

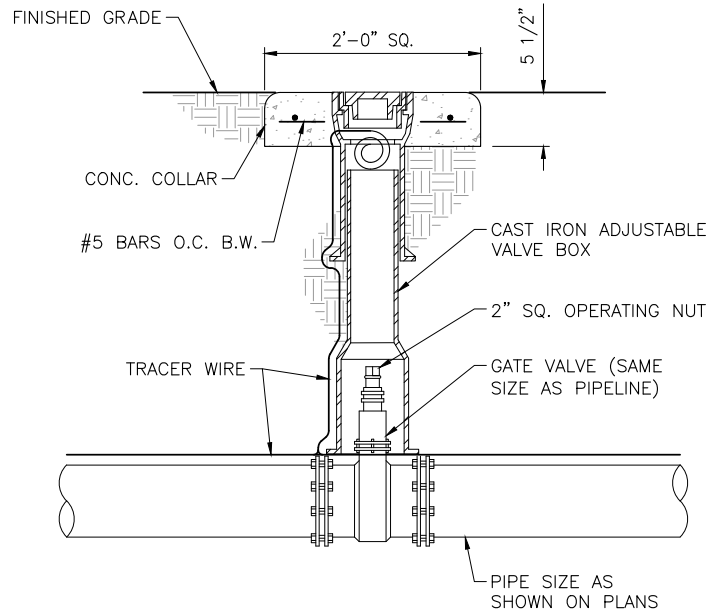
Grand Water & Sewer Service Agency



Construction Standards

DATE 6-9-2020	DESIGNED DJS	DRAWN TRB	CHECKED RWW	SHEET NO. W-01
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NOTES:

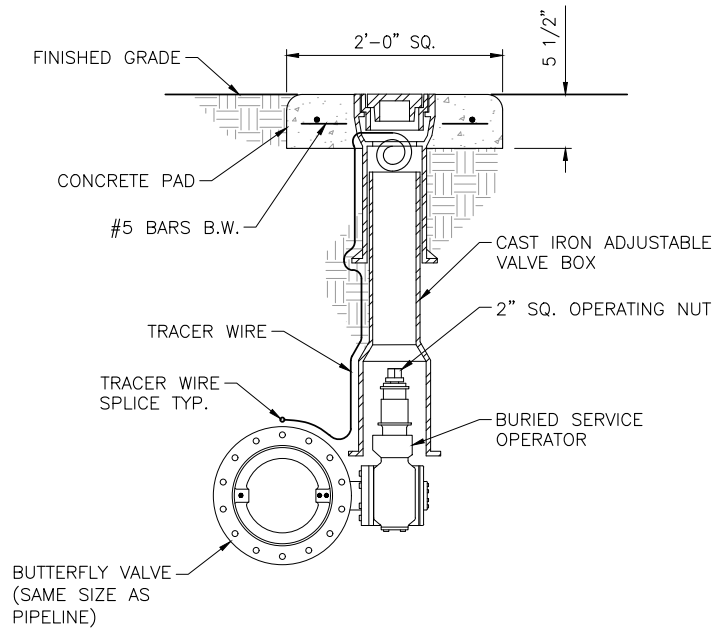
1. ALL VALVES SHALL BE RESTRAINED ACCORDING TO DETAILS W-06 AND W-07 AND SHALL BE TREATED AS A DEAD END IN BOTH DIRECTIONS.
2. PIPE, JOINTS, FITTINGS, VALVES, AND FIRE HYDRANTS SHALL CONFORM TO ANSI/NSF STANDARD 61 AND APPLICABLE SECTIONS OF AWWA STANDARDS C104-AZ14-08 THROUGH C550-05 AND C900-07 THROUGH C950-07. BLOCKING OR MECHANICAL RESTRAINT SHALL BE PROVIDED PER DETAILS W-06 AND W-07.
3. FOR VALVES OVER 48" DEEP ADD VALVE STEM AND VALVE BOX EXTENSIONS AS NECESSARY FOR NORMAL OPERATION OF VALVE KEY.
4. TRACER WIRE SHALL BE BROUGHT INTO THE VALVE BOX THROUGH HOLE AT BELL. COIL 12" OF TRACER WIRE INSIDE VALVE BOX BELL SECTION.
5. VALVES SMALLER THAN 16" SHALL BE GATE VALVES. MAINLINE VALVES 16" AND LARGER SHALL BE SHORT-BODY BUTTERFLY VALVES.
6. ALL NEW MAINS SHALL BE PVC C900 OR C905 DR-18 PIPE UNLESS OTHERWISE APPROVED.

DETAIL - TYPICAL GATE VALVE

N.T.S.

REV NO.	COMMENT	DATE	SUNRISE ENGINEERING 25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com					Grand Water & Sewer Service Agency				
								STANDARD DETAILS				
								WATER - GATE VALVE				
								DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.
								6-9-2020	DJS	TRB	RWW	W-02

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NOTES:

1. ALL VALVES SHALL BE RESTRAINED ACCORDING TO DETAILS W-06 AND W-07 AND SHALL BE TREATED AS A DEAD END IN BOTH DIRECTIONS.
2. PIPE, JOINTS, FITTINGS, VALVES, AND FIRE HYDRANTS SHALL CONFORM TO ANSI/NSF STANDARD 61 AND APPLICABLE SECTIONS OF AWWA STANDARDS C104-AZ14-08 THROUGH C550-05 AND C900-07 THROUGH C950-07. BLOCKING OR MECHANICAL RESTRAINT SHALL BE PROVIDED PER DETAILS W-06 AND W-07.
3. FOR VALVES OVER 48" DEEP ADD VALVE STEM AND VALVE BOX EXTENSIONS AS NECESSARY FOR NORMAL OPERATION OF VALVE KEY.
4. TRACER WIRE SHALL BE BROUGHT INTO THE VALVE BOX THROUGH HOLE AT BELL. COIL 12" OF TRACER WIRE INSIDE VALVE BOX BELL SECTION.
5. VALVES SMALLER THAN 16" SHALL BE GATE VALVES. MAINLINE VALVES 16" AND LARGER SHALL BE SHORT-BODY BUTTERFLY VALVES.
6. ALL NEW MAINS SHALL BE PVC C900 OR C905 DR-18 PIPE UNLESS OTHERWISE APPROVED.

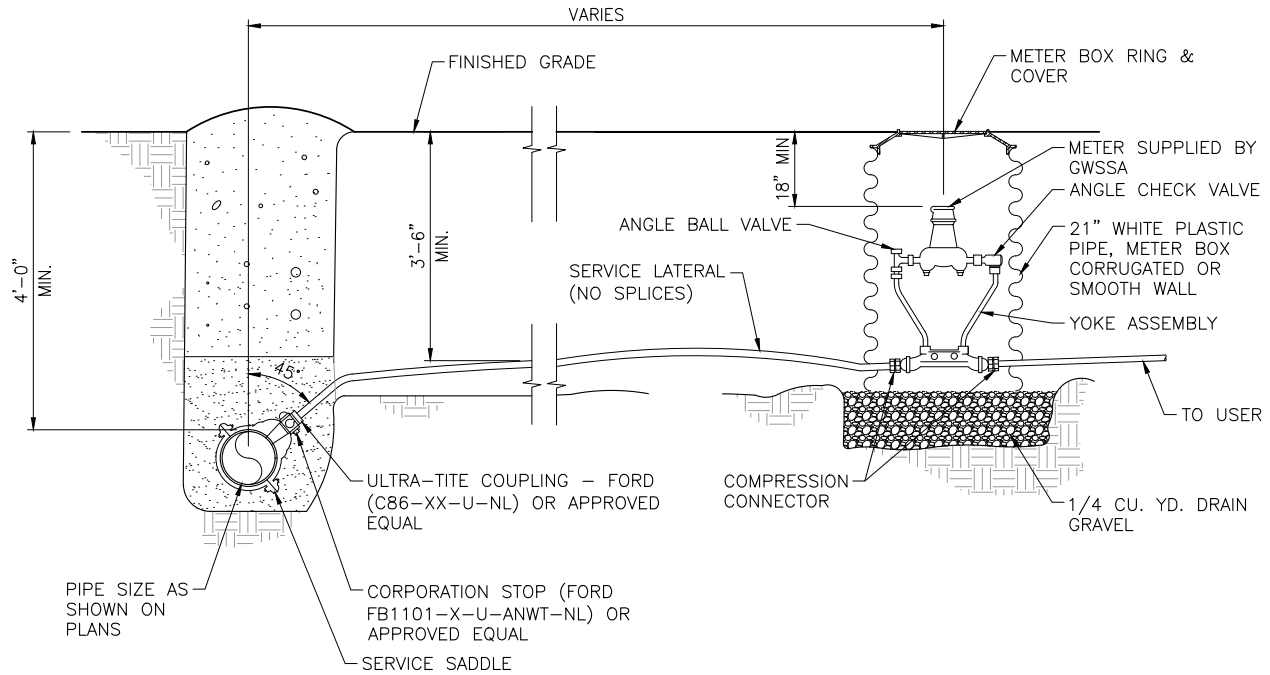
DETAIL - BURIED BUTTERFLY VALVE

N.T.S.

