

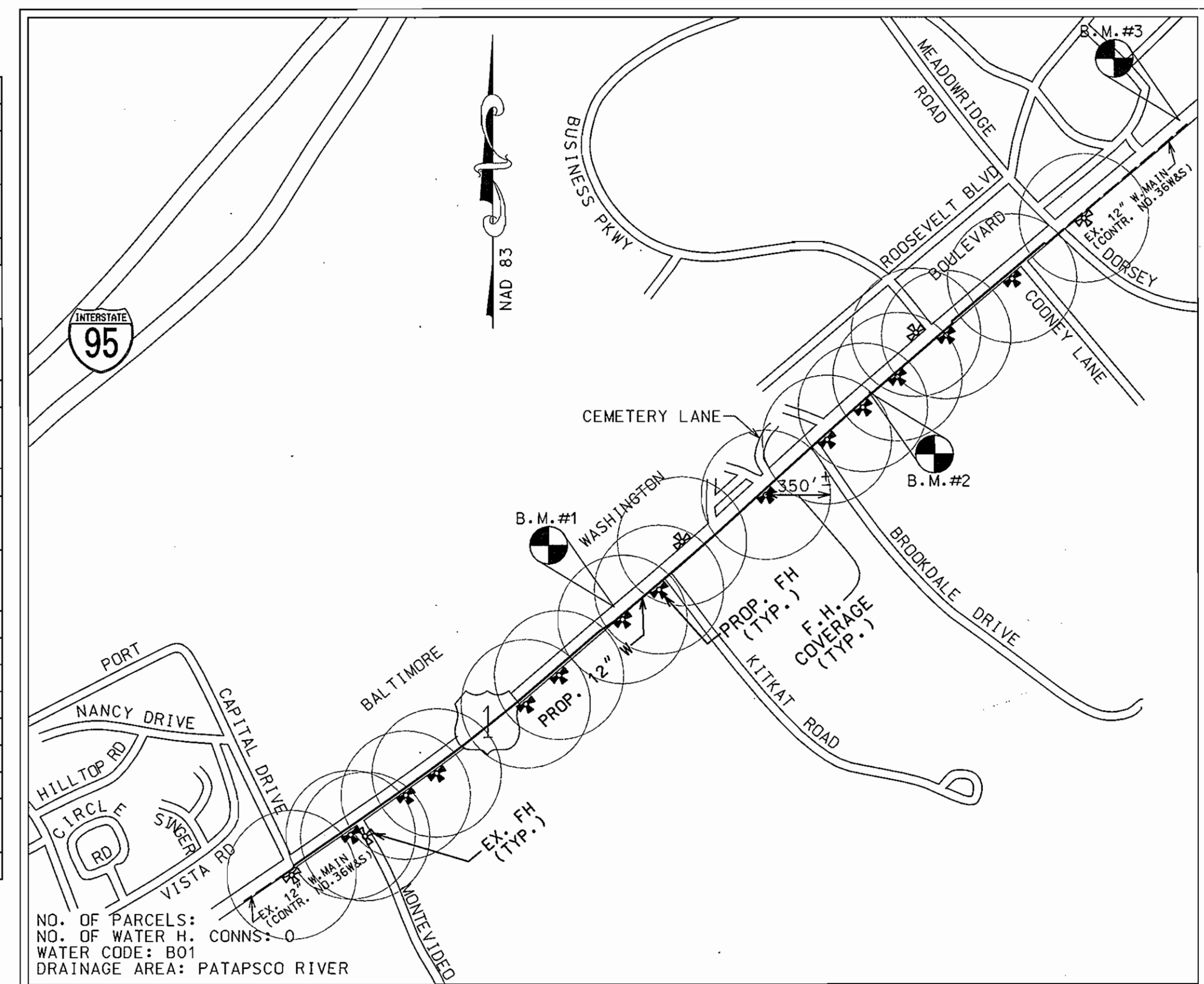
W/S 44-3805 SH 1 C.P. W-8204

WATER STAKEOUT TABLE			
U.S. ROUTE 1		COORDINATES	
ITEM	STATION	NORTHING	EASTING
12" VALVE	194+50	549224.26	1375128.82
1/4" HOR BEND	194+50	549226.29	1375127.48
12"x4"x12" TEE	197+09	549370.76	1375342.37
12"x6"x12" TEE	198+45	549445.40	1375457.02
12"x6"x12" TEE	199+06	549476.77	1375504.99
12"x6"x12" TEE	202+00	549631.52	1375741.23
12" GATE VALVE	204+50	549776.54	1375962.90
12"x6"x12" TEE	205+75	549849.31	1376064.65
AIR RELEASE MH	207+00	549923.58	1376165.19
1/8 HOR BEND	207+20	549936.52	1376182.05
1/8 HOR BEND	207+27	549935.31	1376191.81
1/8 HOR BEND	207+43	549945.59	1376204.77
1/8 HOR BEND	207+50	549955.50	1376205.83
12"x6"x12" TEE	209+36	550074.99	1376348.12
1/32 HOR BEND	211+10	550187.84	1376479.85
12" DEWATERING VALVE & VAULT	211+70	550216.43	1376526.72
1/32 HOR BEND	211+90	550230.35	1376549.46
12"x6"x12" TEE	213+45	550332.46	1376666.37
12" GATE VALVE	214+50	550401.96	1376745.19
12"x12"x12" TEE	214+90	550429.40	1376776.48
12"x6"x12" TEE	216+60	550540.53	1376902.91
AIR RELEASE MH	217+00	550599.18	1376932.58
1/8 HOR BEND	217+55	550603.22	1376975.12
1/8 HOR BEND	217+65	550617.78	1376976.28
12"x8"x12" TEE	217+85	550629.75	1376984.70
12"x6"x12" TEE	219+27	550723.65	1377096.51
12" GATE VALVE	220+17	550783.87	1377164.51
12"x6"x12" TEE	220+25	550788.85	1377170.32
12"x6"x12" TEE	221+80	550893.43	1377387.45
1/8 HOR BEND	224+05	551037.64	1377456.16
1/8 HOR BEND	224+13	551036.44	1377470.03
12" GATE VALVE	225+00	551093.18	1377535.55
12"x6"x12" TEE	226+55	551195.40	1377651.94
12"x12"x12" TEE	230+30	551441.78	1377934.98
12" GATE VALVE	230+67	551470.91	1377969.00
12"x6"x12" TEE	230+93	551482.57	1377982.86
12"x12"x12" TEE	231+38	551516.17	1378021.65
1/8 HOR BEND	232+67	551596.09	1378112.09
1/8 HOR BEND	232+75	551610.40	1378113.13
AIR RELEASE MH	233+20	551639.86	1378146.77
12"x6"x12" TEE	233+70	551672.82	1378184.21
12" GATE VALVE	233+75	551676.29	1378188.00
12"x6"x12" TEE	236+05	551826.96	1378362.52
1/8 HOR BEND	236+87	551879.51	1378423.64
1/8 HOR BEND	236+92	551878.95	1378430.63
12"x8"x12" TEE	239+09	552020.01	1378597.38
12"x8"x12" TEE	239+20	552026.12	1378604.37
12" GATE VALVE	239+32	552035.07	1378614.64
12"x6"x12" TEE	239+65	552055.16	1378637.77
1/8 HOR BEND	240+50	552112.26	1378703.42
1/8 HOR BEND	240+58	552122.14	1378704.11
12"x6"x12" TEE	244+92	552406.56	1379033.00
1/4" HOR BEND	247+00	552537.65	1379194.80
12" VALVE	247+00	552542.61	1379190.50
12"x12" TAPPING TEE	247+00	552538.78	1379193.81

TRAVERSE DATA		
HEC TRAV. PT.	NORTHING	EASTING
MD. SHA. 1	549659.531	1375801.771
" 2	550789.567	1377179.323
" 3	551109.640	1377461.667
" 10	549926.254	1376199.592
" 12	550601.572	1376866.110
" 13	551655.009	1378176.996
" 14	550053.579	1376347.862
HEC. 10	549493.187	1375350.180
HEC. 11	549231.728	1375019.012

QUANTITIES				
ITEM	UNIT	ESTIMATE	AS-BUILT	SUPPLIER
12" WATER MAIN	L.F.	5,282	5,382	U.S. PIPE & FOUNDRY CO.
D.I.P. C.L. 52	L.F.	75	60	
8" WATER MAIN	L.F.	179	130	
6" MAIN	L.F.	1	1	
12" DEWATERING VALVE & VAULT	EA.	3	5	
8" RESILIENT SEATED GATE VALVE & ROADWAY BOX	EA.	13	13	
FIRE HYDRANT	EA.	16	16	
6" RESILIENT SEATED GATE VALVE & ROADWAY BOX	EA.	3	5	
3/4" W.H.C.	L.F.	125	93	
AIR RELEASE VALVE & MH, 1" VALVE	EA.	6	10	
12" RESILIENT SEATED GATE VALVE & ROADWAY BOX	EA.	3	5	
12"x8"x12" TEE	EA.	3	16	
12"x6"x12" TEE	EA.	1	1	
4" W.H.C.	L.F.	25	17	
2" W.H.C.	L.F.	10	16	
1" W.H.C.	L.F.	22	30	
1/2" W.H.C.	L.F.	6	25	
12" TAPPING SLEEVE & VALVE	EA.	2	2	
12" CAP	EA.	2	2	

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS ELLCOTT CITY, MARYLAND 21043



VICINITY MAP
SCALE: 1"=600'

U.S. ROUTE 1 PORT CAPITAL DRIVE TO MEADOWRIDGE ROAD 12" WATER MAIN

CAPITAL PROJECT W-8204 CONTRACT NO. 44-3805

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN AND PROFILE
3	PLAN AND PROFILE
4	PLAN AND PROFILE
5	PLAN AND PROFILE
6	DETAILS
7	PLAN - CATHODIC PROTECTION LAYOUT
8	CATHODIC PROTECTION DETAILS
9	CATHODIC PROTECTION DETAILS
10	CATHODIC PROTECTION DETAILS

- SURVEY CONTROL**
- B.M. #1**
HOWARD CO. CONTROL PT 4386
STAMPED DISC SET IN CONCRETE
37.97' LT OF STA. 216+72.28
N 550601.593 ELEV. 210.560
E 1376866.047
- B.M. #2**
HOWARD CO. CONTROL PT 371A
X-SIT IN CONCRETE 27' RT OF
C STA 233+53.
N 551655.009 ELEV. 209.605
E 1376816.941
- B.M. #3**
HOWARD CO. CONTROL PT 371A
STAMPED ALUM. DISC SET ON TOP
OF 3/4" IRON ROD, 247' EAST OF
ENTR. TO MEADOWRIDGE MEMORIAL
PARK 1.5' FROM EDGE OF RD.
N 553315.158 ELEV. 195.762
E 1379982.120

- GENERAL NOTES**
- Approximate location of existing mains are shown. The Contractor shall take all necessary precautions to protect existing mains and services and maintain uninterrupted service. Any damage incurred shall be repaired immediately to the satisfaction of the Engineer at the Contractor's expense.
 - All horizontal controls are based on Maryland State Coordinates, NAD 83.
 - All vertical controls are based on U.S.G.S. data.
 - All pipe elevations shown are invert elevations unless otherwise noted on the plans.
 - Clear utilities by a minimum of 6". Clear all poles by 5'-0" minimum or tunnel as required. The owner has contacted the utility companies and has made arrangements for bracing of poles as shown on the drawings. In the event the Contractor's work requires the bracing of additional poles, any cost incurred by the owner for the bracing of additional poles or damages shall be deducted from money owed the Contractor. The Contractor shall coordinate with the utility companies to schedule the bracing of the poles.
 - For details not shown on the drawings, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The Contractor shall have a copy of Volume IV on the job.
 - Where test pits have been made on existing utilities, they are noted by the symbol at the location of the test pit. A note or notes containing the results of the test pit or pits is included on the drawings. Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the Contractor two weeks in advance of construction operations at his own expense.
 - Contractor shall notify the following utility companies or agencies at least five working days before starting work shown on these plans:
 - AT&T 410-865-3803
 - BGE - Contractor Services 410-850-4620
 - BGE - Underground Damage Control 410-787-9068
 - Bureau of Utilities (DPW) 410-313-4900
 - Bell Atlantic - MD, Inc. 410-597-8585
 - Colonial Pipeline Co. 410-795-1390
 - Miss Utility 1-800-257-7777
 - State Highway Administration 410-531-5533
 - 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) 313-2450 at least five working days before any open cut of any County road or trenchless installation operation in county roads for laying water/sewer mains or house connections. The approval of these drawings will constitute compliance with DPW requirements per Section 18.14(a) of the Howard County Code.
 - The Contractor is responsible for contacting the various businesses and coordinating his work activities so as not to negatively impact connected customers. The installation of water main shall cause a minimum of disturbance to the existing businesses and notification to the businesses of any "interruptions of service" shall be the responsibility of the contractor. The County requires that the contractor notify each business affected, by letter or with door tags, of the impending service interruption at least 48 hours in advance of the planned interruption. In the event of an unplanned interruption, the contractor will be responsible for notifying the businesses by "door to door" canvassing.

