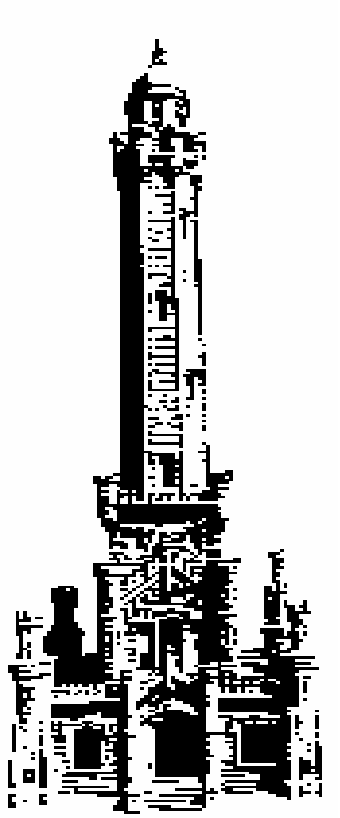
CITY OF CHICAGO

DEPARTMENT OF WATER MANAGEMENT

STANDARD DETAILS FOR WATER MAIN INSTALLATIONS



PREPARED BY:

BUREAU OF ENGINEERING SERVICES

April, 2009

City of Chicago
Richard M. Daley
Mayor

Department of Water Management
John F. Spatz, Jr.
Commissioner

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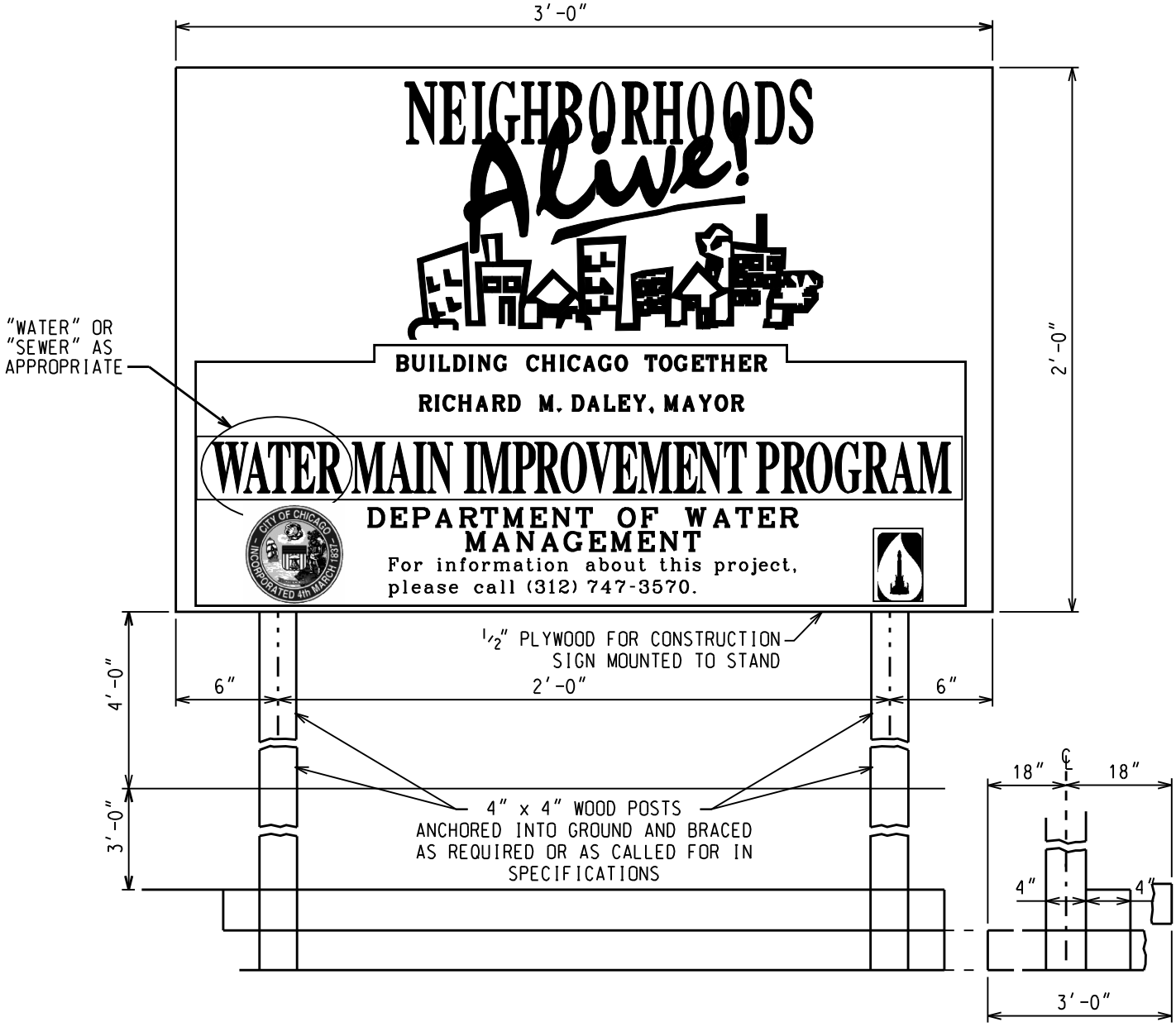
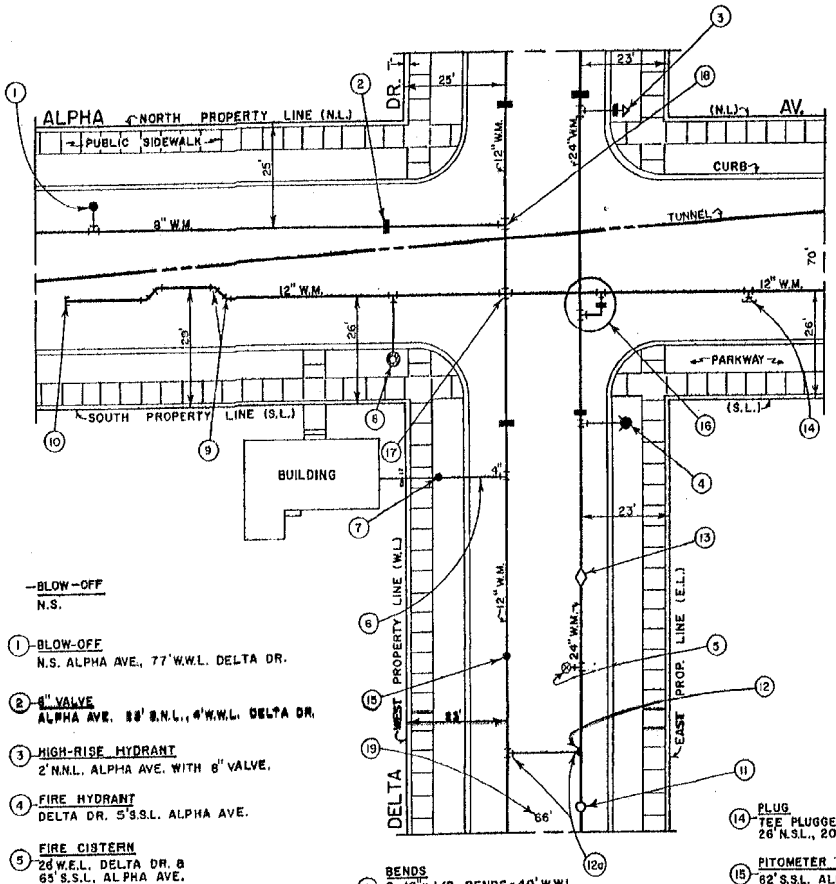


NOTES:

1. TWO SIGNS (ONE ON EACH END OF EACH PIPE PROJECT) MUST BE DISPLAYED FROM THE TIME CONSTRUCTION BEGINS TO THE TIME THAT PAVEMENT IS RESTORED.
2. THE LOCATION OF THE SIGN WILL BE DETERMINED FOR THE RESIDENT ENGINEER.
3. AFTER THE COMPLETION OF THE CONTRACT THE SIGN WILL BE PROPERTY OF THE CITY OF CHICAGO AND MUST BE DELIVERED TO THE APPROPRIATE DISTRICT YARD UNLESS ORDERED TO DISCARD BY THE COMMISSIONER.

LEGEND



—BLOW-OFF
N.S.

1. BLOW-OFF
N.S. ALPHA AVE., 77' W.W.L. DELTA DR.

2. 8" VALVE
ALPHA AVE. 33' S.N.L., 4' W.W.L. DELTA DR.

3. HIGH-RISE HYDRANT
2' N.N.L. ALPHA AVE. WITH 8" VALVE.

4. FIRE HYDRANT
DELTA DR. 5' S.S.L. ALPHA AVE.

5. FIRE CISTERN
26' W.E.L. DELTA DR. & 65' S.S.L. ALPHA AVE.

6. SERVICE PIPE
W.S. DELTA DR., 17' S.S.L. ALPHA AVE.

7. SHUT-OFF BOX or SHUT-OFF COCK
17' S.S.L. ALPHA AVE. & 8' E.W.L. DELTA DR.

8. DRINKING FOUNTAIN
3' W.E.L. DELTA DR. & 11' N.S.L. ALPHA AVE.

9. BENDS
2-12" x 1/8 BENDS - 40' W.W.L. DELTA DR. & 26' N.S.L. ALPHA AVE. & 48' W.W.L. DELTA DR. & 29' N.S.L. ALPHA AV.

10. CAP
MAIN CAPPED IN ALPHA AVE., 26' N.S.L. & 85' W.W.L. DELTA DR.

11. INSPECTION MANHOLE TUNNEL SHAFTS
100' S.S.L. ALPHA AVE., 23' W.E.L. DELTA DR.

12. TAPPING CONNECTION
87' S.S.L. ALPHA AVE.

12a. CROSSOVER (CROSS CONNECTION) or INTERCONNECTION

13. TELEMETERING POINT
43' S.S.L. ALPHA AV. 23' W.E.L. DELTA DR.

14. PLUG
TEE PLUGGED IN ALPHA AV. 26' N.S.L., 20' E.E.L. DELTA DR.

15. PITOMETER TAP BASIN
62' S.S.L. ALPHA AV. 25' E.W.L. DELTA DR.

16. SIDE CONNECTION - 24" x 12" WITH 12" VALVE, 17' W.E.L. DELTA DR. 21' N.S.L. ALPHA AV.

17. CROSS
25' E.W.L. DELTA DR. 26' N.S.L. ALPHA AV.

18. TEE
25' E.W.L. DELTA AV. 25' S.N.L. ALPHA AV.

19. STREET WIDTH
MEASURED FROM PROPERTY LINES

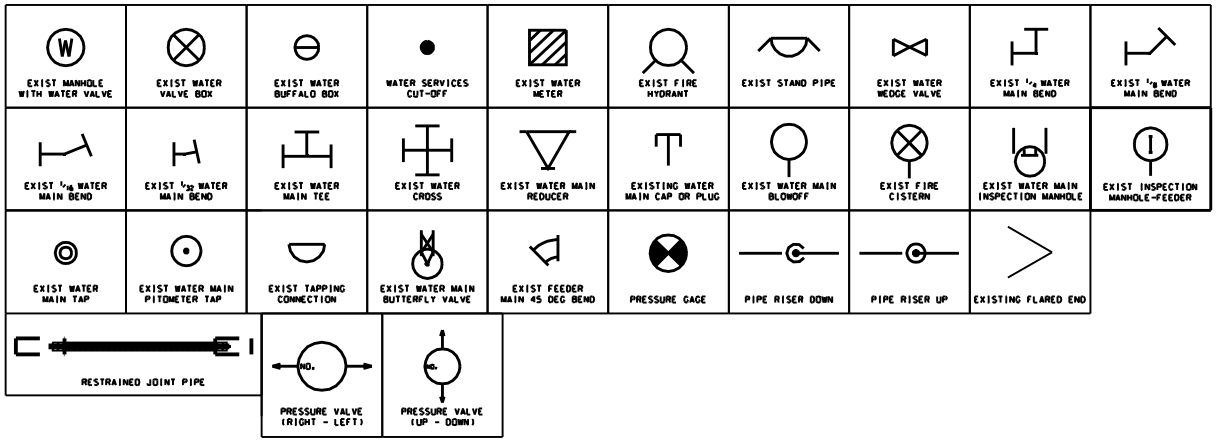
CITY of CHICAGO - WATER MAINS
LL REGULAR 4-1/2" HYDRANT LOWER LEVEL
UL REGULAR 4-1/2" HYDRANT UPPER LEVEL
(M) MAGNETIC GUARDS - HYDRO LOC HYDRANT
(S) SPIDER TYPE HYDRANT
(A) ALCO-SAF-T-LOC HYDRANT
PRIVATE MAINS
INDICATES VACATED STREETS OR ALLEYS
EASEMENT
CITY LIMITS
TUNNELS
R.O.W. RIGHT OF WAY LINES
℄ (CENTER LINE) of STREET or R.O.W.
S.S.L. SOUTH of SOUTH LINE
N.N.L. NORTH of NORTH LINE
E.E.L. EAST of EAST LINE
W.W.L. WEST of WEST LINE
S.N.L. SOUTH of NORTH LINE
N.S.L. NORTH of SOUTH LINE
E.W.L. EAST of WEST LINE
W.E.L. WEST of EAST LINE
S.S.E.X. SOUTH of SOUTH EAST CORNER
P.T. PITOMETER TAP
V. VALVE
B.O. BLOW-OFF
F.C. FIRE CISTERN
M.H. MAN-HOLE
T.C. TAPPING CONNECTION
W.M. WATER MAIN
CONC. CONCRETE WATER MAIN
H 8"V. #000 X S.S.L. 1' W.E.L. L — INDICATES PRESSURE CONTROL VALVES, ARROWS GIVE DIRECTION OF HIGHER (H) AND LOW (L) PRESSURE.
C.I. CAST IRON WATER MAIN
D.I. DUCTILE IRON WATER MAIN
PK. PARK DISTRICT
W/L VALVE BASINS WITH LOCKED LIDS

NOTE: ALL DIMENSIONS ARE MEASURED FROM PROPERTY LINES OR AS NOTED.

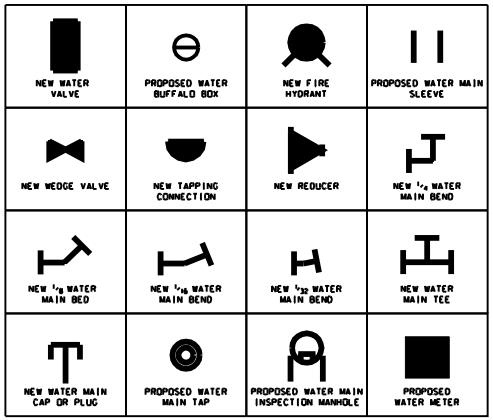
REV:06.07

LEGEND - SYMBOLS

EXISTING WATER SYMBOLS

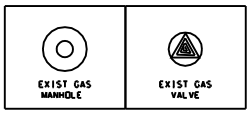


PROPOSED WATER SYMBOLS

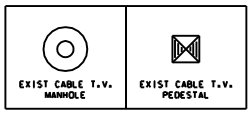


SEWER SYMBOLS

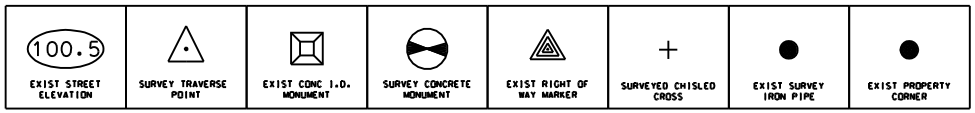
GAS SYMBOLS



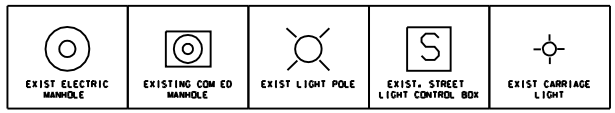
CABLE T.V. SYMBOLS



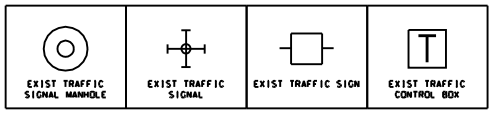
SURVEY SYMBOLS



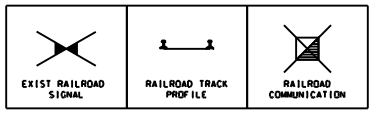
ELECTRICAL SYMBOLS



TRAFFIC SYMBOLS



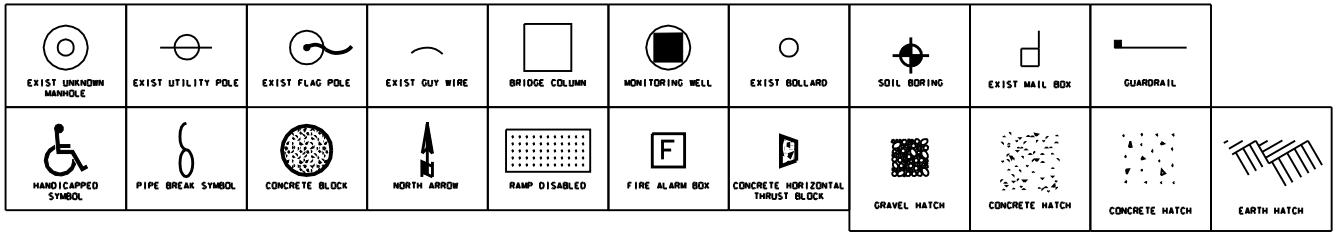
RAILROAD SYMBOLS



VEGETATION SYMBOLS

TELEPHONE SYMBOLS

MISCELLANEOUS SYMBOLS



G-4

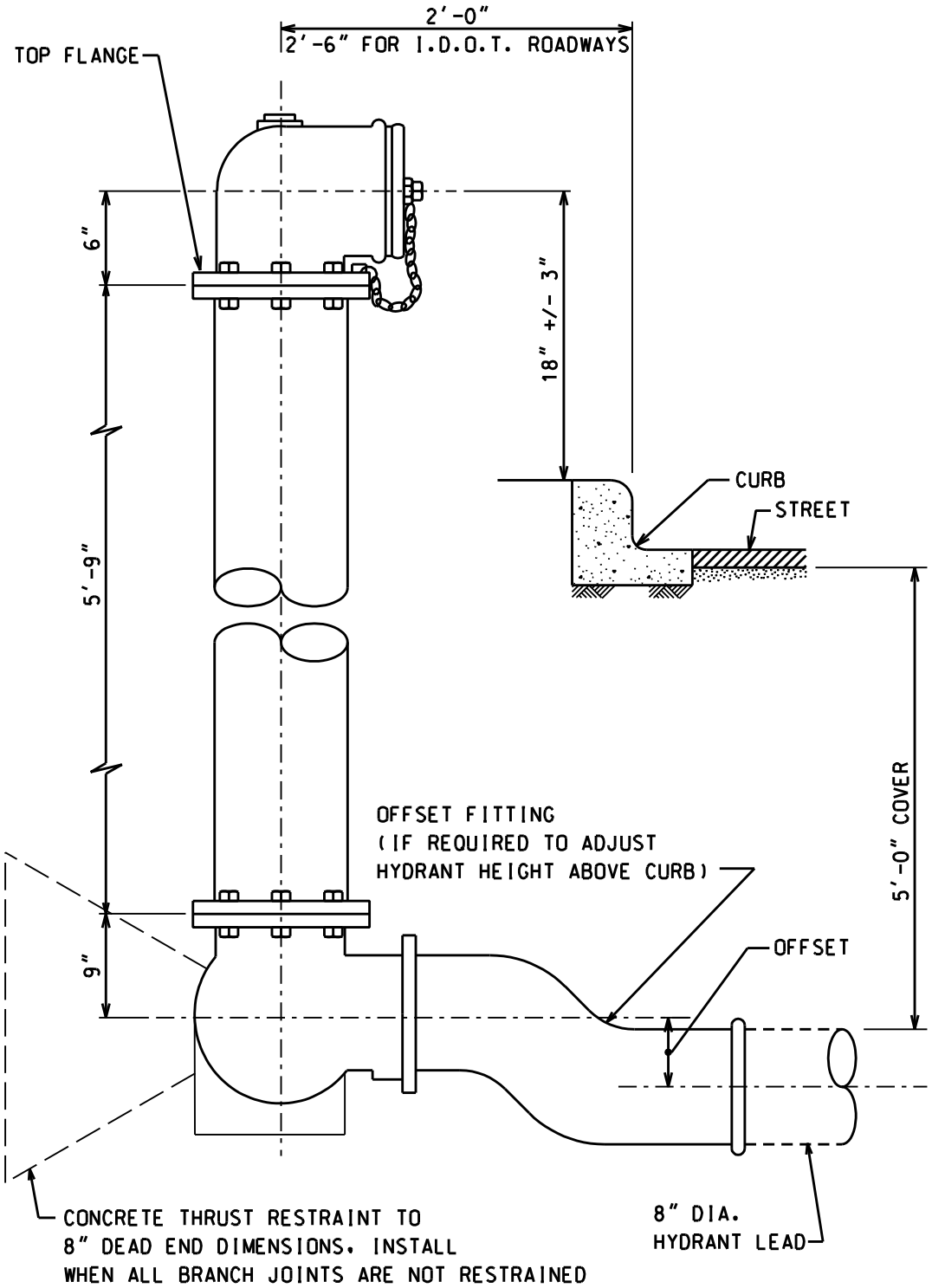
SHT. 1 OF 2

REV:06.07

LEGEND - LINE STYLES

SYMBOL	DESCRIPTION
	Existing-Water Main
	Existing-Water Services
	Proposed-Water Main
	Proposed-New Water Services WM to B-Box
	Proposed-New Water Services B-Box to Property
	Proposed-Water Main (By Others)
	Abandoned-Water Main
	Existing ROW
	Existing ROW (Vacated)
	Existing ROW (Elevated)
	Existing-Easement
	Proposed-ROW
	Existing-City Limits Boundary Line
	Existing-Chicago Park District Line
	Existing-City Electric
	Existing-ComEd
	Existing-Cable TV
	Existing-Telephone
	Existing-Sewer
	Proposed-Sewer
	Proposed-Sewer Lateral
	Existing-Sediment Force Main
	Proposed-Sediment Force Main
	Abandoned-Sewer
	Abandoned-Gas
	Existing-Gas

SYMBOL	DESCRIPTION
	Existing-Curb
	Existing-Sidewalk
	Existing-Ditches-Creeks-Edge of Water
	Existing-Edge of Pavement
	Existing-Embankments-Dead Ends-Retaining Walls
	Existing-Fence
	Existing-CTA Buried Electric Cables
	Existing-Railroads
	Existing-Buried Street Car Tracks
	Existing-Steam and Cooling Pipes
	Existing-City Press Electrical
	Existing-Hedge Line
	Existing-Woods Tree Line
	Proposed-Curb
	Proposed-Sidewalk
	Proposed-Ditches-Creeks-Edge of Water
	Proposed-Pavement



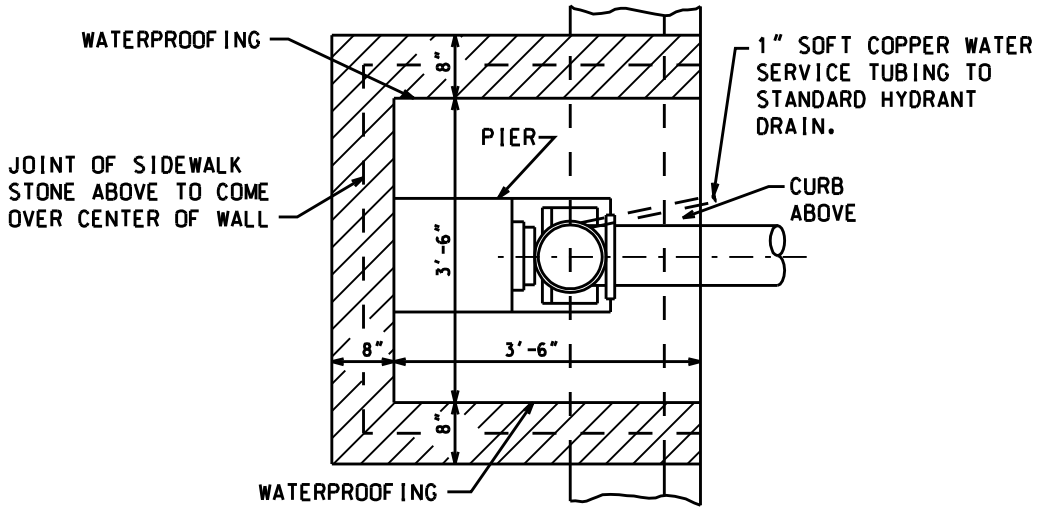
NOTE:

1. SEE FIRE HYDRANT DRAIN DETAILS.
2. ALL BURRIED DUCTILE IRON HYDRANT COMPONENTS MUST BE WRAPPED IN POLYETHYLENE ENCASEMENT.
3. SEE DETAIL D-5 FOR FIRE HYDRANT DRAIN ASEMBLY

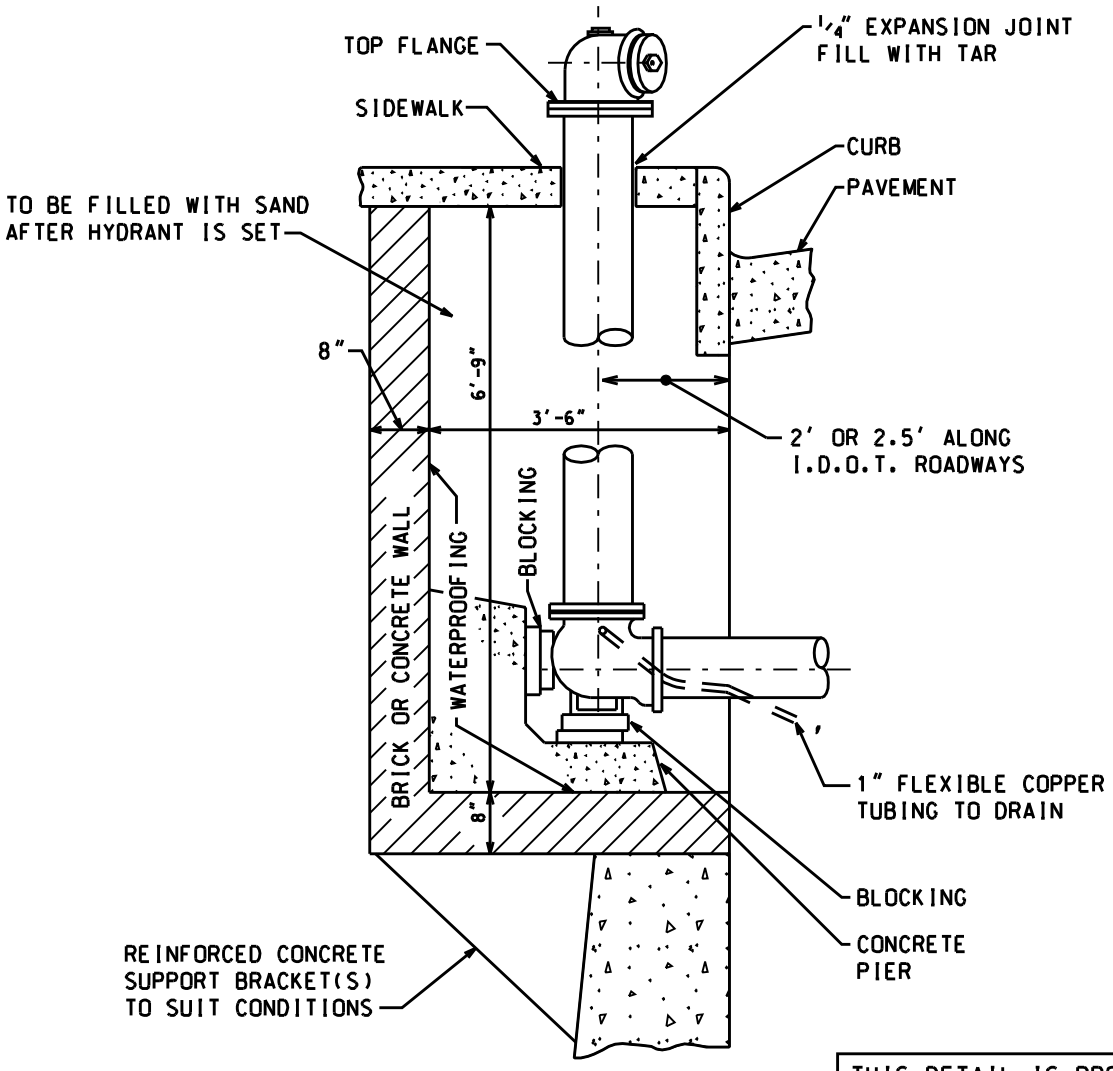
REV:04.09

FIRE HYDRANT SETTING DETAIL

D-2



PLAN VIEW



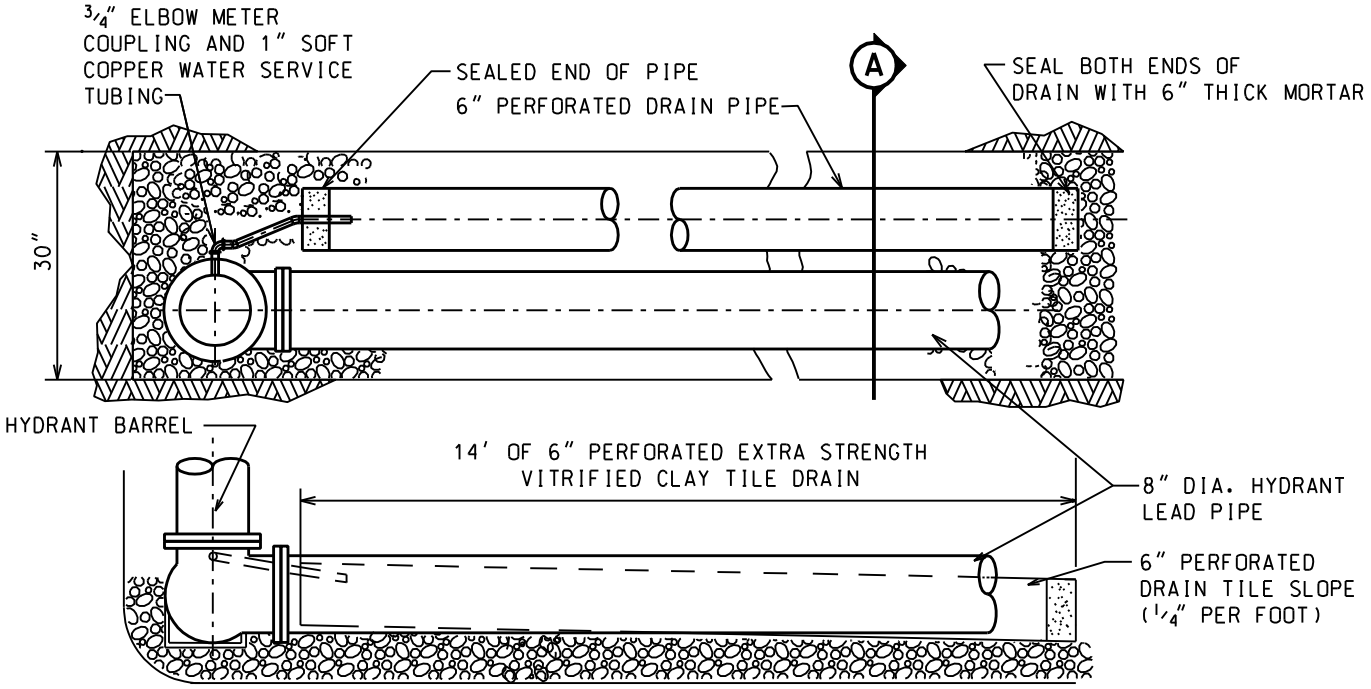
SECTION VIEW

THIS DETAIL IS PROVIDED FOR REFERENCE PURPOSES ONLY AND IS NOT A C.D.W.M. WATER MAIN STANDARD

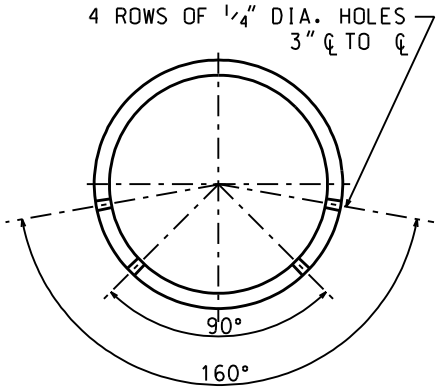
FIRE HYDRANT INSTALLATION DETAIL FOR VAULTED SIDEWALKS

REV:07.07

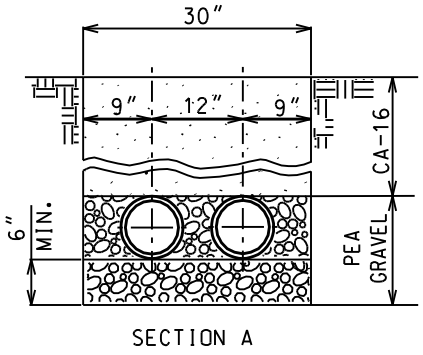
D-3



LAYING CONDITION



DETAIL "A"
DRAIN TILE DRAIN HOLES

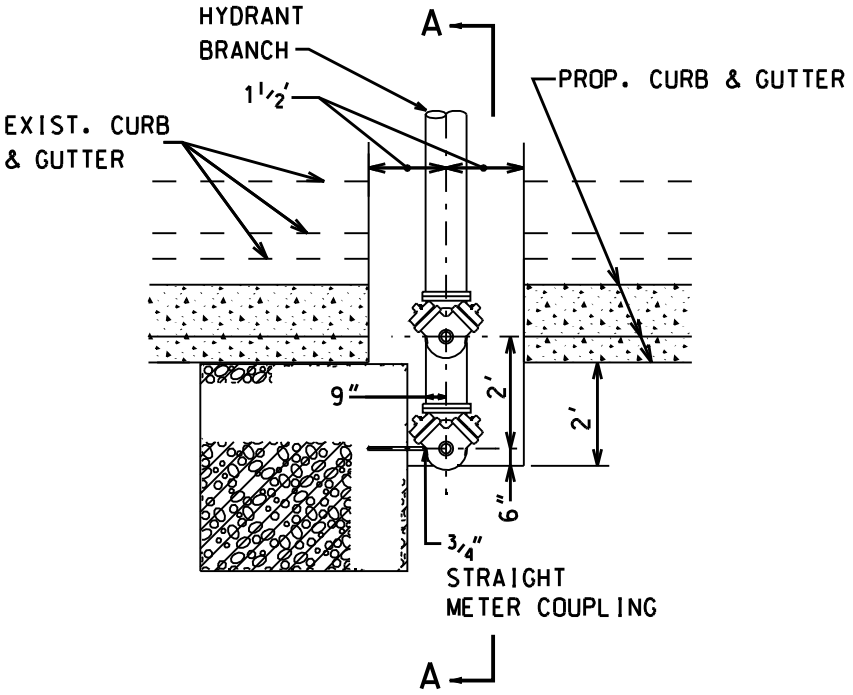


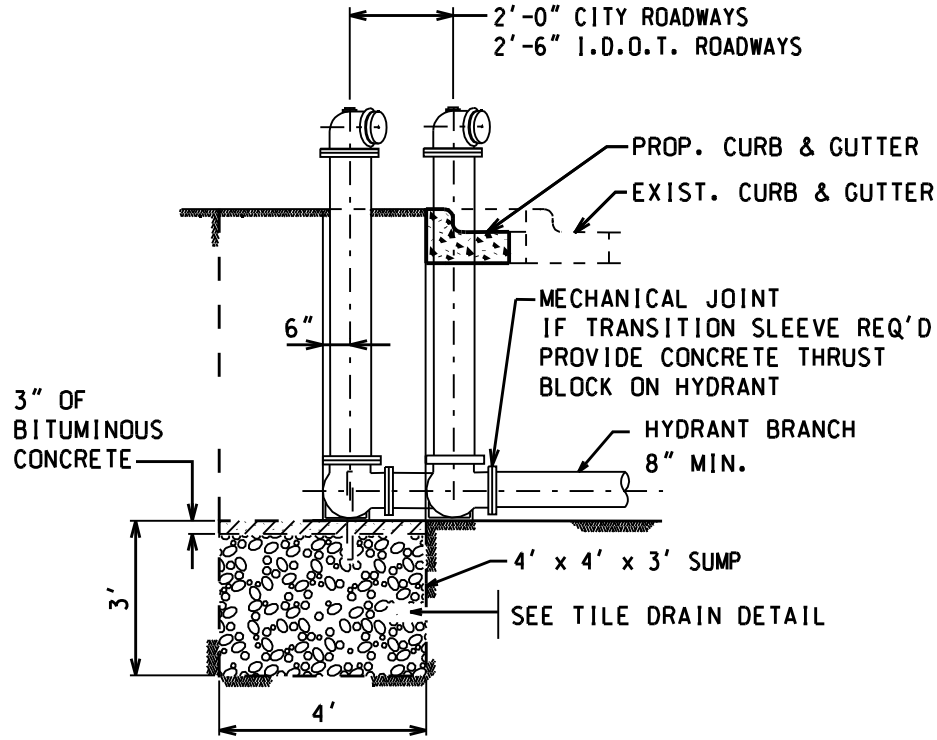
TILE PIPE & HYDRANT BRANCH
EMBEDDED IN PEA GRAVEL

NOTES:

1. WATER TABLE MUST BE BELOW BOTTOM OF TRENCH.
2. LAY DRAIN PIPE IN WATER MAIN TRENCH IF HYDRANT LEAD PIPE IS NOT LONG ENOUGH TO ACHIEVE 14' DRAIN PIPE LENGTH.
3. PLACE DRAIN PIPES SO HOLES ARE FACING DOWN, SEE DETAIL A.
4. COPPER WATER SERVICE TUBING MUST BE ENCASED IN POLYETHYLENE WRAP.

FIRE HYDRANT DRAIN DETAIL



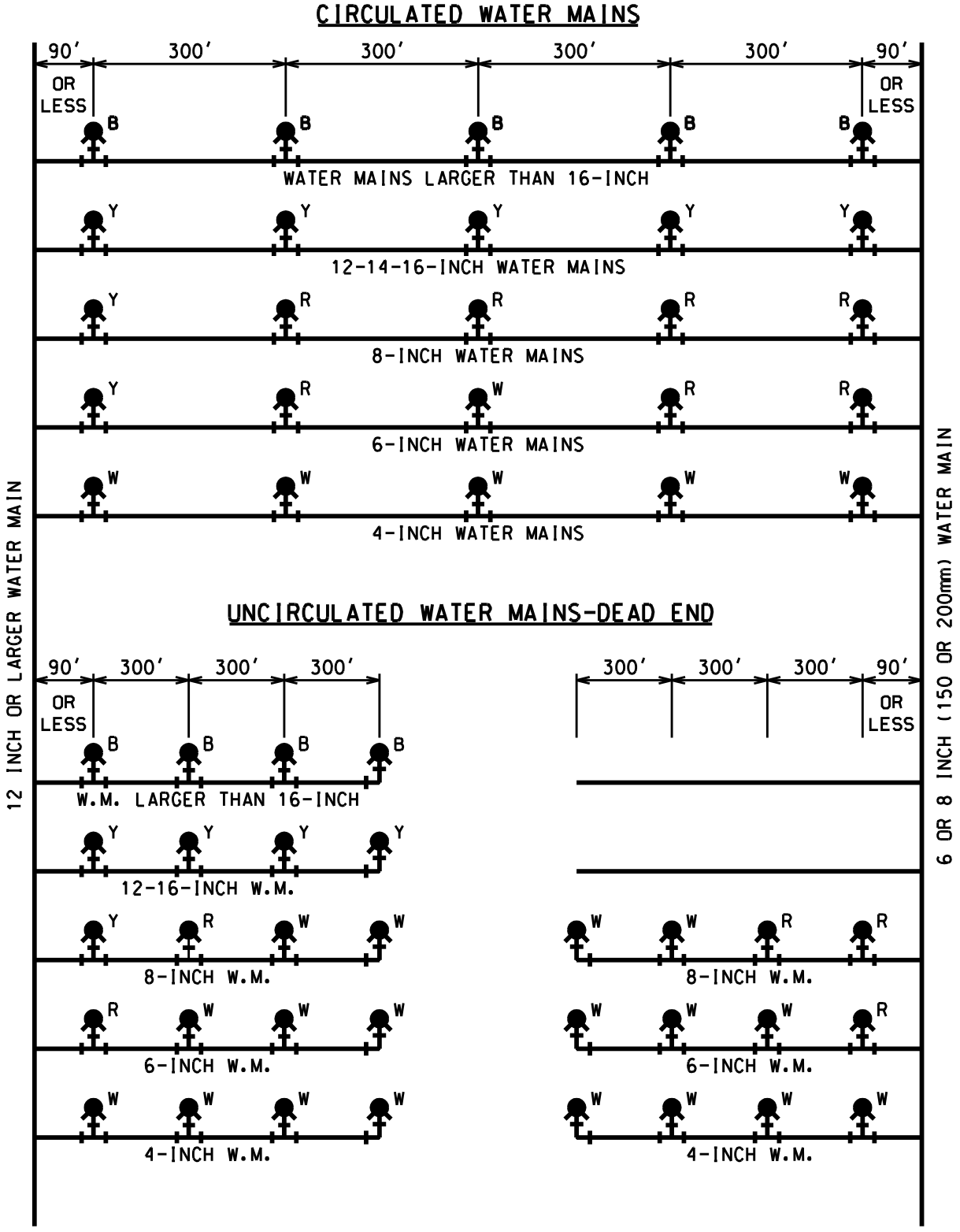


VIEW "A-A"

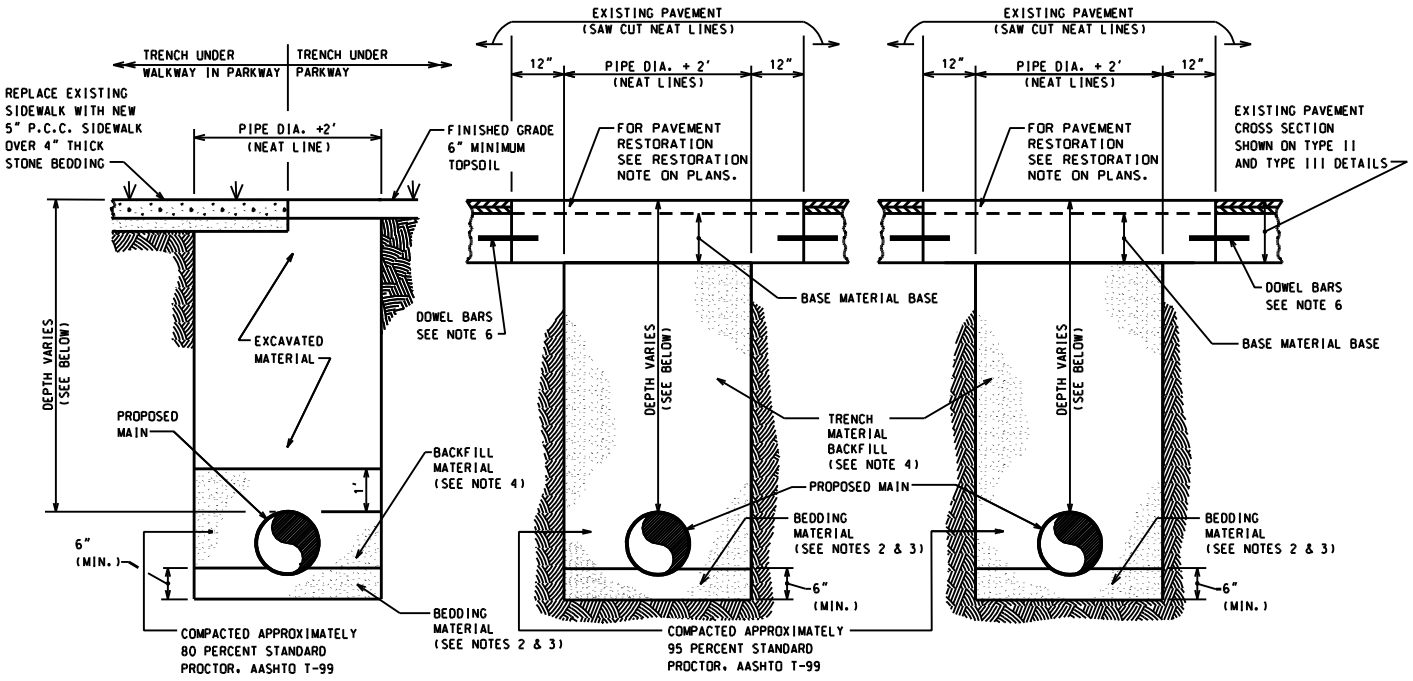
NOTE:

WATER TABLE MUST BE BELOW
BOTTOM OF DRAIN SUMP.

FIRE HYDRANT SUMP DRAIN FOR RELOCATED HYDRANTS



B-BLUE FLANGE Y-YELLOW FLANGE R-RED FLANGE W-WHITE FLANGE
ALL PUBLIC FIRE HYDRANTS ARE TO BE PAINTED RED EXCEPT FOR THE TOP FLANGES WHICH MUST BE COLOR CODED.

