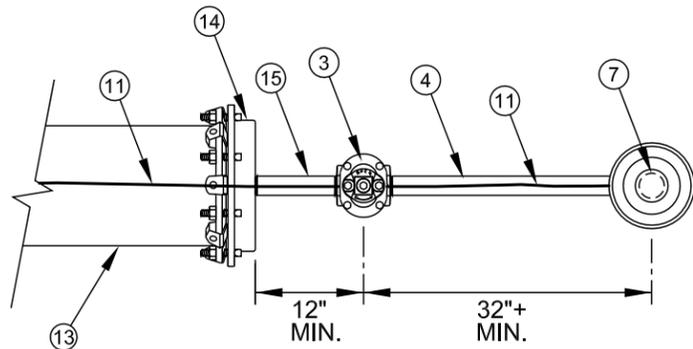
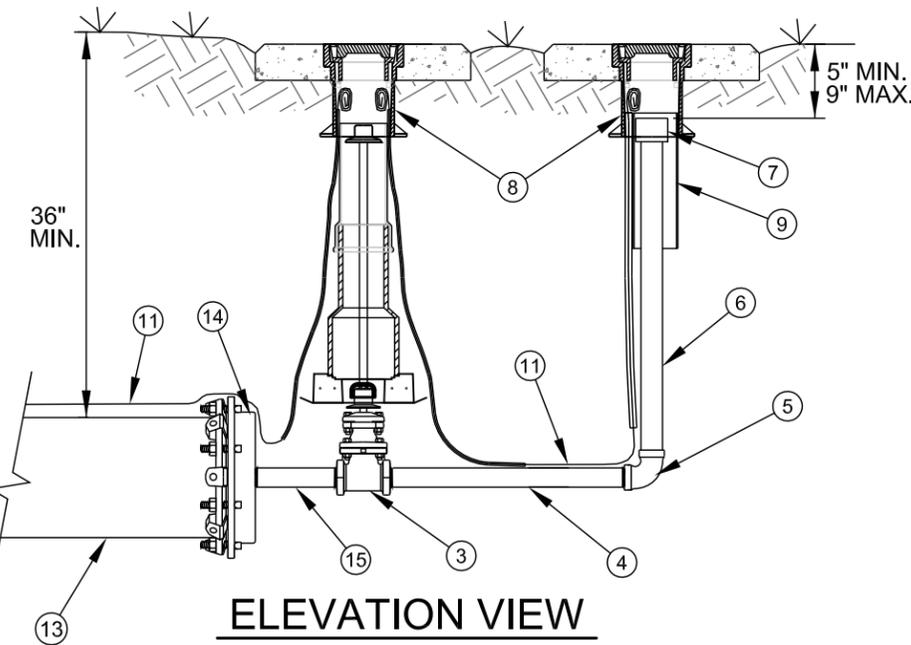