- WATER NOTES**
- All water mains shall be D.I.P. Class 52 unless otherwise noted.
 - Tops of all water mains shall have a minimum of 3'-6" of cover unless otherwise noted.
 - Valves adjacent to tees shall be strapped to tees.
 - All fittings shall be restrained joints, unless otherwise provided for on the drawings.
 - Fire Hydrants shall be set to the bury line elevations shown on the drawings. All fire hydrants shall be installed in accordance with Standard Details. Soil around the fire hydrant shall be compacted in accordance with Section 1000 and Section 1005 of the Howard County Standard Specifications.
 - The Contractor shall not operate any water main valves on the existing water system.
 - Fire Hydrants to be removed shall be returned to:
Howard County Bureau of Utilities
8250 Old Montgomery Rd.
Columbia, Md. 21045 (410)313-4900

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. ... 11/13/99
DIRECTOR OF PUBLIC WORKS DATE

Robert M. ... 11-9-99
CHIEF, BUREAU OF UTILITIES DATE

HICKS ENGINEERING CO., INC.
ENGINEERS, SURVEYORS & PLANNERS
200 EAST JOPPA ROAD - SUITE 400
TOWSON, MARYLAND 21286-3160
(410) 494-0001

[Signature]
REGISTERED PROFESSIONAL ENGINEER

DES: RA1/FW	HEC 1	AS-BUILT PLANS - WATER MAIN	3/02
DRN: JAC			
CHK: DEH			
DATE: 11-1/99	BY NO.	REVISION	DATE

TITLE SHEET

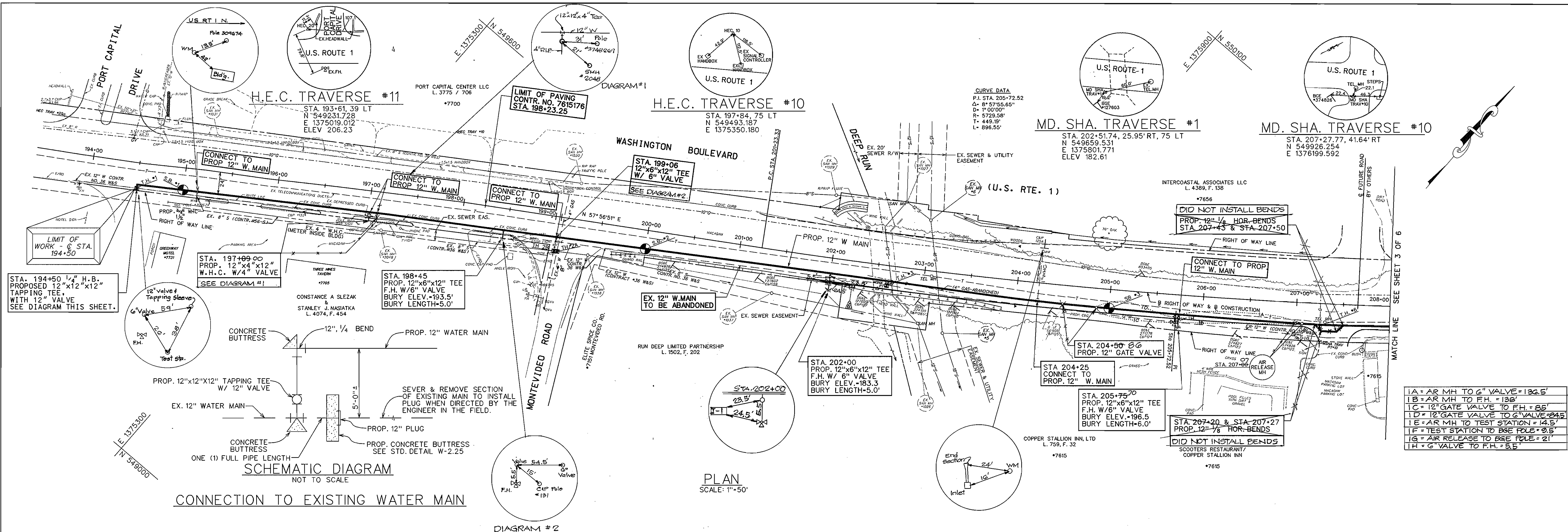
600' SCALE MAP NO. W&S 37/43 BLOCK NO. 29/4.5.9.10

AS BUILT PLAN - 03/02

U.S. ROUTE 1
PORT CAPITAL DR. TO MEADOWRIDGE RD.
12" WATER MAIN EXTENSION
ELECTION DISTRICT NO. 1
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT NO. W-8204
CONTRACT NO. 44-3805

SCALE AS SHOWN
SHEET 1 OF 10

W/S 44-3805 Sht 2 of 10 C.P. W-8204



HICKS ENGINEERING CO., INC.
ENGINEERS, SURVEYORS & PLANNERS
200 EAST JOPPA ROAD - SUITE 402
TOWSON, MARYLAND 21286-3160
(410) 494-0001

[Signature]
PROFESSIONAL ENGINEER

DES:	RAI	HEC	I	AS-BUILT PLANS - WATER MAIN	3/02
DRN:	JAC				
CHK:	DEH				
DATE:	11/1/99	BY	NO.	REVISION	DATE

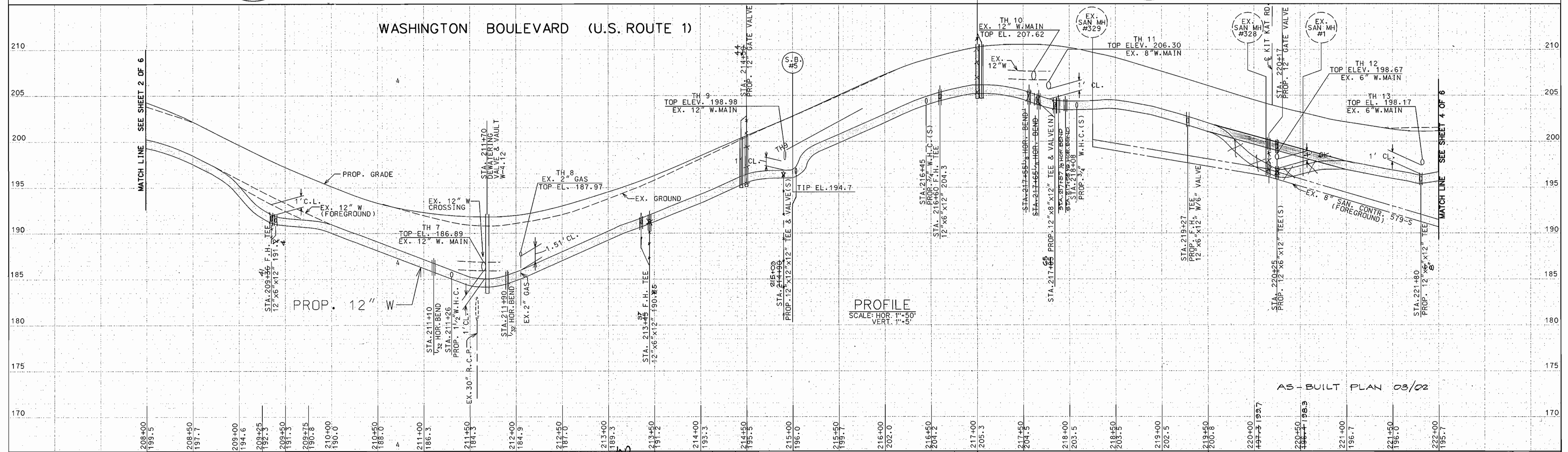
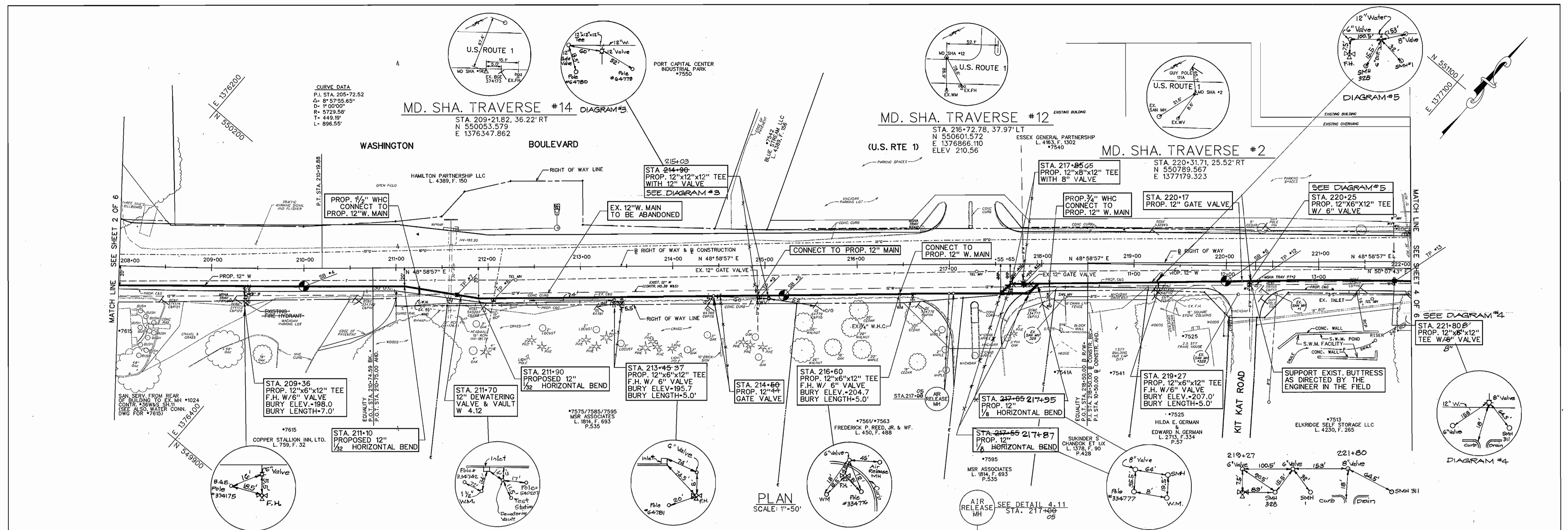
**PLAN & PROFILE
12" WATER MAIN**

600' SCALE MAP NO. W-8204-37/43 BLOCK NO. 29/4.5.9-10

U.S. ROUTE 1
PORT CAPITAL DR. TO MEADOWRIDGE RD.
12" WATER MAIN REPLACEMENT
ELECTION DISTRICT NO. 1
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT NO. W-8204
CONTRACT NO. 44-3805

SCALE AS SHOWN
SHEET 2 OF 10

W/S 44-3805-Sht 3 of 10 C.R. W-8204



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James J. ... 11/3/99
DIRECTOR OF PUBLIC WORKS DATE

Robert ... 11-4-99
CHIEF, BUREAU OF UTILITIES DATE

HICKS ENGINEERING CO., INC.
ENGINEERS, SURVEYORS & PLANNERS
200 EAST JOPPA ROAD SUITE 402
TOWSON, MARYLAND 21286-3160
(410) 494-0001

[Signature]

DES:	RAI	HEC	AS-BUILT PLANS - WATER MAIN
DRN:	JAC		
CHK:	DEH		
DATE:	11/1/99	BY	NO.
		REVISION	DATE

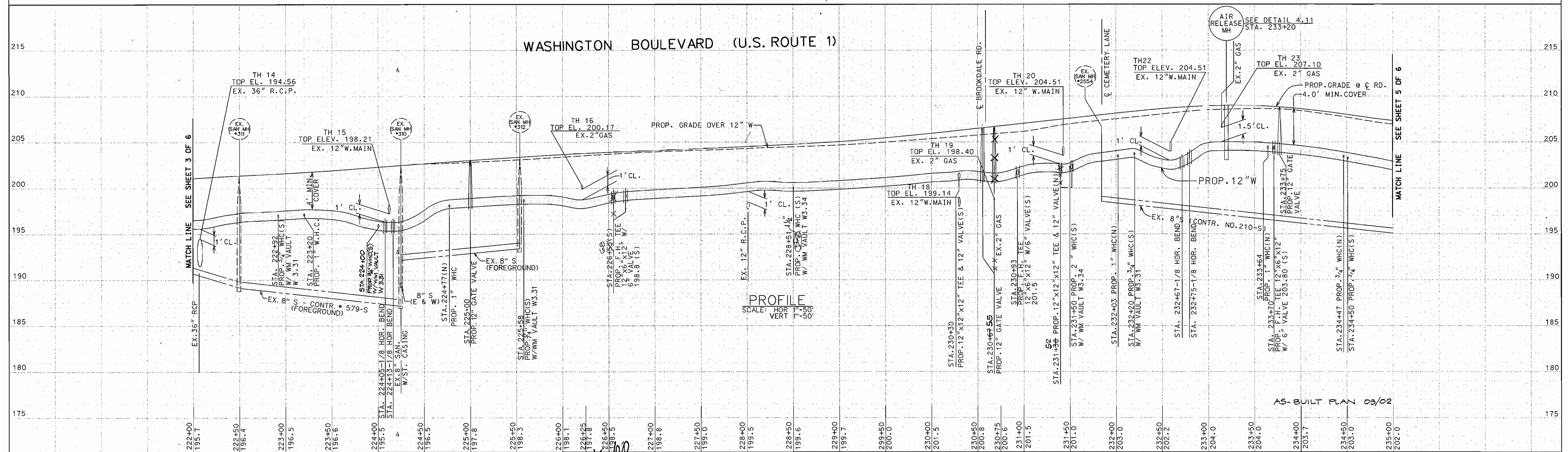
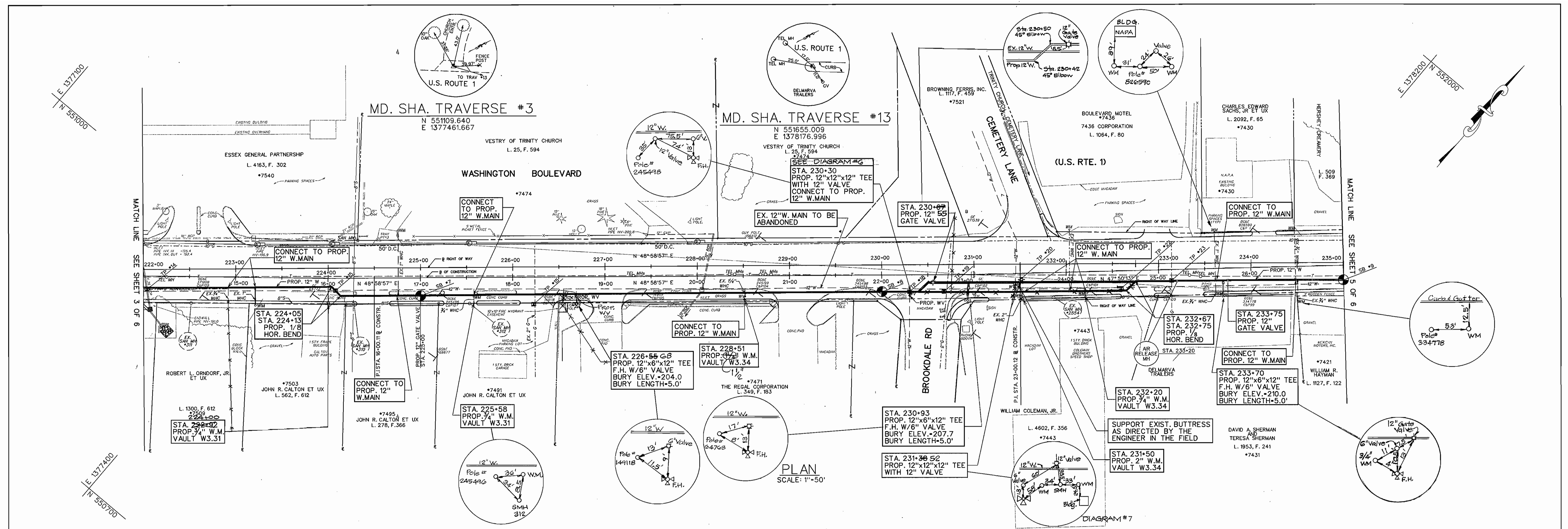
PLAN & PROFILE
12" WATER MAIN

600' SCALE MAP NO. W&S 37/43 BLOCK NO. 29/4.5.9.10

U.S. ROUTE 1
PORT CAPITAL DR. TO MEADOWRIDGE RD.
12" WATER MAIN REPLACEMENT
ELECTION DISTRICT NO. 1
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT NO. W-8204
CONTRACT NO.

