

PROJECT
 City of Madison Heights

CLIENT
 City of Madison Heights
 300 W. 13 Mile Road
 Madison Heights,
 MI 48071

PROJECT LOCATION
 City of Madison Heights,
 Oakland County, MI

SHEET
 Water Main Standard
 Details - HDPE Blocking



Know what's below
 Call before you dig.

DATE ISSUED/REVISED

HDPE SDR11 DIPS RESTRAINING BLOCK SCHEDULE

| HDPE SDR 11 DIPS SIZE | A | B | C | EFFECTIVE AREA | # RESTRAINTS | REINFORCING |
|-----------------------|--------|----------|----------|----------------|--------------|-------------|
| 4" | 1 FT | 2 FT | 2 FT | 4.0 S.F. | 1 | 4 #6(S) |
| 6" | 1 FT | 3 FT | 3 FT | 9.0 S.F. | 2 | 4 #6(S) |
| 8" | 1 FT | 3.75 FT | 3.75 FT | 14.0 S.F. | 2 | 4 #6(S) |
| 10" | 1 FT | 4.75 FT | 4.75 FT | 22.6 S.F. | 3 | 8 #4(S) |
| 12" | 1.5 FT | 5.5 FT | 5.5 FT | 30.3 S.F. | 4 | 8 #6(S) |
| 14" | 1.5 FT | 6.33 FT | 6.33 FT | 40.0 S.F. | 5 | 8 #6(S) |
| 16" | 2 FT | 7.25 FT | 7.25 FT | 52.6 S.F. | 6 | 16 #6(D) |
| 18" | 2 FT | 8.1 FT | 8.1 FT | 65.6 S.F. | 7 | 16 #6(D) |
| 20" | 2 FT | 9 FT | 9 FT | 81.0 S.F. | 9 | 16 #6(D) |
| 24" | 2 FT | 10.75 FT | 10.75 FT | 115.6 S.F. | 14(D) | 16 #6(D) |
| 30" | 2.5 FT | 13.25 FT | 13.25 FT | 175.6 S.F. | 19(D) | 16 #6(D) |
| 36" | 2.5 FT | 15.9 FT | 15.9 FT | 252.8 S.F. | 28(D) | 16 #6(D) |

1. RESTRAINING BLOCKS SHALL HAVE A MINIMUM OF 3.0' COVER.
 2. RESTRAINING BLOCK DIMENSIONS "B" AND "C" MAY BE CHANGED DUE TO DEPTH OF COVER LIMITATIONS PROVIDED THE EFFECTIVE AREA IS MAINTAINED.

