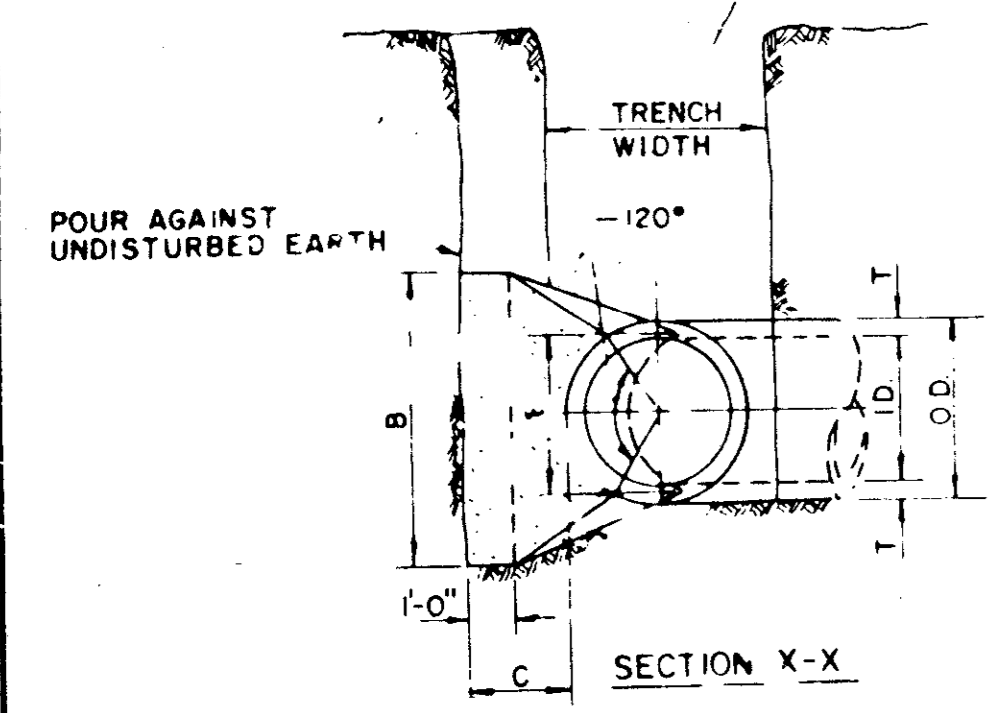


| I.D. (IN.) | T (IN.) | C 11.25" FT. | | | C 22.50" FT. | | | E FT. |
|------------|---------|--------------|-----|-----------|--------------|---|-----------|-------|
| | | A | B | VOL. C.Y. | A | B | VOL. C.Y. | |
| 4.68 | 0.4 | 1.5 | 1.5 | 0.9 | | | | |
| 10.12 | 0.5 | 1.5 | 1.5 | 1.2 | | | | |
| 16.18 | 0.6 | 1.5 | 1.5 | 1.6 | | | | |
| 20 | 0.7 | 1.5 | 1.5 | 1.8 | | | | |
| 24 | 0.9 | 1.5 | 1.5 | 2.1 | | | | |
| 30 | 2.9 | 1.5 | 1.5 | 2.6 | | | | |
| 36 | 4.5 | 1.5 | 2.3 | 3.3 | | | | |
| 42 | 5.0 | 1.8 | 2.6 | 3.8 | | | | |
| 48 | 5.5 | 2.0 | 3.0 | 4.3 | | | | |
| 54 | 6.0 | 2.3 | 3.4 | 4.8 | | | | |
| 60 | 6.5 | 2.5 | 3.8 | 5.3 | | | | |
| 66 | 6.8 | 2.8 | 4.1 | 5.7 | | | | |
| 72 | 7.5 | 3.0 | 4.5 | 6.3 | | | | |
| 78 | 7.5 | 3.3 | 4.9 | 6.7 | | | | |
| 84 | 8.0 | 3.5 | 5.3 | 7.2 | | | | |
| 90 | 8.5 | 3.8 | 5.6 | 7.7 | | | | |
| 96 | 9.0 | 4.0 | 6.0 | 8.2 | | | | |



