

I:\HOWARD-CO-2343\33498-HARWOOD-PARK-WA.DWG SHEETS\33498-C101.DWG

QUANTITIES

Table with columns: BID ITEM NO., PART 'A', ITEM, AMOUNT, UNIT, AS-BUILT, MATERIAL, SUPPLIER. Lists items like WATER MAIN, MOBILIZATION, ENGINEER'S OFFICE, PVC WATER MAIN, etc.

- GENERAL NOTES: 1. THE LOCATIONS, ELEVATIONS, OR STATIONING SHOWN FOR EXISTING MAINS AND UTILITIES ARE APPROXIMATE. 2. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS. 3. UNLESS OTHERWISE SHOWN, SPECIFIED, OR DIRECTED, CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES.

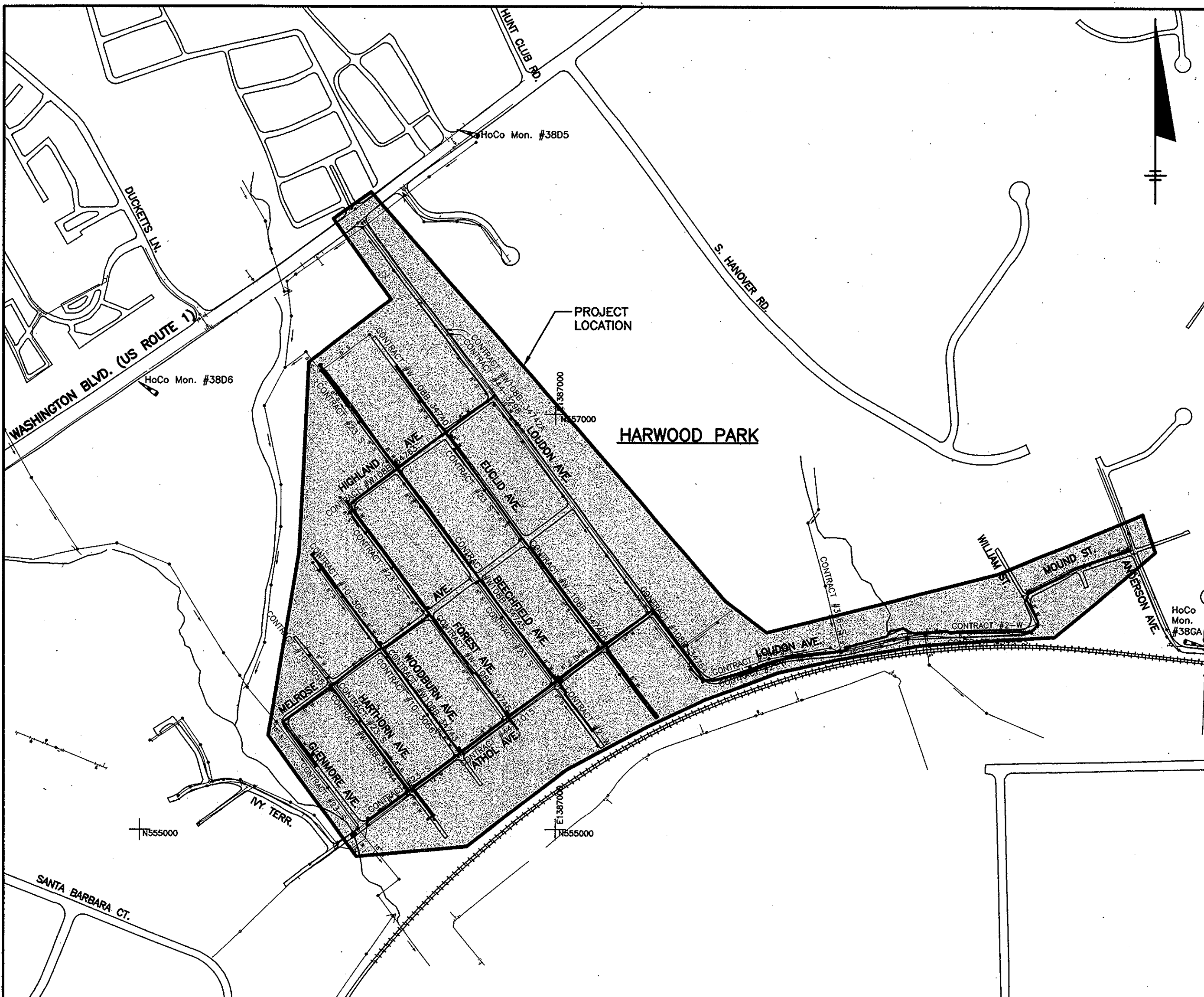


Table with columns: WATER ZONE (400), TYPE OF BUILDING (RESIDENTIAL), NUMBER OF WHC (155), NUMBER OF SHC (N/A), DRAINAGE AREA (PATAPSCO).

VICINITY MAP SCALE: 1" = 400'

HARWOOD PARK WATER MAIN REPLACEMENTS CAPITAL PROJECT: W-8255 CONTRACT NO.: 44-4578 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]

AS-BUILT 112914

ENGINEER'S CERTIFICATE

I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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.

[Signature] 7/2/09 DATE

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL 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.

[Signature] 7/1/09 DATE

INDEX OF DRAWINGS table with columns: DRAWING NO., TITLE. Lists drawings from 1 (COVER SHEET) to 38 (MAINTENANCE OF TRAFFIC).

GENERAL NOTES CONT'D:

- 12. MAINLINE VALVES SHALL BE STRAPPED TO ADJACENT TEES OR CROSSES PER HOWARD CO STD. DET W-2.13. 13. ALL WATER HOUSE CONNECTIONS SHALL BE COPPER MEETING THE REQUIREMENTS OF AND CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.

Table with columns: DSN. BY: GFR/GLF, DRN. BY: RPW, CHK. BY: GLF, DATE: JUNE, 2009. Includes AS-BUILT stamp and revision table.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. Director of Public Works, Chief - Bureau of Engineering, Chief, Bureau of Utilities.

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

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18223, EXPIRATION DATE 12/08/2009.

COVER SHEET HARWOOD PARK WATER MAIN REPLACEMENTS CAPITAL PROJECT: W-8255 CONTRACT NO.: 44-4578 ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN SHEET 1 OF 38 600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

FILE NO. 33498-101F

GENERAL NOTES CONT'D:

- 26. THE CONTRACTOR MUST FOLLOW ALL CONDITIONS AND REQUIREMENTS AS SET FORTH IN THE REQUIRED PERMITS FOR THIS PROJECT.
27. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AS WELL AS ANY EXISTING THRUST RESTRAINT.
28. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED IN MARCH, 2007 BY A. MORTON THOMAS ASSOCIATES, INC.
29. 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. 38D5, NO. 38D6, AND NO. 38GA. ALL VERTICAL CONTROLS ARE BASED ON NAVD 88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE LISTED ON SHEET 3.
30. CONTRACTOR SHALL REPLACE ALL WATER HOUSE CONNECTIONS. ALL WATER HOUSE CONNECTIONS SHALL BE MADE AT THE EXISTING VALVE BOX (INSIDE METERED LOCATIONS) OR METER VAULTS (OUTSIDE METERED LOCATIONS). REFER TO SHEET 26 FOR FURTHER DETAILS OF THE WORK INVOLVED WITH INSTALLATION OF NEW WATER HOUSE CONNECTIONS.
31. INSTALLATION OF THE PROPOSED BYPASS WATER MAIN SYSTEM FOR TEMPORARY WATER SERVICE CONNECTIONS SHOULD ONLY OCCUR BETWEEN APRIL 15TH AND OCTOBER 15TH, AND FROM THE CLOSEST AVAILABLE, SERVICEABLE FIRE HYDRANT. CONTRACTOR MUST NOTIFY PROPERTY OWNERS 72 HOURS PRIOR TO COMMENCING THIS WORK. REFER TO THE TEMPORARY WHC DETAILS ON SHEET 28.
32. THE 6-INCH TEMPORARY BYPASS WATER MAIN PIPING SHALL BE CERTA-LOK YELONIME RESTRANED JOINT PVC PRESSURE PIPE AND COUPLINGS (CLASS 160, DR17, IROM PIPE O.D., MEETING ASTM D-2241, SUITABLE FOR POTABLE WATER USE) AS MANUFACTURED BY CERTAIN TEED CORPORATION OR APPROVED EQUAL. REFER TO THE TEMPORARY BY-PASS PIPE DETAILS ON SHEET 28. TEMPORARY FIRE HYDRANTS, VALVES, WATER SERVICES, AND SIMILAR SHALL BE OF THE SAME MODEL AND MANUFACTURER AS THAT SPECIFIED FOR PERMANENT INSTALLATIONS.
33. EXISTING WATER MAINS, INCLUDING PIPE MATERIAL, FITTINGS, VALVES AND APPURTENANCES EXCAVATED OR REMOVED FOR THE CONSTRUCTION OF THE NEW WATER MAIN SHALL BE REMOVED FROM THE WORK SITE AND DISPOSED OF BY THE CONTRACTOR AT AN APPROPRIATE RECEIVING FACILITY (LICENSED FOR SUCH DISPOSAL) AT THE CONTRACTOR'S EXPENSE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. EXISTING WATER MAINS ABANDONED IN PLACE SHALL BE CAPPED AT EACH END. VALVES ABANDONED IN PLACE SHALL HAVE VALVE BOXES REMOVED. EXISTING FIRE HYDRANTS REMOVED, AS PART OF CONSTRUCTION, SHALL BE DELIVERED TO THE BUREAU OF UTILITIES.
34. PVC WATER MAINS SHALL BE ALLOWED TO CHANGE VERTICAL OR HORIZONTAL DIRECTION ONLY AT PVC HIGH DEFLECTION (HD) COUPLINGS, 5-DEGREE SWEEPS OR STANDARD BENDS. DEFLECTIONS MADE AT STANDARD PIPE JOINTS AND/OR PIPE LENGTHS BENT TO ACHIEVE CURVATURE OF THE WATER MAIN WILL NOT BE ALLOWED UNDER ANY CIRCUMSTANCES.
35. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY FIRE DEPARTMENT (HCDF) DURING CONSTRUCTION CONCERNING FIRE HYDRANTS THAT ARE OUT OF SERVICE. FIRE HYDRANTS THAT ARE OUT OF SERVICE SHALL BE CLEARLY SIGNED "OUT OF SERVICE".
36. CONTINUITY TEST STATIONS SHALL BE PLACED ADJACENT TO EACH FIRE HYDRANT. REFER TO THE FIRE HYDRANT CONTINUITY TEST STATIONS DETAIL W-1.15 ON SHEET 26.
37. THE CONTRACTOR SHALL PROVIDE SURVEY CONSTRUCTION STAKEOUT FOR ALL NECESSARY LINES, GRADES AND ELEVATIONS OF THE PROPOSED FACILITIES.
38. EXISTING WATER MAINS SHALL BE LOCATED BY AND THE ALIGNMENT MARKED IN THE FIELD BY HOWARD COUNTY PERSONNEL. INSTALL NEW WATER MAINS BASED ON THE ALIGNMENT AND OFFSET DIMENSIONS SHOWN RELATIVE TO THE EXISTING WATER MAINS. MAINTAIN REQUIRED SEPARATION FROM SANITARY AND STORM SEWER PIPING. THE MINIMUM 5 FT. OFFSET DIMENSION SHOWN IS BASED ON CENTER OF EXISTING TO CENTER OF NEW WATER MAINS.
39. PIPE TRENCHING AND PAVEMENT REPLACEMENT SHALL BE PERFORMED IN ACCORDANCE WITH HOWARD COUNTY STANDARDS, INCLUDING STANDARD DETAIL G-2.12, "PIPE TRENCH PLASTIC AND COPPER" AND STANDARD DETAIL G-4.01, "UTILITY TRENCH ROADWAY REPAVING", RESPECTIVELY.
40. TEMPORARY PAVING PATCH FOR UTILITY TRENCH REPAIR OF HMA PAVED ROADS AND DRIVEWAYS SHALL CONSIST OF 16-INCHES OF DAMPENED AND COMPACTED NO. 57 AGGREGATE SUB-BASE OVERLAYERED WITH TWO INCHES OF HMA BASE COURSE PLACED FLUSH WITH THE ADJOINING PAVEMENT SURFACE. REFILL ALL DEPRESSIONS AND SETTLEMENT (AS THEY DEVELOP) WITH THE SPECIFIED MATERIALS PRIOR TO INSTALLATION OF THE PERMANENT PAVING SECTION. REMOVE THE TOP SIX INCHES OF MATERIAL, SCARIFY, RECOMPACT, AND TACK COAT THE REMAINING 12-INCH MINIMUM NO. 57 AGGREGATE SUB-BASE, AND REPAVE THE UTILITY TRENCH (AND WHERE REQUIRED, THE REMAINING PORTION OF THE TRAVEL LANE) ALL IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAIL G-4.01. THE HMA MATERIALS SHALL MEET THE TYPICAL SUPERPAVE MIX SPECIFIED IN HOWARD COUNTY STANDARD DETAIL R-2.01, PG 64-22, LEVEL 1 (EASL).
41. WATER MAIN TEST GRADIENT:
THE EXISTING STATIC PRESSURE GRADIENT FOR THE HARWOOD PARK WATER MAIN SYSTEM IS 400 FT.
HYDROSTATIC PRESSURE TEST TO BE INDUCED AT THE LOW POINT OF ANY WATER MAIN TEST SECTION ABOVE ELEVATION 135 SHALL BE 150 PSI MINIMUM.
HYDROSTATIC PRESSURE TEST TO BE INDUCED AT THE LOW POINT OF ANY WATER MAIN TEST SECTION BELOW ELEVATION 135 SHALL BE 200 PSI MINIMUM.
DUE TO THE EXTREME VERTICAL DROP IN SOME SECTIONS OF THIS PROJECT, AS IN BEECHFIELD AVENUE, THERE WILL BE SOME FLEXIBILITY IN THE EXERCISE OF THESE GUIDELINES, UNDER THE DIRECTION OF THE ENGINEER.
42. IN ACCORDANCE WITH 10 STATE STANDARDS REQUIREMENTS - ALL CROSSINGS OF THE NEW WATER MAIN WITH EXISTING SANITARY OR STORM SEWER PIPING (RESULTING IN LESS THAN 18" OF SEPARATION) SHALL BE ACCOMPLISHED BY CENTERING A FULL LENGTH OF THE NEW WATER MAIN PIPING AT THE CROSSING TO MAXIMIZE THE DISTANCE OF ANY WATER MAIN JOINT FROM THE CROSSING.

WORK PLAN NOTES:

THE INTENT OF THE WATER MAIN SYSTEM DESIGN, AS SHOWN OR SPECIFIED, IS TO MAINTAIN (WITHOUT DISRUPTION) WATER SERVICE TO ALL CUSTOMERS.
THE FOLLOWING WORK PLAN DESCRIBES, IN PART, THE STEPS REQUIRED AND THE APPROACH NECESSARY TO COMPLETE THE WORK UNDER THIS CONTRACT AS PROPOSED. THE CONTRACTOR IS REQUIRED TO PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NEEDED FOR A COMPLETE AND FUNCTIONAL WATER MAIN SYSTEM INSTALLATION, INCLUDING INSTALLATION OF NEW WATER MAINS AND APPURTENANCES, PROVISION OF TEMPORARY BY-PASS PIPING SYSTEMS, TRANSFER OF WATER HOUSE CONNECTIONS (WATER SERVICES), AND REMOVAL / ABANDONMENT OF EXISTING WATER MAINS AS SHOWN, SPECIFIED, DIRECTED IN THE FIELD BY THE ENGINEER, OR OTHERWISE NEEDED. SHOULD THE CONTRACTOR DESIRE TO MODIFY THE PROPOSED WORK PLAN FOR ACCOMPLISHING THIS WORK, SAID CHANGE(S) SHALL BE SUBMITTED IN WRITING FOR OWNER/ENGINEER REVIEW. IF THE CONTRACTOR IS IN FULL AGREEMENT WITH THE PROPOSED WORK PLAN AS SPECIFIED HEREIN, IT SHALL BE SO STATED IN WRITING, AND SUBMITTED TO THE OWNER AND HIS ENGINEER. THE RESPONSIBILITY FOR DETERMINING THE MEANS, METHODS, SCHEDULE, DELIVERY OF A WORKING INSTALLATION MEETING THE SPECIFIED DESIGN REQUIREMENTS, AND FOR PAYING ALL RELATED COSTS TO ACCOMPLISH THE WORK AS SPECIFIED HEREIN, AS FINALLY ACCEPTED, AS NEEDED, REMAINS WITH THE CONTRACTOR.

WORK PLAN NOTES: CONT.

- ALL REQUIREMENTS TO SHUTDOWN, ISOLATE, OR OTHERWISE MODIFY THE OPERATION OF THE WATER DISTRIBUTION SYSTEM, OTHER THAN SHOWN OR AGREED TO AS PART OF THIS WORK PLAN, MUST BE AGREED TO IN WRITING BY THE OWNER AND HIS ENGINEER, BEFORE WORK IS BEGUN.
THE WORK PLAN FOR THIS CONTRACT GENERALLY INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:
1. INSTALL THE NEW 8"x8" TS&V CONNECTION ON THE EX. 8-INCH WATER MAIN (WM) WITHIN ANDERSON AVE (AT MOUND ST). INSTALL THE SHORT PIECE OF 8-INCH PIPE AND THE 10" X 8" REDUCER AND CONTINUE THEN WITH INSTALLATION OF THE NEW 10-INCH WM SYSTEM WITHIN MOUND ST AND LOUDON AVENUE UP TO THE NEW 10-INCH GATE VALVE (GV) AT ATHOL AVENUE.
2. REMOVE THE EX. (ABANDONED) 8-INCH WM FROM WITHIN ATHOL AVE (BETWEEN LOUDON AND GLENMORE) AS NEEDED TO INSTALL IN ITS PLACE THE NEW 12-INCH WM SYSTEM UP TO AND INCLUDING THE NEW 12-INCH GVS ON LOUDON AND GLENMORE. ALONG THIS NEW 12-INCH WM, CONSTRUCT ALL 12"x8" TEES WITH VALVES AND HYDRANTS, AND ALL 12"x8" TEES AND CROSSES AT INTERSECTIONS, INCLUDING ALL 8-INCH VALVES STRAPPED TO THE TEES AND CROSSES WITH REQUIRED TEMPORARY CAPS/PLUGS AND BUTTRRESSING.
3. TEMPORARILY SHUT DOWN THE EX. 12-INCH WM WITHIN LOUDON AVE (BETWEEN THE GV AT RTE 1 AND THE GV ON THE TEE AT THE EX. 10-INCH ATHOL AVE WM). REMOVE THE EX. 12-INCH WM AS NEEDED TO INSTALL THE NEW PIPING, VALVING, FITTINGS, BUTTRRESSING, AND ALL APPURTENANCES NEEDED FOR A COMPLETE 3-WAY CONNECTION AT THE LOUDON / ATHOL AVE INTERSECTION. ALSO, REMOVE EX. 12-INCH WM AS NEEDED TO INSTALL THE NEW PIPING, VALVING, FITTINGS, BUTTRRESSING, AND ALL APPURTENANCES NEEDED FOR THE NEW HYDRANT INSTALLATIONS ALONG LOUDON (BETWEEN RTE 1 AND ATHOL). INSTALL HOT SPOT CORROSION PROTECTION ON THIS SECTION OF PIPE.
4. PLACE INTO SERVICE - THE NEW 10-INCH WM SYSTEM WITHIN LOUDON AVE AND MOUND ST (BETWEEN ATHOL AND ANDERSON). THE NEW 12-INCH WM SYSTEM WITHIN ATHOL AVE, AND THE EX. 12-INCH WM SYSTEM WITHIN LOUDON (BETWEEN RTE 1 AND ATHOL).
5. MOVE ALL WHCs WITHIN LOUDON AVE AND MOUND ST (BETWEEN RTE 1 AND ANDERSON AVE) FROM THE EX. 8-INCH AND 10-INCH WMS TO THE NEW 10 AND 12 -INCH WM SYSTEM.
6. MOVE ALL WHCs WITHIN ATHOL AVE (BETWEEN LOUDON AND GLENMORE) FROM THE EX. 12-INCH WM TO THE NEW 12-INCH WM SYSTEM.
7. INSTALL THE NEW 8-INCH WM SYSTEM WITHIN HIGHLAND AVE AND FOREST AVE. CONNECT THE NEW 8-INCH HIGHLAND AVE WM SYSTEM TO THE EX. 12-INCH WM IN LOUDON AVE USING A 12" X 8" TS&V. CONNECT THE NEW 8-INCH FOREST AVE WM SYSTEM TO THE 8-INCH GATE VALVE OFF THE NEW TEE AT ATHOL. TRANSFER ALL WHCs TO THE NEW 8-INCH WM SYSTEMS WITHIN HIGHLAND AVE AND FOREST AVE.
8. INSTALL THE NEW 8-INCH WM SYSTEM WITHIN EUCLID AVE, MAKING THE NECESSARY CONNECTIONS TO THE EXISTING 8-INCH WM AT O+00 AND THE NEW TEES/GVS ON THE HIGHLAND AVE AND ATHOL AVE WM SYSTEMS. TRANSFER ALL WHCs TO THE NEW 8-INCH WM SYSTEM WITHIN EUCLID AVE.
9. INSTALL THE NEW 8-INCH WM SYSTEM WITHIN BEECHFIELD AVE, MAKING THE NECESSARY CONNECTIONS TO THE NEW TEES/GVS ON THE HIGHLAND AVE AND ATHOL AVE WM SYSTEMS. TRANSFER ALL WHCs TO THE NEW 8-INCH WM SYSTEM IN BEECHFIELD AVE.
10. INSTALL THE 6-INCH TEMPORARY WM BY-PASS SYSTEM IN WOODBURN AVE (NEAR MELROSE). REFER TO SHEETS 27 AND 28 FOR FURTHER DETAILS OF THE PROPOSED TEMPORARY BY-PASS WM SYSTEM INSTALLATION. TRANSFER ALL ADJACENT WHCs TO THE TEMPORARY BY-PASS PIPING. INSTALL THE NEW 8-INCH WM SYSTEM WITHIN WOODBURN AVE, MAKING THE NECESSARY CONNECTION TO THE NEW TEE/GV AT ATHOL AVE. TRANSFER ALL WHCs TO THE NEW 8-INCH WM SYSTEM IN HARTHORN AVE. (BETWEEN ATHOL AVE AND STATION 7+90.90). TRANSFER ALL WHCs ALONG HARTHORN (BETWEEN MELROSE AND ATHOL AVE) TO THE TEMPORARY 6-INCH WM SYSTEM.
11. INSTALL THE 6-INCH TEMPORARY WM BY-PASS SYSTEM WITHIN HARTHORN AVE (BETWEEN ATHOL AND MELROSE). REFER TO SHEETS 27 AND 28 FOR FURTHER DETAILS OF THE PROPOSED TEMPORARY BY-PASS WM SYSTEM INSTALLATION. INSTALL THE NEW 8-INCH WM SYSTEM WITHIN HARTHORN AVE (FROM ATHOL AVE TO STATION 7+97.90), MAKING THE NECESSARY CONNECTION TO THE NEW TEE/GV AT ATHOL AVE. TRANSFER ALL WHCs TO THE NEW 8-INCH WM SYSTEM IN HARTHORN AVE. (BETWEEN ATHOL AVE AND STATION 7+90.90). TRANSFER ALL WHCs ALONG HARTHORN (BETWEEN MELROSE AND ATHOL AVE) TO THE TEMPORARY 6-INCH WM SYSTEM.
12. INSTALL THE NEW 8-INCH WM SYSTEM WITHIN GLENMORE AVE AND MELROSE AVE, MAKING THE NECESSARY CONNECTIONS TO THE NEW TEES/GVS AT WOODBURN AND FOREST AVE. TRANSFER ALL WHCs TO THE NEW 8-INCH WM SYSTEM IN GLENMORE AVE AND MELROSE AVE.
13. INSTALL THE NEW 8-INCH WM SYSTEM WITHIN HARTHORN AVE, MAKING THE NECESSARY CONNECTIONS TO THE NEW TEES/GVS AT ATHOL AND MELROSE AVE. TRANSFER ALL ADJACENT WHCs TO THE NEW 8-INCH WM SYSTEM IN HARTHORN AVE.
14. INSTALL THE NECESSARY PIPING, FITTINGS, BUTTRRESSING, AND ALL APPURTENANCES FOR CONNECTION OF THE NEW 8-INCH WM SYSTEM IN MELROSE AVE TO THE EX. 6-INCH WM SYSTEM IN HARTHORN AVE - NORTH OF MELROSE (REQUIRES TEMPORARY SHUTDOWN OF THIS SECTION OF THE HARTHORN AVE WM SYSTEM). REFER TO CONNECTION DETAIL 'C' ON SHEET 15.
15. CLOSE THE NEAREST GVS ON THE EX. 10-INCH AND 12-INCH WM SYSTEMS IN ATHOL AVENUE, EACH SIDE OF THE PROPOSED 12-INCH WM CONNECTION AT GLENMORE AVE (SEE CONNECTION DETAIL "B" ON SHEET 14). REMOVE THE EX. 12-INCH FITTINGS, PIPING, BUTTRRESSING, AND RELATED APPURTENANCES AS NEEDED AND MAKE THE NEW 12-INCH CONNECTION.
16. REMOVE THE TEMPORARY WM SYSTEMS AND ALL APPURTENANCES.
17. ABANDON THE EX. 10-INCH WM SYSTEM WITHIN LOUDON AVE. AND MOUND STREET (FROM RTE 1 TO ANDERSON AVE).
18. INSTALL ALL PIPING, FITTINGS, BUTTRRESSING, AND ACCESSORIES NEEDED TO CONNECT THE NEW 10-INCH WM SYSTEM TO THE EX. 4-INCH WM SYSTEM IN TRISTAN AVE (REQUIRES TEMPORARY SHUTDOWN OF THE TRISTAN AVE WM SYSTEM). REFER TO CONNECTION DETAIL 'D' ON SHEET 19. REMOVE EXISTING PIPING AND RELATED ITEMS WITHIN TRISTAN AVE, AS NEEDED TO MAKE THE CONNECTION. INSTALL HOT SPOT CORROSION PROTECTION ON THIS SECTION OF PIPE.
19. ABANDON THE EX. 12-INCH WM SYSTEM WITHIN ATHOL AVE.
20. ABANDON THE EXISTING 8-INCH WM SYSTEMS WITHIN EUCLID, BEECHFIELD, HIGHLAND, FOREST, GLENMORE AND MELROSE AVE.
21. ABANDON THE REMAINING PORTIONS OF THE EX. 8" WM SYSTEM WITHIN WOODBURN AND HARTHORN AVE.

WORK PLAN NOTE/PLAN SHT REF #s
NOTE NO. PLAN SHEET REFERENCE NO.
1 17 & 18
2 13 & 14
3 14, 19, & 25
4 13, 14, 17, 18, & 19
5 17, 18, & 19
6 13 & 14
7 8 & 16
8 11 & 12
9 9 & 10
10 7, 27 & 28
11 11, 6, 27 & 28
12 5 & 15
13 6
14 6 & 15
15 13 & 14
16 27 & 28
17 17, 18 & 19
18 17 & 19
19 13 & 14
20 5, 8, 9, 10, 11, 12, 15, & 16
21 6 & 7

FITTING SCHEDULES

WOODBURN AVENUE
STATION FITTING DESC. NORTHING EASTING
0+00.00 8" CAP 556328.98 1385826.57
0+04.00 8"x4" TEE/3" B.O.V. 556325.80 1385829.00
2+50.00 8"x8" TEE 556130.17 1385978.14
5+17.17 45 DEG H.B. 555917.86 1386140.06
5+24.50 45 DEG H.B. 555910.38 1386139.21
5+42.65 8"x6" TEE 555895.93 1386150.14
5+61.00 8" G.V. 555881.32 1386161.27
5+65.00 8"x8" TEE 555878.13 1386163.70
5+72.49 8" G.V. 555872.16 1386168.23
5+75.99 8"x8" TEE 555869.39 1386170.37
5+79.49 8" G.V. 555866.58 1386172.45
7+05.06 45 DEG H.B. 555765.55 1386247.01
7+11.06 45 DEG H.B. 555764.54 1386252.88
8+87.00 8"x6" TEE 555622.55 1386356.82
11+75.58 8"x6" TEE 555389.62 1386527.18
11+87.56 8" G.V. 555379.97 1386534.24
12+01.40 12"x8" TEE 555368.79 1386542.42

FOREST AVENUE
STATION FITTING DESC. NORTHING EASTING
0+00.00 8" CAP 556579.97 1385994.08
0+16.50 8" G.V. 556566.72 1386003.92
0+20.00 8"x8" TEE 556563.92 1386006.01
0+46.50 8" G.V. 556542.64 1386021.81
0+50.00 8"x6" TEE 556539.83 1386023.89
3+50.00 8"x6" TEE 556298.99 1386202.76
6+41.93 8"x6" TEE 556064.63 1386376.82
6+69.50 8" G.V. 556042.51 1386393.25
6+73.00 8"x8" TEE 556039.69 1386395.32
9+85.00 8"x6" TEE 555788.42 1386580.32
10+25.72 45 DEG H.B. 555755.66 1386604.53
10+41.50 45 DEG H.B. 555753.15 1386620.12
12+79.30 8"x6" TEE 555561.73 1386761.12
12+98.71 8" G.V. 555546.07 1386772.66
13+02.96 12"x8" CROSS 555542.65 1386775.18
13+07.21 8" G.V. 555539.22 1386777.70
13+54.45 8" CAP 555484.50 1386817.99

BEECHFIELD AVENUE
STATION FITTING DESC. NORTHING EASTING
0+00.00 8" CAP 557237.50 1385861.15
0+03.50 8"x4" TEE/3" B.O.V. 557234.70 1385863.26
0+95.00 8"x6" TEE 557161.61 1385918.29
5+95.00 8"x6" TEE 556762.19 1386219.08
6+17.26 8" G.V. 556744.41 1386232.46
6+25.20 8"x8" CROSS 556738.02 1386237.26
6+29.20 8" G.V. 556734.83 1386239.67
9+50.00 8"x6" TEE 556478.77 1386432.83
12+80.00 8" G.V. 556215.31 1386631.55
12+89.80 8"x6" TEE 556207.50 1386637.45
15+85.00 8"x6" TEE 555970.32 1386813.22
18+71.80 45 DEG H.B. 555739.71 1386983.75
18+85.30 45 DEG H.B. 555737.58 1386997.03
19+04.25 8" G.V. 555722.29 1387008.37
19+08.50 12"x8" CROSS 555718.88 1387010.90
19+10.81 8" G.V. 555717.07 1387012.23
19+72.25 45 DEG H.B. 555667.92 1387049.05
19+86.80 45 DEG H.B. 555653.47 1387047.12
22+04.00 8"x4" TEE/3" B.O.V. 555479.66 1387177.54
22+07.50 8" CAP 555476.83 1387179.59

RELATED WORK PLAN NOTES:

- 1. WATER MAIN SYSTEM SHALL MEAN ALL PIPING, VALVING, HYDRANTS, BENDS, CAPS, FITTINGS, SPECIALS, HARNESSING, CONCRETE ANCHOR COLLAR OR BUTTRRESSING, WHCs, CORROSION PROTECTION SYSTEM, AND ALL RELATED APPURTENANCES FOR A COMPLETE OPERATING WM SYSTEM.
2. THE CONTRACTOR SHALL HAVE ALL MANPOWER, EQUIPMENT, AND MATERIALS ON-SITE AND READY TO USE PRIOR TO BEGINNING WORK ON ANY PORTION OF THE PROJECT.
3. THE CONTRACTOR SHALL PROVIDE TEMPORARY TRAFFIC CONTROL FOR EACH CONSTRUCTION ACTIVITY IN ACCORDANCE WITH SHA STANDARDS.
4. TESTING, CHLORINATION, AND IN SERVICE INSPECTION SHALL BE COMPLETED ON EACH SECTION OF THE NEW WM SYSTEM, PRIOR TO CONNECTING TO EXISTING WATER MAINS AND PLACING INTO SERVICE.
5. SEE SHEET 4 FOR THE PLAN SHEETS ASSOCIATED WITH THE ABOVE WORK PLAN NOTES.
6. INSTALL PROPOSED CORROSION PROTECTION SYSTEMS ON ALL NEW PIPING PRIOR TO BACKFILLING. INSTALL PROPOSED CORROSION PROTECTION SYSTEMS ON EXISTING WM PIPING, WHERE SHOWN OR SPECIFIED PRIOR TO TESTING.
7. SEE SHEET 28 FOR DETAILED DESCRIPTION OF PROPOSED TEMPORARY WM SYSTEM.

FITTING SCHEDULES

LOUDON AVENUE
STATION FITTING DESC. NORTHING EASTING
-0+15.14 12" COUPLING 556075.60 1387455.75
-0+10.75 12"x8" TEE 556072.07 1387458.37
-0+5.36 12" G.V. 556067.74 1387461.58
0+00.00 12"x12" TEE 556063.42 1387464.75
0+12.00 12" G.V. 556053.79 1387471.91
0+16.06 12"x10" RED. 556050.53 1387474.33
2+26.78 10"x4" TEE 555881.31 1387599.90
2+76.84 10"x6" TEE 555841.11 1387629.72
4+16.75 45 DEG H.B. 555728.84 1387713.16
4+63.25 22.5 DEG H.B. 555721.97 1387759.16
6+11.89 5 DEG H.B. 555758.08 1387903.35
6+52.75 10"x6" TEE 555771.43 1387941.97
8+31.27 11.25 DEG H.B. 555829.73 1388110.69
11+14.47 11.25 DEG H.B. 555868.42 1388391.23
11+20.00 10" G.V. 555870.18 1388396.48
11+25.19 45 DEG H.B. 555871.97 1388401.34
11+33.70 10"x6" TEE 555879.58 1388405.15
11+42.22 45 DEG H.B. 555887.18 1388408.95
11+52.05 3" HD COUPLING 555890.49 1388418.20
13+35.03 45 DEG H.B. 555941.25 1388593.98
13+65.49 45 DEG H.B. 555966.66 1388610.76
14+30.78 45 DEG H.B. 555981.09 1388674.42
14+43.23 DRAIN MANHOLE 555974.54 1388685.00
14+71.35 22.5 DEG H.B. 555959.64 1388708.85
14+95.24 11.25 DEG H.B. 555956.85 1388732.58
16+47.02 45 DEG H.B. 555969.59 1388883.82
16+60.00 10"x6" TEE 555961.30 138893.80
16+65.67 45 DEG H.B. 555957.72 138898.19
16+86.54 3" HD COUPLING 555959.38 1388919.00
17+06.60 3" HD COUPLING 555960.02 1388939.03
17+47.85 2.75" HD COUPLING 555959.18 1388980.27
20+56.61 45 DEG H.B. 555967.77 1389288.90
20+70.00 10" G.V. 555977.26 1389298.34
21+03.52 45 DEG H.B. 556001.25 1389321.74
21+15.27 22.5 DEG H.B. 556012.99 1389321.67
21+43.73 5 DEG H.B. 556039.19 1389310.59
22+38.95 45 DEG H.B. 556123.29 1389265.96
22+66.43 45 DEG H.B. 556149.57 1389273.98
22+72.70 10"x6" TEE 556152.59 1389279.45
25+06.50 5 DEG H.B. 556262.41 1389485.89
25+68.66 5 DEG H.B. 556286.70 1389543.06
27+79.00 2" HD COUPLING 556351.74 1389743.11
27+89.32 10"x6" TEE 556355.40 1389752.77
27+95.15 10"x8" REDUCER 556357.46 1389758.22
27+99.90 8" G.V. 556358.79 1389761.72
28+04.90 8"x8" TEE 556360.91 1389767.33

MELROSE STREET
STATION FITTING DESC. NORTHING EASTING
0+00.00 45 DEG H.B. 555518.21 1385693.26
0+07.75 22.5 DEG H.B. 555524.89 1385697.18
2+84.06 8" G.V. 555691.01 1385917.97
2+87.56 8"x8" TEE 555693.11 1385920.76
2+91.06 8" G.V. 555695.20 1385923.54
3+03.97 8"x6" TEE 555702.99 1385933.89
5+89.43 8" G.V. 555876.02 1386160.91
5+92.93 8"x8" TEE 555878.13 1386163.70
5+92.93 8"x8" TEE 555869.39 1386170.37
5+96.71 45 DEG H.B. 555871.63 1386173.32
6+01.63 45 DEG H.B. 555876.49 1386174.08
8+73.05 8" G.V. 556037.61 1386392.50
8+76.55 8"x8" TEE 556039.69 1386395.32

FITTING SCHEDULES

GLENMORE AVENUE
STATION FITTING DESC. NORTHING EASTING
0+00.00 45 DEG H.B. 555518.21 1385693.26
0+07.75 22.5 DEG H.B. 555510.69 1385695.17
2+07.55 8"x6" TEE 555350.95 1385815.18
2+65.00 8" CAP 555306.97 1385848.24

FITTING SCHEDULES

EUCLID AVENUE
STATION FITTING DESC. NORTHING EASTING
0+01.80 45 DEG H.B. 557231.42 1386234.71
0+04.80 8" G.V. 557228.01 1386234.31
0+08.30 45 DEG H.B. 557224.60 1386233.92
0+90.00 8"x6" TEE 557159.45 1386283.15
3+91.09 8" G.V. 556919.39 1386464.87
3+99.00 12"x8" CROSS 556912.99 1386469.68
4+03.00 8" G.V. 556909.80 1386472.09
4+30.00 8"x6" TEE 556888.28 1386488.25
7+75.00 8"x6" TEE 556609.78 1386691.88
10+24.90 8"x6" TEE 556408.11 1386839.45
10+35.00 8" G.V. 556400.05 1386845.54
13+90.00 8"x6" TEE 556117.01 1387059.82
16+49.66 45 DEG H.B. 555909.93 1387216.44
16+64.44 45 DEG H.B. 555907.58 1387231.02
16+79.70 8" G.V. 555895.27 1387240.17
16+83.70 12"x8" CROSS 555892.04 1387242.54
16+87.70 8" G.V. 555888.82 1387244.91
16+95.84 45 DEG H.B. 555882.26 1387249.64
17+09.60 45 DEG H.B. 555868.69 1387247.69
20+95.00 8"x4" TEE/3" B.O.V. 555557.79 1387475.46
21+15.50 8" CAP 555541.25 1387487.57

FITTING SCHEDULES

ATHOL AVENUE
STATION FITTING DESC. NORTHING EASTING
0+00.00 12" COUPLING 555019.68 1386093.42
0+03.27 12" G.V. 555022.92 1386093.84
0+18.17 45 DEG H.B. 555037.69 1386095.79
0+30.00 12"x6" TEE 555044.76 1386105.29
2+65.63 12" G.V. 555185.48 1386294.33
2+70.00 12"x8" TEE 555188.10 1386297.86
2+87.93 12" G.V. 555198.76 1386312.19
2+92.30 12"x8" TEE 555201.38 1386315.71
2+96.68 12" G.V. 555204.01 1386319.23
5+69.78 12" G.V. 555366.19 1386338.91
5+74.15 12"x8" TEE 555368.79 1386342.42
8+60.30 12" G.V. 555540.10 1386771.78
8+64.67 12"x8" CROSS 555542.65 1386775.18
11+54.60 12" G.V. 555715.86 1387006.84
11+58.97 12"x8" CROSS 555718.88 1387010.90
11+71.00 12"x6" TEE 555726.37 1387020.92
14+09.22 12"x6" TEE 555868.69 1387211.34
14+36.40 12" G.V. 555884.97 1387233.11
14+48.20 12"x8" CROSS 555892.04 1387242.54
17+24.48 12" G.V. 556060.86 1387461.25
17+28.80 12"x12" TEE 556063.42 1387464.75

FITTING SCHEDULES

HARTHORN AVENUE
STATION FITTING DESC. NORTHING EASTING
0+00.00 8"x8" TEE 555693.11 1385920.76
0+07.99 8" G.V. 555686.71 1385925.54
0+17.33 8"x6" TEE 555679.23 1385931.13
3+45.03 8"x6" TEE 555416.68 1386127.19
6+03.75 8"x6" TEE 555209.38 1386282.01
6+26.02 8" G.V. 555191.51 1386295.32
6+30.26 12"x8" TEE 555188.10 1386297.86
6+30.26 12"x8" TEE 555201.38 1386315.71
6+26.05 8" G.V. 555187.36 1386326.17
7+95.30 8"x4" TEE/3" B.O.V. 555069.09 1386414.35
7+97.90 8" CAP 555067.00 1386415.90

FITTING SCHEDULES

HIGHLAND AVENUE
STATION FITTING DESC. NORTHING EASTING
0+00.00 8"x8" TEE 556563.92 1386006.01
2+85.47 8" G.V. 556735.62 1386234.04
2+89.47 8"x8" CROSS 556738.02 1386237.26
5+76.40 8" G.V. 556910.60 1386466.46
5+80.40 8"x8" CROSS 556912.99 1386469.68
8+67.89 8" G.V. 557086.14 1386699.68
8+72.28 12"x8" TEE 557088.56 1386702.88

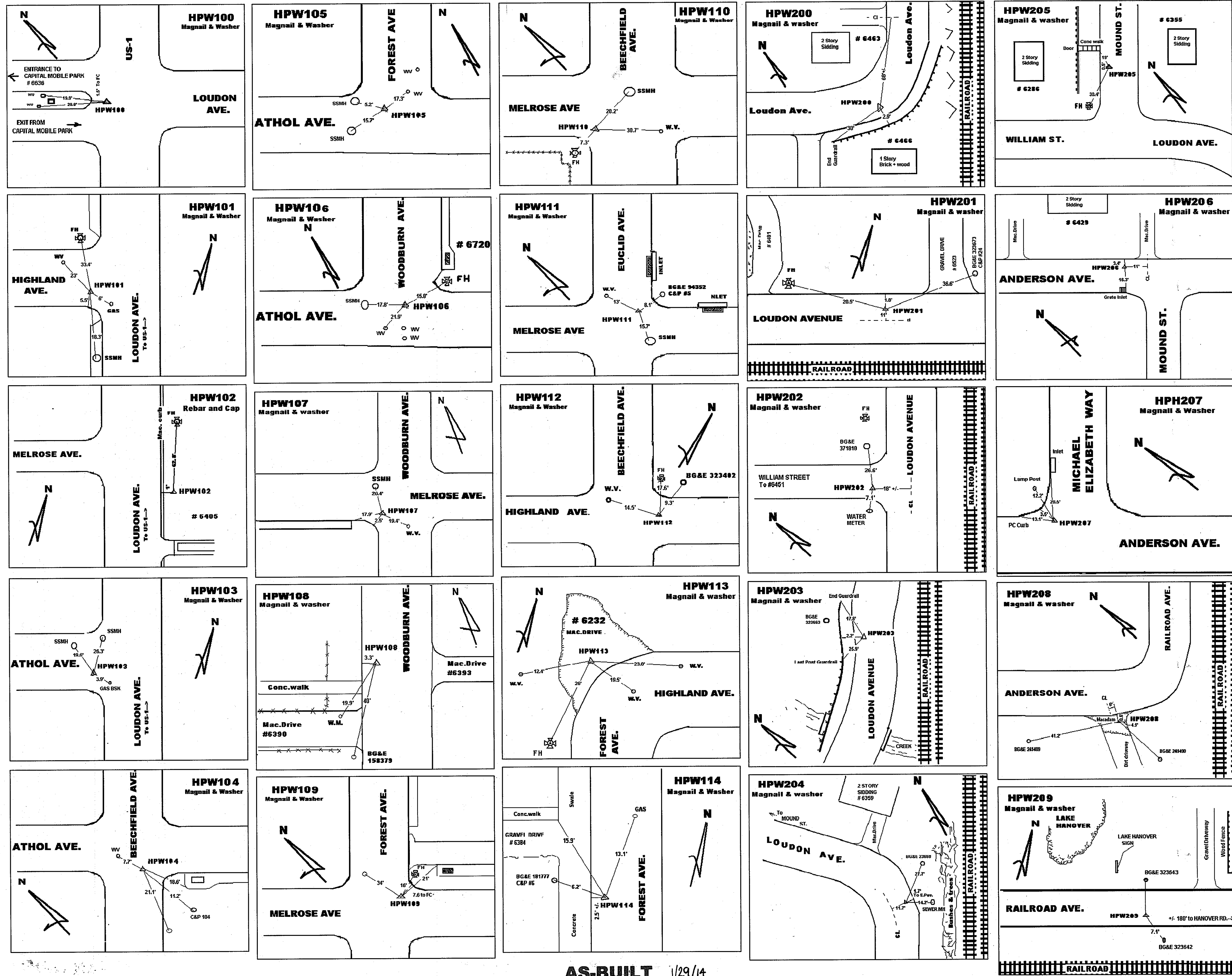
BENCHMARK DATA:

BENCHMARK #	ELEVATION	DESCRIPTION
#1	116.17	RAILROAD SPIKE IN BG&E POLE #371000 AT THE SOUTHWEST CORNER OF ANDERSON AVE AND MOUND ST.
#2	85.09	RAILROAD SPIKE IN BG&E POLE #323680 IN THE SOUTHWEST PART OF CURVE FROM LOUDON AVE. AND WILLIAMS ST.
#3	79.69	BRASS DISK IN TOP OF NORTH HEADWALL OVER A STREAM
#4	117.53	RAILROAD SPIKE IN BG&E POLE #323672 ON THE NORTH SIDE OF LOUDON AVE.
#5	142.28	RAILROAD SPIKE IN BG&E POLE IN THE SOUTHWEST CORNER OF THE INTERSECTION OF ATHOL AVE. AND LOUDON AVE.
#6	110.30	CUT NAIL AND WASHER IN BG&E POLE #007 IN SOUTHWEST CORNER OF BEECHFIELD AVE. AND ATHOL AVE.
#7	100.41	CUT NAIL IN BG&E POLE #371813 IN THE SOUTHWEST CORNER OF WOODBURN AVE. AND ATHOL AVE.
#8	84.56	60D NAIL IN BG&E POLE #371802 IN THE SOUTH SIDE OF ATHOL AVE. AT THE SOUTH END OF GLENMORE AVE.
#9	100.90	CUT NAIL IN BG&E POLE #371836 AT THE WEST SIDE OF HARTHORN AVE. IN FRONT OF HOUSE #6422
#10	94.30	RAILROAD SPIKE IN BG&E POLE #166575 ON THE NORTH SIDE OF MELROSE AVE. WEST OF HARTHORN AVE.
#11	116.19	CUT NAIL IN BG&E POLE #334702 IN THE NORTHWEST CORNER OF MELROSE AVE. AND WOODBURN AVE.
#12	150.02	CUT NAIL IN BG&E POLE #171777 AT THE WEST SIDE OF FOREST AVE AT THE FRONT OF HOUSE #6386&6384
#13	116.80	RAILROAD SPIKE IN BG&E POLE #143141 AT THE WEST SIDE OF FOREST AVE. AT THE FRONT OF HOUSE #6422
#14	136.85	CUT NAIL IN BG&E POLE #138270 IN THE NORTHEAST CORNER OF BEECHFIELD AVE. AND MELROSE AVE.
#15	149.24	CUT NAIL IN BG&E POLE #814250 AT THE EAST SIDE OF EUCLID AVE. AT THE FRONT OF HOUSE #6415
#16	175.03	RAILROAD SPIKE IN BG&E POLE #141852 AT THE EAST SIDE OF EUCLID AVE. AT THE FRONT OF HOUSE #6377&6379
#17	184.36	RAILROAD SPIKE IN BG&E POLE #323420 AT THE NORTHEAST CORNER OF THE INTERSECTION OF HIGHLAND AVE. AND BEECHFIELD AVE.
#18	202.10	RAILROAD SPIKE IN BG&E POLE AT THE EAST SIDE OF LOUDON AVE. AT THE EAST END OF HIGHLAND AVE.

GEODETIC SURVEY CONTROL POINTS:

HORIZONTAL: MARYLAND NAD83 (ADJ 07)
 VERTICAL: NAVD 88
 38D5 N:558378.5584 E:1386524.1878 ELEV:192.964
 38D6 N:557155.4470 E:1384992.2377 ELEV:174.477
 38GA N:558897.3373 E:1390132.0933 ELEV:80.73

SOIL BORING SCHEDULE			
BORING NO.	NORTHING	EASTING	ELEVATION
B-1	555536.53	1385686.04	92.40
B-2	555275.60	1385861.64	86.71
B-3	555711.74	1385921.08	101.90
B-4	555207.29	1386317.31	95.18
B-5	556331.28	1385819.31	120.16
B-6	556120.68	1385986.42	128.30
B-7	555892.50	1386160.82	116.72
B-8	555359.95	1386557.87	101.72
B-9	556563.26	1386004.03	167.06
B-10	556023.25	1386373.35	124.21
B-11	555532.90	1386787.54	109.44
B-12	557181.88	1385905.89	154.08
B-13	556736.99	1386231.29	183.22
B-14	556201.03	1386607.90	135.37
B-15	555700.57	1386991.13	110.96
B-16	555503.54	1387147.61	108.87
B-17	557253.73	1386213.55	167.00
B-18	556912.97	1386468.68	192.83
B-19	556399.42	1386843.42	156.47
B-20	555878.17	1387218.40	123.76
B-21	555444.86	1387483.30	108.10
B-22	555011.13	1386059.74	85.10
B-23	556082.26	1387462.01	142.42
B-23A	556041.01	1387433.37	139.71
B-24	557081.10	1386680.30	200.84
B-25	555720.62	1387725.93	128.24
B-26	555883.98	1388360.28	93.47
B-27A	555925.37	1388624.17	80.58
B-28A	555945.53	1388696.43	79.50
B-29B	556014.56	1389313.32	89.45
B-30	556368.11	1389786.22	116.31



AS-BUILT 1/29/14

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 7/1/09
 Chief, Bureau of Engineering: *[Signature]* 7/1/09
 Chief, Bureau of Utilities: *[Signature]* 7/1/09
 Chief, Utility Design Division: *[Signature]* 7/1/09

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

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16623, EXPIRATION DATE 12/08/2009

[Professional Seal]

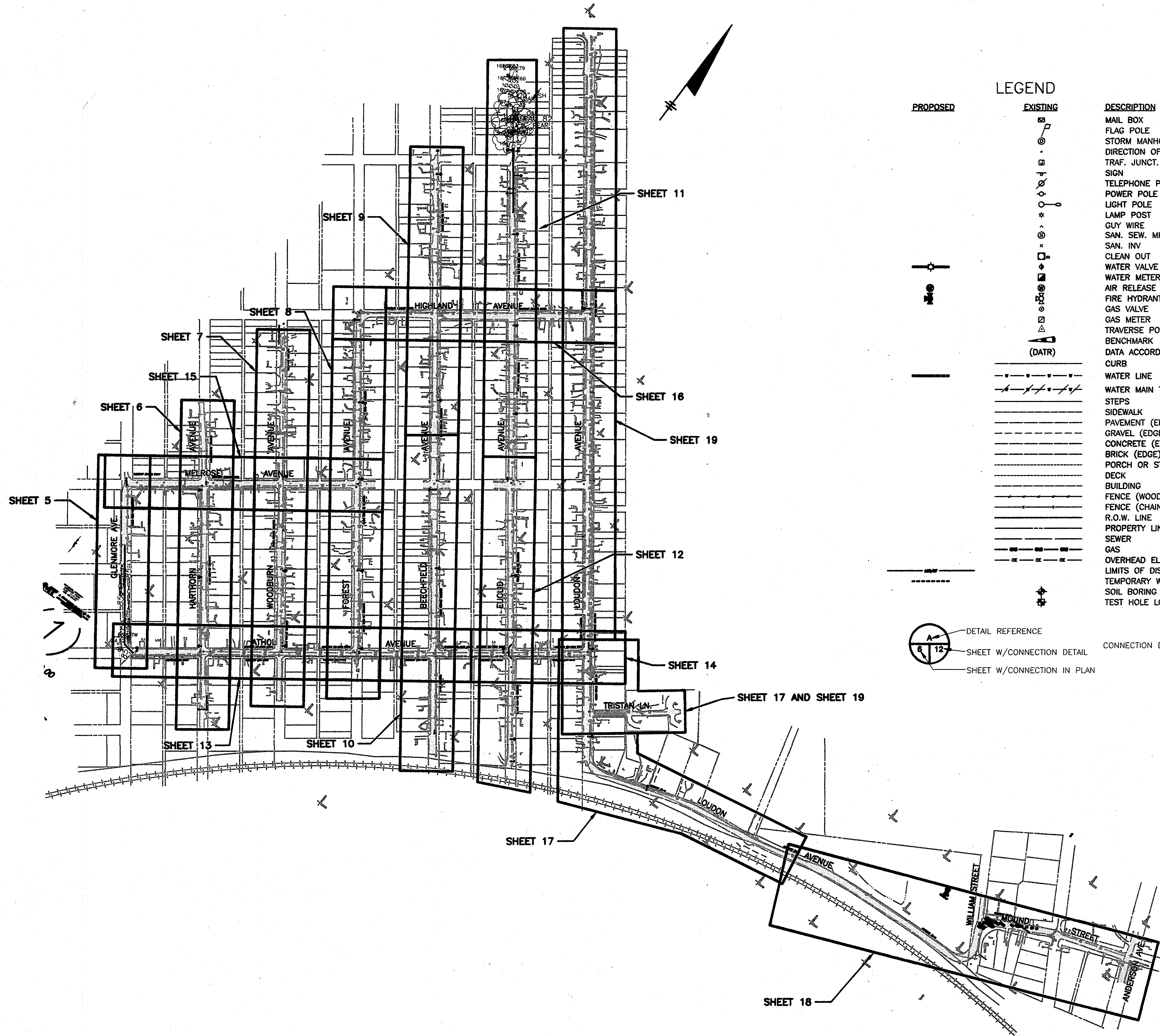
DSN. BY:	RPW		
DRN. BY:	RPW		
CHK. BY:	GLF		
DATE:	JUNE, 2009		
BY NO.			

AS-BUILT
 ISSUED FOR BID
 REVISION

TRAVERSE POINT LOCATION DESCRIPTIONS AND BENCHMARK DATA

60' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND



PROPOSED	EXISTING	DESCRIPTION
		MAIL BOX
		FLAG POLE
		STORM MANHOLE
		DIRECTION OF PIPE
		TRAF. JUNCT. BOX
		SIGN
		TELEPHONE POLE
		POWER POLE
		LIGHT POLE
		LAMP POST
		GUY WIRE
		SAN. SEW. MH
		SAN. INV.
		CLEAN OUT
		WATER VALVE
		WATER METER
		AIR RELEASE VALVE OR BLOW-OFF MANHOLE
		FIRE HYDRANT
		GAS VALVE
		GAS METER
		TRAVERSE POINT
		BENCHMARK
		DATA ACCORDING TO RECORDS
		CURB
		WATER LINE
		WATER MAIN TO BE ABANDONED
		STEPS
		SIDEWALK
		PAVEMENT (EDGE)
		GRAVEL (EDGE)
		CONCRETE (EDGE)
		BRICK (EDGE)
		PORCH OR STOOP
		DECK
		BUILDING
		FENCE (WOOD)
		FENCE (CHAINLINK)
		R.O.W. LINE
		PROPERTY LINE
		SEWER
		GAS
		OVERHEAD ELECTRIC
		LIMITS OF DISTURBANCE DEFINED BY SILT FENCE
		TEMPORARY WATER SERVICE
		SOIL BORING LOCATIONS
		TEST HOLE LOCATIONS
		DETAIL REFERENCE
		SHEET W/CONNECTION DETAIL
		SHEET W/CONNECTION IN PLAN

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]*

GRAPHIC SCALES 1"=200'

AS-BUILT REPLACEMENT SHEET 1/29/14

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 2/3/14
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/3/14
 CHIEF, BUREAU OF UTILITIES DATE

[Signature] 2/3/14
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 2/3/14
 CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.
 8401 Corporate Drive
 Suite 400
 Landover, Maryland 20785
 (301) 751-5822
 FAX: (301) 577-4737

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2009

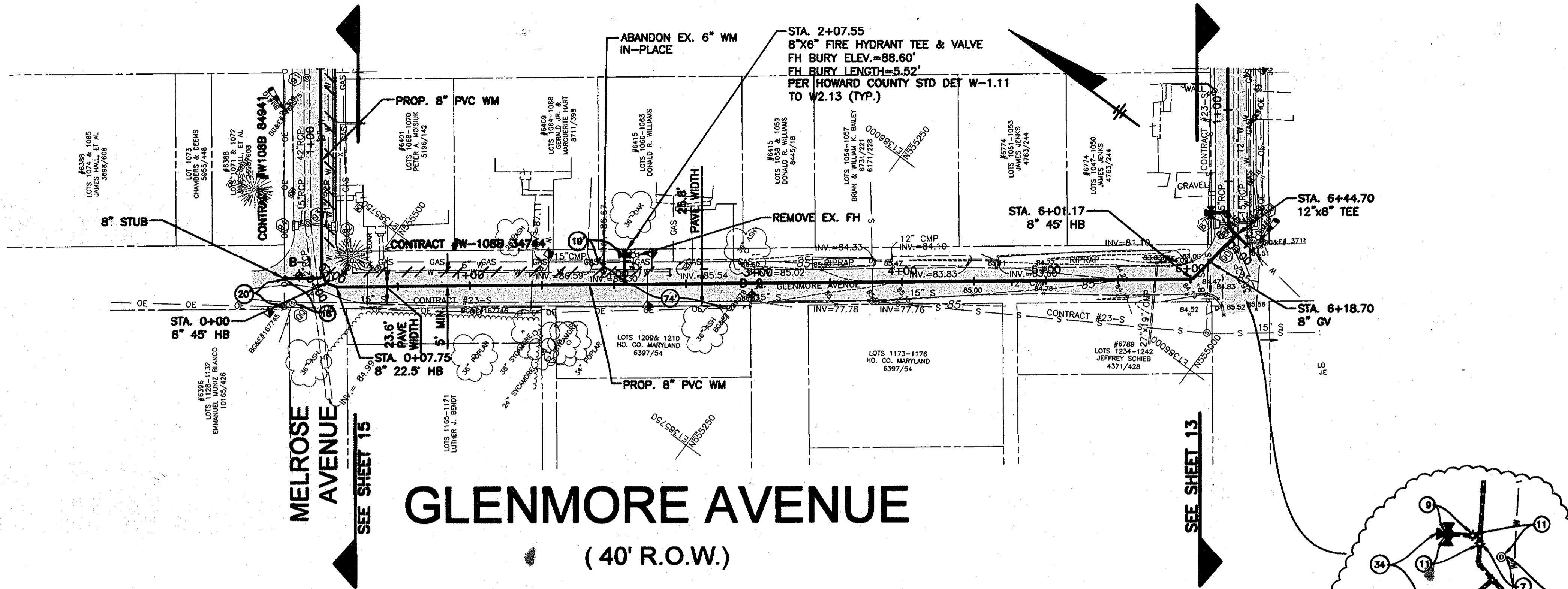
DSN. BY:	RPW		
DRN. BY:	RPW		
CHK. BY:	GLF		
DATE:	JUNE, 2009		
R/JD	1	AS-BUILTS	
R/JD	0	ISSUED FOR BID	06/09
BY	NO.	REVISION	DATE

KEY MAP AND LEGEND

800' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

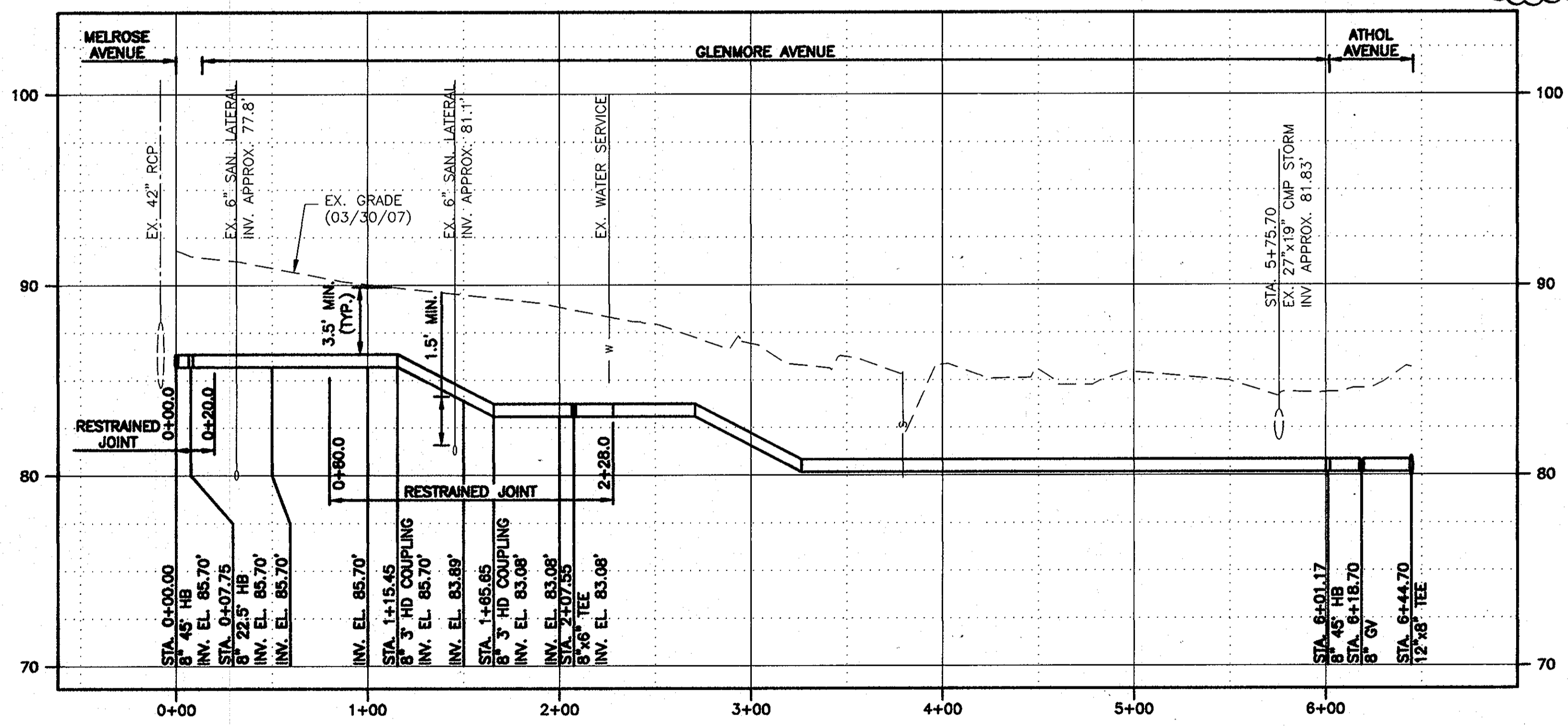
SCALE AS SHOWN
 SHEET 4 OF 38



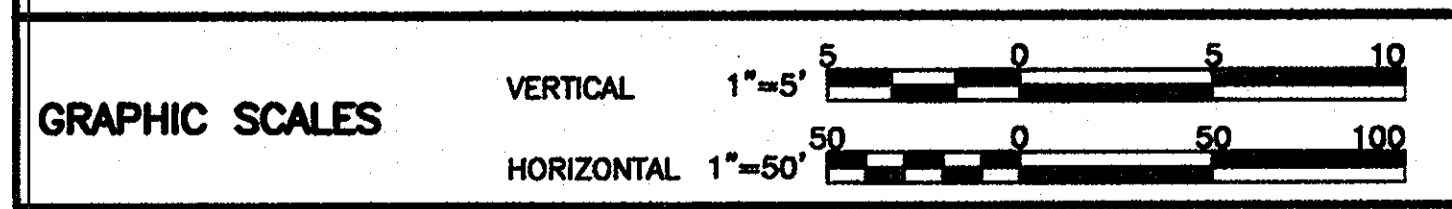
GLENMORE AVENUE (40' R.O.W.)

POTENTIAL CONCRETE BUTRESSING LOCATIONS		
ROAD NAME	STATION	SHEET NO.
GLENMORE AVE.	0+02	5
WOODBURN AVE.	5+70	7
WOODBURN AVE.	11+90	7
FOREST AVE.	0+12	8
FOREST AVE.	6+38	8
FOREST AVE.	12+90	8
FOREST AVE.	13+15	8
BEECHFIELD AVE.	0+00	9
BEECHFIELD AVE.	6+03	9
BEECHFIELD AVE.	18+95	10
BEECHFIELD AVE.	19+35	10
EUCLID AVE.	0+95	11
EUCLID AVE.	4+25	11
EUCLID AVE.	16+70	12
EUCLID AVE.	17+05	12
ATHOL AVE.	0+00	13
ATHOL AVE.	5+60	13
ATHOL AVE.	8+55	13
ATHOL AVE.	11+50	13
ATHOL AVE.	14+40	14
ATHOL AVE.	17+30	14
MELROSE AVE.	0+05	15
LOUDON AVE.	2+26	17
LOUDON AVE.	4+16	17
LOUDON AVE.	4+63	17
LOUDON AVE.	13+65	18
LOUDON AVE.	14+30	18

- TABLE NOTES:**
- CONCRETE BUTRESSING IS LIKELY TO BE LOCATED AT TEES, END CAPS, BENDS, AND OTHER LOCATIONS ON THE EXISTING WATER MAIN SYSTEM. THE ABOVE TABLE LISTS SOME (BUT, LIKELY NOT ALL) OF THE LOCATIONS WHERE EXISTING CONCRETE BUTRESSING HAS THE POTENTIAL TO SOME EXTENT, TO IMPACT THE ALIGNMENT OF THE PROPOSED WATER MAIN SYSTEM.
 - THE CONTRACTOR SHALL PERFORM AS A MINIMUM, VACUUM TEST HOLES AT ALL POTENTIAL AREAS OF CONFLICT ALONG THE PROPOSED WATER MAIN ALIGNMENT, SUFFICIENTLY AHEAD OF WORK, TO ALLOW FOR RESOLUTION OF ANY CONFLICT WITHOUT DELAY OF WORK.



SEE SHEET 3 FOR SOIL BORING SCHEDULE



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: [Signature] 2/19/14
 Chief, Bureau of Engineering: [Signature] 2/19/14
 Chief, Bureau of Utilities: [Signature] 2/19/14
 Chief, Utility Design Division: [Signature] 2/19/14

O'BRIEN & GERE ENGINEERS, INC.
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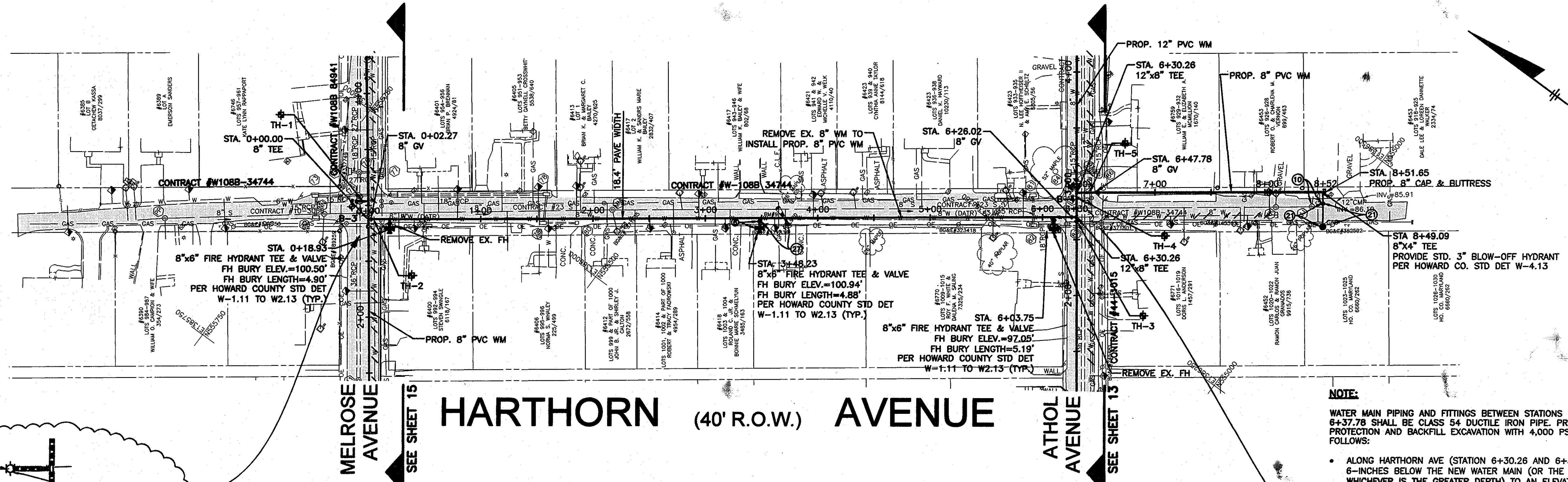
PROFESSIONAL CERTIFICATION:
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18923, EXPIRATION DATE 12/08/2009

DSN. BY:	RPW/GLF
DRN. BY:	RPW
CHK. BY:	GLF
DATE:	JUNE, 2009
RJD	1
RJD	0
BY NO.	

