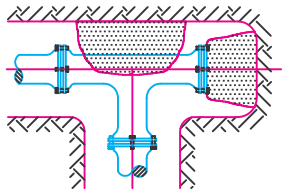
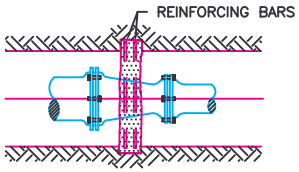
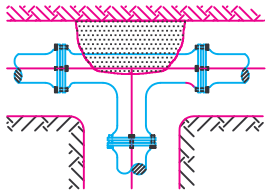


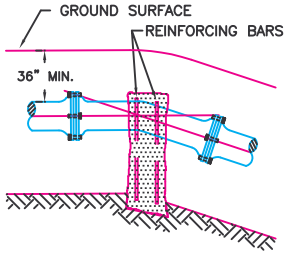
SPECIAL BLOCKING FOR TEE WITH PLUG
(WHEN DIRECTED BY ENGINEER)

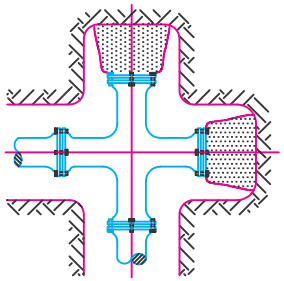


THRUST SUPPORT FOR REDUCER CONNECTION
(SIZE TO BE DETERMINED BY ENGINEER)

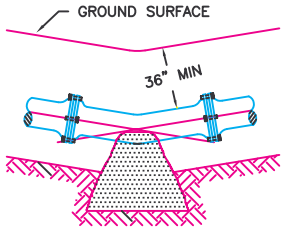


BLOCKING FOR TEE

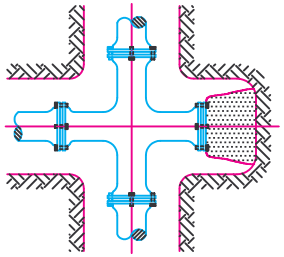




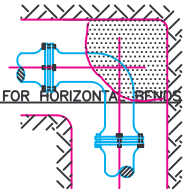
TYPICAL SECTION OF CROSS & 2 PLUG BLOCKING (WHEN DIRECTED BY ENGINEER)



TYPICAL BLOCKING FOR VERTICAL BENDS



TYPICAL SECTION OF CROSS & BLOCKING
(WHEN DIRECTED BY ENGINEER)



TYPICAL BLOCKING FOR HORIZONTAL BENDS

NOTES ON THRUST BLOCKING

1. ALL BLOCKING SHALL BE AGAINST UNDISTURBED HAND DUG SOIL AND SHALL BE CONCRETE HAVING A MINIMUM 28 DAY STRENGTH OF 3000 LB. PER SQUARE INCH.
2. THRUST CALCULATIONS TO BE BASED ON THRUST DUE TO WATER PRESSURE AT 100% OF TEST PRESSURE. THRUST = 2 AP SIN 1/2 ø, WHERE A = AREA OF PIPE; P = WATER PRESSURE; ø = DEFLECTION ANGLE.
3. VERTICAL UPLIFT BLOCKS SHALL BE DESIGNED ON THE BASIS OF 150 LBS. PER CU. FT. FOR CONCRETE AND SOIL AT 120 LBS. PER CU. FT. OVER THE AREA OF BLOCK.
4. VERTICAL DOWN THRUST BLOCKS SHALL BE DESIGNED ON THE BASIS OF 3000 LB. PER SQ. FT. ALLOWABLE SOIL BEARING PRESSURE. DIMENSIONS MAY BE DECREASED WITH APPROVAL OF THE ENGINEER OF MEASURED SOIL CONDITIONS PERMIT. IN POOR SOIL CONDITIONS, BLOCK DIMINSIONS SHALL BE INCREASED IN PROPORTION TO ALLOWABLE BEARING VALUE.
5. THRUST BLOCKS ON HORIZONTAL BENDS, TEES, CROSSES, AND REDUCERS SHALL BE SIZED BASED ON 2400 LBS. PER SQ. FT. OF BLOCKING SURFACE AREA IN CONTACT WITH UNDISTURBED SOIL, BLOCK DIMENSIONS MAY BE DECREASED WITH APPROVAL OF THE ENGINEER OF MEASURED SOIL CONDITIONS PERMIT. IN POOR SOIL CONDITIONS, BLOCK DIMENSIONS SHALL BE INCREASED IN PROPORTION TO THE ALLOWABLE BEARING VALUE.
6. ALL BLOCKING SHALL HAVE A MINIMUM SOIL COVER OF 1 FT.
7. ADDITIONAL REINFORCING MAY BE REQUIRED FOR HORIZONTAL BLOCKING TO HANDLE UNUSUAL SHEAR LOADING CONDITIONS.
8. ANCHOR COLLARS SHALL BE REINFORCED IN ACCORDANCE WITH REINFORCING BAR SCHEDULE FOR REDUCED BLOCKS SHOWN ABOVE. STEEL ANCHOR RING IN ACCORDANCE WITH DIMENSIONS OF ANCHOR COLLAR.

PIPE SIZE	TEES	BENDS			REDUCER		
	THRUST BLOCKING REQ'D (S.F.)	90 DEGREE THRUST BLOCKING REQ'D (S.F.)	45 DEGREE THRUST BLOCKING REQ'D (S.F.)	22 1/2 DEG. THRUST BLOCKING REQ'D (S.F.)	PIPE SIZE (IN.)	ANGLE (THETA)	THRUST BLOCKING REQ'D (S.F.)
2.50	0.61	0.43	0.23	0.12	4–3	8.2	0.05
3	0.88	0.62	0.34	0.17	6–3	19.5	0.45
4	1.57	1.11	0.60	0.31	6–4	12.8	0.22
6	3.53	2.50	1.35	0.69	8–6	10.5	0.25
8	6.28	4.44	2.40	1.23	10–8	9.6	0.30
10	9.82	6.94	3.76	1.92	12–10	8.2	0.31
12	14.14	10.00	5.41	2.76	14–12	7.2	0.32
14	19.24	13.61	7.36	3.75	18–12	18.4	2.83
16	25.13	17.77	9.62	4.90	20–14	17.5	3.04
18	31.81	22.49	12.17	6.21	20–16	11.5	1.42
20	39.27	27.77	15.03	7.66	24–18	14.5	3.12
24	56.55	39.99	21.64	11.03	24–20	9.6	1.44
30	88.36	62.48	33.81	17.24	30–20	19.5	8.30
36	127.23	89.97	48.69	24.82	30–24	11.5	3.20

BEARING STRENGTH OF SOILS

SOILS AND SAFE BEARING LOADS	LBS. PER SQ. FT.
SOUND SHALE	10,000
CEMENTED GRAVEL AND SAND (DIFFICULT TO PICK)	4,000
COARSE & COMPACT SAND	3,000
MEDIUM CLAY (CAN BE SPADED)	2,000
SOFT CLAY	1,000
MUCK	0

TYPICAL THRUST BLOCK DETAILS AND SCHEDULES

City of Nacogdoches
Engineering Department

SURVEYED	DESIGN	DRAWN	APPROVED	JOB	DATE

STATE OF TEXAS
DAVID B. SMITH
48337
REGISTERED PROFESSIONAL ENGINEER
SEAL:

TYPICAL THRUST BLOCK DETAILS & SCHEDULES
DRAWING NAME:

TYPICAL THRUST BLOCK DETAIL
SHEET NAME: