



NORTH WALES WATER AUTHORITY

STANDARD
DETAILS
DRAWINGS

APPENDIX D – STANDARD DETAIL DRAWINGS

NWWA W- WATER DETAILS

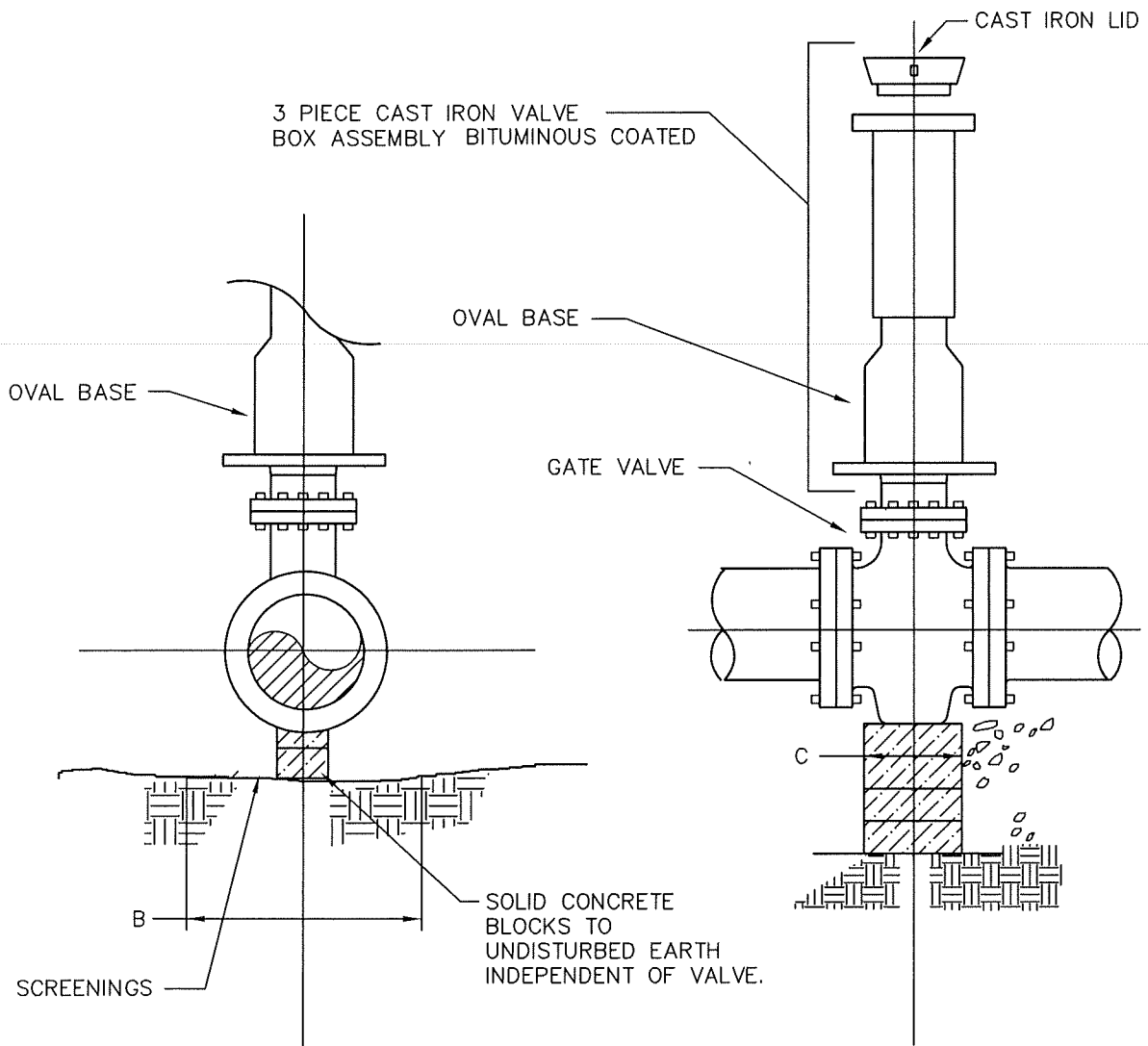
SECTION	DESCRIPTION
W1	TYPICAL GATE VALVE WITH VALVE BOX
W2	TYPICAL FIRE HYDRANT INSTALLATION
W3	STANDARD WATER SERVICE CONNECTION
W4	INLINE BLOW OFF ASSEMBLY
W5	TERMINAL BLOW OFF ASSEMBLY
W6	1 INCH DOMESTIC SERVICE METER PIT INSTALLATION
W7	1 ½ INCH OR 2 INCH DOMESTIC METER PIT INSTALLATION
W8	1 ½ INCH OR 2 INCH DCDA LINE SETTER
W9	1 ½ INCH OR 2 INCH DOMESTIC METER ASSEMBLY
W10	TAPPED TEE W/ 1 INCH DOMESTIC AND 1 INCH FIRE LINE
W11	TAPPED TEE W/1 INCH DOMESTIC AND 1 ½ INCH FIRE LINE
W12	ADDITION OF 1 INCH FIRE LINE TO EXISTING 1 INCH SERVICE
W13	RESIDENTIAL ¾ INCH SERVICE W/ 5/8" X ¾" METER
W14	RESIDENTIAL 1 INCH SERVICE W/ 5/8" X ¾" METER OR 1 " METER
W15	NON-RESIDENTIAL ¾" SERVICE W/ ¾ INCH METER
W16	NON-RESIDENTIAL 1" SERVICE W/ 5/8" X ¾" OR 1" METER
W17	NON-RESIDENTIAL 1 ½ INCH SERVICE W/ 1 ½ INCH METER
W18	NON-RESIDENTIAL 2 INCH SERVICE W/ 2 INCH METER
W19	1" THROUGH 2" FIRE PROTECTION SYSTEMS
W20	4" THROUGH 10" FIRE PROTECTION SYSTEMS
W21	HORIZONTAL THRUST BLOCK ORIENTATION
W22	HORIZONTAL AND VERTICAL DOWNWARD THRUST BLOCK DIMENSIONS
W23	VERTICAL UPWARD THRUST BLOCKS
W24	VERTICAL DOWNWARD THRUST BLOCK ORIENTATION

NWWA S- SEWER DETAILS

SECTION	DESCRIPTION
S1	STANDARD MANHOLE FRAME AND COVER
S2	WATERTIGHT MANHOLE FRAME AND COVER
S3	TYPE "A" STANDARD MANHOLE
S4	TYPE "B" SHALLOW MANHOLE
S5	DROP MANHOLE CONNECTION
S6	DOGHOUSE MANHOLE CONSTRUCTION
S7	POLYPROPYLENE MANHOLE STREP
S8	ALUMINUM MANHOLE STEP
S9	LATERAL CONNECTION SHALLOW SEWER (NEW CONSTRUCTION)
S10	LATERAL CONNECTION DEEP SEWER (NEW CONSTRUCTION)
S11	LPSS LATERAL CONNECTION PIT

NWWA M- MISCELLANEOUS DETAILS

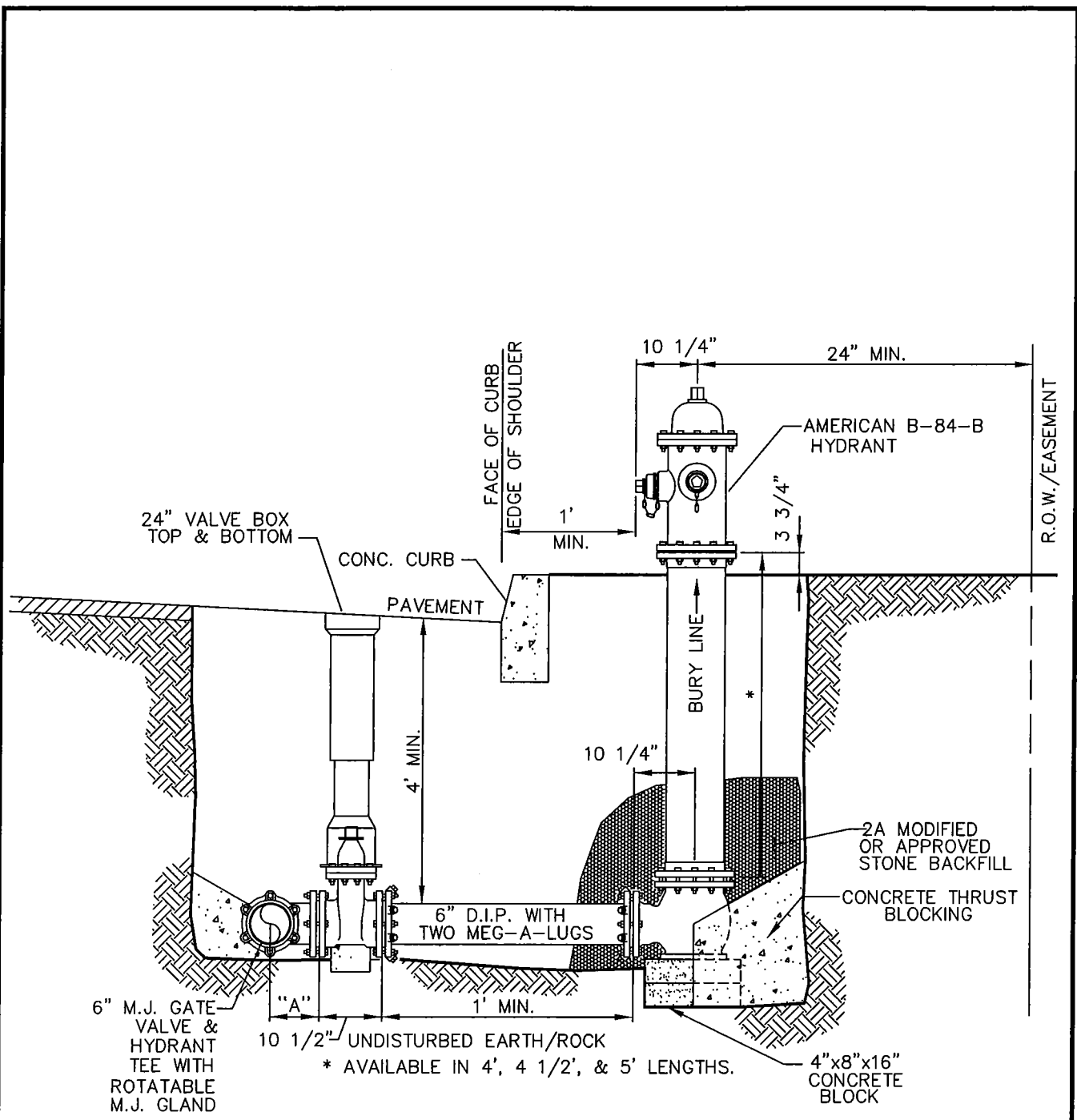
SECTION	DESCRIPTION
M1	STANDARD PIPE BEDDING
M2	CONCRETE ENCASEMENT
M3	PERMANENT PAVEMENT RESTORATION
M4	TEMPORARY PAVEMENT
M5	RESTORATION IN UNPAVED AREAS
M6	JACKING CONDUIT
M7	PIPELINE STREAM CROSSING



END VIEW

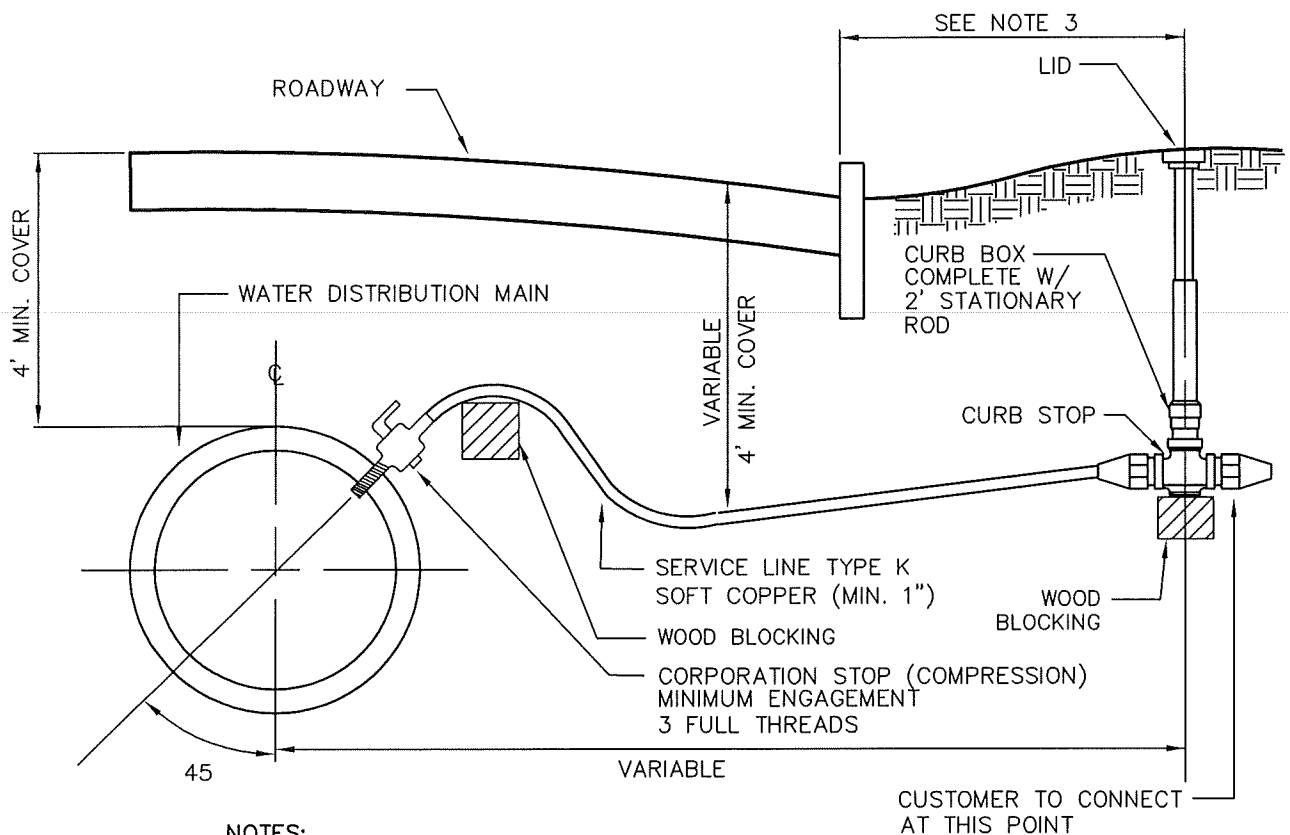
ELEVATION

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	TYPICAL GATE VALVE WITH VALVE BOX	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W1	



MAIN DIA.	6"	8"	10"	12"	16"	20"	24"	30"
"A" DIM.	8.25"	9.25"	11.25"	12.25"	14"	16"	18"	20.5"

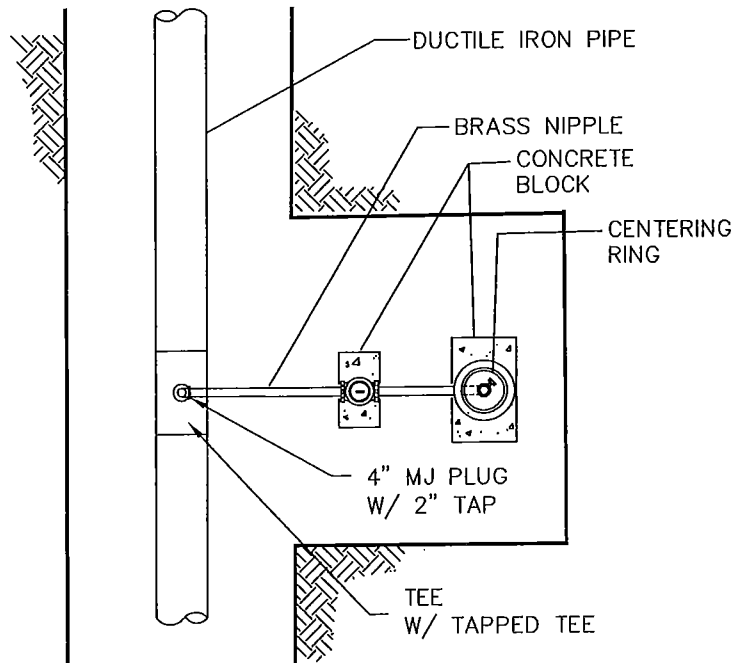
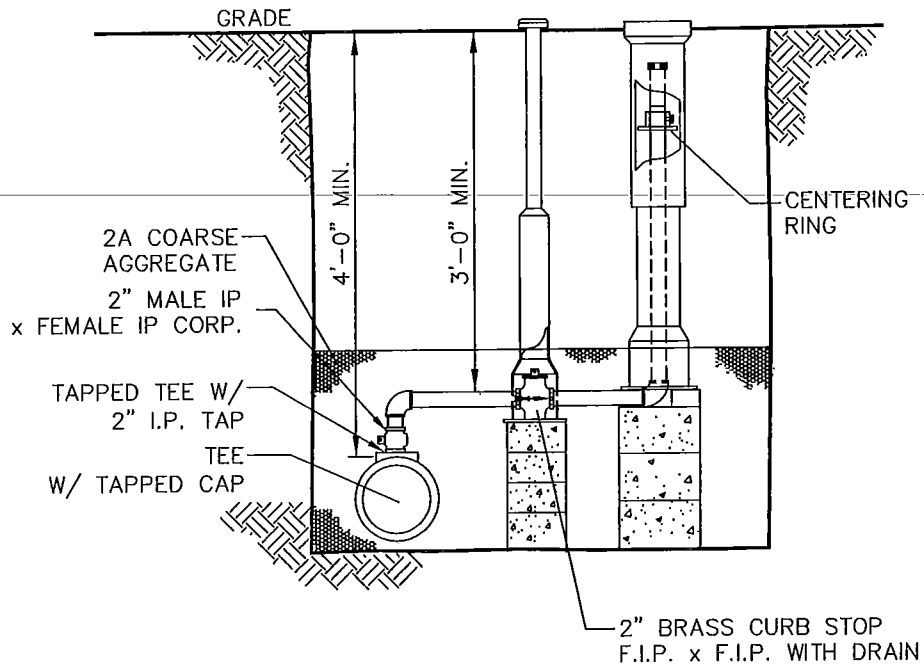
NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	TYPICAL FIRE HYDRANT INSTALLATION	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W2	



NOTES:

1. FOR TAPS > 1" CONNECTION, PROVIDE TAPPING SLEEVE IN ACCORDANCE WITH AUTHORITY SPECIFICATIONS.
2. DO NOT PLACE CURB BOX IN PAVED AREAS UNLESS OTHERWISE APPROVED BY AUTHORITY.
3. WHERE SIDEWALK PARALLELS ROADWAY, THE CURB BOX SHALL BE PLACED BETWEEN THE CURB AND SIDEWALK. ALL OTHER LOCATIONS, CURB BOX TO BE PLACED WHERE DIRECTED BY AUTHORITY.
4. CUSTOMER IS RESPONSIBLE FOR MAINTENANCE OF ALL SERVICE PIPING AND PLUMBING BEYOND THE CURB STOP, WITH EXCEPTION OF WATER METER.
5. PROVIDE COMPRESSION FITTINGS ON CURB AND CORPORATION STOP.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	STANDARD WATER SERVICE CONNECTION	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W3	