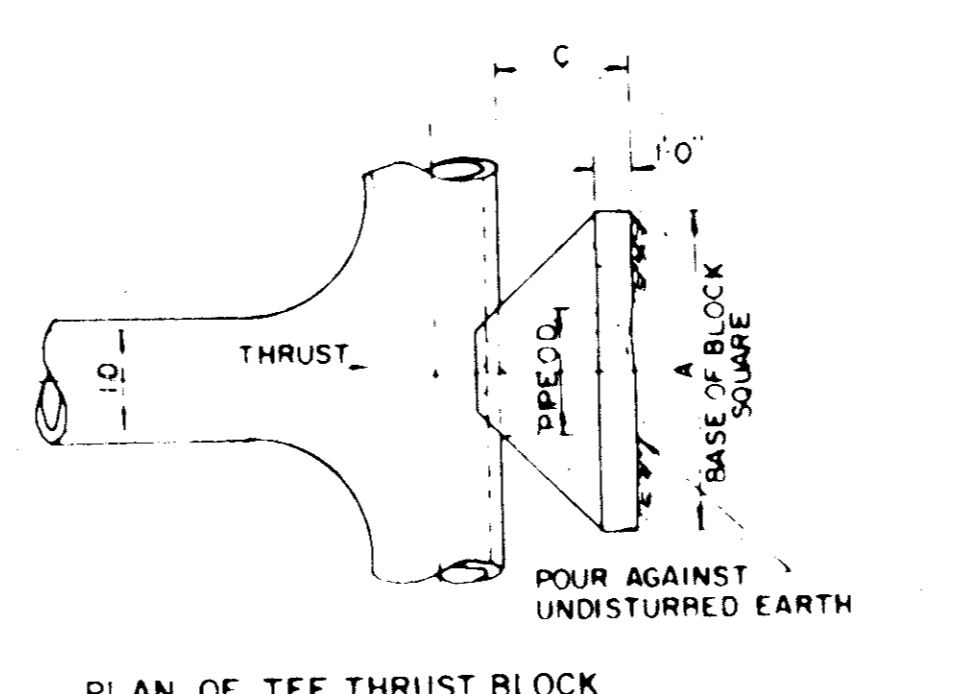
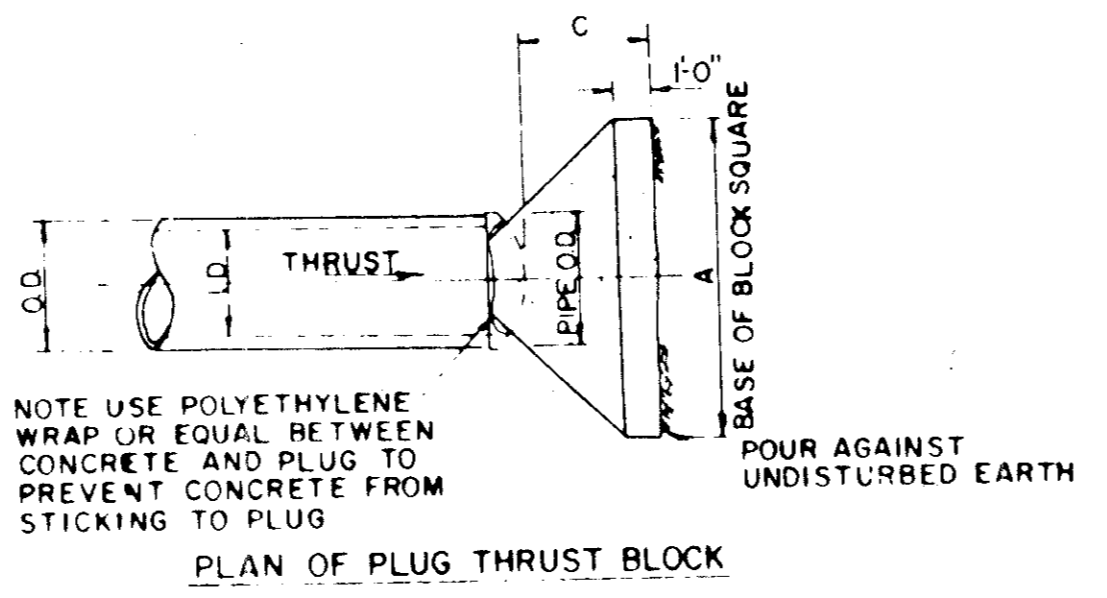
| I.D. (IN.) | G FT. | EARTH | | | ROCK | | | I.D. (IN.) | G FT. | EARTH | | | ROCK | | | |
|------------|-------|-------------|-------|-------|-----------|-------|-------|------------|-------|-----------|-------------|-------|-------|-----------|-------|-------|
| | | THRUST TONS | A FT. | B FT. | VOL. C.Y. | A FT. | B FT. | | | VOL. C.Y. | THRUST TONS | A FT. | B FT. | VOL. C.Y. | A FT. | B FT. |
| 4.68 | 0.4 | 10 | 10 | 1.5 | 0.1 | 10 | 10 | 4.68 | 0.8 | 20 | 15 | 1.5 | 0.1 | 10 | 10 | 0.1 |
| 10.12 | 0.6 | 22 | 15 | 1.5 | 0.1 | 10 | 1.3 | 10.12 | 1.1 | 44 | 20 | 2.5 | 0.3 | 15 | 1.5 | 0.1 |
| 16.18 | 0.8 | 50 | 20 | 2.5 | 0.3 | 15 | 2.0 | 16.18 | 1.6 | 99 | 30 | 3.5 | 0.6 | 20 | 2.5 | 0.3 |
| 20 | 0.9 | 62 | 20 | 3.5 | 0.4 | 15 | 3.0 | 20 | 1.8 | 123 | 35 | 3.5 | 0.7 | 20 | 3.5 | 0.4 |
| 24 | 1.1 | 89 | 30 | 3.0 | 0.5 | 15 | 3.0 | 24 | 2.2 | 177 | 40 | 4.5 | 1.0 | 30 | 3.0 | 0.5 |
| 30 | 1.4 | 104 | 30 | 3.5 | 0.6 | 20 | 3.5 | 30 | 2.7 | 207 | 50 | 4.5 | 1.5 | 30 | 4.0 | 0.8 |
