:37am
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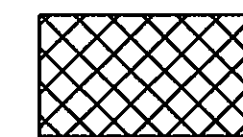
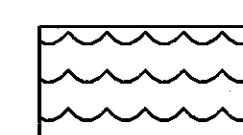
MEADOWRIDGE ROAD



EXISTING PRESSURE REDUCING VALVE VAULT

NOT TO SCALE

NOTE:
 EXISTING POWER TO BE REMOVED AND RELOCATED TO CONTROL PANEL IN NEW PRESSURE REDUCING VALVE VAULT.
 REMOVE THE ROADWAY BOXES FOR ALL THREE EXISTING VALVES TO BE ABANDONED.

-  ITEMS TO BE REMOVED AND RETURNED TO THE BUREAU OF UTILITIES OR DISPOSED OF AS DIRECTED BY HOWARD CO. DPW
-  AREA TO BE FILLED WITH SELECT BACKFILL MATERIAL, BOTTOM SLAB MUST BE BROKEN PRIOR TO BACKFILLING.

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] 09-20-10
 Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 10/15/10 9/25/10
 DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 10/15/10 *[Signature]* 9/28/10
 CHIEF, BUREAU OF UTILITIES DATE CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
 Dewberry & Davis LLC
 3100 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2682
 410.285.8500
 FAX: 410.285.8875



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

EXISTING PRESSURE REDUCING VALVE VAULT DEMOLITION PLAN

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

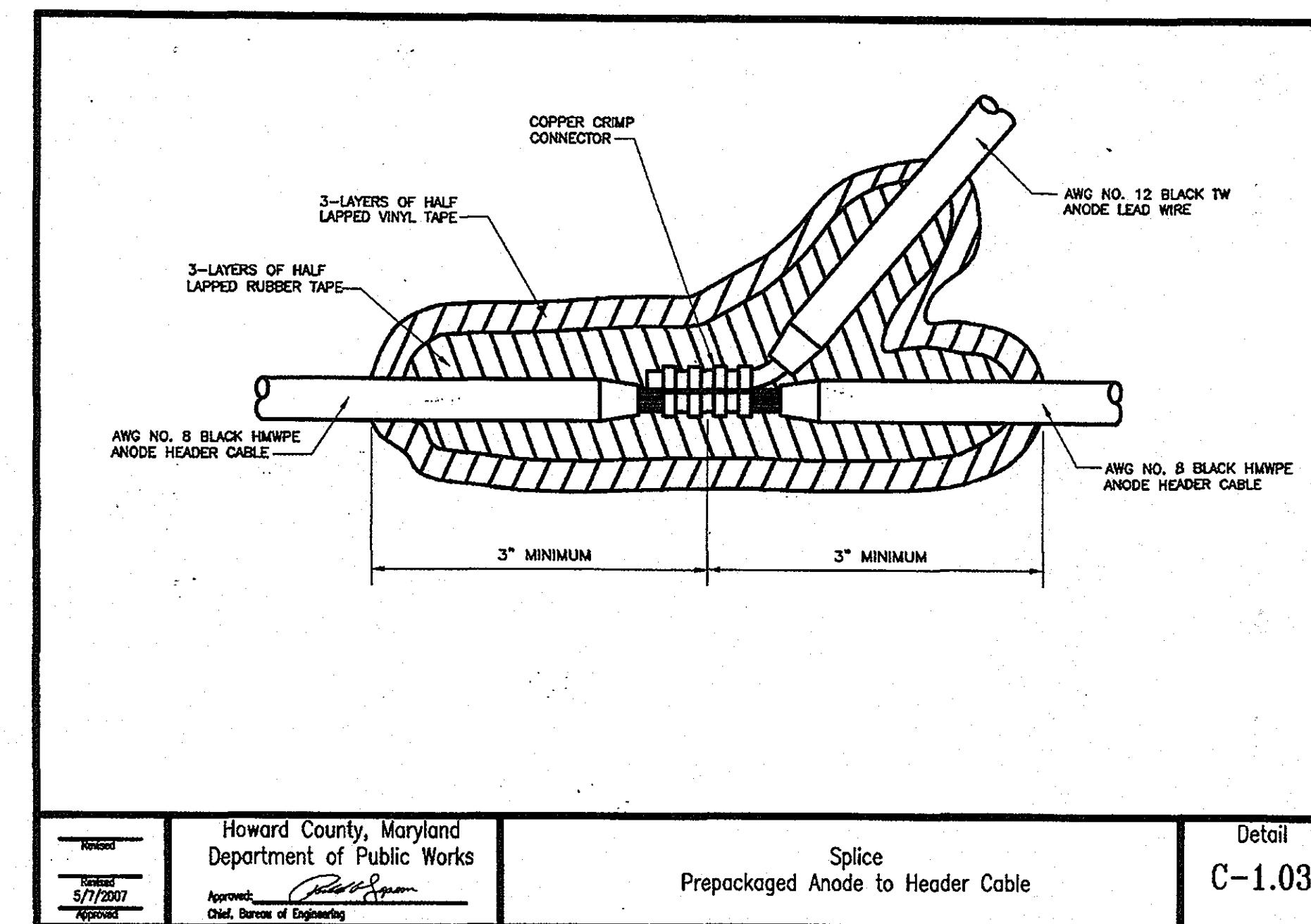
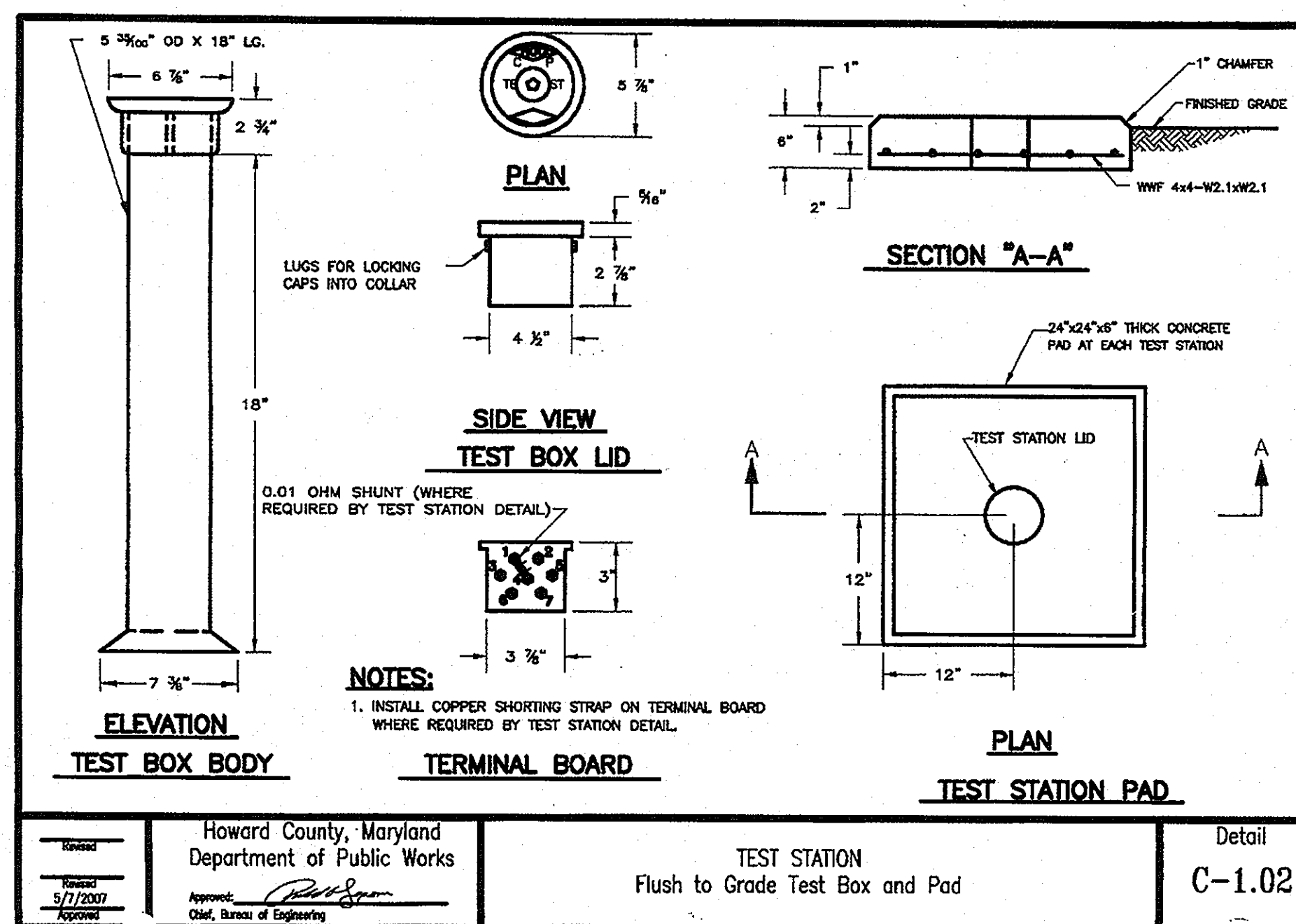
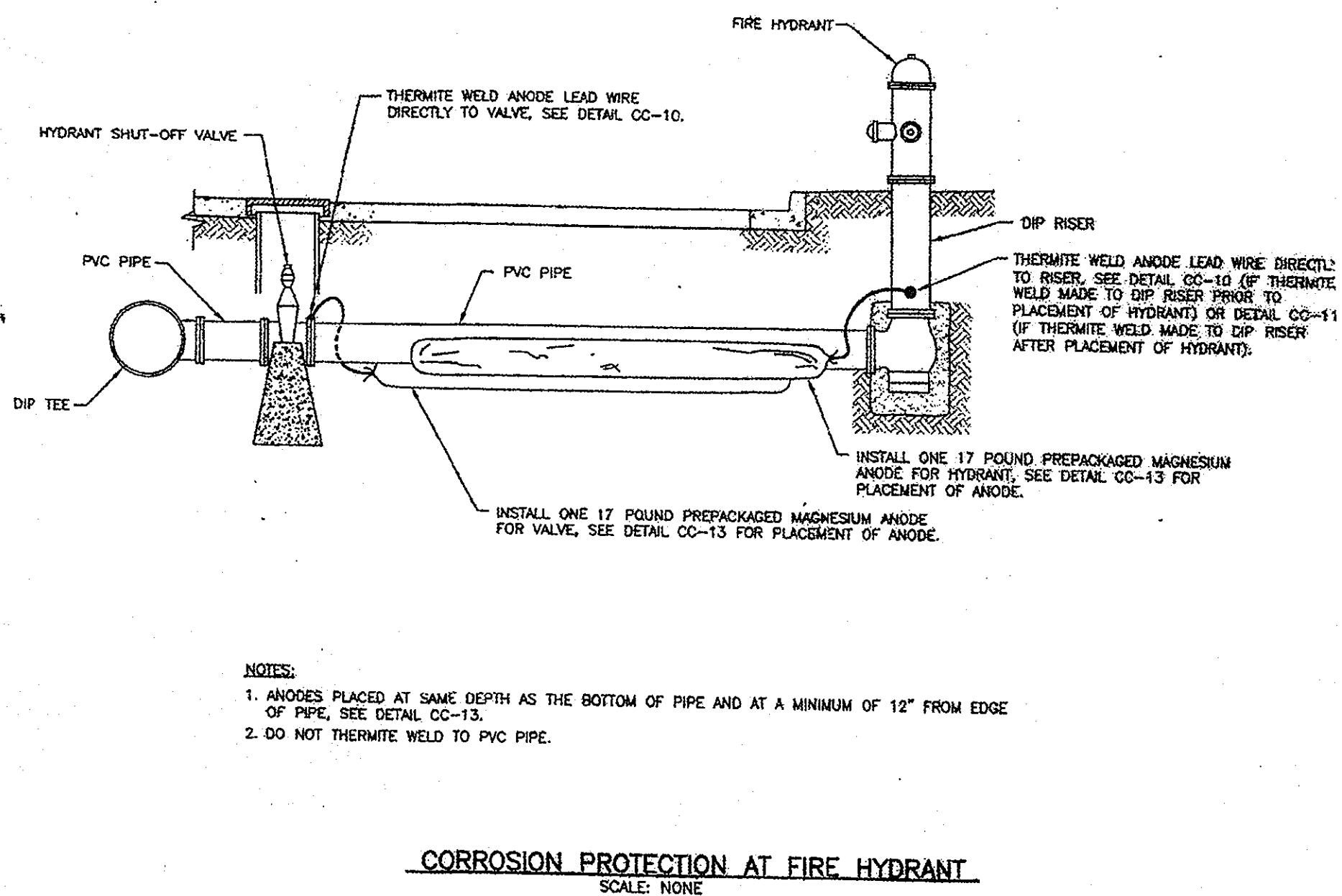
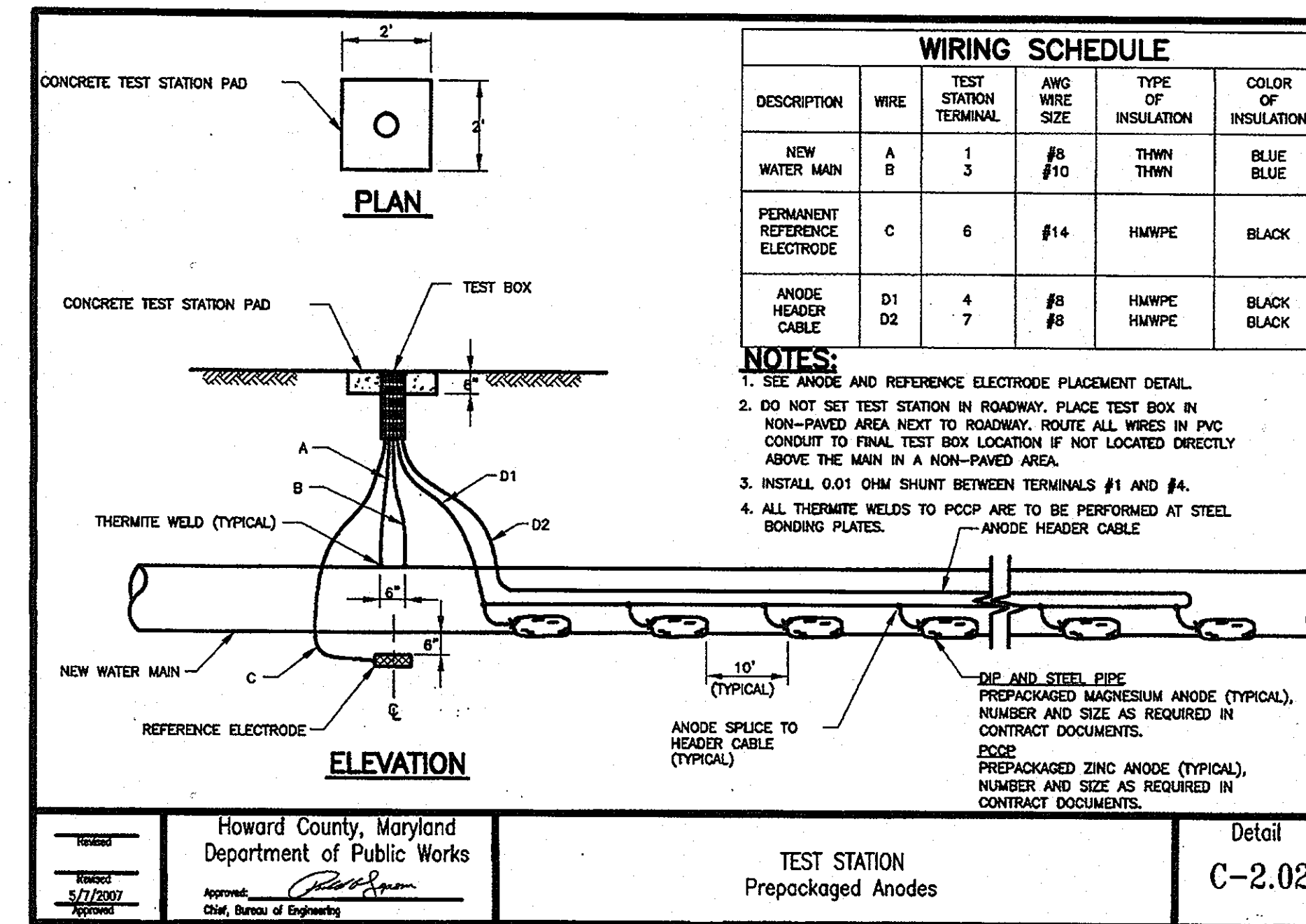
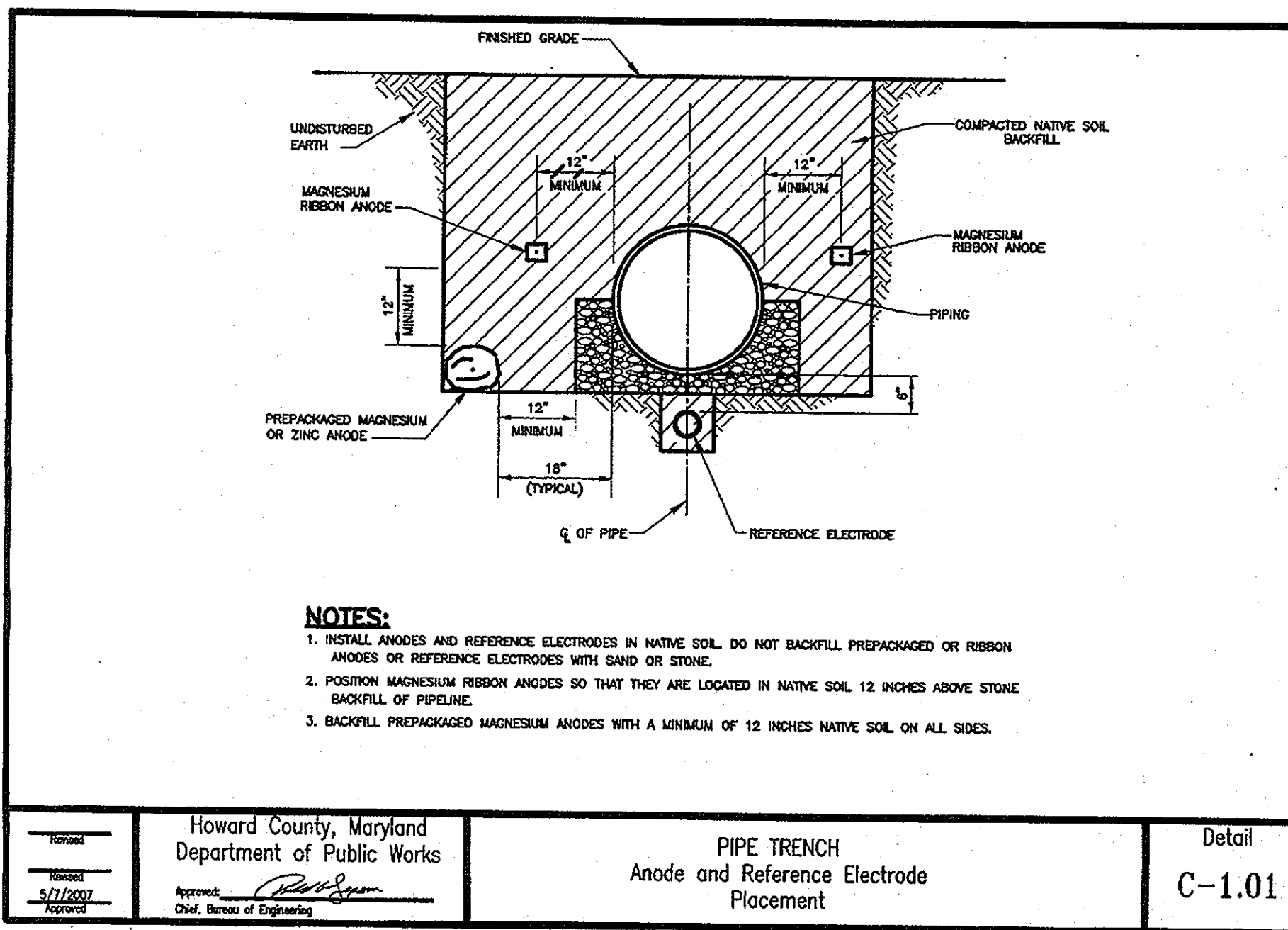
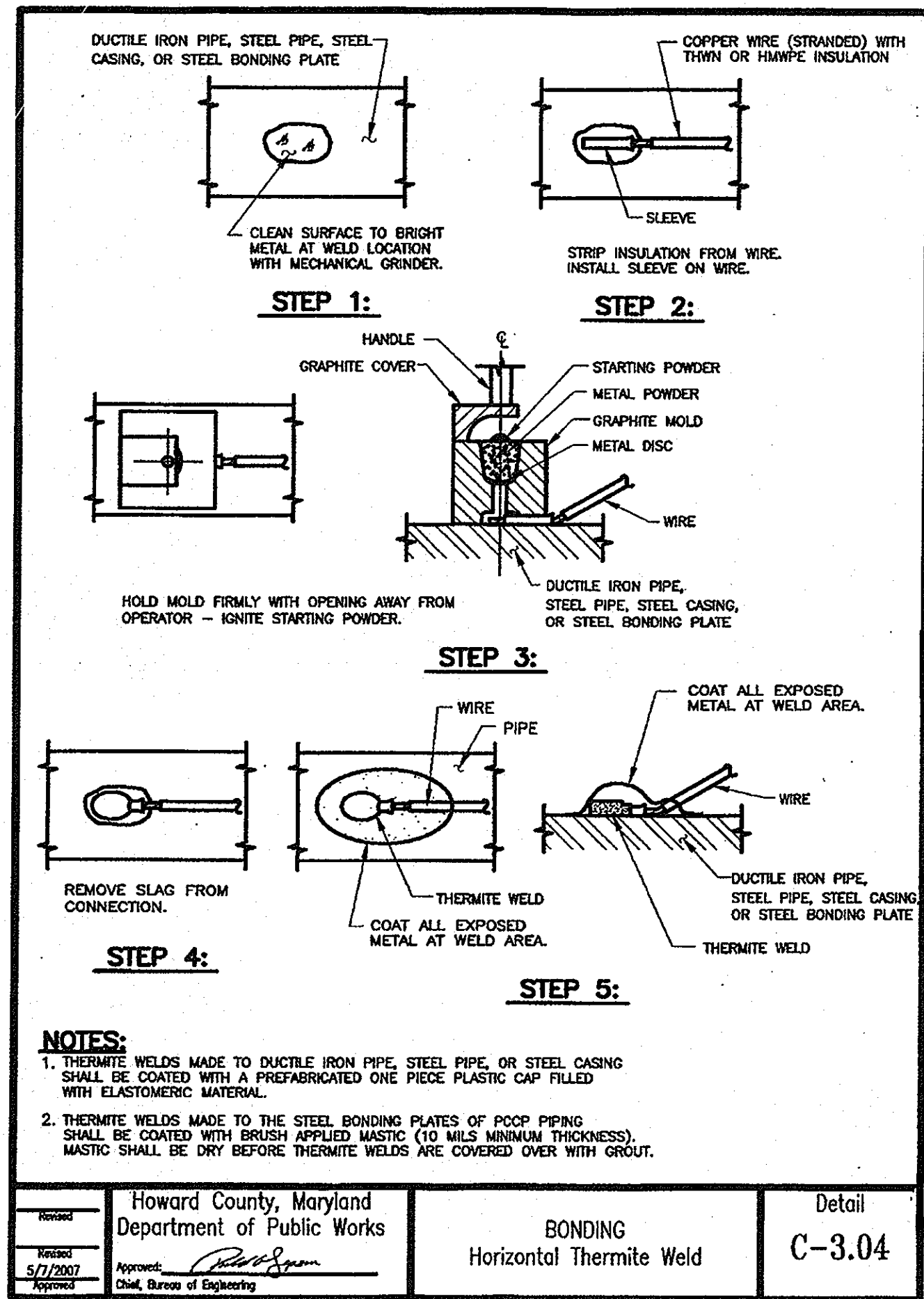
MEADOWRIDGE ROAD WATER MAIN REPLACEMENT
 CAPITAL PROJECT W-8249
 CONTRACT 44-4164

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE: SHOWN

SHEET 13 OF 25

Plotted by: (msh3) on: 09/21/10 at: 12:51:00
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 User: msh3
 Date: 09/21/10 at: 12:51:00
 XREFS: \\proj\proj\44-4164\2010\12-13.dwg



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

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 10/26/10
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/25/10
 CHIEF, BUREAU OF ENGINEERING DATE

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

Dewberry
 Dewberry & Davis LLC
 3106 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2662
 410.285.8500
 FAX: 410.285.8875



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

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

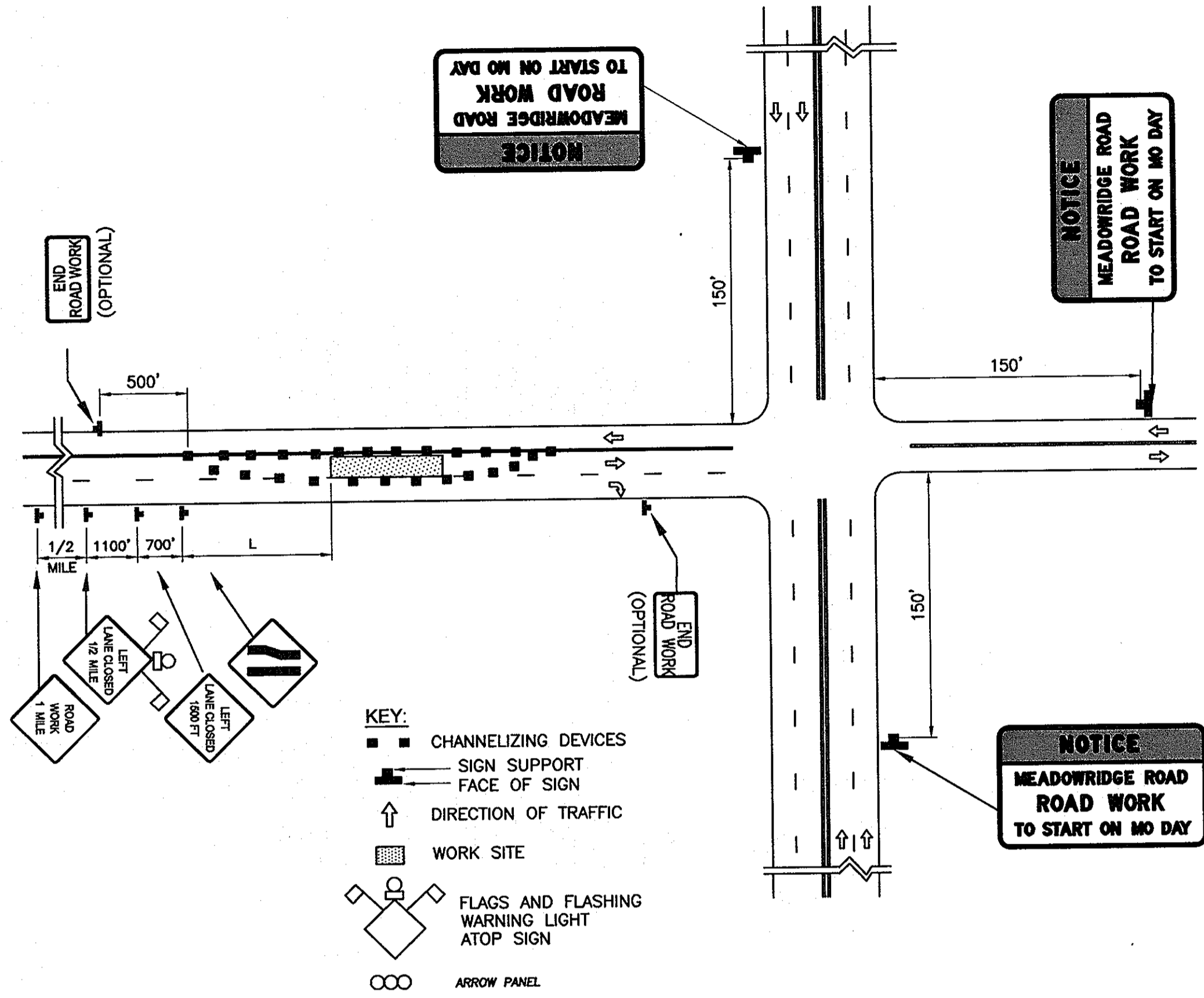
ELECTION DISTRICT NO. 1
 HOWARD COUNTY, MARYLAND

SCALE: SHOWN
 SHEET 14 OF 25

GROUND BED SCHEDULE

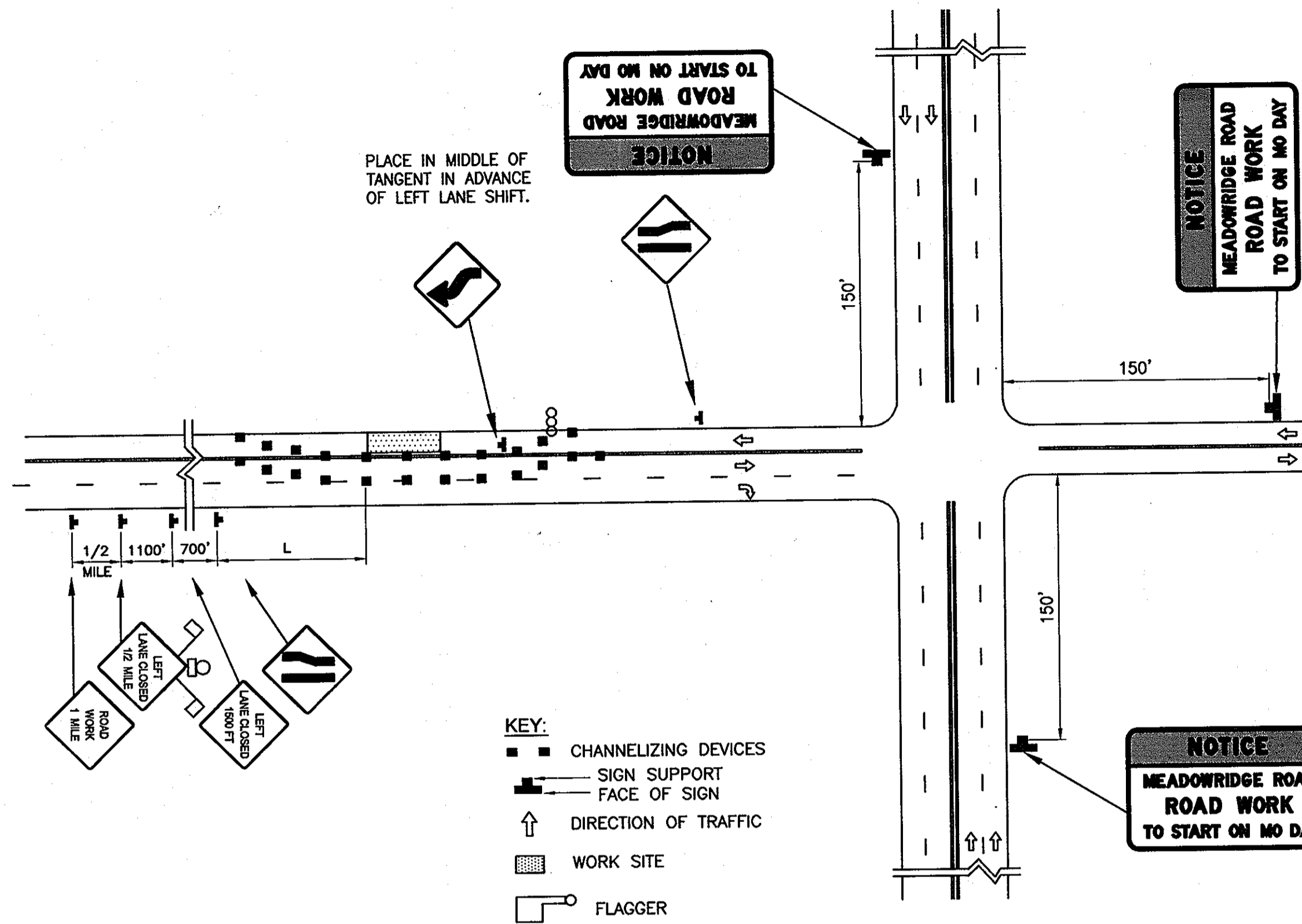
GROUND BED NUMBER	NUMBER OF ANODES	STATION NO.	TEST STATION NUMBER	MAGNESIUM ANODE SIZE
16" WATER MAIN				
1	6	444-26	1	50 lb