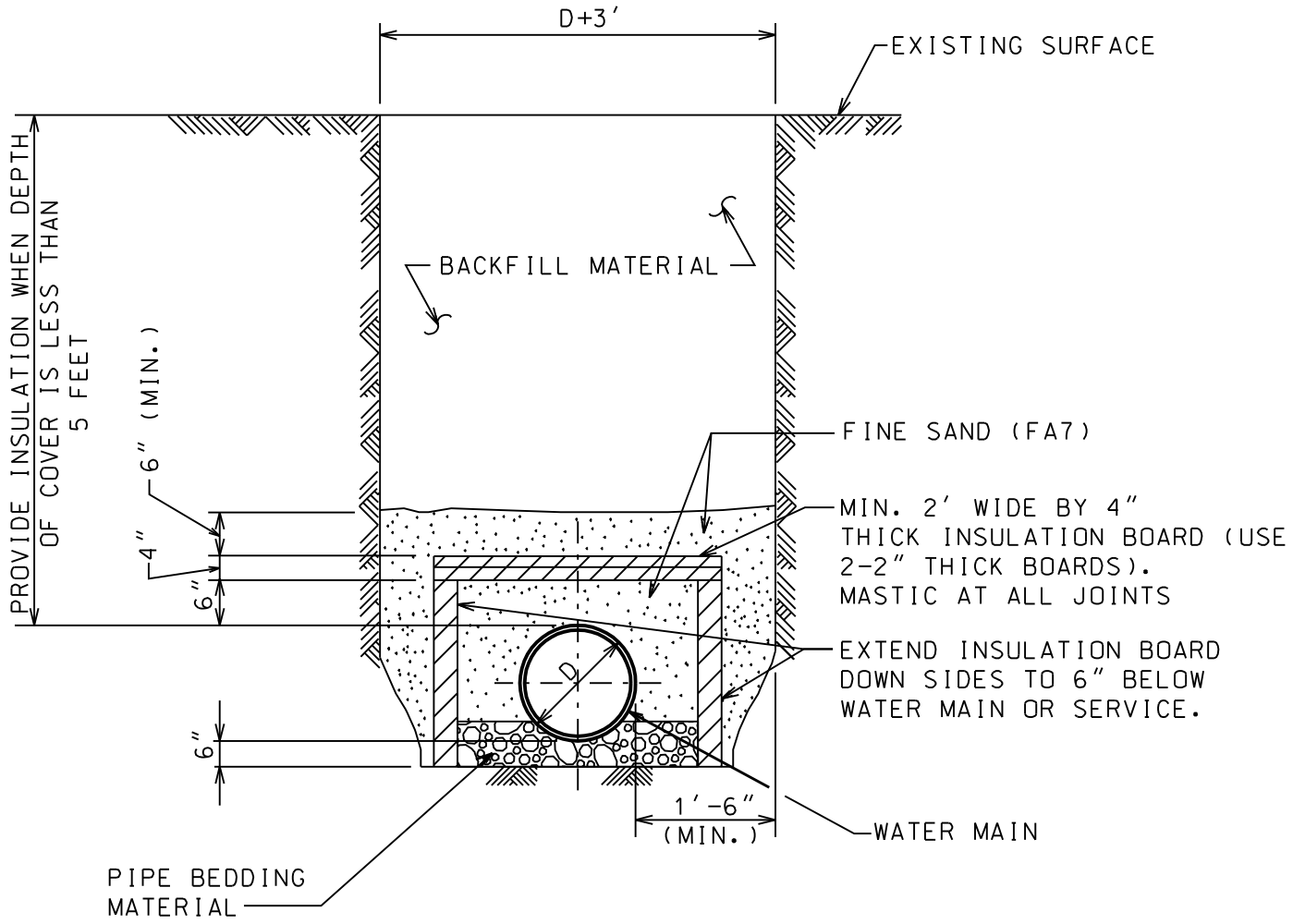


NOTES:

1. PROVIDE PIPE BEDDING TO A DEPTH OF $^{1}/_{8}$ OF PIPE DIAMETER OR 6" MINIMUM OF COMPACTED GRANULAR MATERIAL, GRAVEL, OR CRUSHED STONE.
2. USE CA-16 BEDDING MATERIAL FOR PIPE SIZES UP TO 16-INCH DIAMETER.
3. USE CA-11 BEDDING MATERIAL FOR PIPE SIZES LARGER THAN 16-INCH DIAMETER.
4. BACKFILL MUST BE COMPACTED UP TO ONE FOOT ABOVE THE PIPE IN TYPICAL TRENCH TYPE I AND TO THE TOP OF THE TRENCH IN TYPICAL TRENCH TYPE II & III. TRENCH BACFILL GRADATION CA-16. EXCEPT IN CENTRAL BUISINESS DISTRICT USE CLSM (FLOWABLE FILL)
5. ALL EXCAVATIONS MUST BE PROPERLY SHORED, SHEETED AND BRACED TO PROVIDE SAFE WORKING CONDITIONS. ALL IN COMPLIANCE WITH THE U.S. DEPARTMENT OF LABOR SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION STIPULATED UNDER THE OCCUPATIONAL SAFETY AND HEALTH ACT. (O.S.H.A.).
6. #5 EPOXY COATED BARS, 18" LONG DRILLED AND GROUTED AT 30" CENTERS. EXCEPT OMIT ON CDOT STREETS WHERE CLSM USED AS TRENCH BACKFILL.
7. WHEN TRENCH BACKFILL IS COMPLETE POUR CONCRETE BASE COURSE FLUSH TO TOP AND AT A MINIMUM BOTTOM OF EXISTING PAVEMENT GRADE. THE ADDITIONAL THICKNESS IS TO BE REMOVED DURING PAVEMENT RESTORATION WORK. FINAL CONCRETE BASE THICKNESS MUST BE PER C.D.O.T./I.D.O.T. REQUIREMENTS. WHEN THE THICKNESS OF THE EXISTING ROADWAY BASE MATERIAL IS LESS THAN THE MINIMUM THICKNESS NOTED BELOW, THE BOTTOM OF BASE MATERIAL WILL EXTEND BELOW THE BOTTOM OF THE BASE MATERIAL OF THE EXISTING PAVEMENT. MINIMUM THICKNESS FOR ARTERIAL STREETS IS 9 INCHES AND 7 INCHES FOR RESIDENTIAL STREET.
8. PLATE ALL UNATTENDED EXCAVATIONS IN PAVEMENT AREAS AND SECURE PLATES TO PAVEMENT AND PROVIDE BARRIERS IN PARKWAY AREAS.

* CENTRAL BUSINESS DISTRICT IS DEFINED AS THE AREA FROM DIVISION STREET SOUTH TO ROOSEVELT ROAD AND HALSTED STREET EAST TO LAKE MICHIGAN.

PIPE DEPTH REQUIREMENTS	
MINIMUM DEPTH OF COVER FOR WATER MAINS	
SIZE OF PIPE	DEPTH OF COVER
$^{3}/_{4}$" TO 3"	5'-6" ± 3"
4"	5'-6" ± 3"
6"	5'-6" ± 3"
8"	5'-3" ± 3"
12"	5'-0" ± 2"
16"	4'-6" ± 2"
24"	4'-0" ± 1"
30" TO 42"	3'-6" MIN.(SEE PLAN)
48" & LARGER	3' MIN.(SEE PLAN)



NOTES:

1. INSULATION BOARD TO BE CLOSED CELL, EXTRUDED POLYSTYRENE FOAM MEETING ASTM 578, TYPE VI, 40 PSI COMPRESSING STRENGTH (ASTM D1621) 0.1% MAX. WATER ABSORPTION (ASTM C272).

2. BACKFILL MATERIAL AROUND INSULATION MUST BE FINE SAND FREE FROM ROOTS, ORGANIC MATTER, OR OTHER INJURIOUS MATERIALS.

3. OVERLAP ALL INSULATION BOARD JOINTS.

WATER MAIN TRENCH INSULATION DETAIL

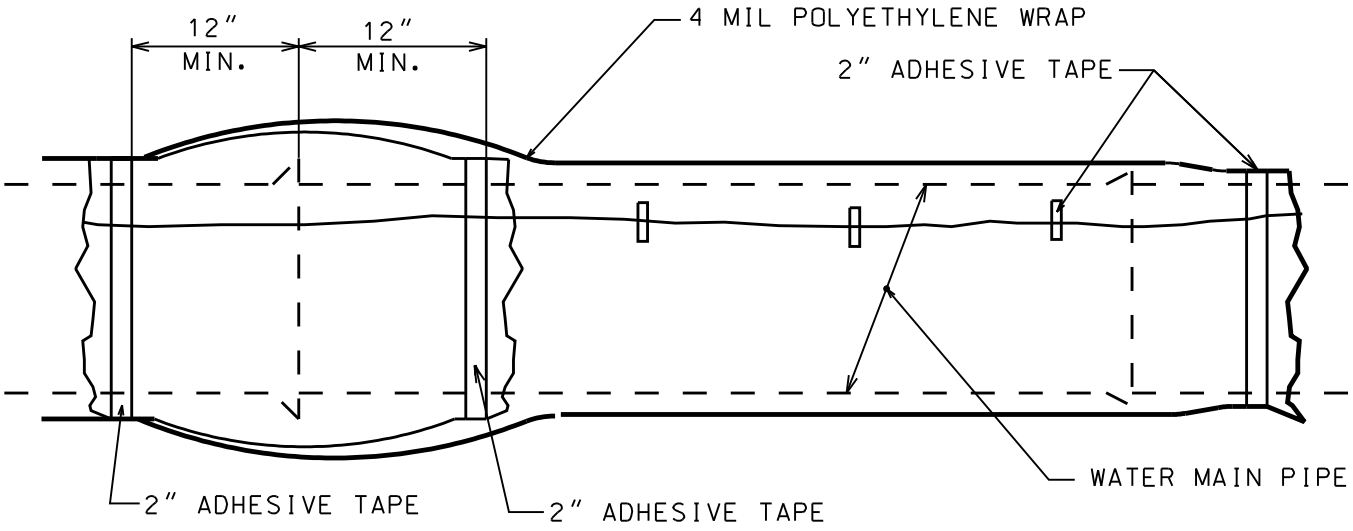


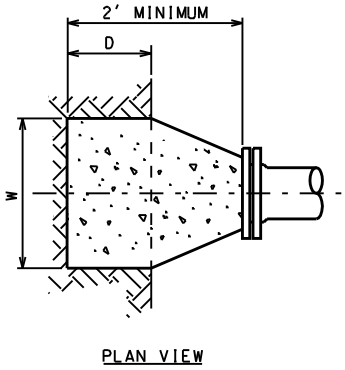
CHART "A" POLYWRAP FLAT TUBE WIDTHS		
PIPE DIAMETER (IN.)	D.I.P. WITH PUSH-ON JOINTS (IN.)	D.I.P. WITH MECHANICAL JOINTS (IN.)
4	14	16
6	17	20
8	21	24
12	29	30
16	37	37
24	53	53

NOTES:

1. USE ONE LENGTH OF POLYETHYLENE TUBE WRAP FOR EACH LENGTH OF PIPE, OVERLAPPED AT PIPE JOINTS AND FOLD EXCESS OVER TOP OF TUBE FOR SLACK REDUCTION.

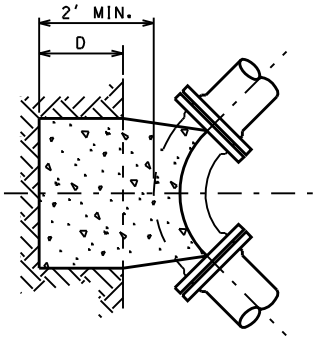
2. USE CHART "A" TO SELECT SIZE OF WRAP.

WATER MAIN
POLYETHYLENE WRAP DETAIL



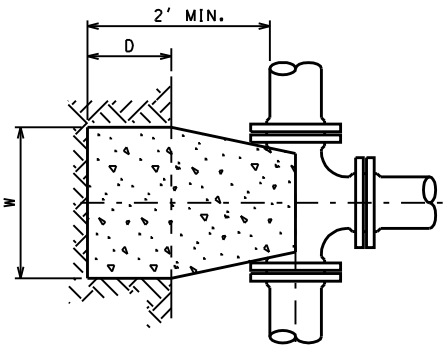
PLAN VIEW

DEAD END THRUST BLOCK



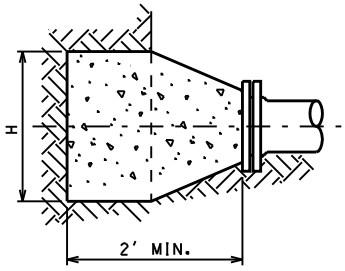
PLAN VIEW

BEND THRUST BLOCK



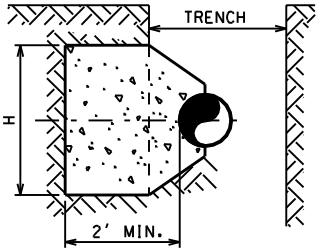
PLAN VIEW

TEE THRUST BLOCK



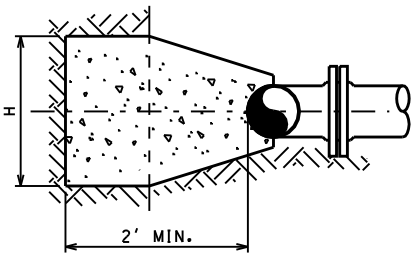
PROFILE

DEAD END THRUST BLOCK



PROFILE

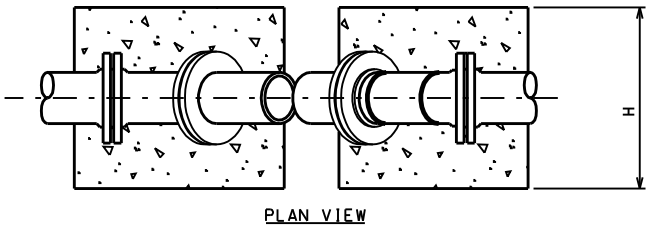
BEND THRUST BLOCK



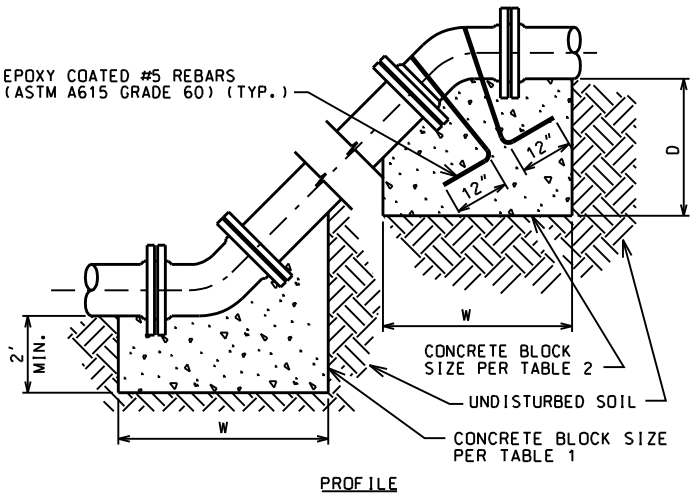
PROFILE

TEE THRUST BLOCK

HORIZONTAL THRUST BLOCK DETAILS



PLAN VIEW



PROFILE

VERTICAL THRUST BLOCK DETAILS

TABLE 1

PIPE SIZE	DEAD END & TEE				HORIZONTAL 1/4 BEND				HORIZONTAL 1/8 BEND			
INCH DIA.	D	H	W	CY	D	H	W	CY	D	H	W	CY
16	1	5.5	4.5	2	1	6.5	5	2.5	1	4.5	4	1.5
12	1	3.5	3.5	1	1	4	4	1.5	1	3	3	.75
8	.5	2.5	2.5	.5	.5	3	3	.5	.5	2	2	.3

PIPE SIZE	HORIZONTAL 1/16 BEND				HORIZONTAL 1/32 BEND			
INCH DIA.	D	H	W	CY	D	H	W	CY
16	1	3.5	3.5	1	1	2.5	2.5	.6
12	1	2.5	2.5	.5	1	2	2	.4
8	.5	1.5	1.5	.25	.5	1.5	1.5	.25

TABLE 2

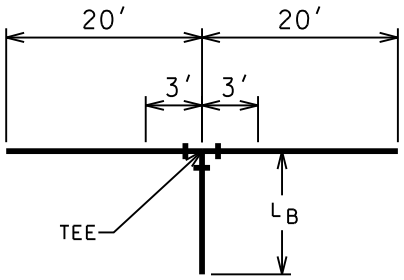
PIPE SIZE	VERTICAL 1/8 BEND				VERTICAL 1/8 BEND BOTTOM			
INCH DIA.	D	H	W	CY	D	H	W	CY
16	7	6	6	11	2	4.5	4	2.25
12	5	6	5	7	2	3	3	1
8	4.5	4	4	3.5	2	2	2	.5

D IS THE DIMENSION INTO UNDISTURBED GROUND IN FEET
H IS HEIGHT OF THRUST BLOCK IN FEET
W IS WIDTH OF THRUST BLOCK IN FEET
ALL DIMENSIONS ARE MINIMUM.
THRUST BLOCKS IN LOOSE FILL OR SAND AREAS ARE NOT INCLUDED IN THESE TABLES AND WILL REQUIRE ADDITIONAL ANALYSIS.

NOTES:

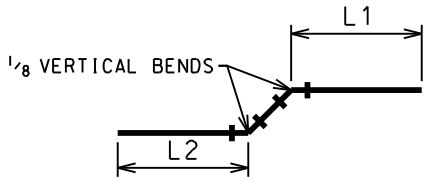
1. FULL CONCRETE THRUST BLOCKS AS SHOWN ARE REQUIRED WHEN THRUST RESTRAIN IS NOT PROVIDED BY OTHER MEANS SUCH AS RESTRAINED JOINT PIPE.
2. WHEN THRUST RESTRAINT GLANDS ARE INSTALLED FOR THE CONNECTIONS, CONCRETE THRUST BLOCKS SHALL BE PROVIDED UP TO THE THE DOTTED LINE AS SHOWN.
3. ALL BOLTS, NUTS, THRUST RESTRAINT GLANDS AND FITTINGS SHALL BE WRAPPED WITH POLYETHYLENE TUBING TO PREVENT CORROSION AND CONCRETE ADHESION.
4. CONCRETE FOR THRUST BLOCKS MUST NOT CONTAIN FLY ASH.

THRUST RESTRAINT
CONCRETE THRUST BLOCK DETAILS



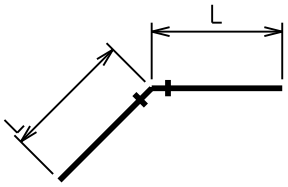
TEE SIZE	L_B
8" x 8" :(8", 12", 16" OR 24") x 12"	0
16" x 16"	42'
36" x 24"	277'

HORIZONTAL TEES - LENGTH OF RESTRAINED JOINTS



PIPE SIZE	L1	L2
8"	26'	26'
12"	37'	11'
16"	67'	20'
24"	67'	20'

1/8 VERTICAL BENDS - LENGTH OF RESTRAINED JOINTS



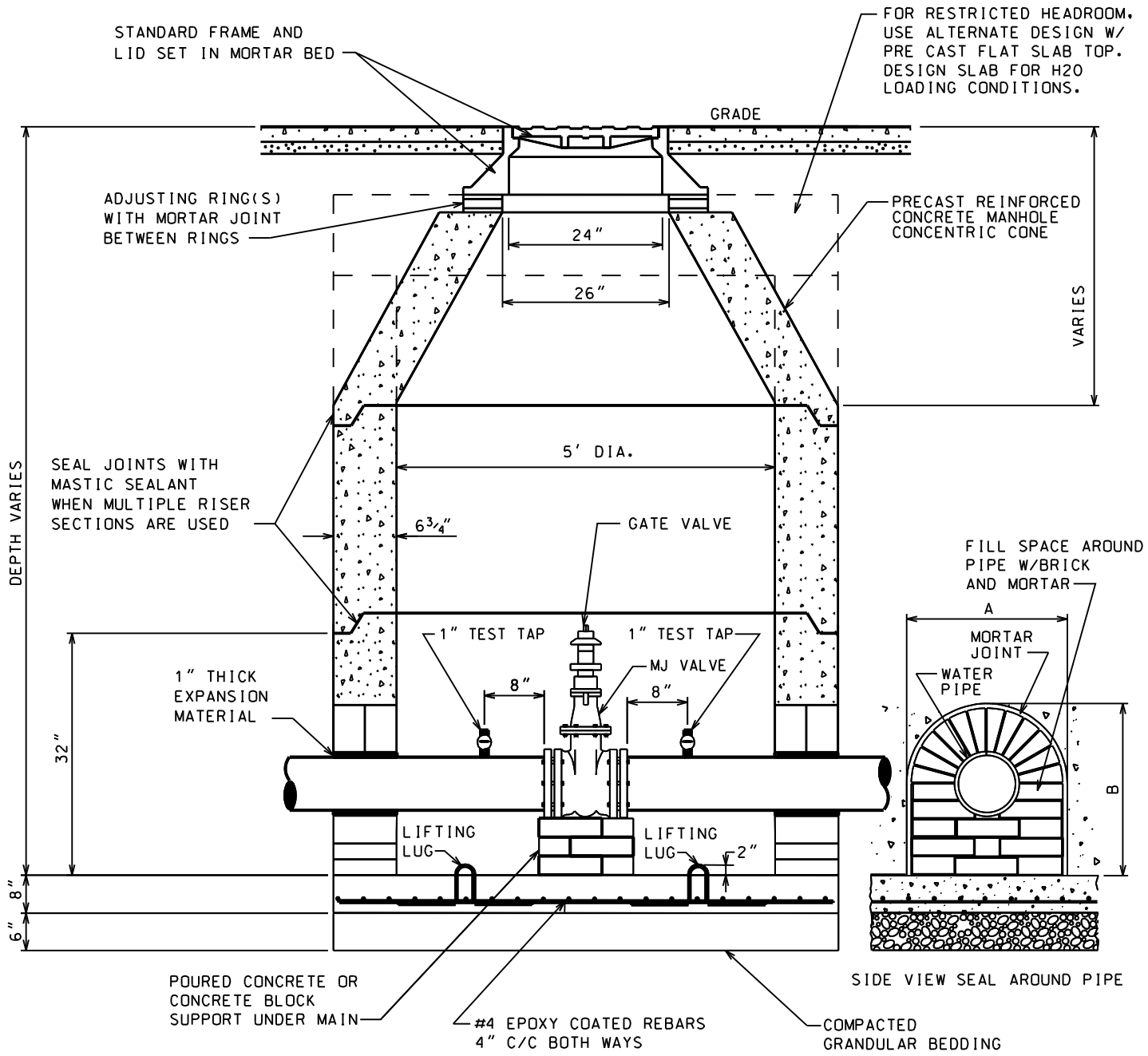
PIPE SIZE	DISTANCE OF RESTRAINED JOINTS REQUIRED EITHER SIDE OF BENDS L — BEND SIZES 1/32	1/16	1/8	1/4
8"	3'	6'	12'	29'
12"	4'	8'	17'	41'
16"	7'	15'	30'	73'
24"	7'	15'	30'	73'

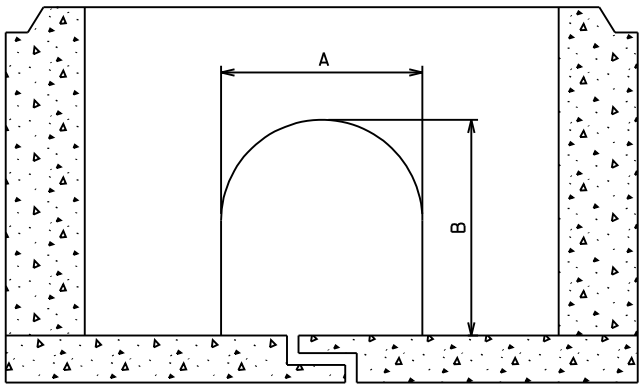
HORIZONTAL BENDS - LENGTH OF RESTRAINED JOINTS

NOTE:
1. MINIMUM LENGTHS OF PIPE REQUIRED TO RESTRAIN FITTINGS SHOWN.

2. LENGTHS BASED ON POLY-WRAPPED PIPE.

THRUST RESTRAINT
RESTRAINED JOINT PIPE DETAILS





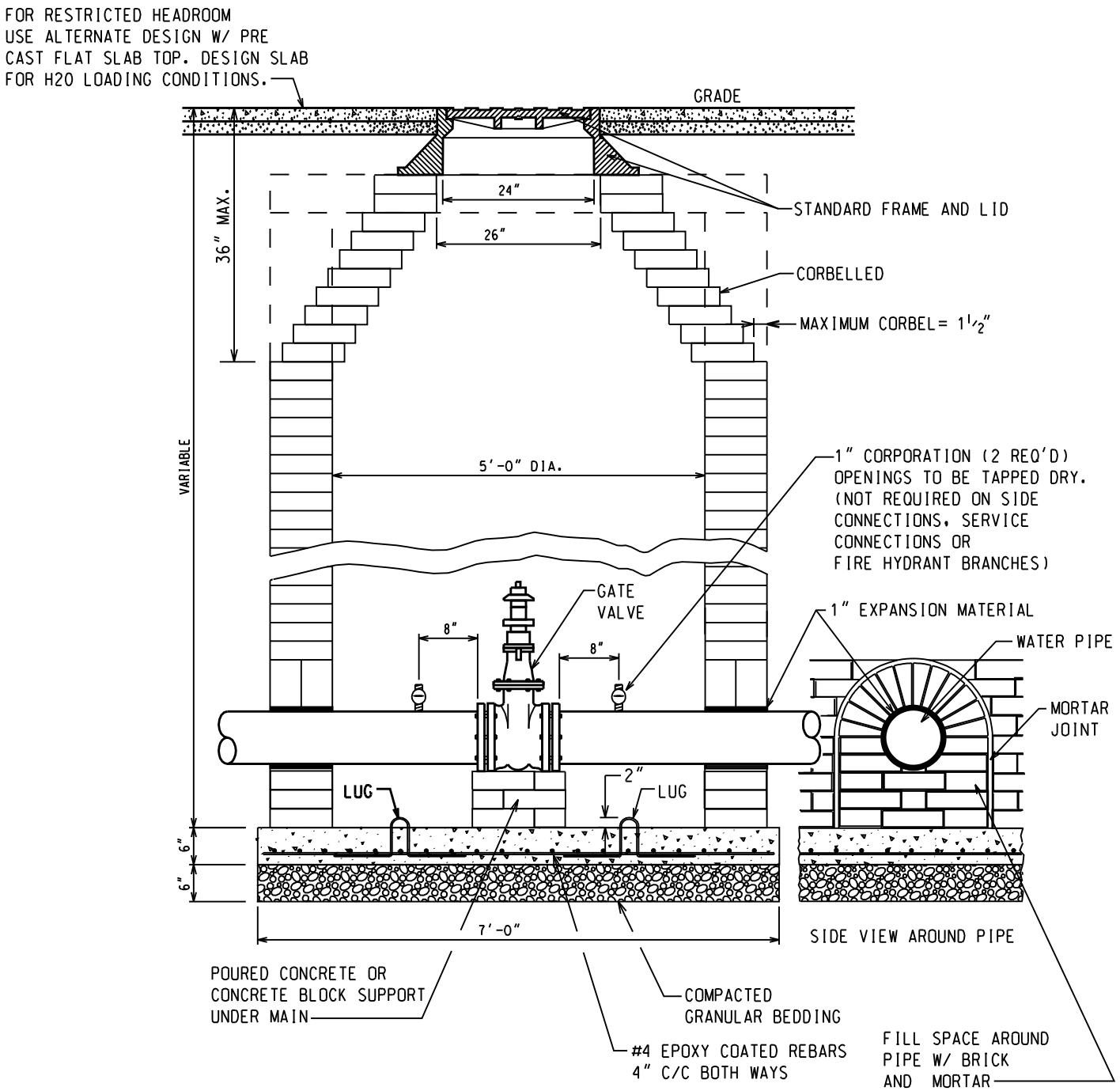
OPTIONAL SPLIT BOTTOM

NOMINAL PIPE SIZES	OPENING DIMENSIONS	
	A	B
8"	11.0"	12.5"
12"	15.5"	16.5"
16"	19.5"	21.0"

PRECAST VALVE BASIN
FOR PIPES UP TO 16" DIA.

