

TEE

BEND

WYE

PLUGGED CROSS

1/4" PLYWOOD OVER FACE OF BOLTS

PLUG OR CAP

PLUGGED CROSS

PLUGGED TEE

NOMINAL FITTING SIZE (INCHES)	TEE, WYE, PLUG OR CAP	90° BEND, PLUGGED CROSS	TEE PLUGGED ON RUN		45° BEND	22 1/2° BEND	11 1/4° BEND
			A ¹	A ²			
4	1.0	1.4	1.9	1.4	1.0	---	---
6	2.1	3.0	4.3	3.0	1.6	1.0	---
8	3.8	5.3	7.6	5.4	2.9	1.5	1.0
10	5.9	8.4	11.8	8.4	4.6	2.6	1.2
12	8.5	12.0	17.0	12.0	6.6	3.4	1.7
14	11.5	16.3	23.0	16.3	8.9	4.6	2.3
16	15.0	21.3	30.0	21.3	11.6	6.0	3.0
18	19.0	27.0	38.0	27.0	14.6	7.6	3.8
20	23.5	33.3	47.0	33.3	18.1	9.4	4.7
24	34.0	48.0	68.0	48.0	26.2	13.6	6.8

NOTE

1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.

2. KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES.

3. IF NOT SHOWN ON PLANS, REQUIRED BEARING AREAS AT FITTING SHALL BE AS INDICATED ABOVE, ADJUSTED IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) AND ALLOWABLE SOIL BEARING STRESS(ES).

4. BEARING AREAS AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER BEARING AREAS AND BLOCKING DETAILS SHOWN IN THIS STANDARD DETAIL.

5. ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 P.S.I. AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION: BEARING AREA = (TEST PRESSURE/150) X (2000/SOIL BEARING STRESS) X (TABLE VALUE).

Bc

SUITABLE MATERIAL

6" OR 1/4 Bc WHICHEVER IS LARGER (12" MAXIMUM)

SPRING LINE

NATURAL GROUND

4" OR Bc/8 WHICHEVER IS LARGER

GRANULAR BEDDING

12" MIN.

NOTE: ALL COSTS OF EXCAVATION BELOW GRADE AND PLACEMENT OF GRANULAR BEDDING SHALL BE INCLUDED IN THE BID PRICES FOR PIPE ITEMS.

Bc

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6" OR 1/4 Bc WHICHEVER IS LARGER (12" MAXIMUM)

SPRING LINE

NATURAL GROUND

4" OR Bc/8 WHICHEVER IS LARGER

GRANULAR BEDDING

12" MIN.

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CURB BOX AND STOP TO PROPERTY LINE

VALVE CROSS

VALVE

PROPERTY LINE

SEE HYDRANT DETAIL

10'

10'

NOTE: ALL COSTS OF EXCAVATION BELOW GRADE AND PLACEMENT OF GRANULAR BEDDING SHALL BE INCLUDED IN THE BID PRICES FOR PIPE ITEMS.

NOZZLE SECTION

OPERATING NUT - 1" PENTAGON

2 1/2" HOSE CONNECTION (THREAD SIZE 3 1/16" O.D., 7 1/2" T.P.I.)

4 1/2" PUMPER CONNECTION (THREAD SIZE 5 9/16" O.D., 4" T.I.P.)

NUT CAP TYPE WITH CHAINS

NOMINAL GROUND LINE

STANDPIPE

BOTTOM

7/8" ROUND HOLES

8 3/8"

22 3/4"

6 1/4"

14 1/2"

9'-1 1/4"

8'-6"

7 5/8"

3 5/8"

5 1/4"

7 3/8"

12 1/4"

9 1/2"

NOTE: 1. 16" BREAKOFF SECTION 2. LEFT HAND OPERATING NUT (1 1/2" POINT TO FLAT) 3. PAINT BARREL SECTION RED TO GRADE. 4. DO NOT PLUG DRAIN HOLES.

4'-0"

2'-0"

2'-0"

COMPACTED TRENCH BACKFILL

WATERMAIN

EXISTING SOIL

2" STYROFOAM INSULATION

4" SAND CUSHION

COMPACTED SELECTED GRANULAR MATERIAL

NOTE

1. WHEN WATERMAIN AND SANITARY SEWER CROSSINGS HAVE LESS THAN 18" VERTICAL SEPARATION, INSTALL CROSSING AS SHOWN.

2. WHEN WATERMAIN COVER IS LESS THAN 7.5 FEET, INSTALL WATERMAIN UNDER SANITARY SEWER.

24"

O.D.

24"

PROPOSED SEWER

COMPACTED SAND

3" STYROFOAM INSULATION

BENDS AS REQUIRED

PROPOSED WATERMAIN

WATERMAIN INSTALLATION UNDER SANITARY OR STORM SEWER

24"

O.D.

24"

PROPOSED SEWER

COMPACTED SAND

3" STYROFOAM INSULATION

BENDS AS REQUIRED

PROPOSED WATERMAIN

WATERMAIN INSTALLATION OVER SANITARY OR STORM SEWER

NOTE: 1. WHEN WATERMAIN AND SANITARY SEWER CROSSINGS HAVE LESS THAN 18" VERTICAL SEPARATION, INSTALL CROSSING AS SHOWN. 2. WHEN WATERMAIN COVER IS LESS THAN 7.5 FEET, INSTALL WATERMAIN UNDER SANITARY SEWER.

8" MIN.

CUT OFF MIN. 5' BELOW GRADE

CASING PIPE

DIP WATER MAIN

6' FROM SPIGOT END

3' FROM BELL END

7' MIN.

15' MIN. OR AS REQUIRED

CUT OFF MIN. 5' BELOW GRADE

3' MAX.

NOTE: 1. WHEN WATERMAIN AND SANITARY SEWER CROSSINGS HAVE LESS THAN 18" VERTICAL SEPARATION, INSTALL CROSSING AS SHOWN. 2. WHEN WATERMAIN COVER IS LESS THAN 7.5 FEET, INSTALL WATERMAIN UNDER SANITARY SEWER.

5'-0"

EDGE OF MAT OR BACK OF CURB

"HYDRAFINDER"

MINIMUM COVER AS REQUIRED IN SPECIFICATIONS OR AS SHOWN ON PLANS.

VALVE WITH MECHANICAL JOINT TEE AND VALVE BOX

ROD EXTENSION

6mm POLYETHYLENE OR EQUAL COVER

GATE VALVE ADAPTOR

WATERMAIN WITH MECHANICAL JOINT TEE FOR SIZE FIRE HYDRANT LINE

JOINT RESTRAINING COUPLING-TWO 3/4" ALL THREAD RODS

2'-6"

AS REQUIRED

NOTE: ALL HYDRANT LEADS SHALL BE RESTRAINED FROM THE MAIN TO THE HYDRANT THROUGH THE USE OF THREADED RODS OR MEGALUGS AS RESTRAINTS IN ACCORDANCE WITH THE STANDARD DETAIL PLATES.

PROPERTY LINE

2" X 4" WOOD MARKER

7.5' MINIMUM COVER

CURB BOX AND STOP

7.5' MINIMUM COVER

SERVICE PIPE

CONCRETE BRICK

WATERMAIN

PROVIDE ONE - 1.0' HORIZONTAL LOOP IN SERVICE LINE

1'

RECORD PLAN

APRIL 2004

DESIGNED BY: DESIGNED BY

DRAWN BY: RKM

APPROVED BY: APPROVED BY

JOB NUMBER 818980J

CAD DATE: April 14, 2003 9:04:40 a.m.

CAD FILE: 818860J\dwg\C\818860J-D2.DWG (RMONJEA)

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

DATE

PRINTED NAME

KRISTINA THOMPSON

LIC. NO.

42350

WATERMAIN CROSSING

NO. DATE BY REVISION DESCRIPTION

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1326 ENERGY PARK DRIVE

ST. PAUL, MINNESOTA 55108

(651) 644-4389

Howard R. Green Company

CONCORD/BOSTON IMPROVEMENTS

CITY OF ELK RIVER

WATERMAIN DETAILS

TYPICAL SERVICE DETAIL

SHEET NO.

19