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				STANDARD DETAILS					
				WATER - BUTTERFLY VALVE					
				DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.	W-03
				6-9-2020	DJS	TRB	RWW		

REV. NO.	COMMENT	DATE	 SUNRISE ENGINEERING 25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com	Grand Water & Sewer Service Agency				
				STANDARD DETAILS				
				WATER - COMBINATION AIR VALVE				
				DATE 6-8-2020	DESIGNED DJS	DRAWN TRB	CHECKED RWW	SHEET NO. W-04

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NOTES:

1. LOCATION OF WATER SERVICE SHALL GENERALLY BE ON THE HIGH SIDE OF THE PROPERTY 5 FEET FROM THE LOT CENTERLINE AND SHALL NOT BE INSTALLED IN DRIVE APPROACH.
2. ALL NEW SERVICE CONNECTIONS SHALL INCLUDE DUAL CHECK VALVE SETTER ASSEMBLIES.
3. SERVICE LATERALS UP TO 2" SHALL BE POLYETHYLENE PIPE (IPS). SERVICE LINES LARGER THAN 2 INCH SHALL BE ASTM D2241 PVC (IPS), SERVICE LINES 4" AND LARGER SHALL BE AWWA C-900.
4. PIPE, JOINTS, FITTINGS, VALVES, AND FIRE HYDRANTS SHALL CONFORM TO ANSI/NSF STANDARD 61 AND APPLICABLE SECTIONS OF AWWA STANDARDS C104-AZ14-08 THROUGH C550-05 AND C900-07 THROUGH C950-07.
5. SERVICE LINES SHALL BE CAPPED UNTIL CONNECTED FOR SERVICE.
6. NEW WATER SERVICE CONNECTIONS SHALL BE $\frac{3}{4}$ " UNLESS OTHERWISE NOTED
7. SERVICE LATERAL FITTINGS SHALL HAVE NO COMPRESSION CONNECTIONS OUTSIDE OF THE METER BOX.

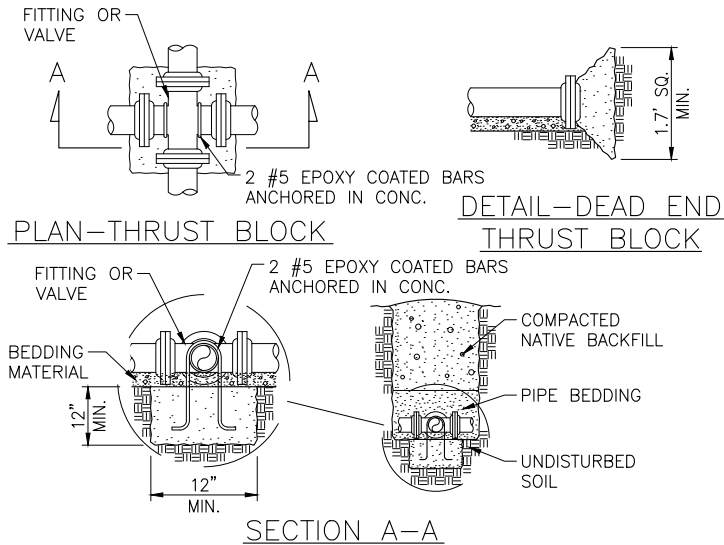
DETAIL - NEW WATER SERVICE CONNECTION

N.T.S.

REV NO.	COMMENT	DATE	 SUNRISE ENGINEERING 25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com	Grand Water & Sewer Service Agency					
				STANDARD DETAILS					
				WATER - NEW WATER SERVICE CONNECTION					
				DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.	W-05
				6-9-2020	DJS	TRB	RWW		

CONCRETE THRUST BLOCK RESTRAINING SYSTEM DETAILS

NOTE:
CONTRACTOR SHALL USE EITHER MECHANICAL
RESTRAINTS OR CONCRETE THRUST RESTRAINING
SYSTEM FOR WATERLINE INSTALLATION.



THRUST BLOCK BEARING AREA IN SQ. FT.									
PIPE SIZE	CROSS	TEE	WYE	DEAD END	VALVE	90° BEND	45° BEND	22.5° BEND	11.25° BEND
4	2.4	1.7	1.7	1.7	—	2.4	1.3	1.0	1.0
6	5.4	3.8	3.8	3.8	—	5.4	2.9	1.5	1.0
8	9.6	6.8	6.8	6.8	—	9.6	5.2	2.7	1.4
10	15.0	10.6	10.6	10.6	—	15.0	8.1	4.2	2.1
12	21.5	15.2	15.2	15.2	15.2	21.5	11.7	6.0	3.0
14	29.3	20.7	20.7	20.7	20.7	29.3	15.9	8.1	4.1
16	38.2	27.0	27.0	27.0	27.0	38.2	20.7	10.6	5.3
18	48.4	34.2	34.2	34.2	34.2	48.4	26.2	13.4	6.7
20	59.7	42.2	42.2	42.2	42.2	59.7	32.3	16.5	8.3
24	85.9	60.8	60.8	60.8	60.8	85.9	46.5	23.7	11.9
REDUCER									
D2 \ D1	6	8	10	12	14	16	18	20	24
4	2.1	5.1	8.8	13.4	—	—	—	—	—
6	—	3.0	6.7	11.3	16.8	23.1	—	—	—
8	—	—	3.8	8.4	13.8	20.1	27.2	—	—
10	—	—	—	4.6	10.1	16.3	23.5	31.4	—
12	—	—	—	—	5.5	11.7	18.8	26.8	45.2
14	—	—	—	—	—	6.3	13.4	21.3	39.8
16	—	—	—	—	—	—	7.1	15.1	33.5
18	—	—	—	—	—	—	—	8.0	26.3
20	—	—	—	—	—	—	—	—	18.4

NOTES:

1. ALL THRUST BLOCK BEARING FACES SHALL BE PLACED AGAINST UNDIS-
TURBED SOIL OR APPROVED COMPACTED BACKFILL.
2. SQUARE ALL EDGES TO RECEIVE CONCRETE.
3. CONCRETE SHALL BE CLASS C.
4. CALCULATED ON 200 PSI TEST PRESSURE AND ALLOWABLE BEARING
PRESSURE OF 1500 LBS. PER SQ. FT.
5. IN POORER SOILS SPECIAL DESIGN IS REQUIRED.
6. ALL FITTINGS AND VALVES SHALL BE ANCHORED WITH TWO EPOXY COATED
#5 REBAR. ONLY ONE REQ'D FOR REDUCER
7. CENTER ALL FITTINGS OVER THRUST BLOCKS.

REV NO.	COMMENT	DATE	 SUNRISE ENGINEERING 25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com	Grand Water & Sewer Service Agency				
				STANDARD DETAILS				
				WATER - CONCRETE THRUST BLOCKS				
				DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.
				6-9-2020	DJS	TRB	RWW	W-06

MECHANICAL

THRUST RESTRAINING SYSTEM DETAILS

* CALCULATIONS DERIVED FROM EBAA IRON SALES

PVC VERTICLE BEND RESTRAINED LENGTHS IN FT.
(L₁—BEFORE CONNECTION/L₂, AFTER CONNECTION)

BEND ANGLE	PIPE SIZE									
	4	6	8	10	12	14	16	18	20	24
11.25	4/1	5/2	7/2	9/3	10/3	12/4	13/4	15/5	16/5	19/6
22.5	8/3	11/4	15/5	17/6	21/7	24/8	27/9	30/9	33/10	38/12
45	16/5	23/8	30/10	36/12	43/14	49/16	56/18	62/20	68/21	79/25

CALCULATIONS BASED ON THE ELEVATION OF THE PIPE REMAINING CONSTANT WITH THE CONTOUR OF THE GROUND.
FOR TWO WAY FLOW, SUCH AS FOUND IN DISTRIBUTION SYSTEMS, USE L' ON BOTH SIDES OF FITTING.

PVC HORIZONTAL BEND RESTRAINED LENGTHS L, IN FT.

BEND ANGLE	PIPE SIZE									
	4	6	8	10	12	14	16	18	20	24
11.25	1	2	2	3	3	4	4	5	5	6
22.5	3	4	5	6	7	8	9	9	10	12
45	5	8	10	12	14	16	18	20	21	25
90	13	18	24	29	34	38	43	47	52	60

1. ALL JOINTS WITHIN THE "L" DISTANCE SHALL BE RESTRAINED

PVC TEE RESTRAINED LENGTHS L, IN FT.

BRANCH SIZE DIA.	RUN SIZE DIAMETER									
	4	6	8	10	12	14	16	18	20	24
4	*	*	*	*	*	*	*	*	*	*
6	—	*	*	*	*	*	*	*	*	*
8	—	—	*	*	*	*	*	*	*	*
10	—	—	—	*	*	*	*	*	*	*
12	—	—	—	—	*	*	*	*	*	*
14	—	—	—	—	—	*	*	*	*	*
16	—	—	—	—	—	—	7	*	*	*
18	—	—	—	—	—	—	—	20	4	*
20	—	—	—	—	—	—	—	—	34	3
24	—	—	—	—	—	—	—	—	—	60

* = FOR THIS CONDITION NEED ONLY RESTRAIN THE OUTLETS OF TEE
NOTES:

- RESTRAIN THE THREE MECHANICAL JOINTS ON THE TEE.
- ALL JOINTS WITHIN THE "L" DISTANCE ON THE BRANCH SIDE OF TEE SHALL BE RESTRAINED AND ALL JOINTS WITHIN 18' ON THE RUN SIDE OF THE TEE SHALL BE RESTRAINED.

PVC REDUCER RESTRAINED LENGTHS L, IN FT.
(SMALL SIDE/LARGE SIDE)

D1/D2	6	8	10	12	14	16	18	20	24
4	42/29	100/52	171/71	258/90	—	—	—	—	—
6	—	40/31	88/54	147/75	217/95	297/113	—	—	—
8	—	—	37/29	82/55	135/77	197/98	266/117	—	—
10	—	—	—	36/30	79/56	128/80	183/100	244/120	—
12	—	—	—	—	36/30	77/57	123/80	174/102	293/142
14	—	—	—	—	—	35/30	74/57	118/81	219/124
16	—	—	—	—	—	—	34/30	73/57	161/104
18	—	—	—	—	—	—	—	34/30	111/82
20	—	—	—	—	—	—	—	—	70/57

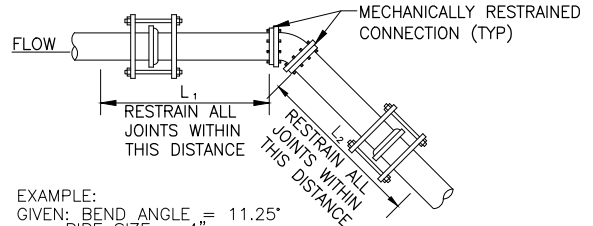
1. ALL JOINTS WITHIN THE "L" DISTANCE SHALL BE RESTRAINED

PVC DEAD END RESTRAINED LENGTHS L, IN FT.

PIPE SIZE									
	4	6	8	10	12	14	16	18	20
	39	55	73	88	104	119	134	149	163

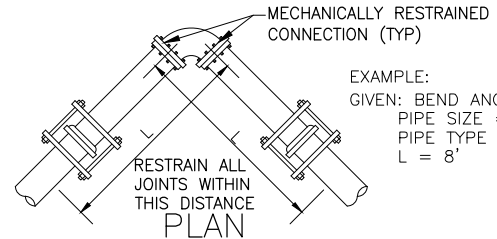
1. ALL JOINTS WITHIN THE "L" DISTANCE SHALL BE RESTRAINED

BASED ON:
TEST PRESSURE 200 PSI
SOIL TYPE: GM — SILTY GRAVEL, GRAVEL—SAND—SILT MIXTURE
BURIAL DEPTH: 4 FT.
TRENCH TYPE: 5 — PIPE BEDDED IN COMPACTED GRANULAR MATERIAL TO THE CENTER LINE OF PIPE, 4" MIN. UNDER PIPE.
COMPACTED GRANULAR OR SELECT MATERIAL TO TOP OF PIPE.
(APPROX. 90% STANDARD PROCTOR, AASHTO T-99)
SAFETY FACTOR: 1.5



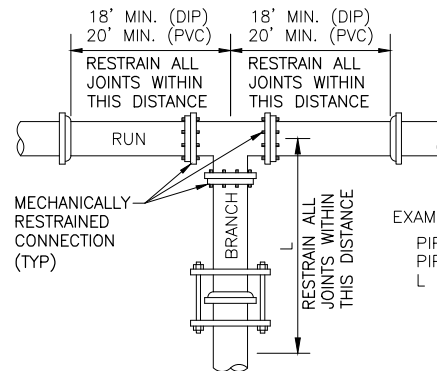
EXAMPLE:
GIVEN: BEND ANGLE = 11.25°
PIPE SIZE = 4"
PIPE TYPE = PVC
L₁ = 4'
L₂ = 1'

ELEVATION



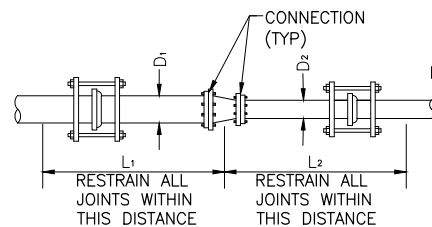
EXAMPLE:
GIVEN: BEND ANGLE = 45°
PIPE SIZE = 6"
PIPE TYPE = PVC
L = 8'

PLAN



EXAMPLE:
PIPE TYPE = DIP
PIPE SIZE = 16"
L = 12'

PLAN



EXAMPLE:
PIPE TYPE = PVC
D₁ = 8"
D₂ = 6"
L₁ = 31'
L₂ = 40'

REV NO.	COMMENT	DATE



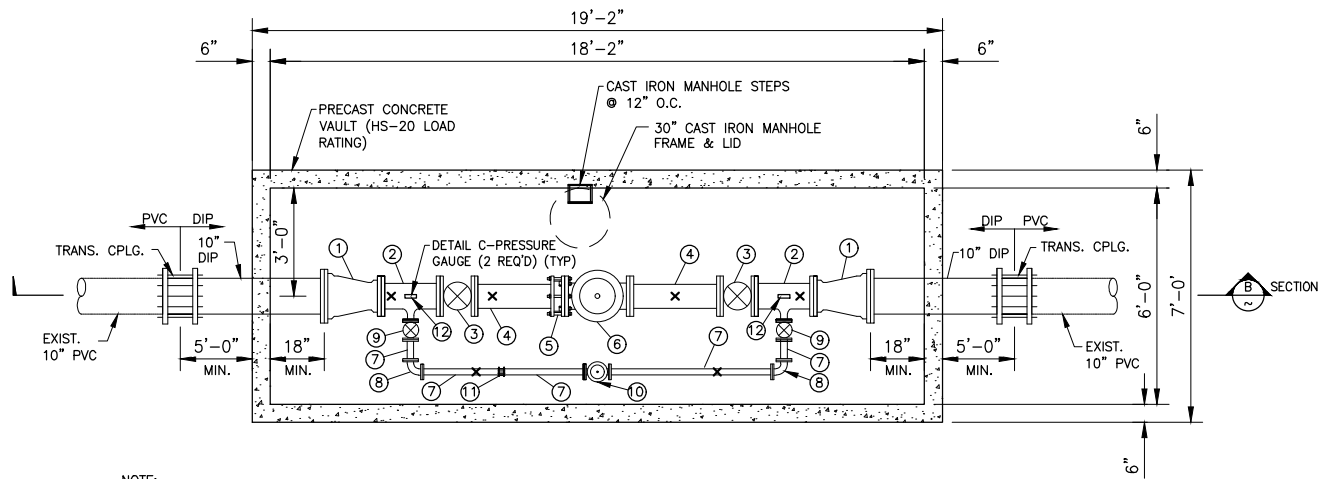
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Grand Water & Sewer Service Agency

STANDARD DETAILS

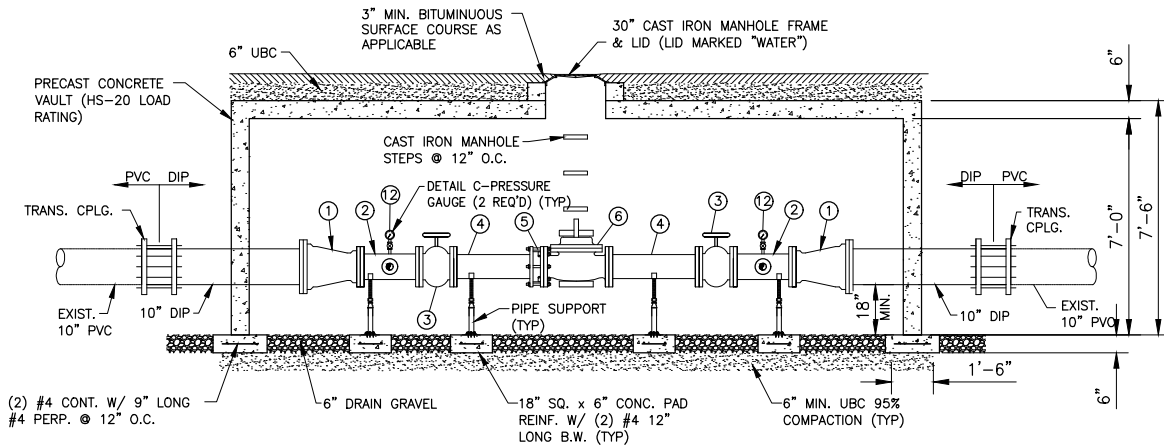
WATER - MECHANICAL RESTRAINING SYSTEM (PVC PIPE)

DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.
8-27-2020	DJS	TRB	RWW	W-07



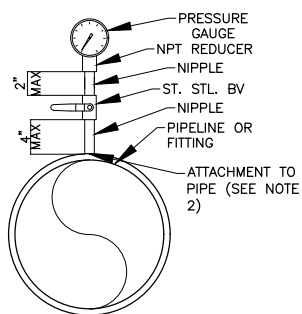
NOTE:
ALL PIPING PENETRATIONS SHALL BE
SEALED WITH PORTLAND CEMENT GROUT.

(A) PLAN - 10" PRV STATION
1/4" = 1'-0"



NOTE:
ALL PIPING PENETRATIONS SHALL BE SEALED
WITH PORTLAND CEMENT GROUT.

(B) SECTION - 10" PRV STATION
1/4" = 1'-0"



- NOTES:
1. GAUGE FACE ORIENTATION SHALL BE AS DIRECTED BY THE OWNER.
2. PIPING ATTACHMENT TO DUCTILE IRON PIPE SHALL BE BY PIPE SADDLE OR BY DIRECT THREADING INTO THE PIPE.
3. FITTINGS AND NIPPLES ARE BRASS.

(C) DETAIL - PRESSURE GAUGE
TYP N.T.S.