**GLENMORE AVENUE
 PLAN AND PROFILE**
 STA. 0+00.00 TO STA. 6+45.00

AS-BUILT REPLACEMENT SHEET 1/29/14
 HARWOOD PARK
 WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 5 OF 38
 FILE NO. 33498-104F

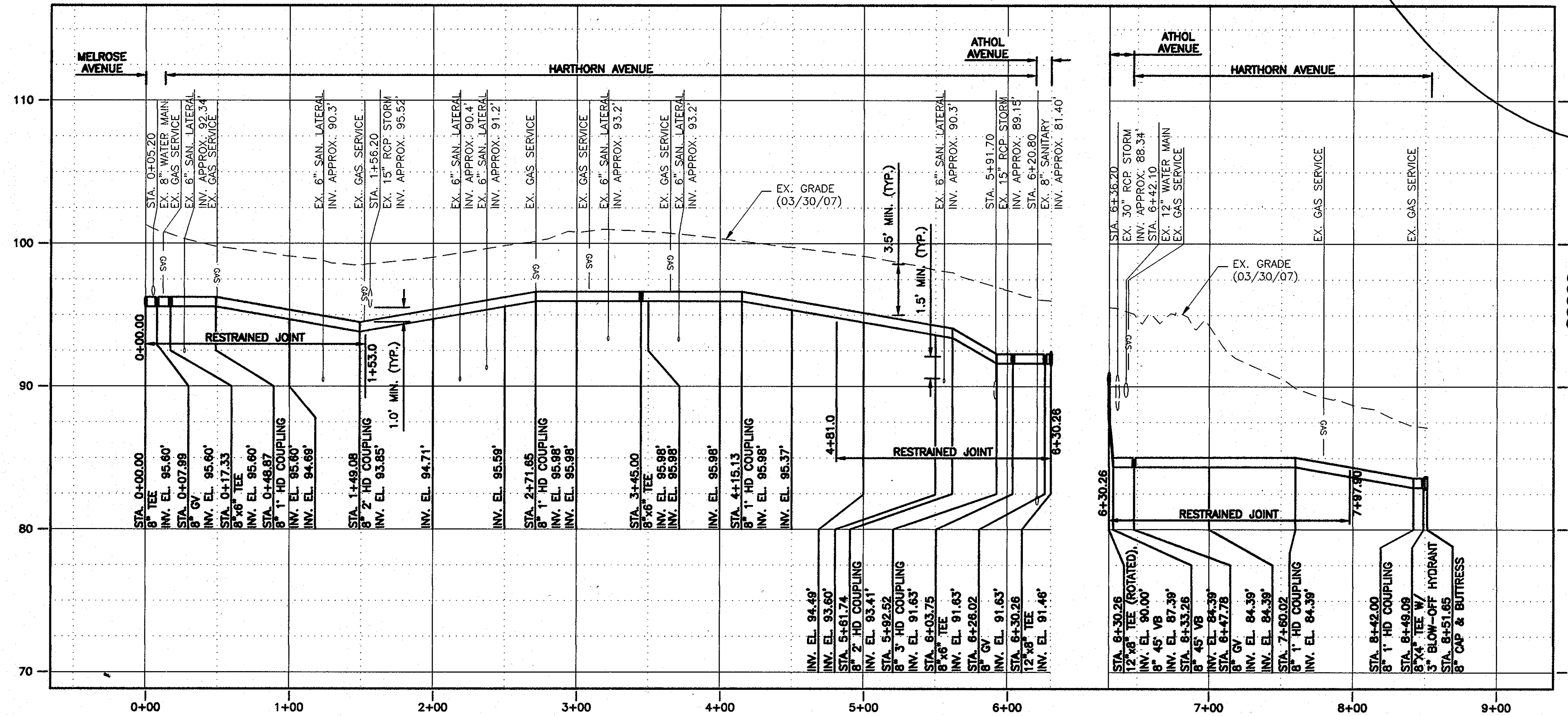
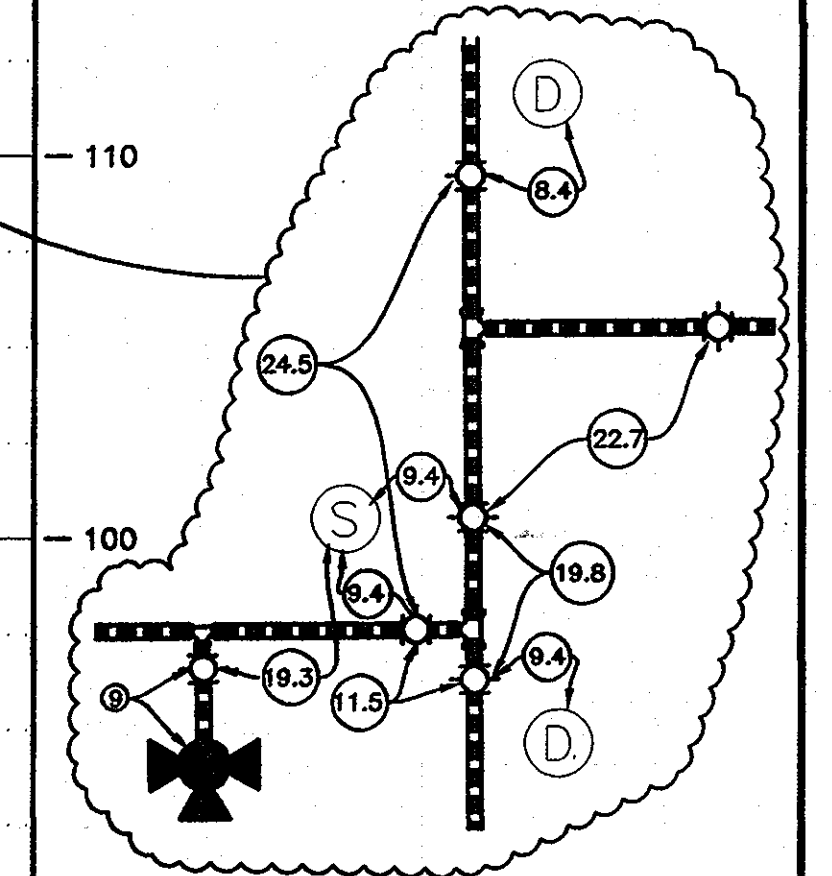
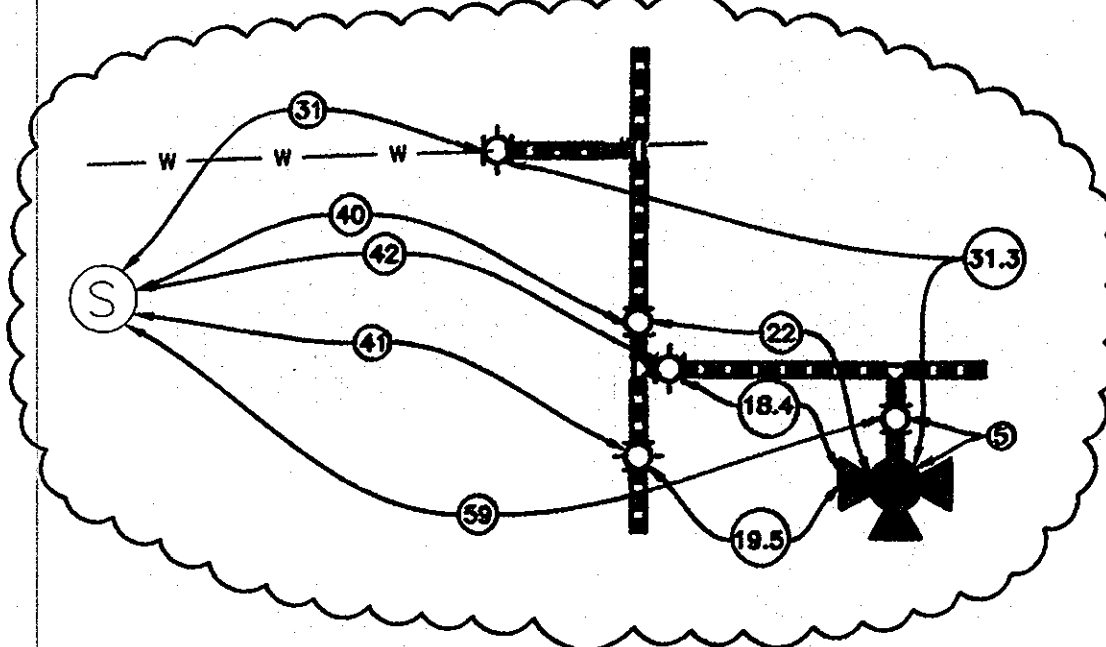


HARTHORN (40' R.O.W.) AVENUE

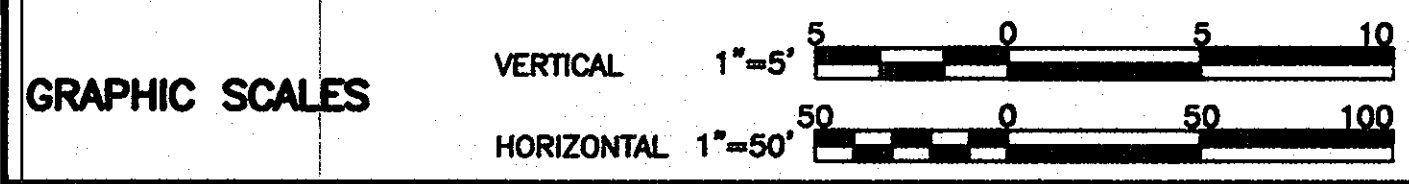
MELROSE AVENUE
SEE SHEET 15

ATHOL AVENUE
SEE SHEET 15

- NOTE:**
- WATER MAIN PIPING AND FITTINGS BETWEEN STATIONS 6+30.26 AND 6+37.78 SHALL BE CLASS 54 DUCTILE IRON PIPE. PROVIDE CORROSION PROTECTION AND BACKFILL EXCAVATION WITH 4,000 PSI CONCRETE AS FOLLOWS:
 - ALONG HARTHORN AVE (STATION 6+30.26 AND 6+37.78) - FROM 6-INCHES BELOW THE NEW WATER MAIN (OR THE TRENCH INVERT, WHICHEVER IS THE GREATER DEPTH) TO AN ELEVATION 6-INCHES ABOVE THE TOP OF THE TEE AT STATION 6+30.26 (UP TO THE SPRINGLINE OF THE EXISTING 30-INCH RCP STORM SEWER PIPE, THE FULL WIDTH OF THE TRENCH).
 - ALONG ATHOL AVE (FIVE FEET PAST EACH END OF THE TEE LOCATED AT STATION 2+49.20) - FROM 6-INCHES BELOW THE NEW WATER MAIN (OR THE TRENCH INVERT, WHICHEVER IS THE GREATER DEPTH) TO AN ELEVATION 6-INCHES ABOVE THE TOP OF THE TEE.



SEE SHEET 3 FOR SOIL BORING SCHEDULE



AS-BUILT REPLACEMENT SHEET 1/29/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. ... 2/6/14
DIRECTOR OF PUBLIC WORKS DATE

James Butler 2/7/14
CHIEF OF ENGINEERING DATE

Steve ... 2/15/14
CHIEF, BUREAU OF UTILITIES DATE

Chris ... 2/15/14
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.

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Landover, Maryland 20785
(301) 731-5622
FAX: (301) 577-4737

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2009

STATE OF MARYLAND
REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	RPW/GLF
DRN. BY:	RPW
CHK. BY:	GLF
DATE:	JUNE, 2009
BY NO.	RJD 1
REVISION	AS-BUILTS
DATE	06/09

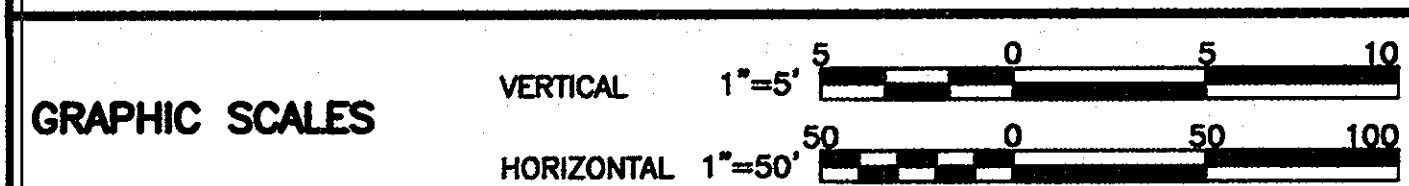
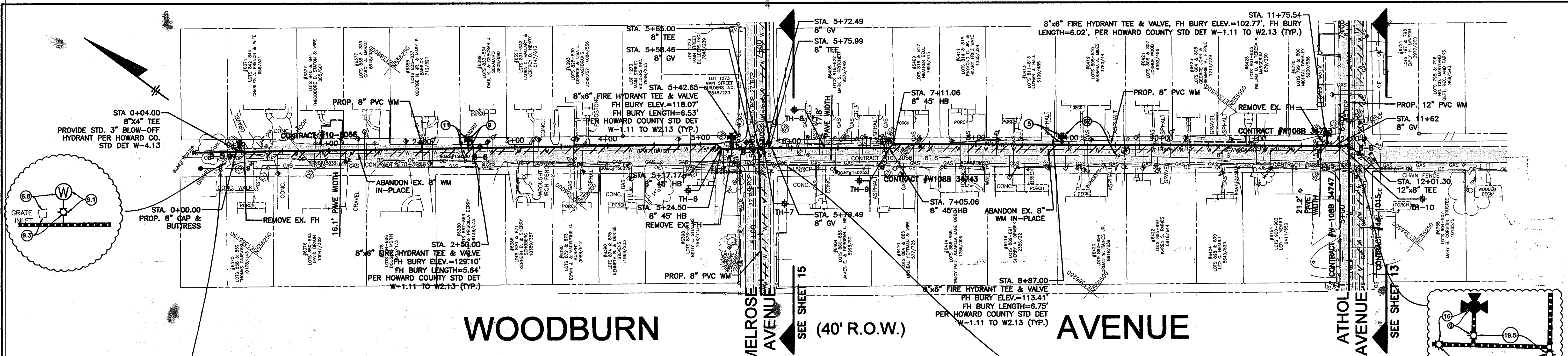
**HARTHORN AVENUE
PLAN AND PROFILE**
STA. 0+00.00 TO STA. 7+97.90

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

**HARWOOD PARK
WATER MAIN REPLACEMENTS**

CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 6 OF 38



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 2/18/14
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/15/14
 CHIEF, BUREAU OF UTILITIES DATE

[Signature] 2/15/14
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 2/15/14
 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

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18923, EXPIRATION DATE 12/08/2009

[Signature]
 PROFESSIONAL ENGINEER

DSN. BY:	RPW/GLF		
DRN. BY:	RPW		
CHK. BY:	GLF		
DATE:	JUNE, 2009		
BY NO.	RJD 1	AS-BUILTS	
	RJD 0	ISSUED FOR BID	06/09
		REVISION	DATE

WOODBURN AVENUE
PLAN AND PROFILE
 STA. 0+00.00 TO STA. 12+01.30

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

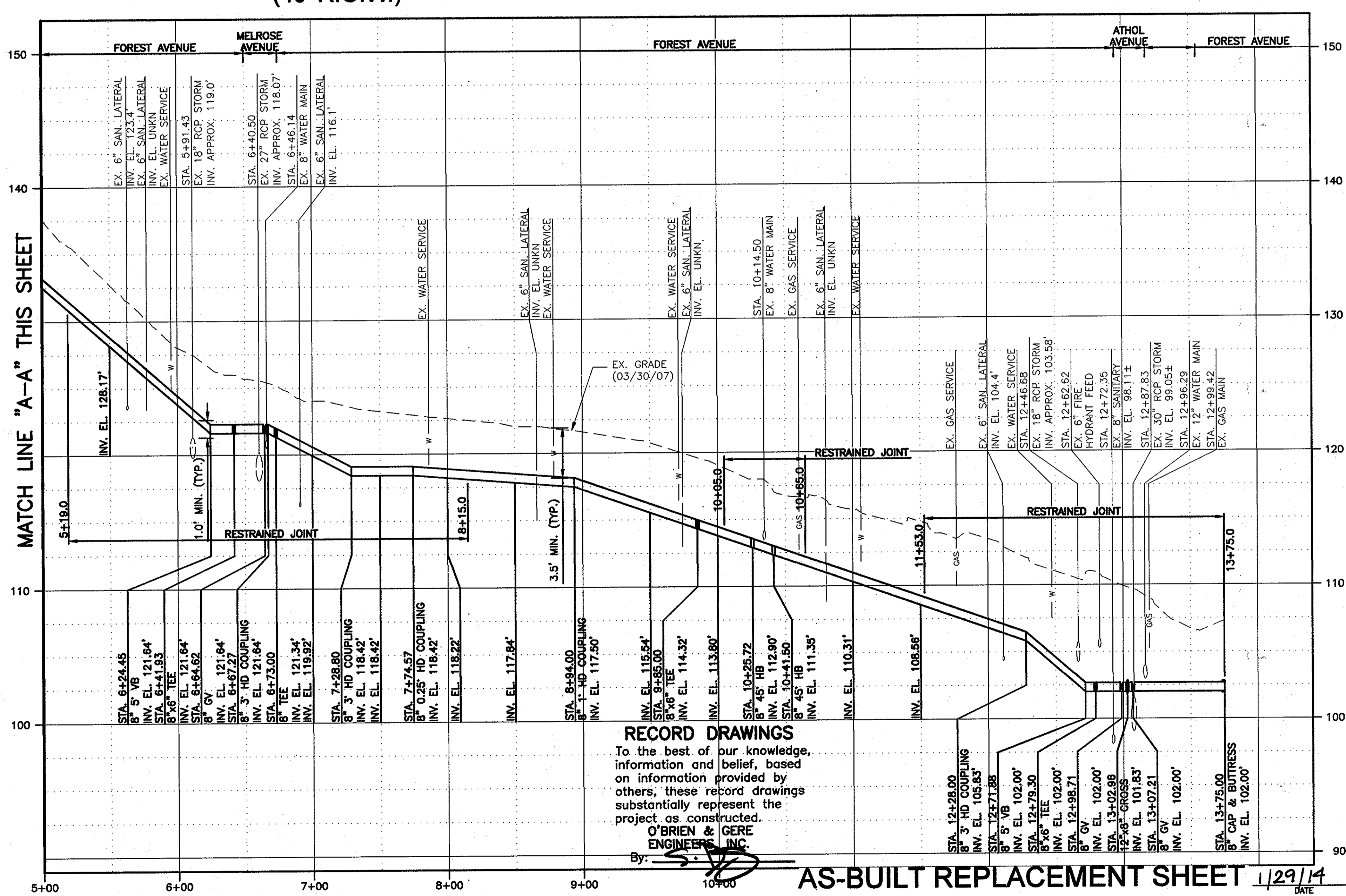
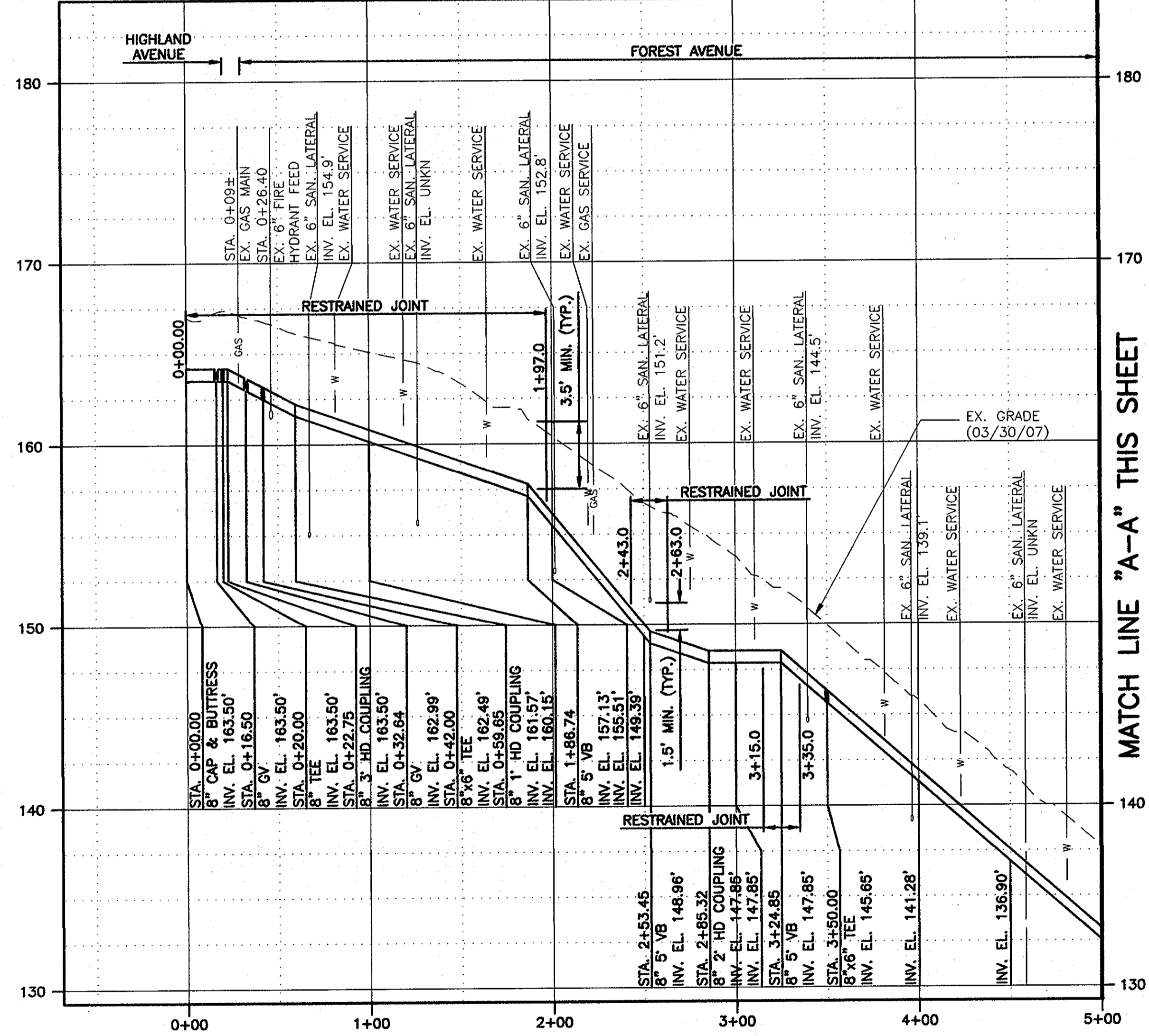
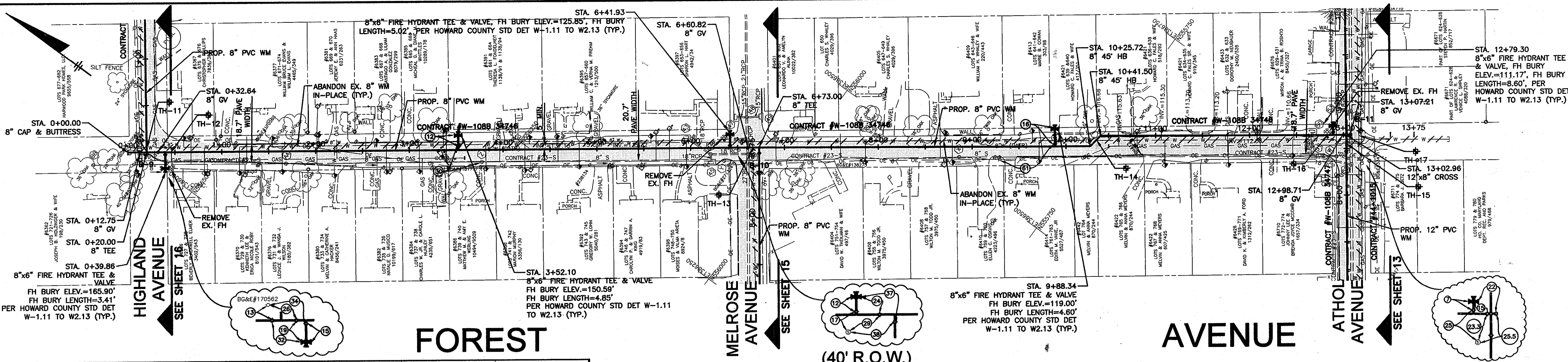
AS-BUILT REPLACEMENT SHEET 1/29/14 DATE

HARWOOD PARK
WATER MAIN REPLACEMENTS

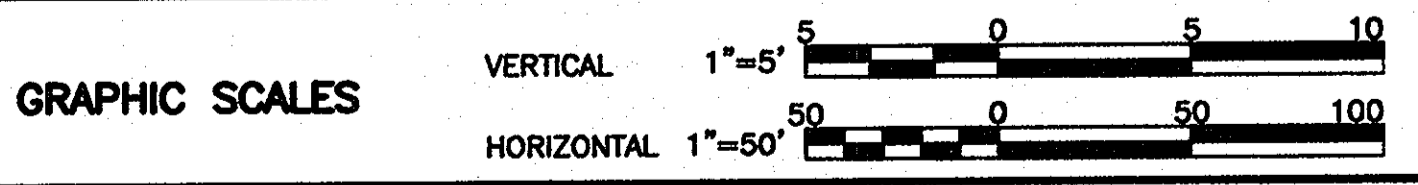
CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 7 OF 38

90 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]*



SEE SHEET 3 FOR SOIL BORING SCHEDULE



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *2/6/14*
 Chief, Bureau of Engineering: *2/1/14*
 Chief, Bureau of Utilities: *2/12/14*
 Chief, Utility Design Division: *2/25/14*

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

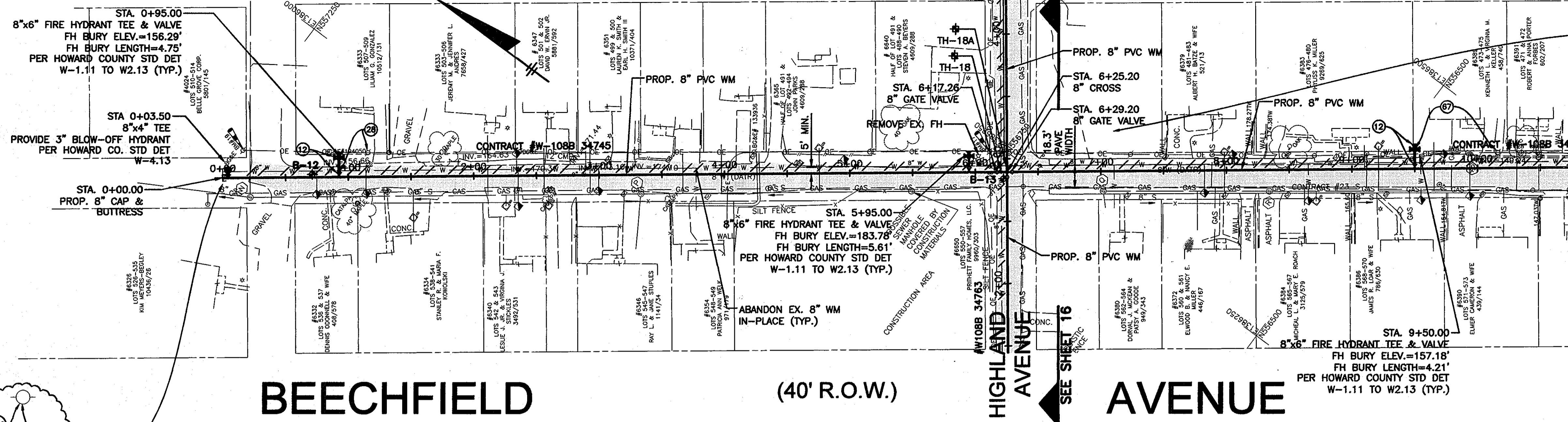
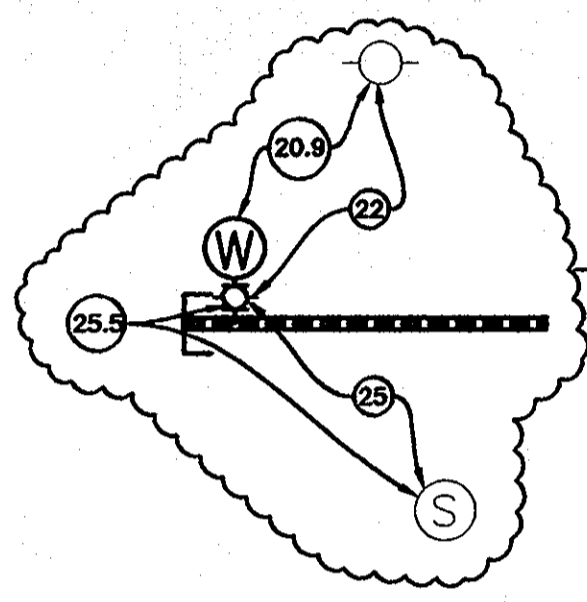
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 1823 EXPIRATION DATE 12/08/2009

DSN. BY:	RPW/GLF
DRN. BY:	RPW
CHK. BY:	GLF
DATE:	JUNE, 2009
R/D	1
R/D	0
BY	NO.

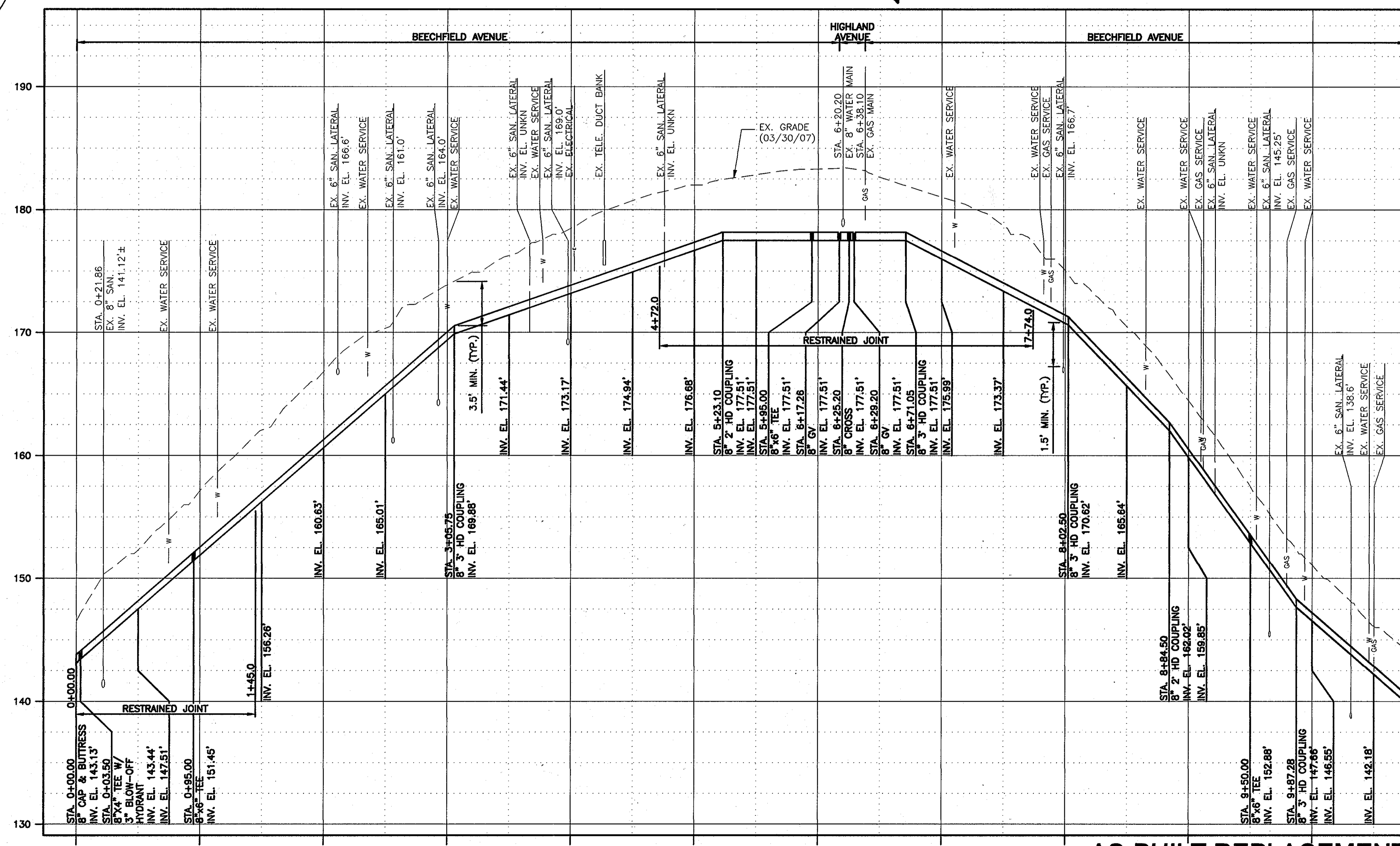
FOREST AVENUE PLAN AND PROFILE
 STA. 0+00.00 TO STA. 13+54.45
 AS-BUILTS
 ISSUED FOR BID
 06/09
 600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 8 OF 38
 FILE NO. 33498-107F

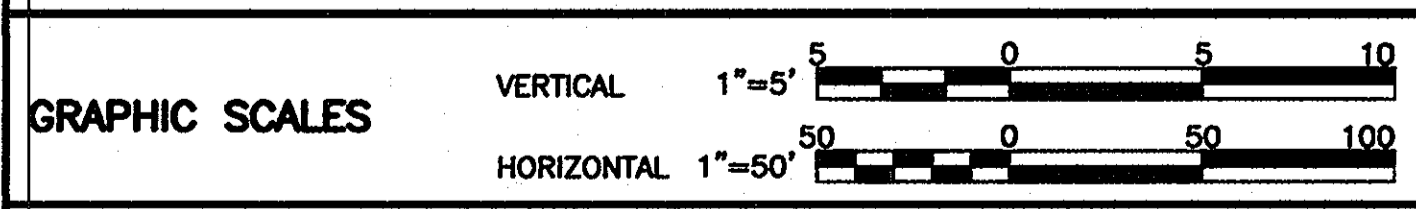


MATCH LINE STA. 10+75 FOR CONTINUATION SEE SHEET 10



MATCH LINE STA. 10+75 FOR CONTINUATION SEE SHEET 10

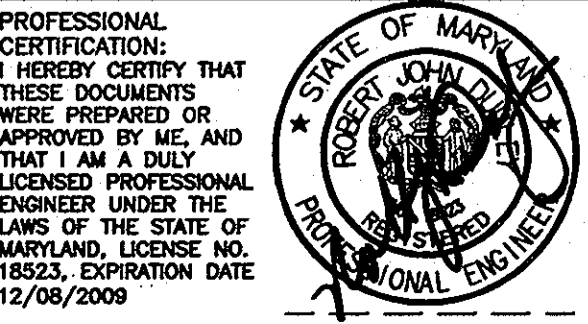
SEE SHEET 3 FOR SOIL BORING SCHEDULE



AS-BUILT REPLACEMENT SHEET 1/29/14

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *[Signature]* 2/14/14
 Chief, Bureau of Utilities: *[Signature]* 2/14/14

O'Brien & Gere Engineers, Inc.
 8401 Corporate Drive
 Suite 400
 Landover, Maryland 20785
 (301) 731-5622
 FAX: (301) 577-4737



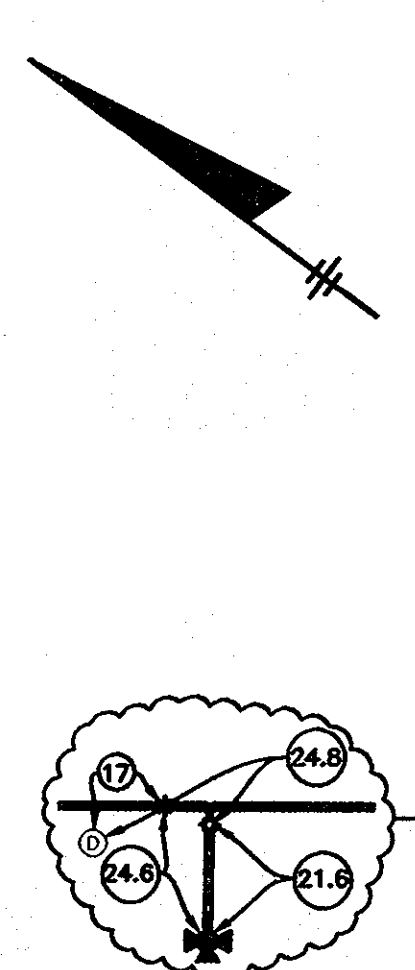
DSN. BY:	RPW/GLF		
DRN. BY:	RPW		
CHK. BY:	GLF		
DATE:	JUNE, 2009		
RJD	1	AS-BUILTS	
RJD	0	ISSUED FOR BID	06/08
BY	NO.	REVISION	DATE

BEECHFIELD AVENUE
 PLAN AND PROFILE
 STA. 0+00.00 TO STA. 10+75.00
 600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

HARWOOD PARK
 WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

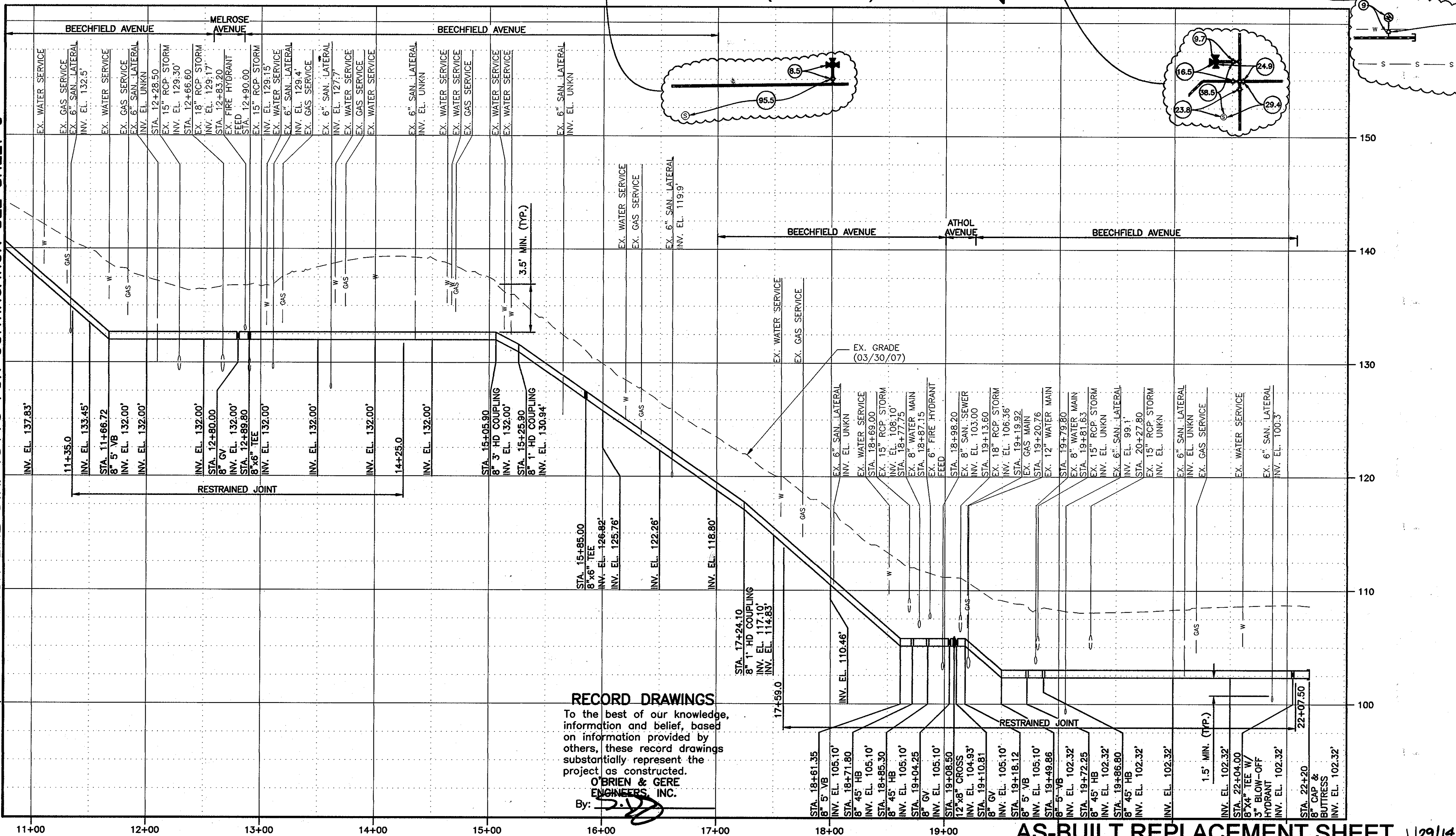
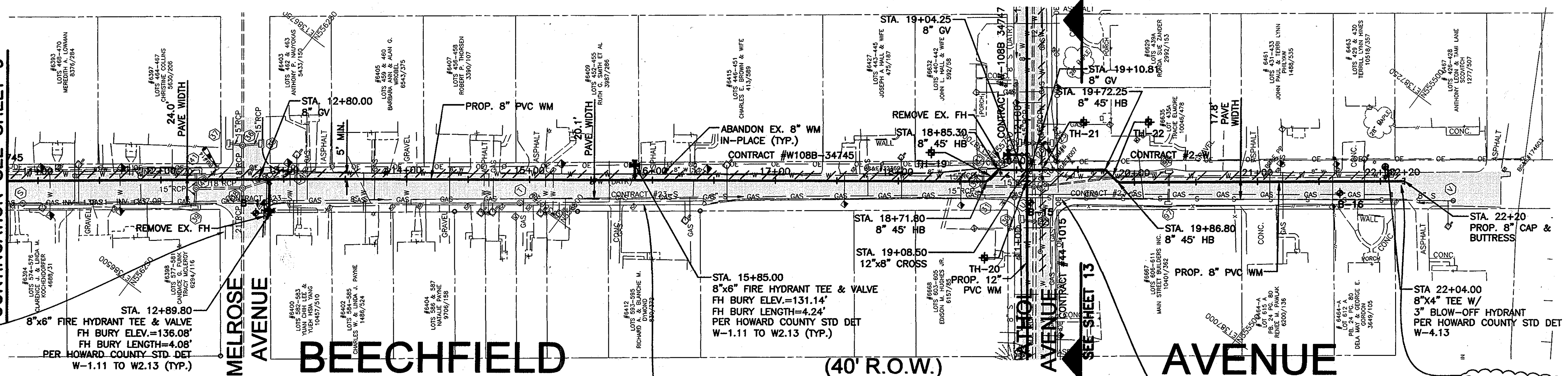
SCALE AS SHOWN
 SHEET 9 OF 38

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]*



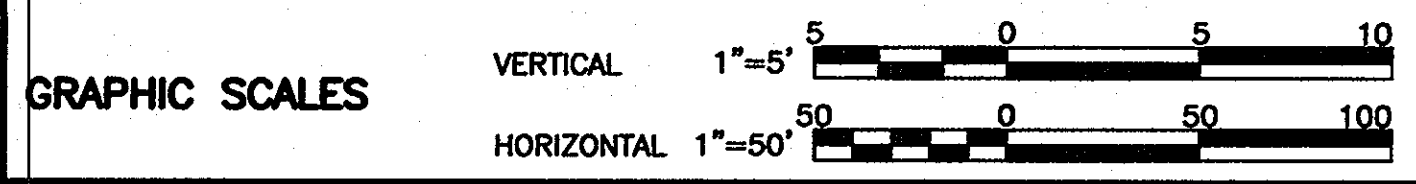
MATCH LINE STA. 10+75 FOR CONTINUATION SEE SHEET 9

MATCH LINE STA. 10+75 FOR CONTINUATION SEE SHEET 9



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]*

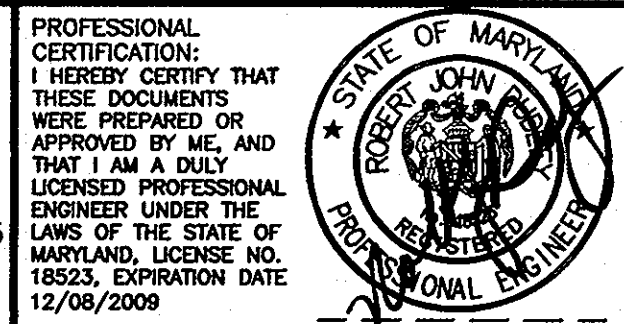
SEE SHEET 3 FOR SOIL BORING SCHEDULE



AS-BUILT REPLACEMENT SHEET 1/29/14

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *[Signature]* 2/19/14
 Chief - Bureau of Engineering: *[Signature]* 2/19/14
 Chief, Bureau of Utilities: *[Signature]* 2/19/14
 Chief, Utility Design Division: *[Signature]* 2/19/14

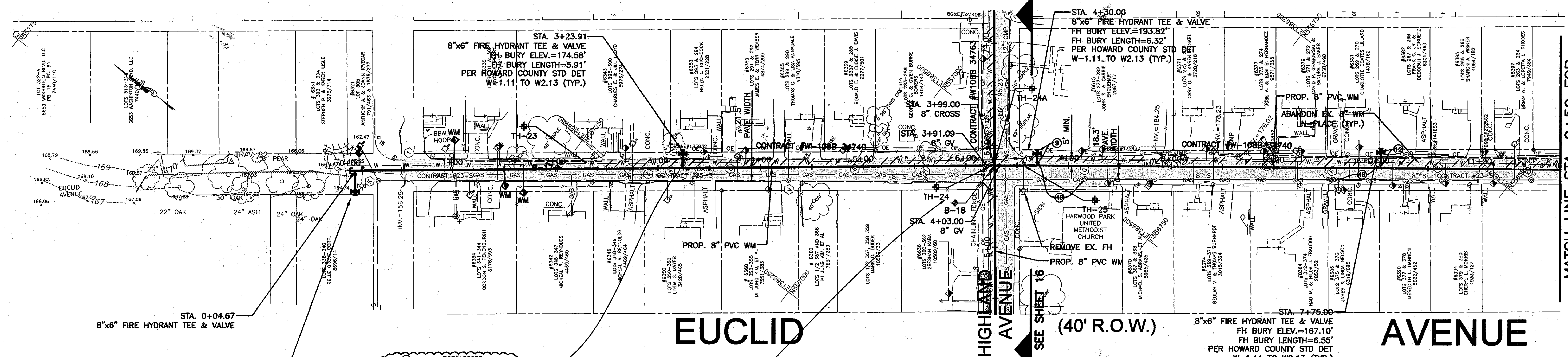
O'BRIEN & GERE ENGINEERS, INC.
 8401 Corporate Drive
 Suite 400
 Landover, Maryland 20785
 (301) 731-5622
 FAX: (301) 577-4737



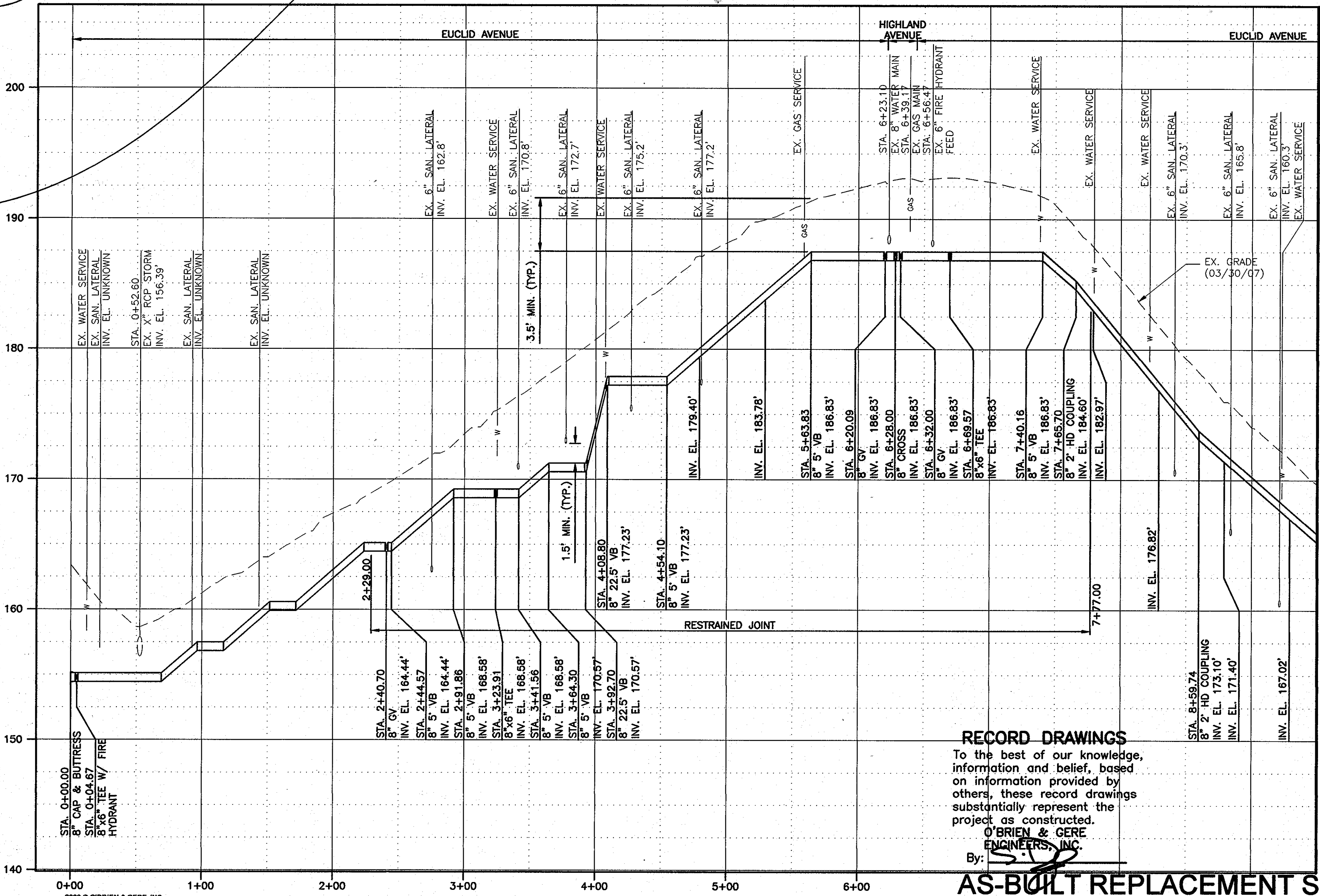
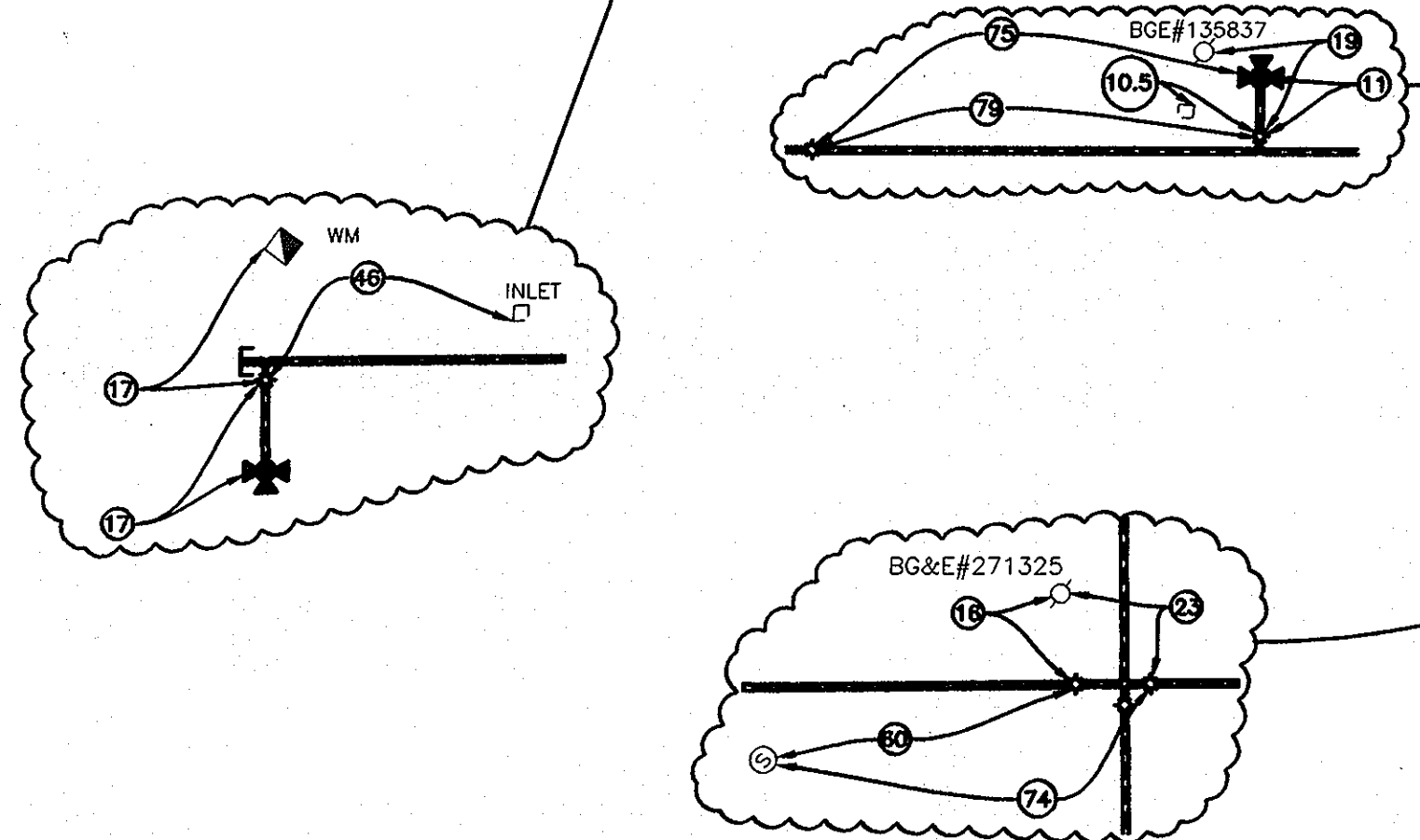
DSN. BY:	RPW/GLF				
DRN. BY:	RPW				
CHK. BY:	GLF				
DATE:	JUNE, 2009				
BY:	NO.	RJD	1	AS-BUILTS	
		RJD	0	ISSUED FOR BID	06/09
				REVISION	DATE

BEECHFIELD AVENUE
PLAN AND PROFILE
 STA. 10+75.0 TO STA. 22+07.50
 600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

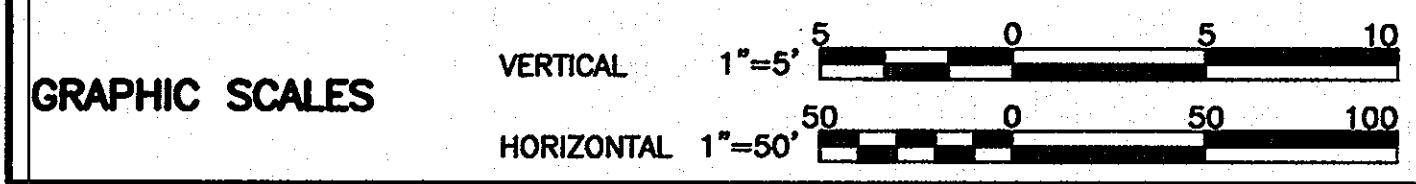
HARWOOD PARK
WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND
 SCALE AS SHOWN
 SHEET 10 OF 38



MATCH LINE STA. 9+50 FOR CONTINUATION SEE SHEET 12



SEE SHEET 3 FOR SOIL BORING SCHEDULE



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 1/29/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Director of Public Works: [Signature] 2/6/14
Chief, Bureau of Utilities: [Signature] 2/5/14

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

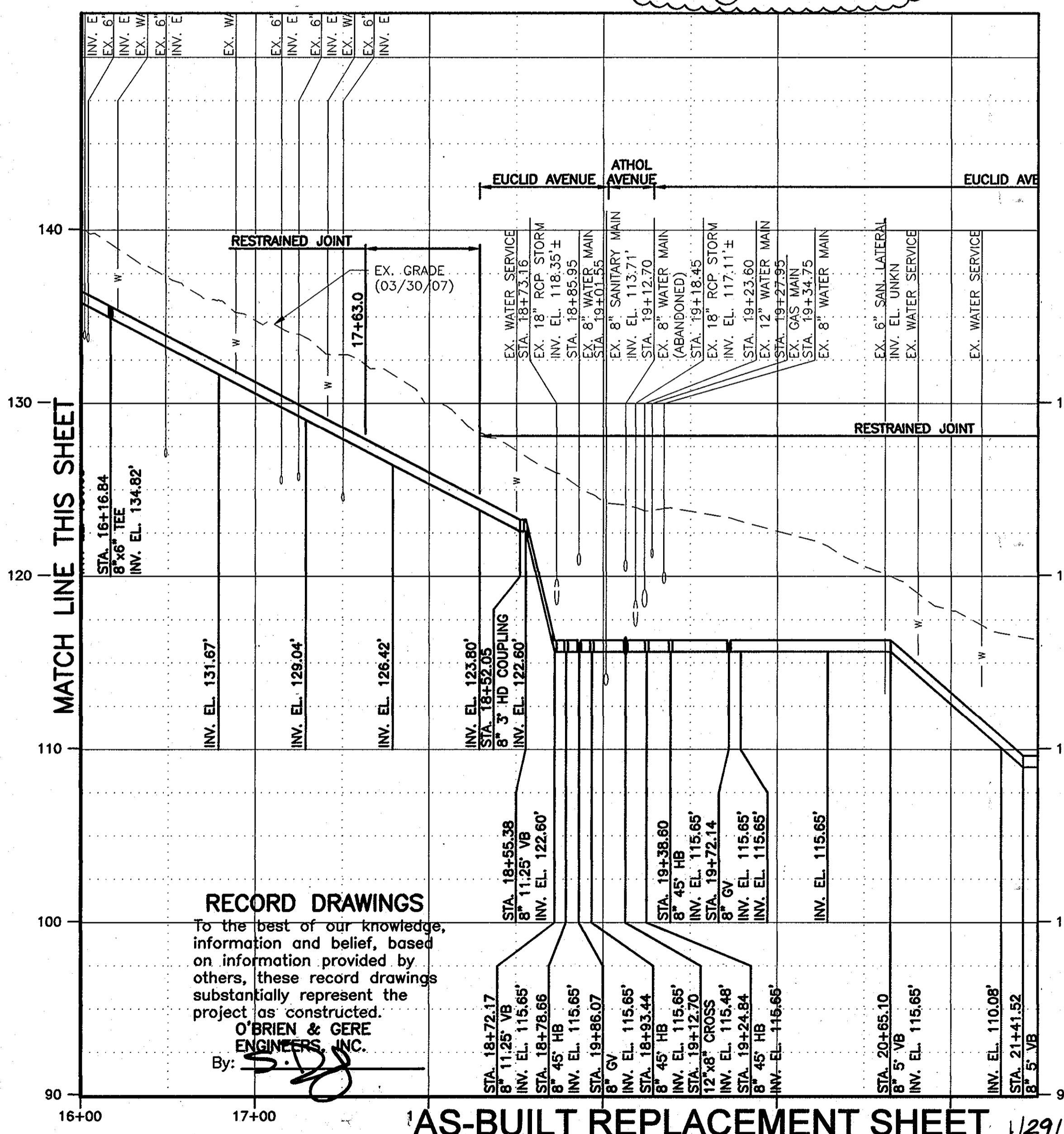
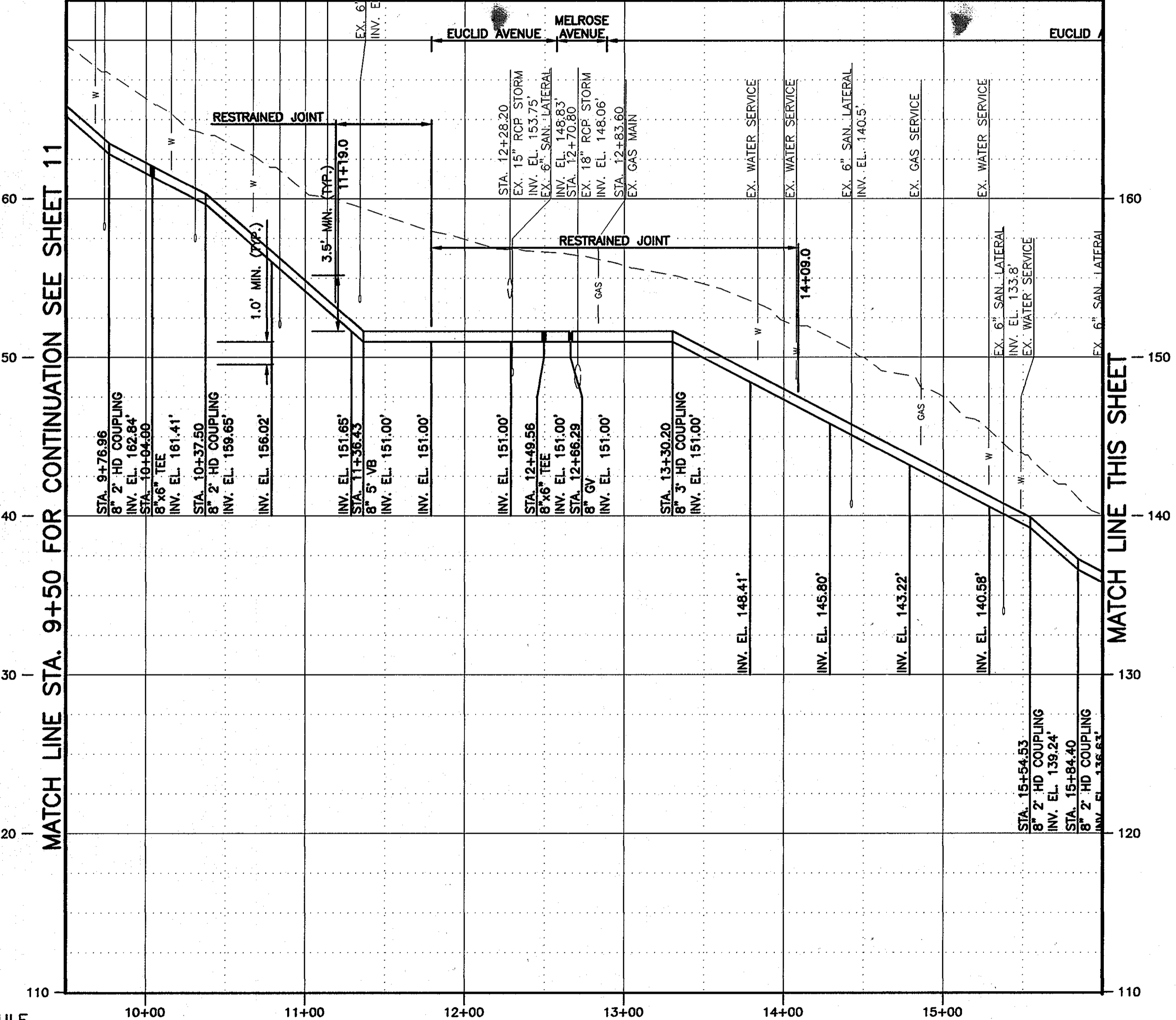
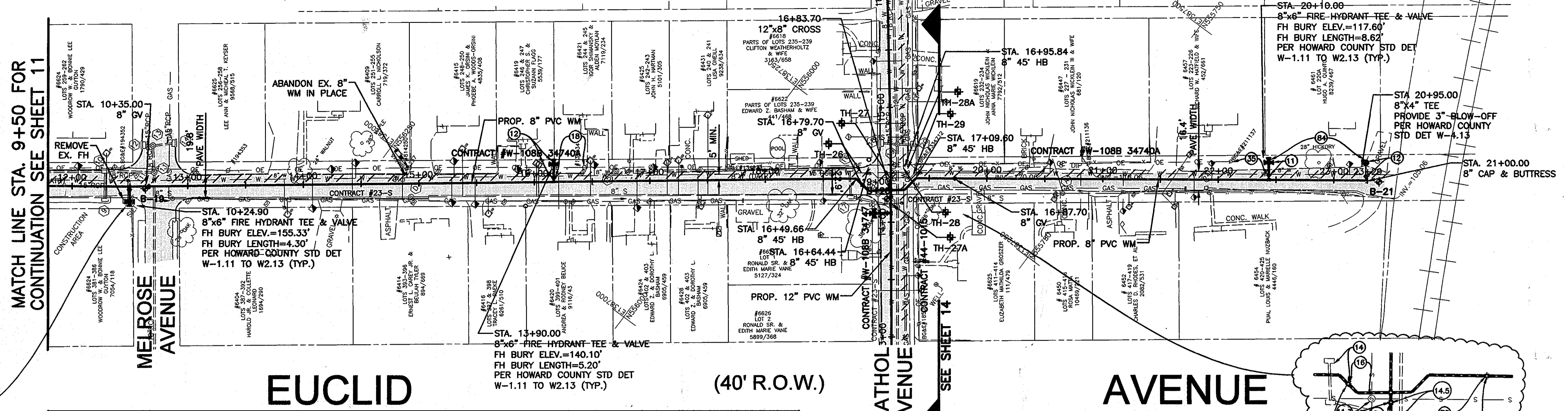
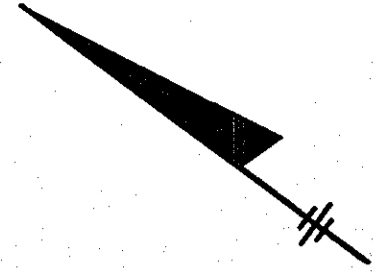
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2009

DSN. BY:	RPW/GLF	RJD	1	AS-BUILTS	
DRN. BY:	RPW	RJD	0	ISSUED FOR BID	06/08
CHK. BY:	GLF	BY	NO.	REVISION	DATE
DATE:	JUNE, 2009				

EUCLID AVENUE PLAN AND PROFILE
STA. 0+00.00 TO STA. 9+50.00
600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

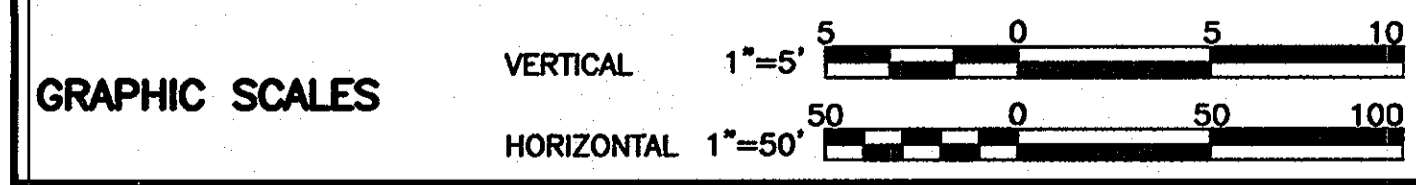
HARWOOD PARK WATER MAIN REPLACEMENTS
CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 11 OF 38
FILE NO. 33498-110F