| 36 | 1.7 | 150 | 35 | 4.5 | 0.9 | 20 | 4.0 | 36 | 3.3 | 298 | 55 | 5.5 | 2.3 | 40 | 4.0 | 1.3 |
| 42 | 1.9 | 204 | 45 | 5.0 | 1.5 | 25 | 5.0 | 42 | 3.8 | 405 | 70 | 6.0 | 3.0 | 45 | 5.0 | 2.1 |
| 48 | 2.2 | 266 | 45 | 6.0 | 2.0 | 25 | 6.0 | 48 | 4.4 | 529 | 80 | 7.0 | 3.7 | 48 | 6.0 | 2.8 |
| 54 | 2.5 | 337 | 60 | 6.0 | 3.0 | 30 | 6.0 | 54 | 4.9 | 670 | 90 | 8.0 | 6.0 | 60 | 6.0 | 4.1 |
| 60 | 2.7 | 416 | 60 | 7.0 | 3.8 | 30 | 7.0 | 60 | 5.5 | 827 | 95 | 9.0 | 10.6 | 60 | 7.0 | 5.3 |
| 66 | 3.0 | 503 | 65 | 8.0 | 5.1 | 35 | 8.0 | 66 | 6.0 | 1001 | 105 | 10.0 | 14.1 | 65 | 8.0 | 7.2 |
| 72 | 3.3 | 599 | 75 | 8.0 | 6.3 | 40 | 8.0 | 72 | 6.6 | 1191 | 110 | 11.0 | 17.6 | 75 | 8.0 | 9.1 |
| 78 | 3.6 | 702 | 80 | 9.0 | 8.1 | 40 | 9.0 | 78 | 7.1 | 1398 | 120 | 12.0 | 22.5 | 80 | 9.0 | 11.7 |
| 84 | 3.8 | 815 | 85 | 10.0 | 10.3 | 45 | 10.0 | 84 | 7.6 | 1621 | 130 | 12.5 | 27.2 | 85 | 10.0 | 14.8 |
| 90 | 4.1 | 935 | 95 | 10.0 | 12.2 | 50 | 10.0 | 90 | 8.2 | 1861 | 140 | 13.5 | 33.7 | 95 | 10.0 | 17.7 |
| 96 | 4.4 | 1064 | 100 | 11.0 | 15.0 | 50 | 11.0 | 96 | 8.7 | 2117 | 150 | 14.5 | 41.2 | 100 | 11.0 | 21.8 |

