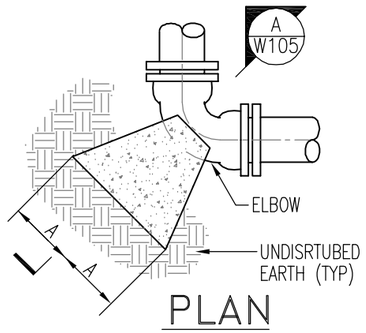
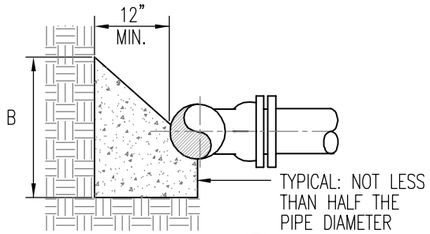
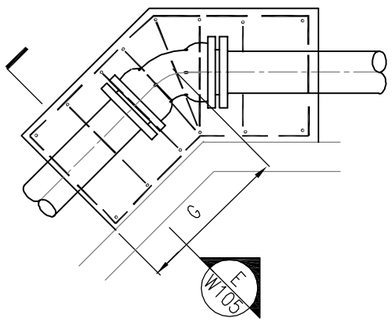
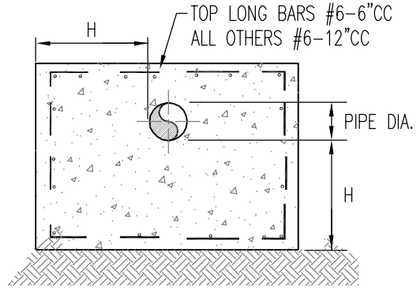


PLAN



SECTION A





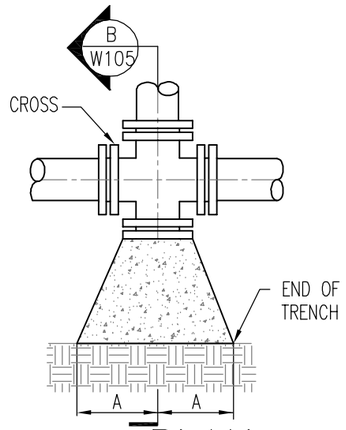
CHANGE IN ELEVATION SECTION E

GRAVITY THRUST BLOCK

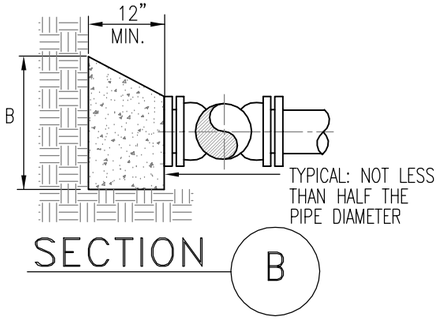
CHANGE OF ELEVATION THRUST BLOCKS							
SIZE	DEGREE BEND	G	H	SIZE	DEGREE BEND	G	H
4"	11-1/4	12"	9"	8"	11-1/4	18"	9"
	22-1/2	18"	9"		22-1/2	30"	12"
	45	24"	12"		45	60"	12"
6"	11-1/4	18"	9"	10"	11-1/4	24"	9"
	22-1/2	24"	9"		22-1/2	36"	
	45	36"	12"		45	84"	

THE HORIZONTAL DIMENSION (G) OF THE BEARING AREA SHALL BE BETWEEN 1.0 AND 2.0 TIMES THE VERTICAL DIMENSION (H). (H <= G <= 2H)

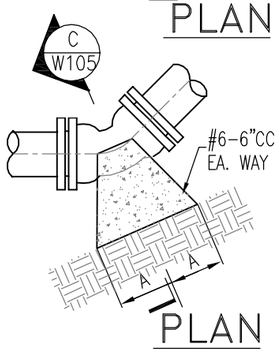
THE VERTICAL DIMENSION (H) OF THE BEARING AREA SHALL BE EQUAL TO ONE-HALF THE TOTAL DEPTH (H) TO THE BOTTOM OF THE THRUST BLOCK BUT NOT LESS THAN THE OUTSIDE DIAMETER (Do) OF THE FITTING (Do < H <= H/2)