REV:06.07

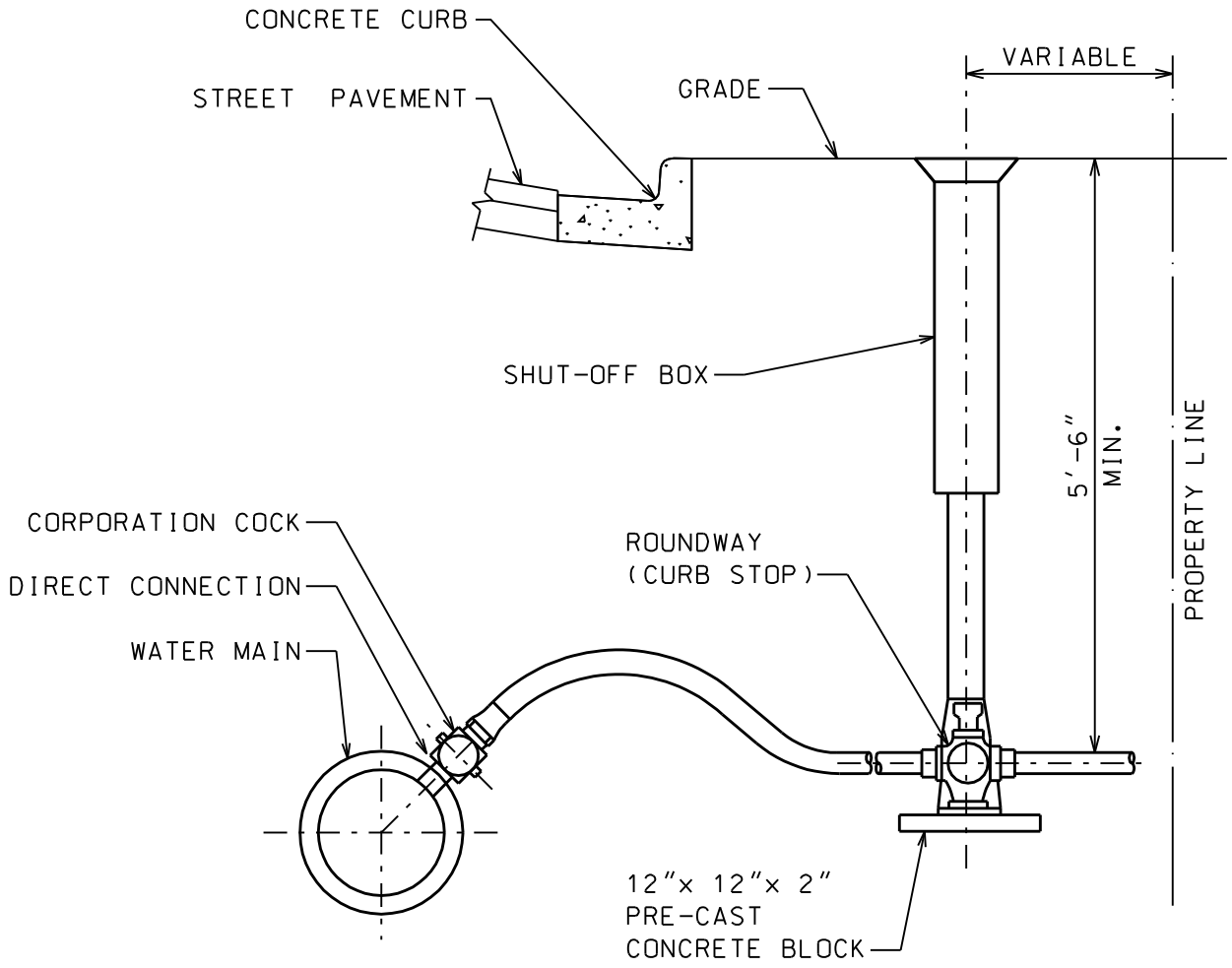
D-13



NOTES:

1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING
2. USE PRECAST CONCRETE BASE OR PROVIDE 6" (MIN.) THICK CONCRETE BASE POURED IN PLACE WITH #4 EPOXY COATED REBARS 4" C/C BOTH WAYS.
3. CUT LIFTING LUGS AFTER PLACING THE PRE-CAST SLAB IN POSITION.
4. ALL JOINTS AND BRICK MASONRY SHALL BE PLASTERED INSIDE AND OUTSIDE WITH 1:2 CEMENT MORTAR.
5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS RESTRICTED.

BRICK MASONRY VALVE BASIN

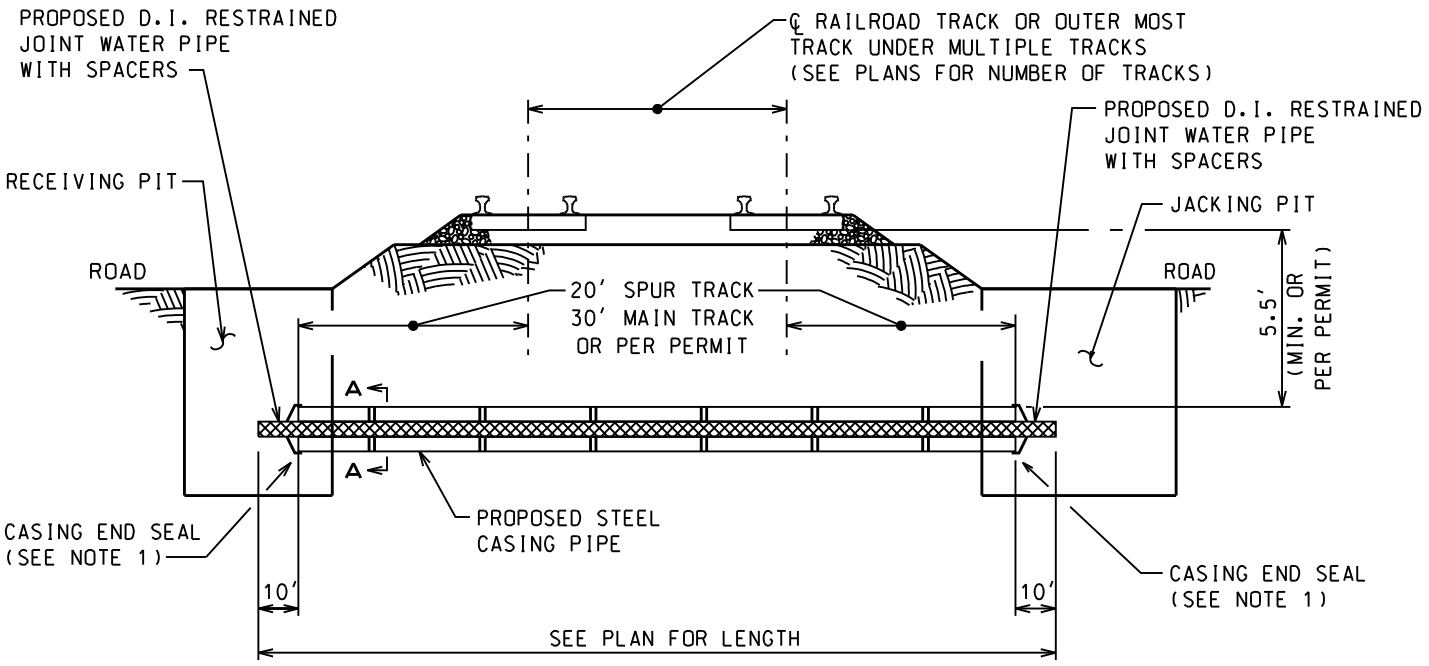


CORPORATION COCK		SHUT-OFF BOX
SIZE	WEIGHT	WEIGHT
In.	Lb.	Lb.
1.0	3.00	7.25
1.5	10.00	7.25
2.0	16.50	7.25

REV:04.07

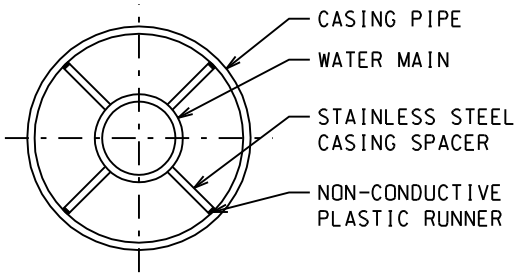
TYPICAL 1" TO 2" WATER SERVICE

D-16



PROFILE

N.T.S.



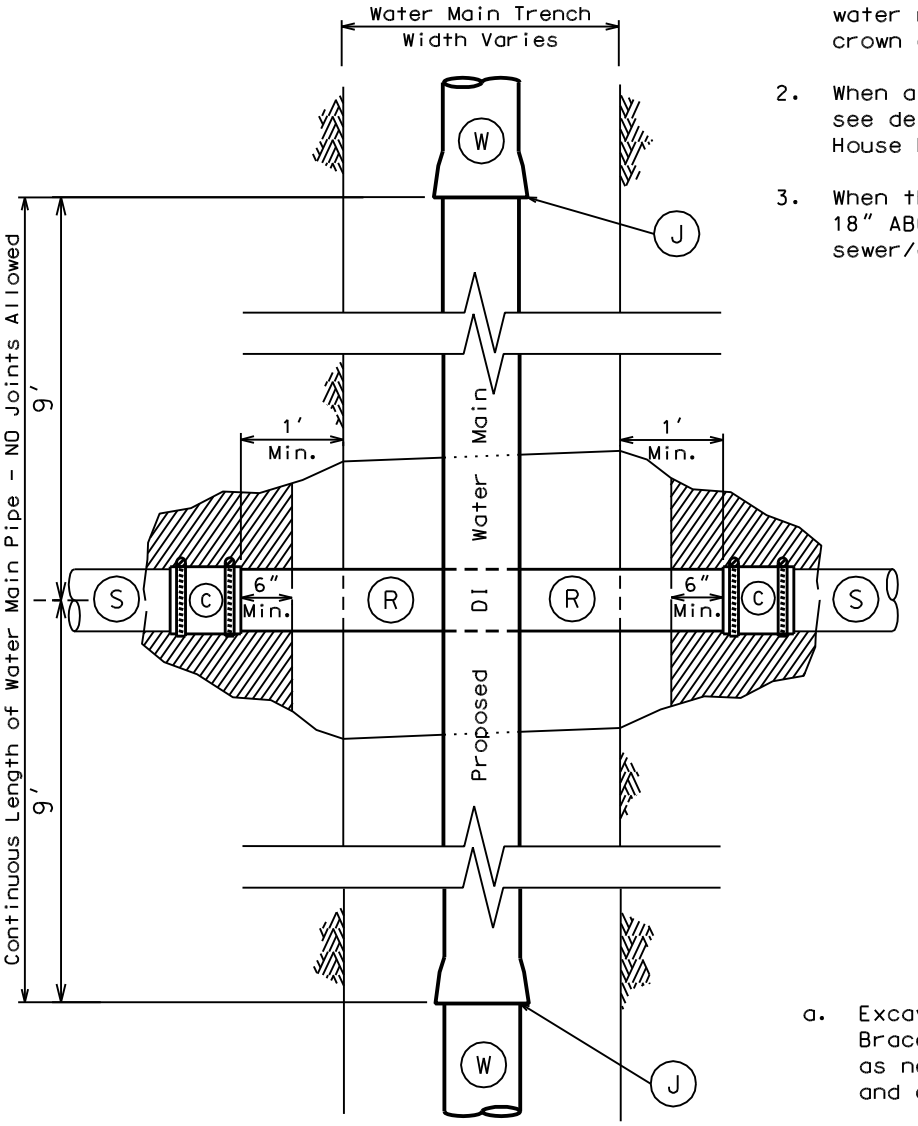
SECTION A-A

NOTES:

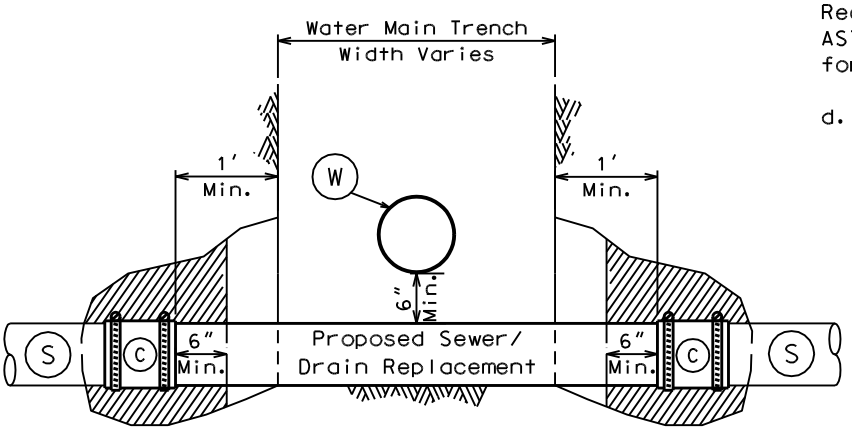
1. END SEAL - BRICK AND MORTAR OR SELF CURING RUBBER SEAL.
2. LENGTH OF CASING PIPES UNDER METRA TRACKS SHALL BE EXTENDED TO METRA R.O.W. LINES AND JACKING AND RECEIVING PITS ARE NOT TO BE LOCATED WITHIN TRACK R.O.W.

THIS DETAIL IS PROVIDED FOR REFERENCE PURPOSES ONLY AND IS NOT A C.D.W.M. WATER MAIN STANDARD

CASING PIPE UNDER RAILROAD TRACK DETAIL D-18



PLAN
No Scale



PROFILE THROUGH SEWER/DRAIN
No Scale

GENERAL NOTES

1. Replace the sewer/drain when the invert of the water main is LESS than 18" ABOVE the crown of the sewer/drain.
2. When a water main crosses UNDER a sewer/drain, see detail "Water Mains Crossing Under Sewers & House Drains."
3. When the invert of the water main is MORE than 18" ABOVE the crown of the sewer/drain, no sewer/drain replacement is required.

KEY TO SYMBOLS

- (W) Proposed DI Water Main
- (J) Proposed DI Water Main Joint (Continuous Pipe Between Joints)
- (S) Existing Sewer or House Drain
- (R) Proposed Sewer/Drain Replacement
- (C) Proposed ASTM C1173 Flexible Transition Coupling for Sewer Piping
- Proposed Bentonite Seal
- Undisturbed Soil

SEWER/DRAIN REPLACEMENT NOTES

a. Excavate as needed to replace sewer/drain. Brace and shore trenches and excavations as needed to provide safe working conditions and comply with applicable requirements.

b. Cut existing sewer/drain to remove section to be replaced; breaking or cracking is not allowed.

c. Replace the sewer/drain with a continuous length of ductile iron pipe, the same size as the sewer/drain, cut to fit. Reconnect the sewer/drain with ASTM C1173 Flexible Transition Couplings for Sewer Pipe.

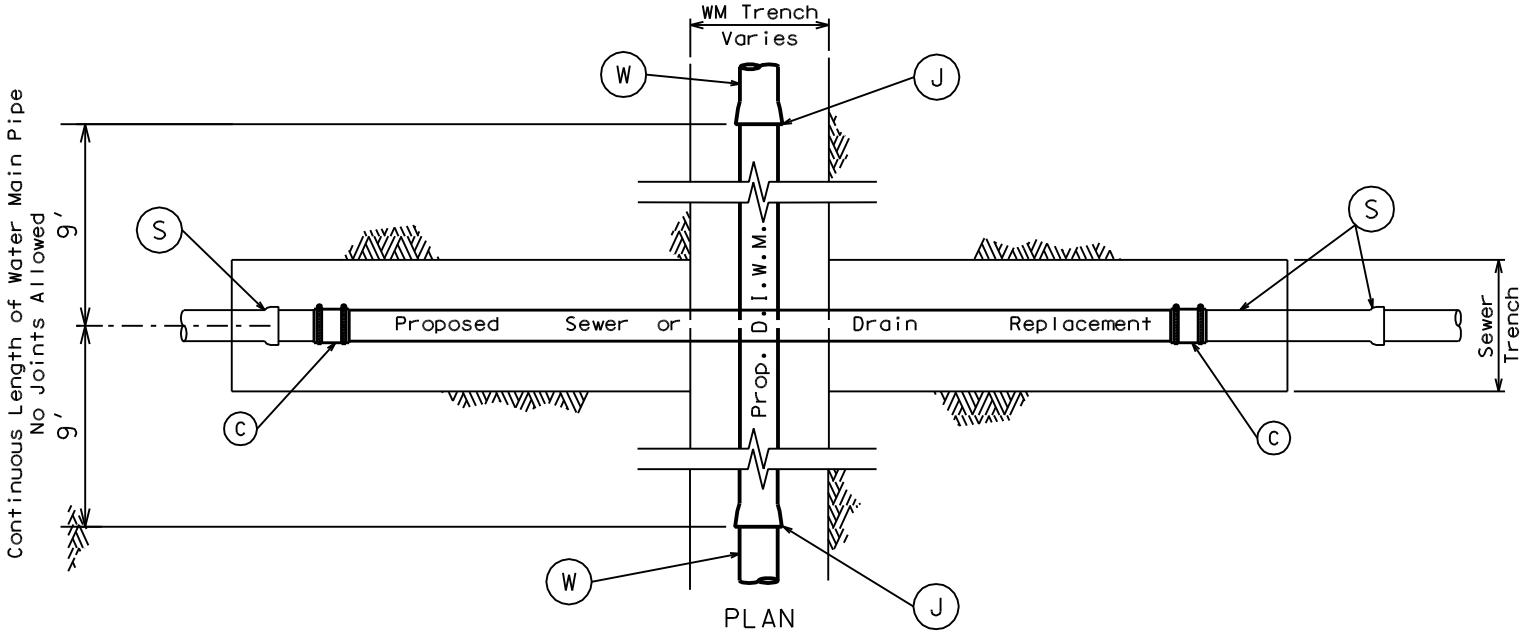
d. Encase the couplings in medium bentonite chips (1/4" - 3/8") mixed with enough clean water to form a stiff clay. Pack the excavations surrounding the couplings to seal off leaks.

e. Center a length of water main pipe (18' typically) over the sewer/drain crossing.

f. Except where bentonite seals are shown, backfill using typical standards.

g. Comply with IL EPA requirements (modified and approved by IL EPA November 13, 2007).

WATER MAINS CROSSING OVER SEWERS & HOUSE DRAINS



PLAN
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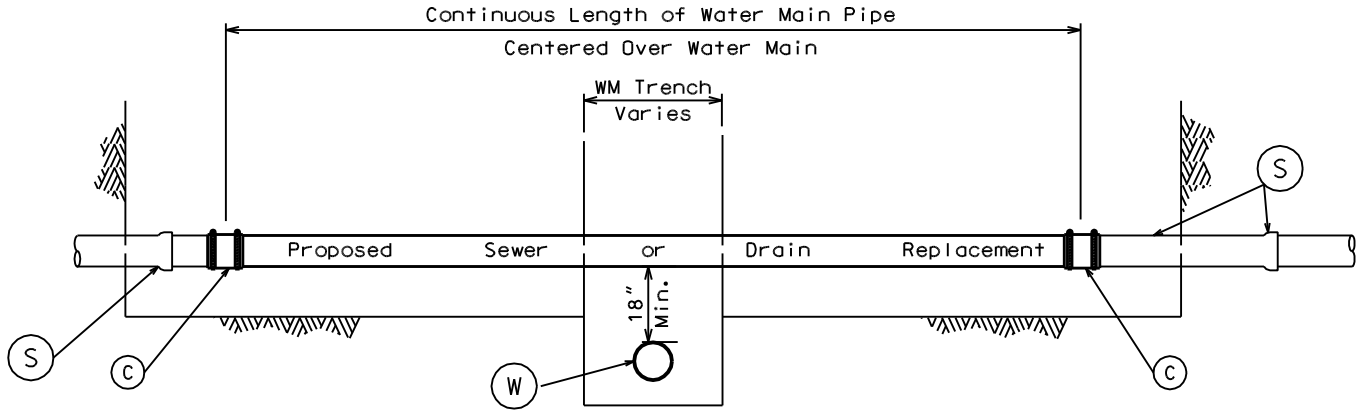


PROFILE THROUGH SEWER/DRAIN
No Scale

GENERAL NOTES

1. Replace the sewer/drain in all cases when a water main crosses UNDER the sewer/drain.
2. When a water main crosses OVER a sewer/drain, see detail "Water Mains Crossing Over Sewers & House Drains."

KEY TO SYMBOLS

- (W) Proposed DI Water Main
- (J) Proposed DI Water Main Joint (Continuous Pipe Between Joints)
- (S) Existing Sewer or House Drain
- (R) Proposed Sewer/Drain Replacement
- (C) Proposed ASTM C1173 Flexible Transition Coupling for Sewer Piping
- Undisturbed Soil

SEWER/DRAIN REPLACEMENT NOTES

a. Minimum clearance between the crown of the water main and the invert of the sewer/drain is 18".

b. Excavate as needed to replace sewer/drain. Brace and shore trenches and excavations as needed to provide safe working conditions and comply with applicable requirements.

c. Cut existing sewer/drain to remove section to be replaced; breaking or cracking is not allowed.

d. Replace the sewer/drain with a continuous length of ductile iron pipe, the same size as the sewer/drain, cut to fit. Reconnect the sewer/drain with ASTM C1173 Flexible Transition Couplings for Sewer Pipe.

e. Center a length of water main pipe (18' typically) under the sewer/drain crossing.

f. Backfill using typical standards.

g. Comply with IL EPA requirements.

REV:11.07

WATER MAINS CROSSING UNDER SEWERS & HOUSE DRAINS

D-19
SHT. 2 OF 2

GENERAL NOTES

1. LOCATION OF UTILITIES AND PROPERTY LINES ARE FROM THE BEST INFORMATION AVAILABLE. EXACT LOCATION AND COMPLETENESS ARE NOT GUARANTEED.

2. THE CONTRACTOR MUST VERIFY THE LOCATION OF UNDERGROUND UTILITIES WITH THE UTILITY OWNERS PRIOR TO DOING ANY WORK IN THE VICINITY. THE CONTRACTOR MUST COMPLY WITH REQUIREMENTS OF UTILITY OWNERS REGARDING NOTICE OF WORK AND PROTECTION OF UTILITIES. THE CONTRACTOR MUST COMPLY WITH THE CITY OF CHICAGO, DEPARTMENT OF TRANSPORTATION DAMAGE PREVENTION PROTOCOL CITY INFRASTRUCTURE DEPARTMENTS. ALL UTILITIES MUST BE NOTIFIED AT LEAST 48 HOURS BEFORE CONSTRUCTION. (CALL DIGGER 312-744-7000).

