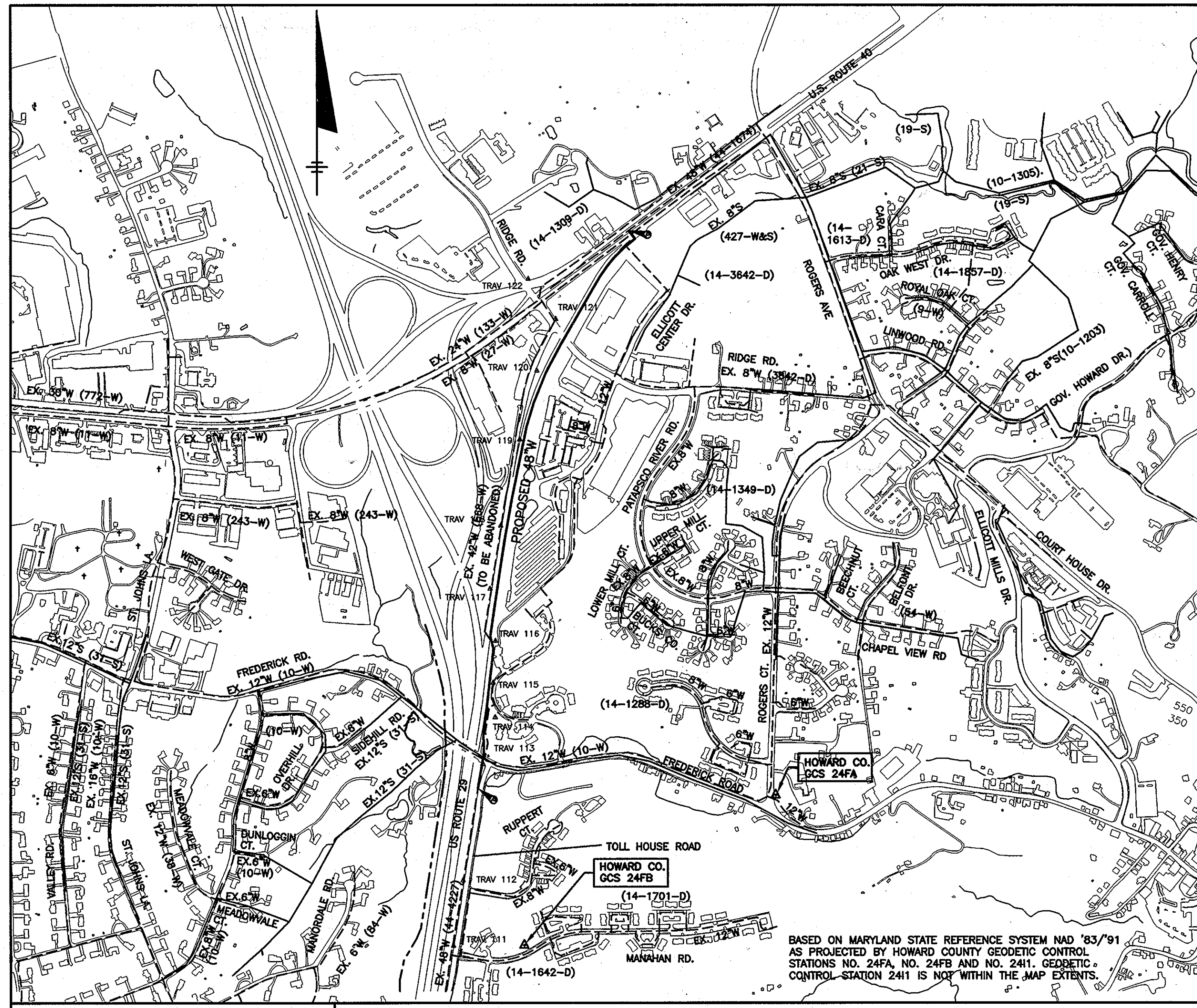


RICHMOND I:\PROJECTS\LANDOVER\2343-HOWARD\32122\US 29 WM DWG\32122C201.DWG

GENERAL NOTES:

- APPROXIMATE LOCATION OF EXISTING MAINS AND UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED ON SEPT. 2006 BY A. MORTON THOMAS & ASSOCIATES, INC.
- 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 NO. 24FA, NO. 24FB AND NO. 2411.
ALL VERTICAL CONTROLS ARE BASED ON NAVD 88. VERTICAL CONTROL PROVIDED ON THE DRAWINGS ARE REBAR AND CAP (ENGINEERING/SURVEY FIRM SHALL PROVIDE DESCRIPTION OF VERTICAL CONTROL POINTS, I.E., IRON BARS, CROSS CUTS ON CONCRETE STRUCTURES, ETC).
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR SANITARY SEWERS BY A MINIMUM OF 18 INCHES. CLEAR ALL POLES BY 5'-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR 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 DRAWING, 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.
- PIPING EQUAL TO OR GREATER THAN 16 INCHES IN DIAMETER SHALL BE PER THE PROJECT SPECIFICATIONS. ALL DUCTILE IRON PIPE LESS THAN 16 INCHES IN DIAMETER TO BE USED ON THE PUBLIC WATER SYSTEM SHALL BE 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.
- WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PITS IS INCLUDED ON THE DRAWINGS OR WITHIN THE 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 WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
AT&T.....800-252-1133
BGE (CONTRACTOR SERVICES).....410-850-4620
BGE (UNDERGROUND DAMAGE CONTROL).....410-787-9068
BUREAU OF UTILITIES.....410-313-4900
COLONIAL PIPELINE COMPANY.....410-795-1390
COMCAST.....410-931-4600
MISS UTILITY.....800-257-7777
QWEST.....800-283-4237
STATE HIGHWAY ADMINISTRATION (SHA).....301-624-8121
VERIZON.....800-743-0033/410-224-9210
MCI WORLDCOM.....800-624-9675
THE PERMITTEE IS REQUIRED TO CONTACT THE DISTRICT 7 MAINTENANCE SECTION AT 301-624-8105 OF THE STATE HIGHWAY ADMINISTRATION FOR LOCATING ALL SHA UNDERGROUND FACILITIES AND ED RODENHIZER AT 410-787-7650 FOR LOCATING ALL SHA TRAFFIC FACILITIES AT LEAST 48 HOURS (TWO FULL WORKING DAYS) PRIOR TO STARTING ANY EXCAVATION WORK UNDER THE SHA PERMIT.
- 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 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 BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410)-313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 16.114(A) OF THE HOWARD COUNTY CODE.
- TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 4'-0" OF COVER UNLESS OTHERWISE NOTED.
- VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES, UNLESS OTHERWISE NOTED.
- ALL FITTINGS ON THE 48" MAIN SHALL BE RESTRAINED JOINT, UNLESS OTHERWISE NOTED. ALL FITTINGS ON SMALLER MAINS SHALL BE RESTRAINED JOINT OR BUTTRESSED/ANCHORED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
- ALL TIE-INS TO EXISTING WATER MAINS SHALL BE COORDINATED WITH THE HOWARD COUNTY BUREAU OF UTILITIES AT LEAST 10 WORKING DAYS PRIOR TO SCHEDULING WORK. THE LOCATIONS FOR ISOLATION, ALONG WITH A PROPOSED SEQUENCE OF CONSTRUCTION, ARE CONTAINED HEREIN, HOWEVER, A DETAILED PLAN FOR SHUTDOWN OF EXISTING WATER MAINS SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE COUNTY.
- EXISTING STORM DRAINS DISTURBED BY THE CONSTRUCTION SHALL BE REPLACED IN KIND AT THE SAME LINE AND GRADE AS THE EXISTING STORM DRAINS.
- SALVAGEABLE VALVES AND APPURTENANCES TO BE REMOVED SHALL BE DELIVERED TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS - BUREAU OF UTILITIES AS DIRECTED BY THE ENGINEER OR COUNTY. ITEMS TO BE SALVAGED ARE SPECIFICALLY CALLED OUT ON THE PLAN SHEETS.
- CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING 42" PCCP WATER MAIN AND OTHER SMALLER DIAMETER MAINS AND APPURTENANCES IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS IN ORDER TO FACILITATE CONSTRUCTION OF THE PROPOSED WATER MAIN AS INDICATED IN THE DRAWINGS AND DETAILS HEREIN.
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SHA PERMIT REQUIREMENTS. NOT MORE THAN 120 LINEAR FEET OF TRENCH SHALL BE STEEL PLATED AT ANY GIVEN TIME. NOT MORE THAN 60 LINEAR FEET OF TRENCH SHALL BE OPEN AT ANY GIVEN TIME. WHERE USED, STEEL PLATING SHALL BE TACKED TOGETHER, PINNED, RECESSED, AND EDGES SHALL BE COVERED WITH COLD MIX TO ENSURE SMOOTH TRANSITION FOR VEHICLE TRAFFIC. THE CONTRACTOR SHALL ESTABLISH TEMPORARY PAVING UPON REMOVAL OF STEEL PLATING AND SHALL ESTABLISH FINAL PAVING UPON COMPLETION OF WORK. THE CONTRACTOR SHALL SEQUENCE HIS TRENCHING, BACKFILLING, AND PAVING OPERATIONS TO CONFORM TO THESE REQUIREMENTS FOR WORK WITHIN THE SHA RIGHT-OF-WAY.
- PERMANENT STAGING OR STOCKPILING OF PROPOSED WATER MAIN AND EQUIPMENT ALONG U.S. ROUTE 29 SHOULDER OR US ROUTE 29 RAMP TO ROUTE 40 SHOULDER IS NOT ALLOWED. ALL STAGED MATERIAL ALONG THE SHOULDER MUST BE REMOVED BY THE END OF EACH WORK DAY. OBTAINING APPROPRIATE AREAS IS THE RESPONSIBILITY OF THE CONTRACTOR. SUBJECT TO SHA PERMIT CONDITIONS, THE CONTRACTOR MAY BE ALLOWED TO STAGE PIPE, AND LIGHT POLES REMOVED DURING CONSTRUCTION, IN THE WESTERN MEDIAN OF U.S. ROUTE 29. NO EQUIPMENT SHALL BE STAGED IN THE SHA RIGHT-OF-WAY.
- THE STATE HIGHWAY ADMINISTRATION (SHA) UTILITY PERMIT IS NOT VALID UNTIL AN AUTHORIZATION NUMBER IS OBTAIN FROM STATE HIGHWAY ADMINISTRATION. THE PERMITTEE OR THEIR REPRESENTATIVE MAY OBTAIN AN AUTHORIZATION NUMBER TO ACTIVATE THIS PERMIT BY CALLING SHA DISTRICT NO. 7 UTILITY OFFICE, FREDERICK, MD, AT 301-624-8115 OR 1-800-635-5119, OR THE DISTRICT PERMIT INSPECTOR FOR HOWARD COUNTY, MD, AT 301-624-8121, PRIOR TO STARTING ANY WORK UNDER THIS PERMIT.



WATER AND SEWER CODE FOR COUNTY USE ONLY:	
WATER CODE NO.	F#4
NO. OF CONNECTIONS	0
SEWER CODE NO.	N/A
NO. OF CONNECTIONS	0
DRAINAGE AREA	PATAPSCO

VICINITY MAP
SCALE: 1" = 600'

BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83/'91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 24FA, NO. 24FB AND NO. 2411. GEODETIC CONTROL STATION 2411 IS NOT WITHIN THE MAP EXTENTS.

U.S. ROUTE 29 WATER MAIN REPLACEMENT: FREDERICK ROAD TO U.S. ROUTE 40

CAPITAL PROJECT: W-8243

CONTRACT NO.: 44-4321

HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

QUANTITIES				
ITEM	BID	AS-BUILT	MATERIAL	SUPPLIER
48" WATERMAIN DIP, PO	1694 LF.			
48" WATERMAIN DIP, RJ	2638 LF.			
48" WATERMAIN STEEL, PO	1034 LF.			
48" WATERMAIN STEEL, RJ	3408 LF.			
48" WATERMAIN PCCP, PO	2198 LF.	2198	PCCP	HANSON
48" WATERMAIN PCCP, RJ	2034 LF.	2034	PCCP	HANSON
8" WATERMAIN DIP, RJ	309 LF.	340	DIP	GRIFFIN BEL AIR SUP.
ACCESS/BLOW-OFF VALVE ASSEMBLY	1 EA.	1 EA.	BRASS	APCO
ACCESS/AIR VALVE ASSEMBLY	1 EA.	1 EA.	BRASS	APCO
ACCESS MANHOLE ASSEMBLY	1 EA.	1 EA.		APCO
48" RSGV	3 EA.	3 EA.		MUELLER
12" RSGV	2 EA.	2 EA.		MUELLER
8" RSGV	3 EA.	3 EA.		MUELLER
72" CASING AND 48" WM (RJ)	148 LF.	148		

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AS-BUILT

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HOWARD COUNTY, MARYLAND

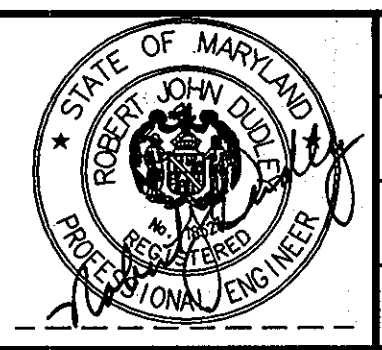
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DIRECTOR OF PUBLIC WORKS DATE

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CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.

8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737



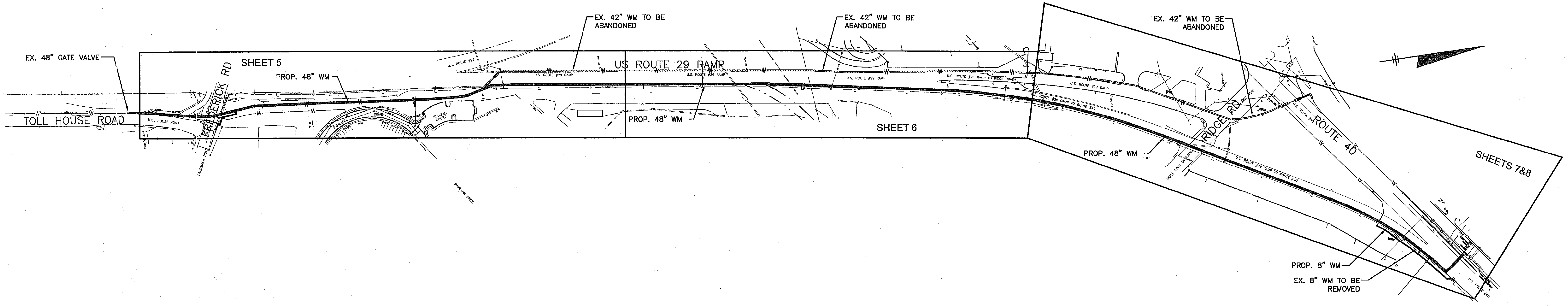
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CHK. BY: RJD				
DATE: JUNE 2007				
BY: RPW	1	AS-BUILT REVISIONS	03/10	
NO.		REVISION	DATE	

COVER SHEET

600' SCALE MAP NO. 24 BLOCK NO. 6,12

U.S. ROUTE 29 WATER MAIN REPLACEMENT
FREDERICK ROAD TO U.S. ROUTE 40

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND



KEY MAP
SCALE: 1" = 150'

BENCHMARK CONTROL DATA:

BENCHMARK	ELEVATION	DESCRIPTION
BM 3	364.86	SQUARE CUT AT LIGHT POLE BASE #B607250
BM 4	383.47	NAIL IN WEST SIDE OF 20" POPLAR
BM 5	348.86	X-CUT AT TOP BONNET BOLT OF FIRE HYDRANT
BM 6	412.23	SQUARE CUT AT CORNER OF TRAFFIC BOX

SURVEY CONTROL DATA:

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
104	579783.7194	1363014.6920	380.53	MAG NAIL
105	580133.5854	1363088.0641	364.64	REBAR AND CAP
106	580091.3983	1363367.0702	383.56	REBAR AND CAP
107	580626.6039	1363465.2289	348.62	REBAR AND CAP
108	581019.1978	1363521.5336	336.75	REBAR AND CAP
109	581762.7157	1363553.4821	361.66	REBAR AND CAP
110	582210.2548	1363669.8089	383.65	REBAR AND CAP
111	582648.3107	1363738.2887	386.59	MAG NAIL
112	583129.1903	1363809.0469	363.64	REBAR AND CAP
113	583979.0330	1363953.4436	299.93	REBAR AND CAP
114	584322.0359	1364043.5341	340.55	REBAR AND CAP
115	584576.7063	1364029.1870	344.11	REBAR AND CAP
116	584882.5975	1364045.2958	369.45	REBAR AND CAP
117	585264.2795	1364006.4055	357.81	REBAR AND CAP
118	585726.9134	1364084.5459	362.94	REBAR AND CAP
119	586356.0083	1364223.1827	382.35	REBAR AND CAP
120	586863.1823	1364348.1749	400.08	REBAR AND CAP
121	587240.7580	1364486.3936	409.36	REBAR AND CAP
122	587533.7807	1364284.5468	419.32	REBAR AND CAP

NOTE:
PROJECT AREA IS WITHIN FEMA FLOOD PLAIN MAP AND PANEL 24004400 23B, ZONE C.

LEGEND
(PLAN AND PROFILE SHEETS)

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> --- SIDEWALK --- PAVEMENT (EDGE) --- GRAVEL (EDGE) --- CONCRETE (EDGE) --- BUILDING --- CENTERLINE --- SHA THRU HIGHWAY RIGHT-OF-WAY --- PROPERTY LINE/RIGHT-OF-WAY --- GUARDRAIL --- FENCE (WOOD) --- FENCE IRON, RAIL --- FENCE(CHAINLINK) --- UNG ELECTRIC LINE --- UNG TELEPHONIC LINE --- UNG CABLE LINE --- UNG FIBER OPTIC LINE --- OVERHEAD UTILITIES --- SANITARY SEWER --- STORM DRAIN --- WATER MAIN --- PROPOSED WATER --- GAS --- DITCH --- STREAM --- WOODLINE --- BUSH --- RIP-RAP DITCH --- MILL AND OVERLAY ○ SB# BORING LOCATION ○ TP# TEST PIT LOCATION ○ BM # ○ REBAR ○ FLY STATION --- ABANDON IN PLACE EX. WM | <ul style="list-style-type: none"> ○ MAIL BOX ○ VENT ○ STORM DRAIN MH --- HEADWALL/ENDWALL --- DROP INLET GRATE --- DROP INLET --- ROAD SIGN --- TELE. JUNC. BOX --- UTILITY POLE ○ LIGHT POLE --- GUY WIRE --- GROUND LIGHT --- ELEC. TRANSFORMER --- ELEC. MH --- ELEC. JUNC. BOX --- SPOT ELEVATION --- CABLE BOX ○ SAN. SEW. MH ○ CLEAN OUT ○ WATER VALVE ○ RSG VALVE ○ WATER METER ○ WATER MAIN VALVE VAULT ○ IRRIGATION VALVE ○ FIRE HYDRANT ○ GAS VENT PIPE ○ GAS VALVE ○ GAS PUMP ○ GAS LINE MARKER ○ IRON PIPE FOUND ○ REBAR AND CAP ○ TRAVERSE STATION ○ POINT OF CONNECTION ○ DETAIL OR SECTION IDENTIFICATION ○ SHEET NO. ○ DETAIL IDENTIFICATION ○ SHEET THAT DETAIL IS LOCATED | <ul style="list-style-type: none"> APPROX. APPROXIMATE ARV MH AIR RELEASE MANHOLE BE BURY ELEVATION BFV BUTTERFLY VALVE BGE BALTIMORE GAS & ELECTRIC BLD. BUILDING BOT BOTTOM C&G CURB AND GUTTER CMP CORRUGATED METAL PIPE CONC. CONCRETE CONSTR. CONSTRUCTION CONTR. CONTRACT DEG. DEGREE DET OR DTL. DETAIL DIP DUCTILE IRON PIPE DR DRIVE E OR ELEC. ELECTRIC EA EACH ESMT EASEMENT EX EXISTING FLG FIRE HYDRANT FMV FLOW METER VAULT G GAS GCS GEODETIC CONTROL SYSTEM GV GATE VALVE HB HORIZONTAL BEND HCR HOWARD COUNTY HDP HORIZONTAL CURVE RADIUS HDPE HORIZONTAL DEFLECTION POINT HORIZ. HIGH DENSITY POLYETHYLENE HORIZ. HORIZONTAL INV INVERT JOINT JOINT LF LINEAR FOOT LOD LIMIT OF DISTURBANCE MAC MACADAM MD MARYLAND MH MANHOLE MIN MINIMUM NIC NOT IN CONTRACT NO NUMBER PC POINT OF CURVE PCCP PRESTRESSED CONCRETE CYLINDER PIPE PED PEDESTAL PO POST OFFICE OR PUSH ON PROP. PROPOSED PT POINT OR POINT OF TANGENCY PVC PVC PIPE OR POINT OF VERTICAL CURVATURE PVD POINT OF VERTICAL DEFLECTION PVI POINT OF VERTICAL INTERSECTION PVMT PAVEMENT PVT POINT OF VERTICAL TANGENCY R/W RIGHT OF WAY RADIUS RADIUS RCP REINFC. CONC. PIPE RD ROAD REOD REQUIRED RJ RESTRAINED JOINT ROW RIGHT-OF-WAY RSGV RESILIENT SEAT GATE VALVE RSWV RESILIENT WEDGE GATE VALVE |
|--|---|--|

ABBREVIATION

- | | |
|--|--|
| <ul style="list-style-type: none"> S SAN SB SANITARY SD SOIL BORING SHA STATE HIGHWAY ADMINISTRATION SHC SEWER HOUSE CONNECTION SHT SHEET S.S. STAINLESS STEEL STA STATION STD STANDARD TB RENO TO BE RENOVATED (FUTURE) TBR TO BE REMOVED (FUTURE) TELE TELEPHONE TEMP TEMPORARY TP TEST PIT TRANS TRANSFORMER UNF UTILITY NOT FOUND VB VERTICAL BEND VCR VERTICAL CURVE RADIUS VERT VERTICAL W WATER W/ WITH WHC WATER HOUSE CONNECTION WM WATER MAIN | <ul style="list-style-type: none"> APP APPLE BPE BRADFORD PEAR CHE CHERRY DEC DECIDUOUS DOG DOGWOOD HEM HEMLOCK HIC HICKORY HOL HOLLY LOC LOCUST MAG MAGNOLIA MAP MAPLE MUL MULBERRY PIN PINE POP POPLAR SPR SPRUCE SYC SYCAMORE WAL WALNUT WIL WILLOW |
|--|--|

LANDSCAPING

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

SCALES 1"=150'

AS-BUILT

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS DATE: 7/3/07	<i>[Signature]</i> CHIEF - BUREAU OF ENGINEERING DATE: 7/3/07
<i>[Signature]</i> CHIEF, BUREAU OF UTILITIES DATE: 7-6-07	<i>[Signature]</i> CHIEF, UTILITY DESIGN DIVISION DATE: 7-3-07

O'BRIEN & GERE ENGINEERS, INC.
8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737



DSN. BY:	GFR
DRN. BY:	RPW
CHK. BY:	RJD
DATE:	JUNE 2007

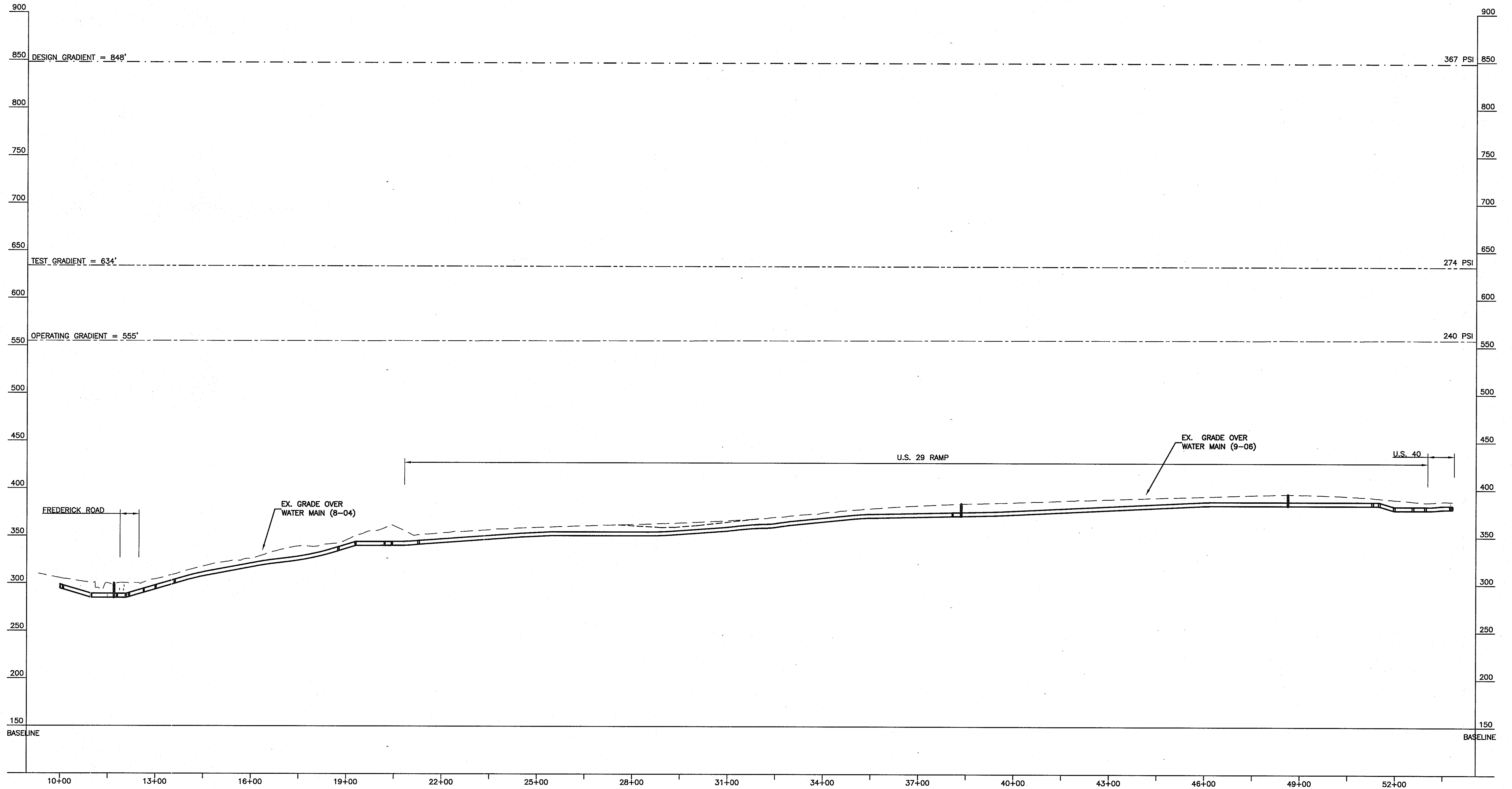
BY	NO.	REVISION	DATE
RPW	1	AS-BUILT REVISIONS	03/0

KEY MAP, LEGEND AND ABBREVIATIONS

600' SCALE MAP NO. 24 BLOCK NO. 6.12

U.S. ROUTE 29 WATER MAIN REPLACEMENT
FREDERICK ROAD TO U.S. ROUTE 40

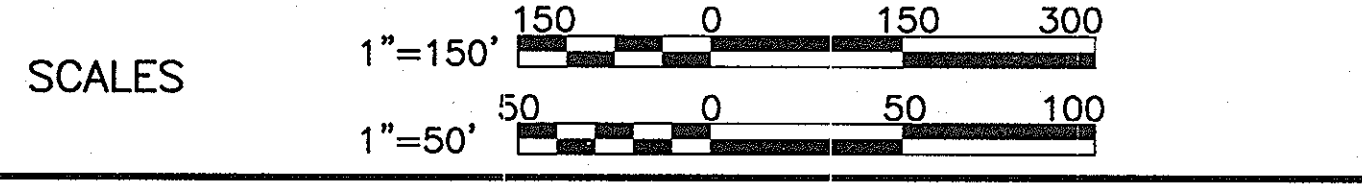
CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND



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BY: *[Signature]*

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HYDRAULIC PROFILE

HORIZ. SCALE: 1"=150'
VERT. SCALE: 1"=50'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

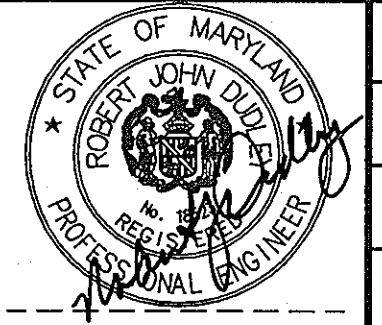
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CHIEF - BUREAU OF ENGINEERING DATE

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DATE: JUNE 2007	RPW	AS-BUILT REVISIONS	03/10
	BY NO.	REVISION	DATE

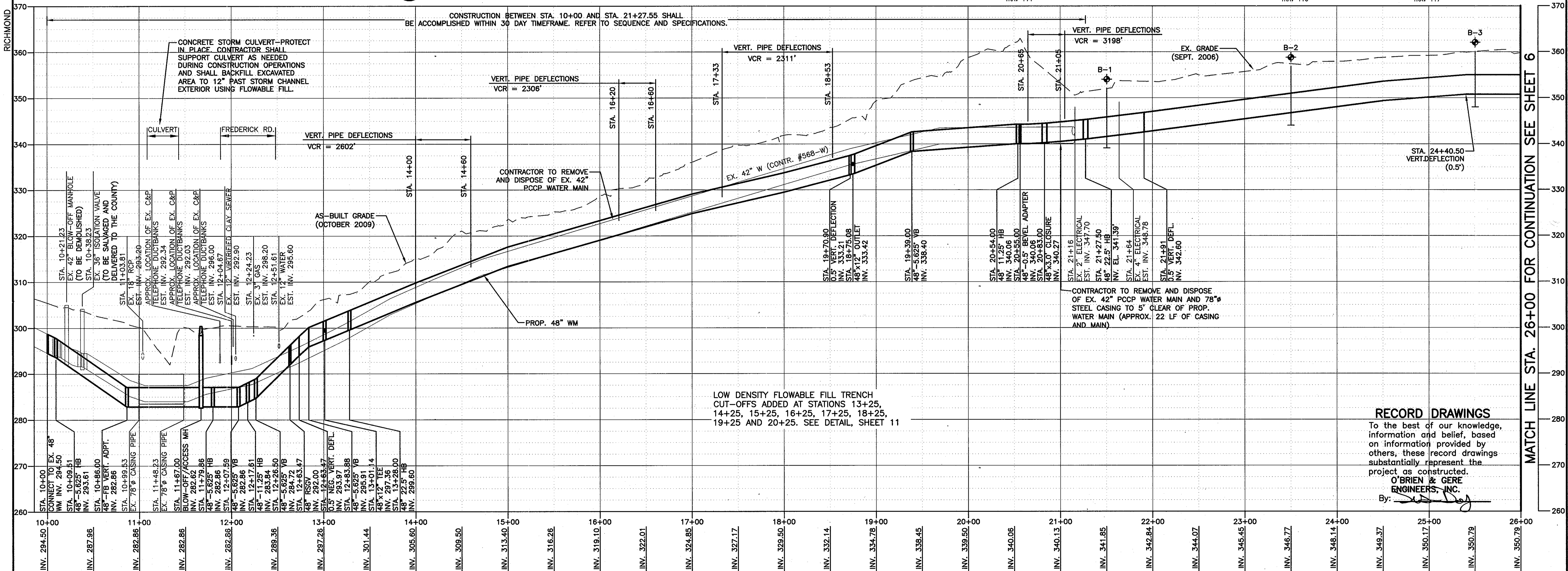
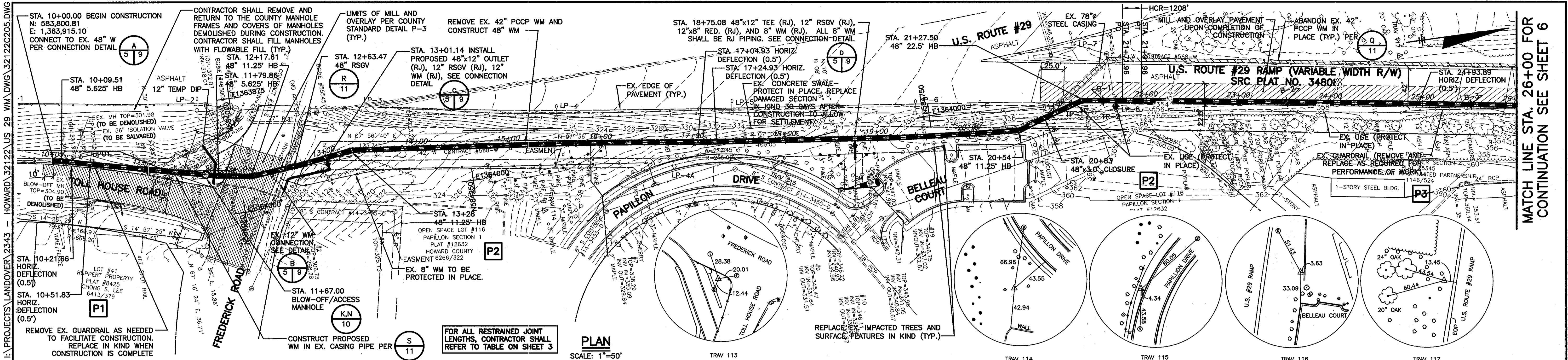
HYDRAULIC PROFILE

600' SCALE MAP NO. 24 BLOCK NO. 6.12

**U.S. ROUTE 29 WATER MAIN REPLACEMENT
FREDERICK ROAD TO U.S. ROUTE 40**

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 4 OF 37



SCALES:
 1"=10' VERTICAL SCALE
 1"=50' HORIZONTAL SCALE

PROFILE
 HORIZ. SCALE: 1"=50'
 VERT. SCALE: 1"=10'

AS-BUILT REPLACEMENT SHEET
 DATE: SEPTEMBER, 2009

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: [Signature] DATE: 4/15/10
 Chief, Bureau of Utilities: [Signature] DATE: 4/15/10

O'BRIEN & GERE ENGINEERS, INC.
 8401 Corporate Drive
 Suite 400
 Landover, Maryland 20785
 (301) 731-5622
 FAX: (301) 577-4737

DSN. BY:	GFR				
DRN. BY:	RPW				
CHK. BY:	RJD				
DATE:	JUNE 2007				
BY:	NO.	AS-BUILT REVISIONS	03/10		
		REVISION	DATE		

48" WM PLAN AND PROFILE
 STA. 10+00.0 TO STA. 26+00.0
 600' SCALE MAP NO. 24 BLOCK NO.

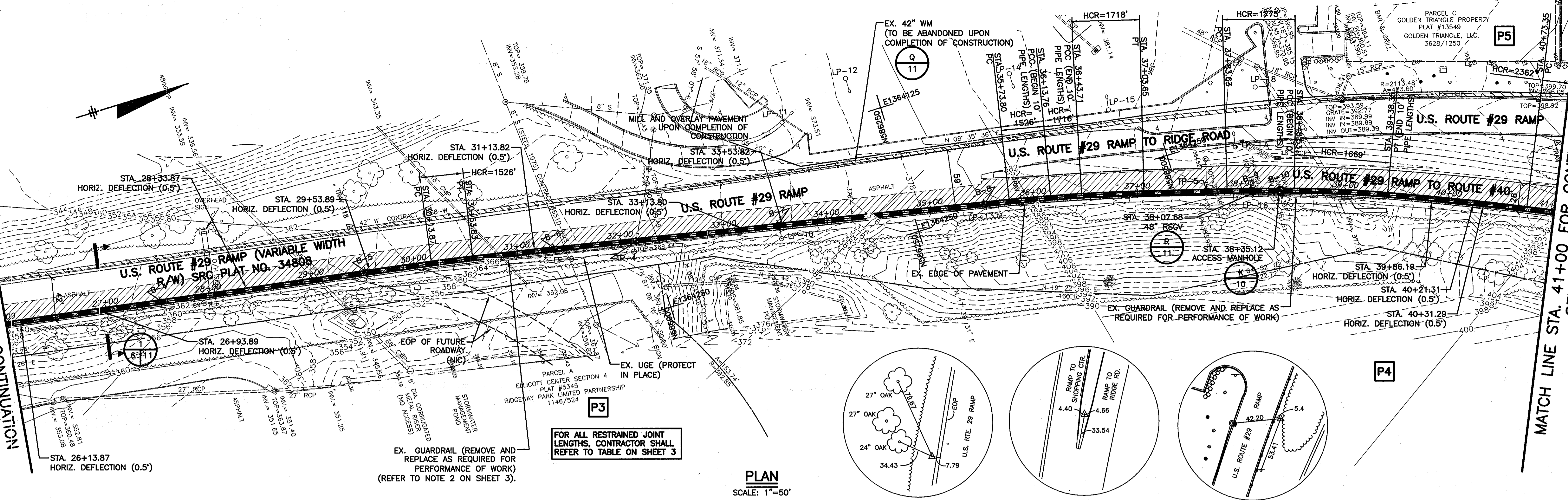
U.S. ROUTE 29 WATER MAIN REPLACEMENT
 FREDERICK ROAD TO U.S. ROUTE 40
 CAPITAL PROJECT: W-8243
 CONTRACT NO.: 44-4321
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND
 SCALE AS SHOWN
 SHEET 5 OF 37

PLOT DATE: 03/01/10

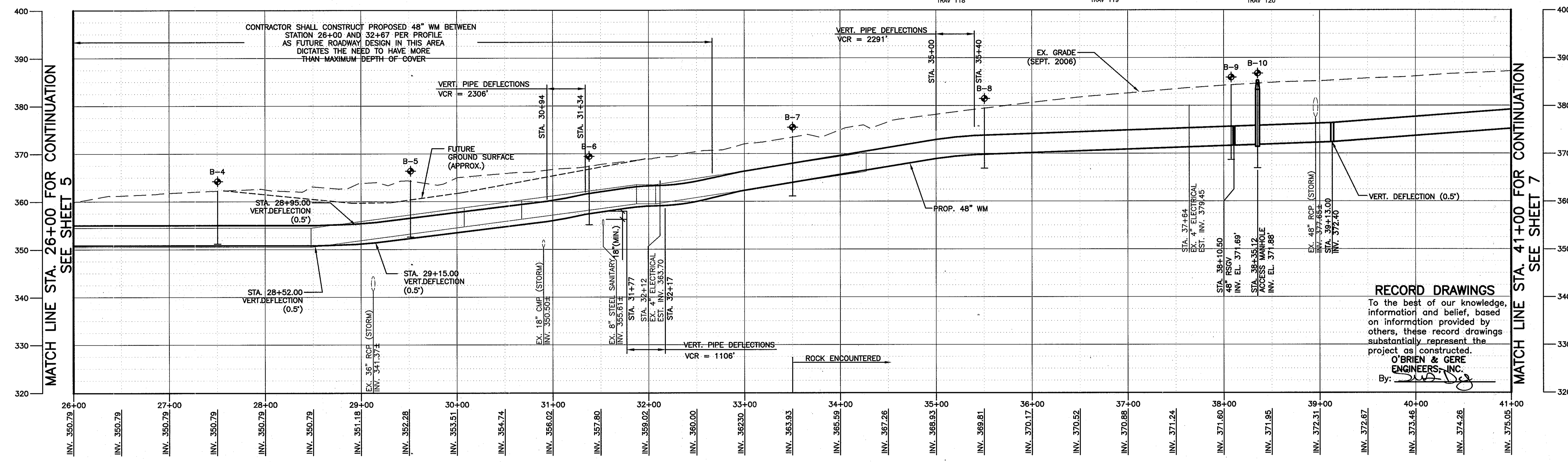
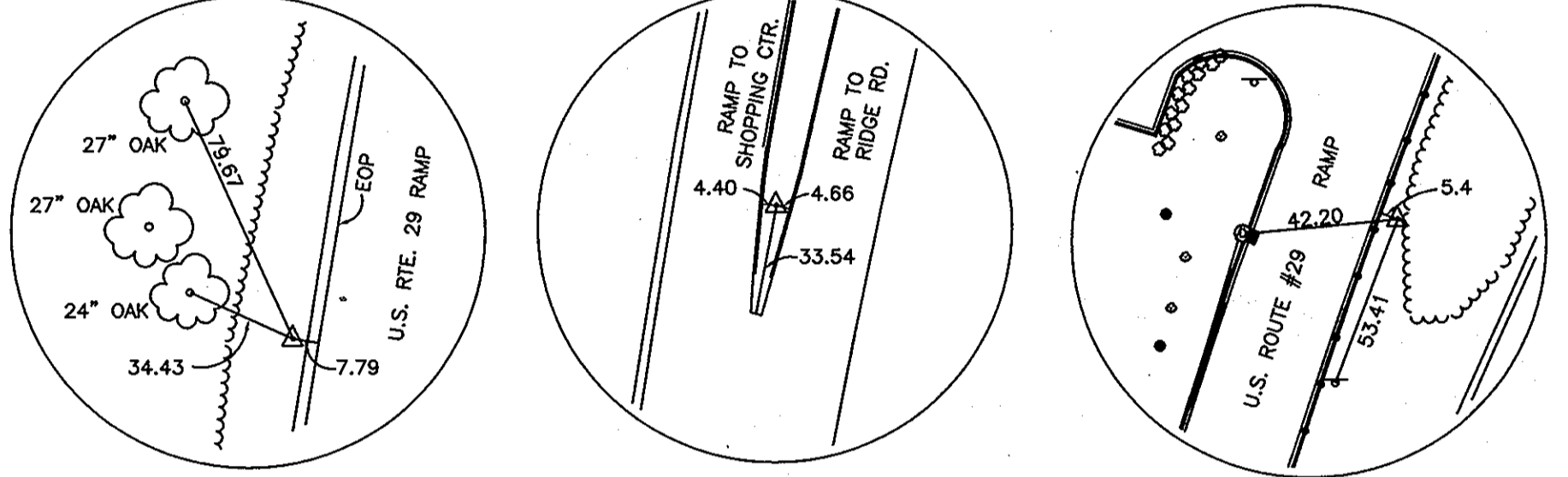
FILE NO. 32122-205

MATCH LINE STA. 26+00 FOR CONTINUATION
SEE SHEET 5

MATCH LINE STA. 41+00 FOR CONTINUATION
SEE SHEET 7



PLAN
SCALE: 1"=50'



PROFILE
HORIZ. SCALE: 1"=50'
VERT. SCALE: 1"=10'

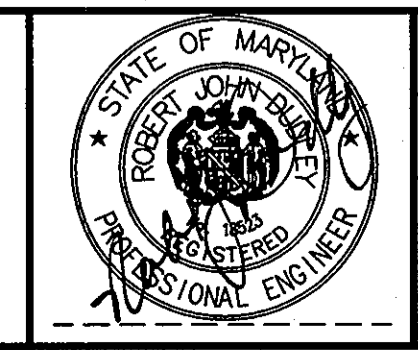
RECORD DRAWINGS
To the best of our knowledge, information and belief, based on information provided by others, these record drawings substantially represent the project as constructed.
O'BRIEN & GERE ENGINEERS, INC.
By: *[Signature]*

AS-BUILT REPLACEMENT SHEET
DATE: SEPTEMBER, 2009

SCALES:
1"=10' VERTICAL SCALE
1"=50' HORIZONTAL SCALE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS: *[Signature]* DATE: 4/15/10
CHIEF - BUREAU OF UTILITIES: *[Signature]* DATE: 4/15/10
CHIEF - BUREAU OF ENGINEERING: *[Signature]* DATE: 4/15/10
CHIEF - UTILITY DESIGN DIVISION: *[Signature]* DATE: 4/15/10

O'BRIEN & GERE ENGINEERS, INC.
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Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737



DSN. BY:	GFR				
DRN. BY:	RPW				
CHK. BY:	RJD				
DATE:	JUNE 2007				
BY NO.	1	AS-BUILT REVISIONS			03/10
REVISION					

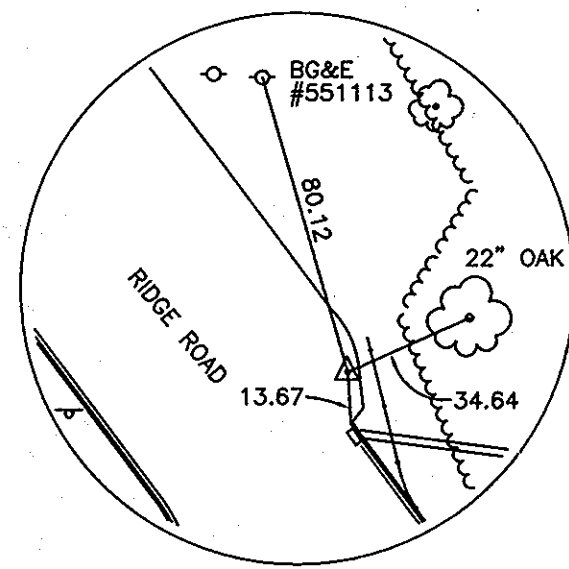
48" WM PLAN AND PROFILE
STA. 26+00.0 TO STA. 41+00.0
600' SCALE MAP NO. 24 BLOCK NO. 6.12

U.S. ROUTE 29 WATER MAIN REPLACEMENT
FREDERICK ROAD TO U.S. ROUTE 40
CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

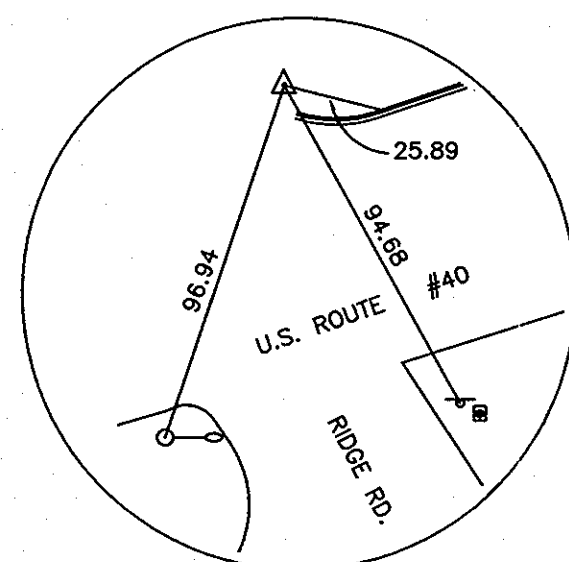
SCALE AS SHOWN
SHEET 6 OF 37
FILE NO. 32122-206

MATCH LINE "A-A" FOR CONTINUATION SEE THIS SHEET

MATCH LINE "A-A" FOR CONTINUATION SEE THIS SHEET



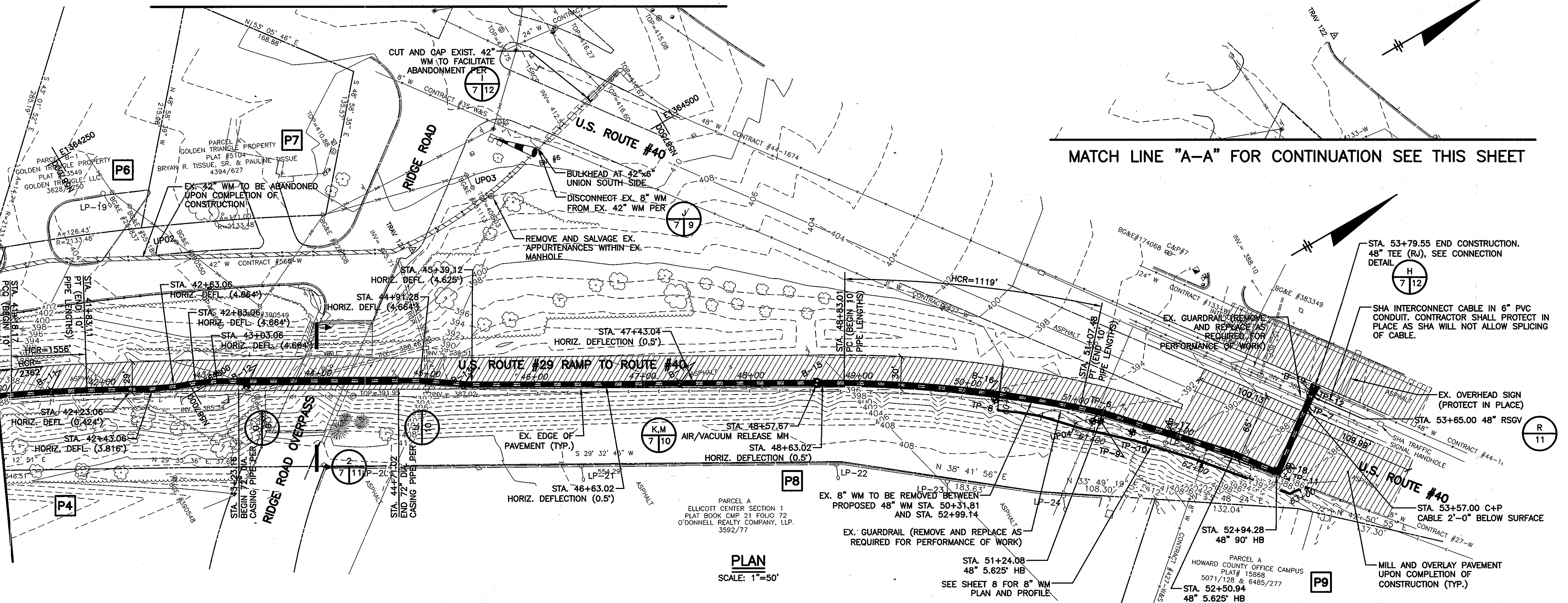
TRAV 121



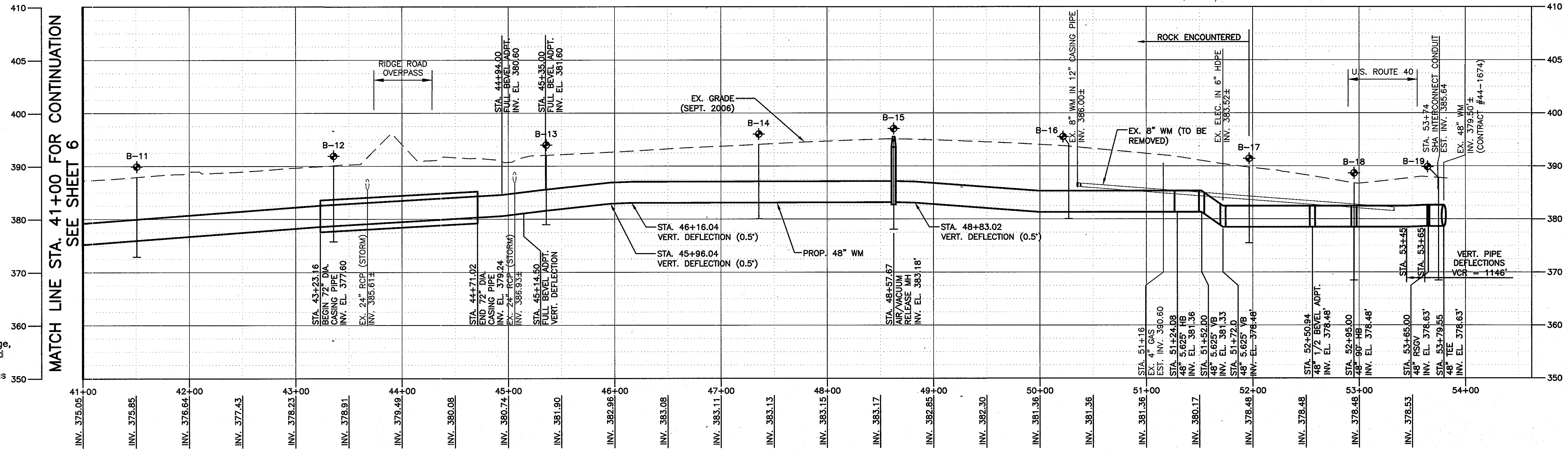
TRAV 122

MATCH LINE STA. 41+00 FOR CONTINUATION SEE SHEET 6

MATCH LINE STA. 41+00 FOR CONTINUATION SEE SHEET 6



PLAN
SCALE: 1"=50'



PROFILE

HORIZ. SCALE: 1"=50'
VERT. SCALE: 1"=10'

RECORD DRAWINGS
To the best of our knowledge, information and belief, based on information provided by others, these record drawings substantially represent the project as constructed.
O'BRIEN & GERE ENGINEERS, INC.
By: *[Signature]*



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

AS-BUILT REPLACEMENT SHEET
DATE: SEPTEMBER, 2009

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 4/15/10
DIRECTOR OF PUBLIC WORKS

[Signature] 4/15/10
CHIEF, BUREAU OF UTILITIES

O'BRIEN & GERE ENGINEERS, INC.
8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737

DSN. BY: GFR			
DRN. BY: RPW			
CHK. BY: RJD	RPW	1	AS-BUILT REVISIONS
DATE: JUNE 2007	RPW	DR01	CONSTRUCTION MODIFICATION NO. 1
	BY	NO.	REVISION
			03/10
			10/07

48" WM PLAN AND PROFILE
STA. 41+00.0 TO STA. 53+79.55

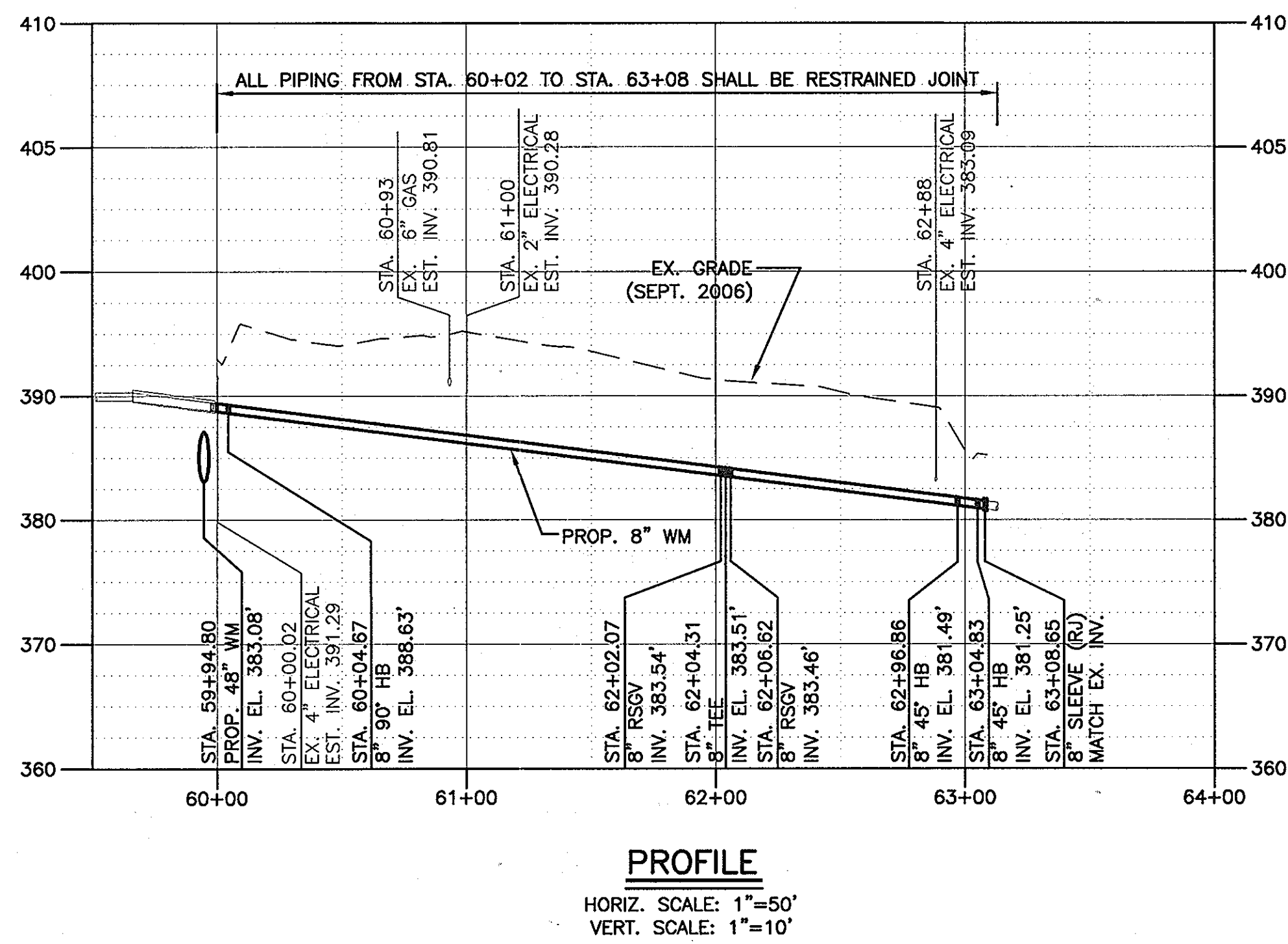
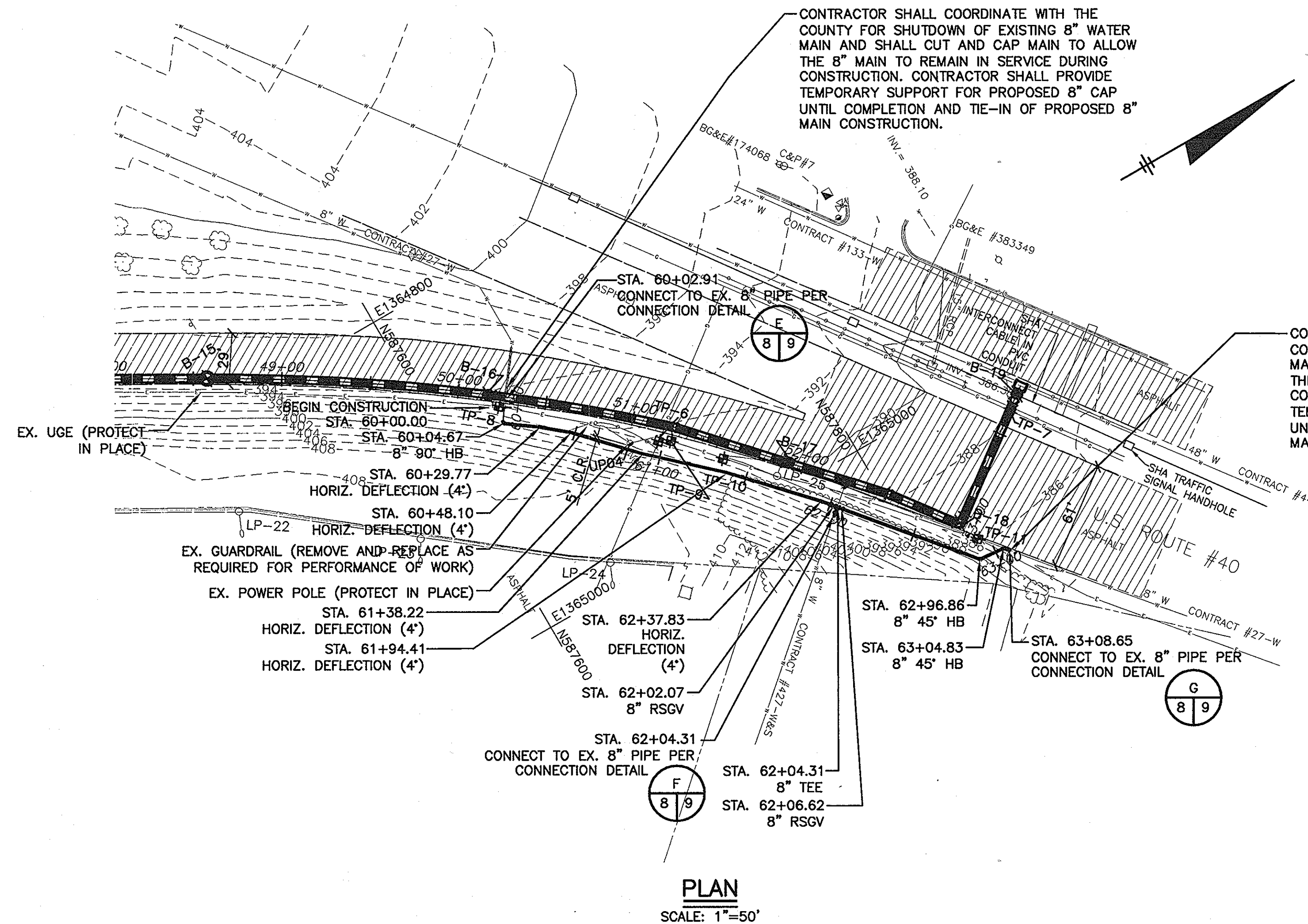
600' SCALE MAP NO. 24 BLOCK NO. 6,12

U.S. ROUTE 29 WATER MAIN REPLACEMENT
FREDERICK ROAD TO U.S. ROUTE 40

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

DRAWING NOTES:

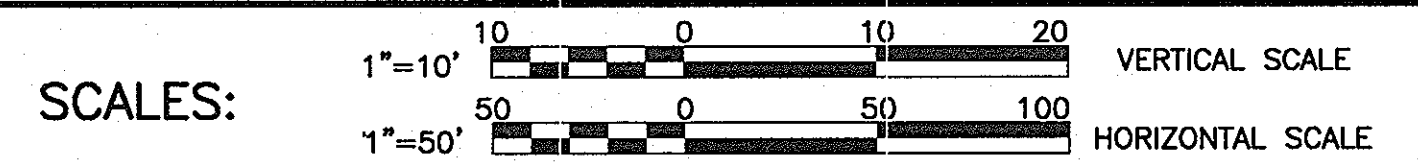
1. REFER TO DRAWING 7 FOR LIMITS OF PAVEMENT MILL AND OVERLAY AND TRAVERSE BUBBLE INFORMATION.
2. ALL PROPOSED 8" PIPING AND FITTINGS SHALL BE RESTRAINED JOINT. ADDITIONALLY, THRUST BLOCKS SHALL BE PROVIDED AS INDICATED IN TIE-IN DETAILS.
3. UPON COMPLETION TIE PROP. 8" WM TO EXISTING 8" WM USING 8" SPOOL AND SLEEVE.
4. CONTRACTOR TO PROVIDE DEBRIS PLUGS ON EX. 8" WM UNTIL TIE-IN IS COMPLETE.
5. CONTRACTOR SHALL PRESSURE TEST, DISINFECT AND SAMPLE PROP. 8" WM PRIOR TO TIE-IN.



RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

AS-BUILT



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

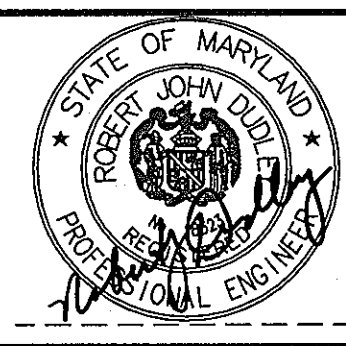
[Signature] 7/3/07
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
ENGINEERS, INC.

8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737



DSN. BY:	GFR		
DRN. BY:	RPW		
CHK. BY:	RJD		
DATE:	JUNE 2007		
BY:	RPW	AS-BUILT REVISIONS	03/0
NO.:		REVISION	DATE

8" WM PLAN AND PROFILE
STA. 60+00.0 TO STA. 63+08.65

600' SCALE MAP NO. 24 BLOCK NO. 6,12

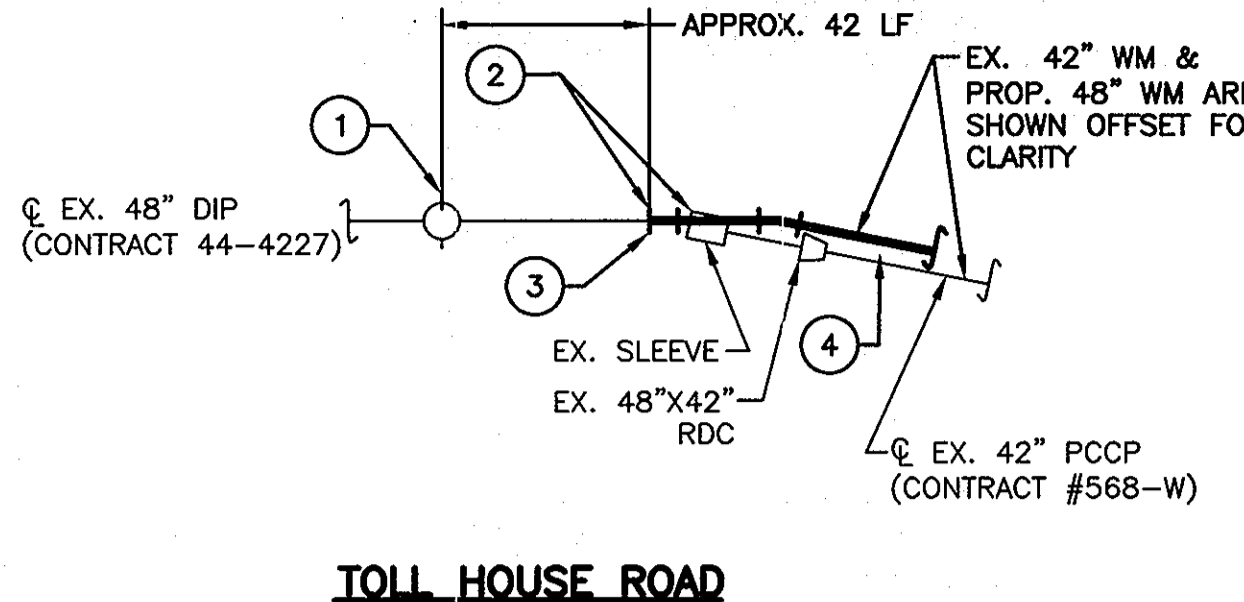
U.S. ROUTE 29 WATER MAIN REPLACEMENT
FREDERICK ROAD TO U.S. ROUTE 40

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

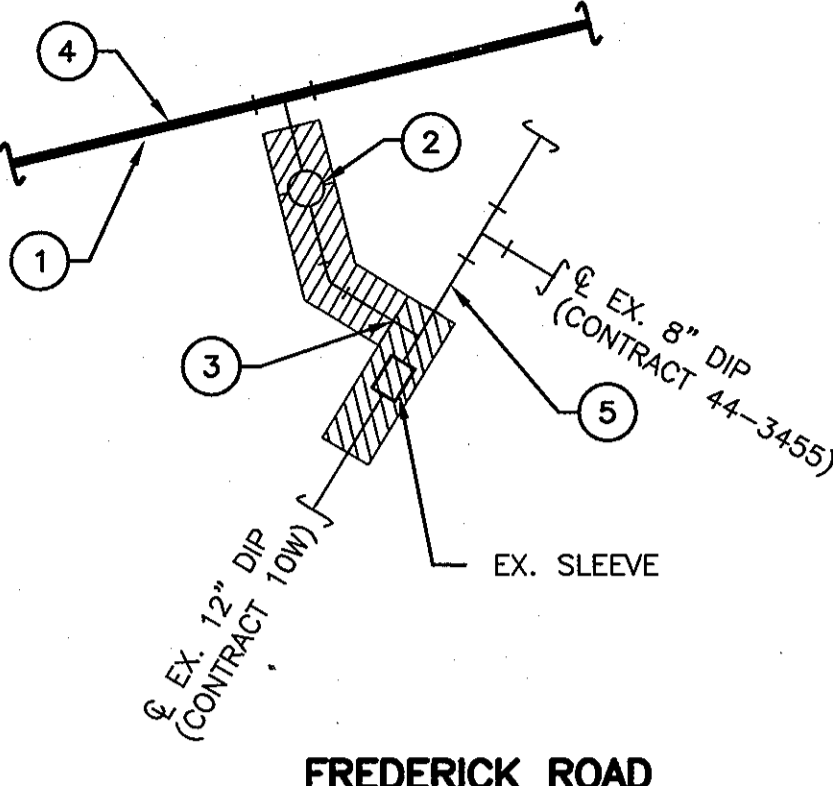
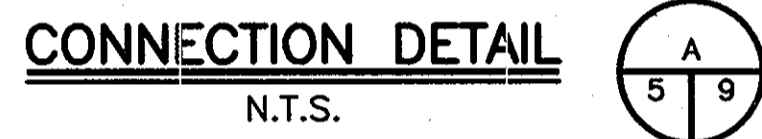
SHEET 8 OF 37

RICHMOND I:\PROJECTS\LANDOVER\2343 - HOWARD\32122\US 29 WM DWG\32122C210.DWG



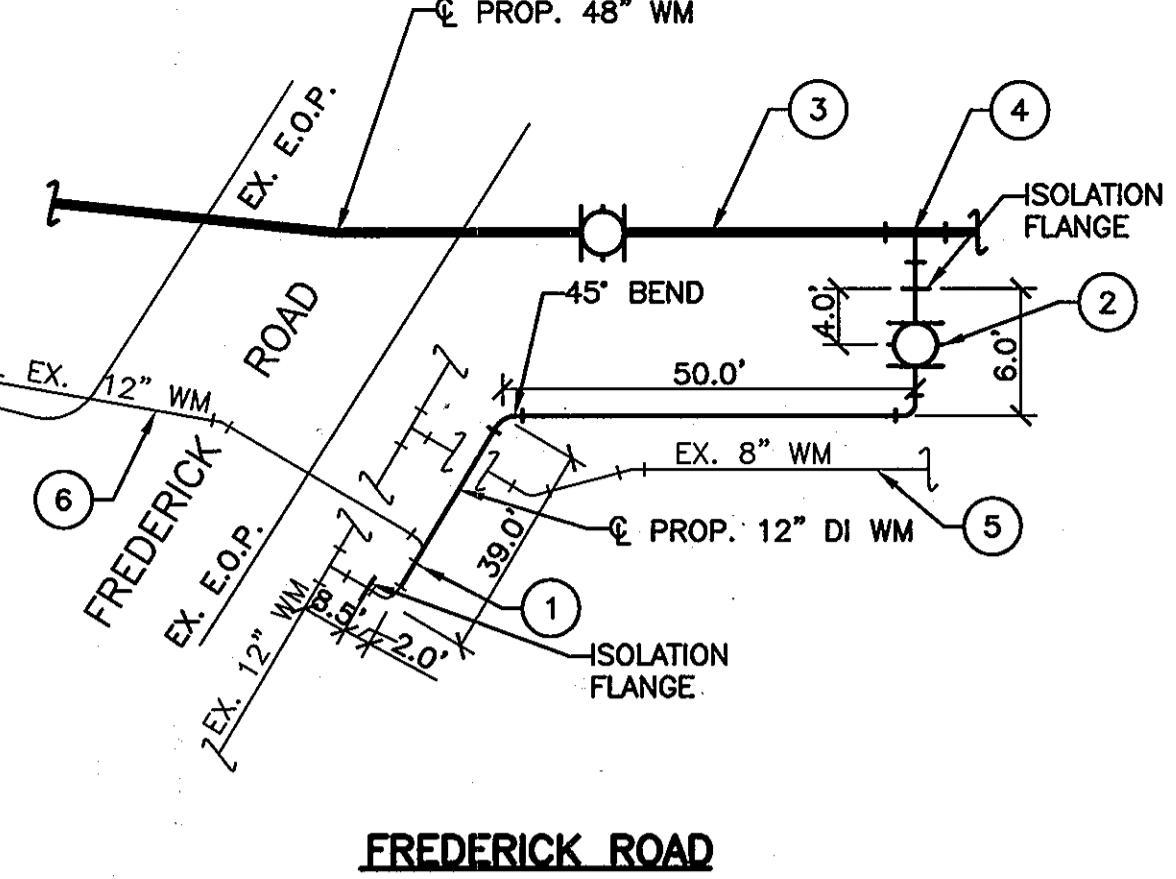
TOLL HOUSE ROAD

- CONNECTION AT STATION 10+00.0**
- CONTRACTOR SHALL COORDINATE WITH COUNTY FOR SHUTDOWN OF EX. 48" WM VIA EX. 48" BFV PRIOR TO CONSTRUCTION.
 - REMOVE AND SALVAGE EX. 48" SLEEVE AND EX. 48"x42" REDUCER. INSTALL PROP. SPOOL PIECE (RJ), PROP. 5.625" HB (RJ), AND PROP. COUPLING AS SHOWN. CONVEY SLEEVE AND REDUCER TO A LOCATION DESIGNATED BY THE COUNTY.
 - INSTALL A RESTRAINED COUPLING BETWEEN EX. 48" DI WM AND PROPOSED 48" WM. FOR DIP - INSTALL A RESTRAINED SLEEVE; FOR STEEL AND PCCP - SEE DETAIL Q ON SHEET 10.
 - REMOVE EX. 42" PCCP WM AND CONSTRUCT PROPOSED 48" WM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
 - REFER TO CATHODIC PROTECTION DRAWINGS FOR LOCATION OF INSULATING FLANGES.



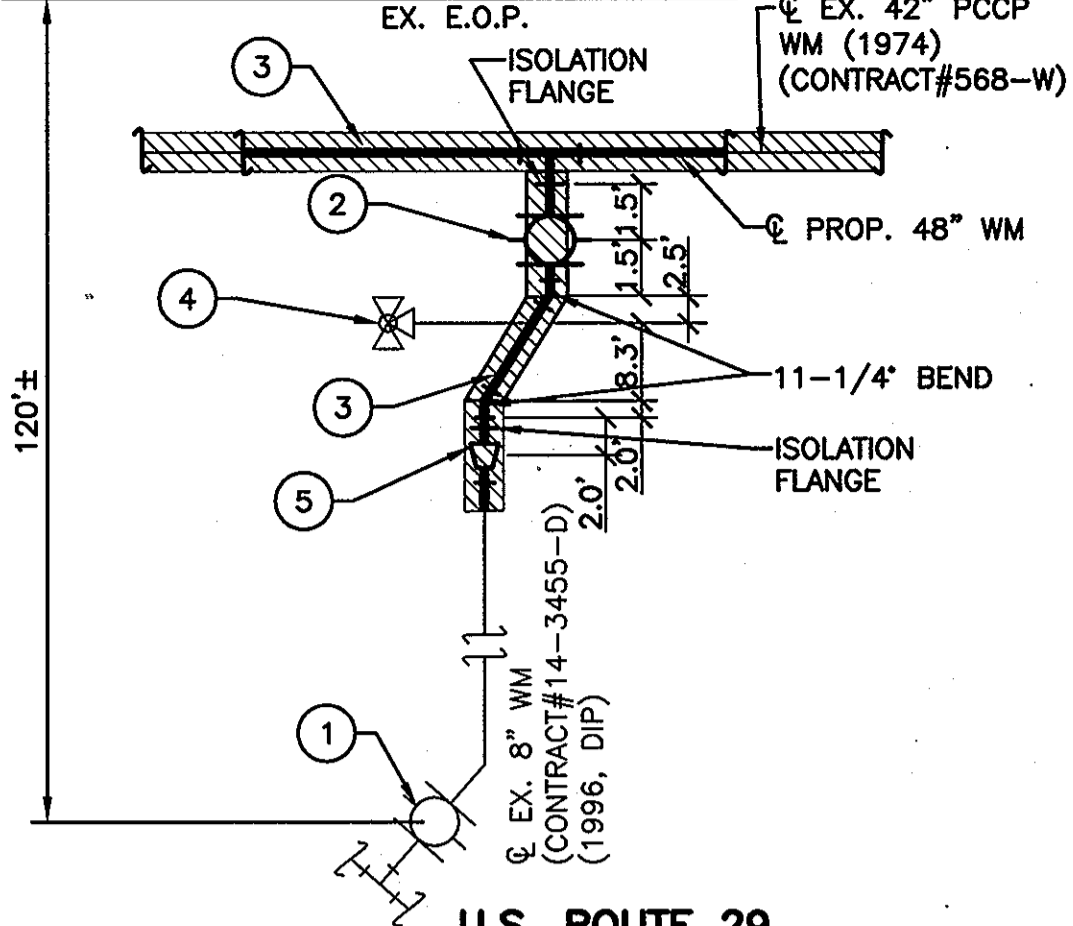
FREDERICK ROAD

- CONNECTION AT STATION 12+37.52**
- CONTRACTOR SHALL COORDINATE WITH COUNTY TO ISOLATE 42" WM AND 12" MAIN TO BE DISCONNECTED.
 - DISCONNECT EX. 12" WM FROM 42" WM AND REMOVE EX. 12" PIPING, 12" GV, 12" TEE, AND 12" SLEEVE.
 - INSTALL 12" SPOOL (RJ) AND 12" MECHANICAL SLEEVE (RJ) AS REQUIRED FOR CLOSURE OF EX. 12" WM.
 - REMOVE EX. 42" PCCP WM AND REPLACE WITH 48" WM.
 - CONTRACTOR SHALL COMPLETE DISCONNECTION AND RETURN EX. 12" WM TO SERVICE WITHIN 8 HOURS OF SHUTDOWN. SHUTDOWN AND WORK SHALL BE COMPLETED AT NIGHT.
 - REFER TO CATHODIC PROTECTION DRAWINGS FOR LOCATION OF INSULATING FLANGES.



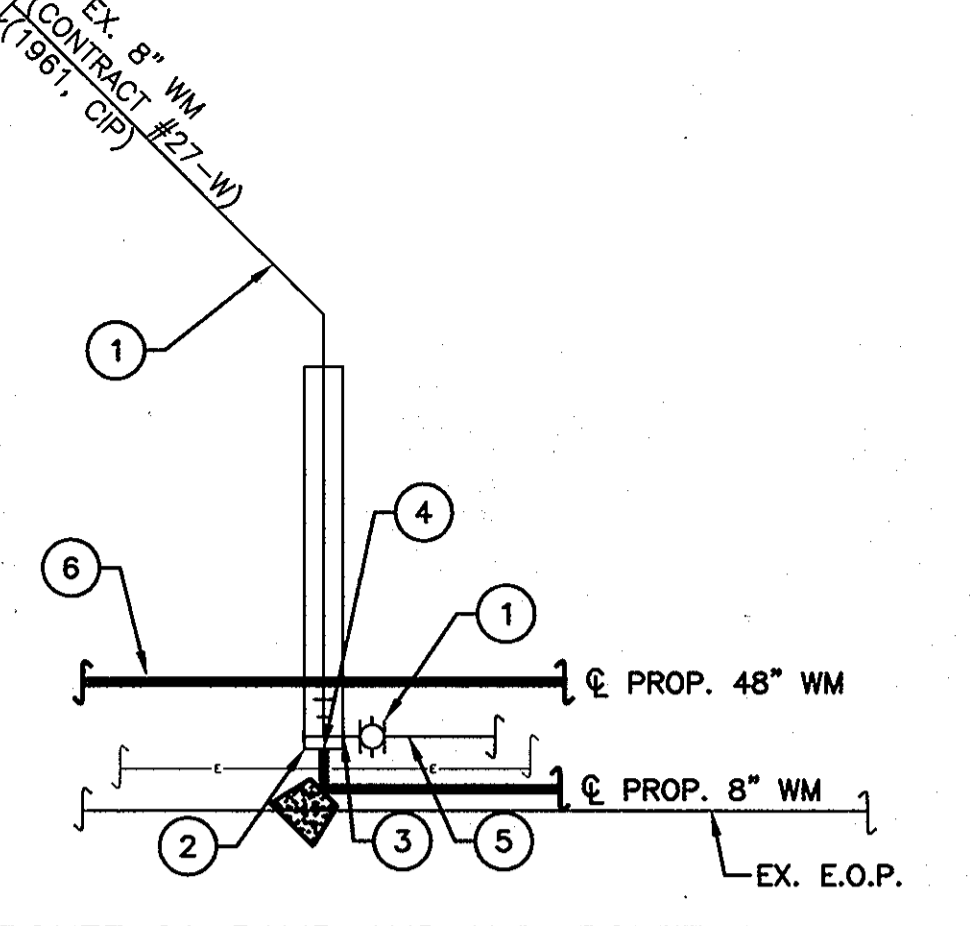
FREDERICK ROAD

- CONNECTION AT STATION 13+01.14**
- REMOVE EX. 12" 90° BEND AND THRUST BLOCK AS WELL AS 12" DI PIPING TO OUTSIDE LIMITS OF PROP. 12" WM TRENCH.
 - INSTALL PROP. 12" DI PIPING (RJ) (APPROX. 77 LF), 45° HB (RJ), 11.25" HB (RJ), 90° HB (RJ), 12" RSGV (RJ), AND 12" SPOOL (RJ). VALVE SHALL BE CONNECTED TO PROP. 48"x12" TEE PER COUNTY STD DTL W2.14
 - REMOVE EX. 42" PCCP WM AND REPLACE WITH 48" WM.
 - INSTALL PROPOSED 48"x12" TEE (RJ).
 - PROTECT IN PLACE
 - ABANDON IN PLACE EX. 12" WM OUTSIDE LIMITS OF CONNECTION PER DETAIL Q ON SHEET 11.
 - REFER TO CATHODIC PROTECTION DRAWINGS FOR LOCATION OF INSULATING FLANGES.



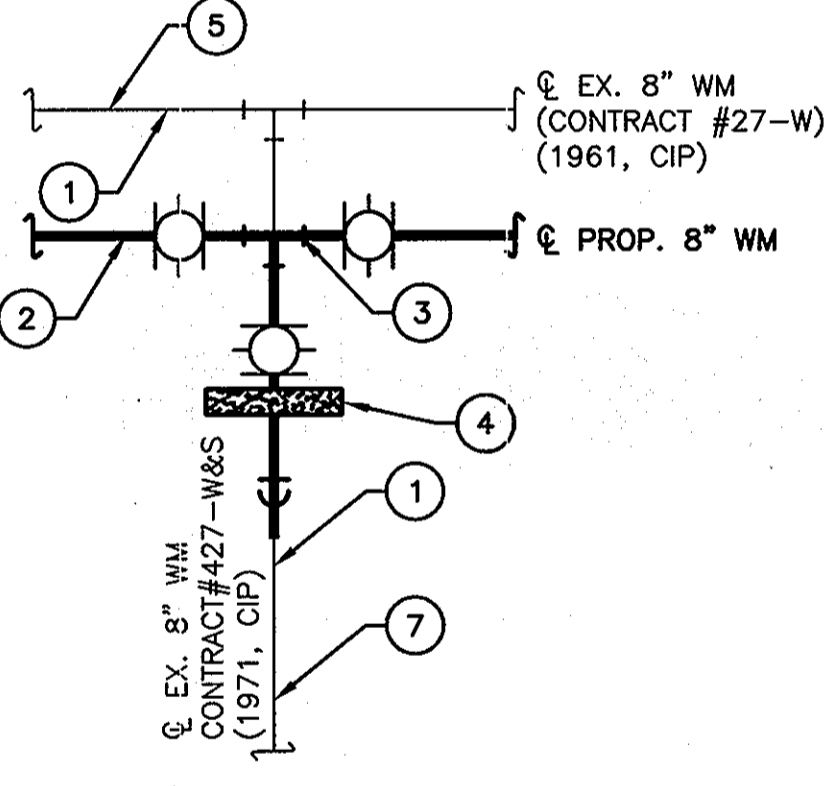
U.S. ROUTE 29

- CONNECTION AT STATION 18+75.08**
- CONTRACTOR SHALL COORDINATE WITH COUNTY FOR SHUT DOWN OF EXISTING 8" WM. EX. 8" WM CAN BE OUT OF SERVICE WHEN 42" WM IS TAKEN OFF-LINE.
 - CONTRACTOR SHALL CUT AND REMOVE PORTION (APPROX. 23 LF) OF EX. 8" WM TO FACILITATE INSTALLATION OF NEW 48" MAIN. PROVIDE CAP OR PLUG ON EX. 8" MAIN TO PREVENT DEBRIS FROM ENTERING EX. 8" MAIN.
 - PROPOSED 48" WM PER PLANS.
 - CONNECT EX. FIRE HYDRANT ASSEMBLY
 - INSTALL 48"x12" TEE (RJ), 12" RSGV (RJ), AND 12" SPOOL (RJ). VALVE SHALL BE CONNECTED TO PROP. 48"x12" TEE PER COUNTY STD DTL W2.14.
 - INSTALL 12"x8" REDUCER (RJ), 8" PIPING (RJ), AND 8" MECHANICAL SLEEVE (RJ) AS REQUIRED TO FACILITATE TIE-IN CONNECTION TO EXISTING 8" WM. APPROXIMATELY 23 LF OF PROPOSED 8" PIPING (RJ) IS REQUIRED TO COMPLETE THIS WORK.
 - REFER TO CATHODIC PROTECTION DRAWINGS FOR LOCATION OF INSULATING FLANGES.



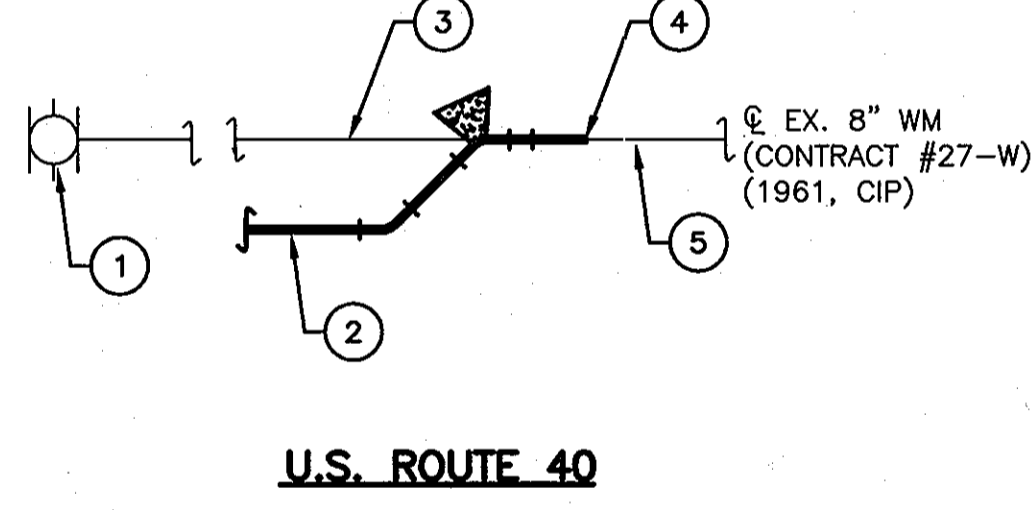
U.S. ROUTE 29 RAMP AND U.S. ROUTE 40

- CONNECTION AT STATION 60+02.91**
- CONTRACTOR SHALL COORDINATE WITH COUNTY FOR SHUT DOWN OF EXISTING 8" WM.
 - CONTRACTOR SHALL CUT AND REMOVE EX. 8" PIPING, EX. TEE, AND THRUST BLOCKS AS DEPICTED IN PLANS AS NEEDED TO FACILITATE CONSTRUCTION.
 - CONTRACTOR SHALL CAP EX. 8" WM TO FACILITATE ISOLATION OF 8" WM TO BE REPLACED. CONTRACTOR TO PROVIDE TEMPORARY RESTRAINT. ISOLATION AND TEMPORARY RESTRAINT SHALL BE AS DEPICTED IN PLANS.
 - CONNECT 8" PIPING (RJ) TO EXISTING 8" WM, OUTSIDE LIMITS OF CASING AND CONSTRUCT 8" WM PER PLANS. UTILIZE 8" SLEEVE (RJ) AS REQUIRED FOR CONNECTION. INSTALL THRUST BLOCK IN ACCORDANCE W/ COUNTY STANDARDS.
 - REMOVE EX. 8" WM AND APPURTENANCES WITHIN THE LIMITS OF PROPOSED 48" WM (REFER TO PLANS).
 - PROPOSED 48" WM PER PLANS.
 - REFER TO CATHODIC PROTECTION DRAWINGS FOR LOCATION OF INSULATING FLANGES.



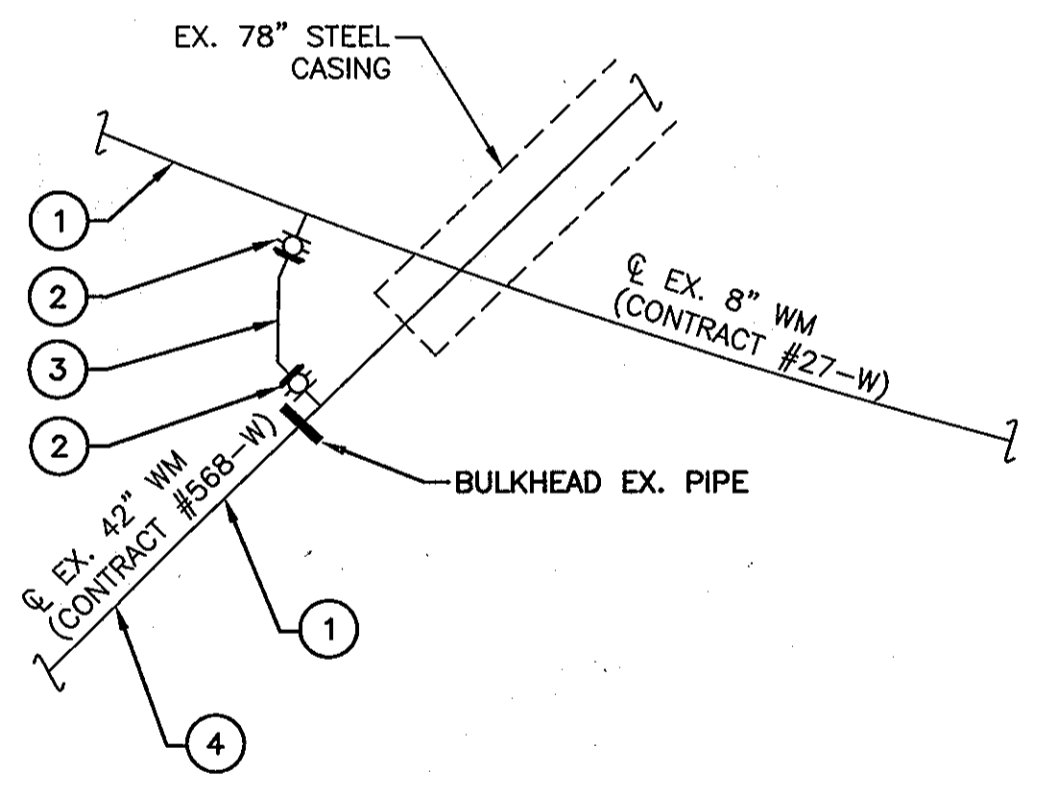
U.S. ROUTE 40

- CONNECTION AT STATION 62+04.31**
- CONTRACTOR SHALL COORDINATE WITH COUNTY FOR SHUT DOWN OF BOTH EX. 8" WMS.
 - PROPOSED 8" WM PER PLANS.
 - INSTALL 8" TEE (RJ), 8" SPOOL (RJ), 8" RESILIENT SEAT GV (RJ), 8" PIPING (RJ), 8" 45° VB (RJ), AND 8" MECHANICAL SLEEVE (RJ) TO FACILITATE TIE-IN TO EX. 8" WM. APPROXIMATELY 12 LF OF PROPOSED 8" PIPING (RJ) IS REQUIRED TO COMPLETE THIS WORK. ROLL PROP. 8" TEE AS REQUIRED TO MEET REQUIRED GRADE.
 - CONSTRUCT CONCRETE THRUST COLLAR AND RESTRAIN TO PROP. 8" WM.
 - REMOVE EX. 8" WM AND APPURTENANCES WITHIN THE LIMITS OF PROP. 48" WM.
 - CONSTRUCT PROPOSED 48" WM PER PLANS.
 - CONTRACTOR SHALL PROVIDE A TEMPORARY DEBRIS PLUG ON EX. 8" WM.
 - REFER TO CATHODIC PROTECTION DRAWINGS FOR LOCATION OF INSULATING FLANGES.



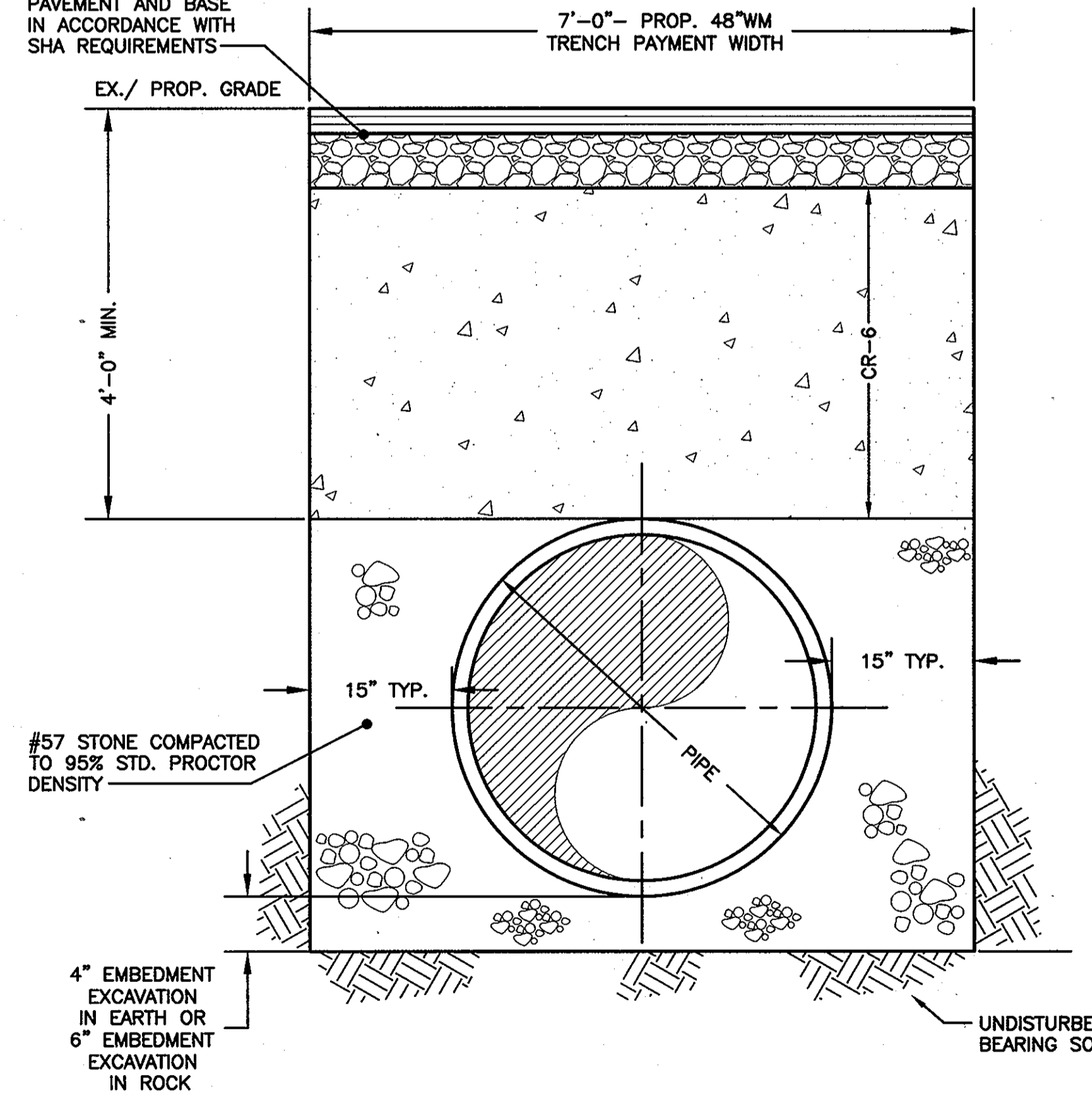
U.S. ROUTE 40

- CONNECTION AT STATION 63+08.65**
- CONTRACTOR SHALL COORDINATE WITH COUNTY FOR SHUT DOWN OF EXISTING 8" WM, AND SHALL ISOLATE EX. 8" WM AS DEPICTED IN PLANS.
 - CONSTRUCT PROP. 8" WM PER PLANS UP TO VICINITY OF TIE-IN CONNECTION PRIOR TO 48" WM CONSTRUCTION.
 - CONTRACTOR SHALL CUT AND REMOVE SECTION OF EX. 8" WM AS REQUIRED TO FACILITATE TIE-IN CONNECTION AND TO EXTENTS REQUIRED FOR CONSTRUCTION OF PROPOSED 48" WM.
 - COMPLETE TIE-IN USING 8" 45-DEGREE HB (TYP-2), THRUST BLOCKS, 8" PIPING, AND 8" MECHANICAL SLEEVE AS REQUIRED TO COMPLETE CONNECTION. INSTALL THRUST BLOCK IN ACCORDANCE W/ COUNTY STANDARDS.
 - CONTRACTOR SHALL PROVIDE A TEMPORARY DEBRIS PLUG ON EX. 8" WM.
 - CONTRACTOR SHALL ENSURE THIS TIE-IN IS PERFORMED IN EARTH UNDISTURBED BY THE PROP. 48" WM AND SHALL POUR THRUST BLOCK AGAINST UNDISTURBED EARTH.
 - REFER TO CATHODIC PROTECTION DRAWINGS FOR LOCATION OF INSULATING FLANGES.



U.S. ROUTE 29 RAMP AND U.S. ROUTE 40

- COORDINATE WITH COUNTY TO ISOLATE EXISTING 8" WM AND 42" WM PRIOR TO WORK.
- PLUG BOTH 6" VALVES AND BUTTRESS BETWEEN.
- REMOVE EX. 6" PIPING AND FITTINGS.
- ABANDON EX. 42" WM.
- PERFORM SURFACE RESTORATIONS TO IMPACTED AREA. ALL WORK BELOW PAVEMENT SHALL BE BACKFILLED WITH FLOWABLE FILL.



TYPICAL PIPE TRENCH DETAIL (PAVED)
N.T.S.

- DETAIL NOTES:**
- REFER TO DETAIL P SHEET 11 FOR PIPE INSTALLATION IN UNPAVED AREAS.
 - ALL TRENCHING PERFORMED UNDER PAVEMENT WITHIN THE SHA ROW SHALL INCLUDE A 2'-0" THICK FLOWABLE FILL CAP BELOW SUBGRADE FOR PAVEMENT REPLACEMENT.
 - TRENCH SHALL BE COMPACTED TO 95% STD. PROCTOR DENSITY, 8" LAYERS MAXIMUM.
 - REFER TO RESTORATION SCHEDULE FOR BASE AND PAVEMENT REQUIREMENTS FOR WORK WITHIN THE SHA ROW.
 - TRENCH LIMIT DEPICTED HEREIN SHALL NOT BE MISCONSTRUED AS LIMITS FOR FINAL PAVING. CONTRACTOR SHALL NOTE THE REQUIRED AREA FOR MILL & OVERLAY DEPICTED IN THE PLANS.

RECORD DRAWINGS
To the best of our knowledge, information and belief, based on information provided by others, these record drawings substantially represent the project as constructed.
O'BRIEN & GERE ENGINEERS, INC.
By: *[Signature]*

AS-BUILT REPLACEMENT SHEET
DATE: SEPTEMBER, 2009

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* DATE: 4/15/10
 Chief - Bureau of Engineering: *[Signature]* DATE: 4/15/10
 Chief, Bureau of Utilities: *[Signature]* DATE: 4/15/10
 Chief, Utility Design Division: *[Signature]* DATE: 4/15/10

O'BRIEN & GERE ENGINEERS, INC.
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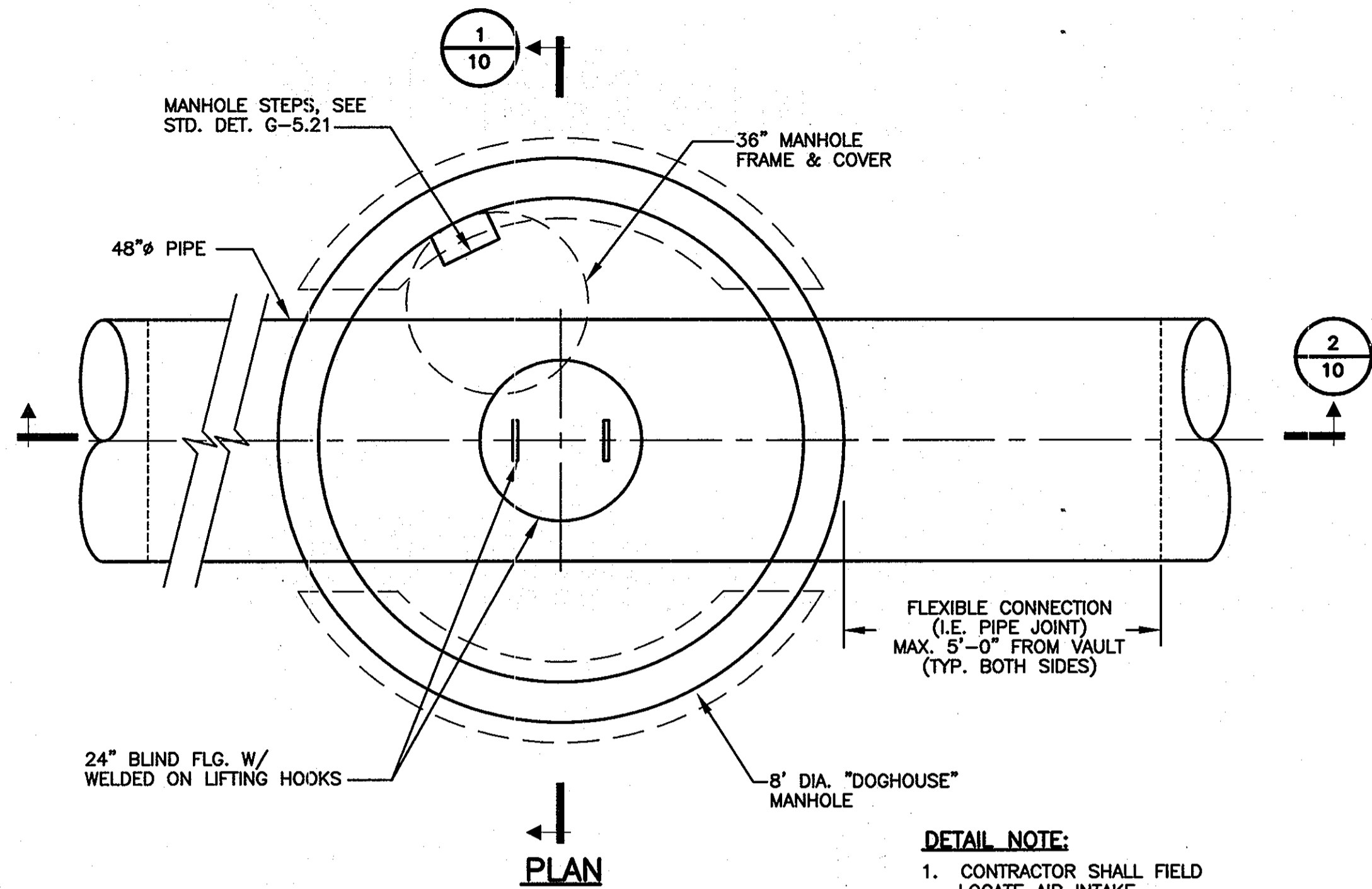
DSN. BY: GFR			
DRN. BY: RPW			
CHK. BY: RJD			
DATE: JUNE 2007	RPW	1	AS-BUILT REVISIONS
	BY	NO.	REVISION
			03/10

CONNECTION AND ABANDONMENT DETAILS

600' SCALE MAP NO. 24 BLOCK NO. 6,12

U.S. ROUTE 29 WATER MAIN REPLACEMENT
FREDERICK ROAD TO U.S. ROUTE 40

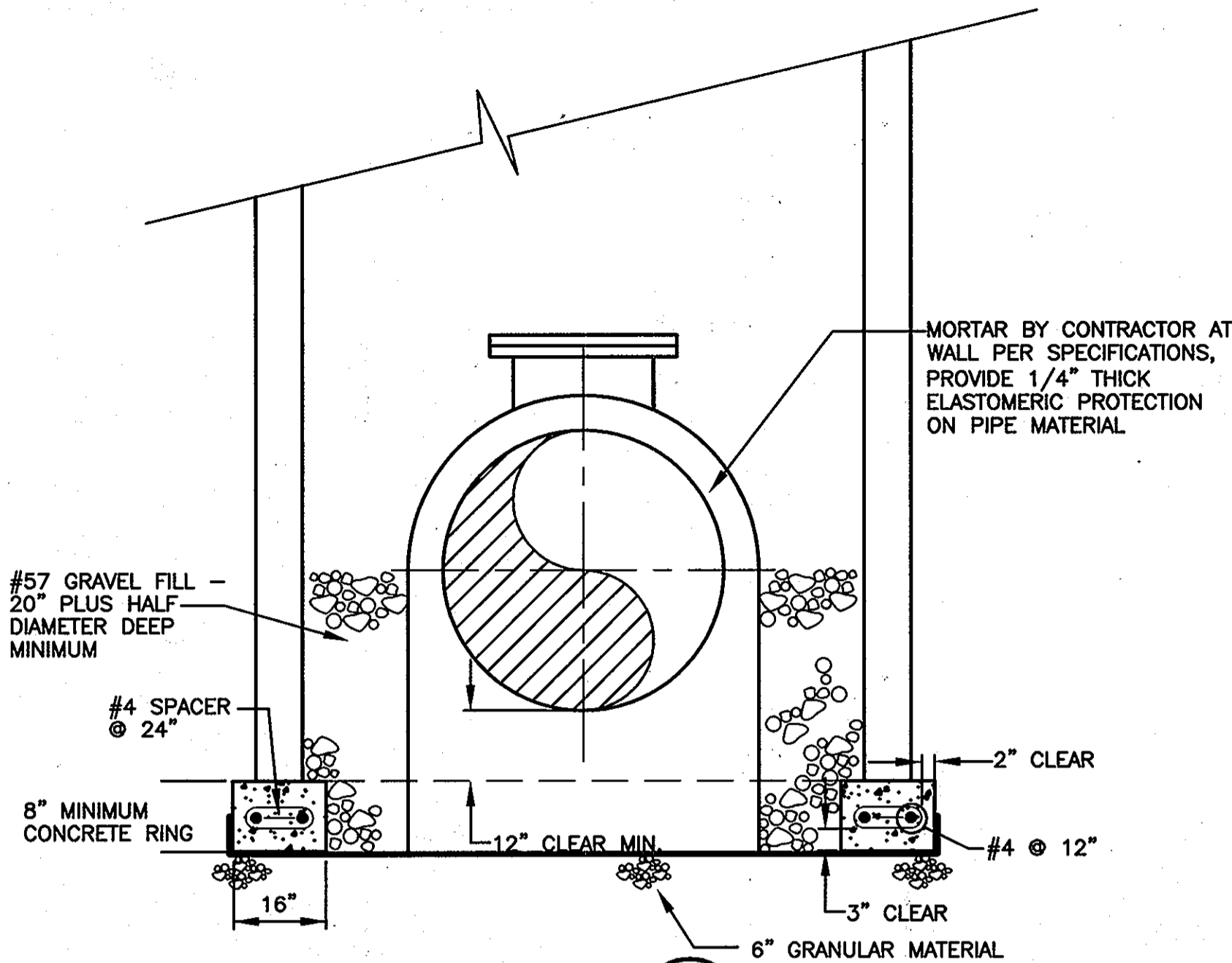
CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND



TYPICAL ACCESS MANHOLE - DETAIL

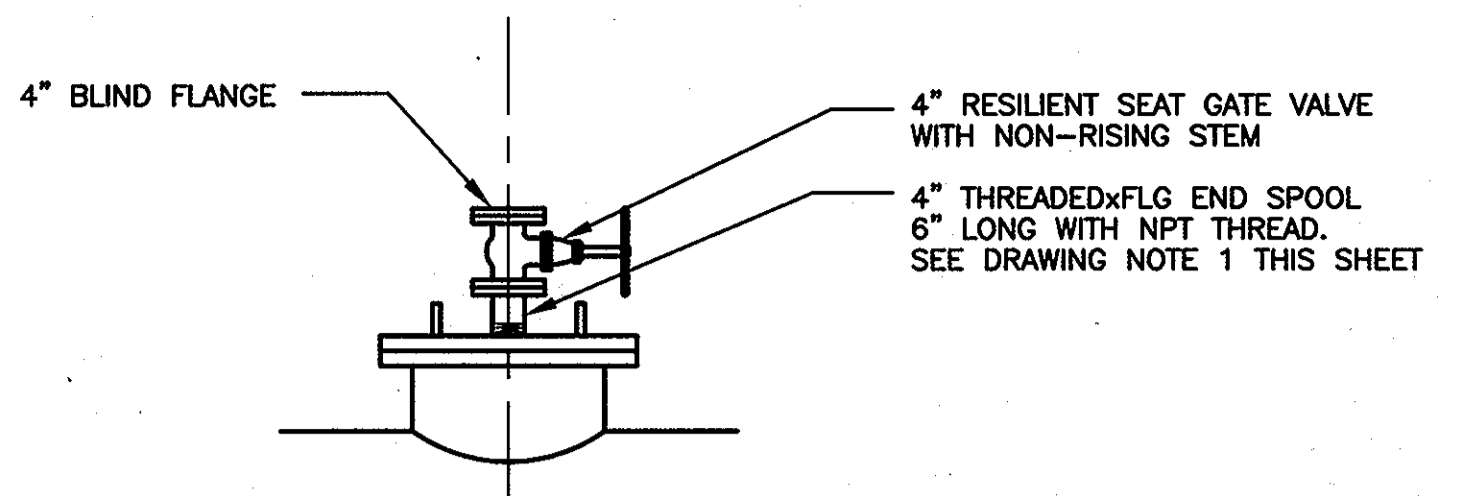
SCALE: 1/2"=1'-0"

DETAIL NOTE:
1. CONTRACTOR SHALL FIELD LOCATE AIR INTAKE ENTRANCE/EXIT LOCATION AS DIRECTED BY INSPECTOR.



SECTION

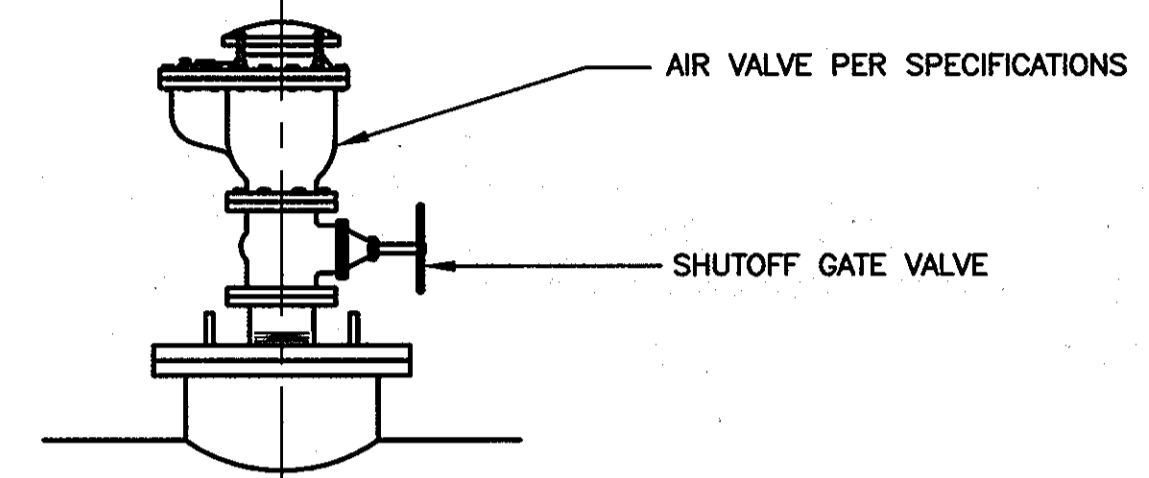
SCALE: 1/2"=1'-0"



TYPICAL ACOUSTICAL MONITORING MANHOLE ASSEMBLY - DETAIL

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

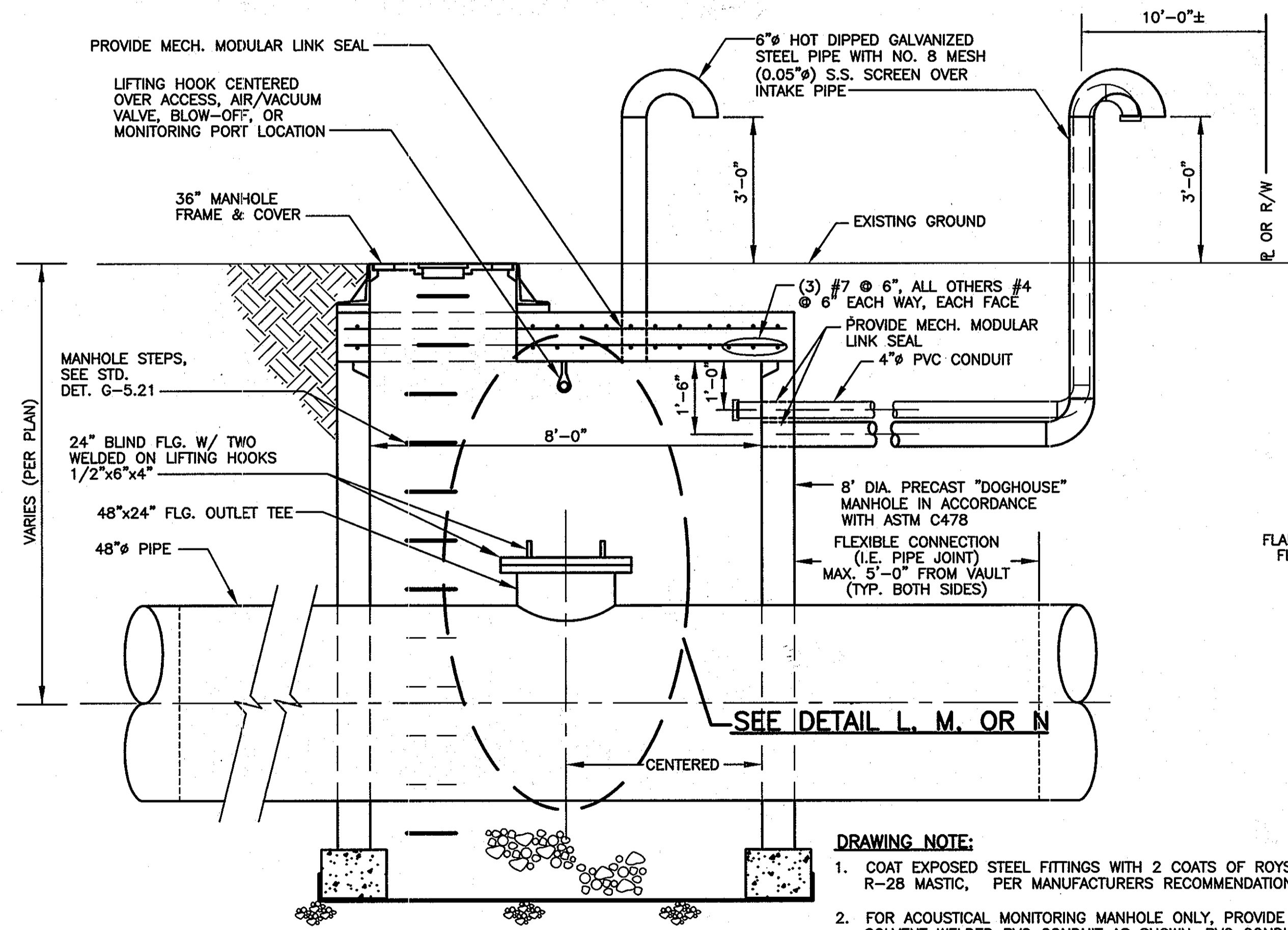
PCCP ALTERNATE ONLY, SEE DRAWING NOTE 2 THIS SHEET



TYPICAL AUTOMATIC AIR VALVE/ACCESS MANHOLE ASSEMBLY - DETAIL

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

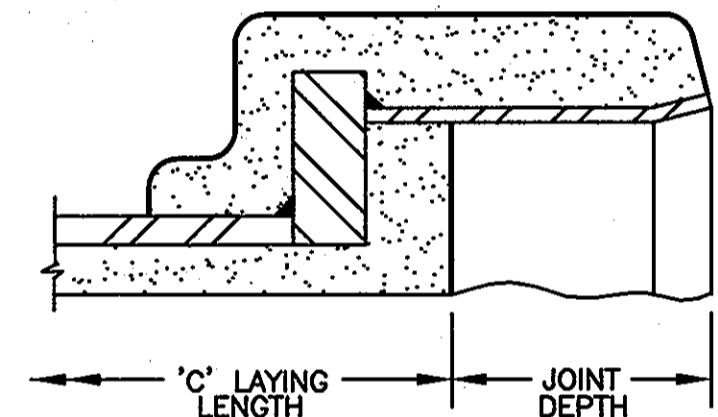
VARIES



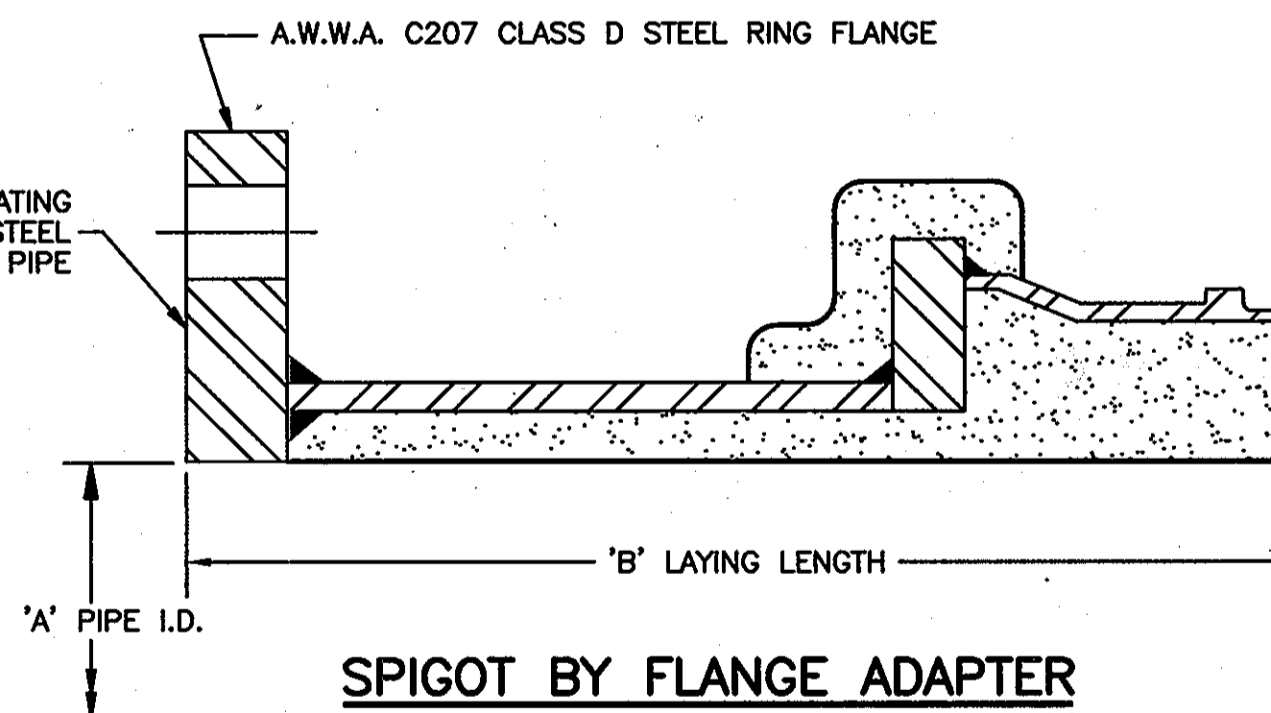
SECTION

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

DRAWING NOTE:
1. COAT EXPOSED STEEL FITTINGS WITH 2 COATS OF ROYSTON R-28 MASTIC, PER MANUFACTURERS RECOMMENDATIONS.
2. FOR ACOUSTICAL MONITORING MANHOLE ONLY, PROVIDE 4" SOLVENT WELDED PVC CONDUIT AS SHOWN. PVC CONDUIT SHALL BE PROVIDED WITH 4" THREADED CAPS ON EACH END.
3. REGARDLESS OF REINFORCEMENT DEPICTED, MANHOLE SHALL BE FURNISHED WITH LIFTING EYES SUITABLE FOR LIFTING WITHOUT CRACKING OR DAMAGING MANHOLE. MANUFACTURER SHALL PROVIDE LIFTING HOOKS AND EMBEDMENT AS REQUIRED FOR LIFTING WITHOUT DAMAGE.