EQUIPMENT SCHEDULE

NUMBER	DESCRIPTION	SIZE	REMARKS
1	10"x 8" REDUCER	-	
2	8"x 8"x 3" TEE	-	
3	GATE VALVE	8"	
4	SPOOL	8"	LENGTH AS REQ'D (2 REQ'D)
5	FLNG. CPLG. ADAPTER	8"	
6	PRESSURE REDUCING VALVE	8"	SINGER S106-PR-AIS OR APPD. EQ., S.S. TUBING, FITTINGS, & TRIM, 15-75 PSI SPRING RANGE REQ'D
7	SPOOL	3"	(GSP) LENGTH AS REQ'D
8	90° ELL.	3"	
9	GATE VALVE	3"	
10	PRESSURE REDUCING VALVE	3"	SINGER S106-PR-AIS OR APPD. EQ., S.S. TUBING, FITTINGS, & TRIM, 15-75 PSI SPRING RANGE REQ'D
11	COUPLING	3"	
12	PRESSURE GAUGE	-	2 REQ'D. LIQUID FILLED (1 UPSTREAM RANGE 0-150 PSI) (1 DOWNSTREAM RANGE 0-60 PSI)
X	LOCATION OF PIPE SUPPORT	-	

REV NO.	COMMENT	DATE



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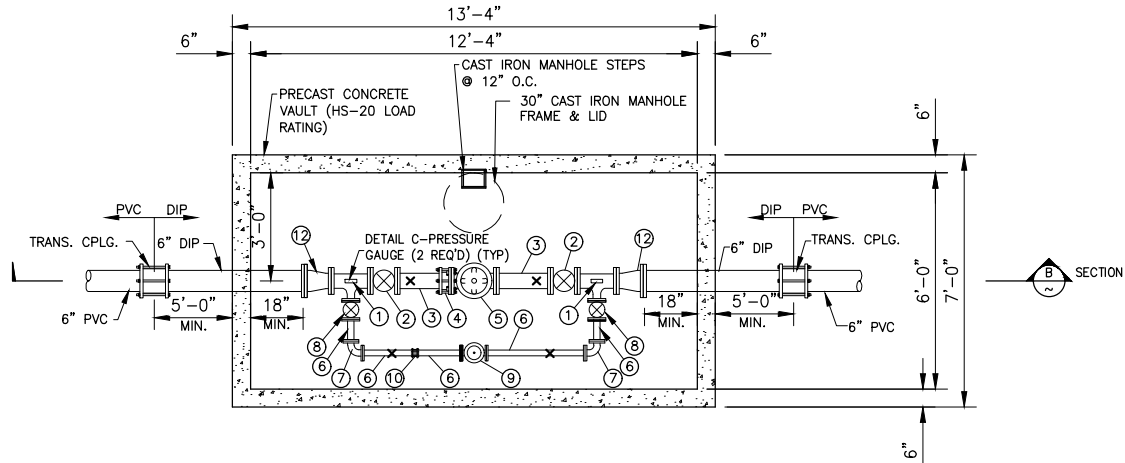
STANDARD DETAILS

WATER- 10" PRV STATION

DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.
6-9-2020	DJS	TRB	RWW	W-08

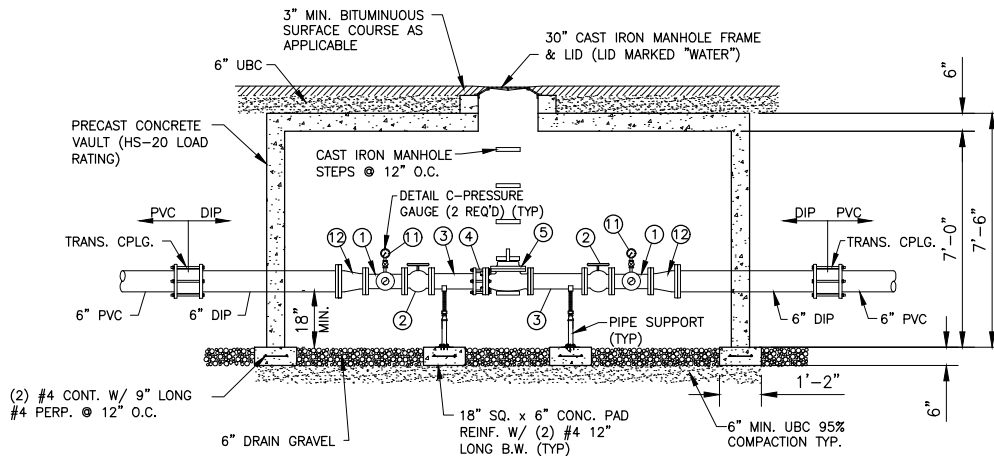
W-08

W-09



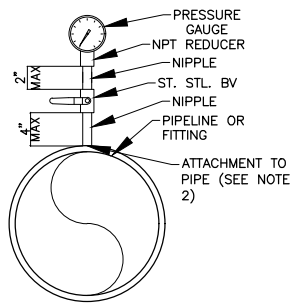
NOTE:
ALL PIPING PENETRATIONS SHALL BE
SEALED WITH PORTLAND CEMENT GROUT.

(A) PLAN - 6" PRV STATION
1/4" = 1'-0"



NOTE:
ALL PIPING PENETRATIONS SHALL BE SEALED
WITH PORTLAND CEMENT GROUT.

(B) SECTION - 6" PRV STATION
1/4" = 1'-0"



- NOTES:
1. GAUGE FACE ORIENTATION SHALL BE AS DIRECTED BY THE OWNER.
2. PIPING ATTACHMENT TO DUCTILE IRON PIPE SHALL BE BY PIPE SADDLE OR BY DIRECT THREADING INTO THE PIPE.
3. FITTINGS AND NIPPLES ARE BRASS.

(C) TYP. N.T.S. DETAIL - PRESSURE GAUGE

EQUIPMENT SCHEDULE

NUMBER	DESCRIPTION	SIZE	REMARKS
1	TEE	4" x 2"	
2	GATE VALVE	4"	
3	SPOOL	4"	2 REQ'D. 2' LONG (1 CUT INTO TWO PIECES)
4	FLNG. CPLG. ADAPTER	4"	
5	PRESSURE REDUCING VALVE	4"	SINGER S106-PR-AIS OR APPD. EQ., S.S. TUBING, FITTINGS, & TRIM, 15-75 PSI SPRING RANGE REQ'D
6	SPOOL	2"	2 REQ'D. LENGTH AS REQ'D. (1 CUT INTO TWO PIECES)
7	90° ELL.	2"	
8	GATE VALVE	2"	
9	PRESSURE REDUCING VALVE	2"	SINGER S106-PR-AIS OR APPD. EQ., S.S. TUBING, FITTINGS, & TRIM, 15-75 PSI SPRING RANGE REQ'D
10	COUPLING	2"	
11	PRESSURE GAUGE		2 REQ'D. LIQUID FILLED (1 UPSTREAM RANGE 0-150 PSI) (1 DOWNSTREAM RANGE 0-60 PSI)
12	REDUCER	6" x 4"	
X	LOCATION OF PIPE SUPPORT		

REV NO.	COMMENT	DATE



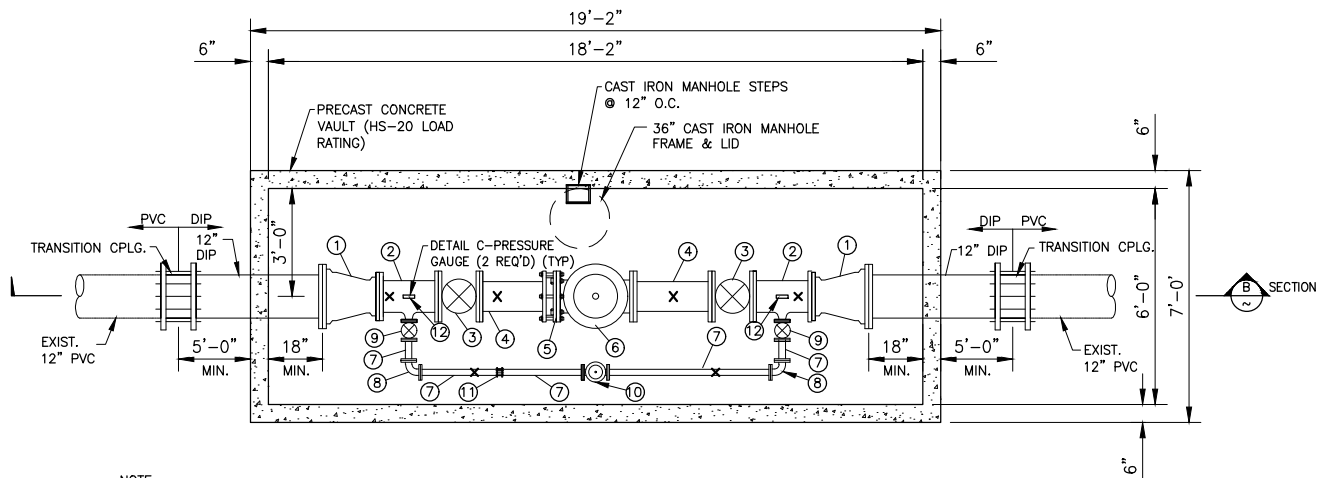
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STANDARD DETAILS