SCALE AS SHOWN
SHEET 3 OF 10

W/S 44-3805 S&T4 of 10 C.P. W-8204



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Robert J. Brown 11/3/99
DIRECTOR OF PUBLIC WORKS DATE

Robert J. Brown 11-4-99
CHIEF, BUREAU OF UTILITIES DATE

HICKS ENGINEERING CO., INC.
ENGINEERS, SURVEYORS & PLANNERS
200 EAST JOPPA ROAD - SUITE 100
TOWSON, MARYLAND 21286-3160
(410) 494-0001

Robert J. Brown
PROFESSIONAL ENGINEER

DES:	RAI	HEC	1	AS-BUILT PLANS - WATER MAIN	3/02
DRN:	JAC				
CHK:	DEH				
DATE:	11/1/99	BY	NO.	REVISION	DATE

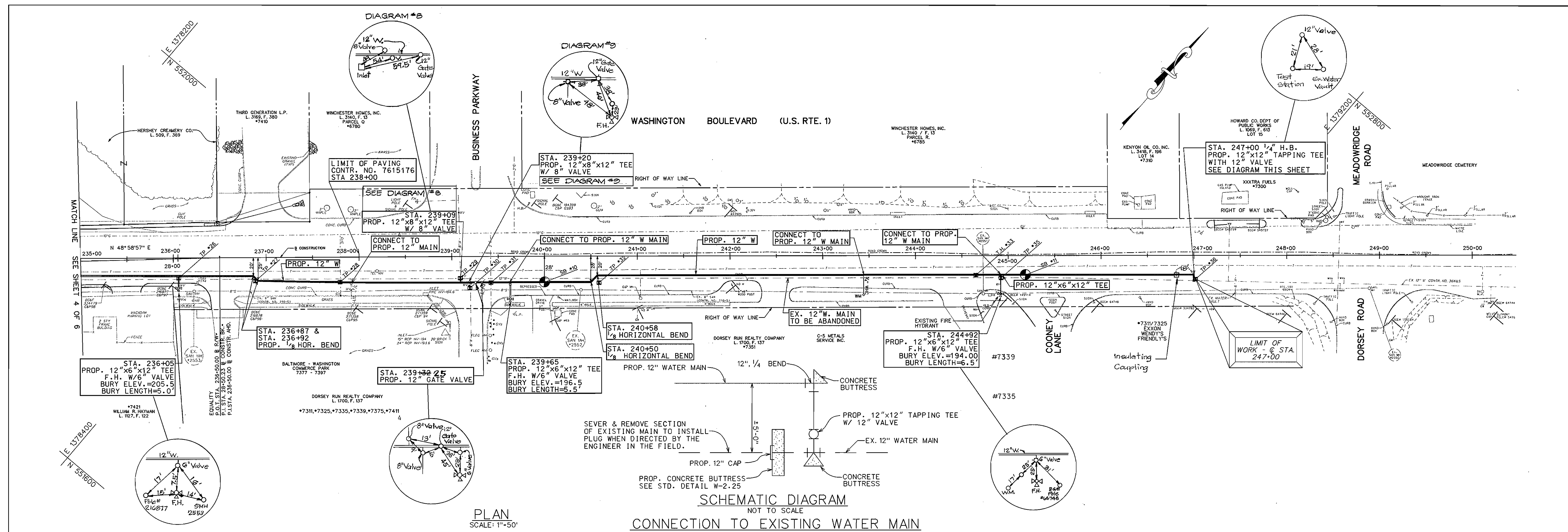
PLAN & PROFILE
12" WATER MAIN

600' SCALE MAP NO. W&S 37/42 BLOCK NO. 29/4.5.9.10

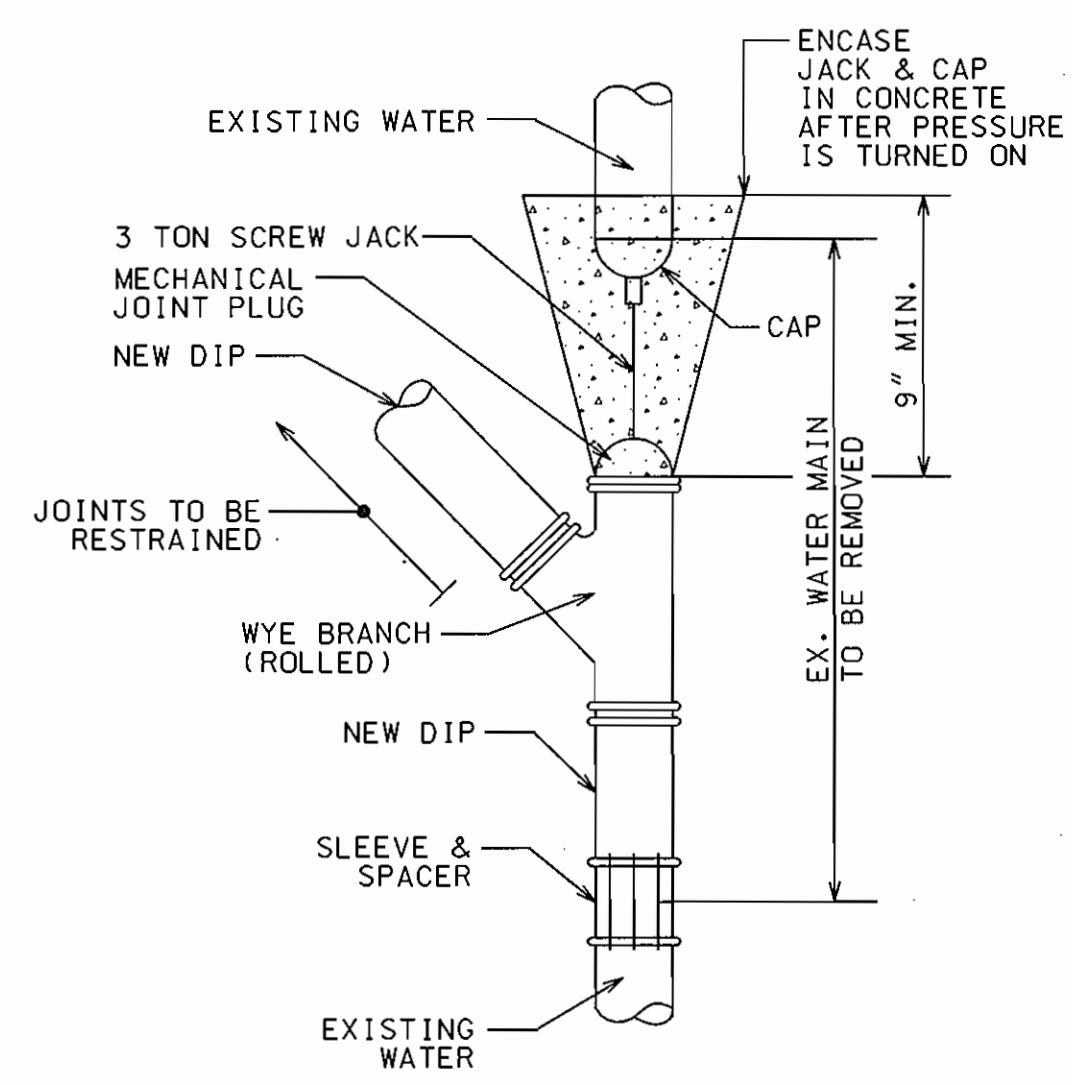
U.S. ROUTE 1
PORT CAPITAL DR. TO MEADOWRIDGE RD.
12" WATER MAIN REPLACEMENT
ELECTION DISTRICT NO. 1
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT NO. W-8204
CONTRACT NO. 44-3805

SCALE AS SHOWN
SHEET 4 OF 10

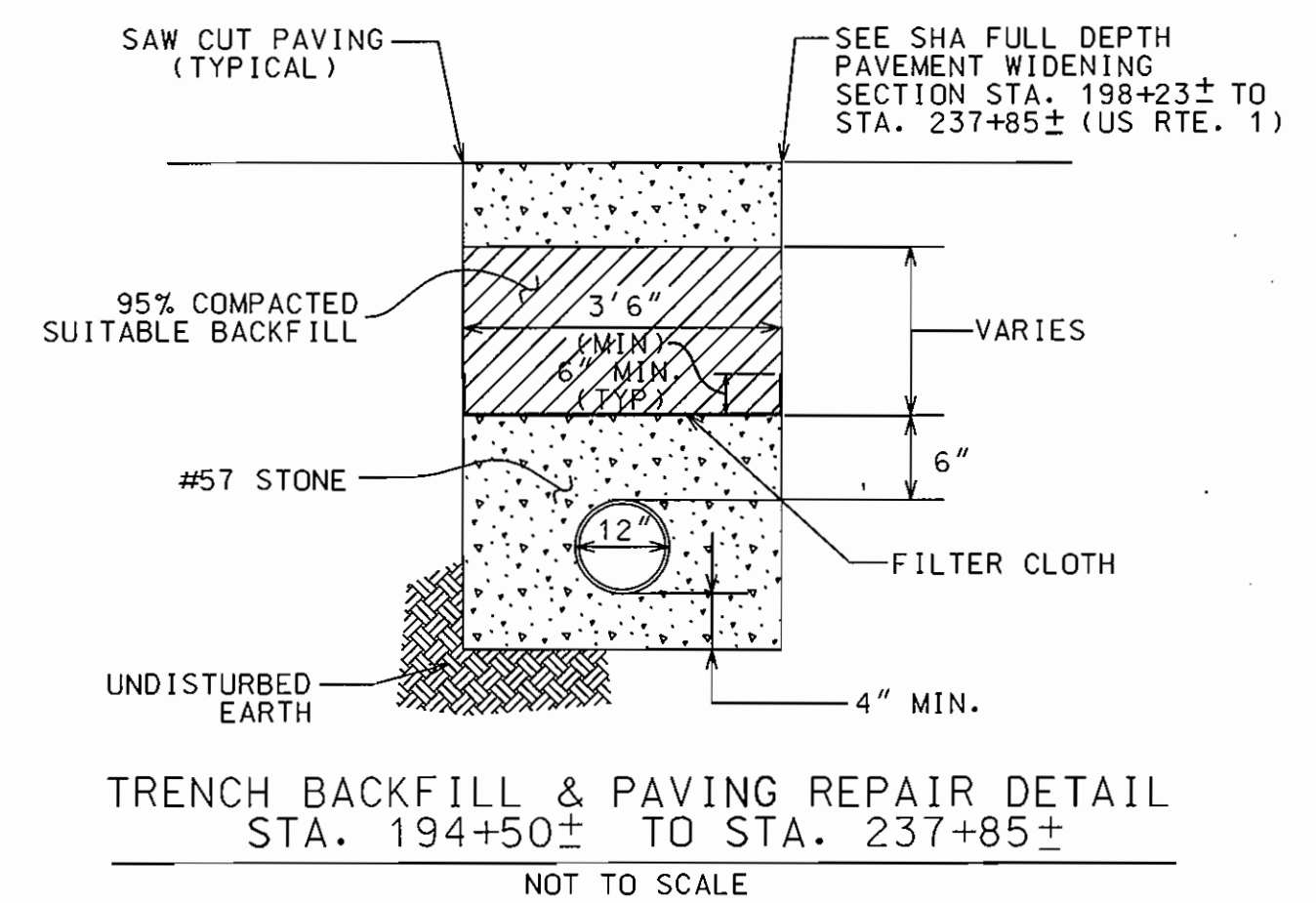
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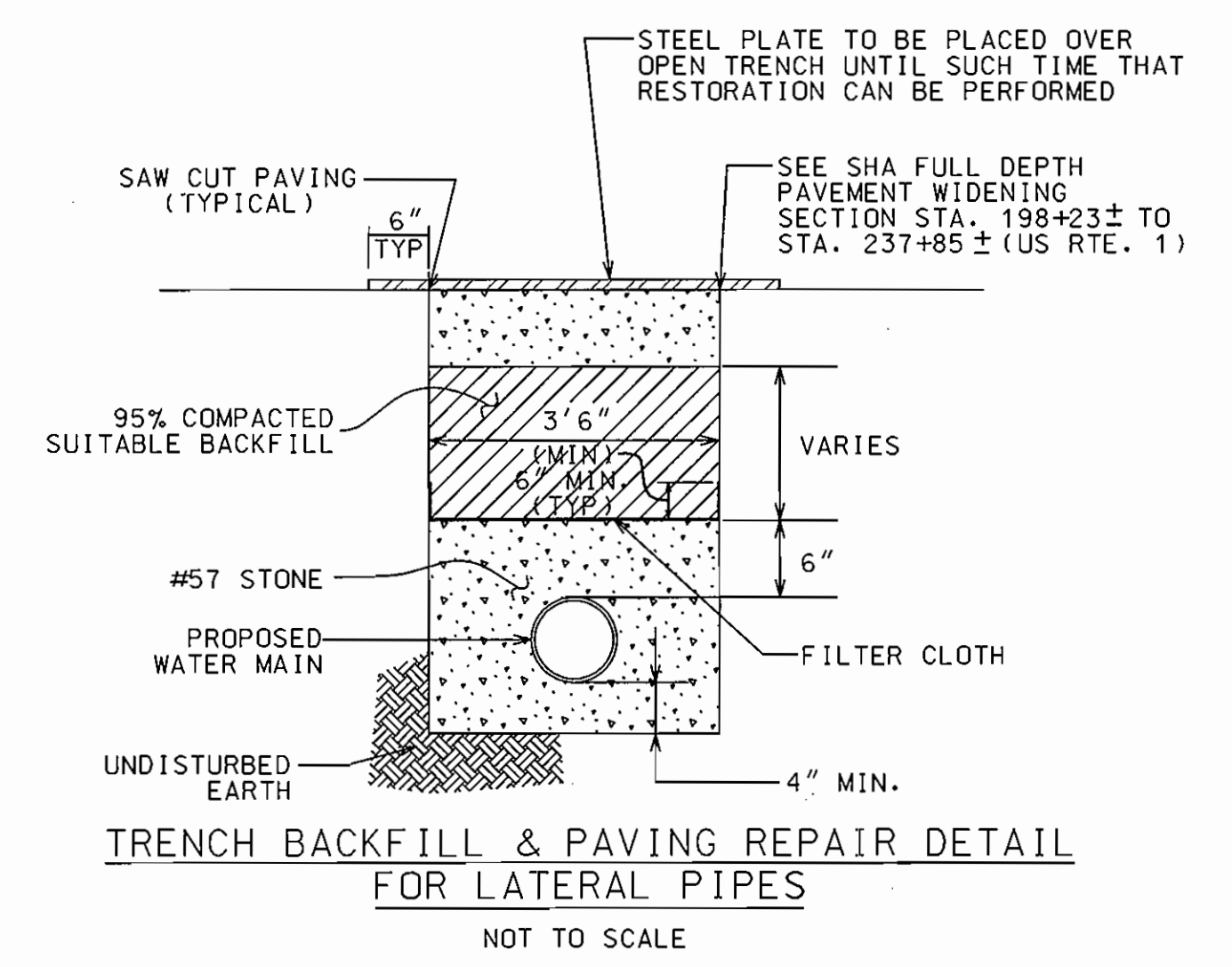
W/S 44-3805 sb+6afjd C.P. W-8204