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION - NO. 1



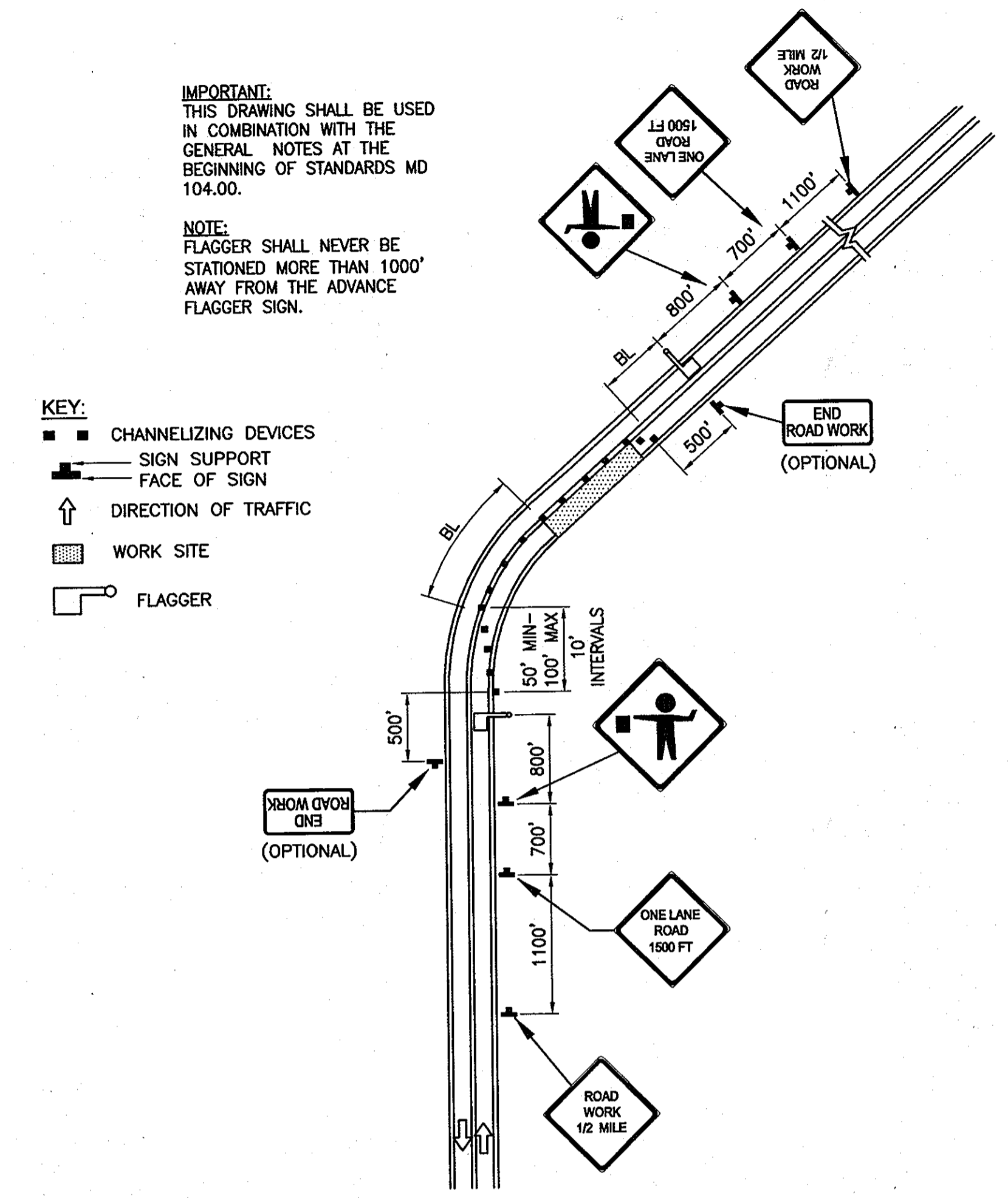
**CENTER LANE CLOSURE/ 3-LANE, 2-WAY
GREATER THAN 40 MPH/ 15 MIN - 12 HRS. OR NIGHTTIME ONLY
STANDARD NO. MD 104.14-01**

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)

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: 6-20-10

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

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* Date: 7/25/10
 Chief, Bureau of Engineering: *[Signature]* Date: 9/28/10
 Chief, Bureau of Utilities: *[Signature]* Date: 9/28/10

Dewberry
 Dewberry & Davis LLC
 3106 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2662
 410.285.9500
 FAX: 410.285.8875



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 MILLIAMP 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
- PL PLATE
- PNL, PANEL CIRCUIT BREAKER PANELBOARD
- PRI PRIMARY VOLTAGE (ABOVE 600 VOLTS)
- PWR POWER
- QTY QUANTITY
- RCP REACTOR CONTROL PANEL
- RECEPT RECEPTACLE
- RQ'D REQUIRED
- RQM'TS 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

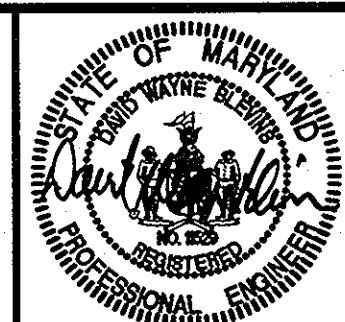
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 14529, EXPIRATION DATE: JULY 9, 2011

David Wayne Klemm 9/20/10
 Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Jan 7 1/5/10 *W/S* 2/25/10
 DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE
Steve Clemon 1/5/10 *W/S* 2/25/10
 CHIEF, BUREAU OF UTILITIES DATE CHIEF, UTILITY DESIGN DIVISION DATE
 RJD

Dewberry
 Dewberry & Davis LLC
 5100 LORD BALTIMORE DRIVE
 SUITE 110
 BALTIMORE, MD 21244-2682
 410.285.9500
 FAX: 410.285.8875



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

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

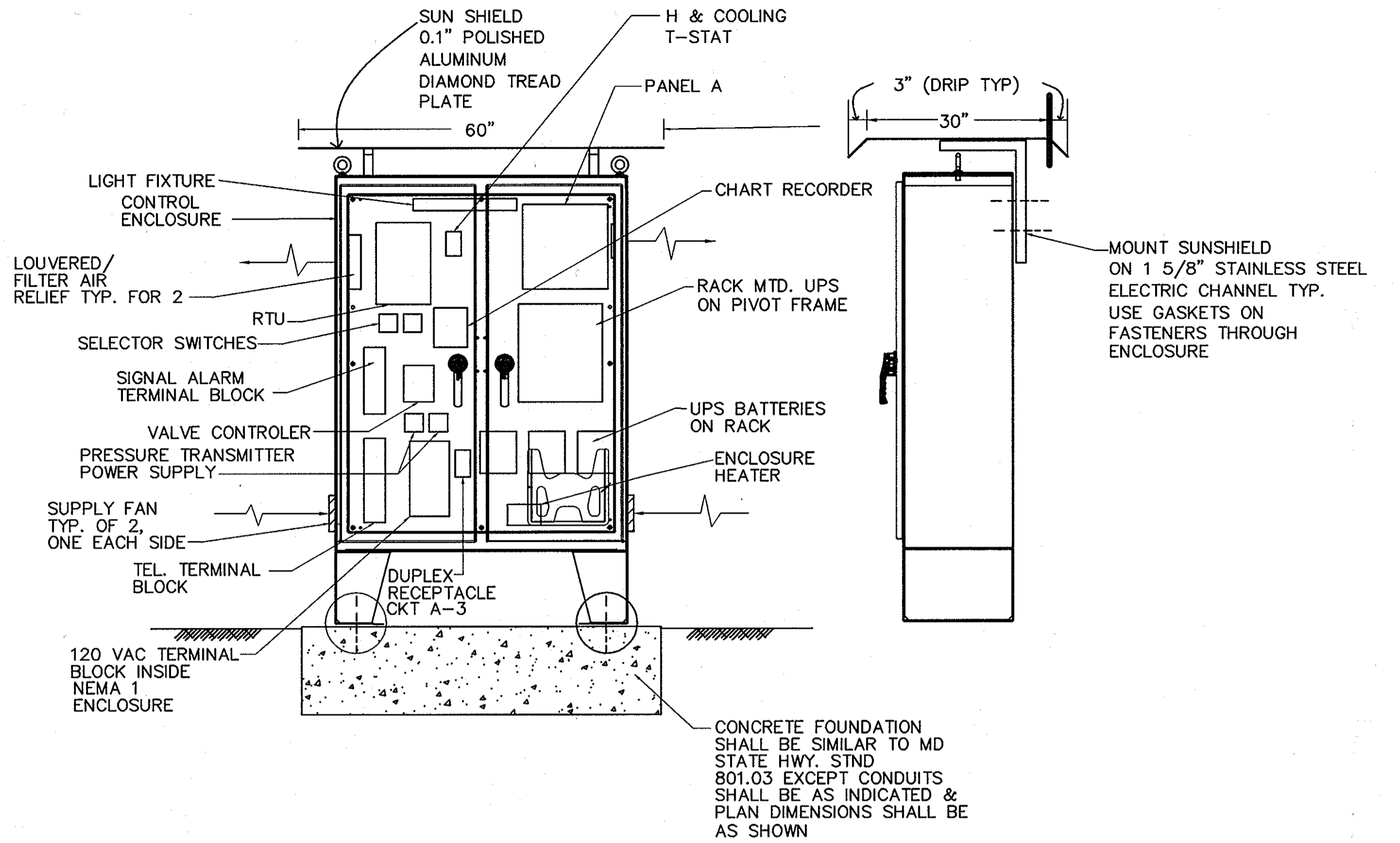
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SHEET 18 OF 25

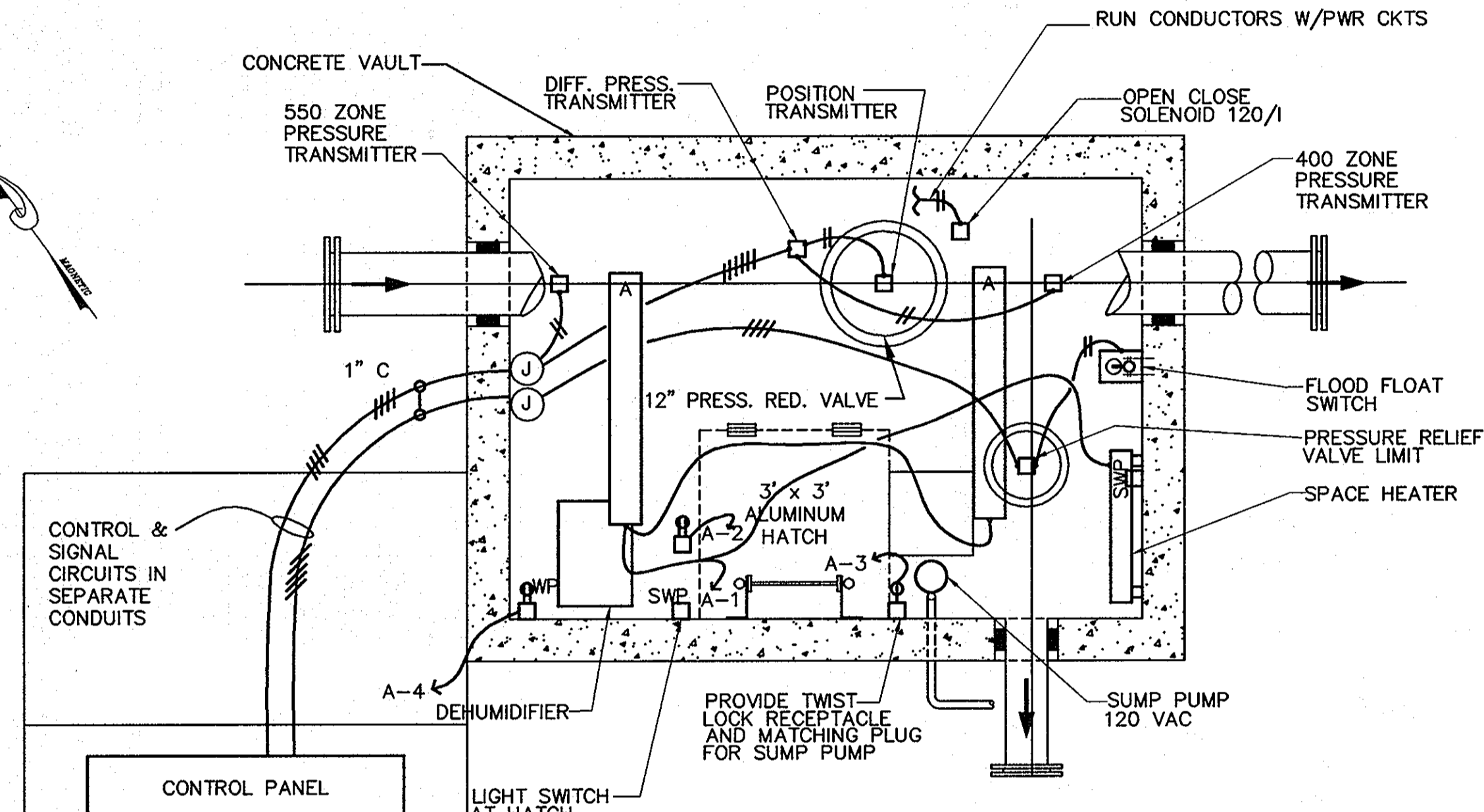
SUITABLE AS SERVICE ENTRANCE EQUIPMENT

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	A	B	CIR/BKR	WIRE	CIR. NO.	WIRE	CIR/BKR	KVA/PHASE	A	B	LOAD
LIGHTS, HEAT	.7			1 20	12	1 A	2 12	1 20	.84			DEHUMIDIFIER
SUMP PUMP				1 20	12	3 B	4 12	1 20				VAULT RECEPTACLE (*)
UPS	1.1			1 15	12	5 A	6 12	1 15	.7			HEAT, FAN, LIGHT
SPARE				1 20		7 B	8					SPACE
SPACE						9 A	10					SPACE
SPACE						11 B	12					SPACE