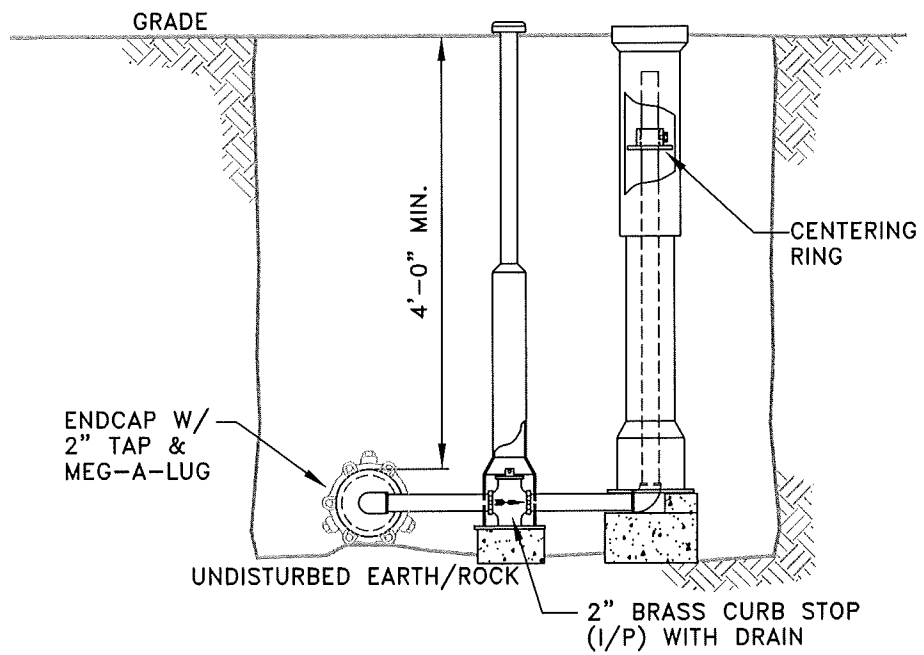
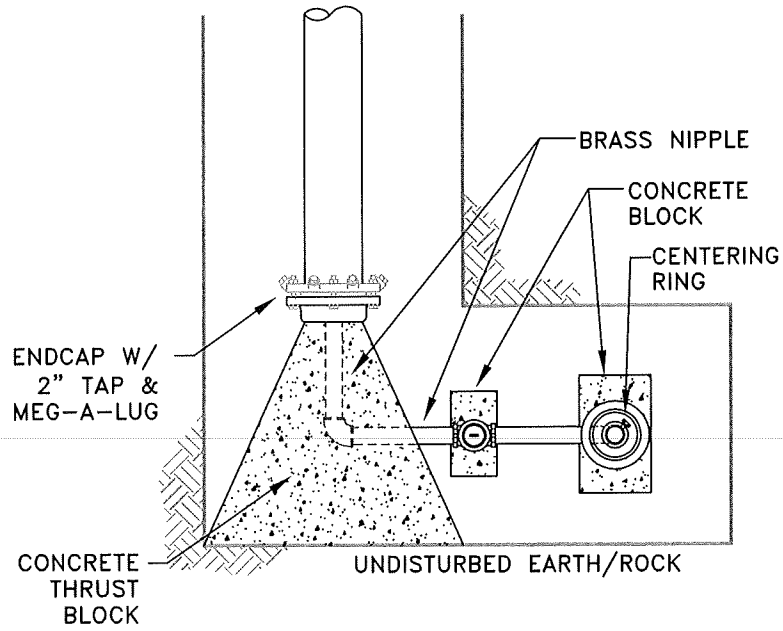


NORTH WALES WATER AUTHORITY

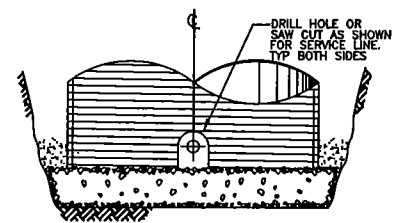
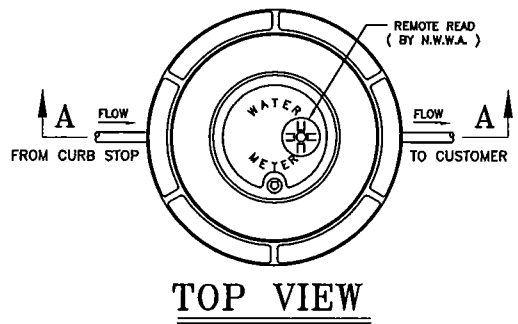
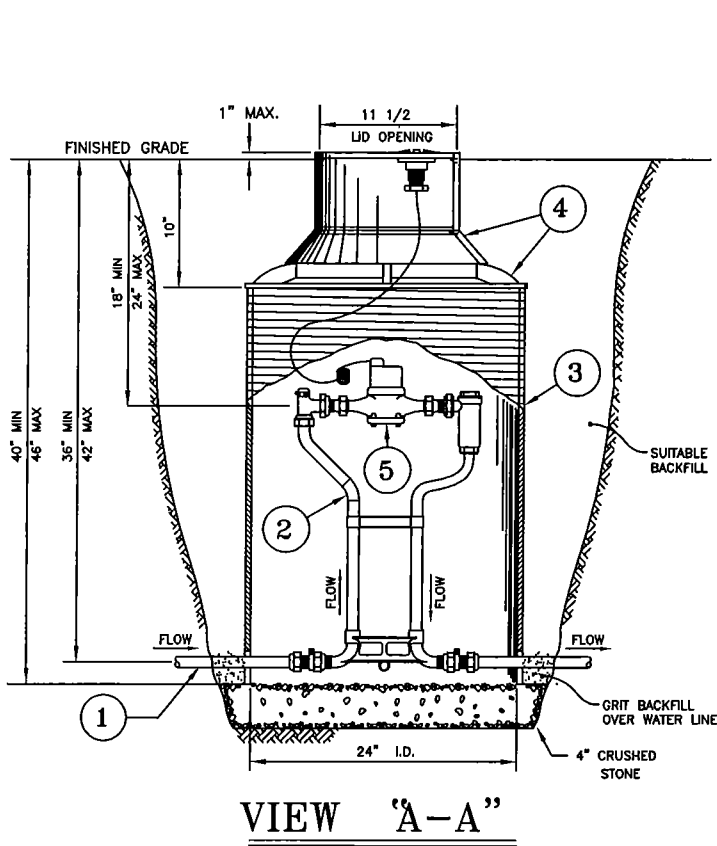
DSG. BY: BSF	CKD. BY: BSF
DATE: 5/11	SCALE: NONE
REVISION	DATE

IN LINE
BLOW-OFF ASSEMBLY

STANDARD DETAIL W4



NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	TERMINAL BLOW-OFF ASSEMBLY	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W5	



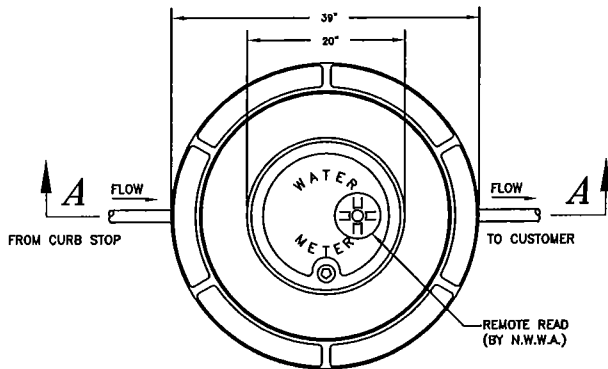
NOTES:

1. Customer to place stake marked "water" in the yard at the desired location.
2. No solder joints allowed underground.
3. If the static pressure exceeds 80 PSI, a 1" tandem line setter which is designed to hold a water meter in series with a pressure regulator is required.
4. The water meter & backflow preventer " will not be set if piping does not conform to NWWA specifications.

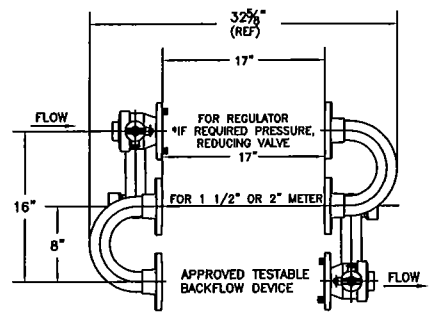
LEGEND:

1. 1" Service line type "K" soft copper
2. 1" Line Setter with dual cartridge backflow preventer with valve.
3. 24" ID x 36" plastic meter vault.
4. Double lid cover with frost plate and 24" x 20" extension ring.
5. Water meter and remote read provided by the NWWA.

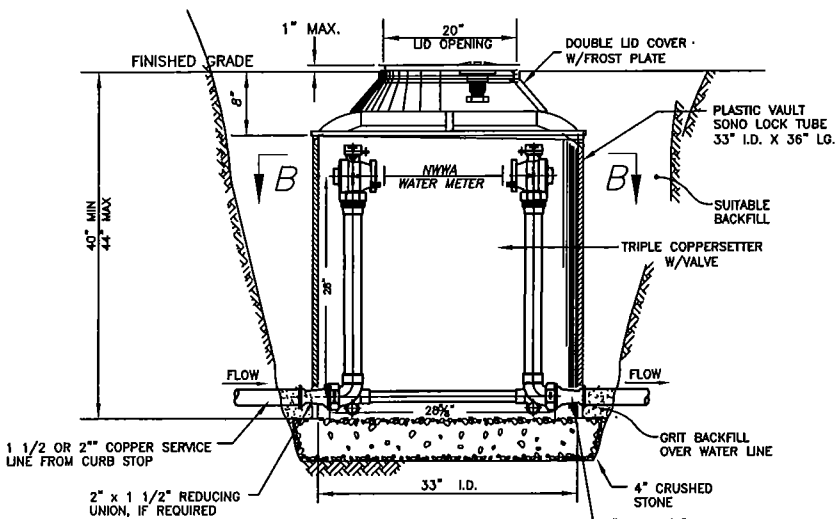
NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF		1" DOMESTIC SERVICE METER PIT INSTALLATION
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
			STANDARD DETAIL W6



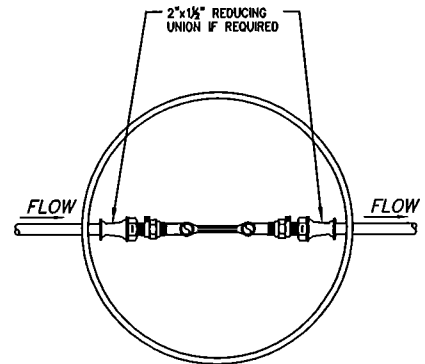
TOP VIEW



VIEW "B-B"



VIEW "A-A"



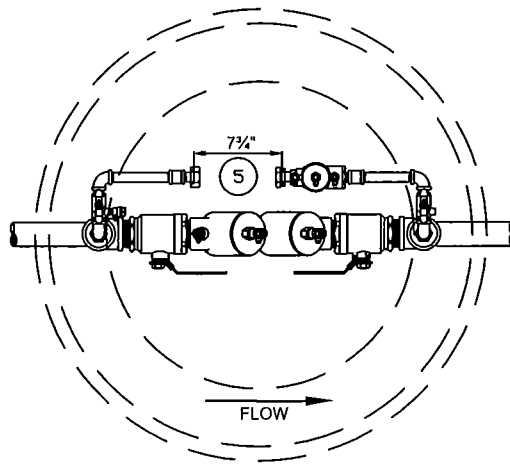
VIEW "C-C"

NOTES:

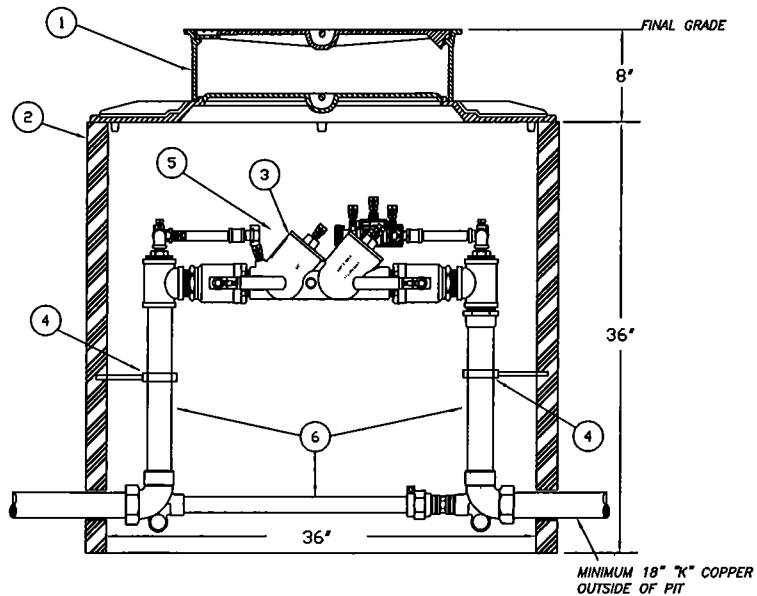
1. CUSTOMER TO PLACE STAKE MARKED "WATER" AT DESIRED LOCATION IN YARD FOR SERVICE LINE.
2. NO SOLDER JOINTS ALLOWED UNDERGROUND.
3. PIT INSTALLED BY CUSTOMER.
4. PRESSURE REDUCING VALVE PROVIDED BY CUSTOMER BECAUSE PRESSURE EXCEEDS 80 PSI.
5. WATER METER FURNISHED BY NWWA.
6. WATER METER WILL NOT BE SET IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	1 1/2" OR 2" DOMESTIC METER PIT INSTALLATION	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W7	

FIRE SERVICE PIT SPECIFICATION
for 1½" or 2" LINE SET w/OUT PRESSURE REDUCER



PLAN VIEW



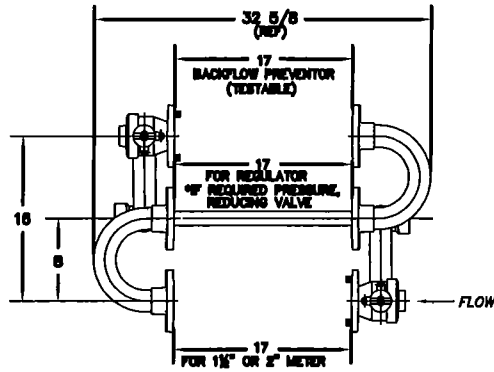
SIDE VIEW

LEGEND:

1. FORD MONITOR COVER WITH INNER LID, OR EQUAL
2. 36" x 36" METER PIT
3. 1½" OR 2" CONBRACO DCDA VERTICAL SET OR EQUAL
4. PIPE HANGER/SUPPORT
5. WATER METER SUPPLIED BY NWWA
6. FORD SETTERS SC-C11674-01 OR EQUAL

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	1½" OR 2" DCDA LINE SETTER	
DATE: 5/11	SCALE: NONE		
REVISION		DATE	
STANDARD DETAIL W8			

1½" or 2" DOMESTIC USE METER PIT W/PRV

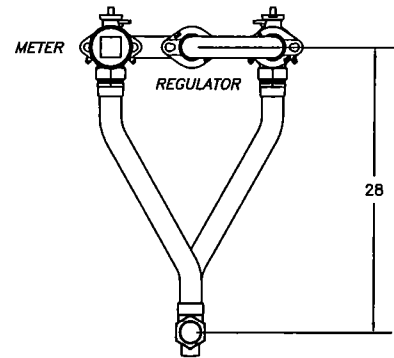
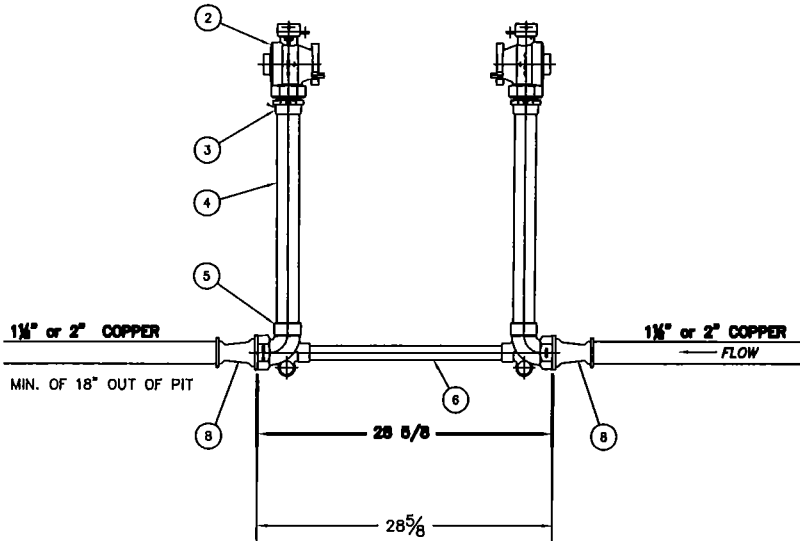


LEGEND

1. GATE VALVE OR BALL VALVE - 1½" MINIMUM BRASS 200 P.S.I. A.W.W.A. APPROVED.
2. METER FLANGES - FURNISHED BY H.W.A.
3. WATER METER - FURNISHED BY H.W.A.
4. SERVICE LINE - 1½" MIN. TYPE "K" SOFT COPPER WITH FLARED OR COMPRESSION FITTINGS.
5. CUSTOMER TO PROVIDE BACKFLOW DEVICE. THE TYPE OF DEVICE MUST BE APPROVED BY AUTHORITY FOR DEGREE OF HAZARD.
6. 1½" PIT WITH REDUCING FLANGES, SUPPLIED BY H.W.A.
7. 1½" PIT WITH REDUCING UNIONS, SUPPLIED BY H.W.A.

NOTES:

1. CUSTOMER TO PLACE STAKE MARKED "WATER" AT DESIRED LOCATION IN YARD FOR SERVICE LINE.
2. NO SOLDER JOINTS ALLOWED UNDERGROUND.
3. CUSTOMER PLUMBER TO INSTALL NO. 6 BONDING JUMPER ACROSS METER AND BACKFLOW.
4. WATER METER WILL NOT BE SET IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.
5. PRESSURE REDUCING VALVE PROVIDED BY CUSTOMER IF REQUIRED.



NORTH WALES WATER AUTHORITY

DSG. BY: BSF

CKD. BY: BSF

DATE: 5/11

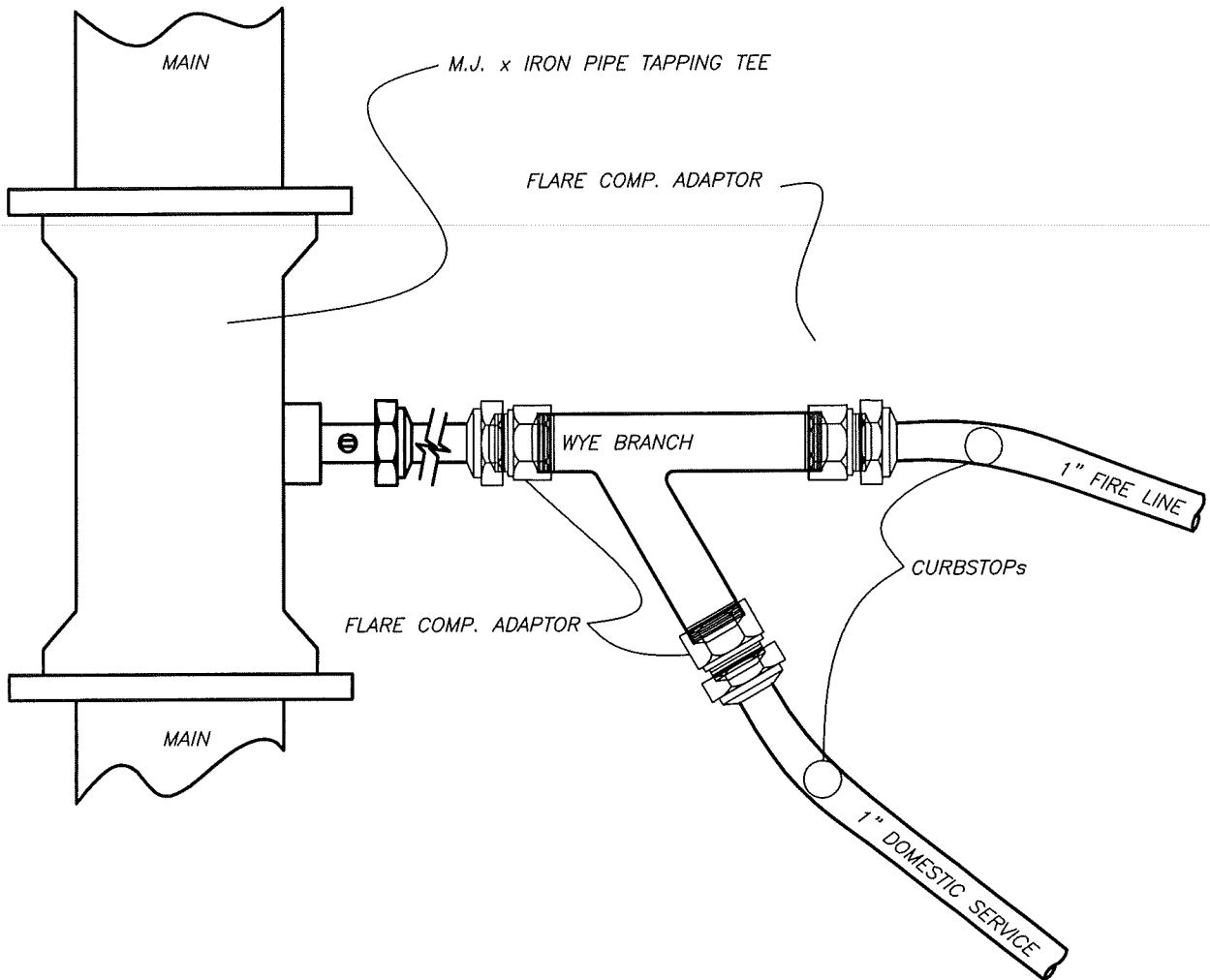
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REVISION