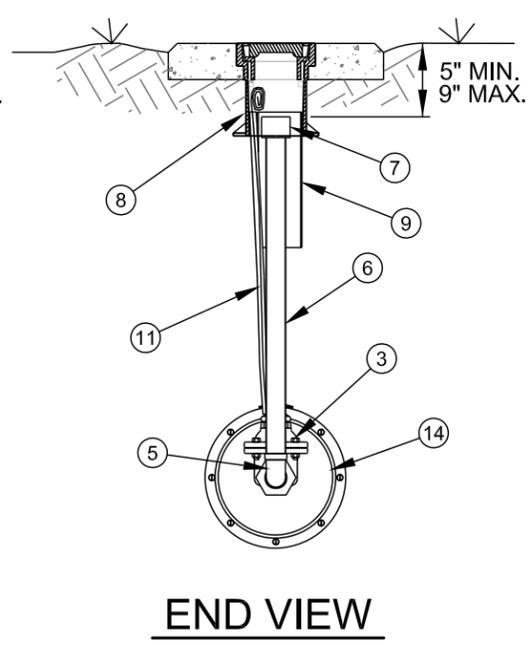
6-INCH THROUGH 12-INCH WATER MAINS



PLAN VIEW



ELEVATION VIEW



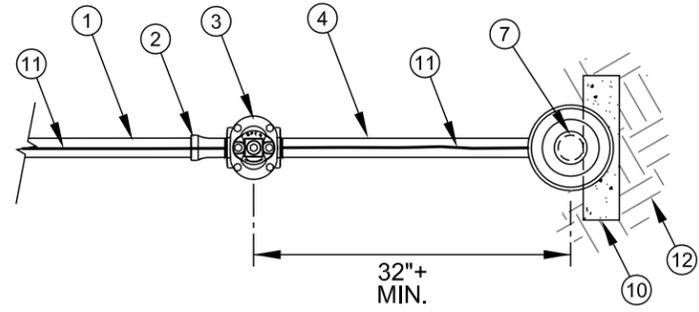
END VIEW

RESTRAINED PIPE LENGTH REQUIREMENTS:

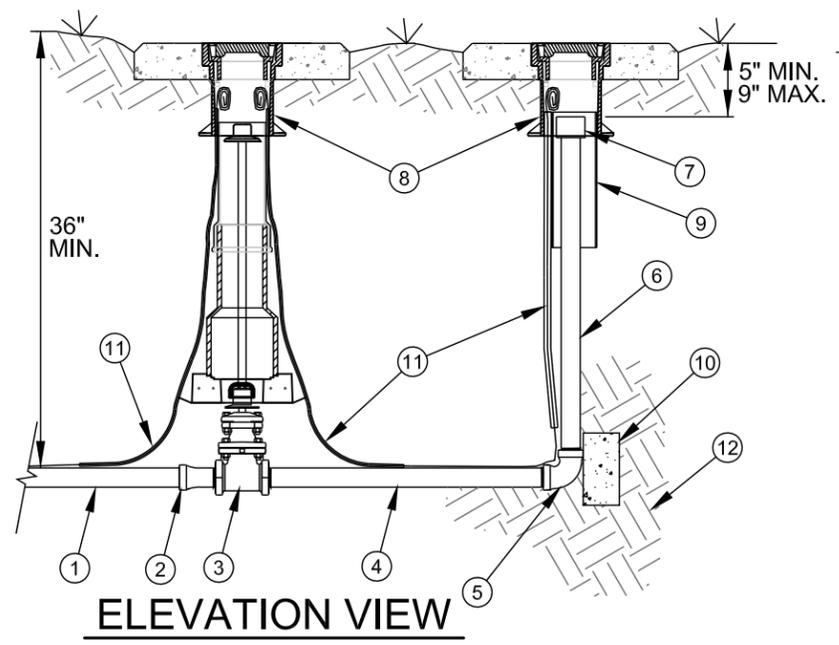
PIPE DIAMETER (INCHES)	REQUIRED RESTRAINED LENGTH:	
	BARE DIP (FEET)	POLYWRAPPED DIP (FEET)
6	169	242
8	219	312
10	264	377
12	309	441

DESIGN BASIS:
 DIPRA "THRUST RESTRAINT DESIGN FOR DIP"
 VERSION 3.3 DATED 05/09/2003
 LAYING CONDITION: TYPE 2
 SOIL DESIGNATION: SILT 1
 DEPTH OF COVER: 3.0 FT. MINIMUM
 DESIGN PRESSURE: 200 PSI
 SAFETY FACTOR: 2.0