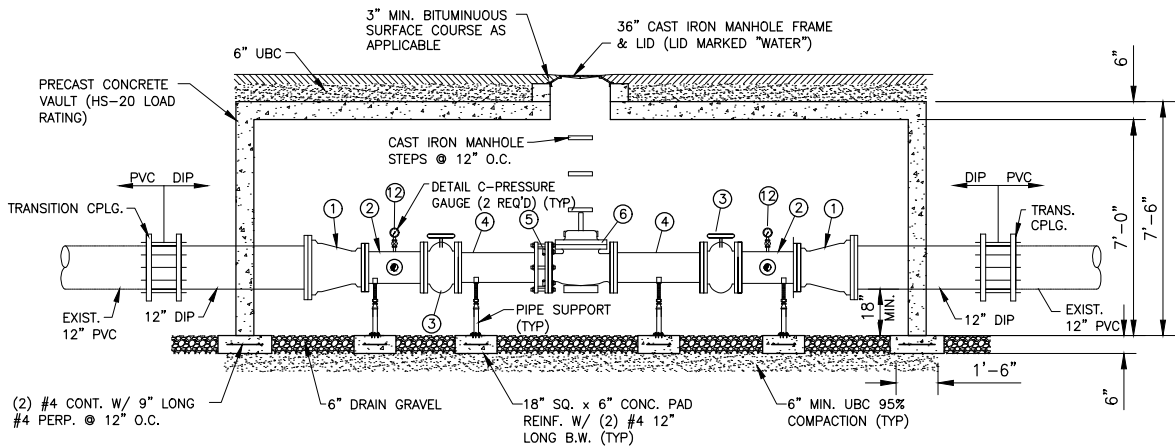
WATER- 6" PRV STATION

DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.
6-9-2020	DJS	TRB	RWW	W-10



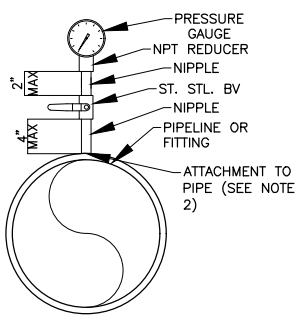
NOTE:
ALL PIPING PENETRATIONS SHALL BE
SEALED WITH PORTLAND CEMENT GROUT.

(A) PLAN - 12" PRV STATION
1/4" = 1'-0"



NOTE:
ALL PIPING PENETRATIONS SHALL BE SEALED
WITH PORTLAND CEMENT GROUT.

(B) SECTION - 12" PRV STATION
1/4" = 1'-0"



NOTES:
1. GAUGE FACE ORIENTATION SHALL BE AS DIRECTED BY
THE OWNER.
2. PIPING ATTACHMENT TO DUCTILE IRON PIPE SHALL BE
BY PIPE SADDLE OR BY DIRECT THREADING INTO THE
PIPE.
3. FITTINGS AND NIPPLES ARE BRASS.

(C) DETAIL - PRESSURE GAUGE
TYP. N.T.S.

EQUIPMENT SCHEDULE

NUMBER	DESCRIPTION	SIZE	REMARKS
1	12"x 10" REDUCER	-	
2	10"x 10"x 3" TEE	-	
3	GATE VALVE	10"	
4	SPOOL	10"	LENGTH AS REQ'D (2 REQ'D)
5	RESTRAINED FLNG. CPLG. ADAPTER	10"	
6	PRESSURE REDUCING VALVE	10"	SINGER S106-PR-AIS OR APPD. EQ., S.S. TUBING, FITTINGS, & TRIM, 15-75 PSI SPRING RANGE REQ'D
7	SPOOL	3"	(GSP) LENGTH AS REQ'D
8	90° ELL.	3"	
9	GATE VALVE	3"	
10	PRESSURE REDUCING VALVE	3"	SINGER S106-PR-AIS OR APPD. EQ., S.S. TUBING, FITTINGS, & TRIM, 15-75 PSI SPRING RANGE REQ'D
11	RESTRAINED COUPLING	3"	
12	PRESSURE GAUGE	-	2 REQ'D. LIQUID FILLED (1 UPSTREAM RANGE 0-150 PSI) (1 DOWNSTREAM RANGE 0-100 PSI)
X	LOCATION OF PIPE SUPPORT	-	

REV NO.	COMMENT	DATE

SUNRISE ENGINEERING

25 EAST 500 NORTH
FILLMORE, UTAH 84631
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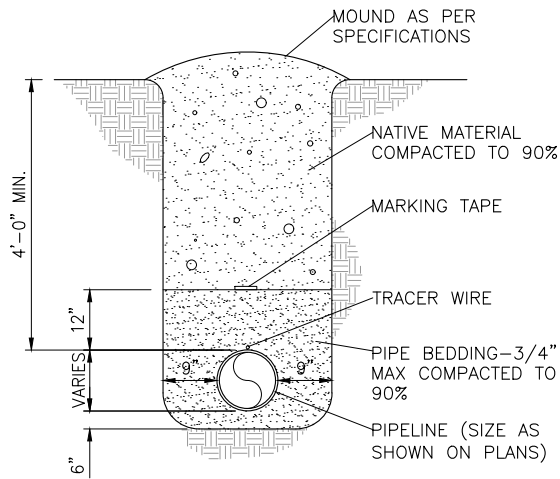
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STANDARD DETAILS

WATER- 12" PRV STATION

DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.
6-9-2020	DJS	TRB	RWW	W-11

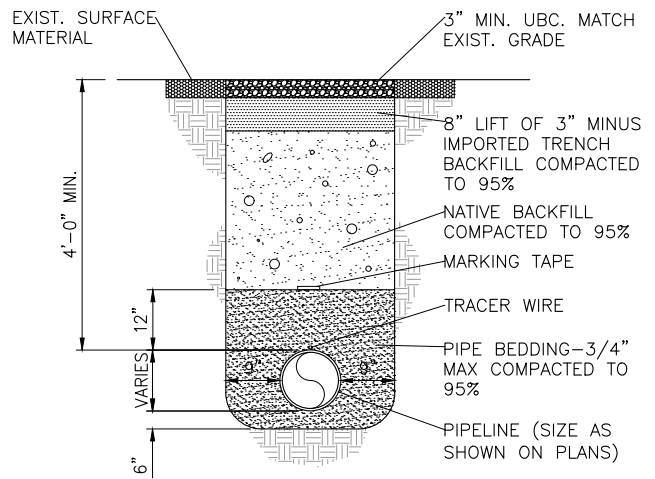
REV. NO.	COMMENT	DATE	SUNRISE ENGINEERING 25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com	Grand Water & Sewer Service Agency					
				STANDARD DETAILS					
				SECONDARY SERVICE CONNECTION					
				DATE 6-9-2020	DESIGNED DJS	DRAWN TRB	CHECKED RWW	SHEET NO. .	PI-01



NOTE:
TRENCH DETAIL OUTSIDE OF TRAVELED ROADWAY
OR DESIGNATED ROAD RIGHT-OF-WAY.

DETAIL - TYPICAL TRENCH

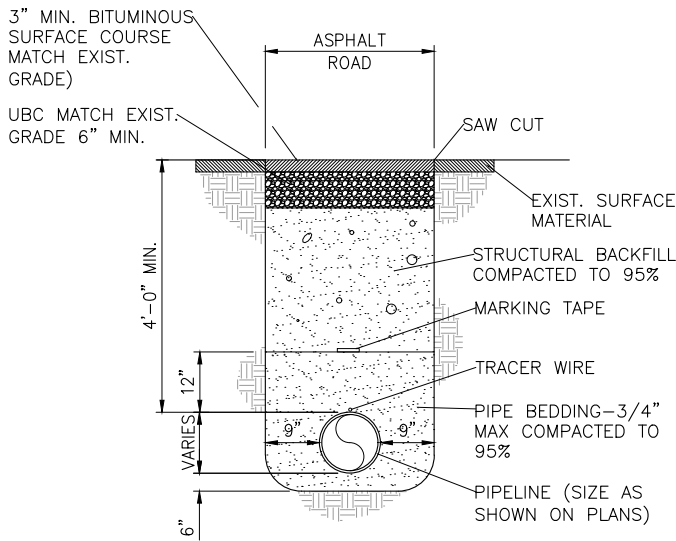
N.T.S.



NOTE:
TRENCH DETAIL INSIDE OF GRAVEL ROADWAYS.

DETAIL - UNPAVED ROADWAY TRENCH

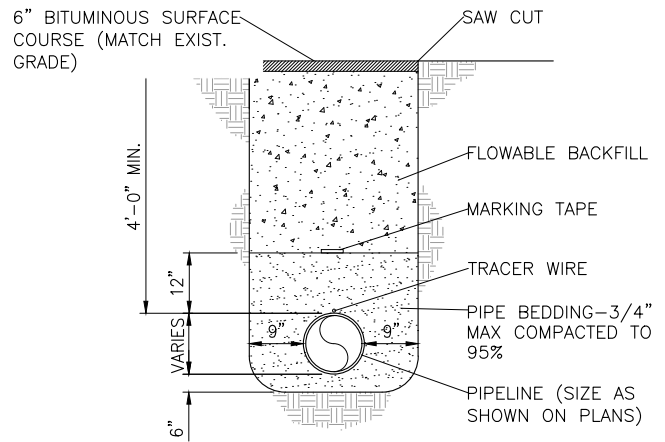
N.T.S.



- NOTES:
1. TRENCH DETAILS INSIDE OF ROADWAYS
ASPHALT/GRAVEL ROADS.
 2. ASPHALT ROADS SHALL BE SAW CUT.
 3. MAX PAY WIDTH SHALL BE 5'-0".

DETAIL - PAVED ROADWAY TRENCH

N.T.S.



NOTE:
THIS SHALL BE USED ON ALL COUNTY AND STATE HIGHWAY CROSSINGS
AND WHERE SPECIFICALLY CALLED FOR. CONTRACTOR SHALL OBTAIN
PERMIT FROM UDOT OR COUNTY PRIOR TO CONSTRUCTION

DETAIL - TRENCH W/ FLOWABLE BACKFILL

N.T.S.