NOTE: CONCRETE DIMENSIONS SHALL BE IN ACCORDANCE WITH STD. DTL. W2.21
DOUBLE CAP & BUTTRESS DETAIL
 NOT TO SCALE



TRENCH BACKFILL & PAVING REPAIR DETAIL
 STA. 194+50± TO STA. 237+85±
 NOT TO SCALE

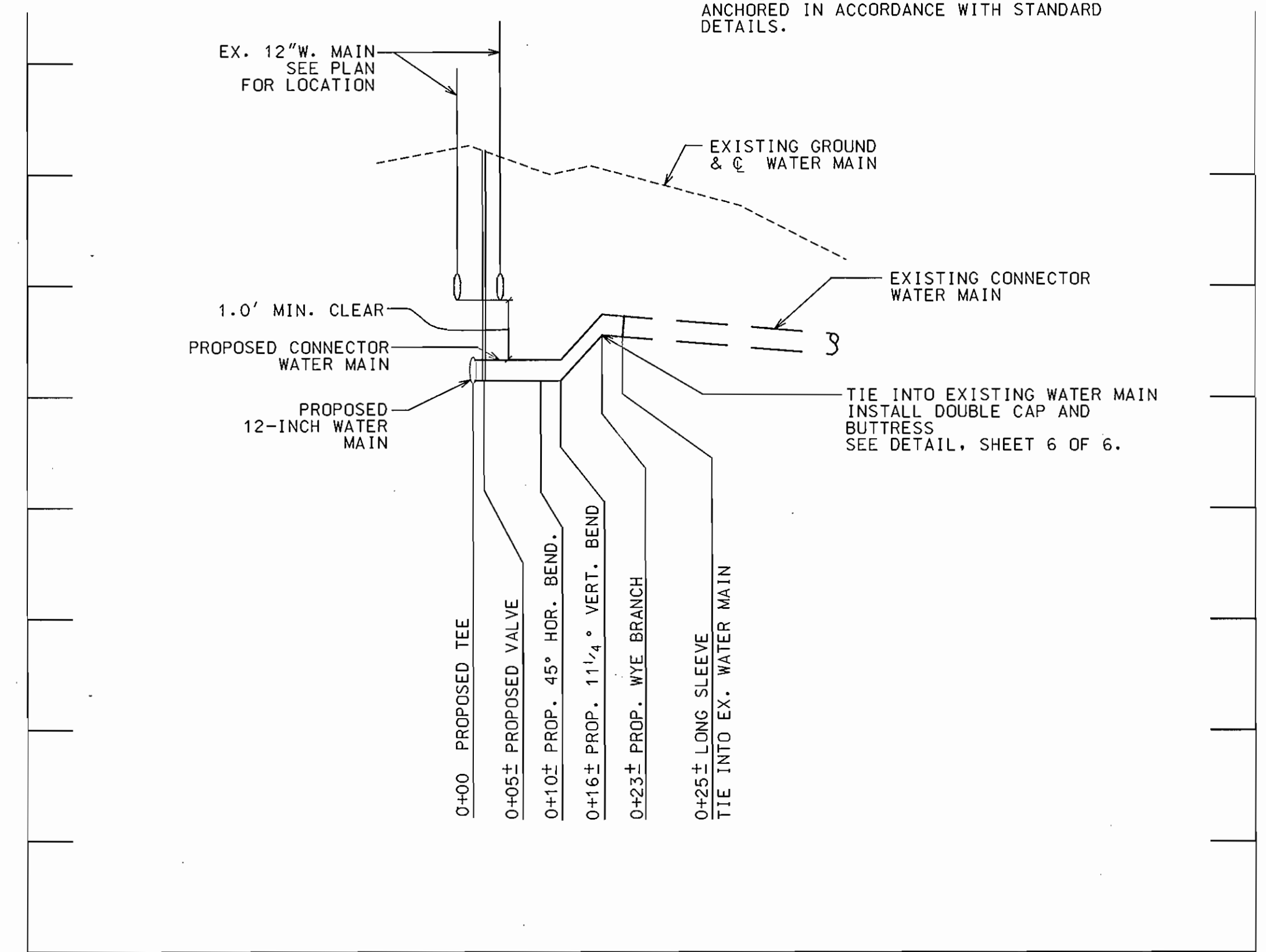


TRENCH BACKFILL & PAVING REPAIR DETAIL FOR LATERAL PIPES
 NOT TO SCALE

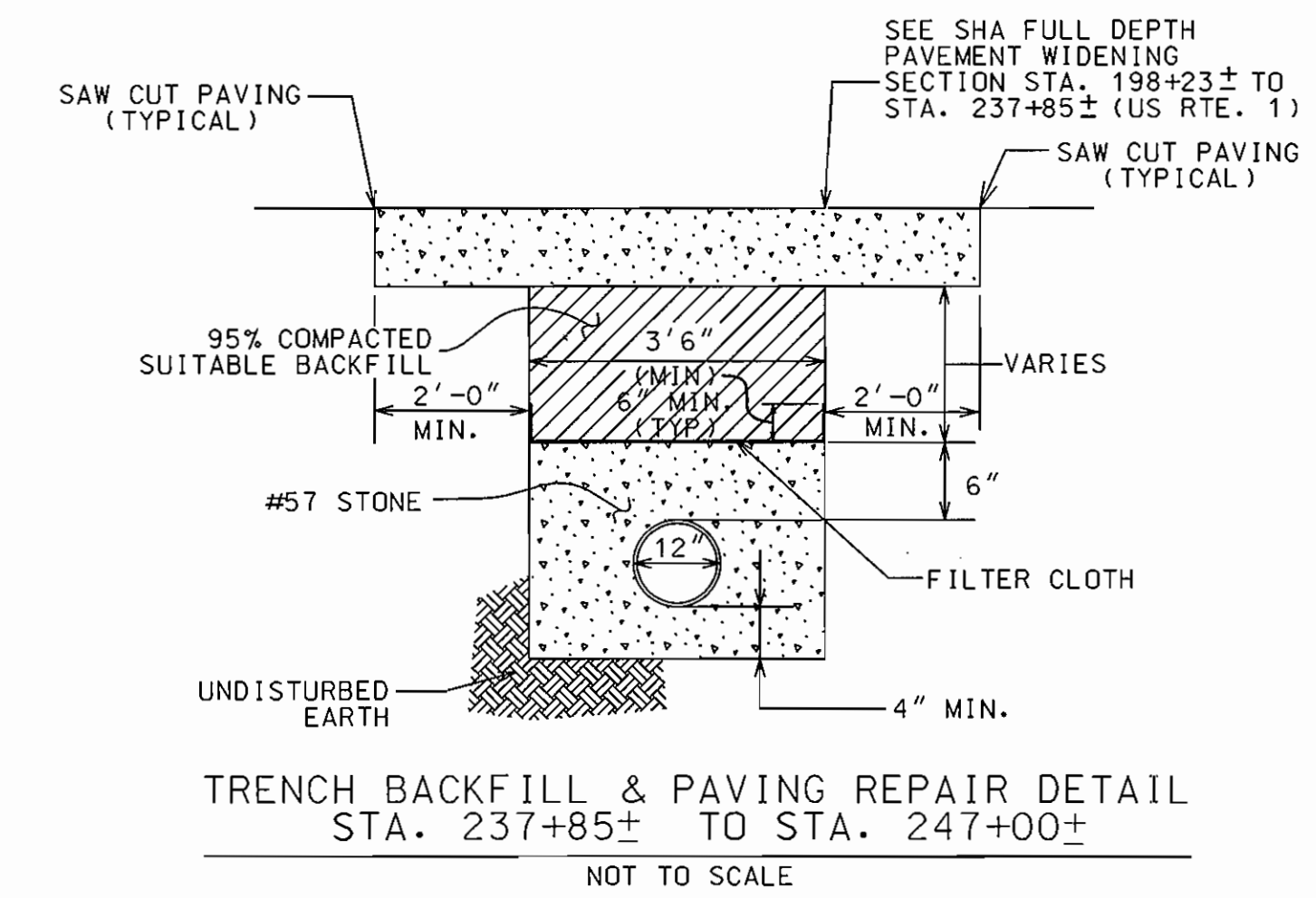
SUGGESTED SEQUENCE OF CONSTRUCTION

- A. AFTER RECEIPT OF NOTICE TO PROCEED, THE CONTRACTOR SHALL PROCEED WITH THE TRENCHING FOR AND INSTALLATION OF THE 12-INCH WATER MAIN, INCLUDING THE PROPOSED TAPPING SLEEVE AND VALVE AND CONNECTION TO THE EXISTING 12-INCH MAIN.
- B. THE PROPOSED WATER MAIN SHALL BE PRESSURE TESTED AND CHLORINATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT SPECIFICATIONS.
- C. AFTER ACCEPTANCE OF THE PRESSURE TEST & CHLORINATION, BY HOWARD COUNTY, THE CONTRACTOR SHALL PROCEED WITH CONNECTING THE EXISTING LATERAL MAINS. THE CONTRACTOR SHALL NOTIFY HOWARD COUNTY, AT LEAST TEN WORKING DAYS PRIOR TO CONNECTING THE EXISTING LATERAL MAINS.
- D. AT SUCH TIME THAT THE LATERAL MAINS HAVE BEEN CONNECTED, THE CONTRACTOR WILL BE DIRECTED TO CONNECT EXISTING AND PROPOSED WATER HOUSE/BUILDING CONNECTIONS TO THE NEWLY INSTALLED 12-INCH WATER MAIN.
- E. WHEN DIRECTED, THE CONTRACTOR SHALL SEVER AND BUTTRESS THE EXISTING 12-INCH WATER MAIN IN ACCORDANCE WITH THE DIAGRAM INDICATED ON THE CONSTRUCTION PLANS.

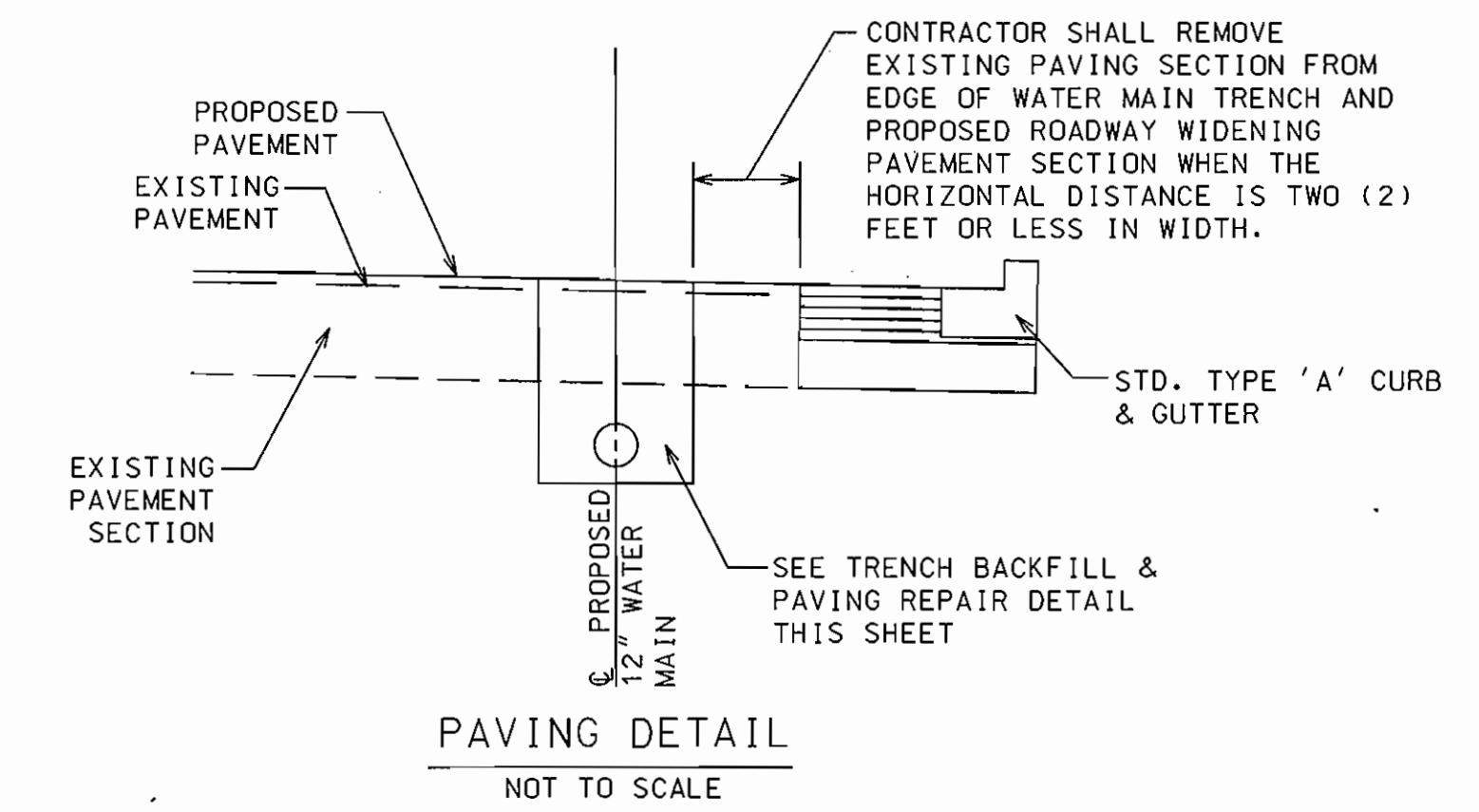
1. ALL HORIZONTAL AND VERTICAL BEND SHALL BE RESTRAINED JOINTS.
2. PROPOSED CAP SHALL BE BUTTRESSED OR ANCHORED IN ACCORDANCE WITH STANDARD DETAILS.