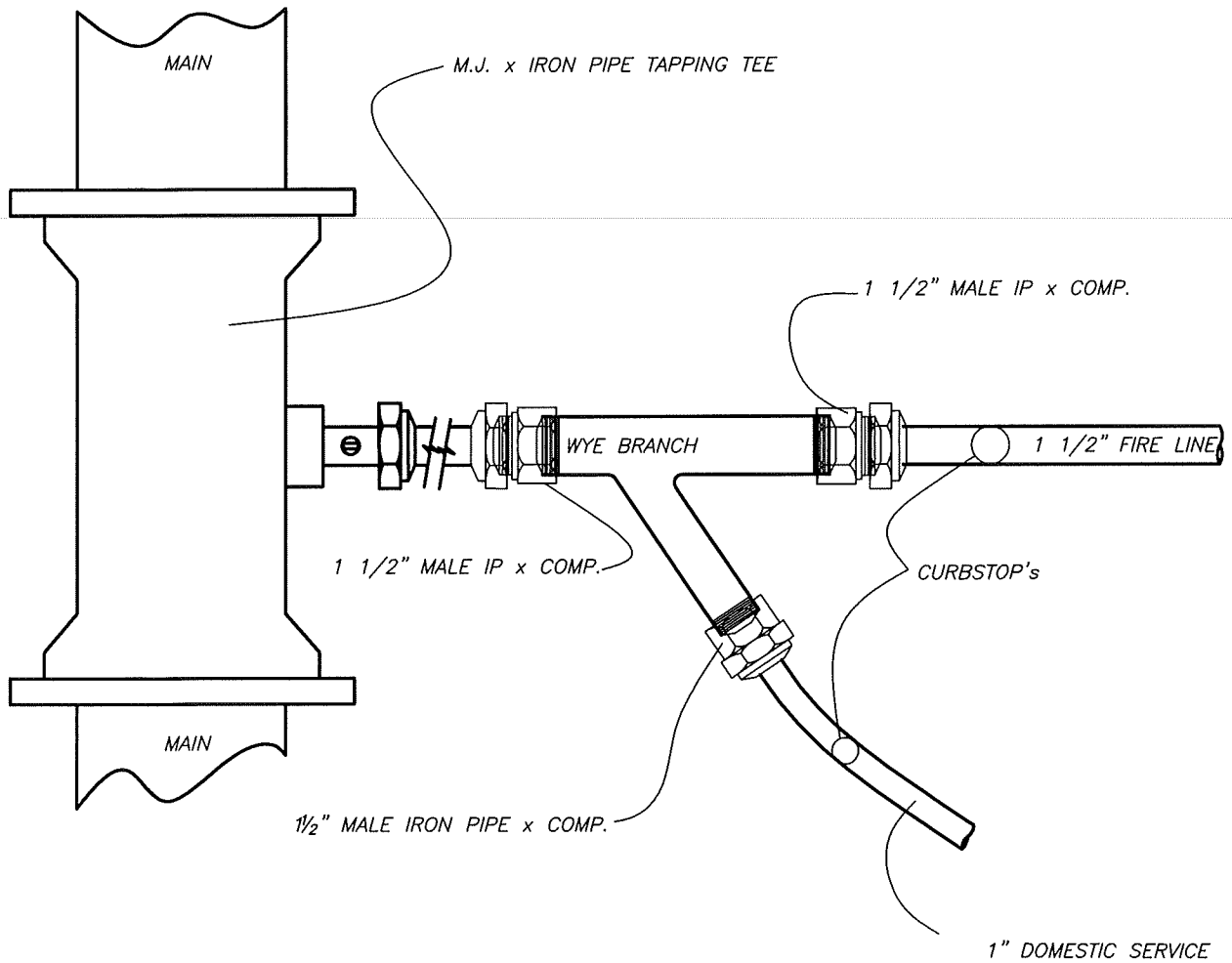
DATE

1½" OR 2" DOMESTIC METER ASSEMBLY

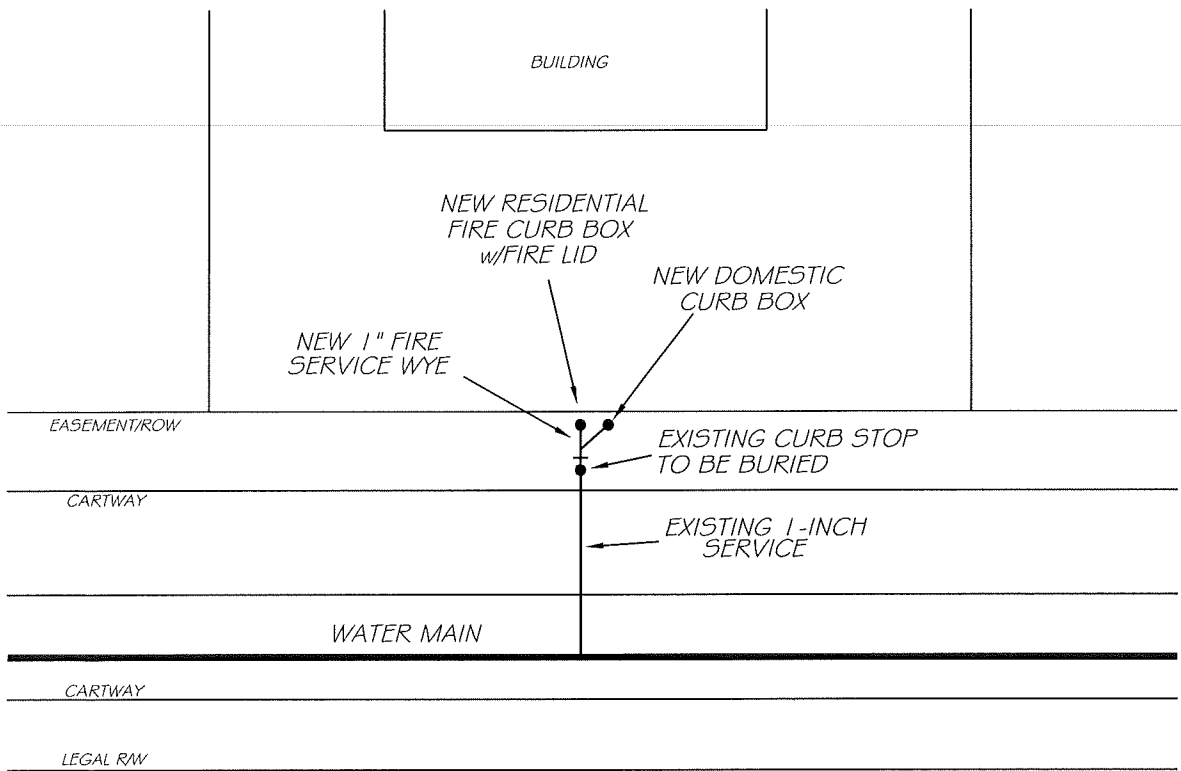
STANDARD DETAIL W9



NORTH WALES WATER AUTHORITY		
DSG. BY: BSF	CKD. BY: BSF	TYPICAL TAPPED TEE w/ 1" SERVICE & 1" FIRELINE
DATE: 5/11	SCALE: NONE	
REVISION	DATE	STANDARD DETAIL W10



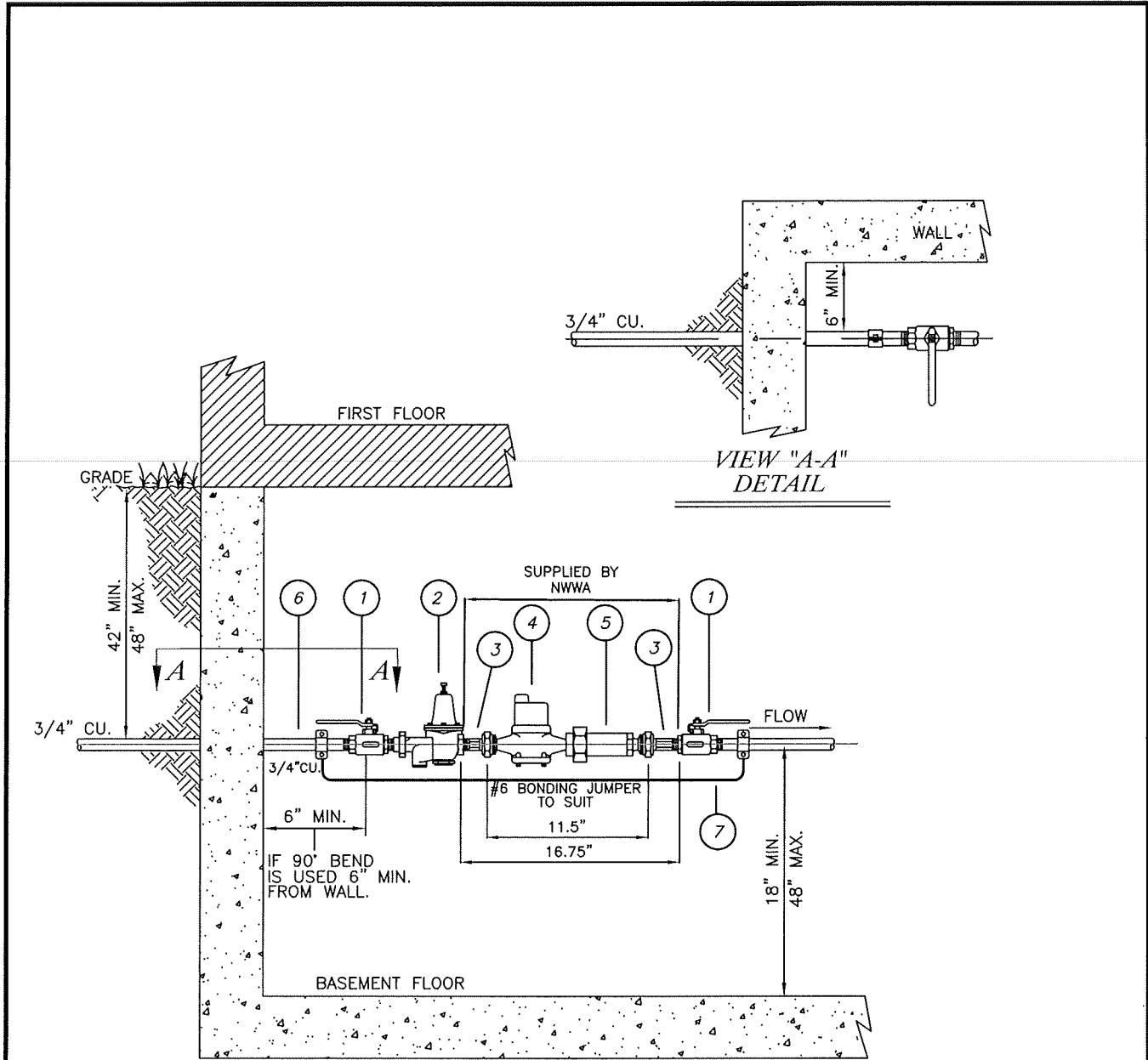
NORTH WALES WATER AUTHORITY		
DSG. BY: BSF	CKD. BY: BSF	TYPICAL TAPPED TEE w/ 1" SERVICE & 1 1/2" FIRELINE
DATE: 5/11	SCALE: NONE	
REVISION	DATE	
		STANDARD DETAIL W11



NOTES:

1. ALL NWWA FACILITIES MUST BE INSTALLED WITHIN EXISTING EASEMENT OR RIGHT-OF-WAY

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	ADDITION OF 1" FIRE LINE TO EXISTING 1" SERVICE LINE	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W12	



LEGEND

- 1. BALL VALVE - 3/4" MINIMUM BRASS 200 P.S.I. AWWA APPROVED
- 2. 3/4" PRESSURE REDUCING VALVE - REQUIRED IF PRESSURE EXCEEDS 80PSI - SUPPLIED BY CUSTOMER.
- 3. 3/4" METER COUPLING - FURNISHED BY N.W.W.A.
- 4. WATER METER - FURNISHED BY N.W.W.A.
- 5. DUAL CHECK BACKFLOW PREVENTER FURNISHED BY N.W.W.A.
- 6. SERVICE LINE - 3/4" MIN. TYPE "K" SOFT COPPER WITH FLARED OR COMPRESSION FITTINGS. CUSTOMER'S
- 7. PLUMBER TO INSTALL NO. 6 BONDING JUMPER ACROSS METER, AS SHOWN.

NOTES

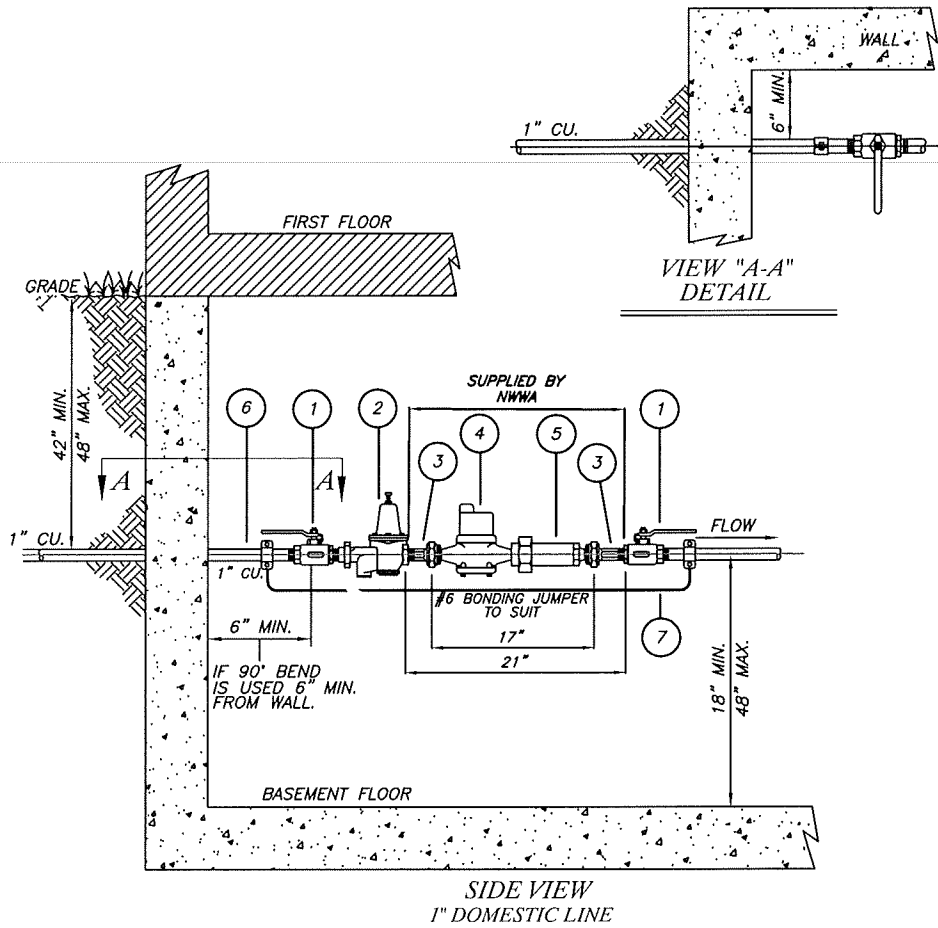
TO PLACE STAKE MARKED CUSTOMER "WATER" AT DESIRED LOCATION IN YARD FOR SERVICE LINE.

NO SOLDER JOINTS ALLOWED UNDERGROUND.

WATER METER WILL NOT BE SET IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.

IT IS THE CUSTOMERS RESPONSIBILITY TO ADDRESS THERMAL EXPANSION WHEN A PRV OR BACKFLOW DEVICE IS FURNISHED.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	RESIDENTIAL 3/4" SERVICE W/ 5/8" x 3/4" OR 3/4" METER	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W13	



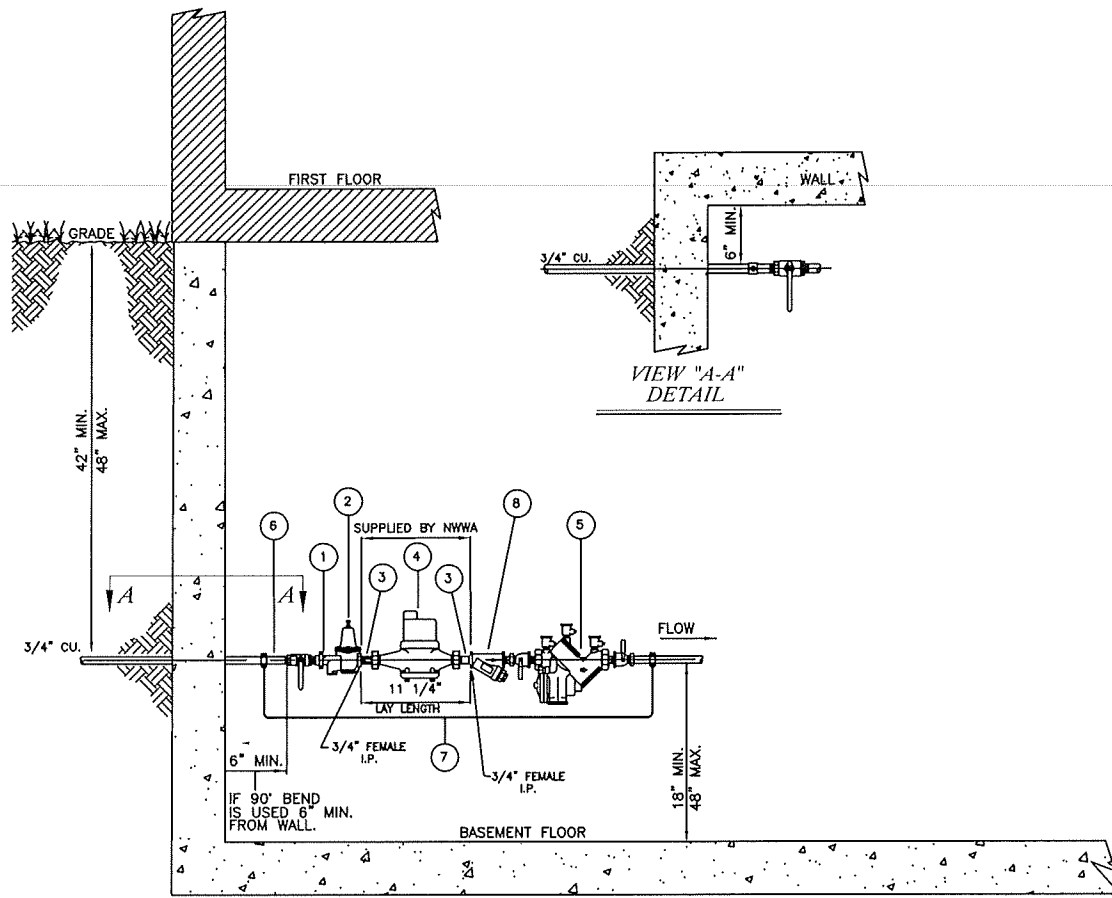
LEGEND

1. BALL VALVE – 1" MINIMUM BRASS 200 P.S.I. AWWA APPROVED
2. 1" PRESSURE REDUCING VALVE – REQUIRED IF PRESSURE EXCEEDS 80PSI – SUPPLIED BY CUSTOMER.
3. 1" METER COUPLING – FURNISHED BY N.W.W.A.
4. WATER METER – FURNISHED BY N.W.W.A.
5. DUAL CHECK BACKFLOW PREVENTER FURNISHED BY N.W.W.A.
6. SERVICE LINE – 1" MIN. TYPE "K" COPPER SOFT WITH FLARED OR COMPRESSION FITTINGS.
7. CUSTOMER'S PLUMBER TO INSTALL NO. 6 BONDING JUMPER ACROSS METER, AS SHOWN.