3. TEST PITS MUST BE EXCAVATED IN ADVANCE OF PIPELINE CONSTRUCTION IN ORDER TO CONFIRM DEPTH AND LOCATION OF EXISTING UTILITIES AND WHEN DIRECTED BY THE DEPARTMENT MANAGER. NO ADDITIONAL PAYMENT WILL BE MADE FOR TEST PIT EXCAVATION.

4. IF ANY PUBLIC OR PRIVATE UTILITIES CROSS THE WATER MAIN TRENCH AND MUST REMAIN IN PLACE. THE CONTRACTOR MUST PROTECT SAID UTILITY IN CONFORMANCE WITH THE SPECIFICATIONS OR AS DIRECTED BY THE COMMISSIONER.

5. PROVIDE EROSION CONTROL IN ACCORDANCE WITH THE SPECIFICATIONS.

6. FITTINGS AND THEIR LOCATIONS INDICATED ON THE DRAWINGS ARE TENTATIVE. THE CONTRACTOR MUST COMPLETE THE INSTALLATION WITH THE NECESSARY FITTINGS DICTATED BY FIELD CONDITIONS. NO ADDITIONAL PAYMENT WILL BE MADE FOR DEVIATIONS FROM THE INDICATED FITTINGS.

7. WORK INDICATED ON THE PLANS AND NOT REFERENCED TO A BID ITEM IS CONSIDERED INCIDENTAL TO THE WORK TO WHICH IT APPLIES AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

8. WATER MAIN AND FITTINGS LOCATIONS SHOWN ON THE DRAWINGS FOR THE NEW WATER MAINS AND APPURTENANCES MAY BE CHANGED BY THE COMMISSIONER DUE TO FIELD CONDITIONS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR SUCH CHANGES. UNLESS PREVIOUSLY APPROVED BY THE COMMISSIONER.

9. THE CONTRACTOR MUST PROVIDE THRUST RESTRAINTS IN ACCORDANCE WITH THE SPECIFICATIONS. THE CONTRACTOR MUST FURNISH AND INSTALL MECHANICAL JOINT THRUST RESTRAINT GLANDS AT ALL FITTINGS AND MECHANICAL JOINTS.

10. THE CONTRACTOR MUST VERIFY THE OPERATION OF EVERY VALVE NECESSARY FOR THE REQUIRED WATER MAIN SHUT DOWN FOR EACH PIPE SECTION. FOR VALVES OR WATER MAINS UNDER 16-INCHES IN DIAMETER. THE WORK MUST BE DONE UNDER THE DIRECT SUPERVISION OF A DEPARTMENT REPRESENTATIVE AT LEAST 2 WEEKS PRIOR TO THE START OF THE JOB. A 24 HOUR ADVANCE NOTICE MUST BE GIVEN TO ALL CONSUMERS EFFECTED AND THE BUREAU OF OPERATIONS AND DISTRIBUTION. THE OPERATION OF ALL VALVES 16-INCHES IN DIAMETER AND LARGER MUST BE PERFORMED BY CITY FORCES PURSUANT TO A 72 HOUR ADVANCE NOTIFICATION TO THE DEPARTMENT. ANY VALVE FOUND NOT OPERABLE WILL BE REPAIRED OR REPLACED BY THE DEPARTMENT UNLESS DIRECTED OTHERWISE BY THE COMMISSIONER.

11. IN INSTANCES WHERE CHLORINATION IS TO BE DONE AGAINST ANY EXISTING VALVE, AT THE TIME THAT THE EXISTING WATER MAIN IS BREACHED FOR FINAL CONNECTION. THE CONTRACTOR IS TO VERIFY THAT THE EXISTING VALVES ARE IN GOOD OPERATING CONDITION AND DO NOT LEAK. ANY LEAKING VALVE SHOULD BE BROUGHT TO THE COMMISSIONERS' ATTENTION AND BE REPAIRED OR REPLACED PRIOR TO MAKING PIPE CONNECTIONS TO THE EXISTING WATER MAIN. THE VALVE SHOULD REMAIN IN THE CLOSED POSITION UNTIL THE NEW WATER MAIN IS APPROVED FOR SERVICE.

GENERAL NOTES (CONTINUED)

12. ALL OPENINGS IN EXISITNG WATER MAINS MUST BE PLUGGED OR CAPPED WITH DUCTILE IRON FITTINGS UNTIL THE MAIN IS ABANDONED.

13. ALL VALVE BASINS MUST BE CONSTRUCTED OF PRE-CAST REINFORCED CONCRETE UNLESS DIRECTED OTHERWISE BY THE COMMISSIONER.

14. NOTES INDICATING S.N.L., E.W.L., ETC., MEAN SOUTH OF THE NORTH PROPERTY LINE, EAST OF THE WEST PROPERTY LINE, ETC. AND ARE MEASURED FROM THE NEAREST STREET.

15. IF A STANDARD MECHANICAL JOINT SLEEVE DOES NOT FIT TO MAKE CONNECTION OF THE NEW PIPE TO THE EXISTING PIPE, A TRANSITION SLEEVE MUST BE USED. NO GRINDING OF THE EXISTING PIPE IS PERMITTED.

16. BURIED STREET CAR TRACKS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. EXACT LOCATIONS AND DIMENSIONS ARE UNKNOWN UNLESS NOTED OTHERWISE. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING IN THE STREETS CONTAINING BURIED STREET CAR TRACKS. BURIED TRACKS AND CABLES MAY BE USED FOR ELECTRICAL GROUNDING BY THE CHICAGO TRANSIT AUTHORITY OR MEMBERS OF THE CHICAGO AREA JOINT ELECTROLYSIS COMMITTEE STANDARDS. ELECTRICAL CONDUCTIVITY MUST BE MAINTAINED.

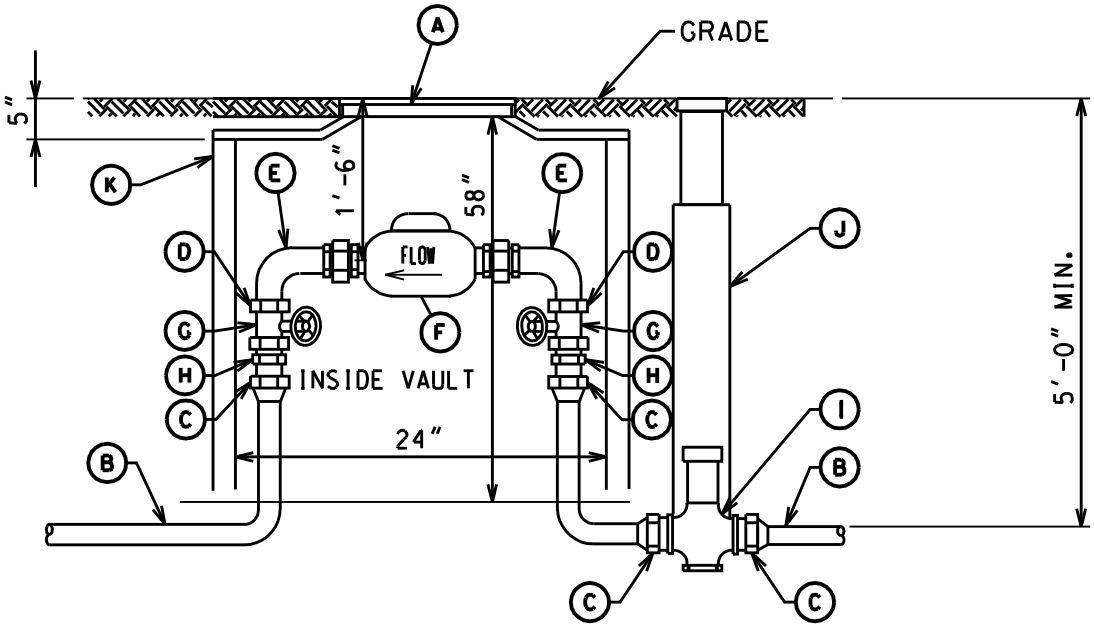
17. HOUSE DRAINS ARE NOT SHOWN ON THE DRAWINGS. THE CONTRACTOR MUST LOCATE ALL HOUSE DRAINS WITHIN THE AREA OF EXCAVATION AND MAKE ADJUSTMENTS AND/OR REPAIRS.

18. THE DEPARTMENT WILL PROVIDE THE NECESSARY I.E.P.A. WATER MAIN CONSTRUCTION PERMITS FOR THIS CONTRACT.

19. WORK WITHIN STATE ROUTES ARE NOTED ON THE DRAWINGS AND WILL REQUIRE I.D.O.T., REGION 1, UTILITY PERMITS. THE CONTRACTOR IS RESPONSIBLE FOR SECURING ALL PERMITS, INITIATED BY THE DEPARTMENT AND OBTAINING PERFORMANCE BONDS. ALL WORK MUST BE IN ACCORDANCE WITH I.D.O.T. PERMIT REQUIREMENTS. QUESTIONS SHOULD BE DIRECTED TO: I.D.O.T REGION ONE UTILITIES COORDINATOR AT (847) 705-4258.

20. ABANDON EXISTING WATER MAINS IN ACCORDANCE WITH THE SPECIFICATIONS.

21. **SWAB PIPE AND FITTINGS THAT WILL NOT BE PRESSURE TESTED OR CHLORINATED WITH CHLORINE SOLUTION DURING INSTALLATION AND USE EXTRA PRECAUTION TO PREVENT SOIL AND DEBRIS FROM ENTERING THE PIPE. INCORPORATE UNTESTED PIPE INTO THE FLUSHING ROUTINE WHEN POSSIBLE. WHEN CONNECTING NEW PIPE TO THE EXISTING WATER SYSTEM, USE OPERATING PRESSURE TO VISUALLY INSPECT FOR LEAKS. WHEN FEASIBLE, PERFORM INSPECTION PRIOR TO BACKFILLING. COMPLY WITH ALL STANDARDS AND REQUIREMENTS OF THE BUREAU OF WATER QUALITY (312) 744-8190.**

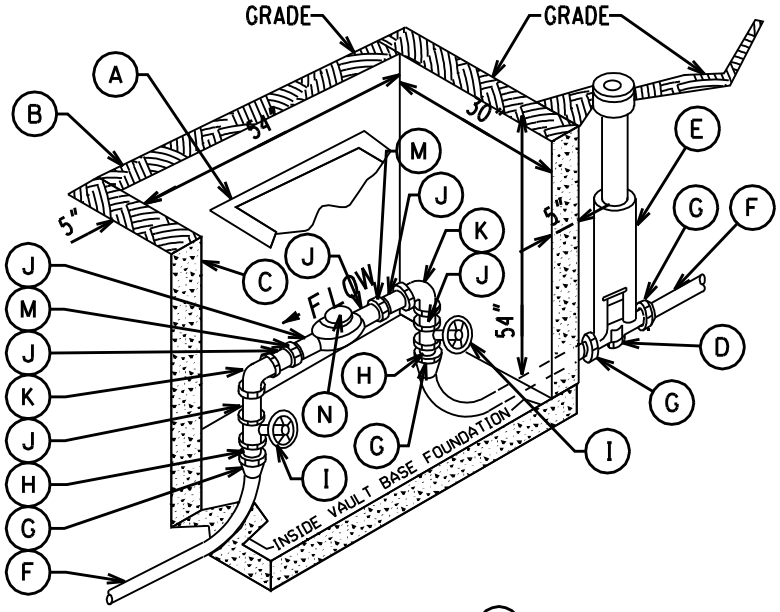


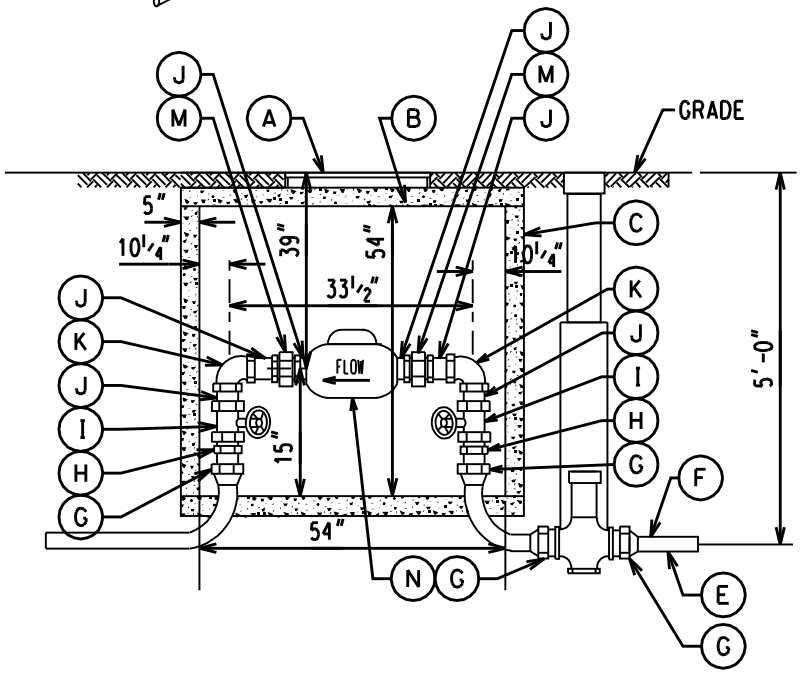
1" METER VAULT
VAULT CODE 11-8-200

A	FRAME AND LID (NEENAH R1911C)
B	1" TYPE K COPPER PIPE
C	FEMALE FLARED FITTING
D	1" x 3/4" BRASS BUSHING
E	3/4" BENT METER COUPLING
F	METER
G	FULL PORT CONTROL VALVE
H	MALE I.P.S. TO FLARED ADAPTER
I	1" ROUNDWAY
J	SHUT-OFF BOX
K	EXTRA HEAVY SALT GLAZED VITRIFIED CLAY TILE PIPE

NOTE:
1 1/2" AND 2" METER VAULT CALL
FOR 39" COVER. SEE NEXT PAGE.

NEW COPPER 1" WATER SERVICE
STANDARD METER VAULT

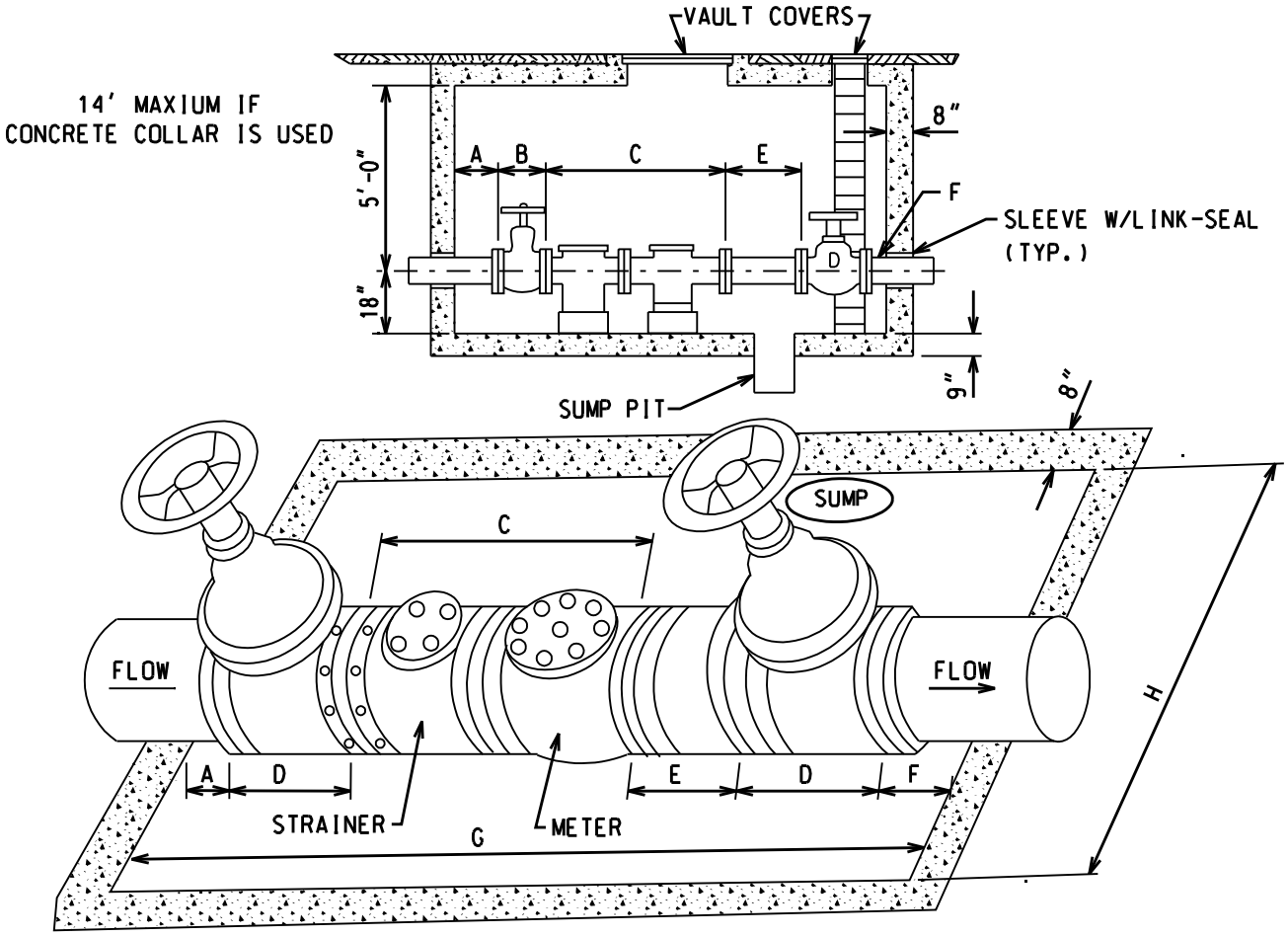




A	COVER 25¼"x 25¼" (NEENAH, R6662JP OR EQUAL) CENTERED OVER METER
B	PRECAST CONCRETE TOP
C	SOLID CONCRETE BLOCK OR PRECAST CONCRETE
D	ROUNDWAY
E	SHUT-OFF BOX
F	TYPE K COPPER
G	F.M. FLARED FITTING
H	MALE I.P.T. TO FLARED
I	FULL PORT CONTROL VALVE
J	BRASS NIP.
K	BRASS ELL.
M	BRASS UNION
N	METER

NEW COPPER 1½" & 2" WATER SERVICES
STANDARD METER VAULT

SIZE	A	B	C	D	E	F	G	H
3"	1'-0"	1'-2"	2'-6"	1'-2"	SPOOL PIECE VARIES	1'-0"	8'-0"	6'-0"
4"	1'-0"	1'-2"	2'-6"	1'-2"	SPOOL PIECE VARIES	1'-0"	8'-0"	6'-0"
6"	1'-0"	1'-2"	2'-6"	1'-2"	SPOOL PIECE VARIES	1'-0"	10'-0"	6'-0"
8"	1'-0"	1'-2"	2'-6"	1'-2"	SPOOL PIECE VARIES	1'-0"	10'-0"	6'-0"
12"	1'-0"	1'-2"	2'-6"	1'-2"	SPOOL PIECE VARIES	1'-0"	10'-0"	6'-0"

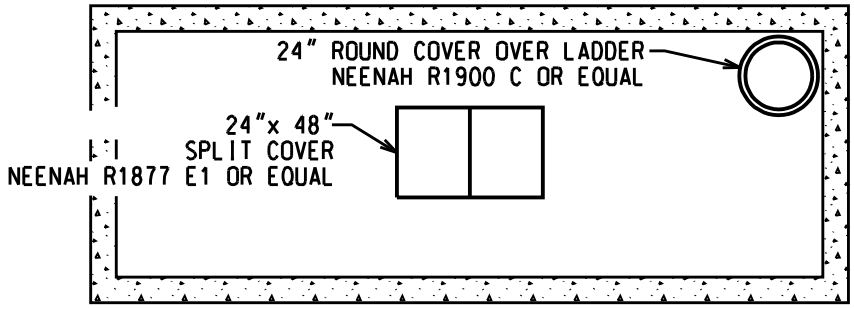


1" TAPS REQUIRED UPSTREAM AND DOWNSTREAM. ALL PIPES AND FITTINGS SHALL BE FLANGED AND SHALL CONFORM TO U.S.A. STANDARD A21.51-1965 (A.W.W.A.C. 151-65) AND SHALL HAVE ON OUTSIDE BITUMINOUS COATING OF EITHER COAL TAR OR ASPHALT BASE AND A CEMENT MORTAR LINING CONFORMING TO U.S.A. STANDARD A21.4-64 (A.W.W.A.C. 104-53).

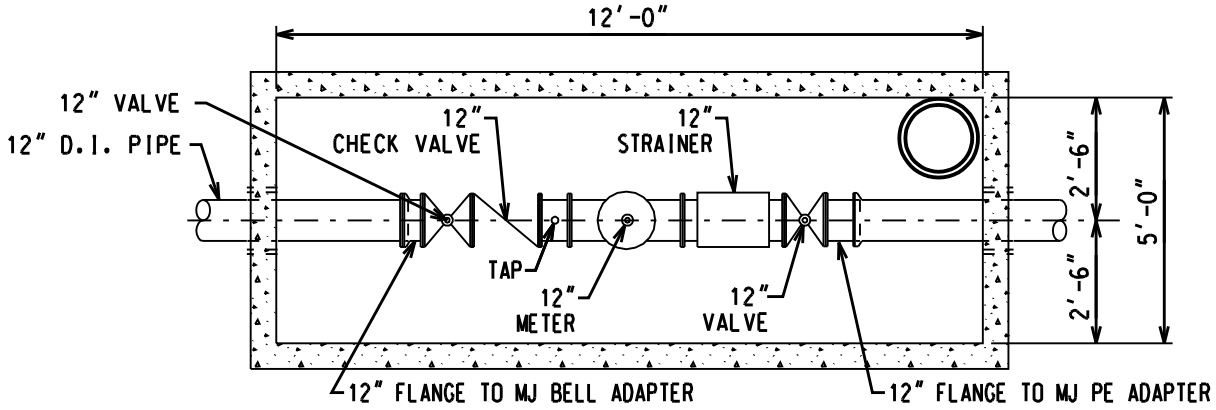
ALL METER VAULT COVERS AND LIDS SHALL BE HEAVY DUTY. 2 PIECE SHALL BE PLACED DIRECTLY ABOVE THE COMPOUND METER BYPASS. NO CENTER BRACE SHALL BE PERMITTED IN COVER FRAME. VAULT COVER SHALL MEASURE 49½" x 31½" AND COMPLY TO R6663NP NEENAH OR EQUAL.
FOR METER READER ACCESS A 1'-11" COVER MUST BE INSTALLED IN CORNER OF VAULT ACCESS COVER TO CONFORM TO R1889 NEENAH OR EQUAL. LADDER TO BE DIRECTLY UNDERCOVER.

FOR BLOCK CONSTRUCTION ON IRON RUNG LADDER ANCHORED TO WALL WITH STEPS 16" MAX. ON CENTER. FOR PRE-CAST VAULTS USE CAST IRON STEPS R1980-T. BOLTING TO BE INSTALLED IN VERTICAL AT 16" CENTERS. A SUMP PIT SHALL BE INSTALLED NEAR BUT NOT UNDER LADDER. NO MECHANICAL JOINT FITTING ALLOWED IN VAULT. BLOCK SUMP TO BE LOCATED NEAR ACCESS LADDER. BUT NOT UNDER LADDER. METER AND VAULTS ETC. TO BE CENTERED IN VAULT.