BELL BY FLANGE ADAPTER



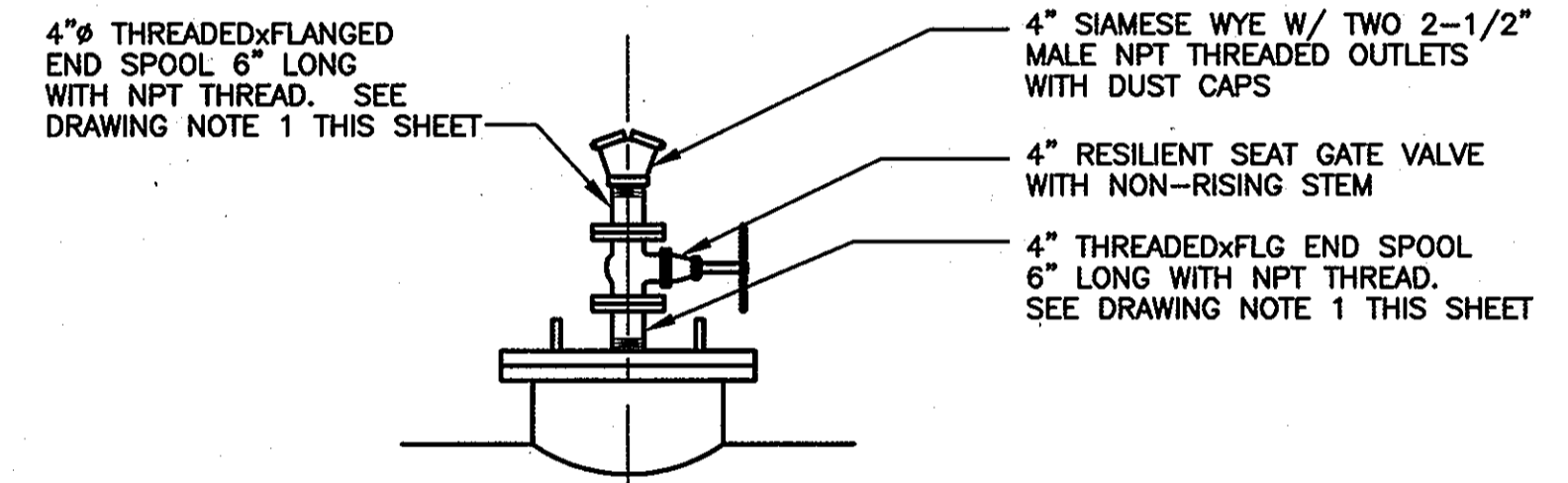
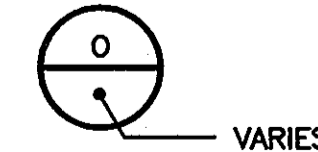
SPIGOT BY FLANGE ADAPTER

A	B	C	JOINT DEPTH
48"	1.63'	1.30'	3 7/8"

NOTES:
1) MESH AND MORTAR AS SHOWN (MESH NOT SHOWN FOR CLARITY).
2) ALL EXPOSED STEEL (EXCEPT FLANGE FACE AND BOLT HOLES) TO BE PAINTED IN ACCORDANCE WITH SPECIFICATION 909.20.
3) FLANGE FACE AND BOLT HOLES TO BE PAINTED WITH ZINC RICH PAINT.

PCCP STANDARD JOINT x FLANGE ADAPTER DETAIL

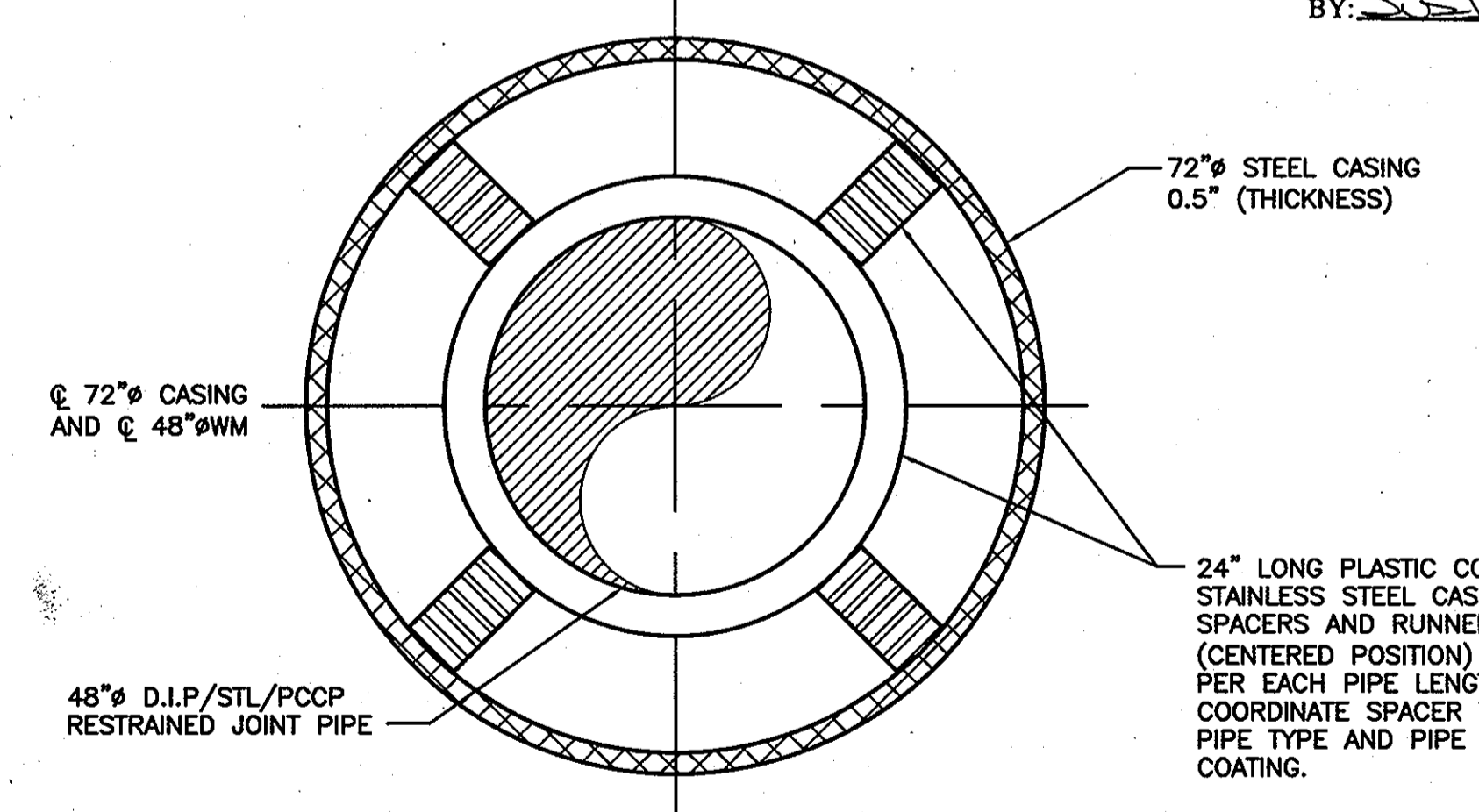
N.T.S.



TYPICAL BLOW-OFF/ACCESS MANHOLE ASSEMBLY - DETAIL

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

VARIES



72" CASING PIPE - DETAIL

N.T.S.

DETAIL NOTES:

- CASING TO BE CLOSED ON BOTH ENDS WITH CASCADE RUBBER END SEALS.
- PROVIDE PIPE JOINT 1 FOOT FROM EACH END OF CASING PIPE.

AS-BUILT

SCALES 1/2"=1'-0"

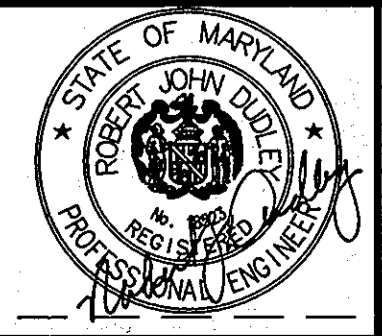
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *Jay D. [Signature]*
Chief, Bureau of Utilities: *Robert [Signature]* 7-6-07

Chief - Bureau of Engineering: *[Signature]* 7/3/07
Chief, Utility Design Division: *[Signature]* 7-3-07

O'BRIEN & GERE ENGINEERS, INC.
8401 Corporate Drive Suite 400 Landover, Maryland 20785 (301) 731-5622 FAX: (301) 577-4737



DSN. BY:	GFR
DRN. BY:	RPW
CHK. BY:	RJD
DATE:	JUNE 2007
BY:	NO.
REVISION:	AS-BUILT REVISIONS
DATE:	03/10

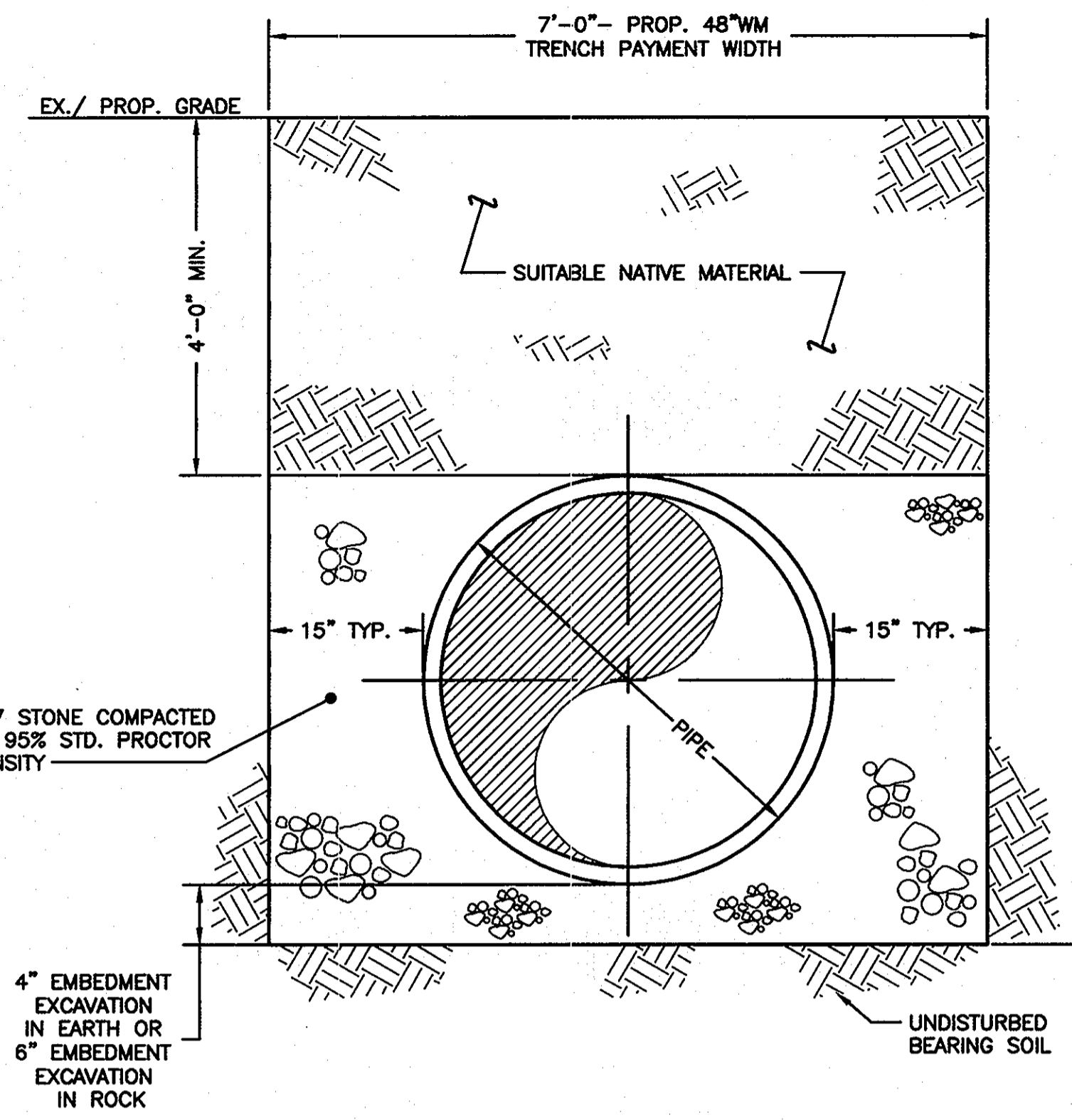
TYPICAL ACCESS, AIR VALVE, BLOW-OFF, CASING PIPE, AND MONITORING MANHOLE DETAILS

600' SCALE MAP NO. 24 BLOCK NO. 6,12

U.S. ROUTE 29 WATER MAIN REPLACEMENT FREDERICK ROAD TO U.S. ROUTE 40

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 10 OF 37
FILE NO. 32122- 211

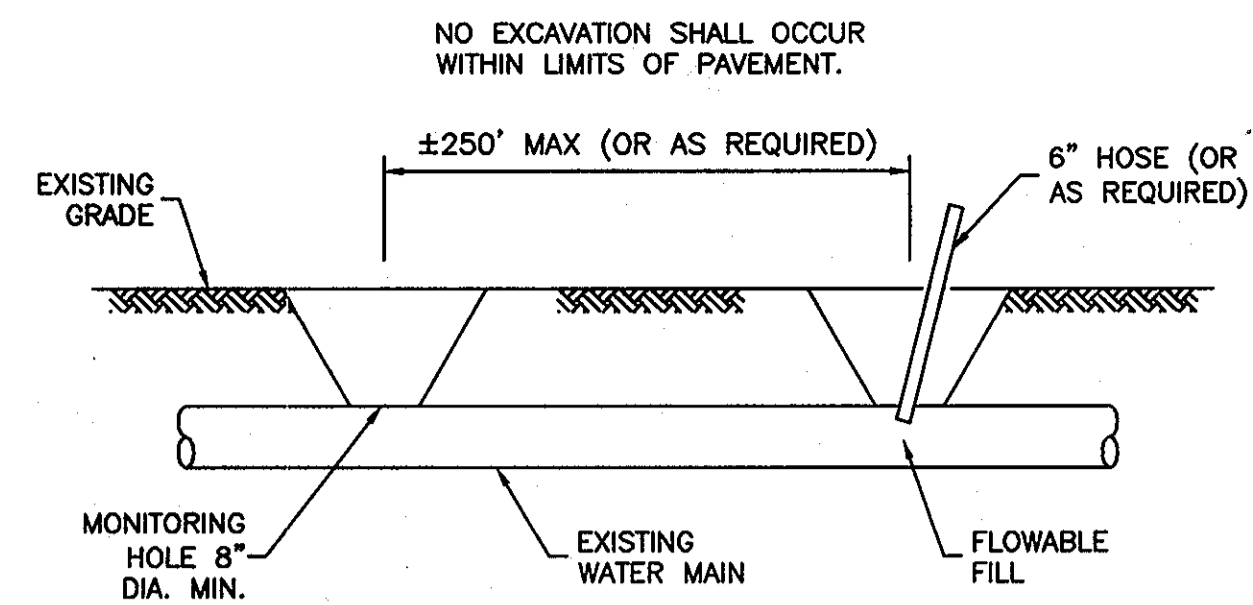


TYPICAL PIPE TRENCH DETAIL (UNPAVED)
N.T.S.



DETAIL NOTES:

- TRENCH SHALL BE COMPACTED TO 95% STD. PROCTOR DENSITY, 8" LAYERS MAXIMUM.
- REFER TO RESTORATION SCHEDULE FOR RESTORATION REQUIREMENTS.
- REFER TO DETAIL T ON SHEET 9 FOR DETAIL OF PIPE INSTALLATION IN PAVED AREAS.



GENERAL NOTES:

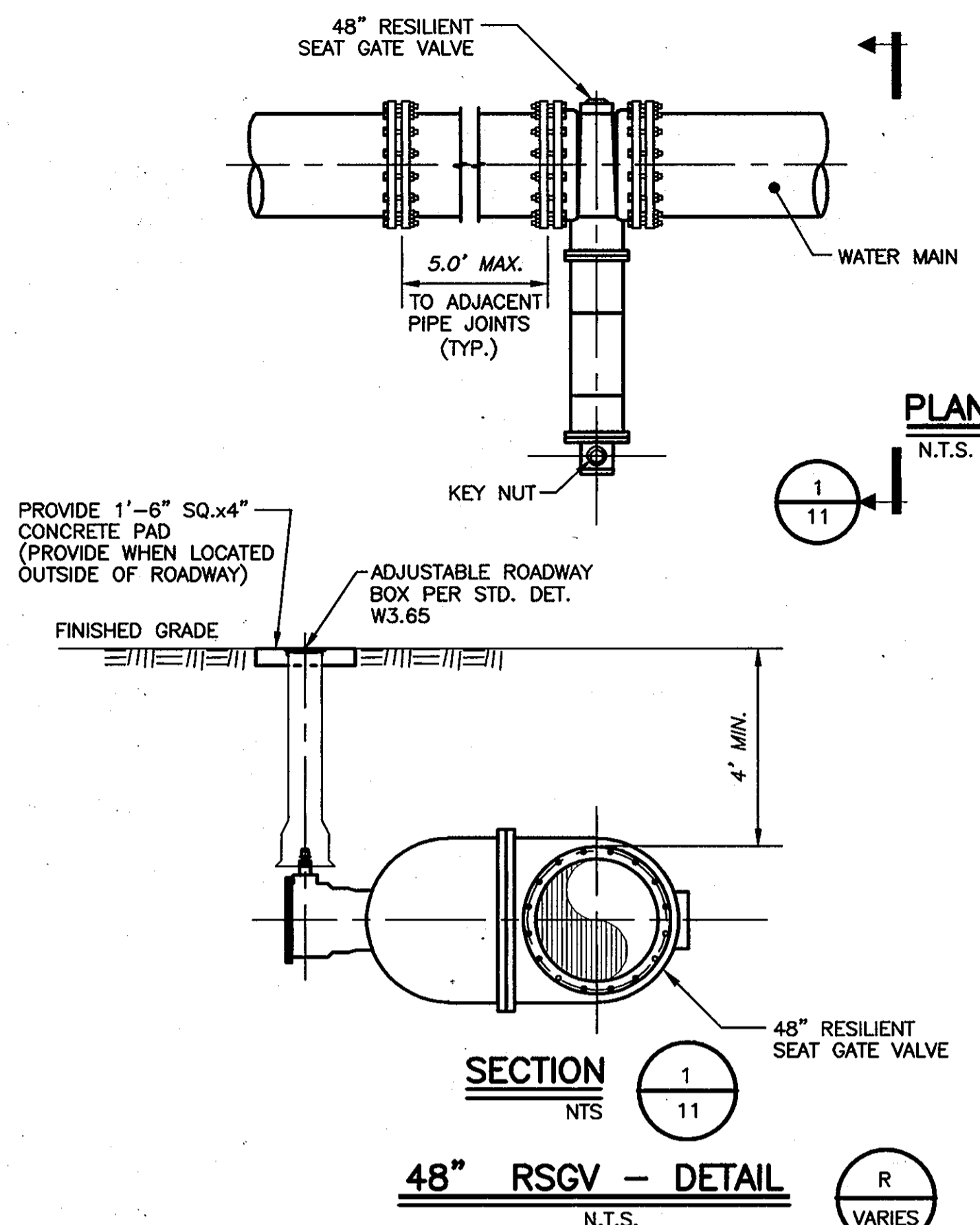
- THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND SUPPLIES TO ABANDON THE EXISTING WATER MAIN INCLUDING EXCAVATION AND BACKFILL, DEMOLITION AND SITE RESTORATION, ALL AS INDICATED, SPECIFIED AND/OR NECESSARY TO COMPLETE THE WORK.
- READY MIX FLOWABLE FILL (CDF) - SHALL CONSIST OF A MIXTURE OF PORTLAND CEMENT, FLY ASH AND SAND. MIXTURE SHALL CONSIST OF THE FOLLOWING APPROXIMATE QUANTITIES OF MATERIAL PER CUBIC YARD AND SHALL BE CAPABLE OF ACHIEVING A COMPRESSIVE STRENGTH OF 50 PSI.
CEMENT - 100 LBS.
FLY ASH - 300 LBS.
SAND (SSD) - 2,576 LBS.
WATER - 541 LBS. (65 GALLONS)
- EXISTING MAIN TO BE ABANDONED SHALL BE CUT AND CAPPED TO PREVENT EXIT OF FLOWABLE FILL OUTSIDE LIMITS OF PROPOSED TRENCH.
- PRIOR TO BEGINNING ABANDONMENT, ALL WATER REMAINING IN THE PIPELINE AND STRUCTURES, SHALL BE PUMPED OUT.
- ABANDONMENT SHALL BE PAID FOR AS A SEPARATE BID ITEM.
- ALL VALVE BOXES, FIRE HYDRANTS, AIR RELEASE VALVES, BLOW-OFFS, AND ANY OTHER APPURTENANCES WHICH EXTEND TO, OR ABOVE, GRADE SHALL BE REMOVED DOWN TO THE ELEVATION OF THE PIPE. ITEMS TO BE SALVAGED ARE DEPICTED ON PLAN SHEETS.
- THE CONTRACTOR SHALL NOT OPEN CUT THE PAVEMENT FOR THE WATER MAIN ABANDONMENT. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR COMPLETING OPERATIONS IN ACCORDANCE WITH SHA REQUIREMENTS.

WATER MAIN ABANDONMENT DETAIL
N.T.S.



AS-BUILT PIPELINE ABANDONMENT SCHEDULE:

- AT STA. 21+00, LT 0'; 42" ABANDONED AND CASING WITH FLOWABLE FILL. LIMIT TO 5' MIN. OUTSIDE EDGE OF PAVING.
- AT STA. 41+83, LT 120'; EXTENDING NORTH, ABANDONED 42" MAIN AND CASING WITHIN RIDGE ROAD UP TO AND ACROSS US ROUTE 40 EAST BOUND WITH FLOWABLE FILL.
- 42" OUTSIDE OF PAVED ROADWAY CAP/PLUG AT ENDS AND ABANDONED WITHOUT FLOWABLE FILL.

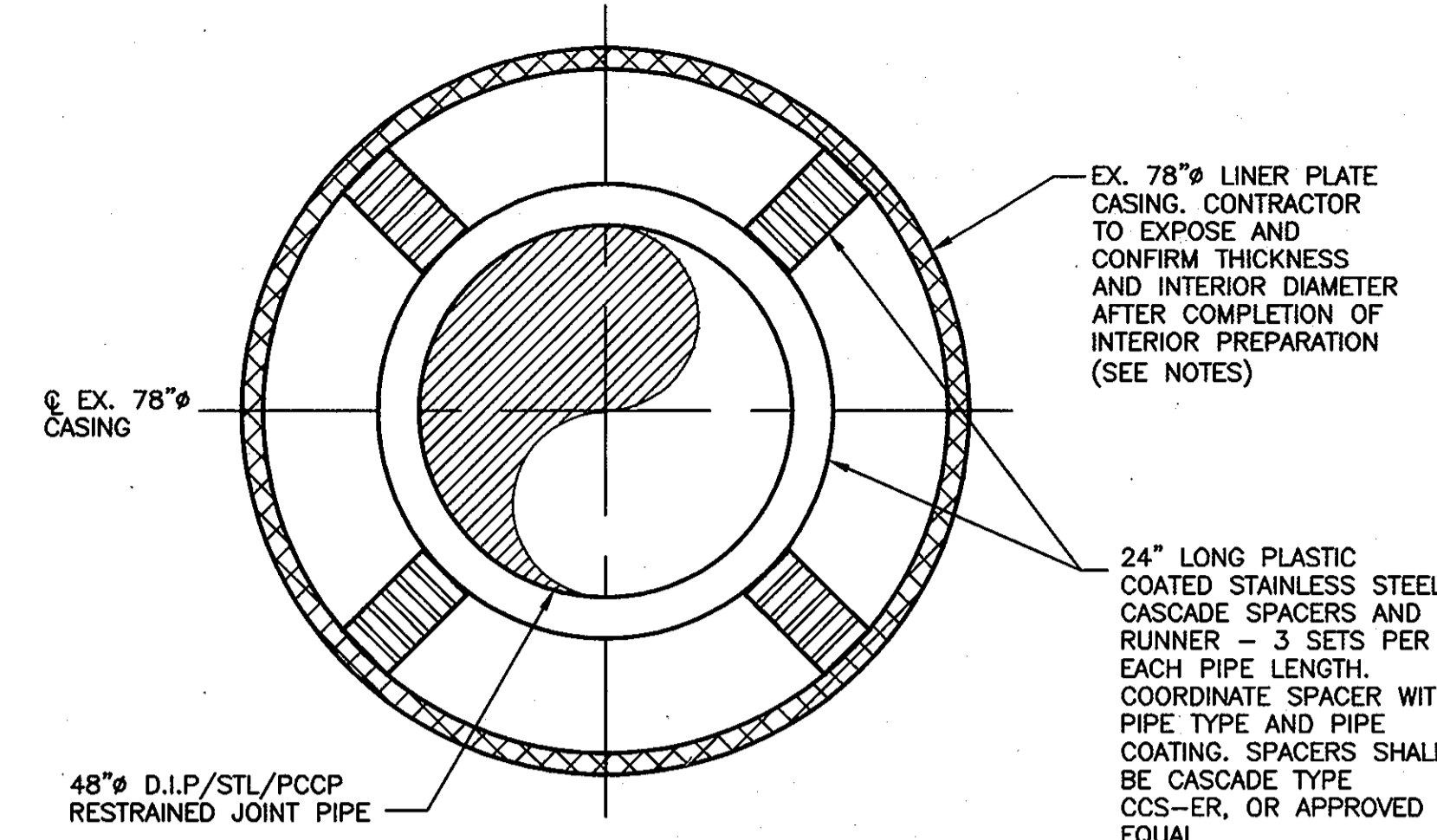


48" RSGV - DETAIL
N.T.S.

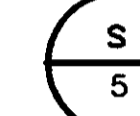


DETAIL NOTES:

- AT STA. 12+63.47 OPERATING NUT SHALL BE ORIENTED TO THE EAST OF PROPOSED MAIN.
- AT STA. 38+07.68 OPERATING NUT SHALL BE ORIENTED TO THE EAST OF PROPOSED MAIN.
- AT STA. 53+70.88 OPERATING NUT SHALL BE ORIENTED AS DIRECTED IN THE FIELD.

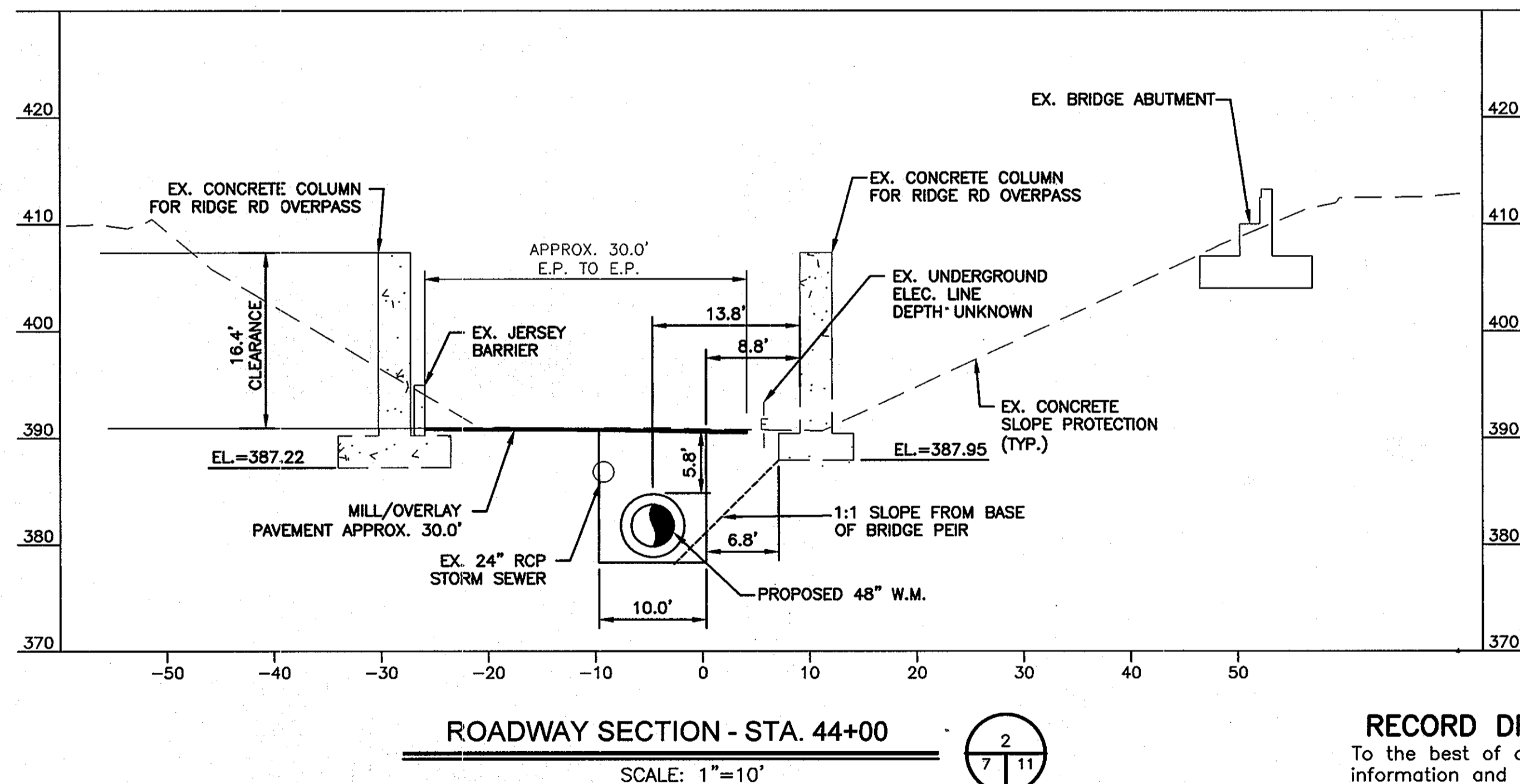


INSTALLATION OF CARRIER PIPE WITHIN EXISTING CASING - DETAIL
N.T.S.

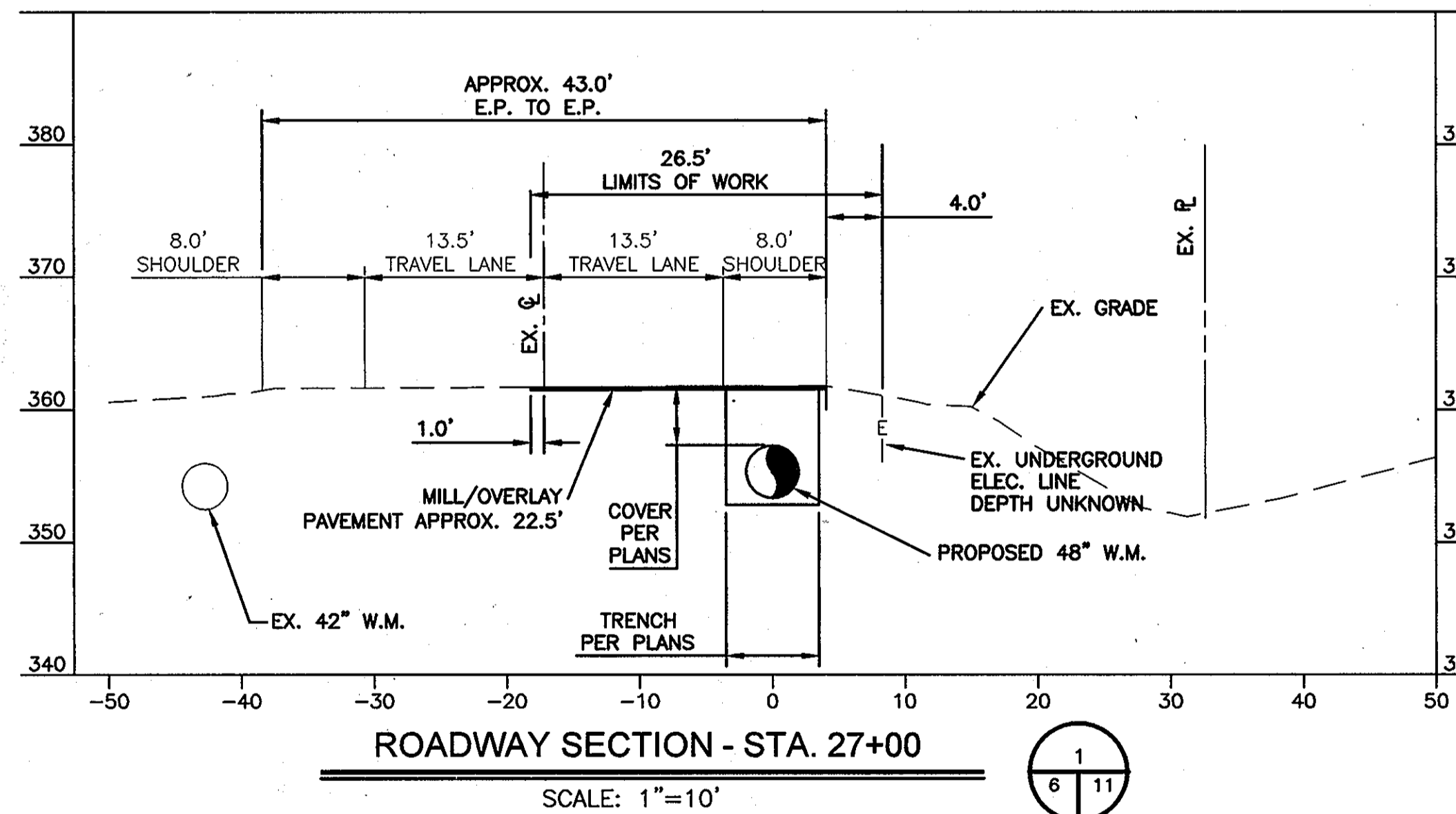
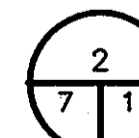


DETAIL NOTES:

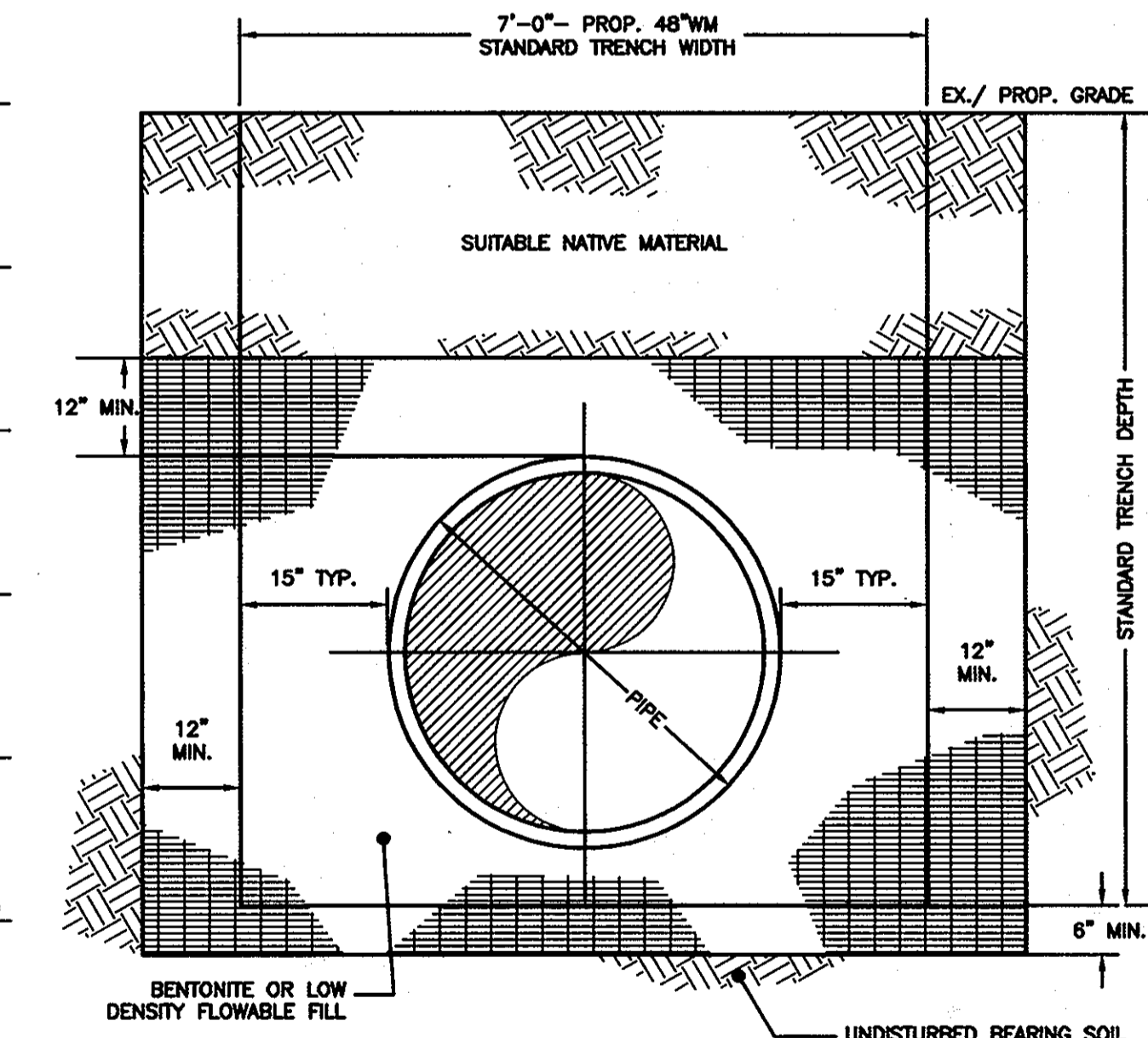
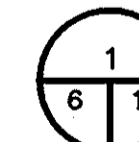
- CONTRACTOR SHALL EXPOSE EXISTING CASING AND REMOVE EXISTING CARRIER PIPING. CONTRACTOR SHALL REMOVE ALL EXISTING CONCRETE, SAND, STEEL STRAPS, AND INTERIOR SURFACE FEATURES WITHIN EXISTING CASING TO PROVIDE A SMOOTH AND UNIFORM STEEL SURFACE SUITABLE FOR INSTALLATION OF PROPOSED SPACERS AND CARRIER PIPE TO ELEVATIONS DEPICTED IN PROFILE SHEETS.
- CASING BRICK CLOSED ON BOTH ENDS. VOID FILLED WITH FLOWABLE FILL.
- PROVIDE PIPE JOINT 1 FOOT FROM EACH END OF CASING PIPE.
- ALL PIPING WITHIN THE CASING SHALL BE RESTRAINED JOINT.
- DETAIL IS SCHEMATIC ONLY. INVERT ELEVATION OF PIPE WITHIN CASING VARIES AT EACH PROPOSED INSTALLATION LOCATION. REFER TO PROFILES FOR REQUIRED CARRIER PIPE INVERT ELEVATION AND COORDINATE SPACERS ACCORDINGLY.



ROADWAY SECTION - STA. 44+00
SCALE: 1"=10'



ROADWAY SECTION - STA. 27+00
SCALE: 1"=10'



TRENCH CUT-OFF - DETAIL
N.T.S.

DETAIL NOTES:

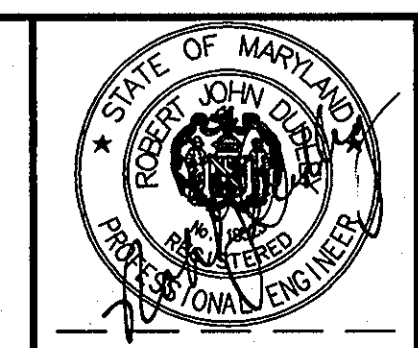
- EXTEND STANDARD TRENCH WIDTH BY 12" MIN EACH SIDE AND 6" BELOW STANDARD DEPTH OF BACKFILL.
- FILL ENTIRE TRENCH WITH BENTONITE OR LOW DENSITY FLOWABLE FILL (100psi-200psi). EXTEND 3' LONGITUDINALLY ALONG THE PIPE TRENCH.
- SPACE CUT-OFFS 100' APART ON THE NORTH SIDE OF STREAM CROSSING BEGINNING AT STA. 12+25 AND ENDING AT STA. 20+25. PUT ONE CUT-OFF ON THE SOUTH SIDE OF THE CROSSING AT STA. 10+50.

AS-BUILT REPLACEMENT SHEET
DATE: MARCH, 2010

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 4/25/10
Chief, Bureau of Engineering: *[Signature]* 4/15/10
Chief, Bureau of Utilities: *[Signature]* 4/15/10
Chief, Utility Design Division: *[Signature]* 4/15/10

O'BRIEN & GERE ENGINEERS, INC.
8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737



DSN. BY:	GFR			
DRN. BY:	RPW			
CHK. BY:	RJD			
DATE:	JUNE 2007			
BY NO.	RPW 1	AS-BUILT REVISIONS		03/10
	RPW DR01	CONSTRUCTION MODIFICATION NO. 1		10/07
		REVISION		DATE

MISCELLANEOUS DETAILS AND TYPICAL CROSS SECTIONS

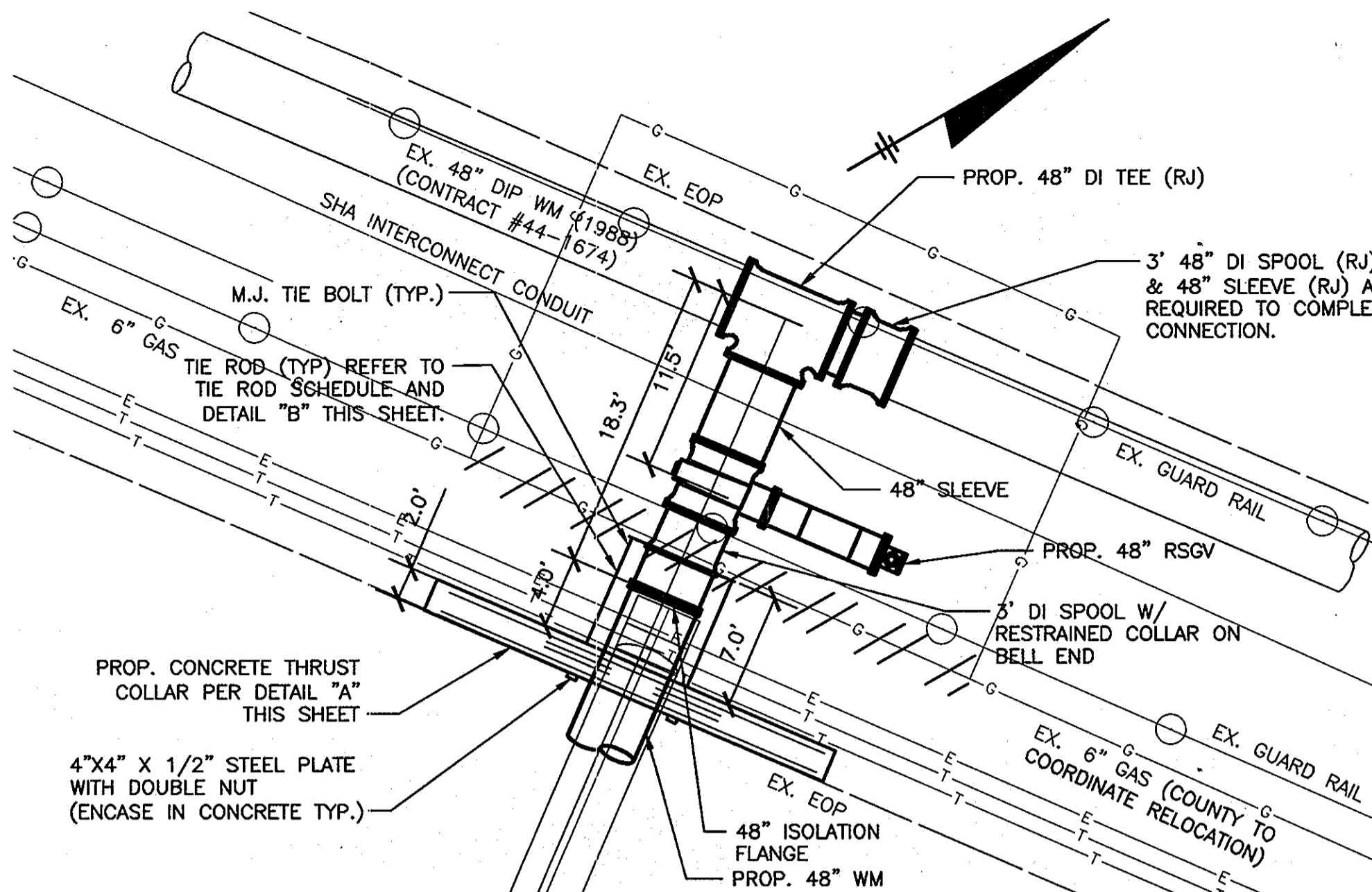
600' SCALE MAP NO. 24 BLOCK NO. 6,12

U.S. ROUTE 29 WATER MAIN REPLACEMENT
FREDERICK ROAD TO U.S. ROUTE 40

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

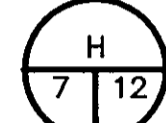
SCALE AS SHOWN

SHEET 11 OF 37



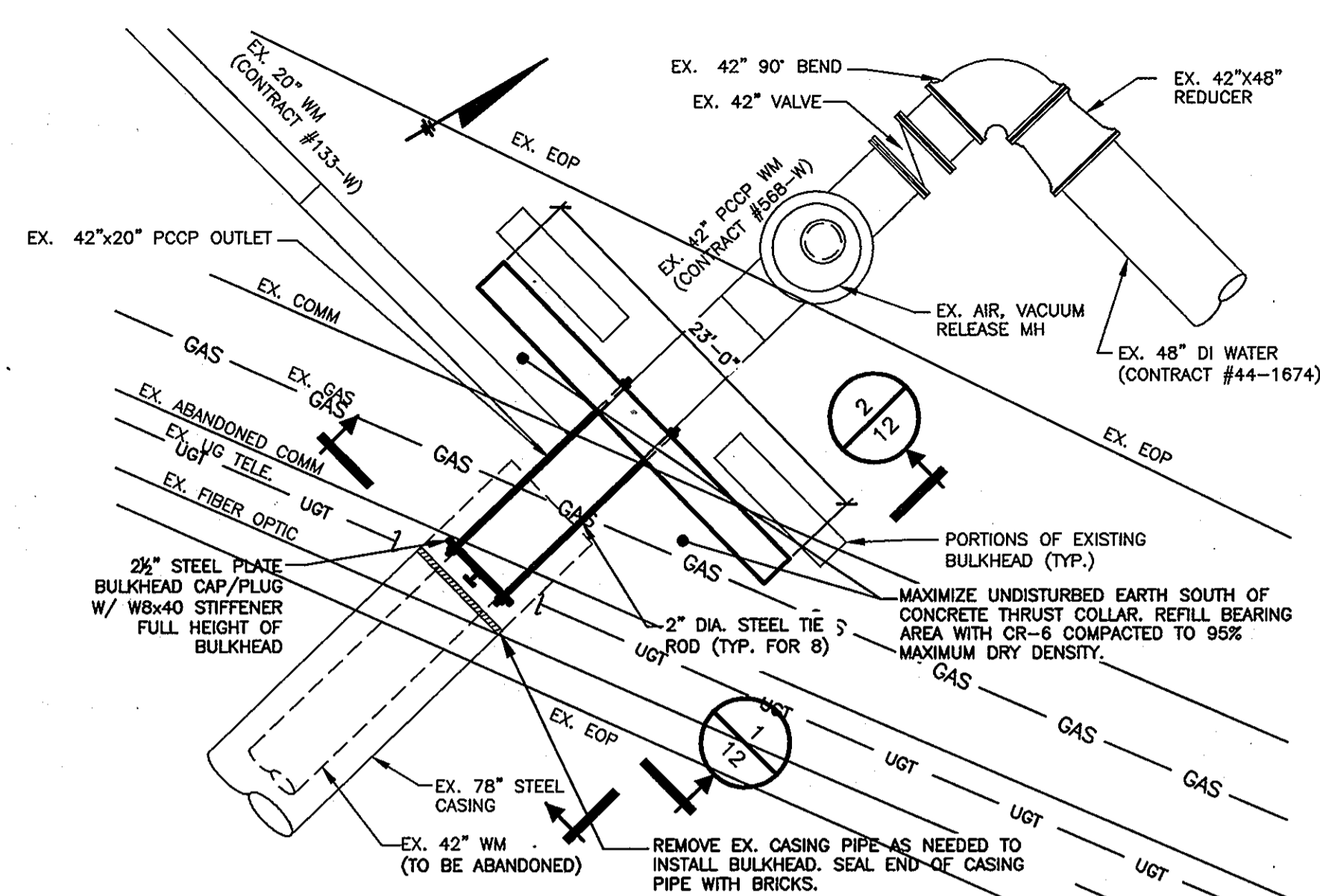
CONNECTION TO EX. 48" MAIN AT STATION 53+79.55

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



NOTES:

- CONTRACTOR SHALL COORDINATE WITH COUNTY FOR SHUT DOWN OF EXISTING 48" WM. SEE SPECIFICATIONS FOR LIMITATIONS ON WHEN SHUT DOWN CAN OCCUR.
- CONTRACTOR SHALL CUT AND REMOVE SECTION OF EX. 48" DI WM AND INSTALL PROPOSED 48" DI TEE (RJ), 48" MECHANICAL COUPLING (RJ), AND 48" DI SPOOLS (RJ). FOR DIP - INSTALL A RESTRAINED SLEEVE; FOR STEEL AND PCCP - SEE DETAIL O ON SHEET 10.
- ORIENT PROPOSED 48" RSGV OPERATOR AS DIRECTED IN FIELD BY ENGINEER.
- CONSTRUCT PROPOSED THRUST COLLAR PER DETAIL "A" ON THIS SHEET.
- REINFORCED CONCRETE THRUST COLLAR SHALL BE INSTALLED A MINIMUM OF 28 DAYS PRIOR TO MAKING CONNECTION.
- PROVIDE AND INSTALL TIE BOLTS AT THE M.J. BELL OF THE 48" DI SPOOL TO TIE THE THRUST COLLAR TO THE PROP. SPOOL.
- AT CONTRACTORS OPTION, AN INTEGRALLY CAST THRUST COLLAR BY PIPE MANUFACTURER MAY BE CAST INTO PROPOSED CONCRETE THRUST BLOCK IN LIEU OF THE RODS. CONTRACTOR SHALL SUBMIT MANUFACTURER'S CALCULATIONS, SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND, ALONG WITH MANUFACTURER'S CERTIFICATION FOR APPROVAL IF THIS OPTION IS CHOSEN.
- REFER TO CATHODIC PROTECTION DRAWINGS FOR LOCATION OF INSULATING FLANGES.
- COUNTY TO COORDINATE RELOCATION OF EX. GAS MAIN PRIOR TO CONSTRUCTION. CONTRACTOR SHALL ASSUME THE REQUIREMENT TO SUPPORT GAS MAIN IN NEW POSITION DURING CONSTRUCTION.
- CONTRACTOR SHALL NOT EXCAVATE BEYOND TRENCH LIMITS FOR PIPELINE AND EXCAVATION LIMITS FOR THRUST COLLAR SO AS TO PROVIDE UNDISTURBED EARTH FOR PROP. THRUST COLLAR TO BEAR UPON.

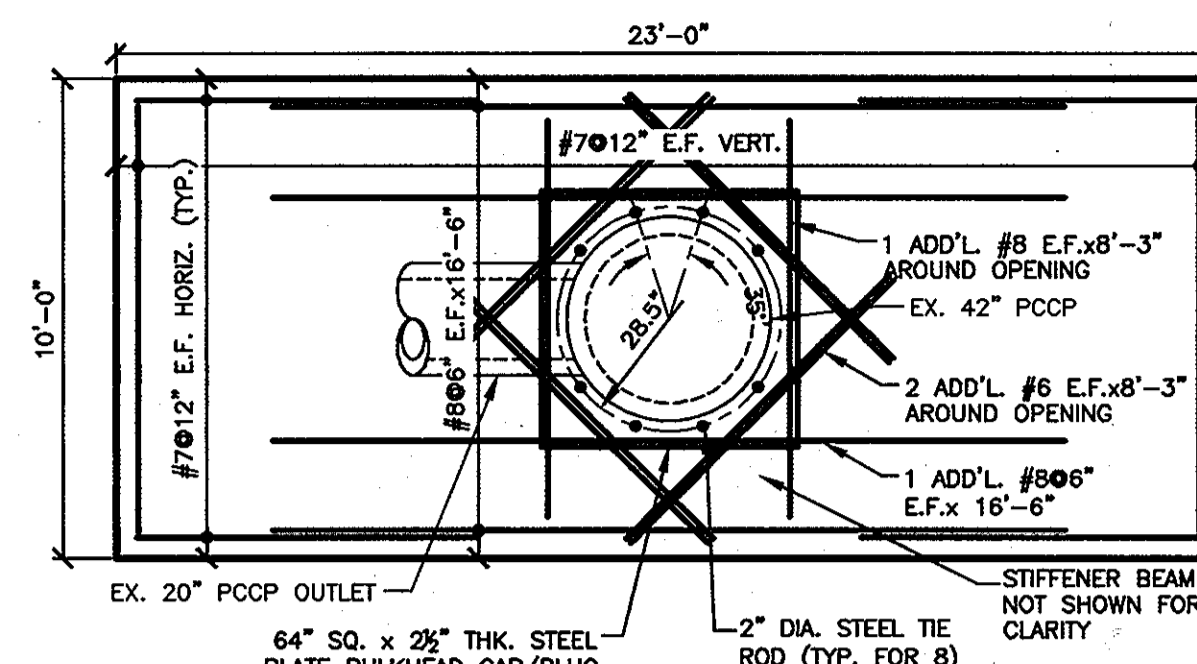


42" PCCP ABANDONMENT PLAN

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

ABANDONMENT NOTES:

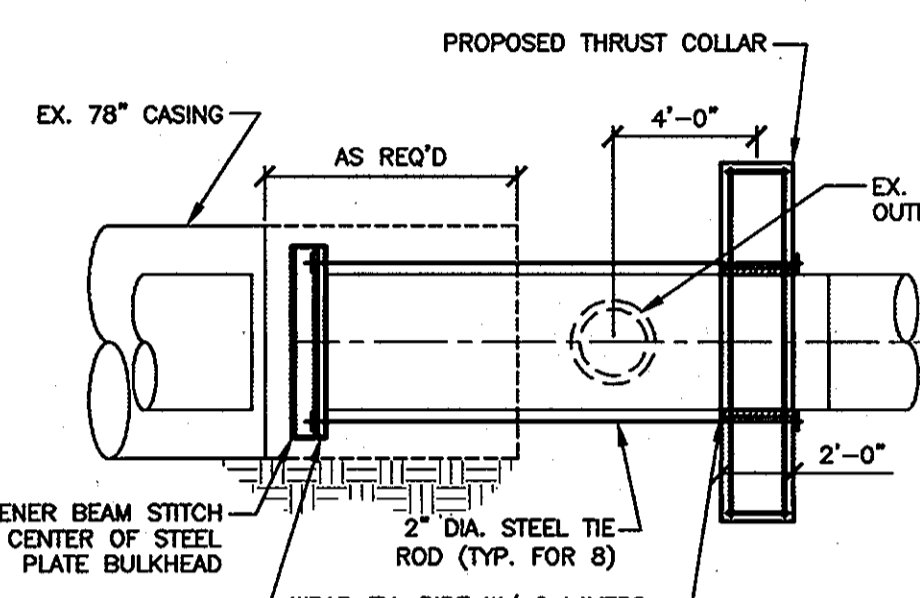
- CONTRACTOR SHALL INSTALL BULKHEAD AT FIRST JOINT SOUTH OF 20" OUTLET PIPE.
- DIMENSIONS TO EXISTING FEATURES ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL DIMENSIONS.
- ALL BURIED TIE RODS, NUTS & TIE BOLTS SHALL BE PAINTED WITH 2 COATS OF BITUMASTIC ENAMEL.
- STIFFENER BEAM SHALL BE MOUNTED IN THE CENTER OF THE STEEL BULKHEAD, RUNNING VERTICALLY THE FULL HEIGHT OF THE PLATE BEAM.
- SHALL BE STITCH WELDED TO THE PLATE ALONG BOTH SIDES OF THE BEAM FLANGE.
- EXISTING PIPE VERTICALLY, LEAVING APPROXIMATELY 3.5' OF COVER.
- ALL CONCRETE SHALL BE HIGH STRENGTH (6,000 PSI COMPRESSIVE STRENGTH).
- PROVIDE A MINIMUM OF 3" COVER OVER ALL REBAR.
- PROVIDED A MINIMUM DEPTH OF 12" #57 STONE BEDDING BELOW EXTENT OF CONCRETE POUR.