REV NO.	COMMENT	DATE



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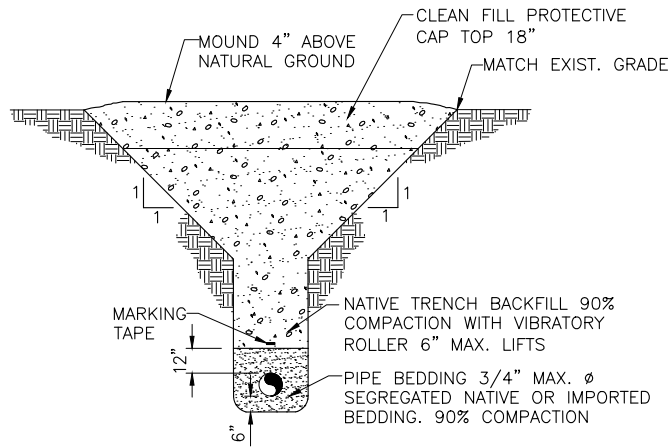
Grand Water & Sewer Service Agency

STANDARD DETAILS

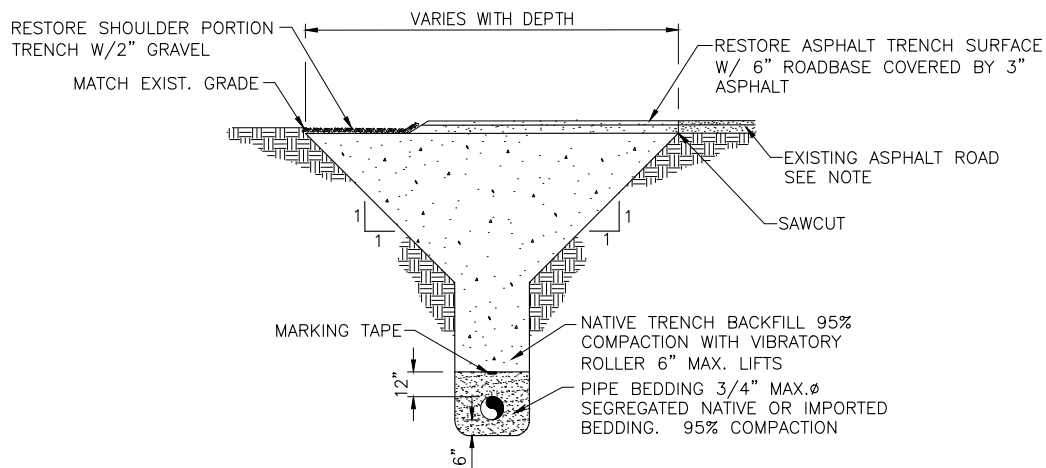
ROADWAY - TRENCH DETAILS

DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.	
6-8-2020	DJS	TRB	RWW	.	R-01

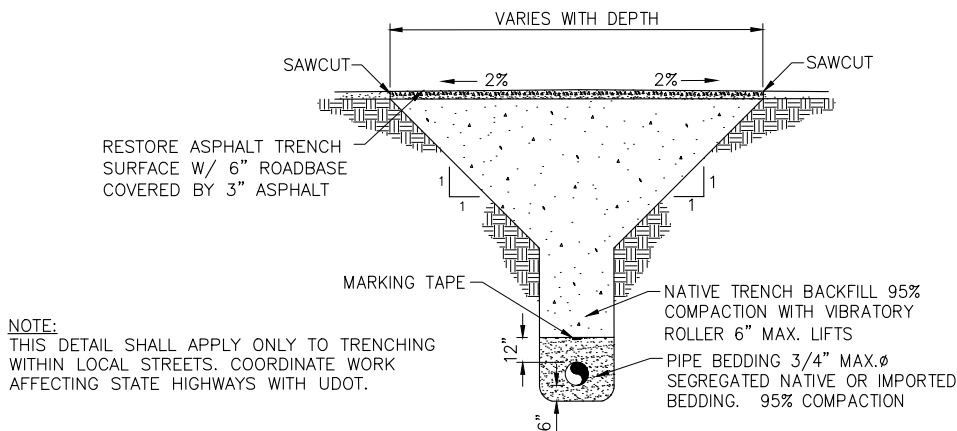
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(A)
TYP **DETAIL - TRENCH CONDITION 'A'**
TRENCH OUTSIDE OF ROADWAYS

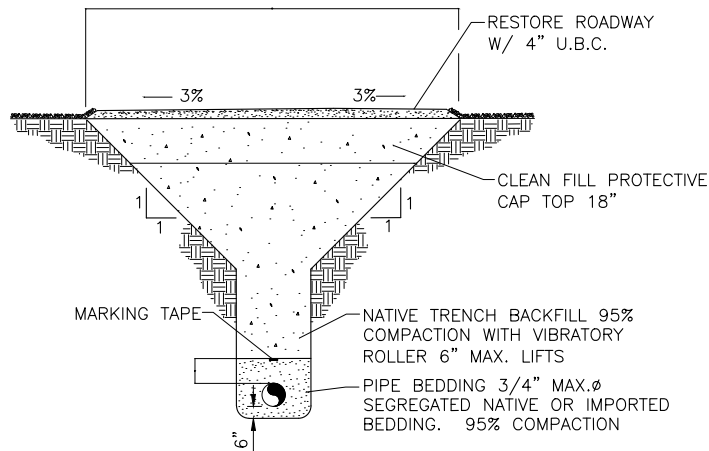


(B)
TYP **DETAIL - TRENCH CONDITION 'B'**
TRENCH WITHIN SHOULDER

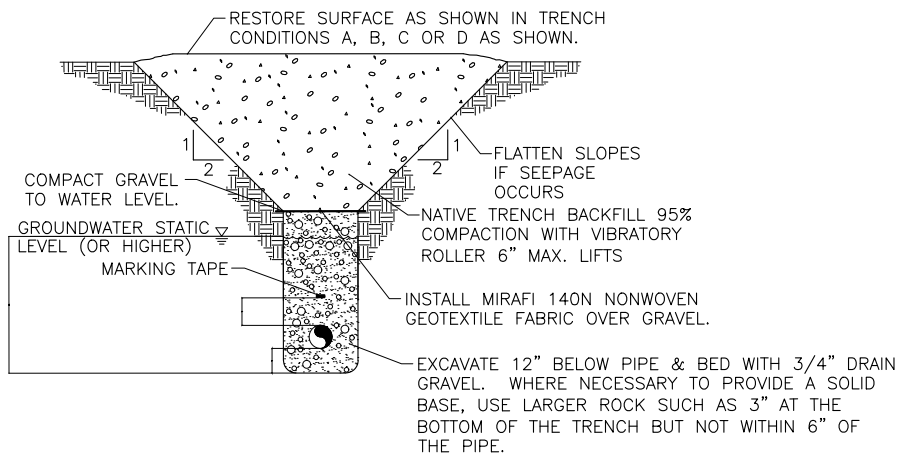


(C)
TYP **DETAIL - TRENCH CONDITION 'C'**
TRENCH WITHIN ASPHALT ROADWAY -
LOCAL STREETS

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				STANDARD DETAILS					
				ROADWAY - TRENCH DETAILS					
				DATE 6-9-2020	DESIGNED DJS	DRAWN TRB	CHECKED RWW	SHEET NO. .	R-02



D **DETAIL - TRENCH CONDITION 'D'**
TYP **TRENCH WITHIN GRAVEL ROADWAY**

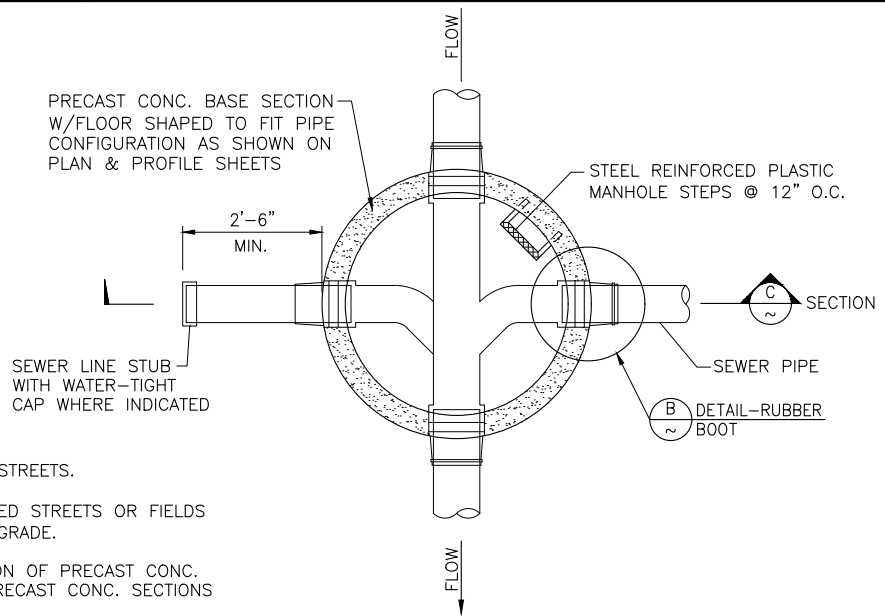


E **DETAIL - TRENCH CONDITION 'E'**
TYP **WET TRENCHING**

NOTES:

1. CONSTRUCTION AS SHOWN IS REQUIRED WHEN GROUNDWATER STATIC LEVEL IS EQUAL TO OR ABOVE SEWER INVERT ELEVATION OR AS DIRECTED BY THE ENGINEER.
2. CLAY CUT-OFF WALLS REQUIRED IN WET TRENCHING OR AS DIRECTED BY THE ENGINEER.
3. DEWATERING EFFORTS REQUIRED.
4. PLACE BACKFILL UP TO WATER LEVEL DURING CONSTRUCTION BEFORE DISCONTINUING THE DEWATERING.
5. DEWATERING OF EXCAVATIONS SHOULD BE FROM OUTSIDE THE EXCAVATED AREA TO MAINTAIN STABILITY.
6. THE FREE WATER LEVEL SHALL BE MAINTAINED AT LEAST 2ft. BELOW THE BASE OF THE EXCAVATION DURING CONSTRUCTION.