TYPICAL PROFILE FOR EXISTING CONNECTOR MAINS TO PROPOSED 12" WATER MAIN
 NOT TO SCALE



TRENCH BACKFILL & PAVING REPAIR DETAIL
 STA. 237+85± TO STA. 247+00±
 NOT TO SCALE



PAVING DETAIL
 NOT TO SCALE

AS BUILT PLAN -03/02

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Sam V. [Signature] 11/8/99
 DIRECTOR OF PUBLIC WORKS DATE

Phil [Signature] 11/3/99
 CHIEF, BUREAU OF ENGINEERING DATE

Phil [Signature] 11-4-99
 CHIEF, BUREAU OF UTILITIES DATE

Phil [Signature] 11-9-99
 CHIEF, WATER & SEWER DIVISION DATE

HICKS ENGINEERING CO., INC.
 ENGINEERS, SURVEYORS & PLANNERS
 200 EAST JOPPA ROAD - SUITE 100
 TOWSON, MARYLAND 21286-3160
 (410) 494-0001

[Professional Engineer Seal]

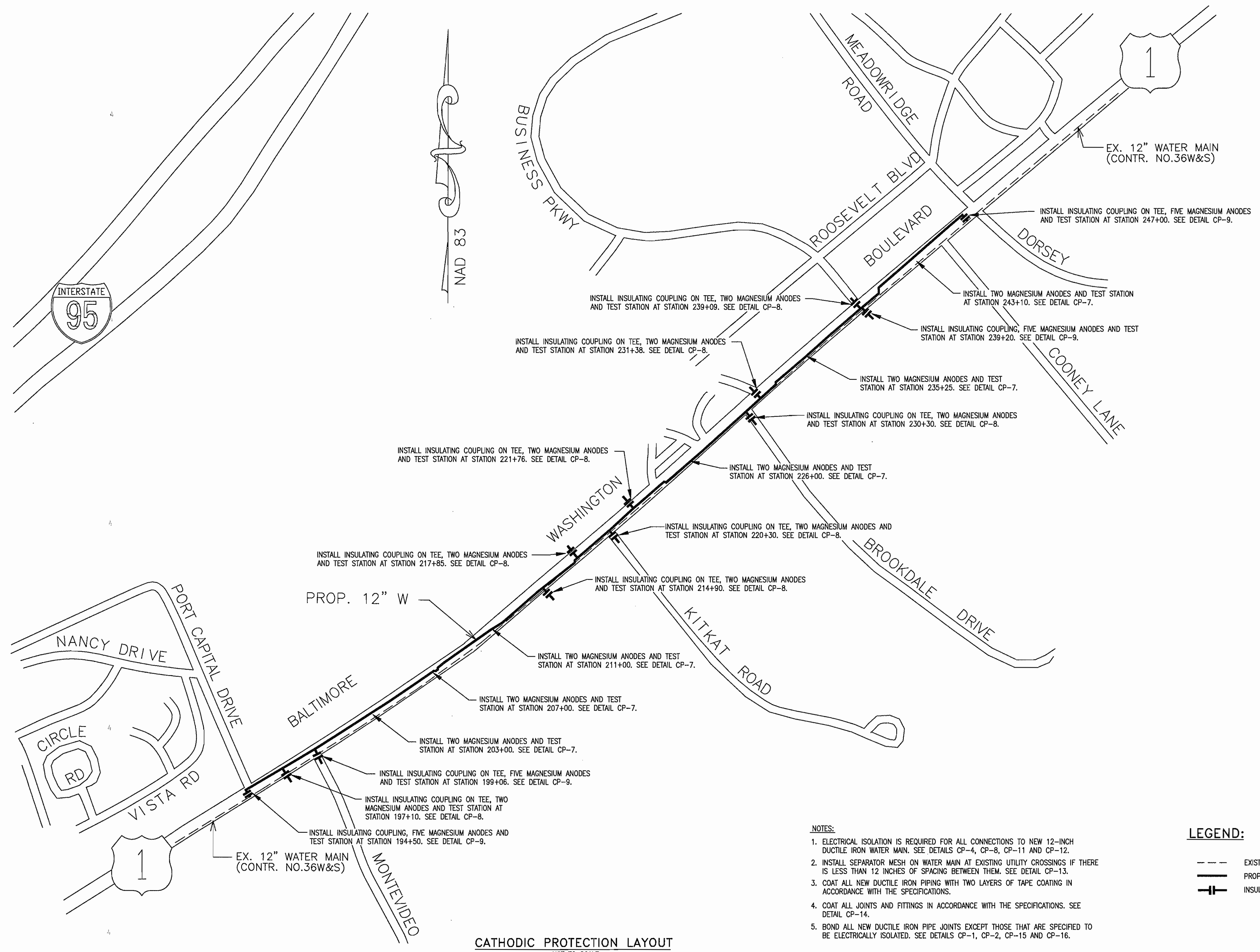
DES: RAI	HEC 1	AS-BUILT PLANS-WATER MAIN	3/02
DRN: JAC			
CHK: DEH			
DATE: 11/1/99	BY NO.	REVISION	DATE

DETAILS

600' SCALE MAP NO. W&S 37/43 BLOCK NO. 29/4.5.9.10

U.S. ROUTE 1
 PORT CAPITAL DR. TO MEADOWRIDGE RD.
 12" WATER MAIN REPLACEMENT
 ELECTION DISTRICT NO. 1
 HOWARD COUNTY, MARYLAND
 CAPITAL PROJECT NO. W-8212
 CONTRACT NO. 44-3805

W/S 44-3805 SA+705'10 C.P. W-8204



CATHODIC PROTECTION LAYOUT
NOT TO SCALE

- NOTES:**
- ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW 12-INCH DUCTILE IRON WATER MAIN. SEE DETAILS CP-4, CP-8, CP-11 AND CP-12.
 - INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM. SEE DETAIL CP-13.
 - COAT ALL NEW DUCTILE IRON PIPING WITH TWO LAYERS OF TAPE COATING IN ACCORDANCE WITH THE SPECIFICATIONS.
 - COAT ALL JOINTS AND FITTINGS IN ACCORDANCE WITH THE SPECIFICATIONS. SEE DETAIL CP-14.
 - BOND ALL NEW DUCTILE IRON PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED. SEE DETAILS CP-1, CP-2, CP-15 AND CP-16.

- LEGEND:**
- EXISTING WATER MAIN
 - PROPOSED WATER MAIN
 - ⊕ INSULATING COUPLING

AS BUILT PLAN -03/02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Robert J. Berman 11/6/99
DIRECTOR OF PUBLIC WORKS DATE

Robert J. Berman 11-9-99
CHIEF, BUREAU OF UTILITIES DATE

Robert J. Berman 11/3/99
CHIEF, BUREAU OF ENGINEERING DATE

Robert J. Berman 11-2-99
CHIEF, WATER & SEWER DIVISION DATE

RUSSELL CORROSION CONSULTANTS, INC.
5405 TWIN KNOLLS RD., SUITE 3
COLUMBIA, MD 21045



DES: MJS	HEC 1	AS-BUILT PLANS-WATER MAIN	3/02
DRN: DJD			
CHK: MJS			
DATE: 10/99			
BY	NO.	REVISION	NO.

CATHODIC PROTECTION LAYOUT

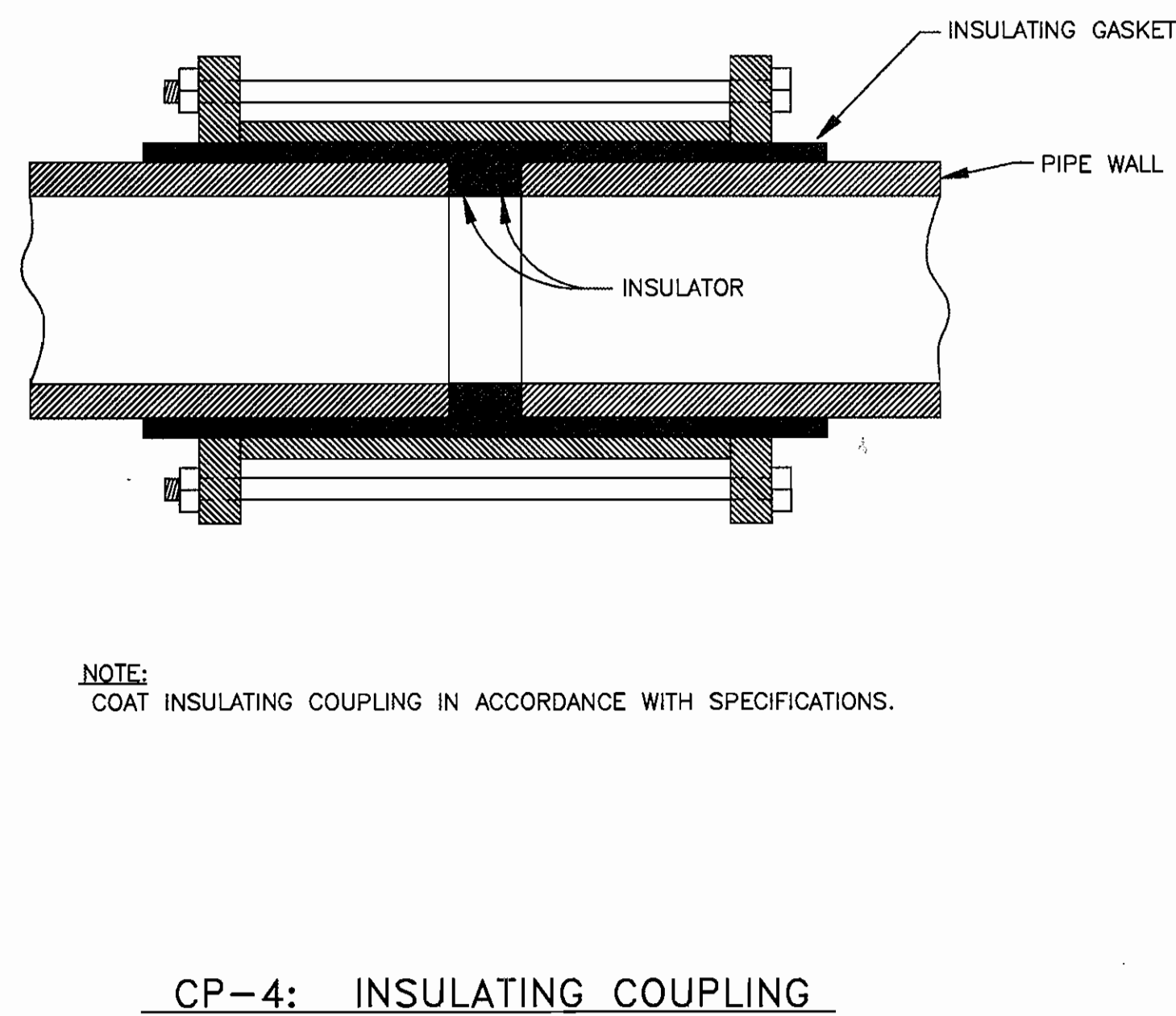
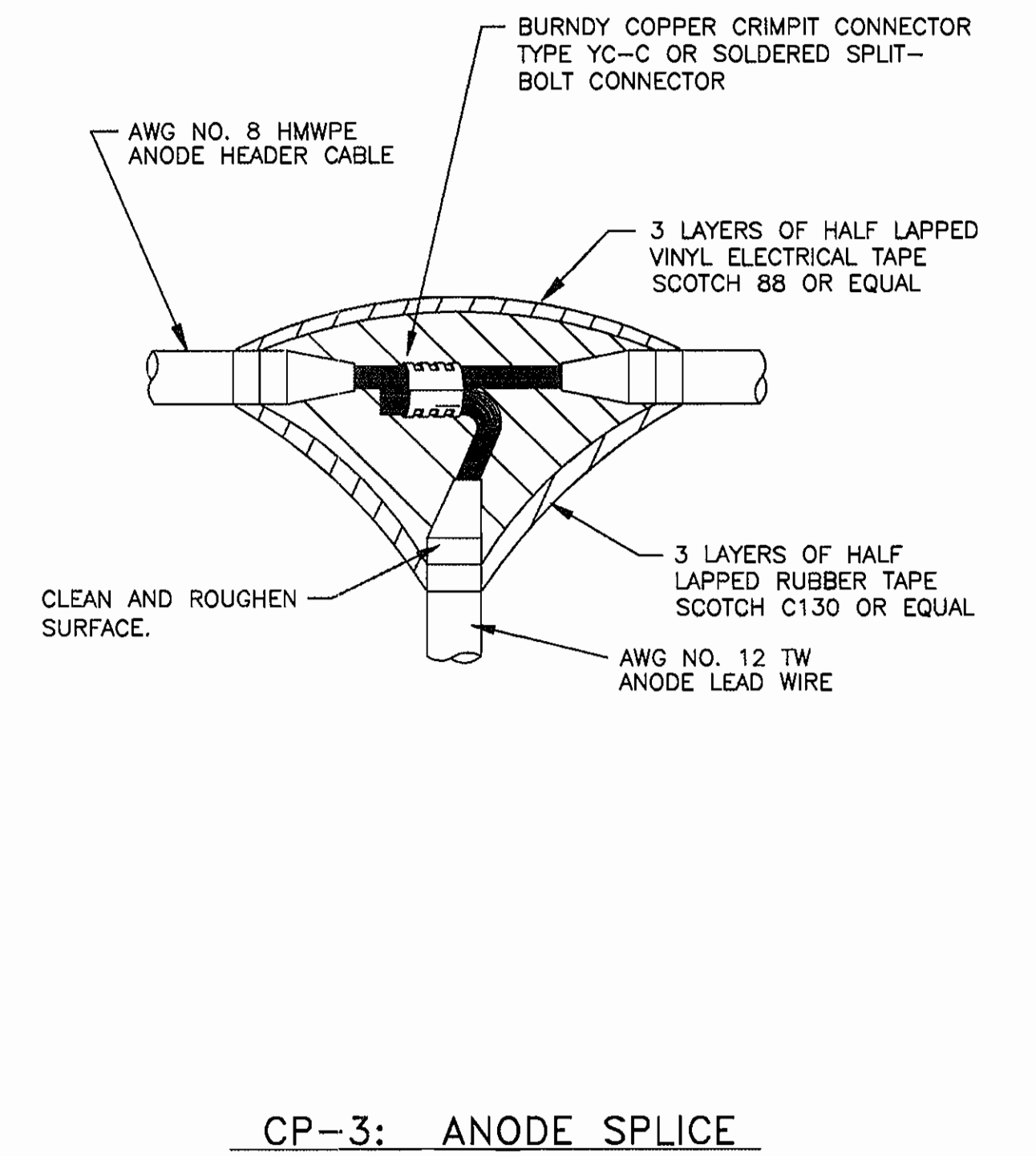
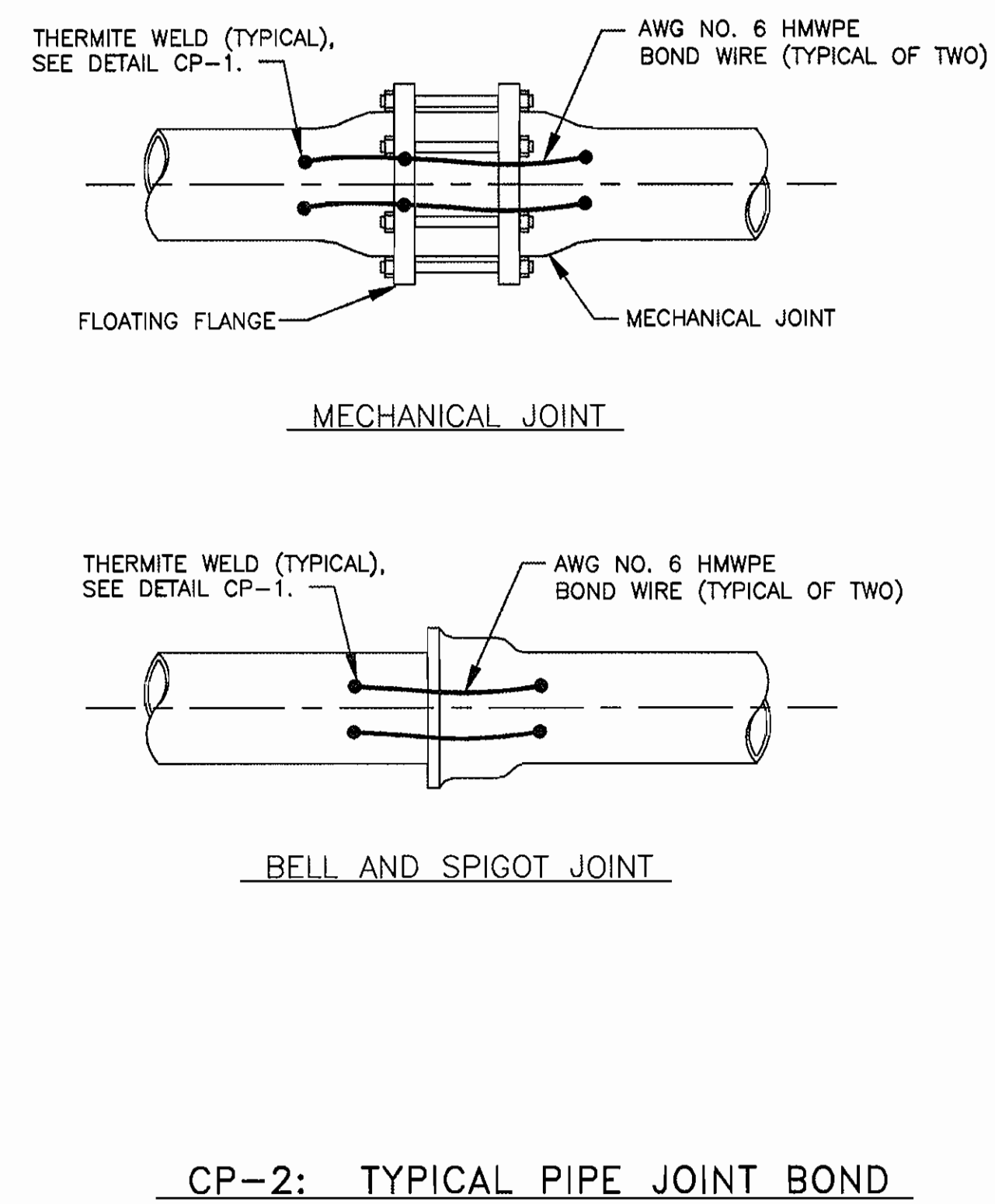
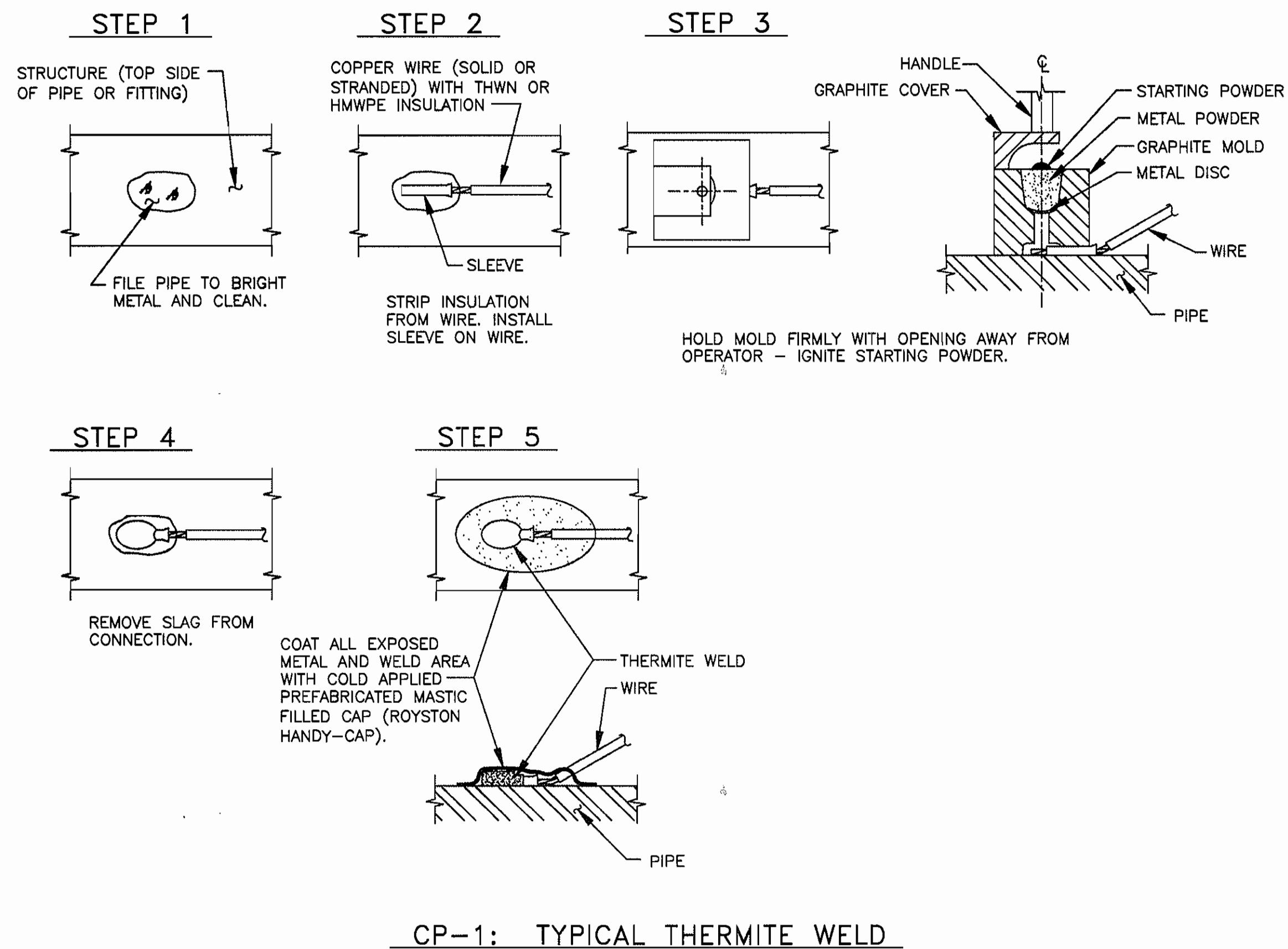
600' SCALE MAP NO. _____ BLOCK NO. _____