SECTION 1

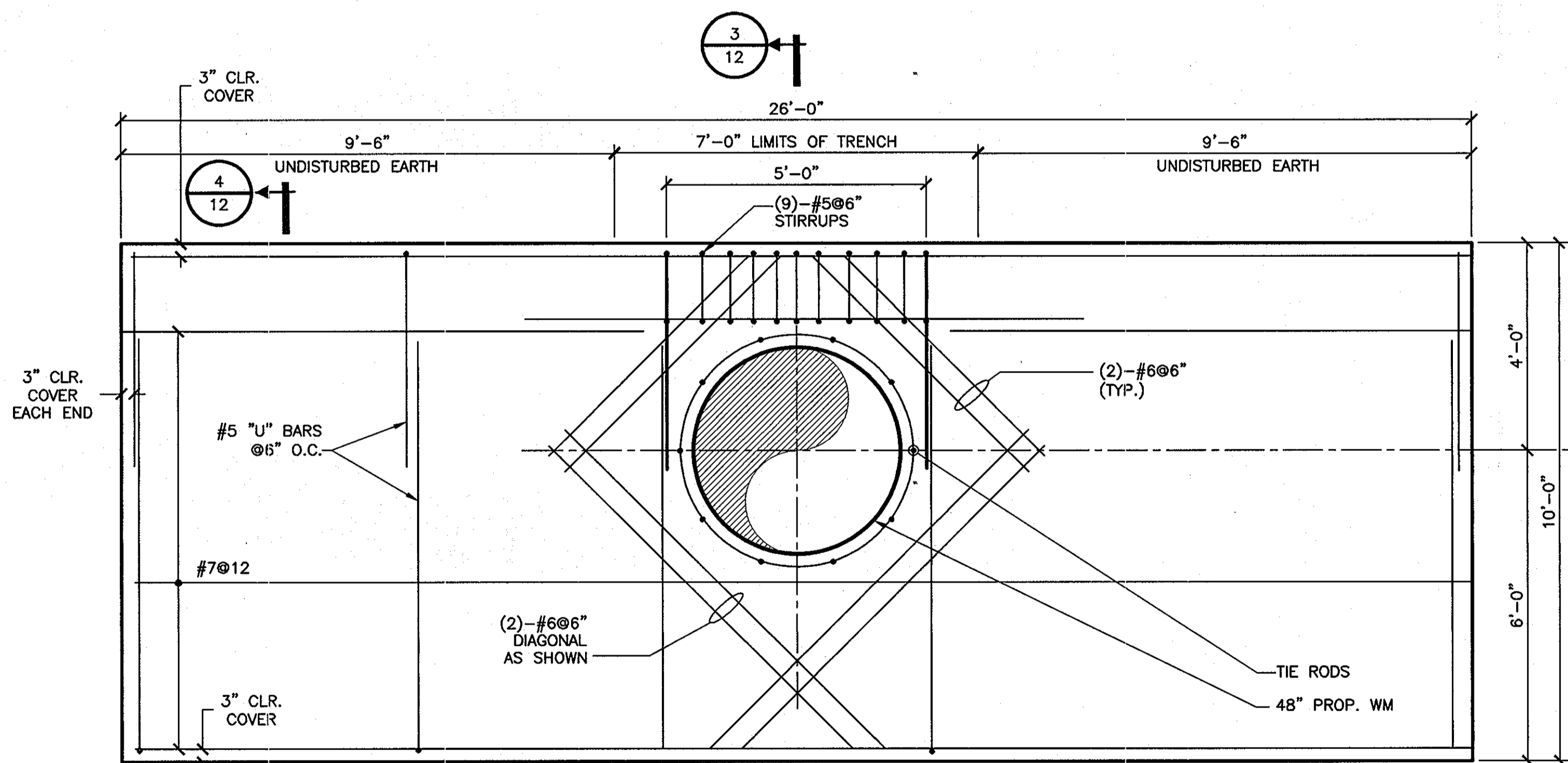
SCALE: 1/4"=1'-0"

NOTE: BAR OVERLAPS SHALL BE 4'-3" MIN.



SECTION 2

SCALE: 3/16"=1'-0"



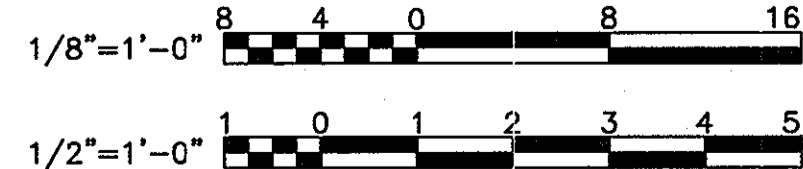
REINFORCED CONCRETE THRUST COLLAR ELEVATION - DETAIL "A"

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

NOTES:

- ALL CONCRETE SHALL BE HIGH STRENGTH (6,000 PSI COMPRESSIVE STRENGTH).
- ALL BEARING SURFACES SHALL BE CARRIED TO UNDISTURBED EARTH.
- ALL BACKFILL IN FRONT OF THE CONCRETE ANCHOR SHALL BE CAREFULLY COMPACTED.
- APPLY COAL TAR PROTECTIVE COATING TO ALL EXPOSED STEEL PER AWWA C-203.
- PROVIDE A MINIMUM OF 3" COVER OVER ALL REBAR.
- PROVIDE A MINIMUM DEPTH OF 12" #57 STONE BEDDING BELOW EXTENT OF CONCRETE POUR.

SCALES:



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RECORD DRAWINGS

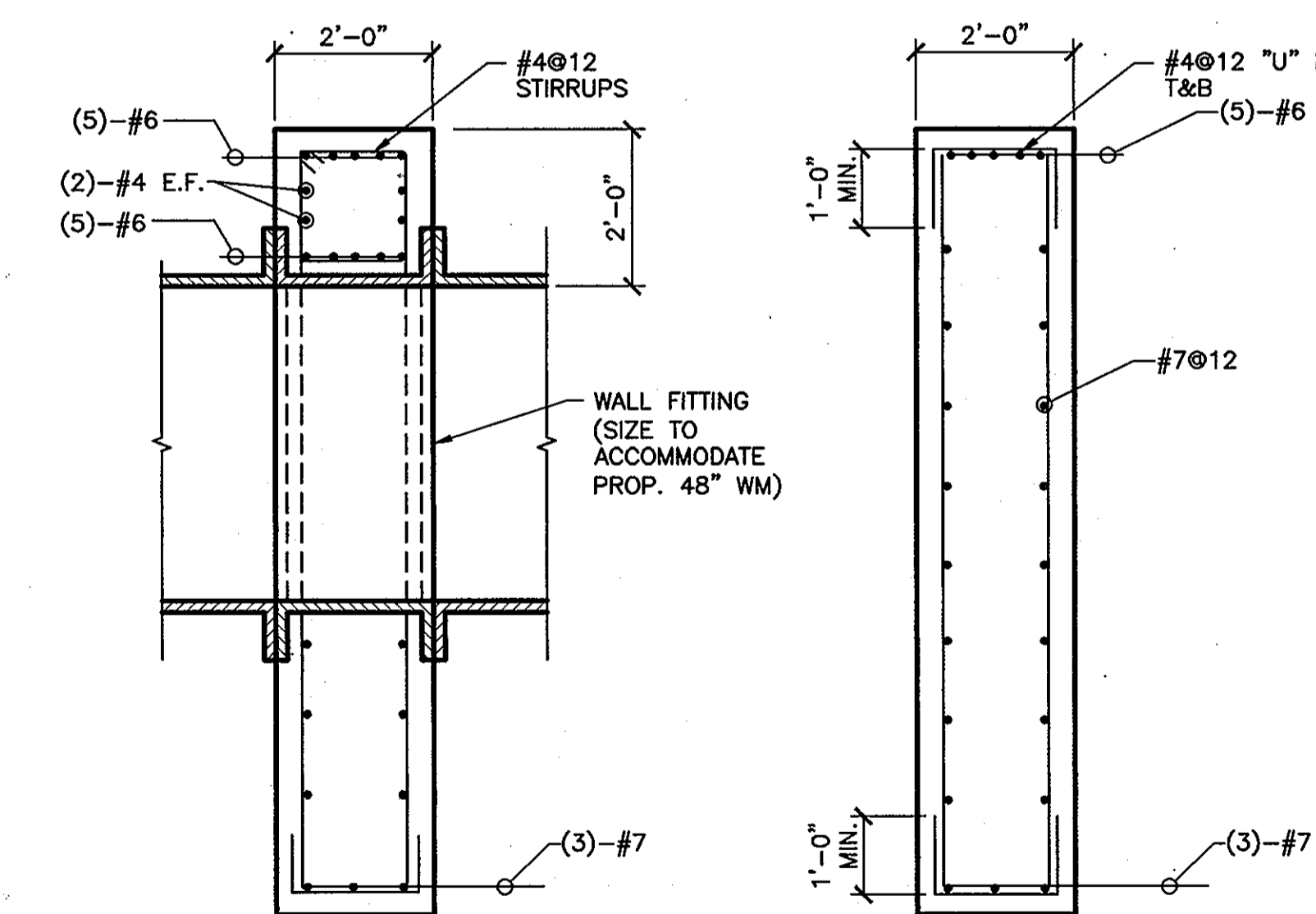
To the best of our knowledge, information and belief, based on information provided by others, these record drawings substantially represent the project as constructed.

O'BRIEN & GERE ENGINEERS, INC.

By: [Signature]

TRENCH BEDDING DETAIL

N.T.S.

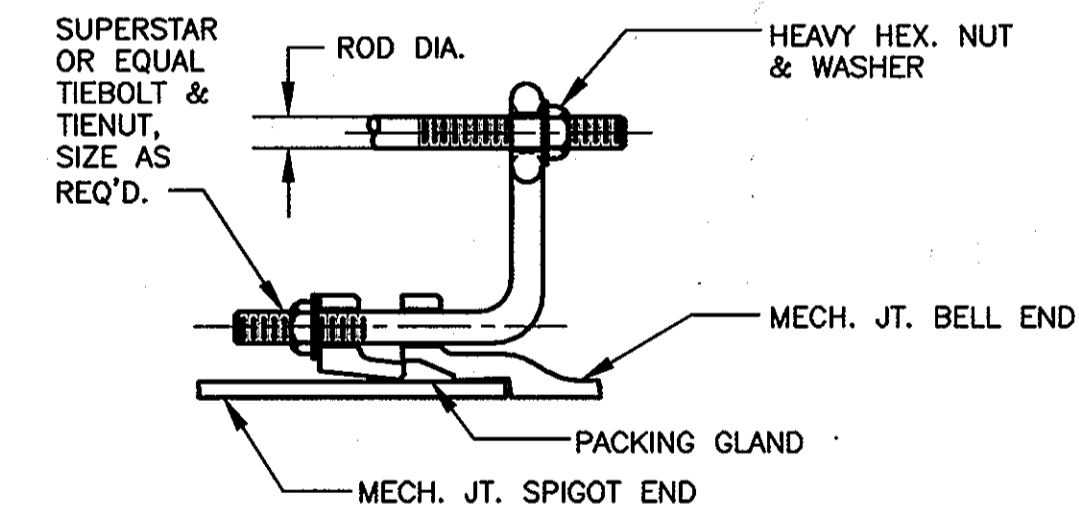


SECTION 3

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

SECTION 4

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



TIE ROD - DETAIL "B"

N.T.S.

NOTES:

- ALL TIE RODS SHALL HAVE A MINIMUM TENSILE YIELD STRENGTH OF 70,000 PSI & MINIMUM ULTIMATE STRENGTH OF 110,000 PSI, AMERICAN COURSE THREADS.
- ALL BURIED TIE RODS, NUTS & TIE BOLTS SHALL BE PAINTED WITH 2 COATS OF BITUMASTIC ENAMEL.
- SEE TIE ROD SCHEDULE FOR ROD SIZE.

AS-BUILT REPLACEMENT SHEET

DATE: AUG. 31, 2009

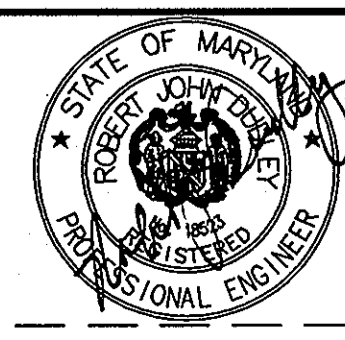
DEPARTMENT OF PUBLIC WORKS

HOWARD COUNTY, MARYLAND

Director of Public Works, Chief of Bureau of Engineering, Chief of Bureau of Utilities, and Utility Design Division signatures and dates.



8401 Corporate Drive Suite 400 Landover, Maryland 20785 (301) 731-5622 FAX: (301) 577-4737



DSN. BY:	GFR
DRN. BY:	IH
CHK. BY:	RJD
DATE:	JUNE 2007
RPW BY:	1 AS-BUILT REVISIONS
NO.:	03/10
REVISION:	
DATE:	600' SCALE MAP NO. 24 BLOCK NO. 6,12

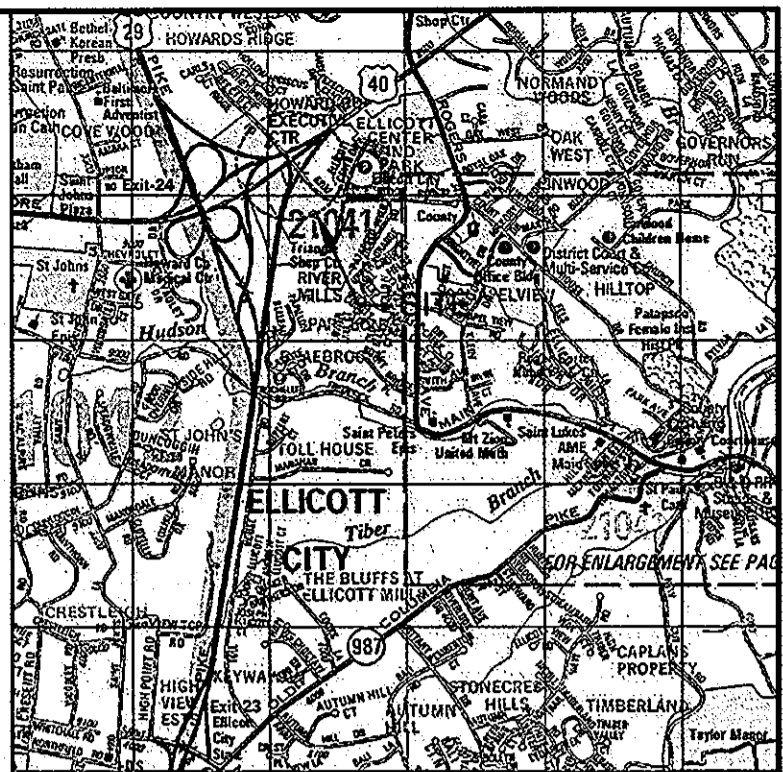
THRUST BLOCK PLANS AND DETAILS

U.S. ROUTE 29 WATER MAIN REPLACEMENT FREDERICK ROAD TO U.S. ROUTE 40

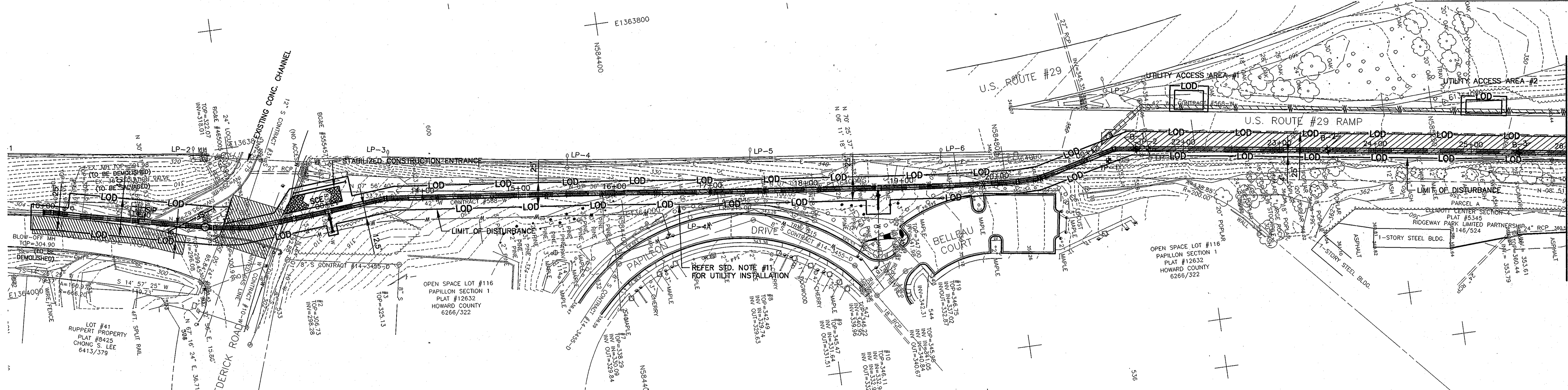
CAPITAL PROJECT: W-8243 CONTRACT NO.: 44-4321 ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 12 OF 37



VICINITY MAP
SCALE: 1" = 3000'



MATCH LINE STA. 26+00 FOR CONTINUATION SEE SHEET ES-2

SEDIMENT CONTROL

PLAN
SCALE: 1"=50'

By the Developer:

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."

Ronald G. Lapsen
Signature of Developer
Print name below signature
Ronald G. Lapsen
Date: 7/3/07

By the Engineer:

"I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

Stewart J. Robinson
Signature of Engineer
Print name below signature
Stewart J. Robinson
Date: 5/14/07

Reviewed for HOWARD SCD and meets Technical Requirements.
Jim Meyer
USDA-Natural Resources Conservation Service
Date: 7/12/07

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.
Paul D. Hunter
Howard SCD
Date: 7/12/07

STABILIZED CONSTRUCTION ENTRANCE		
NAME	LOCATION	LENGTH
SCE #1	13+00	35' LT.

SILT FENCE STATION	
FROM	TO
12+68 LT	13+25 LT
11+60 LT	12+00 LT

INLET PROTECTION	
FROM	TO
11+91 LT	12+06 LT

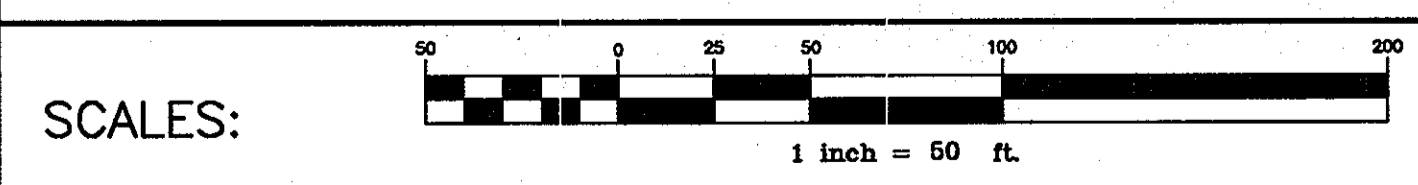
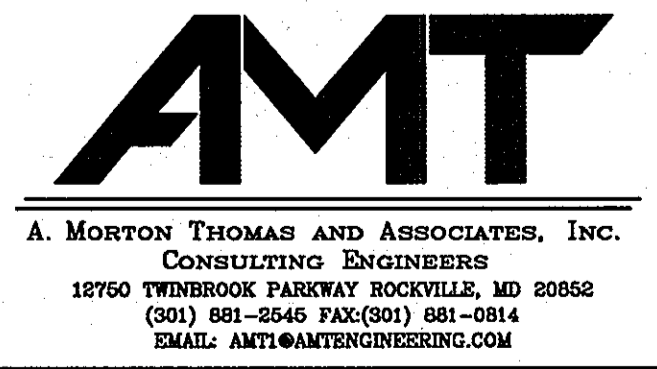
NOTE:

- ADDITIONAL INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE IF NEEDED, SHALL BE LOCATED BY THE INSPECTOR.
- FINAL UTILITY ACCESS AREAS TO BE DETERMINED IN THE FIELD WITH APPROVAL FROM INSPECTOR. SEE SHEET 18 OF 36 FOR TYPICAL DETAIL.
- REFER TO DETAIL ON 20 OF 36 FOR ACCESS AREA EROSION AND SEDIMENT CONTROLS.

RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.
O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

NOTE TO THE CONTRACTOR: "EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED." FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

AS-BUILT



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

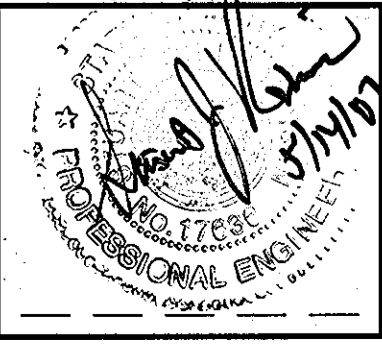
Jan A. D. 7/16/07
DIRECTOR OF PUBLIC WORKS DATE

Rita W. B. 7-06-07
CHIEF, BUREAU OF UTILITIES DATE

Ronald G. Lapsen 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

Cy Don Lee 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
ENGINEERS, INC.
8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737



DSN. BY:	ATR				
DRN. BY:	DEN				
CHK. BY:	SJR				
DATE:	FEB. 2007				
BY:	RPW	NO.	1	AS-BUILT REVISIONS	03/0
				REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN

600' SCALE MAP NO. 24 BLOCK NO. _____

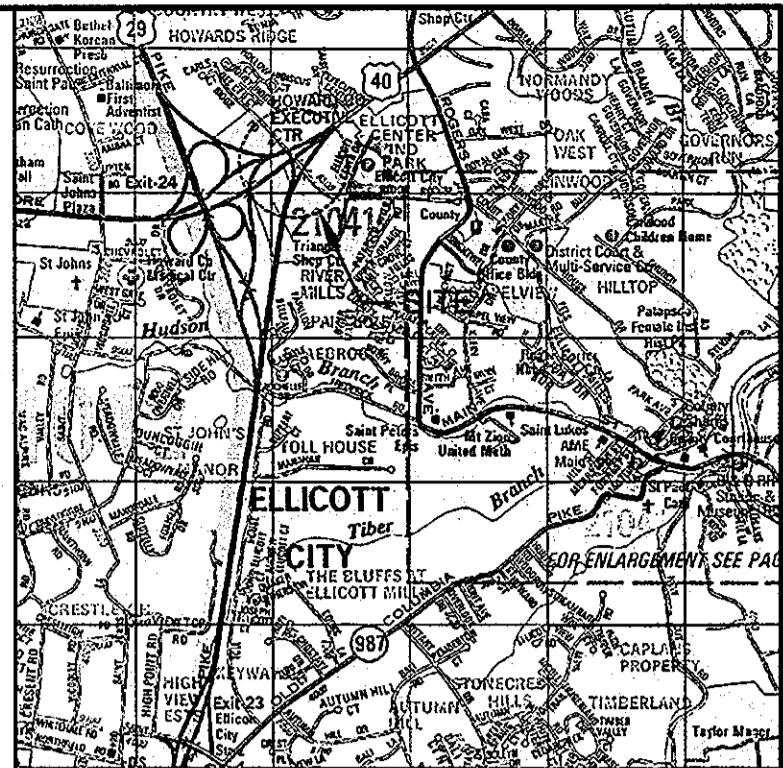
U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

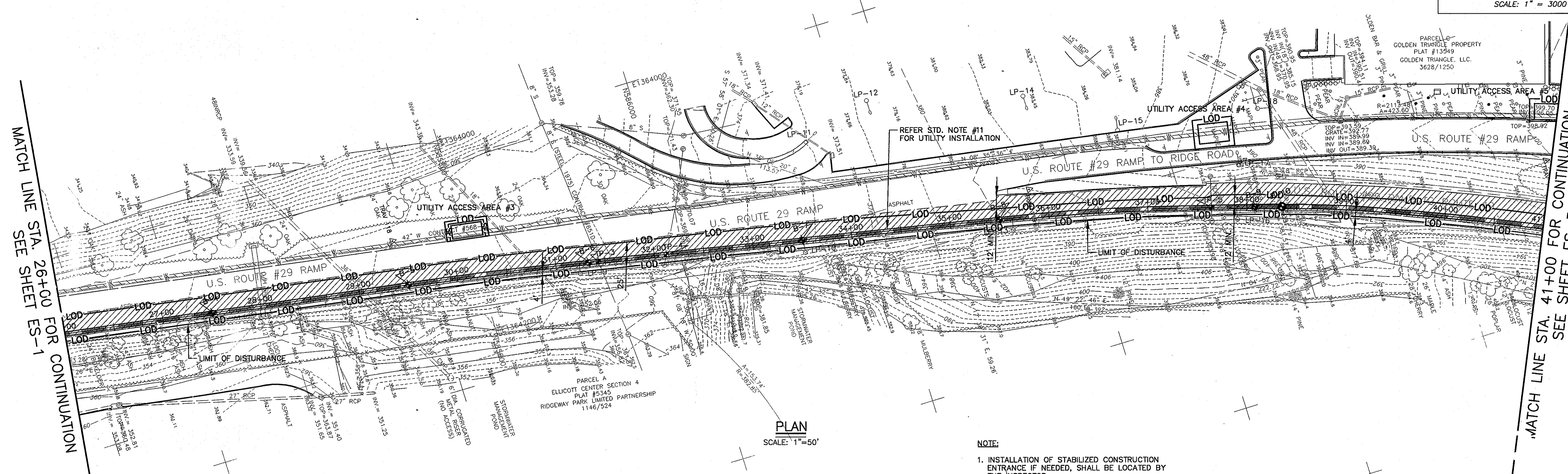
SCALE AS SHOWN

13 of 37

FILE NO. 32122-



VICINITY MAP
SCALE: 1" = 3000'



MATCH LINE STA. 26+00 FOR CONTINUATION
SEE SHEET ES-1

MATCH LINE STA. 41+00 FOR CONTINUATION
SEE SHEET ES-3

PLAN
SCALE: 1"=50'

- NOTE:**
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 2. FINAL UTILITY ACCESS AREAS TO BE DETERMINED IN THE FIELD WITH APPROVAL FROM INSPECTOR. SEE SHEET 18 OF 36 FOR TYPICAL DETAIL.
 3. REFER TO DETAILS ON 20 OF 36 FOR ACCESS AREA EROSION AND SEDIMENT CONTROLS.

SILT FENCE STATION	
FROM	TO
30+00 LT	30+40 LT

RECORD DRAWINGS
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INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

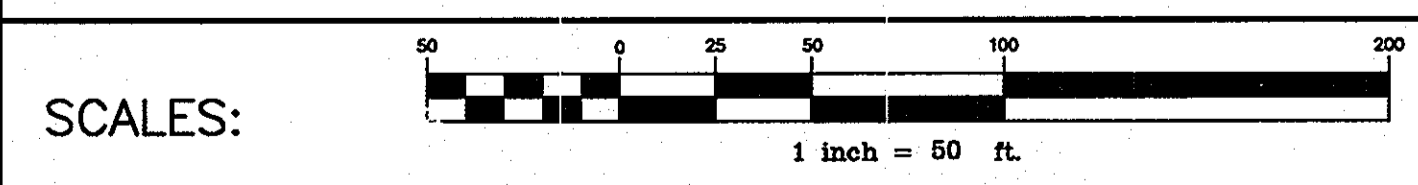
O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*



A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12760 TWINBROOK PARKWAY ROCKVILLE, MD 20852
(301) 981-2645 FAX(301) 981-0814
EMAIL: AMT@AMTENGINEERS.COM

NOTE TO THE CONTRACTOR: "EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED." FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

AS-BUILT



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/6/07
DIRECTOR OF PUBLIC WORKS DATE

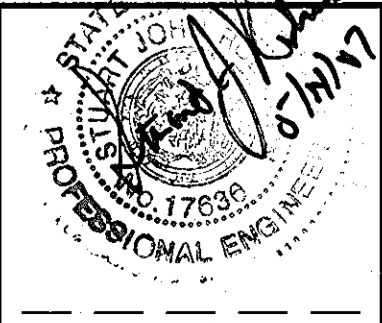
[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF UTILITY DESIGN DIVISION DATE

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O'BRIEN & GERE
ENGINEERS, INC.
8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737



DSN. BY: ATR				
DRN. BY: DEN				
CHK. BY: SJR				
DATE: FEB. 2007	RPW	AS-BUILT REVISIONS	03/0	
	BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN

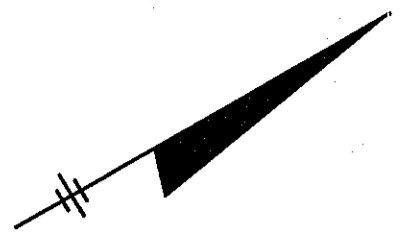
600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

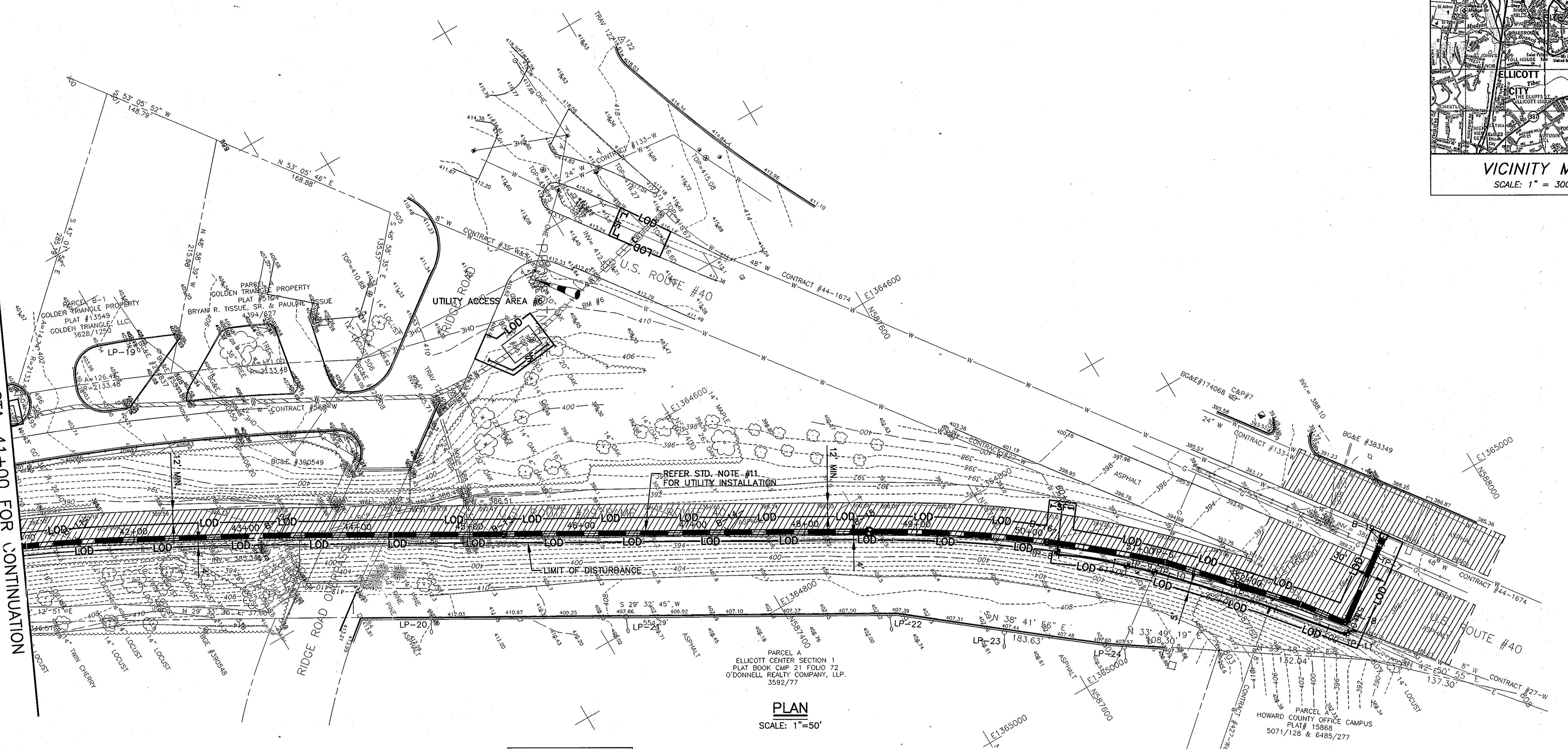
SCALE AS SHOWN
14 of 37

FILE NO. 32122-



VICINITY MAP
SCALE: 1" = 3000'

MATCH LINE STA. 41+00 FOR CONTINUATION
SEE SHEET ES-2



SILT FENCE STATION	
FROM	TO
45+40 LT	45+72 LT
46+35 LT	46+45 LT
50+20 LT	50+45 LT

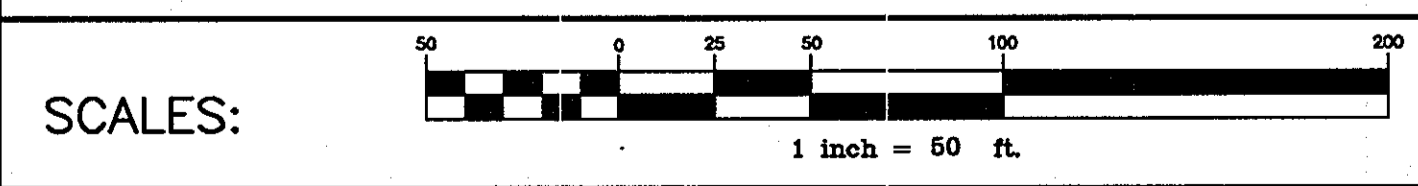
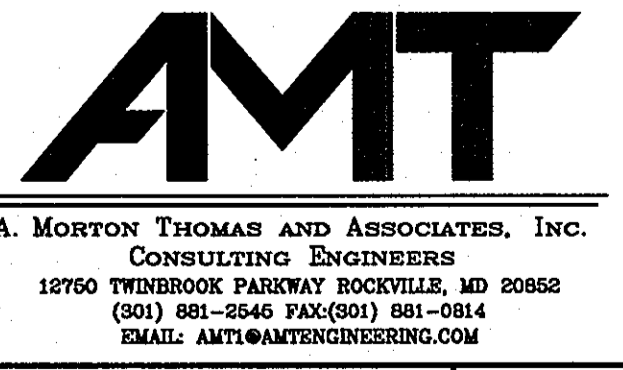
- NOTE:
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RECORD DRAWINGS
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O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

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DIRECTOR OF PUBLIC WORKS DATE

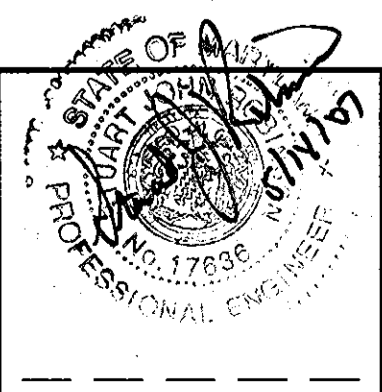
[Signature] 7-3-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
ENGINEERS, INC.

8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737



DSN. BY:	ATR				
DRN. BY:	DEN				
CHK. BY:	SJR				
DATE:	FEB. 2007				
BY:	RPK	AS-BUILT REVISIONS			
NO.:		REVISION			
					03/0
					DATE

EROSION AND SEDIMENT CONTROL PLAN

600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

15 of 37

FILE NO. 32122-

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
2. All vegetative and structural practices are to be installed according to the provisions of this 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 sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol 1, Chapter 12 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (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.
6. 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.
7. Site Analysis:

Total Area of Site	2.65 Acres
Area Disturbed	2.65 Acres
Area to be roofed or paved	0.0 Acres
Area to be vegetatively stabilized	1.37 Acres
Total Cut	10,000 Cu. Yds.
Total Fill	8,000 Cu. Yds.
Offsite waste/borrow area location:	LOCATION TO BE DETERMINED
8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. 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.
11. 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.

SEQUENCE OF CONSTRUCTION

1. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS SEDIMENT CONTROL DIVISION AT (301-313-1855) SEVEN (7) DAYS TO HOLD PRE-CONSTRUCTION MEETING BETWEEN HOWARD COUNTY AND PROJECT REPRESENTATIVES.
2. WITH THE APPROVAL OF THE HOWARD COUNTY INSPECTOR INSTALL SEDIMENT CONTROL MEASURES/DEVICES AT LOCATIONS WHERE WORK WILL BE EACH DAY AND AS SHOWN ON PLANS.
3. START CLEARING AND GRUBBING, DEMOLITION FOR THE INSTALLATION OF WATER MAIN.
4. INSTALL TEMPORARY WATER LINE (ABOVE GROUND) SHOWN ON SHEET ES-4.
5. INSTALL WATER MAIN THAT CAN BE BACKFILLED, COMPACTED AND STABILIZED AT THE END OF EACH DAY, AND/OR PER STANDARD NOTE #11. FOLLOW MOT PLANS.
6. CONTINUE WATER MAIN INSTALLATION.
7. COMPLETE WATER MAIN INSTALLATION.
8. AT THE UTILITY LOCATION ACCESS AREAS THE EXISTING WATER MAIN IN THE PIT AREA SHALL BE REMOVED AND THE EXISTING WATER MAIN TO BE FILLED WITH STOPPER AND CONCRETE (SEE DETAIL) AFTER THE NEW LINE IS IN SERVICE. ACCESS AREA LOCATIONS ARE APPROXIMATELY SHOWN FOR EXCAVATION TO EXISTING WATER LINE. LOCATIONS CAN BE DETERMINED IN THE FIELD WITH APPROVAL OF THE INSPECTOR.
9. FINAL STABILIZE REMAINING DISTURBED AREAS. WITH APPROVAL OF MDE INSPECTOR, REMOVE THE SEDIMENT CONTROL MEASURES AND STABILIZE THE AREA ASSOCIATED WITH EROSION AND SEDIMENT CONTROL REMOVAL ACTIVITIES.

HOWARD SOIL CONSERVATION DISTRICT PERMANENT SEEDING NOTES

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

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 love grass. 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 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 applying 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 (8 gal/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.

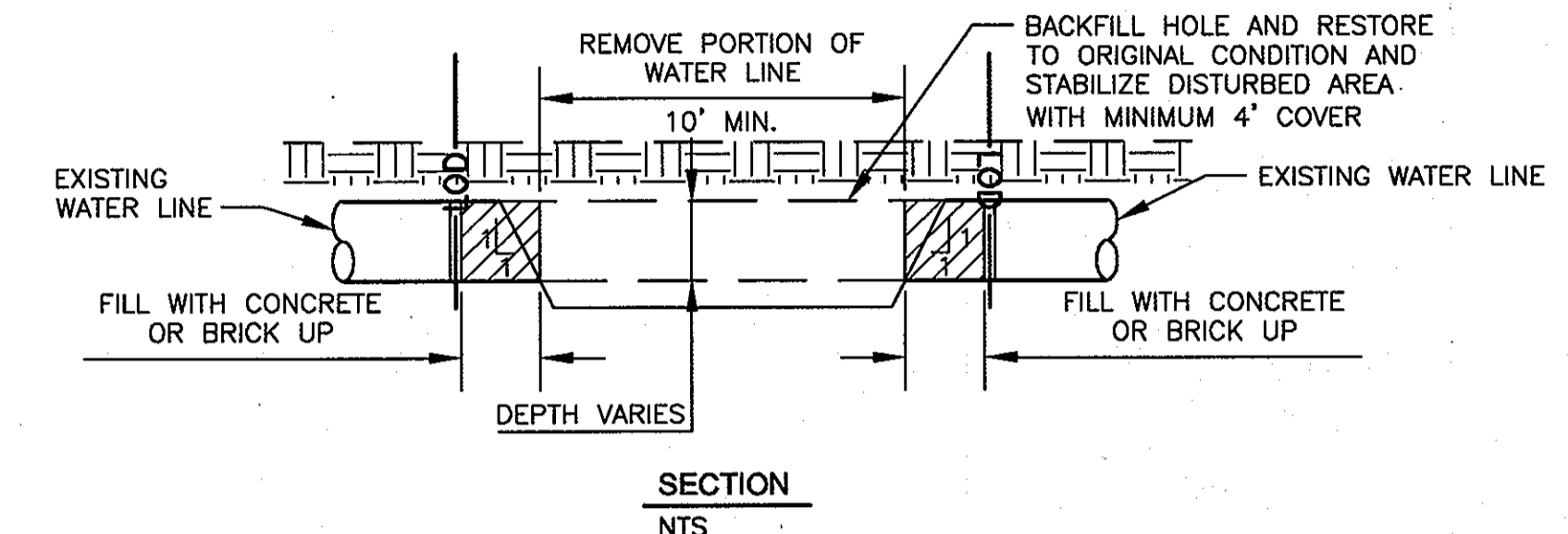
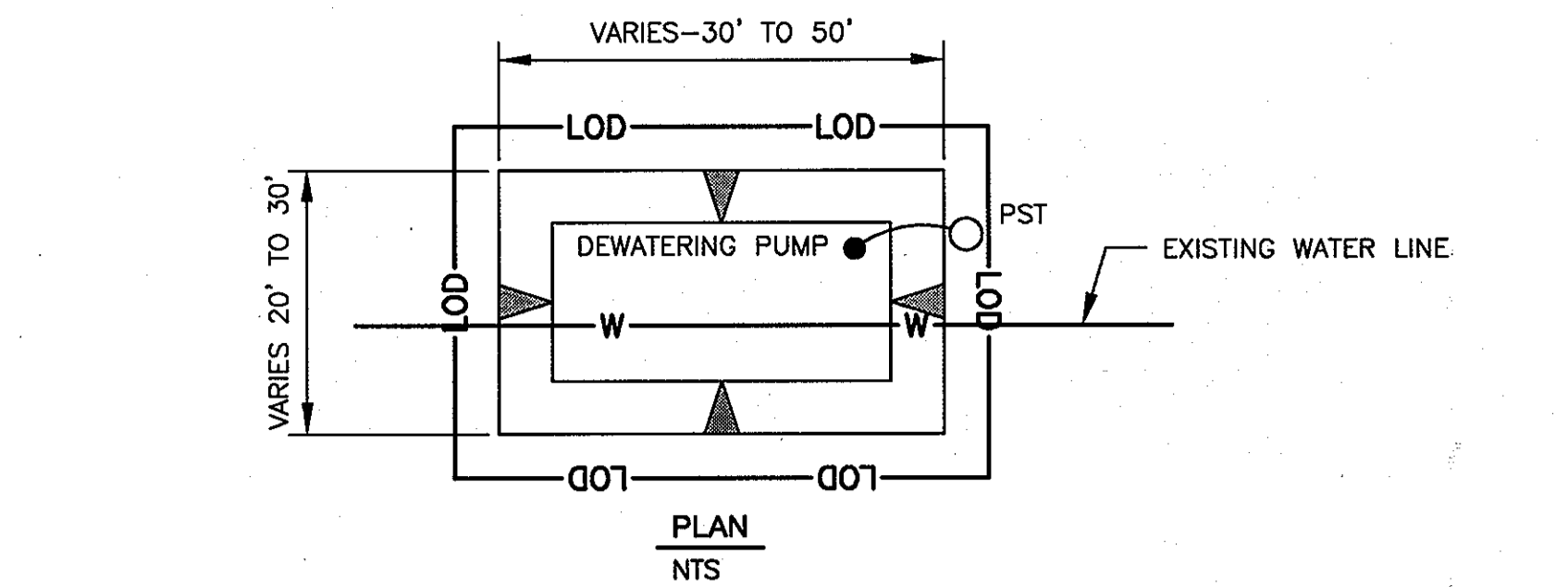
"MISS UTILITY" NOTE

CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION.

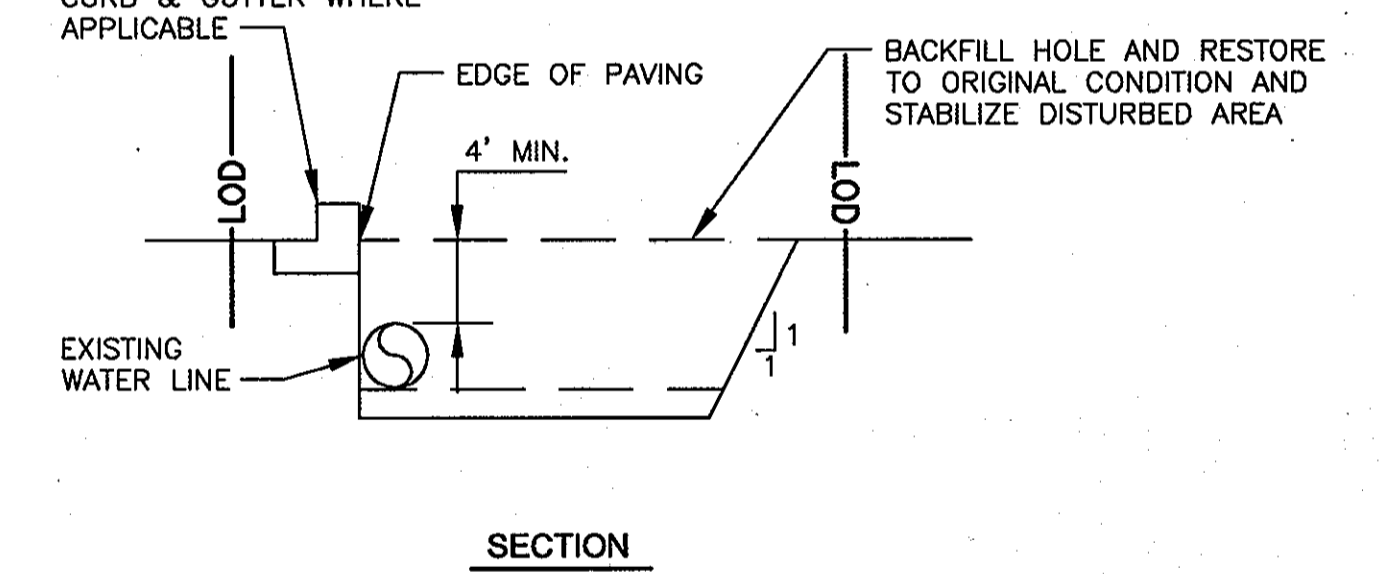
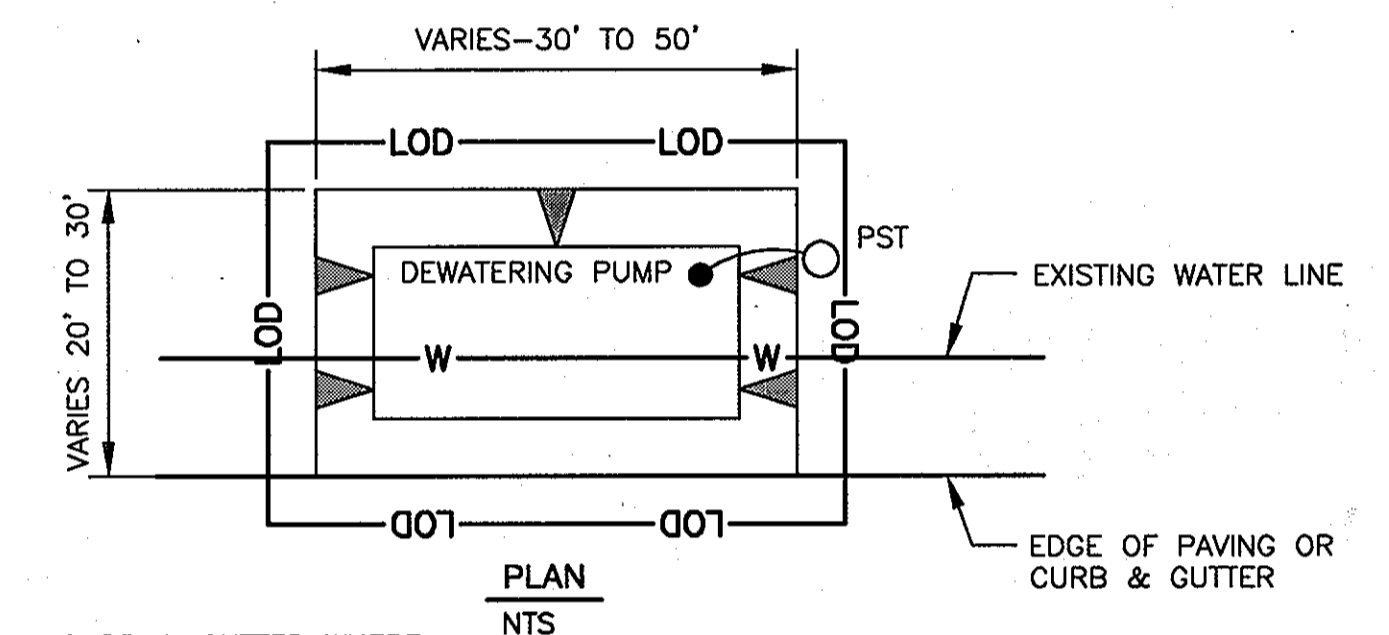
NOTE:

1. EARTHWORK QUANTITIES SHOWN HERE ON ARE APPROXIMATE AND ARE FOR THE REVIEWING AGENCY USE ONLY. THE CONTRACTOR MUST MAKE HIS OWN DETERMINATION OF EARTHWORK QUANTITIES.
2. VOLUMETRIC DISTRIBUTIONS SHOWN HEREON ARE SUBJECT TO GEOTECHNICAL OBSERVATION, TESTING AND CONFIRMATION TO BE PERFORMED BY THE CONTRACTOR'S TESTING AGENCY DURING CONSTRUCTION.
3. STOCKPILING ON SITE IS NOT PERMITTED. CONTRACTOR TO HAUL ANY EXCESS MATERIAL FROM THE SITE.

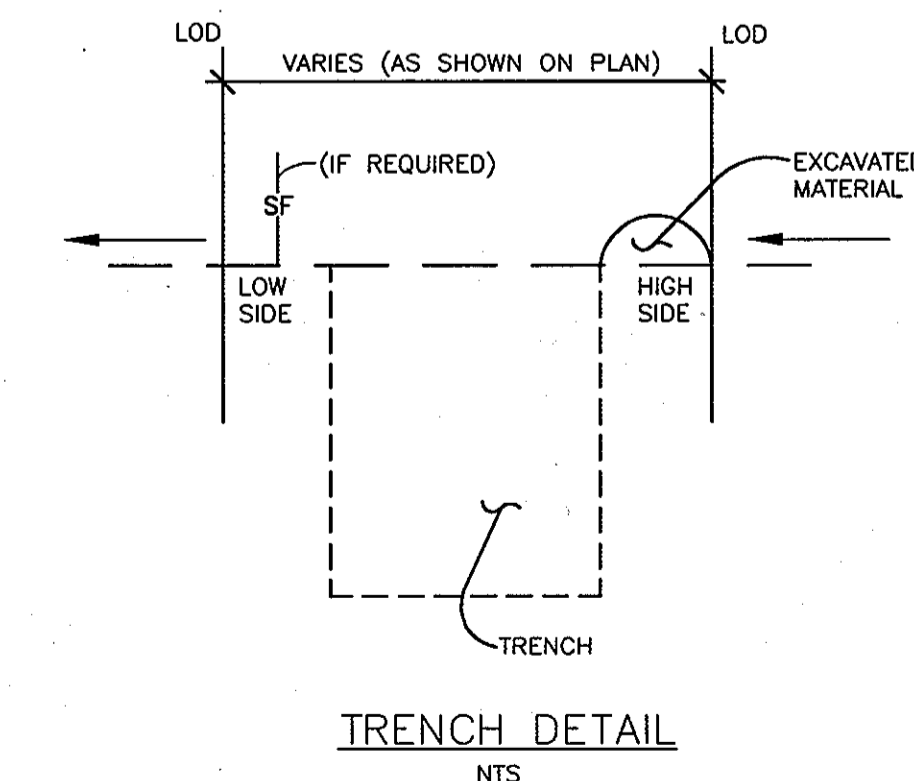
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ACCESS AREA TYPE A FOR PIPE REMOVAL



ACCESS AREA TYPE B FOR PIPE REMOVAL



RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: [Signature]

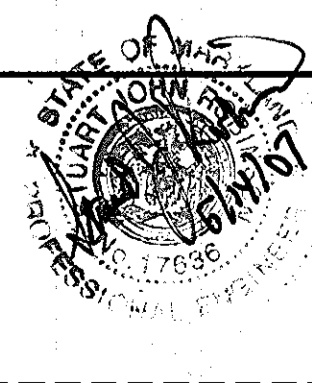


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12760 TWBROOK PARKWAY ROCKVILLE, MD 20862
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DSN. BY: ATR				
DRN. BY: DEN				
CHK. BY: SJR				
DATE: FEB. 2007	RPW	AS-BUILT REVISIONS	03/10	
	BY	NO.	REVISION	DATE

SEDIMENT CONTROL NOTES & MISCELLANEOUS DETAILS

600' SCALE MAP NO. 24 BLOCK NO.

**U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD**

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

16 of 37

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: [Signature] 7/3/07
Chief, Bureau of Engineering: [Signature] 7/3/07
Chief, Bureau of Utilities: [Signature] 7-6-07
Chief, Utility Design Division: [Signature] 7-3-07

FILE NO. 32122-

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 (2.02 ha).
- b. soil amendments (fertilizer and lime specifications)
 - i. soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres; soil analysis may be performed by the university of maryland or a recognized commercial laboratory. soil samples taken for engineering purposes may also be used for chemical analysis.
 - ii. fertilizers shall be uniform in composition, free flowing, and suitable for accurate application by approved equipment. manure may be substituted for fertilizer with prior approval from the appropriate approval authority. fertilizers shall be delivered to the site, fully labeled according to applicable state fertilizer laws and shall bear the name, trade name or trademark, and warranty of the producer.
 - iii. lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide), limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve, and 98 to 100% will pass through a #20 mesh sieve.
 - iv. incorporate lime and fertilizer into the top 3" - 5" (75mm - 125mm) of soil by disking or other suitable means.
- c. seedbed preparation
 - i. temporary seeding
 - a. seedbed preparation shall consist of loosening soil to a depth of 3 inches to 5 inches (75mm to 125mm) by means of suitable agricultural or construction equipment, such as disc harrows, chisel plows, or rippers mounted on construction equipment. after the soil is loosened, it should not be rolled or dragged.
 - b. on the roughened condition, sloped areas (greater than 3:1) should be tracked by a dozer leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
 - c. apply fertilizer and lime as prescribed on the plans.
 - d. incorporate lime and fertilizer into the top 3" - 5" (75mm - 125mm) of soil by disking or other suitable means.
 - ii. permanent seeding
 - a. minimum soil conditions required for permanent vegetative establishment:
 - 1. soil pH shall be between 6.0 and 7.0.
 - 2. soluble salts shall be less than 500 parts per million (ppm).
 - 3. the soil shall contain less than 40% clay, but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. an exception is if leucoglossa or sericea 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 "standards and specifications for topsoil" of the 1994 md standards and specifications for soil erosion and sediment control by the maryland department of the environment.
 - 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 to 5 inches (75mm to 125 mm) to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
 - c. apply soil amendments as per soil test or as included in the contract documents.
 - d. mix soil amendments into the top 3 - 5 inches (75mm - 125mm) of topsoil by disking or other suitable means. lawn areas should be raked to smooth the surface; remove large objects like stones and branches, and ready the area for seed application. where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. the top 1 - 3 inches (25mm - 75mm) of soil should be loose and friable. seedbed loosening may not be necessary on newly disturbed areas.
- d. seed specifications
 - i. all seed must meet the requirements of the maryland state seed law. all seed shall be subject to re-testing by a recognized seed laboratory. all seed used shall have been tested within 6 months immediately preceding the date of sowing such material on this job. note: seed tags shall be made available to the inspector to verify type and rate of seed used.
 - ii. inoculant - the inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. inoculants shall not be used later than the date indicated on the container. add fresh inoculant as directed on package. use four times the recommended rate when hydrosowing. it is very important to keep inoculant as cool as possible until used. temperatures above 75 - 80 degrees fahrenheit can weaken bacteria and make inoculant less effective.
- e. methods of seeding
 - i. hydrosowing: apply seed uniformly with hydroseder (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 rates amounts will not exceed the following: nitrogen - maximum of 100 pounds per acre total of soluble nitrogen; p205 phosphorus: 200 pounds/acre (224.2 kg/ha); k20 (potassium): 200 pounds/acre (224.2kg/ha)
 - b. lime - use only ground agricultural limestone (up to 3 tons per acre (6725 kg/ha) may be applied by hydrosowing). normally, not more than 2 tons (4483 kg/ha) are applied by hydrosowing at any one time. do not use burnt or hydrated lime when hydrosowing. seed and fertilizer shall be mixed on site, and seeding shall be done immediately without interruption.
 - ii. dry seeding: this includes use of conventional drop or broadcast spreaders.
 - a. seed spread shall be incorporated into the subsoil at the rates prescribed on the temporary or permanent seeding summaries. 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 (6mm) of soil covering. seedbed must be firm after planting.
 - b. where practical, seed should be applied in two directions perpendicular to each other. apply half the seeding rate in each direction.