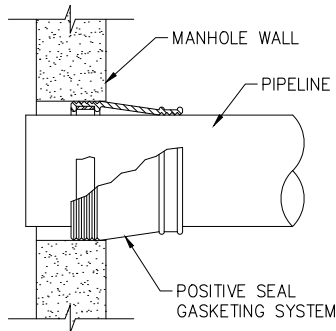
REV NO.	COMMENT	DATE	 SUNRISE ENGINEERING 25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com	Grand Water & Sewer Service Agency					
				STANDARD DETAILS					
				ROADWAY - TRENCH DETAILS					
				DATE 6-9-2020	DESIGNED DJS	DRAWN TRB	CHECKED RWW	SHEET NO. .	R-03



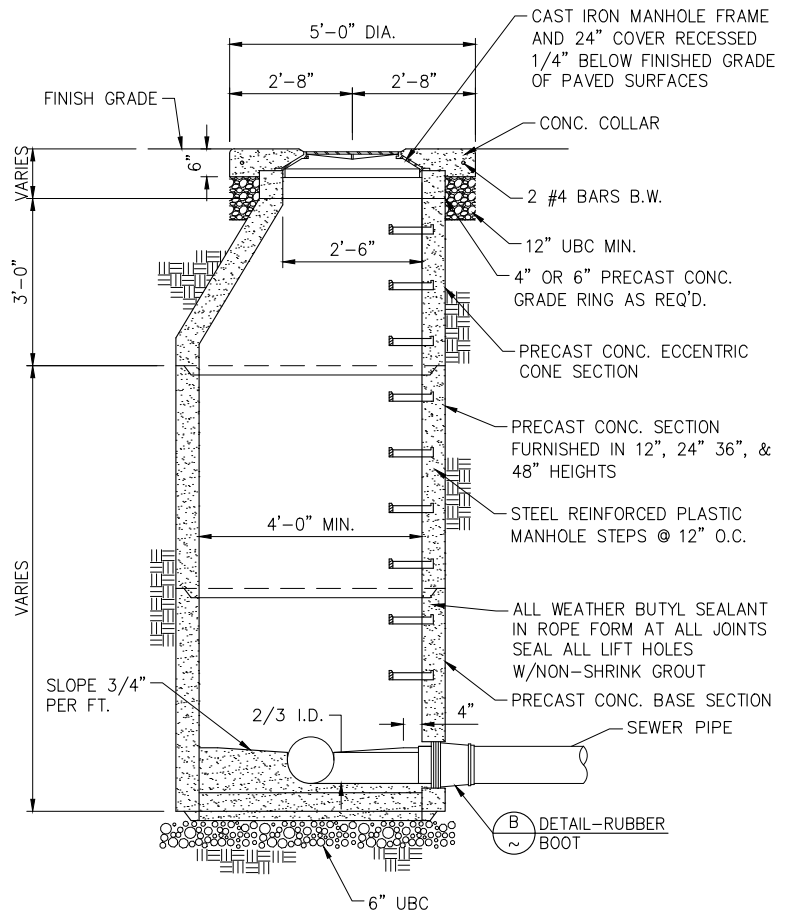
NOTES:

1. VENTED LIDS SHALL BE REQ'D. IN ALL PAVED STREETS.
2. NON-VENTED LIDS SHALL BE REQ'D. IN UNPAVED STREETS OR FIELDS WHERE RIM ELEVATION IS 6" OR LESS ABOVE GRADE.
3. WHERE FIELD CONDITIONS PROHIBIT COMBINATION OF PRECAST CONC. SECTIONS SHOWN, OTHER COMBINATIONS OF PRECAST CONC. SECTIONS MAY BE USED AS PER ENGINEER'S APPROVAL.
4. CONCRETE COLLAR REQ'D IN ASPHALT FINISH ROADS. THEY ARE NOT REQ'D. ON GRAVEL FINISH ROADS.
5. PATCH ALL MANHOLE SECTION JOINTS, OPENINGS AROUND PIPES, AND OTHER VOIDS WITH NON-SHRINK GROUT.

A PLAN - MANHOLE
TYP N.T.S.



B PLAN - RUBBER BOOT
TYP N.T.S.



C SECTION - MANHOLE
TYP N.T.S.

REV NO.	COMMENT	DATE



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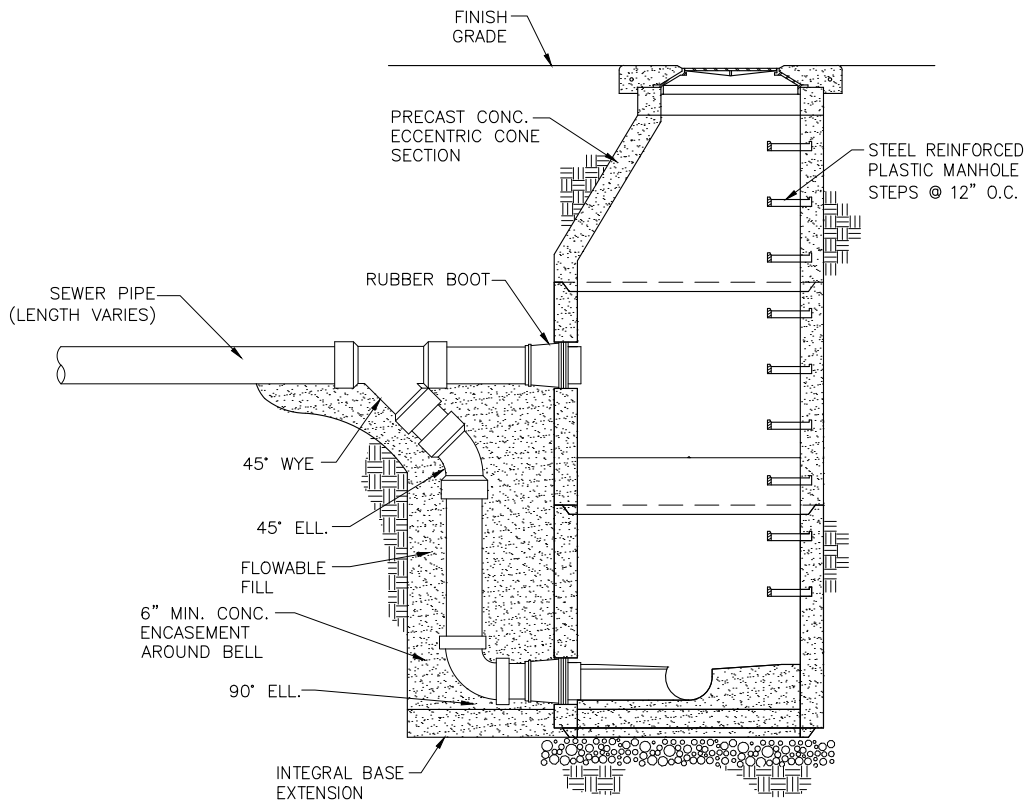
STANDARD DETAILS

SANITARY SEWER- STANDARD MANHOLE

DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.
6-9-2020	DJS	TRB	RWW	.

S-01

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SECTION - DROP MANHOLE

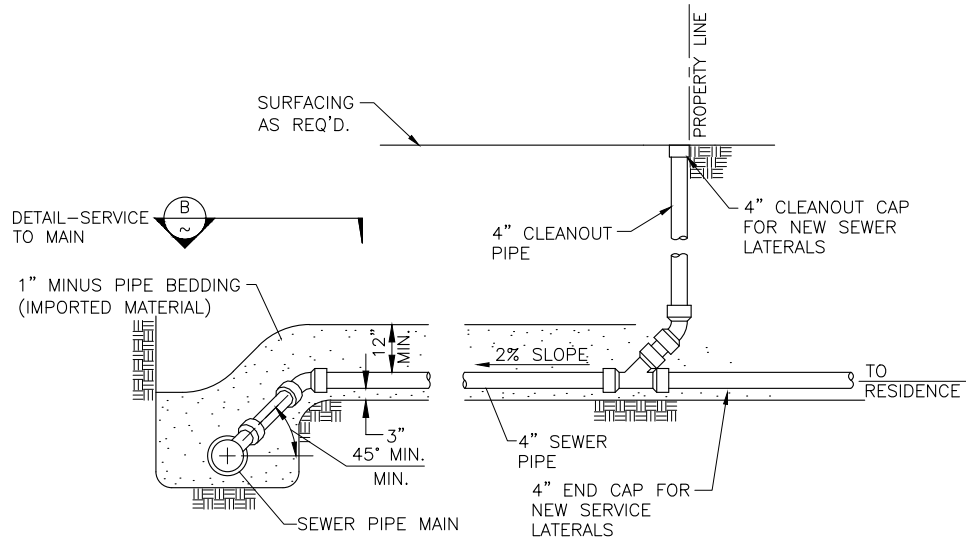
N.T.S.