HORIZONTAL BEND THRUST BLOCK

| I.D. (IN.) | G FT. | EARTH | | | ROCK | | | I.D. (IN.) | G FT. | EARTH | | | ROCK | | | | |
|------------|-------|-------------|-------|-------|-----------|-------|-------|------------|-------|-----------|-------------|-------|-------|-----------|-------|-------|-----------|
| | | THRUST TONS | A FT. | B FT. | VOL. C.Y. | A FT. | B FT. | | | VOL. C.Y. | THRUST TONS | A FT. | B FT. | VOL. C.Y. | A FT. | B FT. | VOL. C.Y. |
| 4.68 | 1.0 | 2.6 | 2.0 | 1.5 | 0.2 | 1.0 | 1.8 | 0.1 | 4.68 | 1.5 | 3.9 | 2.0 | 0.2 | 1.5 | 1.5 | 0.1 | |
| 10.12 | 1.9 | 5.9 | 2.5 | 2.5 | 0.3 | 2.0 | 1.5 | 0.2 | 10.12 | 2.2 | 6.7 | 3.5 | 2.5 | 0.5 | 2.0 | 2.5 | 0.3 |
| 16.18 | 2.2 | 13.2 | 3.9 | 4.0 | 0.8 | 2.5 | 3.0 | 0.8 | 16.18 | 3.2 | 19.5 | 4.5 | 4.5 | 1.2 | 3.0 | 3.5 | 0.8 |
| 20 | 2.4 | 16.3 | 4.5 | 4.0 | 1.0 | 3.0 | 3.0 | 0.5 | 20 | 3.6 | 24.1 | 5.5 | 4.5 | 1.5 | 3.5 | 3.8 | 0.7 |
| 24 | 2.9 | 23.4 | 6.0 | 4.0 | 1.4 | 3.5 | 3.5 | 0.7 | 24 | 4.3 | 34.6 | 8.0 | 4.5 | 2.3 | 4.5 | 4.0 | 1.1 |
| 30 | 3.6 | 27.5 | 5.5 | 5.0 | 1.9 | 3.5 | 4.0 | 0.9 | 30 | 5.4 | 40.6 | 8.5 | 5.0 | 3.2 | 5.5 | 4.0 | 1.6 |
| 36 | 4.4 | 39.5 | 7.0 | 6.0 | 3.4 | 4.5 | 4.5 | 1.6 | 36 | 6.5 | 58.5 | 10.0 | 6.0 | 5.3 | 6.5 | 4.5 | 2.6 |
| 42 | 5.1 | 53.8 | 8.0 | 7.0 | 5.1 | 5.5 | 5.0 | 2.5 | 42 | 7.5 | 79.6 | 11.5 | 7.0 | 8.1 | 8.0 | 5.0 | 4.2 |
| 48 | 5.8 | 70.3 | 9.0 | 8.0 | 7.4 | 6.0 | 6.0 | 3.7 | 48 | 8.6 | 104.0 | 13.0 | 8.0 | 11.9 | 9.0 | 6.0 | 6.3 |
| 54 | 6.5 | 89.0 | 10.0 | 9.0 | 10.3 | 7.0 | 6.5 | 5.3 | 54 | 9.7 | 131.5 | 15.0 | 9.0 | 17.1 | 10.5 | 6.5 | 8.9 |
| 60 | 7.3 | 110.0 | 11.0 | 10.0 | 13.9 | 7.5 | 7.5 | 7.3 | 60 | 10.7 | 162.4 | 16.5 | 10.0 | 23.1 | 11.0 | 7.5 | 12.0 |
| 66 | 8.0 | 132.9 | 12.5 | 11.0 | 18.9 | 8.5 | 8.0 | 9.6 | 66 | 11.8 | 196.5 | 18.0 | 11.0 | 30.1 | 12.0 | 8.5 | 16.2 |
| 72 | 8.7 | 158.2 | 13.5 | 12.0 | 24.0 | 9.0 | 9.0 | 12.3 | 72 | 12.9 | 233.9 | 19.5 | 12.0 | 38.6 | 14.0 | 8.5 | 20.7 |
| 78 | 9.4 | 185.6 | 14.5 | 13.0 | 30.0 | 10.0 | 9.5 | 15.6 | 78 | 13.9 | 274.5 | 21.5 | 13.0 | 49.8 | 14.5 | 9.5 | 25.9 |
| 84 | 10.1 | 215.3 | 15.5 | 14.0 | 37.1 | 10.5 | 10.5 | 19.5 | 84 | 15.0 | 318.4 | 23.0 | 14.0 | 61.2 | 15.5 | 10.5 | 32.8 |
| 90 | 10.9 | 247.1 | 16.5 | 15.0 | 45.0 | 11.5 | 11.0 | 23.9 | 90 | 16.1 | 365.5 | 24.5 | 15.0 | 74.5 | 17.5 | 10.5 | 39.6 |
| 96 | 11.6 | 281.2 | 18.0 | 16.0 | 55.5 | 12.5 | 11.5 | 28.9 | 96 | 17.1 | 415.6 | 26.0 | 16.0 | 89.5 | 18.5 | 11.5 | 48.5 |