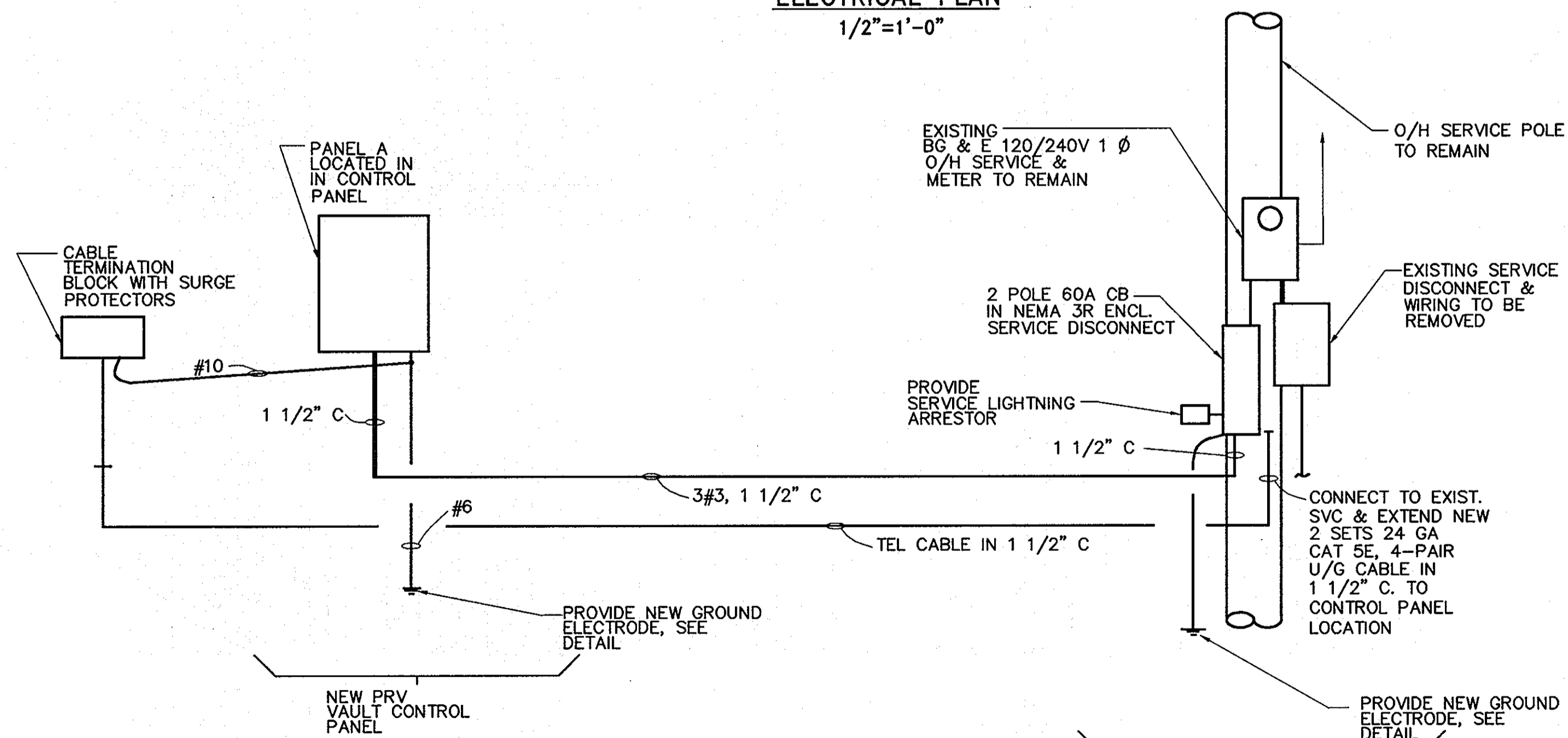
(*) GFCI
 (**) PROVIDE PADLOCK ON-OFF ATTACHMENT



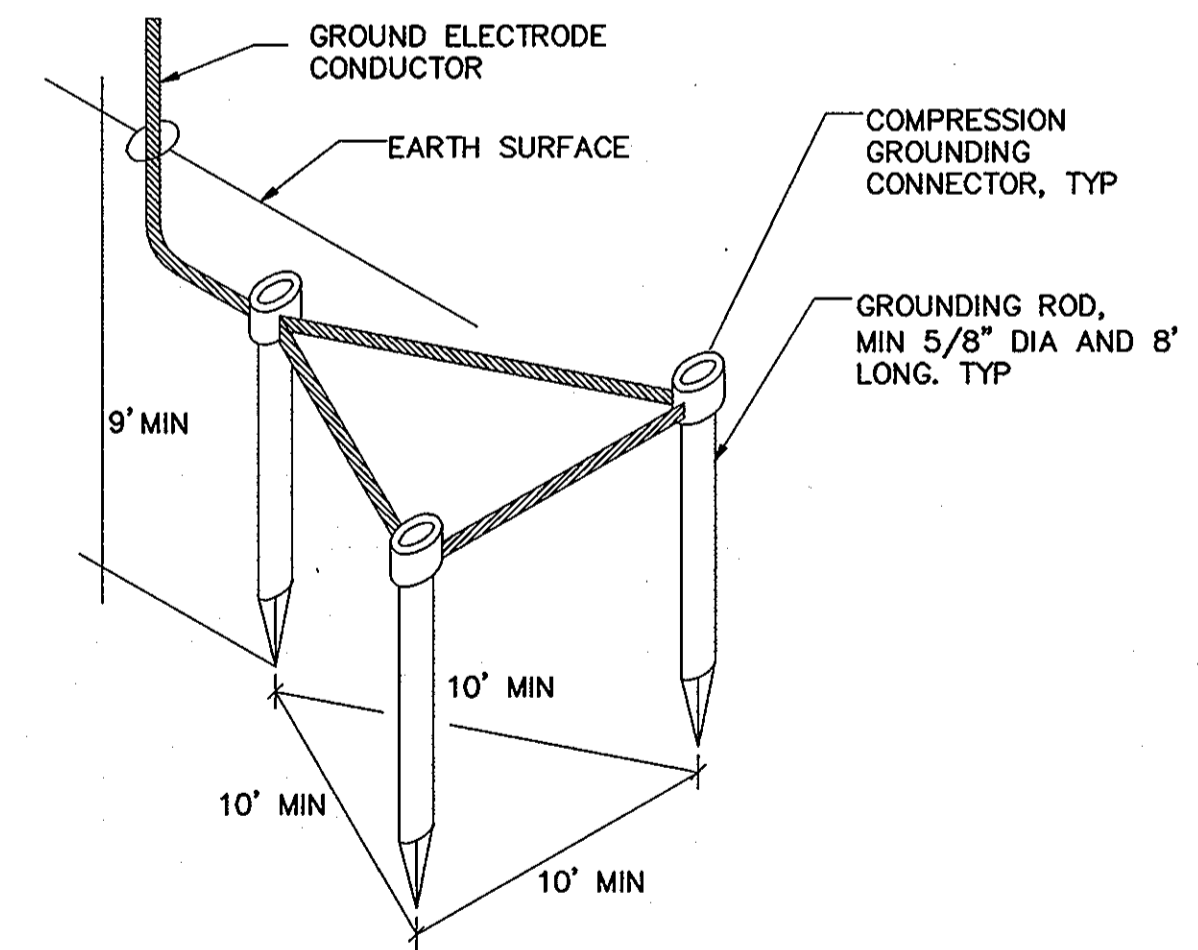
ELEVATION CONTROL PANEL
 3/4"=1'-0"



VALVE VAULT ELECTRICAL PLAN
 1/2"=1'-0"



ELECTRIC POWER RISER AND TELEPHONE RELOCATION
 NOT TO SCALE



DETAIL, GROUNDING ELECTRODE
 NOT TO SCALE

PROFESSIONAL CERTIFICATION
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 [Signature] 9/20/10
 Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 [Signatures and Dates]
 DIRECTOR OF PUBLIC WORKS DATE
 CHIEF, BUREAU OF UTILITIES DATE
 CHIEF, BUREAU OF ENGINEERING DATE
 CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
 Dewberry & Davis LLC
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 BALTIMORE, MD 21244-2662
 410.285.9500
 FAX: 410.255.8875

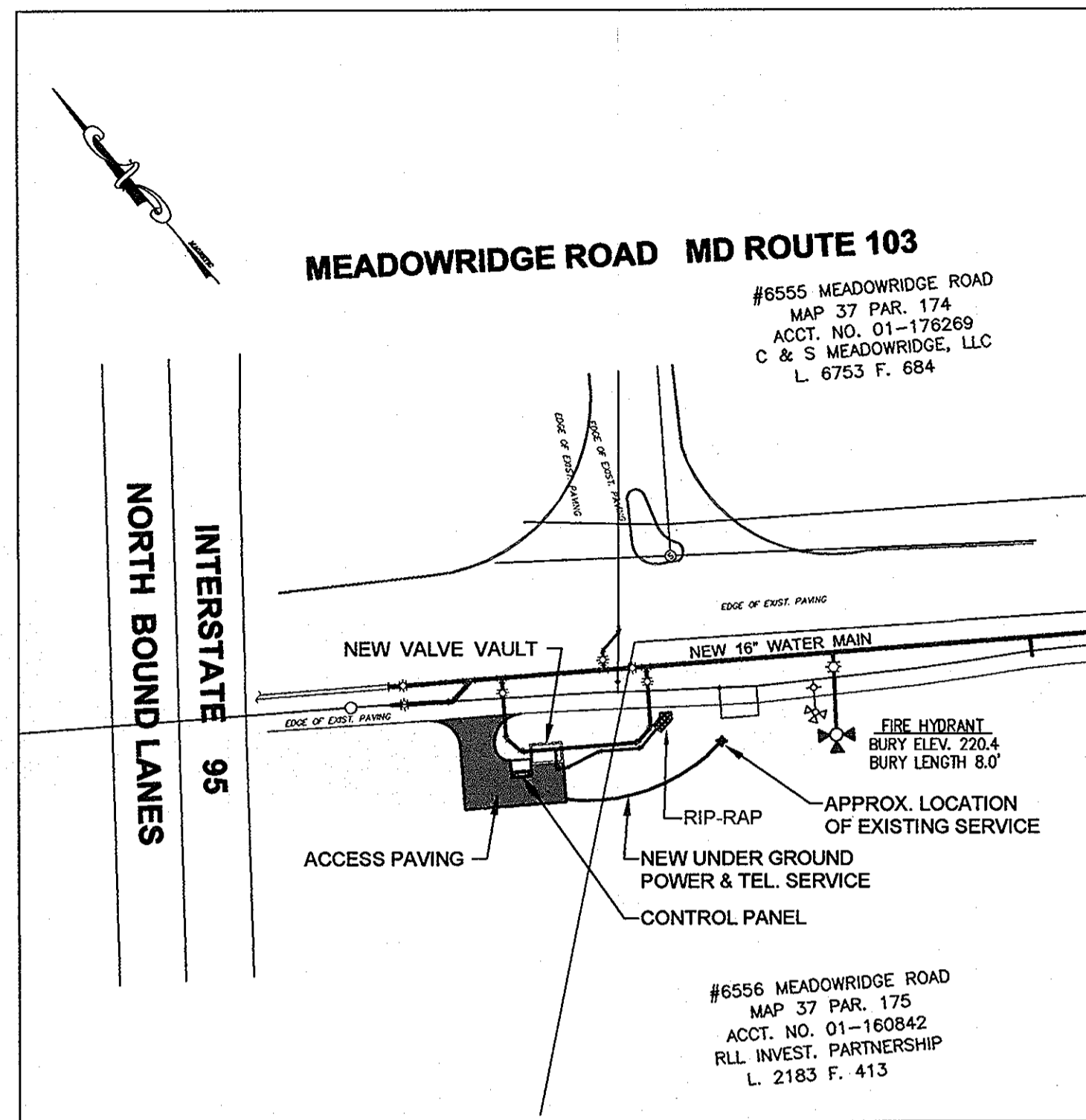


DES: DWB					
DRN: DWB					
CHK: DWB					
DATE:	BY	NO.	REVISIONS	DATE	

VALVE VAULT ELECTRIC PLANS
 600' SCALE MAP NO. 37, 43
 BLOCK NO. 5, 23

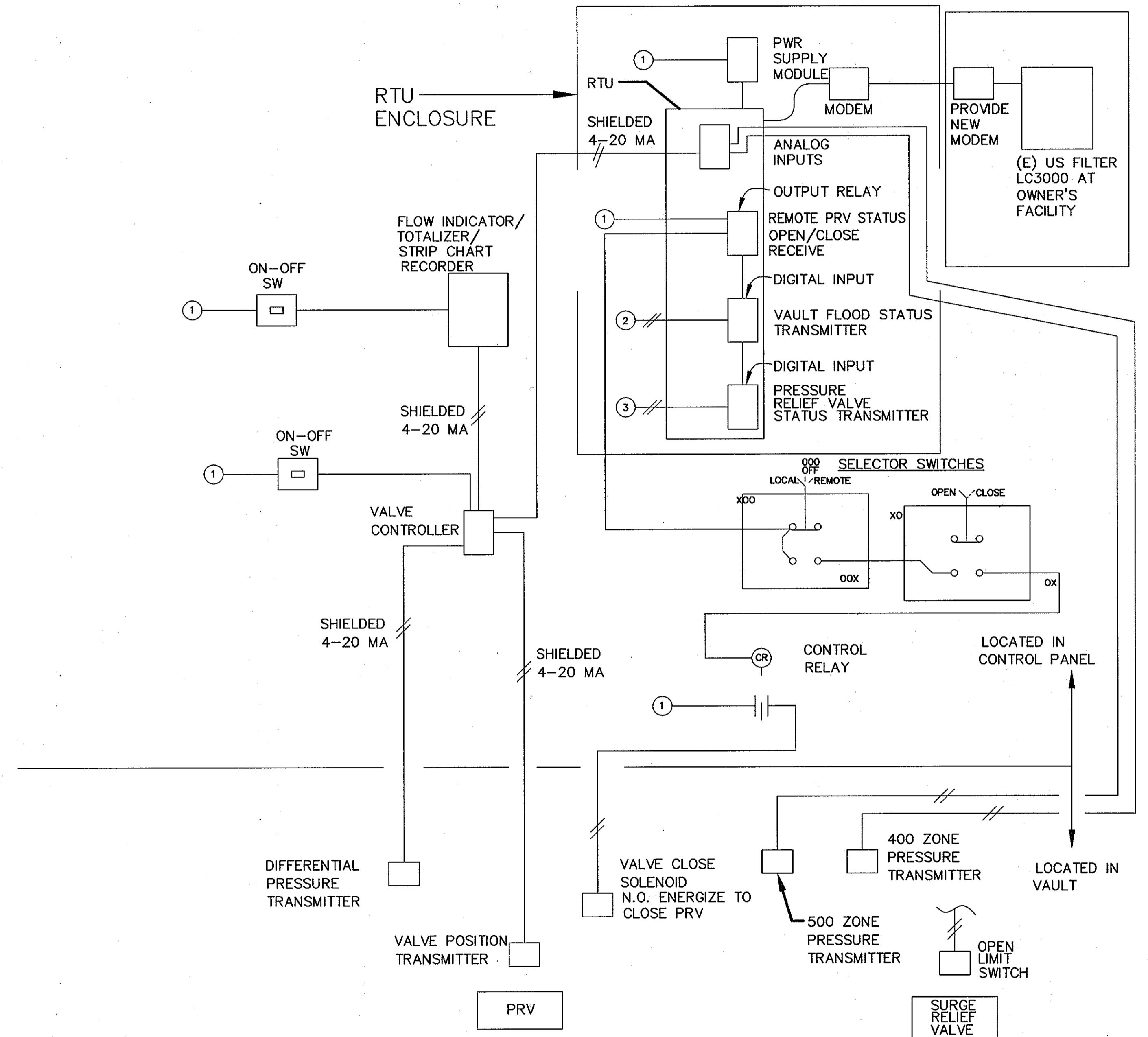
MEADOWRIDGE ROAD WATER MAIN REPLACEMENT
 CAPITAL PROJECT W-8249
 CONTRACT 44-4164
 ELECTION DISTRICT NO. 1
 HOWARD COUNTY, MARYLAND

SCALE: SHOWN
 SHEET 17 OF 25



ELECTRICAL SITE PLAN

SCALE: 1" = 50'



SCHMATIC 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

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Daniel W. Klein 9/28/10
Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>Jang Lee</i> DIRECTOR OF PUBLIC WORKS DATE: 9/28/10	<i>Paul J. Spon</i> CHIEF, BUREAU OF ENGINEERING DATE: 9/28/10
<i>Shirley Clemons</i> CHIEF, BUREAU OF UTILITIES DATE: 9/28/10	<i>Raymond</i> CHIEF, UTILITY DESIGN DIVISION DATE: 9/28/10

Dewberry
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BALTIMORE, MD 21244-2662
410.285.9500
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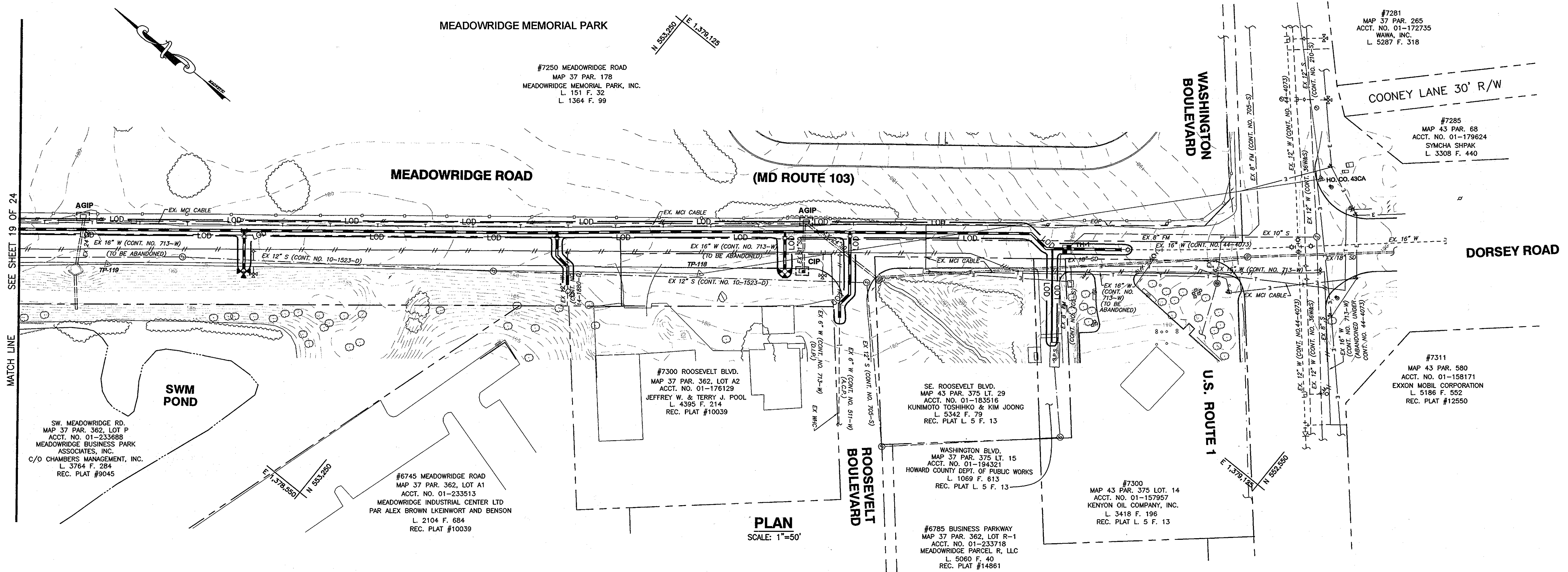
DES: DWB				
DRN: DWB				
CHK: DWB				
DATE:	BY	NO.	REVISIONS	DATE

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.

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] 09-20-10
Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 10/25/10 *[Signature]* 9/28/10
DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 10/25/10 *[Signature]* 9/28/10
CHIEF, BUREAU OF UTILITIES DATE CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
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BALTIMORE, MD 21244-2662
410.285.6200
FAX: 410.295.9875



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

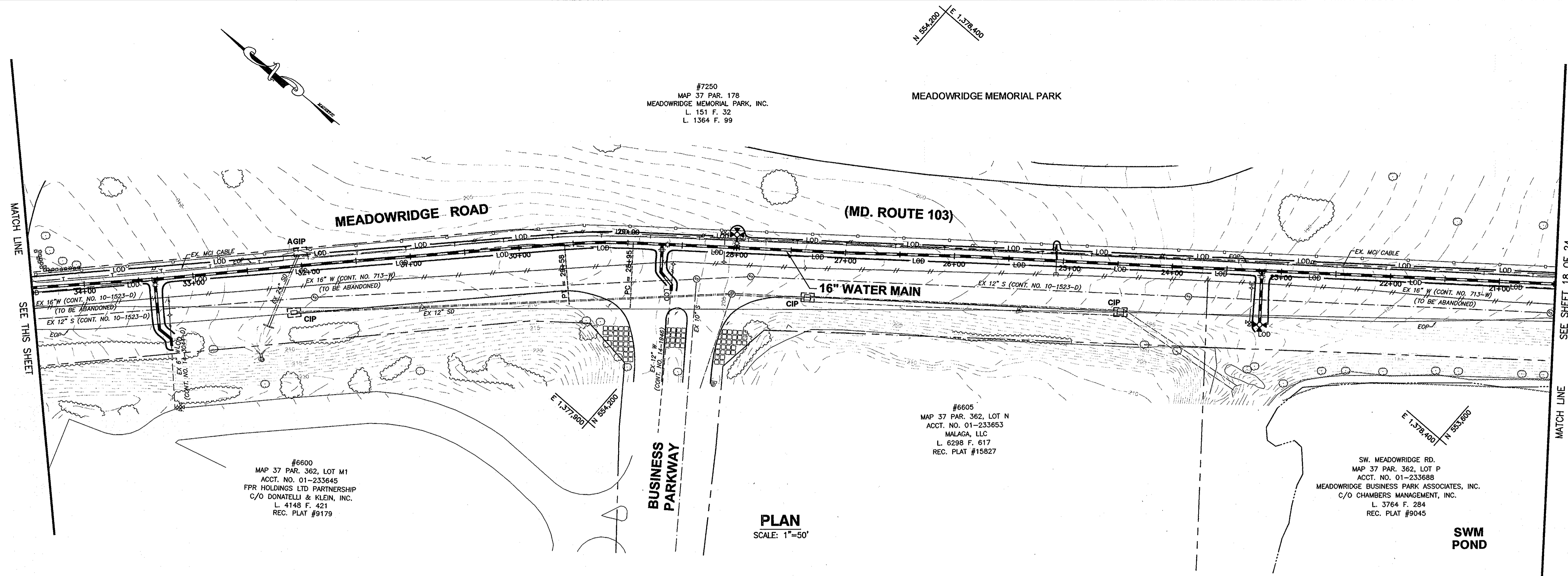
ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

AS-BUILTS

ES-1

SCALE: SHOWN

SHEET 19 OF 25



PLAN
SCALE: 1"=50'

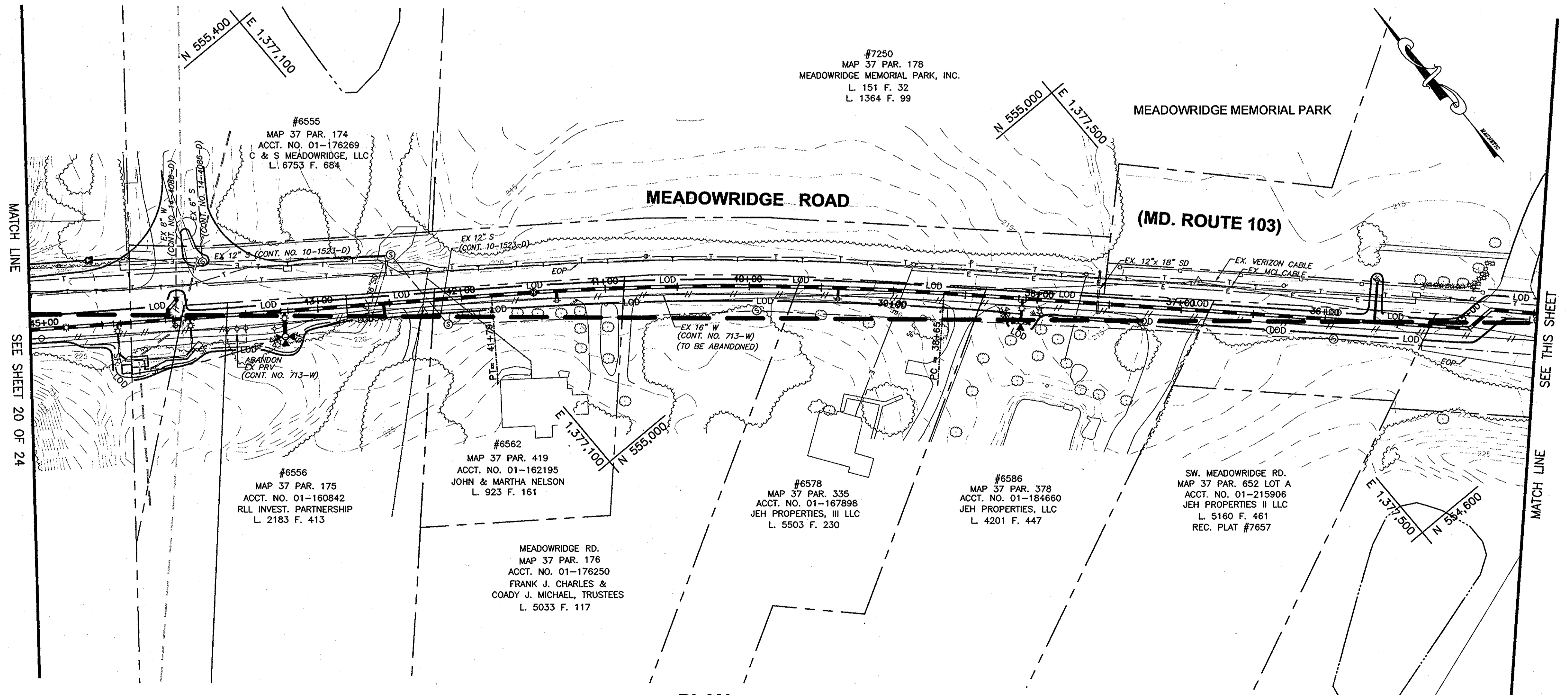
#6600
MAP 37 PAR. 362, LOT M1
ACCT. NO. 01-233645
FPR HOLDINGS LTD PARTNERSHIP
C/O DONATELLI & KLEIN, INC.
L. 4148 F. 421
REC. PLAT #9179

#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

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

- 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.



PLAN
SCALE: 1"=50'

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

#7250
MAP 37 PAR. 178
MEADOWRIDGE MEMORIAL PARK, INC.
L. 151 F. 32
L. 1364 F. 99

#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

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

#6586
MAP 37 PAR. 378
ACCT. NO. 01-184660
JEH PROPERTIES, LLC
L. 4201 F. 447

SW. MEADOWRIDGE RD.
MAP 37 PAR. 652 LOT A
ACCT. NO. 01-215806
JEH PROPERTIES II LLC
L. 5160 F. 461
REC. PLAT #7657

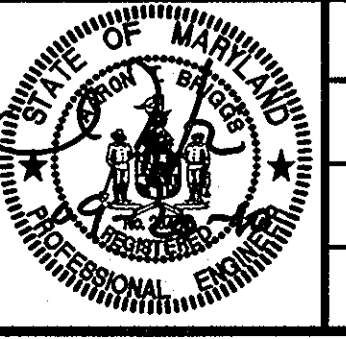
MEADOWRIDGE RD.
MAP 37 PAR. 176
ACCT. NO. 01-176250
FRANK J. CHARLES &
COADY J. MICHAEL, TRUSTEES
L. 5033 F. 117

PROFESSIONAL CERTIFICATION
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[Signature] 09-20-10
Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/28/10
Chief, Bureau of Engineering: *[Signature]* 2/28/10
Chief, Bureau of Utilities: *[Signature]* 10/11/10
Chief, Utility Design Division: *[Signature]* 2/28/10

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410.285.8500
FAX: 410.285.8875



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/E
6477 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 537
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. NOAKES ET AL J/T
6415 MEADOWRIDGE ROAD
LIBER 4212 FOLIO 53
MAP 37 PARCEL 180

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

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

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

NOTTINGHAM CONDOMINIUM
PHASE 2
PLAT NO. 8888

LOT 3
EDITH VIRGINIA FIELDS
NE ROUTE 103
LIBER 1289 FOLIO 190
MAP 37 PAR. 180

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/C
6436 MEADOWRIDGE ROAD
LIBER 3878 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