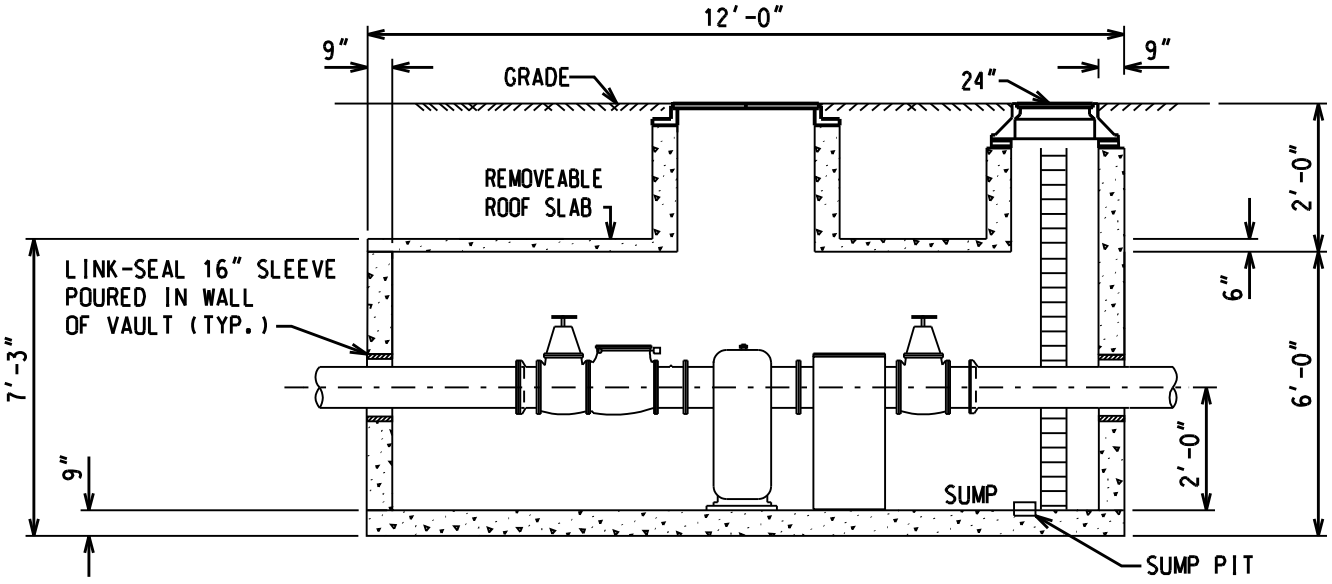
3", 4", 6", 8" & 12" METER VAULTS



PLAN VIEW ABOVE SURFACE



PLAN VIEW IN GROUND



SECTION VIEW IN GROUND

NOTES:

1. ALL CONCRETE STRUCTURES SHALL BE WATER TIGHT. THE CONTRACTOR WILL BE REQUIRED TO TAKE SUCH MEANS NECESSARY TO CORRECT ANY AND ALL LEAKAGE THRU FLOORS OR WALLS OF STRUCTURE. WITHOUT ADDITIONAL COMPENSATION.
2. WALLS MAY BE CONSTRUCTED OF 8" CONCRETE BLOCK ON A CONCRETE FLOOR SLABS MAY BE PRECAST CONCRETE-OR THEY BE PRECAST CONCRETE REINFORCED AS REQUIRED.
3. METER AND PIPING TO BE SET BEFORE INSTALLING ROOF SLAB.
4. ALL METER VAULTS SHALL BE FURNISHED WITH GALVANIZED OR ALUMINUM LADDERS. ALL OPENINGS IN METER VAULTS SHALL BE SEALED WITH 'NO SHRINK' GROUT.

12" METER VAULT WITH CHECK VALVE

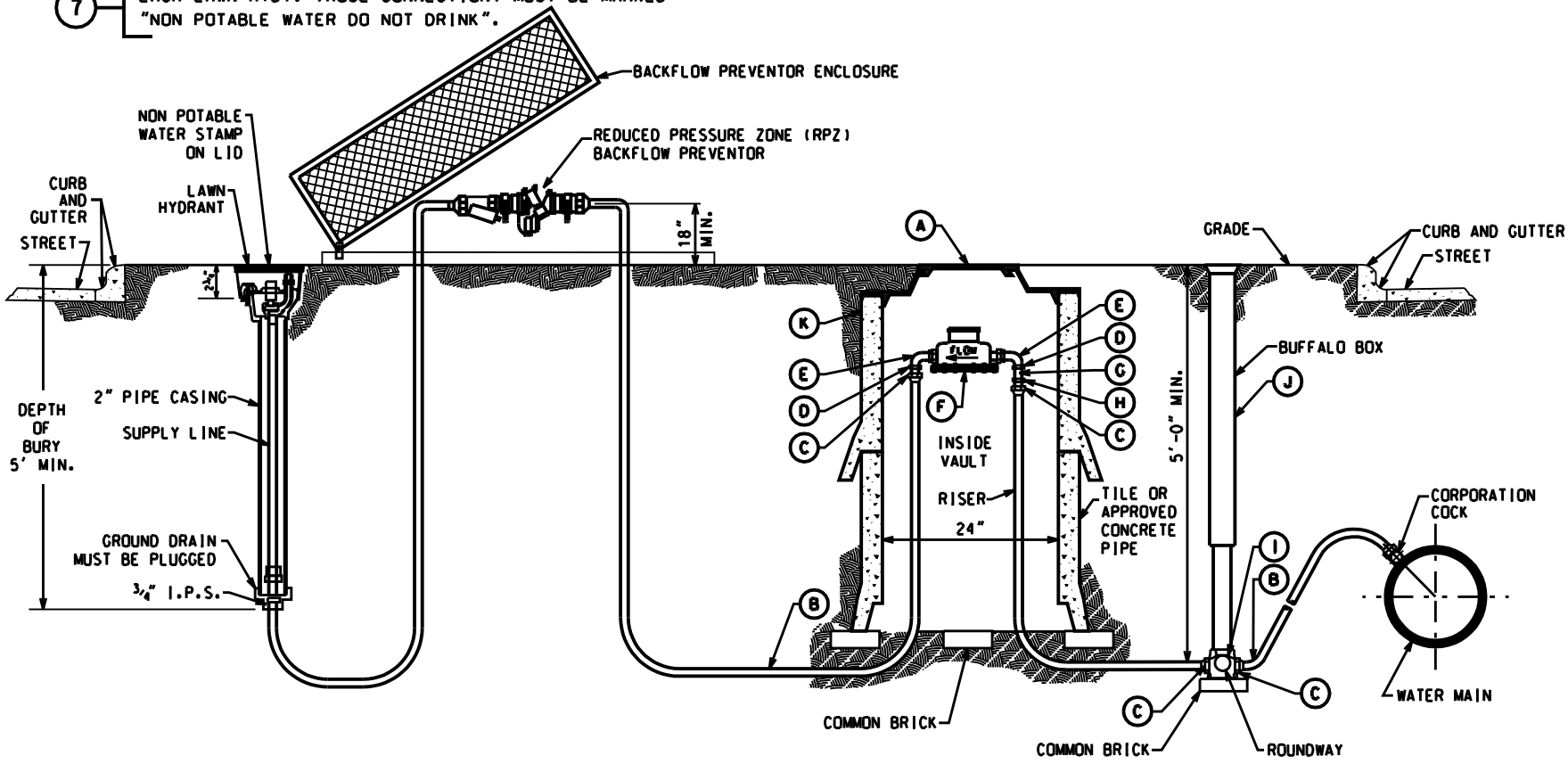
REV:04.07

TYPICAL METER INSTALLATION FOR 1" WATER SERVICE WITH LAWN HYDRANT AND BLACKFLOW PREVENTOR

TO PROTECT WATER SYSTEM FROM FREEZING

1. SHUTOFF WATER AT ROUNDWAY
2. REMOVE AND STORE RPZ AND KEEP FROM FREEZING.
3. OPEN LAWN HYDRANT AND LOOSEN METER NUT ON HOUSE SIDE OF METER
4. BLOWOUT WATER LINES FROM RPZ TO METER AND FROM RPZ TO LAWN HYDRANT.
5. IN SPRING REINSTALL RPZ AND ALSO HAVE RPZ TESTED BY LICENSED PERSONEL WITH A PERMIT FROM WATER DEPT. IN CITY HALL.
6. EACH RPZ MUST BE IDENTIFIED OR NUMBERED SO THAT RPZ WILL BE REINSTALLED IN THE SAME LOCATION AT ALL TIMES.
7. EACH LAWN HYDT. (HOSE CONNECTION) MUST BE MARKED "NON POTABLE WATER DO NOT DRINK".

A	FRAME AND LID (NEENAH R1911C)
B	1" TYPE K COPPER PIPE
C	FEMALE FLARED FITTING
D	1"x ¾" BRASS BUSHING
E	¾" BENT METER COUPLING
F	METER
G	FULL PORT CONTROL VALVE
H	MALE I.P.S. TO FLARED ADAPTER
I	1" ROUNDWAY
J	SHUT-OFF BOX
K	EXTRA HEAVY SALT GLAZED VITRIFIED CLAY TILE PIPE



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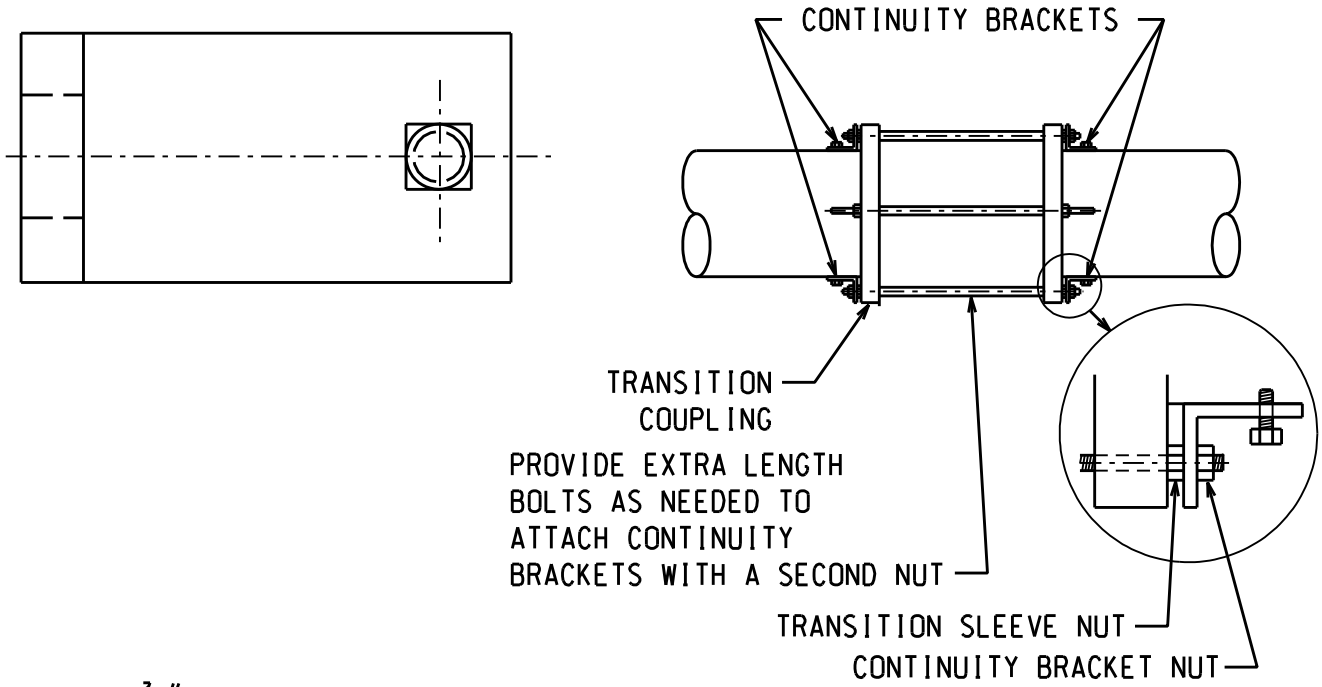
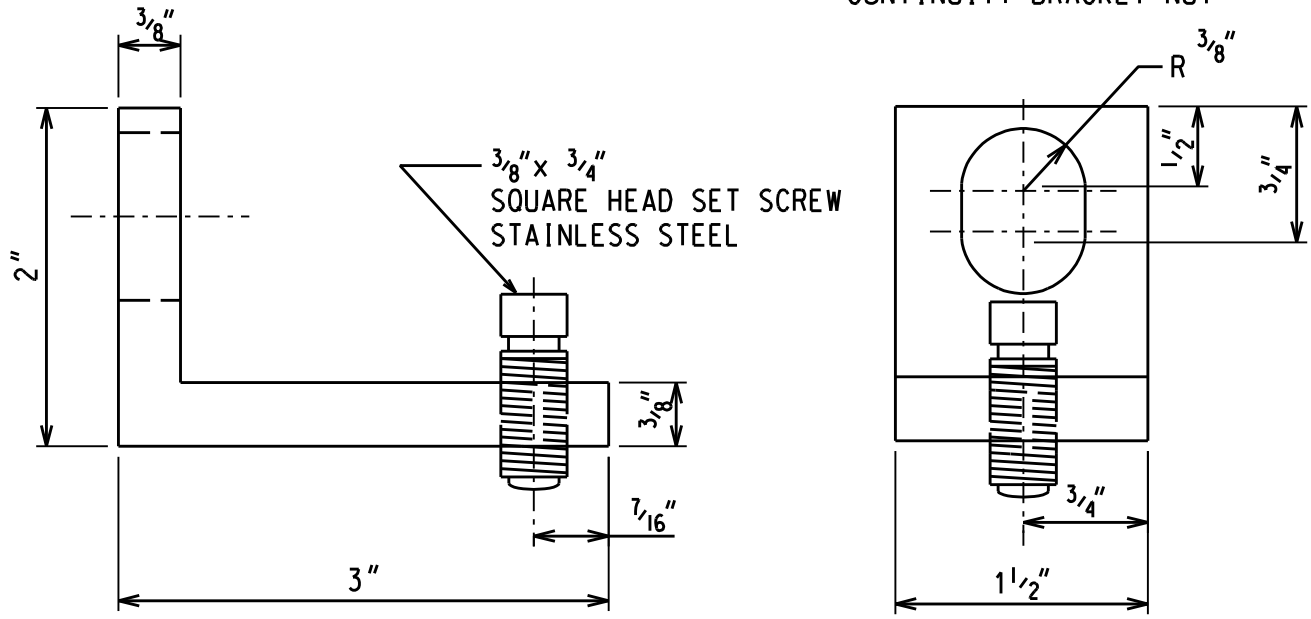




INSTALLATION NOTE:

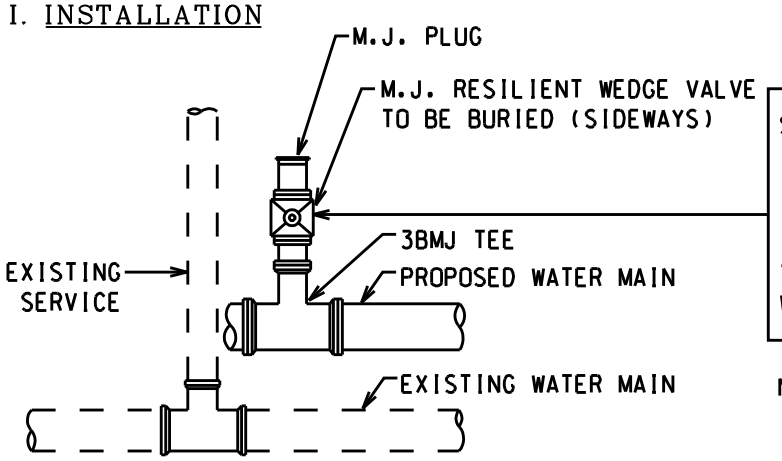
AFTER THE TRANSITION SLEEVE IS TIGHTENED AND THE WATER MAIN PRESSURE TESTED, INSTALL MINIMUM OF FOUR (4) ELECTRICAL CONTINUITY BRACKETS. A MINIMUM OF TWO (2) ARE TO BE INSTALLED ON EACH END OF THE TRANSITION SLEEVE TO PROVIDE ELECTRICAL CONTINUITY FOR PIPE THAWING. EQUALLY SPACE BRACKETS AROUND PIPE (IE. 9& 3 O'CLOCK POSITION).

FOR 16-INCH DIAMETER CAST IRON PIPE INCREASE THE NUMBER OF ELECTRICAL CONTINUITY BRACKETS TO THREE (3) ON EACH END.

FOR 24-INCH DIAMETER AND LARGER CAST IRON PIPE CONTACT THE D.W.M., BUREAU OF ENGINEERING SERVICES.

ELECTRICAL CONTINUITY BRACKET FOR TRANSITION COUPLING

I. INSTALLATION

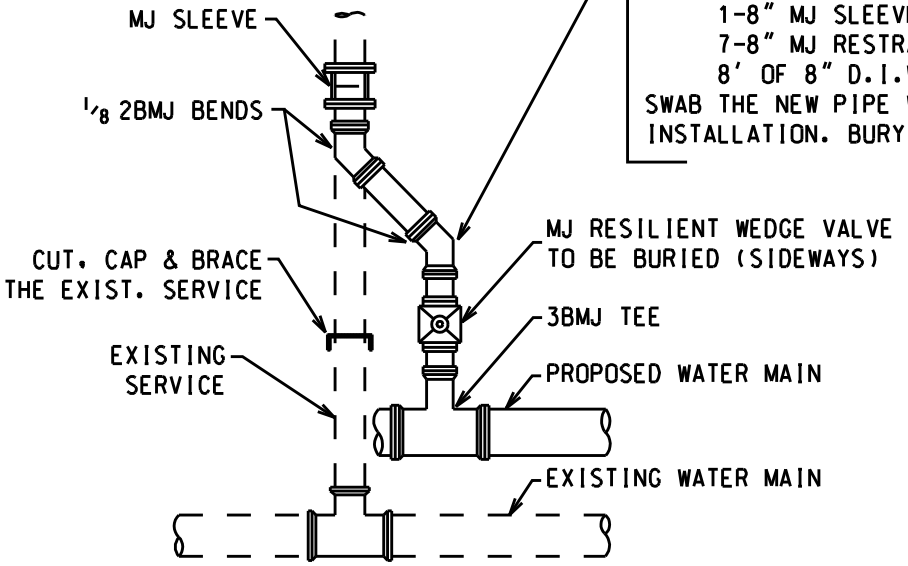


SET: 1-4" 3BMJ TEE
1-8" MJ RESILIENT WEDGE VALVE
2-12" MJ RESTRAINT GLANDS
2-8" MJ RESTRAINT GLANDS
3' OF 8" D.I.W.P.
TEMPORARILY PLUG AND BRACE THE VALVE WITH:1-8" MJ PLUG

NOTE:
MINIMUM 4" TEE TO BE USED FOR 3" SERVICE CONNECTION.

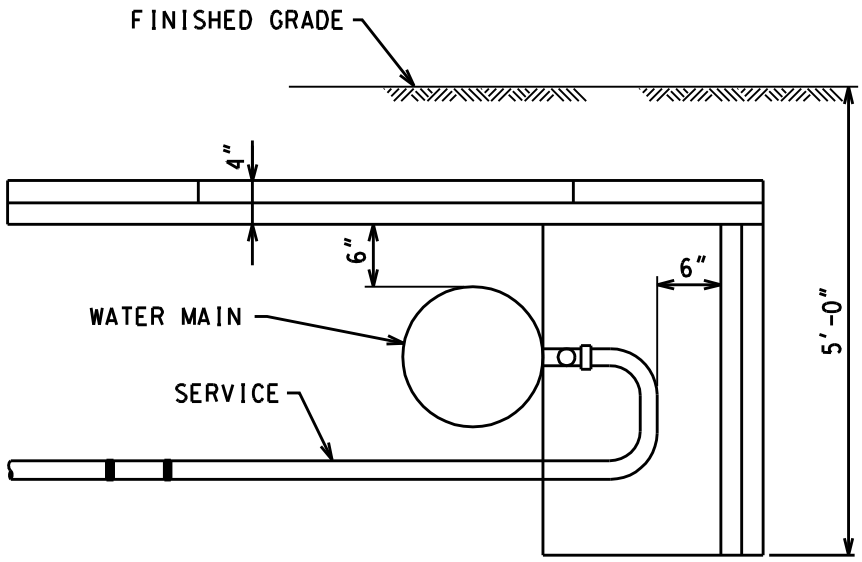
II. RECONNECTION

AFTER THE NEW WATER MAIN IS APPROVED, CUT, CAP AND BRACE THE EXISTING 8" SERVICE WITH:1-8" MJ CAP
1-8" MJ RESTRAINT GLAND
REMOVE TEMPORARY PLUG OF NOTE ABOVE AND CONNECT 8" SERVICE TO THE MJ RESILIENT WEDGE VALVE WITH:2-8"x 1/8 2BMJ BENDS
1-8" MJ SLEEVE
7-8" MJ RESTRAINT GLANDS
8' OF 8" D.I.W.P.
SWAB THE NEW PIPE WITH HTH CHLORINE DURING THE INSTALLATION. BURY THE MJ RESILIENT WEDGE VALVE.

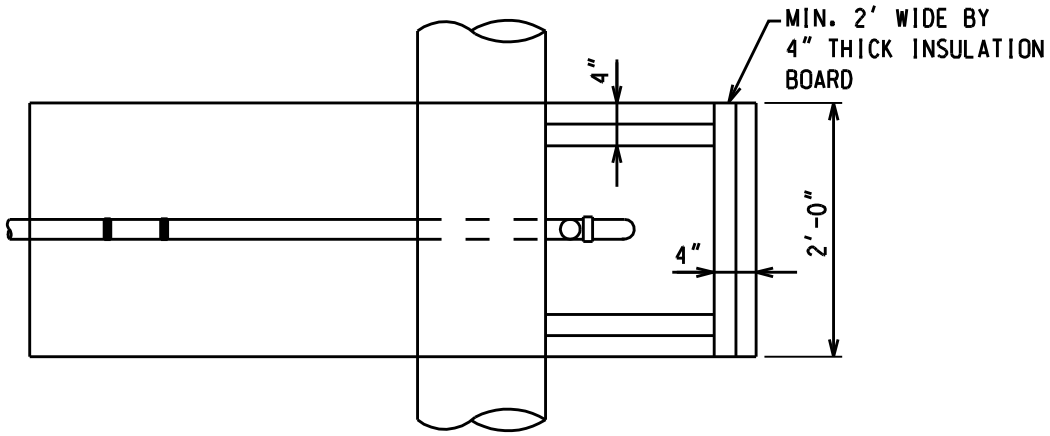


NOTE:
MECHANICAL JOINT THRUST RESTRAINT GLANDS OR APPROVED EQUIPMENT FITTINGS TO BE USED WITH ALL MJ FITTINGS.

