CONCRETE THRUST BLOCKING (HORIZONTAL)

PIPE DIA.	Table Pressure PSI	Thrust (T) at fittings in Pounds				
		A — Tee & Dead Ends	B — 90 deg Bend	C — 45 deg Bend	D — 22.5 deg Bend	E — 11.25 deg Bend
4"	250	3140	4440	2405	1225	615
6"	250	7070	9995	5410	2760	1385
8"	250	12565	17770	9620	4905	2465
10"	250	19635	27770	15030	7660	3850
12"	250	28275	39985	21640	11030	5545
14"	250	38485	54425	29455	15015	7545
16"	250	50265	71085	38470	19615	9855

Soil Type	Soil Bearing Capacity (B) in PSI
Muck, peat, etc.	0
Soft Clay	1000
Sand	2000
Sand and gravel	3000
Sand and gravel cemented with clay	4000
Hard shale	10,000

DETERMINATION OF THRUST BLOCK BEARING AREA

NOTE: WHEN THRUST BLOCK BEARING AREA IS NOT SPECIFIED ON THE PLANS OR DETERMINED BY THE ENGINEER. USE THE FOLLOWING PROCEDURE TO DETERMINE REQUIRED BEARING AREA.

1. Determine thrust (T) for type of fitting or joint and size of pipe from Table.

2. Determine Design (Test) Pressure from Standard Specifications or Special Provisions.

3. Determine Table Pressure from Table.

4. Determine Soil Bearing Capacity (B) of soil from Table.

5. Determine required bearing area (A) in sq. ft. as follows:

$$A = \left(\frac{T}{B}\right)\left(\frac{\text{Design (Test) Pressure}}{\text{Table Pressure}}\right)$$

Example: Design (Test) Pressure = 150 PSI
Pipe = 14"
Fitting = Tee
Soil = Sand

From Table, T = 272.3 PSI
From Table, B = 14 PSI

$$A = \left(\frac{38485}{2000}\right)\left(\frac{150}{250}\right) = 11.55 \text{ sq ft}$$

CONCRETE BLOCKING FOR CONVEX VERTICAL BENDS

DIMENSION TABLE

| PIPE DIA. in.	Table Pressure PSI	Bend Angle (deg)	Concrete Volume (cy)	Cube Size (ft)	Stirrup Dia. (in)	Stirrup Embmt. (in)
4"	250	11.25	0.21	1.8	5/8	17
		22.5	0.43	2.3		
		45	0.77	2.8		
6"	250	11.25	0.48	2.4	5/8	17
		22.5	0.95	3.0		
		45	1.79	3.6		
8"	250	11.25	0.86	2.9	5/8	17
		22.5	1.65	3.5		
		45	3.22	4.4		
10"	250	11.25	1.39	3.3	5/8	17
		22.5	2.62	4.1		
		45	4.97	4.7		
12"	250	11.25	1.94	3.7	5/8	17
		22.5	3.91	4.7		
		45	6.89	5.7		
14"	250	11.25	2.62	4.1	5/8	17
		22.5	5.26	5.2	3/4	20
		45	9.70	6.4	1	27
16"	250	11.25	3.44	4.5	5/8	17
		22.5	6.89	5.7	7/8	24
		45	12.63	7.0	1-1/8	30

NOTES:

1. Contractor to provide blocking adequate to withstand full test pressure.

2. Divide thrust by safe bearing load to determine required bearing area (A in sq ft) of concrete to distribute load.

3. Adjust bearing areas (A) for other pressure conditions. (See "Determination of Thrust Block Bearing Area" equation.

4. Pour concrete blocking against undisturbed earth.

5. All concrete to be 2900 PSI minimum.

6. Wrap pipe and/or fittings with 2 layers of polyethylene film where in contact with concrete

7. Keep concrete clear of all joints and accessories.

8. Stirrups shall be deformed galvanized cold rolled steel AASHTO M31 (ASTM A615), Grade 420. Coat with coal tar epoxy after installation.
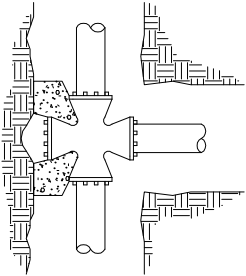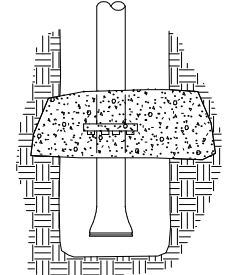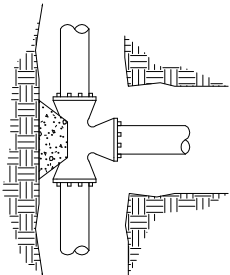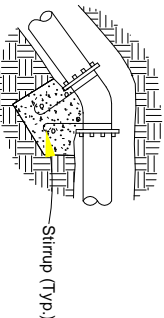

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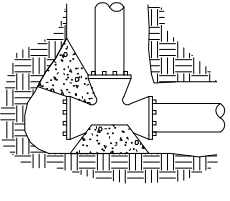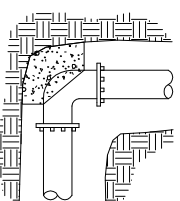
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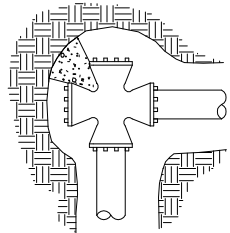
CROSS

CROSS

CONVEX VERTICAL BEND

Stirrup (Typ.)

STRADDLE

TEE

WYE

OREGON STANDARD DRAWINGS
CITY OF HOOD RIVER
THRUST BLOCKING

DATE	2002	
2 -05	REVISIONS	DESCRIPTION
		City of Hood River Modifications