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]*

SEE SHEET 3 FOR SOIL BORING SCHEDULE



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *[Signature]*
 Chief, Bureau of Engineering: *[Signature]*
 Chief, Bureau of Utilities: *[Signature]*
 Chief, Utility Design Division: *[Signature]*

O'BRIEN & GERE ENGINEERS, INC.
 8401 Corporate Drive
 Suite 400
 Landover, Maryland 20785
 (301) 731-5522
 FAX: (301) 577-4737

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DSN. BY:	RPW/GLF				
DRN. BY:	RPW				
CHK. BY:	GLF				
DATE:	JUNE, 2009				
BY	NO.	RJD	1	AS-BUILTS	
		RJD	0	ISSUED FOR BID	06/09
				REVISION	DATE

EUCLID AVENUE
PLAN AND PROFILE
 STA. 9+50.00 TO STA. 21+15.50

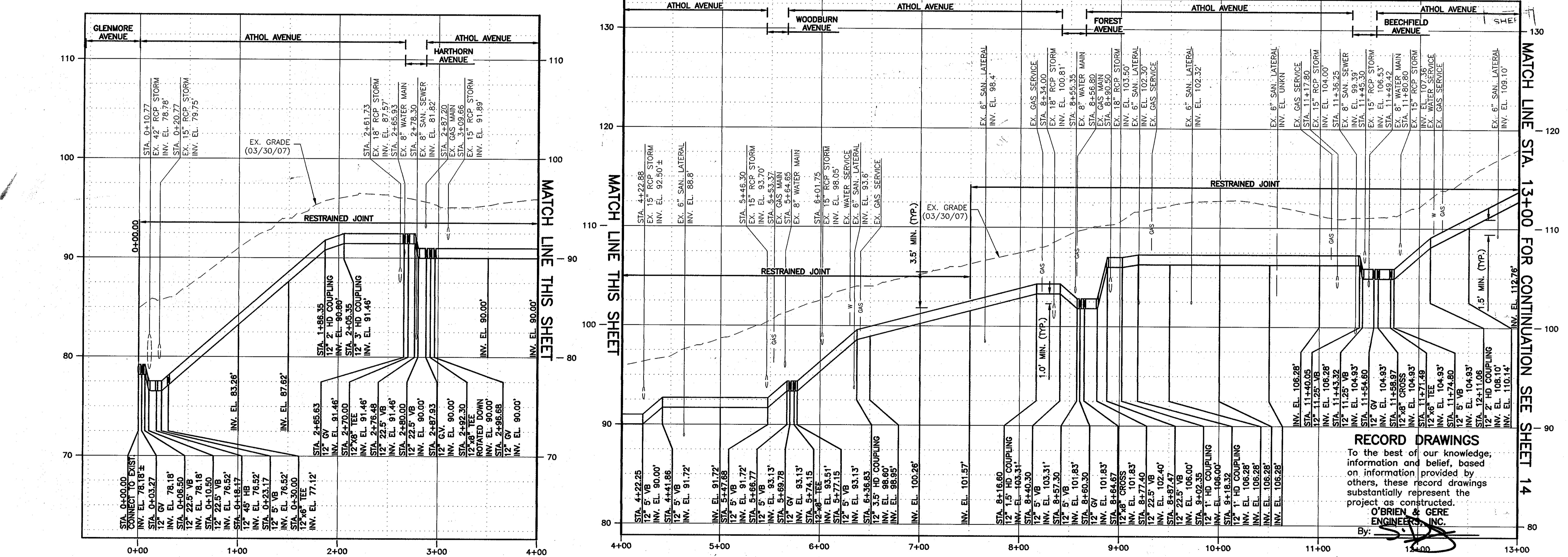
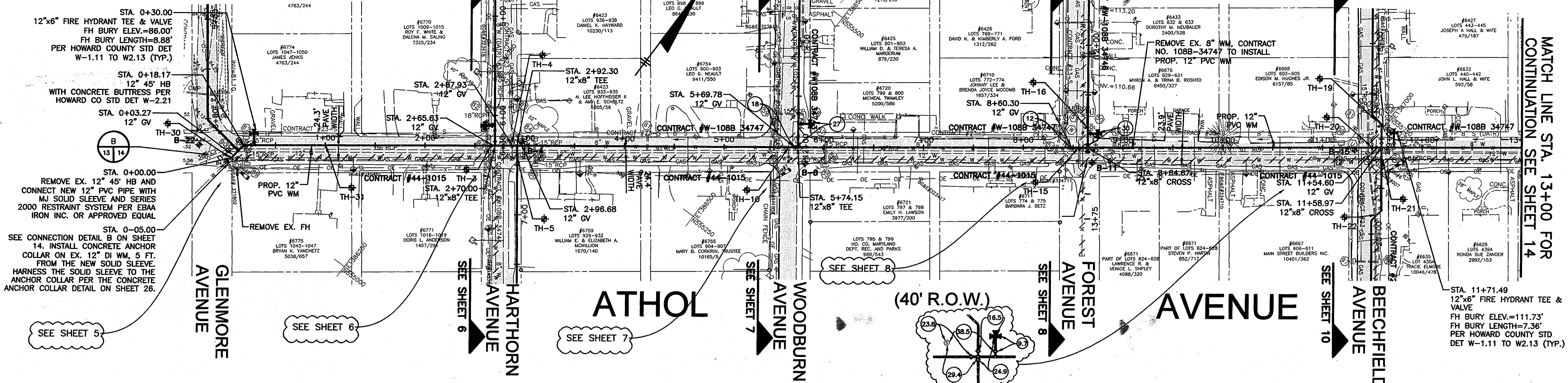
HARWOOD PARK
WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 12 OF 38
 FILE NO. 33498-111F

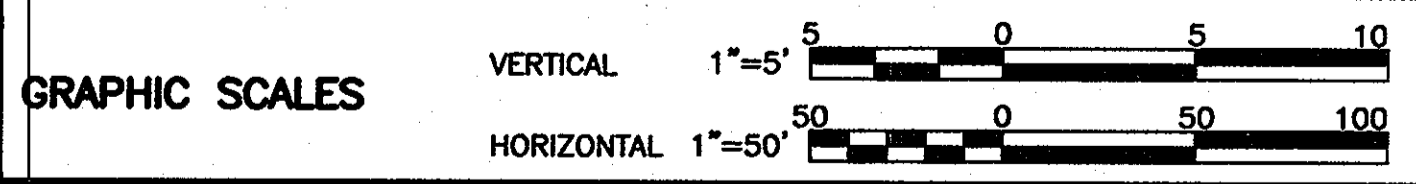
MATCH LINE STA. 13+00 FOR CONTINUATION SEE SHEET 14

MATCH LINE STA. 13+00 FOR CONTINUATION SEE SHEET 14

SCALE AS SHOWN SHEET 13 OF 38

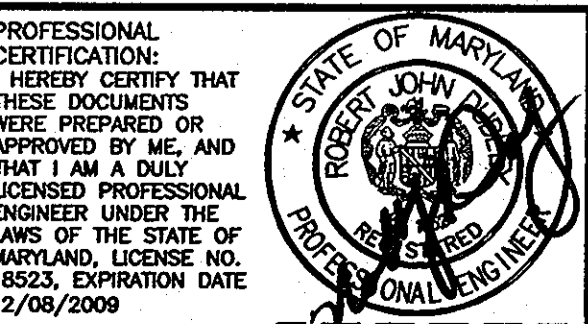


SEE SHEET 3 FOR SOIL BORING SCHEDULE



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *John J. ...*
 Chief, Bureau of Engineering: *Thomas R. Butler* 2/3/14
 Chief, Bureau of Utilities: *...* 2/5/14

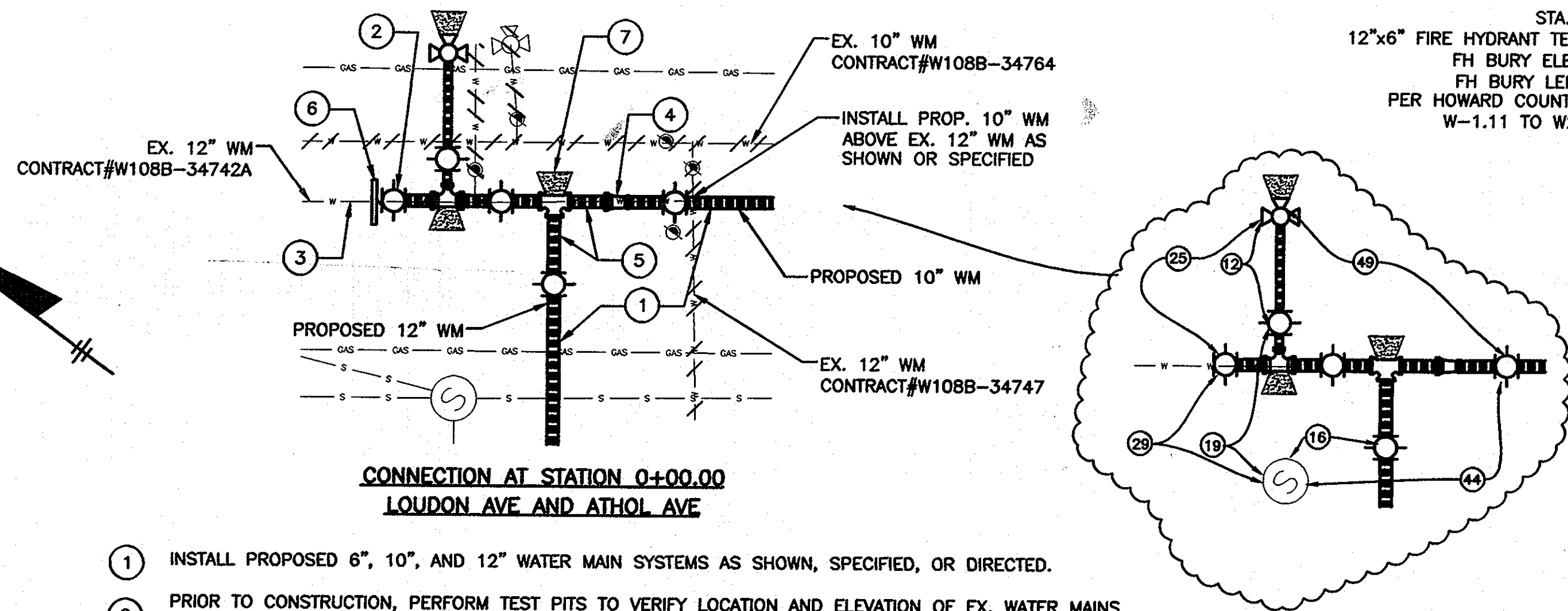
O'BRIEN & GERE ENGINEERS, INC.
 8401 Corporate Drive
 Suite 400
 Landover, Maryland 20785
 (301) 731-5622
 FAX: (301) 577-4737



DSN. BY:	RPW/GLF				
DRN. BY:	RPW				
CHK. BY:	GLF	RJD	1	AS-BUILTS	
DATE:	JUNE, 2009	RJD	0	ISSUED FOR BID	06/09
		BY	NO.	REVISION	DATE

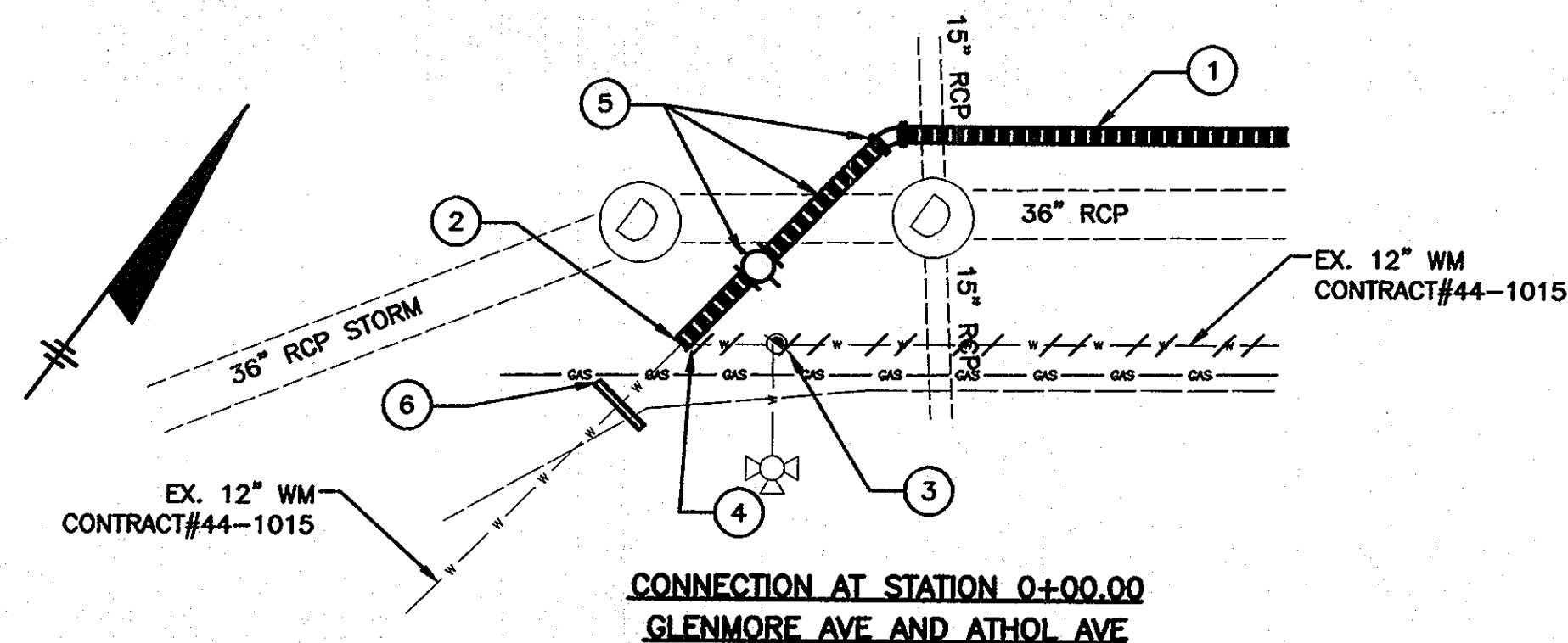
ATHOL AVENUE
 PLAN AND PROFILE
 STA. 0+00.00 TO STA. 13+00.00
 600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

AS-BUILT REPLACEMENT SHEET 1/29/14
 HARWOOD PARK
 WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND



- 1 INSTALL PROPOSED 6", 10", AND 12" WATER MAIN SYSTEMS AS SHOWN, SPECIFIED, OR DIRECTED.
- 2 PRIOR TO CONSTRUCTION, PERFORM TEST PITS TO VERIFY LOCATION AND ELEVATION OF EX. WATER MAINS IMPACTING THE 3 WAY AND HYDRANT CONNECTIONS. UPON COMPLETION OF TEST PITS, CONTACT ENGINEER IF DESIGN REVISIONS ARE REQUIRED.
- 3 COORDINATE COUNTY SHUT DOWN OF EX. GATE VALVES.
- 4 REMOVE EX. WATER MAIN PIPING AND RELATED APPURTENANCES AS NEEDED.
- 5 INSTALL PROPOSED 12" PIPING, 12"x10" REDUCER, 10" PIPING, 12" AND 10" GATE VALVES, 12"x12" TEE, 12" 45 DEG. VERTICAL BENDS, 12" SOLID SLEEVE JOINT, 6" PIPING, 6" GATE VALVE, 6" 45 DEG. VERTICAL BENDS, 6" SOLID SLEEVE JOINT, AND ALL RELATED APPURTENANCES AS SHOWN, SPECIFIED, OR DIRECTED. ALL VALVES AND FITTINGS SHALL BE MECHANICAL JOINT, RESTRAINED USING THE SERIES 2000 PVC PIPE RESTRAINT SYSTEM BY EBAA IRON, INC. OR APPROVED EQUAL.
- 6 INSTALL A CONCRETE ANCHOR COLLAR ON THE EX. 12" WM. CONTRACTOR SHALL FIELD LOCATE EXIST. PIPE JOINTS AND INSTALL THE ANCHOR COLLAR A MAXIMUM OF 10' FROM THE NEW SOLID SLEEVE. HARNESS THE SLEEVE TO THE ANCHOR COLLAR PER THE ANCHOR COLLAR DETAIL ON SHEET 26.
- 7 POUR CONCRETE BUTTRESSING BEHIND ALL TEES, AT 45 DEGREE VERTICAL BENDS, AND ELSEWHERE AS SHOWN, SPECIFIED, OR DIRECTED.

CONNECTION DETAIL
N.T.S.

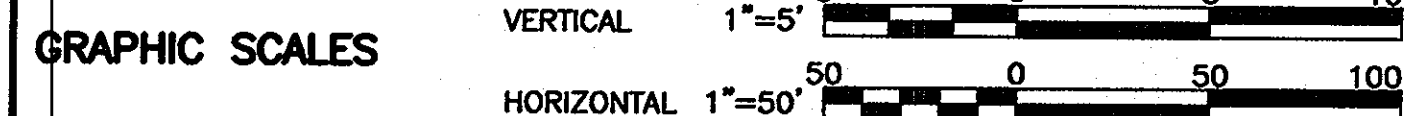


- 1 INSTALL PROPOSED 12" WATER MAIN SYSTEMS AS SHOWN, SPECIFIED, OR DIRECTED.
- 2 PRIOR TO CONSTRUCTION, PERFORM TEST PITS TO VERIFY LOCATION AND ELEVATION OF EX. WATER MAIN IMPACTING THE CONNECTION. UPON COMPLETION OF TEST PITS, CONTACT ENGINEER IF DESIGN REVISIONS ARE REQUIRED.
- 3 COORDINATE WITH THE COUNTY SHUT DOWN OF EX. GATE VALVES.
- 4 REMOVE EX. WATER MAIN PIPING AND RELATED APPURTENANCES AS NEEDED.
- 5 INSTALL PROPOSED 12" PIPING, 12" GV, 12" 45 DEG. HORIZONTAL BEND, 12" 22.5 DEG. VERTICAL BENDS, 12" SOLID SLEEVE JOINT, AND ALL RELATED APPURTENANCES AS SHOWN, SPECIFIED, OR DIRECTED. ALL VALVES AND FITTINGS SHALL BE MECHANICAL JOINT, RESTRAINED USING THE SERIES 2000 PVC PIPE RESTRAINT SYSTEM BY EBAA IRON, INC. OR APPROVED EQUAL.
- 6 INSTALL A CONCRETE ANCHOR COLLAR ON THE EX. 12" WM. CONTRACTOR SHALL FIELD LOCATE EXIST. PIPE JOINTS AND INSTALL THE ANCHOR COLLAR A MAXIMUM OF 10' FROM THE NEW SOLID SLEEVE. HARNESS THE SLEEVE TO THE ANCHOR COLLAR PER THE ANCHOR COLLAR DETAIL ON SHEET 26.
- 7 POUR CONCRETE BUTTRESSING BEHIND ALL TEES, AT 45 DEGREE VERTICAL BENDS, AND ELSEWHERE AS SHOWN, SPECIFIED, OR DIRECTED.

CONNECTION DETAIL
N.T.S.



SEE SHEET 3 FOR SOIL BORING SCHEDULE



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *James G. Butler* 2/16/14
 Chief - Bureau of Engineering: *James G. Butler* 2/16/14
 Chief, Bureau of Utilities: *Silvan C. Gann* 2/16/14
 Chief Utility Design Division: *Debra R. Pines* 2/15/14

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

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18823, EXPIRATION DATE 12/08/2009

DSN. BY: RPW/GLF
 DRN. BY: RPW
 CHK. BY: GLF
 DATE: JUNE, 2009

RJD 1
 RUD 0
 BY NO.

AS-BUILTS
 ISSUED FOR BID
 REVISION

06/09
 DATE

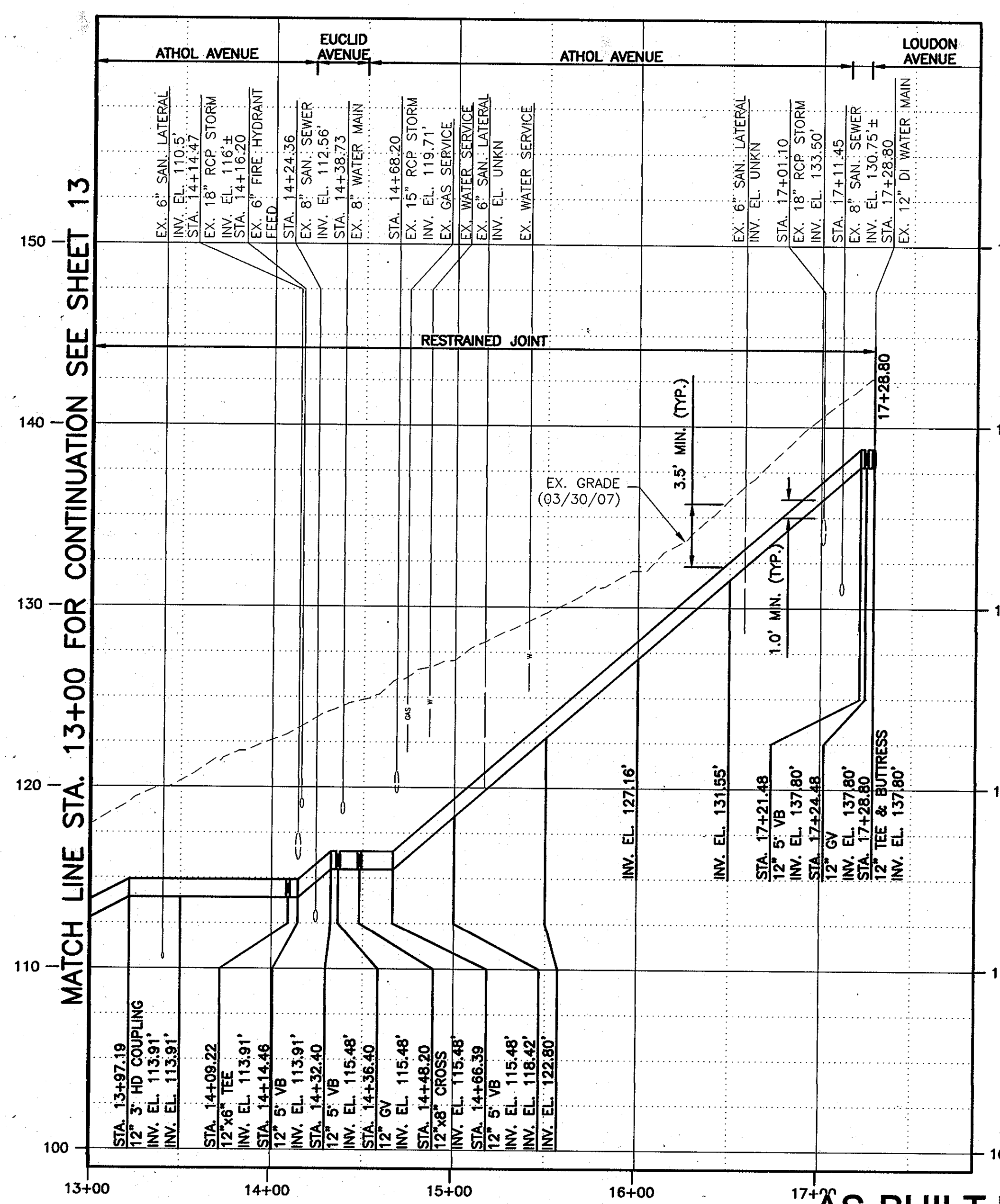
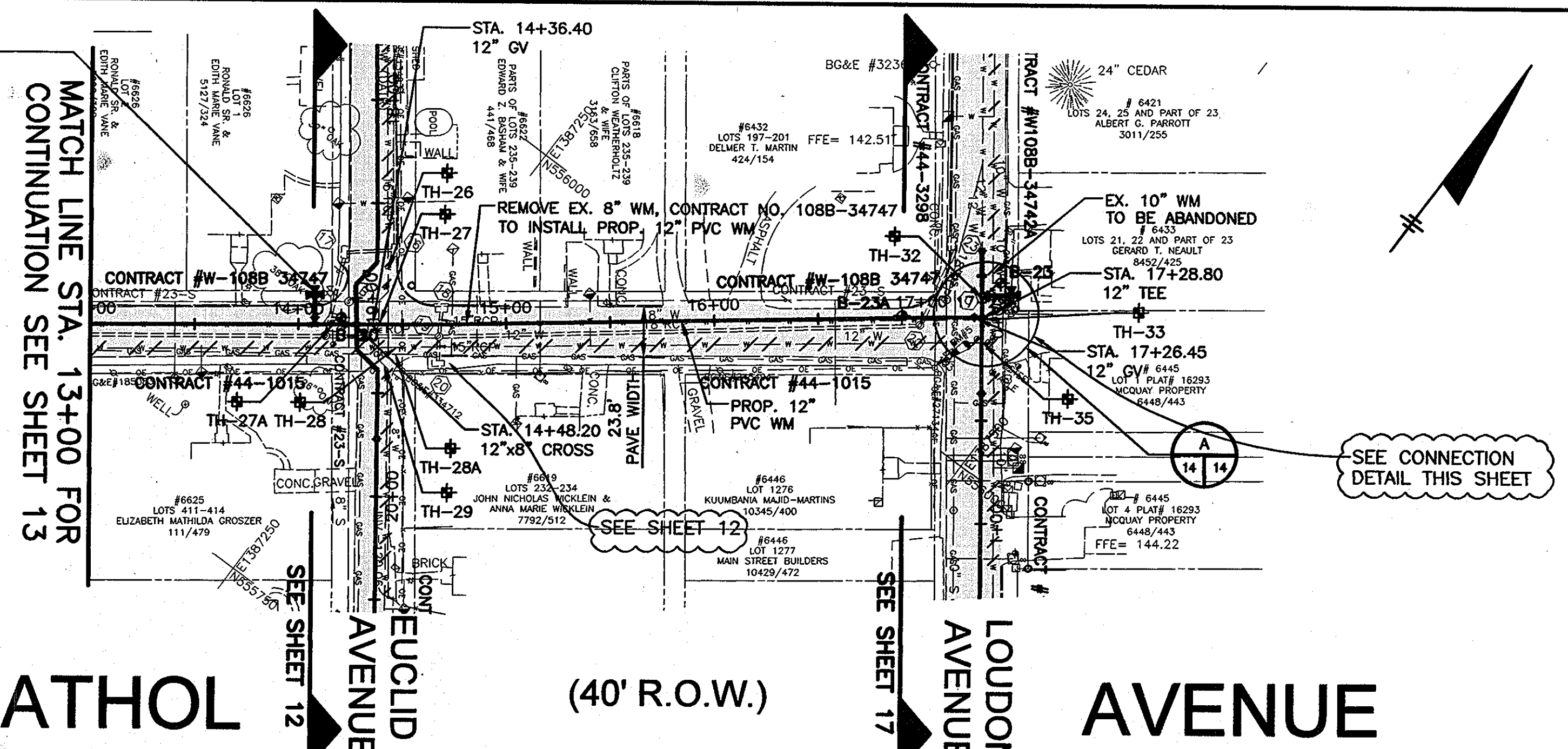
ATHOL AVENUE
PLAN AND PROFILE
STA 13+00.00 TO STA 17+28.80

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

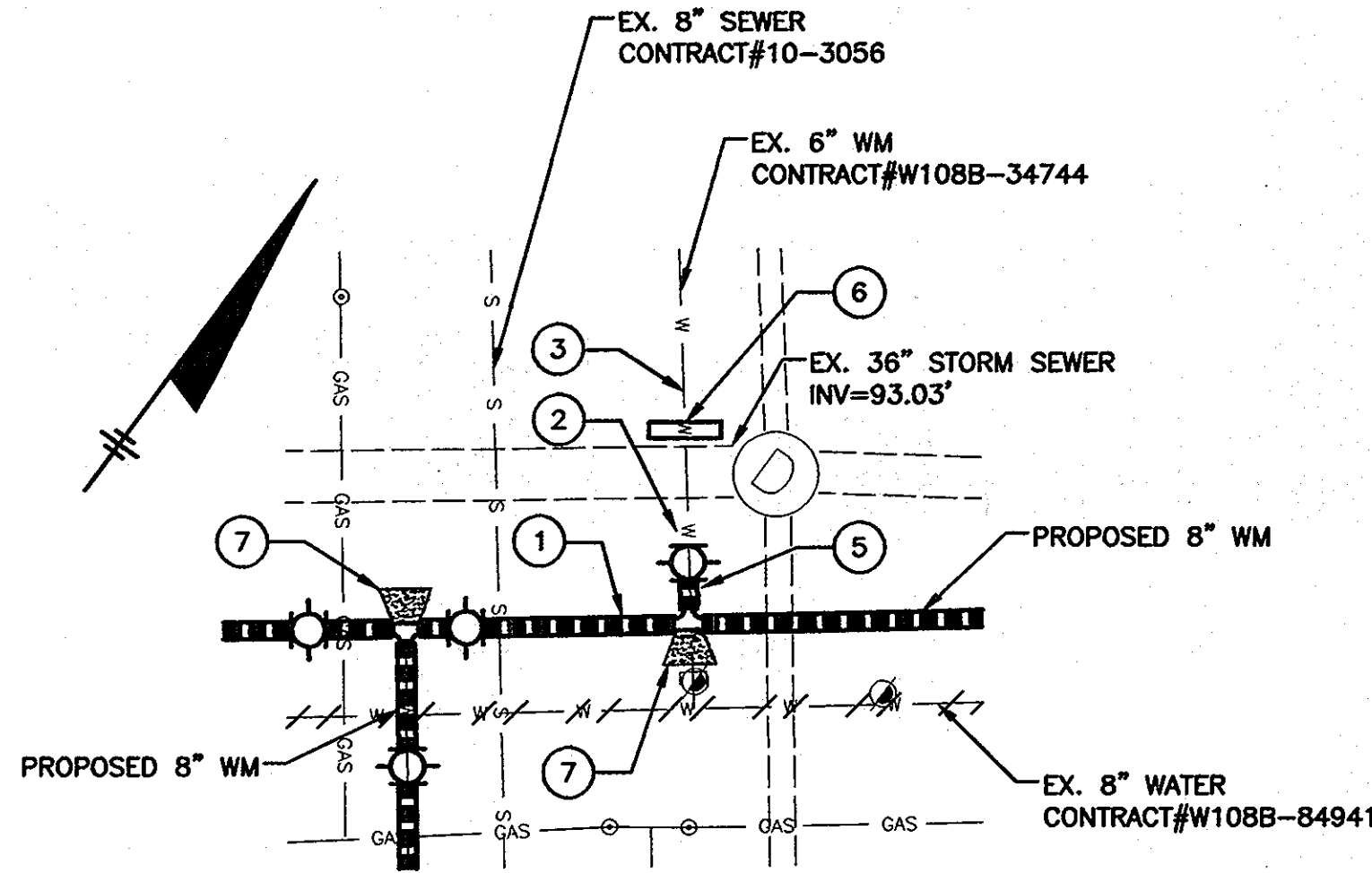
HARWOOD PARK
WATER MAIN REPLACEMENTS
CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

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]*

SCALE AS SHOWN
SHEET 14 OF 38



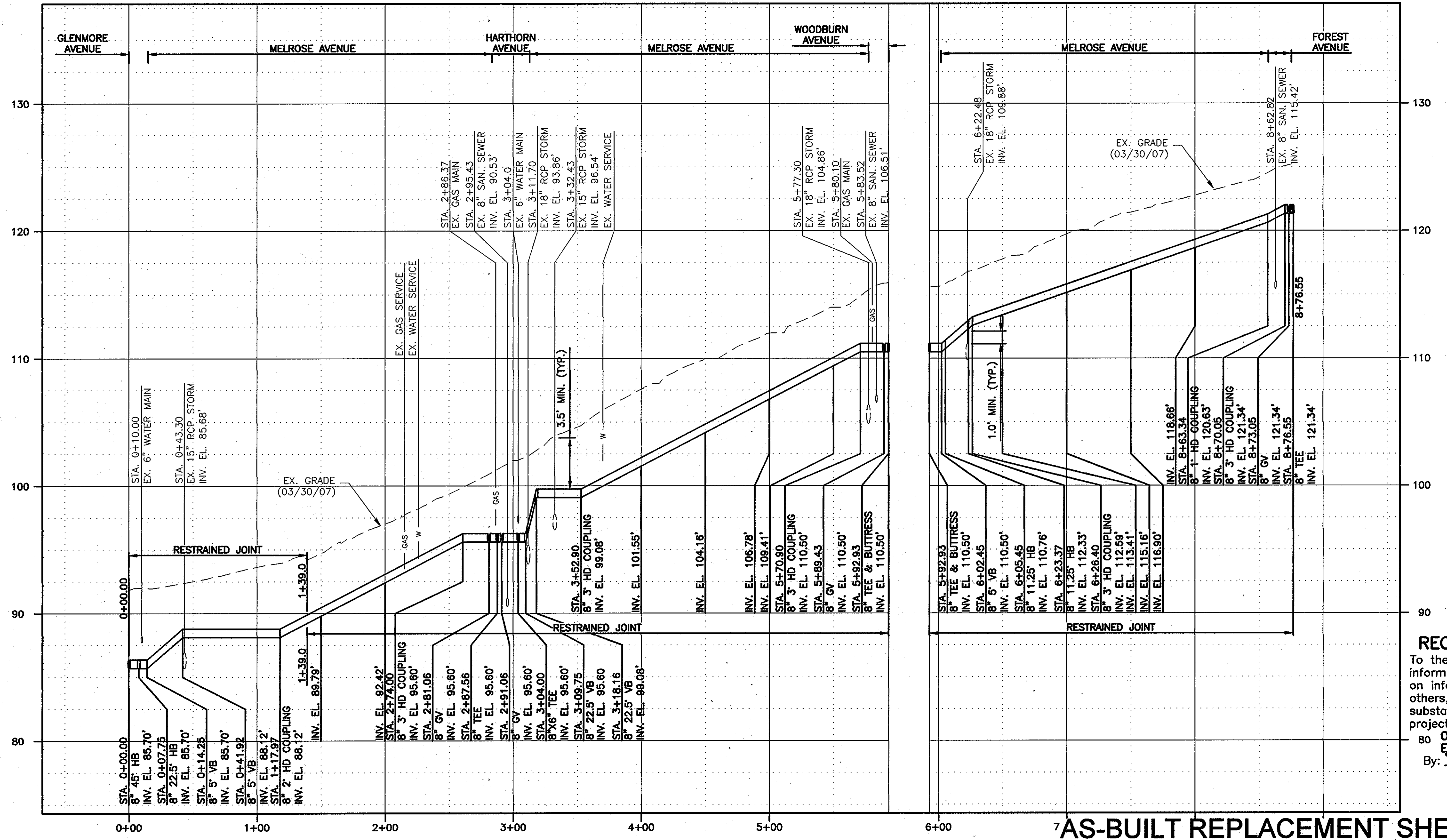
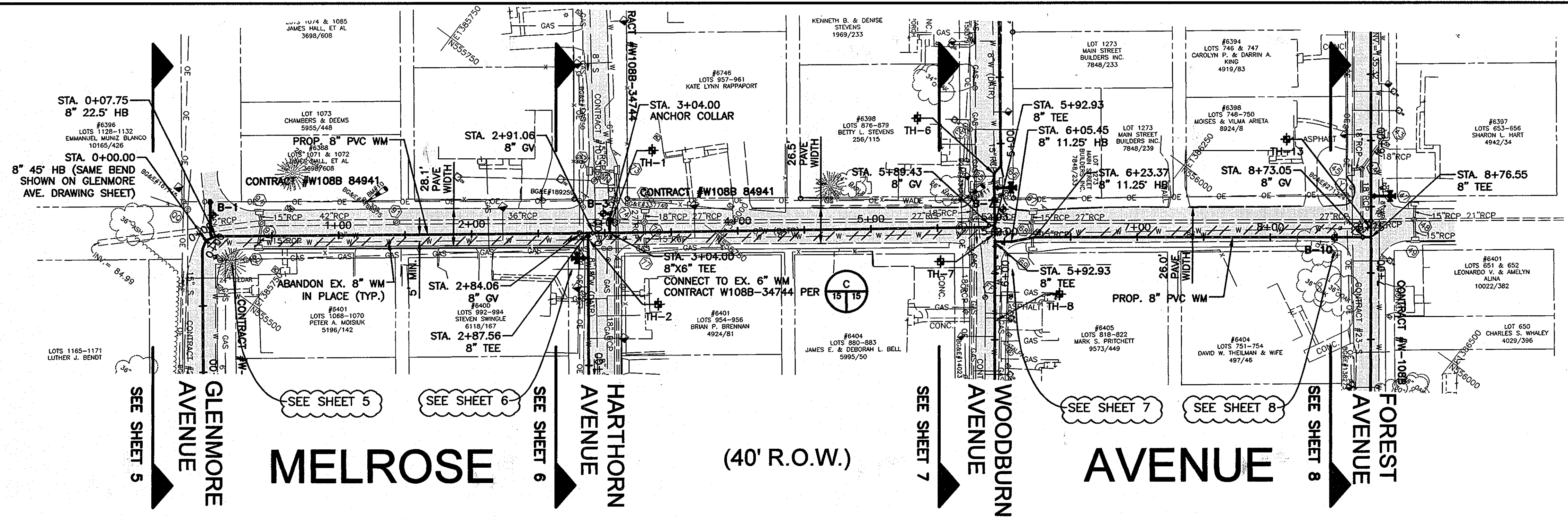
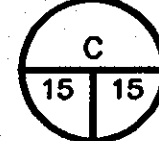
AS-BUILT REPLACEMENT SHEET 1/29/14



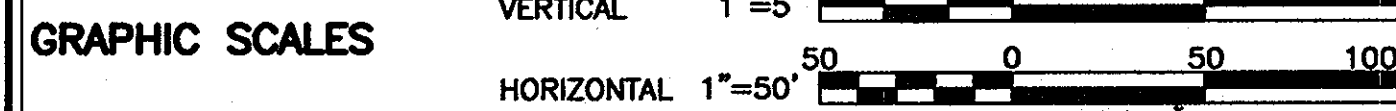
**CONNECTION AT STATION 3+04.00
MELROSE AVE AND HARTHORN AVE**

- 1 INSTALL PROPOSED 6" WATER MAIN SYSTEM AS SHOWN, SPECIFIED, OR DIRECTED.
- 2 PRIOR TO CONSTRUCTION, PERFORM TEST PITS TO VERIFY LOCATION AND ELEVATION OF EX. WATER MAINS IMPACTING THE HARTHORN AVE CONNECTION. UPON COMPLETION OF TEST PITS, CONTACT ENGINEER IF DESIGN REVISIONS ARE REQUIRED.
- 3 COORDINATE COUNTY SHUT DOWN OF EX. GATE VALVES.
- 4 REMOVE EX. WATER MAIN PIPING AND RELATED APPURTENANCES AS NEEDED.
- 5 INSTALL PROPOSED 6" PIPING, 6" 45 DEG. VERTICAL BENDS, 6" SOLID SLEEVE JOINT, AND ALL RELATED APPURTENANCES AS SHOWN, SPECIFIED, OR DIRECTED. WORK DESCRIPTION ASSUMES THE 8" X 6" TEE AND 6" GATE VALVE HAVE ALREADY BEEN INSTALLED. ALL VALVES AND FITTINGS SHALL BE MECHANICAL JOINT, RESTRAINED USING THE SERIES 2000 PVC PIPE RESTRAINT SYSTEM BY EBAA IRON, INC. OR APPROVED EQUAL.
- 6 INSTALL CONCRETE ANCHOR COLLAR ON THE EX. 8" WM. CONTRACTOR SHALL FIELD LOCATE EXIST. PIPE JOINTS AND INSTALL THE ANCHOR COLLAR A MAXIMUM OF 10' FROM THE NEW SLEEVE, AND PAST THE EXIST. STORM SEWER. HARNESS THE SLEEVE TO THE ANCHOR COLLAR PER THE ANCHOR COLLAR DETAIL ON SHEET 26.
- 7 POUR CONCRETE BUTTRESSING BEHIND THE TEE, AT 45 DEG. VERTICAL BENDS, AND ELSEWHERE AS SHOWN, SPECIFIED, OR DIRECTED.

CONNECTION DETAIL
N.T.S.



SEE SHEET 3 FOR SOIL BORING SCHEDULE



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 2/26/14
 Chief - Bureau of Engineering: *[Signature]* 2/14/14
 Chief, Bureau of Utilities: *[Signature]* 2/15/14
 Chief, Utility Design Division: *[Signature]* 2/15/14

O'BRIEN & GERE ENGINEERS, INC.
 8401 Corporate Drive
 Suite 400
 Landover, Maryland 20785
 (301) 731-5822
 FAX: (301) 577-4737

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18923, EXPIRATION DATE 12/08/2009



DSN. BY:	RPW/GLF
DRN. BY:	RPW
CHK. BY:	GLF
DATE:	JUNE, 2009
RJD	1
RJD	0
BY	NO.

**MELROSE AVENUE
PLAN AND PROFILE
STA. 0+00.00 TO STA. 8+75.16**

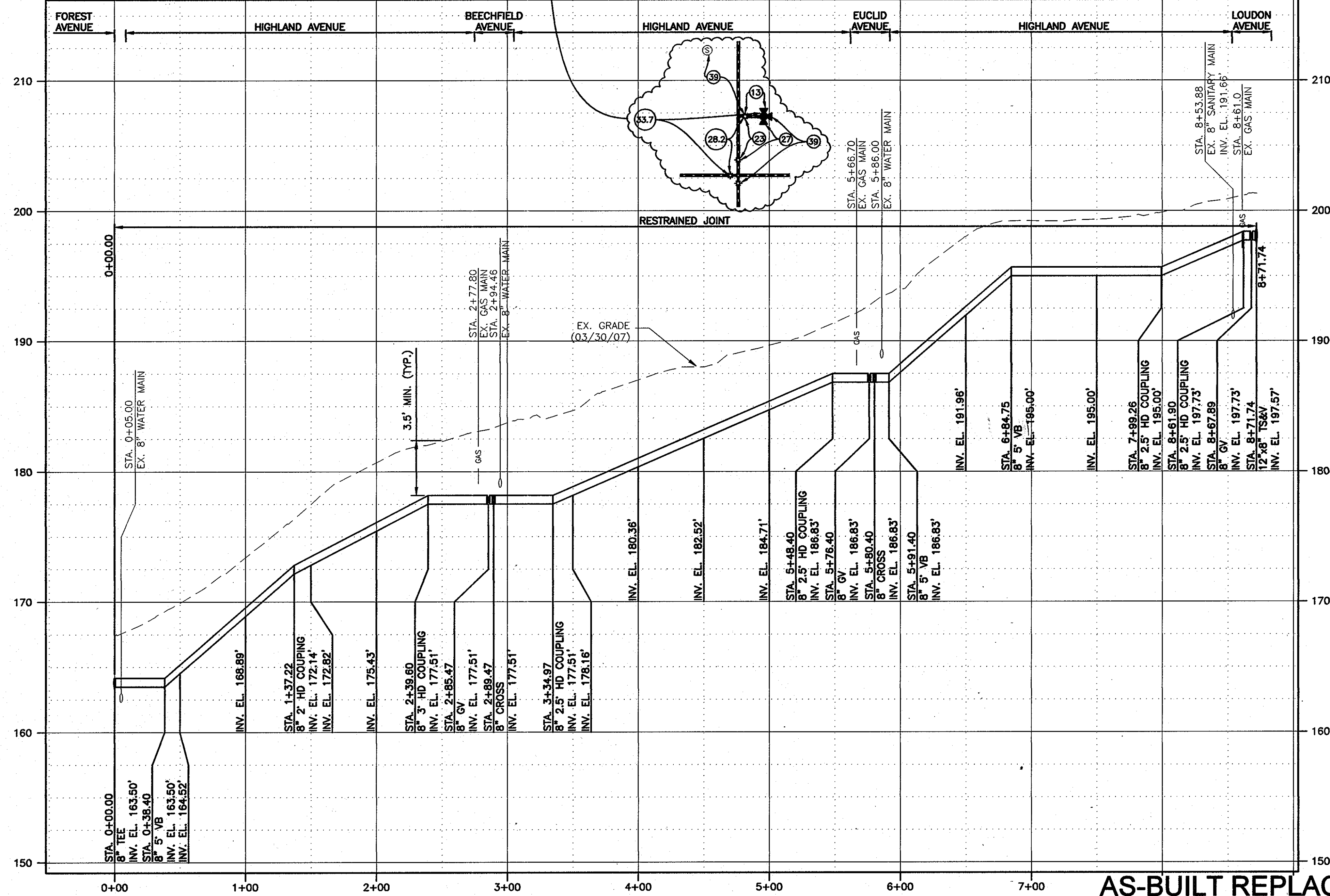
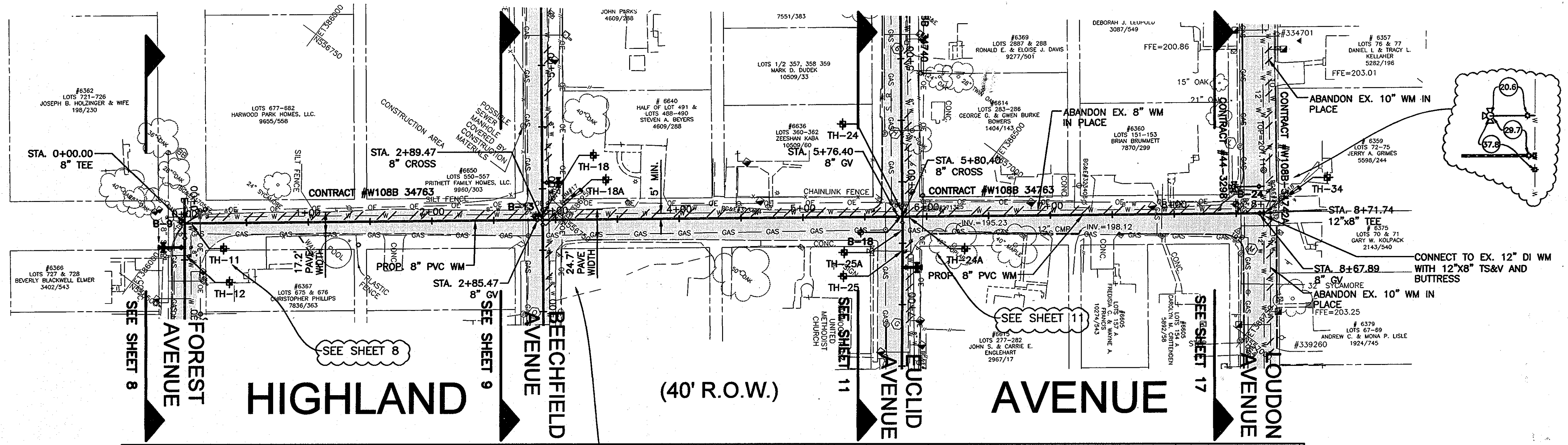
AS-BUILTS
ISSUED FOR BID 06/09

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

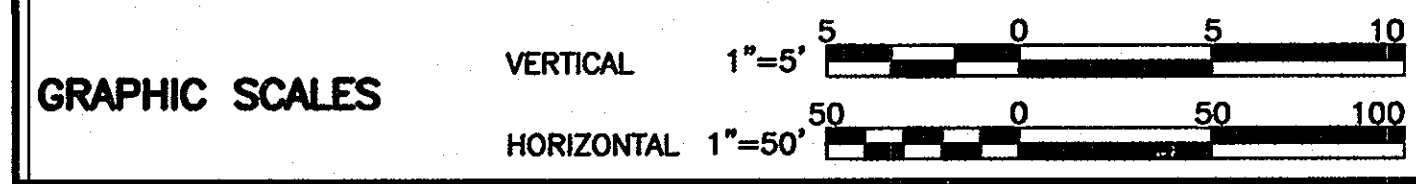
**HARWOOD PARK
WATER MAIN REPLACEMENTS**
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 15 OF 38

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]*



SEE SHEET 3 FOR SOIL BORING SCHEDULE



AS-BUILT REPLACEMENT SHEET 1/29/14

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *Raymond...* 2/10/14
 Chief - Bureau of Engineering: *Thomas B. Butler* 2/1/14
 Chief, Bureau of Utilities: *...* 2/5/14
 Chief, Utility Design Division: *...* 2/5/14

O'BRIEN & GERE ENGINEERS, INC.
 8401 Corporate Drive Suite 400
 Landover, Maryland 20785
 (301) 731-5522 FAX: (301) 577-4737

PROFESSIONAL CERTIFICATION:
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18923, EXPIRATION DATE 12/08/2009

DSN. BY:	RPW/GLF
DRN. BY:	RPW
CHK. BY:	GLF
DATE:	JUNE, 2009
BY:	NO.
RJD	1
RJD	0

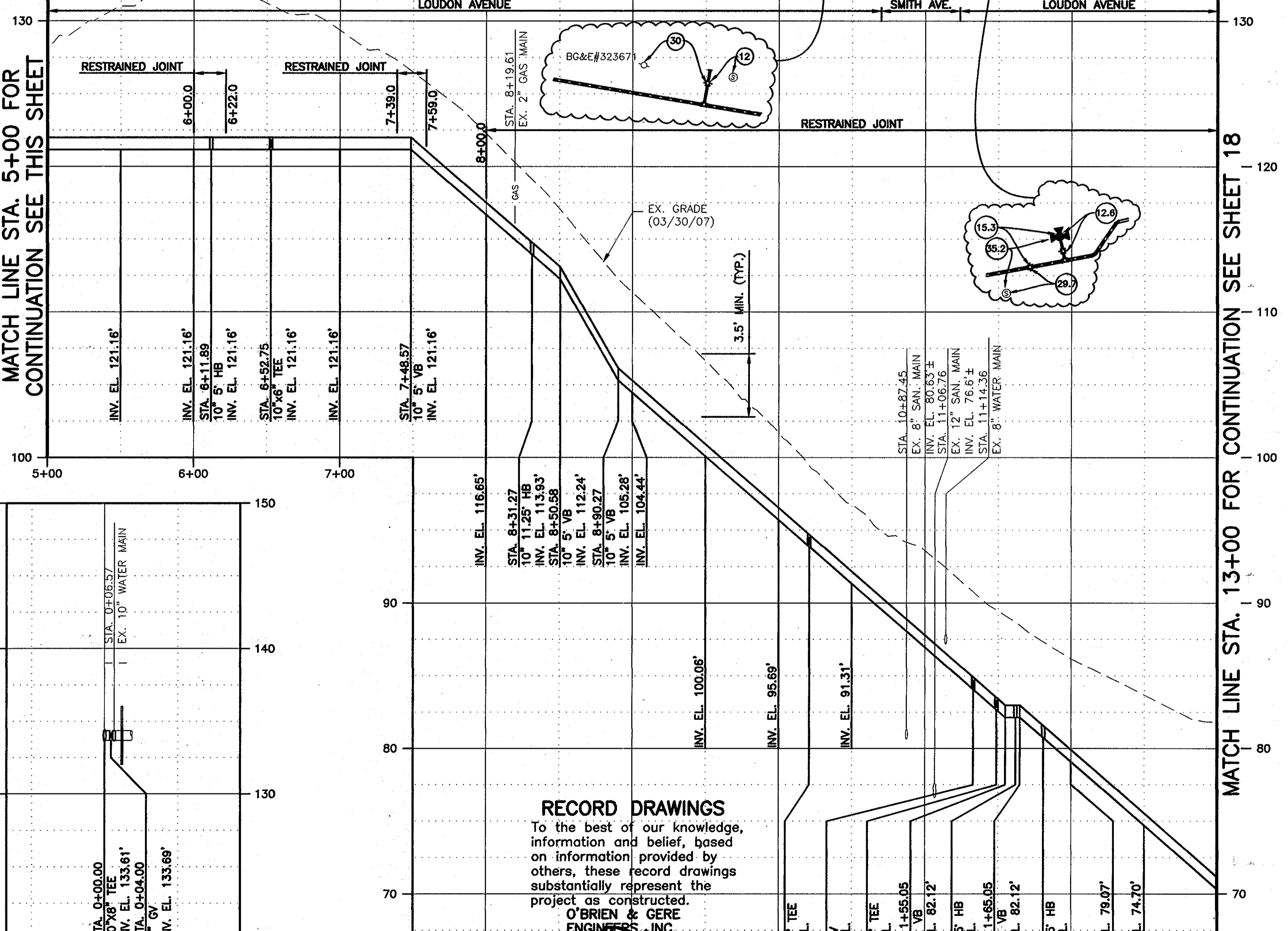
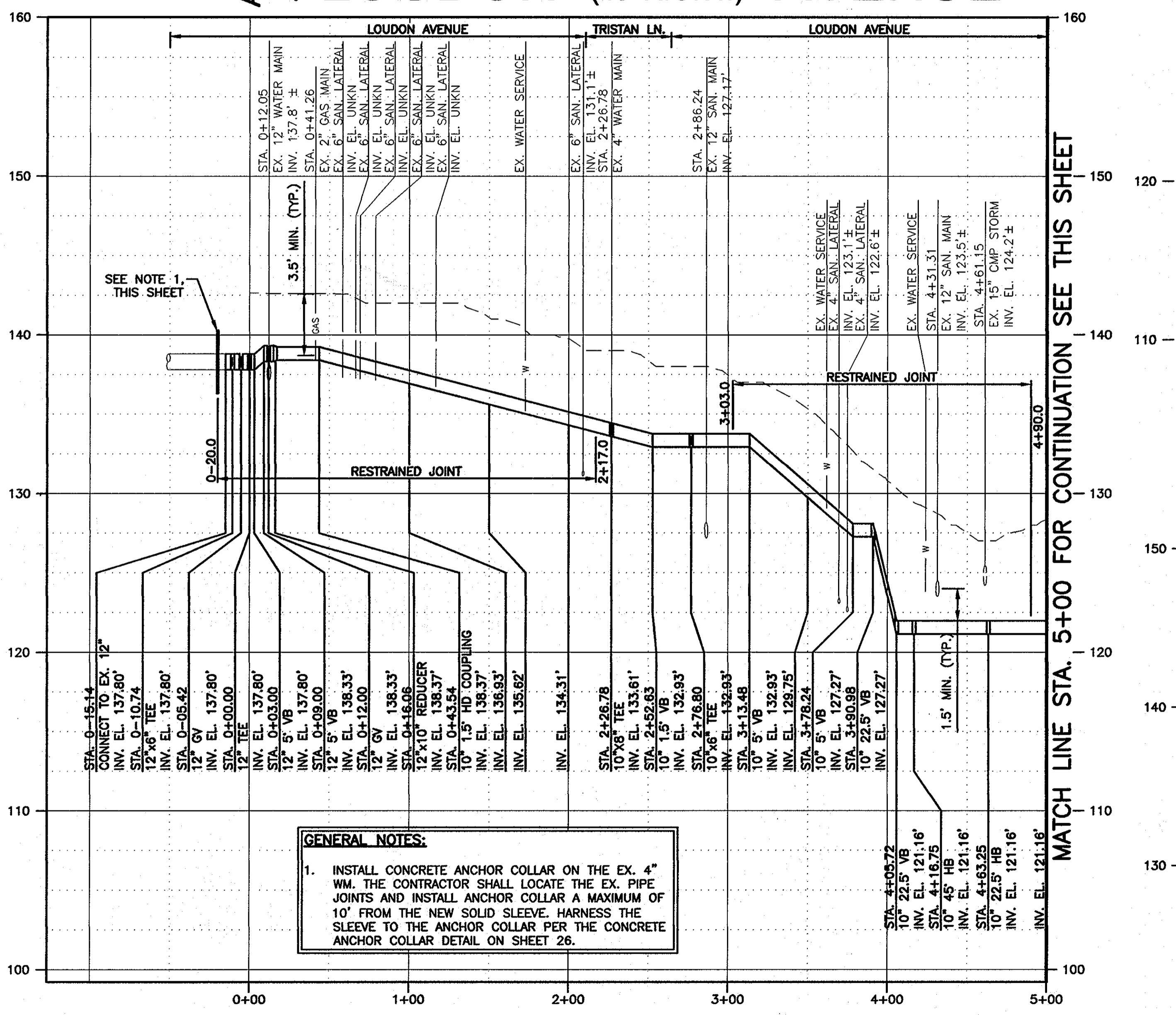
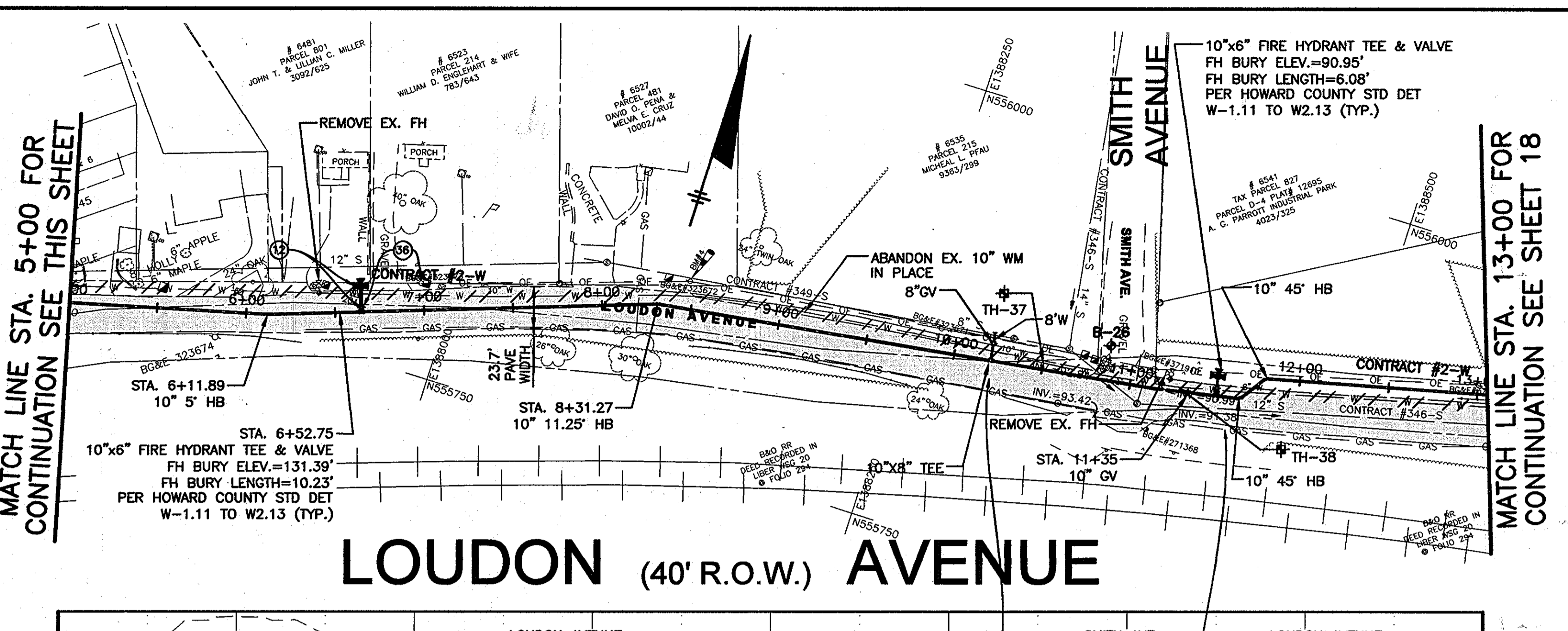
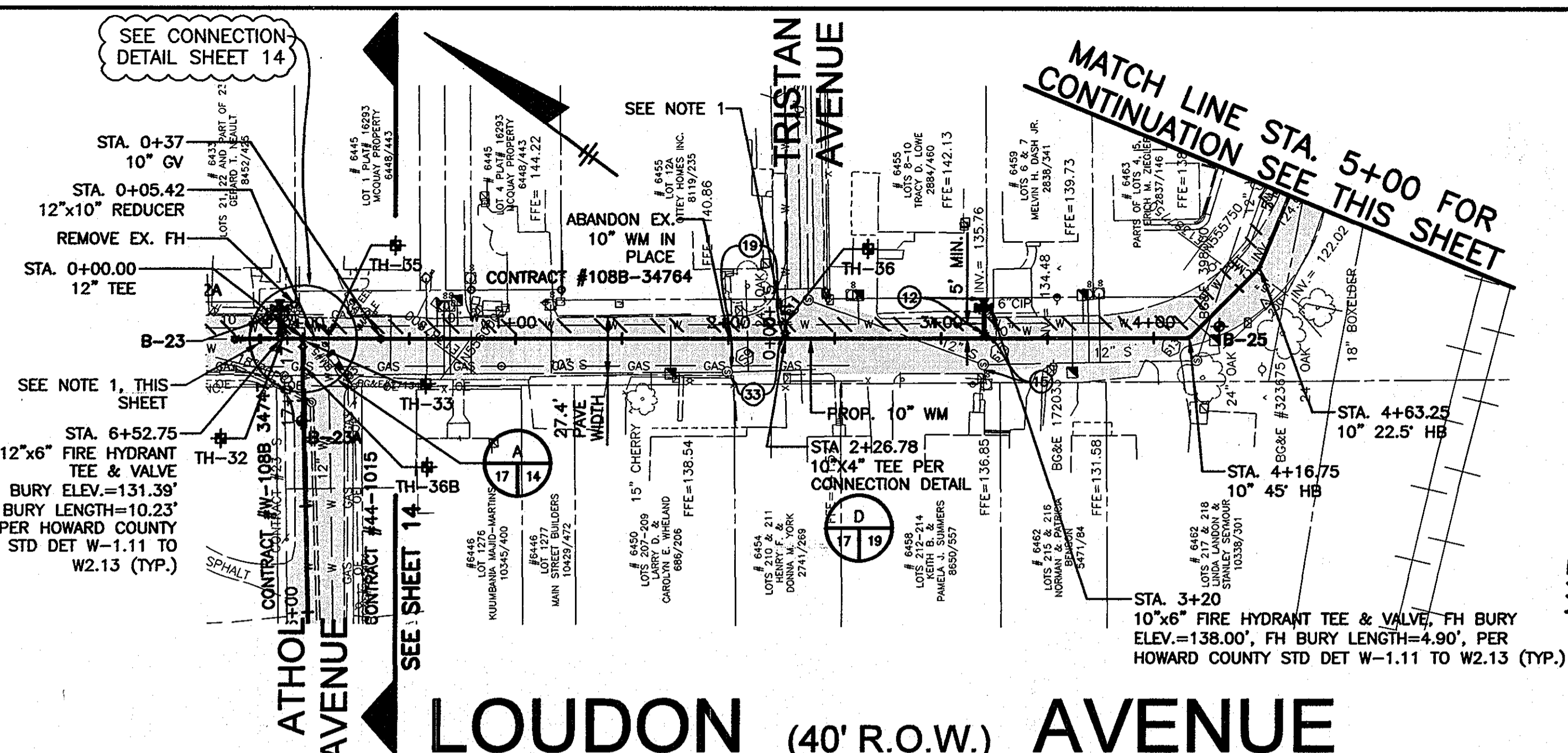
HIGHLAND AVENUE PLAN AND PROFILE
 STA. 0+00.00 TO STA. 8+71.74

AS-BUILTS	06/09
ISSUED FOR BID	06/09
REVISION	DATE

HARWOOD PARK WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

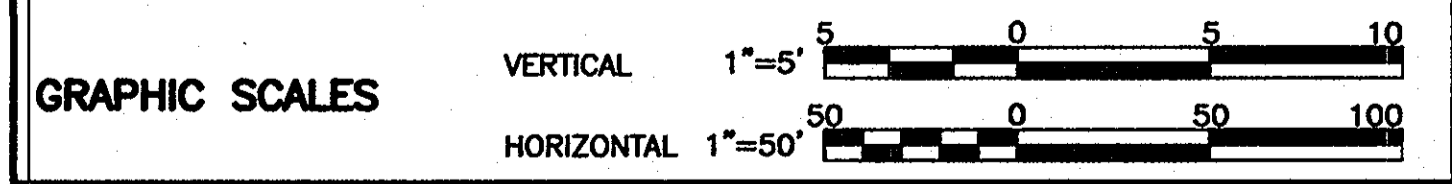
SCALE AS SHOWN
 SHEET 16 OF 38

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]*



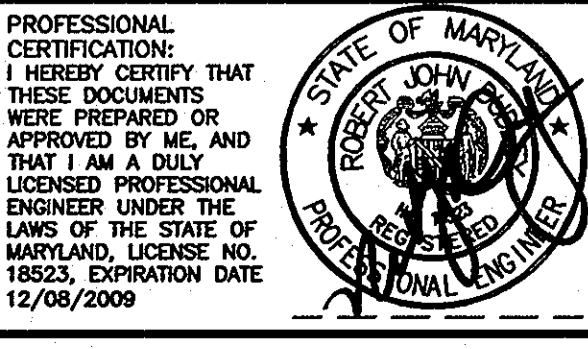
GENERAL NOTES:
 1. INSTALL CONCRETE ANCHOR COLLAR ON THE EX. 4" WM. THE CONTRACTOR SHALL LOCATE THE EX. PIPE JOINTS AND INSTALL ANCHOR COLLAR A MAXIMUM OF 10' FROM THE NEW SOLID SLEEVE. HARNESS THE SLEEVE TO THE ANCHOR COLLAR PER THE CONCRETE ANCHOR COLLAR DETAIL ON SHEET 26.

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
 Director of Public Works: *[Signature]* 2/19/14
 Chief, Bureau of Engineering: *[Signature]* 2/19/14
 Chief, Bureau of Utilities: *[Signature]* 2/19/14
 Chief, Utility Design Division: *[Signature]* 2/19/14

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

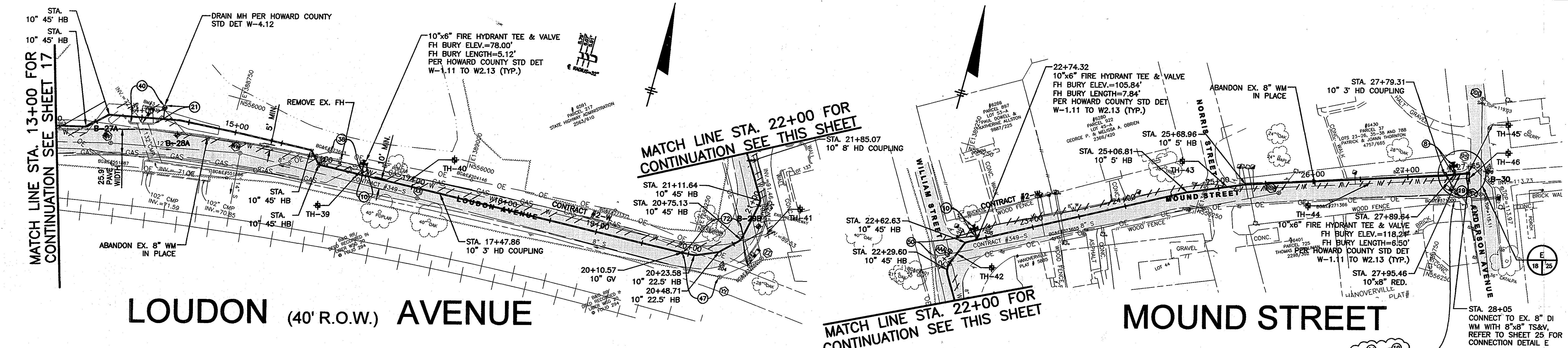


DSN. BY:	RPW/GLF
DRN. BY:	RPW
CHK. BY:	GLF
DATE:	JUNE, 2009
RJD	1
RJD	0
BY	NO.