U.S. ROUTE 1
PORT CAPITAL DR. TO MEADOWRIDGE RD.
12" WATER MAIN EXTENSION
ELECTION DISTRICT NO. 1
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8204
CONTRACT NO. 44-3805

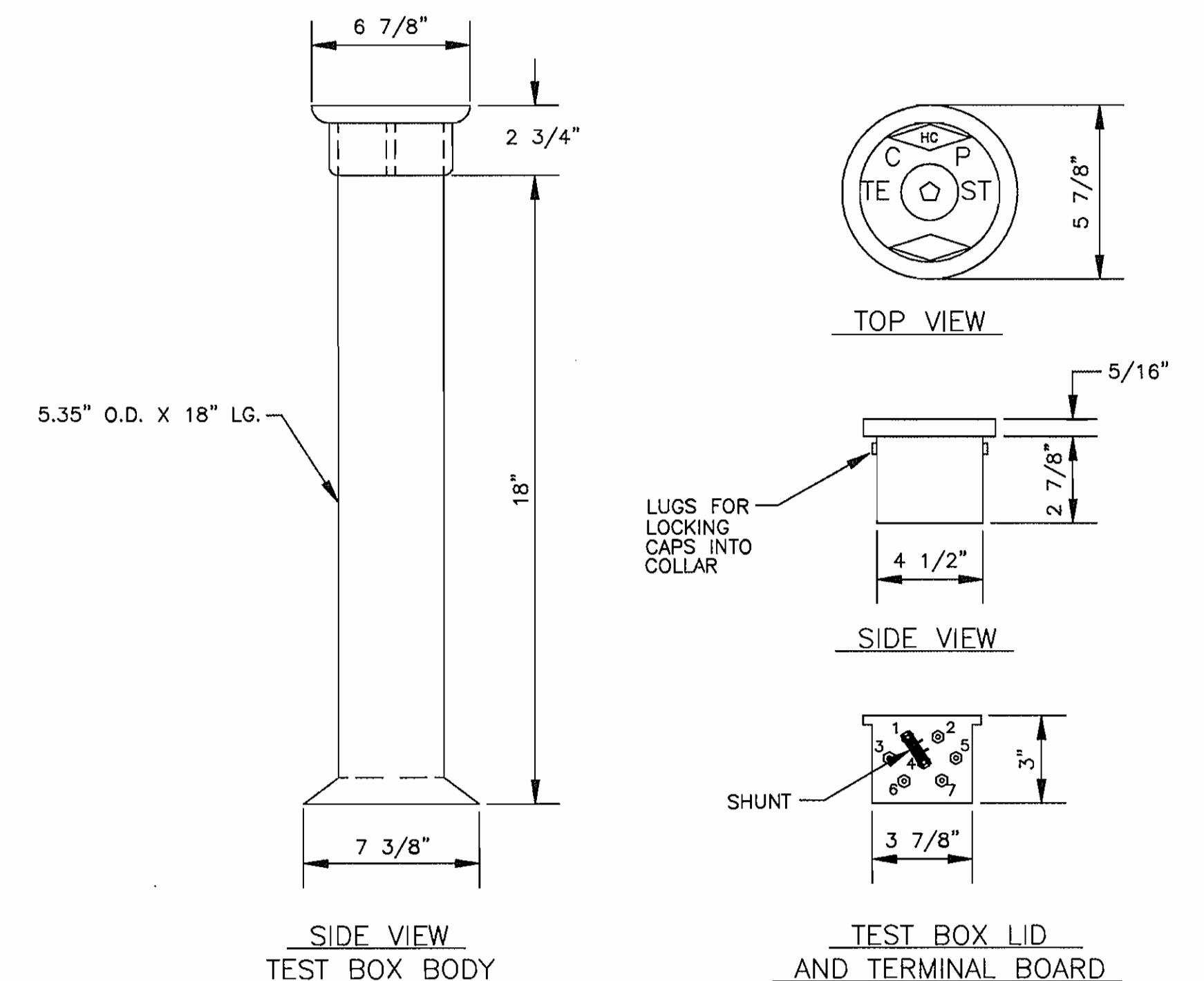
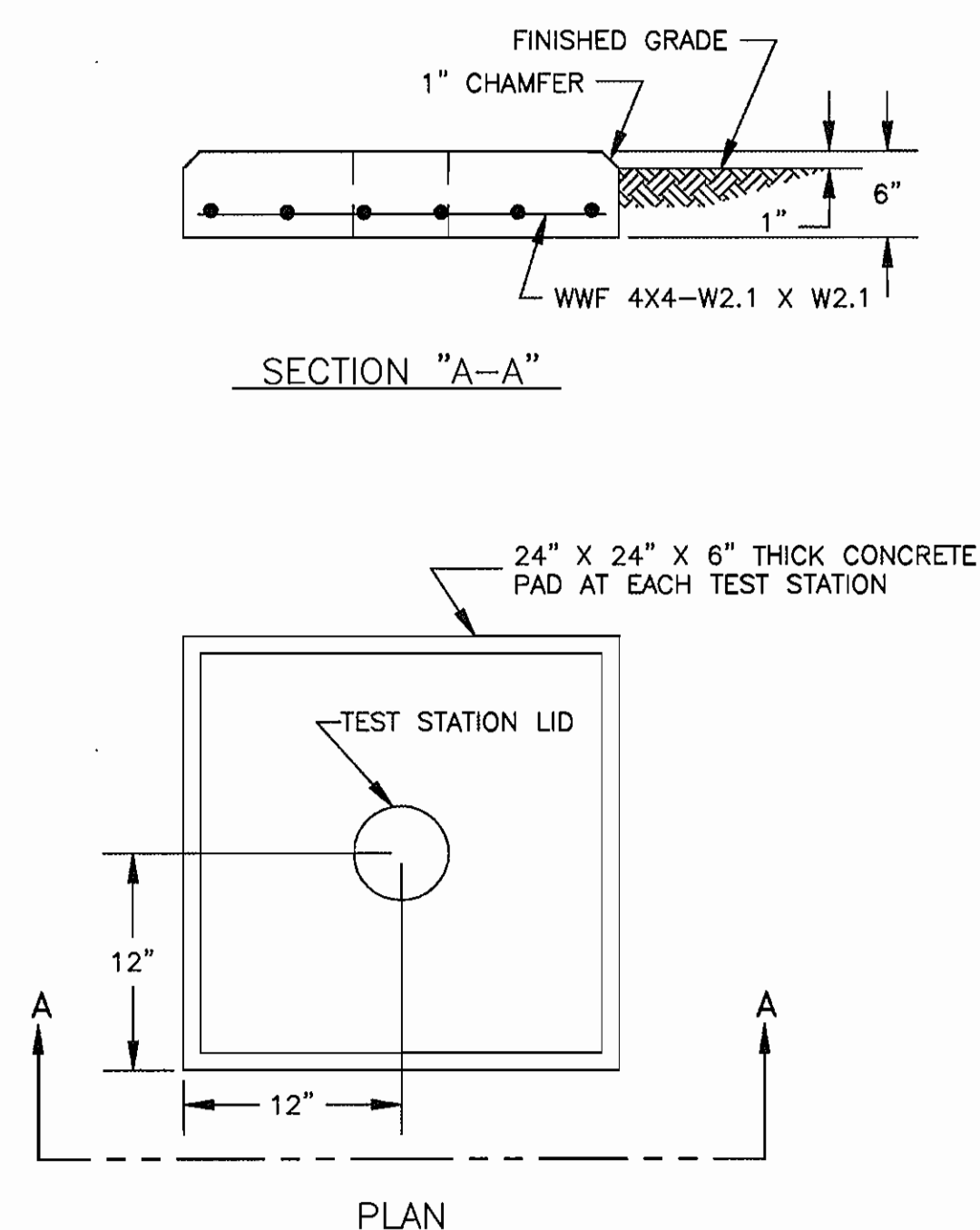
SCALE: NONE

SHEET 7 OF 10

W/S 44-3805 SH+0 of 10 C.P. W-8204



NOTE:
COAT INSULATING COUPLING IN ACCORDANCE WITH SPECIFICATIONS.



AS BUILT PLAN-03/02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James W. ... 11/8/99
DIRECTOR OF PUBLIC WORKS DATE

Robert M. ... 11/3/99
CHIEF, BUREAU OF ENGINEERING DATE

Robert M. ... 11-4-99
CHIEF, BUREAU OF UTILITIES DATE

... 11-2-99
CHIEF, WATER & SEWER DIVISION DATE

RUSSELL CORROSION CONSULTANTS, INC.
5405 TWIN KNOLLS RD., SUITE 3
COLUMBIA, MD 21045



DES: MJS	HEC 1	AS-BUILT PLANS - WATER MAIN	5/02
DRN: DJD			
CHK: MJS			
DATE: 10/99	BY NO.	REVISION	NO.