TYPICAL SERVICE RECONNECTION 3" AND LARGER USING M.J. RESILIENT WEDGE VALVE



SIDE VIEW



TOP VIEW

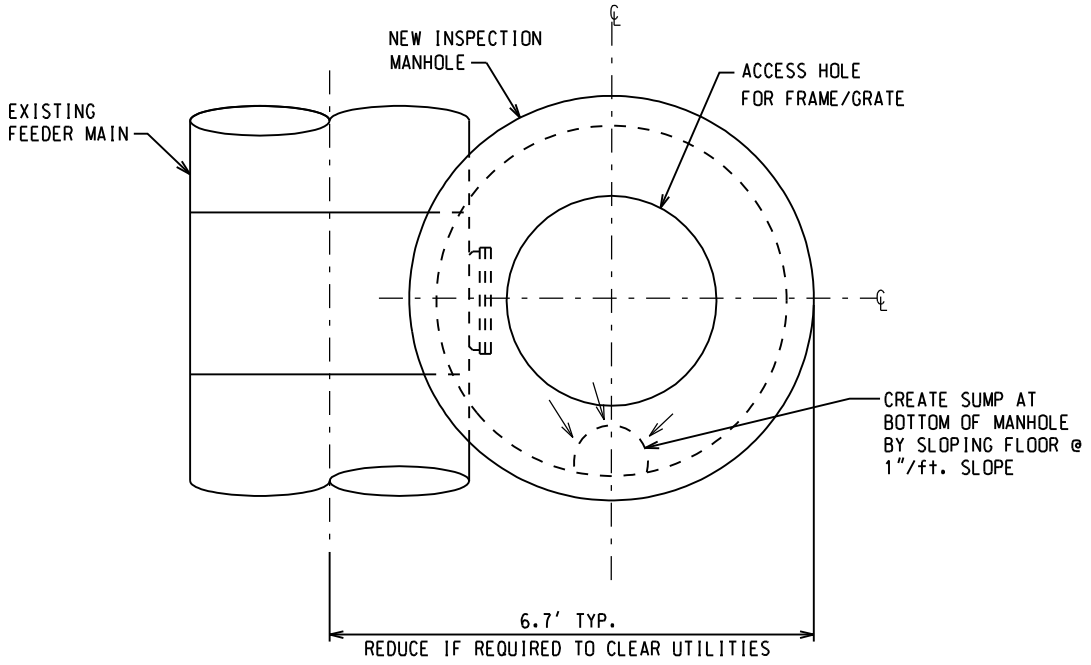
SERVICE PIPE INSULATION DETAILS

NOTES:

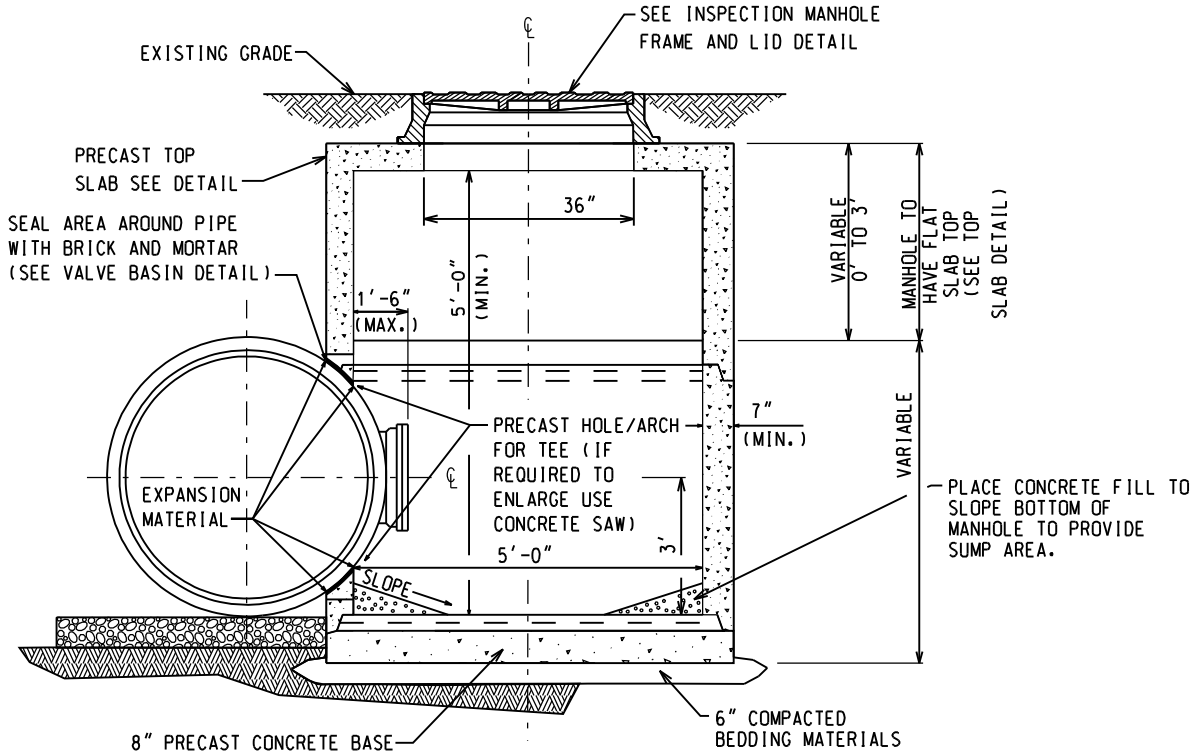
1. BACK FILL MATERIAL AROUND INSULATION SHALL BE FINE SAND (FA7), FREE FROM ROOTS, ORGANIC MATTER, LEAVES OR OTHER INJURIOUS MATERIALS.

2. OVERLAP ALL INSULATION BOARD JOINTS.

3. INSULATION BOARD TO BE CLOSED CELL, EXTRUDED POLYSTYRENE FOAM MEETING ASTM 578, TYPE VI, 40 PSI COMPRESSING STRENGTH (ASTM D1621) 0.1% MAX. WATER ABSORPTION (ASTM C272).

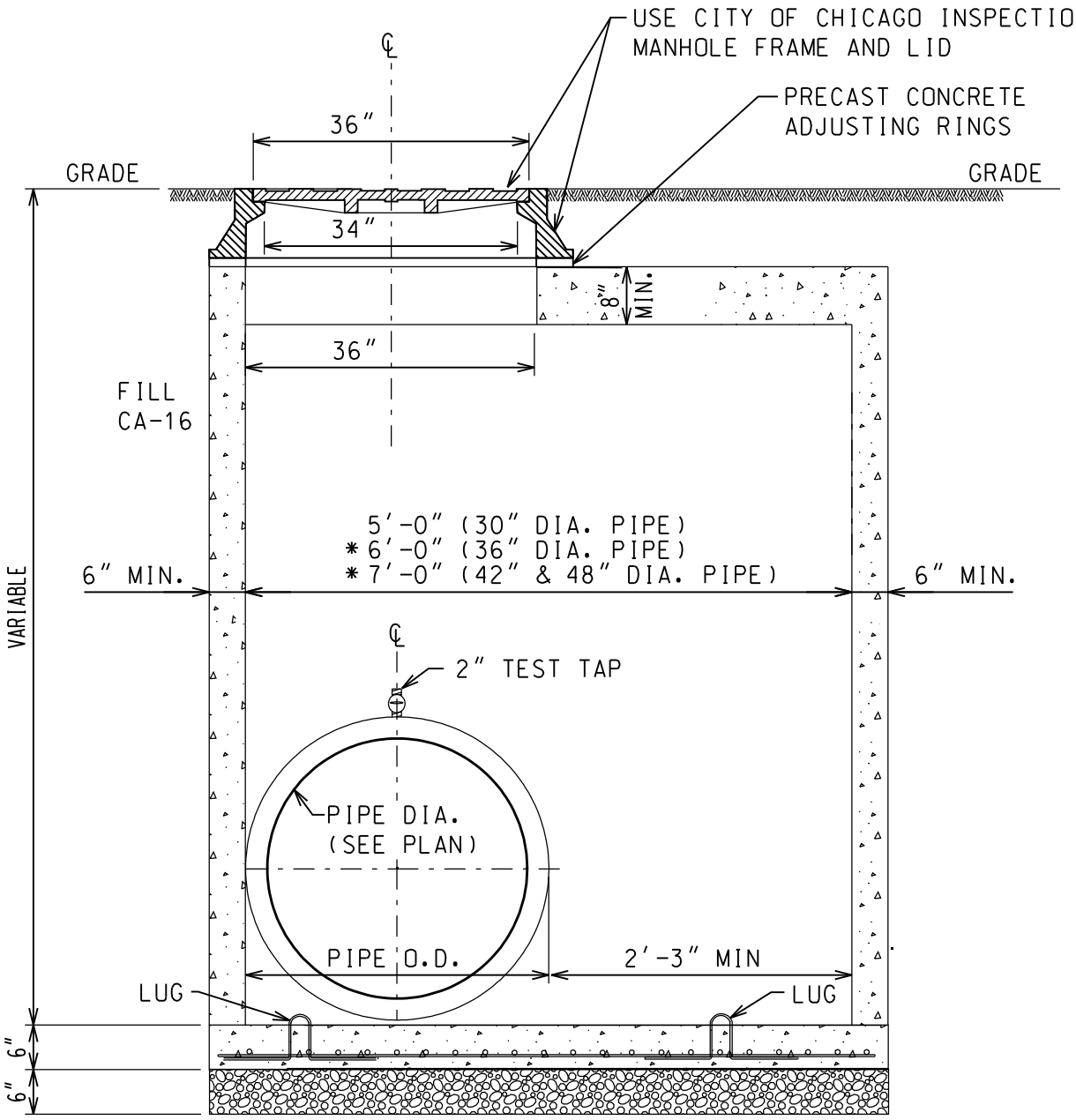


PLAN



SECTIONAL VIEW

NOTE:
ALL OPENINGS IN BASIN SHALL BE SEALED WITH "NO SHRINK" GROUT.



SECTIONAL VIEW

SCALE: N.T.S.

NOTE:

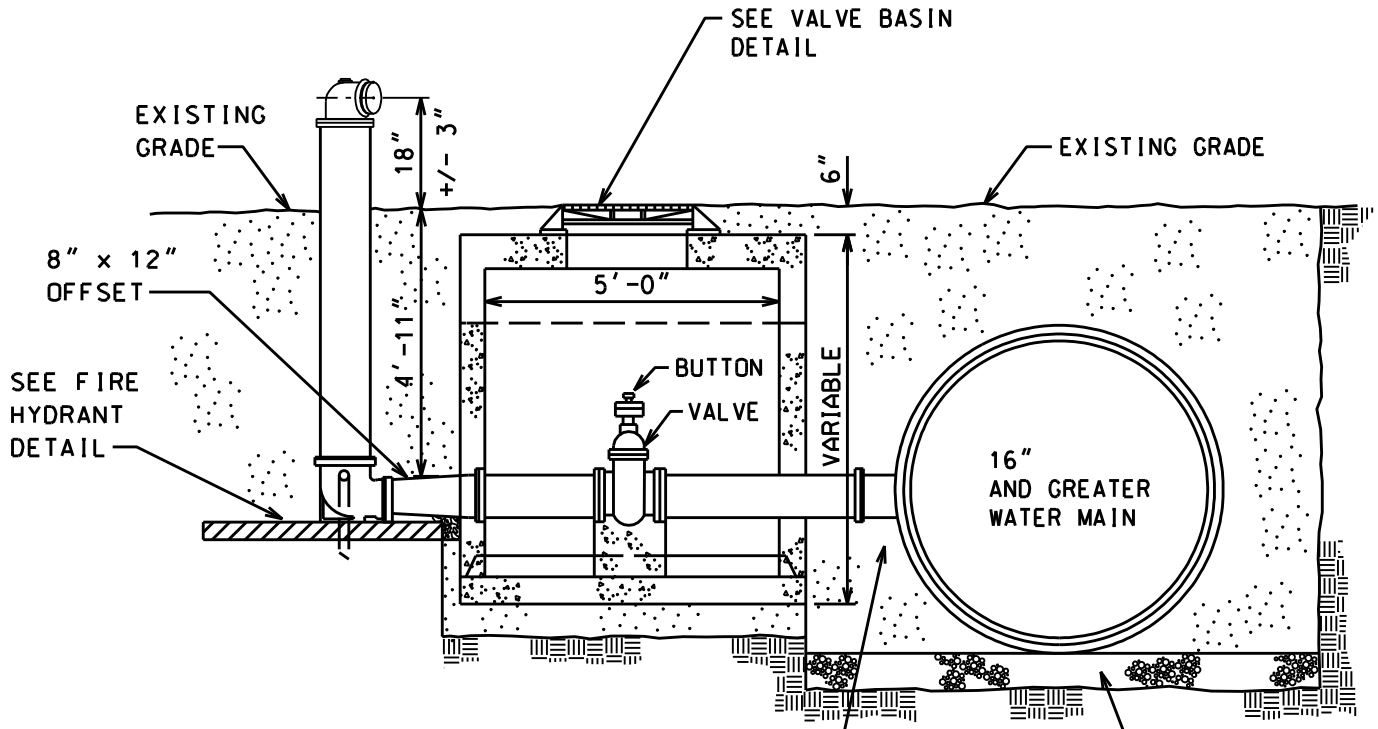
1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING
2. USE PRECAST CONCRETE BASE OR PROVIDE 6" THICK IDOT CLASS 'SI' CONCRETE BASE POURED IN PLACE WITH #4 EPOXY COATED REBARS 4" C/C BOTH WAYS.
3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING. CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.
4. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS REQUIRED.
5. THE LOCATION OF MANHOLE TO BE DETERMINED ON INDIVIDUAL BASIS.

*6. OPENING ON TOP SLAB TO BE CENTERED OVER TEST TAP.

PITOMETER TAP BASIN
PRECAST CONCRETE

REV:07.07

FM-4



NOTE:
INSTALL THRUST RESTRAINT GLAND ON ALL MECHANICAL JOINTS.

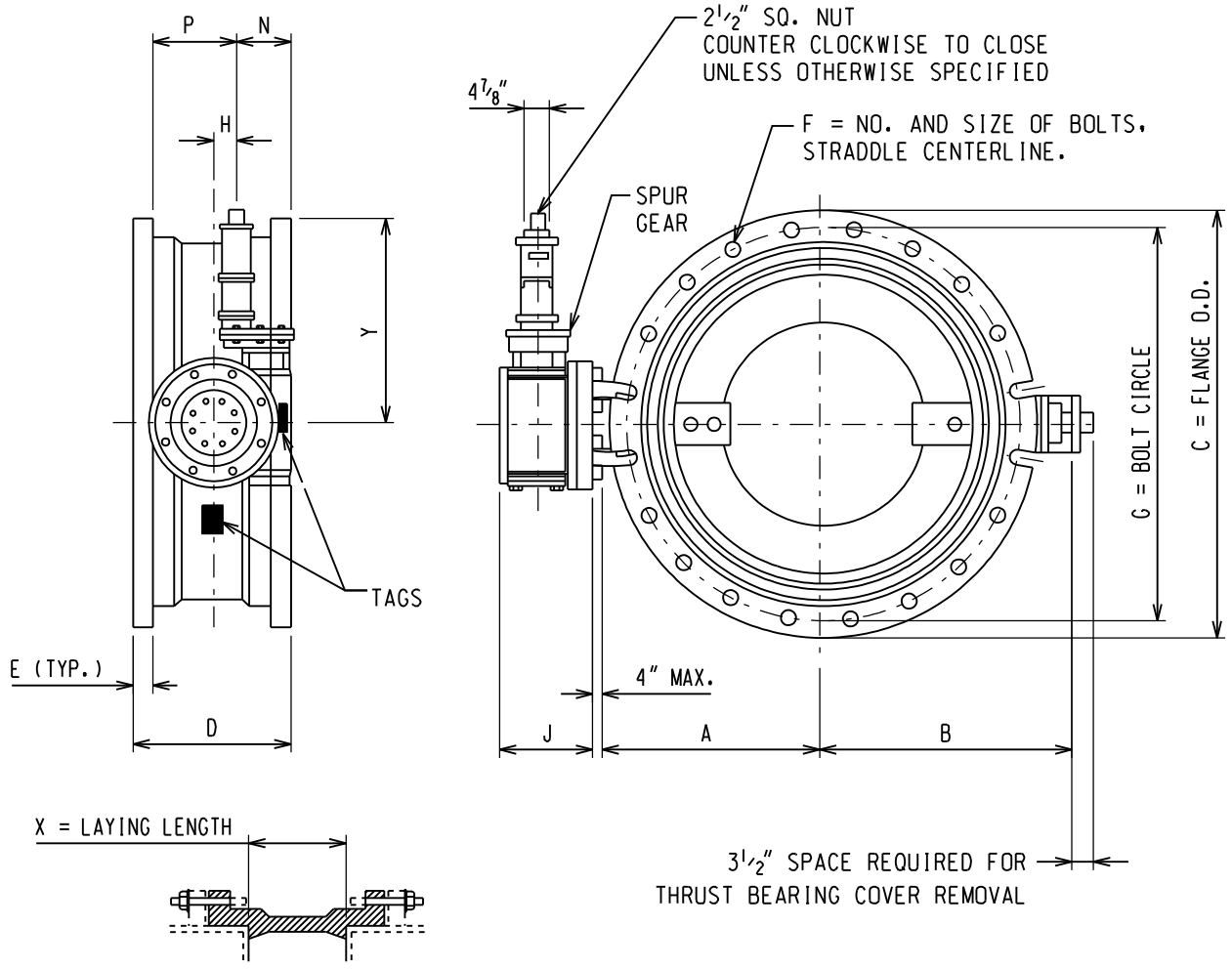
FIRE HYDRANT SETTING
16" & LARGER WATER MAIN

REV:04.09

FM-5

VALVE SIZE	A	B	C	D	E	F		G	X
24-INCH	18 5/8"	18 5/8"	31 9/16"	13 1/4"	1 5/8"	16	3/4"	30"	6 3/8"
30-INCH	21 1/2"	24 3/8"	39"	18"	1 13/16"	20	1"	36 7/8"	10"
36-INCH	25 7/16"	28 1/4"	45 7/8"	22"	2"	24	1"	43 3/4"	14"
42-INCH	29 7/8"	32 7/8"	53"	22"	2"	28	1 1/4"	50 5/8"	14"
48-INCH	34 1/16"	37 1/8"	59 7/8"	24"	2"	32	1 1/4"	57 1/2"	16"

OPERATOR SIZE	J	L	M	N	P	Q	Y	VALVE	NO. OF TURNS
T-425	7 3/8"	6"	7 1/8"	6 7/8"	9 1/2"	6 5/8"	24"	36"	75
T-425	8"	6 5/8"	7 1/8"	6 7/8"	9 1/2"	6 5/8"	24"	48"	127

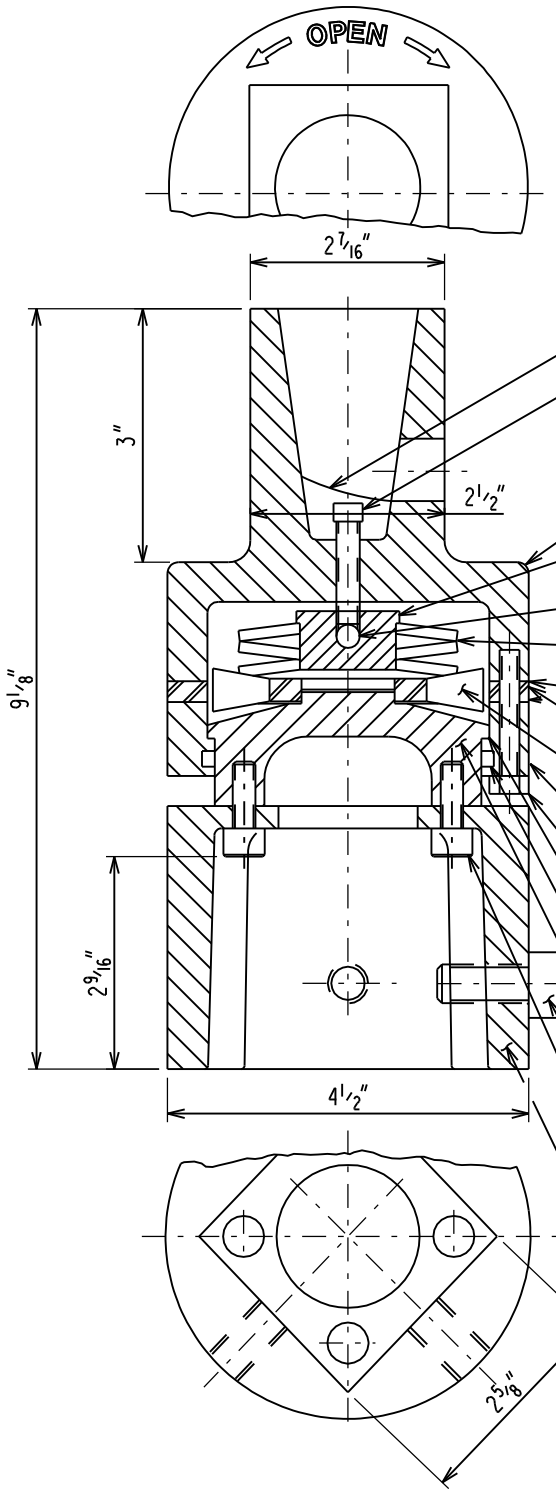


INSTALLATION DIAGRAM

NOTE:

1. BUTTERFLY VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA SPECIFICATION C-504-87, CLASS 150B, SHORT BODY VALVE WITH MECHANICAL JOINT ACCESSORIES.

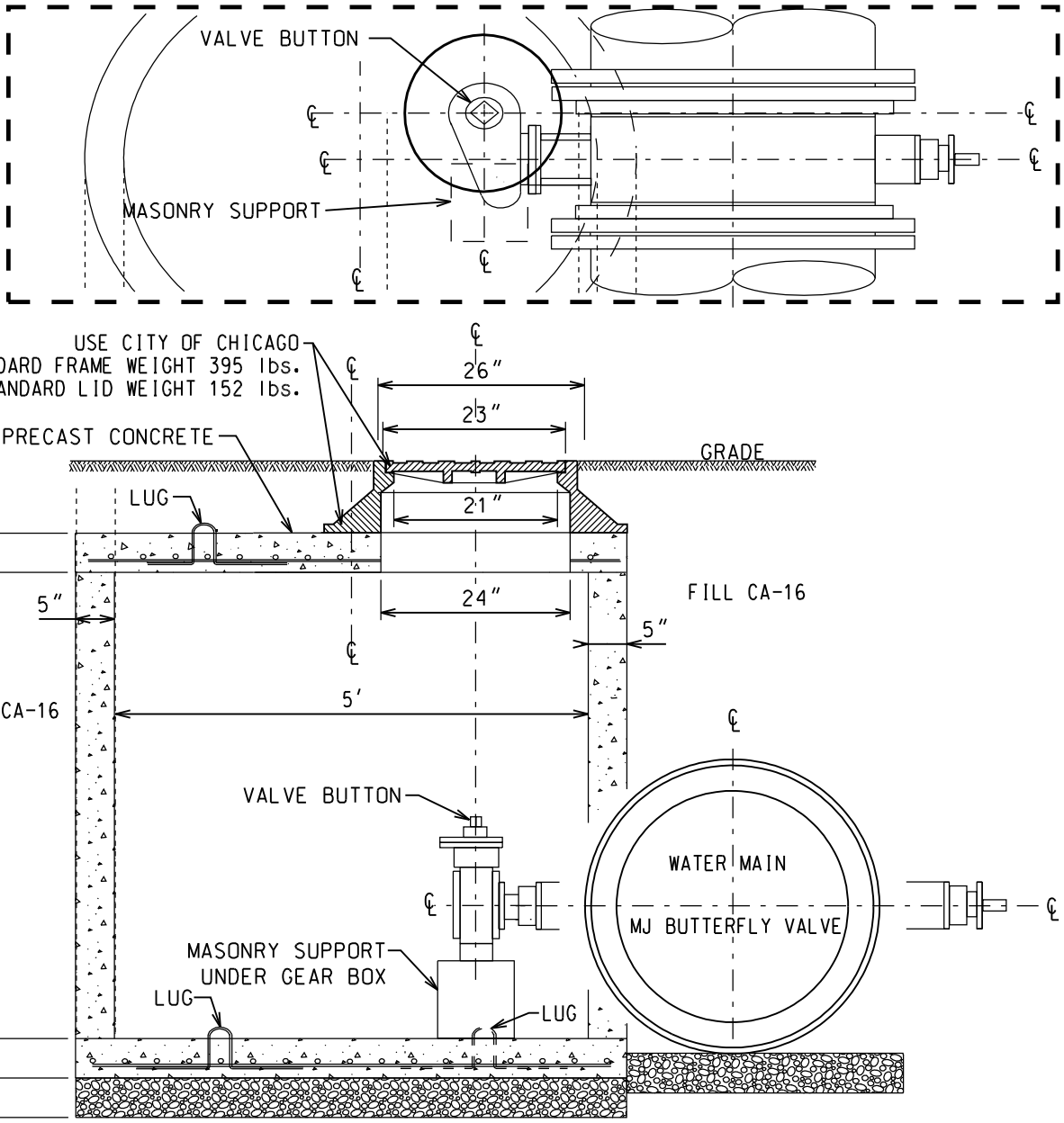
2. OPERATORS ARE EQUIPPED WITH OPEN/CLOSE INDICATING ARROW. ASSEMBLY OPEN CLOCKWISE.