LOUDON AVENUE PLAN AND PROFILE
 STA. 0+00.00 TO STA. 13+00.00
 AS-BUILTS
 ISSUED FOR BID
 REVISION
 DATE: 06/09

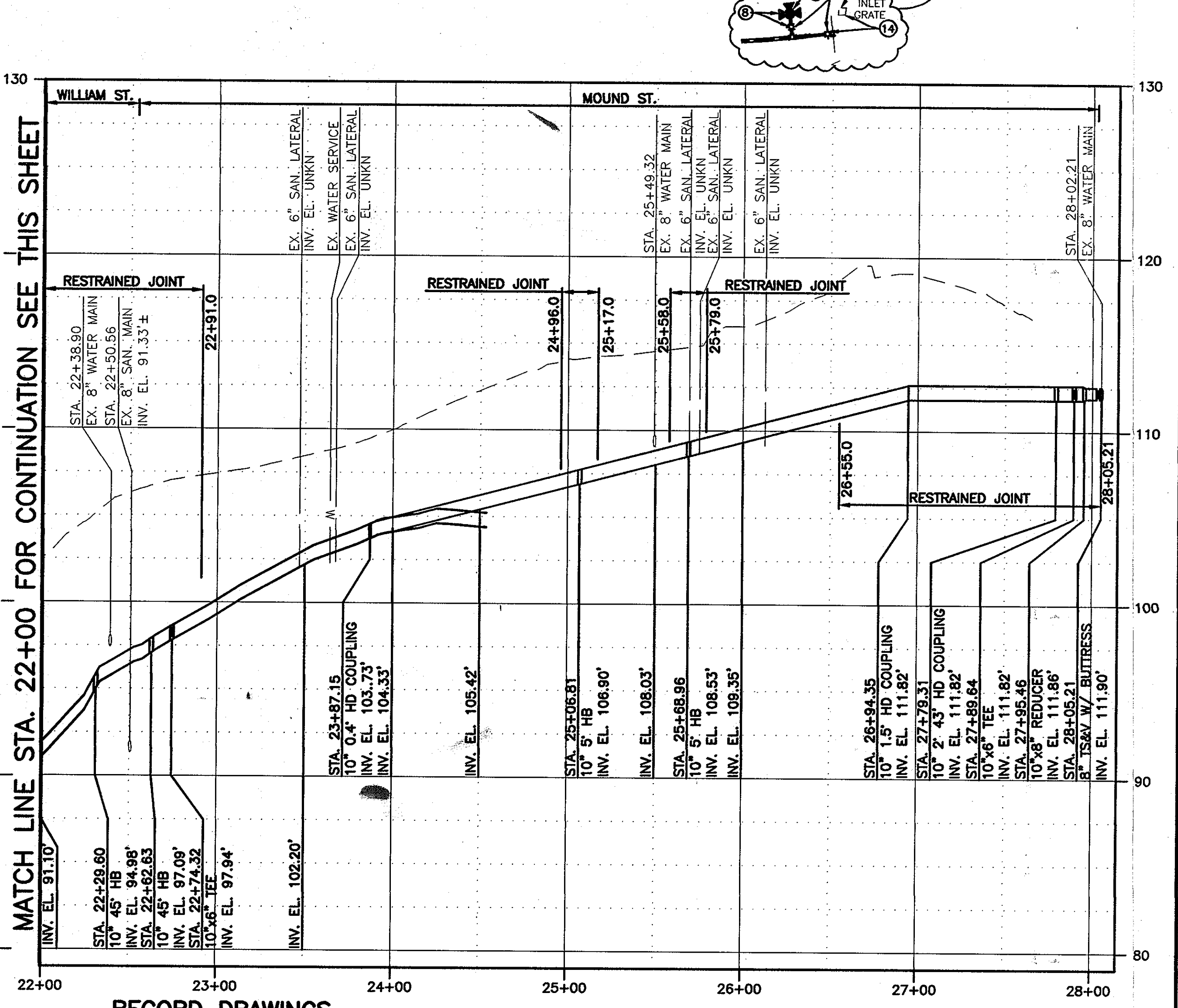
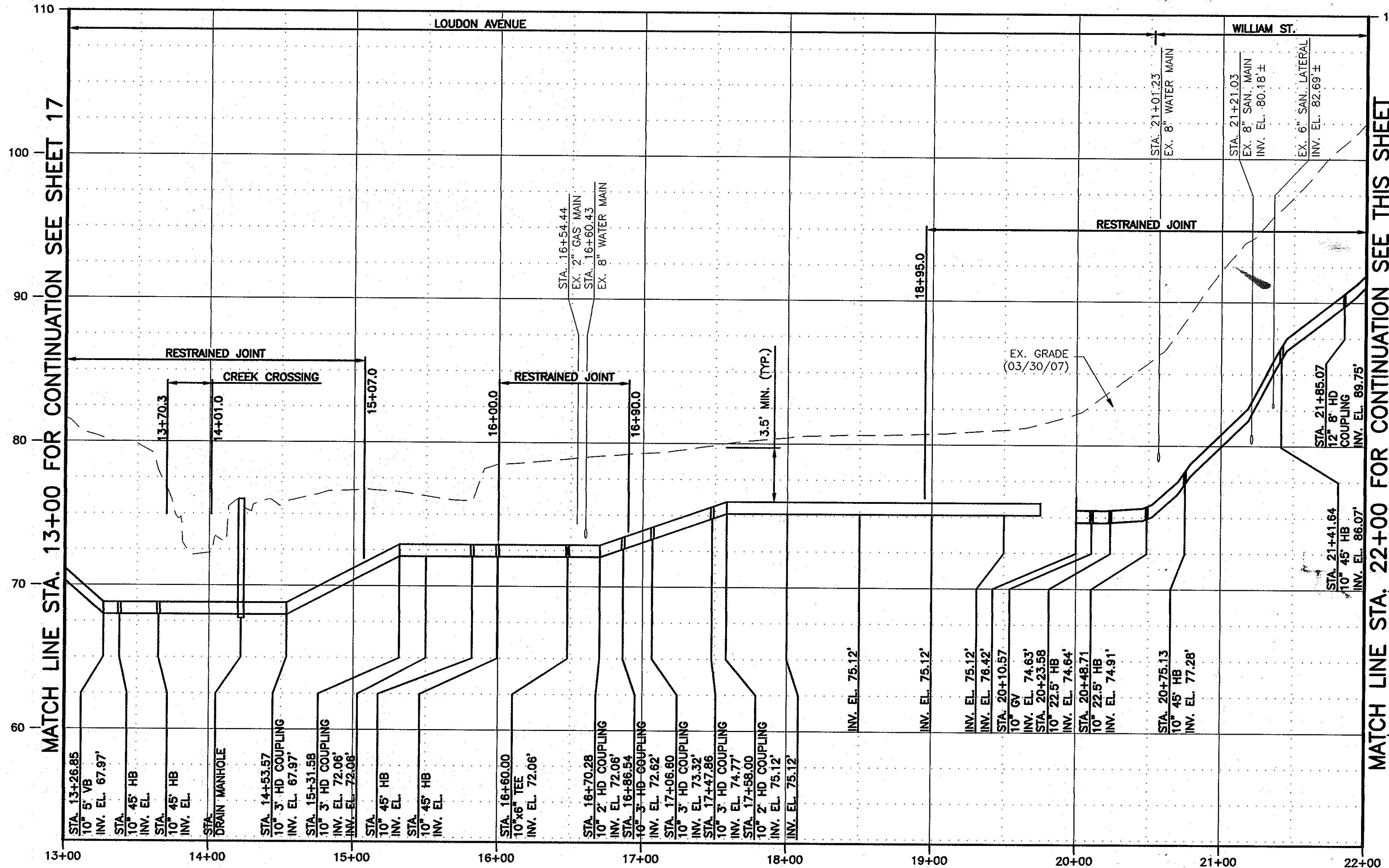
HARWOOD PARK WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 17 OF 38
 FILE NO. 33498-116F

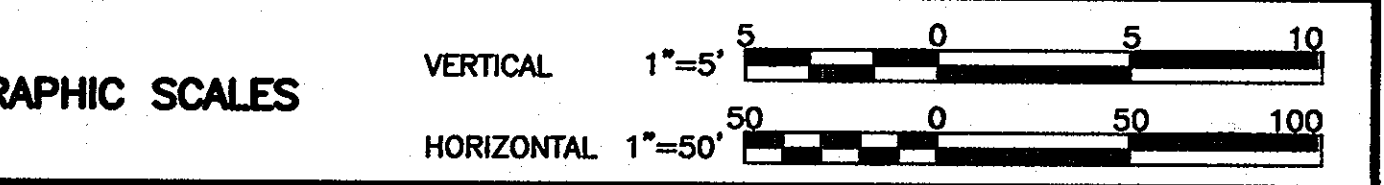


LOUDON (40' R.O.W.) AVENUE

MOUND STREET



SEE SHEET 3 FOR SOIL BORING SCHEDULE



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 1/29/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 2/6/14
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/5/14
 CHIEF, BUREAU OF UTILITIES DATE

[Signature] 2/14/14
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 2/5/14
 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

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 18223, EXPIRATION DATE 12/08/2009

[Signature]
 REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	RPW/GLF		
DRN. BY:	RPW		
CHK. BY:	GLF		
DATE:	JUNE, 2009		
BY:	RJD	1	AS-BUILTS
	RJD	0	ISSUED FOR BID
			06/09

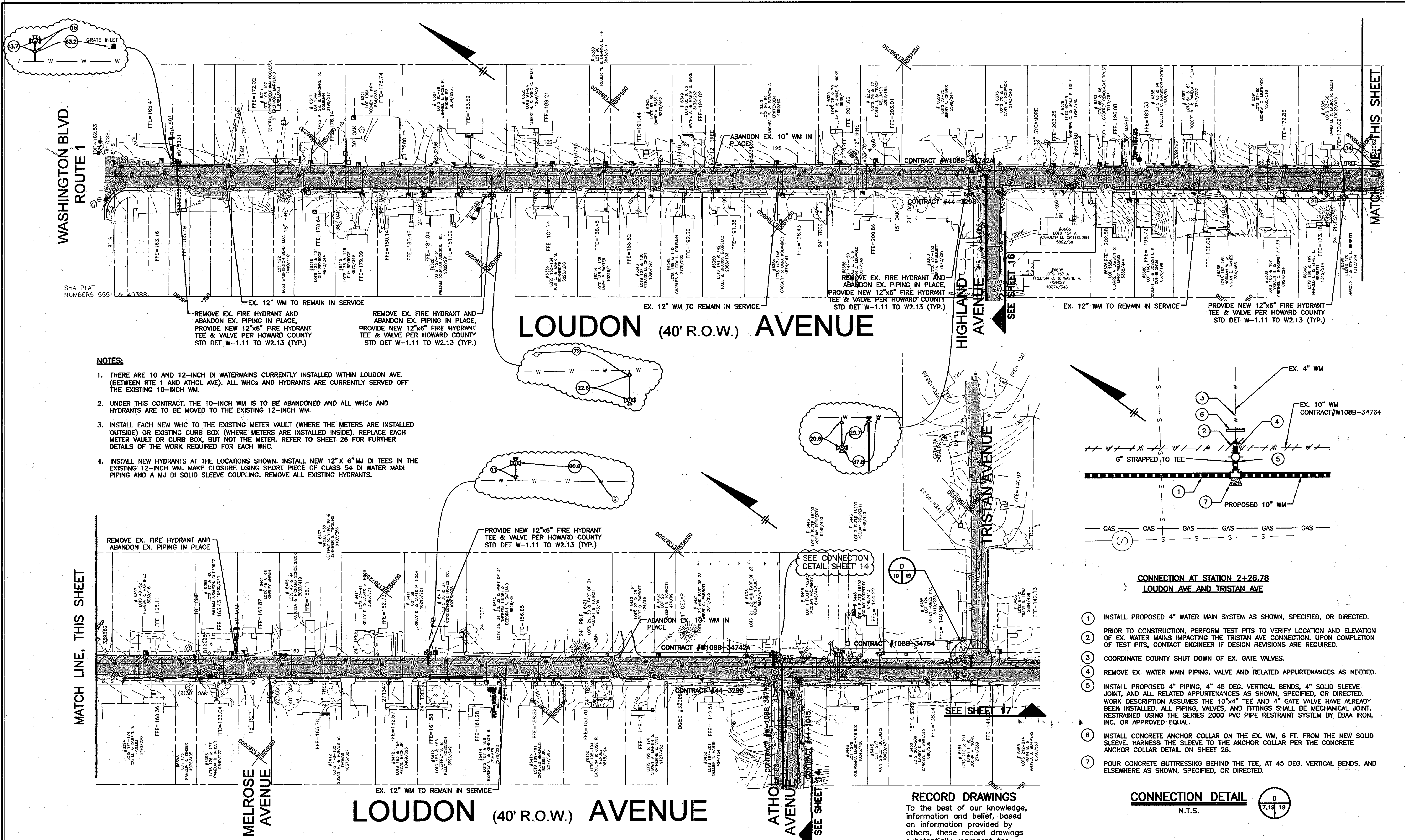
LOUDON AVE., WILLIAM ST., AND MOUND ST. PLAN AND PROFILE
STA. 13+00.00 TO STA. 28+05.21

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS

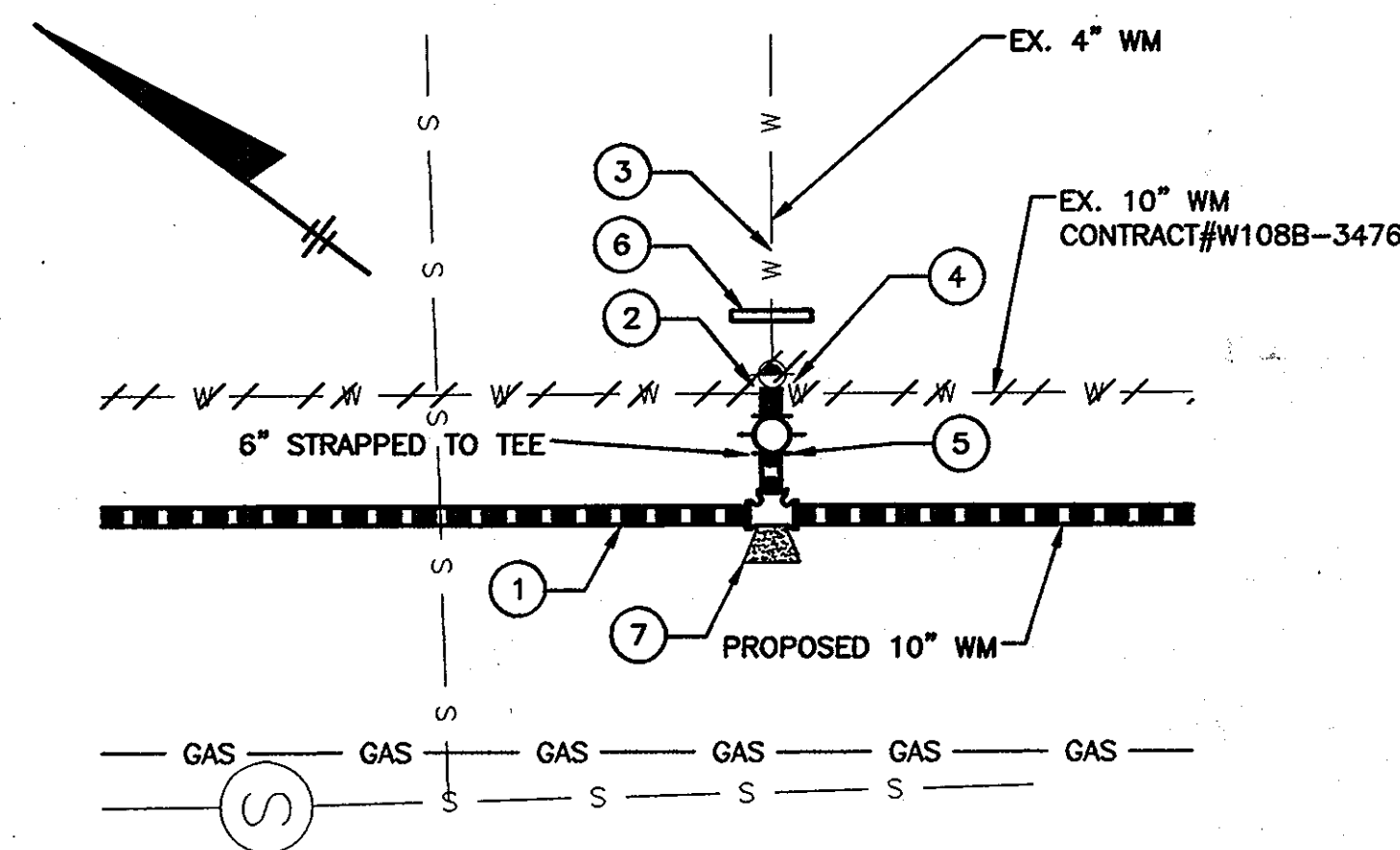
CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO.: 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 18 OF 38



NOTES:

1. THERE ARE 10 AND 12-INCH DI WATERMAINS CURRENTLY INSTALLED WITHIN LOUDON AVE. (BETWEEN RTE 1 AND ATHOL AVE). ALL WHCs AND HYDRANTS ARE CURRENTLY SERVED OFF THE EXISTING 10-INCH WM.
2. UNDER THIS CONTRACT, THE 10-INCH WM IS TO BE ABANDONED AND ALL WHCs AND HYDRANTS ARE TO BE MOVED TO THE EXISTING 12-INCH WM.
3. INSTALL EACH NEW WHC TO THE EXISTING METER VAULT (WHERE THE METERS ARE INSTALLED OUTSIDE) OR EXISTING CURB BOX (WHERE METERS ARE INSTALLED INSIDE). REPLACE EACH METER VAULT OR CURB BOX, BUT NOT THE METER. REFER TO SHEET 26 FOR FURTHER DETAILS OF THE WORK REQUIRED FOR EACH WHC.
4. INSTALL NEW HYDRANTS AT THE LOCATIONS SHOWN. INSTALL NEW 12" X 6" MJ DI TEES IN THE EXISTING 12-INCH WM. MAKE CLOSURE USING SHORT PIECE OF CLASS 54 DI WATER MAIN PIPING AND A MJ DI SOLID SLEEVE COUPLING. REMOVE ALL EXISTING HYDRANTS.



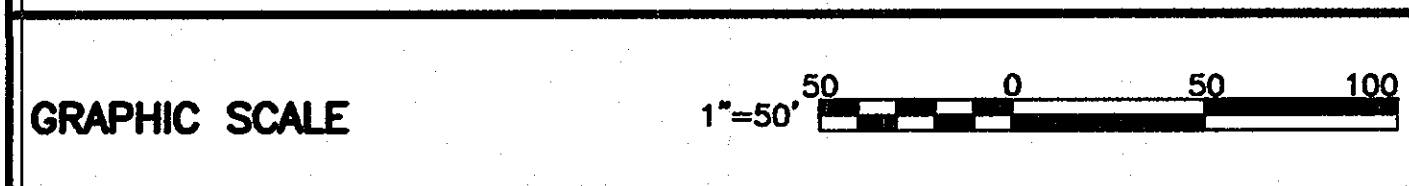
**CONNECTION AT STATION 2+26.78
LOUDON AVE AND TRISTAN AVE**

1. INSTALL PROPOSED 4" WATER MAIN SYSTEM AS SHOWN, SPECIFIED, OR DIRECTED.
2. PRIOR TO CONSTRUCTION, PERFORM TEST PITS TO VERIFY LOCATION AND ELEVATION OF EX. WATER MAINS IMPACTING THE TRISTAN AVE CONNECTION. UPON COMPLETION OF TEST PITS, CONTACT ENGINEER IF DESIGN REVISIONS ARE REQUIRED.
3. COORDINATE COUNTY SHUT DOWN OF EX. GATE VALVES.
4. REMOVE EX. WATER MAIN PIPING, VALVE AND RELATED APPURTENANCES AS NEEDED.
5. INSTALL PROPOSED 4" PIPING, 4" 45 DEG. VERTICAL BENDS, 4" SOLID SLEEVE JOINT, AND ALL RELATED APPURTENANCES AS SHOWN, SPECIFIED, OR DIRECTED. WORK DESCRIPTION ASSUMES THE 10" X 4" TEE AND 4" GATE VALVE HAVE ALREADY BEEN INSTALLED. ALL PIPING, VALVES, AND FITTINGS SHALL BE MECHANICAL JOINT, RESTRAINED USING THE SERIES 2000 PVC PIPE RESTRAINT SYSTEM BY EBAA IRON, INC. OR APPROVED EQUAL.
6. INSTALL CONCRETE ANCHOR COLLAR ON THE EX. WM, 6 FT. FROM THE NEW SOLID SLEEVE. HARNASS THE SLEEVE TO THE ANCHOR COLLAR PER THE CONCRETE ANCHOR COLLAR DETAIL ON SHEET 26.
7. POUR CONCRETE BUTTRESSING BEHIND THE TEE, AT 45 DEG. VERTICAL BENDS, AND ELSEWHERE AS SHOWN, SPECIFIED, OR DIRECTED.

CONNECTION DETAIL
N.T.S.

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 1/29/14



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* Date: 2/1/14
 Chief, Bureau of Utilities: *[Signature]* Date: 2/1/14

Chief, Bureau of Engineering: *[Signature]* Date: 2/1/14
 Chief, Utility Design Division: *[Signature]* Date: 2/1/14

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

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18923, EXPIRATION DATE 12/08/2009.

STATE OF MARYLAND PROFESSIONAL ENGINEER

DSN. BY:	RPW/GLF
DRN. BY:	YLM
CHK. BY:	GLF
DATE:	JUNE, 2009
BY:	NO.
RJD	1
RJD	0
AS-BUILTS	ISSUED FOR BID
06/09	DATE

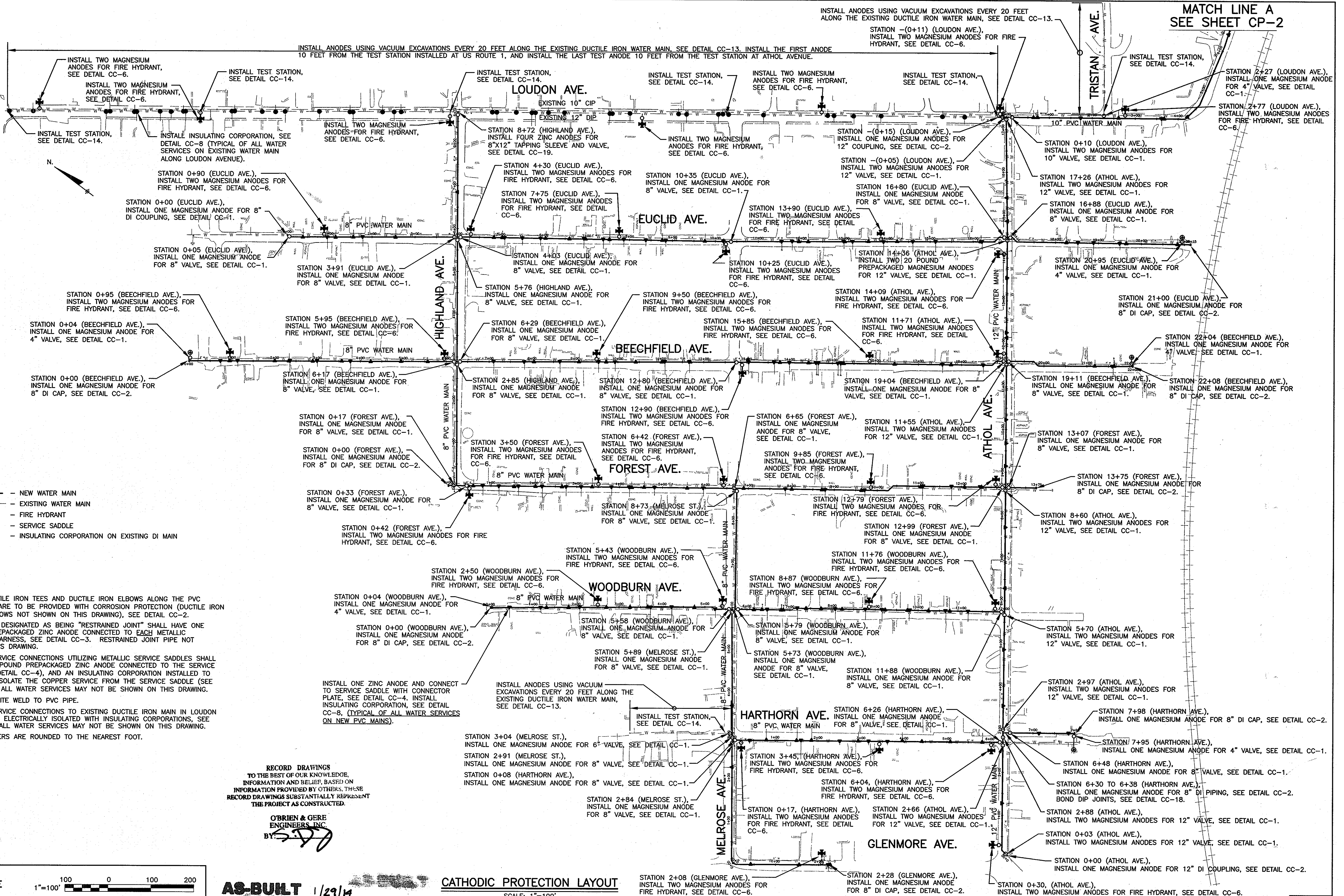
LOUDON AVENUE PLAN
RTE 1 TO TRISTAN AVENUE

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS
CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO.: 2
HOWARD COUNTY, MARYLAND

MATCH LINE A
SEE SHEET CP-2

WASHINGTON BLVD.
MD. ROUTE 1



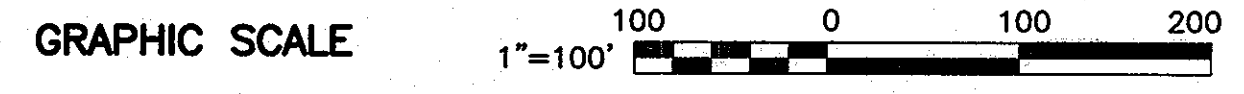
- LEGEND:**
- NEW WATER MAIN
 - EXISTING WATER MAIN
 - FIRE HYDRANT
 - ▲ SERVICE SADDLE
 - INSULATING CORPORATION ON EXISTING DI MAIN

- NOTES:**
1. ALL NEW DUCTILE IRON TEES AND DUCTILE IRON ELBOWS ALONG THE PVC WATER MAINS ARE TO BE PROVIDED WITH CORROSION PROTECTION (DUCTILE IRON TEES AND ELBOWS NOT SHOWN ON THIS DRAWING), SEE DETAIL CC-2.
 2. ALL PVC PIPE DESIGNATED AS BEING "RESTRAINED JOINT" SHALL HAVE ONE 12 POUND PREPACKAGED ZINC ANODE CONNECTED TO EACH METALLIC RESTRAINING HARNESS, SEE DETAIL CC-3. RESTRAINED JOINT PIPE NOT SHOWN ON THIS DRAWING.
 3. ALL WATER SERVICE CONNECTIONS UTILIZING METALLIC SERVICE SADDLES SHALL HAVE ONE 12 POUND PREPACKAGED ZINC ANODE CONNECTED TO THE SERVICE SADDLE (SEE DETAIL CC-4), AND AN INSULATING CORPORATION INSTALLED TO ELECTRICALLY ISOLATE THE COPPER SERVICE FROM THE SERVICE SADDLE (SEE DETAIL CC-8). ALL WATER SERVICES MAY NOT BE SHOWN ON THIS DRAWING.
 4. DO NOT THERMITE WELD TO PVC PIPE.
 5. ALL WATER SERVICE CONNECTIONS TO EXISTING DUCTILE IRON MAIN IN LOUDON AVENUE TO BE ELECTRICALLY ISOLATED WITH INSULATING CORPORATIONS, SEE DETAIL CC-8. ALL WATER SERVICES MAY NOT BE SHOWN ON THIS DRAWING.
 6. STATION NUMBERS ARE ROUNDED TO THE NEAREST FOOT.

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.

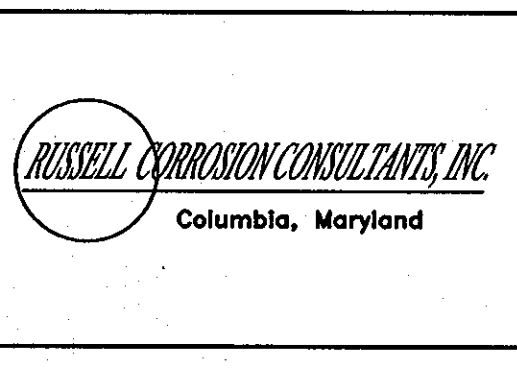
O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

THIS DRAWING IS NOT APPLICABLE FOR
USE AS STANDARD CORROSION CONTROL
PROCEDURES FOR OTHER PROJECTS
DUE TO VARIOUS 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.



AS-BUILT 1/29/14 **CATHODIC PROTECTION LAYOUT**
SCALE: 1"=100'

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS DATE: 7/16/09	<i>[Signature]</i> CHIEF - BUREAU OF ENGINEERING DATE: 7/16/09
<i>[Signature]</i> CHIEF, BUREAU OF UTILITIES DATE: 7/16/09	<i>[Signature]</i> CHIEF, UTILITY DESIGN DIVISION DATE: 7/16/09



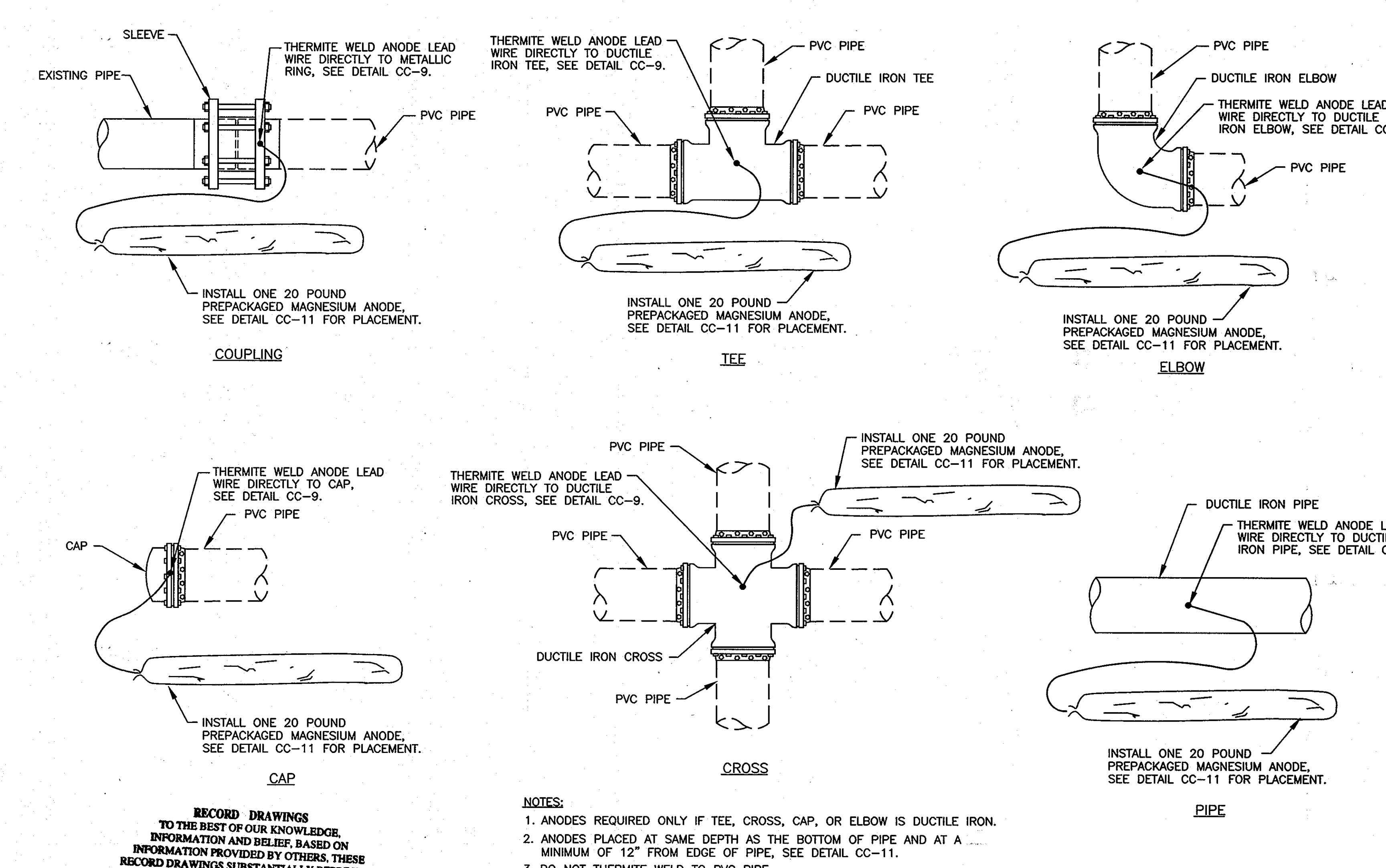
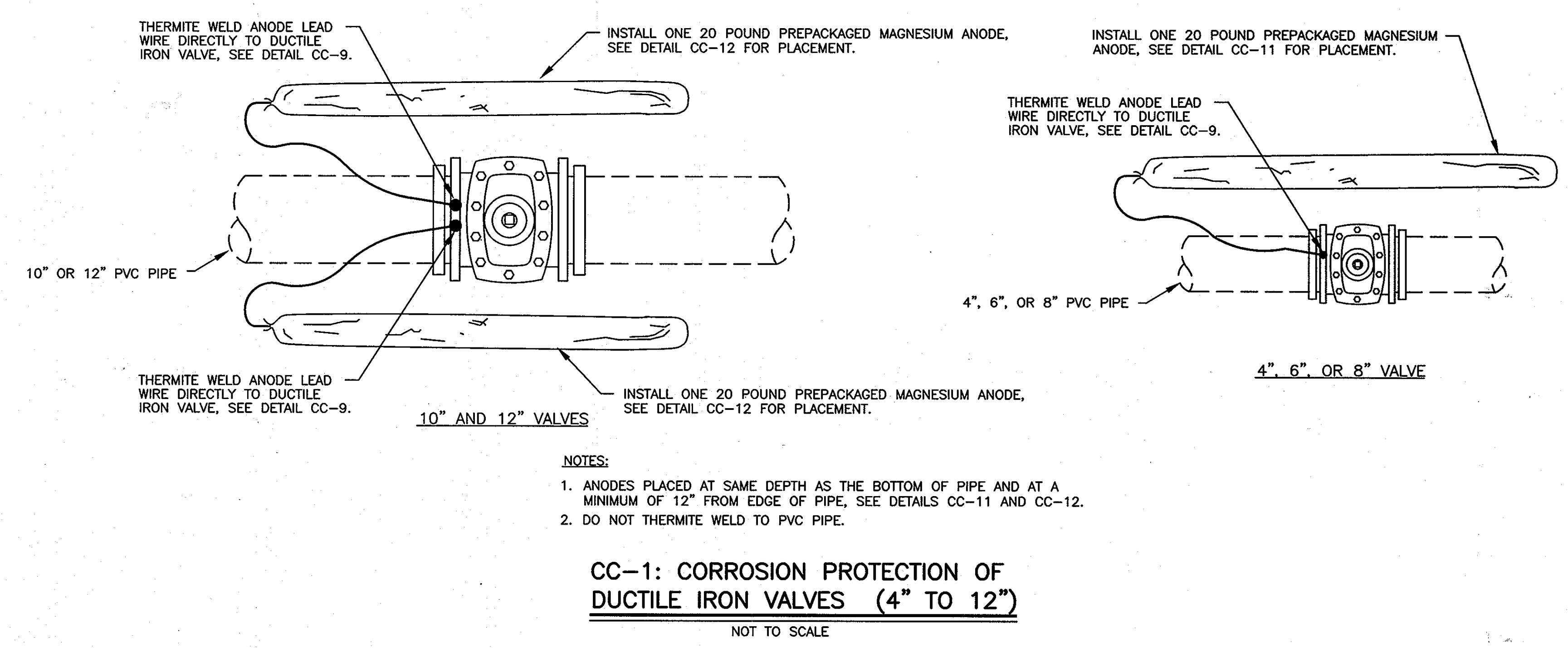
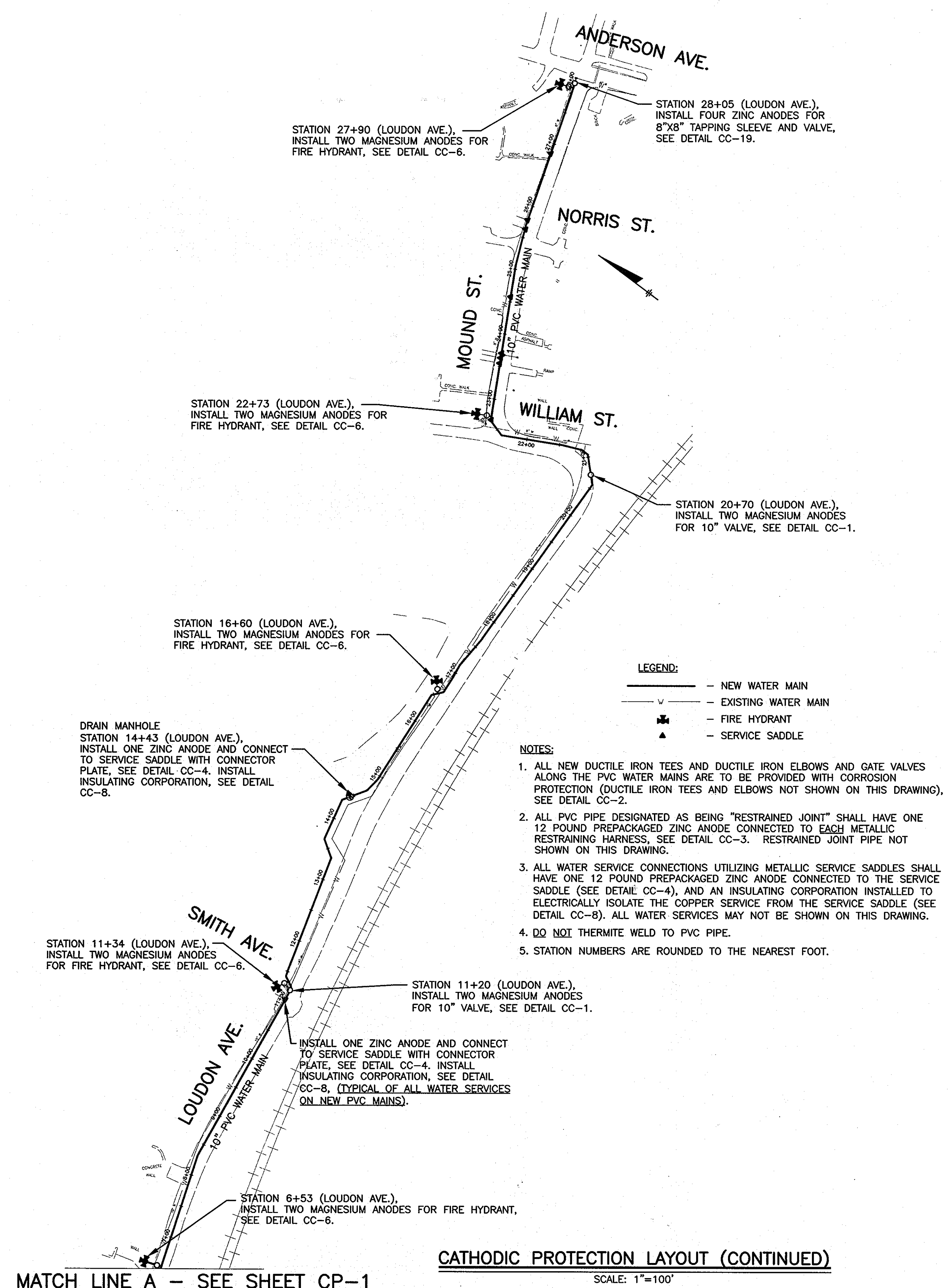
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17083, EXPIRATION DATE 09/27/2010	<i>[Signature]</i>
--	--------------------

DSN. BY: MJS			
DRN. BY: DJD			
CHK. BY: MJS			
DATE: JUNE 2009	MJS 0	AS-BUILT	ISSUED FOR BID
BY: NO.		REVISION	DATE: 6/09

CATHODIC PROTECTION LAYOUT	
600' SCALE MAP NO. 38	BLOCK NO. 13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS	
CAPITAL PROJECT: W-8255 CONTRACT NO.: 44-4578 ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND	
CP-1	SCALE AS SHOWN
SHEET	20 OF 38

FILE NO. 33498-



MATCH LINE A - SEE SHEET CP-1

SCALE: 1"=100'

GRAPHIC SCALE 1"=100'

AS-BUILT 1/29/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *Jan 7/109*
Date: 7/109

Chief - Bureau of Engineering: *Paul P. ...*
Date: 7/109

Chief, Bureau of Utilities: *Steve C. ...*
Date: 7/2/09

Chief/Utility Design Division: *Paul ...*
Date: 7/2/09

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17093, EXPIRATION DATE 09/27/2010

DSN. BY: MJS
DRN. BY: DJD
CHK. BY: MJS
DATE: JUNE 2009

AS-BUILT
ISSUED FOR BID
REVISION

DATE: 6/09

CATHODIC PROTECTION LAYOUT AND DETAILS

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

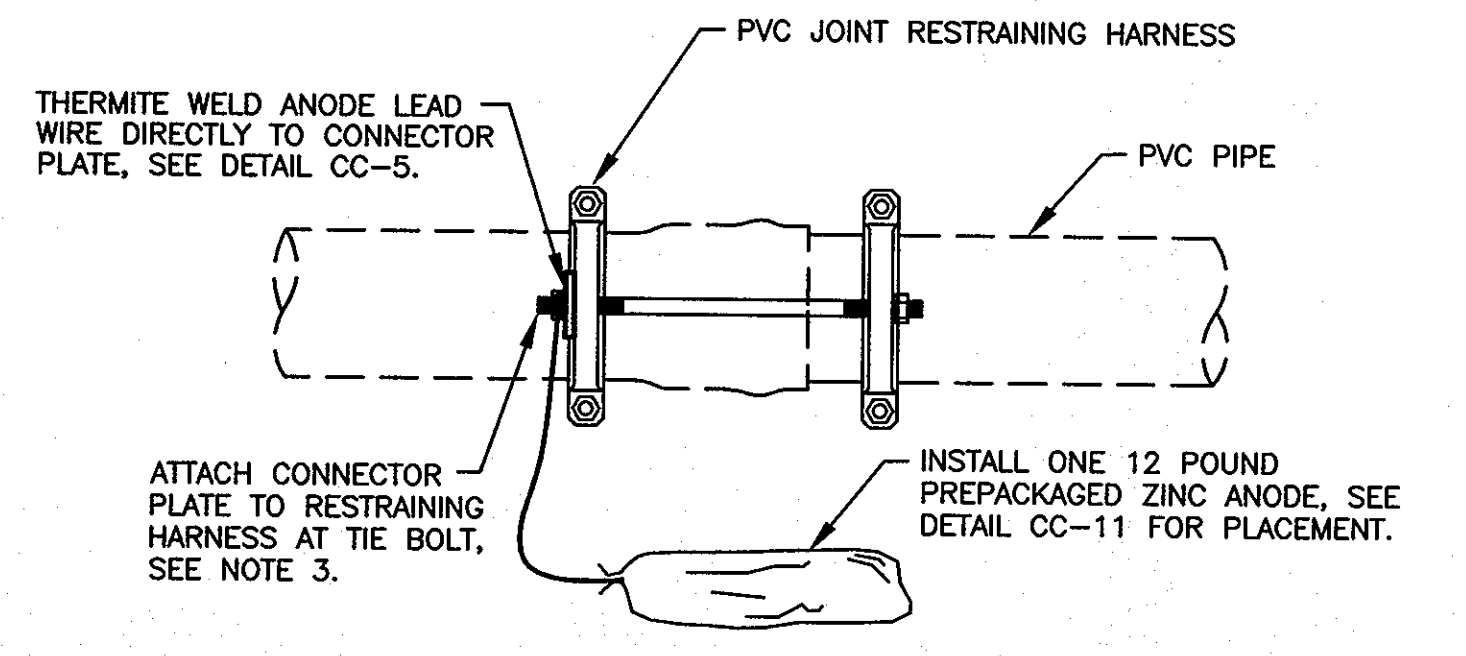
HARWOOD PARK WATER MAIN REPLACEMENTS

CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

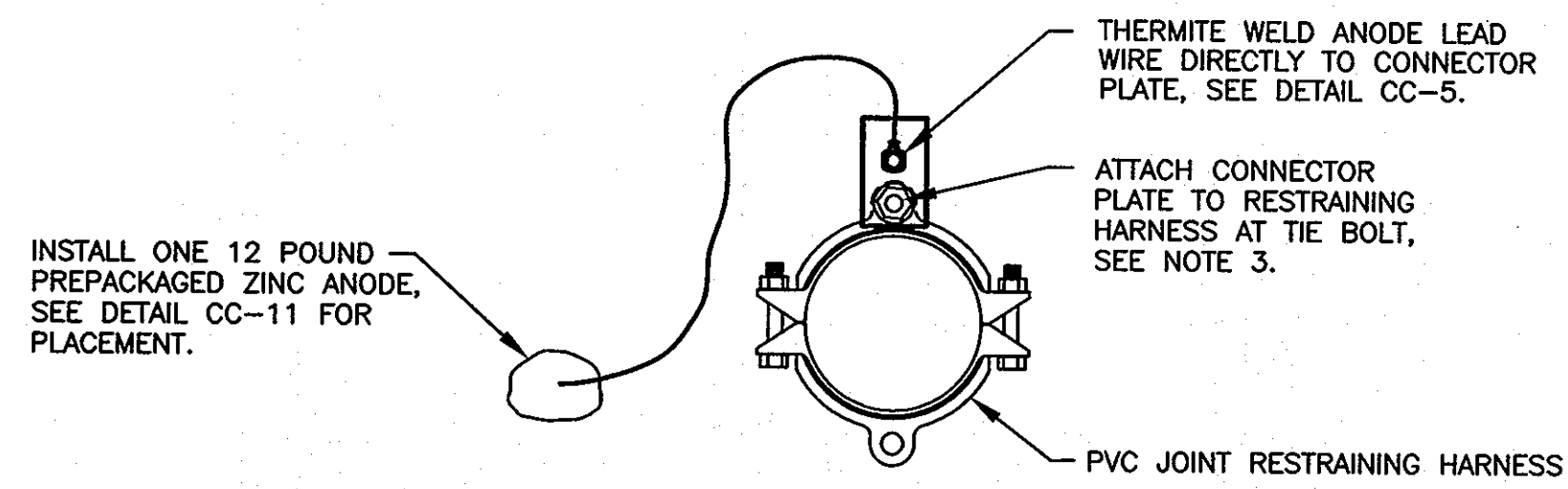
CP-2
SCALE AS SHOWN
SHEET 21 OF 38

DESC:

FILE NO. 33498-



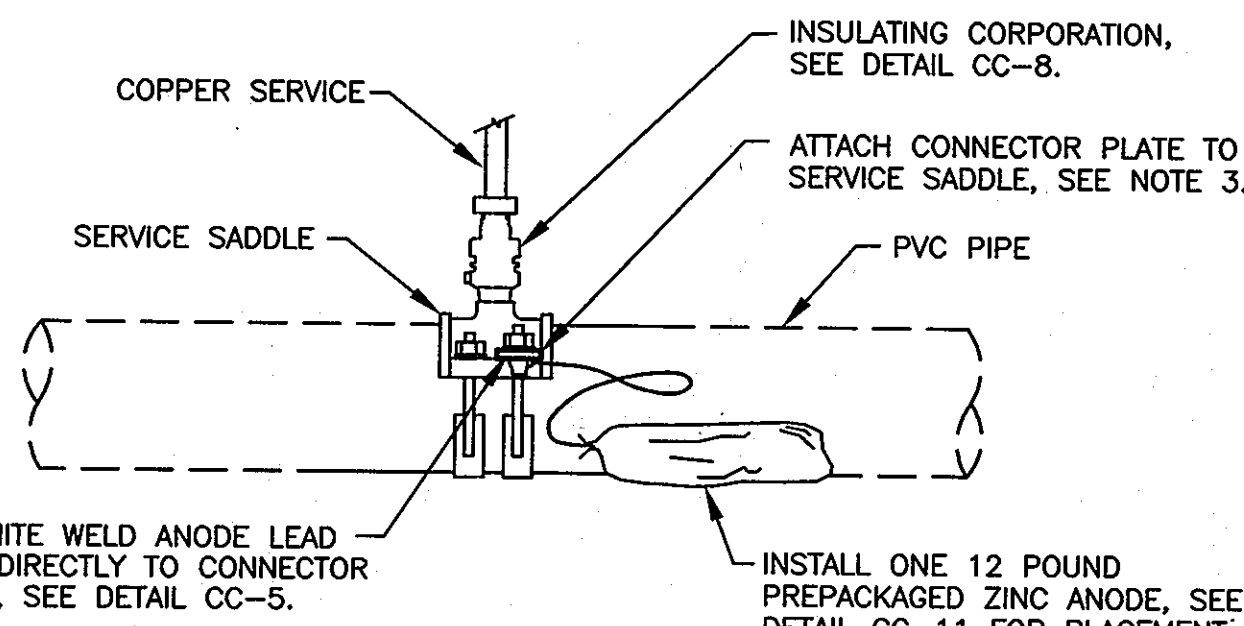
PLAN VIEW



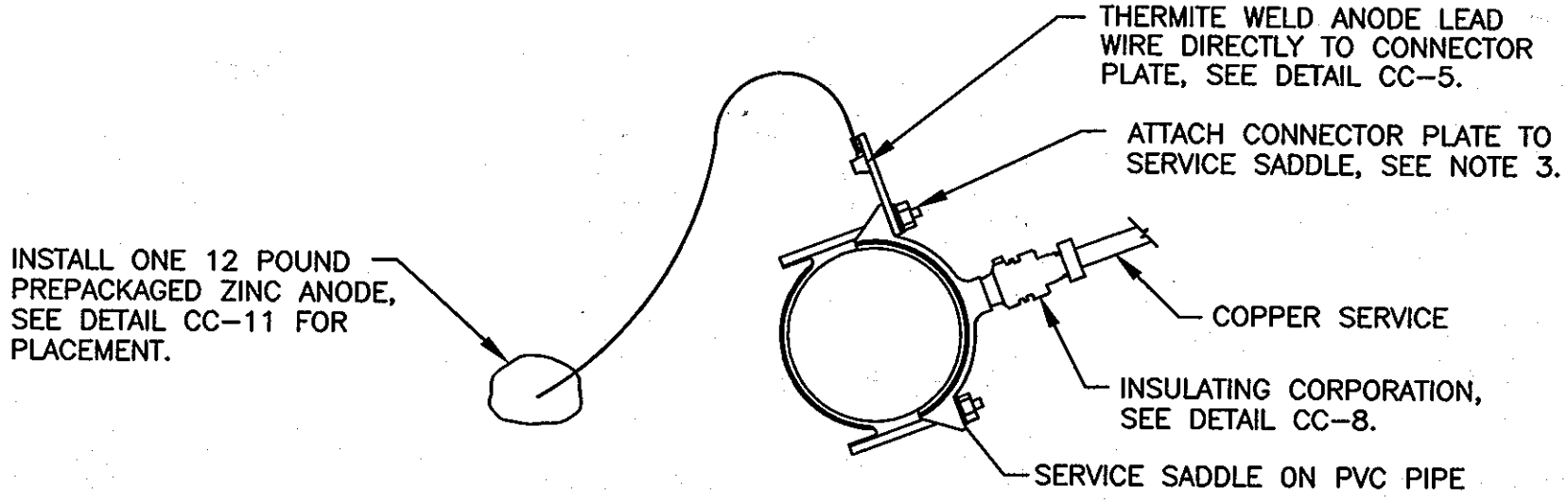
SECTION VIEW

- NOTES:
1. ANODE LEAD WIRE TO BE THERMITE WELDED TO CONNECTOR PLATE PRIOR TO ATTACHING CONNECTOR PLATE TO RESTRAINING HARNESS.
 2. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-11.
 3. REMOVE COATING FROM RESTRAINING HARNESS WHERE CONNECTOR PLATE IS TO BE MOUNTED. REMOVE COATING IMMEDIATELY PRIOR TO ATTACHING THE CONNECTOR PLATE.
 4. DO NOT THERMITE WELD TO PVC PIPE.

CC-3: CORROSION PROTECTION OF RESTRAINING HARNESS
NOT TO SCALE



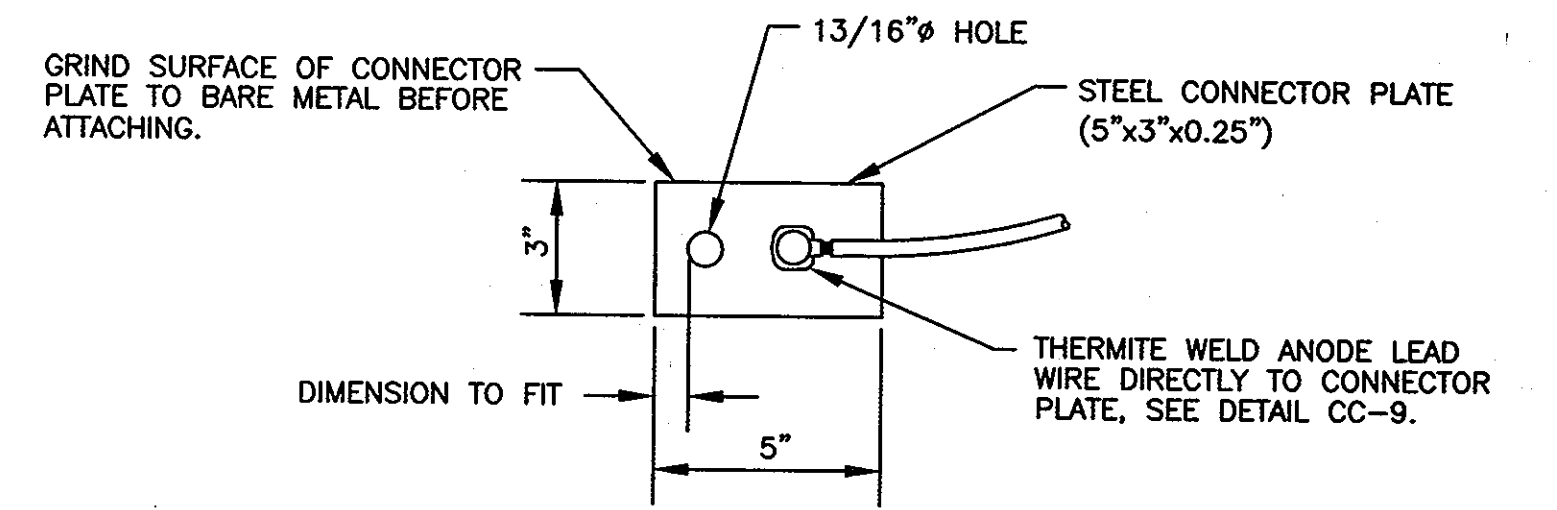
PLAN VIEW



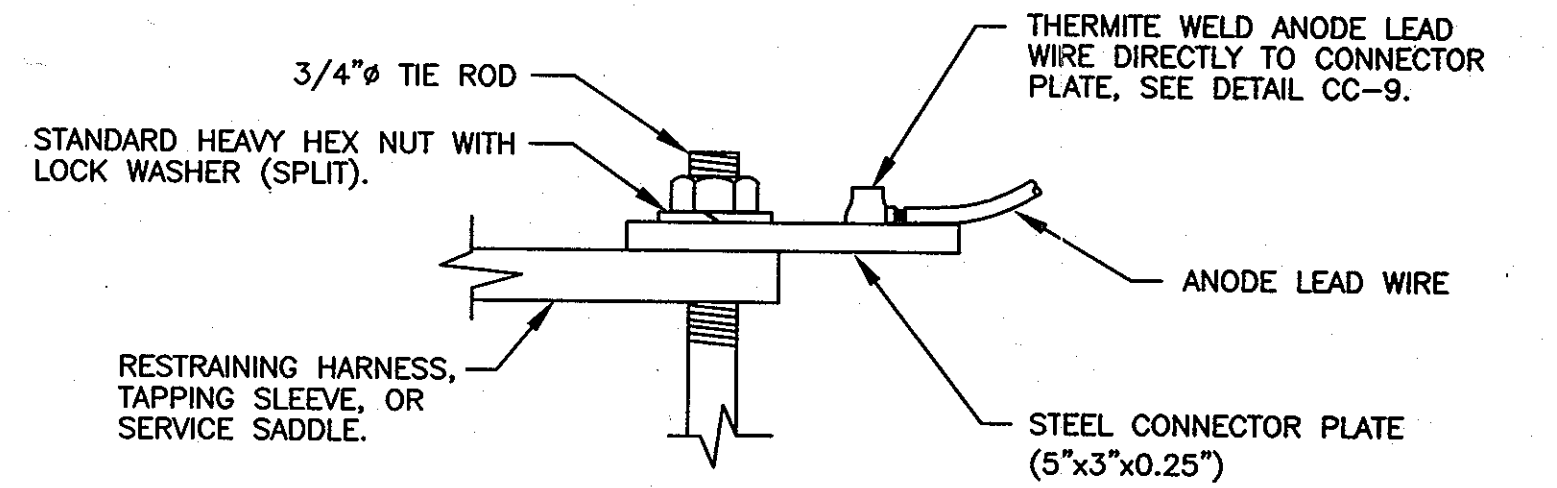
SECTION VIEW

- NOTES:
1. ANODE LEAD WIRE TO BE THERMITE WELDED TO CONNECTOR PLATE PRIOR TO ATTACHING CONNECTOR PLATE TO SERVICE SADDLE.
 2. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-11.
 3. REMOVE COATING FROM SERVICE SADDLE WHERE CONNECTOR PLATE IS TO BE MOUNTED. REMOVE COATING IMMEDIATELY PRIOR TO ATTACHING THE CONNECTOR PLATE.
 4. DO NOT THERMITE WELD TO PVC PIPE.

CC-4: CORROSION PROTECTION OF SERVICE SADDLE
NOT TO SCALE



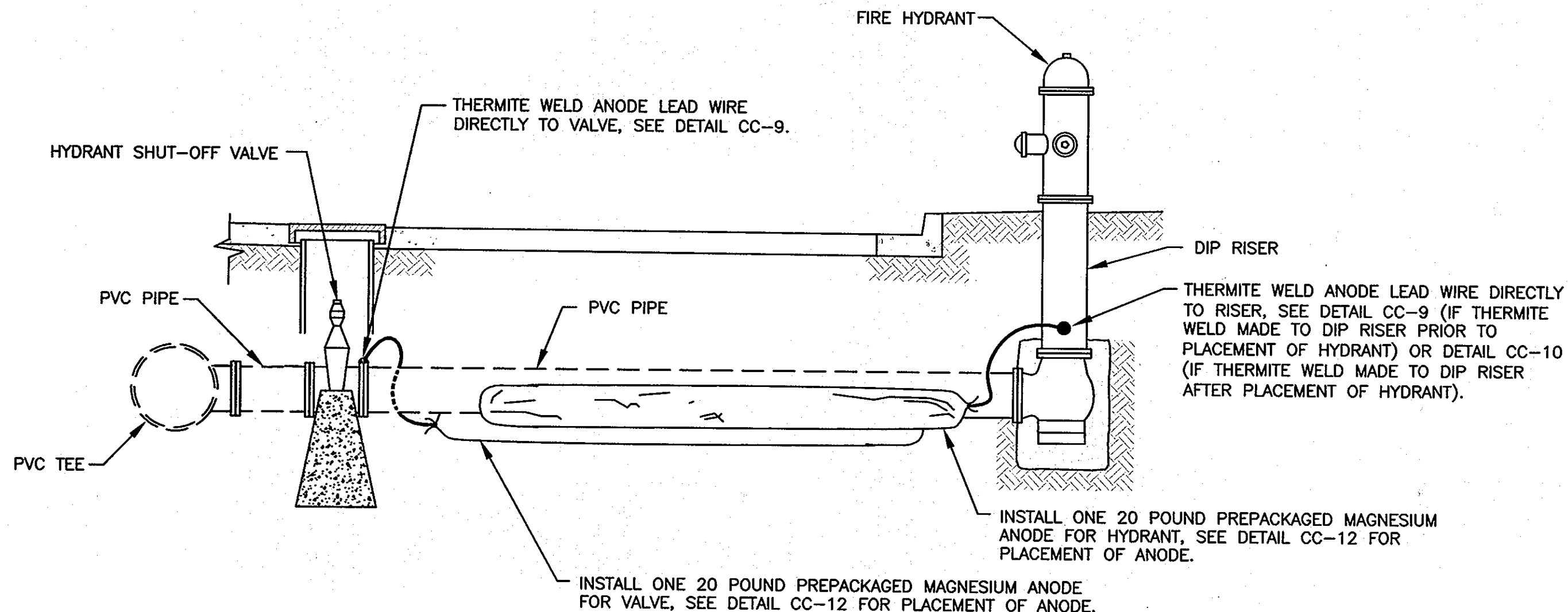
PLAN VIEW



SIDE VIEW

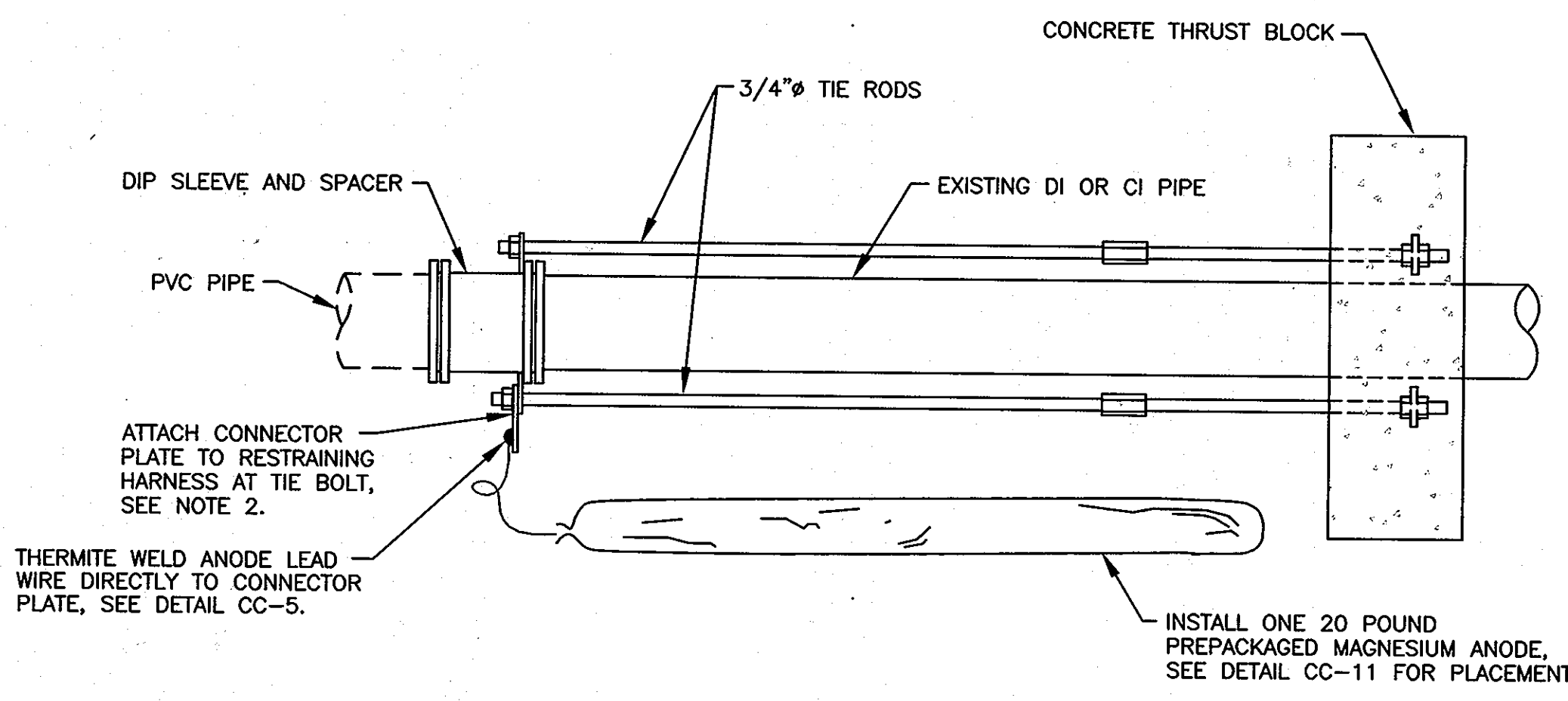
- NOTES:
1. ANODE LEAD WIRE TO BE THERMITE WELDED TO CONNECTOR PLATE PRIOR TO ATTACHING CONNECTOR PLATE TO RESTRAINING HARNESS, TAPPING SADDLE, OR SERVICE SADDLE.
 2. THERMITE WELDS SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL.

CC-5: CONNECTOR PLATE DETAIL
NOT TO SCALE



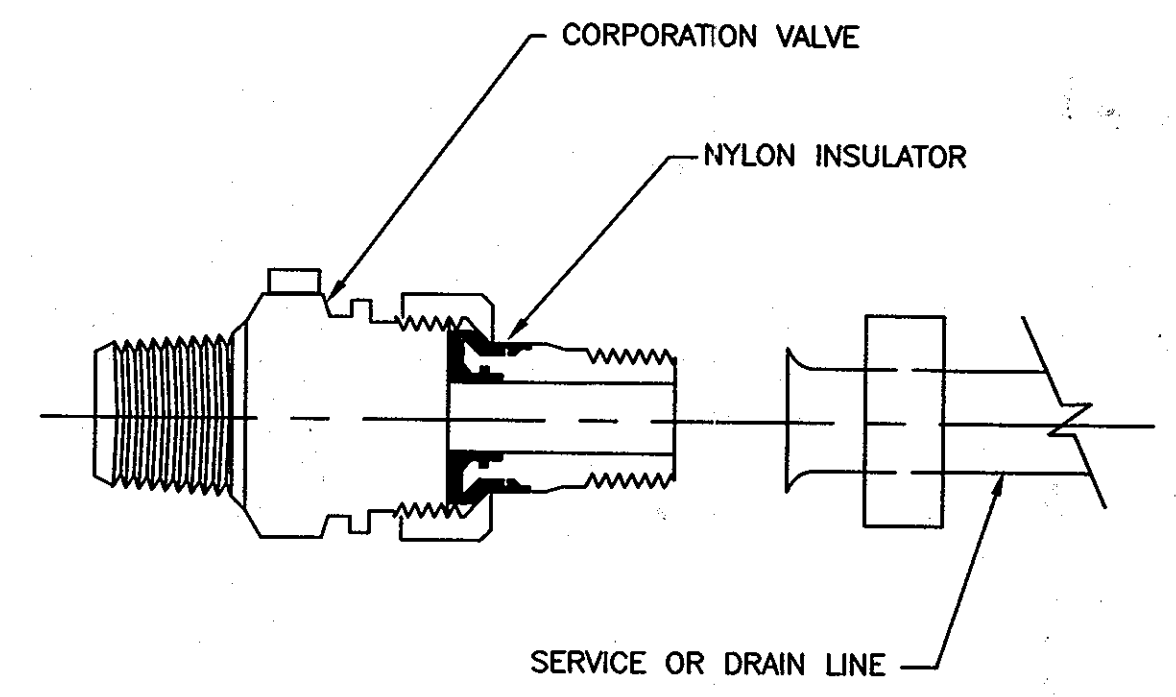
- NOTES:
1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-12.
 2. DO NOT THERMITE WELD TO PVC PIPE.

CC-6: CORROSION PROTECTION AT FIRE HYDRANT
SCALE: NONE



- NOTES:
1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-11.
 2. REMOVE COATING FROM RESTRAINING HARNESS WHERE CONNECTOR PLATE IS TO BE MOUNTED. REMOVE COATING IMMEDIATELY PRIOR TO ATTACHING THE CONNECTOR PLATE.
 3. DO NOT THERMITE WELD TO PVC PIPE.