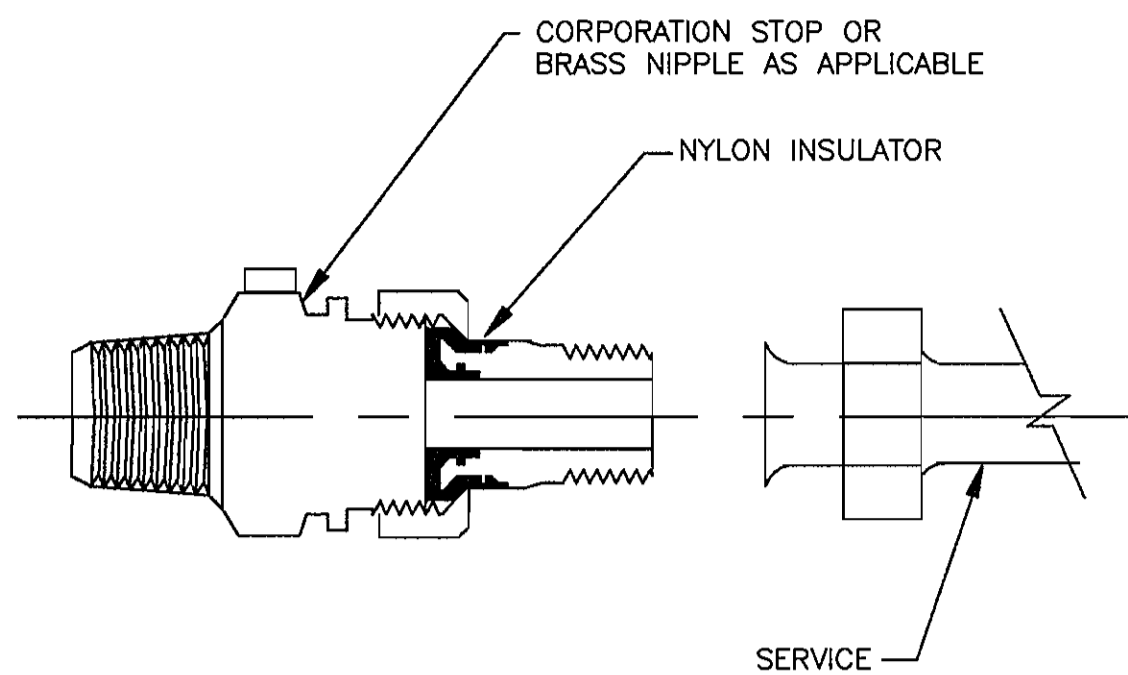
CATHODIC PROTECTION DETAILS

U.S. ROUTE 1
PORT CAPITAL DR. TO MEADOWRIDGE RD.
12" WATER MAIN EXTENSION
ELECTION DISTRICT NO. 1
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT W-8204
CONTRACT NO. 44-3805

SCALE:
NONE

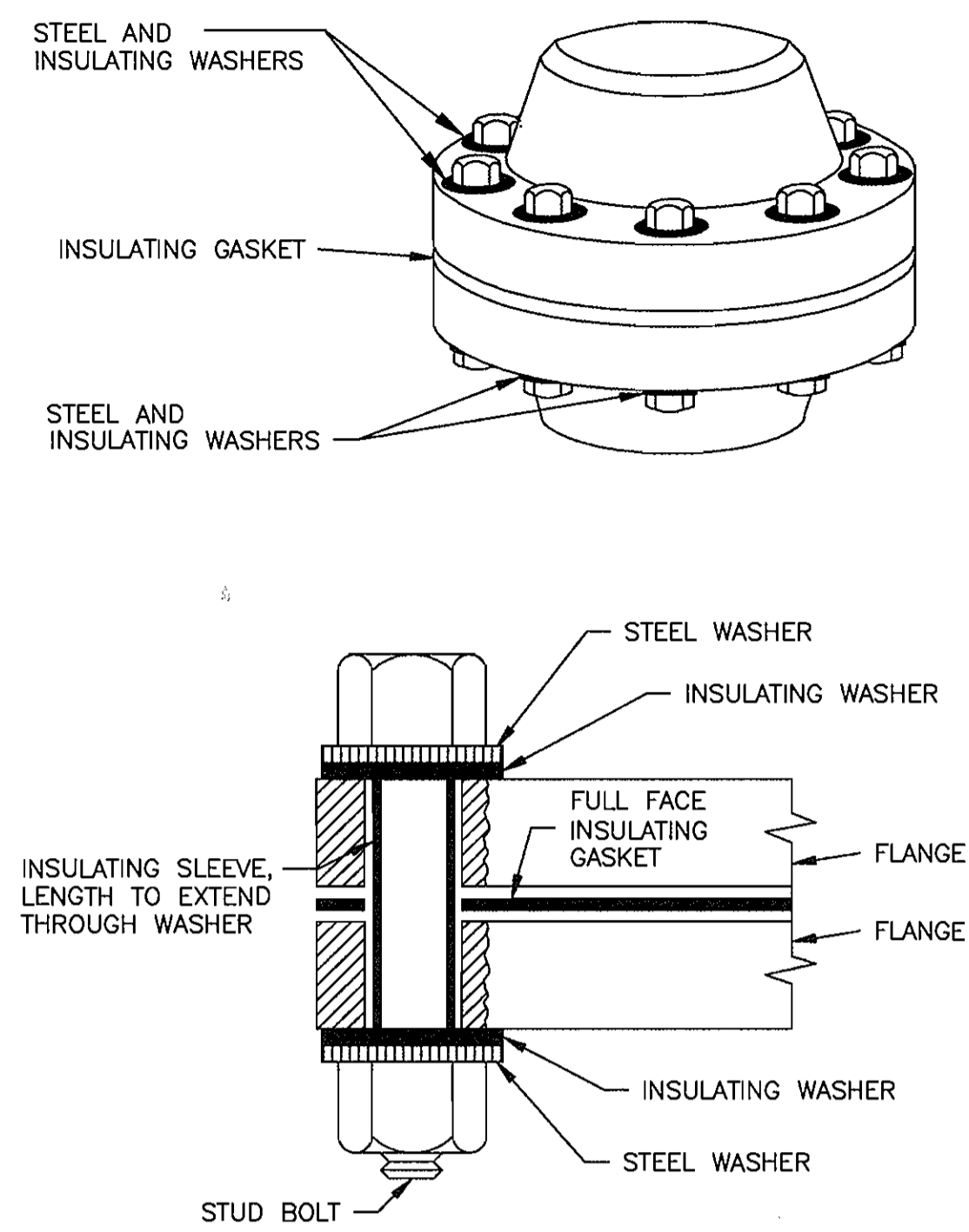
SHEET
8 OF 10

W/S 44-3805 SH100f10 C.P. W-8204



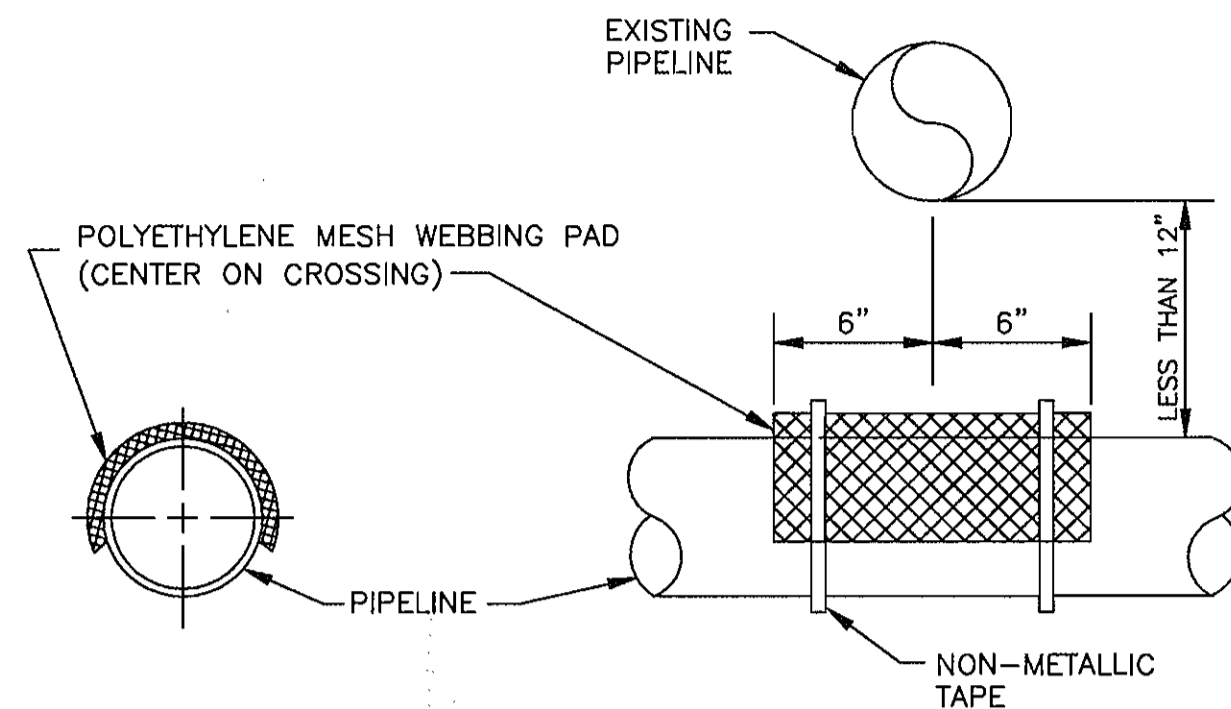
NOTES:
 1. INSTALL ELECTRICAL ISOLATION ON ALL 1-INCH DIAMETER AND SMALLER WATER SERVICE CONNECTIONS TO DUCTILE IRON MAIN.
 2. COAT EXTERIOR OF SERVICE PIPING WITH TWO COATS OF COAL TAR MASTIC (20 MILS TOTAL) FOR A DISTANCE OF 12 INCHES ON EITHER SIDE OF INSULATOR.

CP-11: ELECTRICAL ISOLATION FOR SERVICE



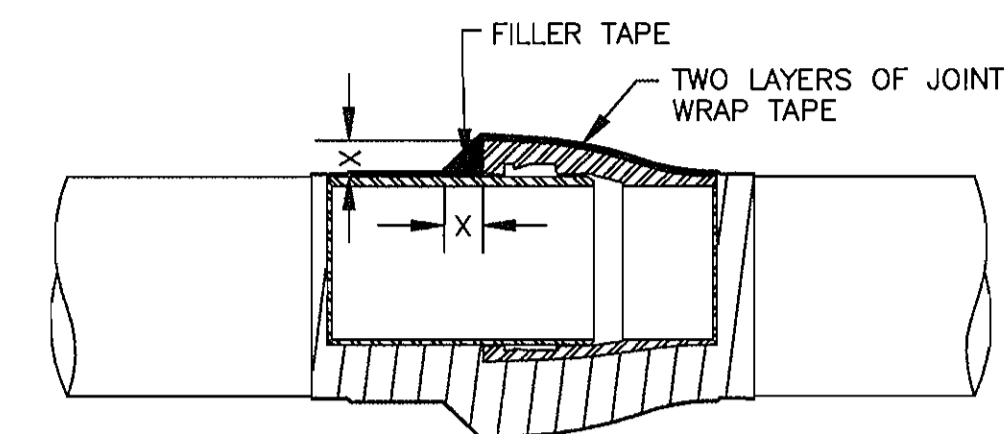
NOTE:
 1. COAT INSULATING FLANGE IN ACCORDANCE WITH SPECIFICATIONS.

CP-12: INSULATING FLANGE



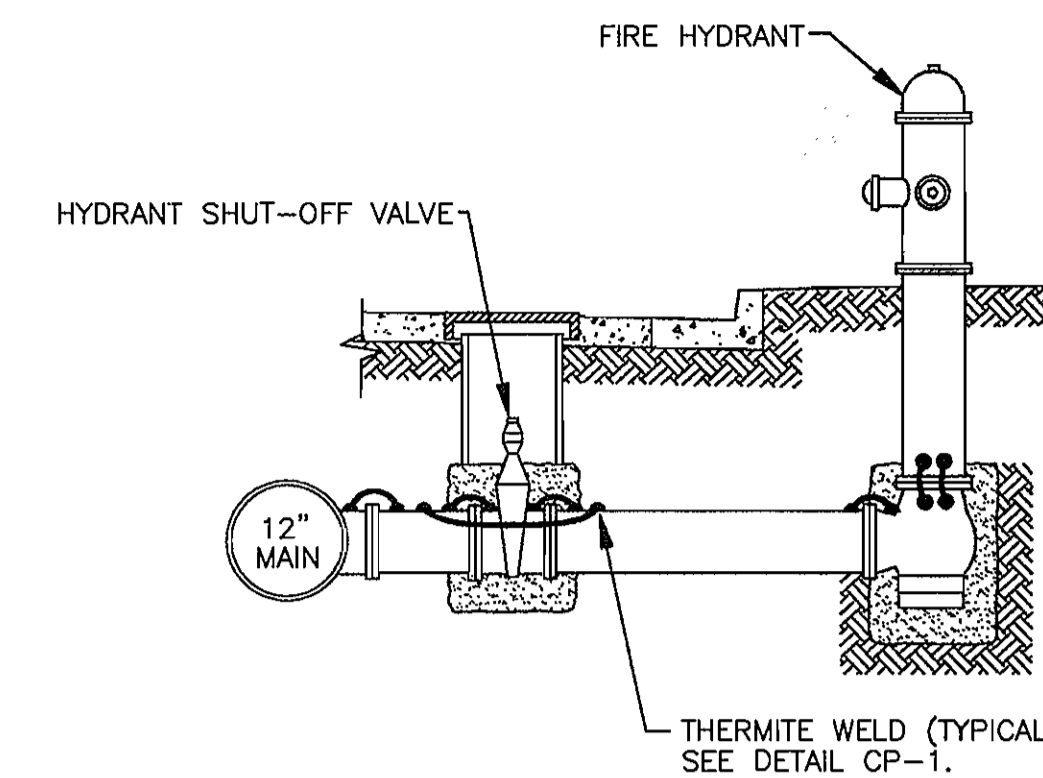
NOTE:
 1. USE ONLY WHEN PIPES ARE LESS THAN 12" APART.

CP-13: SEPARATOR TO AVOID ELECTRICAL CONTACT



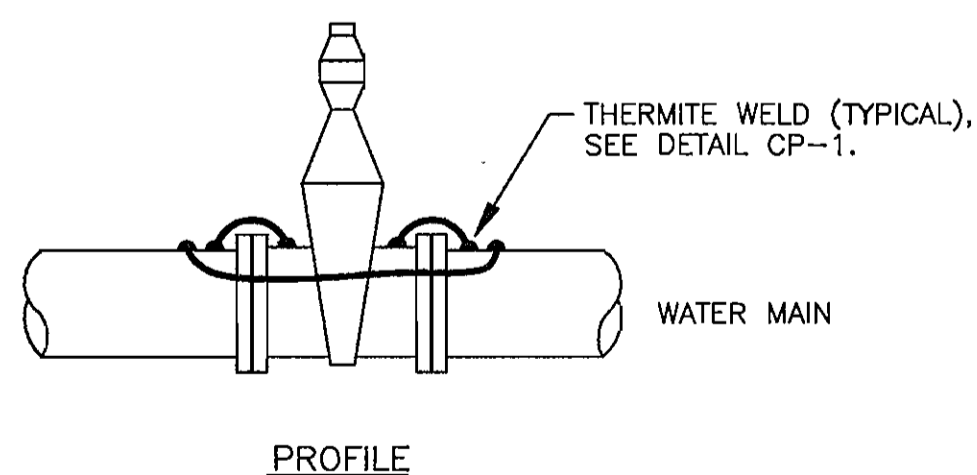
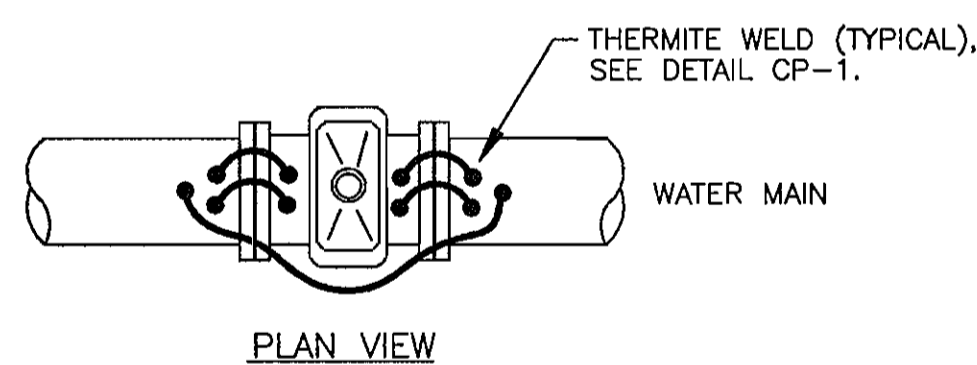
NOTES:
 1. CLEAN JOINT OF ALL FOREIGN MATERIAL BY WIRE BRUSHING.
 2. APPLY COATING PRIMER TO JOINT.
 3. INSTALL FILLER TAPE AS SHOWN.
 4. APPLY TWO LAYERS OF JOINT WRAP TAPE.
 5. COAT PIPE FITTINGS IN A SIMILAR MANNER.