- f. mulch specifications (in order of preference)
 - i. straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty, and shall be free of noxious weed seeds as specified in the maryland seed law.
 - ii. wood cellulose fiber mulch (wcfm)
 - a. wcfm shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - b. wcfm shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
 - c. wcfm, including dye, shall contain no germination or growth inhibiting factors.
 - d. wcfm 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 homogenous 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 shall contain no elements or compounds at concentration levels that will be phytotoxic.
 - f. wood cellulose fiber 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 a stand of 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 and 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 (4484 kg/ha). mulch shall be applied to a uniform loose depth of between 1 and two inches (25mm and 50mm). 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 (5604 kg/ha).
 - iii. wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre (2242 kg/ha). the wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs (22.7 kg) of wood cellulose fiber per 100 gallons (378.5 l) of water.
- h. securing straw mulch (mulch anchoring): mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. this may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard.
 - i. a mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches (50mm). this is the most effective on large areas, but is limited to flatter slopes where equipment can operate safely. if used on sloping land, this practice should be used on the contour, if possible.
 - ii. wood cellulose fiber may be used for anchoring straw. the fiber binder shall be applied at a net dry weight of 750 lbs./acre (841 kg/ha). the wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs (22.7 kg) of wood cellulose fiber per 100 gallons (378.5 l) of water.
 - iii. applications of liquid binders should be applied heavier at edges where wind catches mulch, such as in valleys and on crests of berms; the remainder of area should be uniform after binder application. synthetic binders - synthetic binders such as acrylic dri (agro-lock), dca-70, etrosset, terra tox 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 (1.22m to 4.57m) wide and 300 to 3,000 feet (91.44m to 914.4m) 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' (4.57m).
 - ii. construction sequence (refer to figure 3 below):
 - a. excavate and stabilize all temporary swales, side ditches, or berm that will be used to convey runoff from the excavation.
 - b. performed phase 1 excavation, dress, and stabilize.
 - c. performed phase 2 excavation, dress, and stabilize. overseed previously seeded 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 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.
- j. incremental stabilization of embankments - fill slopes
 - i. embankments shall constructed in lifts as prescribed on the plans.
 - ii. slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15' (4.57m), 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 down the slope in a non-erosive manner to a sediment trapping device.
 - iv. construction sequence: see this sheet.
 - a. excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. constructed slope silt fence on low side of fill shown in figure 5, 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.

SECTION II: TEMPORARY SEEDING

VEGETATION - ANNUAL GRASS OR GRAIN USED TO PROVIDE COVER ON DISTURBED AREAS FOR UP TO TWELVE MONTHS. FOR LONGER DURATION OF VEGETATIVE COVER, PERMANENT SEEDING IS REQUIRED.

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.

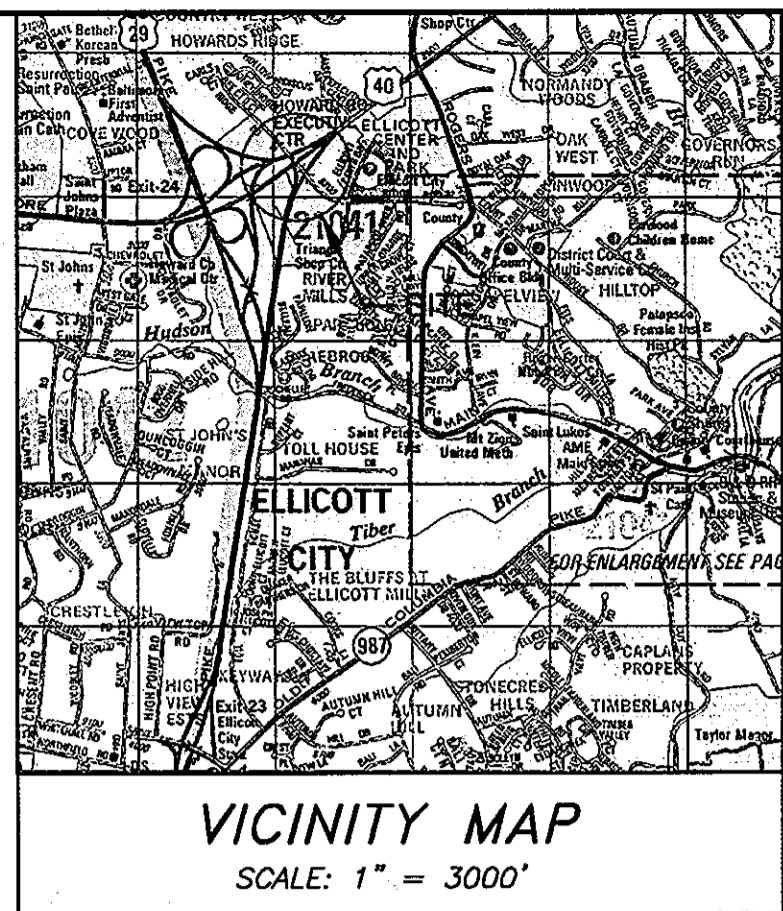
SECTION IV - SOD TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER)

- A. GENERAL SPECIFICATIONS
 - i. CLASS OF TURFGRASS SHALL BE MARYLAND OR VIRGINIA STATE CERTIFIED OR APPROVED. SOD LABELS SHALL BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
 - ii. SOD SHALL BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" (19mm), PLUS OR MINUS 1/4" (6mm), AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS SHALL EXCLUDE TOP GROWTH AND THATCH. INDIVIDUAL PIECES OF SOD SHALL BE CUT TO THE SUPPLIER'S WIDTH AND LENGTH. MAXIMUM ALLOWABLE DEVIATION FROM STANDARD WIDTHS AND LENGTHS SHALL BE 5 PERCENT. BROKEN PADS AND TORN OR UNEVEN EDGES WILL NOT BE ACCEPTABLE.
 - iii. STANDARD SIZE SECTIONS OF SOD SHALL BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
 - iv. SOD SHALL NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
 - v. SOD SHALL BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD SHALL BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
- B. SOD INSTALLATION
 - i. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, THE SUBSOIL SHALL BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD.
 - ii. THE FIRST ROW OF SOD SHALL BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND TIGHTLY WEDGED AGAINST EACH OTHER. LATERAL JOINTS SHALL BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED A DEPTH OF 2 TO 4 INCHES (50mm TO 100mm), LEVELED, AND RAKED TO PREPARE A PROPER SEEDBED. STONES AND DEBRIS OVER 1-1/2 INCHES (38mm) 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 OF 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.
- 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" (100mm). 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. THE FIRST MOWING OF SOD SHOULD NOT BE ATTEMPTED UNTIL THE FINAL 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" (50mm) AND 3" (75mm), UNLESS OTHERWISE SPECIFIED.

SECTION V - 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 (50mm TO 100mm), LEVELED, AND RAKED TO PREPARE A PROPER SEEDBED. STONES AND DEBRIS OVER 1-1/2 INCHES (38mm) 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 OF 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. TURFGRASS MIXTURES
 - i. KENTUCKY BLUEGRASS - FULL SUN MIXTURE - FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND THE 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 RYE GRASS 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 PRIME 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 POUNDS/1000 SQUARE FEET. 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 - 75%. SEEDING RATE: 1-1/2 TO 3 POUNDS/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 MIMCO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND."
- B. IDEAL TIMES OF SEEDING
 - WESTERN MARYLAND: MARCH 15 - JUNE 1; AUGUST 1 - OCTOBER 1 (HARDINESS ZONES - 5b, 6a) CENTRAL MARYLAND: MARCH 1 - MAY 15; AUGUST 15 - OCTOBER 15 (HARDINESS ZONES - 6b) SOUTHERN MARYLAND, EASTERN SHORE: MARCH 1 - MAY 15, AUGUST 15 - OCTOBER 15 (HARDINESS ZONES - 7a, 7b)
- C. IRRIGATION IF SOIL MIXTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2" - 1" (13mm TO 25mm) EVERY 3 TO 4 DAYS, DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASON, OR ON ADVERSE SITES.
- D. REPAIRS AND MAINTENANCE
 - i. INSPECT ALL SEEDING AREAS FOR FAILURES AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.
 - ii. ONCE THE VEGETATION IS ESTABLISHED, THE SITE SHALL HAVE 9% GROUND COVER TO BE CONSIDERED ADEQUATELY STABILIZED.
 - iii. IF THE STAND PROVIDES LESS THAN 40% GROUND COVERAGE, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING RECOMMENDATIONS.
 - iv. IF THE STAND PROVIDES BETWEEN 40% AND 94% GROUND COVERAGE, OVERSEEDING AND FERTILIZING USING HALF OF THE RATES ORIGINALLY APPLIED MAY BE NECESSARY.
 - v. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDINGS ARE SHOWN IN AREAS, REFER TO THE UNIVERSITY OF MARYLAND PUBLICATION, "LAWN CARE IN MARYLAND", BULLETIN NO. 171. TABLE 24. FOR LAWNS AND OTHER MEDIUM TO HIGH MAINTENANCE TURFGRASS

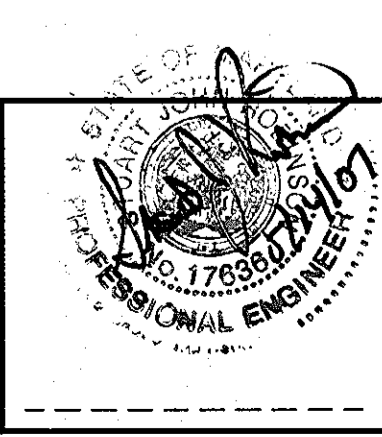


DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

7/1/07
7-6-07

7/3/07
7-3-07

O'BRIEN & GERE ENGINEERS, INC.
8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737



DSN. BY: ATR					
DRN. BY: DEN					
CHK. BY: SJR					
DATE: FEB. 2007	RPW	AS-BUILT REVISIONS	03/10		
	BY	NO.	REVISION		

600' SCALE MAP NO. 24	BLOCK NO.
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U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

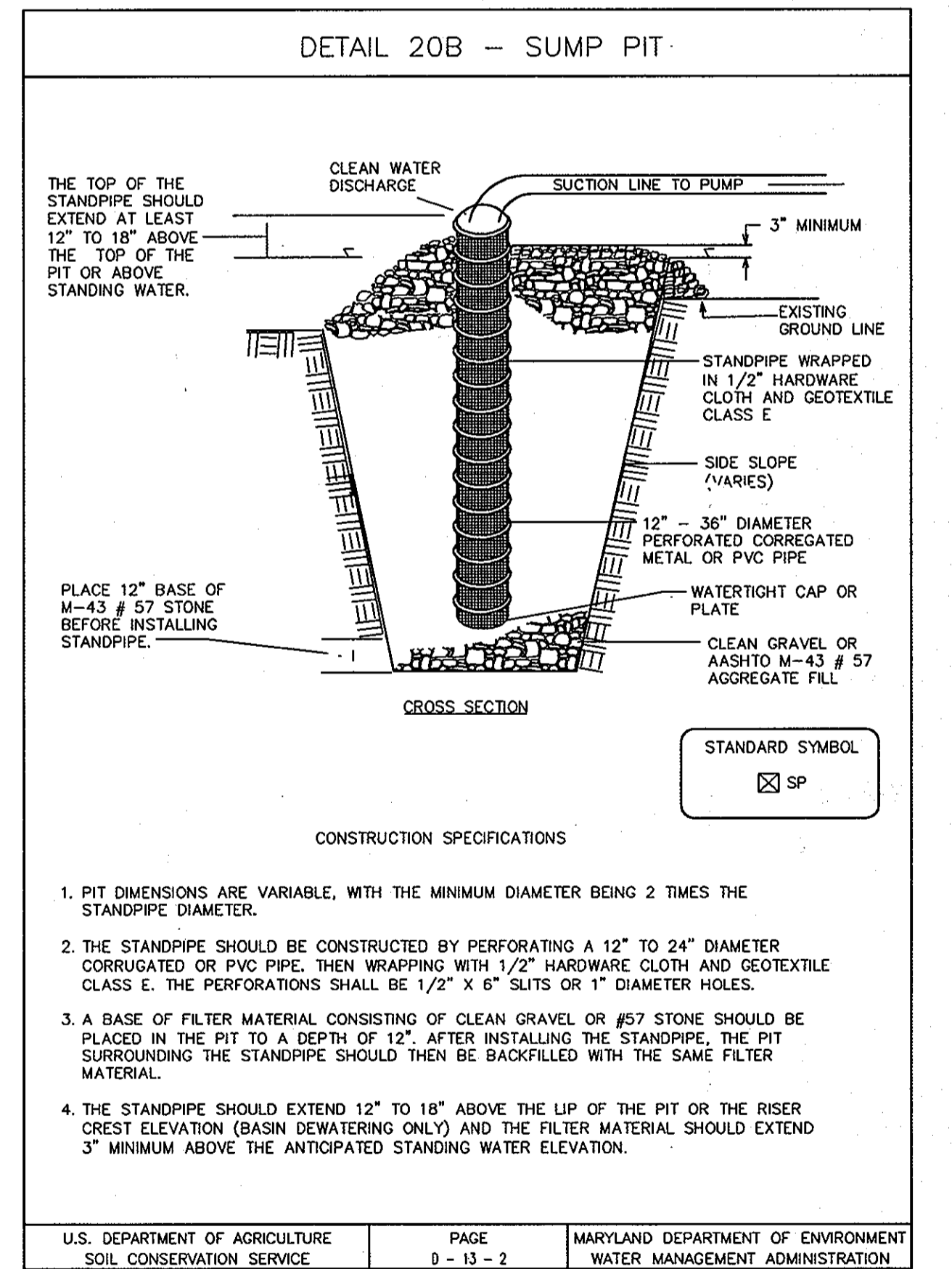
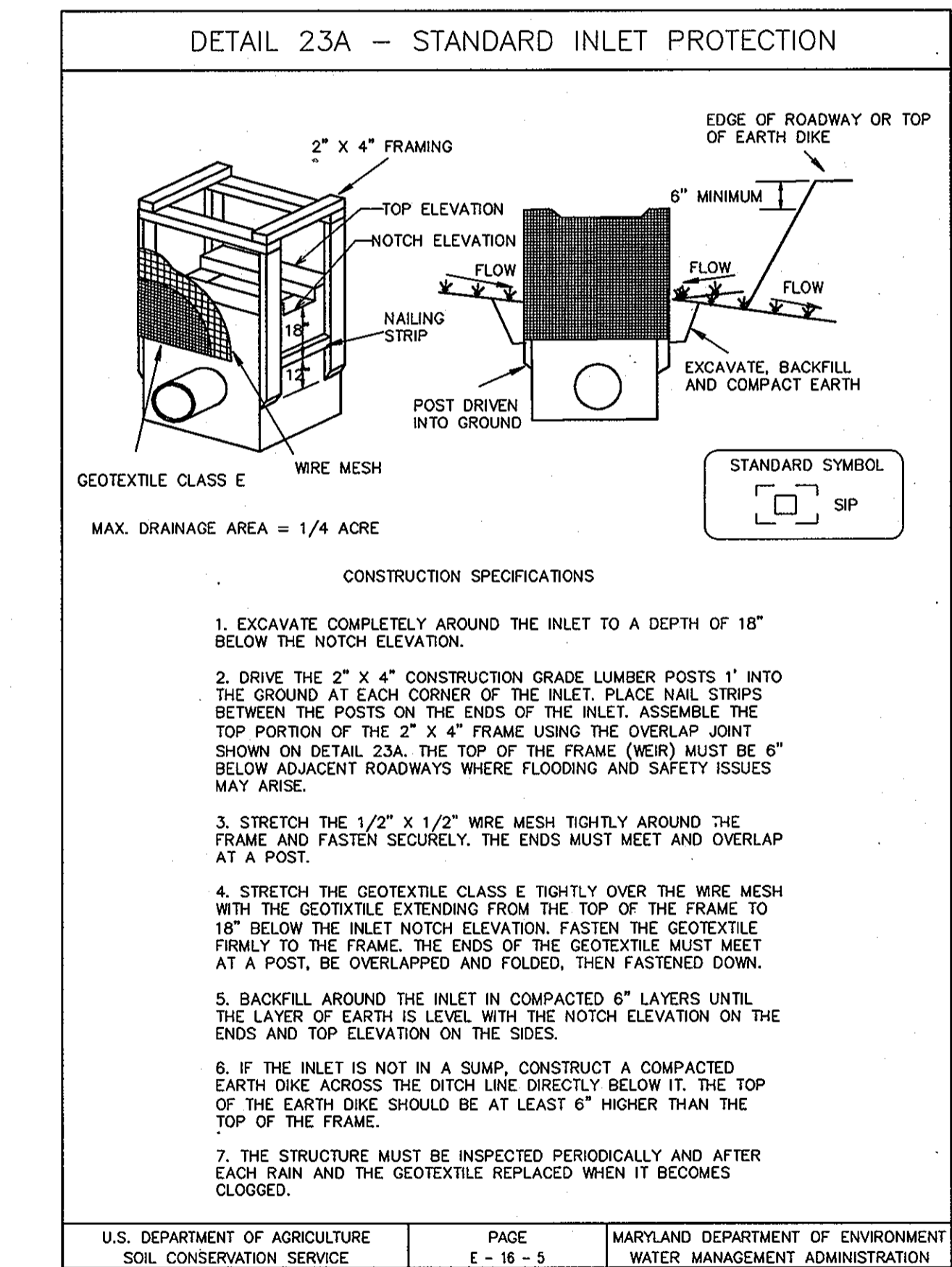
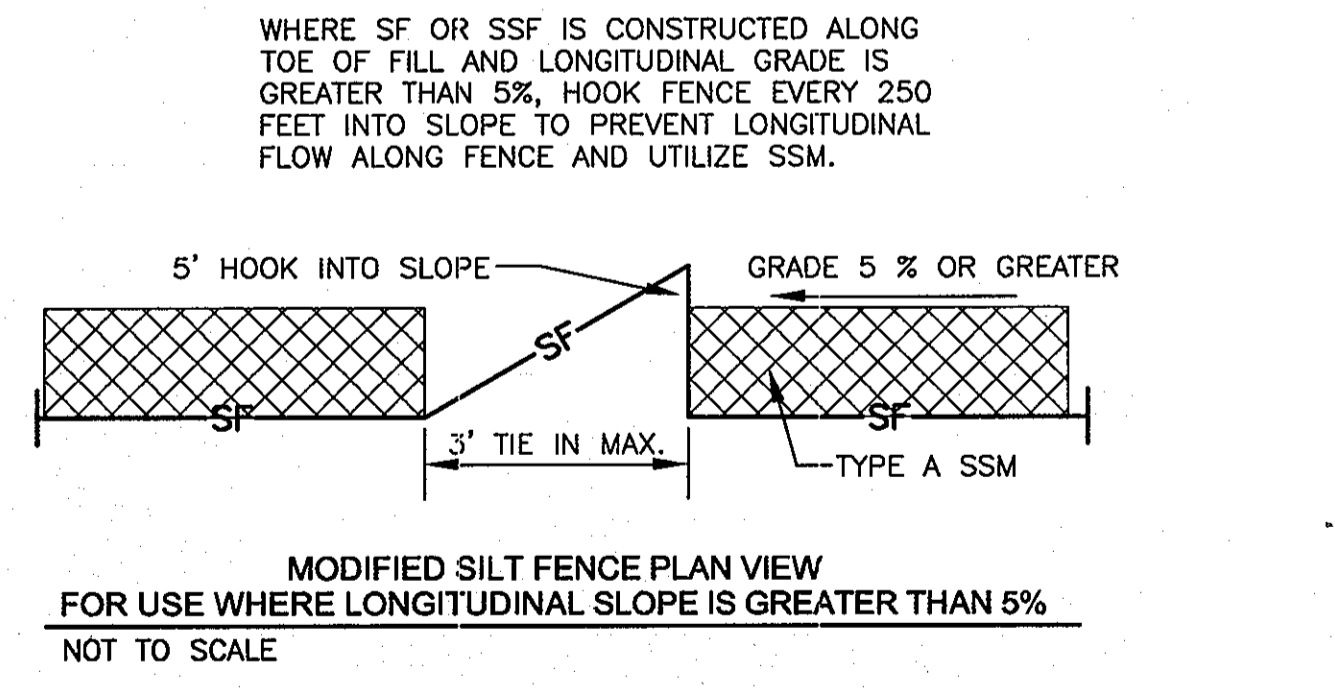
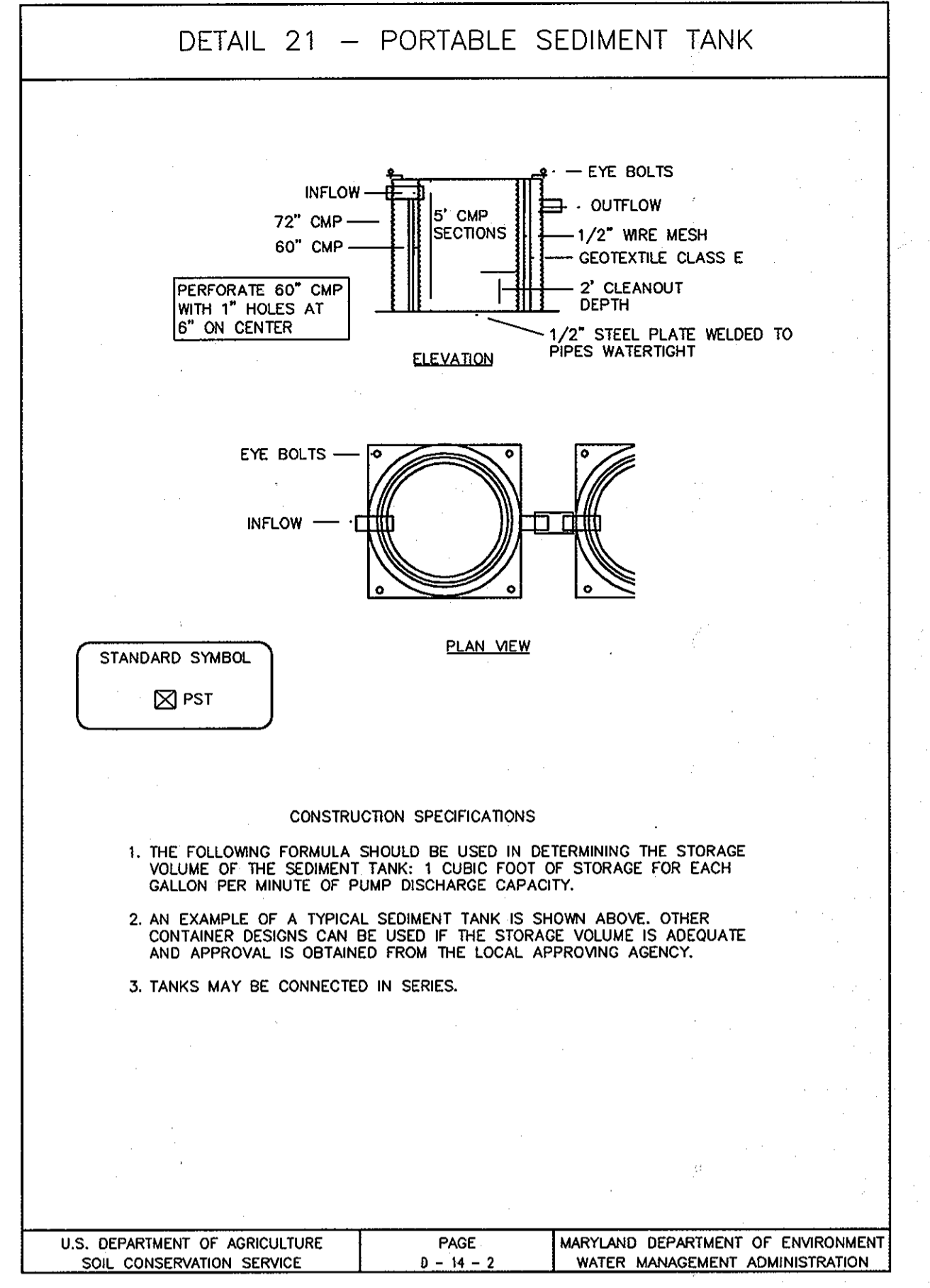
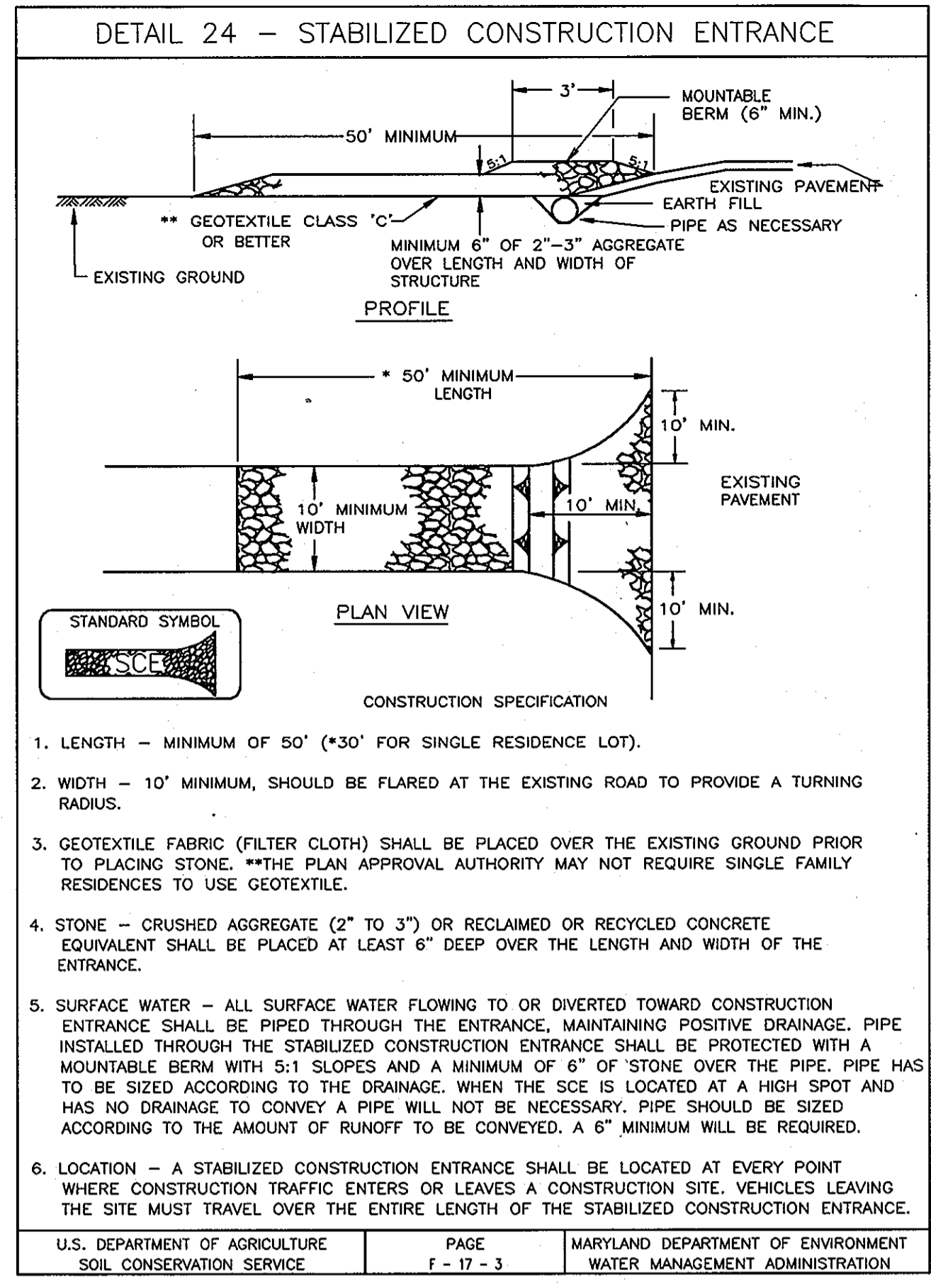
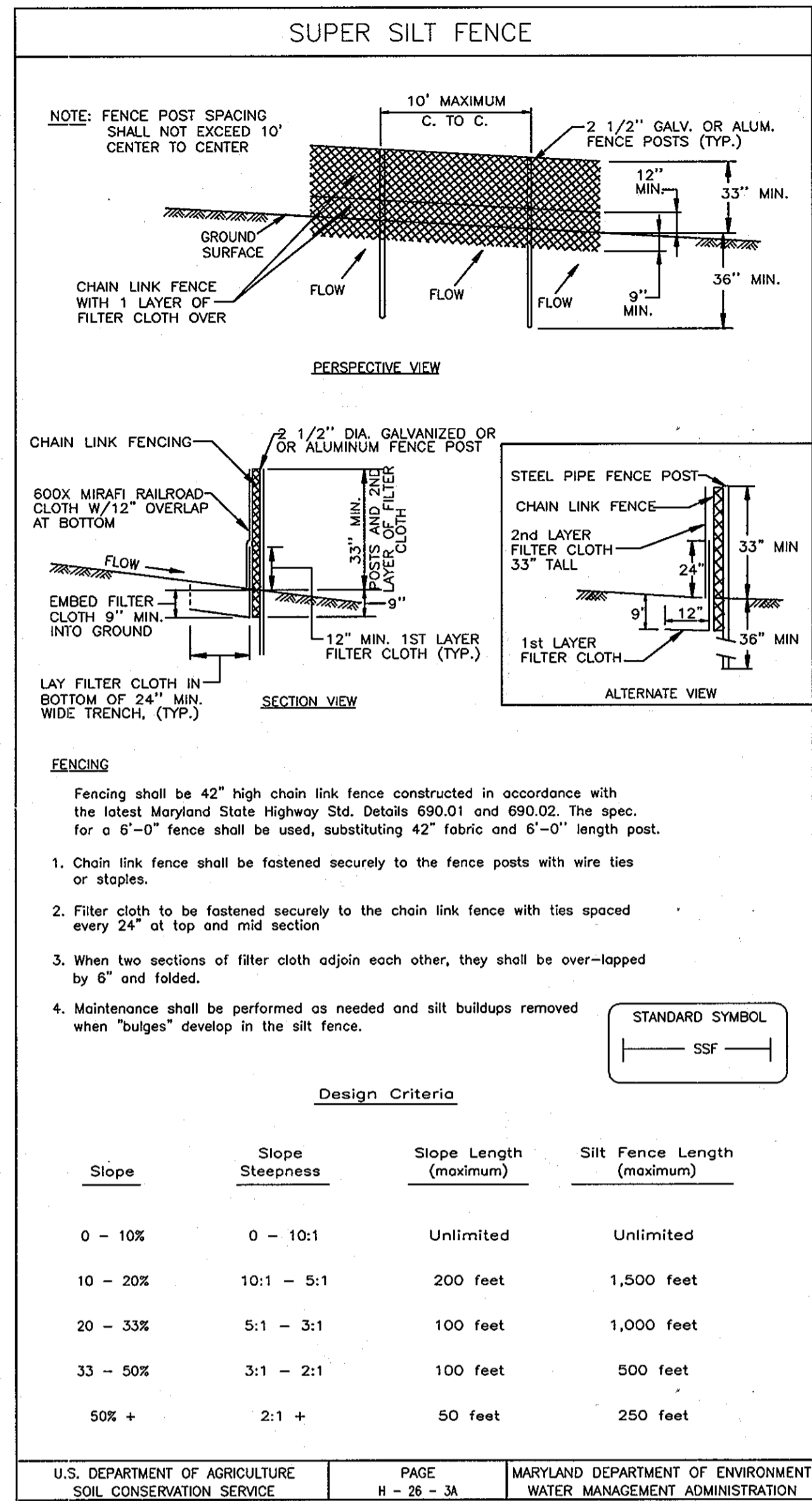
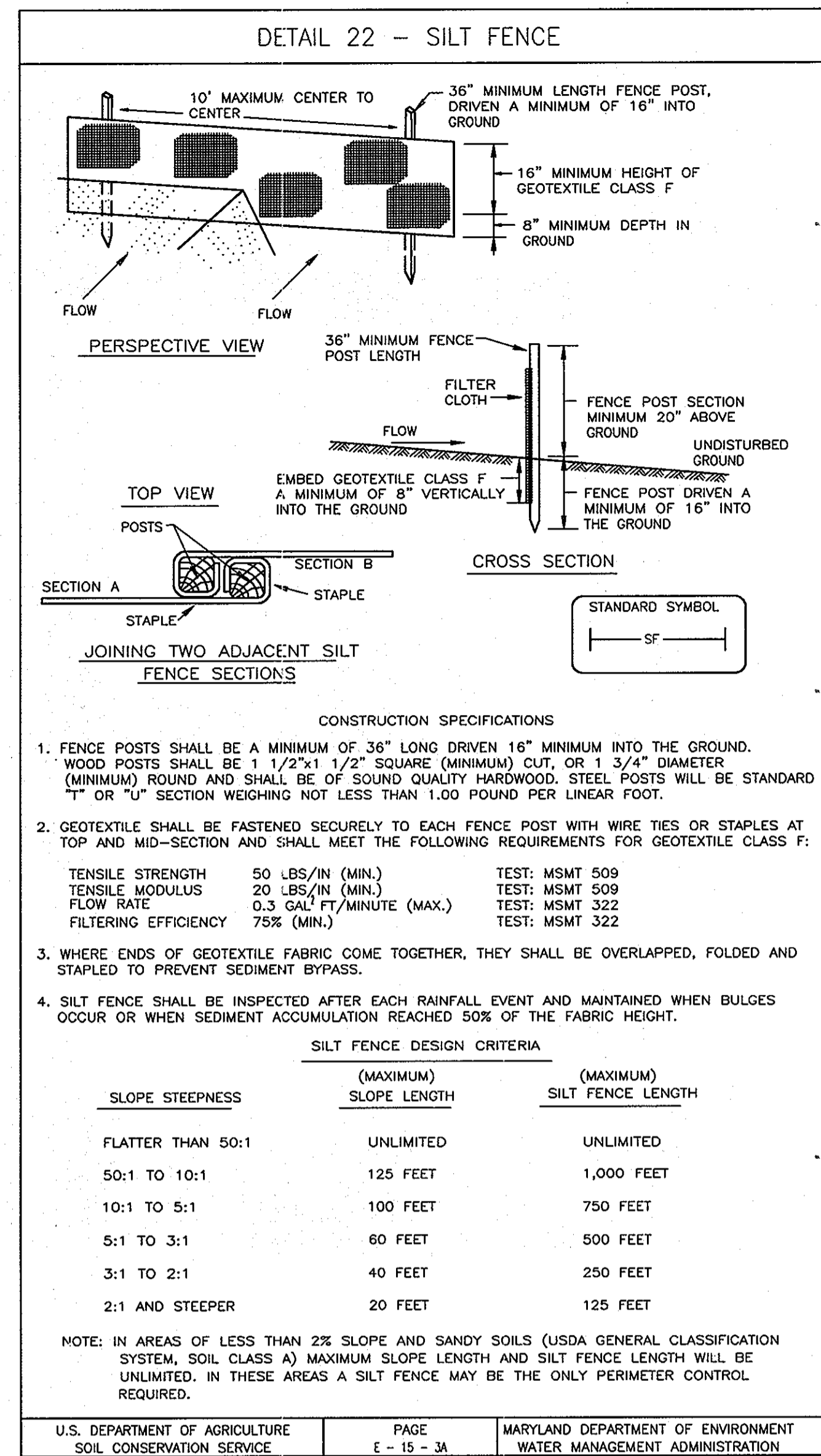
CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
17 of 37

AS-BUILT

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBROOK PARKWAY ROCKVILLE, MD 20850
(301) 981-2545 FAX: (301) 981-0814
EMAIL: AMT@AMTENGINEERING.COM

FILE NO. 32122



RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: [Signature]

NOTE TO THE CONTRACTOR: "EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED." FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

AS-BUILT

AMT

A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 WINBROOK PARKWAY ROCKVILLE, MD 20862
(301) 981-8245 FAX(301) 981-0814
EMAIL: AMT@AMTENGINEERING.COM

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/6/07
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.
8401 Corporate Drive
Suite 400
Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737

STATE OF MARYLAND
JULY 17, 2007
PROFESSIONAL ENGINEER

DSN. BY: ATR
DRN. BY: DEN
CHK. BY: SJR
DATE: FEB. 2007

RPW 1 AS-BUILT REVISIONS
BY NO. REVISION

03/10
DATE

600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

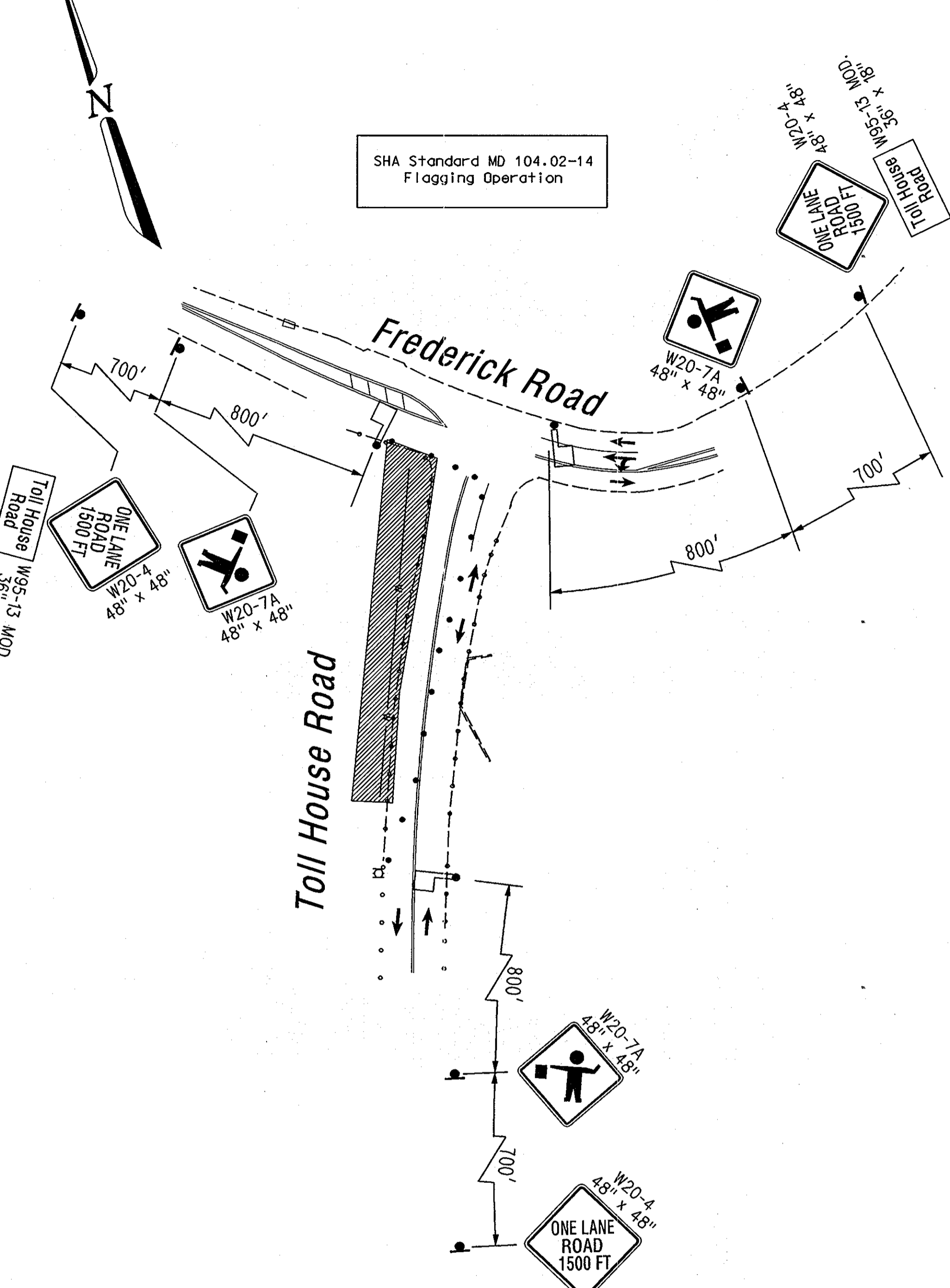
SCALE AS SHOWN

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

18 of 37

FILE NO. 32122

Sta 10+00 to 11+50

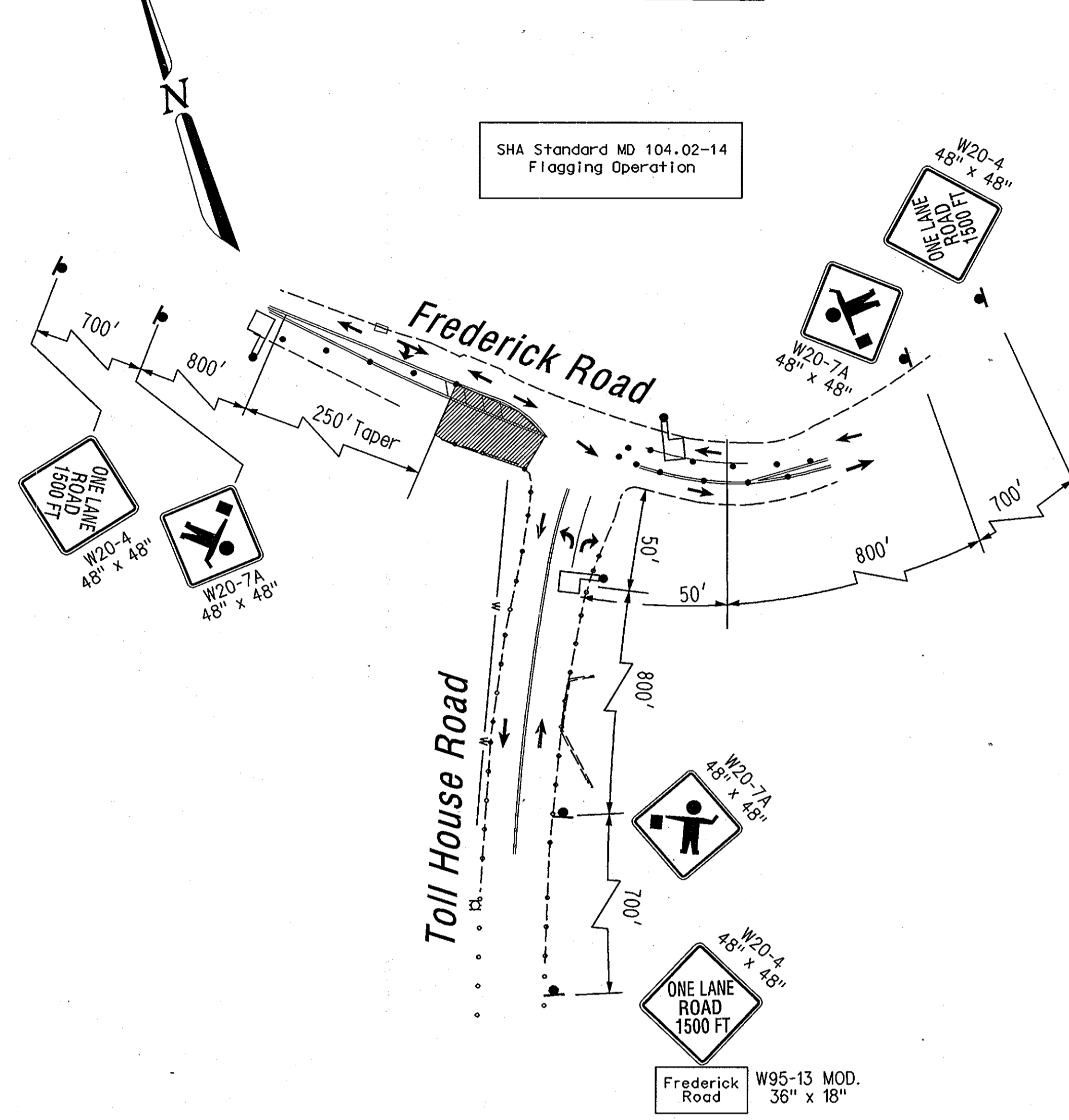


SHA Standard MD 104.02-14
Flagging Operation

Sequence of Construction - Sta 10+00 to 11+50

1. Place Advance Warning Signs and set traffic control devices for construction area. Flexible Roll Up Signs will be used on this project. For specification of the Flexible Roll Up Signs, see MD-SHA Section 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
2. Complete the water line construction on southbound Toll House Road.

Sta 11+50 to 12+00

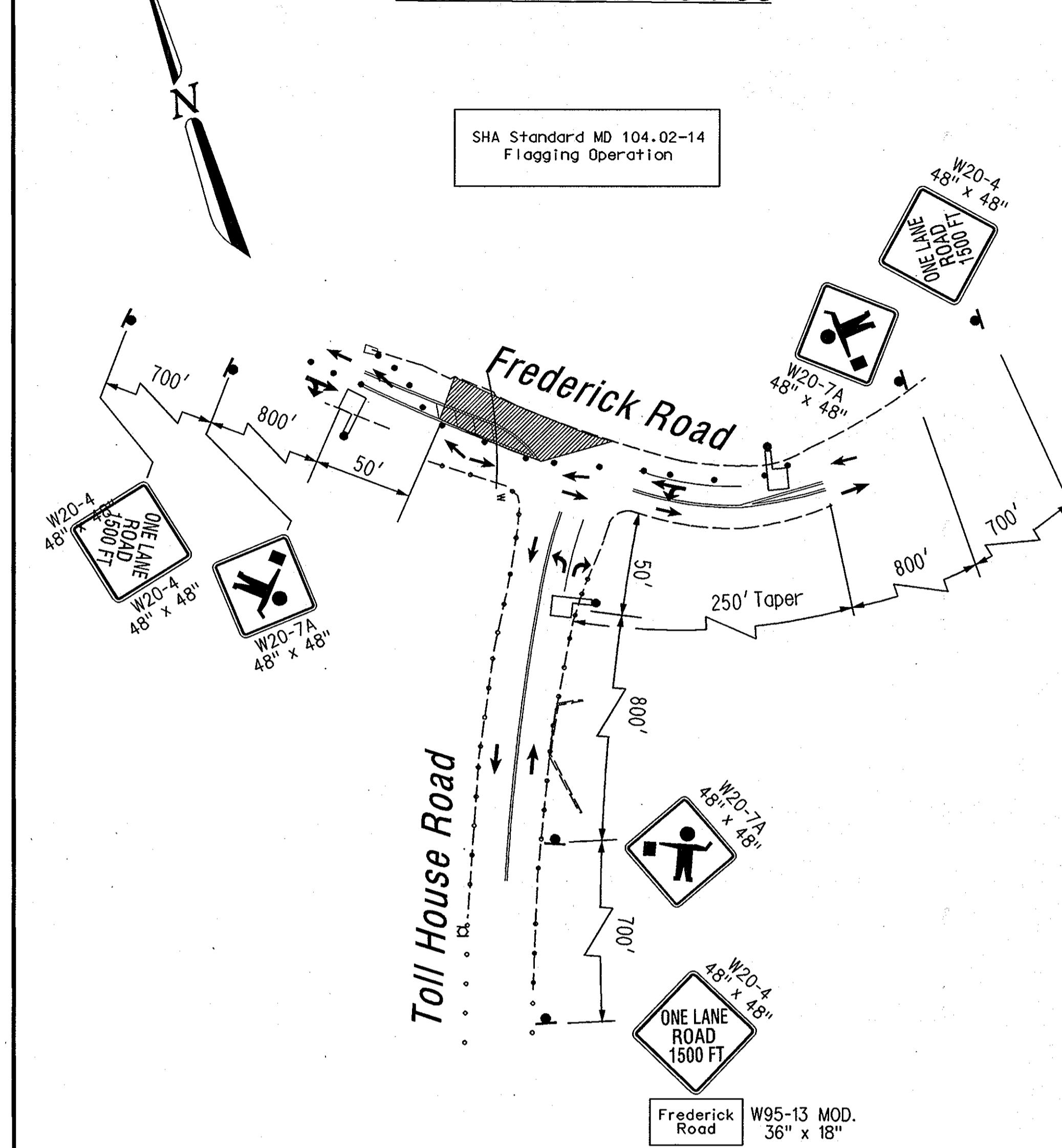


SHA Standard MD 104.02-14
Flagging Operation

Sequence of Construction - Sta 11+50 to 12+00

1. Place Advance Warning Signs and set traffic control devices for construction area. Flexible Roll Up Signs will be used on this project. For specification of the Flexible Roll Up Signs, see MD-SHA Section 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
2. Complete the water line construction on eastbound Frederick Road.

Sta 12+00 to 13+00



SHA Standard MD 104.02-14
Flagging Operation

Sequence of Construction - Sta 12+00 to 13+00

1. Place Advance Warning Signs and set traffic control devices for construction area. Flexible Roll Up Signs will be used on this project. For specification of the Flexible Roll Up Signs, see MD-SHA Section 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
2. Complete the water line construction on westbound Frederick Road.

CONTRACTOR IS TO USE THE LATEST MD-SHA STANDARDS FOR HIGHWAY INCIDENTAL STRUCTURES (TEMPORARY TRAFFIC CONTROL)

RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

Day Time Work Zone
9:00 AM - 3:00 PM
Monday - Friday

LEGEND

- Work Zone
- Existing Geometrics
- Proposed Geometrics
- Construction Sign (placed in this phase)
- Existing Construction Sign (placed in previous phase)
- Channelizing Devices (Drums)
- Arrow Panel
- Temporary Barrier Wall
- Direction of Travel
- Flagger

AS-BUILT

SCALE 1" = 50'

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

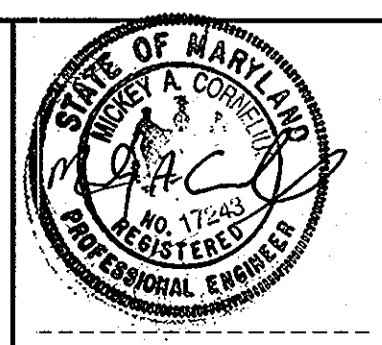
[Signature] 7/10/07
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-531-6600
1-800-583-8411
Fax: 410-931-6601
Job No.: 2000-1211
File Name: MOTI-US 29-WM.dgn



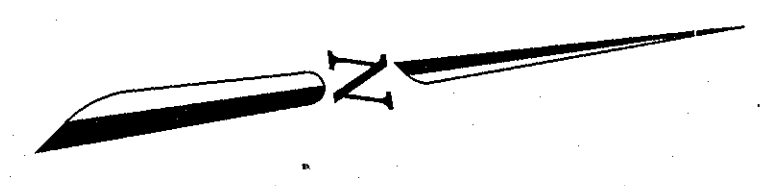
DSN. BY: FJH			
DRN. BY: FJH			
CHK. BY: JDD			
DATE: 6/4/07	RPW	AS-BUILT REVISIONS	03/10
	BY NO.	REVISION	DATE

Maintenance of Traffic Plan
48" Water Main
Frederick Rd. at Toll House Rd.
Sta 10+00 - 13+00 - Sheet 1 of 1
600' SCALE MAP NO. W&S: 24 & 30 BLOCK NO.

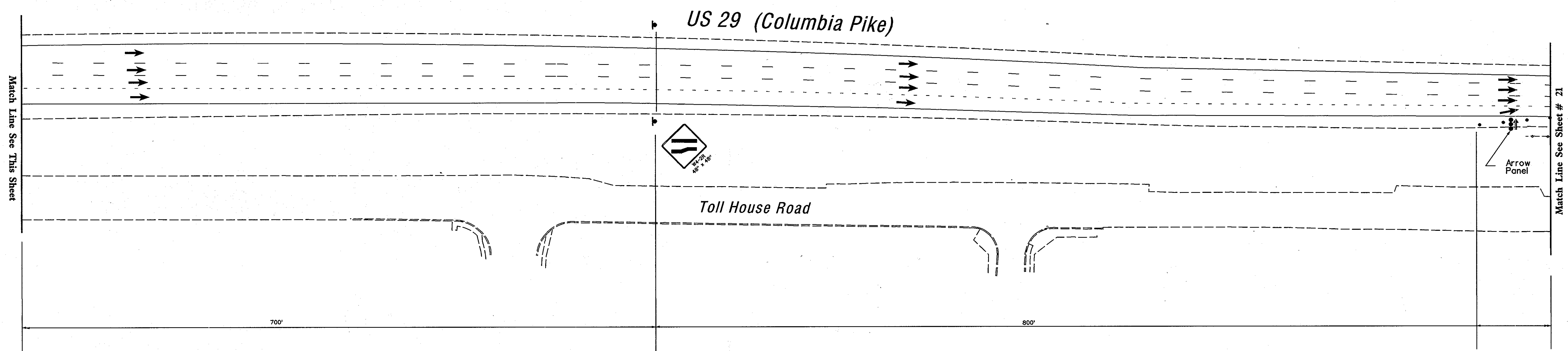
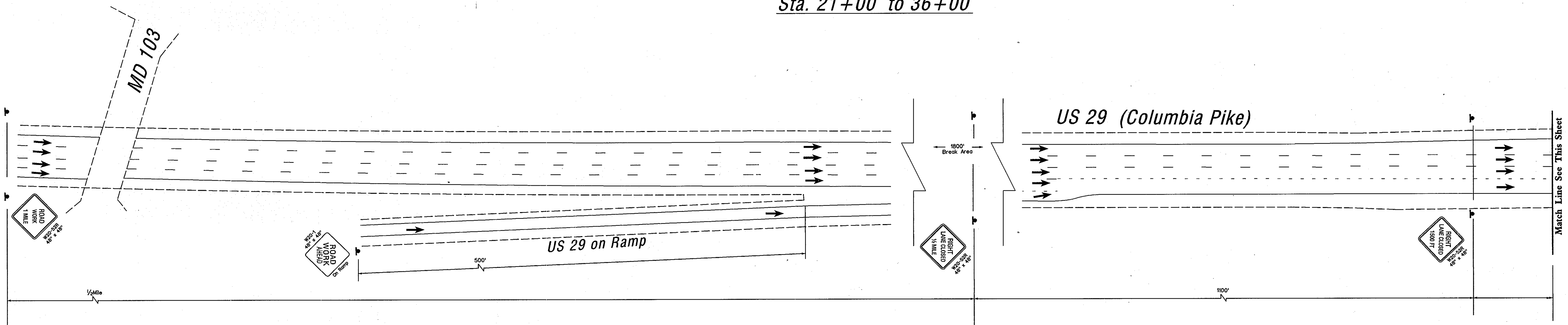
US ROUTE 40 TO FREDERICK ROAD
US ROUTE 29 / WATER MAIN REPLACEMENT

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 19 OF 37



Sta. 21+00 to 36+00



Sequence of Construction - Sta 21+00 to 36+00

1. Place Advance Warning Signs and set channelizing devices adjacent to construction area. Flexible Roll Up Signs will be used on this project. For specification of the Flexible Roll Up Signs, see MD-SHA Section 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
2. Construct the water line along the NB shoulder off Ramp to US 29 in 100 ft. - 150 ft. movable work zones. Night time operation 8:00 PM - 12:00 AM (Midnight), 12:01 AM - 8 AM. All open trench work zone areas to be steelplated with appropriate signing and all travel lanes will be open to traffic during non-construction periods.
3. Channelizing devices shall remain adjacent to the work area during periods of non-construction. All driveways and roadways shall remain open and unobstructed by any channelizing devices.

CONTRACTOR IS TO USE THE LATEST MD-SHA STANDARDS FOR HIGHWAY INCIDENTAL STRUCTURES (TEMPORARY TRAFFIC CONTROL)

Night Time Work Zone
 8:00 PM - 12:00 AM (Midnight),
 12:01 AM - 8:00 AM
 Monday - Friday

LEGEND

- Work Zone
- Existing Geometrics
- Proposed Geometrics
- Construction Signs (placed in this phase)
- Construction Signs (placed in previous phase)
- Existing Construction Sign (placed in previous phase)
- Channelizing Devices (Drums)
- Arrow Panel
- Temporary Barrier Wall
- Direction of Travel

RECORD DRAWINGS
 TO THE BEST OF OUR KNOWLEDGE,
 INFORMATION AND BELIEF, BASED ON
 INFORMATION PROVIDED BY OTHERS, THESE
 RECORD DRAWINGS SUBSTANTIALLY REPRESENT
 THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
 ENGINEERS, INC.
 BY:

AS-BUILT

SCALE 1" = 50'

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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

9/10/07
 DIRECTOR OF PUBLIC WORKS DATE

7/3/07
 CHIEF - BUREAU OF ENGINEERING DATE

7-6-07
 CHIEF, BUREAU OF UTILITIES DATE

7-3-07
 CHIEF, UTILITY DESIGN DIVISION DATE

The Traffic Group, Inc.
 Suite 11
 9900 Franklin Square Drive
 Baltimore, Maryland 21236
 410-531-6600
 1-800-583-3411
 Fax: 410-931-6601
 Job No.: 2000-1211
 File Name: MOTI-US 29-WM.dgn



DSN. BY:	FJH		
DRN. BY:	FJH		
CHK. BY:	JDD		
DATE:	6/4/07		
RPW BY:	JDD	AS-BUILT REVISIONS	03/10
NO.		REVISION	DATE

Maintenance of Traffic Plan
 48" Water Main
 Sta. 21+00 to 36+00
 Sheet 1 of 2
 600' SCALE MAP NO. W&S: 24 & 30 BLOCK NO.