CC-7: CORROSION PROTECTION AT IN-LINE THRUST BLOCK
NOT TO SCALE



- NOTES:
1. INSTALL ELECTRICAL ISOLATION ON ALL WATER SERVICE AND DRAIN LINE CONNECTIONS TO MAIN.
 2. COAT EXTERIOR OF CORPORATION STOP, AND SERVICE PIPING AND/OR DRAIN LINE FOR A DISTANCE OF 12 INCHES WITH MASTIC COATING (ROYSTON ROSKOTE R28). MASTIC COATING TO BE MINIMUM OF 20 MILS IN THICKNESS.
 3. INSULATED CORPORATION NOT REQUIRED FOR PLASTIC SERVICES.

CC-8: INSULATING CORPORATION
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'BRIEN & GERR
ENGINEERS, INC.
BY: [Signature]

AS-BUILT 1/29/14

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.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
Director of Public Works [Signature] 7/1/09	Chief - Bureau of Engineering [Signature] 7/1/09
Chief, Bureau of Utilities [Signature] 7/2/09	Chief, Utility Design Division [Signature] 7/2/09

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

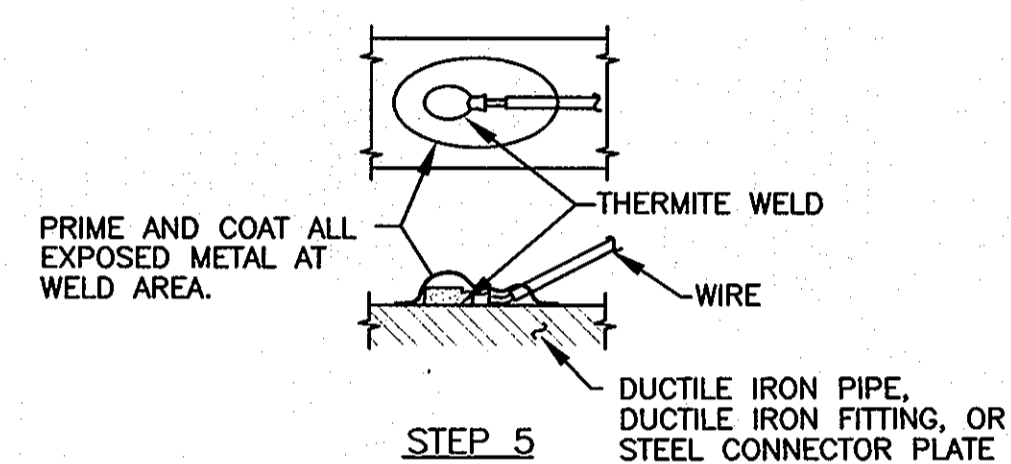
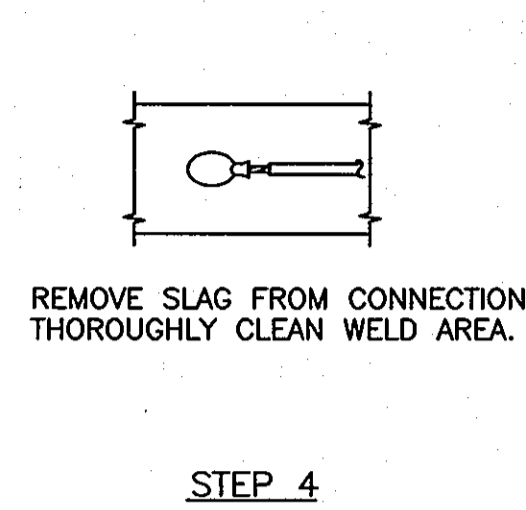
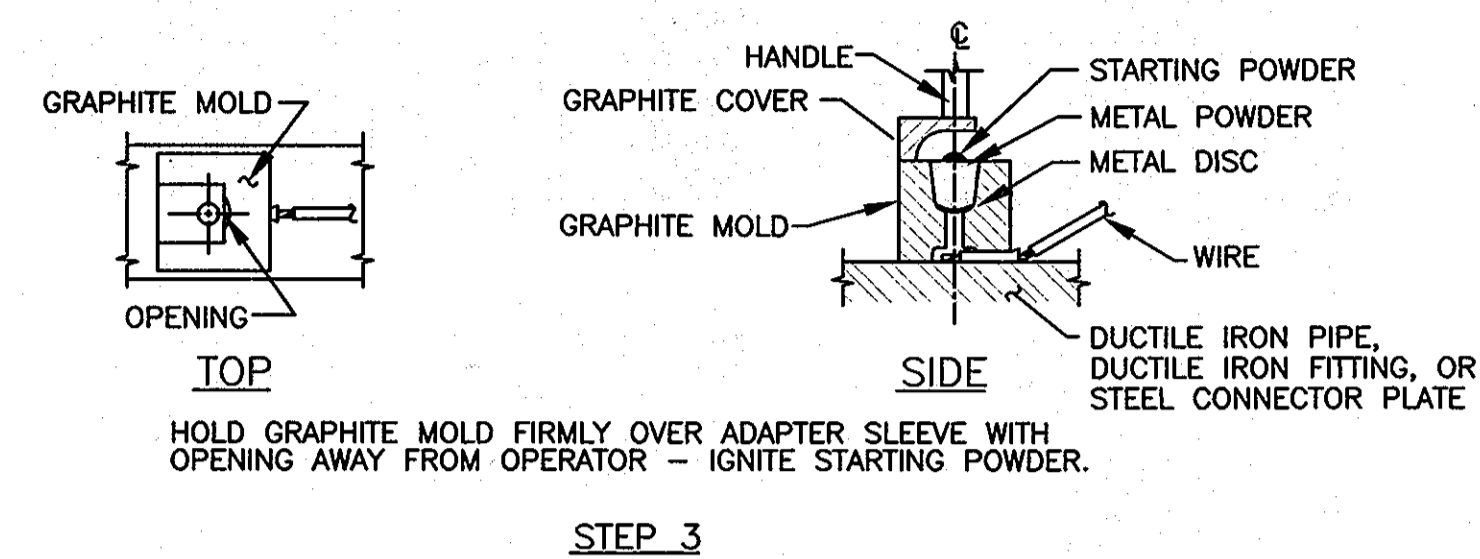
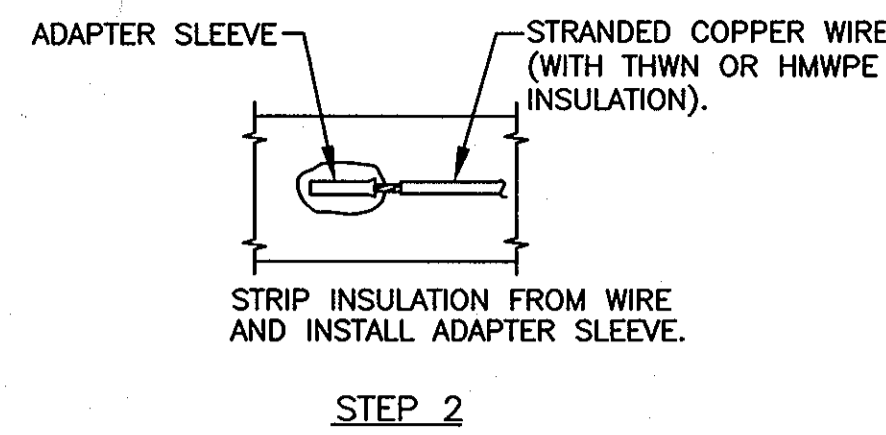
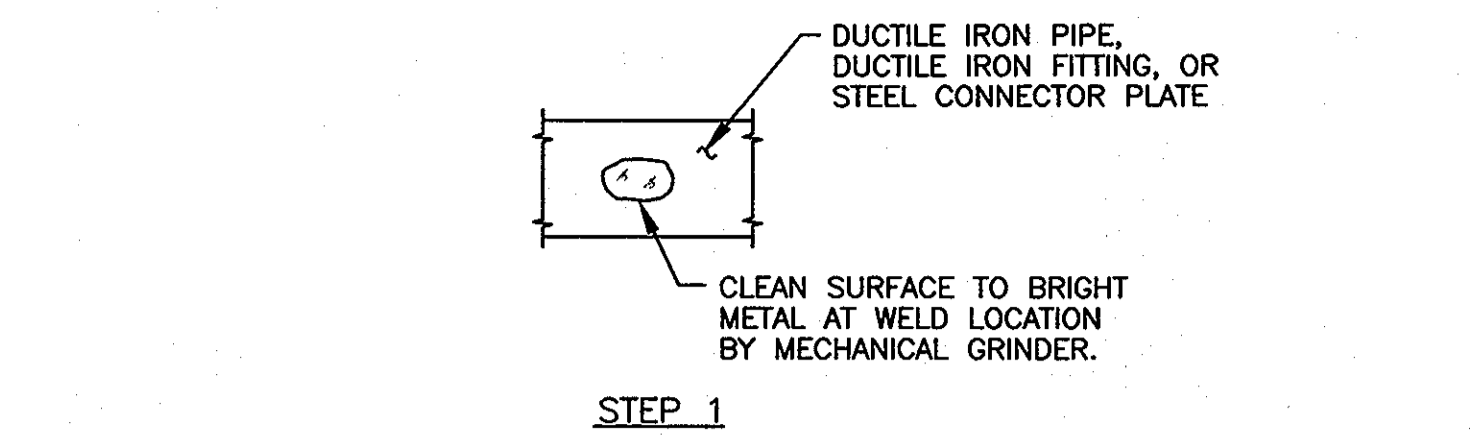
PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17085, EXPIRATION DATE 09/27/2010

DSN. BY: MJS			
DRN. BY: DJD			
CHK. BY: MJS			
DATE: JUNE 2009			
BY NO.	MJS 0	ISSUED FOR BID	6/09
		REVISION	

CATHODIC PROTECTION DETAILS	
600' SCALE MAP NO. 38	BLOCK NO. 13, 14, 19

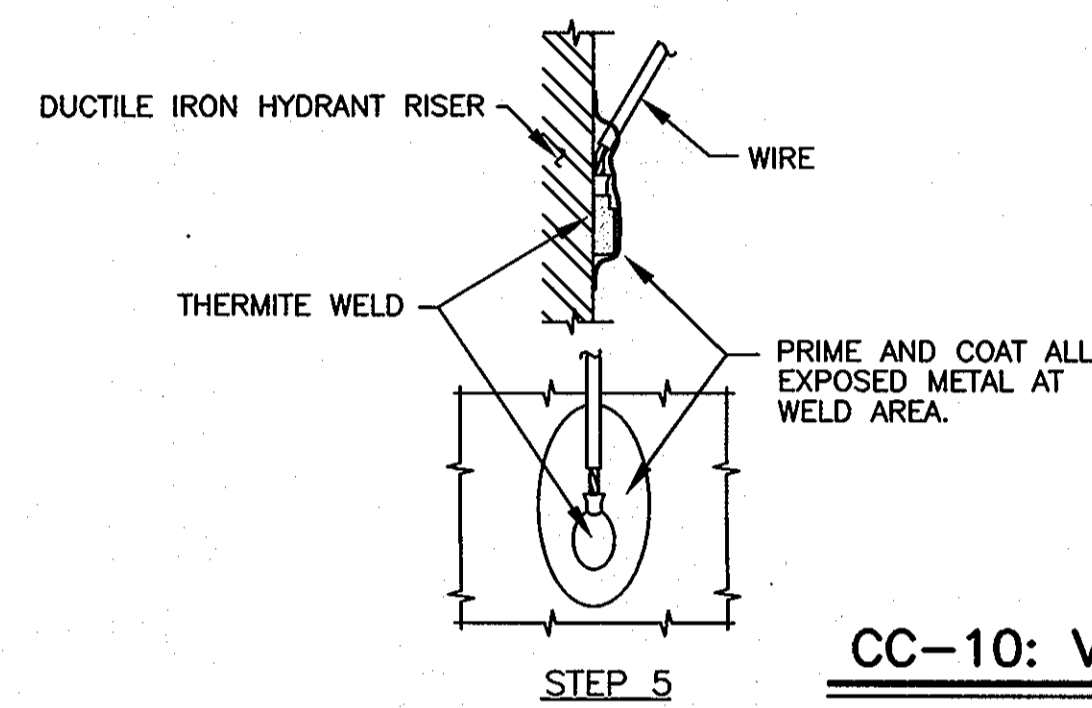
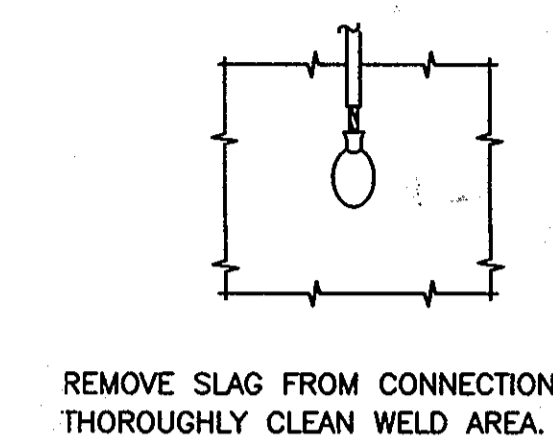
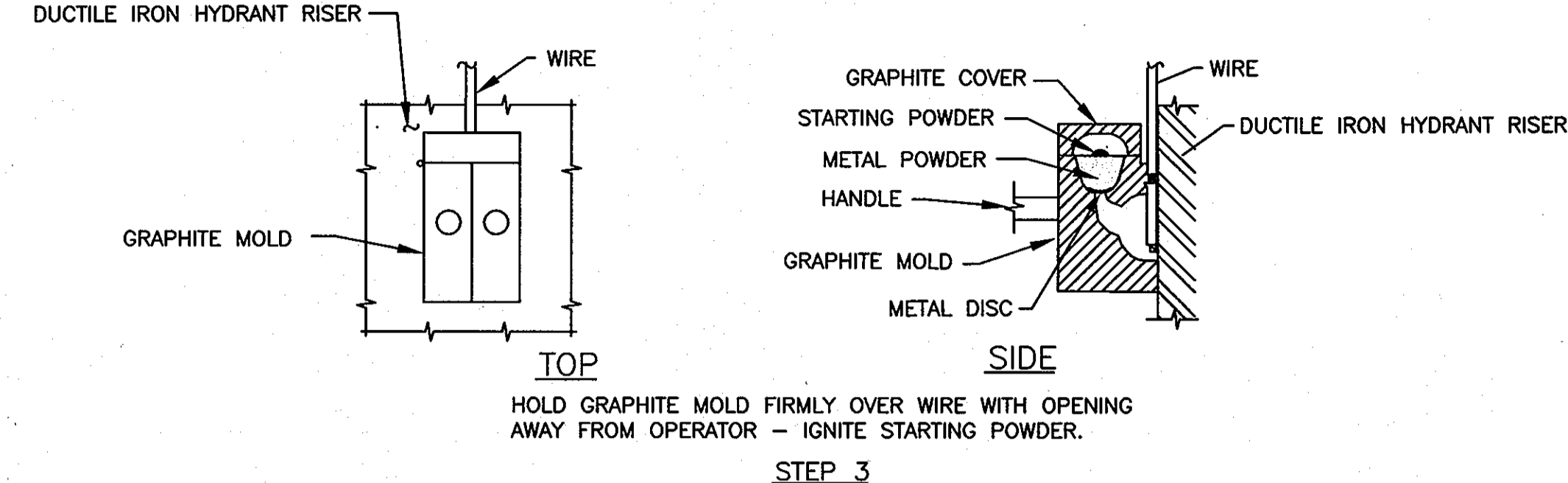
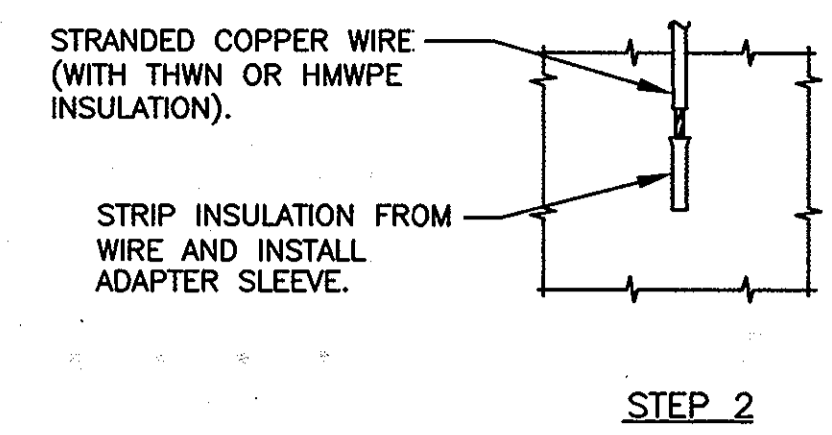
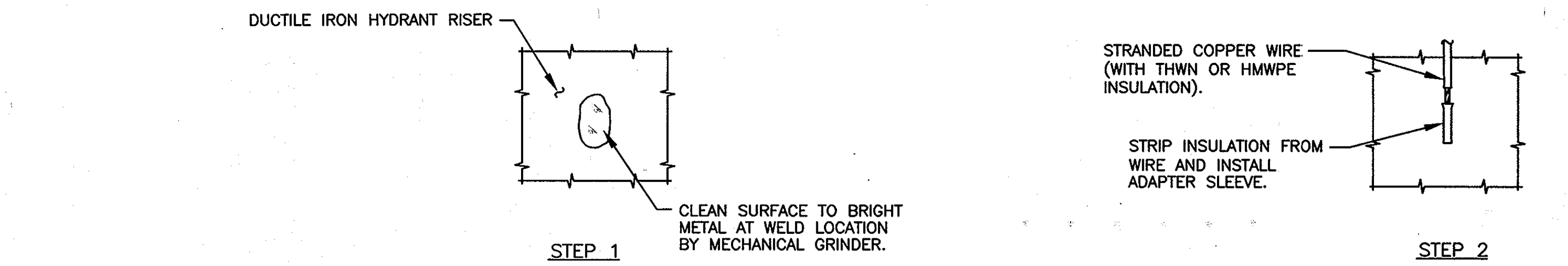
HARWOOD PARK WATER MAIN REPLACEMENTS
CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CP-3
SCALE AS SHOWN
SHEET 22 OF 38
FILE NO. 33488-



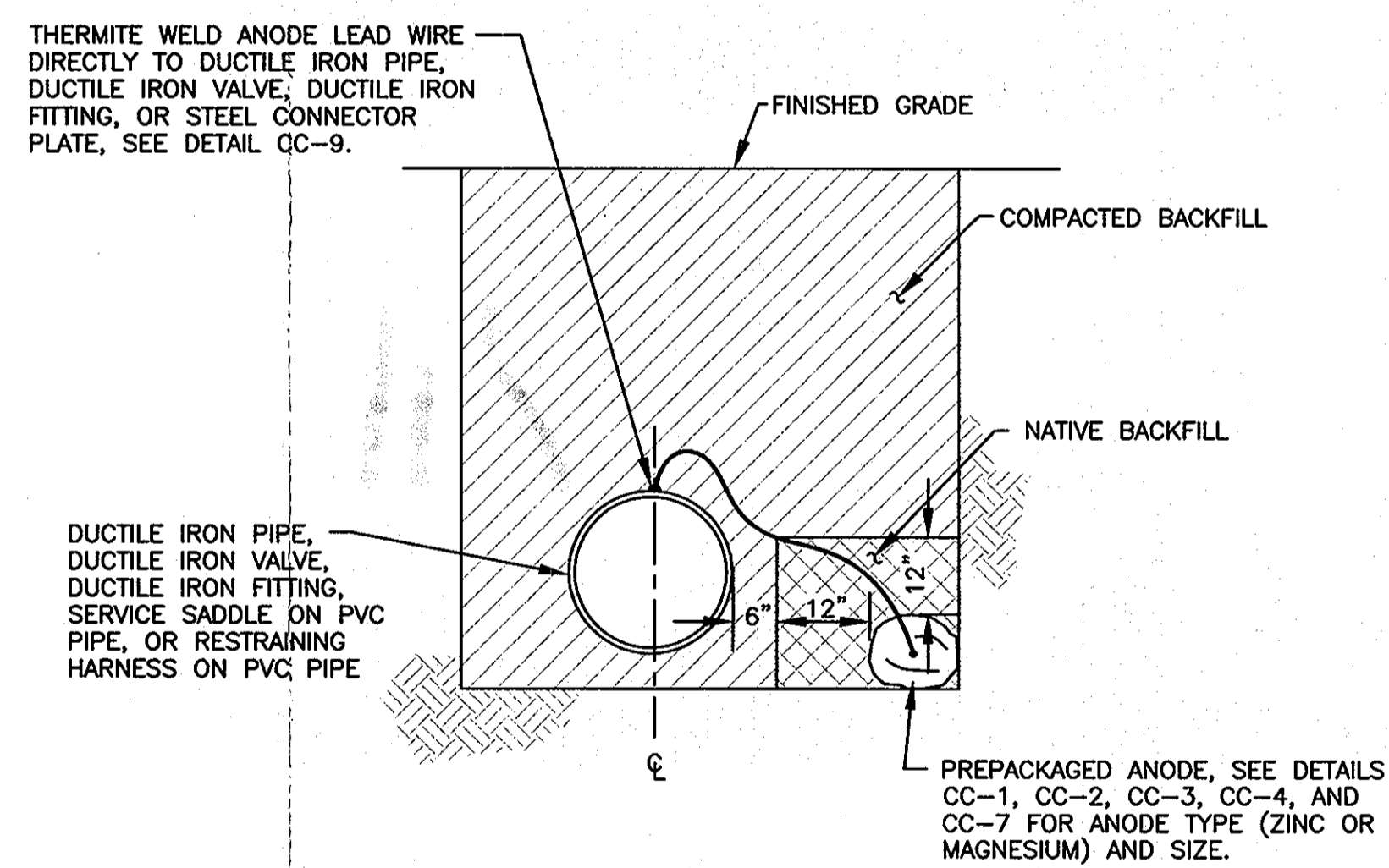
CC-9: HORIZONTAL THERMITE WELD
SCALE: NONE

- NOTES:**
1. THERMITE WELDS SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL.
 2. DO NOT THERMITE WELD TO PVC PIPE.



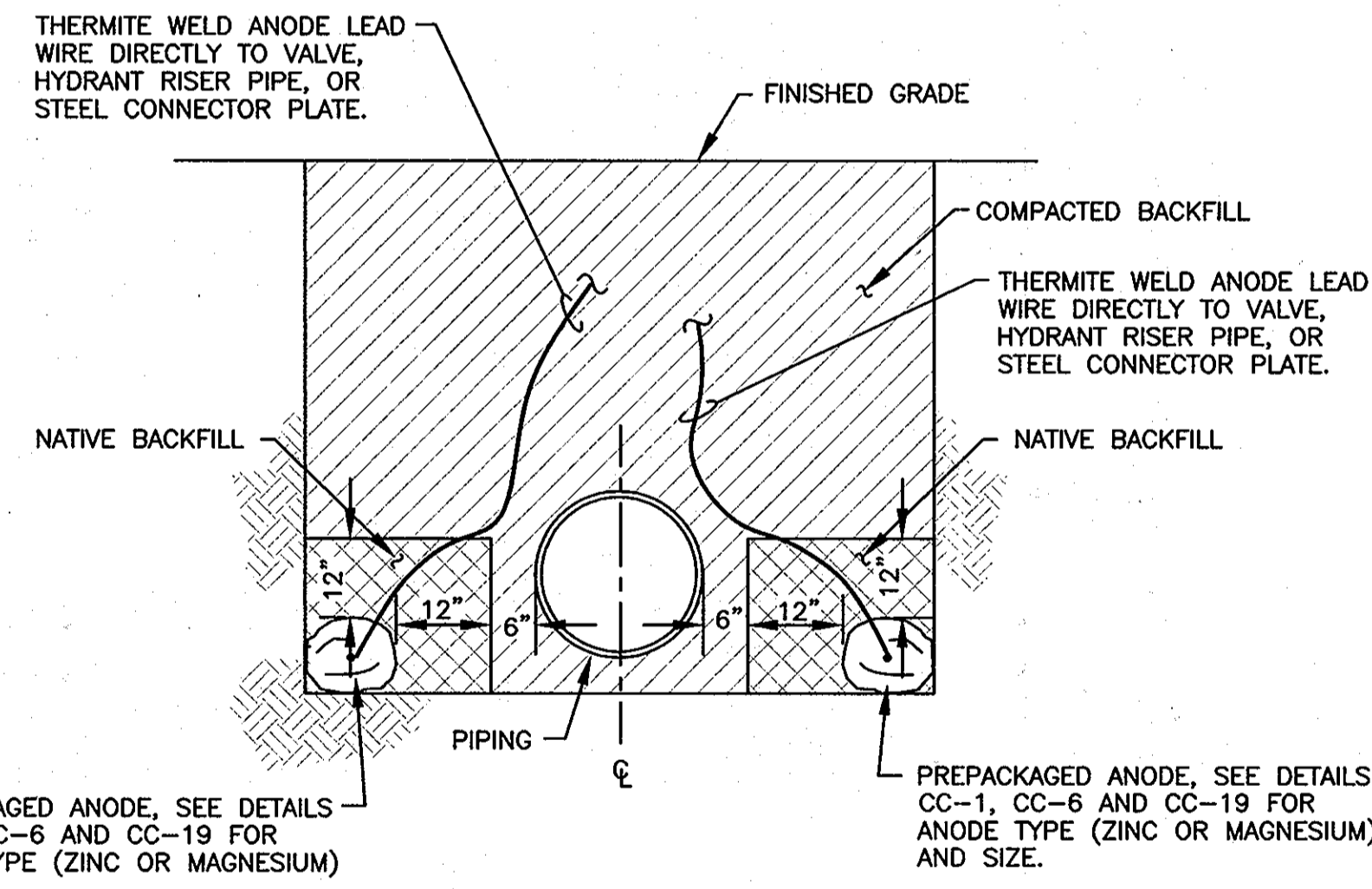
CC-10: VERTICAL THERMITE WELD
SCALE: NONE

- NOTES:**
1. THERMITE WELDS SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL.
 2. DO NOT THERMITE WELD TO PVC PIPE.



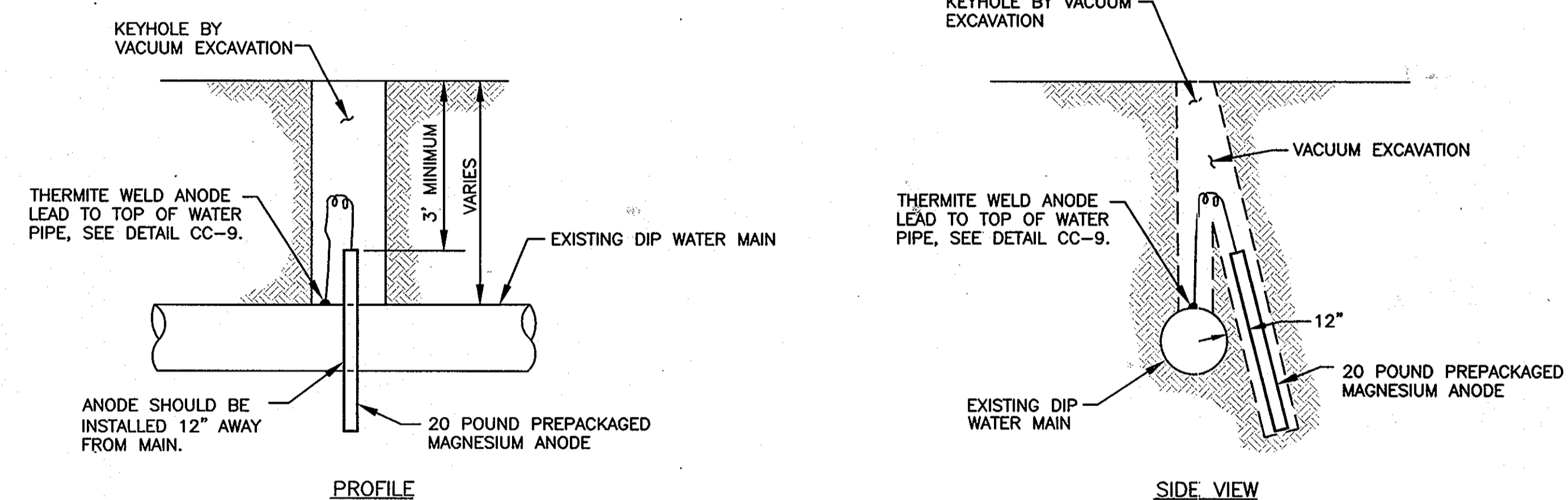
- NOTES:**
1. INSTALL ANODE IN NATIVE SOIL. DO NOT BACKFILL ANODE WITH SAND OR STONE.
 2. DO NOT THERMITE WELD TO PVC PIPE.

CC-11: SINGLE ANODE PLACEMENT
NOT TO SCALE



- NOTES:**
1. WHEN INSTALLING ANODES AT HYDRANTS, ATTACH ONE ANODE LEAD TO SHUT-OFF VALVE, AND ONE ANODE LEAD TO HYDRANT RISER PIPE, SEE DETAIL CC-6.
 2. INSTALL ANODES A MINIMUM OF 12 INCHES FROM PIPE.
 3. BACKFILL ANODES WITH NATIVE SOIL FOR A MINIMUM OF 12 INCHES ON ALL SIDES. DO NOT BACKFILL ANODES WITH SAND OR STONE.
 4. DO NOT THERMITE WELD TO PVC PIPE.

CC-12: DOUBLE ANODE PLACEMENT
NOT TO SCALE



- NOTES:**
1. BACKFILL EXCAVATION WITH CLEAN, DRY SOIL. SOIL IN EXCAVATION TO BE COMPACTED IN ACCORDANCE WITH HOWARD COUNTY DPW STANDARDS.
 2. RESTORE THE SURFACE TO AS FOUND CONDITION IN ACCORDANCE WITH HOWARD COUNTY DPW STANDARDS.

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]*

CC-13: ANODE INSTALLATION FOR HOT SPOT CATHODIC PROTECTION
SCALE: NONE

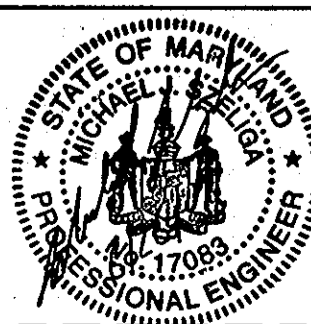
THIS DRAWING IS NOT APPLICABLE FOR USE AS STANDARD CORROSION CONTROL PROCEDURES FOR OTHER PRODUCTS DUE TO VARIABLE CONDITIONS AT OTHER SITES. NEITHER THIS DESIGN NOR ANY PART THEREOF MAY BE DUPLICATED IN ANY WAY FOR OTHER PRODUCTS OR MODIFIED IN ANY WAY FOR THIS OR OTHER PRODUCTS, EXCEPT BY WRITTEN AGREEMENT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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 7/1/09
Chief, Bureau of Engineering: *[Signature]* 7/1/09
Chief, Bureau of Utilities: *[Signature]* 7/2/09
Chief, Utility Design Division: *[Signature]* 7/2/09

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17083, EXPIRATION DATE 09/27/2010



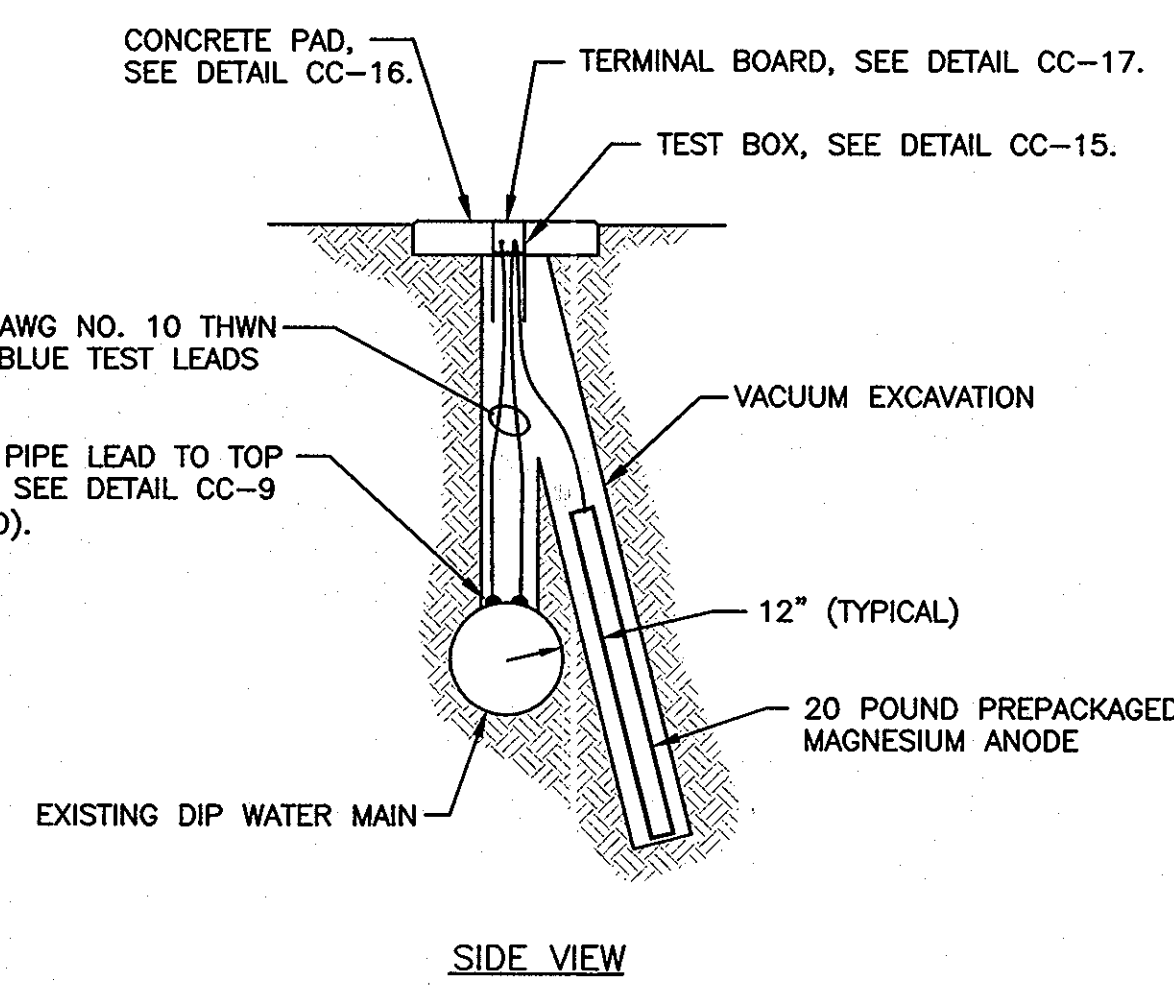
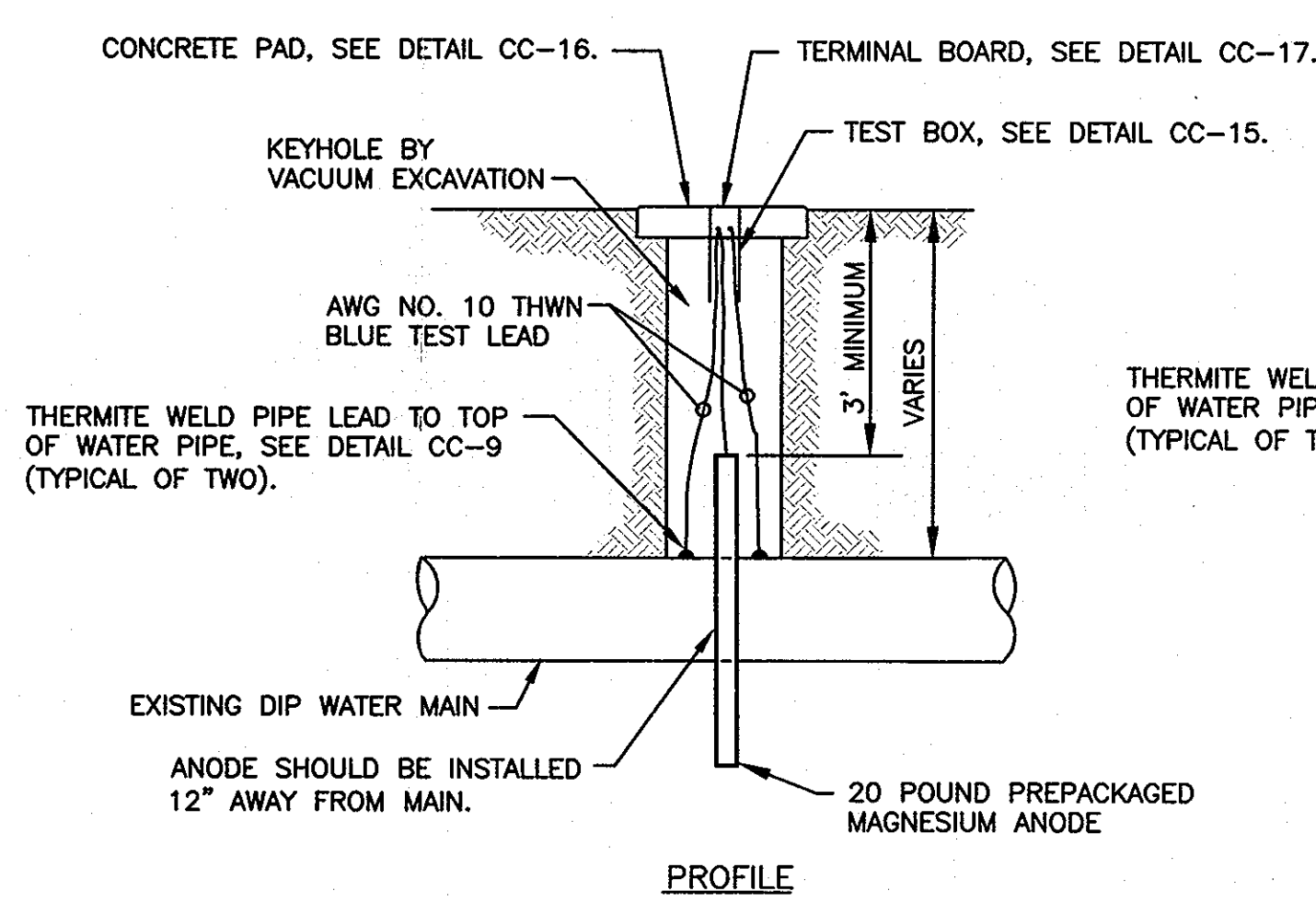
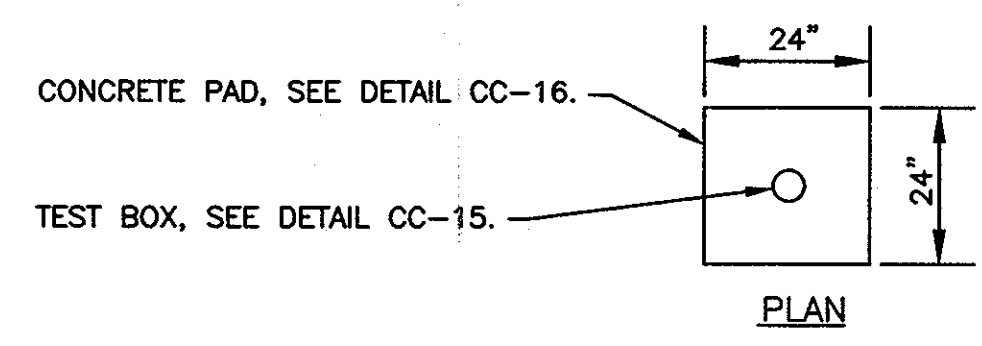
DSN. BY:	MJS			
DRN. BY:	DJD			
CHK. BY:	MJS			
DATE:	JUNE 2009	MJS	0	
BY:	NO.			
		AS-BUILT		1/14
		ISSUED FOR BID		6/09
		REVISION		DATE

CATHODIC PROTECTION
DETAILS

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

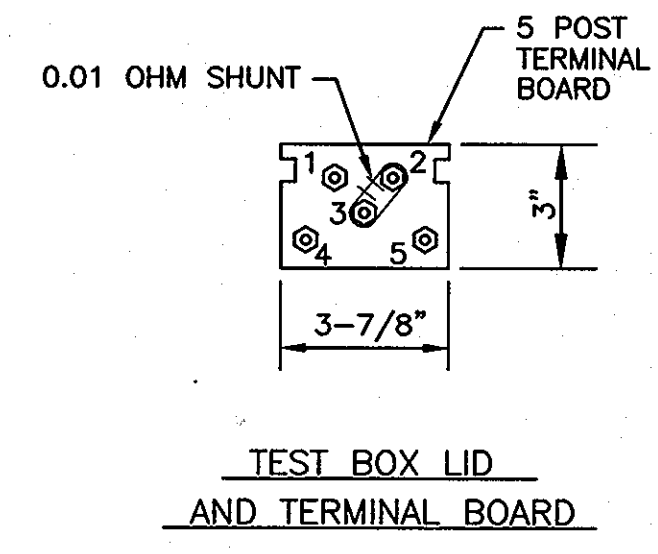
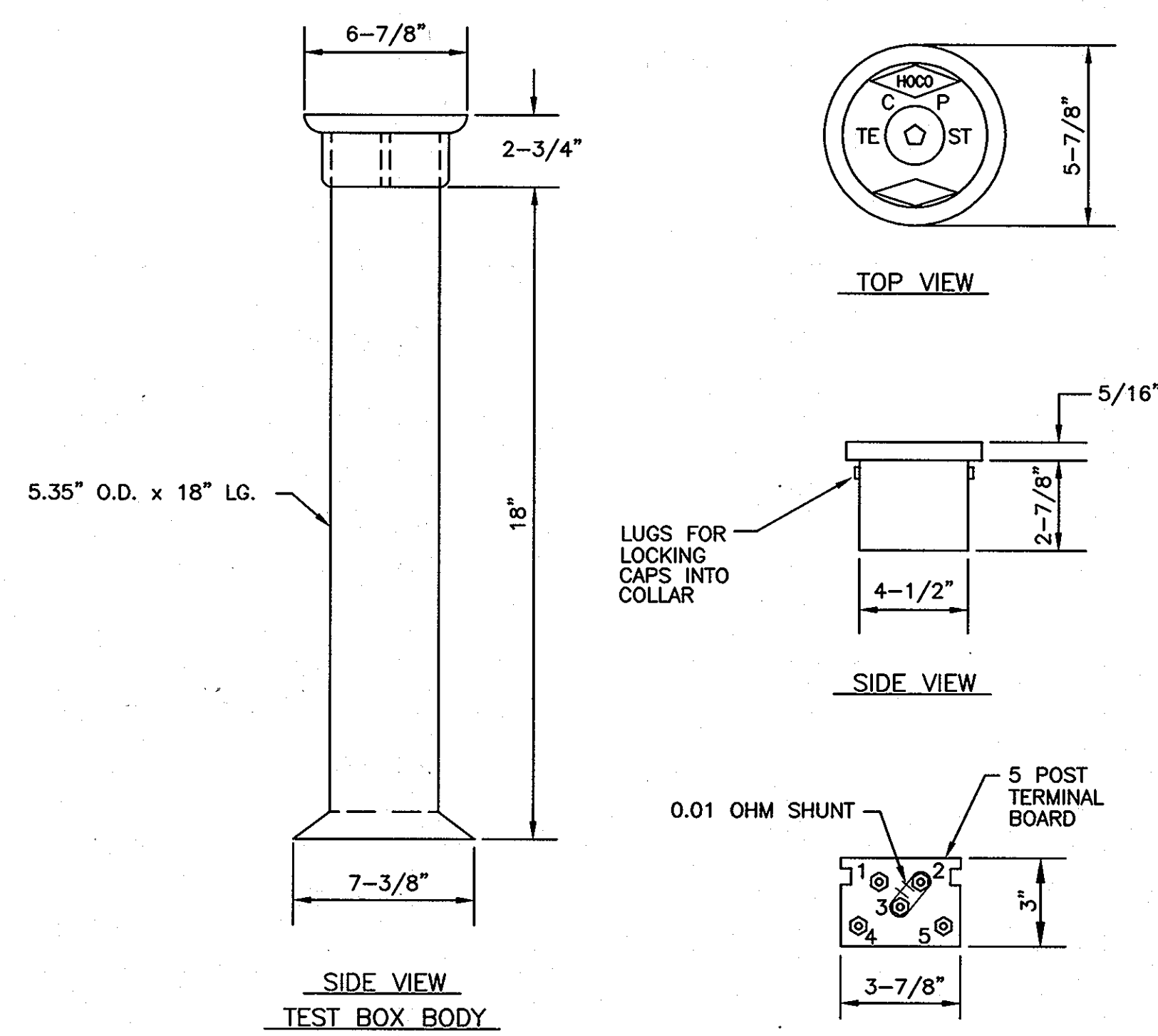
AS-BUILT 1/29/14
HARWOOD PARK
WATER MAIN REPLACEMENTS
CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CP-4
SCALE AS SHOWN
SHEET 23 OF 38
FILE NO. 33498-

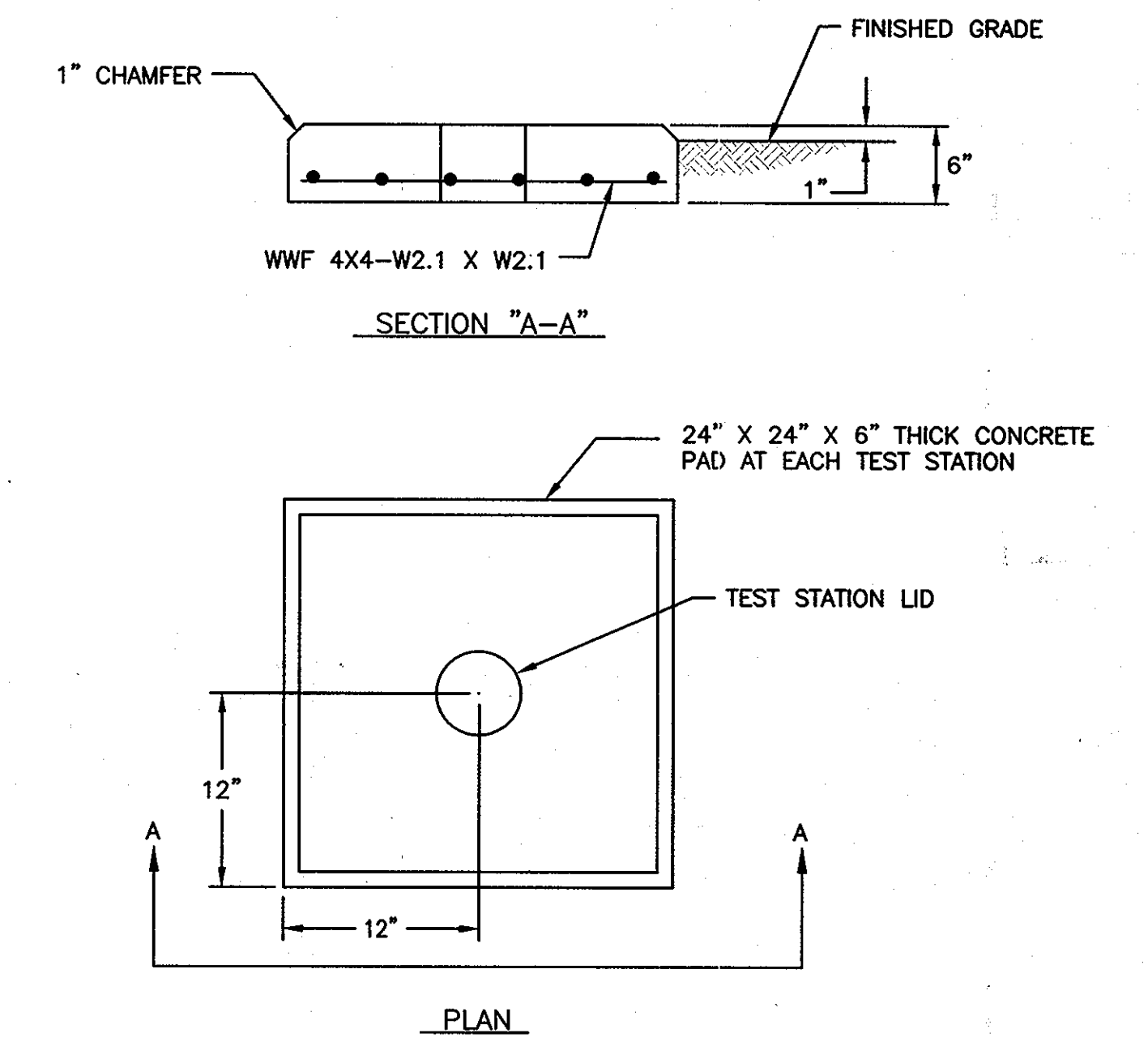


- NOTES:**
- BACKFILL EXCAVATION WITH CLEAN, DRY SOIL. SOIL IN EXCAVATION TO BE COMPACTED IN ACCORDANCE WITH HOWARD COUNTY DPW STANDARDS.
 - RESTORE THE SURFACE TO AS FOUND CONDITION IN ACCORDANCE WITH HOWARD COUNTY DPW STANDARDS.
 - DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN PVC CONDUIT TO FINAL TEST BOX LOCATION IF TEST BOX IS NOT LOCATED DIRECTLY ABOVE THE MAIN IN A NON-PAVED AREA.

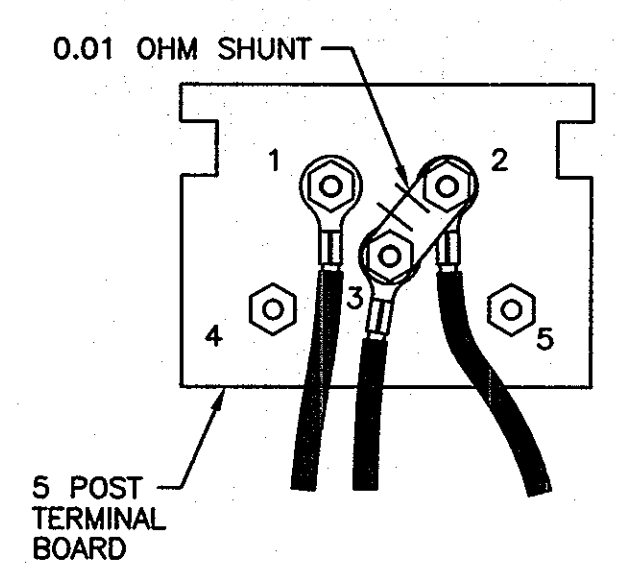
CC-14: TEST STATION INSTALLATION FOR HOT SPOT CATHODIC PROTECTION
SCALE: NONE



CC-15: TYPICAL TEST BOX FOR HOT SPOT CATHODIC PROTECTION
SCALE: NONE

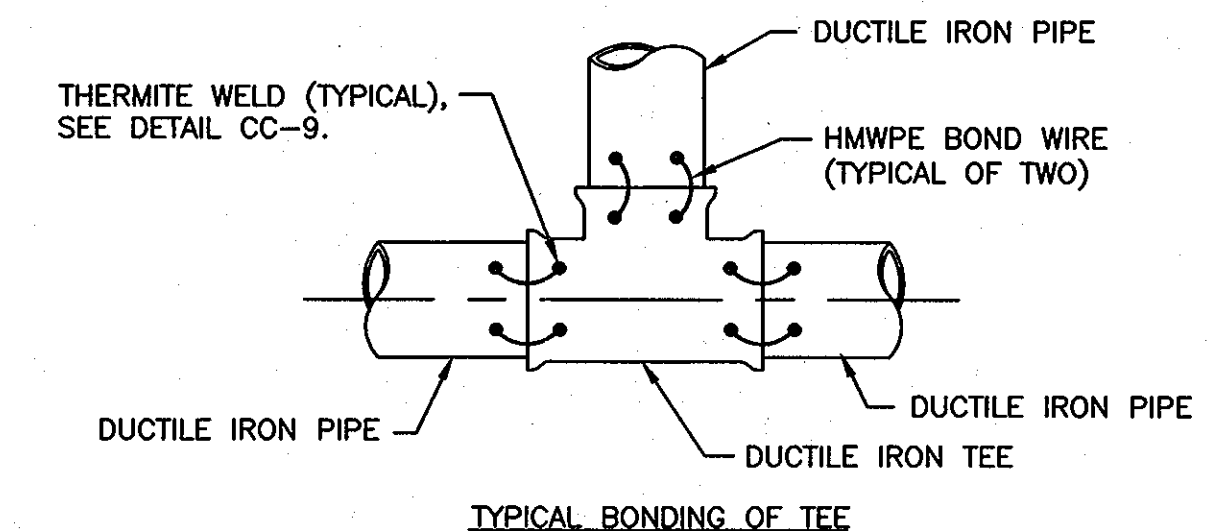
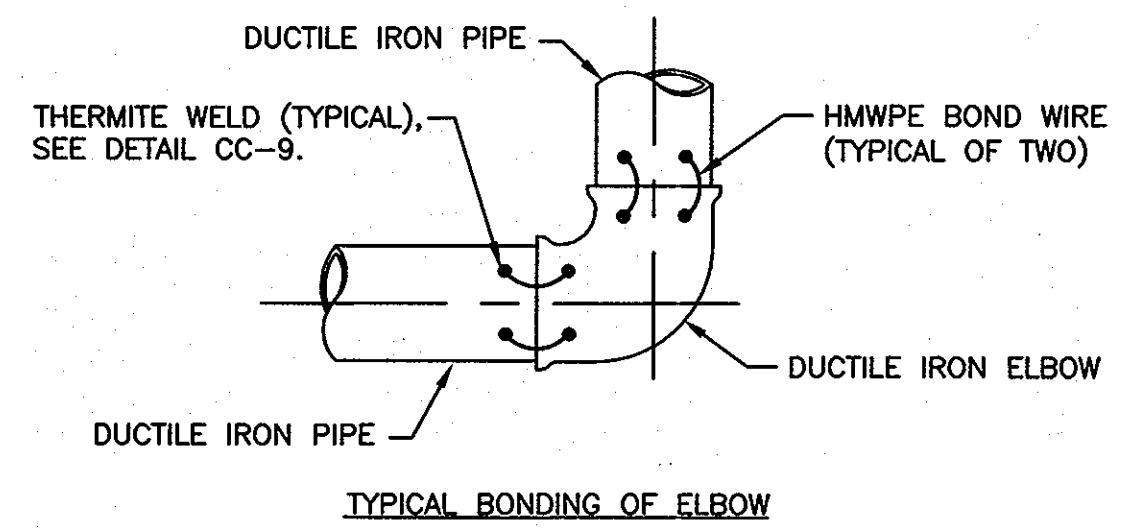
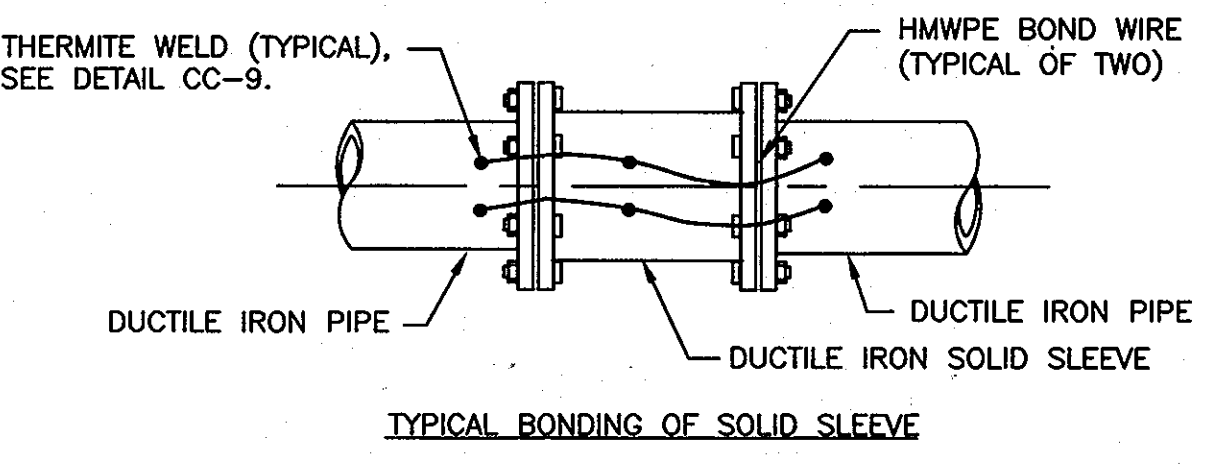
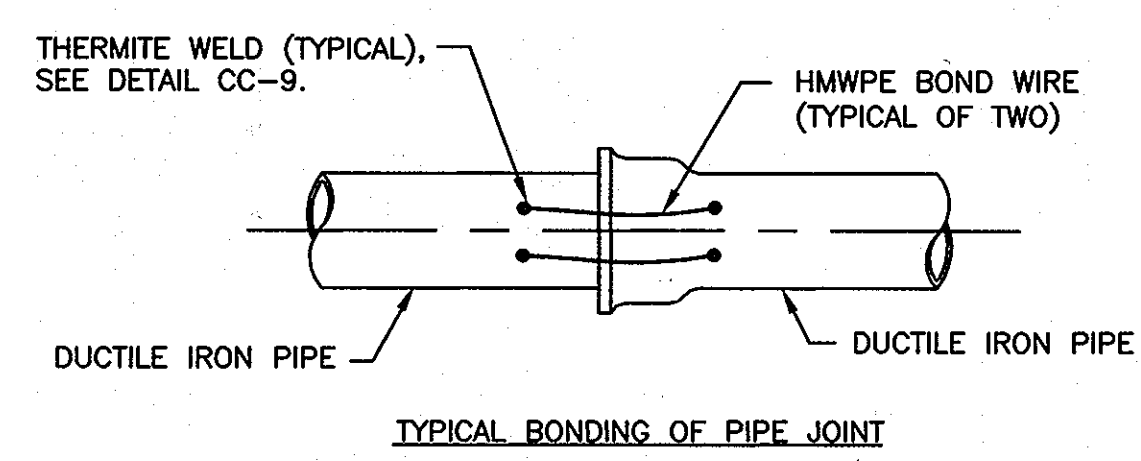


CC-16: TYPICAL CONCRETE TEST STATION PAD FOR HOT SPOT CATHODIC PROTECTION
SCALE: NONE



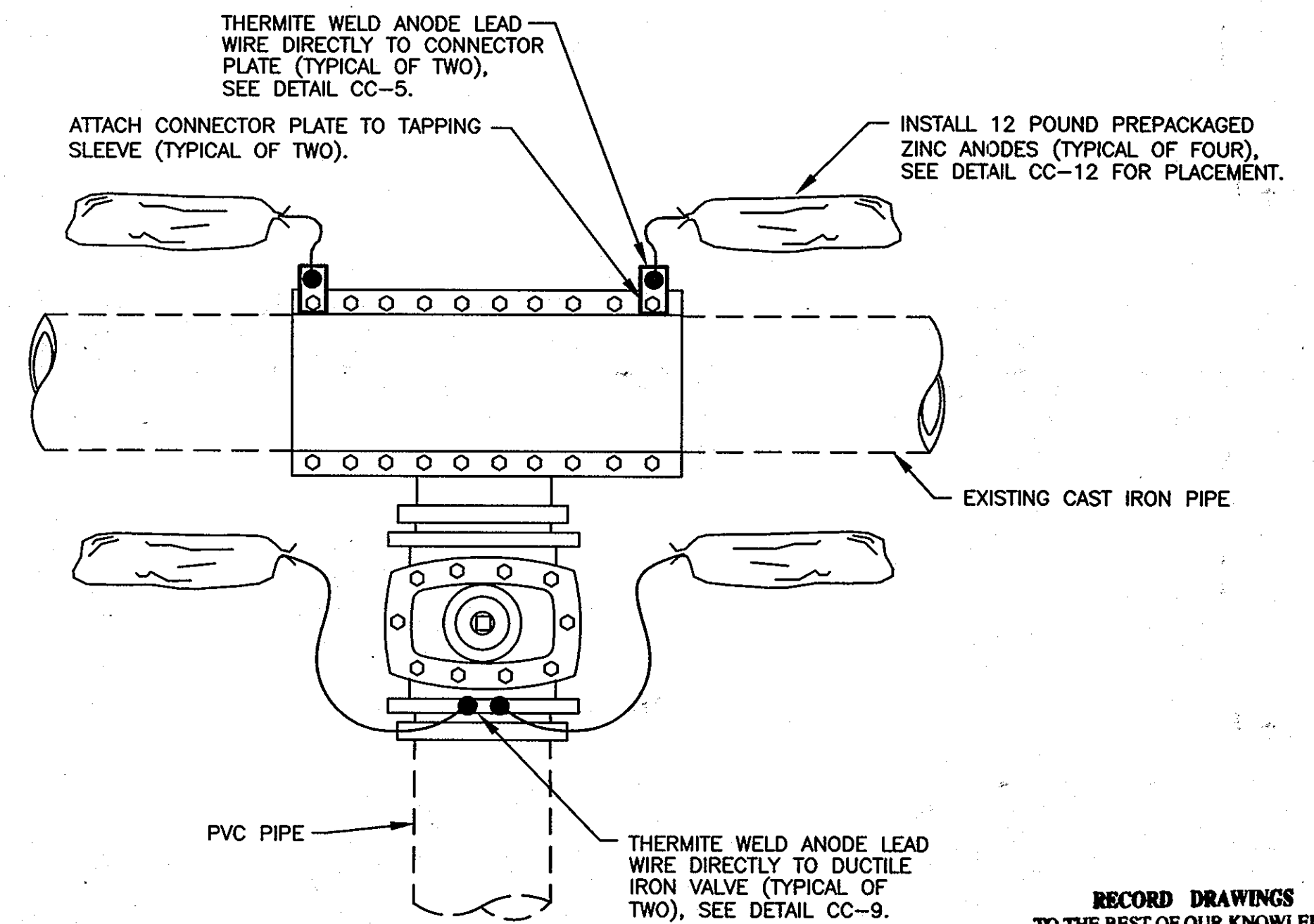
- TERMINAL 1 - AWG NO. 10 THWN BLUE WIRE (LEAD FROM PIPE)
 TERMINAL 2 - AWG NO. 10 THWN BLUE WIRE (2ND LEAD FROM PIPE)
 TERMINAL 3 - AWG NO. 12 TW BLACK WIRE (LEAD FROM ANODE)
 TERMINAL 4 - NOT USED
 TERMINAL 5 - NOT USED

CC-17: TERMINAL BOARD WIRING FOR HOT SPOT CATHODIC PROTECTION
SCALE: NONE



- NOTES:**
- BOND ALL JOINTS ON UNDERGROUND DUCTILE IRON PIPING ASSOCIATED WITH THE WATER MAIN.
 - THERMITE WELD BONDING WIRES TO TOP OF PIPE OR FITTINGS, SEE DETAIL CC-9.
 - 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
 - DO NOT THERMITE WELD TO PVC PIPE.

CC-18: DUCTILE IRON PIPE JOINT BONDING
SCALE: NONE



- NOTES:**
- ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE DETAIL CC-12.
 - DO NOT THERMITE WELD TO PVC PIPE.

CC-19: CORROSION PROTECTION OF TAPPING SLEEVE AND VALVE
SCALE: NONE

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]*

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.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/1/09
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/1/09
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7/2/09
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7/2/09
CHIEF, UTILITY DESIGN DIVISION DATE

RUSSELL CORROSION CONSULTANTS, INC.
Columbia, Maryland

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17083, EXPIRATION DATE 09/27/2010.

STATE OF MARYLAND
REGISTERED PROFESSIONAL ENGINEER
17083

DSN. BY:	MJS			
DRN. BY:	DJD			
CHK. BY:	MJS			
DATE:	JUNE 2009			
BY:	MJS	0		
NO.:				

AS-BUILT ISSUED FOR BID 6/09

REVISION DATE

CATHODIC PROTECTION DETAILS

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS

CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

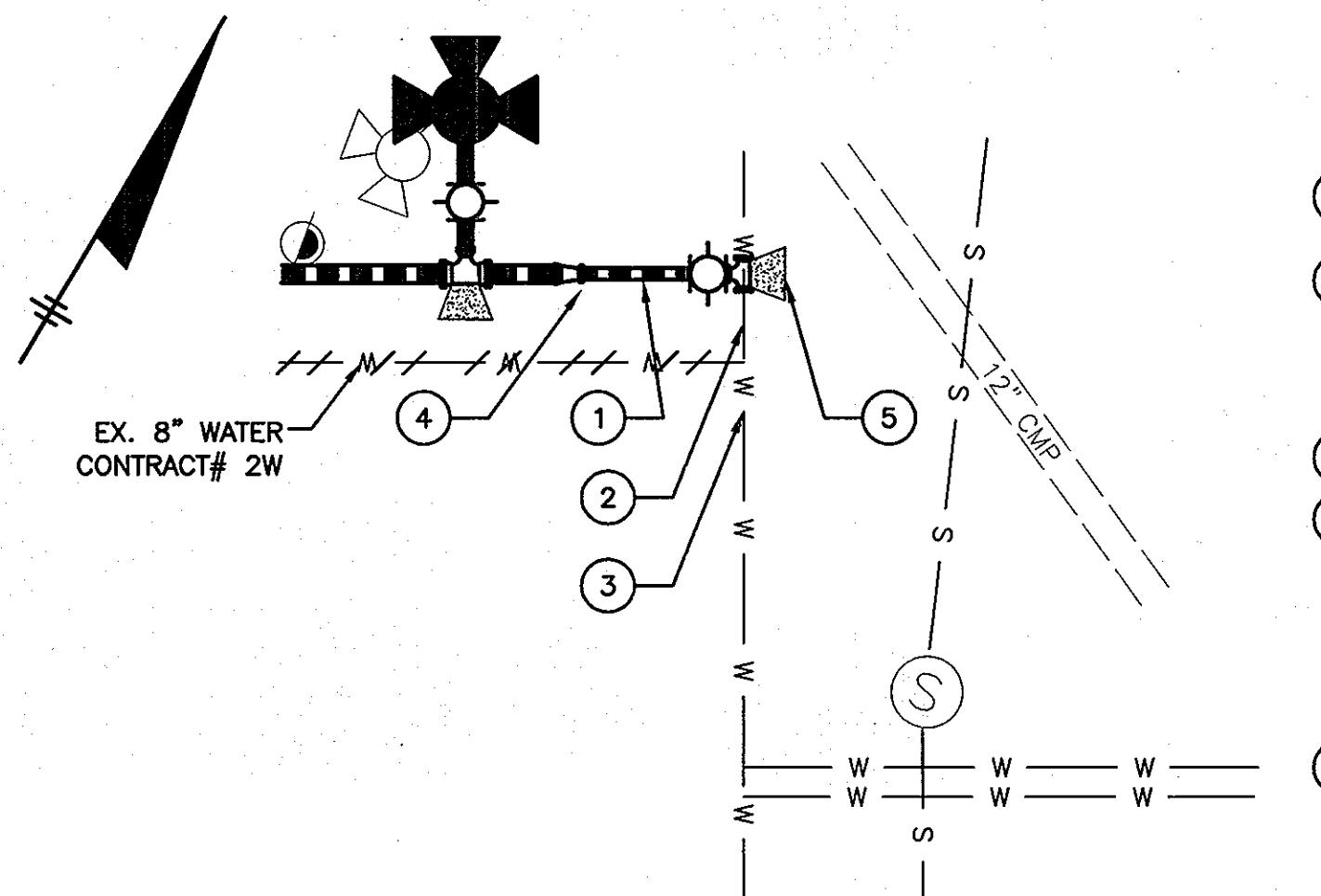
STORM DRAIN STRUCTURE DATA:

Table of storm drain structures including items 1-71, listing types (Grate Inlet, Catch Basin, Drain Manhole, etc.), elevations, and coordinates.

