## TABLE 1
## SAFE BEARING LOADS OF SOILS & MULTIPLICATION FACTORS FOR MODIFICATION OF THRUST BLOCK AREAS

| SOIL | SAFE BEARING LOAD (LBS. /SQ. FT.) | FACTOR |
|---|---|---|
| MUCK | 0 | 0 |
| SOFT CLAY | 1000 | 2.0 |
| SAND | 2000 | 1.0 |
| SAND AND GRAVEL | 3000 | 0.67 |
| SAND AND GRAVEL CEMENTED WITH CLAY | 4000 | 0.50 |
| SHALE | 10000 | 0.20 |

## TABLE 2
## REQUIRED BEARING AREAS & DIMENSIONS FOR CONCRETE THRUST BLOCKS

| PIPE SIZE INCHES | TEE | | 90° (1/4) BEND | | 45° (1/8) BEND | | 22 1/2° (1/16)BEND | | 11-1/4°(1/32)BEND | |
|---|---|---|---|---|---|---|---|---|---|---|
| | AREA sq. ft. | Dimensions DxW | AREA sq. ft. | Dimensions DxW | AREA sq. ft. | Dimensions DxW | AREA sq. ft. | Dimensions DxW | AREA sq. ft. | Dimensions DxW |
| 2 | 0.4 | 0.5x1.0 | 0.5 | 0.5x1.0 | 0.3 | 0.5x1.0 | 0.1 | 0.5x1.0 | 0.1 | 0.5x1.0 |
| 3 | 0.8 | 1.0x1.0 | 1.1 | 1.0x1.5 | 0.6 | 0.5x1.5 | 0.3 | 0.5x1.0 | 0.2 | 0.5x1.0 |
| 4 | 1.4 | 1.0x1.5 | 2.0 | 1.0x2.0 | 1.1 | 1.0x1.5 | 0.6 | 0.5x1.5 | 0.3 | 0.5x1.0 |
| 6 | 3.2 | 1.5x2.5 | 4.5 | 2.0x2.5 | 2.4 | 1.5x2.0 | 1.2 | 1.0x1.5 | 0.6 | 0.5x1.5 |
| 8 | 5.7 | 2.0x3.0 | 8.0 | 2.0x4.0 | 4.3 | 2.0x2.5 | 2.2 | 1.5x1.5 | 1.1 | 1.0x1.5 |
| 10 | 8.8 | 2.5x3.5 | 12.5 | 3.0x4.5 | 6.8 | 2.0x3.5 | 3.4 | 1.5x2.5 | 1.7 | 1.0x2.0 |
| 12 | 12.7 | 3.5x3.5 | 18.0 | 4.0x4.5 | 9.7 | 2.5x4.0 | 5.0 | 2.0x2.5 | 2.5 | 1.5x2.0 |
| 14 | 17.3 | 3.5x5.0 | 24.5 | 4.5x5.5 | 13.3 | 3.5x4.0 | 6.8 | 2.0x3.5 | 3.4 | 1.5x2.5 |
| 16 | 22.6 | 4.5x5.0 | 32.0 | 5.0x6.5 | 17.3 | 3.5x4.5 | 8.8 | 2.5x3.5 | 4.4 | 2.0x2.5 |
| 18 | 28.6 | 5.0x6.0 | 40.5 | 5.5x7.0 | 21.9 | 4.0x5.5 | 11.2 | 3.0x4.0 | 5.6 | 2.0x3.0 |
| 20 | 35.3 | 5.5x6.5 | 50.0 | 6.5x8.0 | 27.0 | 4.5x6.0 | 13.8 | 3.5x4.0 | 6.9 | 2.0x3.5 |

### NOTES

A) FOR REQUIRED BEARING AREA AND DIMENSION DxW SEE TABLE 2 VALUES OF DxW OTHER THAN THOSE SHOWN IN THE TABLE, MAY BE USED PROVIDED THEY YIELD A BEARING AREA EQUAL TO OR LARGER THAN THAT REQUIRED.

B) ALL THRUST BLOCKS SHALL BE 3000 P.S.I. POURED CONCRETE.

C) CONCRETE NOT TO OVERLAP ANY JOINT.

D) CONCRETE TO BE PLACED SO AS NOT TO INTERFERE WITH REMOVING OR INSTALLING ANY OF THE HARDWARE.

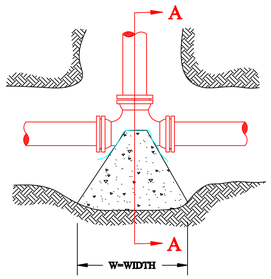
E) VALUES FOR TEE, ALSO APPLY TO END PLUGS, CAPS AND TAPPING SLEEVES.

F) REQUIRED BEARING AREA ARE DUE TO THRUSTS CAUSED BY 150 P.S.I. WORKING PRESSURES PLUS 50% ( 75 P.S.I.) SURGE ALLOWANCE RESULTING IN 225 P.S.I. TOTAL INTERNAL PRESSURE, NOMINAL PIPE DIAMETER USED.