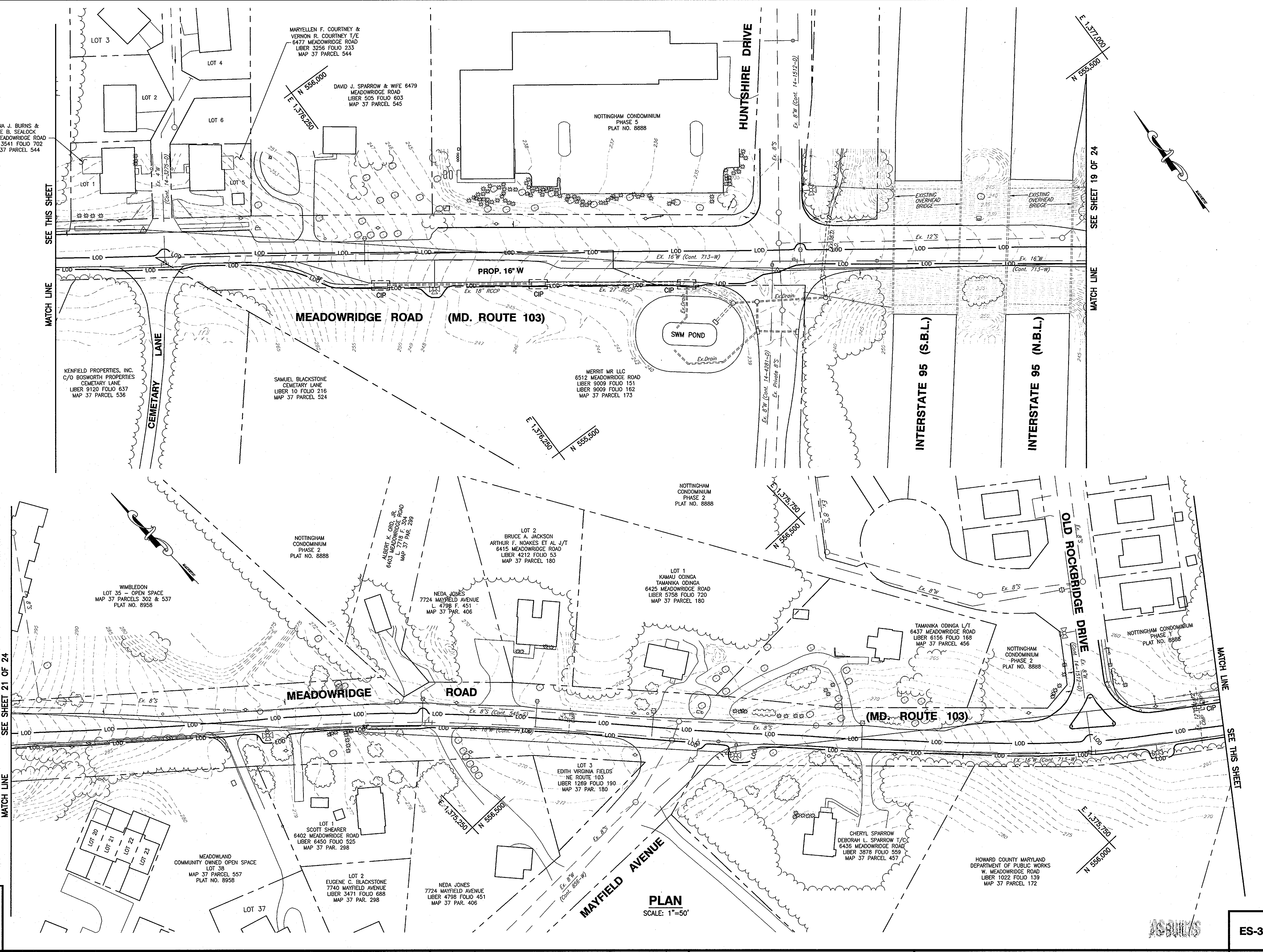
UTILITY NOTES

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[Signature] 09-20-10 Date



PLAN
SCALE: 1"=50'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 10/5/10 DATE

Chief, Bureau of Utilities: *[Signature]* 10/14/10 DATE

Chief, Utility Design Division: *[Signature]* 9/28/10 DATE

Dewberry
Dewberry & Davis LLC

3106 LORD BALTIMORE DRIVE
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410.285.9500
FAX: 410.265.6875



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-3

SCALE: SHOWN

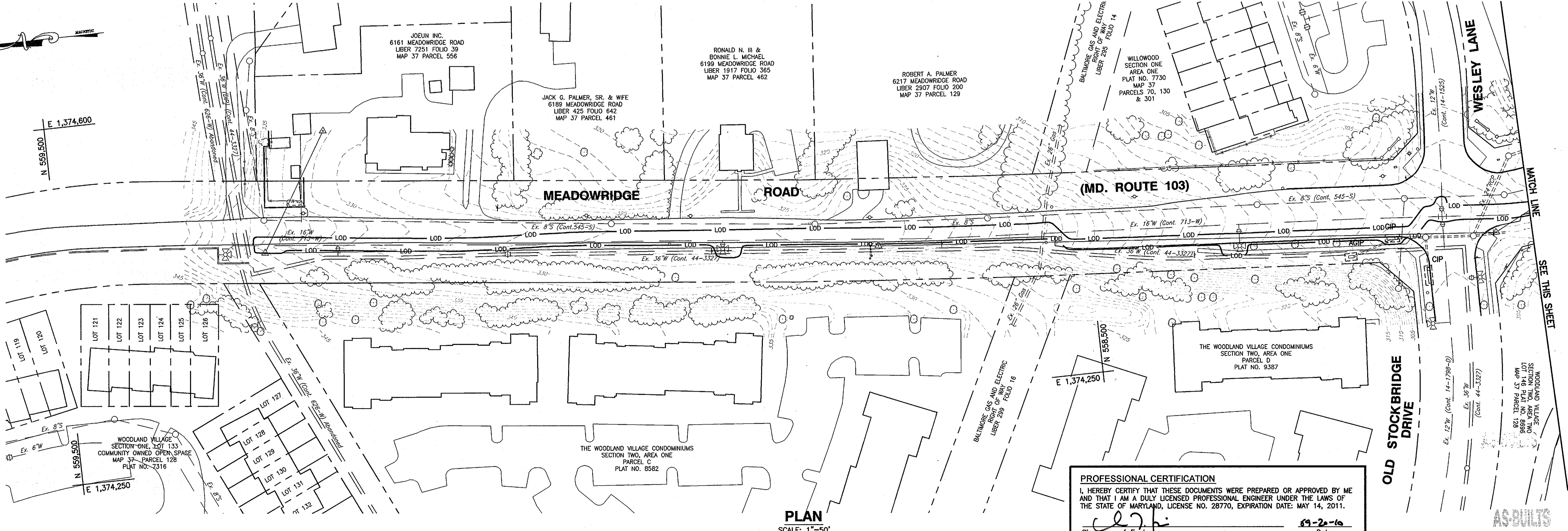
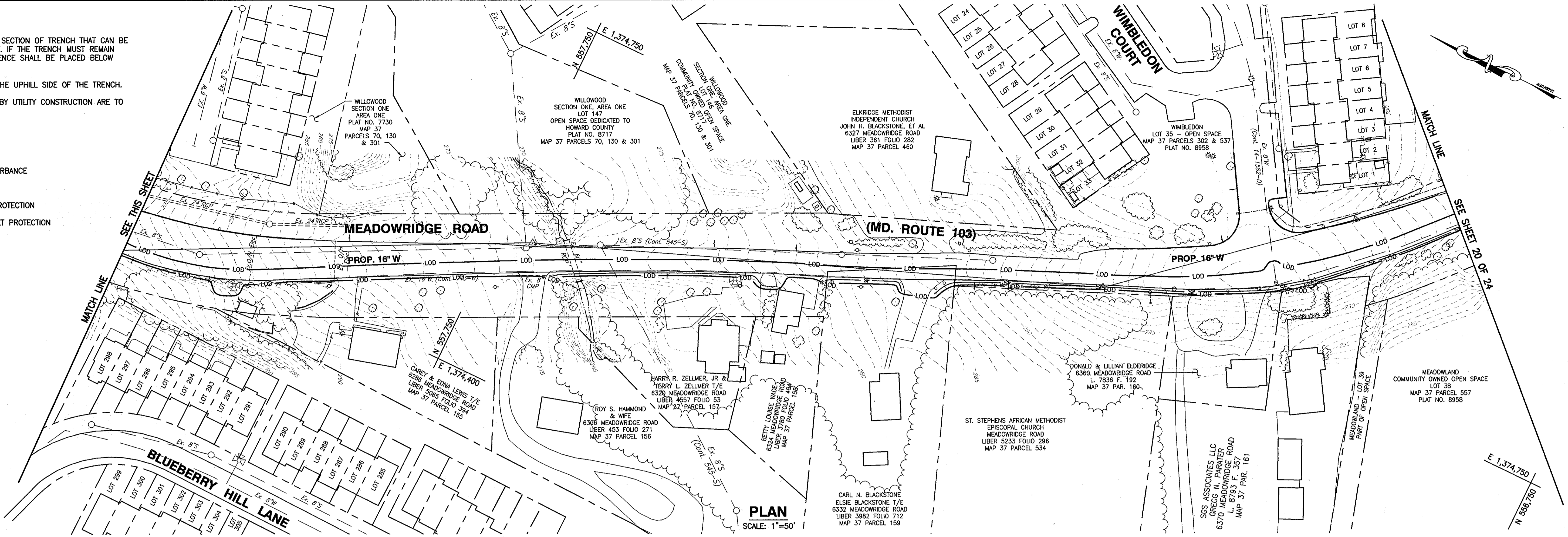
SHEET 21 OF 25

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



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
6-2-16
Date

AS-BUILTS

ES-4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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

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

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

Dewberry
Dewberry & Davis LLC
3106 LORD BALTIMORE DRIVE
SUITE 110
BALTIMORE, MD 21244-2682
410.285.8500
FAX: 410.285.8875



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

SEDIMENT AND EROSION CONTROL PLAN

60' 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 22 OF 25

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Section I - Vegetative Stabilization Methods and Materials

- A. Site Preparation
 - i. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
 - ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
 - iii. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.
- B. Soil Amendments (Fertilizer and Lime Specifications)
 - i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
 - ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.
 - iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 85% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98-100% will pass through a #20 mesh sieve.
 - iv. Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.

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

- D. Seed Specifications
 - i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.
 - Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.
 - ii. Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen fixing bacteria specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75-80° F. can weaken bacteria and make the inoculant less effective.

- E. Methods of Seeding
 - i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.
 - a. If fertilizer is being applied at the time of seeding, the application rate amounts will not exceed the following: maximum of 100 lbs per acre total of soluble nitrogen; P2O5 (phosphorus): 200 lbs/acre; K2O (potassium): 200 lbs/acre.
 - b. Lime - use only ground agricultural limestone. (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
 - c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
 - ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
 - a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.
 - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
 - iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
 - a. Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seeded must be firm after planting.
 - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

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

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

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

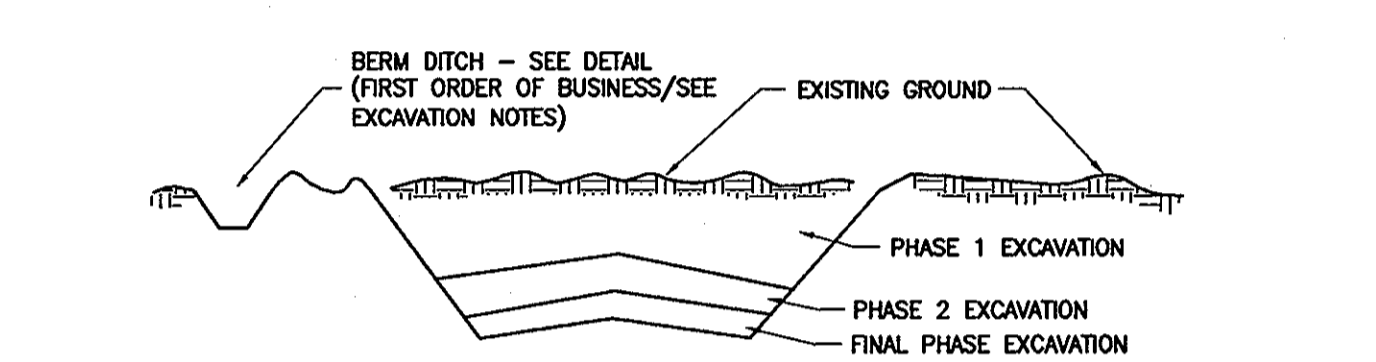


Figure 4 Incremental Stabilization - Cut

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

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

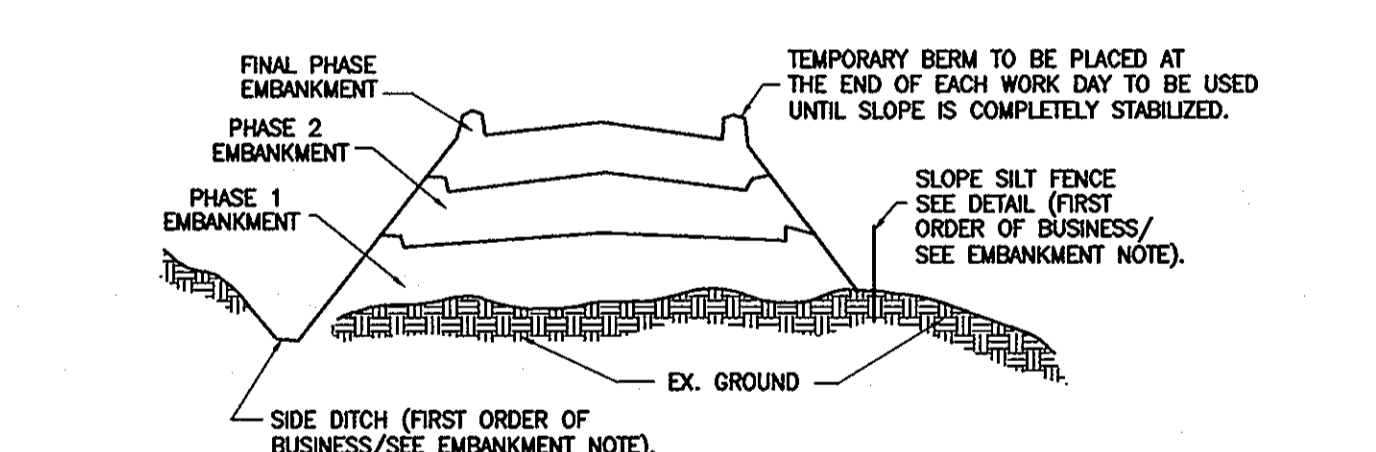


Figure 5 Incremental Stabilization - Embankment Fill Comply with MD 378 Specifications.

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

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

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

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

PERMANENT SEEDING SUMMARY								
SEED MIXTURE (HARDINESS ZONE 6b)					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.BLUGRASS	125 LB/AC 15 LB/AC 10 LB/AC	3/1 - 5/15 8/15 - 10/15	1/4" - 1/2"				
7	TALL FESCUE WEEPING LOVEGRASS SEROTINUS LESPEDEZA	110 LB/AC 3 LB/AC 20 LB/AC	3/1 - 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)	

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

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

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 1/2 inches in diameter shall be removed. The resulting seedbed shall be in such condition that future mowing of grasses will pose no difficulty.

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

- A. Permanent Seeding
 - i. Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of three bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
 - ii. Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.
 - iii. Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: certified Tall Fescue Cultivars 95-100%, certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding rate: 5 to 8 lb/1000 sq. ft. One or more cultivars may be blended.
 - iv. Kentucky Bluegrass/Fine Fescue - Shade Mixture - For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: certified Kentucky Bluegrass Cultivars 30-40% and certified Fine Fescue and 60-70%. Seeding rates: 1/2 - 3 lb/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.
 - i. Once the vegetation is established, the site shall have 95% ground cover to be considered adequately stabilized.
 - ii. If the stand provides less than 40% ground coverage, reestablish following original lime, fertilizer, seedbed preparation and seeding recommendations.
 - iii. If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing half of the rates originally applied may be necessary.
 - iv. Maintenance fertilizer rates for permanent seedings are shown in table 24. For lawns and other medium to high maintenance turfgrass areas, refer to the University of Maryland publication "Lawn Care in Maryland" Bulletin No. 171.