SANITARY SEWER STRUCTURE DATA:

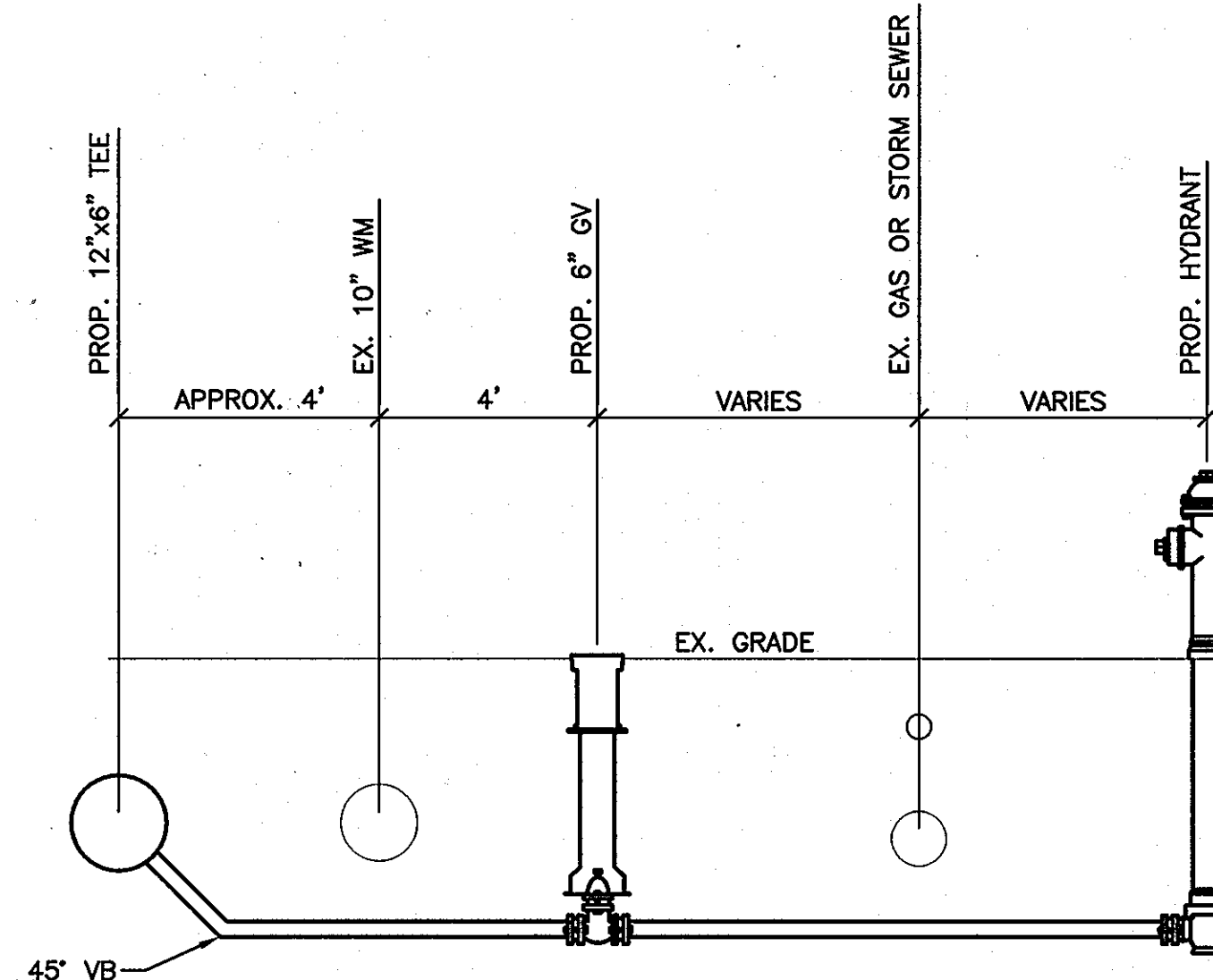
Table of sanitary sewer structures including items A-S, listing types (Sewer Manhole, Inlet, etc.), elevations, and coordinates.

CONNECTION AT STATION 28+05.21 ANDERSON AVE AND MOUND ST



CONNECTION DETAIL N.T.S.

- 1. INSTALL PROPOSED 8" WATER MAIN SYSTEM AS SHOWN, SPECIFIED, OR DIRECTED.
2. PRIOR TO CONSTRUCTION, PERFORM TEST PITS TO VERIFY LOCATION AND ELEVATION OF EX. WATER MAINS IMPACTING THE PROPOSED 8"x8" TAPPING SLEEVE AND VALVE (TS&V) CONNECTION. UPON COMPLETION OF TEST PITS, CONTACT ENGINEER IF DESIGN REVISIONS ARE REQUIRED.
3. COORDINATE COUNTY SHUT DOWN OF EX. GATE VALVES.
4. INSTALL PROPOSED 8"x8" TS&V, 8" PIPING, 10"x8" REDUCER, 10" PIPING, AND ALL RELATED APPURTENANCES AS SHOWN, SPECIFIED, OR DIRECTED. ALL PIPING, VALVES (OUTSIDE FACE AT THIS CONNECTION), AND FITTINGS SHALL BE MECHANICAL JOINT, RESTRAINED (WITHIN THE LIMITS SHOWN, SPECIFIED OR DIRECTED) USING THE SERIES 2000 PVC PIPE RESTRAINT SYSTEM BY EBAA IRON, INC. OR APPROVED EQUAL.
5. POUR CONCRETE BUTTRESSING BEHIND THE TS&V AND ELSEWHERE AS SHOWN, SPECIFIED, OR DIRECTED.

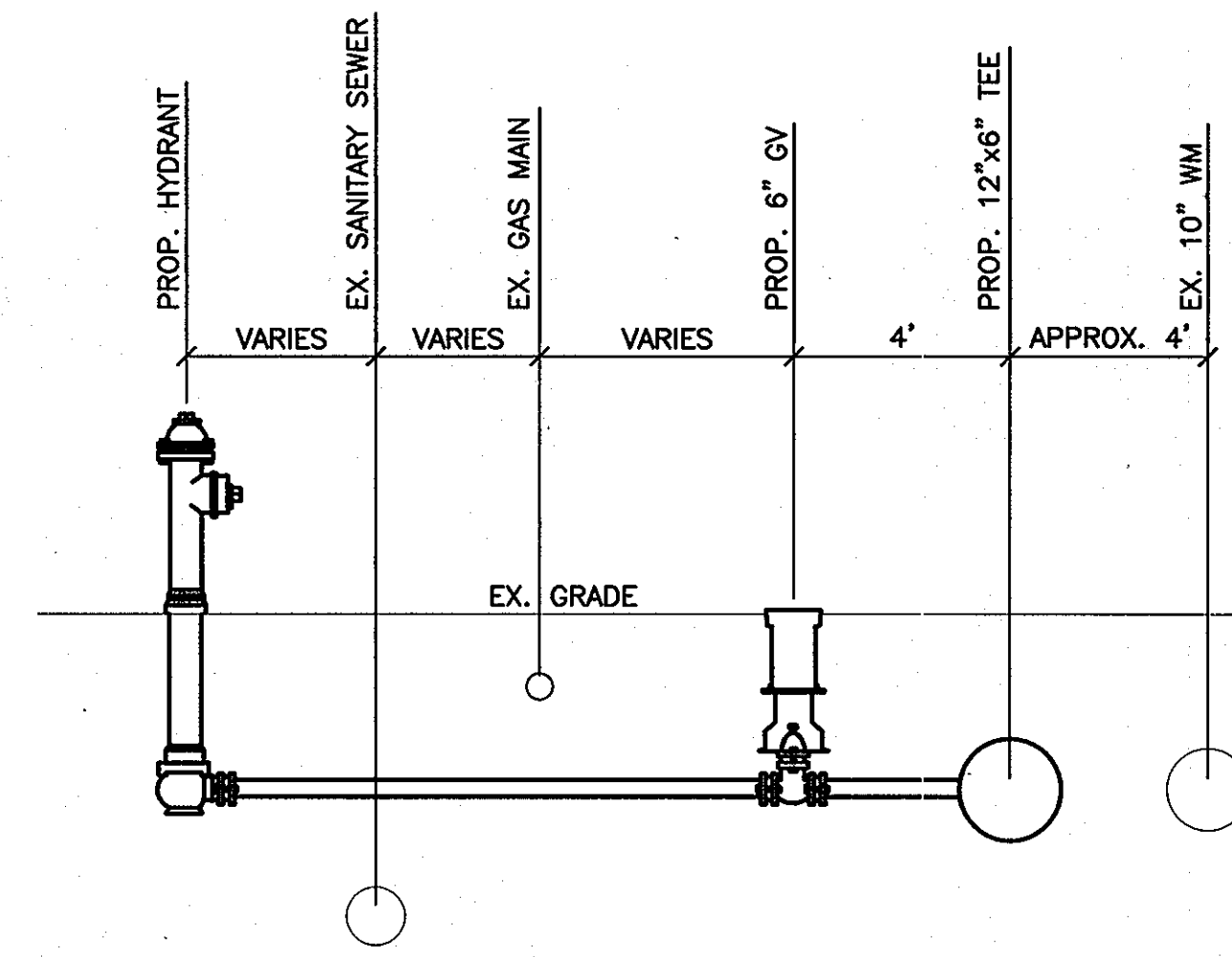


45" VB

DETAIL NOTES:

- 1. THIS DETAIL ADDRESSES INSTALLATION OF THE PROPOSED 6-INCH HYDRANT LEADS OFF THE EX. 12-INCH WM (TO THE NORTHEAST SIDE OF LOUDON AVE.).
2. THE EX. 10-INCH WATER MAIN WILL BE LIVE WHEN THE HYDRANT LEADS ARE INSTALLED, BUT LATER ABANDONED UNDER THIS CONTRACT.
3. AS SHOWN ON THIS DETAIL AND ON PLAN SHEET 19, THESE HYDRANT LEADS ALSO CROSS EITHER AN EX. GAS MAIN OR A STORM SEWER NEAR THE HYDRANT LOCATION.
4. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND ELEVATION OF THE EX. 10-INCH AND 12-INCH WATER MAINS, EX. GAS, AND EX. STORM SEWER AT EACH HYDRANT LEAD INSTALLATION.
5. ADJUST THE LOCATION/ELEVATION OF THE 45-DEGREE BEND AS NEEDED TO ACHIEVE A MINIMUM 12-INCH CLEARANCE BETWEEN THE BOTTOM OF THE EX. 10-INCH WATER MAIN OR THE EX. STORM SEWER (WHICHEVER IS DEEPER) AND THE TOP OF THE 6-INCH HYDRANT LEAD.
6. THE PROPOSED 6-INCH GATE VALVE SHALL BE INSTALLED 4- FEET OFF THE CENTERLINE OF THE EX. 10-INCH WATER MAIN.
7. ALL JOINTS SHALL BE RESTRAINED MECHANICAL JOINTS PER GENERAL NOTE 9 ON PLAN SHEET 1.

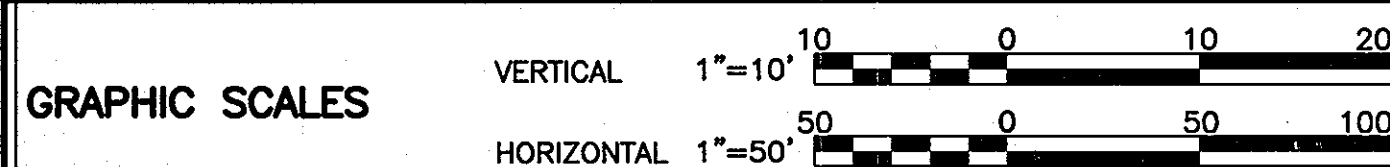
TYPICAL HYDRANT LEAD DETAIL (CROSSING UNDER ADJACENT WATER MAIN) N.T.S.



DETAIL NOTES:

- 1. THIS DETAIL ADDRESSES INSTALLATION OF THE PROPOSED 6-INCH HYDRANT LEADS OFF THE EX. 12-INCH WM (TO THE SOUTHWEST SIDE OF LOUDON AVE.).
2. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND ELEVATION OF THE EX. 12-INCH WATER MAIN AT EACH HYDRANT LEAD INSTALLATION.
3. THE LOCATION AND ELEVATION OF THE EX. SANITARY SEWER AND GAS MAIN ARE SHOWN IN THEIR GENERAL RELATIONSHIP TO THE PROPOSED 6-INCH HYDRANT LEAD. THE CONTRACTOR SHALL FIELD VERIFY THEIR EXACT LOCATIONS AND ELEVATIONS (AS NEEDED) AT EACH HYDRANT LEAD INSTALLATION.
4. THE PROPOSED 6-INCH GATE VALVE SHALL BE INSTALLED 4- FEET OFF THE CENTERLINE OF THE EX. 12-INCH WATER MAIN.
5. ALL JOINTS SHALL BE RESTRAINED MECHANICAL JOINTS PER GENERAL NOTE 9 SHEET 1.

TYPICAL HYDRANT LEAD DETAIL (CROSSING SEWER AND GAS) N.T.S.



AS-BUILT 1129114

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.

DSN. BY: GLF, DRN. BY: RPW, CHK. BY: GLF, DATE: JUNE, 2009

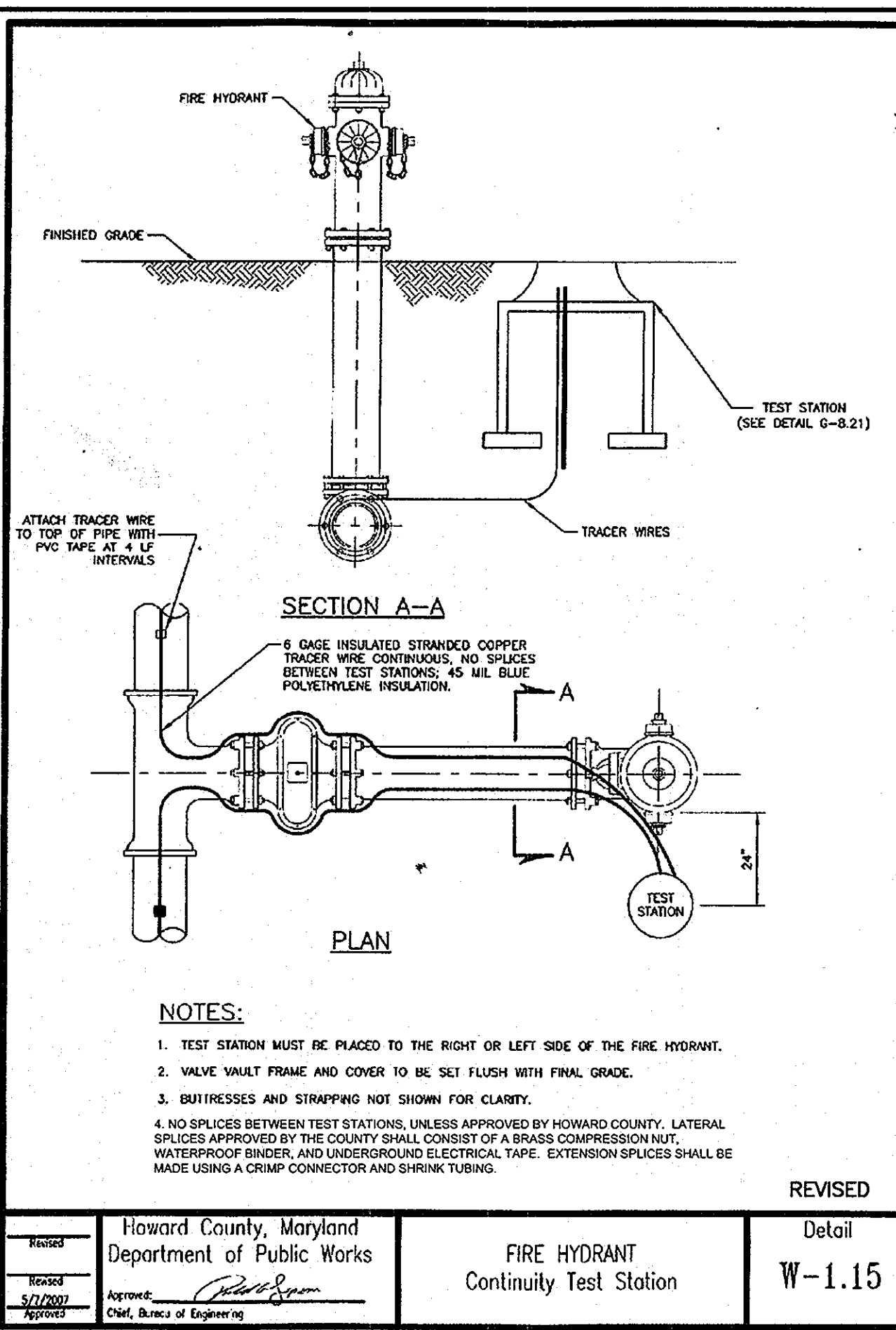
EXISTING STRUCTURES INFORMATION SCHEDULES AND MISCELLANEOUS DETAILS

AS-BUILT, ISSUED FOR BID, DATE: 06/09

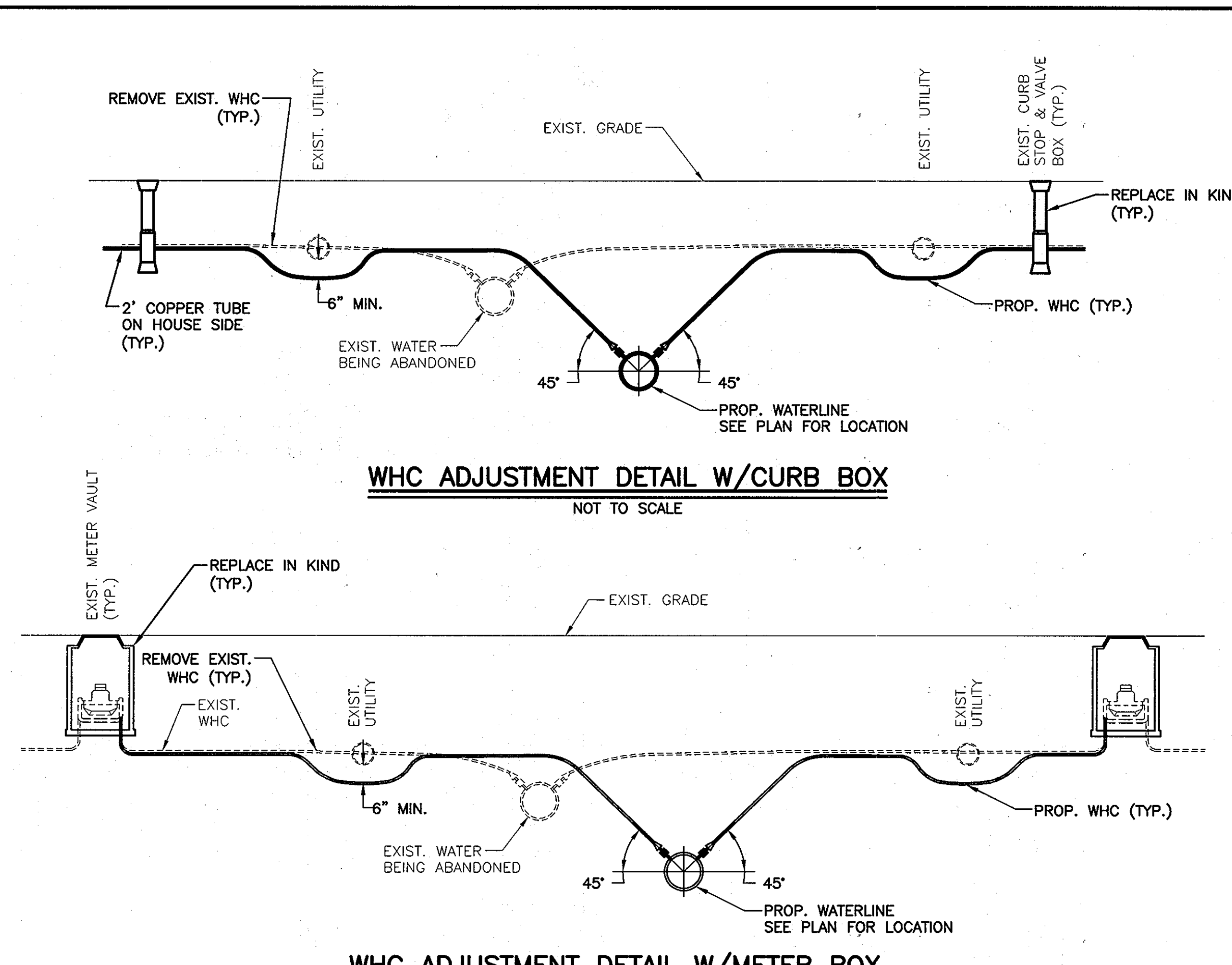
HARWOOD PARK WATER MAIN REPLACEMENTS, CAPITAL PROJECT: W-8255, CONTRACT NO.: 44-4578, ELECTION DISTRICT NO. 2, HOWARD COUNTY, MARYLAND

SCALE AS SHOWN, SHEET 25 OF 38

I:\HOWARD-CO\2343\33498-HARWOOD-PARK-WA\DWG\SHEETS\33498-C121.DWG

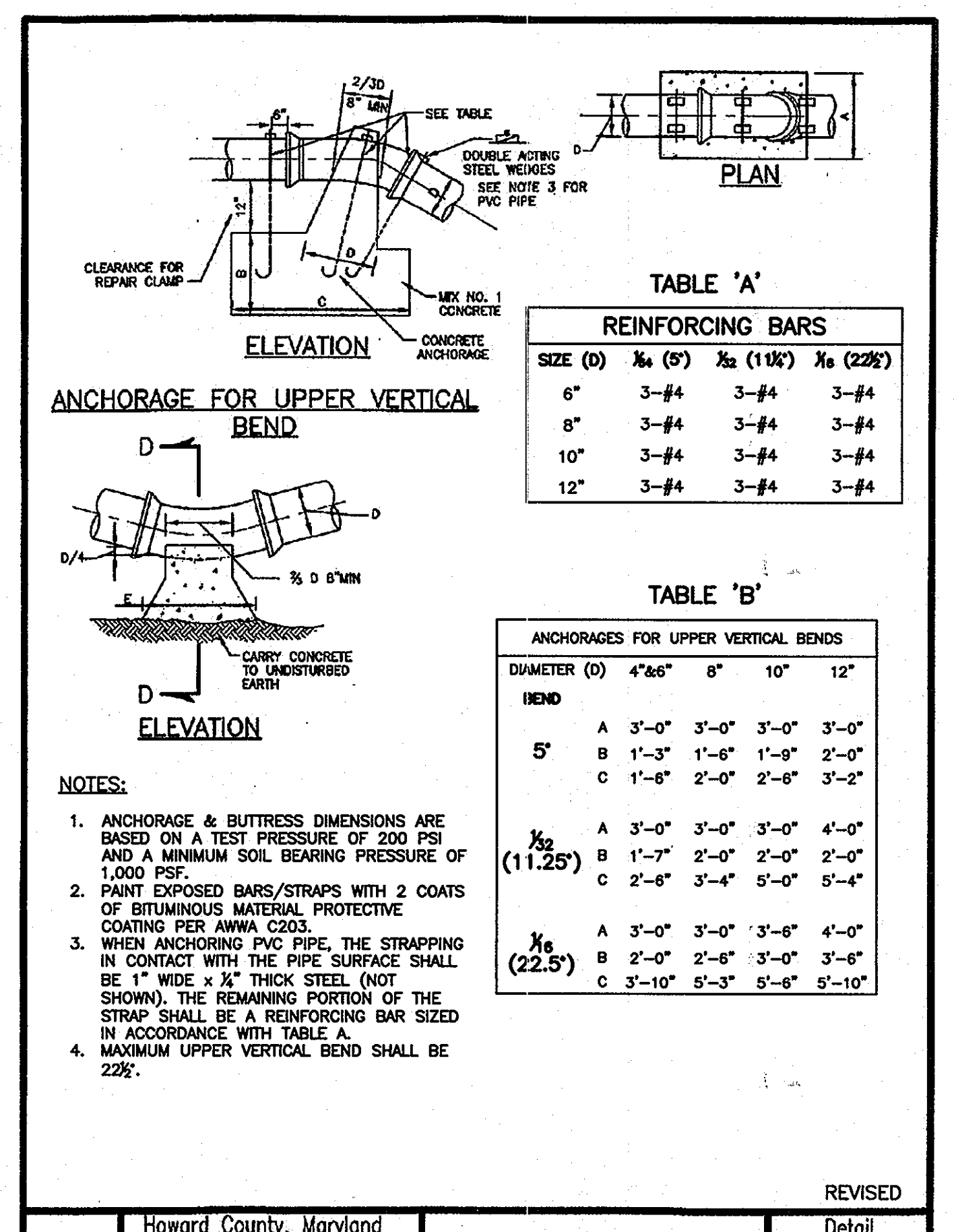


Howard County, Maryland Department of Public Works	FIRE HYDRANT Continuity Test Station	Detail W-1.15
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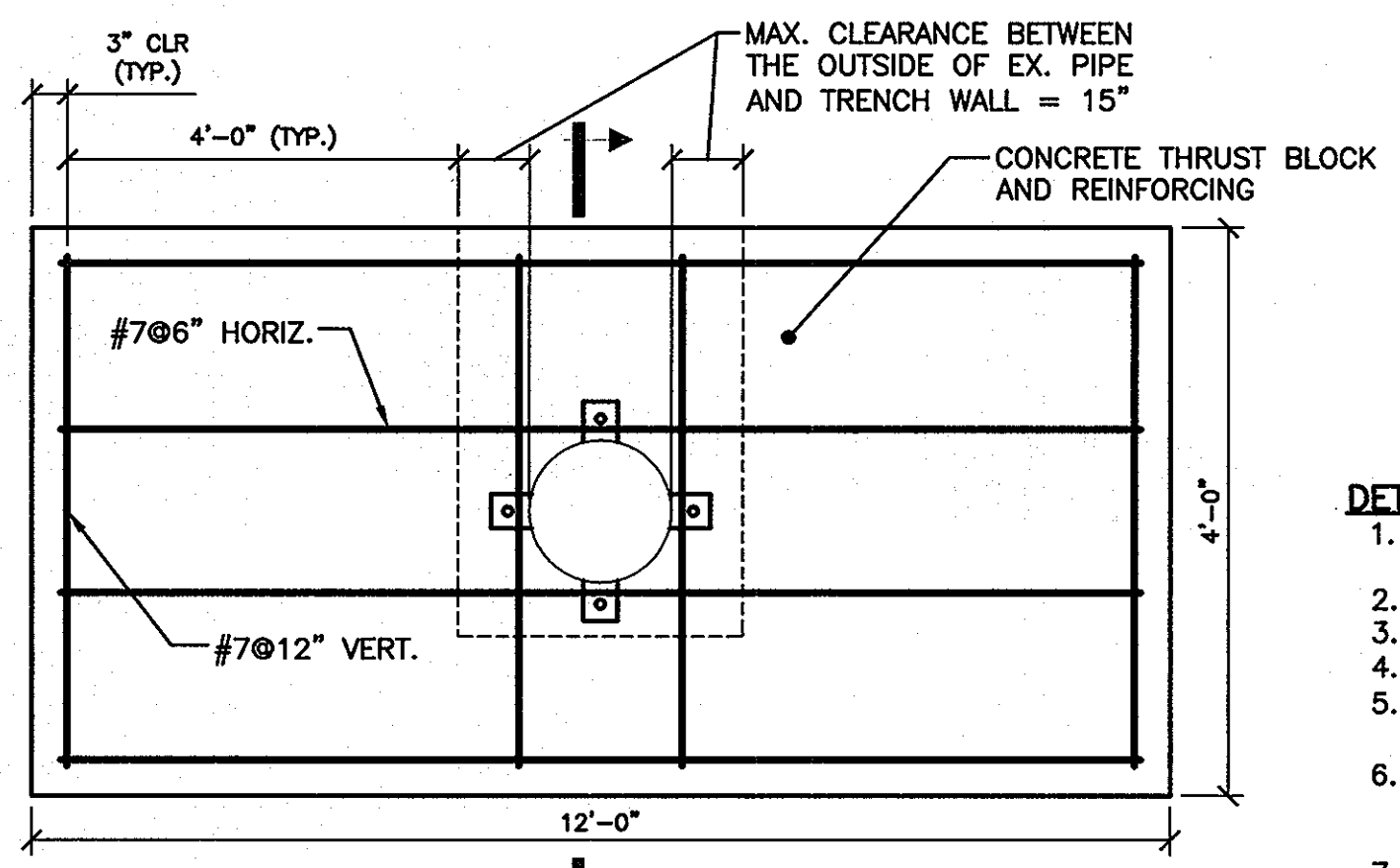


WHC NOTES:

- INSIDE METER WHC:**
 PROVIDE NEW WHC FROM THE PROPOSED PVC WATER MAIN TO AND INCLUDING THE EXISTING CURB STOP VALVE IN ACCORDANCE WITH HOWARD COUNTY STANDARD DESIGN DETAIL W-3.21 AND W-3.30.
NEW WHC SHALL INCLUDE:
 - NEW COPPER FROM WATER MAIN TO CURB BOX AND 2' STUB ON HOUSE SIDE OF BOX.
 - NEW CAST IRON OR POLY-IRON COVER VALVE BOX.
 - NEW CURB STOP BALL VALVE.
 - EXISTING OUTSIDE METER SETTINGS WHICH HAVE BEEN "JUMPED" TO ACCOMMODATE NEW INSIDE METER SETTINGS SHALL BE REPLACED WITH CURB BOX AND BALL VALVE CURB STOP PER HOWARD COUNTY STANDARD DESIGN DETAIL W-3.21.
- OUTSIDE METER WHC:**
 PROVIDE NEW WHC FROM THE PROPOSED PVC WATER MAIN TO AND INCLUDING THE ENTIRE METER VAULT ASSEMBLY IN ACCORDANCE WITH HOWARD COUNTY STANDARD DESIGN DETAIL W-3.30 AND W-3.29.
NEW WHC SHALL INCLUDE:
 - NEW COPPER FROM WATER MAIN TO METER VAULT AND 2' STUB ON HOUSE SIDE OF METER VAULT.
 - NEW 18" CONCRETE OR POLYETHYLENE METER VAULT AND 12" METER FRAME AND COVER.
 - NEW ANGLE VALVES AND METER SETTING ASSEMBLY.
- IN THE EVENT THE NEW WHC MUST CROSS EXISTING UTILITIES 4 FOOT DEEP OR LESS (BETWEEN THE NEW WATER MAIN AND THE CURB STOP OR METER) THE WHC SHALL BE INSTALLED UNDER THE EXISTING UTILITY AS SHOWN WITH THE EXCEPTION OF DEEP STORM DRAINS AND ALL SEWER MAINS.**



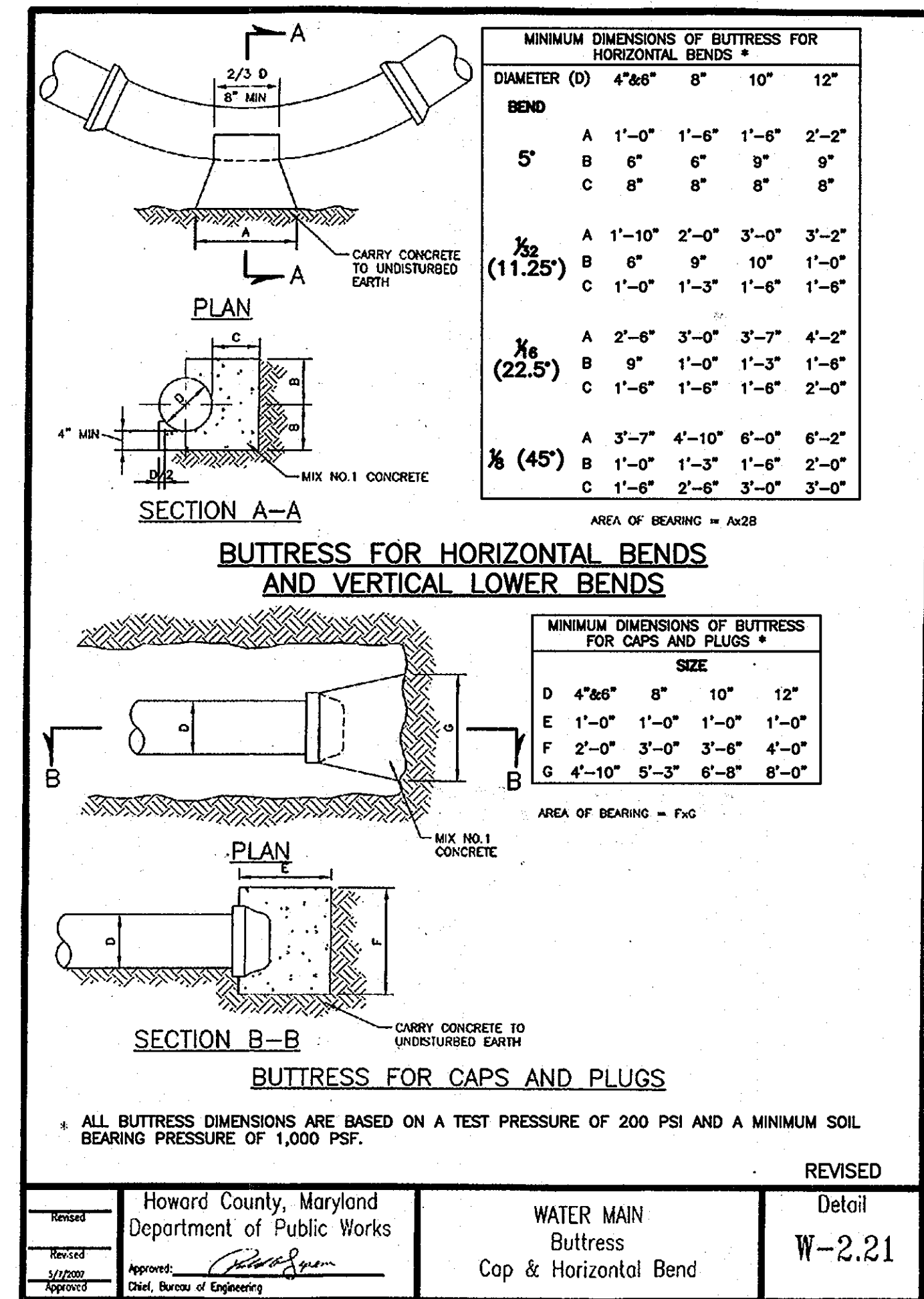
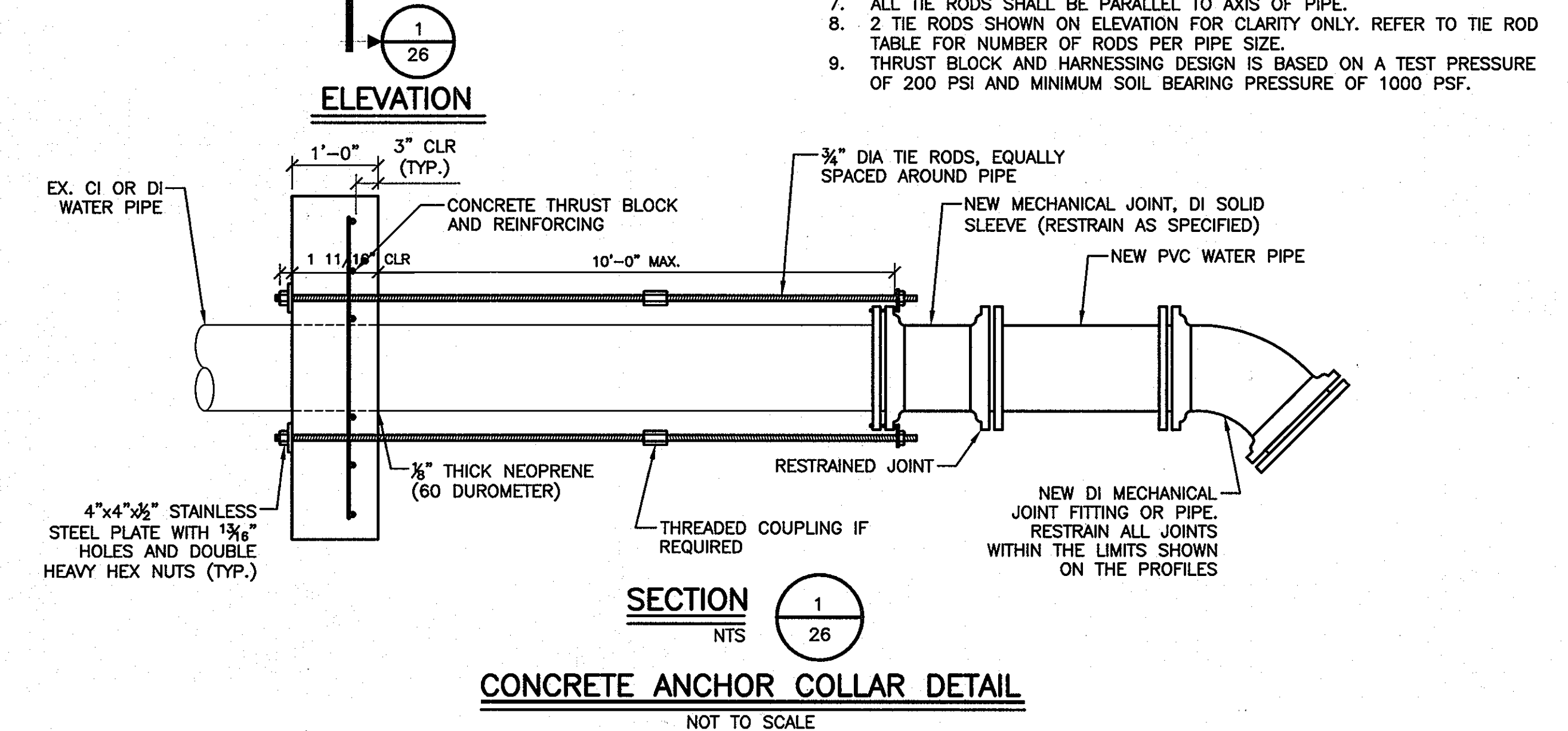
Howard County, Maryland Department of Public Works	WATER MAIN Buttress & Anchorage Vertical Bend	Detail W-2.22
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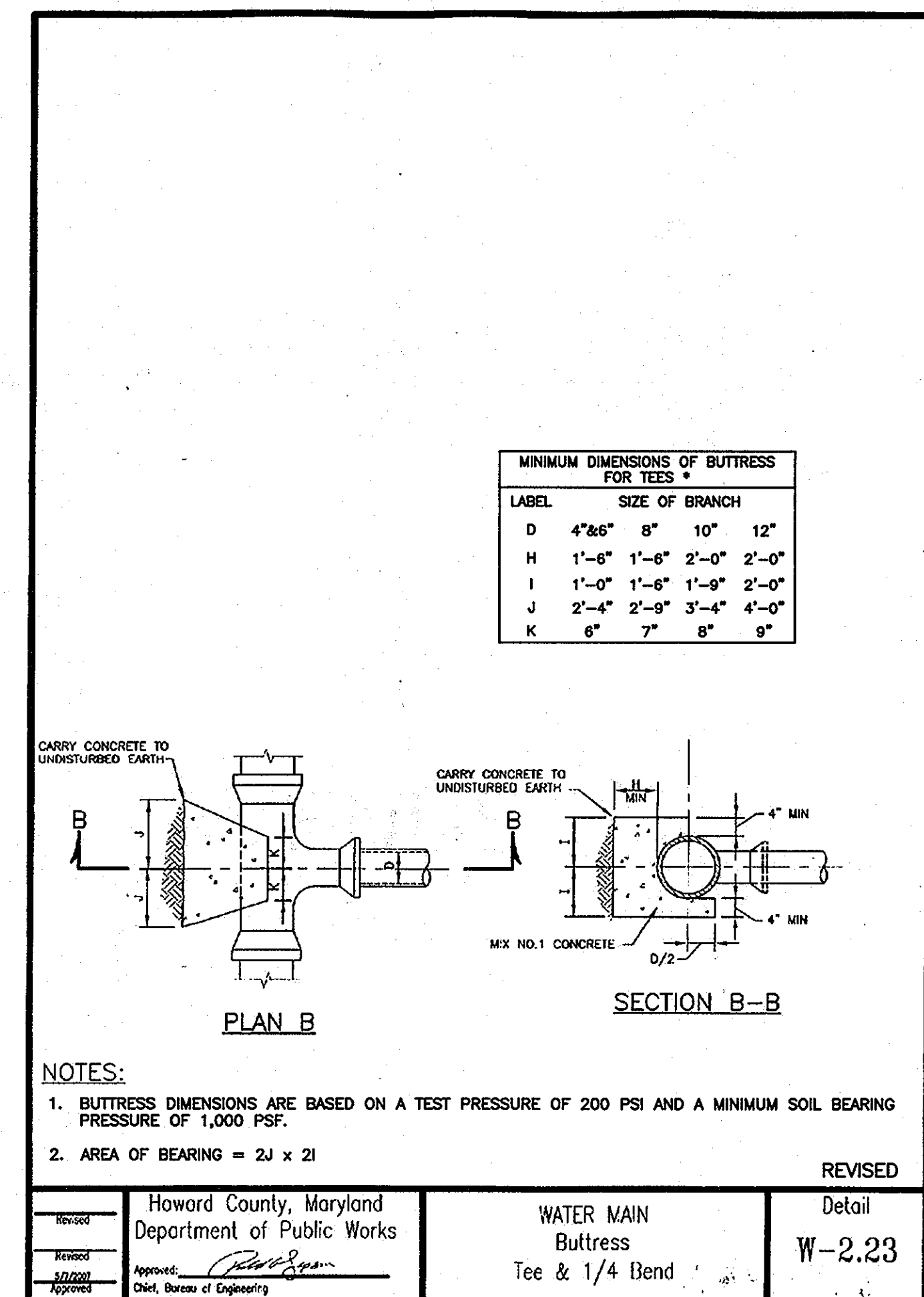
TIE ROD TABLE

PIPE DIA	NO. OF TIE RODS
4" (6')	2
8"	4
10"	4
12"	6

- DETAIL NOTES:**
- ALL CONCRETE SHALL BE 4000 PSI. PIPELINE SHALL NOT BE PRESSURIZED UNTIL CONCRETE REACHES 4000 PSI.
 - ALL REBARS SHALL BE ASTM A615 GRADE 60, 36,000 LB YIELD STRENGTH.
 - STEEL PLATES SHALL BE ASTM A36.
 - MAINTAIN 2" CLEAR BETWEEN ALL REBARS AND PIPE.
 - COAT ALL TIE RODS AND RELATED METAL APPURTENANCES WITH TWO (2) COATS OF BITUMINOUS MATERIAL PROTECTIVE COATING PER AWWA C203.
 - BOLT CIRCLE FOR 3/4" TIE RODS AT THRUST COLLAR SHALL EQUAL BOLT CIRCLE AT TIE BOLTS. THE BOLTS SHALL BE SUPERSTAR TIE BOLTS BY STAR NATIONAL PRODUCTS OR APPROVED EQUAL.
 - ALL TIE RODS SHALL BE PARALLEL TO AXIS OF PIPE.
 - 2 TIE RODS SHOWN ON ELEVATION FOR CLARITY ONLY. REFER TO TIE ROD TABLE FOR NUMBER OF RODS PER PIPE SIZE.
 - THRUST BLOCK AND HARNESSING DESIGN IS BASED ON A TEST PRESSURE OF 200 PSI AND MINIMUM SOIL BEARING PRESSURE OF 1000 PSF.



Howard County, Maryland Department of Public Works	WATER MAIN Buttress Cap & Horizontal Bend	Detail W-2.21
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Howard County, Maryland Department of Public Works	WATER MAIN Buttress Tee & 1/4 Bend	Detail W-2.23
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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]*

AS-BUILT 1/29/14

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 7/1/09 DATE
 DIRECTOR OF PUBLIC WORKS

[Signature] 7/1/09 DATE
 CHIEF - BUREAU OF ENGINEERING

[Signature] 7/1/09 DATE
 CHIEF, BUREAU OF UTILITIES

[Signature] 7/1/09 DATE
 CHIEF, UTILITY DESIGN DIVISION

O'BRIEN & GERE ENGINEERS, INC.

8401 Corporate Drive
 Suite 400
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 (301) 731-5622
 FAX: (301) 577-4737

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2009

[Signature]
 PROFESSIONAL ENGINEER

DSN. BY: GLF	
DRN. BY: RPW	
CHK. BY: GLF	
DATE: JUNE, 2009	
R/D 0	AS-BUILT
BY NO.	ISSUED FOR BID
	REVISION
	DATE
	600' SCALE MAP NO. 38
	BLOCK NO. 13, 14, 19

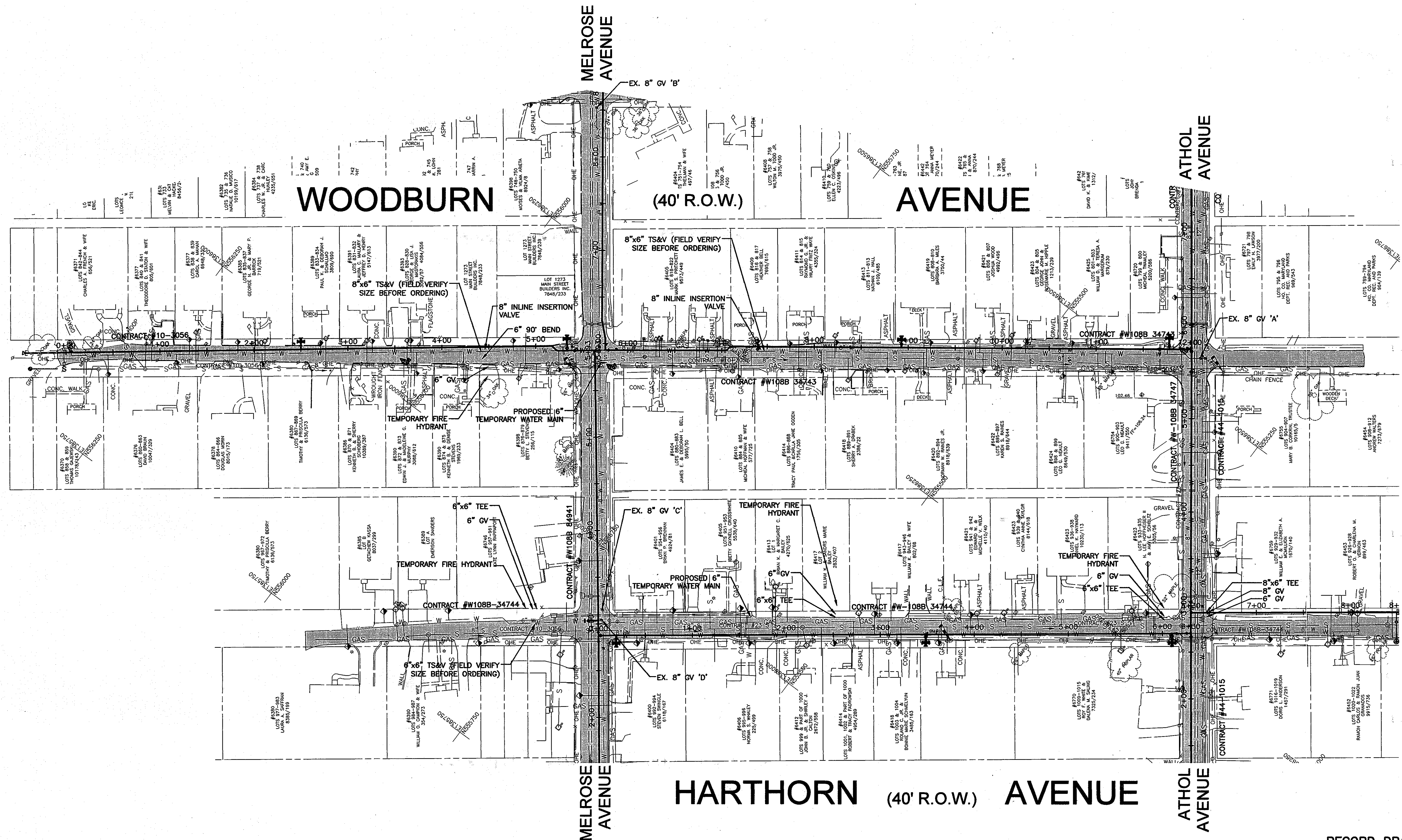
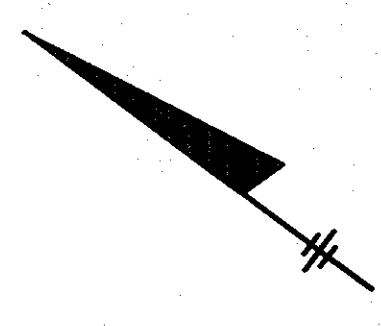
GENERAL DETAILS

HARWOOD PARK WATER MAIN REPLACEMENTS

CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

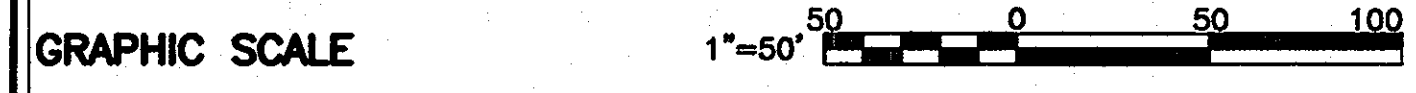
SCALE AS SHOWN
 SHEET 26 OF 38

FILE NO. 33498-121F



PLAN NOTE:
REFER TO SHEET 28 FOR FURTHER DETAILS OF THE REQUIRED TEMPORARY WM SYSTEM.

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

[Signature] 2/14/14
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/14/14
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 2/14/14
CHIEF, UTILITY DESIGN DIVISION DATE

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[Professional Seal]

DSN. BY:	GLF				
DRN. BY:	RPW				
CHK. BY:	GLF	RJD			
DATE:	JUNE, 2009	RJD	0		
		BY	NO.		

AS-BUILTS
ISSUED FOR BID 06/09

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

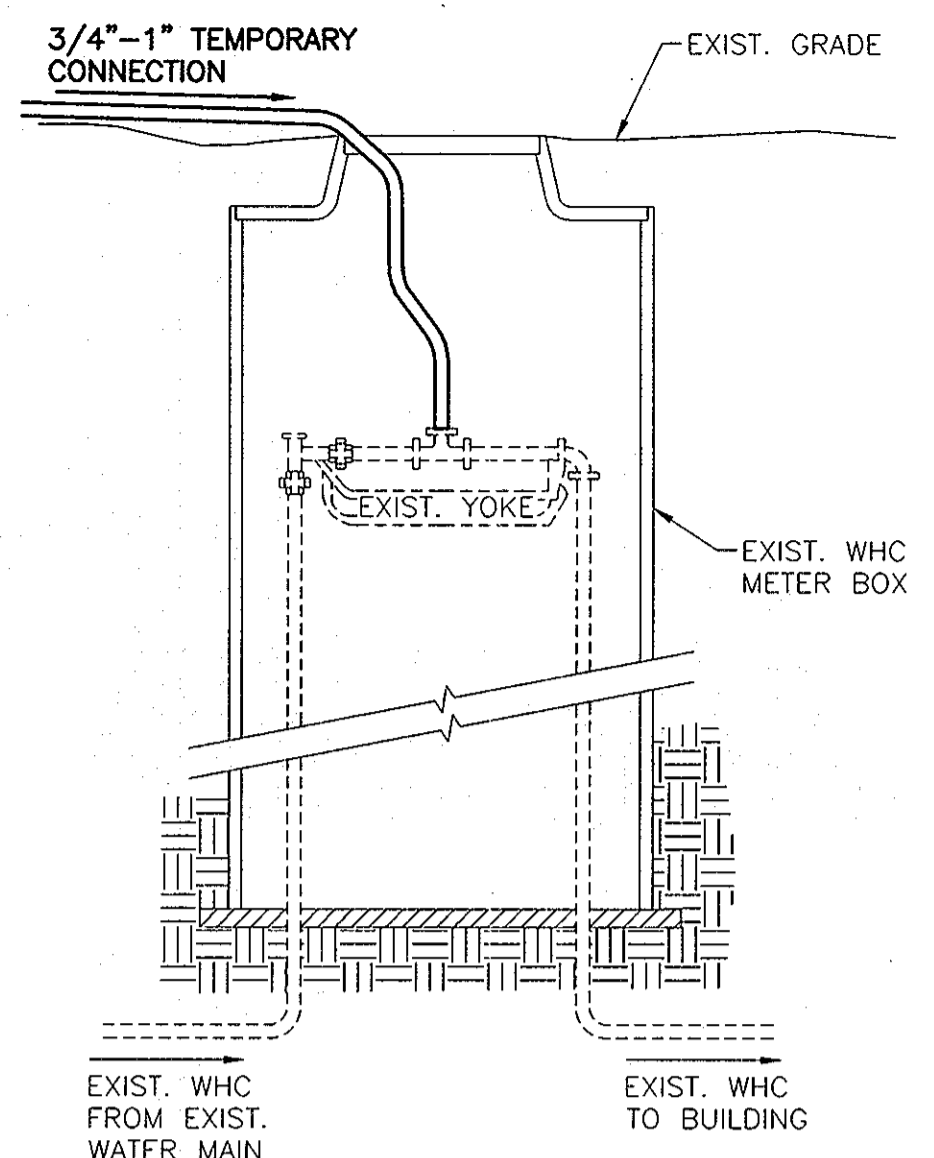
AS-BUILT REPLACEMENT SHEET 1/29/14

TEMPORARY BY-PASS WATER MAIN PLAN

HARWOOD PARK WATER MAIN REPLACEMENTS
CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO.: 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 27 OF 38

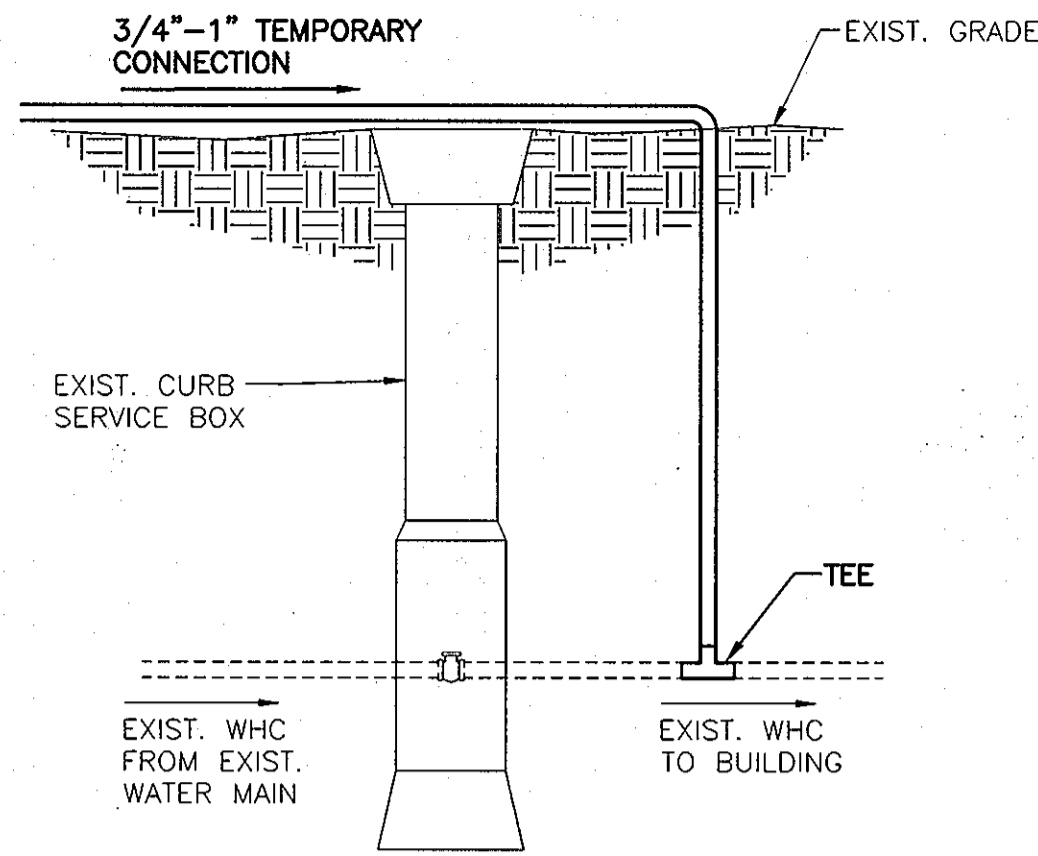
I:\HOWARD-CO.2343\33498.HARWOOD-PARK-WA.DWG\DWG\SHEETS\33498-C122.DWG



- NOTES:**
1. REMOVE METER FROM WHC VAULT, STORE AND REPLACE UPON COMPLETION OF JOB.
 2. INSTALL TEE TO YOKE AND CONNECT TEMPORARY PIPE TO TEE.
 3. INSTALL TEMPORARY METER COVER WITH KNOCKOUT FOR BYPASS PIPING.

TEMPORARY WHC CONNECTION FOR OUTSIDE METER OR INSIDE METER WITH CURB STOP IN METER VAULT

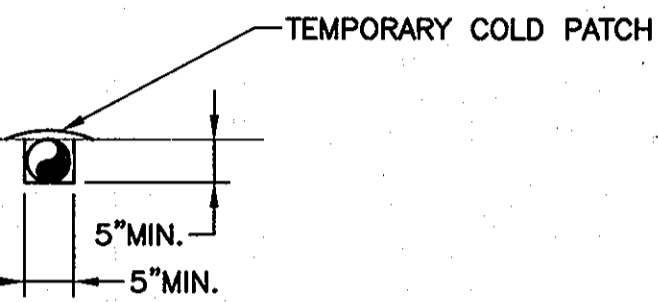
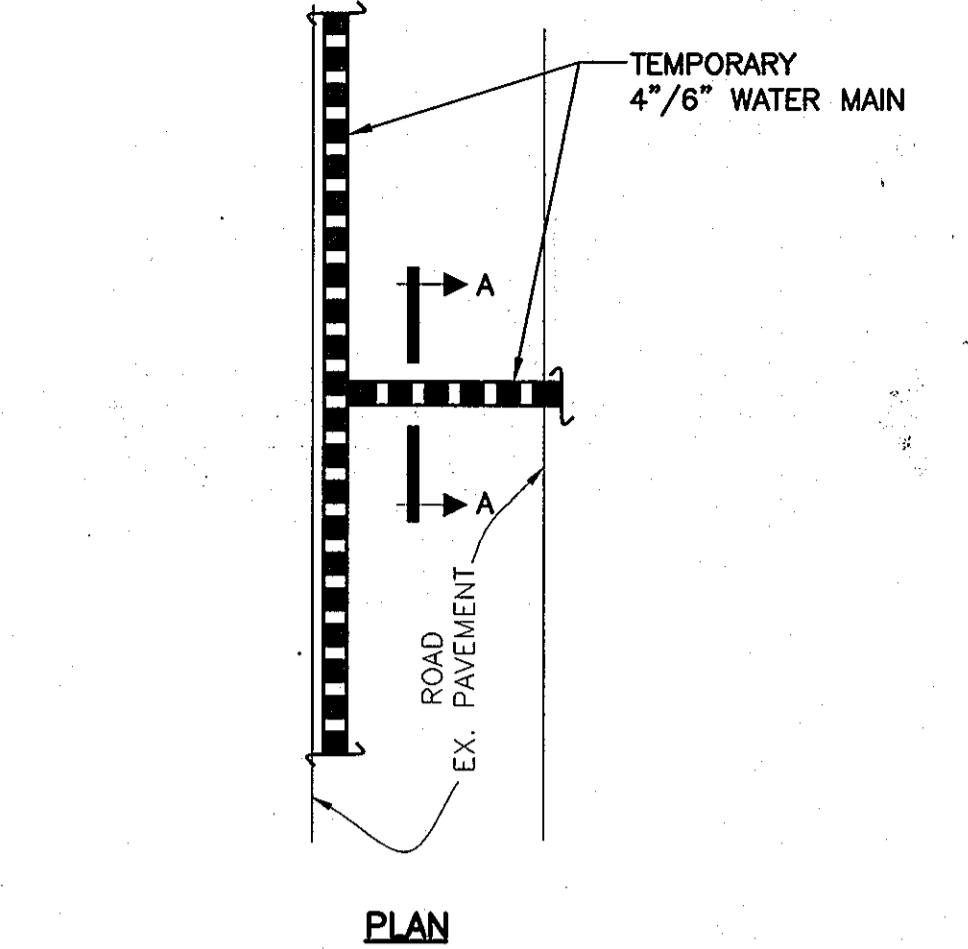
NOT TO SCALE



- NOTES:**
1. EXCAVATE TO CONNECT TEMPORARY WHC CONNECTION.
 2. SHUT-OFF CURB STOP VALVE/METER.
 3. INSTALL TEE ON BUILDING SIDE OF CURB SERVICE BOX AND CONNECT TEMPORARY WATER LINE TO TEE.
 4. BACKFILL EXCAVATION.

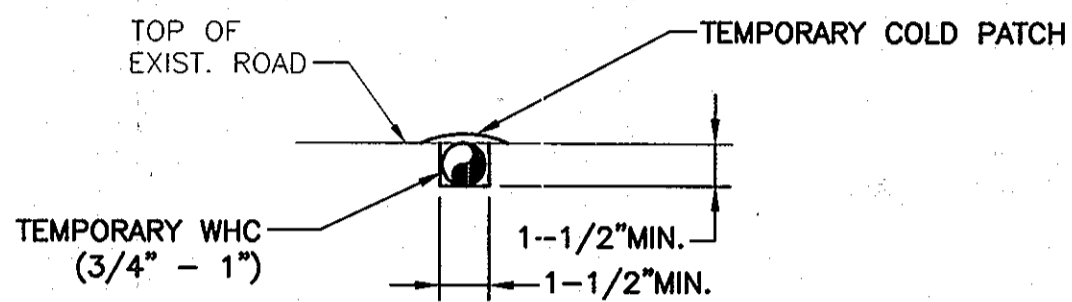
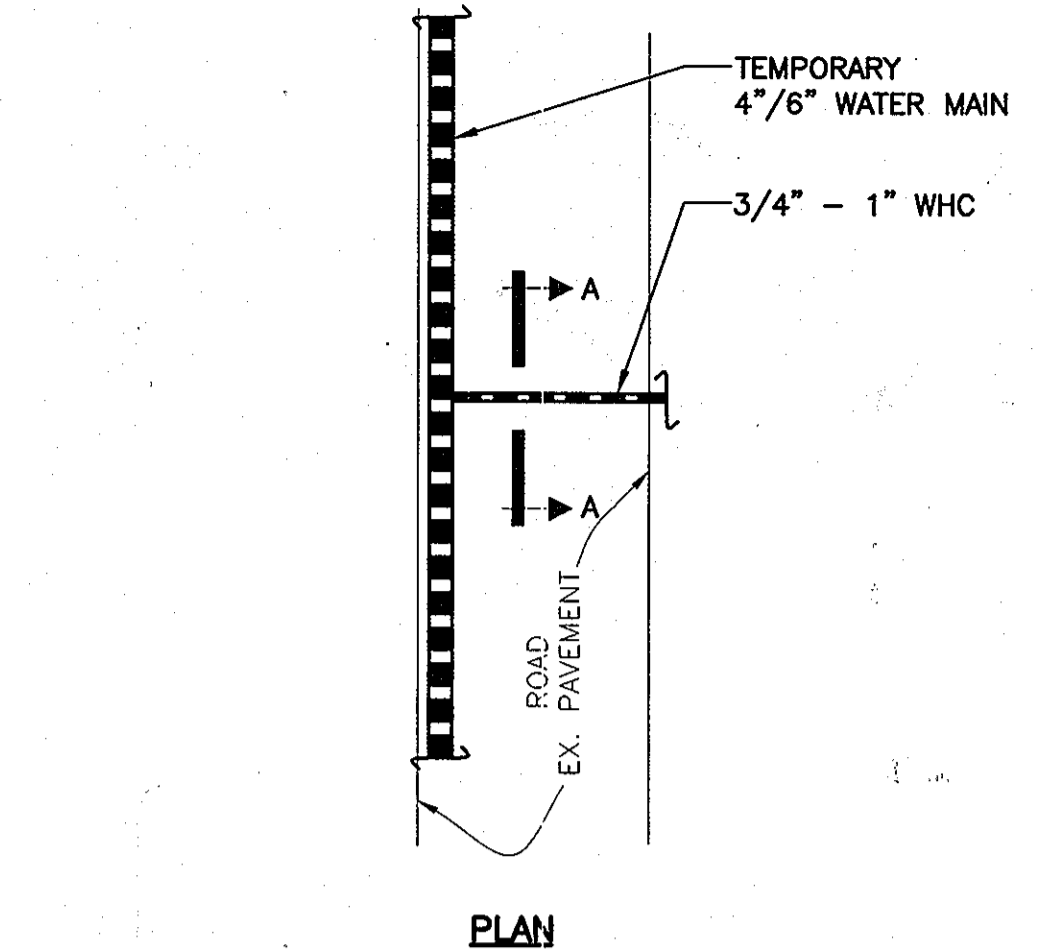
TEMPORARY WHC CONNECTION FOR INSIDE METER WITH CURB STOP

NOT TO SCALE



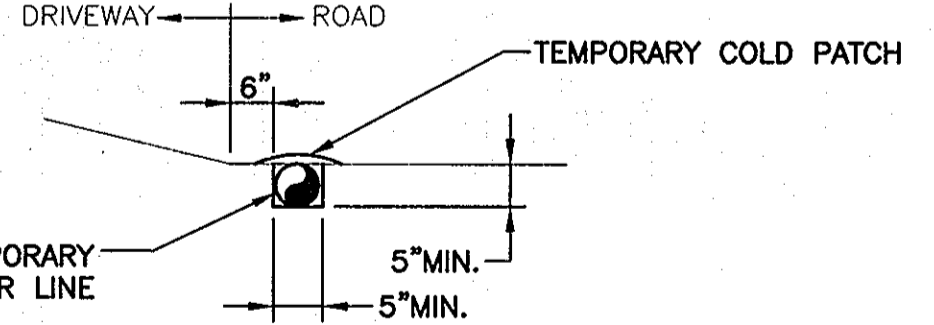
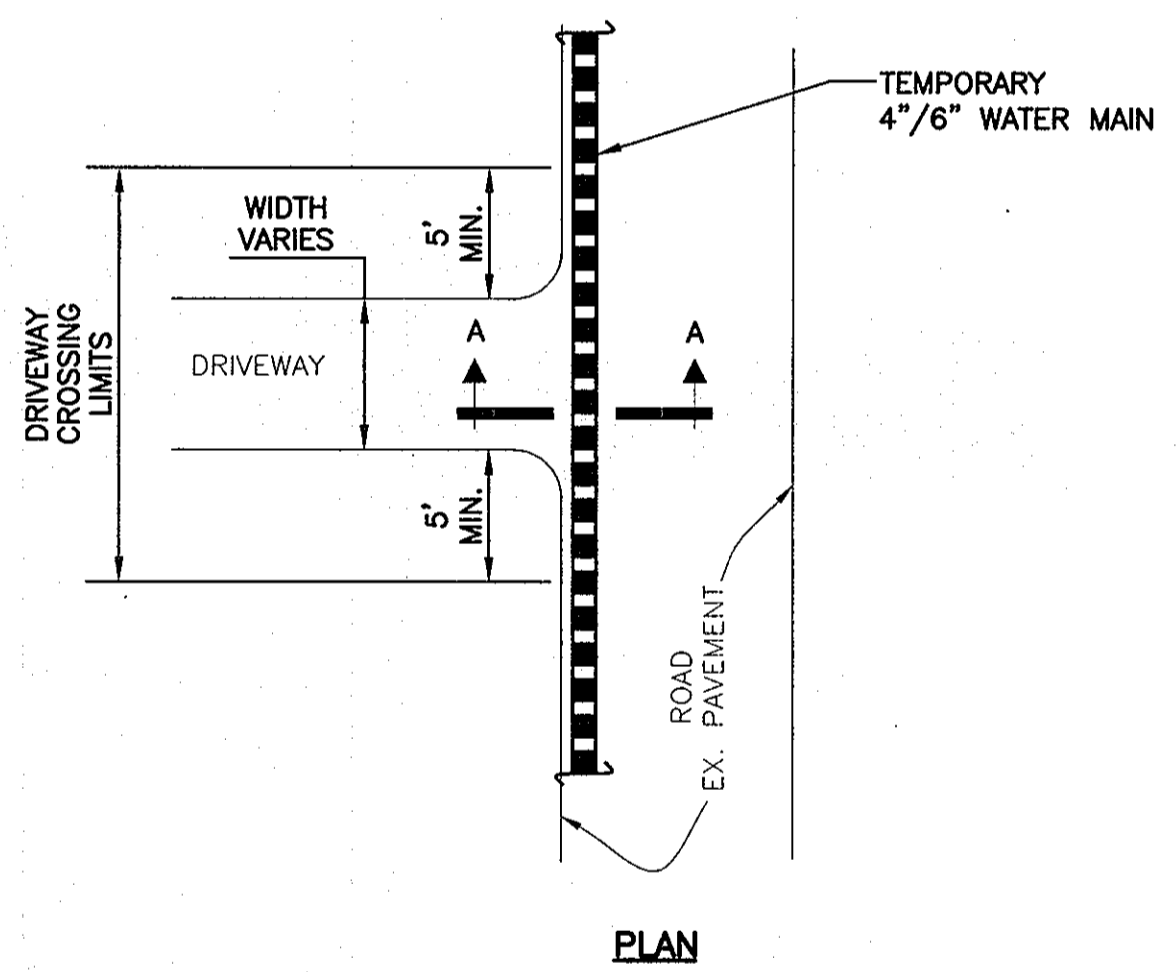
TRENCH FOR TEMPORARY WATER CROSSING ROAD

NOT TO SCALE



TRENCH FOR TEMPORARY WHC CROSSING ROAD

NOT TO SCALE



TRENCH FOR TEMPORARY WATER CROSSING DRIVEWAYS

NOT TO SCALE

NOTE:
THE TEMPORARY WATER MAINS SHALL BE INSTALLED ON TOP OF THE EXISTING GROUND/PAVEMENT WITH EXCEPTION OF THE CROSSINGS AND CONNECTIONS SHOWN, SPECIFIED, OR DETAILED TO BE BELOW GRADE. REFER TO THE DETAILS ON THIS SHEET AND TO SHEET FOR LAYOUT OF THE PROPOSED TEMPORARY BY-PASS WATER MAINS.