NOTES

- CUSTOMER TO PLACE STAKE MARKED "WATER" AT DESIRED LOCATION IN YARD FOR SERVICE LINE.
- NO SOLDER JOINTS ALLOWED UNDERGROUND.
- WATER METER WILL NOT BE SET IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.
- IT IS THE CUSTOMERS RESPONSIBILITY TO ADDRESS THERMAL EXPANSION WHEN A PRV OR BACKFLOW DEVICE IS FURNISHED.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	RESIDENTIAL 1" SERVICE W/ 5/8" x 3/4", 3/4" OR 1" METER	
DATE: 5/11	SCALE: NONE		
REVISION	DATE	STANDARD DETAIL W14	



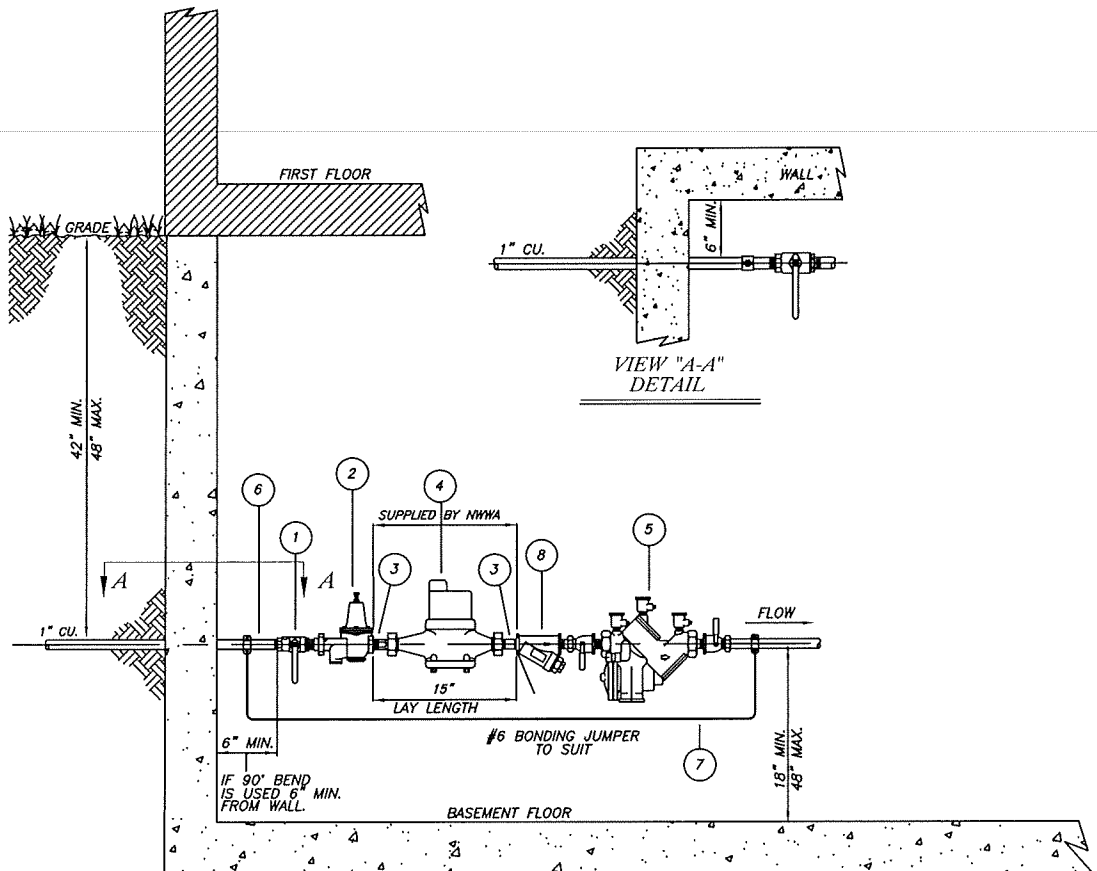
LEGEND:

- BALL VALVE - 3/4" MINIMUM BRASS 200 P.S.I. A.W.W.A. APPROVED
- PRESSURE REDUCING VALVE - REQUIRED IF PRESSURE EXCEEDS 80PSI - SUPPLIED BY CUSTOMER.
- METER COUPLING - FURNISHED BY N.W.W.A.
- WATER METER - FURNISHED BY N.W.W.A.
- TO PROVIDE BACKFLOW CUSTOMER DEVICE. DEVICE MUST BE APPROVED BY NORTH WALES WATER AUTHORITY PRIOR TO INSTALLATION.
- 6. SERVICE LINE - 3/4" MIN. TYPE "K" SOFT COPPER WITH FLARED OR COMPRESSION FITTINGS. CUSTOMER
- PLUMBER TO INSTALL NO. 6 BONDING JUMPER ACROSS METER, AS SHOWN
- STRAINER PROVIDED BY CUSTOMER (OPTIONAL).

NOTES:

- TO PLACE STAKE MARKED CUSTOMER "WATER" AT DESIRED LOCATION IN YARD FOR SERVICE LINE.
- NO SOLDER JOINTS ALLOWED UNDERGROUND.
- WATER METER WILL NOT BE SET IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	COMMERCIAL/INDUSTRIAL 3/4" SERVICE W/ 5/8"x3/4" OR 3/4" METER	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W15	



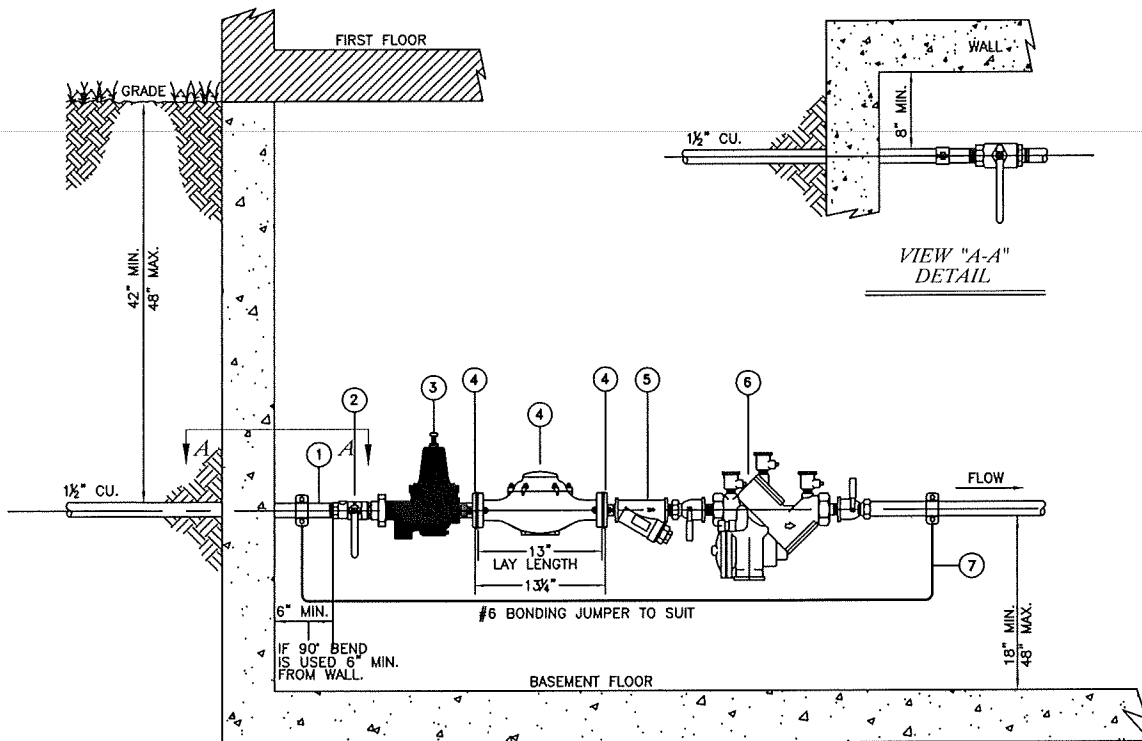
LEGEND

- BALL VALVE - 1" MINIMUM BRASS 200 P.S.I. AWWA APPROVED
- 1" PRESSURE REDUCING VALVE - REQUIRED IF PRESSURE EXCEEDS 80PSI - SUPPLIED BY CUSTOMER.
- METER COUPLING - FURNISHED BY N.W.W.A.
- WATER METER - FURNISHED BY N.W.W.A.
- TO PROVIDE BACKFLOW CUSTOMER DEVICE. DEVICE MUST BE APPROVED BY NORTH WALES WATER AUTHORITY FOR DEGREE OF HAZARD.
- SERVICE LINE - 1" MIN. TYPE "K" SOFT COPPER WITH FLARED OR COMPRESSION FITTINGS.
- CUSTOMER'S PLUMBER TO INSTALL NO. 6 BONDING JUMPER ACROSS METER, AS SHOWN.
- STRAINER PROVIDED BY CUSTOMER (OPTIONAL).

NOTES

- CUSTOMER TO PLACE STAKE MARKED "WATER" AT DESIRED LOCATION IN YARD FOR SERVICE LINE.
- NO SOLDER JOINTS ALLOWED UNDERGROUND.
- WATER METER WILL NOT BE SET IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.
- IT IS THE CUSTOMERS RESPONSIBILITY TO ADDRESS THERMAL EXPANSION WHEN A PRESSURE REDUCING VALVE OR BACKFLOW DEVICE IS FURNISHED.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	COMMERCIAL/INDUSTRIAL 1" SERVICE W/ 5/8" x 3/4", 3/4" OR 1" METER	
DATE: 5/11	SCALE: NONE		
REVISION	DATE	STANDARD DETAIL W16	



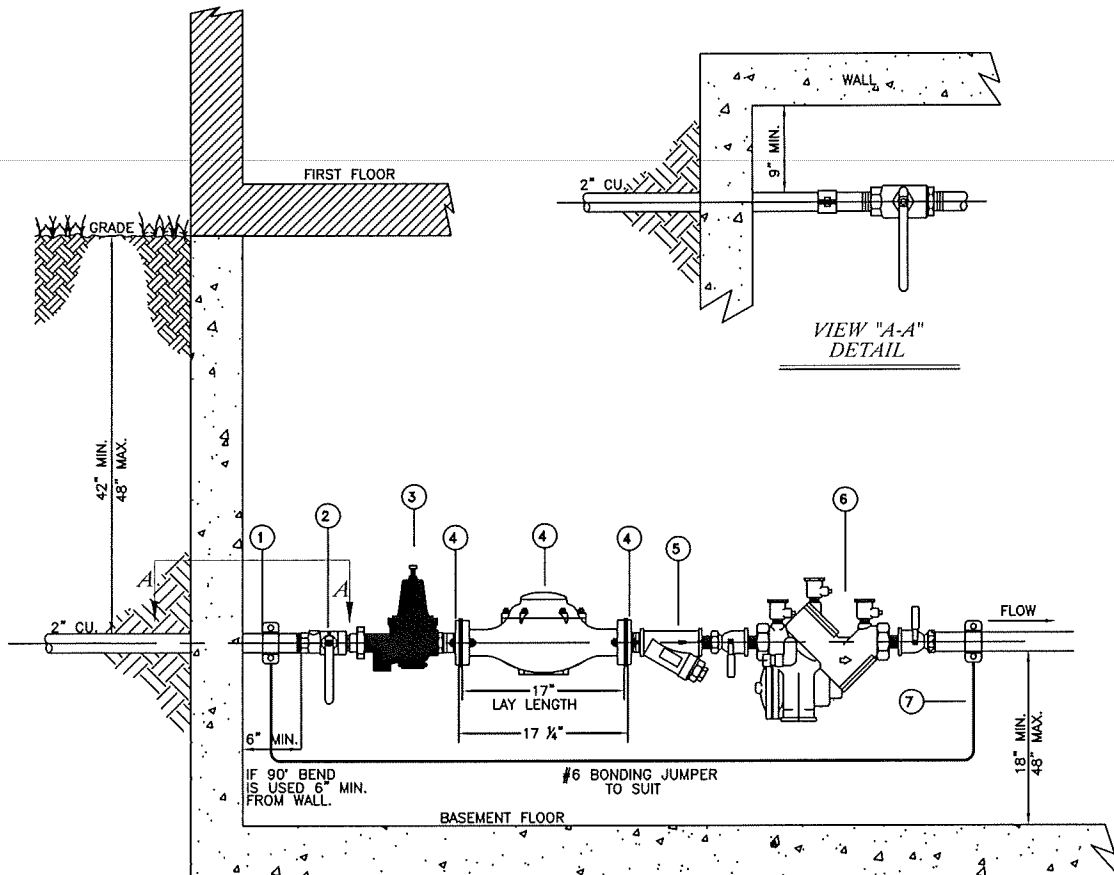
LEGEND

1. SERVICE LINE SHALL BE 1½" MIN. TYPE "K" SOFT COPPER WITH FLARED OR COMPRESSION FITTINGS.
2. 1½" MIN. BRASS BALL VALVE WITH A MAXIMUM WORKING PRESSURE OF 200 PSI.
3. A PRESSURE REDUCING VALVE IS REQUIRED AND MUST BE SUPPLIED BY THE CUSTOMER IF THE STATIC PRESSURE EXCEEDS 80 PSI.
4. WATER METER, FLANGES, AND GASKETS ARE PROVIDED BY NWWA.
5. "OPTIONAL" STRAINER PROVIDED BY THE CUSTOMER.
6. CUSTOMER TO PROVIDE BACKFLOW PREVENTION DEVICE WITH A MAXIMUM WORKING PRESSURE OF 175 PSI. ALL DEVICES MUST BE APPROVED BY NWWA PRIOR TO INSTALLATION.
7. CUSTOMER'S PLUMBER TO INSTALL NO. 6 BONDING JUMPER ACROSS WATER METER AND BACKFLOW DEVICE.

NOTES:

- CUSTOMER TO PLACE STAKE MARKED "WATER" AT DESIRED LOCATION IN YARD FOR SERVICE LINE.
- NO SOLDER JOINTS ALLOWED UNDERGROUND.
- WATER METER WILL NOT BE SET IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.
- CUSTOMER TO SUPPORT PIPING AS NEEDED
- IT IS THE CUSTOMER'S RESPONSIBILITY TO ADDRESS THERMAL EXPANSION WHEN A PRV OR BACKFLOW DEVICE IS FURNISHED.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	COMMERCIAL/INDUSTRIAL 1½" SERVICE W/ 1½" METER	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W17	



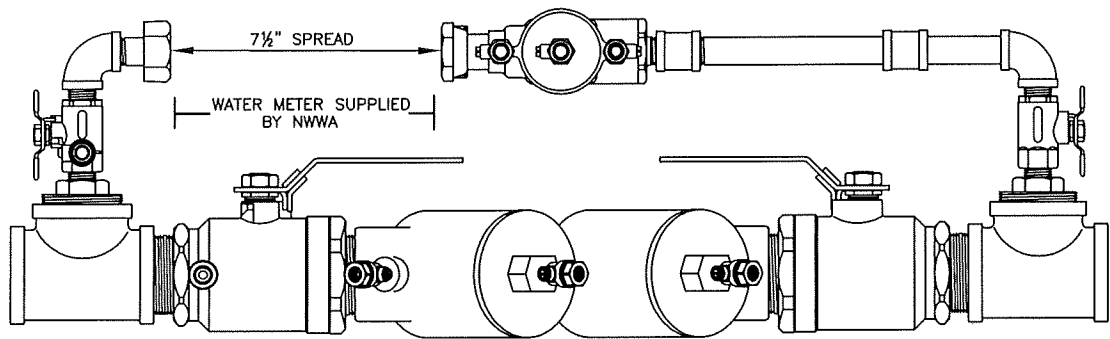
LEGEND

1. SERVICE LINE SHALL BE 2" MIN. TYPE "K" SOFT COPPER WITH FLARED OR COMPRESSION FITTINGS.
2. 2" MIN. BRASS BALL VALVE WITH A MAXIMUM WORKING PRESSURE OF 200 PSI.
3. A PRESSURE REDUCING VALVE IS REQUIRED AND MUST BE SUPPLIED BY THE CUSTOMER IF THE STATIC PRESSURE EXCEEDS 80 PSI.
4. WATER METER, FLANGES, AND GASKETS ARE PROVIDED BY NWWA.
5. "OPTIONAL" STRAINER PROVIDED BY THE CUSTOMER.
6. CUSTOMER TO PROVIDE BACKFLOW PREVENTION DEVICE WITH A MAXIMUM WORKING PRESSURE OF 175 PSI. ALL DEVICES MUST BE APPROVED BY NWWA PRIOR TO INSTALLATION.
7. CUSTOMER'S PLUMBER TO INSTALL NO. 6 BONDING JUMPER ACROSS WATER METER AND BACKFLOW DEVICE.

NOTES:

- CUSTOMER TO PLACE STAKE MARKED "WATER" AT DESIRED LOCATION IN YARD FOR SERVICE LINE.
- NO SOLDER JOINTS ALLOWED UNDERGROUND.
- WATER METER WILL NOT BE SET IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.
- CUSTOMER TO SUPPORT PIPING AS NEEDED
- IT IS THE CUSTOMERS RESPONSIBILITY TO ADDRESS THERMAL EXPANSION WHEN A PRV OR BACKFLOW DEVICE IS FURNISHED.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	COMMERCIAL/INDUSTRIAL 2" SERVICE W/ 2" METER	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W18	



GENERAL SPECIFICATIONS:

THE BACKFLOW PREVENTER WILL BE A DOUBLE CHECK VALVE DETECTOR ASSEMBLY TYPE INCLUDING (4) RESILIENT SEATED TEST COCKS AND 2 FULL PORT BALL VALVES.

THE (2) CHECK VALVES SHALL BE INDEPENDENTLY ACTING AND INTERNALLY LOADED. EACH CHECK SHALL MAINTAIN A MINIMUM 1 PSID IN THE NORMAL DIRECTION OF FLOW, UNDER STATIC CONDITIONS. BOTH CHECKS AND TEST COCKS SHALL BE TOP MOUNTED FOR EASE OF TESTING, REPAIR AND MAINTENANCE.

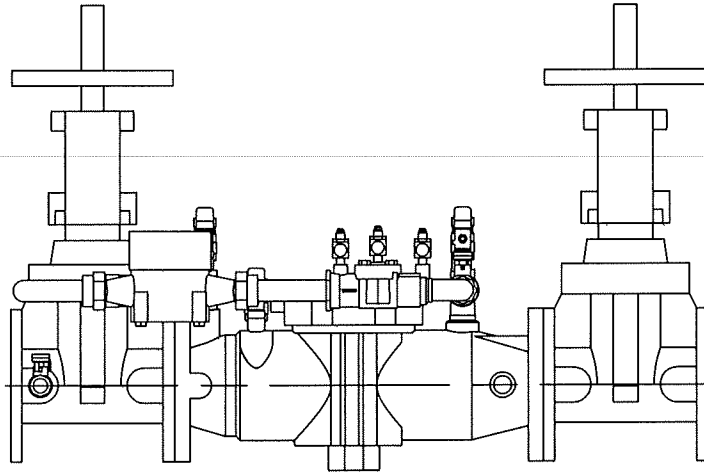
THE BACKFLOW PREVENTER SHALL BE SUITABLE FOR SUPPLY PRESSURE UP TO 175 PSI.

THE BACKFLOW PREVENTERS THAT COMPRISE THIS ASSEMBLY MUST MEET THE FOLLOWING STANDARDS: USC's FCCC & HR MANUAL SEC. 10, ASSE 1047, FM+UL.

NOTES:

1. ALL DEVICES MUST BE APPROVED BY NORTH WALES WATER AUTHORITY PRIOR TO INSTALLATION.
2. WATER METER AND GASKETS WILL BE PROVIDED BY NWWA
3. THE SERVICE LINE SHALL BE TYPE "K" SOFT COPPER WITH FLARED OR COMPRESSION FITTINGS.
4. CUSTOMER MUST PROVIDE THE BACKFLOW DEVICE.
5. IF THE SYSTEM UTILIZES A PUMP OR IS A CHEMICAL SYSTEM, THE DEVICE MUST BE AN RPDA.
6. THE WATER METER WILL NOT BE SET AND WATER SERVICE WILL BE DISCONTINUED IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	1" THROUGH 2" FIRE PROTECTION SYSTEMS	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W19	



GENERAL SPECIFICATIONS:

THE BACKFLOW PREVENTER WILL BE A DOUBLE CHECK VALVE DETECTOR ASSEMBLY TYPE INCLUDING (4) RESILIENT SEATED TEST COCKS AND 2 FULL PORT BALL VALVES.

THE (2) CHECK VALVES SHALL BE INDEPENDENTLY ACTING AND INTERNALLY LOADED. EACH CHECK SHALL MAINTAIN A MINIMUM 1 PSID IN THE NORMAL DIRECTION OF FLOW, UNDER STATIC CONDITIONS. BOTH CHECKS AND TEST COCKS SHALL BE TOP MOUNTED FOR EASE OF TESTING, REPAIR AND MAINTENANCE.

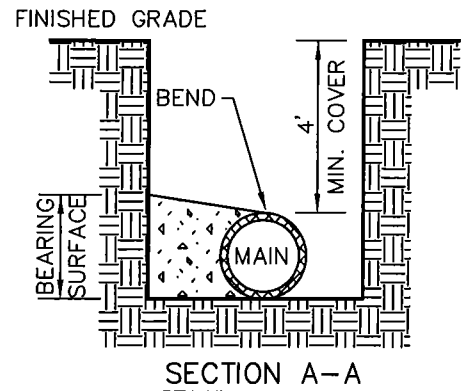
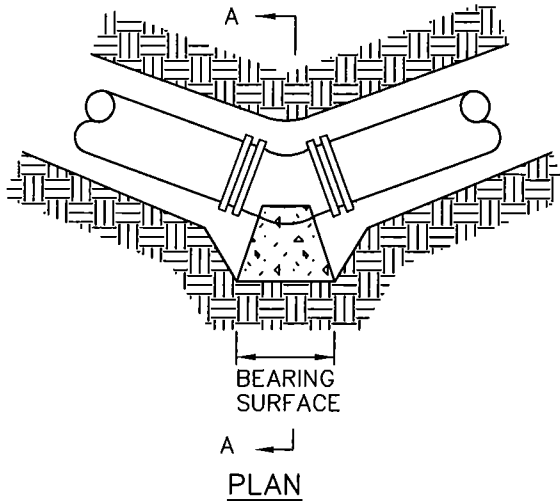
THE BACKFLOW PREVENTER SHALL BE SUITABLE FOR SUPPLY PRESSURE UP TO 175 PSI.

THE BACKFLOW PREVENTERS THAT COMPRISE THIS ASSEMBLY MUST MEET THE FOLLOWING STANDARDS: USC's FCCC & HR MANUAL SEC. 10, ASSE 1047, FM+UL, AWWA.