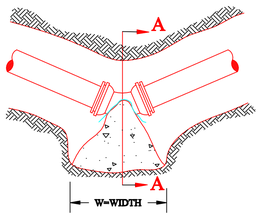
G) REQUIRED BEARING AREAS ARE BASED ON ALLOWABLE SOIL BEARING CAPACITY OF 2000 LBS. PER SQ. FT. FOR SAND. DUE TO OTHER SOIL CONDITIONS ENCOUNTERED, BEARING AREAS MAY BE MODIFIED BY THE ENGINEER BY MULTIPLYING THE AREA GIVEN IN TABLE 1 FOR THE APPROPRIATE PIPE SIZE AND FITTING BY THE LISTED CORRECTION FACTORS.

H) IN MUCK, PEAT OR RECENTLY PLACED FILL, ALL THRUSTS SHALL BE RESISTED BY PILES OR THE BODY TO SOLID FOUNDATIONS, OR BY REMOVAL OF SUCH UNSTABLE MATERIAL AND REPLACEMENT WITH BALLAST OF SUFFICIENT STABILITY TO RESIST THE THRUSTS, ALL A.O.B.E.

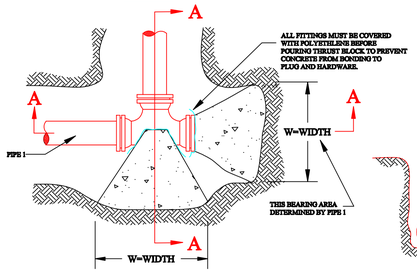
A. FOR REQUIRED BEARING ARE AND DIMENSIONS DxW SEE TABLE 2 VALUES OF DxW OTHER THAN THOSE SHOWN IN THE TABLE, MAY BE USED PROVIDED THEY YIELD A BEARING AREA EQUAL TO OR LARGER THAN THAT REQUIRED.



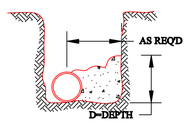

TEE




BEND

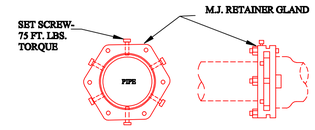



TEE WITH PLUG

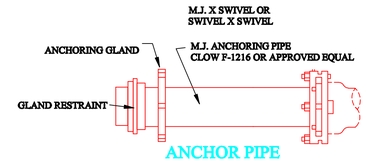



SECTION A-A

TYPICAL POURED IN PLACE CONCRETE THRUST BLOCK DETAILS

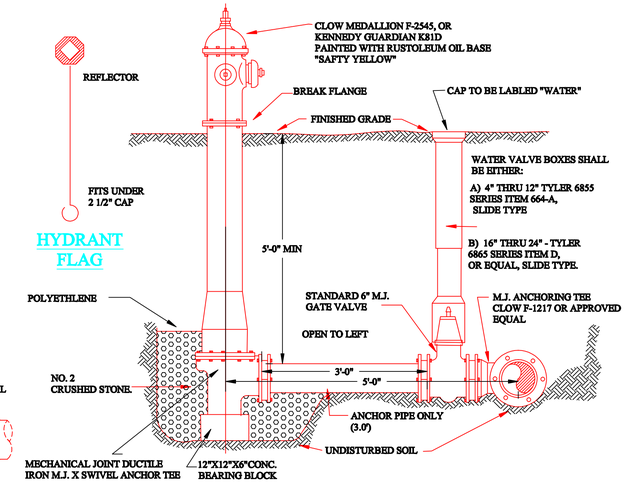



RETAINER GLAND




ANCHOR PIPE

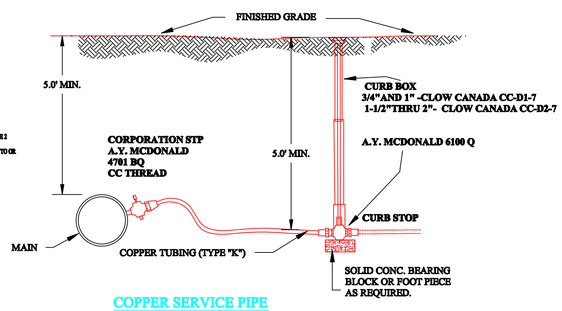
THRUST RESTRAINT OPTIONS




HYDRANT FLAG

TYPICAL HYDRANT INSTALLATION

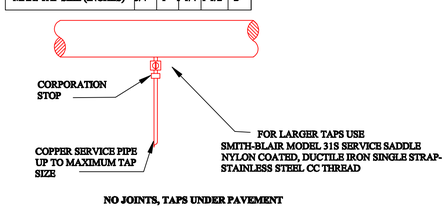
**CURB BOXES SHALL BE EITHER :**
A) FOR 3/4" AND 1 -CLOW CANADA CC-D1-7 CLOW CANADA CC-D2-7
5'-6" ADJUSTABLE WITH 35" X 5/8" DIAMETER GRADE 304 STAINLESS STEEL ROD AND BRASS COTTER PIN.
B) FOR 1 1/2" THRU 2", OR EQUAL, 5'-6" ADJUSTABLE WITH 35" X 5/8" DIAMETER GRADE 304 STAINLESS STEEL ROD AND BRASS COTTER PIN.