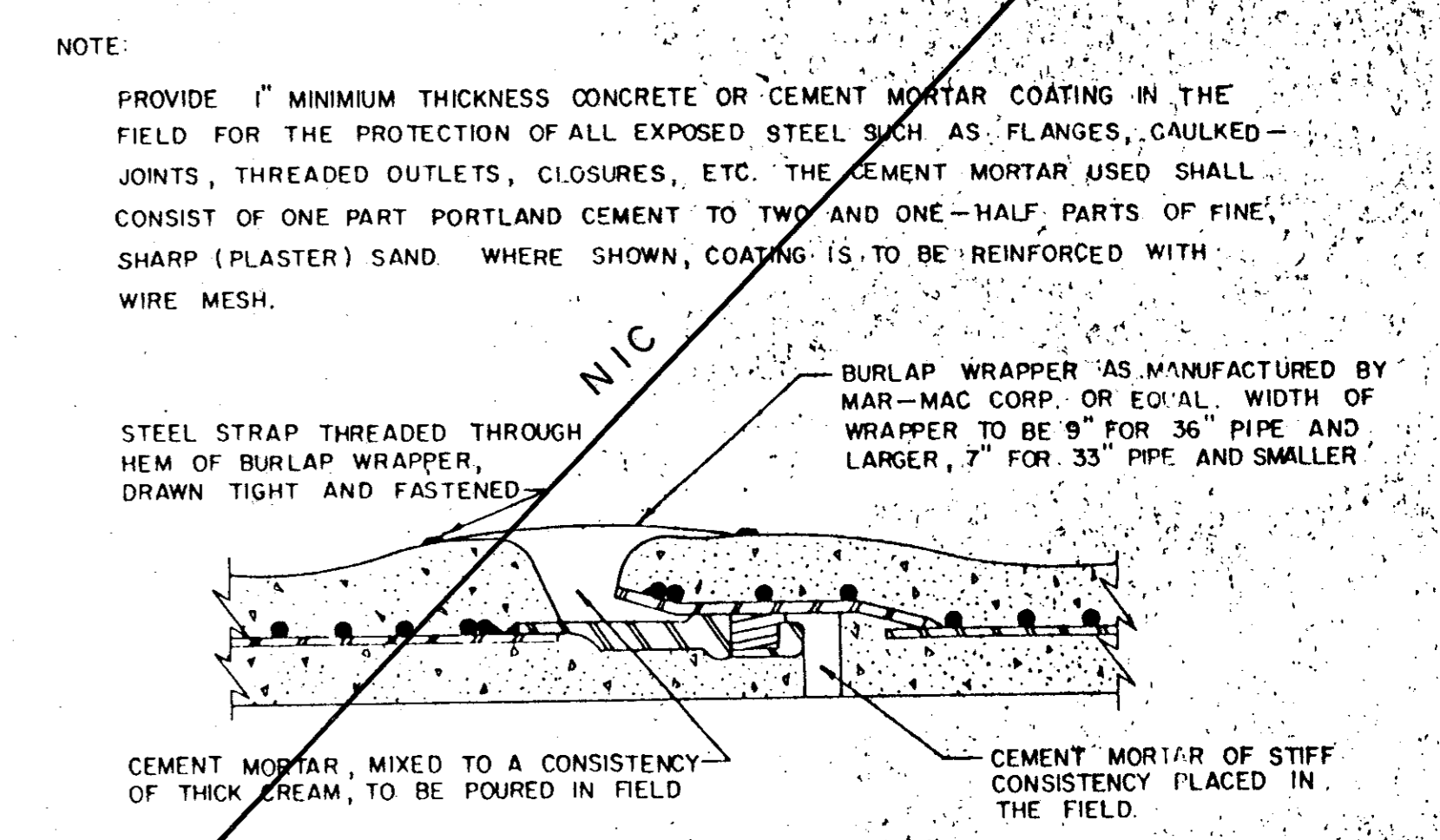
| I.D. (IN.) | G FT. | EARTH | | | ROCK | | | I.D. (IN.) | G FT. | EARTH | | | ROCK | | | | |
|------------|-------|-------------|-------|-------|-----------|-------|-------|------------|-------|-----------|-------------|-------|-------|-----------|-------|-------|-----------|
| | | THRUST TONS | A FT. | B FT. | VOL. C.Y. | A FT. | B FT. | | | VOL. C.Y. | THRUST TONS | A FT. | B FT. | VOL. C.Y. | A FT. | B FT. | VOL. C.Y. |
| 4.68 | 2.1 | 5.6 | 3.0 | 2.0 | 0.3 | 2.0 | 1.8 | 0.2 | 4.68 | 2.7 | 7.1 | 5.0 | 1.5 | 0.4 | 2.0 | 2.0 | 0.2 |
| 10.12 | 3.1 | 12.6 | 5.5 | 2.5 | 0.8 | 3.5 | 2.0 | 0.4 | 10.12 | 4.0 | 16.0 | 8.5 | 2.8 | 1.0 | 3.8 | 2.5 | 0.5 |
| 16.18 | 4.7 | 28.3 | 7.5 | 4.0 | 1.9 | 5.0 | 3.0 | 0.9 | 16.18 | 6.0 | 36.0 | 8.0 | 4.0 | 2.4 | 4.8 | 4.0 | 1.0 |
| 20 | 5.2 | 34.9 | 9.0 | 4.0 | 2.3 | 5.5 | 3.5 | 1.2 | 20 | 6.6 | 44.4 | 10.0 | 4.5 | 3.1 | 6.0 | 4.0 | 1.5 |
| 24 | 6.2 | 50.3 | 11.5 | 4.5 | 3.5 | 6.5 | 4.0 | 1.6 | 24 | 7.9 | 64.0 | 14.5 | 4.5 | 5.0 | 8.0 | 4.0 | 2.1 |
| 30 | 7.8 | 58.9 | 12.0 | 5.0 | 4.8 | 7.5 | 4.0 | 2.2 | 30 | 9.9 | 75.0 | 15.0 | 5.0 | 6.7 | 10.0 | 4.0 | 3.3 |
| 36 | 9.4 | 84.9 | 14.5 | 6.0 | 6.2 | 9.5 | 4.8 | 3.8 | 36 | 11.9 | 108.0 | 18.0 | 6.0 | 11.4 | 12.0 | 4.5 | 5.3 |