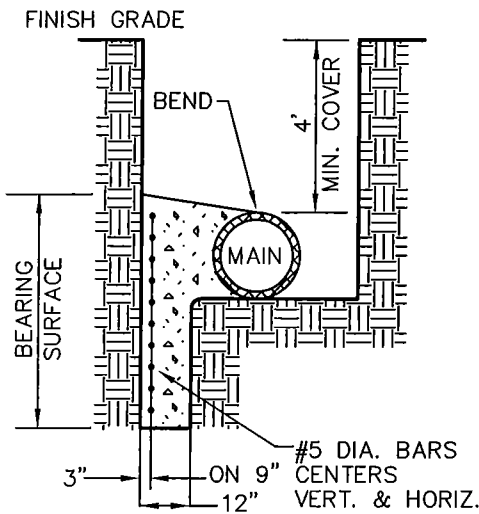
NOTES:

1. ALL DEVICES MUST BE APPROVED BY NORTH WALES WATER AUTHORITY PRIOR TO INSTALLATION.
2. WATER METER AND GASKETS WILL BE PROVIDED BY NWWA
3. CUSTOMER MUST PROVIDE THE BACKFLOW DEVICE.
4. IF THE SYSTEM UTILIZES A PUMP OR IS A CHEMICAL SYSTEM, THE DEVICE MUST BE AN RPDA.
5. THE WATER METER WILL NOT BE SET AND WATER SERVICE WILL BE DISCONTINUED IF PIPING DOES NOT CONFORM TO SPECIFICATIONS.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	4" THROUGH 10" FIRE PROTECTION SYSTEMS	
DATE: 5/11	SCALE: NONE		
REVISION		DATE	
STANDARD DETAIL W20			



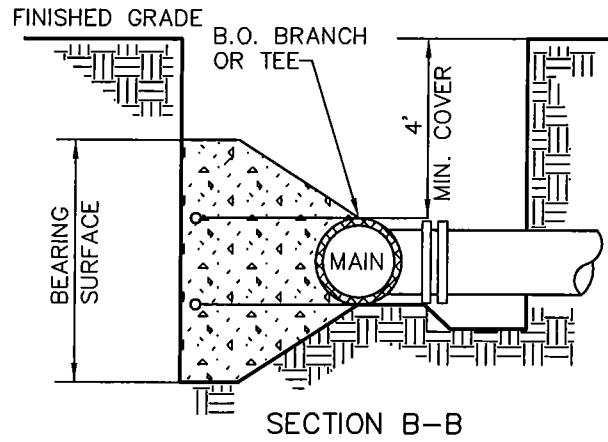
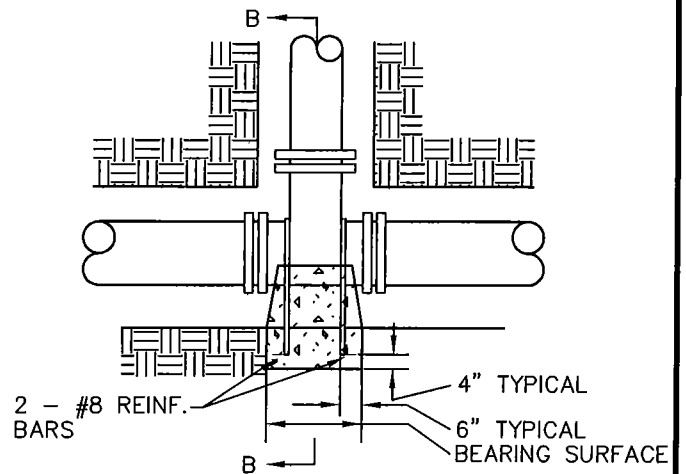
(FOR BEARING SURFACE \leq 10SF)



(FOR BEARING SURFACE > 10SF)

NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 2500 P.S.I.
2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS U-SHAPED AROUND PIPE.
3. ALL FITTINGS AND JOINTS SHALL BE ENVELOPED WITH 8 MIL. POLYETHYLENE FILM BEFORE PLACING CONCRETE.
4. PAINT ALL EXPOSED STEEL WITH TWO COATS OF ASTM D1187 ASPHALT EMULSION.
5. FOR THE REQUIRED BEARING SURFACE SEE STANDARD DETAIL W8.

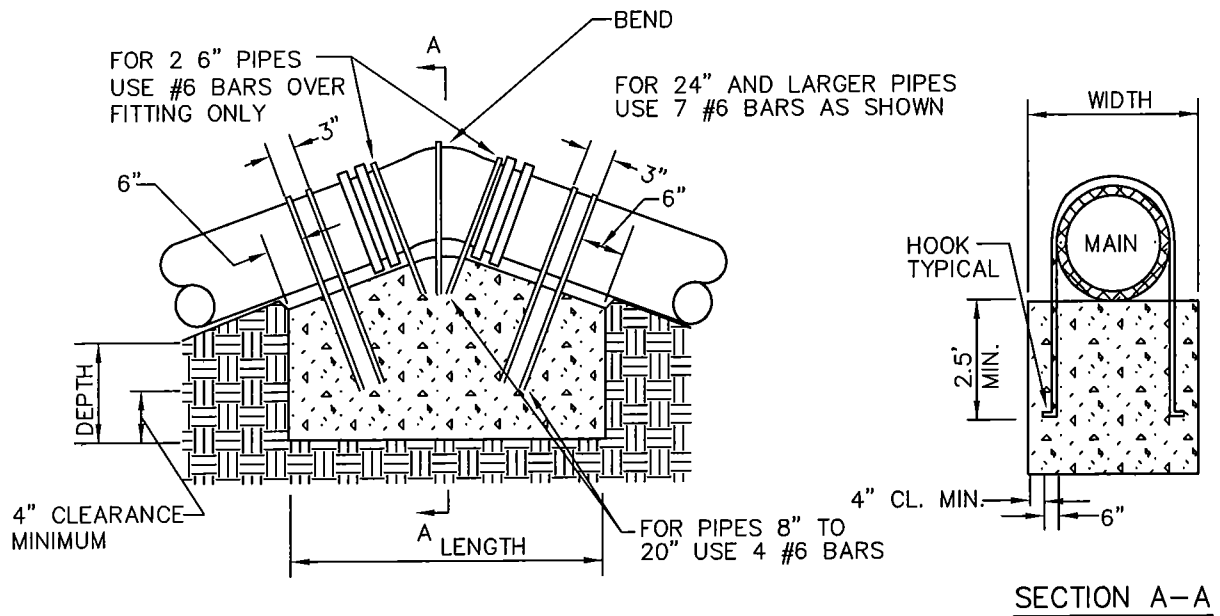


NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	HORIZONTAL THRUST BLOCK ORIENTATION	
DATE: 5/11	SCALE: NONE		
REVISION	DATE	STANDARD DETAIL W21	

BEARING SURFACE AREAS HORIZONTAL THRUST & VERTICAL DOWNWARD THRUST 150 P.S.I. WORKING PRESSURE																				
PIPE SIZE	3"			4"			6"			8"										
	DEGREE OF BEND OR DEFLECTION																			
	D.E.	90°	45°	22.5°	11.25°	D.E.	90°	45°	22.5°	11.25°	D.E.	90°	45°	22.5°	11.25°					
TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS																				
SOFT CLAY (1,000#/SF)	2.8	3.9	2.1	1.1	1.0	4.1	5.8	3.1	1.6	1.0	8.4	11.9	6.4	3.3	1.6	14.5	20.5	11.1	5.6	2.8
SILT (1,500#/SF)	1.8	2.6	1.4	1.0	1.0	2.7	3.8	2.1	1.1	1.0	5.6	7.9	4.6	2.2	1.1	9.6	13.6	7.4	3.8	1.9
SANDY SILT (3,000#/SF)	1.0	1.3	1.0	1.0	1.0	1.4	1.9	1.0	1.0	1.0	2.8	4.0	2.1	1.1	1.0	4.8	6.8	3.7	1.9	1.0
SAND (4,000#/SF)	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.0	1.0	1.0	2.1	3.0	1.6	1.0	1.0	3.6	5.1	2.8	1.4	1.0
SANDY CLAY (6,000#/SF)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.4	2.0	1.1	1.0	1.0	2.4	3.4	1.8	1.0	1.0
HARD CLAY (9,000#/SF)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.3	1.0	1.0	1.0	1.6	2.3	1.2	1.0	1.0
PIPE SIZE	10"			12"			14"			16"										
TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS																				
SOFT CLAY (1,000#/SF)	21.8	30.8	16.7	8.5	4.3	30.8	43.5	23.6	12.0	6.0	41.4	58.5	31.7	16.1	8.1	53.5	75.6	40.9	20.9	10.5
SILT (1,500#/SF)	14.5	20.5	11.1	5.7	2.8	20.5	29.0	15.7	8.0	4.0	27.6	39.0	21.1	10.8	5.4	35.7	50.4	27.3	13.9	7.0
SANDY SILT (3,000#/SF)	7.3	10.3	5.6	2.8	1.4	14.5	14.5	7.9	4.0	2.0	13.8	19.5	10.6	5.4	2.7	17.8	25.2	13.6	7.0	3.5
SAND (4,000#/SF)	5.4	7.7	4.2	2.1	1.1	10.9	10.9	5.9	3.0	1.5	10.3	14.6	7.9	4.0	2.0	13.4	18.9	10.2	5.2	2.6
SANDY CLAY (6,000#/SF)	3.6	5.1	2.8	1.4	1.0	5.1	7.3	3.9	2.0	1.0	6.9	9.7	5.3	2.7	1.4	8.9	12.6	6.8	3.5	1.7
HARD CLAY (9,000#/SF)	2.4	3.4	1.9	1.0	1.0	3.4	4.8	2.06	1.3	1.0	4.6	6.5	3.5	1.8	1.0	5.9	8.4	4.5	2.3	1.2

NOTE: D.E. DENOTES DEAD END OR TEE
ALL AREAS IN SQUARE FEET.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	HORIZONTAL AND VERTICAL DOWNWARD THRUST BLOCK DIMENSIONS	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W22	



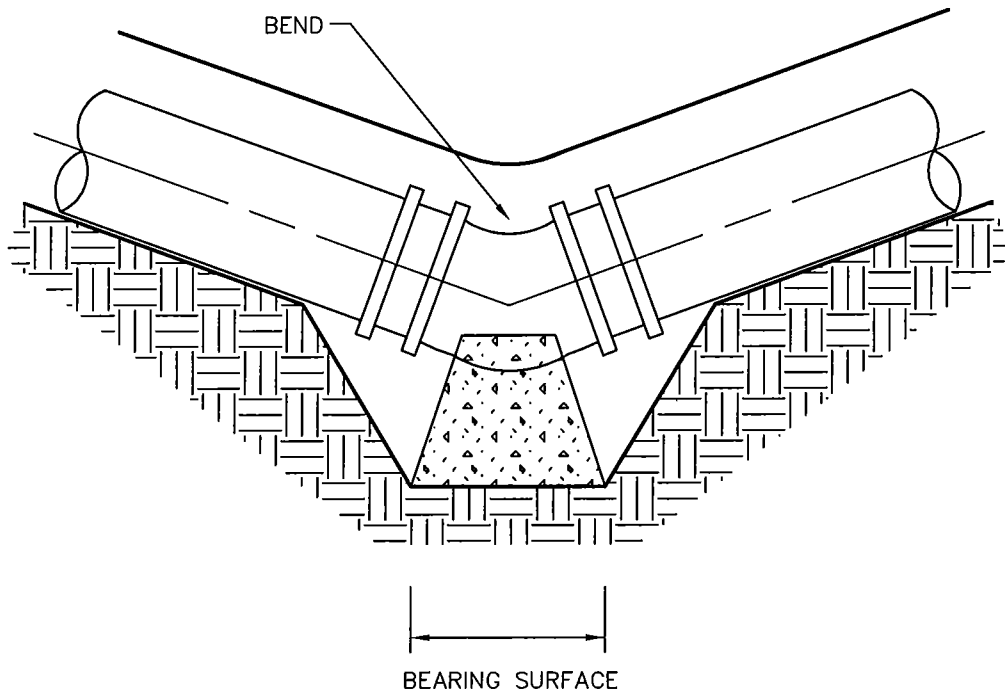
NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 P.S.I.
2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS U-SHAPED AROUND PIPE.
3. ALL FITTINGS AND JOINTS SHALL BE ENVELOPED WITH 8 MIL. POLYETHYLENE FILM BEFORE PLACING CONCRETE.
4. PAINT ALL EXPOSED STEEL WITH TWO COATS OF ASTM D1187 ASPHALT EMULSION.

BEARING SURFACE AREAS - VERTICAL UPWARD THRUST 150 P.S.I. WORKING PRESSURE									
PIPE SIZES	LENGTH			WIDTH			DEPTH		
	11.25 °	22.25 °	45 °	11.25 °	22.25 °	45 °	11.25 °	22.25 °	45 °
6" & 8"	3'	4'	6'	3'	3'	3'	2'	3'	4'
10" & 12"	4'	6'	7'	4'	4.5'	4'	2.5'	3'	4'
14" & 16"	6'	8'	11'	4.5'	4.5'	4.5'	3.5'	5'	5'

ALL AREAS IN SQUARE FEET.

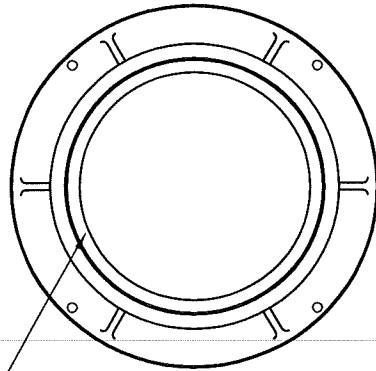
NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	VERTICAL UPWARD THRUST BLOCKS	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL W23	



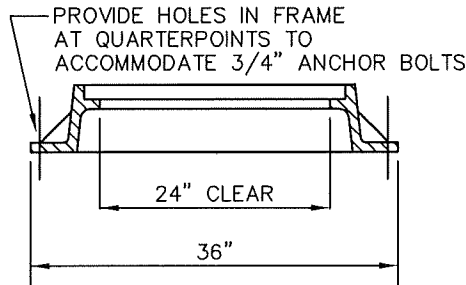
NOTES:

1. ALL CONCRETE SHALL HAVE A MIN. COMPRESSIVE STRENGTH OF 2500 P.S.I.
2. ALL FITTINGS AND JOINTS SHALL BE COVERED WITH POLYETHYLENE FILM BEFORE PLACING CONCRETE.
3. PAINT ALL EXPOSED STEEL WITH TWO COATS OF ASTM D1187 ASPHALT EMULSION.
4. FOR THE REQUIRED BEARING SURFACE SEE STANDARD DETAIL W8.

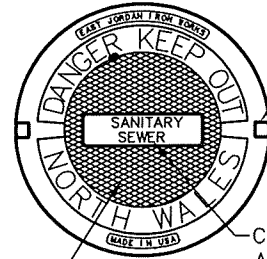
NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	VERTICAL DOWNWARD THRUST BLOCK	
DATE: 5/11	SCALE: NONE		
REVISION		DATE	
STANDARD DETAIL W24			



FULL SEAT
NO PROTRUDING
TABS OR LUGS

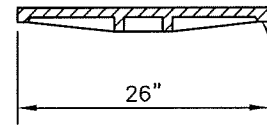


FRAME



MFG. STANDARD
NON-SKID SURFACE AS
APPROVED BY AUTHORITY

2 PICK HOLES
CAST-IN LETTERS
AS SPECIFIED



CONTINUOUS
NEOPRENE
GASKET

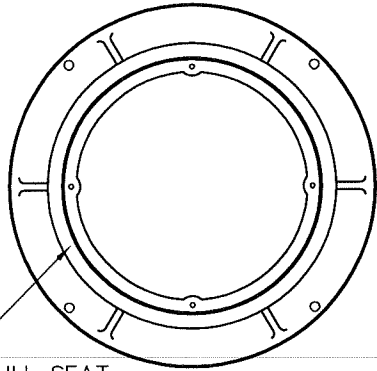
COVER

NOTES:

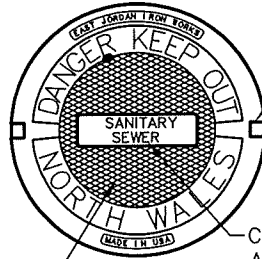
THE FOLLOWING MANUFACTURER'S STANDARD CASTING SHALL BE USED:

EAST JORDAN IRON WORKS 1045Z FRAME, 1040AGS COVER

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	STANDARD MANHOLE FRAME AND COVER	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL S1	



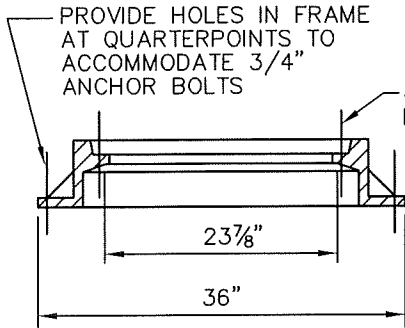
FULL SEAT
NO PROTRUDING TABS
OR LUGS



2 PICK HOLES

CAST-IN LETTERS
AS SPECIFIED

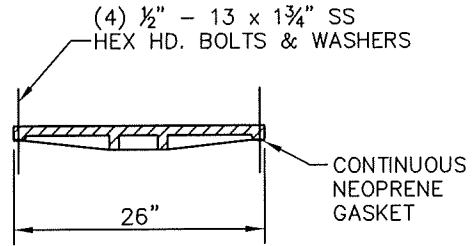
MFG. STANDARD
NON-SKID SURFACE AS
APPROVED BY AUTHORITY



PROVIDE HOLES IN FRAME
AT QUARTERPOINTS TO
ACCOMMODATE 3/4"
ANCHOR BOLTS

4 THREADED HOLES
FOR 1/2" DIA. BOLTS

FRAME



(4) 1/2" - 13 x 1 3/4" SS
HEX HD. BOLTS & WASHERS

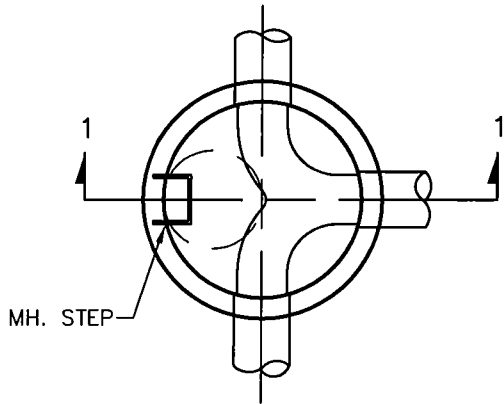
CONTINUOUS
NEOPRENE
GASKET

COVER

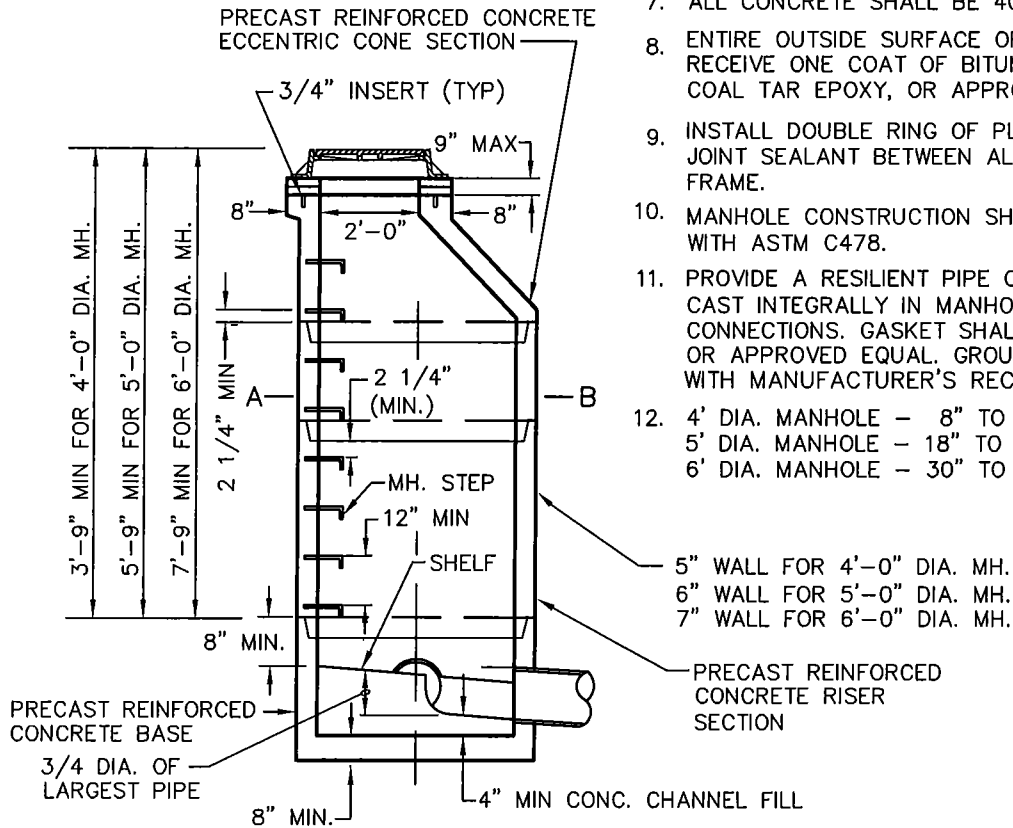
NOTE:

THE FOLLOWING MANUFACTURER'S STANDARD CASTING SHALL BE USED:
EAST JORDAN IRON WORKS 1045ZPT

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	WATERTIGHT MANHOLE FRAME AND COVER	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL S2	



PLAN BELOW LINE A - B

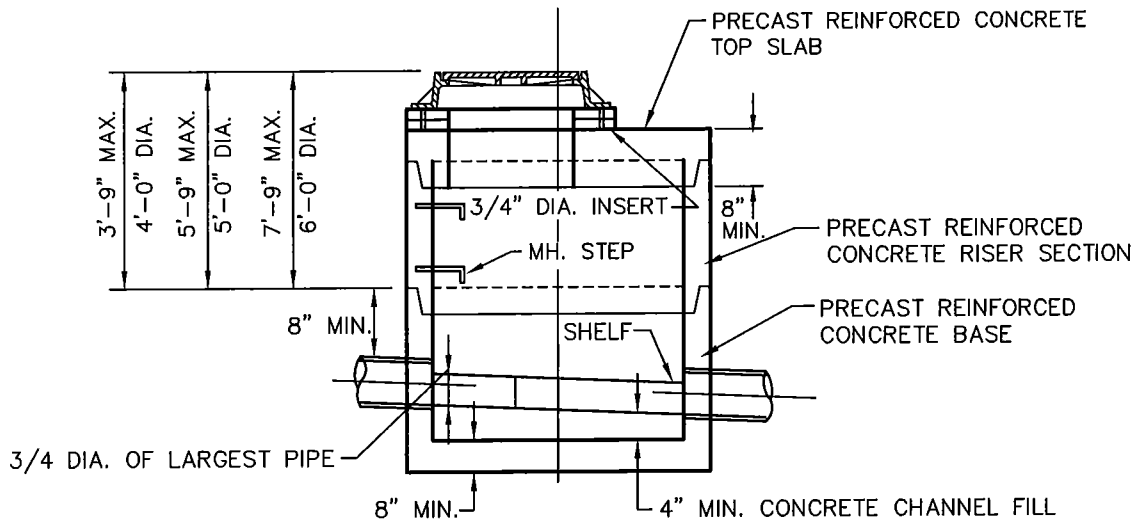


SECTION 1-1

NOTES:

1. THE DEPTH OF THE INVERT CHANNEL SHALL BE EQUAL TO 3/4 OF THE DIAMETER OF THE SEWER.
2. THE SHELF SHALL SLOPE TOWARD THE INVERT CHANNEL AT A RATE OF 1" PER FOOT.
3. TYPE "B" MANHOLES (SHALLOW TYPE) TO BE PROVIDED WHERE REQUIRED BY DEPTH CONDITIONS. ALL OTHER MANHOLES TO BE TYPE "A".
4. FOR MANHOLES HAVING 5' DIA. AND 6' DIA. BASE, REDUCTION IN DIAMETER TO 4' SHALL START AT THE FIRST JOINT ABOVE THE UPPERMOST PIPE CONNECTION TO WALL, WHERE DEPTH IS SUFFICIENT.
5. ALL MANHOLE FRAMES SHALL BE BOLTED TO THE CONE SECTION OR CONCRETE SLAB WITH 2-3/4" DIA. BOLTS WITH WASHERS AND NUTS. BOLTS TO BE AT 180° ON THE BOLT CIRCLE. FOR WATERTIGHT COVERS USE 4-3/4" DIA. BOLTS AT 90° ON THE BOLT CIRCLE.
6. SEE THE SPECIFICATIONS FOR LENGTH OF PIPE CONNECTIONS TO MANHOLES.
7. ALL CONCRETE SHALL BE 4000 PSI MINIMUM.
8. ENTIRE OUTSIDE SURFACE OF MANHOLE SHALL RECEIVE ONE COAT OF BITUMINOUS COATING, COAL TAR EPOXY, OR APPROVED EQUAL.
9. INSTALL DOUBLE RING OF PLASTIC PREFORMED JOINT SEALANT BETWEEN ALL SECTIONS AND UNDER FRAME.
10. MANHOLE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ASTM C478.
11. PROVIDE A RESILIENT PIPE CONNECTION GASKET CAST INTEGRALLY IN MANHOLE WALL AT ALL PIPE CONNECTIONS. GASKET SHALL BE A-LOK CONNECTOR, OR APPROVED EQUAL. GROUT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
12. 4' DIA. MANHOLE - 8" TO 16" PIPES
5' DIA. MANHOLE - 18" TO 27" PIPES
6' DIA. MANHOLE - 30" TO 48" PIPES

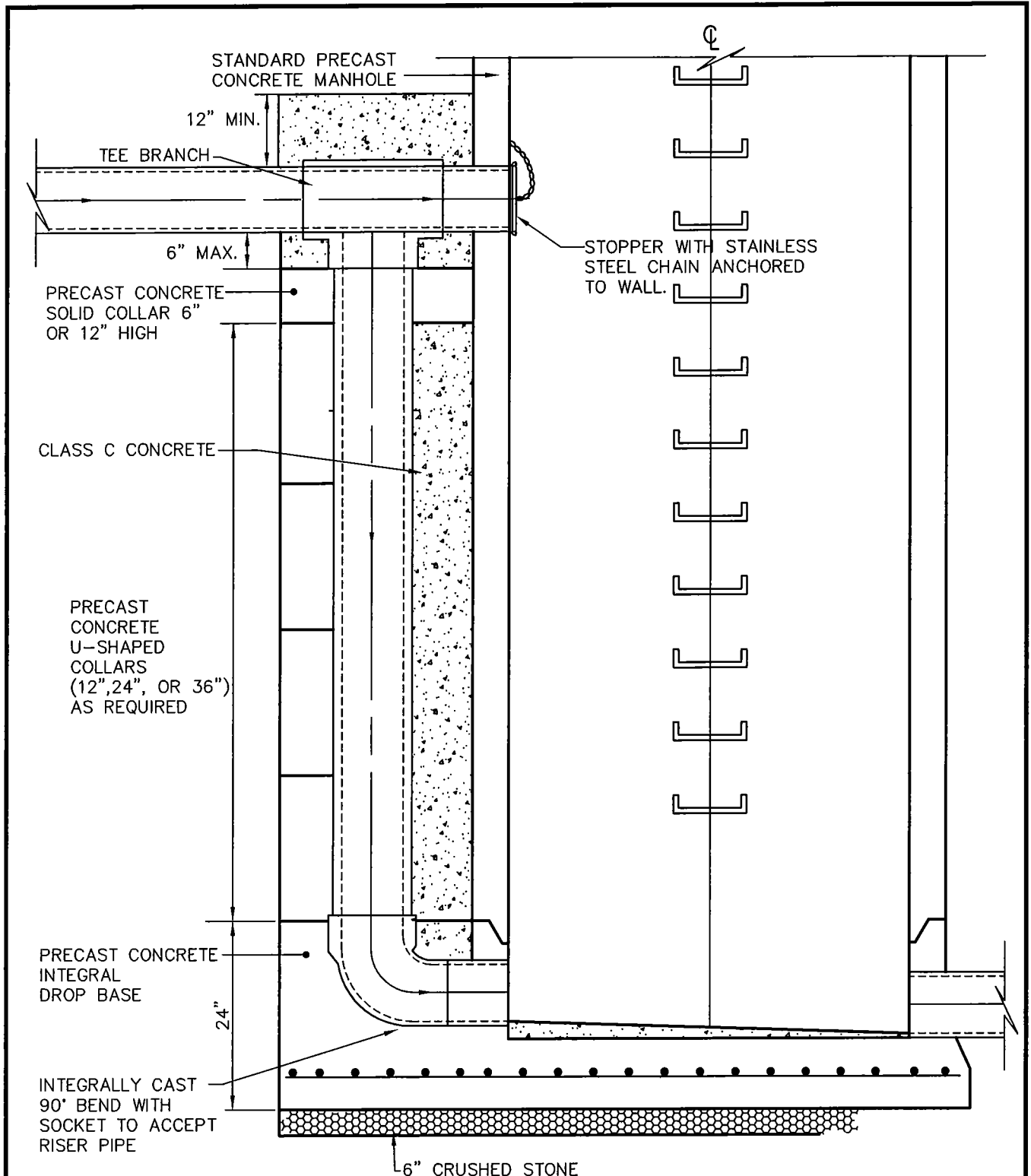
NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	TYPE "A" STANDARD MANHOLE	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL S3	



NOTES:

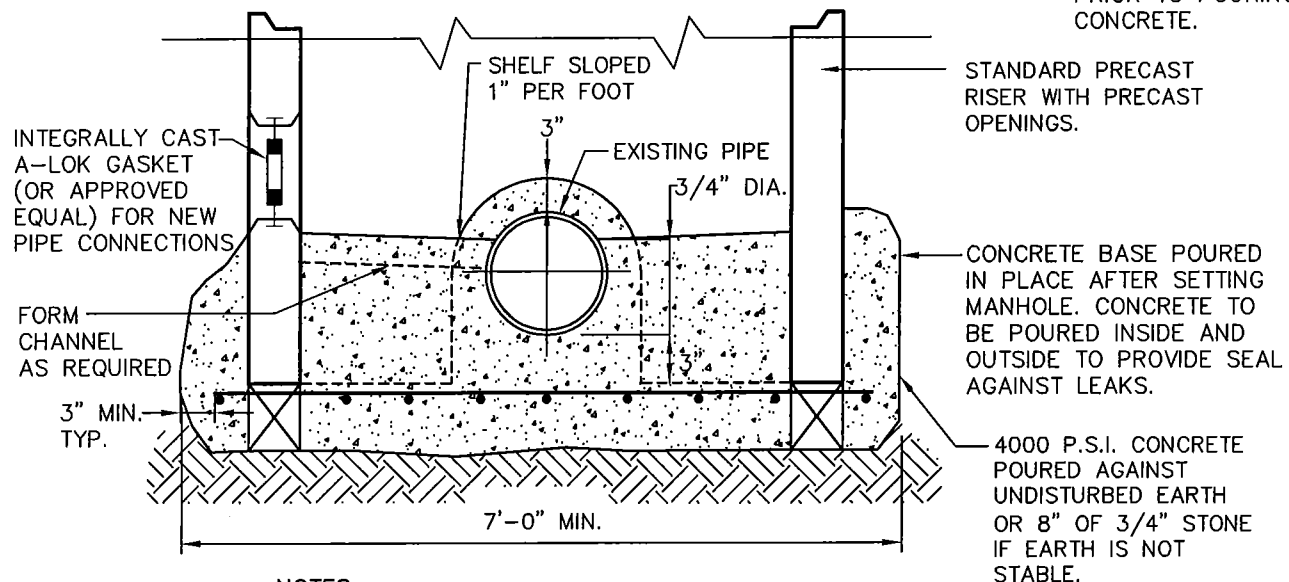
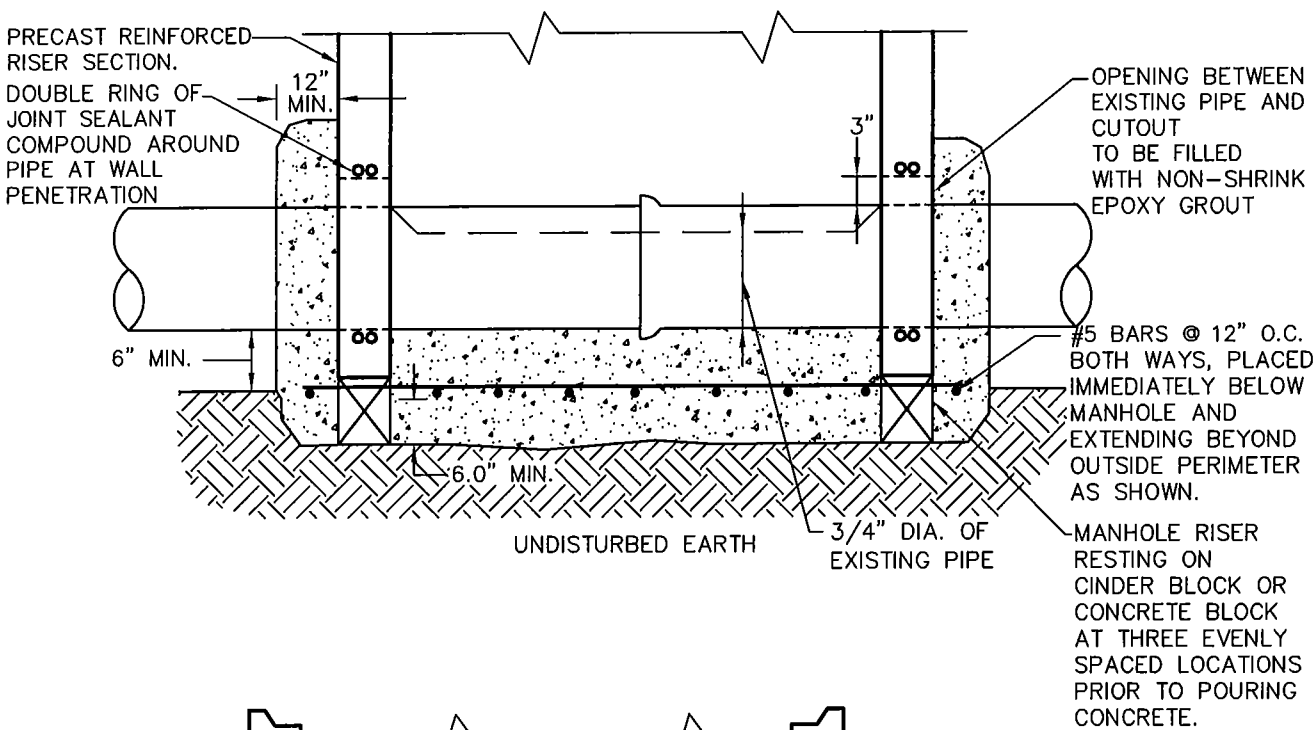
1. THE DEPTH OF THE INVERT CHANNEL SHALL BE EQUAL TO 3/4 OF THE DIAMETER OF THE SEWER.
2. THE SHELF SHALL SLOPE TOWARD THE INVERT CHANNEL AT A RATE OF 1" PER FOOT.
3. TYPE "B" MANHOLES (SHALLOW TYPE) TO BE PROVIDED WHERE REQUIRED BY DEPTH CONDITIONS. ALL OTHER MANHOLES TO BE TYPE "A".
4. FOR MANHOLES HAVING 5' DIA. AND 6' DIA. BASE, REDUCTION IN DIAMETER TO 4' SHALL START AT THE FIRST JOINT ABOVE THE UPPERMOST PIPE CONNECTION TO WALL, WHERE DEPTH IS SUFFICIENT.
5. ALL MANHOLE FRAMES SHALL BE BOLTED TO THE CONE SECTION OR CONCRETE SLAB WITH 2 - 3/4" DIA. BOLTS WITH WASHERS AND NUTS. BOLTS TO BE AT 180° ON THE BOLT CIRCLE. FOR WATERTIGHT COVERS USE 4 - 3/4" DIA. BOLTS AT 90° ON THE BOLT CIRCLE.
6. SEE THE SPECIFICATIONS FOR LENGTH OF PIPE CONNECTIONS TO MANHOLES.
7. ALL CONCRETE SHALL BE 4000 PSI MINIMUM.
8. ENTIRE OUTSIDE SURFACE OF MANHOLE SHALL RECEIVE ONE COAT OF BITUMINOUS COATING, COAL TAR EPOXY OR APPROVED EQUAL.
9. INSTALL DOUBLE RING OF PLASTIC PREFORMED JOINT SEALANT BETWEEN ALL SECTIONS AND UNDER FRAME.
10. MANHOLE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ASTM C478.
11. PROVIDE A RESILIENT PIPE CONNECTION GASKET CAST INTEGRALLY IN MANHOLE WALL AT ALL PIPE CONNECTIONS. GASKET SHALL BE A-LOK CONNECTOR, OR APPROVED EQUAL. GROUT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
12. 4' DIA. MANHOLE - 8" TO 16" PIPES
 5' DIA. MANHOLE - 18" TO 27" PIPES
 6' DIA. MANHOLE - 30" TO 48" PIPES

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	TYPE "B" SHALLOW MANHOLE	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL S4	



- NOTES: 1. CONSTRUCTION TO BE SAME AS STANDARD MANHOLE EXCEPT AS NOTED.
2. MINIMUM ALLOWABLE DROP IS 2'.

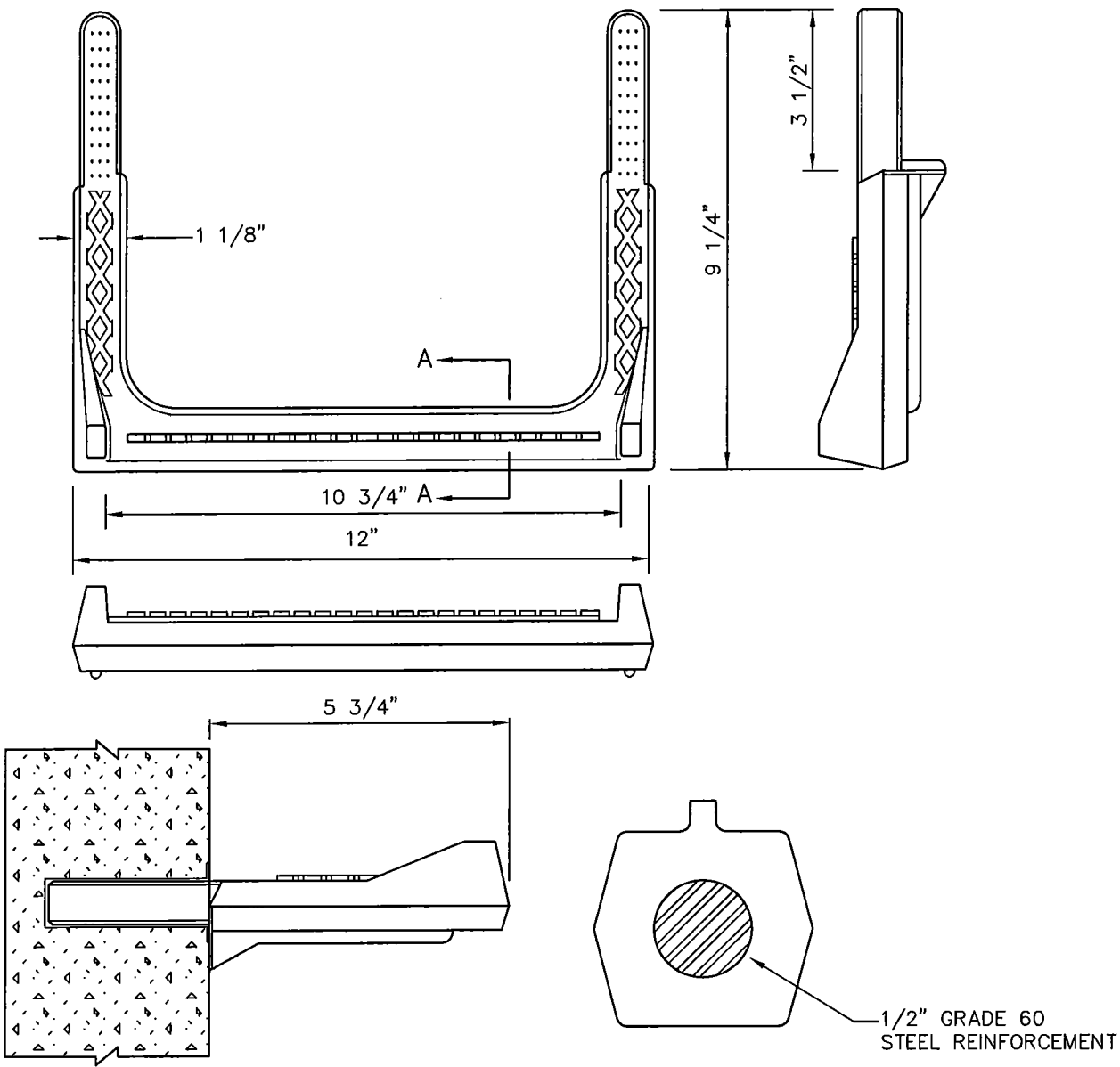
NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	DROP MANHOLE CONNECTION	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL S5	



NOTES:

1. EXISTING PIPE TO REMAIN UNTIL SATISFACTORY COMPLETION OF MANHOLE TESTING.
2. REMOVE CROWN OF EXISTING PIPE FLUSH WITH CONCRETE SHELF.