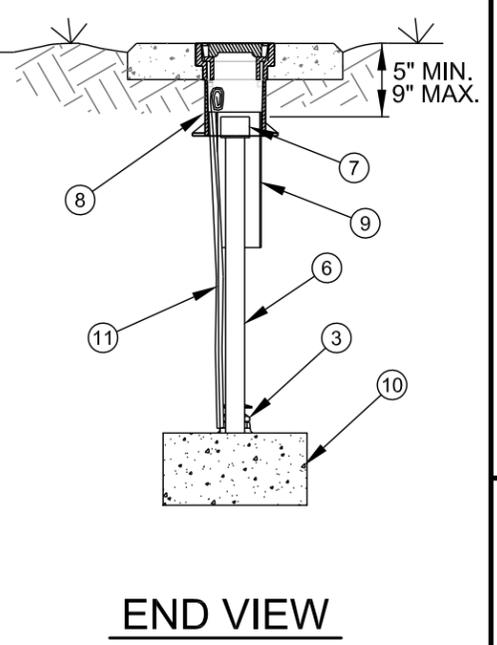
2-INCH WATER MAINS



PLAN VIEW



ELEVATION VIEW



END VIEW

PIPE DIAMETER (INCHES)	TOTAL THRUST (POUNDS)	SQUARE FEET	BEARING LOAD (LB/SQ FT)
2	724	0.89	813

APPROXIMATE SOIL BEARING CAPACITY (DIPRA)

SOIL TYPE	BEARING LOAD (LB/SQ FT)	DESIGN POINT @ (PIPE DIAMETER)
HARD CLAY	9,000	
SANDY CLAY	6,000	
SAND	4,000	
SANDY SILT	3,000	
	2,000	
SILT	1,500	
	1,250	
SOFT CLAY	1,000	
	750	*724
	500	
	250	
MUCK	0	

NO SCALE
 STANDARD NO. NIN
 VERSION NO. 1.0
 VERSION DATE 8.23.2011

- NO. DESCRIPTION**
- 2-INCH DR 13.5 PVC WATER MAIN (IPS)
 - 2-INCH D.I. PC 350 ADAPTOR (BELL x MNPT) - FUSION BONDED EPOXY - HARCO OR APPROVED EQUAL.
 - 2-INCH GATE VALVE (FNPT x FNPT)
 - 2-INCH RED BRASS NIPPLE - SCH 40 - (MNPT x MNPT), L = 30-INCH (MIN)
 - 2-INCH RED BRASS 90° BEND (FNPT x FNPT)
 - 2-INCH RED BRASS NIPPLE - SCH 40 - (MNPT x MNPT) - LENGTH AS REQUIRED
 - 2-INCH THREADED COUPLING (FNPT x FNPT) - GALV. MALLEABLE IRON OR DUCTILE IRON (F.B.E.)
 - STANDARD VALVE BOX ASSEMBLY - SEE DETAIL
 - 5-INCH CAST IRON SOIL PIPE, L = 15-INCHES, OR VALVE BOX BOTTOM SECTION
 - PRECAST CONCRETE SOLID BLOCK (16" x 8" x 4")
 - AWG #12 GAUGE COPPER TRACER WIRE WITH BLUE INSULATION (30MIL HDPE) - TERMINATE WITH 24-INCH EXCESS WIRE (COILED) IN VALVE BOX (TYP.)
 - UNDISTURBED OR COMPACTED SOIL - 100% STANDARD PROCTOR
 - DUCTILE IRON PIPE - RESTRAINED - LENGTH AS REQUIRED - SEE DETAIL
 - MJ CAP WITH WEDGE ACTION RESTRAINT GLAND, TAP 2-INCH THREADED OUTLET (FNPT)
 - 2-INCH RED BRASS NIPPLE - SCH 40 (MNPT x MNPT), L = 12-INCH (MIN)

- NO. ALTERNATE DESCRIPTION**
- WHEN USING 2-INCH SDR 9 HDPE (IPS) BLOW-OFF PIPE WITH STAINLESS STEEL, BRASS OR BRONZE MNPT ENDS, USE THE FOLLOWING PRODUCTS:
- 2-INCH SDR 9 HDPE (POLY) - IPS PIPE (MNPT x MNPT) - L = 30-INCH (MIN)
 - 2-INCH SDR 9 HDPE (POLY) - IPS PIPE (MNPT x MNPT) - LENGTH AS REQ'D.
 - 2-INCH SDR 9 HDPE (POLY) - IPS PIPE (MNPT x MNPT) - L = 12-INCH (MIN)

2-INCH BLOW OFF ASSEMBLY (DEAD END OF MAIN) WITH 2-INCH GATE VALVE
 2-INCH THROUGH 12-INCH MAINS

CHARLOTTE-MECKLENBURG UTILITIES
 STANDARD DETAILS
 WATER