HDPE WATER MAIN NOTES

1. ALL HDPE WATER MAIN SHALL BE D.I.P.S. SDR 11 MANUFACTURED FROM A PE 4710 RESIN. HDPE PIPE SHALL BE MARKED WITH A PERMANENTLY CO-EXTRUDED BLUE STRIPE.
2. ALL HDPE FITTINGS SHALL BE MANUFACTURED FROM A PE 4710 RESIN.
3. ALL HDPE WATER SERVICES SHALL BE SDR 9.
4. ELECTROFUSION EQUIPMENT SHALL BE CALIBRATED AND CERTIFIED PER THE PIPE MANUFACTURER'S REQUIREMENTS.
5. CONCRETE RESTRAINING BLOCKS AND THRUST BLOCKS SHALL BE CONSTRUCTED OF MINIMUM 3,500 P.S.I. CONCRETE.
6. ALL HDPE PIPING SHALL BE INSTALLED WITH TWO TRACER/LOCATOR WIRES INSULATED WITH HIGH MOLECULAR WEIGHT POLYETHYLENE (HMWPE) SPECIFICALLY FOR USE IN DIRECT BURIAL APPLICATIONS.
7. TRACER WIRES SHALL BE 6-GAUGE SOLID OR STRANDED ANNEALED OR HARD COPPER PER UL83 (THERMOPLASTIC INSULATED WIRES AND CABLES) AND ASTM REQUIREMENTS INCLUDING ASTM B1 (STANDARD SPECIFICATION FOR HARD-DRAWN COPPER WIRE), B3 (STANDARD SPECIFICATION FOR SOFT OR ANNEALED COPPER WIRE), AND B8 (STANDARD SPECIFICATION FOR CONCENTRIC-LAY-STRANDED COPPER CONDUCTORS, HARD, MEDIUM-HARD, OR SOFT).
8. TRACER WIRE SHALL BE INSTALLED. INSULATION SHALL BE FOR 600-VOLT APPLICATIONS AND SHALL BE A MINIMUM OF 45 MILS THICK. THE MINIMUM THICKNESS AT ANY POINT SHALL NOT BE LESS THAN 20% OF THE SPECIFIED AVERAGE THICKNESS IN COMPLIANCE WITH UL 63. THE TRACER WIRE SHALL HAVE THE UL 63 SPECIFICATION SHALL BE CLEARLY MARKED ON THE WIRE INSULATION. THE INSULATION SHALL BE COLORED BLUE FOR WATER MAIN APPLICATIONS.
9. TWO TRACER WIRES SHALL BE ATTACHED TO THE WATER MAIN PIPE AT FIVE FOOT INTERVALS OR AS APPROVED BY THE ENGINEER. ATTACHMENT TO PIPE SHALL BE MADE WITH PLASTIC CABLE TIES OR EQUIVALENT. THE USE OF TAPE IS NOT APPROVED. TRACER WIRES SHALL BE CHECKED FOR CONTINUITY PRIOR TO PLACING THE WATER MAIN INTO SERVICE.
10. HDPE PIPE TRANSITIONS TO DUCTILE IRON PIPE SHALL BE PERFORMED USING FUSED-ON MECHANICAL JOINT ADAPTERS OR FLANGE ADAPTERS. MEGA-LUGS OR MEGA-LUGS COMBINED WITH INTERNAL PIPE STIFFENERS ARE NOT APPROVED.
11. HYDROSTATIC TESTING SHALL BE PER AWWA STANDARDS (ASTM F2164). TESTING SHALL BE PERFORMED AFTER THE INITIAL EXPANSION PHASE AND AFTER THE SYSTEM HAS STABILIZED. TESTING PRESSURE SHALL BE 150 P.S.I. HELD FOR 2 HOURS.

HDPE WATER MAIN ALLOWABLE LOSSES FOR 2 HOUR TEST PERIOD

| PIPE DIA. | PIPE LENGTH | ALLOWABLE WATER LOSS PER FT. | TOTAL LOSS ALLOWED |
|-----------|-------------|------------------------------|--------------------|
| 3" | | x 0.15 | = |
| 4" | | x 0.25 | = |
| 6" | | x 0.60 | = |
| 8" | | x 1.00 | = |
| 10" | | x 1.30 | = |
| 12" | | x 2.30 | = |
| 14" | | x 2.80 | = |
| 16" | | x 3.30 | = |
| 18" | | x 4.30 | = |
| 20" | | x 5.50 | = |
| 24" | | x 8.90 | = |