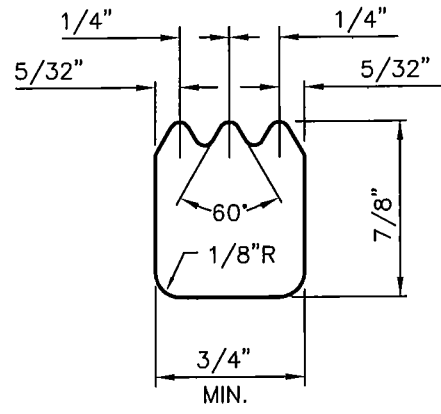
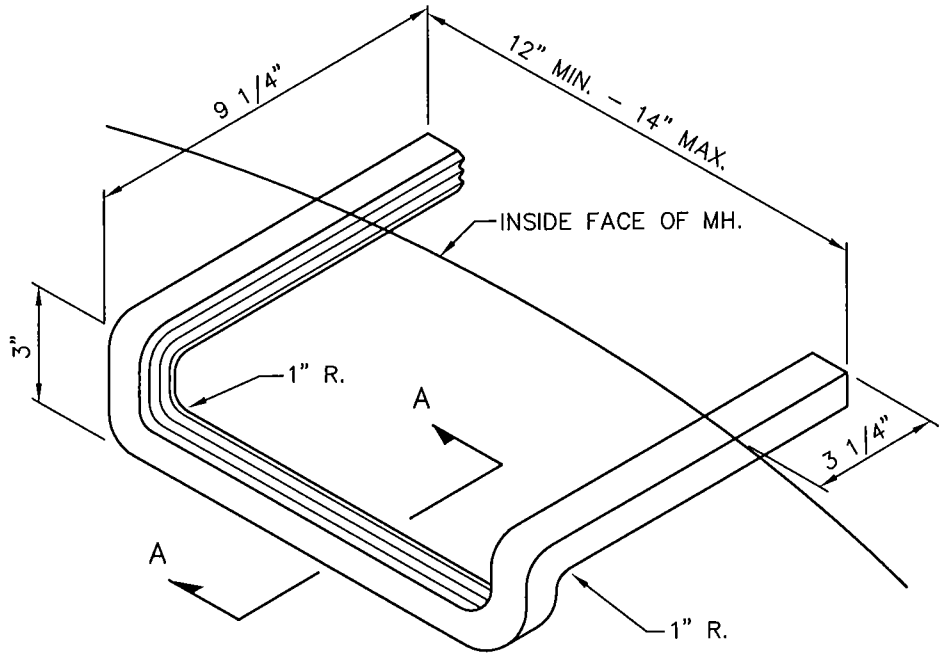
NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	DOGHOUSE MANHOLE CONSTRUCTION	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL S6	



SPECIFICATIONS

STEPS TO BE FABRICATED FROM COPOLYMER POLYPROPYLENE PLASTIC.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	POLYPROPYLENE MANHOLE STEP	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL S7	

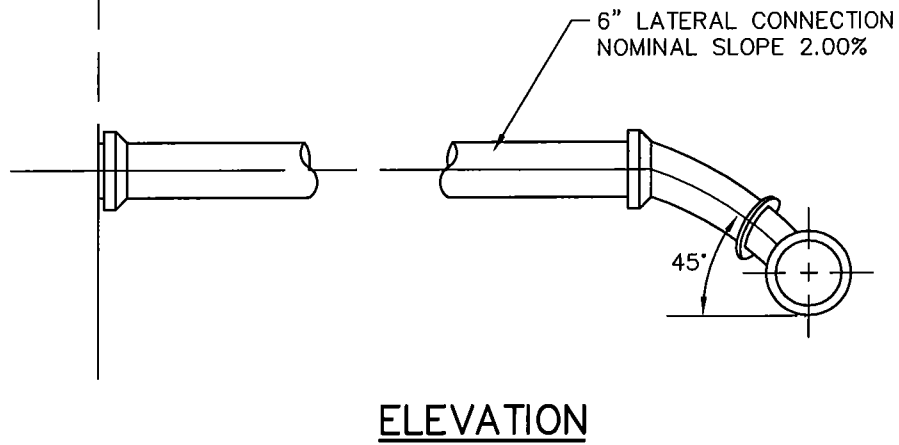
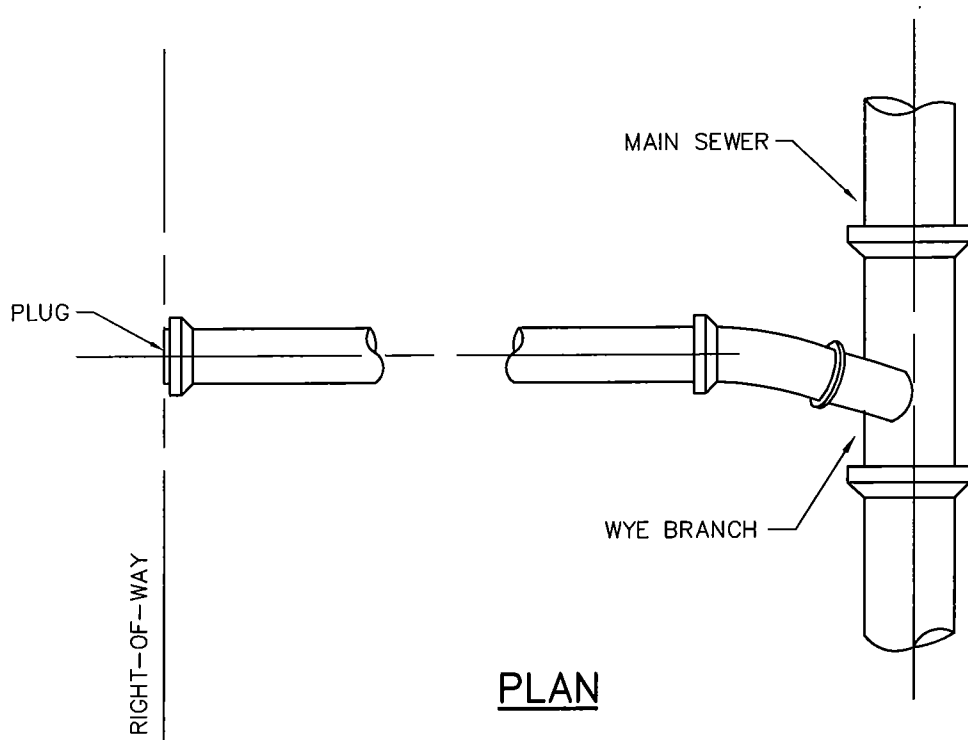


SECTION A-A

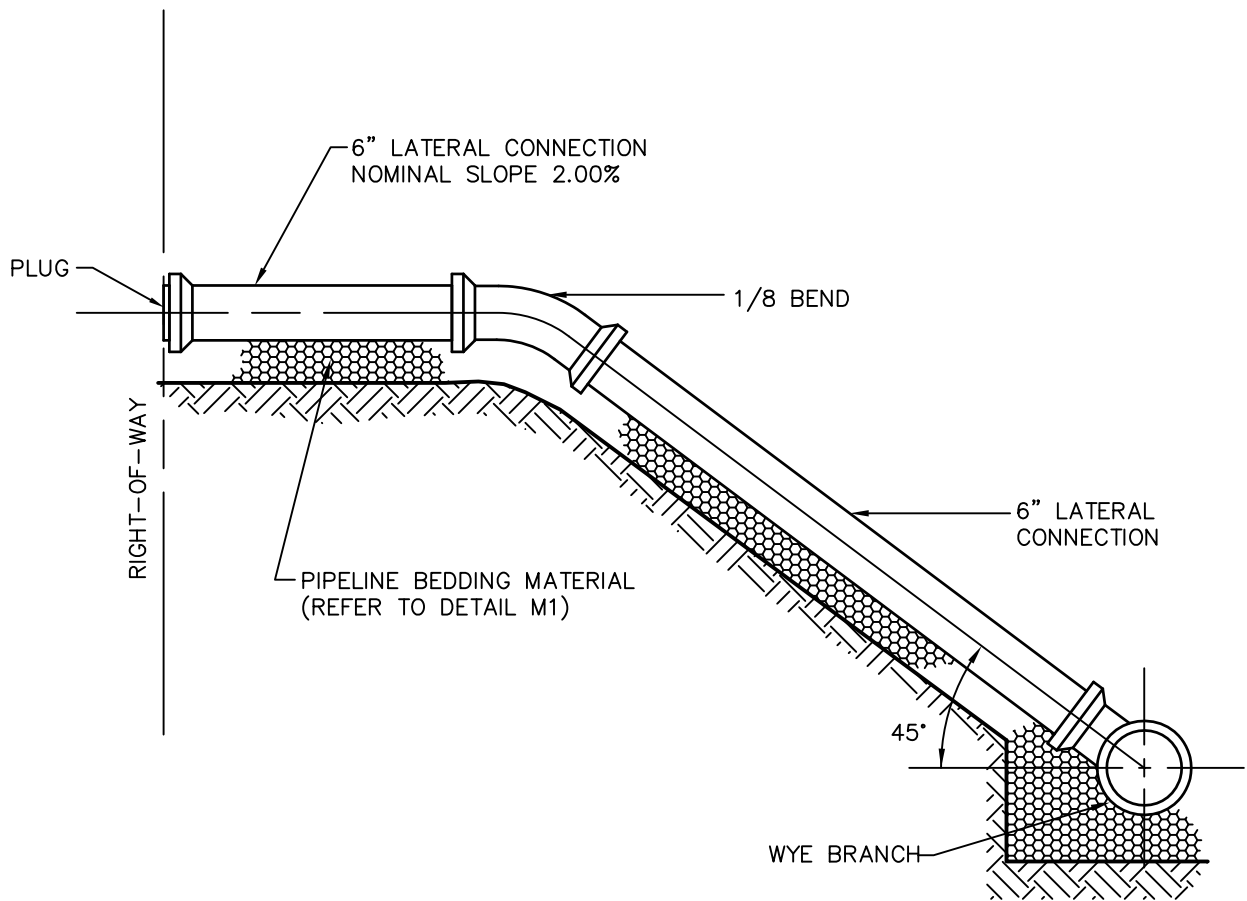
NOTES:

1. STEPS TO BE FABRICATED OF ALUMINUM ALLOY 6061-T6(EXTRUDED).
2. PORTIONS OF STEPS TO BE EMBEDDED IN WALLS OF MANHOLES OR CHAMBERS TO BE DIPPED IN HEAVY BODIED BITUMINOUS PAINT, OR PROVIDE PLASTIC INSERT.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	ALUMINUM MANHOLE STEP	
DATE: 5/11	SCALE: NONE		
REVISION		DATE	
STANDARD DETAIL S8			

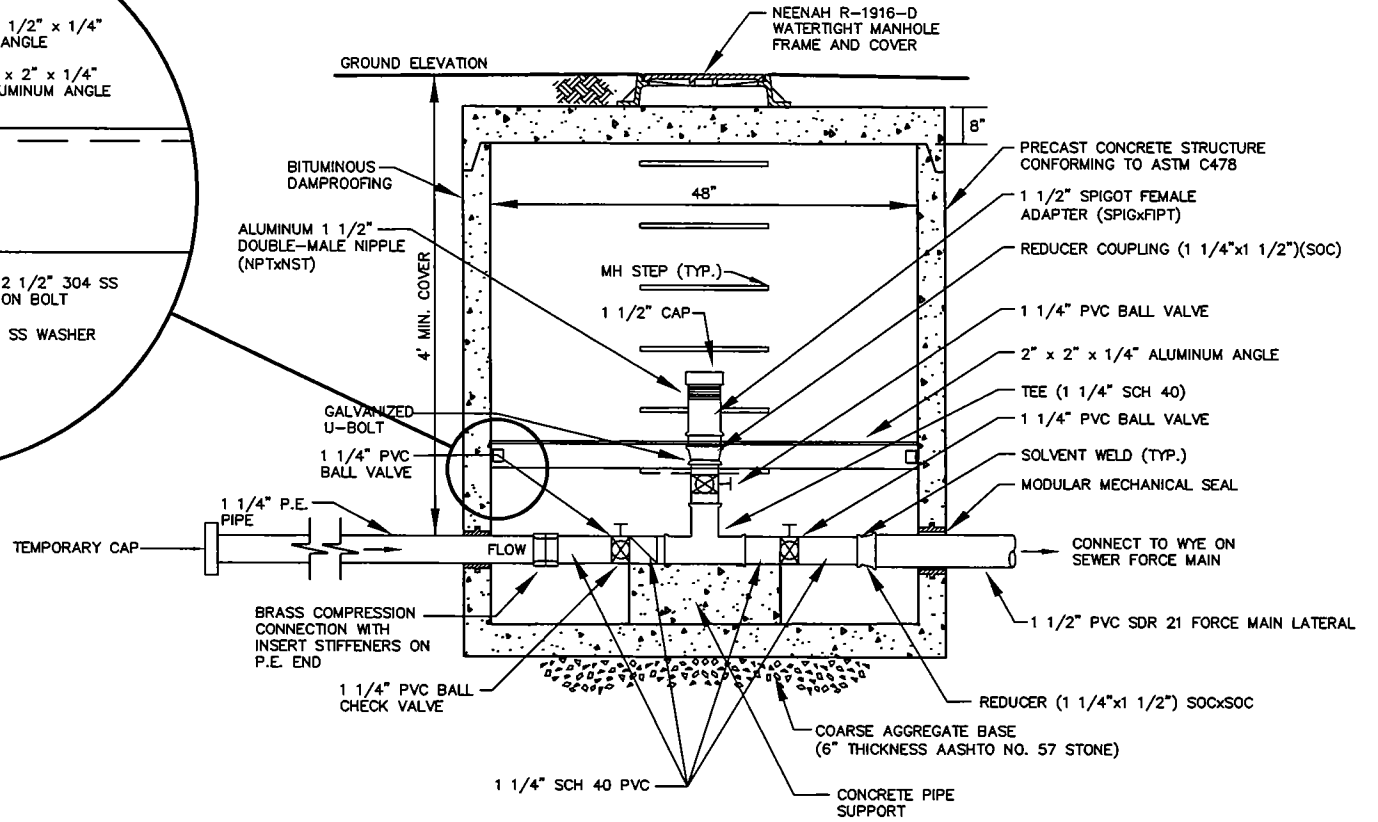
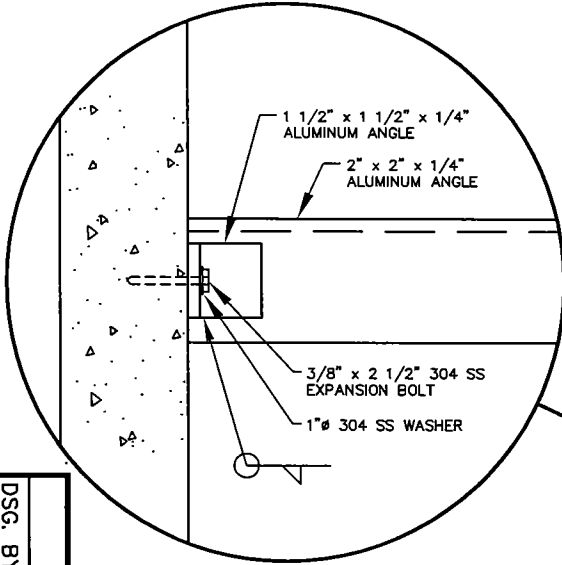


NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	LATERAL CONNECTION SHALLOW SEWER (NEW CONSTRUCTION)	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL S9	

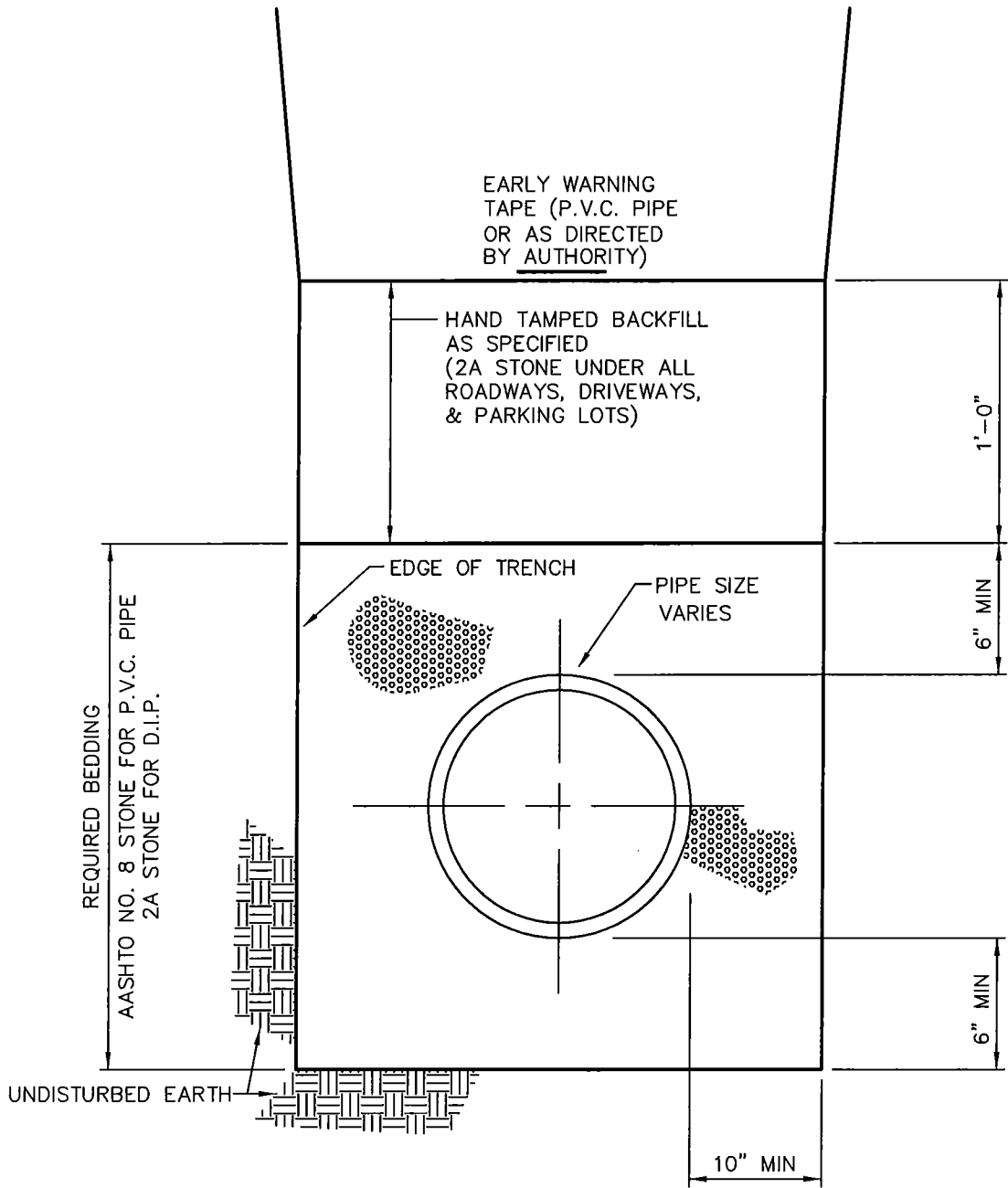


ELEVATION

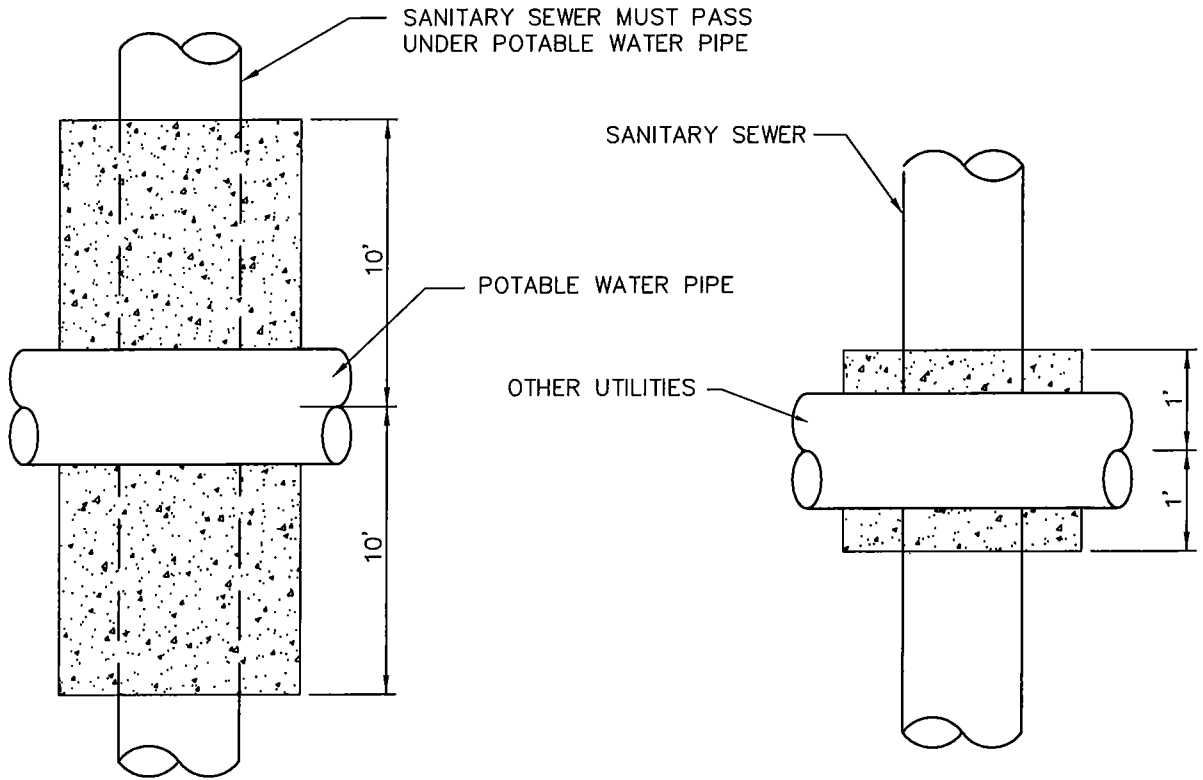
NORTH WALES WATER AUTHORITY		
DSG. BY: BSF	CKD. BY: BSF	LATERAL CONNECTION DEEP SEWER (NEW CONSTRUCTION)
DATE: 5/11	SCALE: NONE	
REVISION	DATE	STANDARD DETAIL S10



