



SECTION A-A



TYPICAL TRENCH DETAILS

TRENCH IN ROCK

SOIL	SAFE BEARING LOAD (LBS./SQ. FT.)	FACTOR
MUCK	0	0
SOFT CLAY	1000	2.00
SAND	2000	1.00
SAND & GRAVEL	3000	0.67
SAND & 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 AREA sq.ft	Dimensions		90° (1/4) BEND		45° (1/8) BEND		22-1/2° (1/16) BEND		11-1/4° (1/32) BEND	
		D	W	AREA sq.ft	Dimensions D x W	AREA sq.ft	Dimensions D x W	AREA sq.ft	Dimensions D x W	AREA sq.ft	Dimensions D x W
2	0.4	0.5 x 1.0	0.5	0.5 x 1.0	0.3	0.5 x 1.0	0.1	0.5 x 1.0	0.1	0.5 x 1.0	
3	0.8	1.0 x 1.0	1.1	1.0 x 1.5	0.6	0.5 x 1.5	0.3	0.5 x 1.0	0.2	0.5 x 1.0	
4	1.4	1.0 x 1.5	2.0	1.0 x 2.0	1.1	1.0 x 1.5	0.6	0.5 x 1.5	0.3	0.5 x 1.0	
6	3.2	1.5 x 2.5	4.5	2.0 x 2.5	2.4	1.5 x 2.0	1.2	1.0 x 1.5	0.6	0.5 x 1.5	
8	5.7	2.0 x 3.0	8.0	2.0 x 4.0	4.3	2.0 x 2.5	2.2	1.5 x 1.5	1.1	1.0 x 1.5	
10	8.8	2.5 x 3.5	12.5	3.0 x 4.5	6.8	2.0 x 3.5	3.4	1.5 x 2.5	1.7	1.0 x 2.0	
12	12.7	3.5 x 3.5	18.0	4.0 x 4.5	9.7	2.5 x 4.0	5.0	2.0 x 2.5	2.5	1.5 x 2.0	
14	17.3	3.5 x 6.0	24.5	4.5 x 5.5	13.3	3.5 x 4.0	6.8	2.0 x 3.5	3.4	1.5 x 2.5	
16	22.6	4.5 x 5.0	32.0	5.0 x 6.5	17.3	3.5 x 4.5	8.8	2.5 x 3.5	4.4	2.0 x 2.5	
18	28.6	5.0 x 6.0	40.5	5.5 x 7.0	21.9	4.0 x 5.5	11.2	3.0 x 4.0	5.6	2.0 x 3.0	
20	35.3	5.5 x 6.5	50.0	6.5 x 8.0	27.0	4.5 x 6.0	13.8	3.5 x 4.0	6.9	2.0 x 3.5	

NOTES:

FOR REQUIRED BEARING AREA AND DIMENSIONS D.W. SEE TABLE 2
VALUES OF D.W. OTHER THAN THOSE SHOWN IN THE TABLE,
MULTIPLY THE BEARING AREA BY THE BEARING AREA EQUAL TO,
OR LARGER THAN THAT REQUIRED.

A. ALL THRUST BLOCKS SHALL BE 3000 R.S. POURED CONCRETE.

B. CONCRETE NOT TO OVERLAP ANY JOINT.

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

D. VALUES FOR TEE, ALSO APPLY TO END PLUGS, CAPS AND TAPPING
SIZES.

F. REQUIRED BEARING AREA IS DUE TO THURSTS CAUSED BY 150
P.S.I. WORKING PRESSURE PLUS 50 K (TYPICAL) SURGE ALLOWANCE
PLUS 250 P.S.I. TOTAL INTERNAL PRESSURE. NOMINAL PIPE
DIAMETER USED.

REQUIRED BEARING AREAS ARE BASED ON ALLOWABLE SOIL BEARING
CAPACITY OF 2000 P.S.I. ON SAND DUE TO OTHER
SOIL CONDITIONS ENCOUNTERED. BEARING AREAS MAY BE MODIFIED
BY THE ENGINEER BY MULTIPLYING THE AREA GIVEN IN TABLE 1
BY THE APPROPRIATE PIPE SIZE AND FITTING. THE LISTED
CORRECTION FACTORS.