COPPER SERVICE PIPE

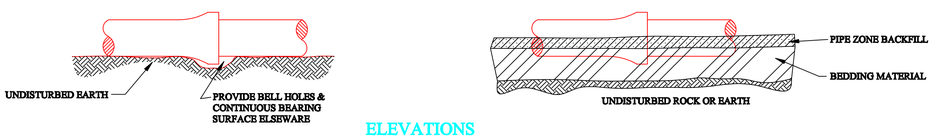
MAXIMUM TAP SIZE

| MAIN SIZE - (INCHES) | 4 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|
| MAX. TAP SIZE (INCHES) | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 |

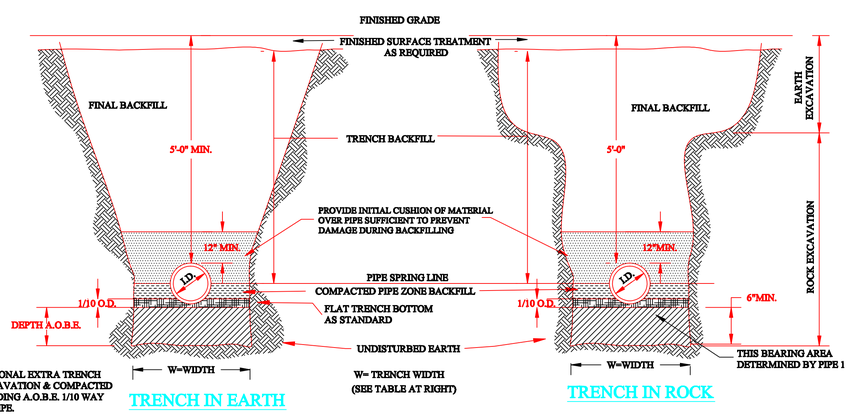



SINGLE AND MULTIPLE TAPS

TYPICAL SERVICE CONNECTIONS




ELEVATIONS



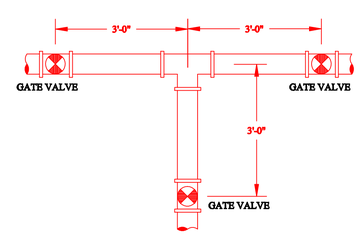

TRENCH IN EARTH

TRENCH IN ROCK

TYPICAL TRENCH DETAILS

TRENCH WIDTH

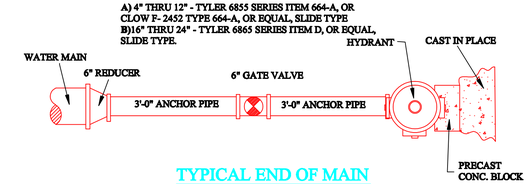
| PIPE SIZE I.D. (INCHES) | MIN. SUGGESTED TRENCH WIDTH FOR AMPLE WORKING SPACE (MAX. TRENCH WIDTH ALLOWED = I.D. PLUS 24" AT TOP OF PIPE | |
|---|---|---|
| I.D. | W MIN. | W MAX. |
| 2 | 18 | 26 |
| 3 | 18 | 27 |
| 4 | 18 | 28 |
| 6 | 21 | 30 |
| 8 | 24 | 32 |
| 10 | 26 | 34 |
| 12 | 28 | 36 |
| 14 | 30 | 38 |
| 16 | 32 | 40 |
| 18 | 35 | 42 |
| 20 | 37 | 44 |




TYPICAL SPACING

WATER VALVES SHALL HAVE THEIR EXTERIOR AND INTERIOR SURFACES FUSION EPOXY COATED CONFORMING TO AWWA C550-81. ALL SHALL BE MECHANICAL JOINT AND OPEN TO THE LEFT. FIELD -LOCK GASKETS REQUIRED ON LAST THREE JOINTS.

WATER VALVES SHALL BE EITHER:
A) 4" THRU 12"- CLOW F-5065, OR EQUAL, DOUBLE GATE VALVE.
B) 4" THRU 12" - CLOW F-6100, OR KENNEDY 4571, RESILIENT WEDGE VALVE
WATER VALVE BOXES SHALL BE EITHER:
A) 4" THRU 12" - TYLER 6855 SERIES ITEM 664-A, OR CLOW F- 2452 TYPE 664-A, OR EQUAL, SLIDE TYPE
B)16" THRU 24" - TYLER 6865 SERIES ITEM D, OR EQUAL, SLIDE TYPE.




TYPICAL END OF MAIN HYDRANT

**REVISIONS**

| DATE | BY | DESCRIPTION |
|---|---|---|
| 2/15/06 | | |

# WATER DISTRIBUTION DETAILS

# TOWN OF BETHLEHEM
## DEPARTMENT OF PUBLIC WORKS
## 445 DELAWARE AVE. DELMAR, NY 12054