| 42 | 10.9 | 115.5 | 17.0 | 7.0 | 12.8 | 11.0 | 5.5 | 6.3 | 42 | 13.9 | 147.0 | 21.0 | 7.0 | 17.8 | 14.0 | 6.5 | 6.7 |
| 48 | 12.5 | 150.9 | 19.0 | 8.0 | 18.4 | 13.0 | 6.0 | 9.2 | 48 | 15.9 | 192.0 | 24.0 | 8.0 | 26.2 | 16.0 | 8.0 | 12.4 |
| 54 | 14.0 | 191.0 | 21.5 | 9.0 | 26.0 | 15.0 | 6.5 | 12.9 | 54 | 17.9 | 243.0 | 27.0 | 9.0 | 36.9 | 18.0 | 9.0 | 18.1 |
| 60 | 15.8 | 235.8 | 24.0 | 10.0 | 36.4 | 16.0 | 7.5 | 17.6 | 60 | 19.9 | 298.8 | 30.0 | 10.0 | 50.3 | 20.0 | 10.5 | 24.0 |
| 66 | 17.1 | 285.3 | 26.5 | 11.0 | 46.0 | 18.0 | 8.0 | 23.0 | 66 | 21.8 | 362.8 | 33.0 | 11.0 | 66.2 | 22.0 | 11.5 | 32.5 |
| 72 | 18.7 | 339.5 | 29.5 | 12.0 | 57.6 | 19.0 | 9.0 | 28.4 | 72 | 23.8 | 431.8 | 36.0 | 12.0 | 85.6 | 24.0 | 13.0 | 41.0 |
| 78 | 20.2 | 398.5 | 31.0 | 13.0 | 73.7 | 21.0 | 9.5 | 37.4 | 78 | 25.7 | 506.7 | 39.0 | 13.0 | 108.2 | 26.0 | 14.0 | 53.2 |
| 84 | 21.8 | 462.1 | 33.5 | 14.0 | 94.7 | 22.0 | 10.5 | 46.5 | 84 | 27.7 | 587.7 | 42.0 | 14.0 | 134.4 | 28.0 | 15.5 | 64.8 |
| 90 | 23.3 | 530.5 | 35.5 | 15.0 | 114.4 | 24.0 | 11.0 | 58.2 | 90 | 29.0 | 674.6 | 45.0 | 15.0 | 164.9 | 30.0 | 17.5 | 81.2 |
| 96 | 24.9 | 603.6 | 38.0 | 16.0 | 138.9 | 25.0 | 12.0 | 70.0 | 96 | 31.6 | 767.5 | 48.0 | 16.0 | 199.0 | 32.0 | 19.5 | 97.1 |