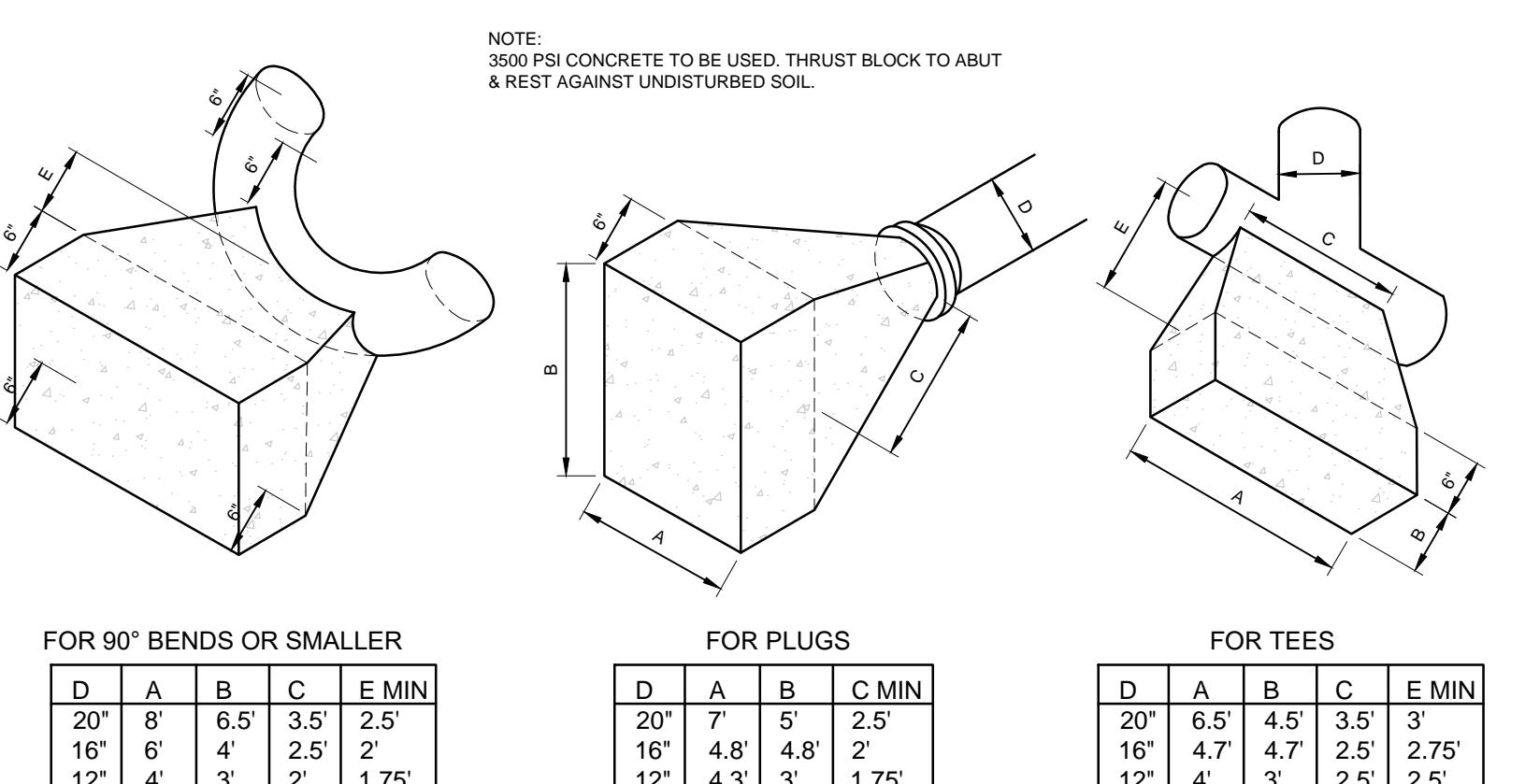
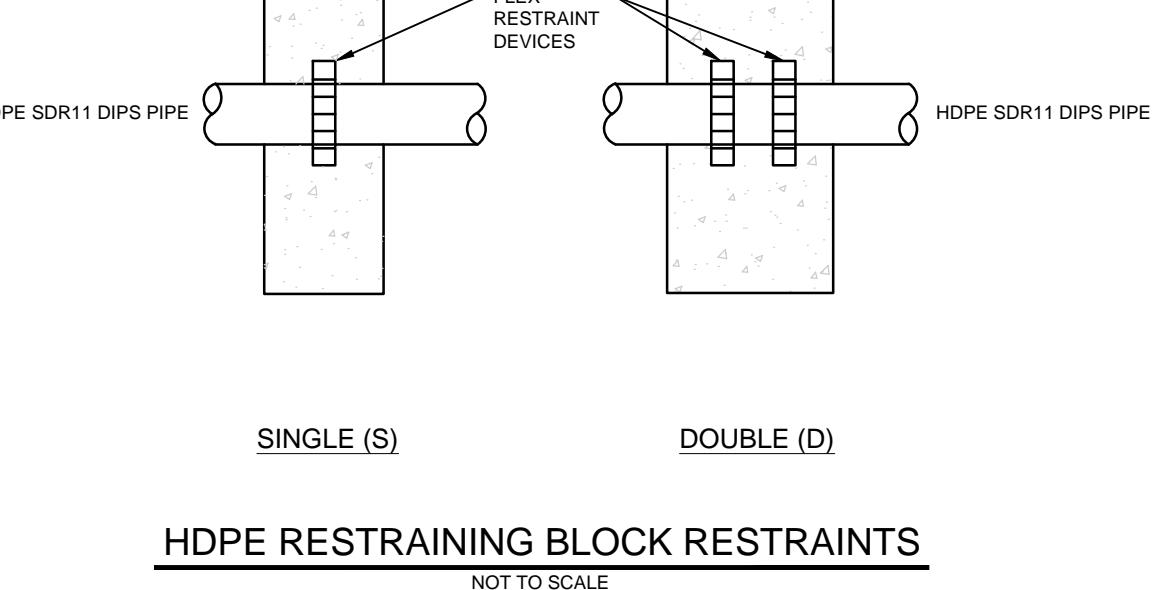
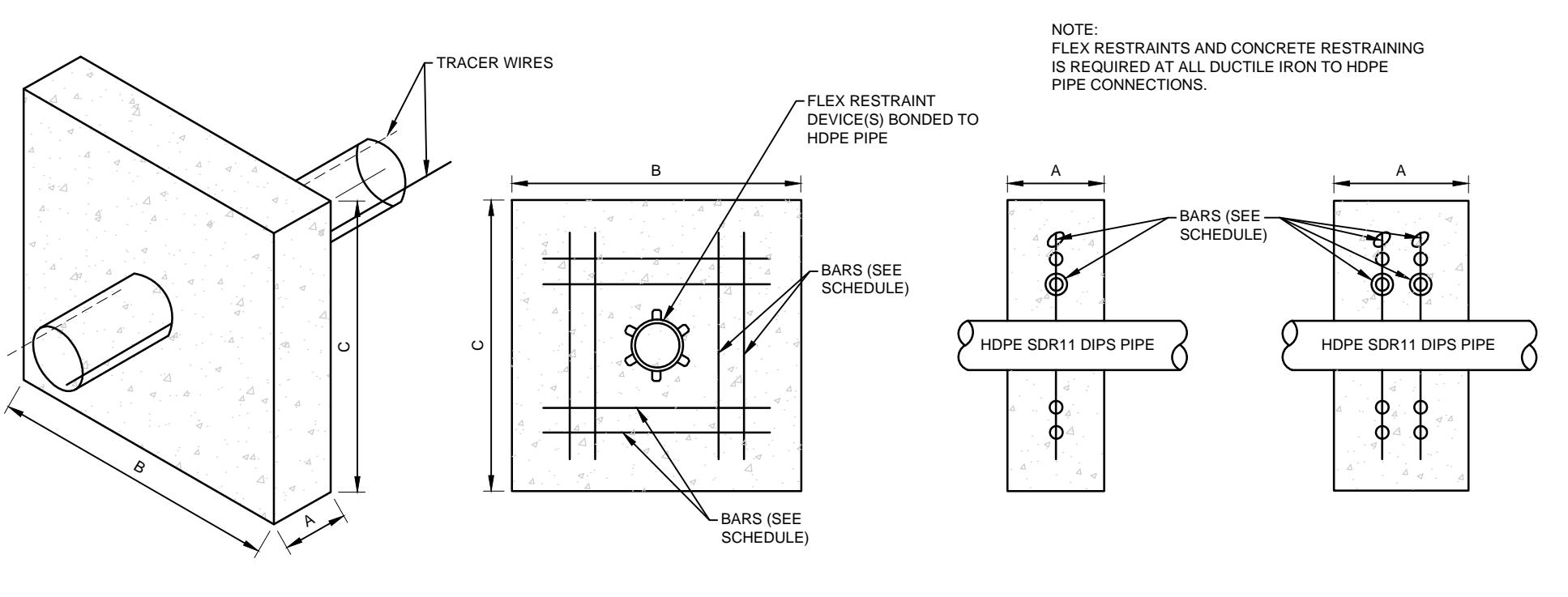
DRAWN BY:
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DESIGNED BY:
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APPROVED BY:
 T. Germain

DATE:
 December 9, 2019

SCALE:
 N.T.S.



HDPE THRUST BLOCK DETAILS
 NOT TO SCALE