PAINT: TWO PART EPOXY PRIME COAT
WITH TWO PART POLYURETHANE
TOP COAT COLOR-U.S. PAINT
#G9028 "SUN YELLOW"

- SEALANT: POLYURETHANE
- ADJUSTING SCREW: ALLOY STEEL ANSI B18.6
- NUT: CAST IRON ASTM A48
- SPRING GUIDE: ALLOY STEEL AISI 41L40
- BEARING BALL: MFGS. STD.
- SPRING: CRV SPRING STEEL DIM 2093
- GASKETS: CELLULOSE FIBER-STYRENE BUTADIENE
- DRIVE PLATE: CARBON STEEL AISI 1045
- DRIVE ROLLER: ALLOY STEEL AISI 41L40
- RETAINER: CAST IRON ASTM A48
- SPLINE HD SCREW: ALLOY STEEL ANSI B18.3 ENI PLATED
- WASHER: MOLYDISULFIDE FILLED NYLON
- SEAL RING: NITRILE BUTADIENE
- DETENT PIECE: SAE 123C CAST IRON
- SQ HD SET SCREW: ALLOY STEEL 1/2" x 1" ANSI B18.6 ENI PLATED
- SOCKET HD SCREW: ALLOY STEEL ANSI B18.3 ENI PLATED
- SOCKET: CAST IRON ASTM A48

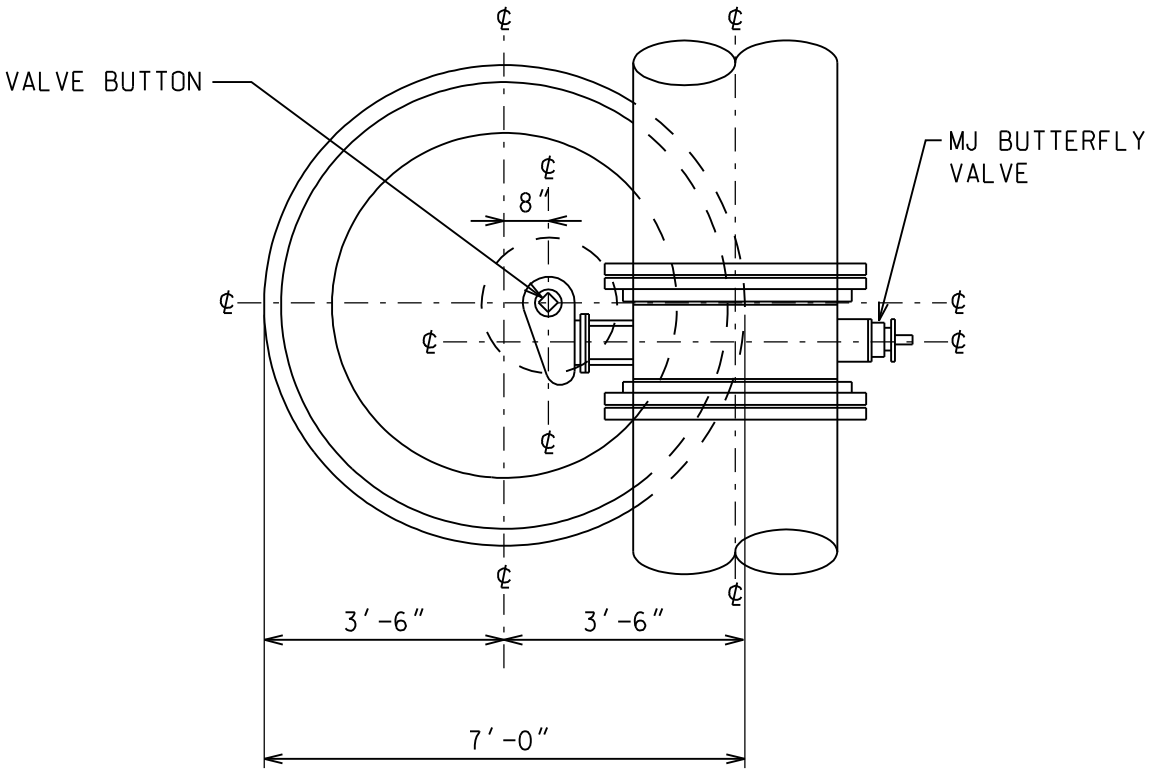
TORQUE OVERLOAD PROTECTOR



NOTES:

1. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS REQUIRED.
2. PRECAST 6" THICK CONCRETE SLAB WITH #4 EPOXY COATED REBARS 4" C/C BOTHWAYS.
3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING. CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.
4. PROVIDE 24-INCH DIAMETER OPENING IN THE CENTER OR AS REQUIRED.
5. THE LOCATION OF MANHOLE TO BE DETERMINED ON INDIVIDUAL BASIS.
6. PROVIDE 6" THICK COMPACTED CA-16 BEDDING.

BUTTERFLY VALVE BASIN
PRECAST CONCRETE



NOTES:

1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING.

2. USE PRECAST CONCRETE BASE OR PROVIDE 6" THICK I.D.O.T. CLASS 'SI' CONCRETE BASE POURED IN PLACE WITH #4 EPOXY COATED REBARS 4" C/C BOTH WAYS.

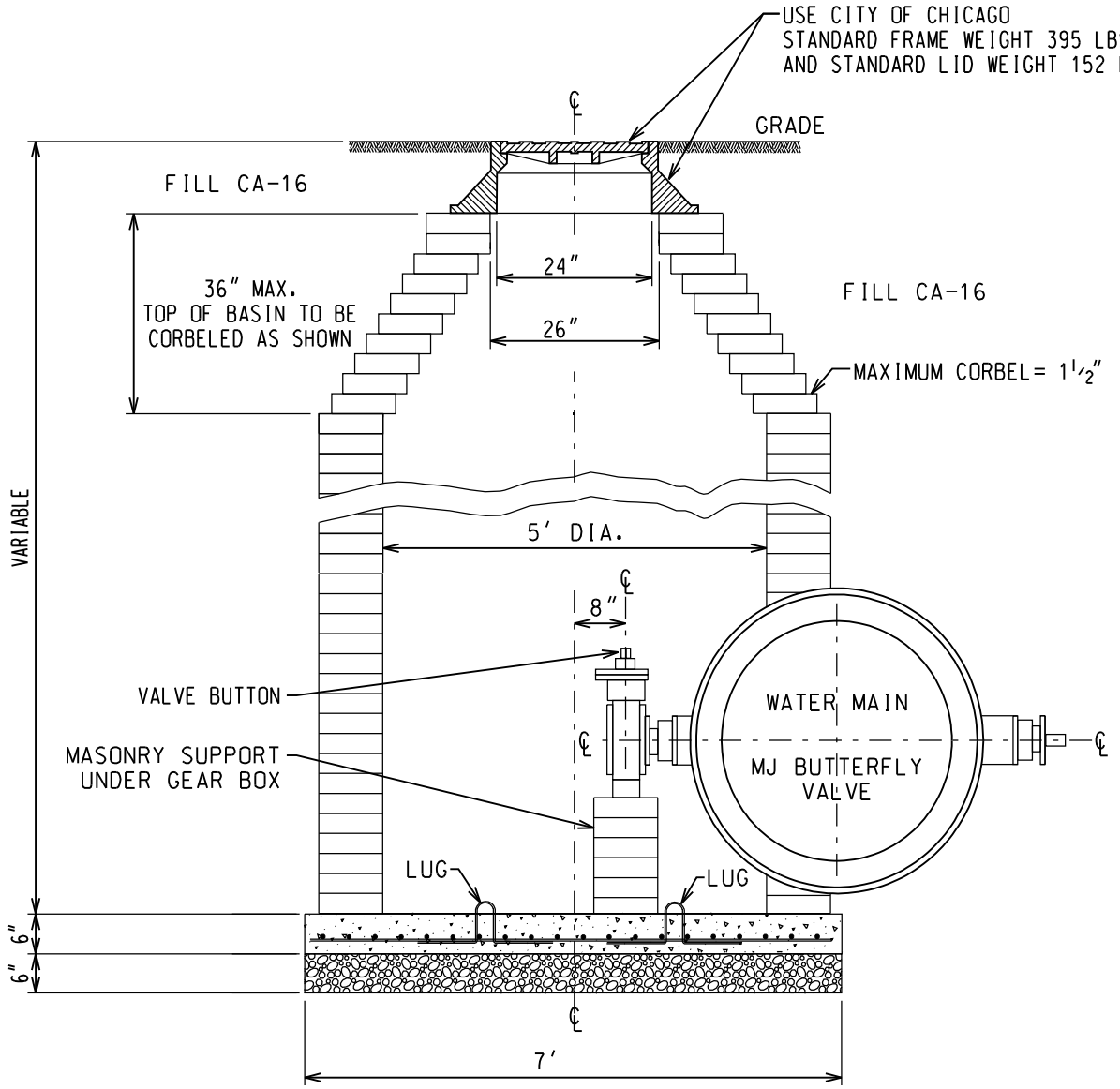
3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING. CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.

4. ALL JOINTS AND BRICK MASONRY SHALL BE PLASTERED INSIDE AND OUTSIDE WITH 1:2 MORTAR TO MAKE THE STRUCTURE WATER TIGHT.

5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS REQUIRED.

BUTTERFLY VALVE BASIN - MASONRY

PLAN



NOTES:

1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING

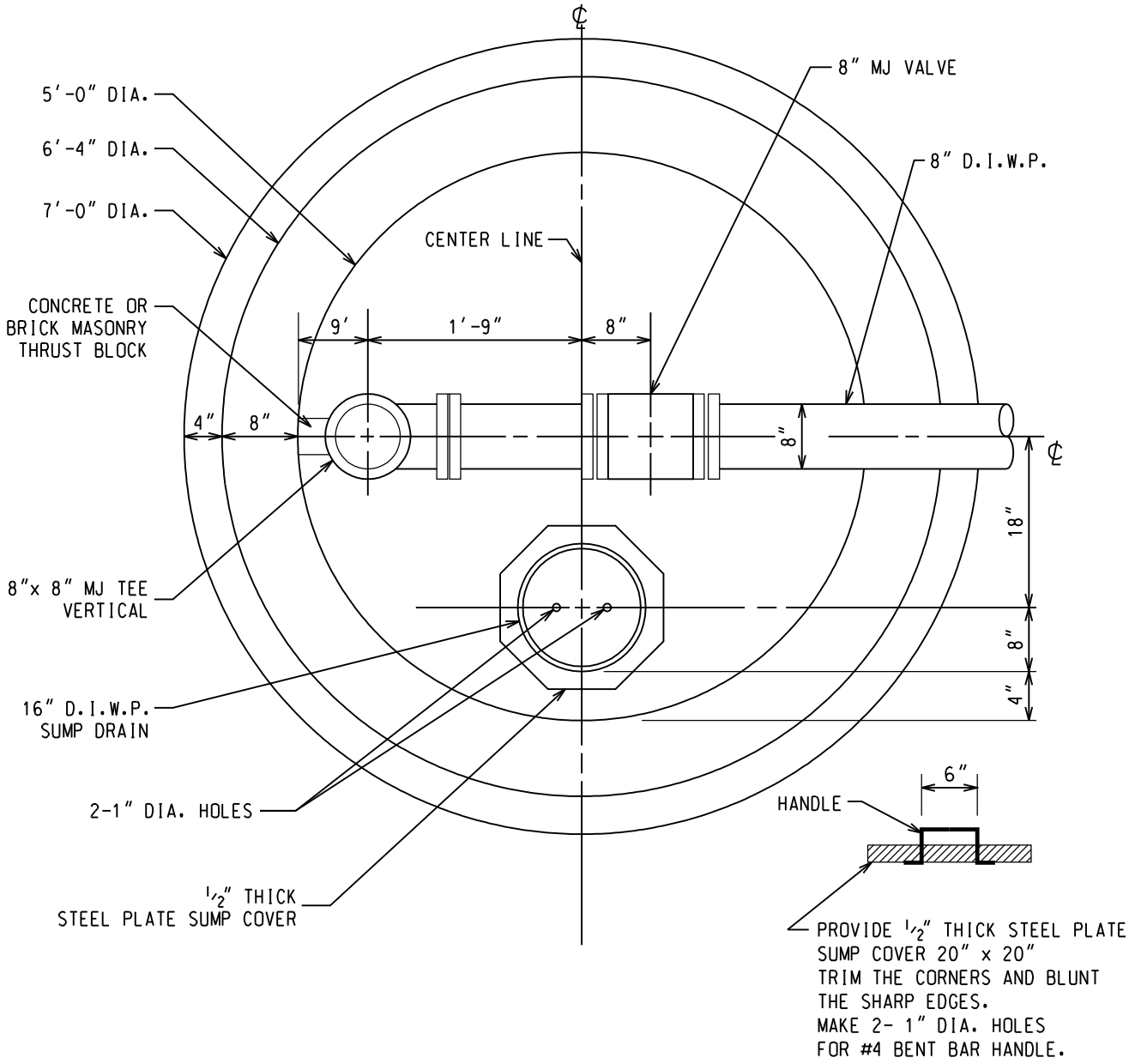
2. USE PRECAST CONCRETE BASE OR PROVIDE
   6" THICK I.D.O.T. CLASS 'SI' CONCRETE BASE
   POURED IN PLACE WITH #4 EPOXY COATED REBARS
   4" C/C BOTH WAYS.

3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING.
   CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.

4. ALL JOINTS AND BRICK MASONRY SHALL BE
   PLASTERED INSIDE AND OUTSIDE WITH 1:2 CEMENT
   MORTAR TO MAKE THE STRUCTURE WATER TIGHT.

5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE
   HEAD ROOM IS REQUIRED.

BUTTERFLY VALVE BASIN - MASONRY
SECTIONAL VIEW

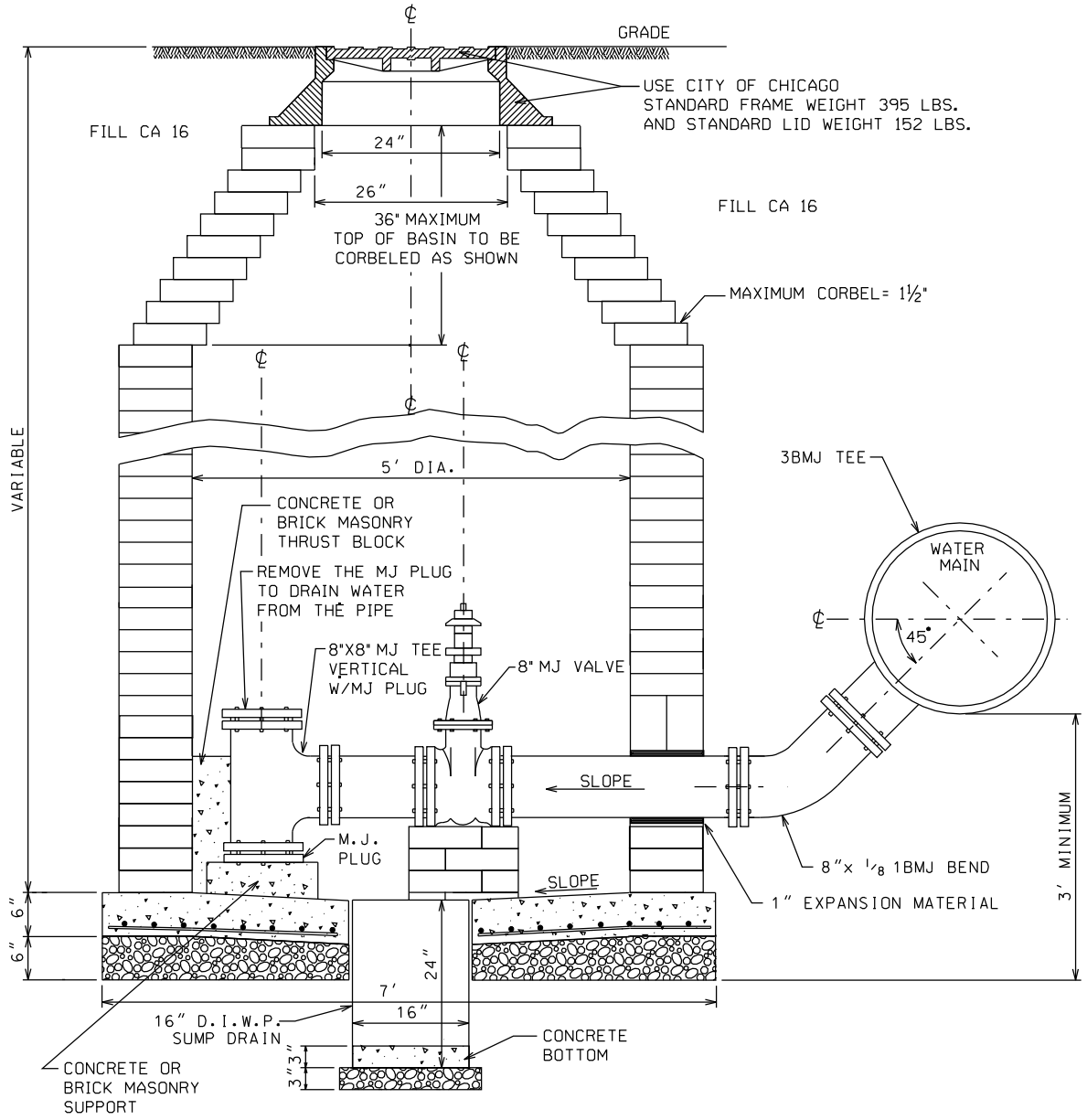


NOTES:

1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING
2. USE PRECAST CONCRETE BASE OR PROVIDE 6" THICK IDOT CLASS 'SI' CONCRETE BASE POURED IN PLACE WITH #4 EPOXY COATED REBARS 4" C/C BOTH WAYS.
3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING. CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.
4. ALL JOINTS AND BRICK MASONRY SHALL BE PLASTERED INSIDE AND OUTSIDE WITH 1:2 CEMENT MORTAR TO MAKE THE STRUCTURE WATER TIGHT.
5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS REQUIRED.
6. PROVIDE 2" SLOPE TOWARDS THE SUMP.
7. PROVIDE ½" THICK STEEL PLATE SUMP COVER.

TYPICAL BLOW-OFF/FIRE CISTERN-MASONRY

PLAN



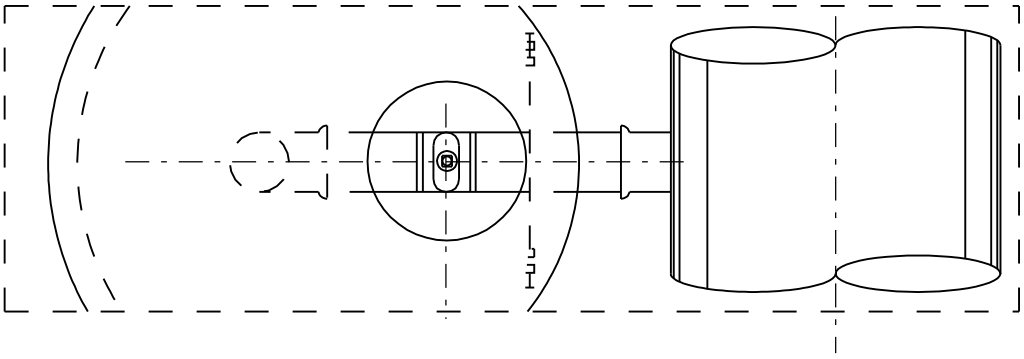
NOTES:

1. PROVIDE 6" THICK COMPACTED CA 16 BEDDING
2. USE PRECAST CONCRETE BASE OR PROVIDE 6" THICK IDOT CLASS 'SI' CONCRETE BASE POURED IN PLACE WITH #4 EPOXY COATED REBARS 4" C/C BOTH WAYS.
3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING. CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.
4. ALL JOINTS AND BRICK MASONRY SHALL BE PLASTERED INSIDE AND OUTSIDE WITH 1:2 CEMENT MORTAR TO MAKE THE STRUCTURE WATER TIGHT.
5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS REQUIRED.

TYPICAL BLOW-OFF/FIRE CISTERN-MASONRY
SECTIONAL VIEW

REV:04.07

FM-18
SHT. 2 OF 2



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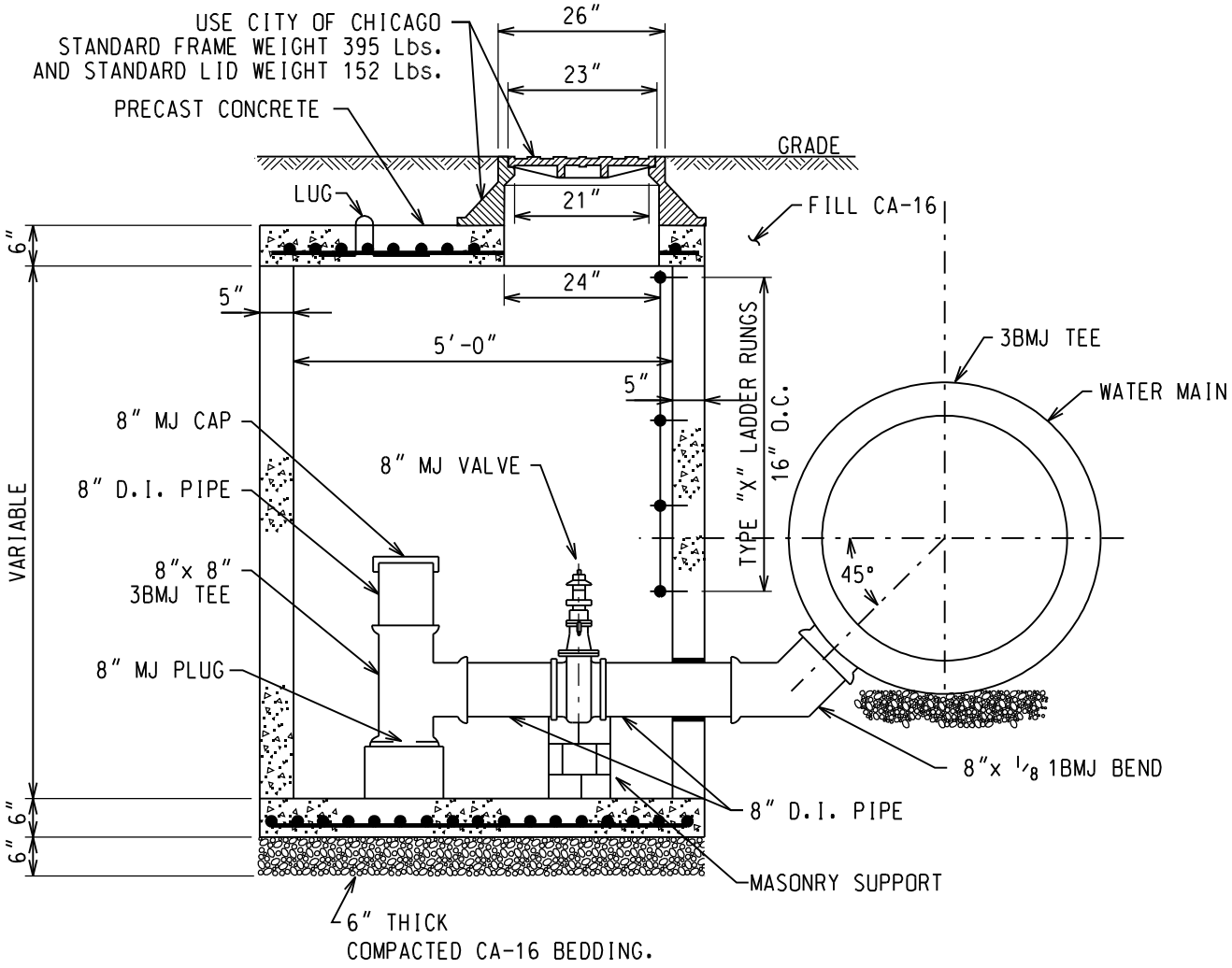

SECTIONAL VIEW

NOTE: INSTALL MEGALUGS ON ALL MECHANICAL JOINTS.

TYPICAL BLOW-OFF/FIRE CISTERN
PRECAST CONCRETE

REV:04.07

FM-19

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