IN MUCK, PILE OR RECENTLY PLACED FILL, ALL THRUSTS SHALL
BE CARRIED BY THE UNDERLIER. PILE FOUNDATIONS OR BY
REMOVAL OF SUCH UNSTABLE MATERIAL AND REPLACEMENT WITH
BANKING OF SUFFICIENT STABILITY TO RESIST THE THRUSTS, AS
A.O.B.E.

NUMBER OF TIE
RODS REQUIRED.

PIPE SIZE INCHES	MINIMUM NO. OF 3/4" RODS
2	2 ①
3	2 ①
4	2
6	2
8	2
10	2
12	2
14	4
16	4
18	6
20	6

NOTES

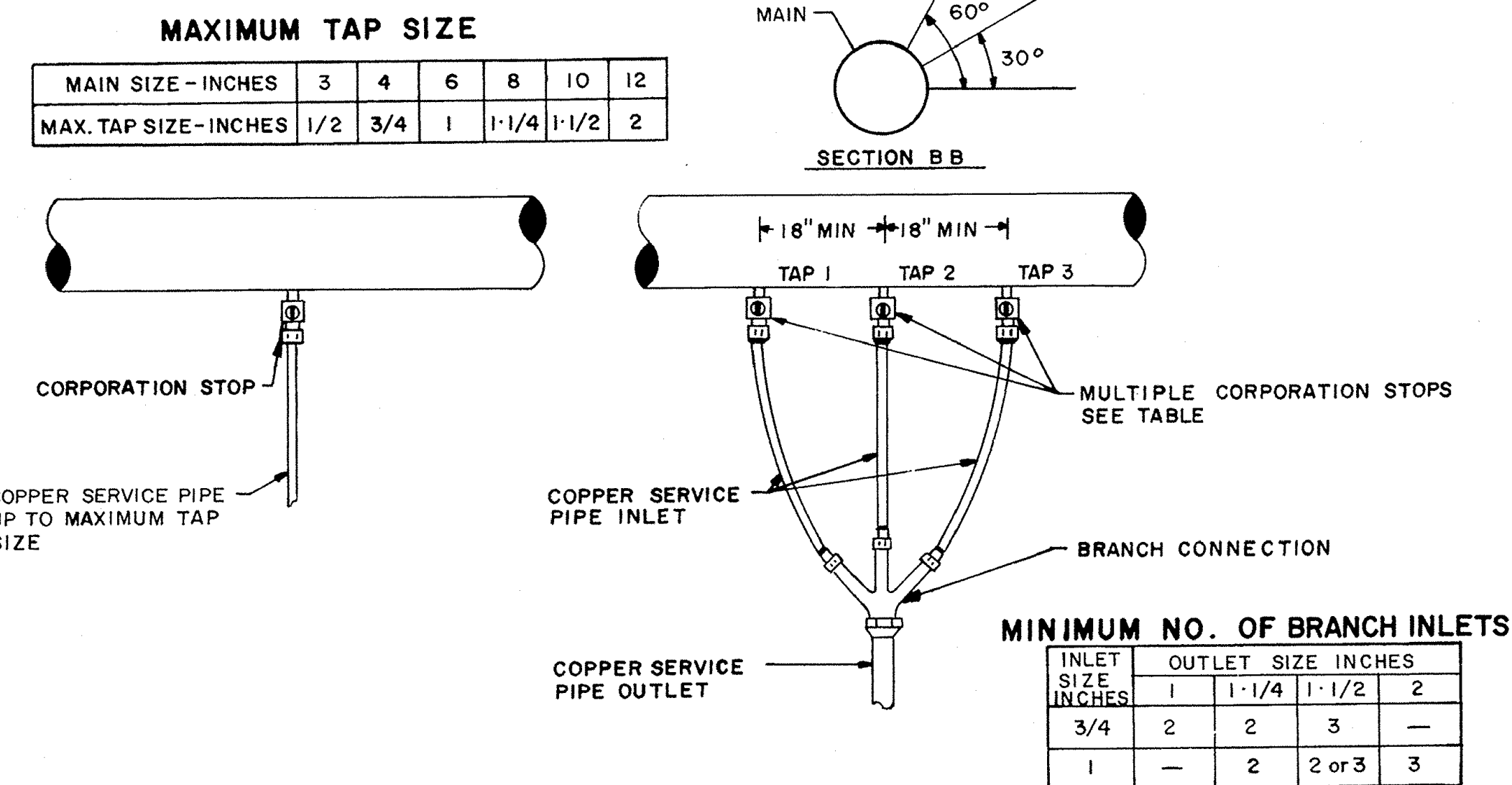
① APPLIES TO 5/8" RODS
AS WELL.