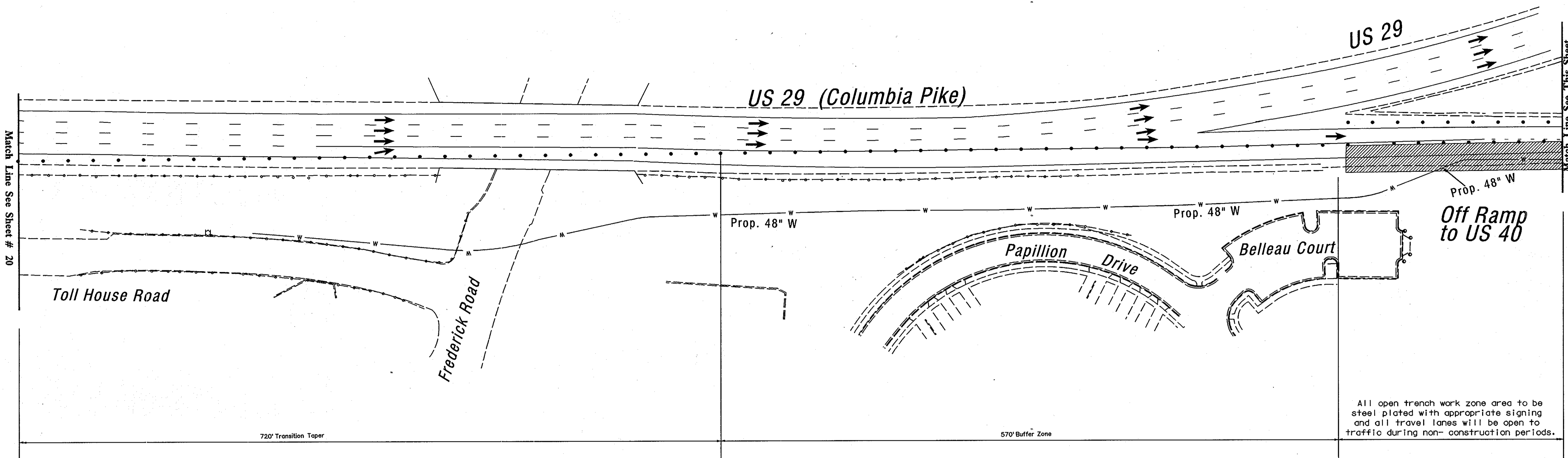
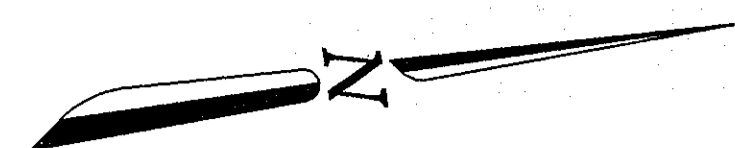
US ROUTE 40 TO FREDERICK ROAD
 US ROUTE 29 / WATER MAIN REPLACEMENT

CAPITAL PROJECT: W-8243
 CONTRACT NO.: 44-4321
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

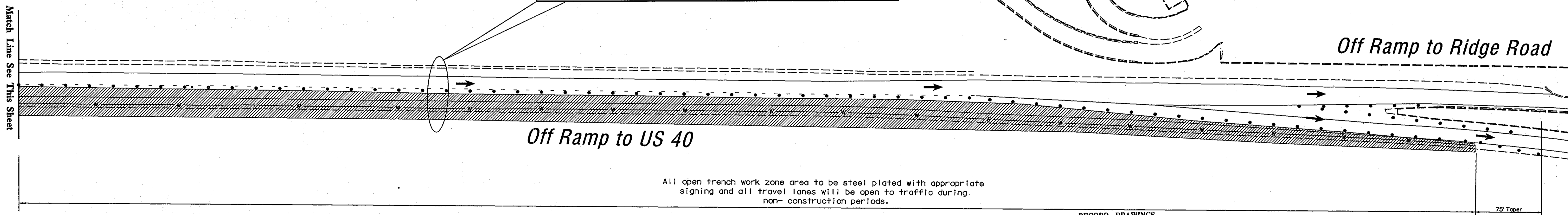
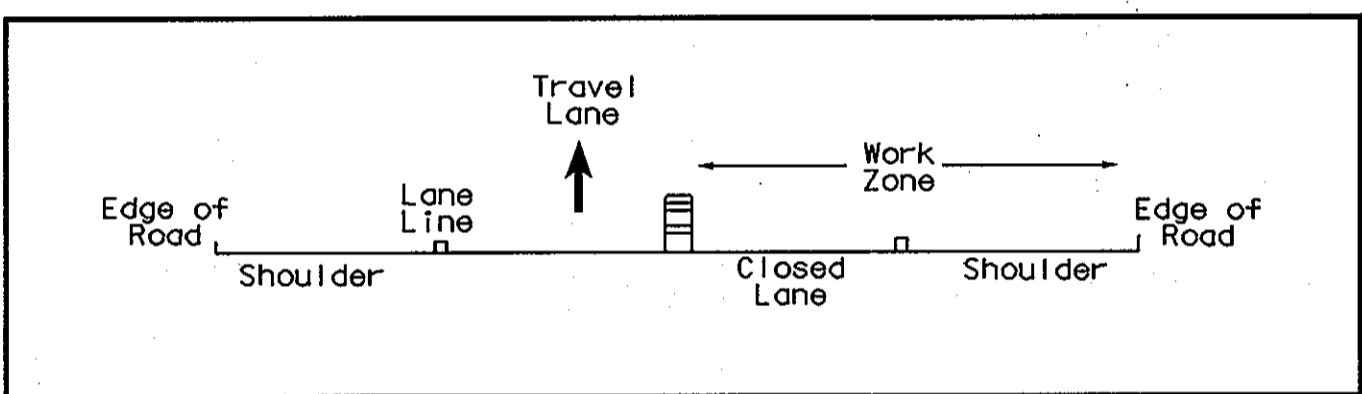
SCALE AS SHOWN
 SHEET 20 OF 37

O:\John\2000\0300-211\Draw\0200 File 11-22-06\mtp 10529 -HW.dgn 6/4/2007

Sta. 21+00 to Sta. 36+00



All open trench work zone area to be steel plated with appropriate signing and all travel lanes will be open to traffic during non-construction periods.



All open trench work zone area to be steel plated with appropriate signing and all travel lanes will be open to traffic during non-construction periods.

Sequence of Construction - Sta 21+00 to 36+00

1. Place Advance Warning Signs and set channelizing devices adjacent to construction area. Flexible Roll Up Signs will be used on this project. For specification of the Flexible Roll Up Signs, see MD-SHA Section 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
2. Construct the water line along the NB shoulder of US 29 in 100 ft. - 150 ft. movable work zones. Night time operation 8:00 PM - 12:00 AM (Midnight), 12:01 AM - 8 AM. All open trench work zone areas to be steelplated with appropriate signing and all travel lanes will be open to traffic during non-construction periods.
3. Channelizing devices shall remain adjacent to the work area during periods of non-construction. All driveways and roadways shall remain open and unobstructed by any channelizing devices.

CONTRACTOR IS TO USE THE LATEST MD-SHA STANDARDS FOR HIGHWAY INCIDENTAL STRUCTURES (TEMPORARY TRAFFIC CONTROL)

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC. BY: [Signature]

Night Time Work Zone
8:00 PM - 12:00 AM (Midnight),
12:01 AM - 8:00 AM
Monday - Friday

LEGEND

- Work Zone
- Existing Geometrics
- Proposed Geometrics
- Construction Sign (placed in this phase)
- Construction Signs Channelizing Devices (Drums)
- Arrow Panel
- Existing Construction Sign (placed in previous phase)
- Temporary Barrier Wall
- Direction of Travel

AS-BUILT

SCALE 1" = 50'

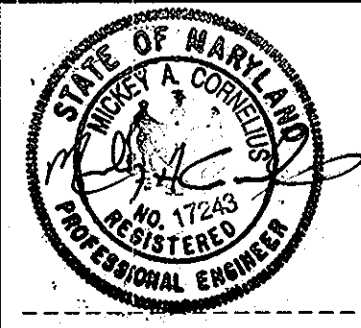
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

7/16/07 DATE
7/3/07 DATE

7-6-07 DATE

The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, Maryland 21236
410-931-6600
1-800-593-8411
Fax 410-931-6601
Job No.: 2000-1211
File Name: MOT1-US 29-WM.dgn



DSN. BY: FJH			
DRN. BY: FJH			
CHK. BY: JDD			
DATE: 6/4/07	RPW	AS-BUILT REVISIONS	03/0
BY NO.		REVISION	DATE

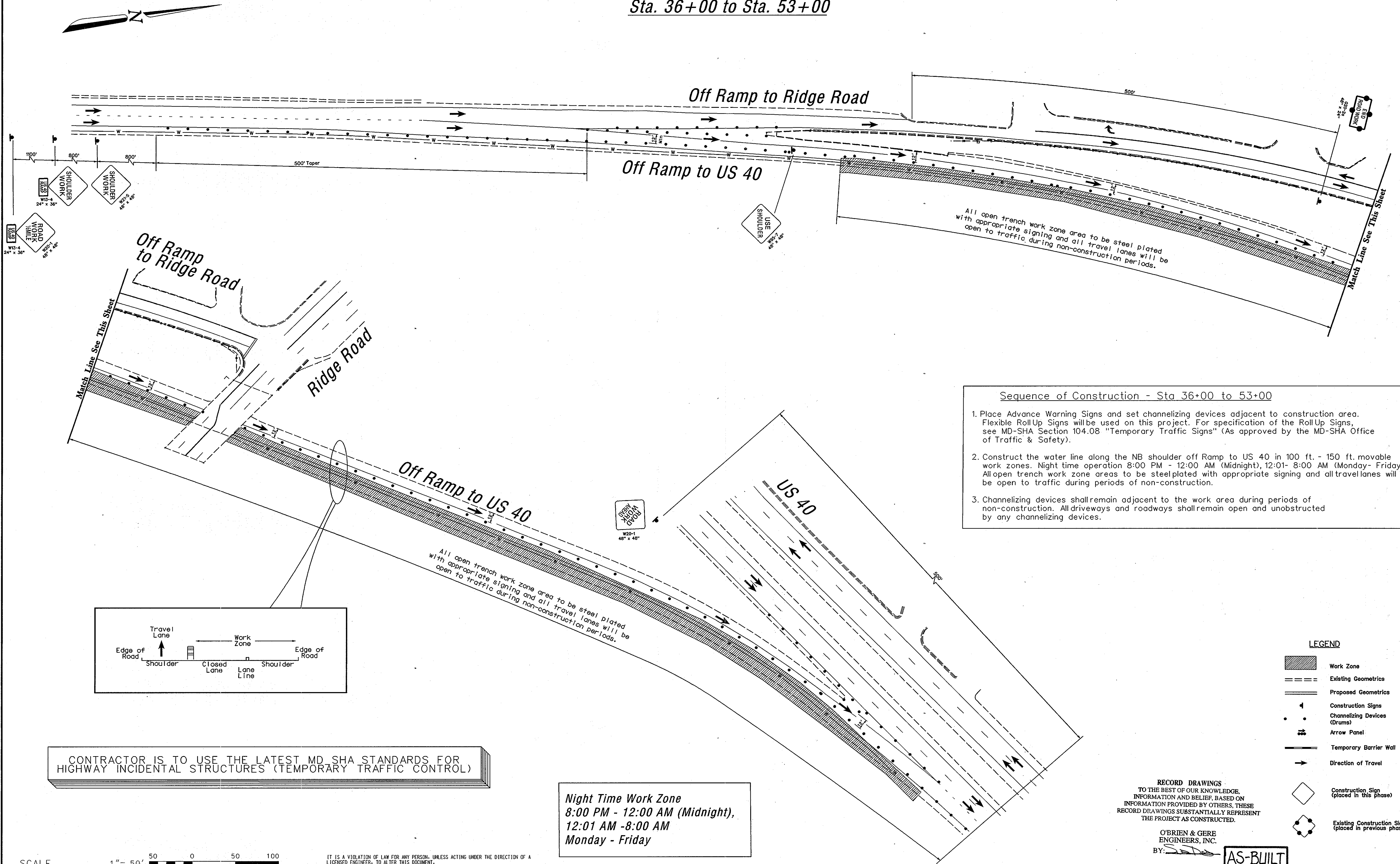
Maintenance of Traffic Plan
48" Water Main
Sta. 21+00 to Sta. 36+00
Sheet 2 of 2
600' SCALE MAP NO. W&S: 24 & 30 BLOCK NO.

US ROUTE 40 TO FREDERICK ROAD
US ROUTE 29 /WATER MAIN REPLACEMENT

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

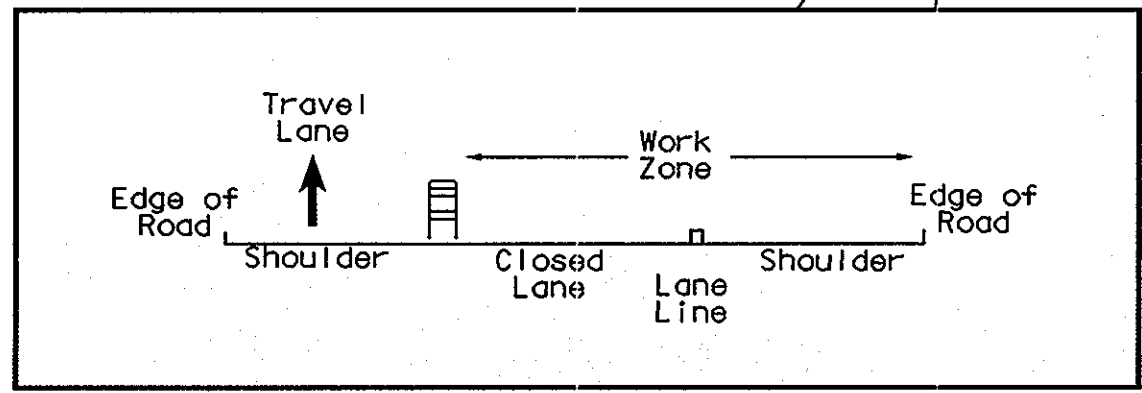
SCALE AS SHOWN
SHEET 21 OF 37

Sta. 36+00 to Sta. 53+00



Sequence of Construction - Sta 36+00 to 53+00

1. Place Advance Warning Signs and set channelizing devices adjacent to construction area. Flexible RollUp Signs will be used on this project. For specification of the RollUp Signs, see MD-SHA Section 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
2. Construct the water line along the NB shoulder off Ramp to US 40 in 100 ft. - 150 ft. movable work zones. Night time operation 8:00 PM - 12:00 AM (Midnight), 12:01- 8:00 AM (Monday- Friday). All open trench work zone areas to be steelplated with appropriate signing and all travel lanes will be open to traffic during periods of non-construction.
3. Channelizing devices shall remain adjacent to the work area during periods of non-construction. All driveways and roadways shall remain open and unobstructed by any channelizing devices.



CONTRACTOR IS TO USE THE LATEST MD SHA STANDARDS FOR HIGHWAY INCIDENTAL STRUCTURES (TEMPORARY TRAFFIC CONTROL)

Night Time Work Zone
 8:00 PM - 12:00 AM (Midnight),
 12:01 AM - 8:00 AM
 Monday - Friday

- LEGEND**
- Work Zone
 - Existing Geometrics
 - Proposed Geometrics
 - Construction Signs
 - Channelizing Devices (Drums)
 - Arrow Panel
 - Temporary Barrier Wall
 - Direction of Travel
 - Construction Sign (placed in this phase)
 - Existing Construction Sign (placed in previous phase)

RECORD DRAWINGS
 TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
 BY: *[Signature]* **AS-BUILT**

SCALE 1" = 50'

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 7/6/07
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/3/07
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
 CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
 CHIEF, UTILITY DESIGN DIVISION DATE

The Traffic Group, Inc.
 Suite 11
 9900 Franklin Square Drive
 Baltimore, Maryland 21236
 410-531-6600
 1-800-533-8411
 Fax: 410-931-6601
 Job No.: 2000-1211
 File Name: MOT2-US 29-WM.dgn



DSN. BY: FJH			
DRN. BY: FJH			
CHK. BY: JDD			
DATE: 6/4/07	RPW	AS-BUILT REVISIONS	03/10
	BY	NO.	REVISION

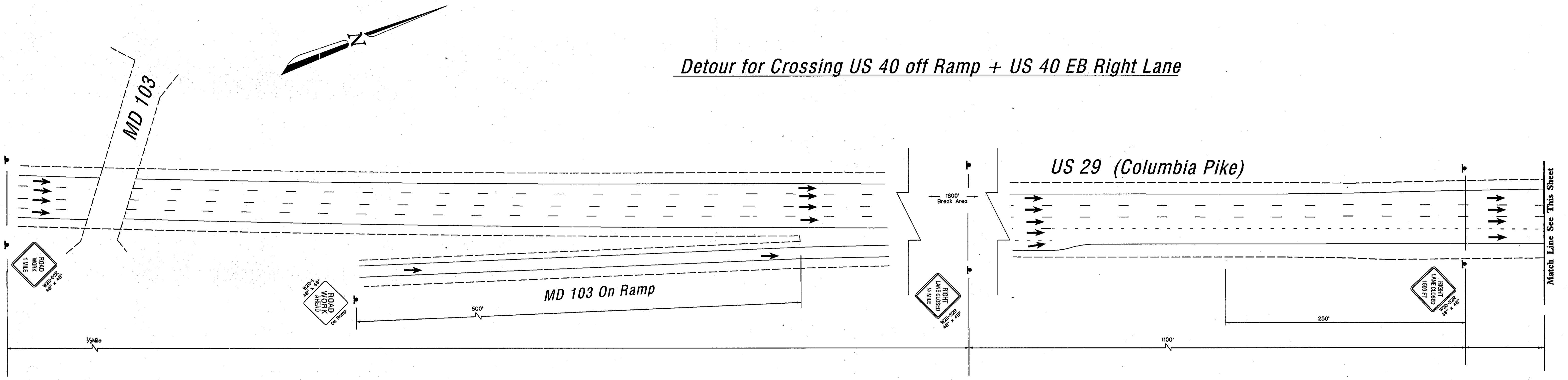
Maintenance of Traffic Plan
 48" Water Main
 Sta. 36+00 to Sta. 53+00
 Sheet 1 of 1
 600' SCALE MAP NO. W&S: 24 & 30 BLOCK NO.

US ROUTE 40 TO FREDERICK ROAD
 US ROUTE 29 / WATER MAIN REPLACEMENT

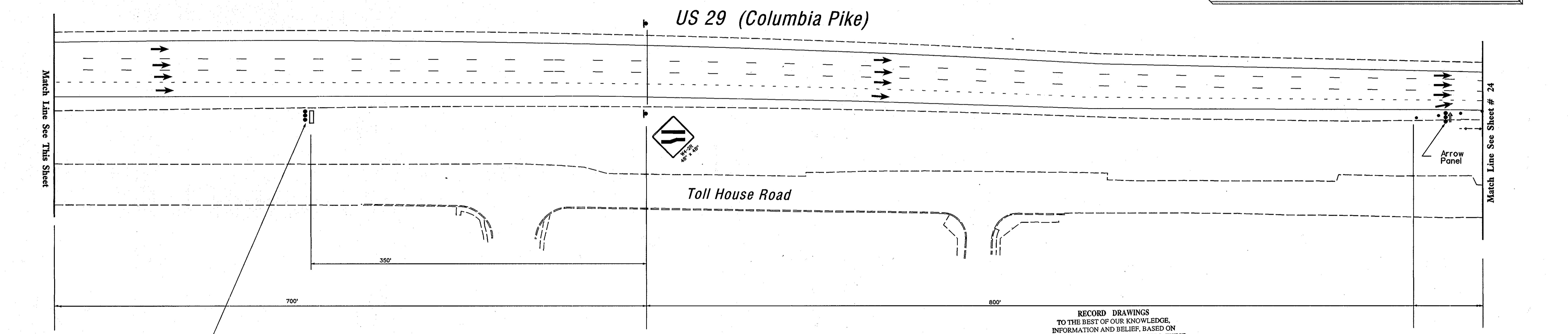
CAPITAL PROJECT: W-8243
 CONTRACT NO.: 44-4321
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 22 OF 37

Detour for Crossing US 40 off Ramp + US 40 EB Right Lane



CONTRACTOR IS TO USE THE LATEST MD-SHA STANDARDS FOR HIGHWAY INCIDENTAL STRUCTURES (TEMPORARY TRAFFIC CONTROL)



RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC. BY: *[Signature]*

Sequence of Construction - Detour for Crossing US 40 off Ramp + US 40 EB Right Lane

1. Place Advance Warning Signs and set channelizing devices adjacent to construction area. Flexible Roll Up Signs will be use on this project. For specification of the Flexible Roll Up Signs, see MD-SHA Section 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
2. The contractor can begin setting/uncovering the detour signs and setting signs for the right lane closure starting at 8:00 PM. No right lane or ramp will be closed before 10:00 PM.
3. Construct the water line across the off ramp to US 40. Night time operation 10:00 PM - 12:00 AM (Midnight), 12:01 AM - 5:00AM. All open trench work zone area to be steelplated with appropriate signing and all travel lanes/ramp will be open to traffic during non-construction period.
4. Channelized devices shall remain adjacent to the work area during periods of non-construction. All driveways and roadways shall remain open and unobstructed by any channelized devices.

Night Time Work Zone
 10:00 PM - 12:00 AM (Midnight),
 12:01 AM - 5:00 AM
 Monday - Friday
 Must Maintain Two Lanes of Traffic Along EB US 40 Through The Ridge Road Intersection until 10:00 PM

LEGEND

- Work Zone
- Existing Geometrics
- Proposed Geometrics
- Construction Sign (placed in this phase)
- Construction Signs
- Channelizing Devices (Drums)
- Arrow Panel
- Existing Construction Sign (placed in previous phase)
- Temporary Barrier Wall
- PCMS
- AS-BUILT
- Direction of Travel

PCMS

Message # 1: US 40 EB RAMP TO BE

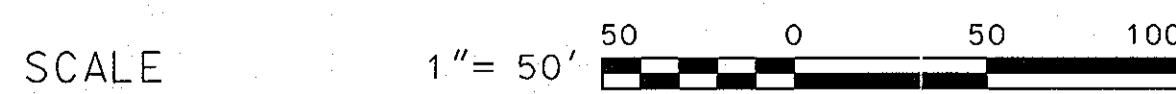
Message # 2: CLOSED (time) (date)

Message # 1: US 40 EB RAMP CLOSED

Message # 2: FOLLOW DETOUR

TO BE PLACED THREE(3) DAYS IN ADVANCE OF RAMP CLOSURE

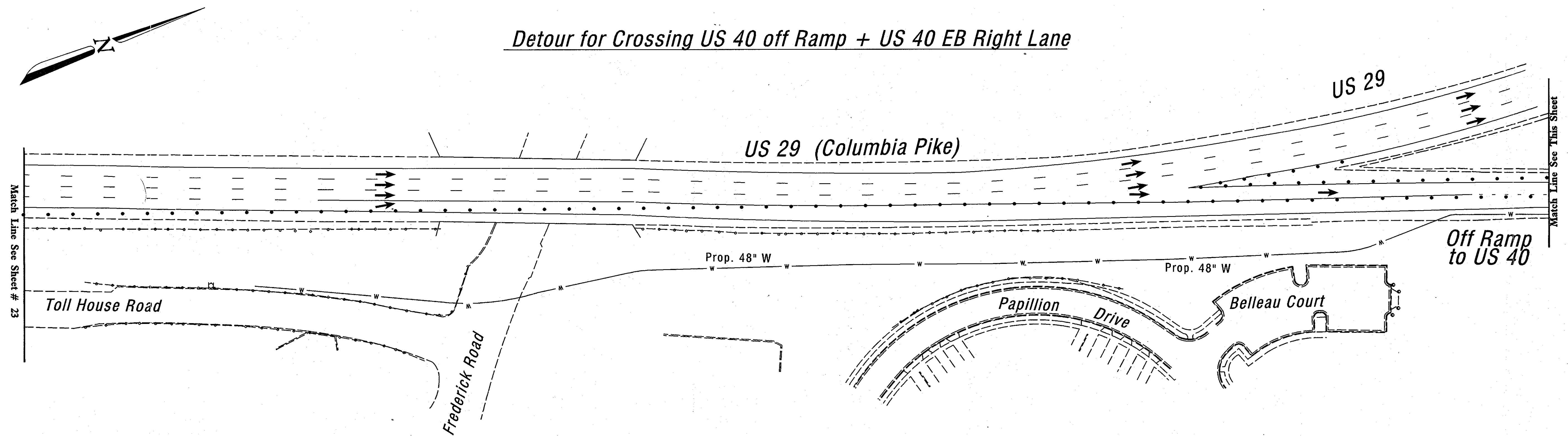
TO BE PLACED DURING RAMP CLOSURE



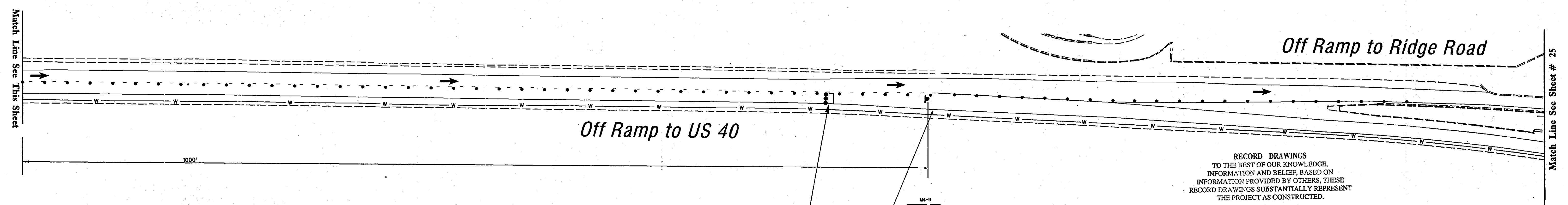
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND Director: <i>[Signature]</i> 7/1/07 Chief - Bureau of Engineering: <i>[Signature]</i> 7/3/07 Chief - Bureau of Utilities: <i>[Signature]</i> 7-6-07 Chief - Utility Design Division: <i>[Signature]</i> 7-3-07		The Traffic Group, Inc. Suite E1 9900 Franklin Square Drive Baltimore, Maryland 21236 410-531-6600 1-800-323-8911 Fax: 410-931-6601 Job No.: 2000-4211 File Name: MOT3-US 29-WM.dgn		State of Maryland Professional Engineer Seal DSN. BY: FJH DRN. BY: FJH CHK. BY: JDD DATE: 6/4/07		Maintenance of Traffic Plan 48" Water Main Detour for Crossing US 40 off Ramp + US 40 EB Right Lane Sheet 1 of 3 RPW 1 AS-BUILT REVISIONS 03/10 BY NO. REVISION DATE		US ROUTE 40 TO FREDERICK ROAD US ROUTE 29 / WATER MAIN REPLACEMENT CAPITAL PROJECT: W-8243 CONTRACT NO.: 44-4321 ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND		SCALE AS SHOWN SHEET 23 OF 37	
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Detour for Crossing US 40 off Ramp + US 40 EB Right Lane



- Sequence of Construction - Detour for Crossing US 40 off Ramp + US 40 EB Right Lane**
1. Place Advance Warning Signs and set channelizing devices adjacent to construction area. Flexible Roll Up Signs will be used on this project. For specification of the Flexible Roll Up Signs, see MD-SHA Section 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
 2. The contractor can begin setting/uncovering the detour signs and setting signs for the right lane closure starting at 8:00 PM. No right lane or ramp will be closed before 10:00 PM.
 3. Construct the water line across the off ramp to US 40. Night time operation 10:00 PM - 12:00 AM (Midnight), 12:01 AM - 5:00 AM. All open trench work zone area to be steel plated with appropriate signing and all travel lanes/ramp will be open to traffic during non-construction period.
 4. Channelized devices shall remain adjacent to the work area during periods of non-construction. All driveways and roadways shall remain open and unobstructed by any channelized devices.



RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

CONTRACTOR IS TO USE THE LATEST MD-SHA STANDARDS FOR HIGHWAY INCIDENTAL STRUCTURES (TEMPORARY TRAFFIC CONTROL)

PCMS

Message # 1	Message # 2	Message # 1	Message # 2
US 40 EB RAMP TO BE	CLOSED (time) (date)	US 40 EB RAMP CLOSED	FOLLOW DETOUR
TO BE PLACED THREE(3) DAYS IN ADVANCE OF RAMP CLOSURE		TO BE PLACED DURING RAMP CLOSURE	

Night Time Work Zone
10:00 PM - 12:00 AM (Midnight),
12:01 AM - 5:00 AM
Monday - Friday
Must Maintain Two Lanes of Traffic Along EB US 40 Through The Ridge Road Intersection until 10:00 PM

LEGEND

- Work Zone
- Existing Geometrics
- Proposed Geometrics
- Construction Signs (placed in this phase)
- Channelizing Devices (Drums)
- Arrow Panel
- Temporary Barrier Wall
- Direction of Travel
- Existing Construction Sign (placed in previous phase)
- PCMS

AS-BUILT

SCALE 1" = 50'

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/16/07
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
CHIEF - BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF - UTILITY DESIGN DIVISION DATE

The Traffic Group, Inc.
Suite H
2900 Franklin Square Drive
Baltimore, Maryland 21236
410-531-6600
1-800-583-3411
Fax: 410-931-6601

Job No.: 2000-1211
File Name: MCT3-US 29-WM.dgn



DSN. BY: FJH			
DRN. BY: FJH			
CHK. BY: JDD			
DATE: 6/4/07	RPW	AS-BUILT REVISIONS	03/10
	BY NO.	REVISION	DATE

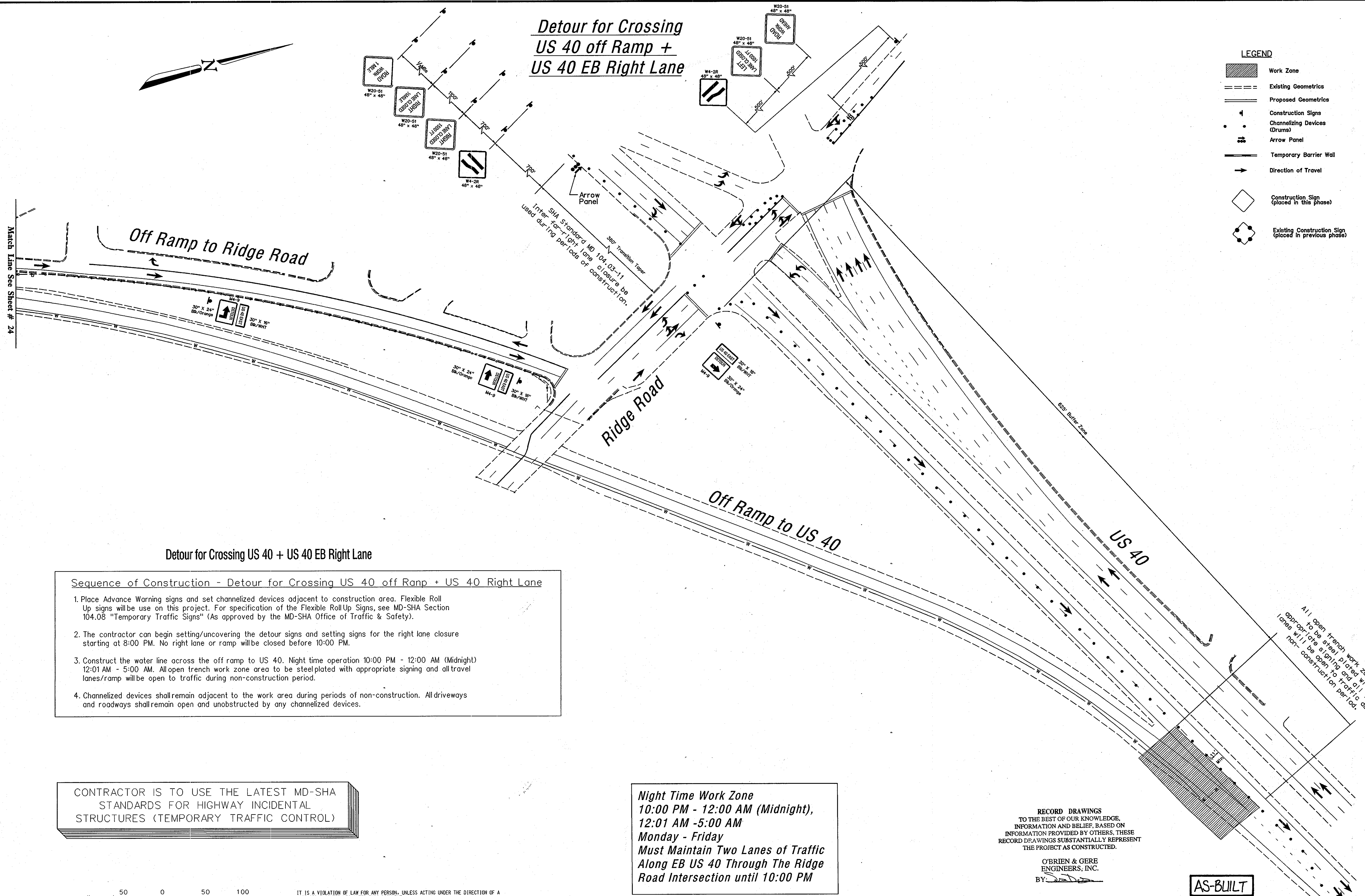
Maintenance of Traffic Plan
48" Water Main
Detour for Crossing US 40 off Ramp + US 40 EB Right Lane
Sheet 2 of 3
600' SCALE MAP NO. W&S: 24 & 30 BLOCK NO.

US ROUTE 40 TO FREDERICK ROAD
US ROUTE 29 /WATER MAIN REPLACEMENT

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 24 OF 37

**Detour for Crossing
US 40 off Ramp +
US 40 EB Right Lane**



- LEGEND**
- Work Zone
 - Existing Geometrics
 - Proposed Geometrics
 - Construction Signs
 - Channelizing Devices (Drums)
 - Arrow Panel
 - Temporary Barrier Wall
 - Direction of Travel
 - Construction Sign (placed in this phase)
 - Existing Construction Sign (placed in previous phase)

Detour for Crossing US 40 + US 40 EB Right Lane

Sequence of Construction - Detour for Crossing US 40 off Ramp + US 40 Right Lane

1. Place Advance Warning signs and set channelized devices adjacent to construction area. Flexible Roll Up signs will be use on this project. For specification of the Flexible Roll Up Signs, see MD-SHA Section 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
2. The contractor can begin setting/uncovering the detour signs and setting signs for the right lane closure starting at 8:00 PM. No right lane or ramp will be closed before 10:00 PM.
3. Construct the water line across the off ramp to US 40. Night time operation 10:00 PM - 12:00 AM (Midnight) 12:01 AM - 5:00 AM. All open trench work zone area to be steelplated with appropriate signing and all travel lanes/ramp will be open to traffic during non-construction period.
4. Channelized devices shall remain adjacent to the work area during periods of non-construction. All driveways and roadways shall remain open and unobstructed by any channelized devices.

CONTRACTOR IS TO USE THE LATEST MD-SHA STANDARDS FOR HIGHWAY INCIDENTAL STRUCTURES (TEMPORARY TRAFFIC CONTROL)

Night Time Work Zone
10:00 PM - 12:00 AM (Midnight),
12:01 AM - 5:00 AM
Monday - Friday
Must Maintain Two Lanes of Traffic
Along EB US 40 Through The Ridge
Road Intersection until 10:00 PM

RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.
O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

AS-BUILT


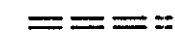
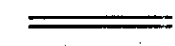







SCALE 1" = 50'

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<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p><i>[Signature]</i> 7/6/07 DIRECTOR OF PUBLIC WORKS DATE</p> <p><i>[Signature]</i> 7-6-07 CHIEF, BUREAU OF UTILITIES DATE</p>	<p>The Traffic Group, Inc. Suite #1 9900 Franklin Square Drive Baltimore, Maryland 21226 410-521-6600 1-800-583-8411 Fax 410-931-6601 Job No.: 2000-1211 File Name: MCT4-US 29-WM.dgn</p>		<p>DSN. BY: FJH DRN. BY: FJH CHK. BY: JDD DATE: 6/4/07</p>	<p>Maintenance of Traffic Plan 48" Water Main Detour for Crossing US 40 off Ramp + US 40 EB Right Lane Sheet 3 of 3</p>	<p>US ROUTE 40 TO FREDERICK ROAD US ROUTE 29 /WATER MAIN REPLACEMENT</p> <p>CAPITAL PROJECT: W-8243 CONTRACT NO.: 44-4321 ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 25 OF 37</p>													
				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>RPW</th> <th>BY</th> <th>NO.</th> <th>AS-BUILT REVISIONS</th> <th>REVISION</th> <th>DATE</th> </tr> <tr> <td>03/0</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	RPW	BY	NO.	AS-BUILT REVISIONS	REVISION	DATE	03/0								
RPW	BY	NO.	AS-BUILT REVISIONS	REVISION	DATE														
03/0																			

Crossing US 40 EB Lane

LEGEND

-  Work Zone
-  Existing Geometrics
-  Proposed Geometrics
-  Construction Signs
-  Channelizing Devices (Drums)
-  Arrow Panel
-  Temporary Barrier Wall
-  Direction of Travel
-  Construction Sign (placed in this phase)
-  Existing Construction Sign (placed in previous phase)

Sequence of Construction - Crossing US 40 EB lane

1. Place Advance Warning Signs and set channelizing devices adjacent to construction area. Flexible Roll Up Signs will be use on this project. For specification of the Flexible RollUp Signs, see MD-SHA 104.08 "Temporary Traffic Signs" (As approved by the MD-SHA Office of Traffic & Safety).
2. The contractor can begin setting signs for the left lane closure starting at 8:00 PM. No lane will be closed before 10:00 PM.
2. Construct the water line across eastbound lane of US 40. Work to be done during night time operation 10:00 PM - 12:00 AM (Midnight), 12:01 AM - 5:00 AM (Monday- Friday). All open trench work zone area to be steel plated with appropriate signing and all travel lanes will be open to traffic during non-construction periods.
3. Channelizing devices shall remain adjacent to the work area during periods of non-construction. All driveways and roadways shall remain open and unobstructed by any channelizing devices.

Night Time Work Zone
 10:00 PM - 12:00 AM (Midnight),
 12:01 AM - 5:00 AM Monday - Friday
 Must Maintain Two Lanes of Traffic
 Along EB US 40 Through The Ridge
 Road Intersection until 10:00 PM

CONTRACTOR IS TO USE THE LATEST MD-SHA STANDARDS FOR
 HIGHWAY INCIDENTAL STRUCTURES (TEMPORARY TRAFFIC CONTROL)

All open trench work zone
 area to be steel plated with
 appropriate signing and all
 travel lanes will be open
 to traffic during non-
 construction period.

RECORD DRAWINGS
 TO THE BEST OF OUR KNOWLEDGE,
 INFORMATION AND BELIEF, BASED ON
 INFORMATION PROVIDED BY OTHERS, THESE
 RECORD DRAWINGS SUBSTANTIALLY REPRESENT
 THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
 ENGINEERS, INC.
 BY: *[Signature]*

AS-BUILT

SCALE 1" = 50'

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS DATE: 7/1/07	<i>[Signature]</i> CHIEF - BUREAU OF ENGINEERING DATE: 7/3/07
<i>[Signature]</i> CHIEF, BUREAU OF UTILITIES DATE: 7-6-07	<i>[Signature]</i> CHIEF, UTILITY DESIGN DIVISION DATE: 7-3-07

The Traffic Group, Inc.
 Suite H
 9900 Franklin Square Drive
 Baltimore, Maryland 21236
 410-931-6600
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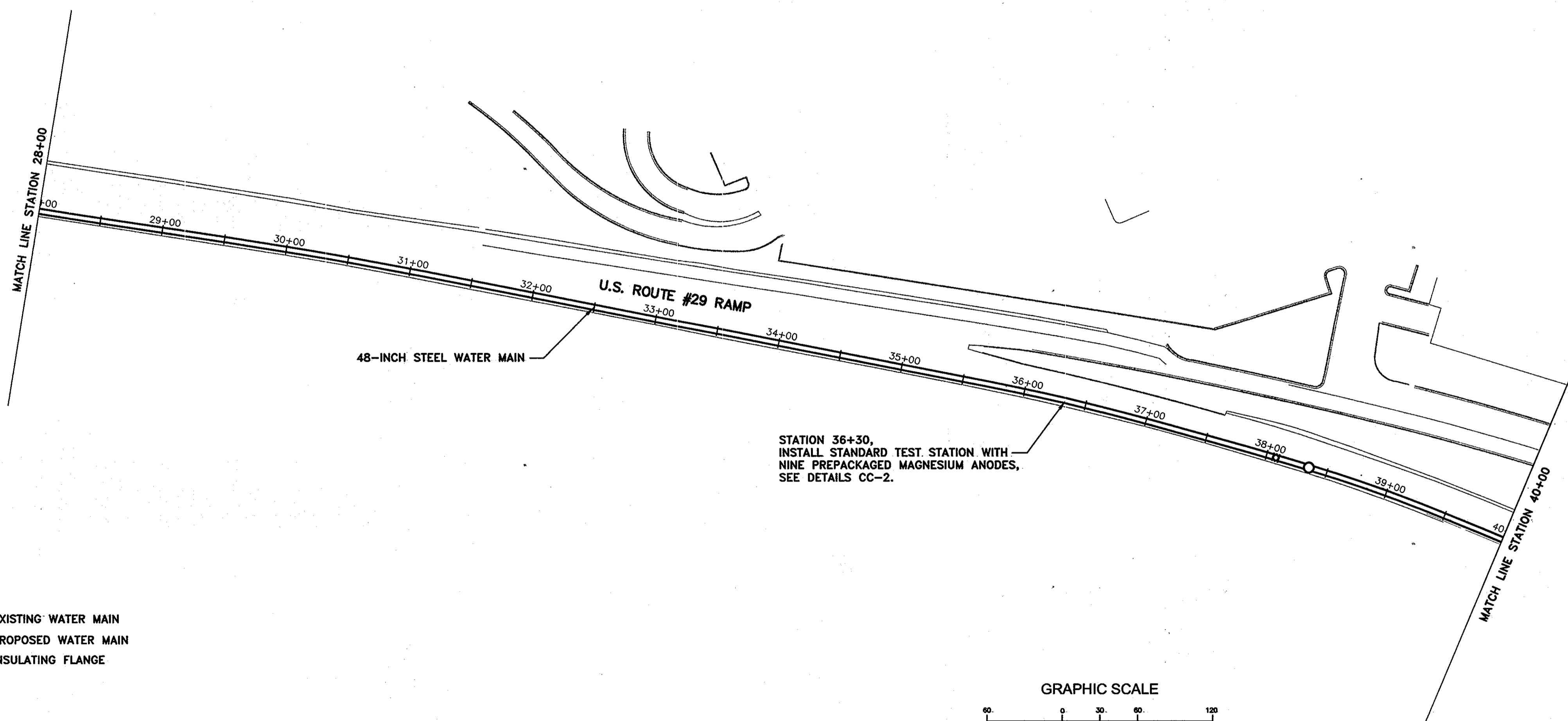
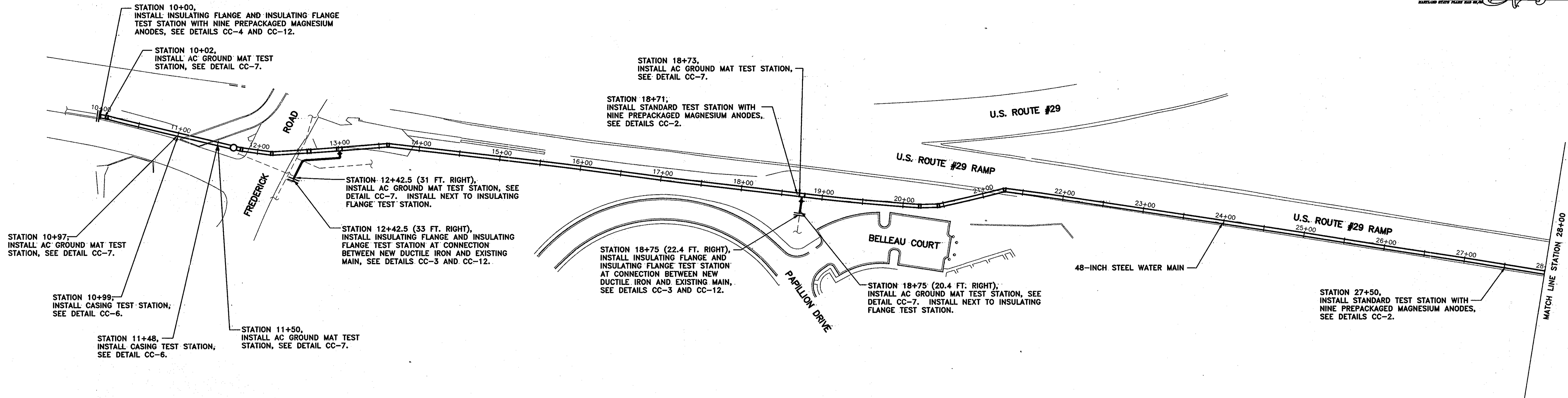


DSN. BY: FJH			
DRN. BY: FJH			
CHK. BY: JDD			
DATE: 6/4/07			
RPN	AS-BUILT REVISIONS	03/10	
BY	NO.	REVISION	DATE

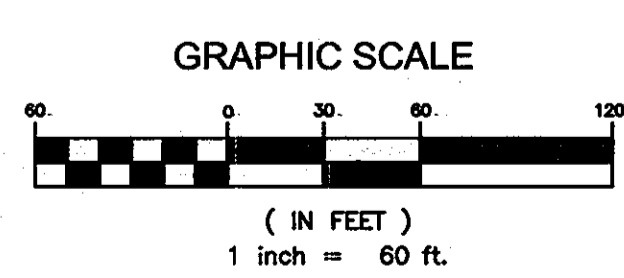
Maintenance of Traffic Plan
 48" Water Main
 Crossing US 40 EB Lane
 Sheet 1 of 1
 600' SCALE MAP NO. W&S: 24 & 30 BLOCK NO. _____

US ROUTE 40 TO FREDERICK ROAD
 US ROUTE 29 /WATER MAIN REPLACEMENT
 CAPITAL PROJECT: W-8243
 CONTRACT NO.: 44-4321
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 26 OF 37



- LEGEND:**
- EXISTING WATER MAIN
 - == PROPOSED WATER MAIN
 - |— INSULATING FLANGE



RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

- NOTES:**
1. ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW STEEL WATER MAIN, SEE DETAILS CC-3, CC-4, CC-5, AND CC-12.
 2. INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL CC-13.
 3. ALL NEW STEEL PIPING TO BE EXTERNALLY COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
 4. COAT ALL JOINTS AND FITTINGS IN ACCORDANCE WITH THE SPECIFICATIONS.
 5. BOND ALL NEW NON-WELDED PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED, SEE DETAIL CC-10.
 6. DO NOT SET TEST STATIONS IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN PVC CONDUIT TO FINAL TEST BOX LOCATION.

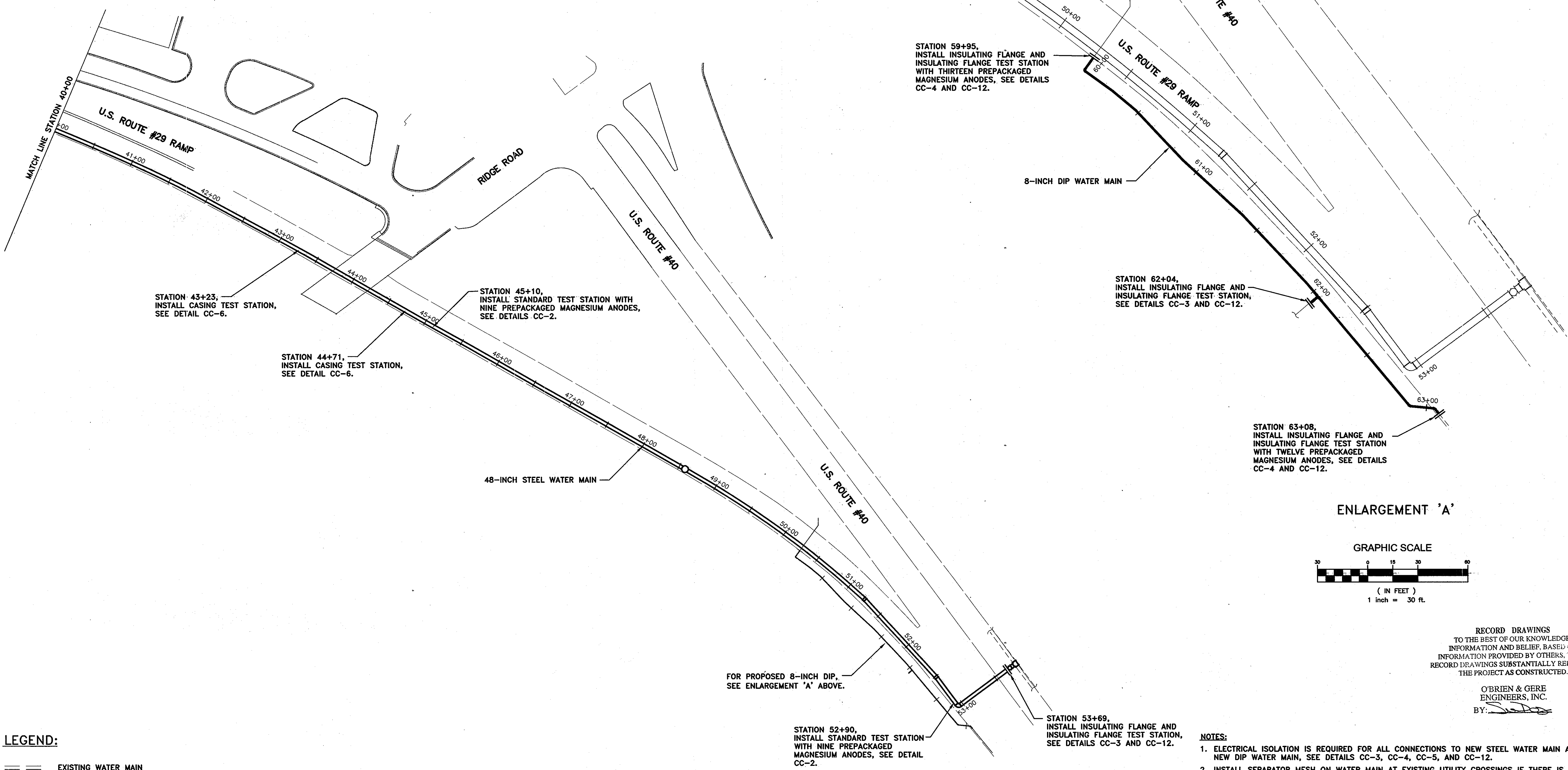
THIS DRAWING IS NOT APPLICABLE FOR USE AS STANDARD CORROSION CONTROL PROCEDURES FOR OTHER PROJECTS DUE TO VARIABLE CONDITIONS AT OTHER SITES. NEITHER THIS DESIGN NOR ANY PART THEREOF MAY BE DUPLICATED IN ANY WAY FOR OTHER PROJECTS OR MODIFIED IN ANY WAY FOR THIS OR OTHER PROJECTS, EXCEPT BY WRITTEN AGREEMENT WITH RUSSELL CORROSION CONSULTANTS, INC.

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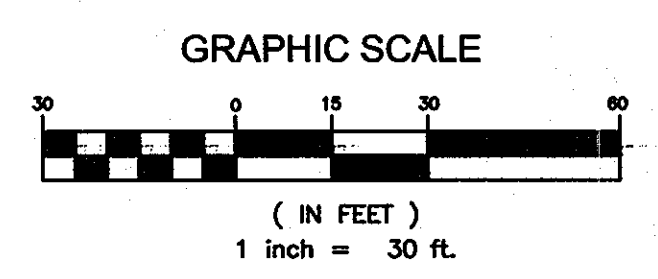
AS-BUILT

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND		 O'BRIEN & GERE ENGINEERS, INC.	 RUSSELL CORROSION CONSULTANTS, INC. Columbia, Maryland	DSN. BY: MJS				CATHODIC PROTECTION LAYOUT FOR 48"Ø STEEL WATER MAIN	U.S. ROUTE 29 WATER MAIN REPLACEMENT U.S. ROUTE 40 TO FREDERICK ROAD CAPITAL PROJECT: W-8243 CONTRACT NO.: 44-4321 ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND	CP-1
DIRECTOR OF PUBLIC WORKS <i>[Signature]</i> 7/3/07 DATE	CHIEF - BUREAU OF ENGINEERING <i>[Signature]</i> 7/3/07 DATE			DRN. BY: DJD/ZGS	CHK. BY: MJS	DATE: JUNE, 2007	RPW 1 AS-BUILT REVISIONS BY NO. REVISION DATE			03/10

FILE NO.



ENLARGEMENT 'A'

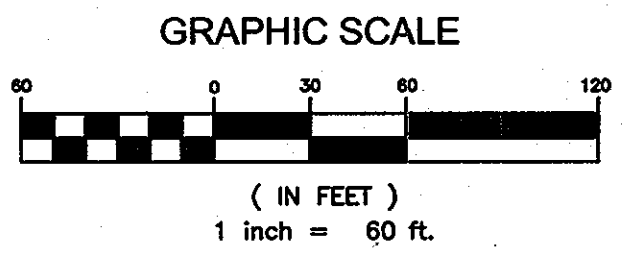


RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. RECORD DRAWINGS SUBSTANTIALLY REPRODUCE THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

NOTES:

1. ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW STEEL WATER MAIN AND NEW DIP WATER MAIN, SEE DETAILS CC-3, CC-4, CC-5, AND CC-12.
2. INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL CC-13.
3. ALL NEW STEEL PIPING TO BE EXTERNALLY COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
4. COAT ALL JOINTS AND FITTINGS IN ACCORDANCE WITH THE SPECIFICATIONS.
5. BOND ALL NEW NON-WELDED PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED, SEE DETAIL CC-10.
6. DO NOT SET TEST STATIONS IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN PVC CONDUIT TO FINAL TEST BOX LOCATION.



LEGEND:

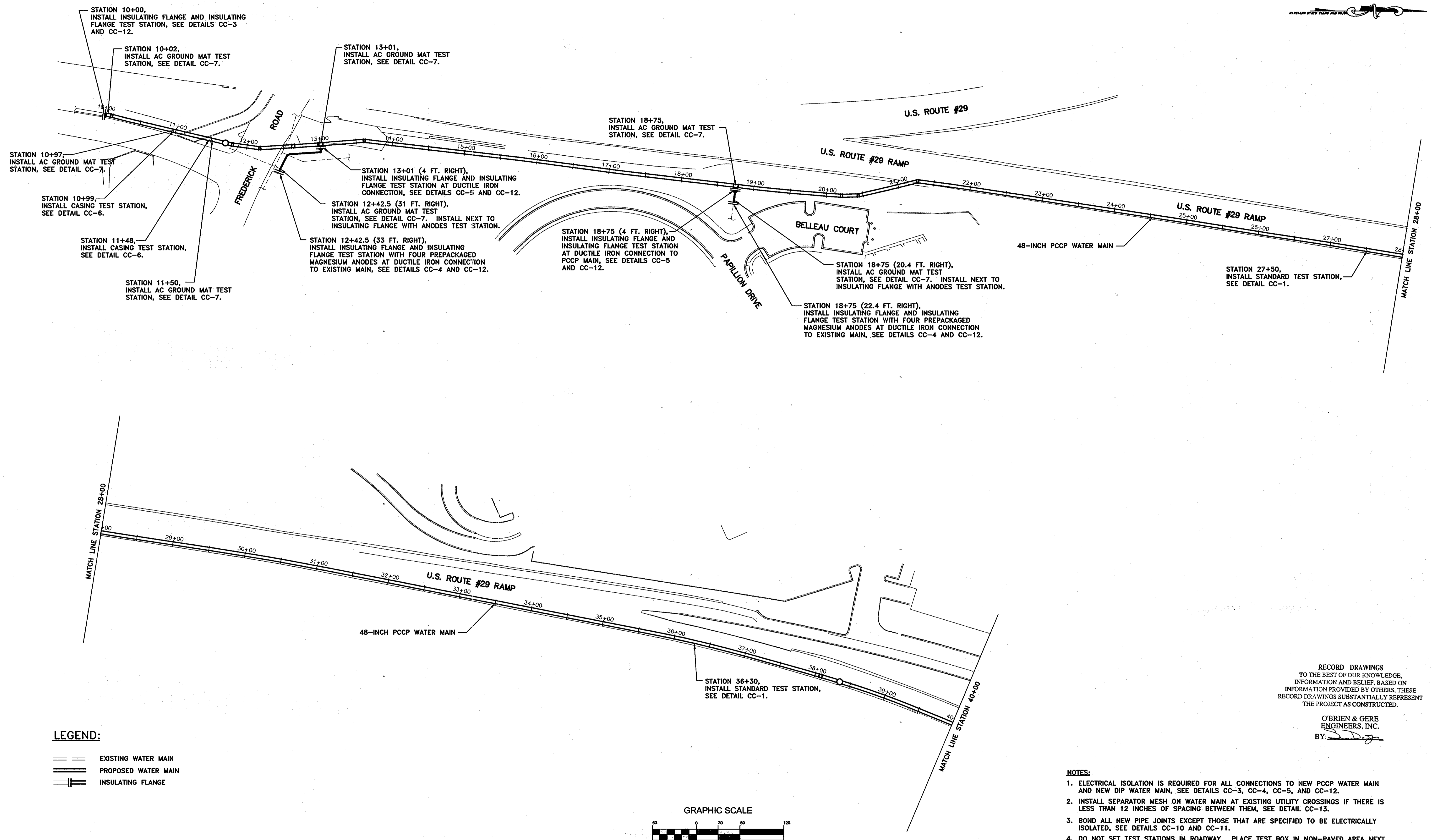
- EXISTING WATER MAIN
- == PROPOSED WATER MAIN
- |— INSULATING FLANGE

THIS DRAWING IS NOT APPLICABLE FOR USE AS STANDARD CORROSION CONTROL PROCEDURES FOR OTHER PROJECTS DUE TO VARIABLE CONDITIONS AT OTHER SITES. NEITHER THIS DESIGN NOR ANY PART THEREOF MAY BE DUPLICATED IN ANY WAY FOR OTHER PROJECTS OR MODIFIED IN ANY WAY FOR THIS OR OTHER PROJECTS, EXCEPT BY WRITTEN AGREEMENT WITH RUSSELL CORROSION CONSULTANTS, INC.