VERTICAL BEND THRUST BLOCK

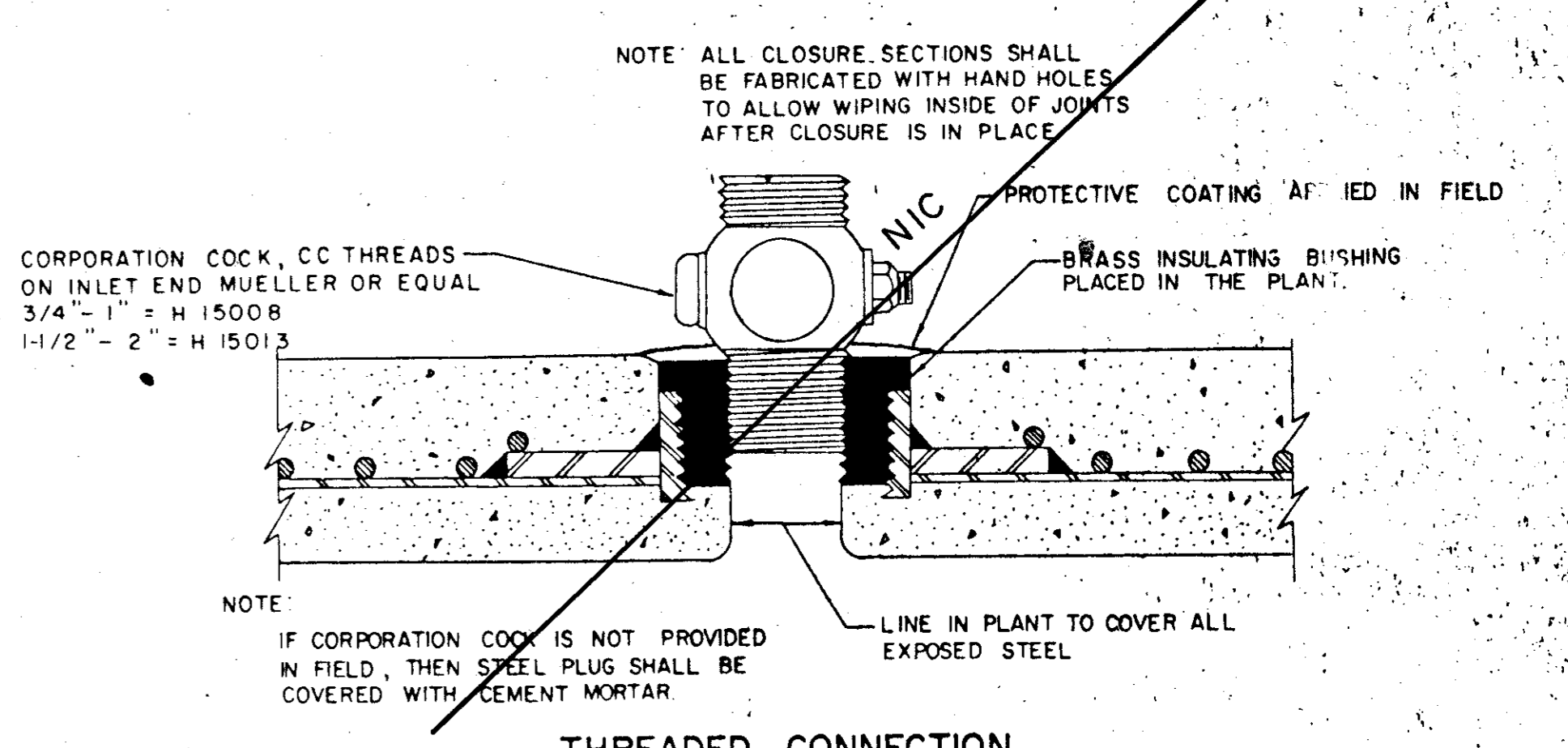


| I.D. (IN.) | THRUST TONS | EARTH | | ROCK | | |
|------------|-------------|-------|-----------|-------|-----------|-----|
| | | C FT. | VOL. C.Y. | A FT. | VOL. C.Y. | |
| 4.68 | 5.1 | 1.5 | 2.5 | 0.3 | 2.0 | 0.2 |
| 10.12 | 11.3 | 1.5 | 3.5 | 0.6 | 2.5 | 0.3 |
| 16.18 | 25.5 | 2.0 | 5.5 | 1.6 | 4.0 | 0.9 |
| 20 | 31.5 | 2.0 | 6.0 | 1.7 | 4.0 | 0.9 |
| 24 | 45.2 | 2.5 | 7.0 | 2.1 | 5.0 | 1.1 |
| 30 | 53.0 | 3.0 | 7.5 | 2.1 | 5.5 | 1.2 |
| 36 | 74.3 | 4.0 | 9.0 | 2.7 | 6.5 | 1.4 |
| 42 | 104.0 | 4.5 | 10.5 | 3.0 | 7.5 | 1.6 |
| 48 | 136.0 | 5.0 | 12.0 | 3.5 | 8.5 | 1.8 |
| 54 | 172.0 | 5.5 | 13.5 | 4.0 | 9.5 | 2.0 |
| 60 | 212.0 | 6.0 | 15.0 | 4.5 | 10.5 | 2.2 |
| 66 | 257.0 | 6.5 | 16.5 | 4.5 | 11.5 | 2.5 |
| 72 | 303.0 | 7.5 | 17.5 | 4.7 | 12.5 | 2.7 |
| 78 | 358.0 | 8.0 | 19.0 | 5.0 | 13.5 | 3.0 |
| 84 | 416.0 | 8.5 | 20.5 | 5.3 | 14.5 | 3.3 |
| 90 | 477.0 | 9.0 | 22.0 | 5.7 | 15.5 | 3.6 |
| 96 | 543.0 | 9.5 | 23.5 | 6.0 | 16.5 | 3.9 |