SEDIMENT CONTROL GENERAL NOTES

- 1. 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.
- 2. All vegetative and structural practices are to be installed according to the provisions of the plan and are to be in conformance with the most current Maryland Standards and Specifications for Soil Erosion and Sediment Control and revisions thereto.
- 3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within; a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
- 4. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control for permanent seeding (Sec. 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.
- 5. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- 6. Site Analysis *
Site is defined as areas involving any improvement.

Total Area of Site	5.29 Acres
Area Disturbed	5.29 Acres
Area to be paved	21,587 Sq. Yds.
Area to be Vegetatively Stabilized	0 Sq. Yds.
Total Cu.	24,576 Cu. Yds.
Total Fill	23,148 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.

- 7. Any sediment control practices which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- 8. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- 9. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
- 10. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each work day, whichever is shorter.
- 11. Spoil from trench excavation shall be placed 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: 6-9-20-10

ES-5
SCALE: SHOWN
SHEET 23 OF 25

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] DATE: 6/28/10
Chief, Bureau of Utilities: [Signature] DATE: 9/28/10

Chief, Bureau of Engineering: [Signature] DATE: 9/28/10
Chief, Utility Design Division: [Signature] DATE: [Signature]

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DES: ARW
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CHK: ATB
DATE: [Signature]

SEDIMENT AND EROSION CONTROL NOTES

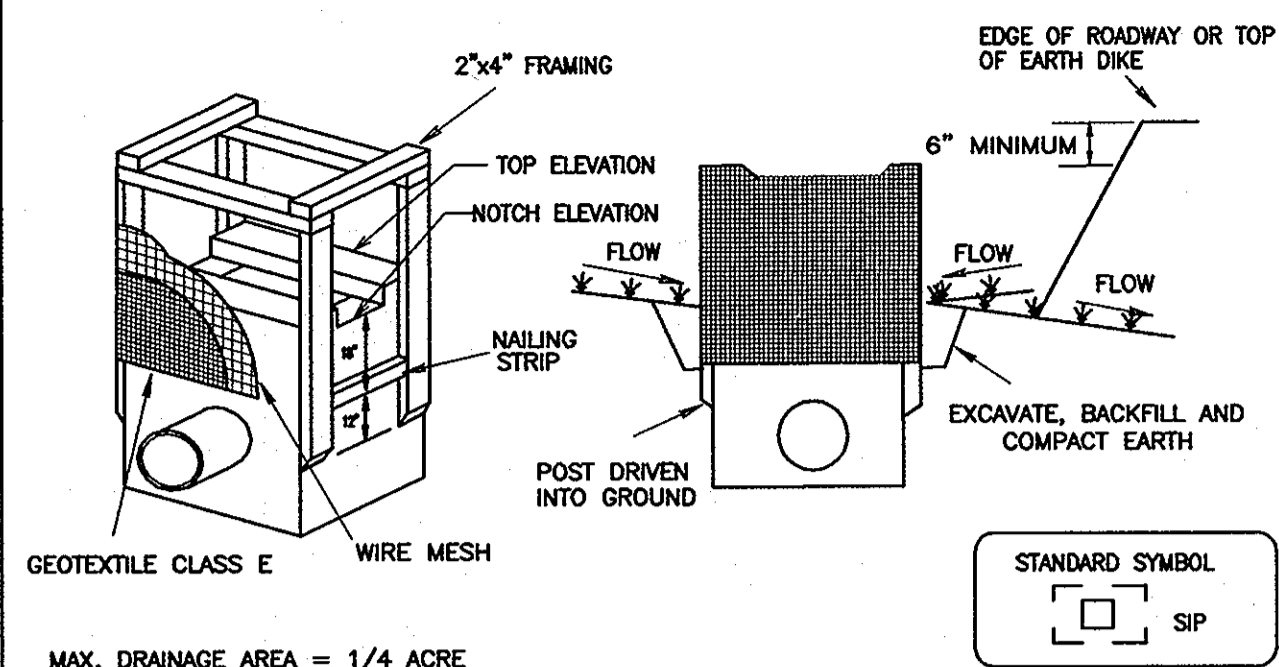
600' SCALE MAP NO. 37, 43 BLOCK NO. 5, 23

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

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

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

DETAIL 23A - STANDARD INLET PROTECTION



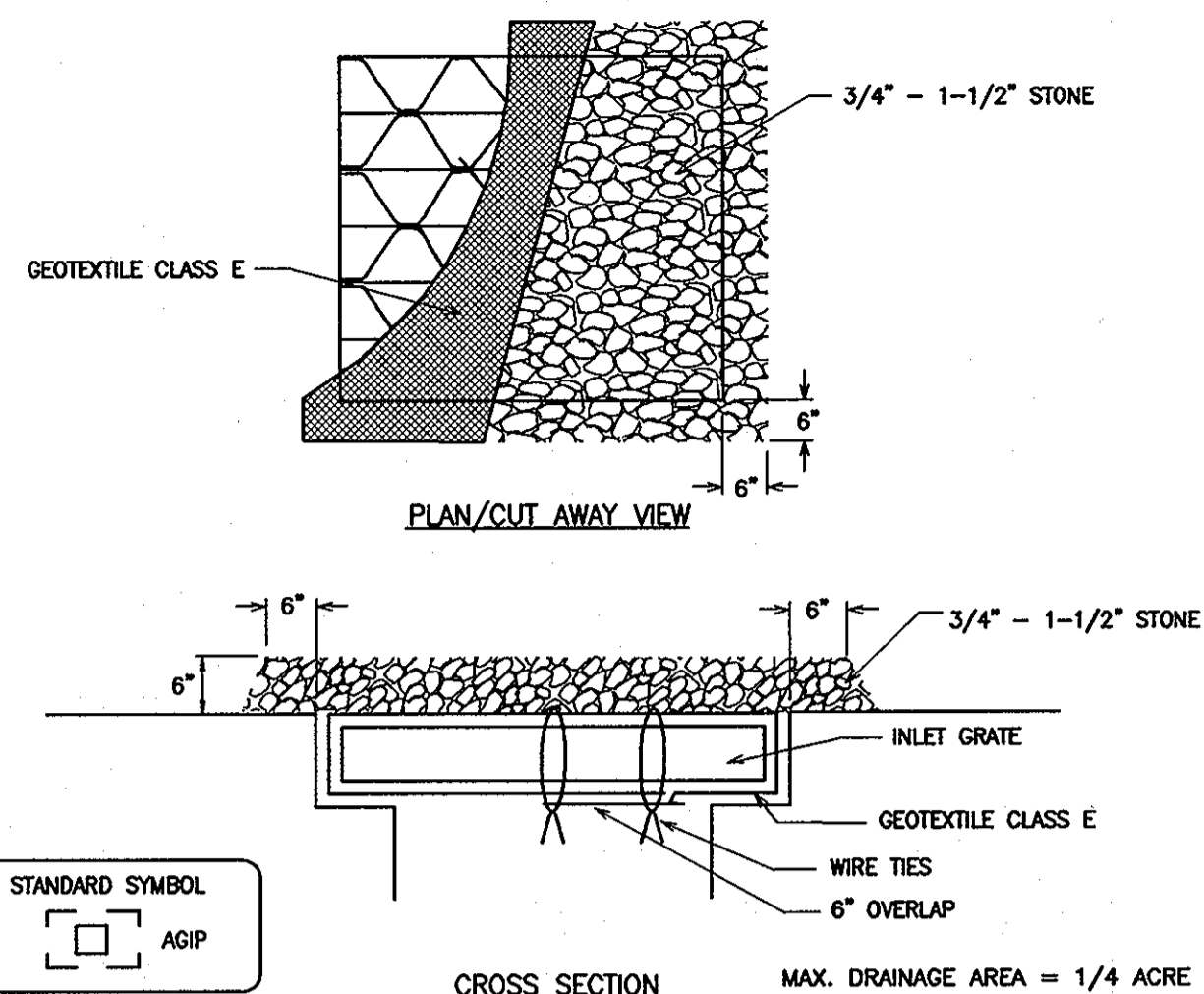
MAX. DRAINAGE AREA = 1/4 ACRE

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



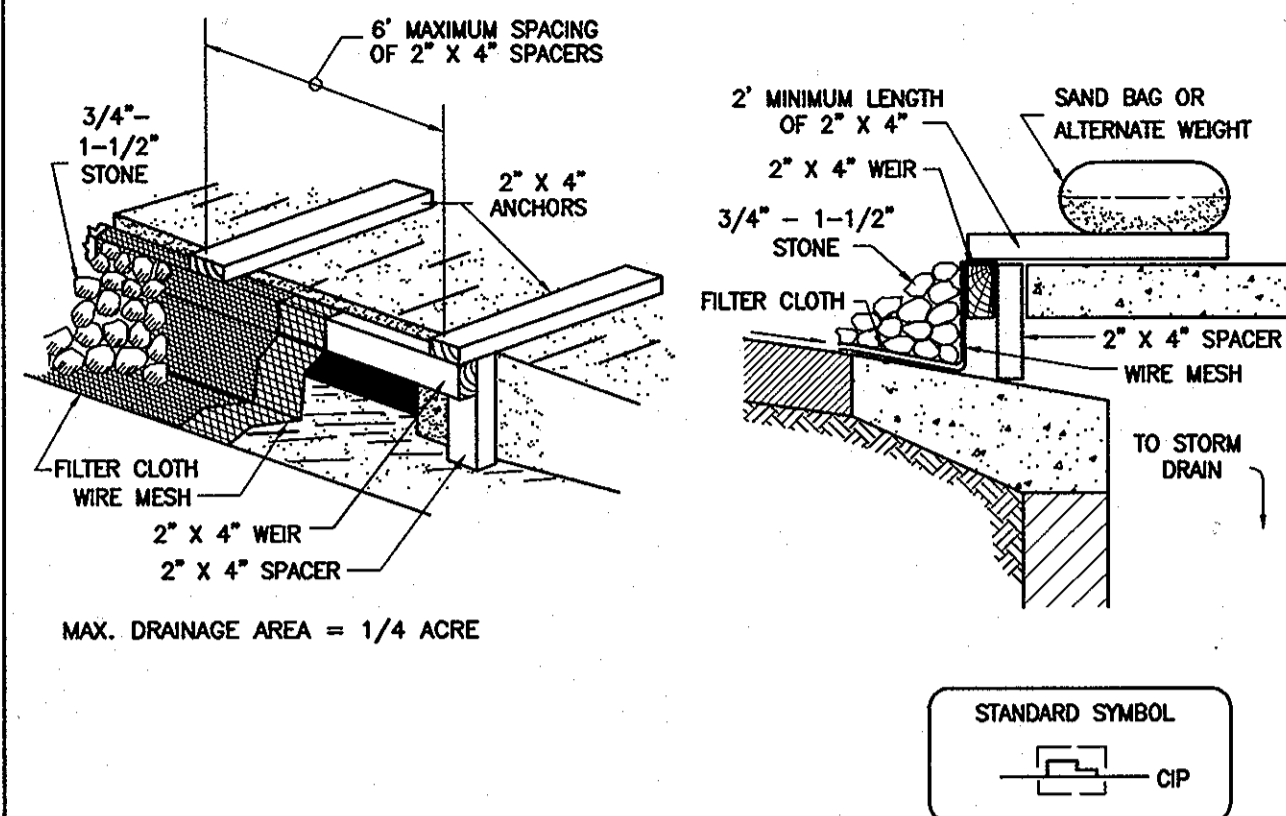
MAX. DRAINAGE AREA = 1/4 ACRE

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

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



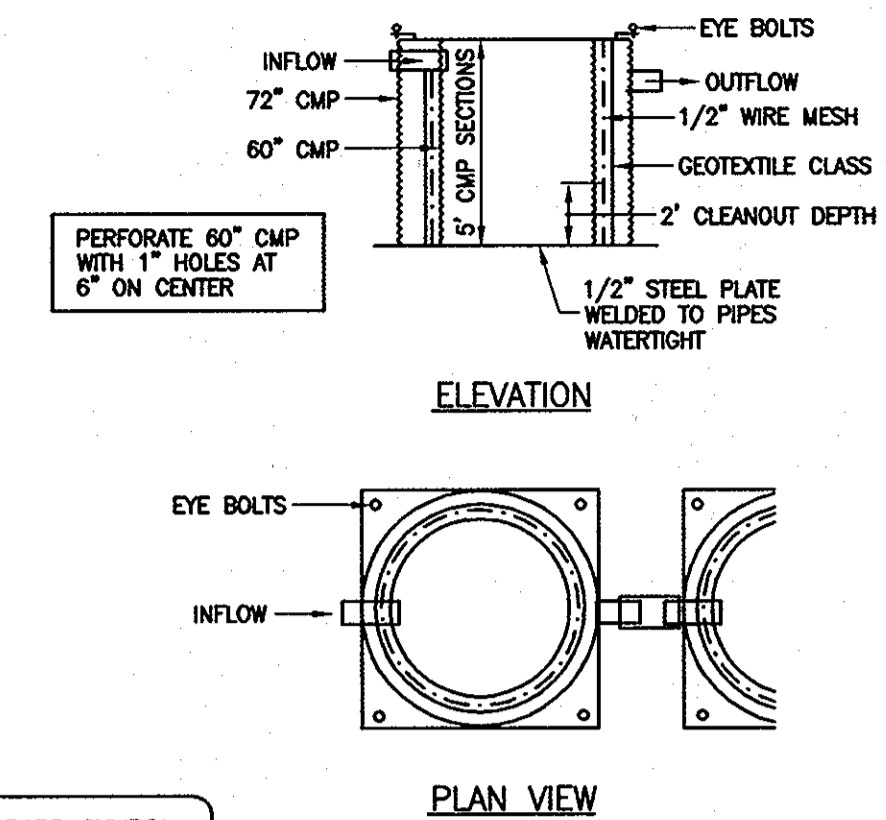
MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

- Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4") to the 2" x 4" weir (measuring throat length plus 2") as shown on the standard drawings.
- Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.
- Securely nail the 2" x 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4" apart).
- Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.
- 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" x 1/2" wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean 3/4" x 1-1/2" stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.
- 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 21 - PORTABLE SEDIMENT TANK