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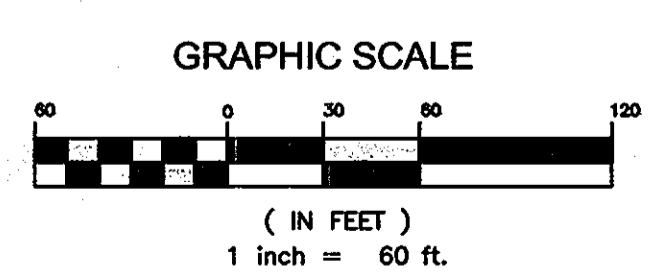
AS-BUILT

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>[Signature]</i> 9/10/07 DIRECTOR OF PUBLIC WORKS DATE <i>[Signature]</i> 7/3/07 CHIEF - BUREAU OF ENGINEERING DATE		 O'BRIEN & GERE ENGINEERS, INC. RUSSELL CORROSION CONSULTANTS, INC. Columbia, Maryland		 DSN. BY: MJS DRN. BY: DJD/ZGS CHK. BY: MJS DATE: JUNE, 2007		CATHODIC PROTECTION LAYOUT FOR 48"Ø STEEL WATER MAIN U.S. ROUTE 29 WATER MAIN REPLACEMENT U.S. ROUTE 40 TO FREDERICK ROAD CAPITAL PROJECT: W-8243 CONTRACT NO.: 44-4321 ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND		CP-2 SHEET 28 OF 37 FILE NO.
AS-BUILT REVISIONS RPW 1 AS-BUILT REVISIONS 03/10 BY NO. REVISION DATE				600' SCALE MAP NO. 24 BLOCK NO.				



LEGEND:

- == EXISTING WATER MAIN
- === PROPOSED WATER MAIN
- ||| INSULATING FLANGE



RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

NOTES:

1. ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW PCCP WATER MAIN AND NEW DIP WATER MAIN, SEE DETAILS CC-3, CC-4, CC-5, AND CC-12.
2. INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL CC-13.
3. BOND ALL NEW PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED, SEE DETAILS CC-10 AND CC-11.
4. DO NOT SET TEST STATIONS IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN PVC CONDUIT TO FINAL TEST BOX LOCATION.

AS-BUILT

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/10/07
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/5/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
ENGINEERS, INC.

[Logo]
RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland



DSN. BY:	MJS			
DRN. BY:	DJD/ZGS			
CHK. BY:	MJS			
DATE:	JUNE, 2007			
RPW BY NO.	1	AS-BUILT REVISIONS		
		REVISION		
			03/10	
			DATE	

CATHODIC PROTECTION LAYOUT FOR 48"Ø PCCP WATER MAIN

600' SCALE MAP NO. 24 BLOCK NO. _____

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

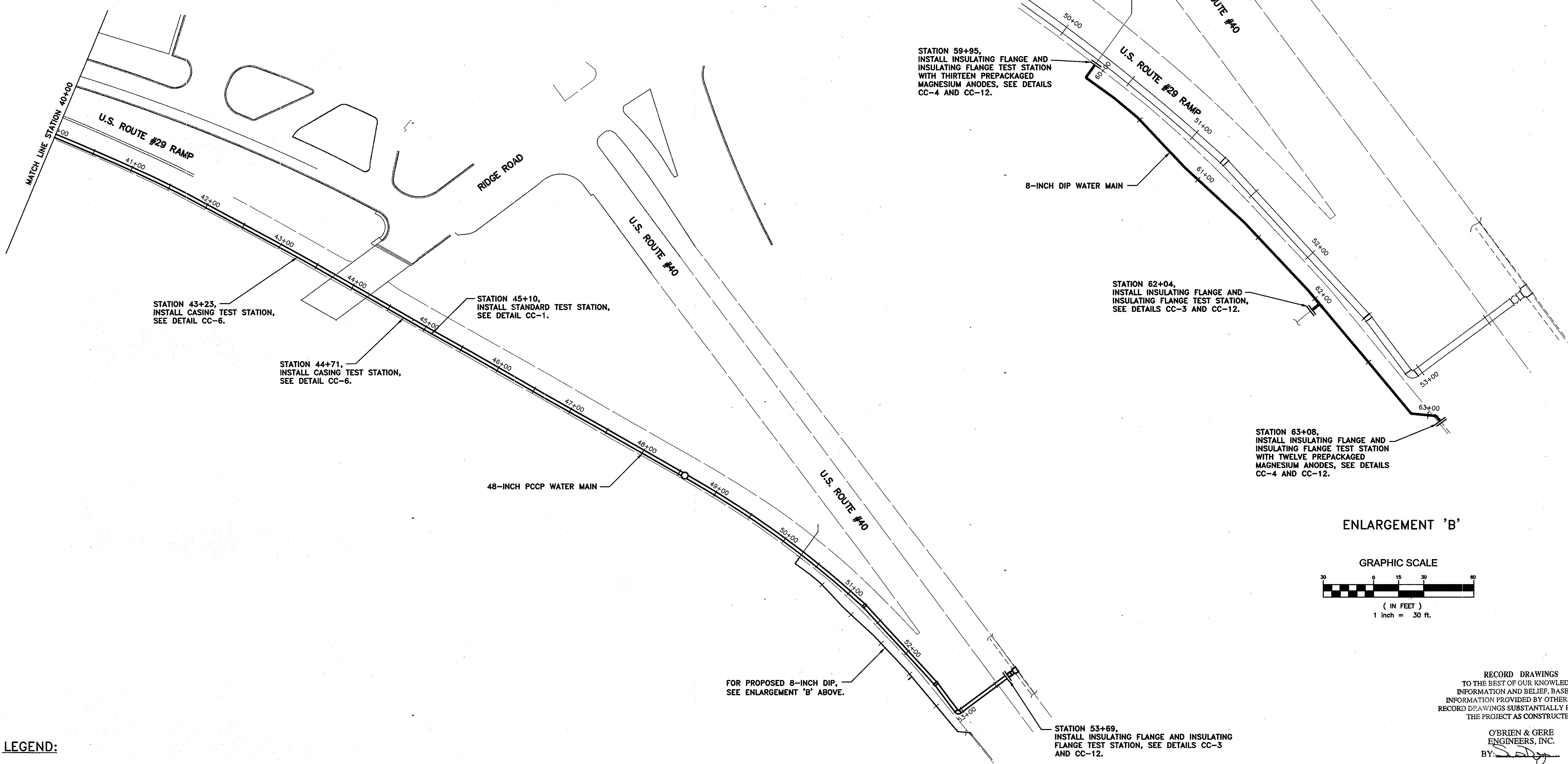
CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CP-3

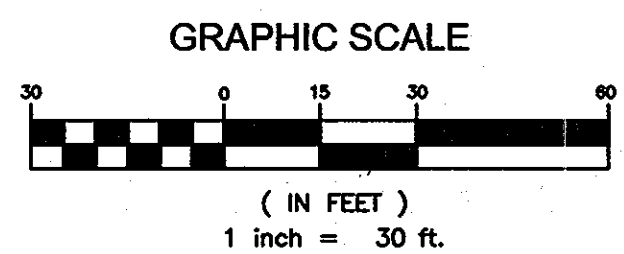
SCALE AS SHOWN

SHEET 29 OF 37

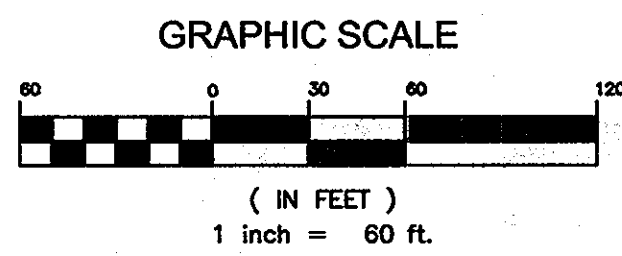
FILE NO.



ENLARGEMENT 'B'



FOR PROPOSED 8-INCH DIP, SEE ENLARGEMENT 'B' ABOVE.



LEGEND:

- == EXISTING WATER MAIN
- == PROPOSED WATER MAIN
- == INSULATING FLANGE

NOTES:

1. ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW PCCP WATER MAIN AND NEW DIP WATER MAIN, SEE DETAILS CC-3, CC-4, CC-5, AND CC-12.
2. INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL CC-13.
3. BOND ALL NEW PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED, SEE DETAILS CC-10 AND CC-11.
4. DO NOT SET TEST STATIONS IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN PVC CONDUIT TO FINAL TEST BOX LOCATION.

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

AS-BUILT

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/10/07
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
ENGINEERS, INC.

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland



DSN. BY:	MJS				
DRN. BY:	DJD/ZGS				
CHK. BY:	MJS				
DATE:	JUNE, 2007				
		RPW	AS-BUILT REVISIONS	03/10	
		BY	NO.	REVISION	DATE

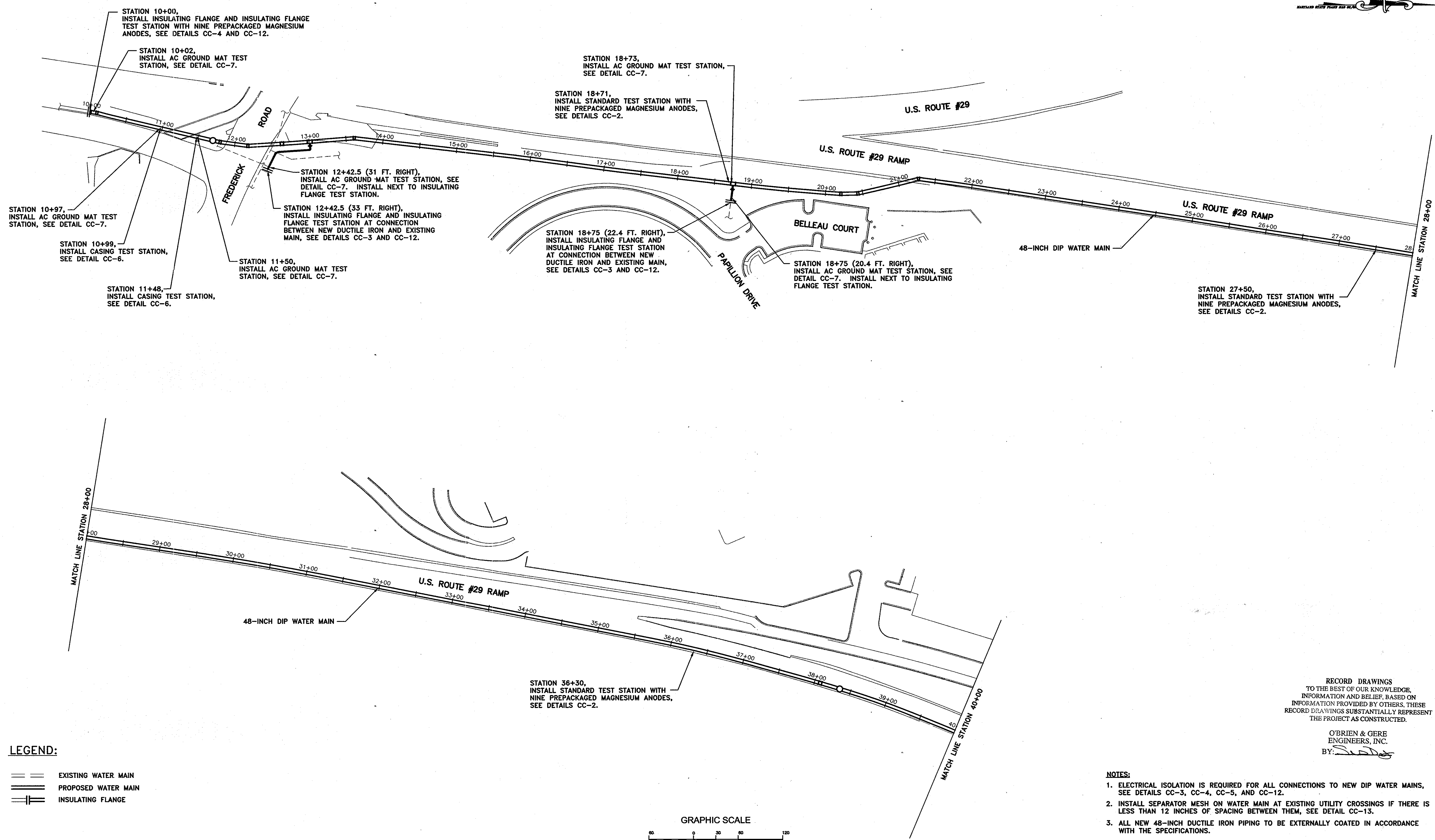
CATHODIC PROTECTION LAYOUT
FOR 48"Ø PCCP WATER MAIN

600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CP-4
SCALE AS SHOWN
SHEET 30 OF 37
FILE NO.

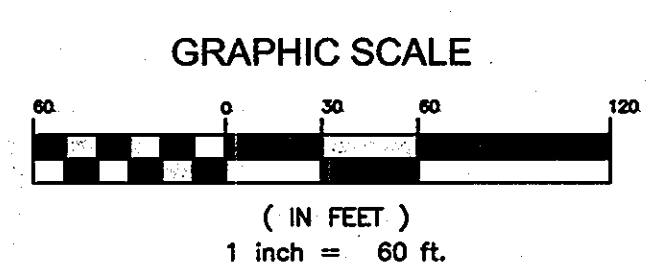


LEGEND:

== EXISTING WATER MAIN

=== PROPOSED WATER MAIN

||| INSULATING FLANGE



RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

- NOTES:**
- ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW DIP WATER MAINS, SEE DETAILS CC-3, CC-4, CC-5, AND CC-12.
 - INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL CC-13.
 - ALL NEW 48-INCH DUCTILE IRON PIPING TO BE EXTERNALLY COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
 - BOND ALL NEW PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED, SEE DETAIL CC-10.
 - DO NOT SET TEST STATIONS IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN PVC CONDUIT TO FINAL TEST BOX LOCATION.

AS-BUILT

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/16/07
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
ENGINEERS, INC.

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland



DSN. BY:	MJS			
DRN. BY:	DJD/ZGS			
CHK. BY:	MJS			
DATE:	JUNE, 2007			
BY:	RPW	AS-BUILT REVISIONS	03/10	
NO.:		REVISION	DATE	

CATHODIC PROTECTION LAYOUT
FOR 48"Ø DIP WATER MAIN

600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

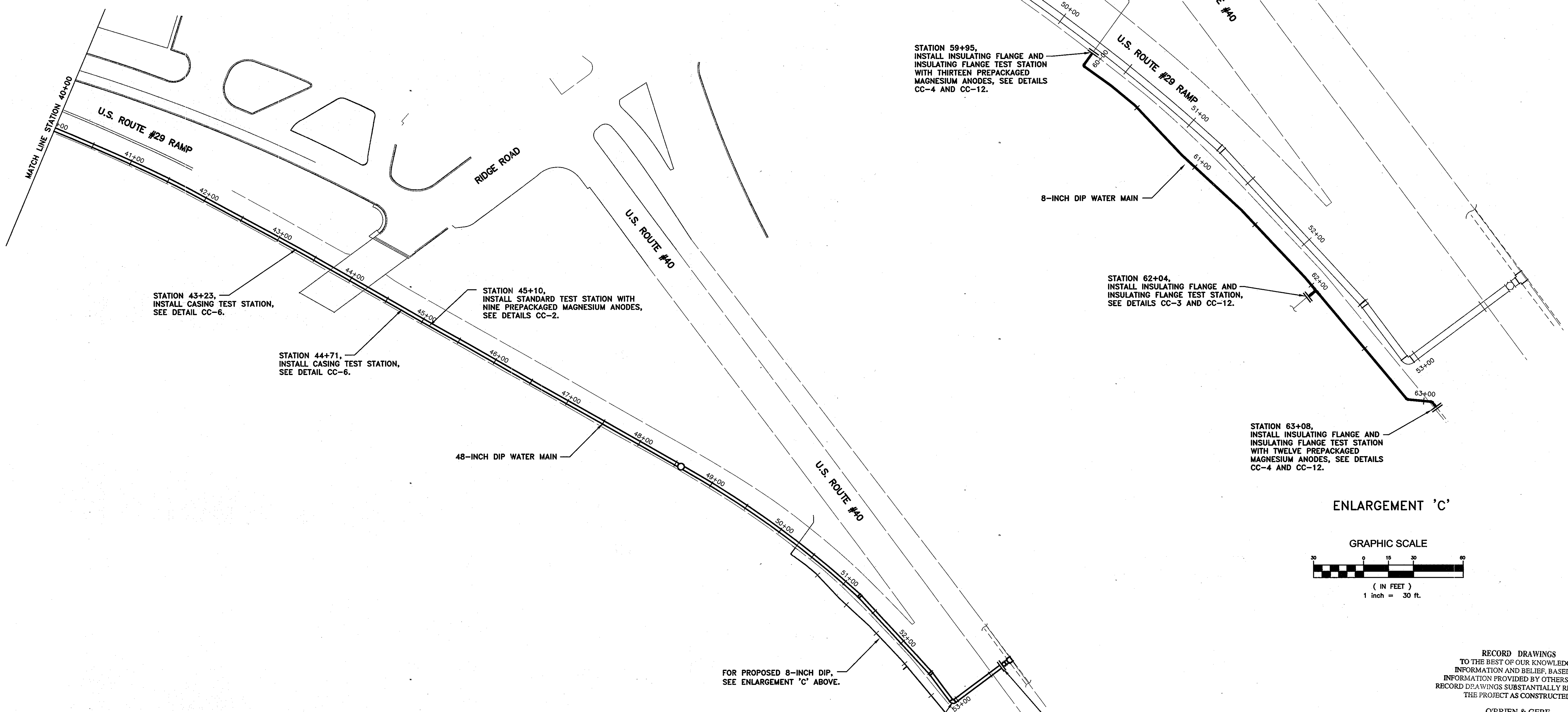
CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CP-5

SCALE AS SHOWN

SHEET 31 OF 37

FILE NO.



STATION 59+95,
INSTALL INSULATING FLANGE AND
INSULATING FLANGE TEST STATION
WITH THIRTEEN PREPACKAGED
MAGNESIUM ANODES, SEE DETAILS
CC-4 AND CC-12.

STATION 62+04,
INSTALL INSULATING FLANGE AND
INSULATING FLANGE TEST STATION,
SEE DETAILS CC-3 AND CC-12.

STATION 63+08,
INSTALL INSULATING FLANGE AND
INSULATING FLANGE TEST STATION
WITH TWELVE PREPACKAGED
MAGNESIUM ANODES, SEE DETAILS
CC-4 AND CC-12.

STATION 43+23,
INSTALL CASING TEST STATION,
SEE DETAIL CC-6.

STATION 45+10,
INSTALL STANDARD TEST STATION WITH
NINE PREPACKAGED MAGNESIUM ANODES,
SEE DETAILS CC-2.

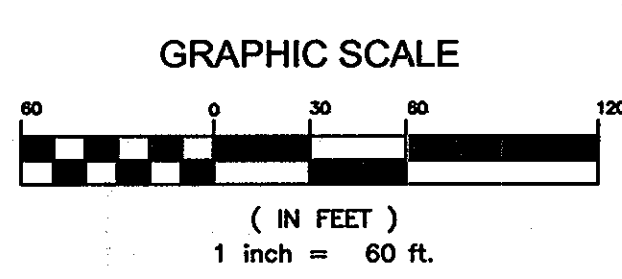
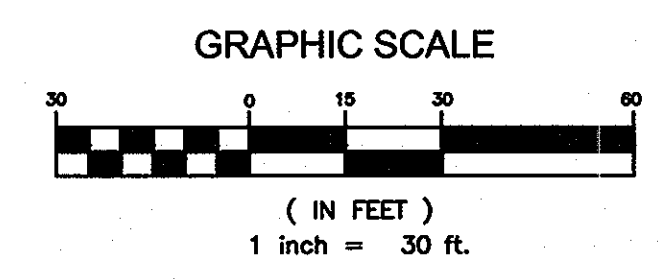
STATION 44+71,
INSTALL CASING TEST STATION,
SEE DETAIL CC-6.

FOR PROPOSED 8-INCH DIP.
SEE ENLARGEMENT 'C' ABOVE.

STATION 52+90,
INSTALL STANDARD TEST STATION
WITH NINE PREPACKAGED
MAGNESIUM ANODES, SEE DETAIL
CC-2.

STATION 53+69,
INSTALL INSULATING FLANGE AND
INSULATING FLANGE TEST STATION,
SEE DETAILS CC-3 AND CC-12.

ENLARGEMENT 'C'



LEGEND:

- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- INSULATING FLANGE

RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

NOTES:

1. ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW DIP WATER MAINS, SEE DETAILS CC-3, CC-4, CC-5, AND CC-12.
2. INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL CC-13.
3. ALL NEW 48-INCH DUCTILE IRON PIPING TO BE EXTERNALLY COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
4. BOND ALL NEW PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED, SEE DETAIL CC-10.
5. DO NOT SET TEST STATIONS IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN PVC CONDUIT TO FINAL TEST BOX LOCATION.

AS-BUILT

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/3/07
DIRECTOR OF PUBLIC WORKS DATE

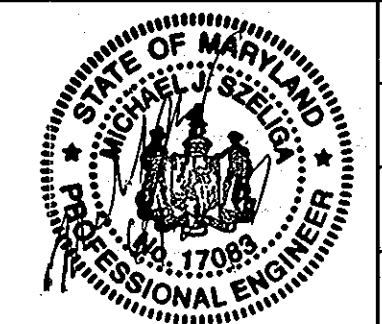
[Signature] 7-3-07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF/UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
ENGINEERS, INC.

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland



DSN. BY:	MJS			
DRN. BY:	DJD/ZGS			
CHK. BY:	MJS			
DATE:	JUNE, 2007			
	RPW	AS-BUILT REVISIONS	03/10	
	BY	NO.	REVISION	DATE

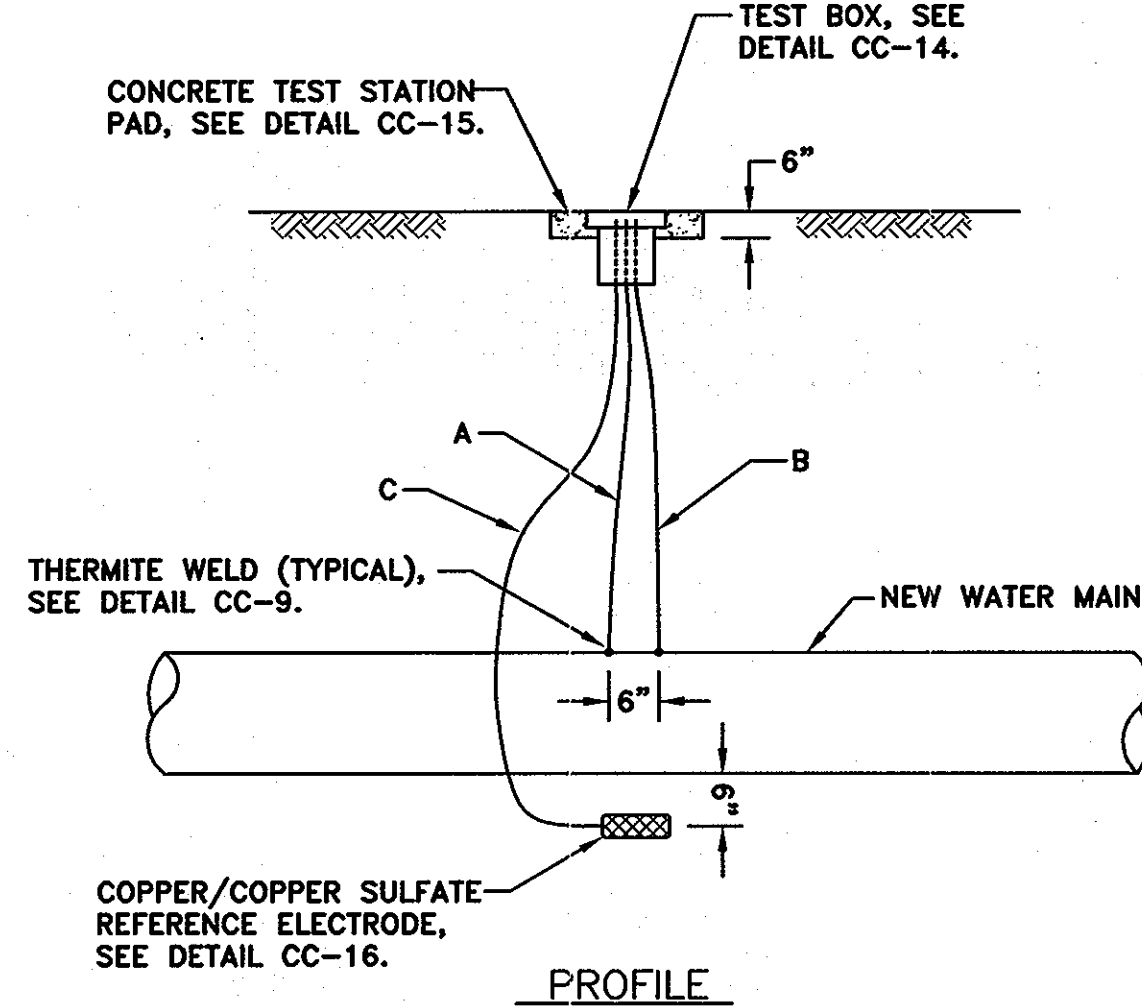
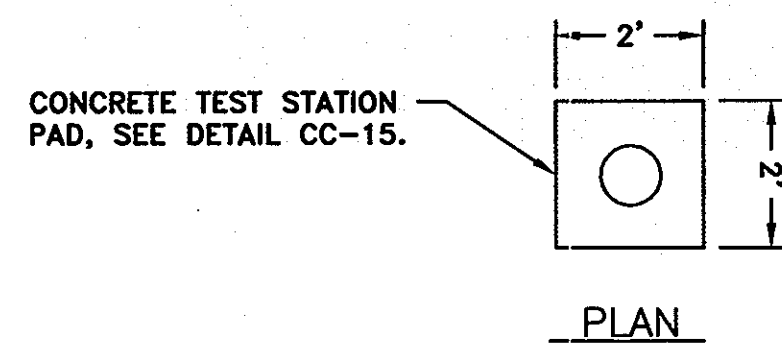
CATHODIC PROTECTION LAYOUT
FOR 48"Ø DIP WATER MAIN

600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CP-6
SCALE AS SHOWN
SHEET 32 OF 37
FILE NO.

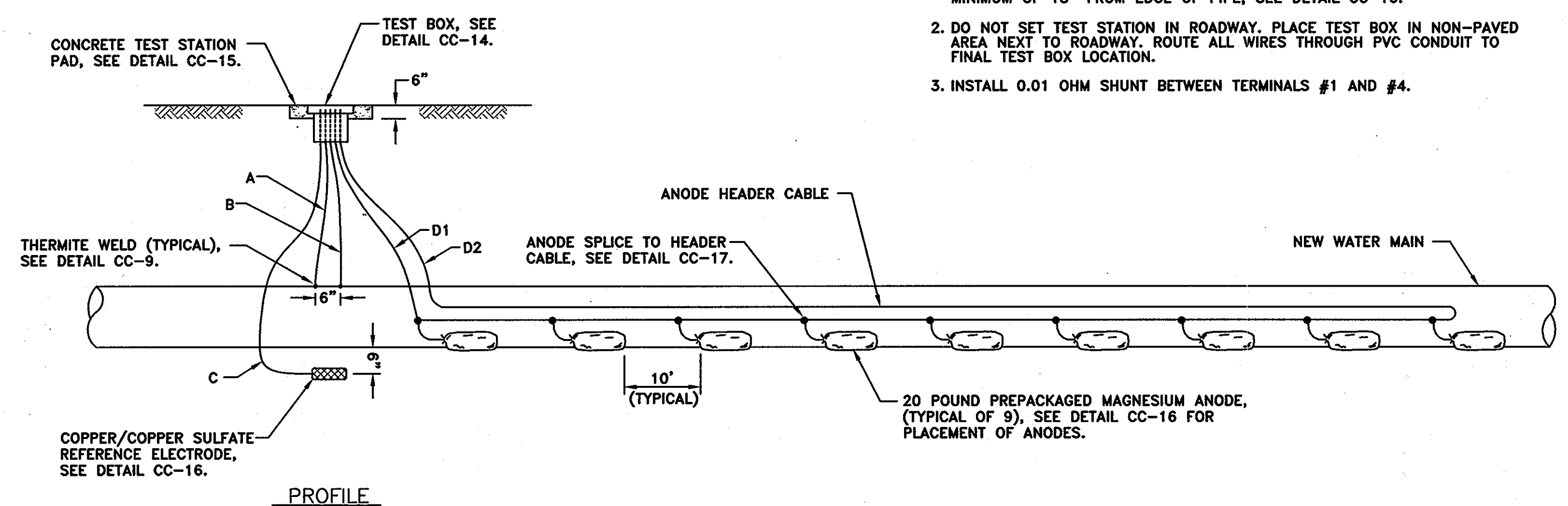
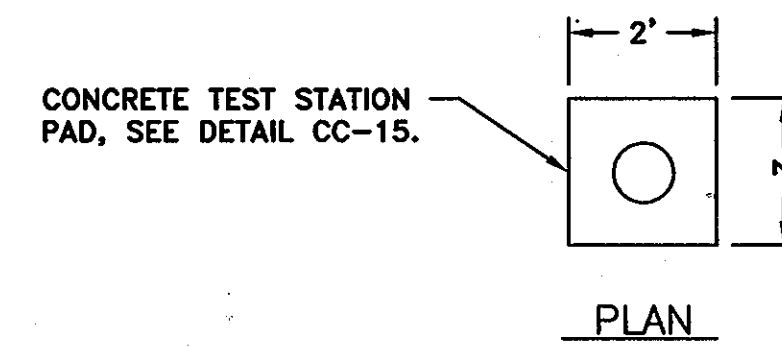


CC-1: STANDARD TEST STATION
NOT TO SCALE

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A	1	#8	THWN	BLUE
	B	3	#10	THWN	BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK-YELLOW

NOTES:

- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES THROUGH PVC CONDUIT TO FINAL TEST BOX LOCATION.
- ALL THERMITE WELDS TO PCCP TO BE PERFORMED AT STEEL BONDING PLATES.

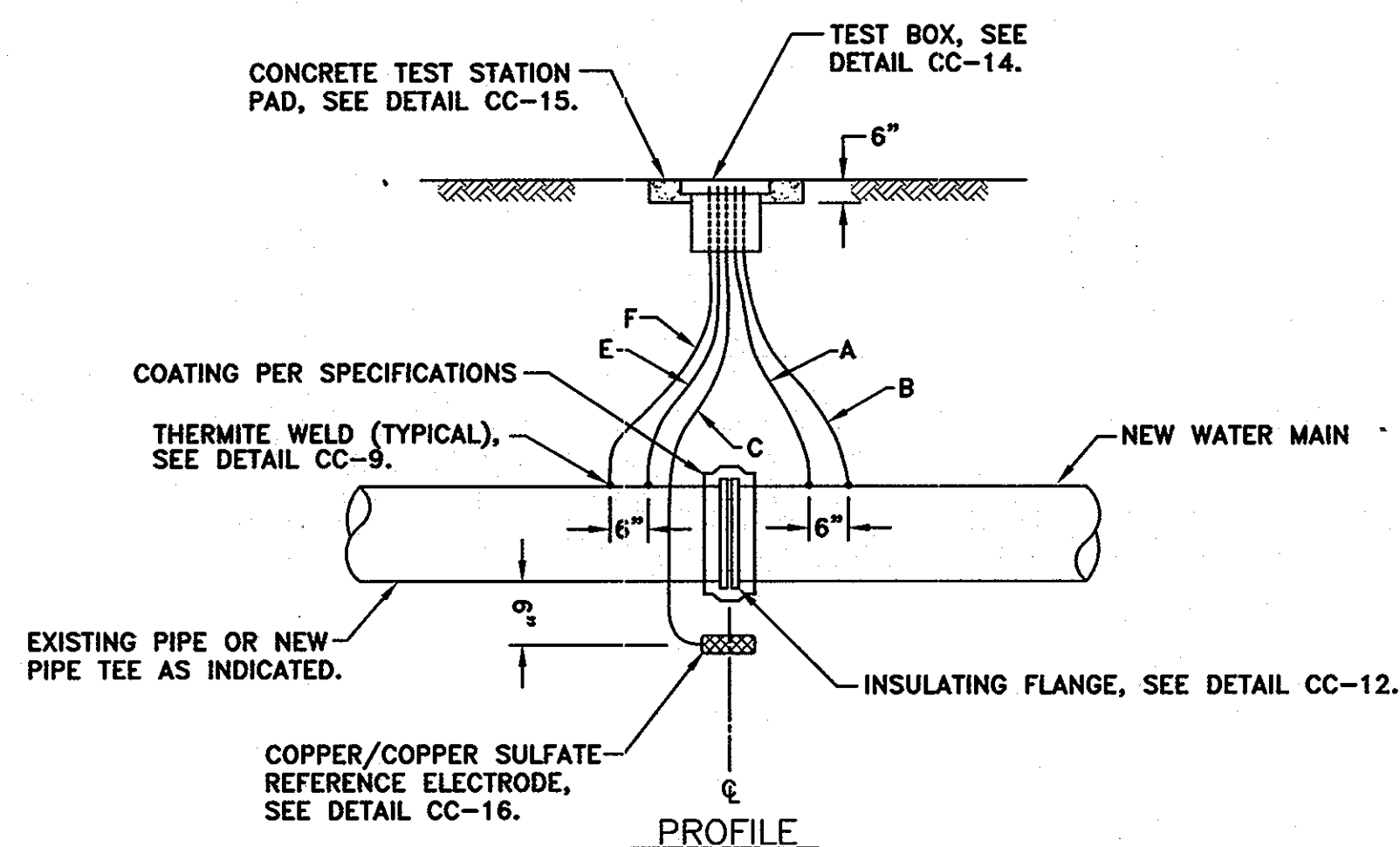
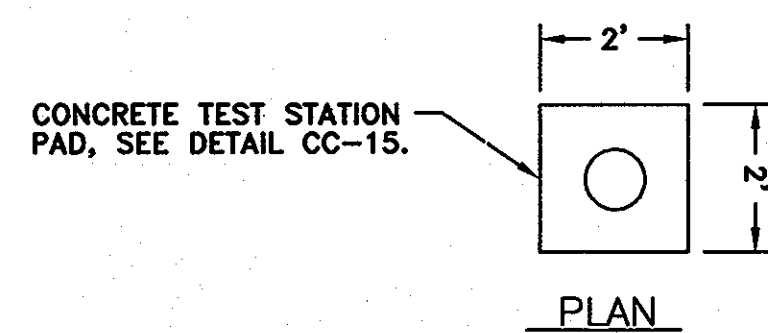


CC-2: STANDARD TEST STATION WITH ANODES
NOT TO SCALE

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A	1	#8	THWN	BLUE
	B	3	#10	THWN	BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK-YELLOW
ANODE HEADER CABLE	D1	4	#8	HMWPE	BLACK
	D2	7	#8	HMWPE	BLACK

NOTES:

- ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 18" FROM EDGE OF PIPE, SEE DETAIL CC-16.
- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES THROUGH PVC CONDUIT TO FINAL TEST BOX LOCATION.
- INSTALL 0.01 OHM SHUNT BETWEEN TERMINALS #1 AND #4.

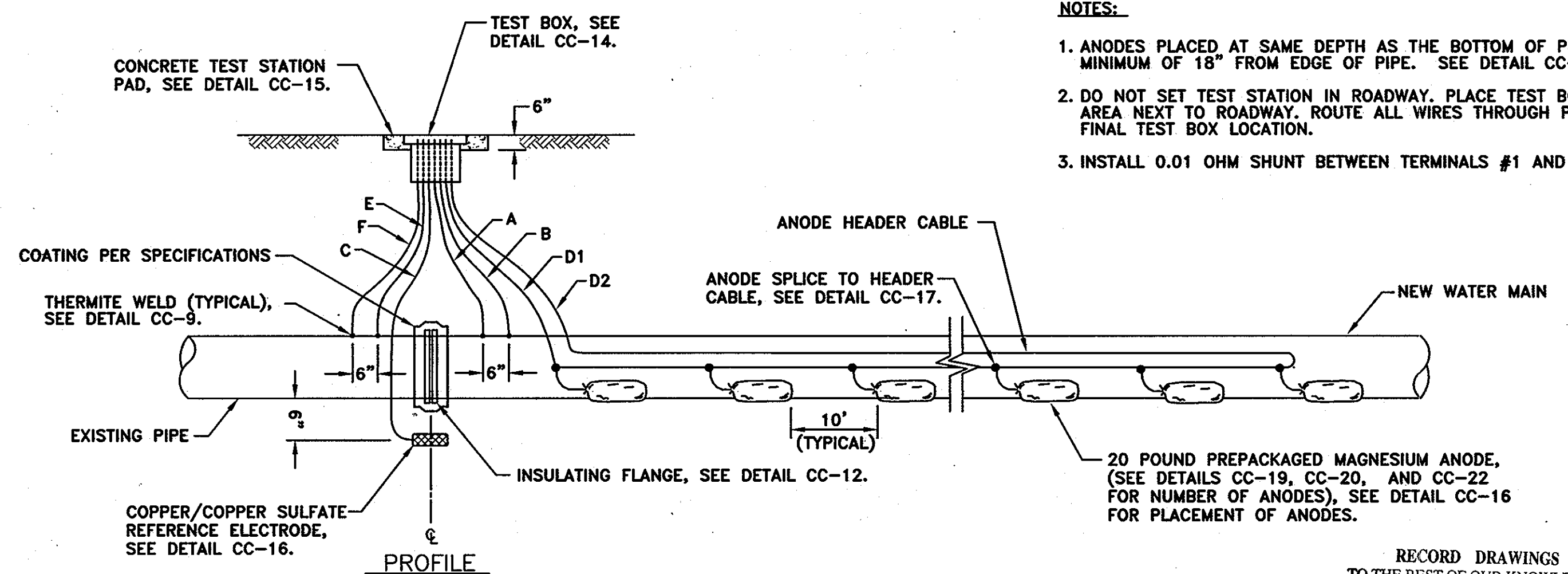
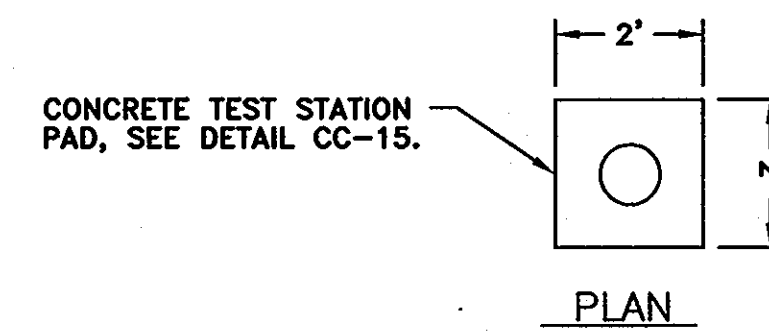


CC-3: INSULATING FLANGE TEST STATION
NOT TO SCALE

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A	1	#8	THWN	BLUE
	B	3	#10	THWN	BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK
EXISTING PIPE OR NEW PIPE TEE	E	2	#8	THWN	WHITE
	F	5	#10	THWN	WHITE

NOTES:

- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES THROUGH PVC CONDUIT TO FINAL TEST BOX LOCATION.
- ALL THERMITE WELDS TO PCCP TO BE PERFORMED AT STEEL BONDING PLATES.



CC-4: INSULATING FLANGE TEST STATION WITH ANODES
NOT TO SCALE

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A	1	#8	THWN	BLUE
	B	3	#10	THWN	BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK-YELLOW
ANODE HEADER CABLE	D1	4	#8	HMWPE	BLACK
	D2	7	#8	HMWPE	BLACK
EXISTING PIPE OR NEW PIPE TEE	E	2	#8	THWN	WHITE
	F	5	#10	THWN	WHITE

NOTES:

- ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 18" FROM EDGE OF PIPE. SEE DETAIL CC-16.
- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES THROUGH PVC CONDUIT TO FINAL TEST BOX LOCATION.
- INSTALL 0.01 OHM SHUNT BETWEEN TERMINALS #1 AND #4.

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AS-BUILT

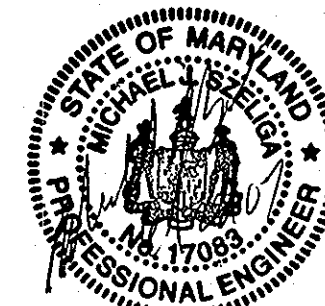
O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/3/07
DIRECTOR OF PUBLIC WORKS DATE
[Signature] 7-3-07
CHIEF, BUREAU OF ENGINEERING DATE

O'BRIEN & GERE ENGINEERS, INC.

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland



DSN. BY: MJS				
DRN. BY: DJD/MJS				
CHK. BY: MJS				
DATE: JUNE, 2007	RPW	1	AS-BUILT REVISIONS	09/10
	BY	NO.	REVISION	DATE

CORROSION CONTROL
DETAILS - 1

600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

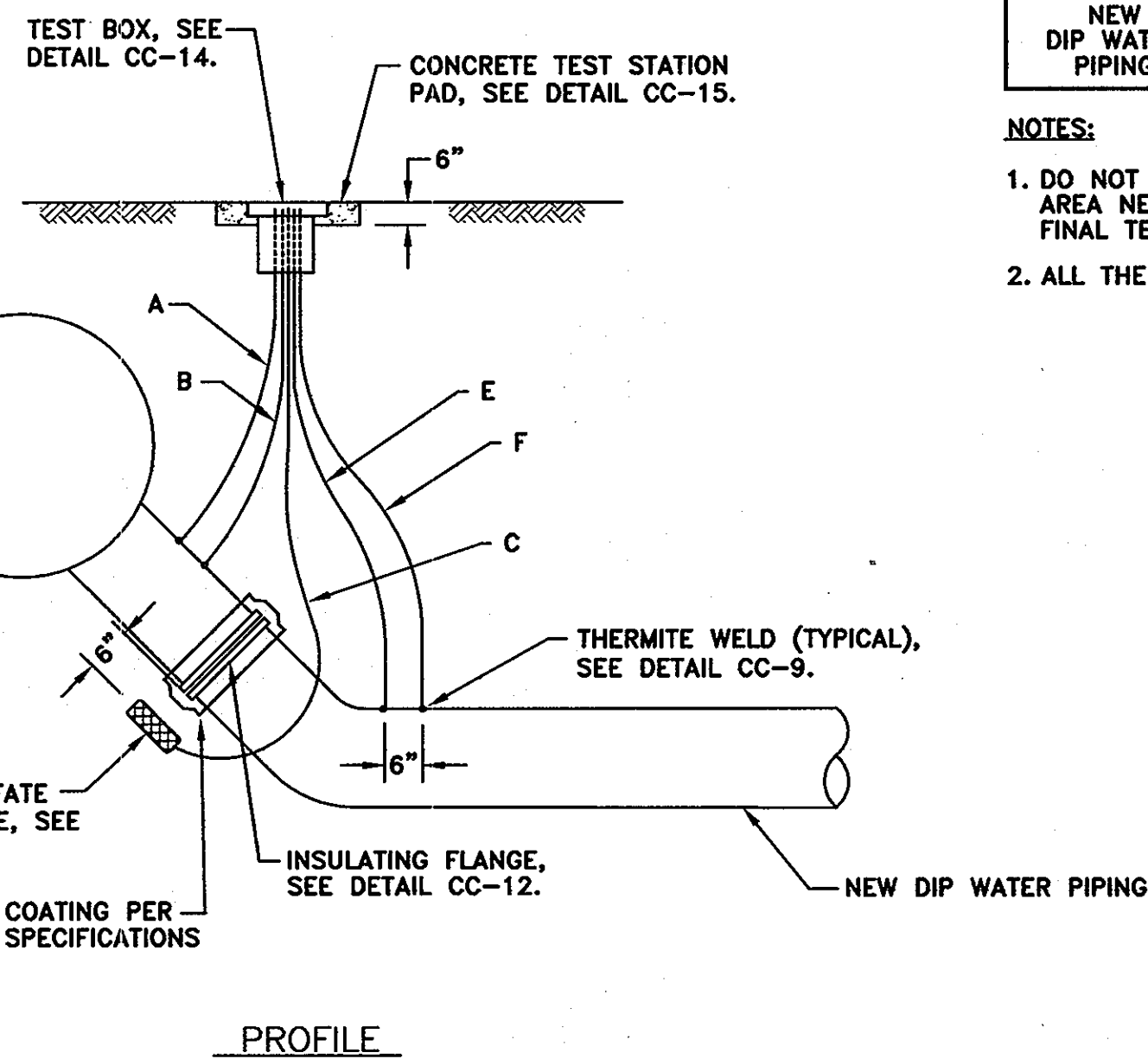
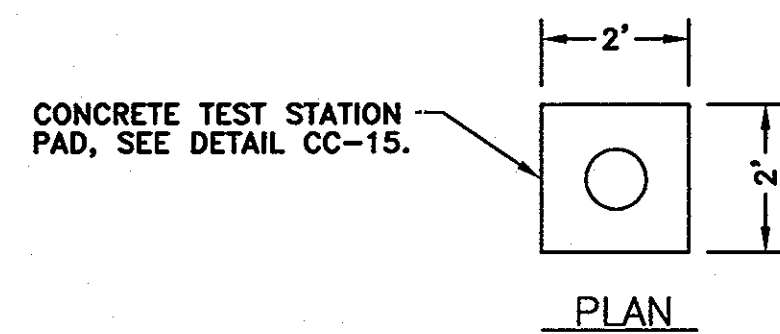
CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CP-7

SCALE AS SHOWN

SHEET 33 OF 37

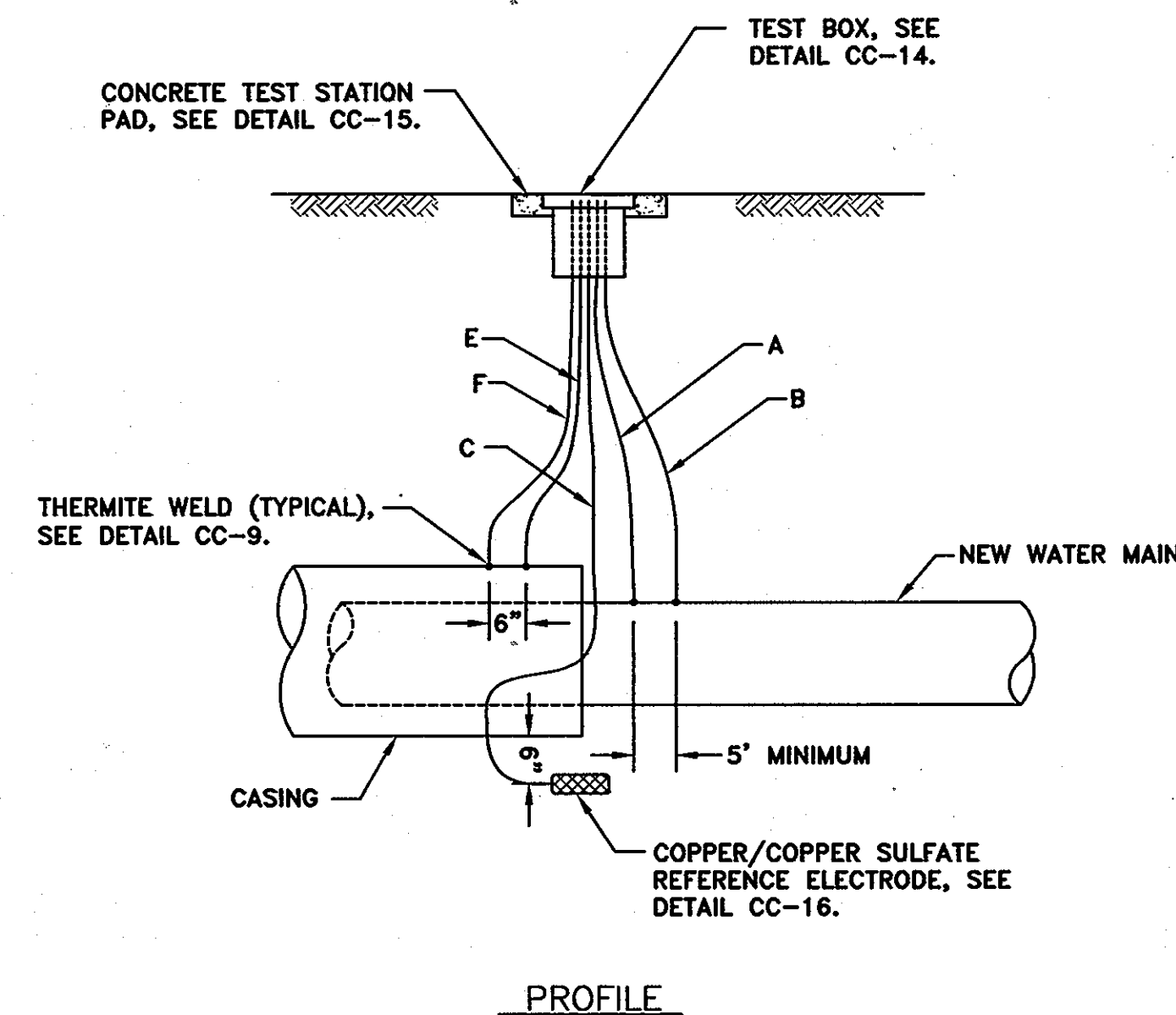
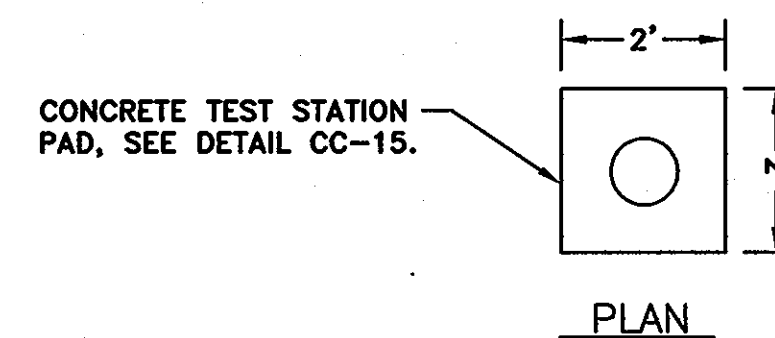
FILE NO.



CC-5: INSULATING FLANGE TEST STATION FOR DIP CONNECTIONS TO MAIN
NOT TO SCALE

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW TRANSMISSION MAIN	A	1	#8	THWN	BLUE
	B	3	#10	THWN	BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK-YELLOW
NEW DIP WATER PIPING	E	2	#8	THWN	WHITE
	F	5	#10	THWN	WHITE

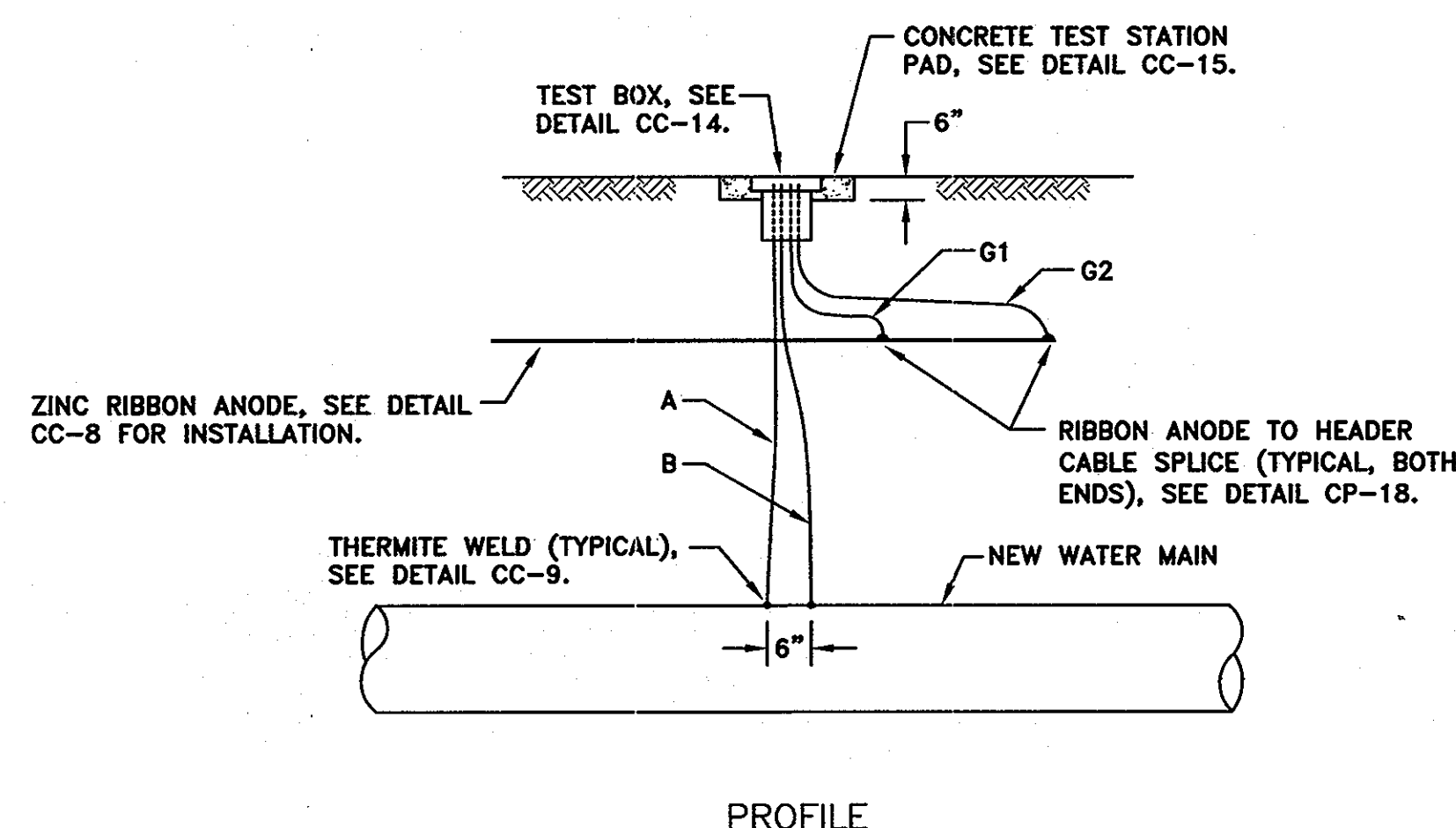
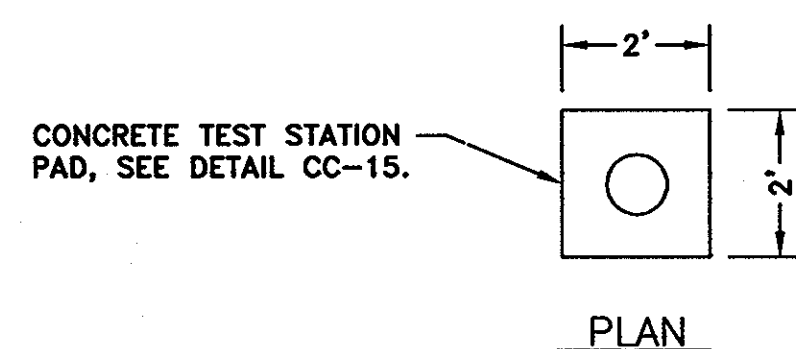
- NOTES:**
- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES THROUGH PVC CONDUIT TO FINAL TEST BOX LOCATION.
 - ALL THERMITE WELDS TO PCCP TO BE PERFORMED AT STEEL BONDING PLATES.