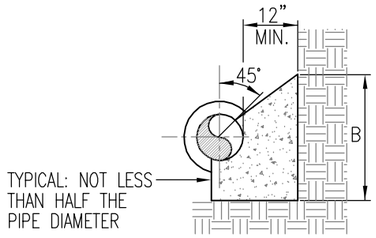
PLAN



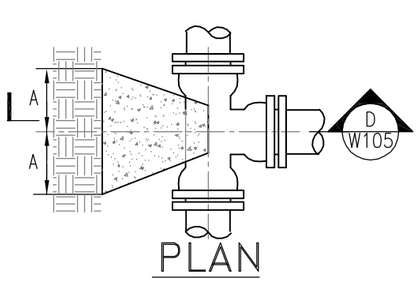
SECTION B



PLAN



SECTION C



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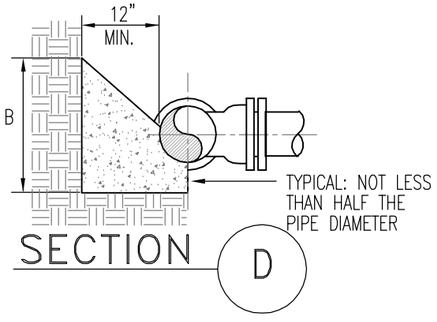

SECTION D

HORIZONTAL THRUST BLOCKS											
SIZE	90° BENDS		45° BENDS		22-1/2" BENDS		TEES		PLUGS		BEARING BLOCK AREA IN SQ.FT
	A	B	A	B	A	B	A	B	C	B	
4"	12"	24"	10"	22"	6"	20"	12"	24"	12"	24"	3.8
6"	16"	10"	9"	10"	6"	8"	10"	12"	10"	21"	7.9
8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"	13.6
10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"	20.5
12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"	29.0
14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"	39.0
16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"	50.4

THRUST BLOCK ORIENTATION SHALL BE SUCH THAT THE CENTER OF THE FITTING CORRESPONDS WITH THE CENTER OF THE THRUST BLOCK.

THE MINIMUM ALLOWABLE ANGLE (EITHER VERTICAL OR HORIZONTAL) SHALL BE 45 DEGREES.

EXAMPLE:

USING TABLE, FIND THE HORIZONTAL BEARING BLOCK AREA FOR A 6 IN. DIAMETER, 45 DEGREE BEND WITH AN INTERNAL PRESSURE OF 150 PSI. THE SOIL BEARING STRENGTH IS 3,000 LB PER SQ. FT., AND THE SAFETY FACTOR IS 1.5.

FROM THE TABLE, THE REQUIRED BEARING BLOCK AREA FOR A 6 IN. DIAMETER, 90 DEGREE BEND WITH AN INTERNAL PRESSURE OF 100 PSI AND A SOIL HORIZONTAL BEARING STRENGTH OF 1,000 PSI IS 7.9 PER SQ. FT.

FOR OUR PROBLEM:

$$\text{AREA} = \frac{7.9\ \text{FT}^2\ (0.414)\ \left(\frac{150}{100}\right)}{\left(\frac{3{,}000}{1{,}000}\right)} = 1.64\ \text{FT}^2$$

NOTES:

1. THRUST BLOCK DESIGN CRITERIA IS BASED ON 100 PSI SYSTEM PRESSURE WITH 1,000 LB. PER SQ. FT. SOIL BEARING STRENGTH. A SAFETY FACTOR OF 1.5, AND DUCTILE-IRON PIPE OUTSIDE DIAMETERS.
2. PLACE 4 MIL. POLYETHYLENE BETWEEN CONCRETE AND FITTING (CONCRETE SHALL NOT INTERFERE WITH JOINT).
3. MINIMUM CONCRETE THICKNESS SHALL BE 12 INCHES.
4. BEARING BLOCK AREA VALUES LISTED ARE BASED ON A 90 DEGREE HORIZONTAL BEND.
   (a) FOR OTHER HORIZONTAL BENDS , MULTIPLY BY THE FOLLOWING COEFFICIENTS: 45 DEGREE: 0.414; 22-1/2" DEGREE: 0.199 11-1/4 DEGREE 0.098.
   (b) FOR OTHER INTERNAL PRESSURES, MULTIPLY BY RATIO TO 100 PSI
   (c) FOR OTHER SOIL HORIZONTAL BEARING STRENGTHS, DIVIDE BY RATIO TO 1,000 LB. PER SQ. FT.
   (d) FOR OTHER SAFETY FACTORS, MULTIPLY BY RATIO TO 1.5.

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Date:	14 FEB 2010
Scale:	1/2"=1'-0"
Designed By:	NEM
Drawn By:	MMC
Checked By:	NEM

DIRECT BURIED WATER DISTRIBUTION SYSTEM
THRUST BLOCK DETAILS

DESIGN & CONSTRUCTION STANDARDS

Drawing No.
UES-DD-W105