NORTH WALES WATER AUTHORITY LPS LATERAL CONNECTION PIT		DSG. BY: BSF DATE: 5/11	OKD. BY: BSF SCALE: NONE
		REVISION	DATE
STANDARD DETAIL S11			

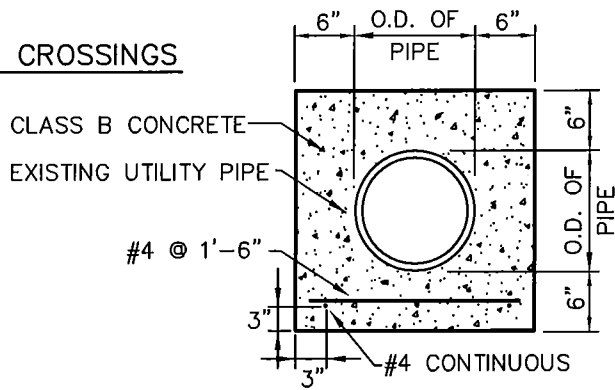


NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	STANDARD PIPE BEDDING	
DATE: 5/11	SCALE: NONE		
REVISION		DATE	
STANDARD DETAIL M1			



WATER CROSSINGS

UTILITY CROSSINGS

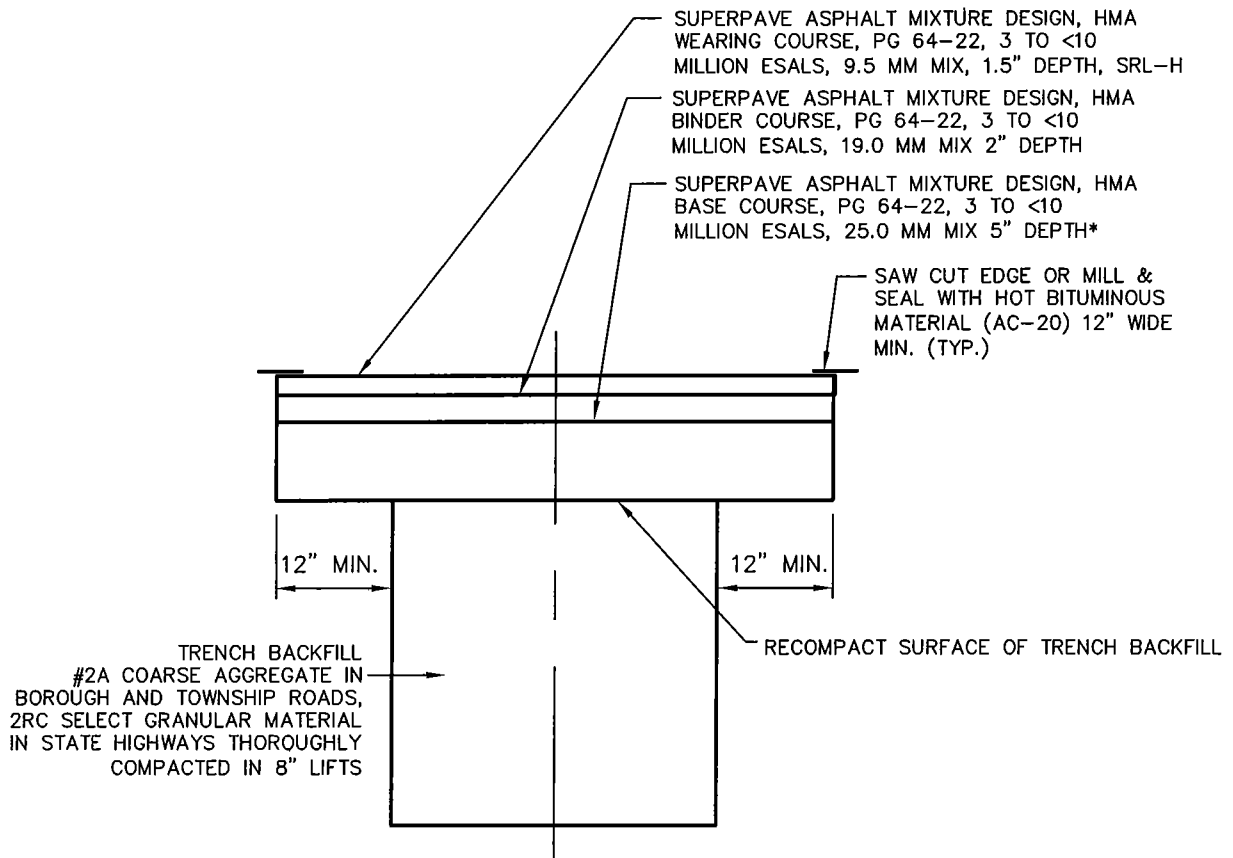


ENCASEMENT SECTION

NOTE:

PROVIDE REINFORCEMENT AT UTILITY CROSSINGS OR AS DIRECTED BY THE AUTHORITY'S ENGINEER

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	CONCRETE ENCASEMENT	
DATE: 5/11	SCALE: NONE		
REVISION		DATE	
STANDARD DETAIL M2			

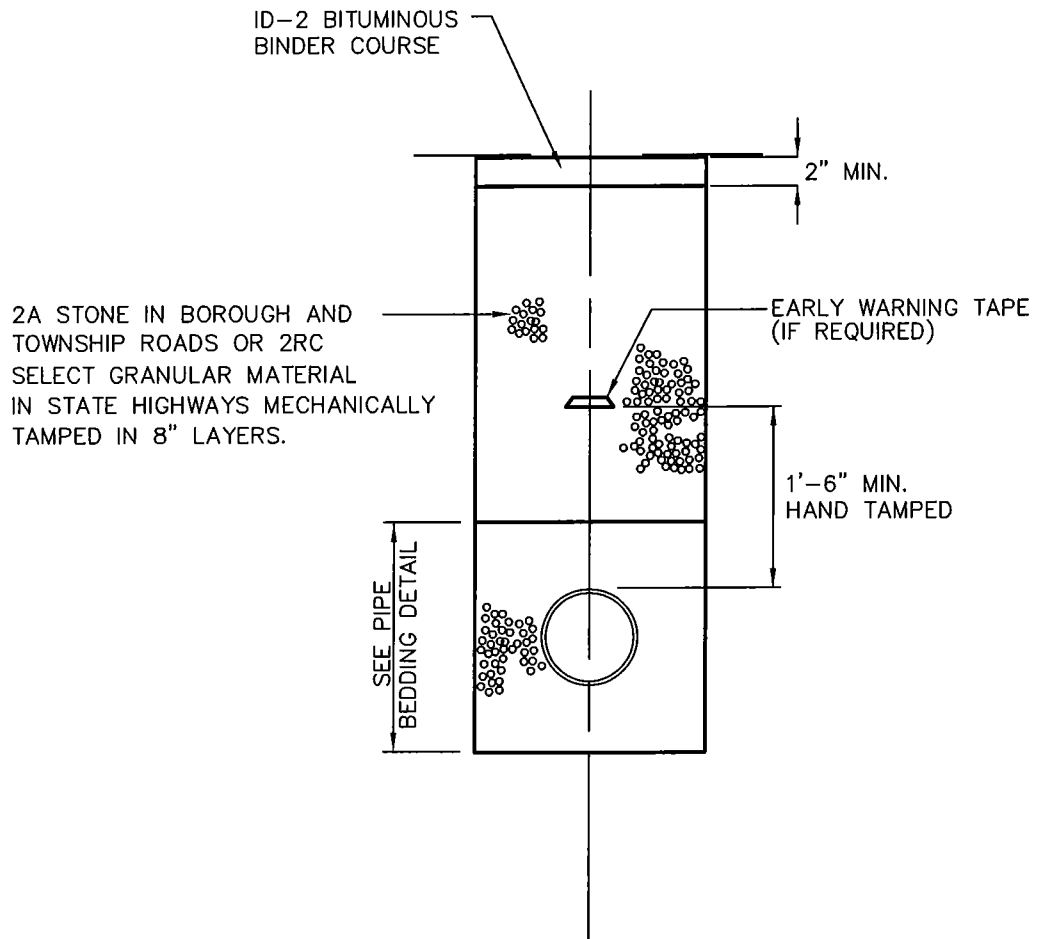


NOTES:

1. SPECIAL CONDITIONS OF ROAD OPENING PERMIT MAY SUPERSEDE THIS DETAIL.
2. EXPOSED VERTICAL AND HORIZONTAL SURFACES SHALL BE PREPARED AS PER PUB 408, SECTION 40J. 3(F)
3. OVER CUT ALL EDGES 1'. EXCAVATE OLD AND TEMPORARY MATERIAL. RECOMPACT SUB-GRADE. TACK COAT ALL VERTICAL EDGES. INSTALL ONLY BASE COURSE AND BINDER IN ONE DAY.

* MATCH EXISTING DEPTH IF GREATER

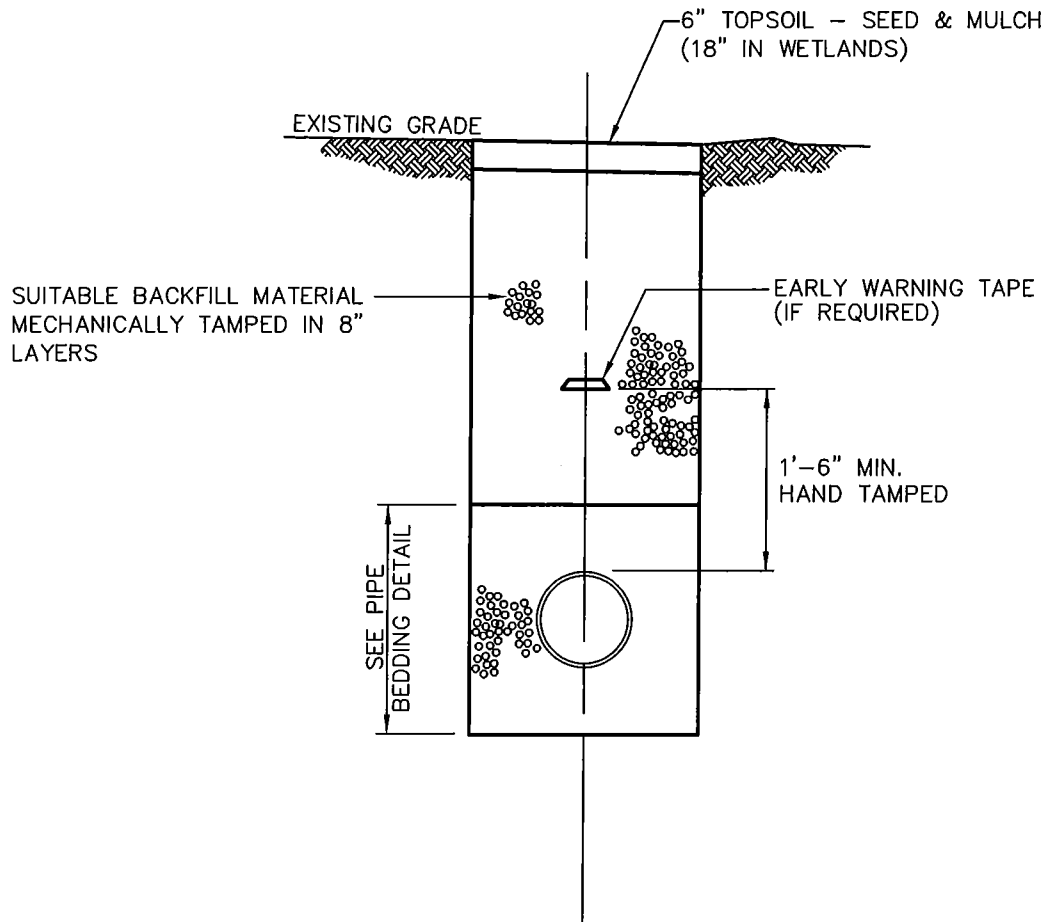
NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	PERMANENT PAVEMENT RESTORATION	
DATE: 5/11	SCALE: NONE		
REVISION	DATE		
		STANDARD DETAIL M3	



NOTES:

1. SPECIAL CONDITIONS OF TOWNSHIP ROAD OPENING PERMITS OR PENNDOT HIGHWAY OCCUPANCY PERMIT MAY SUPERSEDE THIS DETAIL.
2. CONTRACTOR TO MAINTAIN TEMPORARY PAVING, UNTIL PERMANENT PAVING IS INSTALLED.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	TEMPORARY PAVEMENT	
DATE: 5/11	SCALE: NONE		
REVISION		DATE	
STANDARD DETAIL M4			



NOTES:

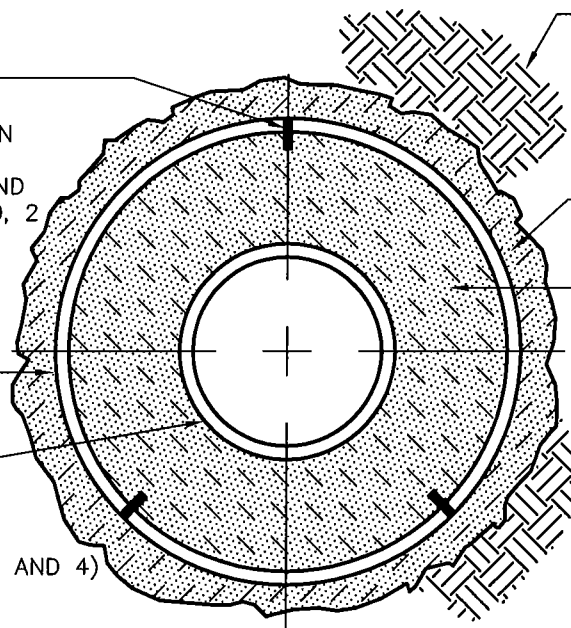
1. THE TOP 6" OF ALL TRENCHES IN NON-WETLAND AREAS SHALL BE BACKFILLED WITH TOPSOIL AND RESTORED IN ACCORDANCE WITH SECTION 02920 OF THE STANDARD SPECIFICATIONS.
2. THE TOP 18" OF ALL TRENCHES IN WETLANDS SHALL BE BACKFILLED WITH PREVIOUSLY STRIPPED TOPSOIL AND RESTORED IN ACCORDANCE WITH SECTION 02920 OF THE STANDARD SPECIFICATIONS.

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	RESTORATION IN UNPAVED AREAS	
DATE: 5/11	SCALE: NONE		
REVISION	DATE	STANDARD DETAIL M5	

TAPPED GROUT HOLE (TYP.)
 PROVIDE 1 1/2" THREADED
 FITTINGS SPACED EVERY 4' ON
 CENTER. ALTERNATE FITTING
 LOCATIONS BETWEEN 12, 4 AND
 8 O'CLOCK POSITIONS AND 10, 2
 AND 6 O'CLOCK POSITIONS.

CASING
 PIPE

CARRIER
 PIPE
 SUPPORTED
 BY SPACERS
 (SEE NOTES 2 AND 4)



SURROUNDING
 GROUND

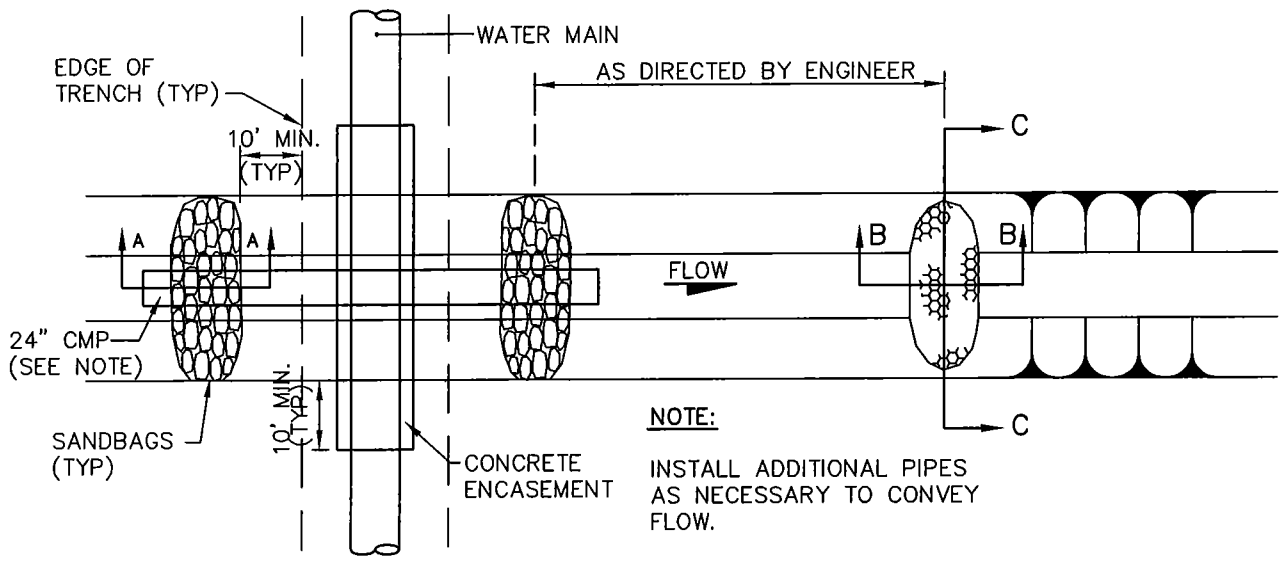
GROUT OUTSIDE CASING
 PIPE FILLING VOIDS

APPROVED FINE
 AGGREGATE BETWEEN
 CASING AND CARRIER
 PIPES (SEE NOTE 4)

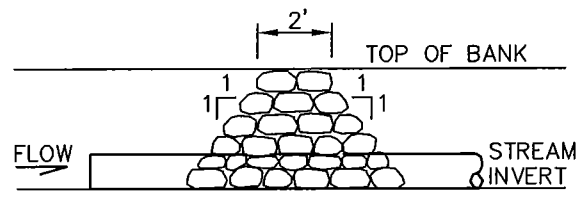
NOTES:

1. PENNDOT REQUIREMENTS CONTROL AS APPROPRIATE.
2. PROVIDE APPROVED SPACERS AS REQUIRED TO MAINTAIN PROPER ALIGNMENT OF CARRIER PIPE.
3. ENDS OF CASING SHALL BE SEALED WITH BRICK MASONRY CONSTRUCTION AFTER ALL TESTS HAVE BEEN COMPLETED AND ACCEPTED BY ENGINEER.
4. REFER TO SECTION 02310 OF SPECIFICATIONS.

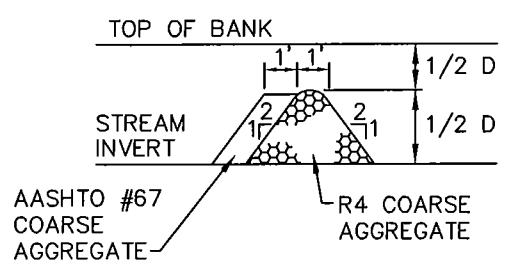
NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	JACKING CONDUIT	
DATE: 5/11	SCALE: NONE		
REVISION		DATE	
STANDARD DETAIL M6			



NOTE:
INSTALL ADDITIONAL PIPES
AS NECESSARY TO CONVEY
FLOW.



SECTION A-A
N.T.S.

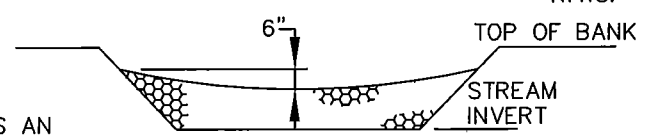


D = DEPTH OF WATER
AT CHANNEL CAPACITY.

SECTION B-B
N.T.S.

NOTE:

THIS DETAIL IS PROVIDED AS AN
EXAMPLE FOR A SMALL STREAM
CROSSING.



SECTION C-C
N.T.S.
SEDIMENTATION DIKE

NORTH WALES WATER AUTHORITY			
DSG. BY: BSF	CKD. BY: BSF	PIPELINE STREAM CROSSING	
DATE: 5/11	SCALE: NONE		
REVISION	DATE	STANDARD DETAIL M7	