TEMPORARY WATER SYSTEM WORK PLAN:

THE FOLLOWING WORK PLAN DESCRIBES AN APPROACH FOR INSTALLATION OF THE PROPOSED TEMPORARY WATER SYSTEM WITHIN WOODBURN AND HARTHORN AVE.

THE WORK PLAN GENERALLY INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

GENERAL

REFER TO SHEET 2 - "WORK PLAN NOTES", FOR THE PROPOSED TIMING OF THE TEMPORARY WM BY-PASS SYSTEM INSTALLATION WITHIN WOODBURN AND HARTHORN AVE..

SHEET 27 AND THIS SHEET PRESENT THE LOCATION AND DETAILS FOR INSTALLATION OF THE PROPOSED TEMPORARY WM SYSTEM.

THE MAXIMUM SHUTDOWN FOR ANY 24 HOUR PERIOD IS SIX HOURS.

WOODBURN AVENUE

INSTALL TEMPORARY TRAFFIC CONTROL DEVICES FOR THE WORK AREA PER SHA STANDARD DETAILS.

CLOSE EXISTING GATE VALVES A, B, AND C TO ALLOW FOR INSTALLATION OF THE TEMPORARY WATER SYSTEM.

EXCAVATE AND INSTALL 8" X 6" TS&Vs AT THE TWO LOCATIONS SHOWN ON SHEET 27. INSTALL TEMPORARY BUTTRESSING BEHIND THE TS&Vs.

INSTALL THE 6-INCH TEMPORARY WM PIPING UP TO AND ALONG THE PAVEMENT SURFACE AS MUCH AS POSSIBLE (AS DETAILED ON THIS SHEET). MAINTAIN SUFFICIENT DEPTH FOR THE TEMPORARY HYDRANT LEAD TO PASS UNDER THE EX. GAS MAIN. MAINTAIN A MINIMUM 3.5 FT DEPTH OF COVER AT THE TEMPORARY HYDRANT.

OPEN THE 6-INCH GATE VALVES ON THE TEMPORARY WM PIPING, AND SLOWLY OPEN ALL THREE EXISTING 8-INCH GATE VALVES THAT WERE CLOSED TO ISOLATE THE WORK AREA.

CHLORINATE AND FLUSH THE EXISTING 8-INCH WM SYSTEM AND NEW 6-INCH TEMPORARY PIPING WITHIN WOODBURN AVE.

TRANSFER THE WHCs WITHIN THE LIMITS OF THE 6-INCH TEMPORARY WM PIPING, FROM THE EXISTING 8-INCH WM TO THE TEMPORARY 6-INCH WM.

INSTALL NEW 8-INCH IN-LINE INSERTION (STOP) VALVES AT THE TWO LOCATIONS SHOWN ON SHEET 27.

REMOVE THE TRAFFIC CONTROL DEVICES FOR THE TEMPORARY WM INSTALLATION AND SETUP TEMPORARY TRAFFIC CONTROL DEVICES FOR THE NEW PERMANENT 8-INCH WM INSTALLATION.

PROCEED WITH INSTALLATION OF THE NEW PERMANENT WM SYSTEM WITHIN WOODBURN AVE AS PROPOSED IN THE OVERALL WORK PLAN ON SHEET 2.

HARTHORN AVENUE

A. CONNECTION SOUTHEAST OF THE ATHOL AVE INTERSECTION:

INSTALL TEMPORARY TRAFFIC CONTROL DEVICES FOR THE WORK AREA PER SHA STANDARD DETAILS.

INSTALL AN 8" X 6" MJ DI TEE AND 6-INCH GATE VALVE FOR THE TEMPORARY WATER SYSTEM DURING INSTALLATION OF AND AS PART OF THE NEW WM SYSTEM INSTALLATION WITHIN HARTHORN AVE. LEAVE 6-INCH GATE VALVE CLOSED.

INSTALL 6-INCH TEMPORARY WM PIPING ABOUT THREE FEET BEYOND THE 6-INCH GATE VALVE. INSTALL A 90 DEGREE BEND AND VERTICAL 6-INCH PIPING TO WITHIN ONE FOOT OF GRADE.

INSTALL CONCRETE BUTTRESSING BEHIND THE 8" X 6" TEE AND THE 90 DEGREE BENDS, THEN BACKFILL THE EXCAVATIONS.

REMOVE THE TEMPORARY TRAFFIC CONTROL DEVICES FROM THE WORK AREA.

B. CONNECTION NORTHWEST OF THE MELROSE AVE INTERSECTION

INSTALL TEMPORARY TRAFFIC CONTROL DEVICES FOR THE WORK AREA PER SHA STANDARD DETAILS.

EXCAVATE AND INSTALL A 6" X 6" TS&V CONNECTION ON THE EXISTING 6-INCH WM, NORTHWEST OF THE MELROSE AVE INTERSECTION. LEAVE THE 6-INCH GV ON THE TEMPORARY BY-PASS CLOSED. REFER TO SHEET 27 FOR LOCATION. INSTALL TEMPORARY CONCRETE BUTTRESS BEHIND THE TS&V.

INSTALL THE 6-INCH TEMPORARY WM SYSTEM (INCLUDING THE TEMPORARY HYDRANT, THE 6-INCH MJ DI GATE VALVE FOR HYDRANT SHUTOFF, AND THE 6" X 6" MJ DI TEE FOR INSTALLATION OF THE HYDRANT). MAINTAIN A MINIMUM COVER OF 3.5 FEET AT THE VALVE AND HYDRANT. INSTALL TEMPORARY CONCRETE BUTTRESSES BEHIND THE 6" X 6" HYDRANT TEE AND THE HYDRANT.

BRING THE 6-INCH TEMPORARY WM PIPING TO ONE FOOT BELOW GRADE, JUST PRIOR TO THE MELROSE AVE INTERSECTION.

REMOVE THE TEMPORARY TRAFFIC CONTROL DEVICES FROM THE WORK AREA.

C. TEMPORARY WM SYSTEM ALONG HARTHORN AVE

INSTALL TEMPORARY TRAFFIC CONTROL DEVICES FOR THE WORK AREA PER SHA STANDARD DETAILS.

INSTALL TEMPORARY 6-INCH WM PIPING ALONG HARTHORN AVE, ON AND WITHIN THE PAVEMENT SURFACE AS SHOWN ON SHEET 27 AND DETAILED ON THIS SHEET.

OPEN THE 6-INCH GATE VALVES AT BOTH CONNECTIONS.

CHLORINATE AND FLUSH THE TEMPORARY 6-INCH WM PIPING.

CLOSE EX. GATE VALVE D.

TRANSFER THE WHCs WITHIN THE LIMITS OF THE 6-INCH TEMPORARY WM PIPING, FROM THE EXISTING 8-INCH WM TO THE TEMPORARY 6-INCH WM.

ADJUST THE TEMPORARY TRAFFIC CONTROL DEVICES AS NEEDED FOR INSTALLATION OF THE NEW 8-INCH WM SYSTEM.

PROCEED WITH INSTALLATION OF THE NEW PERMANENT WM SYSTEM WITHIN HARTHORN AVE AS PROPOSED IN THE OVERALL WORK PLAN ON SHEET 2.

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

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

AS-BUILT 1/29/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 7/1/09
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 7/1/09
CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 7/1/09
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 7/1/09
CHIEF UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.

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[Signature]
PROFESSIONAL ENGINEER

DSN. BY:	GLF		
DRN. BY:	IH/RPW		
CHK. BY:	GLF		
DATE:	JUNE, 2009		
RJD	0	AS-BUILT	1/14
BY	NO.	ISSUED FOR BID	06/09
		REVISION	DATE

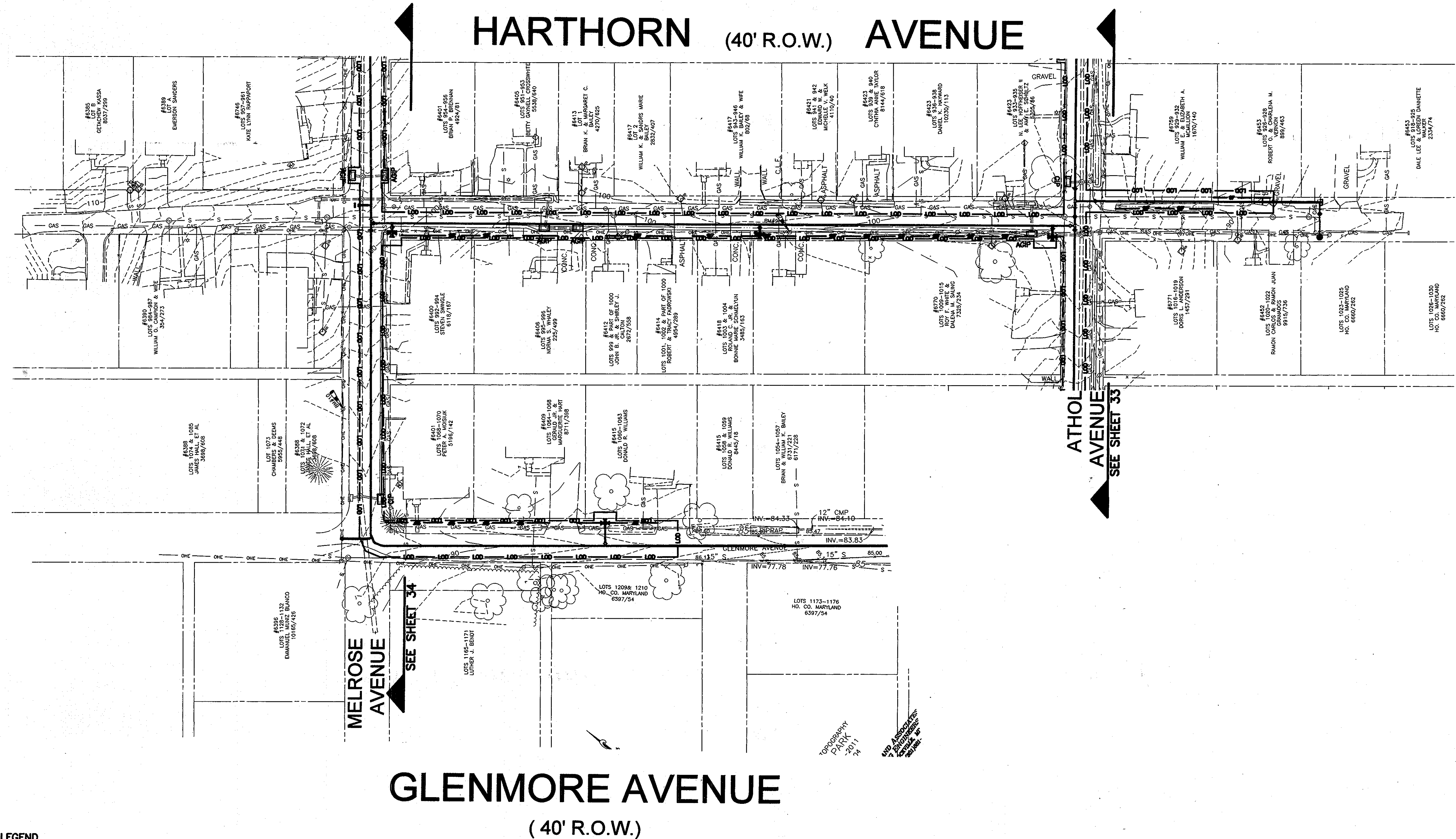
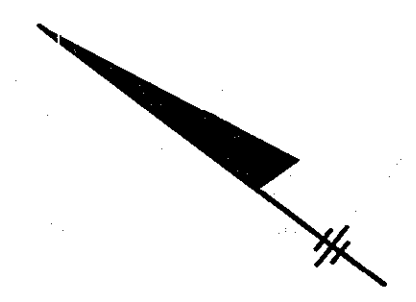
TEMPORARY CONNECTION & BY-PASS WATER MAIN DETAILS	
600' SCALE MAP NO.	38
BLOCK NO.	13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS

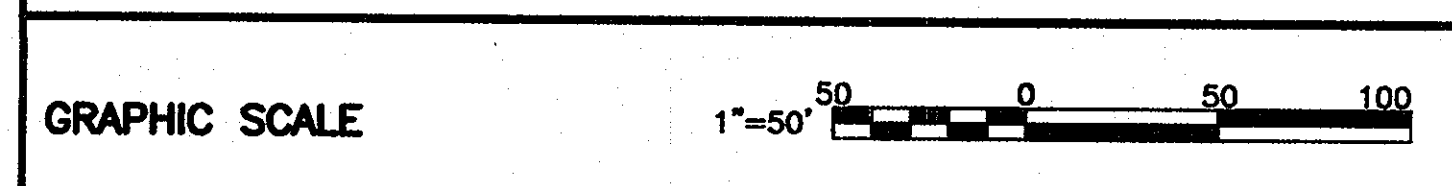
CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 28 OF 38

FILE NO. 33498-122F



- EROSION AND SEDIMENT CONTROL LEGEND**
- LOD — LIMITS OF DISTURBANCE
 - SF — SILT FENCE
 - SSF — SUPER SILT FENCE
 - CIP OR AGIP CURB INLET PROTECTION (CIP) OR AT-GRADE INLET PROTECTION (AGIP)



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 2/26/14
 Chief, Bureau of Engineering: *[Signature]* 2/26/14
 Chief, Bureau of Utilities: *[Signature]* 2/26/14
 Chief, Utility Design Division: *[Signature]* 2/26/14

O'BRIEN & GERE ENGINEERS, INC.
 8401 Corporate Drive
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DSN. BY: SSD					
DRN. BY: SSD					
CHK. BY: GLF	RJD	1	AS-BUILTS		
DATE: JUNE, 2009	RJD	0	ISSUED FOR BID	06/09	
	BY	NO.	REVISION	DATE	

EROSION AND SEDIMENT CONTROL PLAN
GLENMORE AVENUE AND HARTHORN AVENUE

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

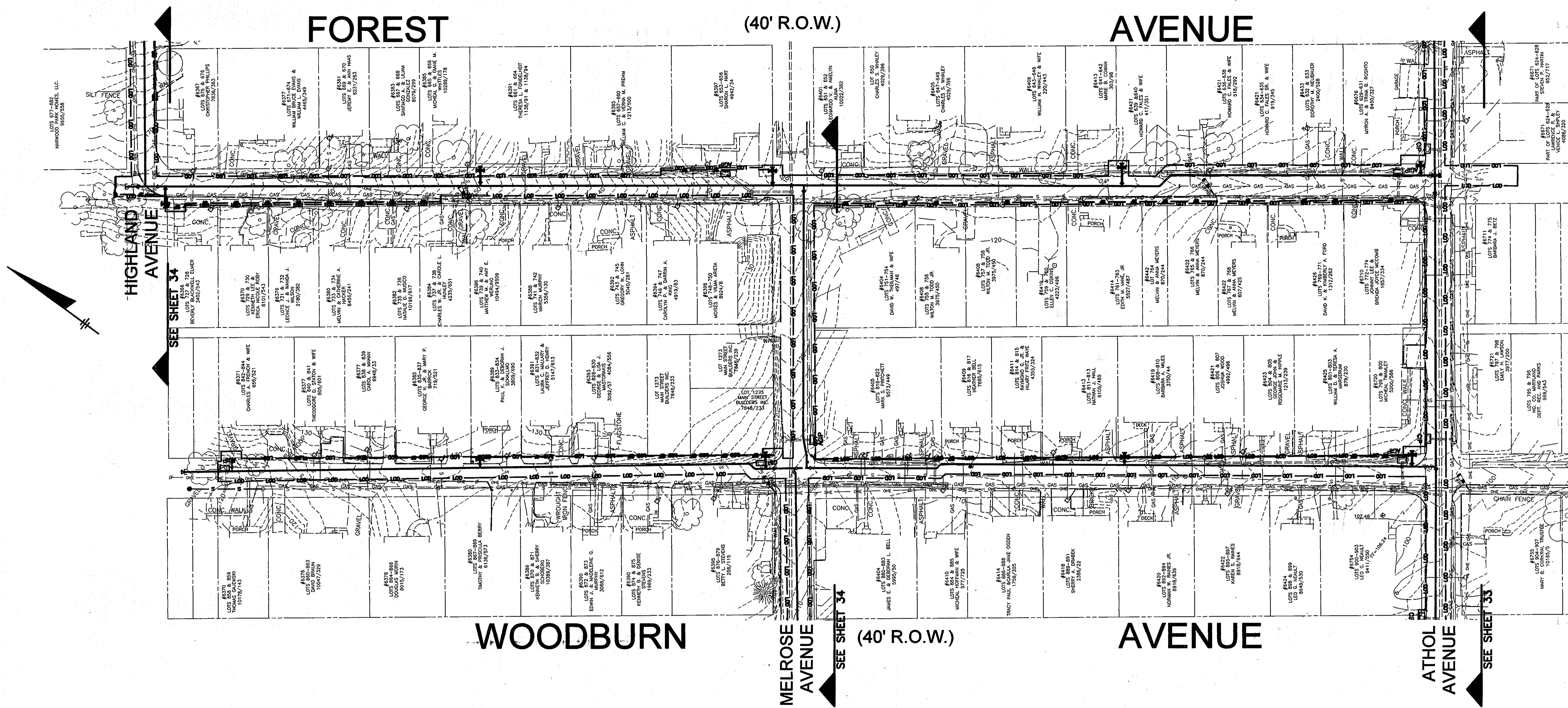
AS-BUILT REPLACEMENT SHEET 1/29/14

HARWOOD PARK WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 29 OF 38

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]*



EROSION AND SEDIMENT CONTROL LEGEND

- LDD — LIMITS OF DISTURBANCE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- CIP OR AGIP CURB INLET PROTECTION (CIP) OR AT-GRADE INLET PROTECTION (AGIP)

GRAPHIC SCALE



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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Ray de 2/10/14
 DIRECTOR OF PUBLIC WORKS DATE

Thomas E. Geller 2/11/14
 CHIEF - BUREAU OF ENGINEERING DATE

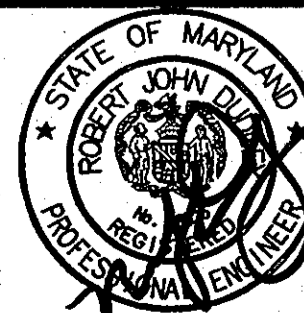
John Chan 2/11/14
 CHIEF, BUREAU OF UTILITIES DATE

Dee Dee 2/11/14
 CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.

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DSN. BY:	SSD				
DRN. BY:	SSD				
CHK. BY:	GLF	RJD	1	AS-BUILTS	
DATE:	JUNE, 2009	RJD	0	ISSUED FOR BID	06/09
BY:	NO.			REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN	
WOODBURN AVENUE AND FOREST AVENUE	
60' SCALE MAP NO.	38
BLOCK NO.	13, 14, 19

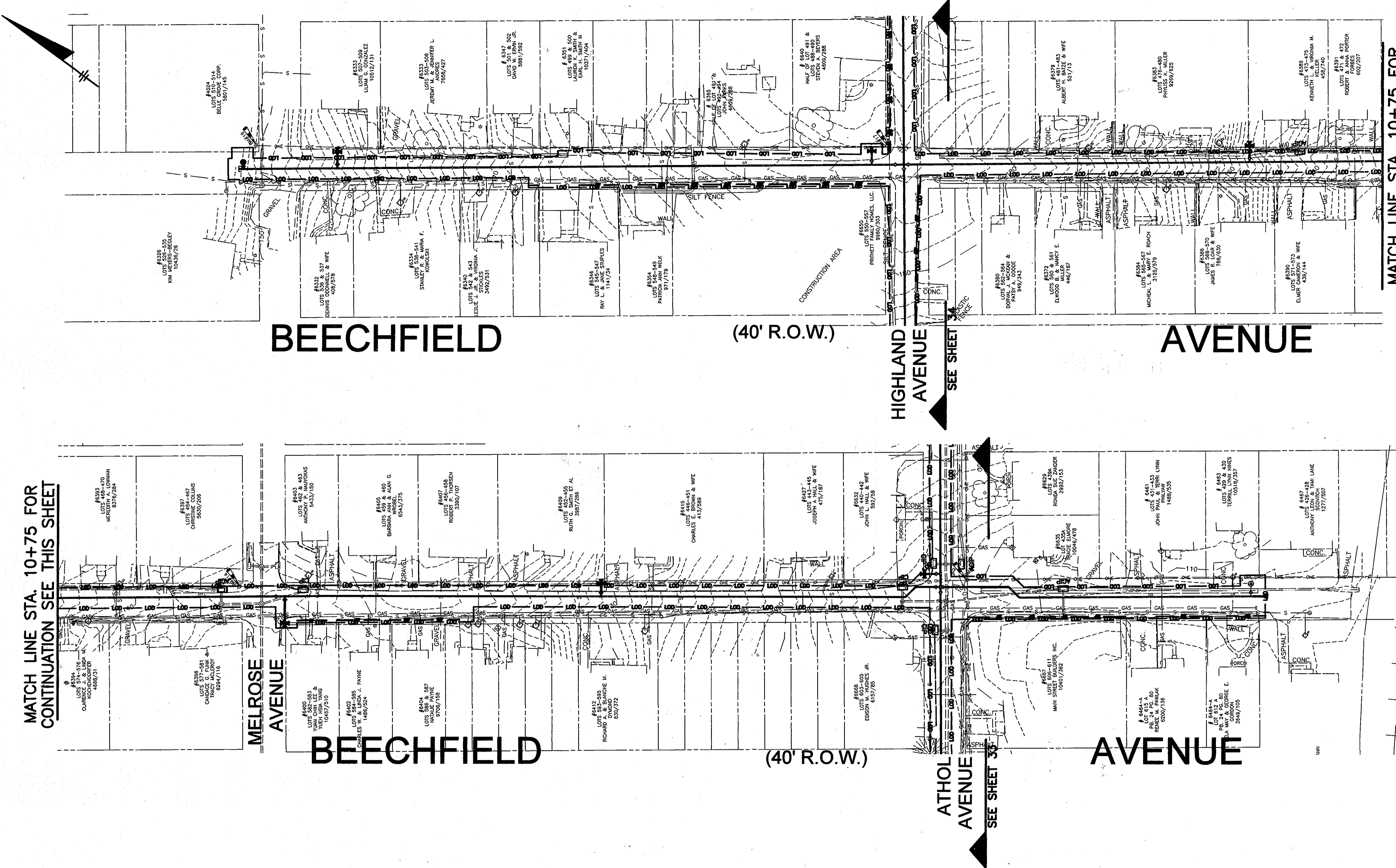
AS-BUILT REPLACEMENT SHEET 1/29/14

HARWOOD PARK WATER MAIN REPLACEMENTS

CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO.: 2
 HOWARD COUNTY, MARYLAND

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

SCALE AS SHOWN
 SHEET 30 OF 38

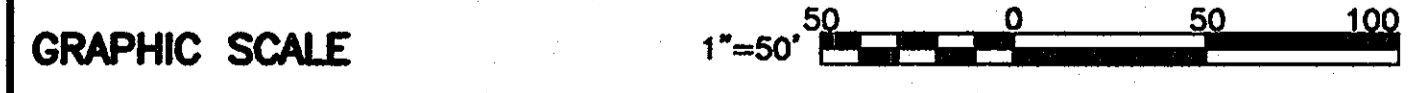


MATCH LINE STA. 10+75 FOR CONTINUATION SEE THIS SHEET

MATCH LINE STA. 10+75 FOR CONTINUATION SEE THIS SHEET

EROSION AND SEDIMENT CONTROL LEGEND

— LOD —	LIMITS OF DISTURBANCE
— SF —	SILT FENCE
— SSF —	SUPER SILT FENCE
□	CURB INLET PROTECTION (CIP)
□	OR AT-GRADE INLET PROTECTION (AGIP)



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

AS-BUILT REPLACEMENT SHEET 1/29/14

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 2/2/14
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/5/14
 CHIEF, BUREAU OF UTILITIES DATE

[Signature] 2/7/14
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 2/5/14
 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

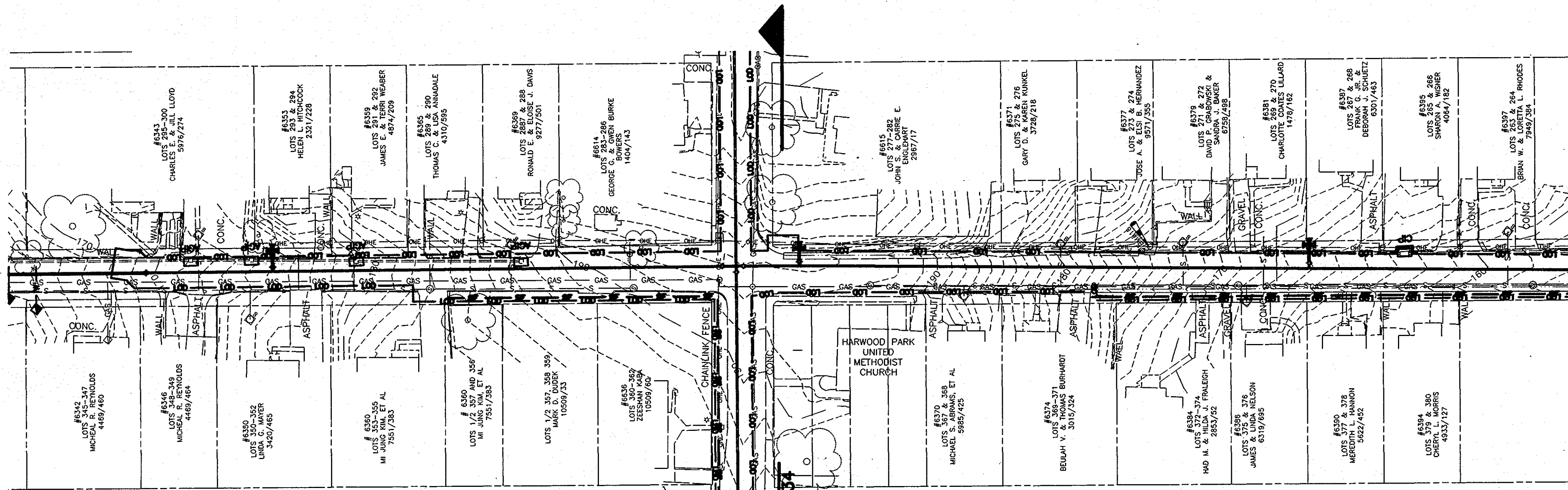
PROFESSIONAL CERTIFICATION:
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2009

[Signature]
 ROBERT JOHN WEAVER
 PROFESSIONAL ENGINEER

DSN. BY:	SSD				
DRN. BY:	SSD				
CHK. BY:	GLF	RJD 1			
DATE:	JUNE, 2009	RJD 0			06/09
BY:	NO.				

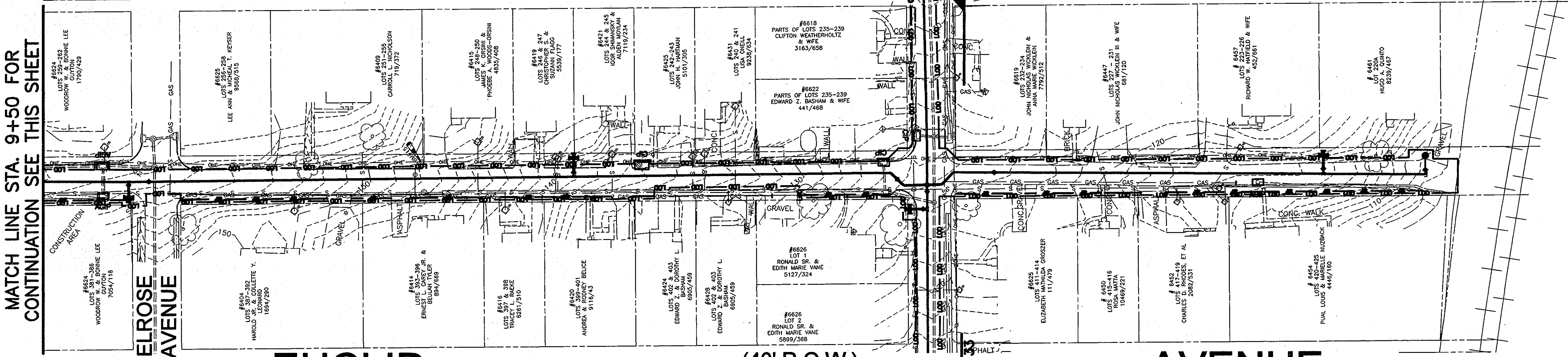
EROSION AND SEDIMENT CONTROL PLAN	
BEECHFIELD AVENUE	
600' SCALE MAP NO.	38
BLOCK NO.	13, 14, 19

HARWOOD PARK
 WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO.: 2
 HOWARD COUNTY, MARYLAND



EUCLID AVENUE (40' R.O.W.)

MATCH LINE STA. 9+50 FOR CONTINUATION SEE THIS SHEET

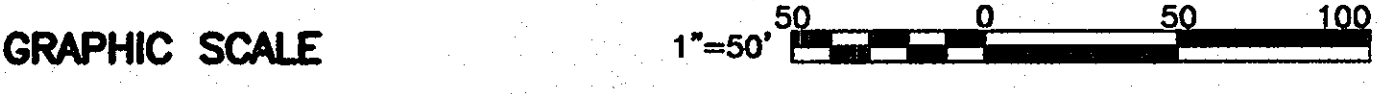


EUCLID AVENUE (40' R.O.W.)

MATCH LINE STA. 9+50 FOR CONTINUATION SEE THIS SHEET

EROSION AND SEDIMENT CONTROL LEGEND

— LOD —	LIMITS OF DISTURBANCE
— SF —	SILT FENCE
— SSF —	SUPER SILT FENCE
□	CURB INLET PROTECTION (CIP) OR AT-GRADE INLET PROTECTION (AGIP)



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

[Signature] 2/15/14
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/15/14
 CHIEF, BUREAU OF UTILITIES DATE

[Signature] 2/15/14
 CHIEF - BUREAU OF ENGINEERING DATE

[Signature] 2/15/14
 CHIEF, UTILITY DESIGN DIVISION DATE

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[Professional Seal]

DSN. BY:	SSD				
DRN. BY:	SSD				
CHK. BY:	GLF				
DATE:	JUNE, 2009				
BY:	RJD	1	AS-BUILTS		
	RJD	0	ISSUED FOR BID	06/09	
	BY NO.		REVISION	DATE	

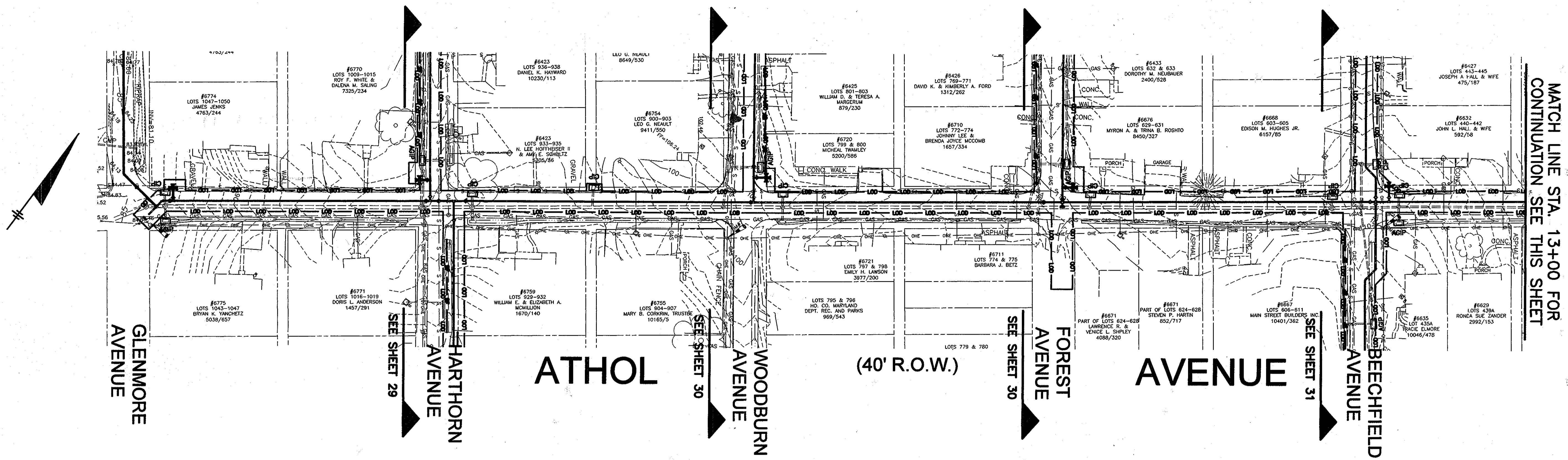
EROSION AND SEDIMENT CONTROL PLAN
EUCLID AVENUE

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

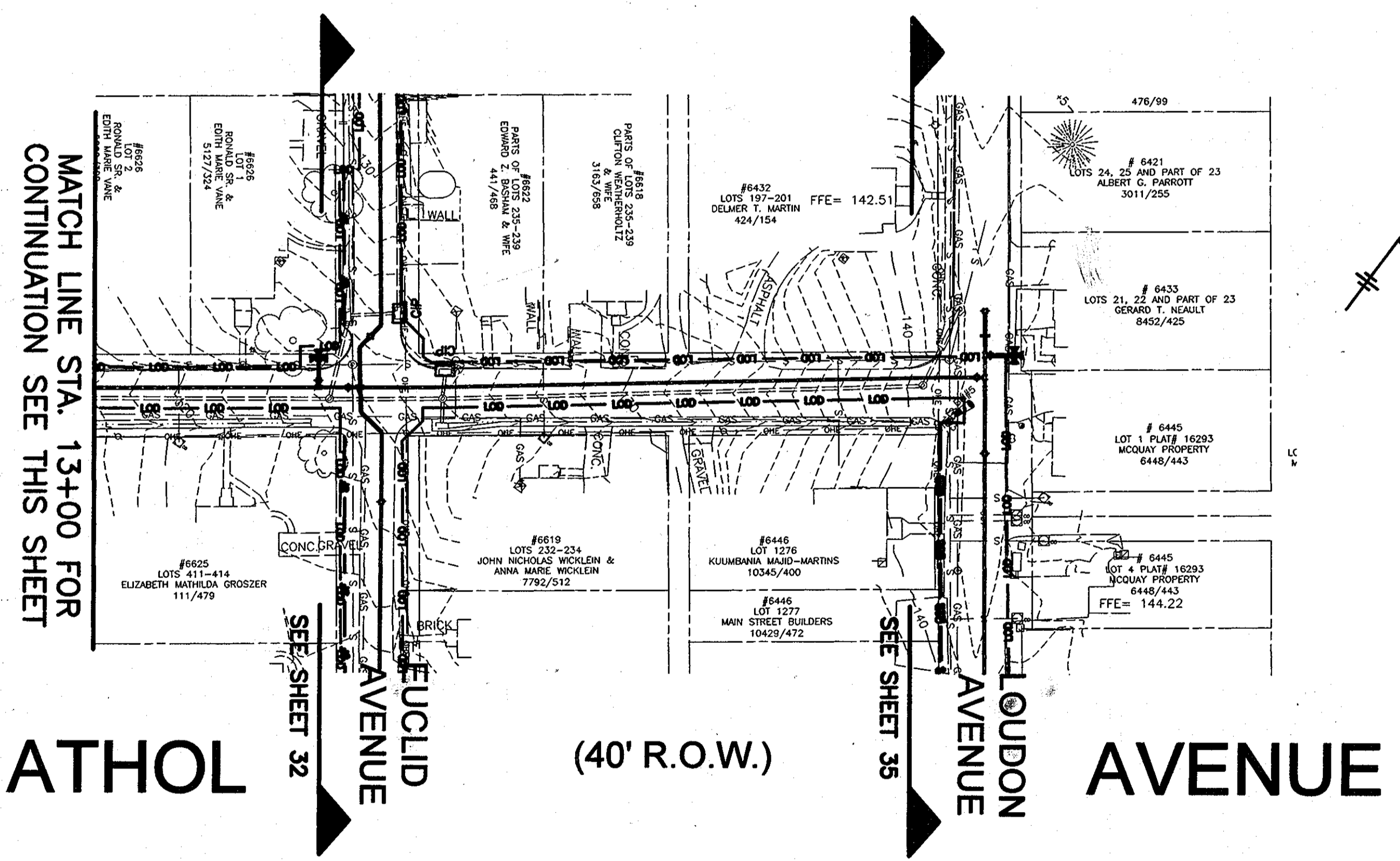
AS-BUILT REPLACEMENT SHEET 1/29/14

HARWOOD PARK WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO.: 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 32 OF 38



MATCH LINE STA. 13+00 FOR CONTINUATION SEE THIS SHEET

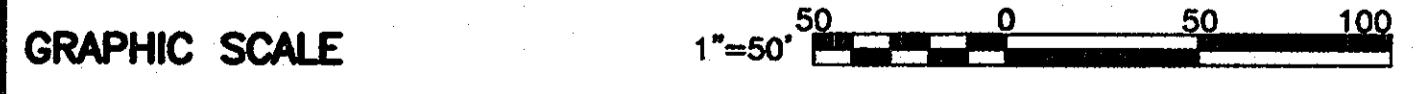


MATCH LINE STA. 13+00 FOR CONTINUATION SEE THIS SHEET

EROSION AND SEDIMENT CONTROL LEGEND

— LOD —	LIMITS OF DISTURBANCE
— SF —	SILT FENCE
— SSF —	SUPER SILT FENCE
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□	OR AT-GRADE INLET PROTECTION (AGIP)

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



AS-BUILT REPLACEMENT SHEET 1/29/14

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *[Signature]* 2/6/14
 Chief, Bureau of Engineering: *[Signature]* 2/7/14
 Chief, Bureau of Utilities: *[Signature]* 2/10/14
 Chief, Utility Design Division: *[Signature]* 2/5/14

O'BRIEN & GERE ENGINEERS, INC.
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[Professional Seal]

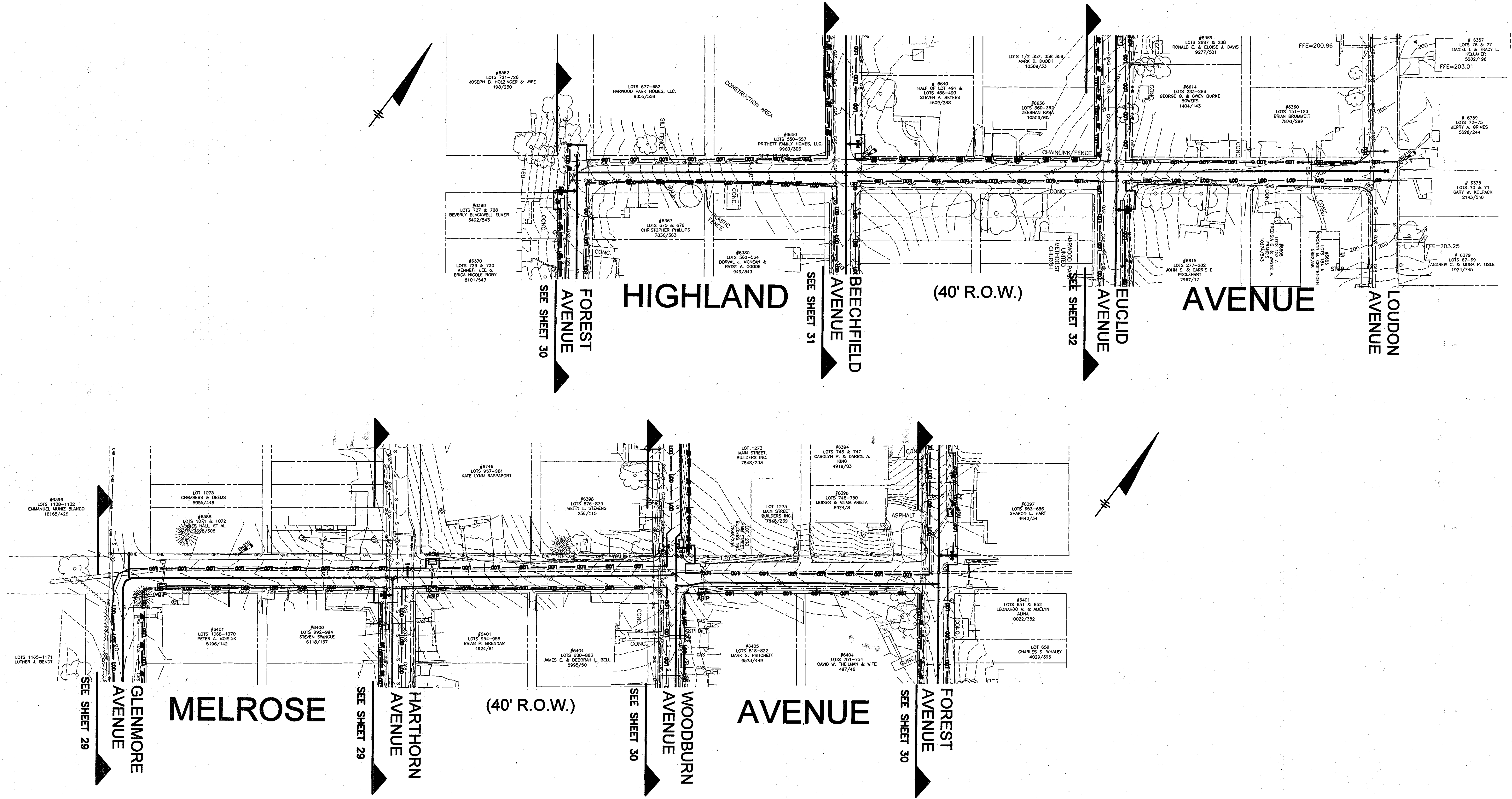
DSN. BY:	SSD				
DRN. BY:	SSD				
CHK. BY:	GLF	RJD	1	AS-BUILTS	
DATE:	JUNE, 2009	RJD	0	ISSUED FOR BID	06/08
		BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN	
ATHOL AVENUE	
600' SCALE MAP NO.	38
BLOCK NO.	13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO.: 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 33 OF 38

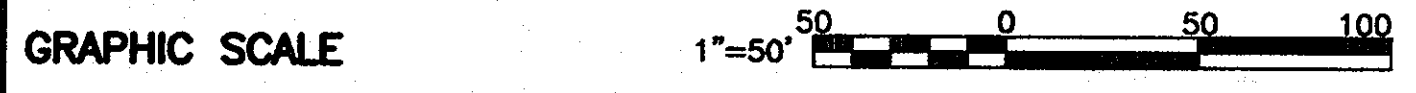
FILE NO. 33498-131F



EROSION AND SEDIMENT CONTROL LEGEND

— LOD —	LIMITS OF DISTURBANCE
— SF —	SILT FENCE
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O'BRIEN & GERE ENGINEERS, INC.
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AS-BUILT REPLACEMENT SHEET 1/29/14

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Director of Public Works: *[Signature]* 2/19/14
 Chief, Bureau of Engineering: *[Signature]* 2/19/14
 Chief, Bureau of Utilities: *[Signature]* 2/19/14
 Chief, Utility Design Division: *[Signature]* 2/19/14

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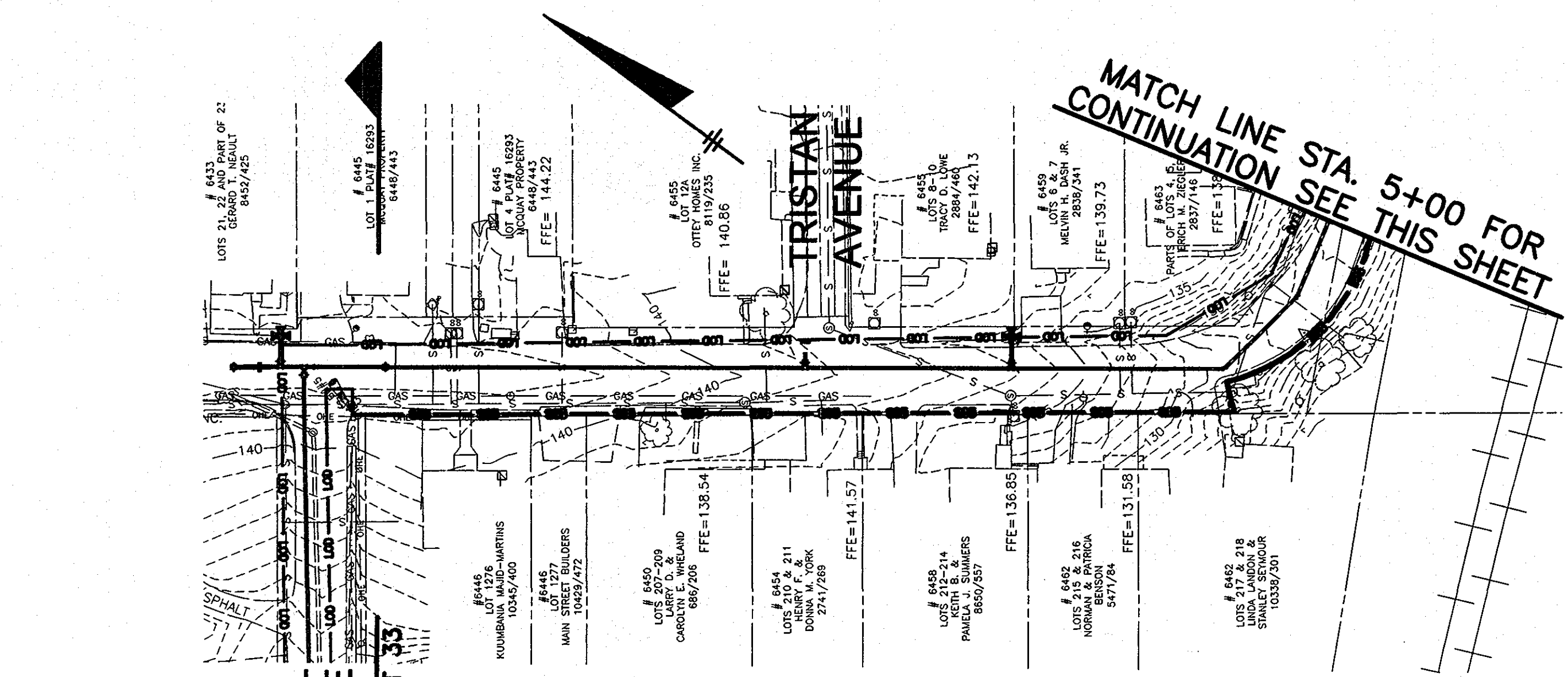
[Professional Engineer Seal]

DSN. BY:	SSD				
DRN. BY:	SSD				
CHK. BY:	GLF	RJD	1	AS-BUILTS	
DATE:	JUNE, 2009	RJD	0	ISSUED FOR BID	06/09
		BY	NO.	REVISION	DATE

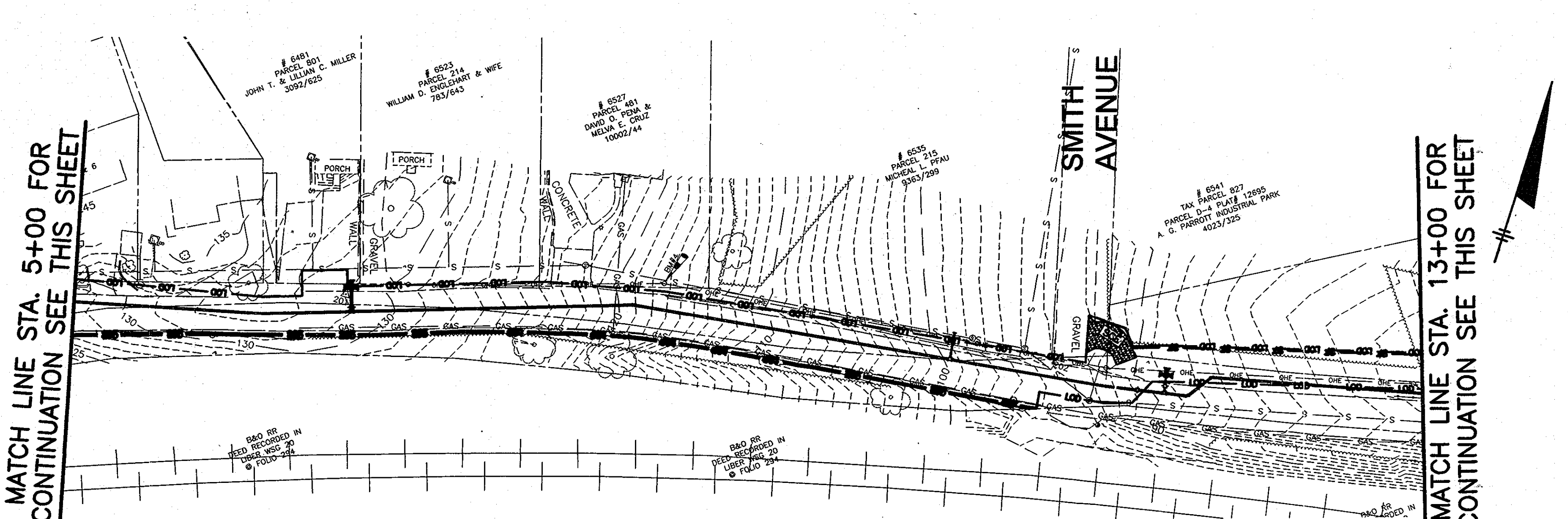
EROSION AND SEDIMENT CONTROL PLAN
MELROSE AVENUE AND HIGHLAND AVENUE
 600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
 ELECTION DISTRICT NO.: 2
 HOWARD COUNTY, MARYLAND

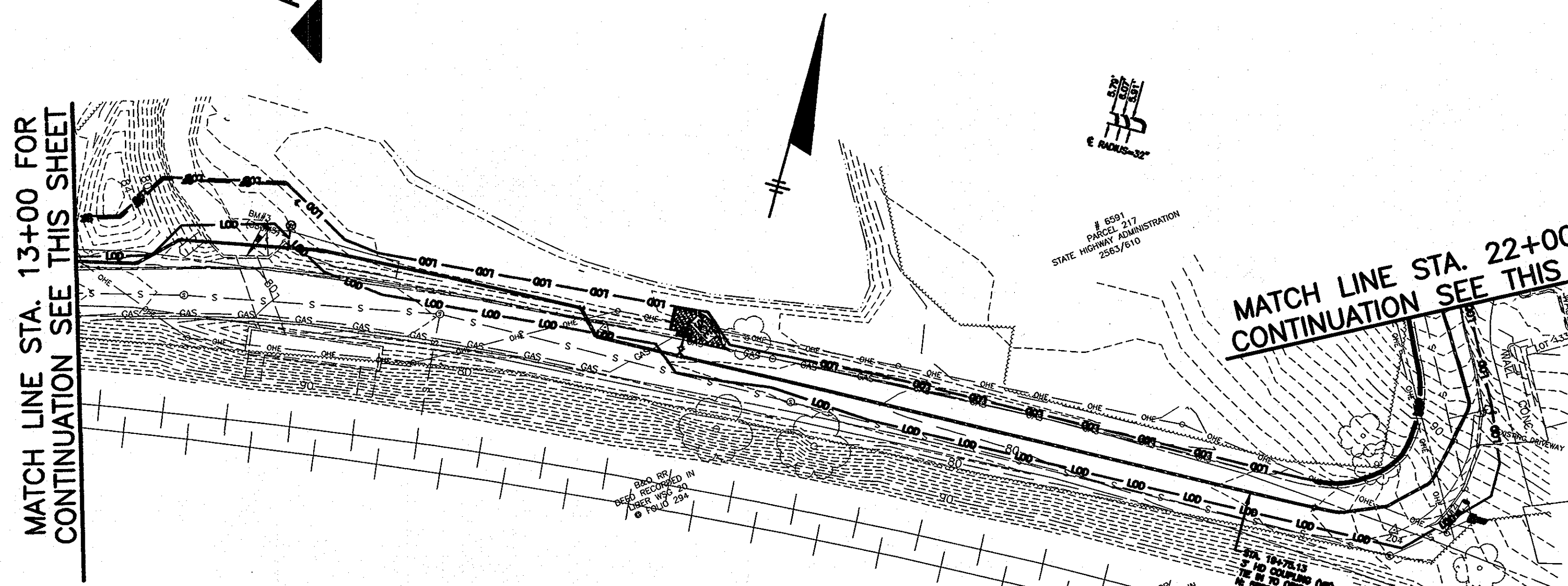
SCALE AS SHOWN
 SHEET 34 OF 38



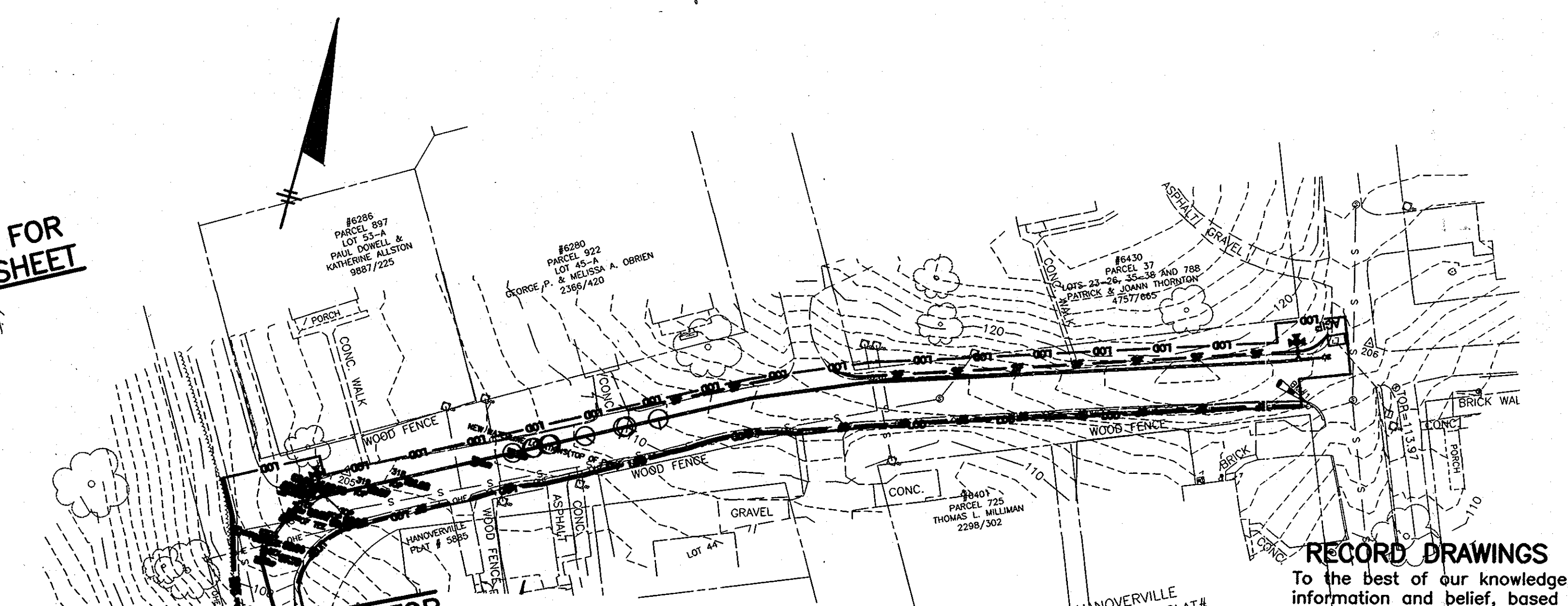
LOUDON (40' R.O.W.) AVENUE



LOUDON (40' R.O.W.) AVENUE



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By: *[Signature]*

EROSION AND SEDIMENT CONTROL LEGEND

- LOD — LIMITS OF DISTURBANCE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- CIP OR AGIP CURB INLET PROTECTION (CIP) OR AT-GRADE INLET PROTECTION (AGIP)

GRAPHIC SCALE 1"=50' 0 50 100

GENERAL SEDIMENT CONTROL NOTES:

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (CID) PRIOR TO THE START OF ANY CONSTRUCTION.
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THE PLAN AND ARE TO BE IN CONFORMANCE WITH THE "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL AND EROSION CONTROL" AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE AND REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, e.g., TEMPORARY DIVERSION DIKES AND ALL SLOPES GREATER THAN 3:1 AND b) 14 DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE LATEST EDITION OF THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL AND EROSION CONTROL FOR PERMANENT SEEDINGS (SEC. 51) AND (SEC. 54), TEMPORARY SEEDINGS (SEC. 50) AND MULCHING (SEC. 53). TEMPORARY STABILIZATION WITH MULCH CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

6. SITE ANALYSIS:
TOTAL AREA OF SITE = 30.06 AC.
AREA DISTURBED (LOD) = 6.99 AC.
AREA TO BE PAVED = 9.22 AC.
AREA TO BE VEGETATIVELY STABILIZED = 1.06 AC.
TOTAL CUT = 16,729 CU. YD.
TOTAL FILL = 16,729 CU. YD.
7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
9. SITE GRADING WILL BEGIN ONLY AFTER ALL PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN OPERATING CONDITION.
10. CUT AND FILL QUANTITIES PROVIDED UNDER SITE ANALYSIS DO NOT REPRESENT BID QUANTITIES. THESE QUANTITIES DO NOT DISTINGUISH BETWEEN TOPSOIL, STRUCTURAL FILL OR EMBANKMENT MATERIAL. NOR DO THEY REFLECT CONSIDERATION OF UNDERCUTTING OR REMOVAL OF UNSUITABLE MATERIAL. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SITE CONDITIONS, WHICH MAY AFFECT THE WORK.

11. 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.
12. CONTRACTOR SHALL MAKE EVERY EFFORT TO AVOID DAMAGE TO EXISTING TREES.
13. CONTRACTOR SHALL NOT ALLOW SOIL TO ENTER EXISTING STORM DRAINS OR BE TRACKED ONTO EXISTING ROADWAYS.
14. AT ALL CONSTRUCTION ACCESS POINTS, CONTRACTOR SHALL INSTALL A STABILIZED CONSTRUCTION ENTRANCE AS REQUIRED.
15. SPOIL FROM TRENCH EXCAVATION SHALL BE PLACED ON THE UPHILL SIDE OF THE EXCAVATION.
16. SILT FENCE IS TO BE INSTALLED AT THE INSPECTOR'S DIRECTION.
17. A STABILIZED CONSTRUCTION ENTRANCE IS TO BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

SEQUENCE OF CONSTRUCTION:

1. OBTAIN GRADING PERMIT AND OTHER NECESSARY PERMITS PRIOR TO BEGINNING CONSTRUCTION. ALL EROSION AND SEDIMENT CONTROL SHALL CONFORM TO THE LATEST MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
2. STAKEOUT THE WATER MAIN ALIGNMENT.
3. INSTALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THESE PLANS. DURATION 7 CALENDAR DAYS.
4. BEGIN CONSTRUCTION. CONTRACTOR WILL OPEN ONLY THAT LENGTH OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE (1) DAY, SILT FENCE SHALL BE PLACED DOWN SLOPE OF THE TRENCH. ALL DITCHES, SWALES AND CONCENTRATED FLOW AREAS SHALL BE STABILIZED IMMEDIATELY WITH SOD. COMPLETE WATER MAIN LINE CONSTRUCTION.
5. PROVIDE SEEDING AND PAVING AS APPLICABLE. PAVING TO BE PER CONSTRUCTION PLANS AND SPECIFICATIONS, COMPLETE SITE CLEANUP. DURATION 20 CALENDAR DAYS.
6. UPON APPROVAL OF HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE REMAINING SEDIMENT CONTROL DEVICES AND STABILIZE AREAS DISTURBED BY THIS PROCESS WITH PERMANENT, TEMPORARY OR SPECIAL SEEDING IN ALL AREAS AS REQUIRED.

AS-BUILT REPLACEMENT SHEET 1/29/14

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 2/6/14
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 2/5/14
CHIEF, BUREAU OF UTILITIES DATE

O'BRIEN & GERE ENGINEERS, INC.