THRUST RESTRAINT OPTIONS



TYPICAL SERVICE CONNECTIONS



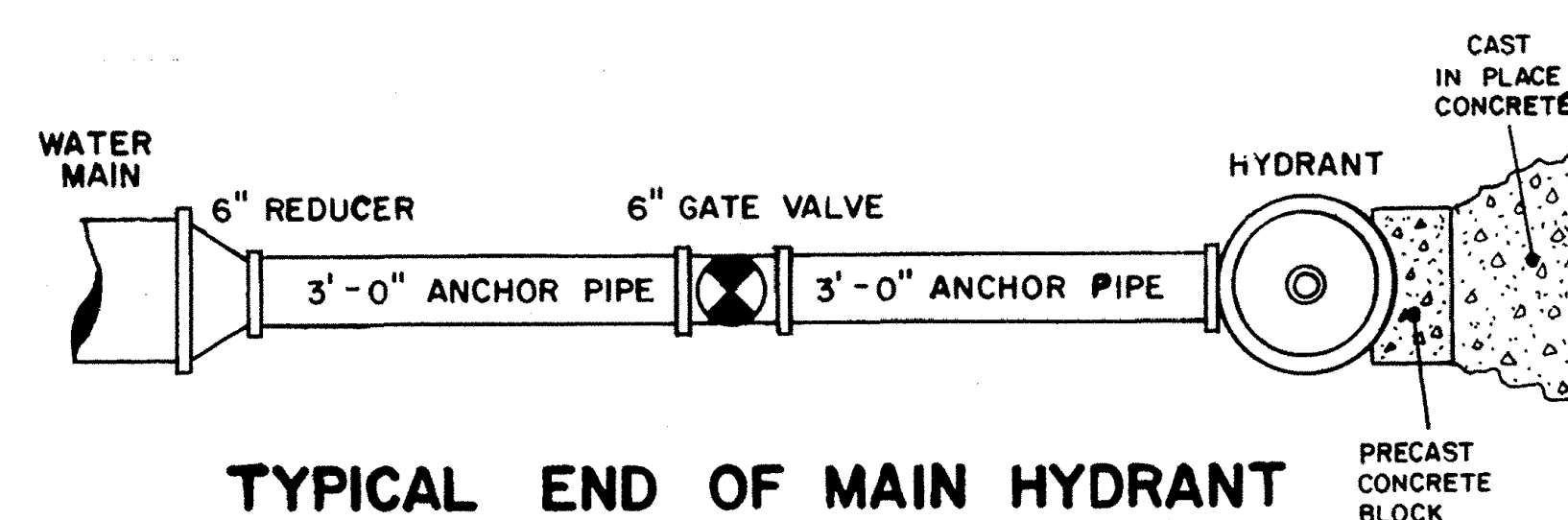
SINGLE & MULTIPLE TAPS



TRENCH WIDTH		
PIPE SIZE-I.D. (INCHES)		
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

MIN. SUGGESTED TRENCH WIDTH FOR AMPLE WORKING SPACE (I.O.D. BELL PLUS 12")

MAX. TRENCH WIDTH ALLOWED = I.D. PLUS 24" AT 7' TOP OF PIPE



TYPICAL END OF MAIN HYDRANT

OBTAIN STANDARD SPECIFICATIONS

REVISIONS		
DATE	BY	DESCRIPTION
7/82	C.W.	ORIGINAL
7/91	TWR	NEW NOTES, ANCHOR PIPE, TAPS
5/98	TR	HYDRANTS, CORP AND CURB STOP

WATER DISTRIBUTION DETAILS

TOWN OF BETHLEHEM

DEPARTMENT OF PUBLIC WORKS

445 DELAWARE AVE. DELMAR N.Y. 12054

SCALE :	NONE
DRAWN BY :	C. WICKHAM, JR.
APPROVED BY :	B.H. SECOR

DATE:

SHEET 2 OF 5

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Planners
Environmental Scientists

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ELM AVENUE EAST RESIDENTIAL DEVELOPMENT

TOWN OF BETHLEHEM WATER DISTRIBUTION DETAILS

TOWN OF BETHLEHEM, ALBANY COUNTY, NEW YORK

drawn NA	checked NA
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