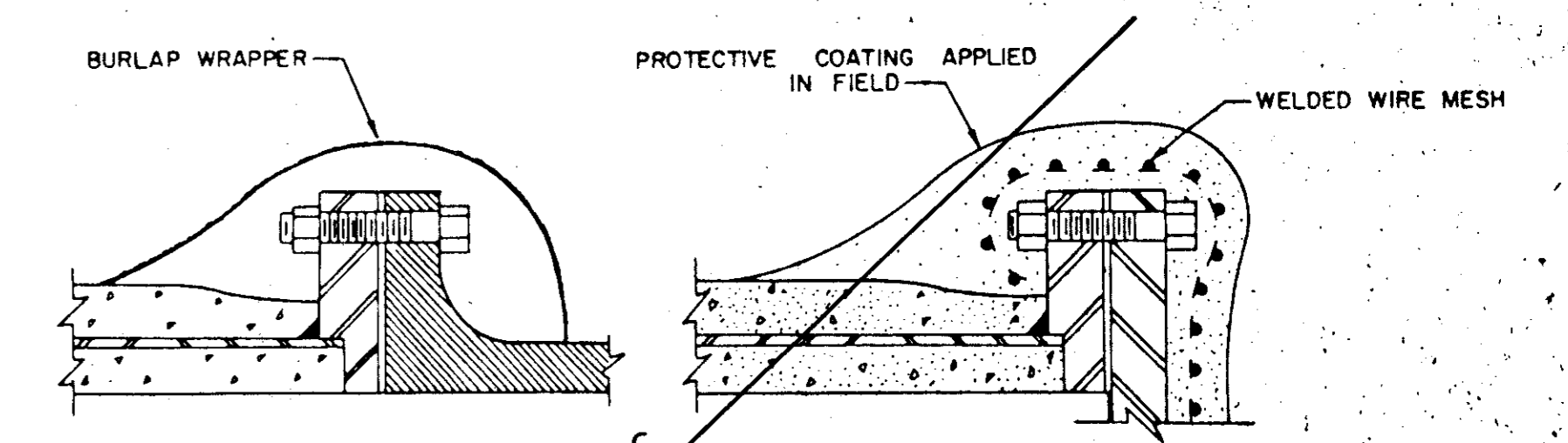
PLUG & TEE THRUST BLOCK



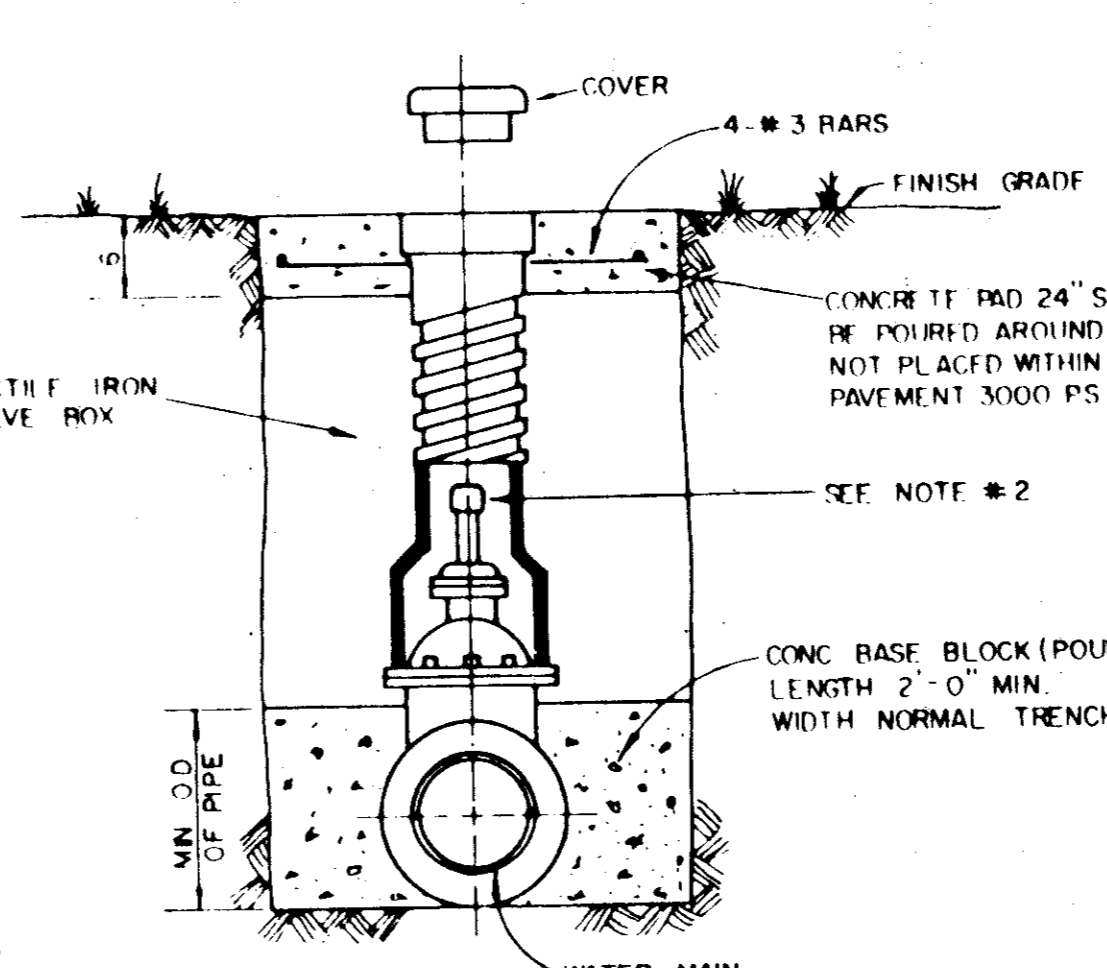
STANDARD RUBBER GASKET JOINT



THREADED CONNECTION



FLANGED CONNECTIONS



TYPICAL VALVE SETTING AND BOX

NOTE: 1. GATE VALVES SHALL BE IN ACCORDANCE WITH AWWA STANDARD C-509-80 OR LATEST THEREOF. ALL VALVES SHALL BE "MUELLER" OR APPROVED EQUAL.

2. A PERMANENTLY ATTACHED VALVE EXTENSION STEM SHALL BE REQUIRED FOR ANY VALVE THATS OPERATING NUT IS LOCATED IN EXCESS OF 4 FEET BELOW THE TOP OF VALVE BOX. THIS EXTENSION SHALL BE OF SUFFICIENT LENGTH TO INSURE THAT ITS TOP IS WITHIN 4" OF VALVE BOX LID. MANUFACTURED VALVE STACK DUCTILE IRON PIPE TO BE USED FOR EXTENSION GREATER THAN 4'-0" BELL END OF STACK TO BE FITTED OVER VALVE. VALVE AND VALVE STACK IS TO BE POLY WRAPPED.

3. VALVES SHALL BE OF DUCTILE IRON W/RUBBER ENCAPSULATED DISK BODY BOLTS SHALL BE STAINLESS STEEL OF SAME SIZE ON EACH VALVE.

REINFORCED CONCRETE CYLINDER PIPE DETAILS

TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS
WATER

THRUST BLOCKS

Designed - _____ Date - _____ Job No. - _____
 Drawn - _____ Scale - _____ Sheet SD 5A
 Approved -