CC-6: CASING TEST STATION
NOT TO SCALE

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A	1	#8	THWN	BLUE
	B	3	#10	THWN	BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#14	HMWPE	BLACK-YELLOW
CASING	E	2	#8	THWN	WHITE
	F	5	#10	THWN	WHITE

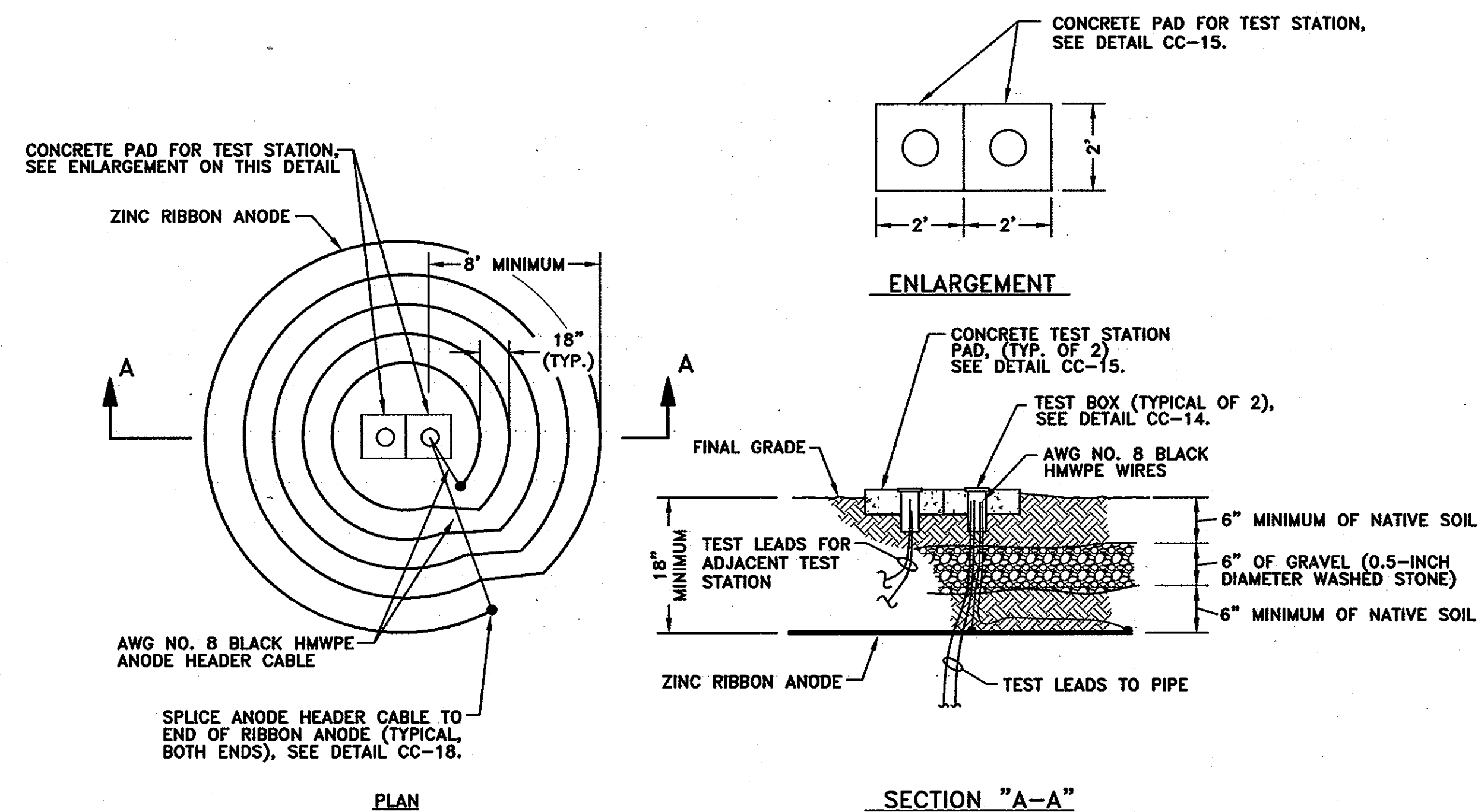
- NOTES:**
- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES THROUGH PVC CONDUIT TO FINAL TEST BOX LOCATION.
 - ALL THERMITE WELDS TO PCCP TO BE PERFORMED AT STEEL BONDING PLATES.



CC-7: AC GROUND MAT TEST STATION
NOT TO SCALE

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A	1	#8	THWN	BLUE
	B	3	#10	THWN	BLUE
HEADER CABLE FOR ZINC RIBBON ANODE	G1	4	#8	HMWPE	BLACK
	G2	4	#8	HMWPE	BLACK

- NOTES:**
- DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES TO FINAL TEST BOX LOCATION.
 - INSTALL COPPER SHORTING BAR BETWEEN TERMINALS #1 AND #4.
 - ALL THERMITE WELDS TO PCCP TO BE PERFORMED AT STEEL BONDING PLATES.



- NOTES:**
- INSTALL GROUND MAT WHERE INDICATED ON TEST STATION SCHEDULES, SEE DETAIL CC-19 FOR STEEL PIPE OPTION LOCATIONS, DETAIL CC-20 FOR PCCP OPTION LOCATIONS, AND DETAIL CC-21 FOR DIP OPTION LOCATIONS.
 - AC GROUND MAT USED IN CONJUNCTION WITH OTHER TEST FACILITIES. OTHER TEST WIRES NOT SHOWN FOR CLARITY.

CC-8: AC GROUND MAT INSTALLATION
NOT TO SCALE

AS-BUILT

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

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BY: *[Signature]*

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HOWARD COUNTY, MARYLAND

[Signature] 7/16/07
DIRECTOR OF PUBLIC WORKS DATE

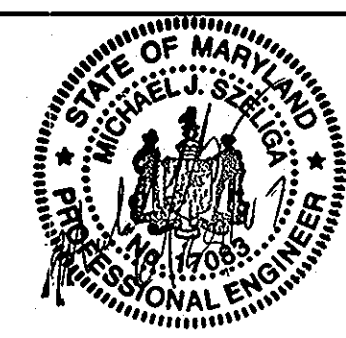
[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland



DSN. BY: MJS				
DRN. BY: DJD/MJS				
CHK. BY: MJS				
DATE: JUNE, 2007	RPW	AS-BUILT REVISIONS	03/10	
	BY NO.	REVISION	DATE	

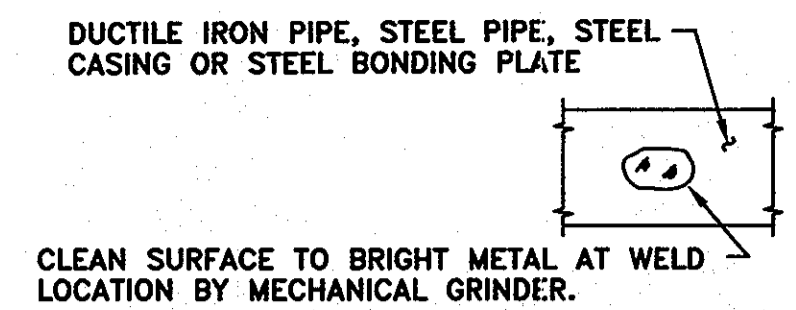
CORROSION CONTROL DETAILS - 2

600' SCALE MAP NO. 24 BLOCK NO.

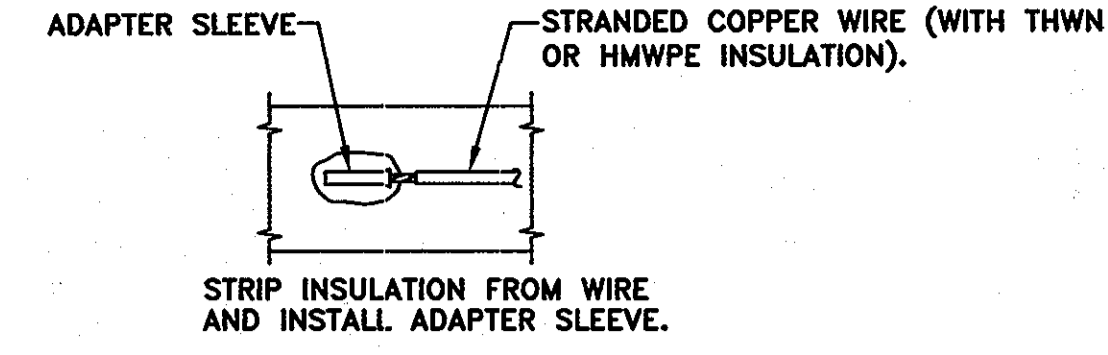
U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

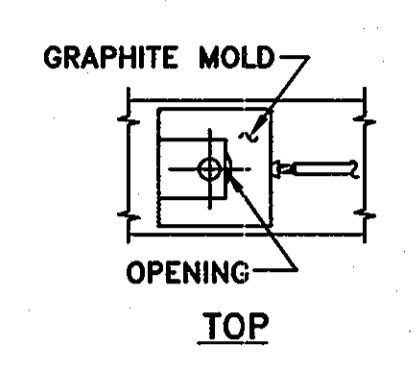
CP-8
SCALE AS SHOWN
SHEET 34 OF 37
FILE NO.



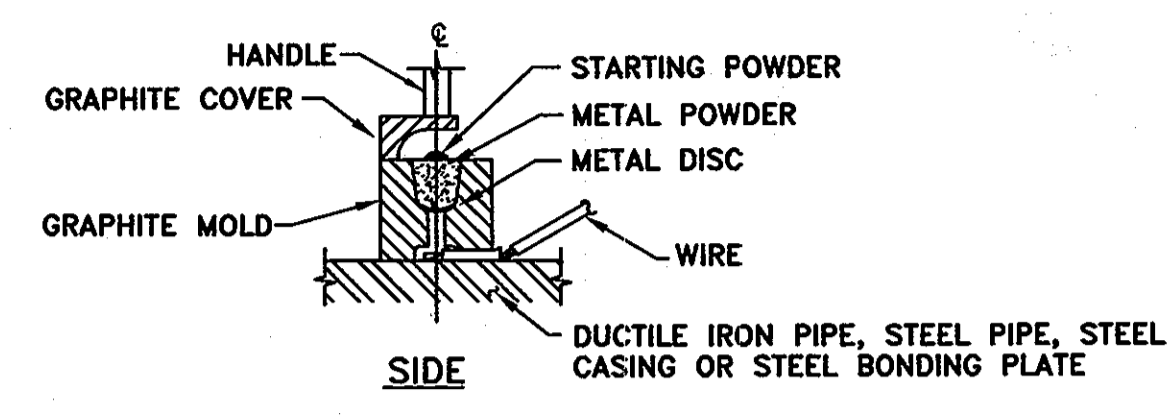
STEP 1



STEP 2



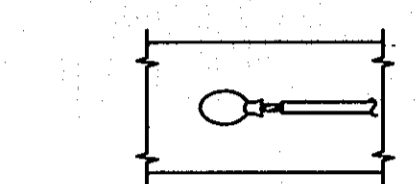
TOP



SIDE

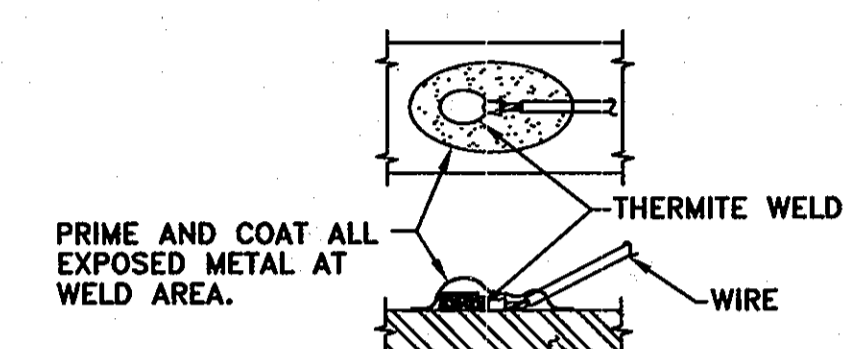
HOLD GRAPHITE MOLD FIRMLY OVER ADAPTER SLEEVE WITH OPENING AWAY FROM OPERATOR - IGNITE STARTING POWDER.

STEP 3



REMOVE SLAG FROM CONNECTION. THOROUGHLY CLEAN WELD AREA.

STEP 4



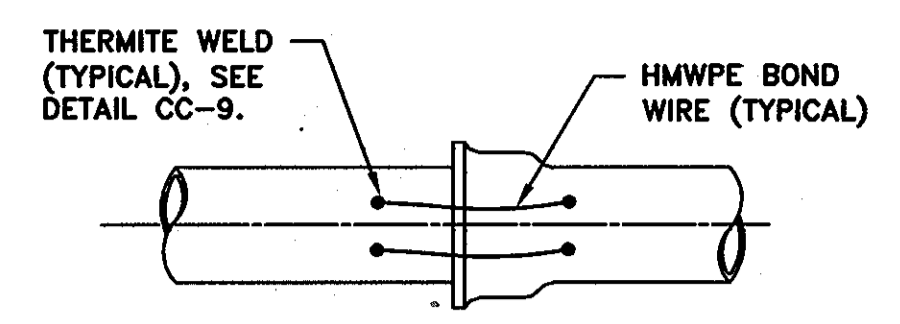
STEP 5

DUCTILE IRON PIPE, STEEL PIPE, STEEL CASING OR STEEL BONDING PLATE

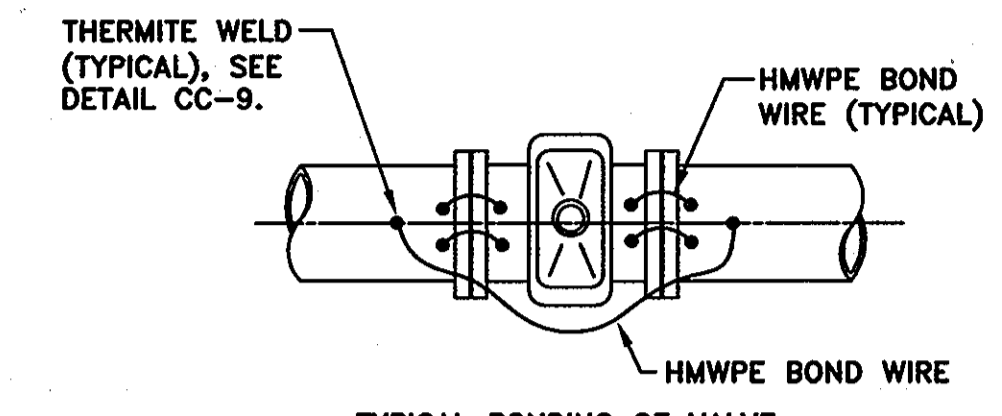
NOTES:

1. THERMITE WELDS MADE DUCTILE IRON PIPE OR STEEL PIPE OR STEEL CASING SHALL BE COATED WITH A PREFABRICATED ONE-PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL.
2. THERMITE WELDS MADE TO THE STEEL BONDING PLATES OF PCCP PIPING SHALL BE COATED WITH BRUSH APPLIED R28 MASTIC (10 MILS MINIMUM THICKNESS) OR APPROVED EQUAL. MASTIC SHALL BE DRY BEFORE THERMITE WELDS ARE COVERED OVER WITH GROUT.

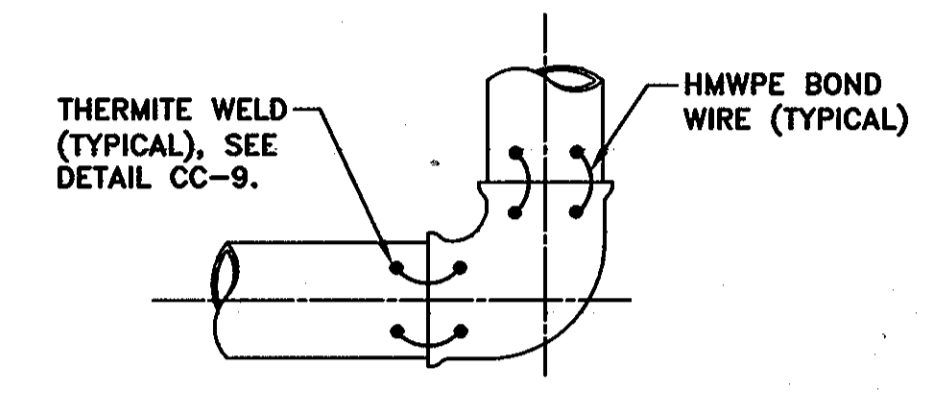
CC-9: THERMITE WELD
NOT TO SCALE



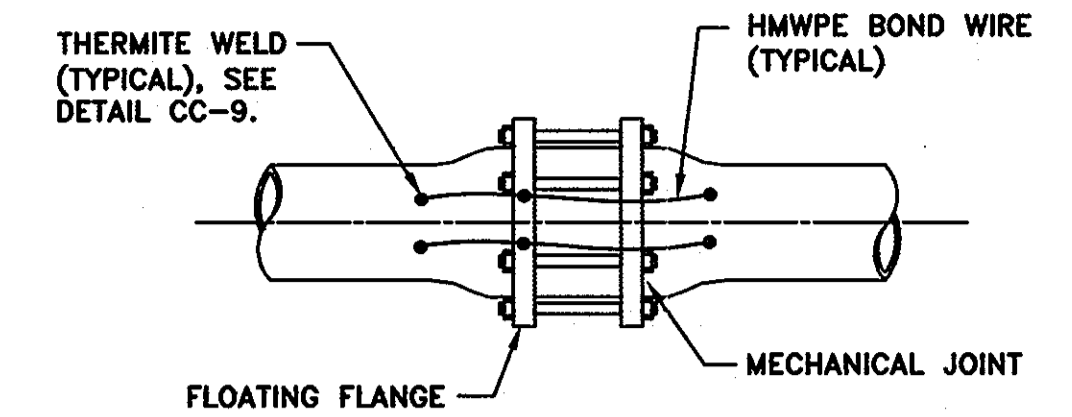
TYPICAL PIPE JOINT BOND



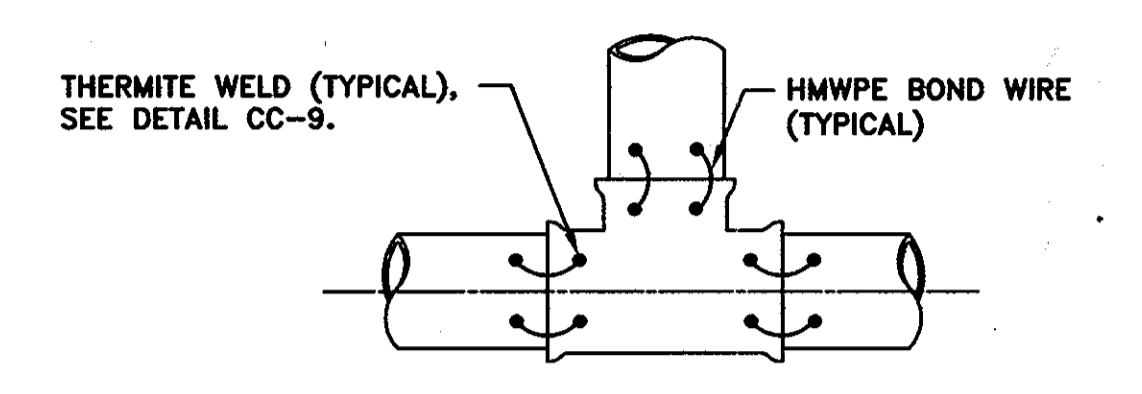
TYPICAL BONDING OF VALVE



TYPICAL BONDING OF BEND, REDUCER OR SOLID SLEEVE



TYPICAL MECHANICAL COUPLING BOND

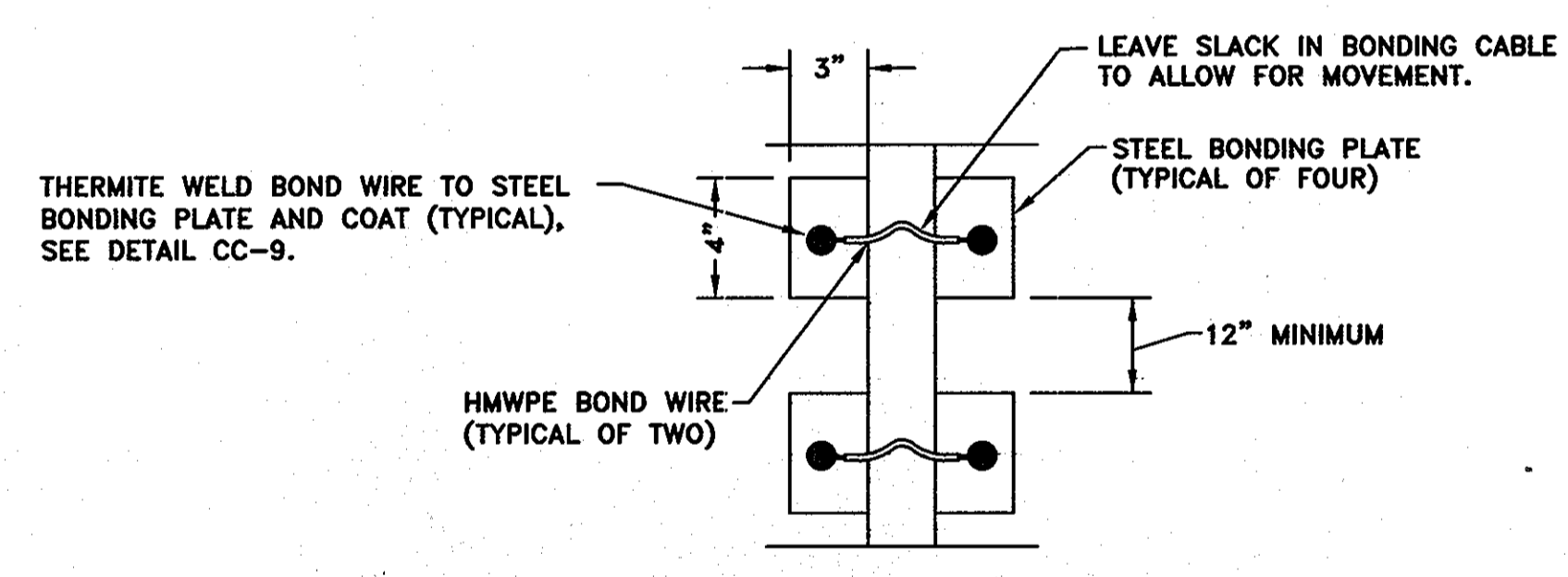


TYPICAL BONDING OF TEE

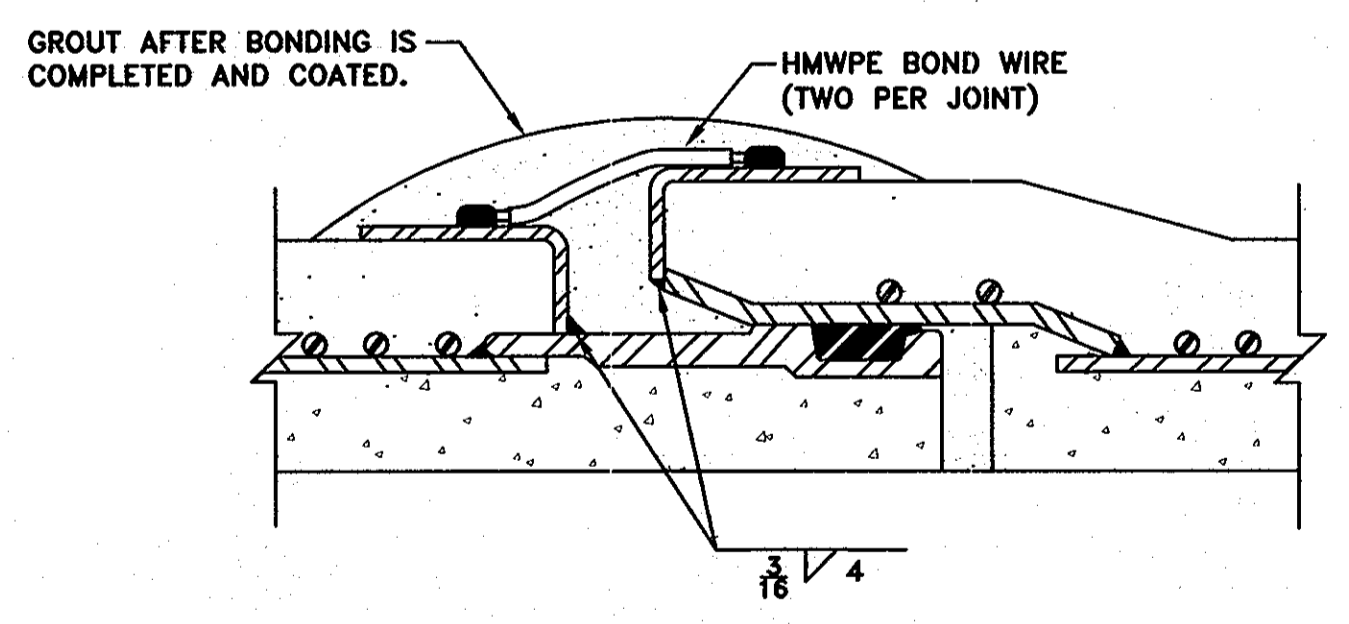
NOTES:

1. BOND ALL PIPE JOINTS, INCLUDING THOSE ON PIPE, FITTINGS, VALVES, ETC., EXCEPT THOSE SPECIFIED TO BE INSULATED.
2. THERMITE WELD BONDING WIRES TO TOP OF PIPE OR FITTINGS, SEE DETAIL CC-9.
3. WIRE SIZE FOR BONDING JOINTS SHALL BE AS FOLLOWS:
12" & SMALLER - AWG NO. 6
16" TO 36" - AWG NO. 4
LARGER THAN 36" - AWG NO. 2
4. ALL THERMITE WELDS TO PCCP TO BE PERFORMED AT THE STEEL BONDING PLATES.

CC-10: JOINT BONDING
NOT TO SCALE



TOP VIEW

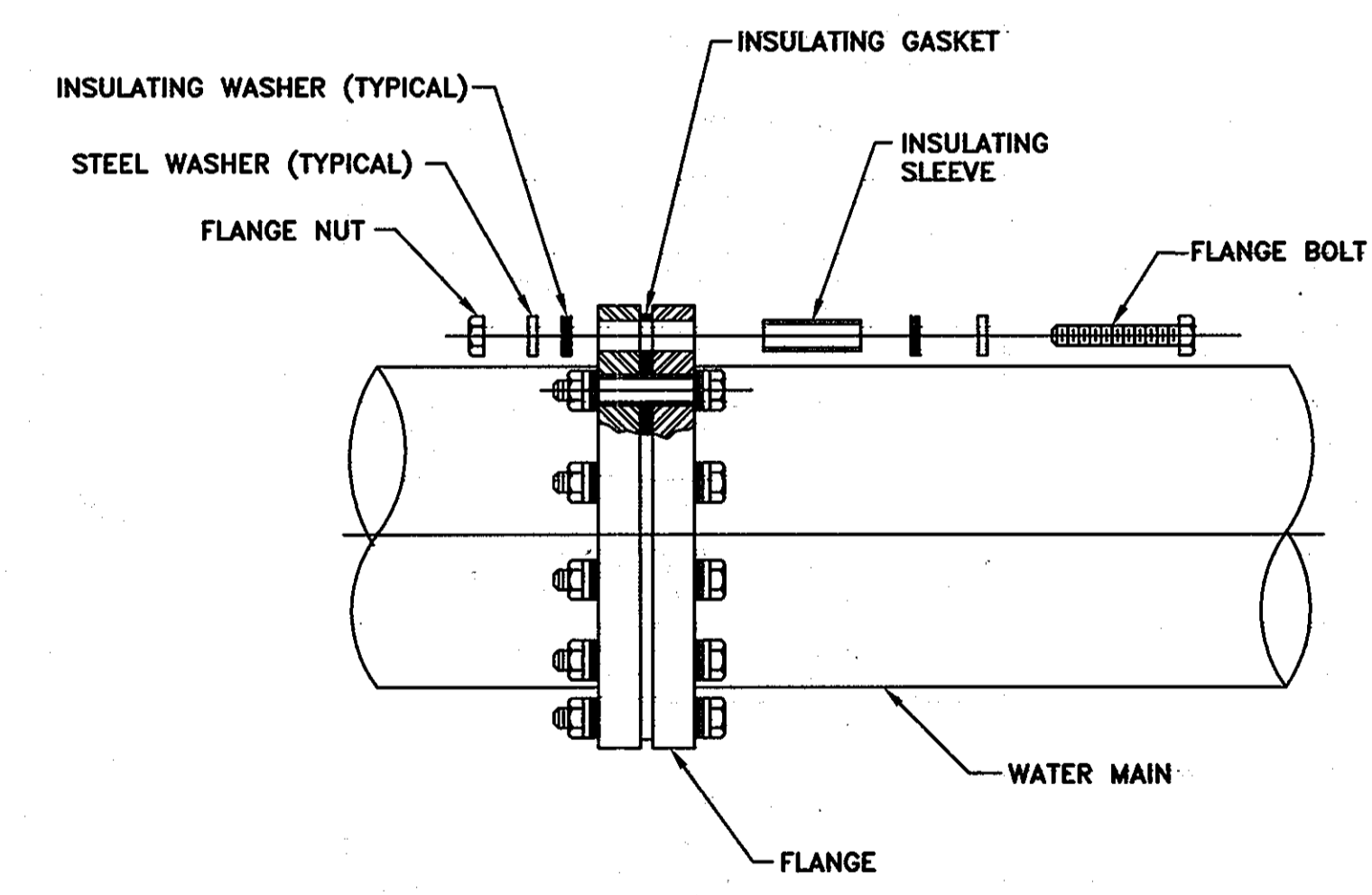


SIDE VIEW
LINED CYLINDER PIPE JOINT

NOTES:

1. STEEL BONDING PLATES TO BE INSTALLED BY PIPE MANUFACTURER DURING PIPE FABRICATION.
2. BOND ALL PIPE JOINTS, INCLUDING THOSE ON PIPE, FITTINGS, VALVES, ETC., EXCEPT THOSE SPECIFIED TO BE INSULATED.
3. WIRE SIZE FOR BONDING JOINTS SHALL BE AS FOLLOWS:
12" & SMALLER - AWG NO. 6
16" TO 36" - AWG NO. 4
LARGER THAN 36" - AWG NO. 2

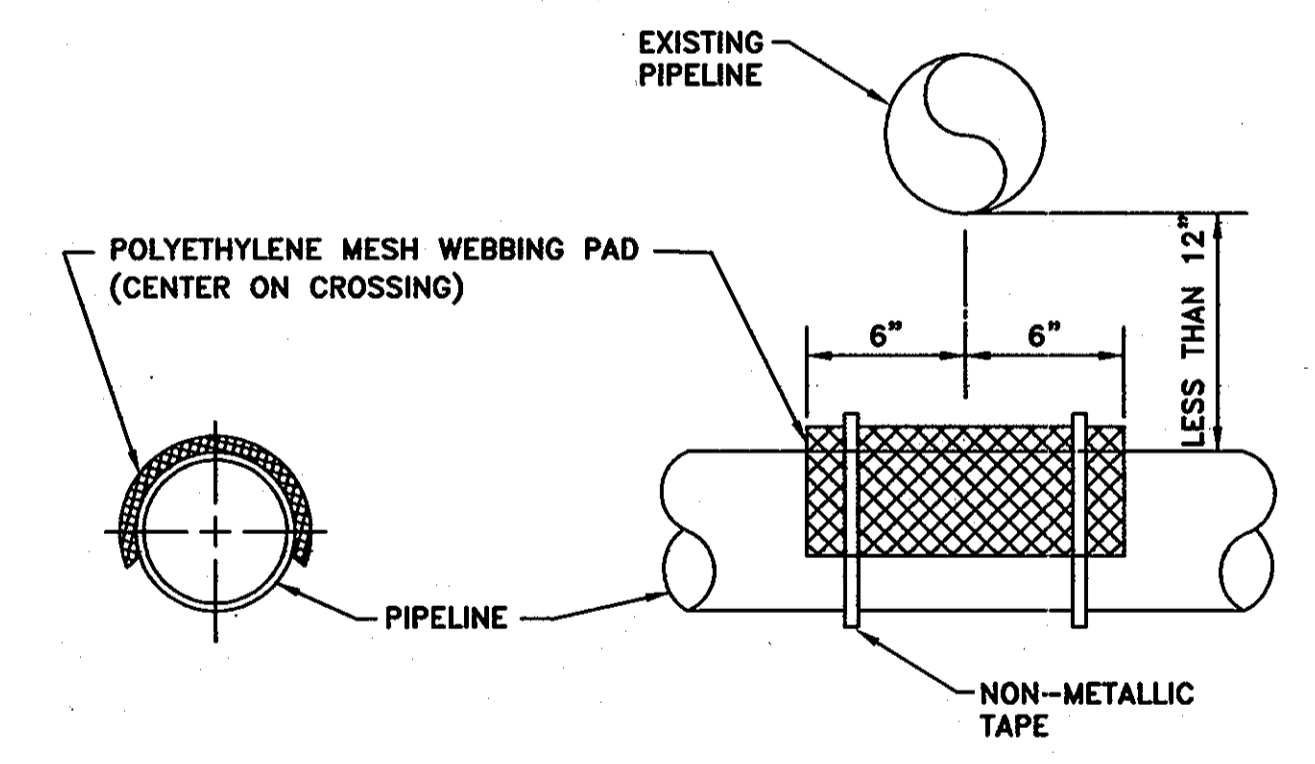
CC-11: PCCP JOINT BONDING
NOT TO SCALE



NOTE:

SEE SPECIFICATIONS FOR EXTERNAL COATING OF INSULATING FLANGE.

CC-12: INSULATING FLANGE
NOT TO SCALE



NOTE:

USE ONLY WHEN PIPES ARE LESS THAN 12" APART.

CC-13: SEPARATOR TO AVOID ELECTRICAL CONTACT
NOT TO SCALE

AS-BUILT

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: [Signature]

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

7/16/07
DIRECTOR OF PUBLIC WORKS

7/3/07
CHIEF - BUREAU OF ENGINEERING

7-6-07
CHIEF, BUREAU OF UTILITIES

7-3-07
CHIEF, UTILITY DESIGN DIVISION

O'BRIEN & GERE ENGINEERS, INC.

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

STATE OF MARYLAND
REGISTERED PROFESSIONAL ENGINEER
NO. 11703

DSN. BY: MJS				
DRN. BY: DJD/PGD				
CHK. BY: MJS				
DATE: JUNE, 2007	RPW	I	AS-BUILT REVISIONS	03/10
	BY	NO.	REVISION	DATE

CORROSION CONTROL DETAILS - 3

600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

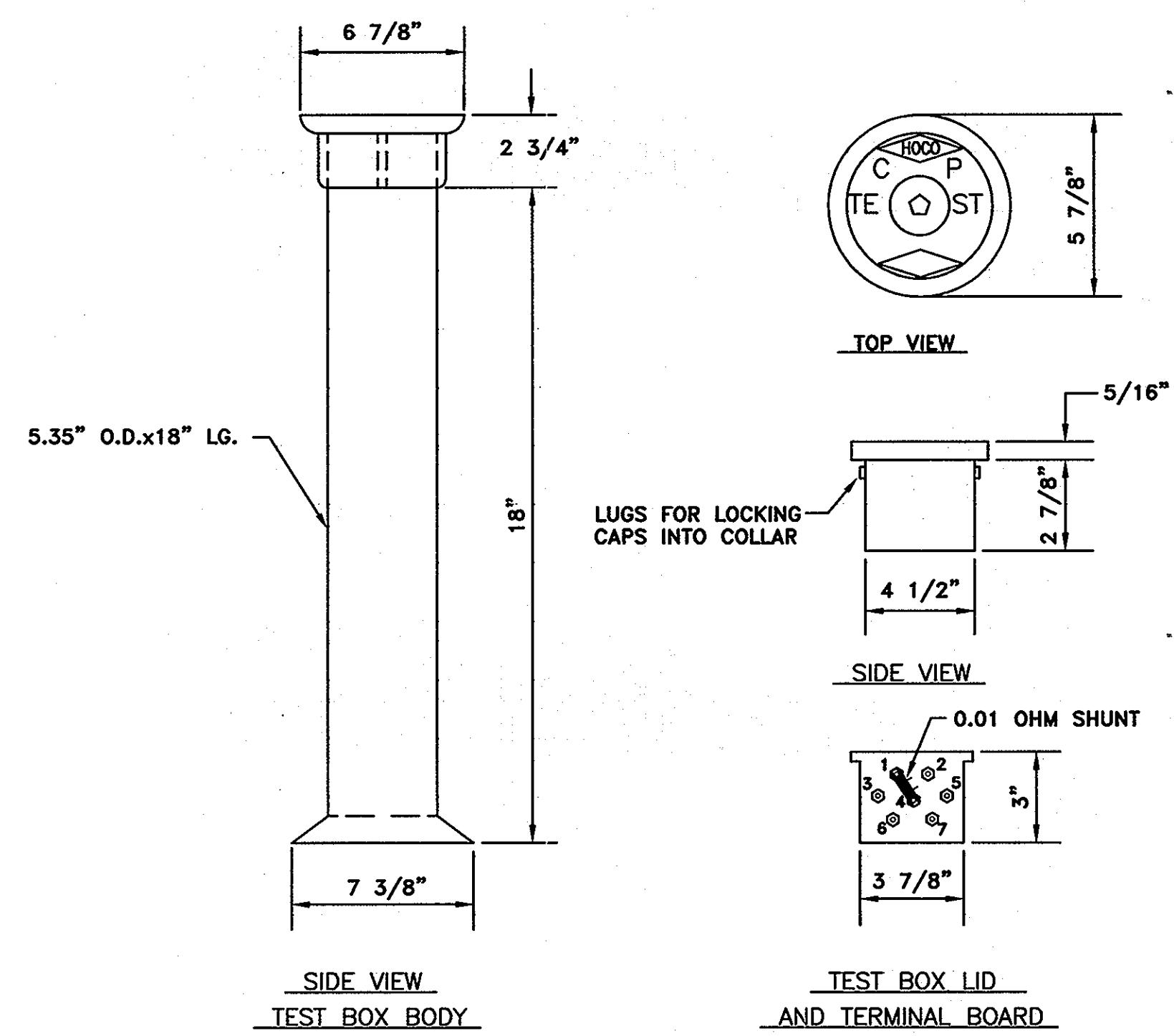
CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CP-9

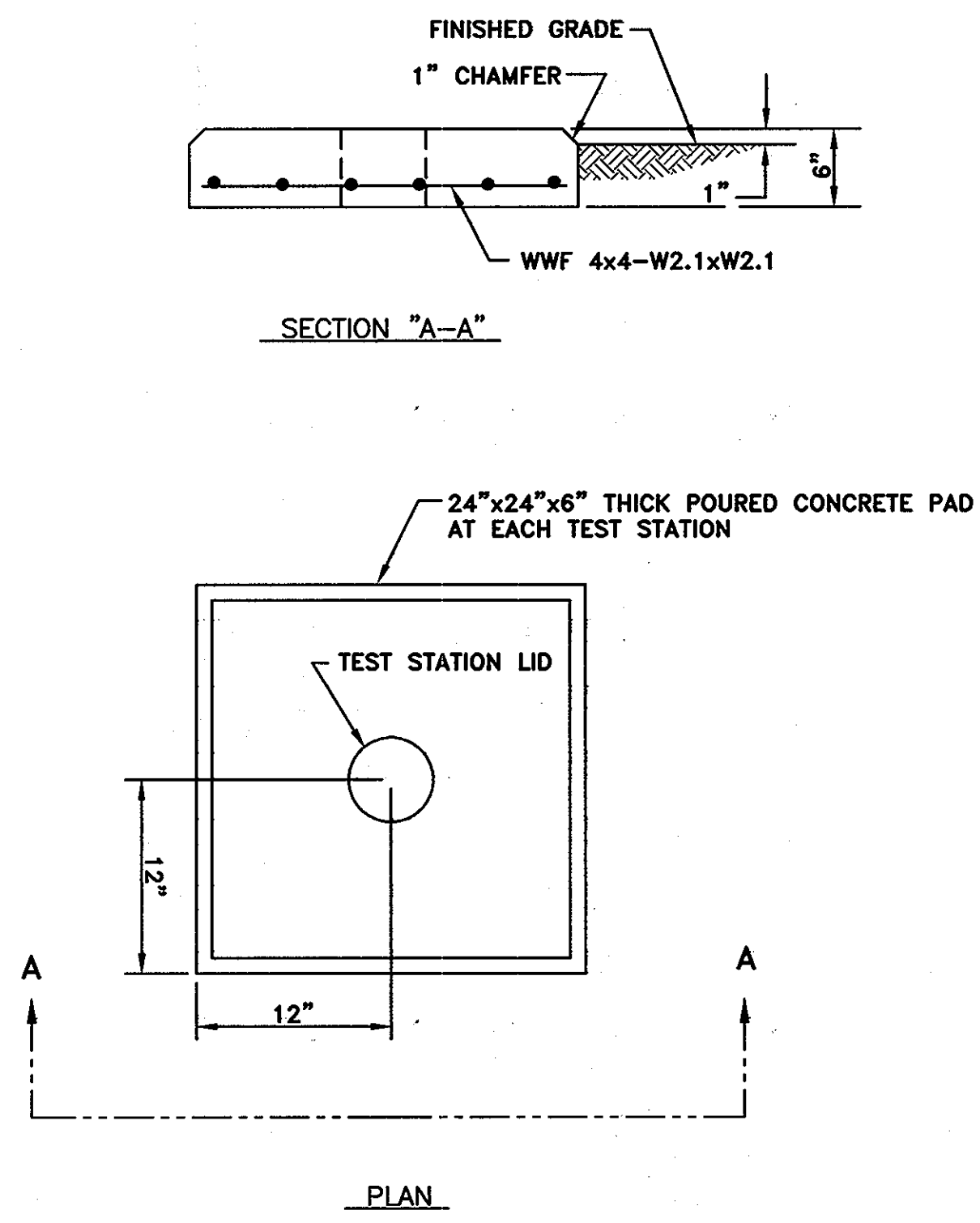
SCALE AS SHOWN

SHEET 35 OF 37

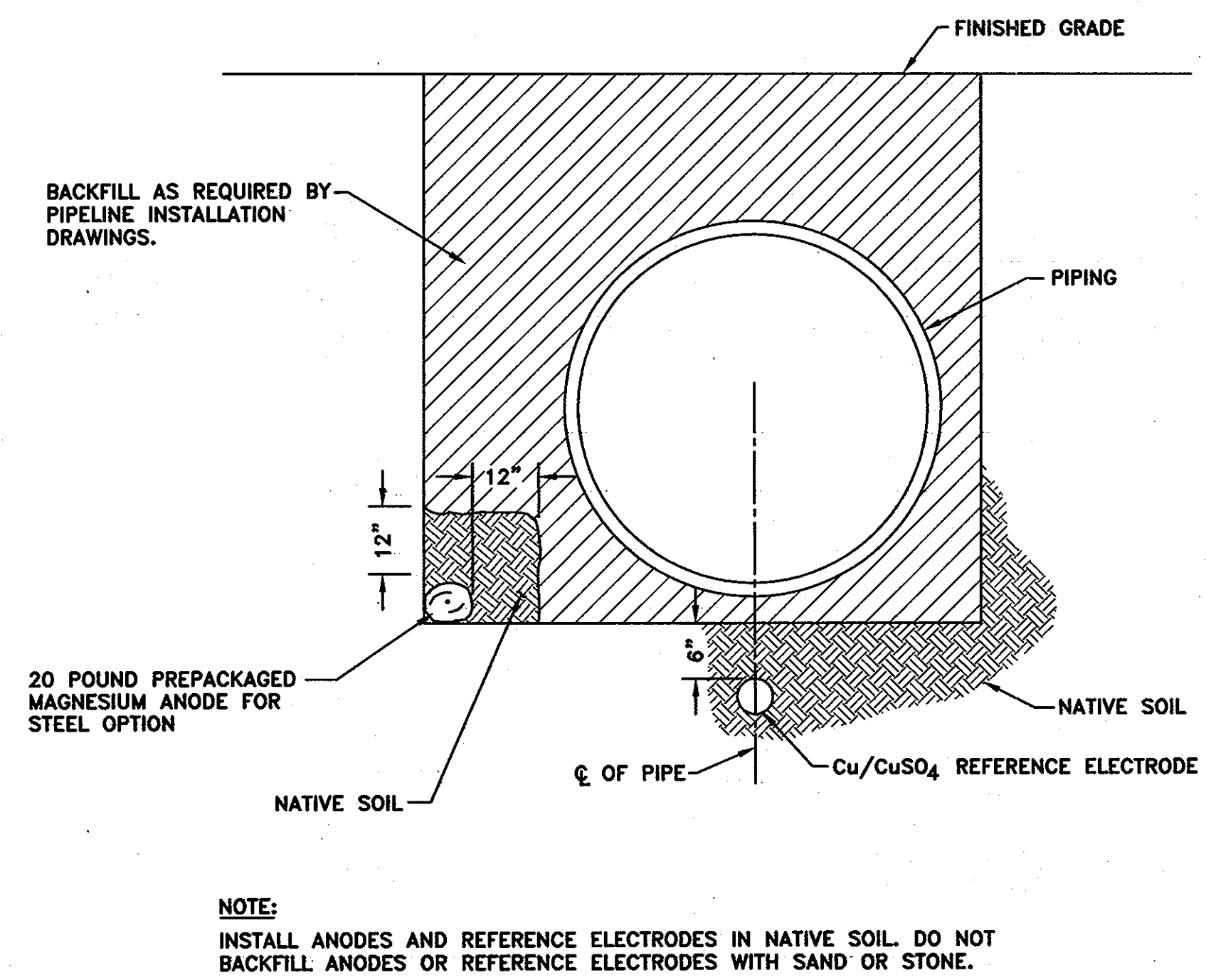
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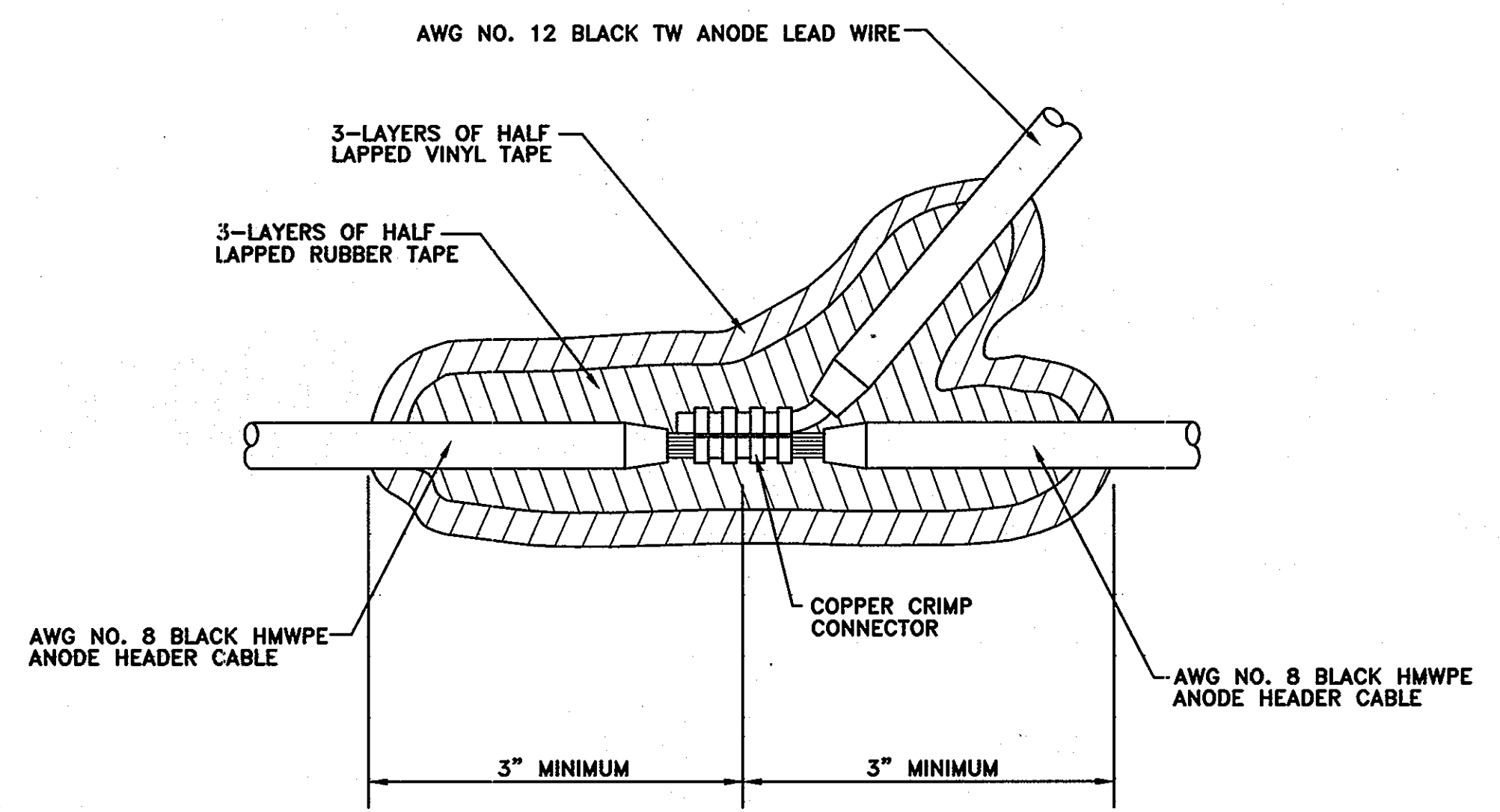
CC-14: TEST BOX
NOT TO SCALE



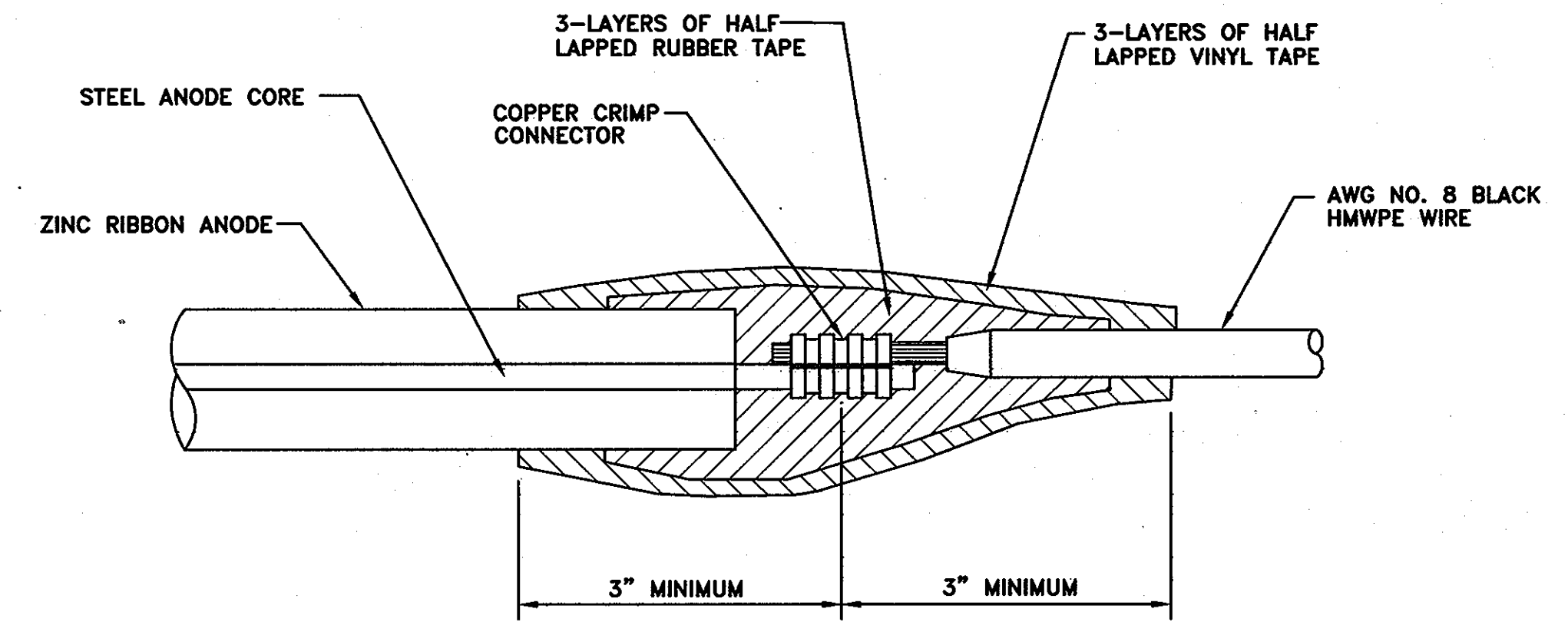
CC-15: TEST STATION PAD
NOT TO SCALE



CC-16: ANODE AND REFERENCE ELECTRODE PLACEMENT
NOT TO SCALE



CC-17: ANODE TO HEADER CABLE SPLICE
NOT TO SCALE



CC-18: ZINC RIBBON ANODE TO HEADER CABLE SPLICE
NOT TO SCALE

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'DRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
[Signature] 7/10/07
DIRECTOR OF PUBLIC WORKS DATE
[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE
[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE
[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.
RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

STATE OF MARYLAND
PROFESSIONAL ENGINEER
NOV 17 2005

DSN. BY: MJS				
DRN. BY: DJD/ZGS				
CHK. BY: MJS				
DATE: JUNE, 2007	RPK	AS-BUILT REVISIONS	03/10	
	BY	NO.	REVISION	DATE

CORROSION CONTROL DETAILS - 4
600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD
CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CP-10
SCALE AS SHOWN
SHEET 36 OF 37
FILE NO.

HOWARD COUNTY 48" STEEL WATER MAIN				
STATION NUMBER	TEST STATION TYPE	DETAIL NUMBER	NUMBER OF ANODES	REFERENCE ELECTRODE
10+00	INSULATING FLANGE WITH ANODES	CC-4	9	YES
10+02	AC GROUND MAT	CC-7	0	NO
10+97	AC GROUND MAT	CC-7	0	NO
10+99	CASING	CC-6	0	YES
11+48	CASING	CC-6	0	YES
11+50	AC GROUND MAT	CC-7	0	NO
12+42.5 (31' RT.)	AC GROUND MAT	CC-7	0	NO
12+42.5 (33' RT.)	INSULATING FLANGE	CC-3	0	YES
18+71	ANODE	CC-2	9	YES
18+73	AC GROUND MAT	CC-7	0	NO
18+75 (20.4' RT.)	AC GROUND MAT	CC-7	0	NO
18+75 (22.4' RT.)	INSULATING FLANGE	CC-3	0	YES
27+50	ANODE	CC-2	9	YES
36+30	ANODE	CC-2	9	YES
43+23	CASING	CC-6	0	YES
44+71	CASING	CC-6	0	YES
45+10	ANODE	CC-2	9	YES
52+90	ANODE	CC-2	9	YES
53+69	INSULATING FLANGE	CC-3	0	YES

CC-19: TEST STATION SCHEDULE
(48" STEEL OPTION)

HOWARD COUNTY 48" PCCP WATER MAIN				
STATION NUMBER	TEST STATION TYPE	DETAIL NUMBER	NUMBER OF ANODES	REFERENCE ELECTRODE
10+00	INSULATING FLANGE	CC-3	0	YES
10+02	AC GROUND MAT	CC-7	0	NO
10+97	AC GROUND MAT	CC-7	0	NO
10+99	CASING	CC-6	0	YES
11+48	CASING	CC-6	0	YES
11+50	AC GROUND MAT	CC-7	0	NO
12+42.5 (31' RT.)	AC GROUND MAT	CC-7	0	NO
12+42.5 (33' RT.)	INSULATING FLANGE WITH ANODES	CC-4	4	YES
13+01	AC GROUND MAT	CC-7	0	NO
13+01 (4' RT.)	INSULATING FLANGE FOR DIP CONNECTION	CC-5	0	YES
18+75	AC GROUND MAT	CC-7	0	NO
18+75 (4' RT.)	INSULATING FLANGE FOR DIP CONNECTION	CC-5	0	YES
18+75 (20.4' RT.)	AC GROUND MAT	CC-7	0	NO
18+75 (22.4' RT.)	INSULATING FLANGE WITH ANODES	CC-4	4	YES
27+50	STANDARD	CC-1	0	YES
36+30	STANDARD	CC-1	0	YES
43+23	CASING	CC-6	0	YES
44+71	CASING	CC-6	0	YES
45+10	STANDARD	CC-1	0	YES
53+69	INSULATING FLANGE	CC-3	0	YES

CC-20: TEST STATION SCHEDULE
(48" PCCP OPTION)

HOWARD COUNTY 48" DIP WATER MAIN				
STATION NUMBER	TEST STATION TYPE	DETAIL NUMBER	NUMBER OF ANODES	REFERENCE ELECTRODE
10+00	INSULATING FLANGE WITH ANODES	CC-4	9	YES
10+02	AC GROUND MAT	CC-7	0	NO
10+97	AC GROUND MAT	CC-7	0	NO
10+99	CASING	CC-6	0	YES
11+48	CASING	CC-6	0	YES
11+50	AC GROUND MAT	CC-7	0	NO
12+42.5 (31' RT.)	AC GROUND MAT	CC-7	0	NO
12+42.5 (33' RT.)	INSULATING FLANGE	CC-3	0	YES
18+71	ANODE	CC-2	9	YES
18+73	AC GROUND MAT	CC-7	0	NO
18+75 (20.4' RT.)	AC GROUND MAT	CC-7	0	NO
18+75 (22.4' RT.)	INSULATING FLANGE	CC-3	0	YES
27+50	ANODE	CC-2	9	YES
36+30	ANODE	CC-2	9	YES
43+23	CASING	CC-6	0	YES
44+71	CASING	CC-6	0	YES
45+10	ANODE	CC-2	9	YES
52+90	ANODE	CC-2	9	YES
53+69	INSULATING FLANGE	CC-3	0	YES

CC-21: TEST STATION SCHEDULE
(48" DIP OPTION)

HOWARD COUNTY 8" DIP WATER MAIN				
STATION NUMBER	TEST STATION TYPE	DETAIL NUMBER	NUMBER OF ANODES	REFERENCE ELECTRODE
59+95	INSULATING FLANGE WITH ANODES	CC-4	13	YES
62+04	INSULATING FLANGE	CC-3	0	YES
63+08	INSULATING FLANGE WITH ANODES	CC-4	12	YES

CC-22: TEST STATION SCHEDULE
(8" DIP)

RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

AS-BUILT

CP-11

THIS DRAWING IS NOT APPLICABLE FOR
USE AS STANDARD CORROSION CONTROL
PROCEDURES FOR OTHER PROJECTS
DUE TO VARIABLE CONDITIONS AT OTHER
SITES. NEITHER THIS DESIGN NOR ANY
PART THEREOF MAY BE DUPLICATED IN
ANY WAY FOR OTHER PROJECTS OR
MODIFIED IN ANY WAY FOR THIS OR
OTHER PROJECTS, EXCEPT BY WRITTEN
AGREEMENT WITH RUSSELL CORROSION
CONSULTANTS, INC.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING
UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER
THIS DOCUMENT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/1/07
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/3/07
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7-6-07
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7-3-07
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE
ENGINEERS, INC.

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland



DSN. BY: MJS				
DRN. BY: DJD/ZGS				
CHK. BY: MJS				
DATE: JUNE, 2007	RPW	1	AS-BUILT REVISIONS	03/10
	BY	NO.	REVISION	DATE

CORROSION CONTROL
DETAILS - 5

600' SCALE MAP NO. 24 BLOCK NO.

U.S. ROUTE 29 WATER MAIN REPLACEMENT
U.S. ROUTE 40 TO FREDERICK ROAD

CAPITAL PROJECT: W-8243
CONTRACT NO.: 44-4321
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
37 OF 37

FILE NO.