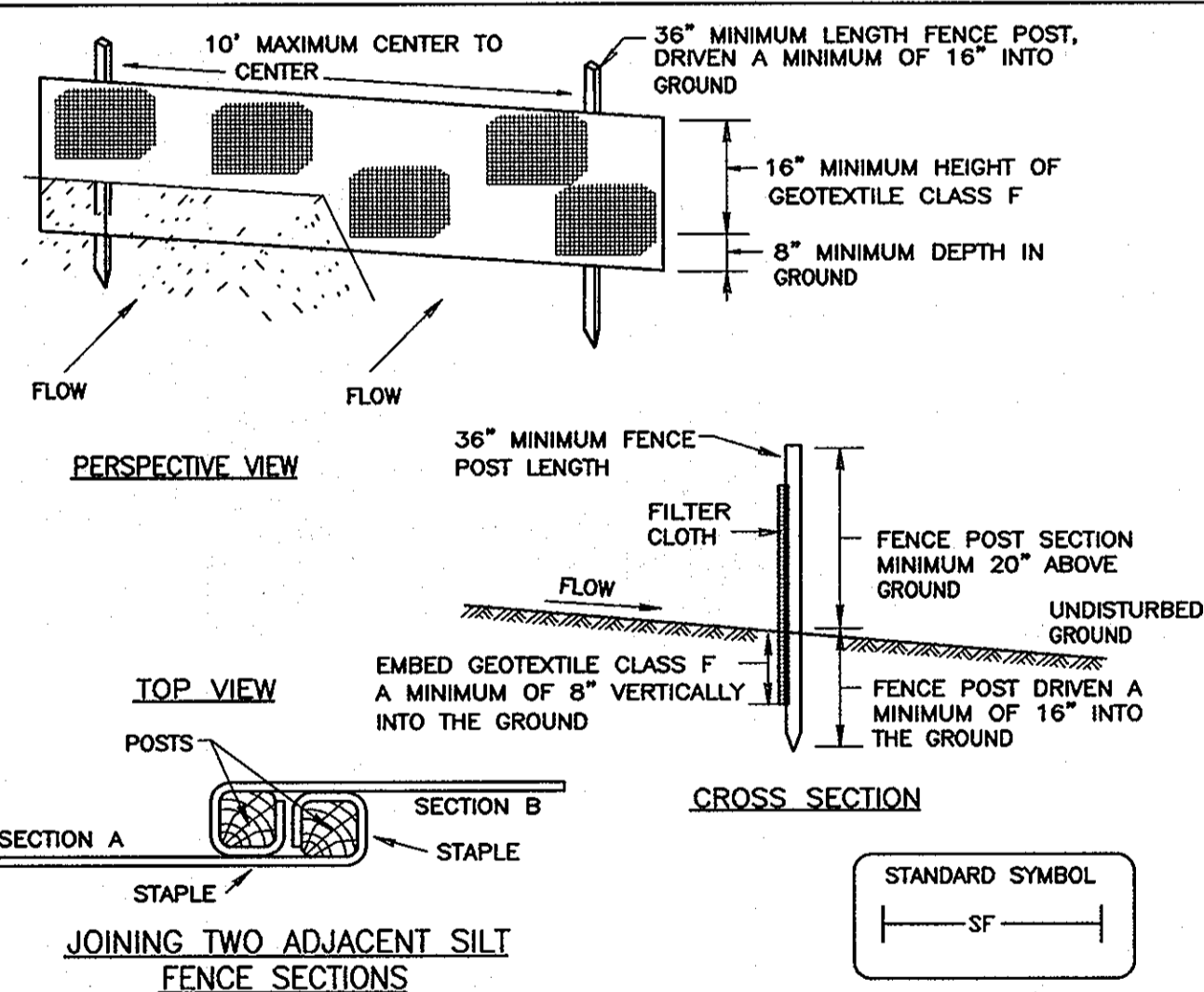
STANDARD SYMBOL
PST

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

DETAIL 22 - SILT FENCE



Construction Specifications

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

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

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

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.

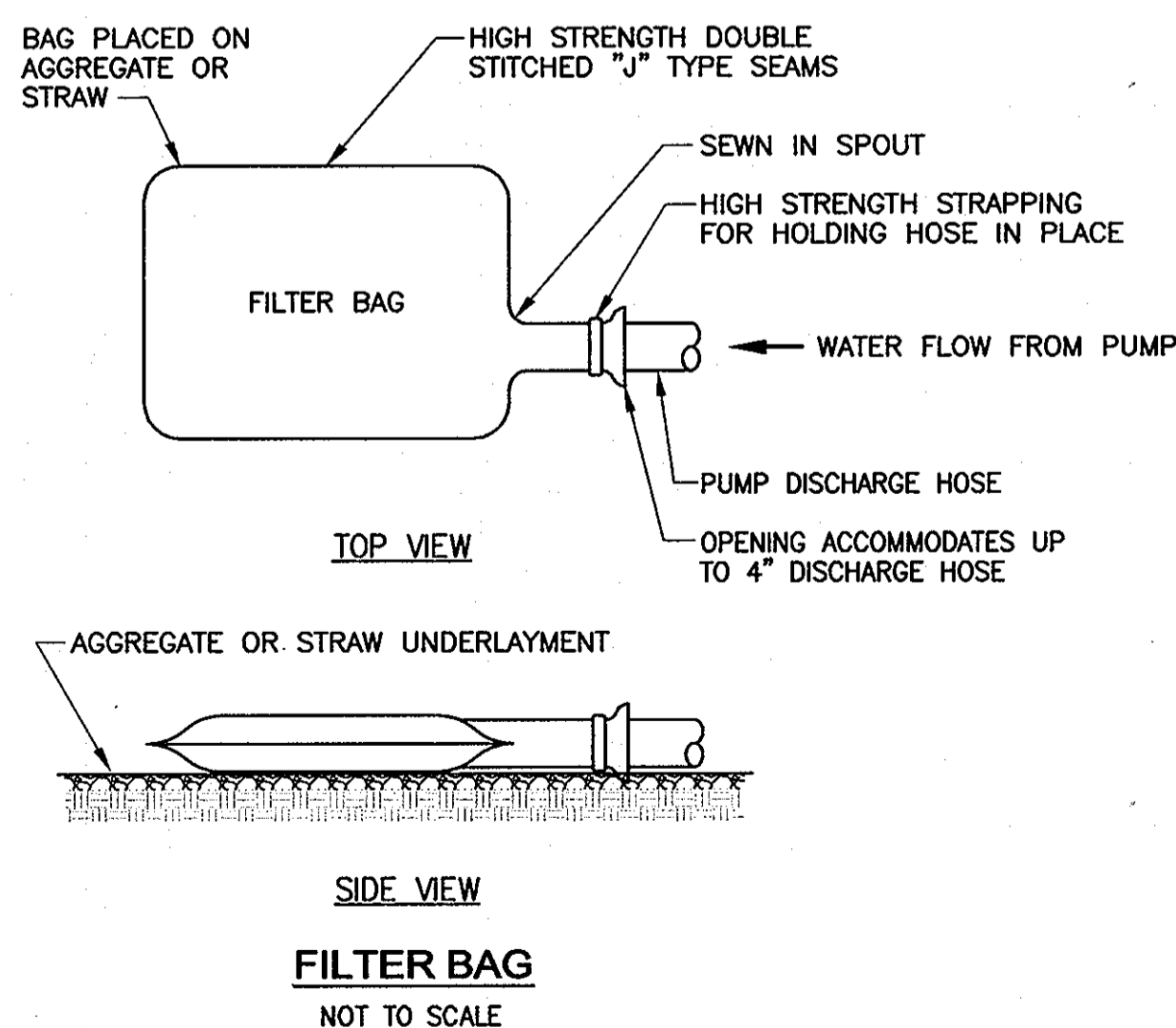
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-15-3A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SUPER SILT FENCE

Design Criteria

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

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

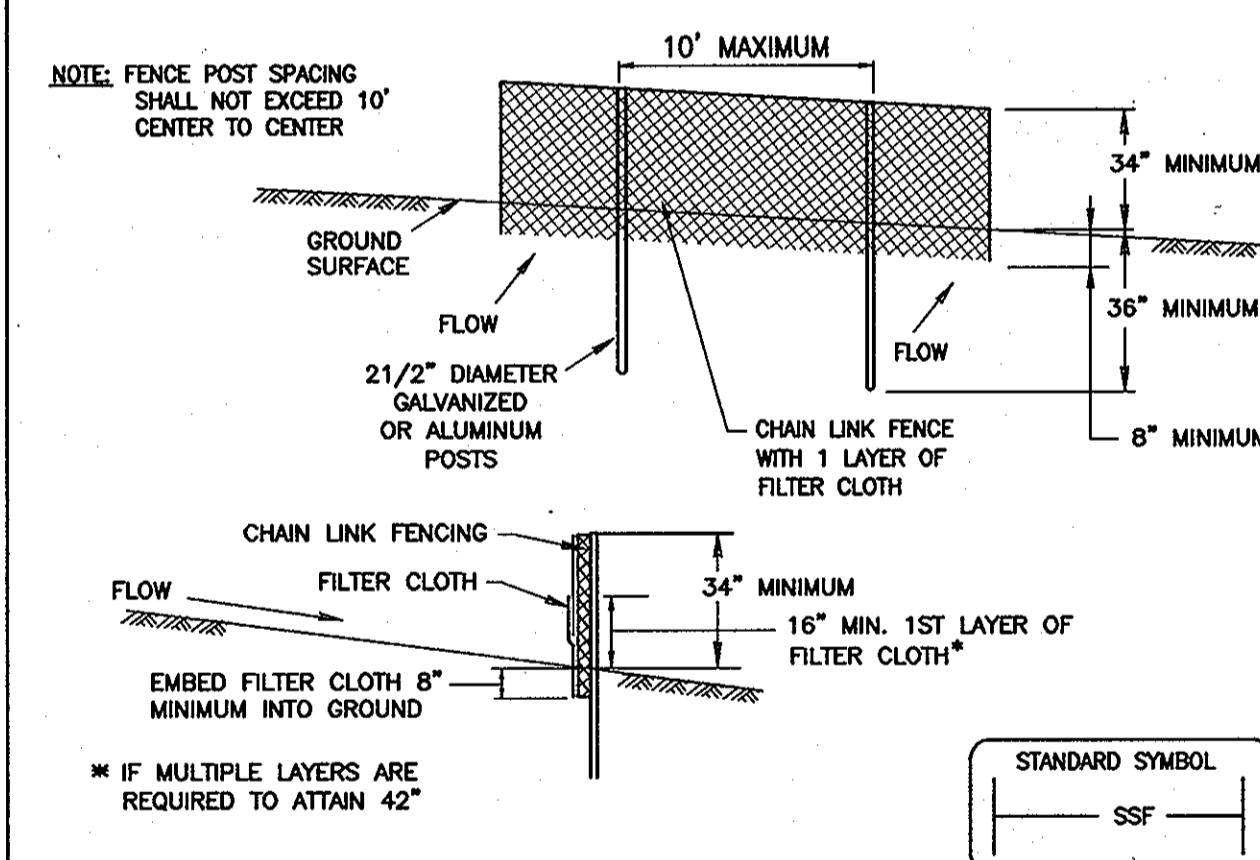


Construction Specifications

Filter Bag

NOT TO SCALE

DETAIL 33 - SUPER SILT FENCE



IF MULTIPLE LAYERS ARE REQUIRED TO ATTAIN 42"

Construction Specifications

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

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE H-26-3 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, 2013.

[Signature]
Signature of Engineer

09-28-10
Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signatures]
DIRECTOR OF PUBLIC WORKS DATE
CHIEF, BUREAU OF UTILITIES DATE
CHIEF, BUREAU OF ENGINEERING DATE
CHIEF, UTILITY DESIGN DIVISION DATE

Dewberry
Dewberry & Davis LLC

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BALTIMORE, MD 21244-2662
410.285.9500
FAX: 410.285.9875



DES: ARW
DRN: ARW
CHK: ATB
DATE:

BY	NO.	REVISIONS	DATE

SEDIMENT AND EROSION CONTROL DETAILS

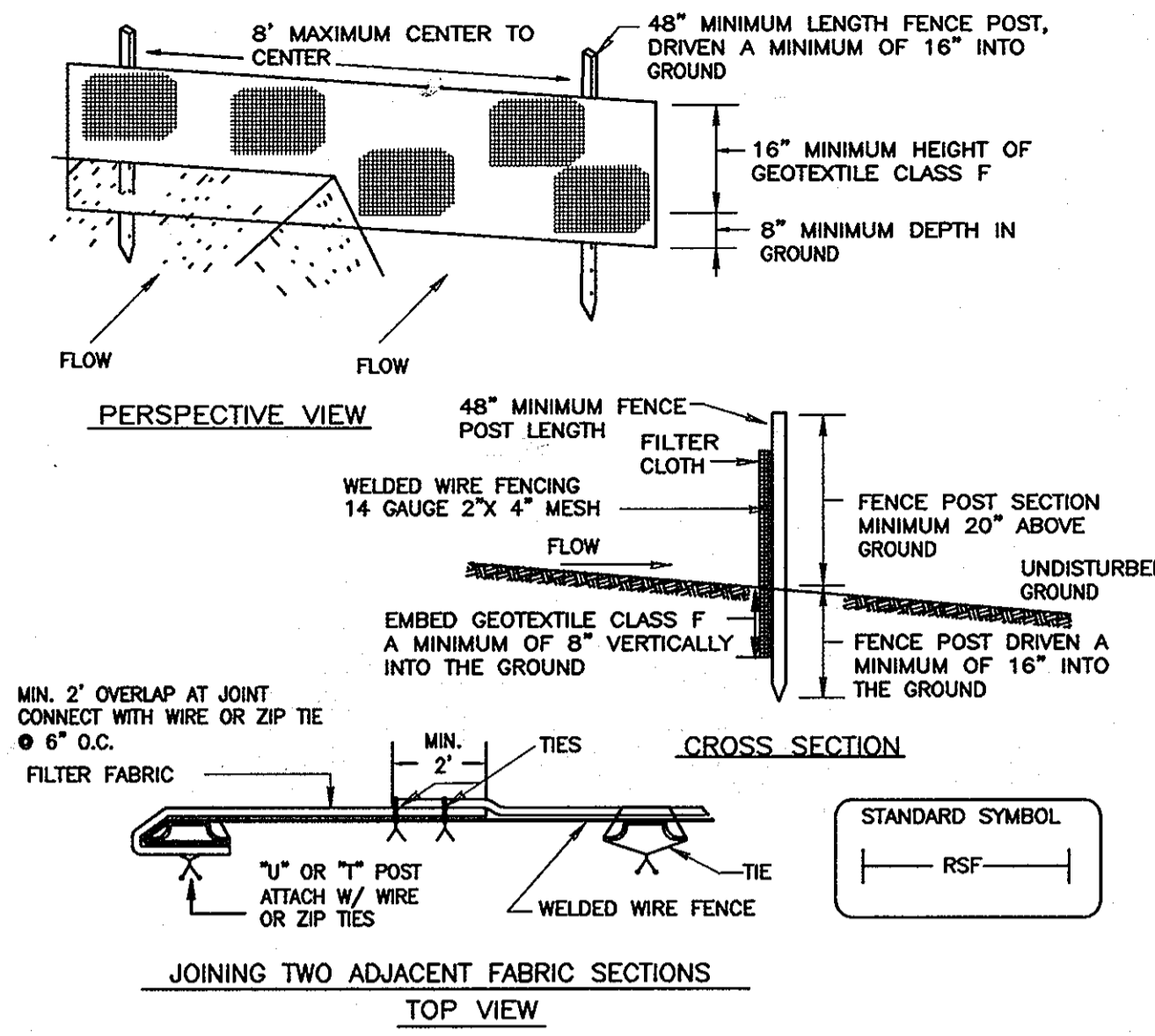
600' SCALE MAP NO. 37, 43 BLOCK NO. 5, 23

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

ELECTION DISTRICT NO. 1

HOWARD COUNTY, MARYLAND

ES-6
SCALE: SHOWN
SHEET 24 OF 25



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

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

Silt Fence Design Criteria

Slope Steepness	(Maximum)	(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:
1. **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.)
 2. **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 unrotted 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 reseeding.

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 unrotted 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: 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

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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