CP-14: JOINT COATING

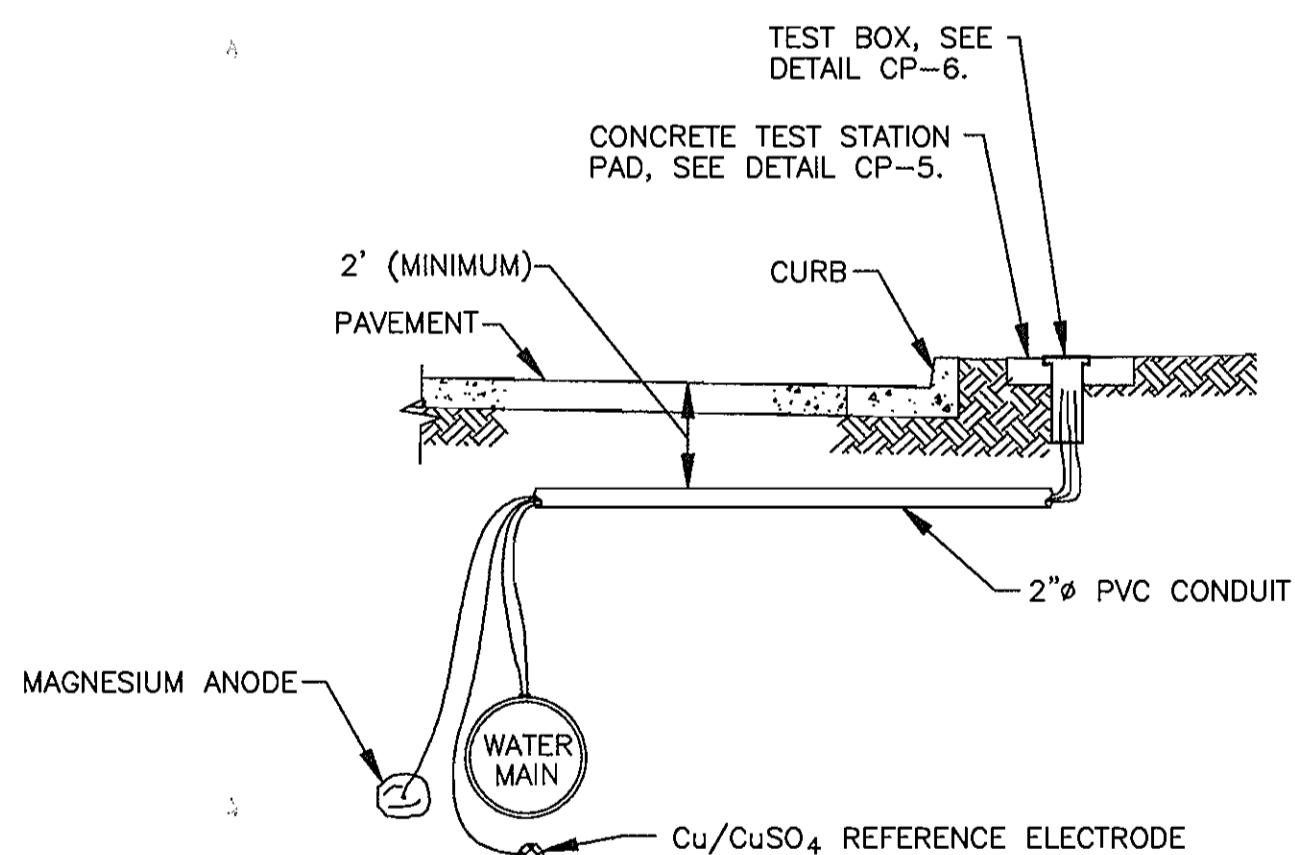


NOTES:
 1. BOND ALL DUCTILE IRON COMPONENTS TOGETHER WITH AWG NO. 6 HMWPE WIRES.
 2. INSTALL BOND WIRES ON TOP OF PIPE OR FITTING WHERE POSSIBLE.
 3. INSTALL A MINIMUM OF TWO BOND CABLES ACROSS EACH PIPE JOINT.
 4. SEE DETAIL CP-16 FOR BONDING OF VALVE.

CP-15: ELECTRICAL BONDING OF HYDRANT PIPING

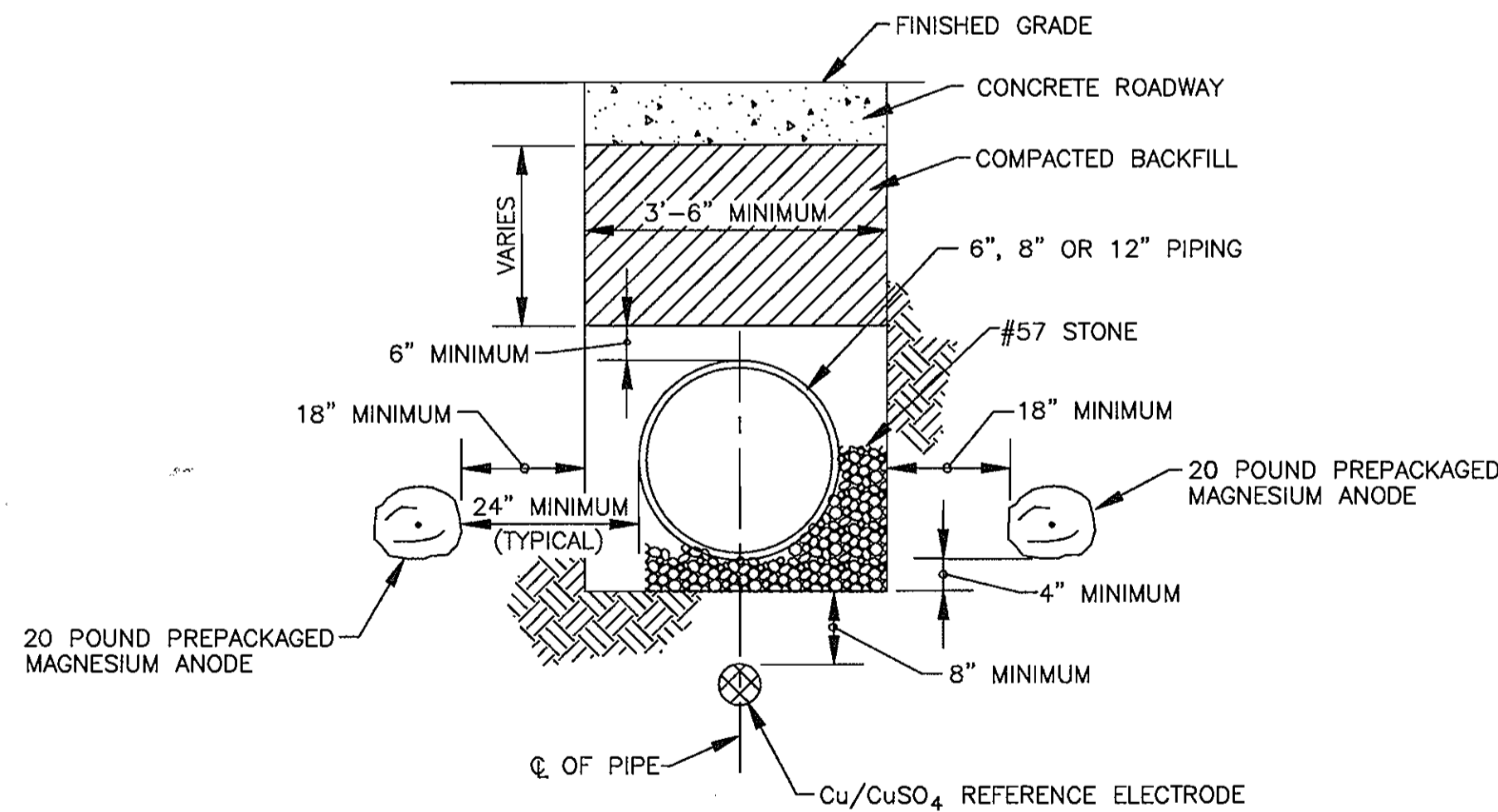


CP-16: BONDING OF VALVES

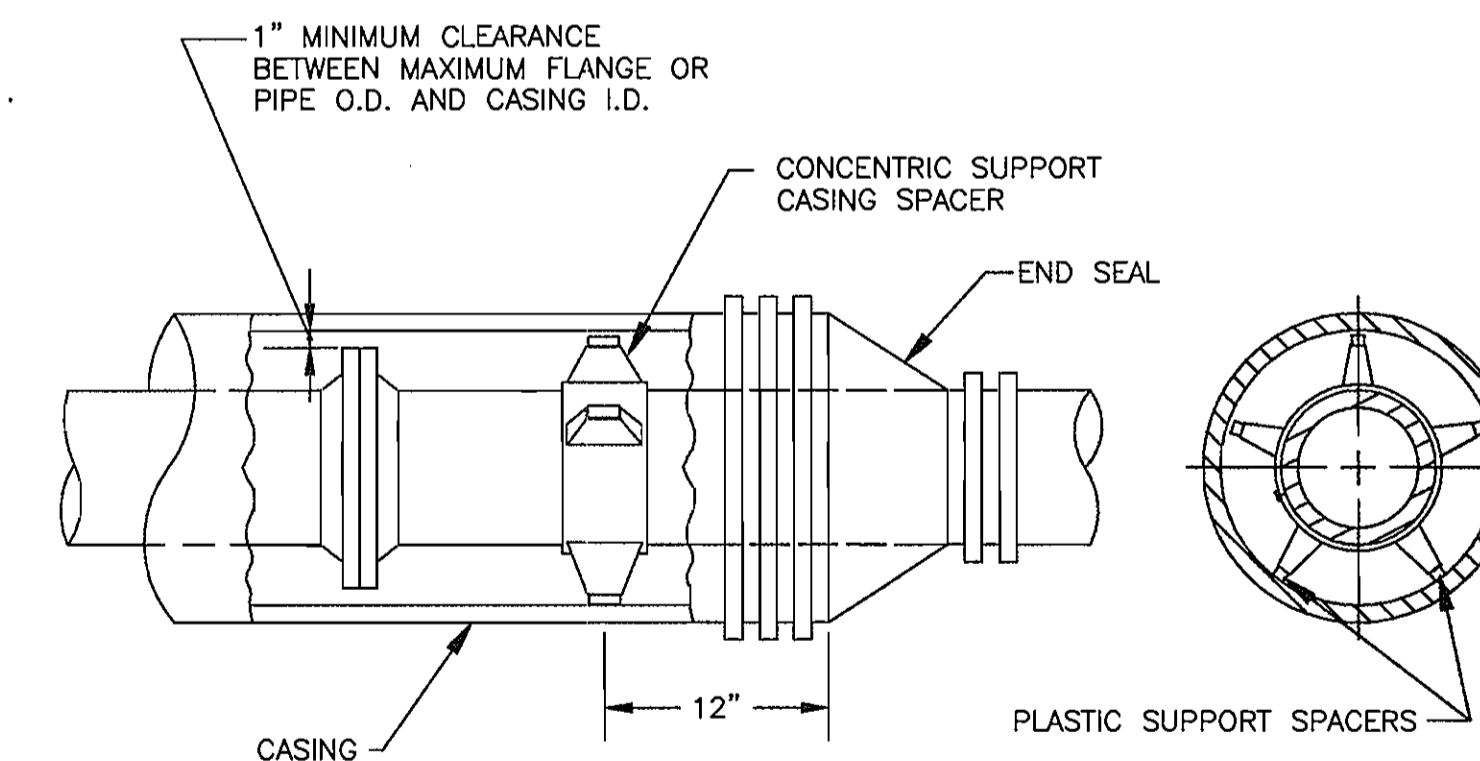


NOTES:
 1. INSTALL TEST BOX OUTSIDE OF ROADWAY.
 2. INSTALL CONDUIT UNDERNEATH PAVEMENT USING HIGH PRESSURE AIR INJECTION.
 3. ROUTE TEST LEADS THROUGH CONDUIT TO TEST BOX.

CP-17: TEST STATION PLACEMENT



CP-18: ANODE AND REFERENCE ELECTRODE PLACEMENT



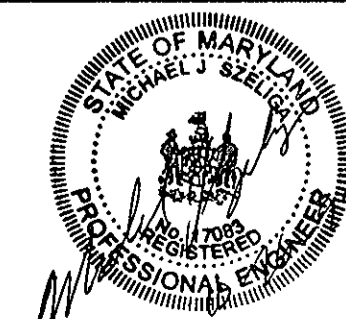
NOTE:
 1. INSTALL CASING SPACERS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

CP-19: CASING ISOLATION

AS BUILT PLAN-03/02

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: [Signature] DATE: 11/2/99
 Chief, Bureau of Engineering: [Signature] DATE: 11/3/99
 Chief, Bureau of Utilities: [Signature] DATE: 11-9-99
 Chief, Water & Sewer Division: [Signature] DATE: 11-2-99

RUSSELL CORROSION CONSULTANTS, INC.
 5405 TWIN KNOLLS RD., SUITE 3
 COLUMBIA, MD 21045



DES: MJS	HEC 1	AS-BUILT PLANS - WATER MAIN	3/02
DRN: DJD			
CHK: MJS			
DATE: 10/99	BY NO.	REVISION	NO.

CATHODIC PROTECTION DETAILS

600' SCALE MAP NO. _____ BLOCK NO. _____

U.S. ROUTE 1
 PORT CAPITAL DR. TO MEADOWRIDGE RD.
 12" WATER MAIN EXTENSION
 ELECTION DISTRICT NO. 1
 HOWARD COUNTY, MARYLAND
 CAPITAL PROJECT W-8204
 CONTRACT NO. 44-3805

SCALE: NONE

SHEET 10 OF 10