NOTE:

FOR DROP DISTANCES LESS THAN 24" NO DROP MANHOLE SHALL BE USED. THE CONTRACTOR SHALL SLOPE THE TROUGHS IN THE BASE OF THE MANHOLE TO ACCOMMODATE THE DROP DISTANCES.

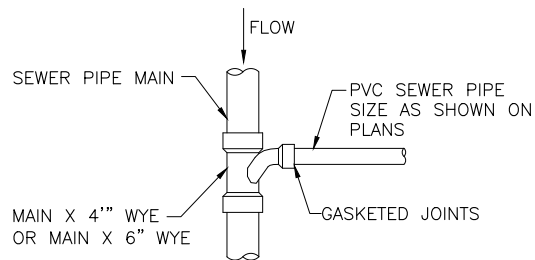
REV NO.	COMMENT	DATE	 SUNRISE ENGINEERING				Grand Water & Sewer Service Agency				
							STANDARD DETAILS				
			25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com				SANITARY SEWER- STANDARD DROP MANHOLE				
							DATE 6-9-2020	DESIGNED DJS	DRAWN TRB	CHECKED RWW	SHEET NO. S-02

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NOTE:
SEWER LATERALS ARE GENERALLY LOCATED ON THE LOW SIDE
OF THE PROPERTY 5 FEET FROM THE LOT CENTERLINE.

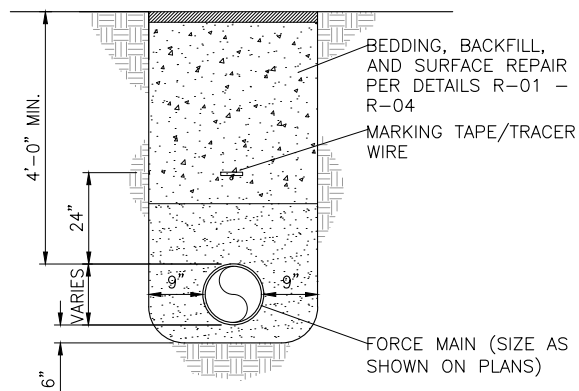
A
TYP DETAIL - SEWER SERVICE LATERAL
N.T.S.



B
TYP DETAIL - SERVICE TO MAIN
N.T.S.

REV NO.	COMMENT	DATE	SUNRISE ENGINEERING 25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com	Grand Water & Sewer Service Agency					
				STANDARD DETAILS					
				SANITARY SEWER- STANDARD SERVICE CONNECTION					
				DATE 6-9-2020	DESIGNED DJS	DRAWN TRB	CHECKED RWW	SHEET NO. .	S-03

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NOTES:

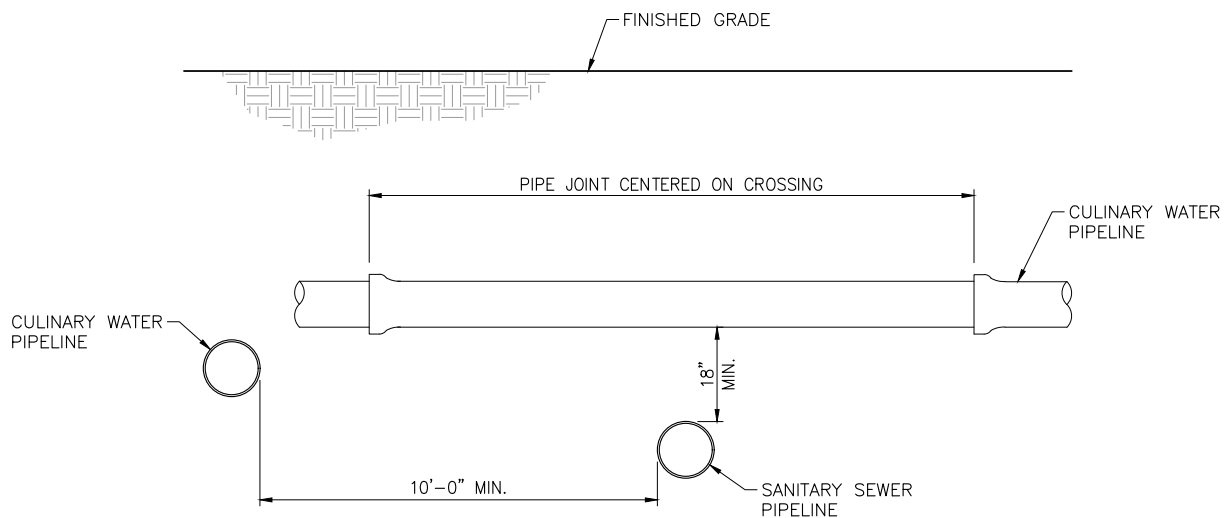
1. UNLESS GRINDER PUMPS ARE UTILIZED, FORCE MAINS SHALL BE A MINIMUM 4" HDPE.
2. FORCE MAINS SHALL ENTER THE GRAVITY SEWER SYSTEM AT A POINT NOT MORE THAN 24" ABOVE THE FLOWLINE OF THE RECEIVING MANHOLE.
3. AUTOMATIC AIR RELIEF VALVES SHALL BE PLACED AT HIGH POINTS IN THE FORCE MAIN TO PREVENT AIR LOCKING.
4. JOINT RESTRAINT MUST BE PROVIDED PER DETAILS W-06 AND W-07. JOINTS MAY ALSO BE FUSED.

DETAIL - FORCE MAIN CONSTRUCTION

N.T.S.

REV NO.	COMMENT	DATE	SUNRISE ENGINEERING 25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com	Grand Water & Sewer Service Agency					
				STANDARD DETAILS					
				SANITARY SEWER - FORCE MAIN CONSTRUCTION					
				DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.	S-04
				6-9-2020	DJS	BN	RWW	.	

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NOTES:

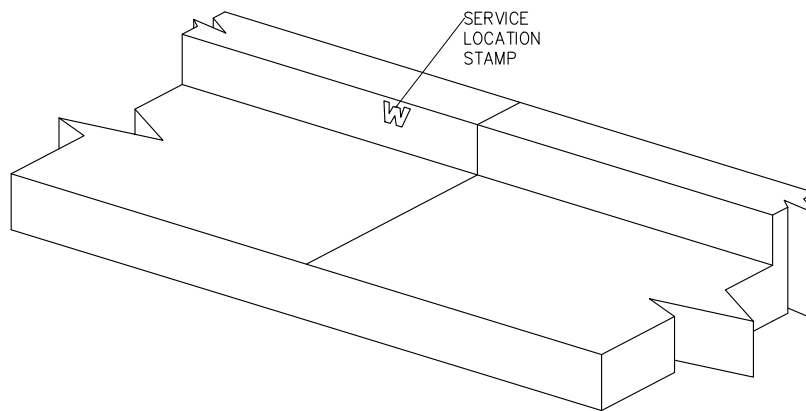
1. IF THE MINIMUM SEPARATION SHOWN HERE CANNOT BE MET, ADDITIONAL COORDINATION WITH GWSSA AND DIVISION OF DRINKING WATER APPROVAL ARE REQUIRED.
2. WATER TRANSMISSION LINES THAT MAY BECOME UNPRESSURIZED SHALL NOT BE INSTALLED WITHIN 20 FEET OF SEWER LINES.
3. WHEN A NEW SEWER FORCE MAIN CROSSES UNDER AN EXISTING WATER MAIN, ALL PORTIONS OF THE SEWER FORCE MAIN WITHIN 10 FEET (HORIZONTALLY) OF THE WATER MAIN SHALL BE ENCLOSED IN A CONTINUOUS SLEEVE.
4. WHEN A NEW WATER MAIN CROSSES OVER AN EXISTING SEWER FORCE MAIN, THE WATER MAIN SHALL BE CONSTRUCTED OF PIPE MATERIALS WITH A MINIMUM RATED WORKING PRESSURE OF 200 PSI OR EQUIVALENT PRESSURE RATING.
5. THE SEPARATION STANDARDS SHOWN ALSO APPLY TO SERVICE LATERALS.

DETAIL - WATER AND SEWER SEPARATION

N.T.S.

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				STANDARD DETAILS				
				WATER - WATER AND SEWER SEPARATION				
				DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.
				6-9-2020	DJS	BN	RWW	M-01

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NOTES:

1. NEW OR REPLACED CONCRETE CURBS SHALL BE STAMPED WITH 2" BLOCK LETTERS IDENTIFYING THE LOCATION WHERE A UTILITY SERVICE LINE CROSSES THE CURB.
2. THE FOLLOWING DESIGNATIONS SHALL BE USED TO IDENTIFY UTILITIES:
 - "W" - CULINARY WATER
 - "PI" - PRESSURIZED IRRIGATION
 - "S" - SEWER
 - "G" - GAS

DETAIL - SERVICE LOCATION STAMP

N.T.S.

REV NO.	COMMENT	DATE	SUNRISE ENGINEERING 25 EAST 500 NORTH FILLMORE, UTAH 84631 TEL 435.743.6151 • FAX 435.743.7900 www.sunrise-eng.com				Grand Water & Sewer Service Agency				
							STANDARD DETAILS				
							MISC - SERVICE LOCATION STAMP				
							DATE	DESIGNED	DRAWN	CHECKED	SHEET NO.
							6-9-2020	DJS	BN	RWW	M-02