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[Signature]
PROFESSIONAL ENGINEER

DSN. BY:	SSD		
DRN. BY:	SSD		
CHK. BY:	GLF		
DATE:	JUNE, 2009		
RJD	1	AS-BUILTS	
RJD	0	ISSUED FOR BID	06/08
BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN
LOUDON AVENUE & GENERAL NOTES

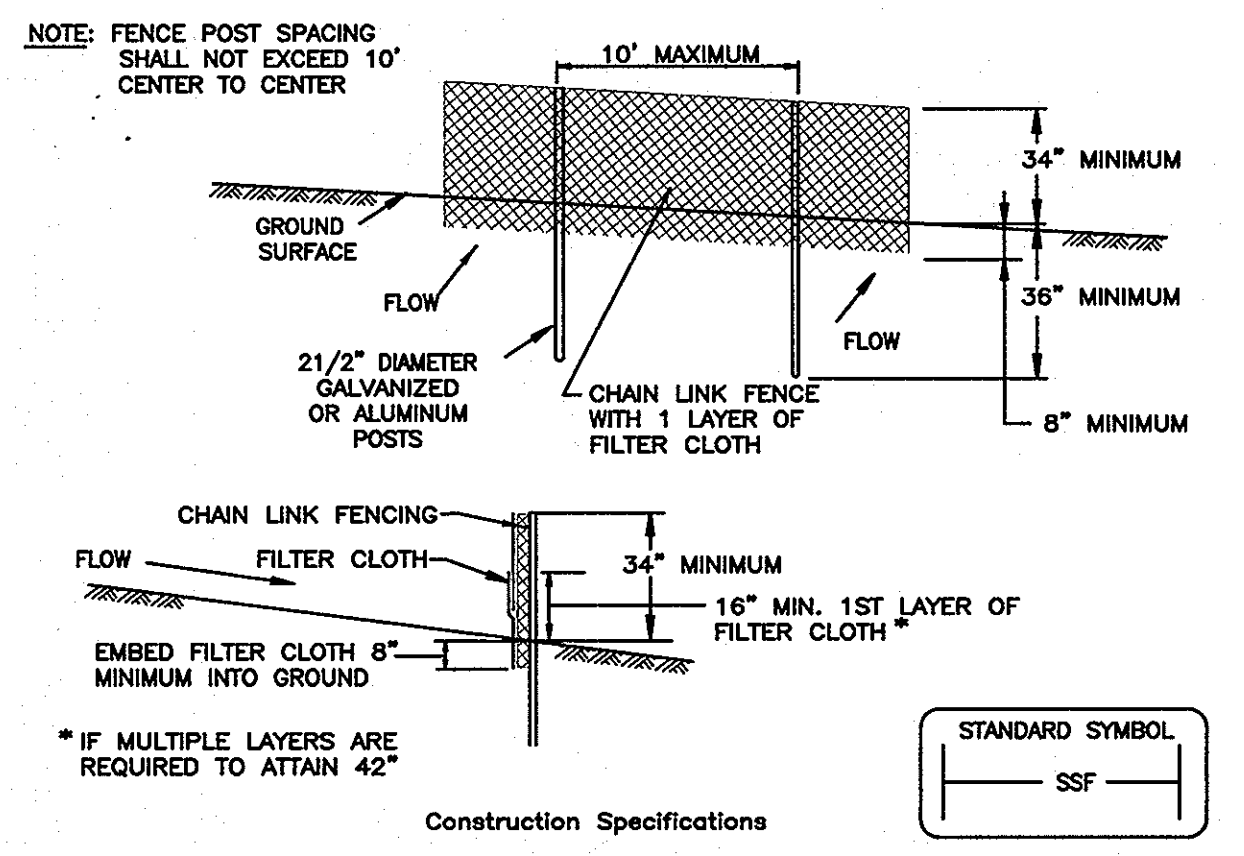
600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

HARWOOD PARK WATER MAIN REPLACEMENTS
CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO.: 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 38 OF 38

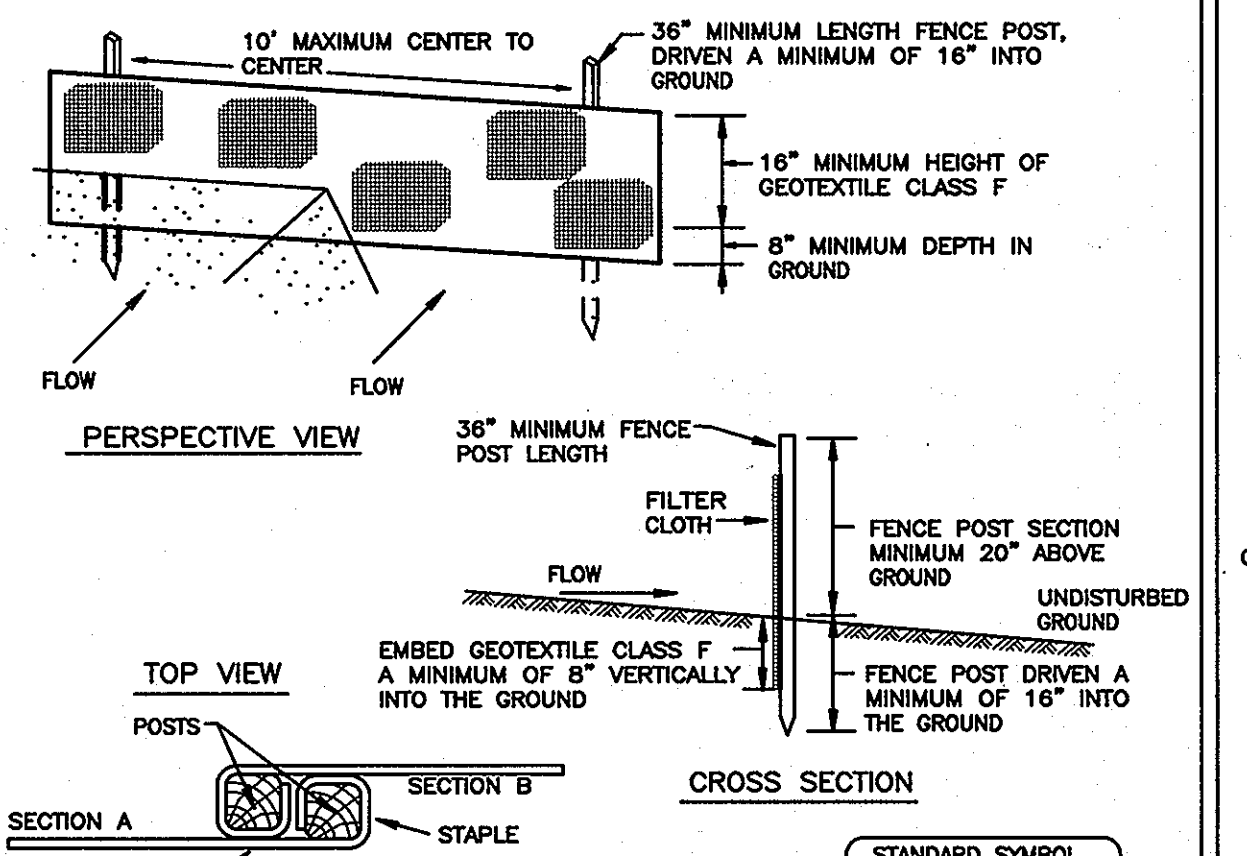
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DETAIL 33 - SUPER SILT FENCE



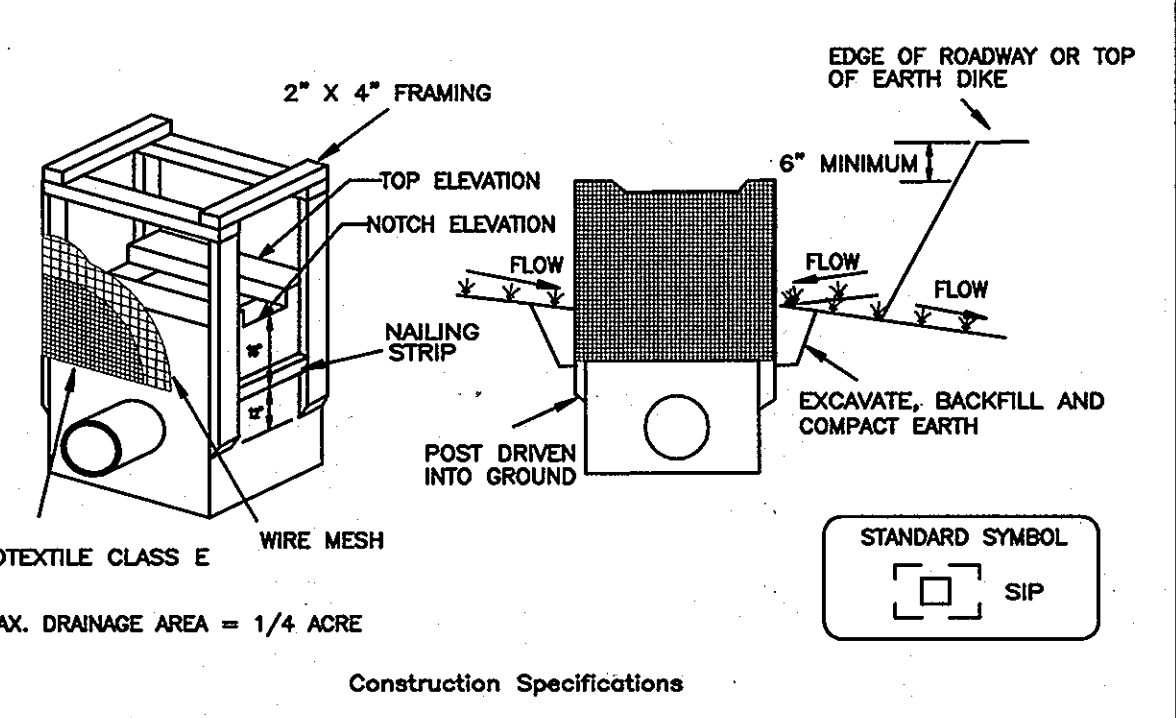
NOTE: FENCE POST SPACING SHALL NOT EXCEED 10' CENTER TO CENTER. Construction Specifications: 1. Fencing shall be 42" in height... 2. Chain link fence shall be fastened securely... 3. Filter cloth shall be fastened securely... 4. Filter cloth shall be embedded a minimum of 8" into the ground... 5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded... 6. Maintenance shall be performed as needed... 7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

DETAIL 22 - SILT FENCE



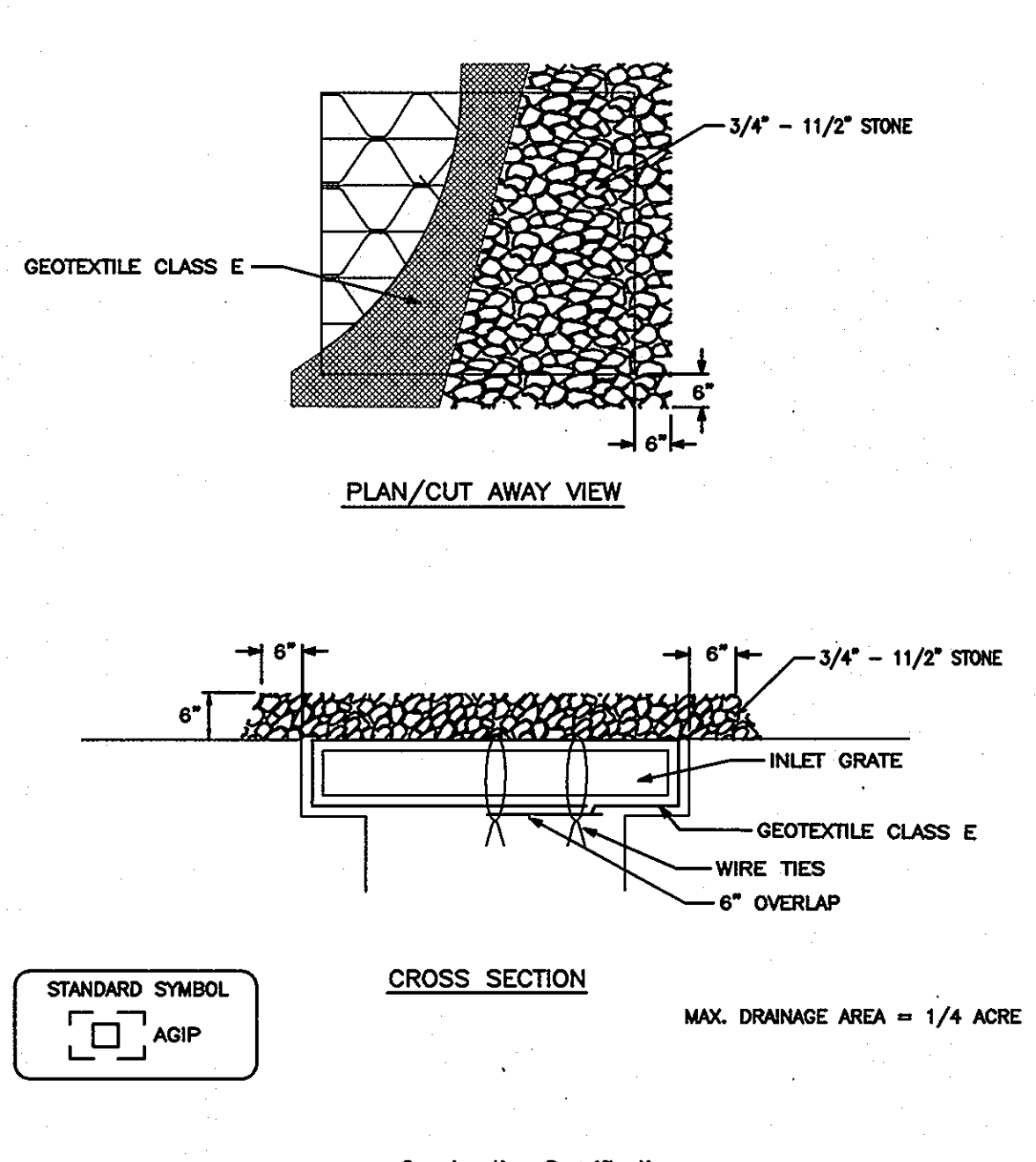
Construction Specifications: 1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground... 2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section... 3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass... 4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reaches 50% of the fabric height.

DETAIL 23A - STANDARD INLET PROTECTION



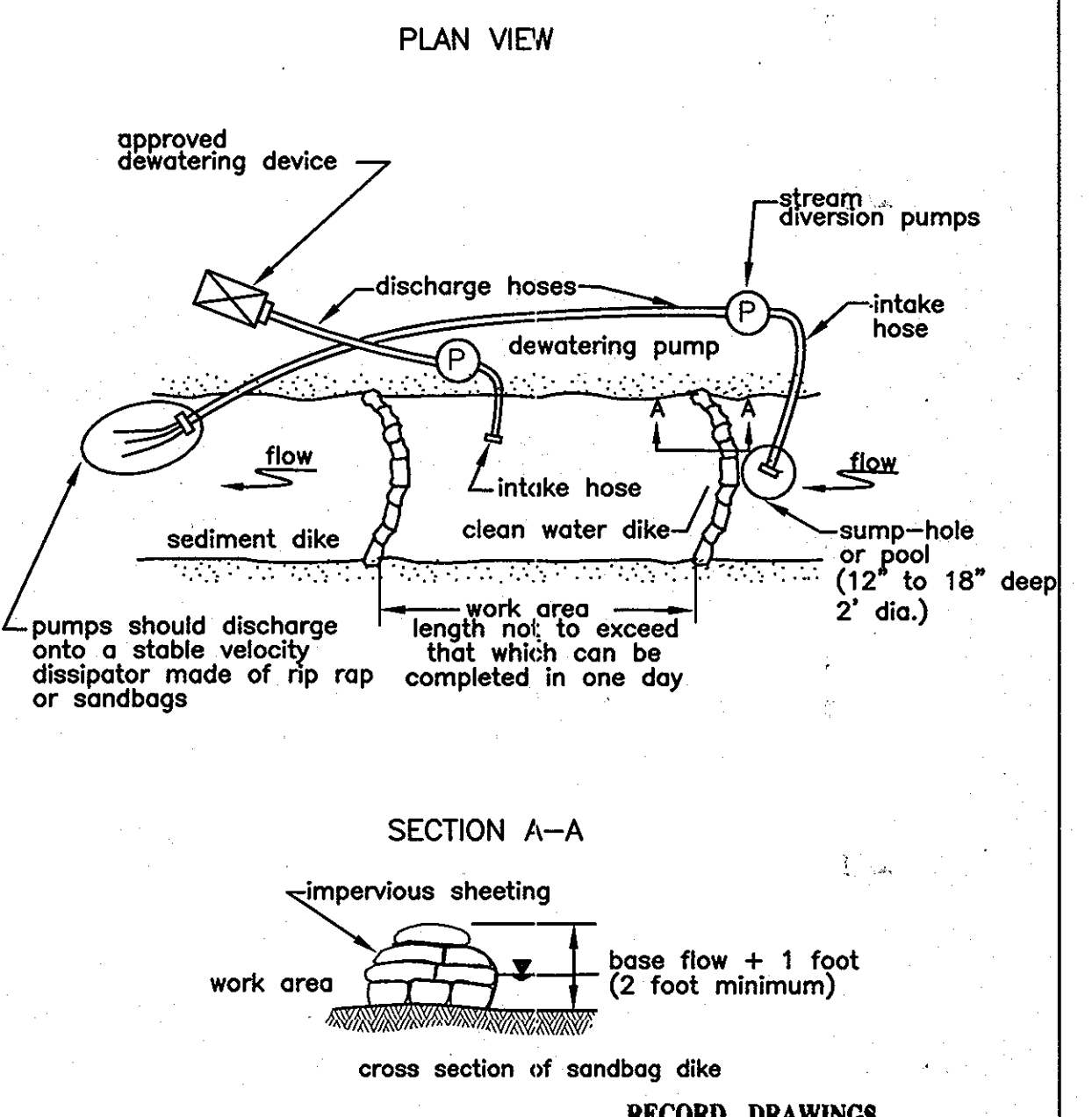
Construction Specifications: 1. Excavate completely around the inlet to a depth of 18" below the notch elevation... 2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet... 3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely... 4. Stretch the Geotextile Class E tightly over the wire mesh with the geotextile extending from the top of the frame to 18" below the inlet notch elevation... 5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation... 6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it... 7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

DETAIL 23B - AT GRADE INLET PROTECTION



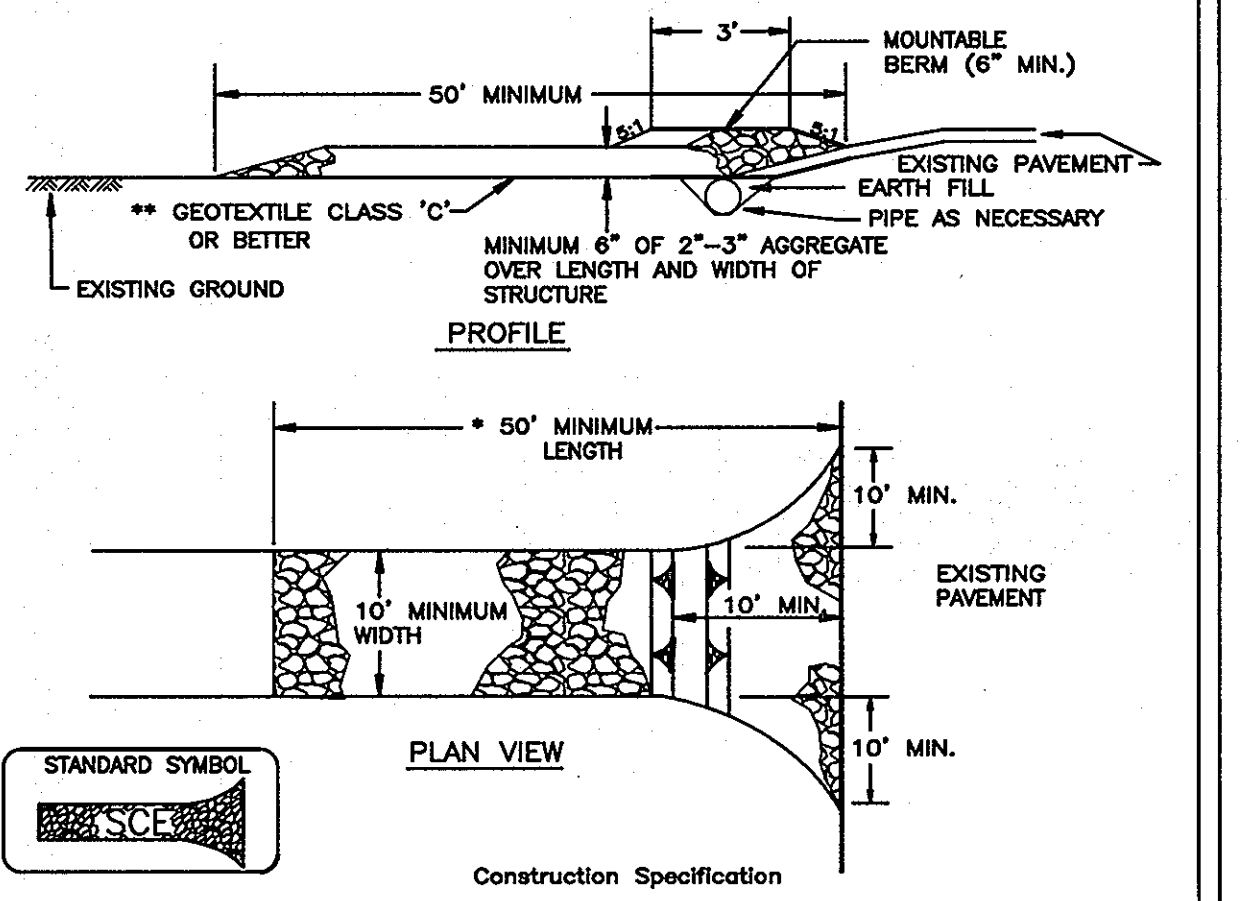
Construction Specifications: 1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place... 2. Place 3/4" to 1 1/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

DETAIL 1.2: PUMP-AROUND PRACTICE



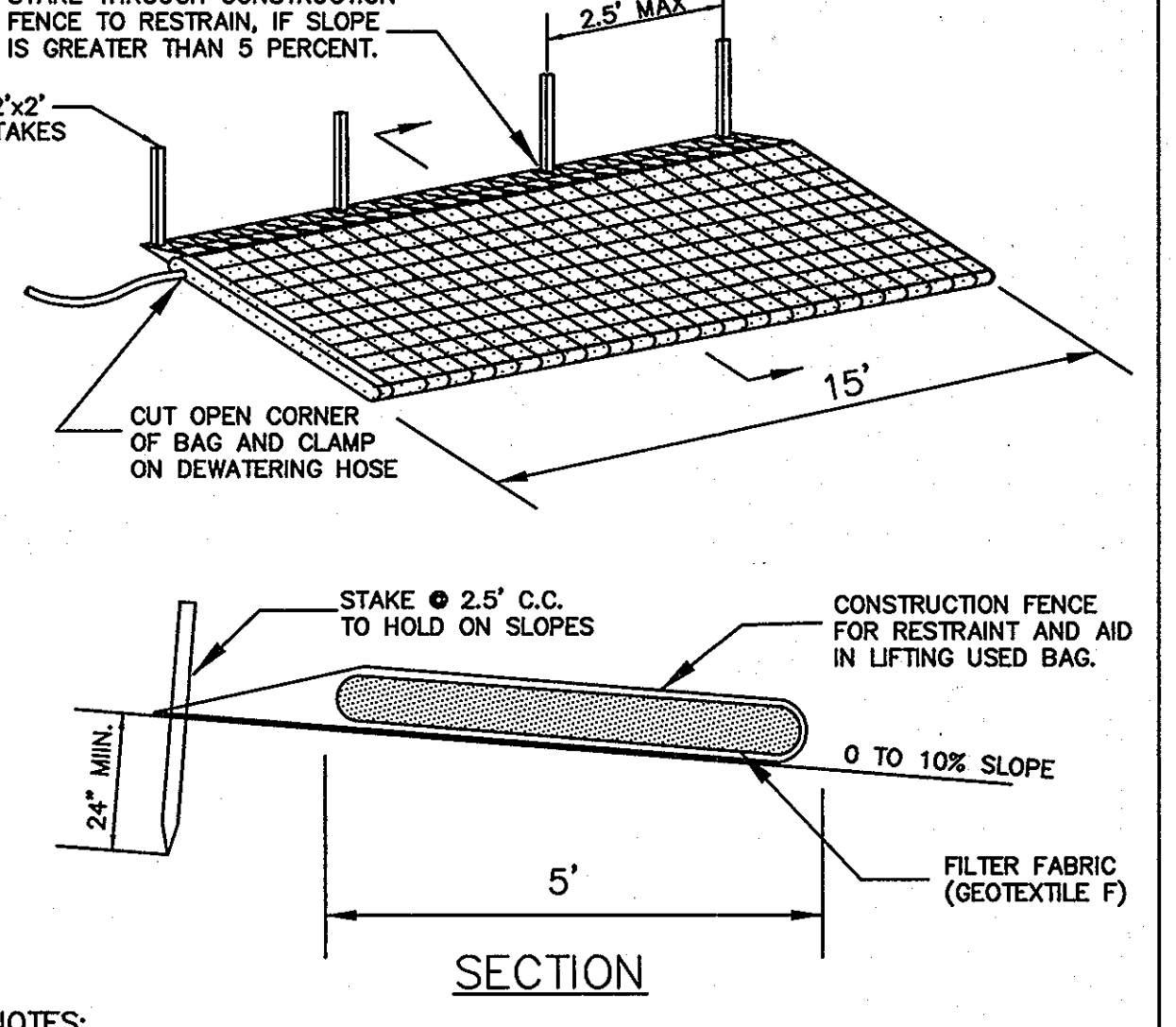
RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED. O'BRIEN & GERE ENGINEERS, INC.

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



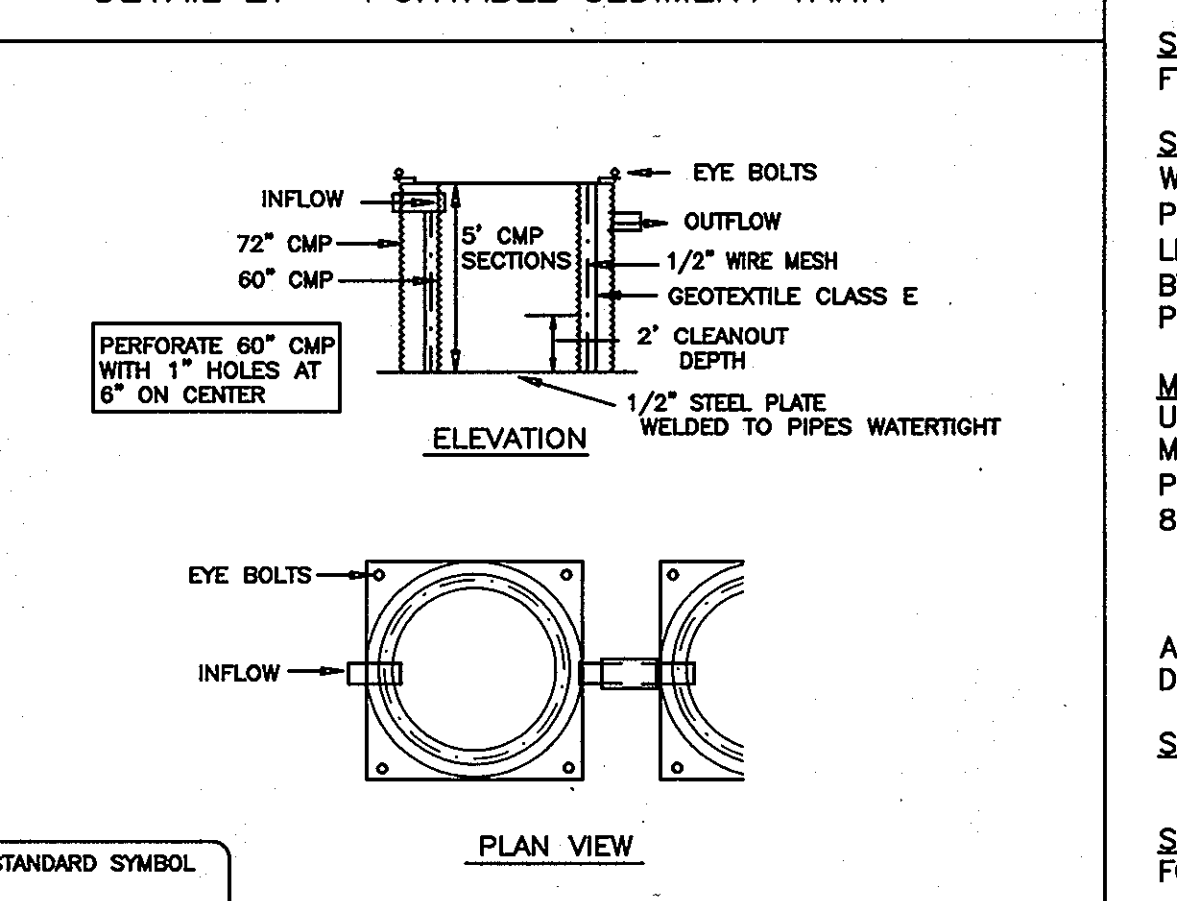
Construction Specification: 1. Length - minimum of 50' (*30' for single residence lot)... 2. Width - 10' minimum, should be flared at the existing road to provide a turning radius... 3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone... 4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance... 5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage... 6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site.

DETAIL 23C - CURB INLET PROTECTION



Construction Specifications: 1. Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4") to the 2" x 4" weir... 2. Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir... 3. Securely nail the 2" x 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face... 4. Place the assembly against the inlet throat and nail (minimum 2" lengths of 2" x 4" to the top of the weir at spacer locations)... 5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening... 6. Form the 1/2" x 1/2" wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet... 7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment... 8. Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

DETAIL 21 - PORTABLE SEDIMENT TANK



Construction Specifications: 1. The following formula should be used in determining the storage volume of the sediment tank: 1 cubic foot of storage for each gallon per minute of pump discharge capacity... 2. An example of a typical sediment tank is shown above... 3. Tanks may be connected in series.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. Includes signatures of Director of Public Works and Chief, Bureau of Engineering, dated 7/1/09.

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

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2009.

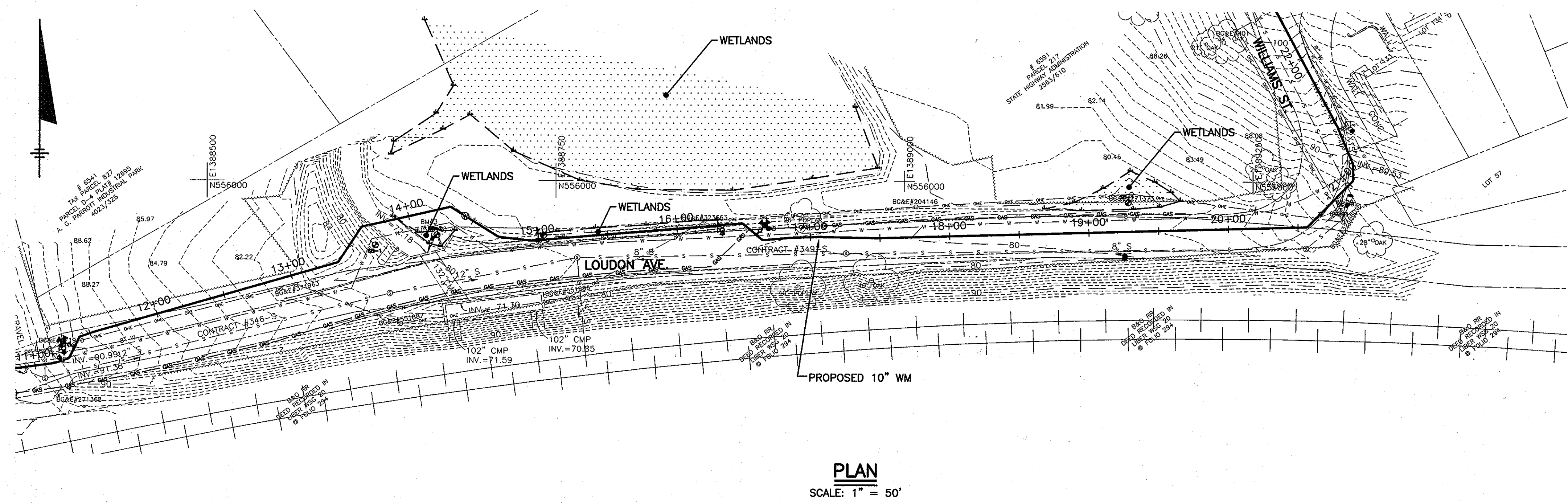
DSN. BY: SSD DRN. BY: SSD CHK. BY: GLF DATE: JUNE, 2009. Includes AS-BUILT stamp and revision table.

EROSION AND SEDIMENT CONTROL PLAN NOTES AND DETAILS. 600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19.

HARWOOD PARK WATER MAIN REPLACEMENTS. CAPITAL PROJECT: W-8255 CONTRACT NO.: 44-4578 ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND. SHEET 36 OF 38.

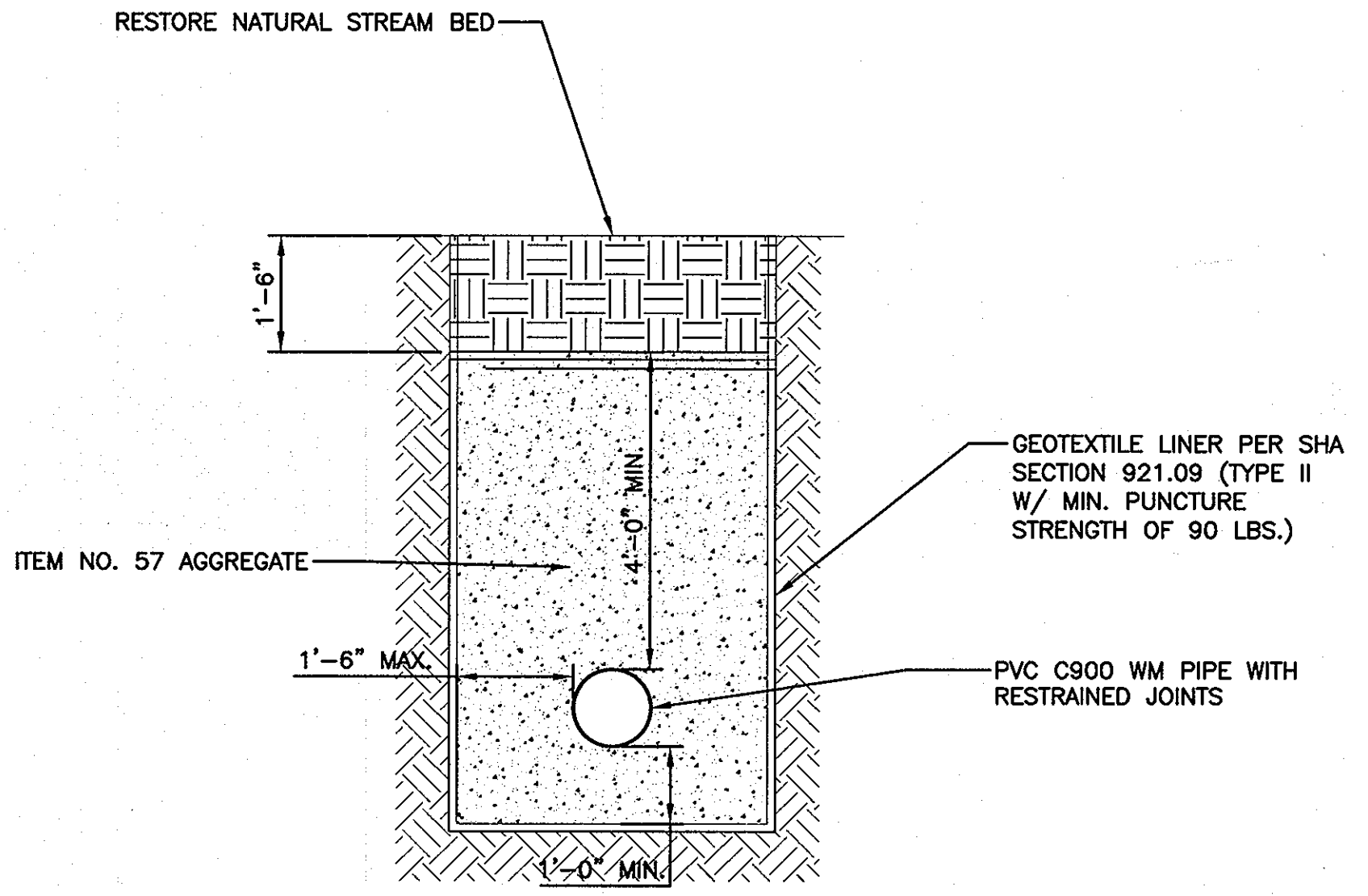
FILE NO. 33498-124F

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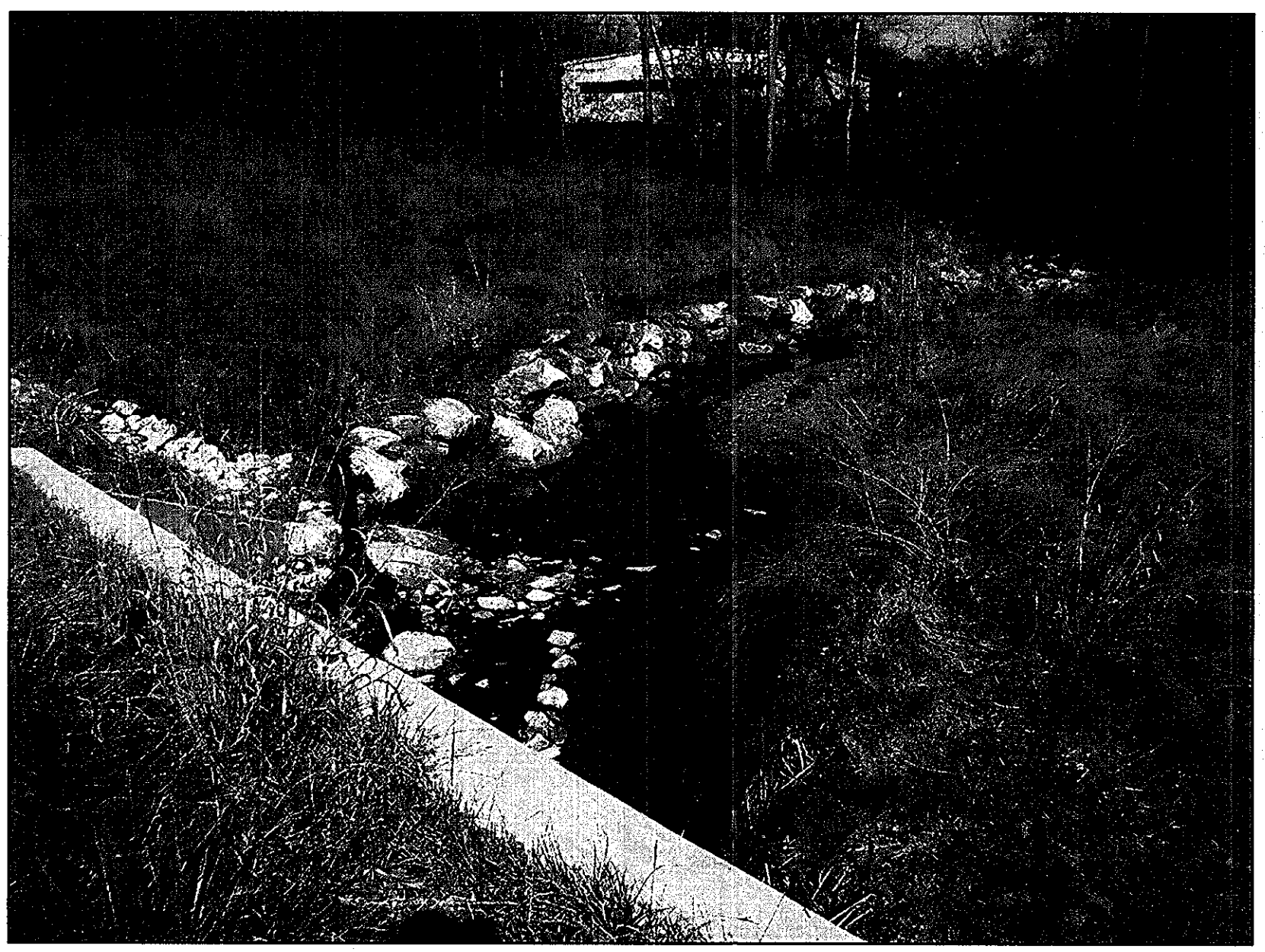
PLAN
SCALE: 1" = 50'

- CREEK CROSSING WORK PLAN:**
- DEVELOP LAYDOWN AREA(S) FOR EXCAVATED MATERIAL USING A GEOTEXTILE BASE, SURROUNDED BY SILT FENCING.
 - INSTALL SILT FENCING THE FULL WIDTH OF THE CREEK FLOW, BOTH UPSTREAM AND DOWNSTREAM OF THE PROPOSED CROSSING, ANCHOR THE BOTTOM OF THE SILT FENCING TO ENSURE THAT THE SILT IS ADEQUATELY CONTAINED.
 - REMOVE EXISTING RIP-RAP AND GEOTEXTILE LINER FROM WITHIN THE CREEK AND IT'S BANKS (WITHIN THE CREEK CROSSING LIMITS SHOWN OR SPECIFIED) AND PLACE IN LAYDOWN AREA(S).
 - SETUP BY-PASS PUMPING SYSTEM FOR DURATION OF THE EXCAVATION AND RESTORATION OF THE CROSSING, ONCE WORK HAS STARTED, IT SHALL CONTINUE UNTIL THE CROSSING AND RESTORATION ARE COMPLETE. ALL WORK SHALL BE COMPLETED WITHIN 48 HOURS.
- NO WORK SHALL BE ALLOWED WITHIN THE CREEK AREA BETWEEN THE PERIOD OF MARCH 1 THROUGH JUNE 15.
- INSTALL A STONE COFFER DAM UPSTREAM OF THE PROPOSED EXCAVATION TO LIMIT OR ELIMINATE FLOW INTO THE EXCAVATION AREA. CREEK FLOW SHALL BE BY-PASSED AT A RATE AND VOLUME SIMILAR TO THE UPSTREAM FLOW. (PRIOR TO COFFER DAMMING).
 - EXCAVATE FOR AND INSTALL THE PROPOSED WATER MAIN PIPING AND APPURTENANCES AS SHOWN OR SPECIFIED.
 - RESTORE THE CREEK CROSSING USING THE GEOTEXTILE AND AGGREGATE LINERS AND RIP-RAP SHOWN OR SPECIFIED.
- NOTE THAT THE HEAVY RIP-RAP REMOVED FROM THE VERTICAL SLOPE OF THE WEST BANK SHALL RE-USED IN THIS SAME LOCATION. PROVIDE AND PLACE AS NEEDED, ANY ADDITIONAL HEAVY RIP-RAP OF THE SAME SIZE AND GRADATION, FOR A COMPLETE RESTORATION OF THE WEST BANK.
- REMOVE ALL LAYDOWN AREA MATERIALS AND RESTORE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION.



CREEK CROSSING DETAIL
NOT TO SCALE

- CREEK CROSSING DETAIL NOTE:**
- THE MATERIALS AND INSTALLATION FOR ALL NEW, AGGREGATE LINER, AND GEOTEXTILE LINER SHALL MEET SHA SECTIONS 312, 901, AND 921.09.

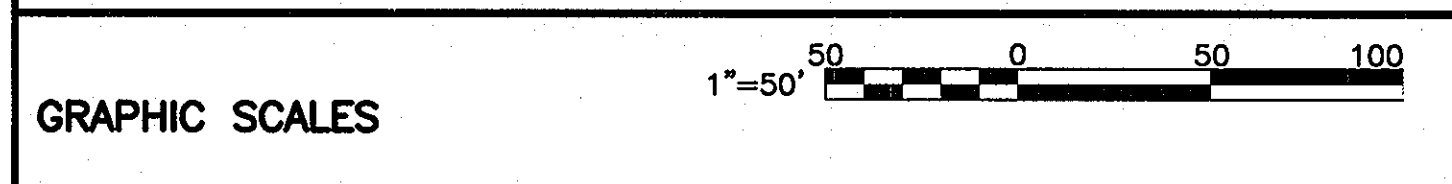


PROPOSED CREEK CROSSING LOCATION

- NOTES:**
- THIS PICTURE IS MEANT TO PROVIDE A GENERAL UNDERSTANDING OF THE PROPOSED CREEK CROSSING LOCATION. THE MATERIALS AND CONDITION SHOWN ARE VALID ONLY AT THE TIME THIS PICTURE WAS TAKEN (FALL OF 2008).
 - THE CONTRACTOR SHALL VISIT THE PROPOSED CREEK CROSSING TO DETERMINE THE CURRENT MATERIALS AND THE SITE CONDITIONS FOR BIDDING.

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

[Signature] 7/1/09 DATE
DIRECTOR OF PUBLIC WORKS

[Signature] 7/1/09 DATE
CHIEF, BUREAU OF UTILITIES

[Signature] 7/1/09 DATE
CHIEF - BUREAU OF ENGINEERING

[Signature] 7/1/09 DATE
CHIEF, UTILITY DESIGN DIVISION

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

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18523, EXPIRATION DATE 12/08/2007

[Signature]
ROBERT JOHN O'BRIEN
REGISTERED PROFESSIONAL ENGINEER

DSN. BY:	GLF				
DRN. BY:	IH				
CHK. BY:	GLF				
DATE:	JUNE, 2009				
R/D	0				
BY	NO.				
		AS-BUILT	1/14		
		ISSUED FOR BID	06/09		
		REVISION	DATE		

CREEK CROSSING PLAN,
PICTURE AND DETAILS

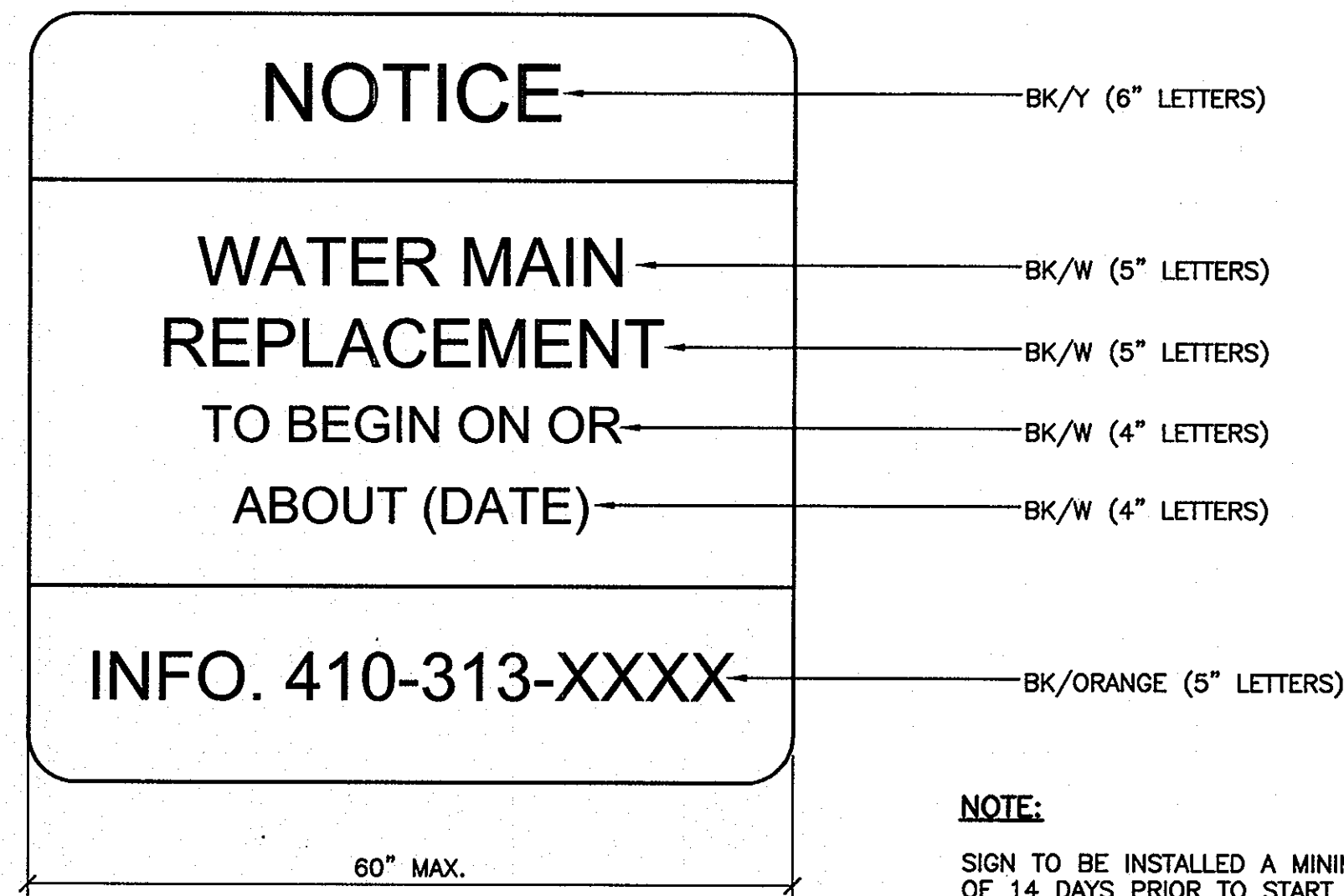
600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

AS-BUILT 1/29/14

HARWOOD PARK
WATER MAIN REPLACEMENTS
CAPITAL PROJECT: W-8255
CONTRACT NO.: 44-4578
ELECTION DISTRICT NO.: 2
HOWARD COUNTY, MARYLAND

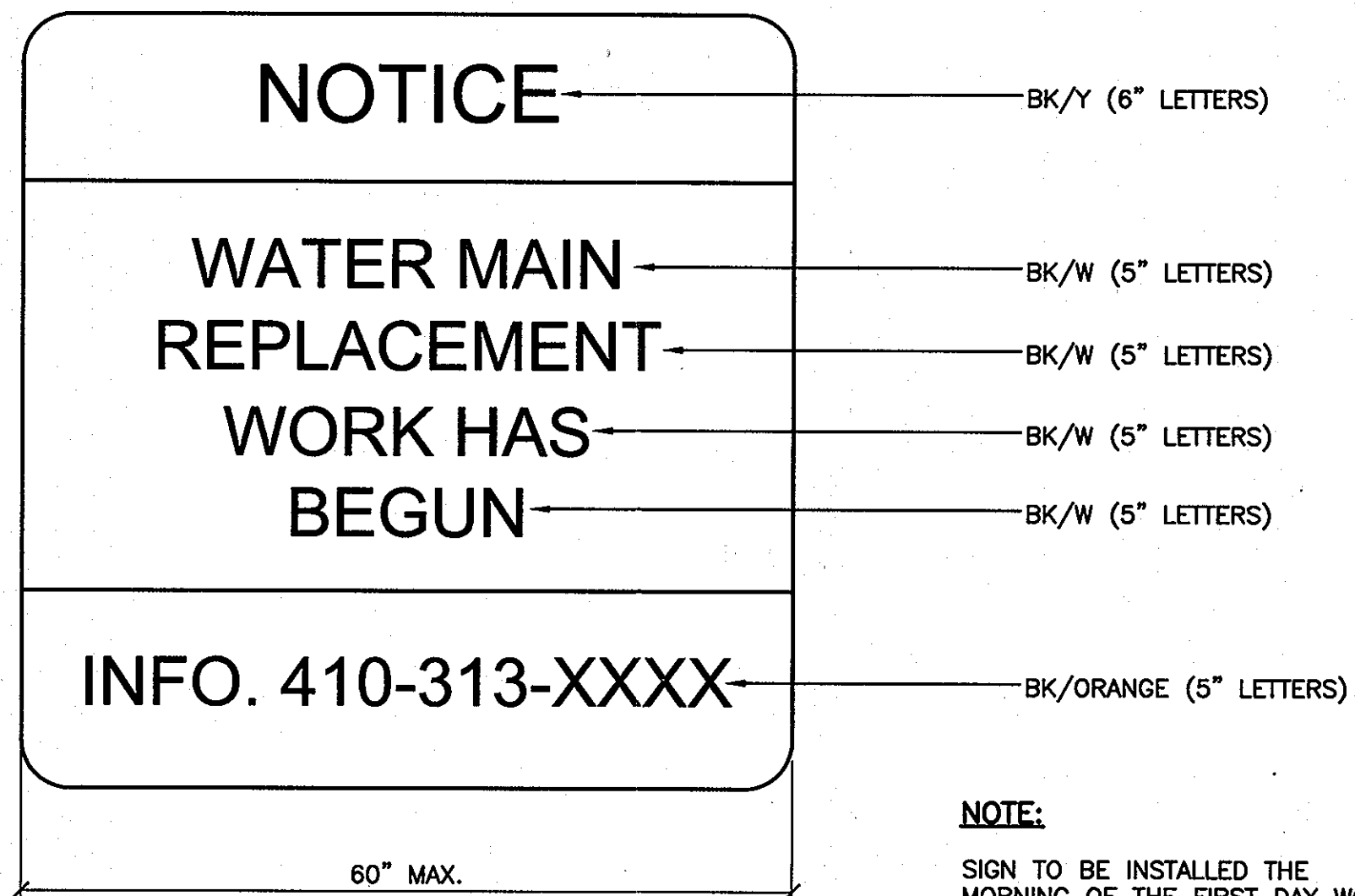
SCALE AS SHOWN
SHEET 37 OF 38
FILE NO. 33498-XXXF

I:\HOWARD-CO.2343\33498.HARWOOD-PARK-WA.DWG\SHEETS\33498-C138.DWG



NOTE:
 SIGN TO BE INSTALLED A MINIMUM OF 14 DAYS PRIOR TO START OF CONSTRUCTION.

NOTICE SIGN—WORK TO BEGIN
 NOT TO SCALE

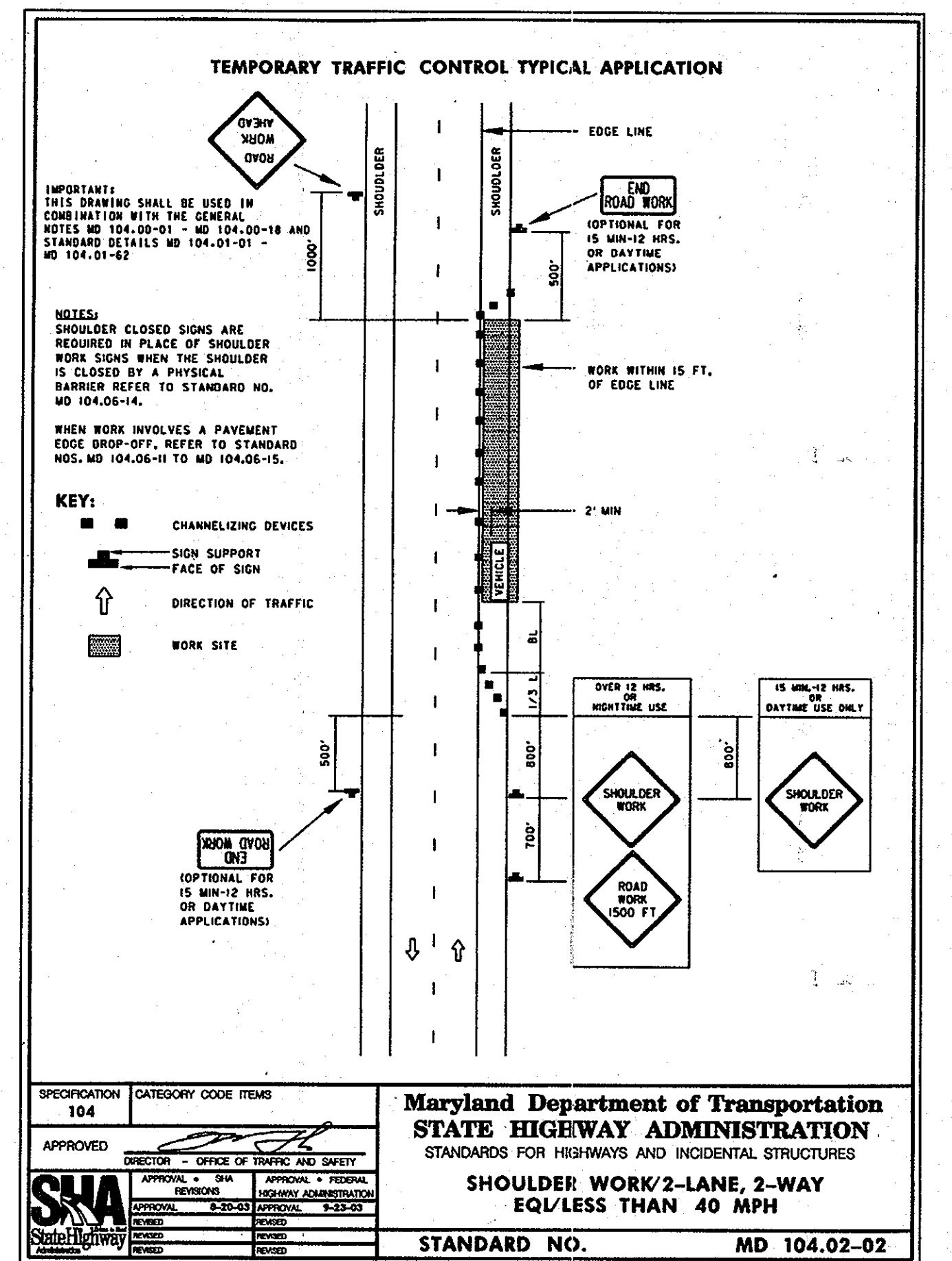
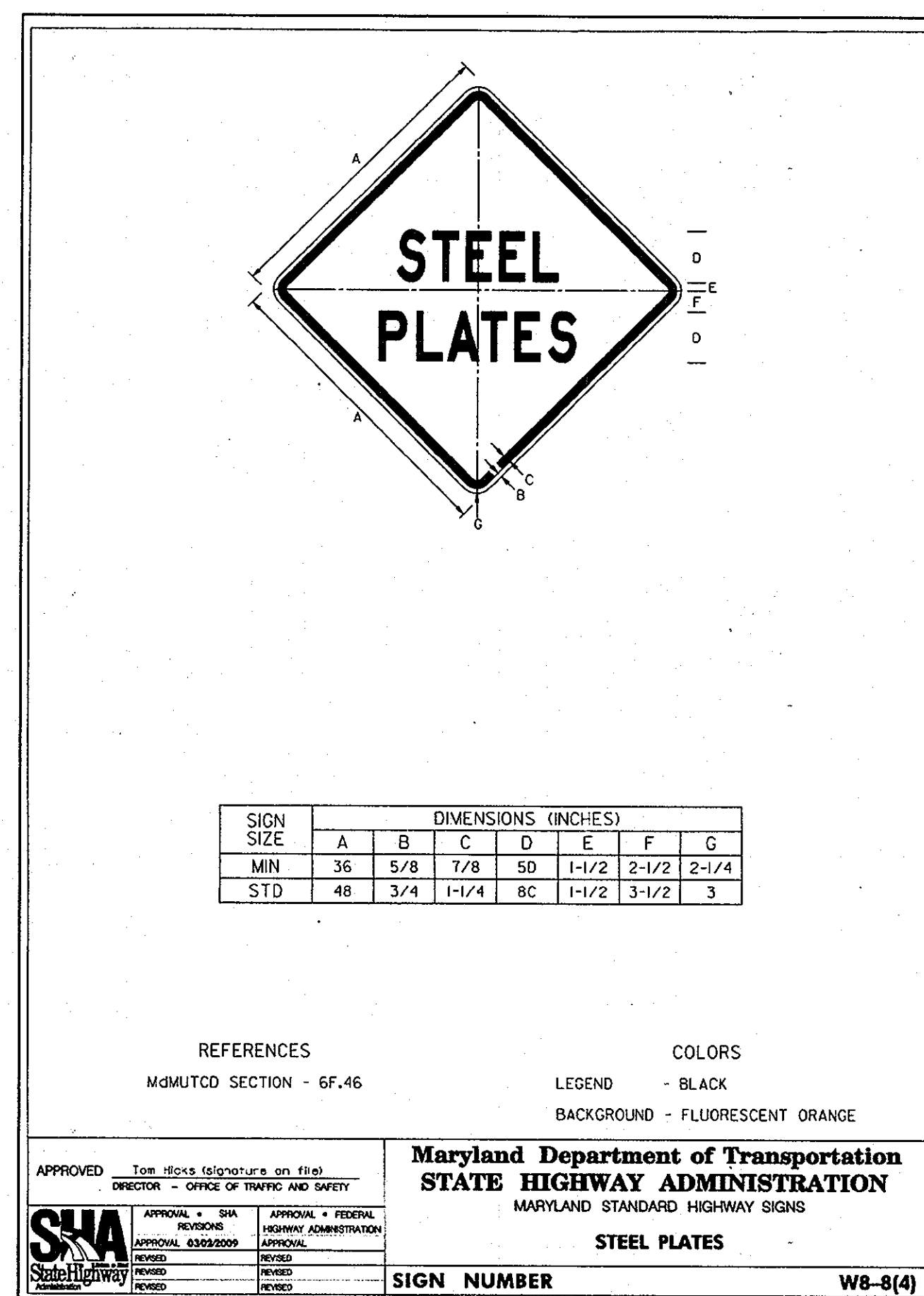
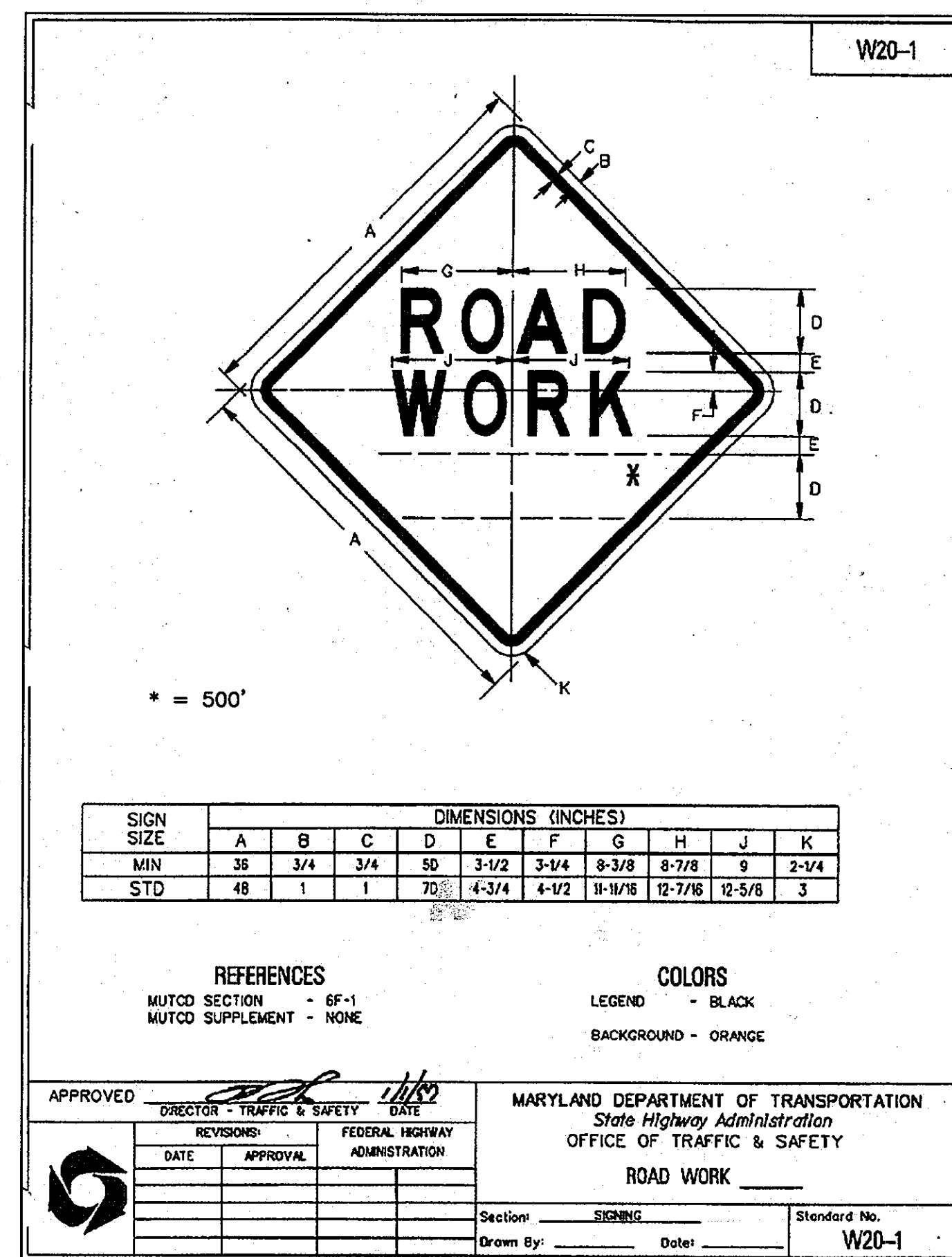
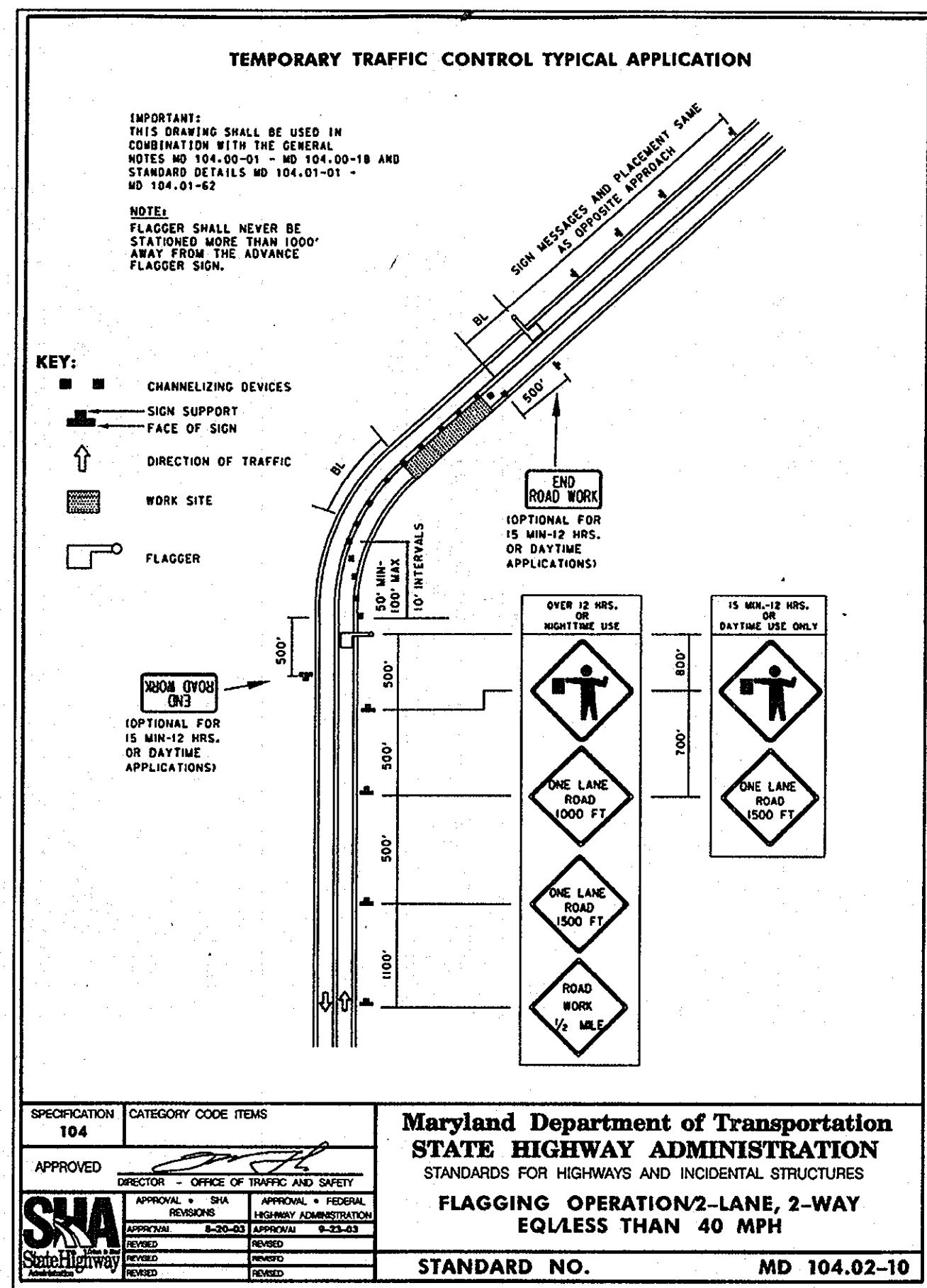
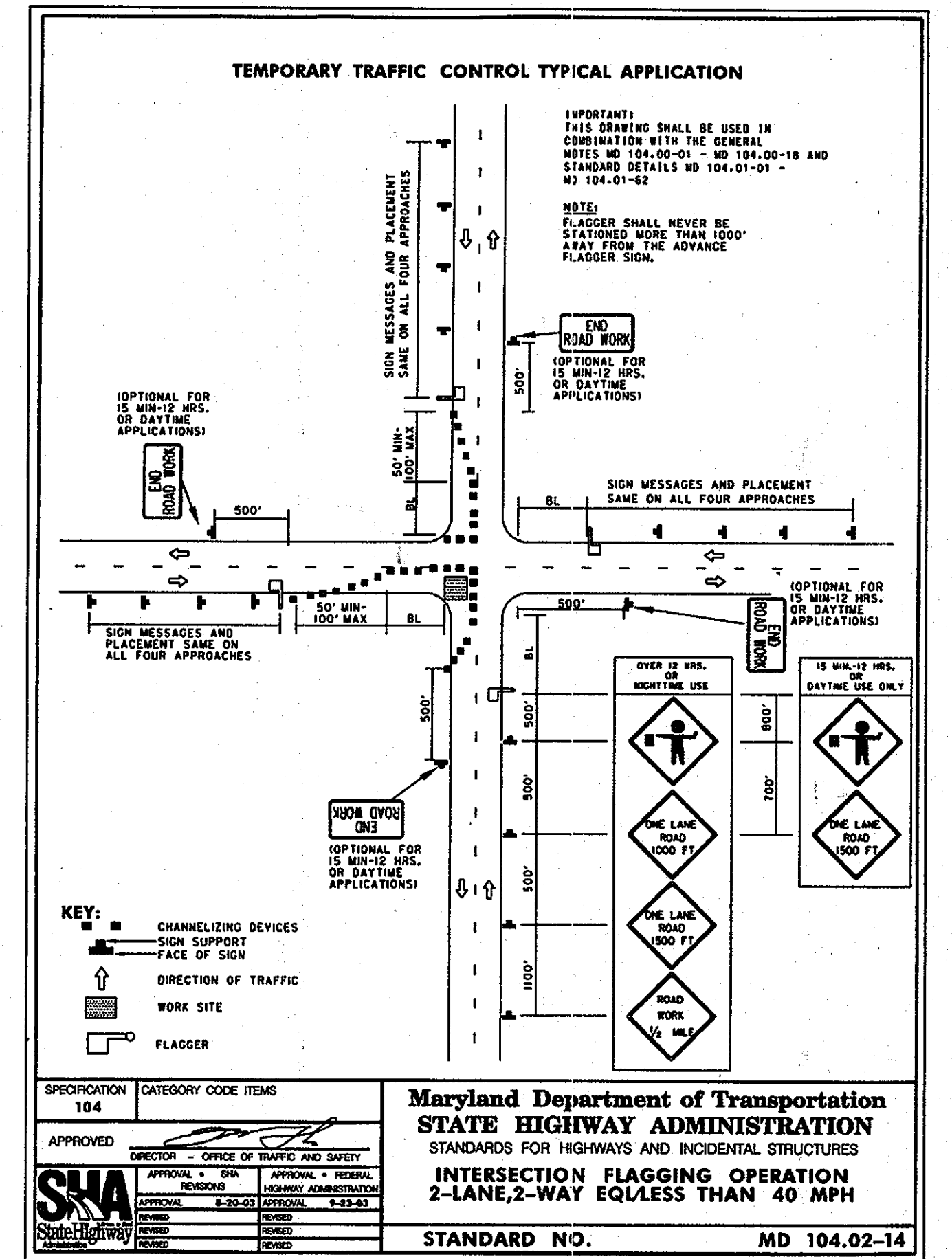


NOTE:
 SIGN TO BE INSTALLED THE MORNING OF THE FIRST DAY WORK BEGINS; AND SHALL REMAIN UNTIL WORK IS COMPLETED.

NOTICE SIGN—WORK HAS BEGUN
 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'BRIEN & GERE ENGINEERS, INC.
 BY: *[Signature]*



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 7/1/09
 Chief, Bureau of Engineering: *[Signature]* 7/1/09
 Chief, Bureau of Utilities: *[Signature]* 7/1/09
 Chief, Utility Design Division: *[Signature]* 7/1/09

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STATE OF MARYLAND
 ROBERT JOHN
 NATIONAL ENGINEER

DSN. BY: GLF
 DRN. BY: IH
 CHK. BY: GLF
 DATE: JUNE, 2009

AS-BUILT
 ISSUED FOR BID 06/09
 REVISION

MAINTENANCE OF TRAFFIC

600' SCALE MAP NO. 38 BLOCK NO. 13, 14, 19

AS-BUILT 1129114

HARWOOD PARK
 WATER MAIN REPLACEMENTS
 CAPITAL PROJECT: W-8255
 CONTRACT NO.: 44-4578
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 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 38 OF 38
 FILE NO. 33498-XXXF