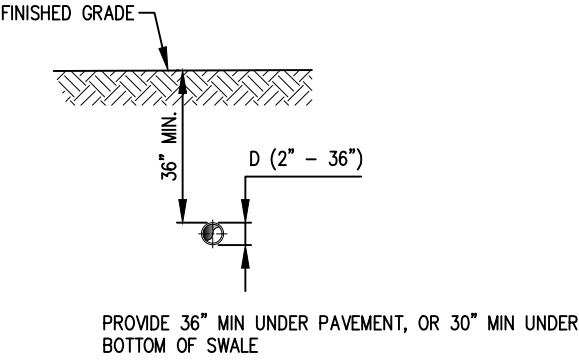
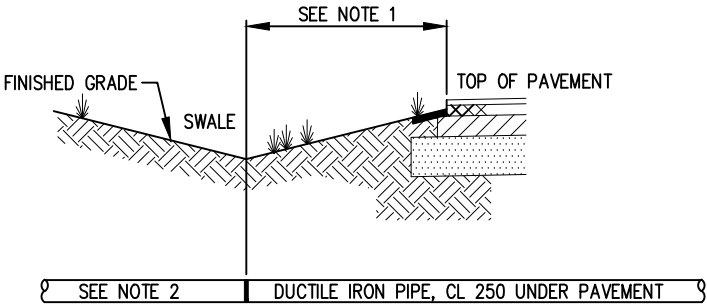
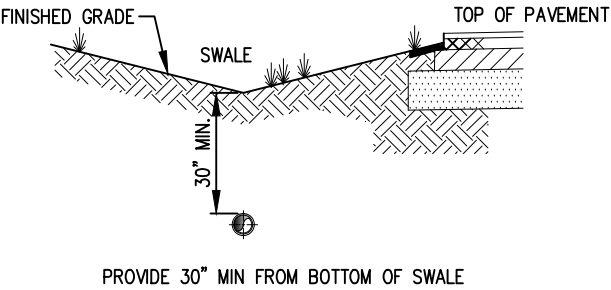


MIN. COVER FOR MAINS



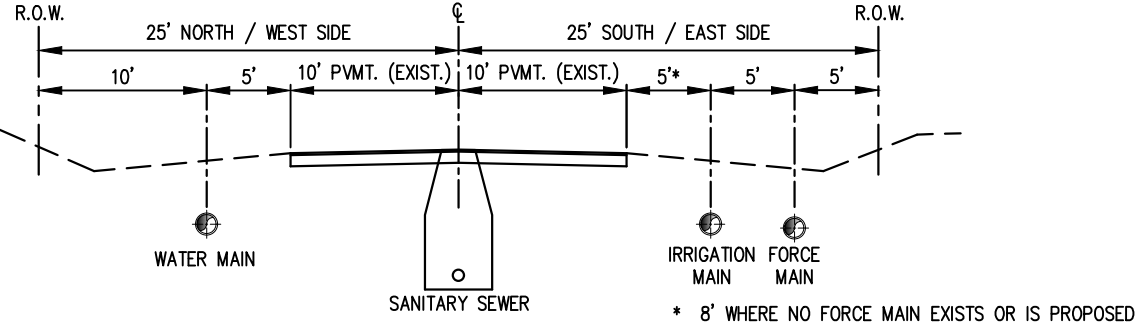
EXCEPTIONS

1. MIN COVER FOR MAINS IN SWALE (2"-36" DIA. MAINS)

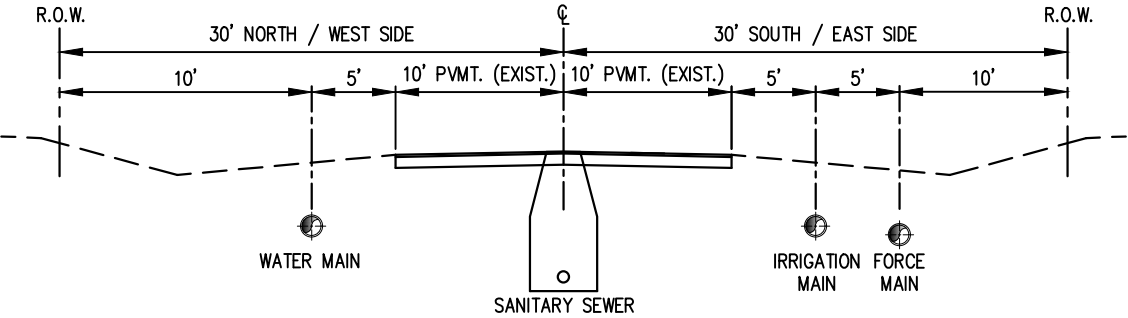


- NOTES:
1. DUCTILE IRON PIPE TO BE EXTENDED A MINIMUM OF 5 FEET OUTSIDE OF EDGE OF PAVEMENT, OR TO THE FULL LAYING LENGTH OF THE PIPE, WHICHEVER IS GREATER.
  2. PIPE INSTALLED BY OPEN CUT IN UN-PAVED AREAS PIPE, SIZES 4"-12", SHALL BE PVC. PIPE INSTALLED BY OPEN CUT SIZES 16" AND GREATER SHALL BE DUCTILE IRON PIPE.
  3. SEE SPECIFICATIONS SECTION 02598 FOR DETAILS OF PIPE MATERIALS.

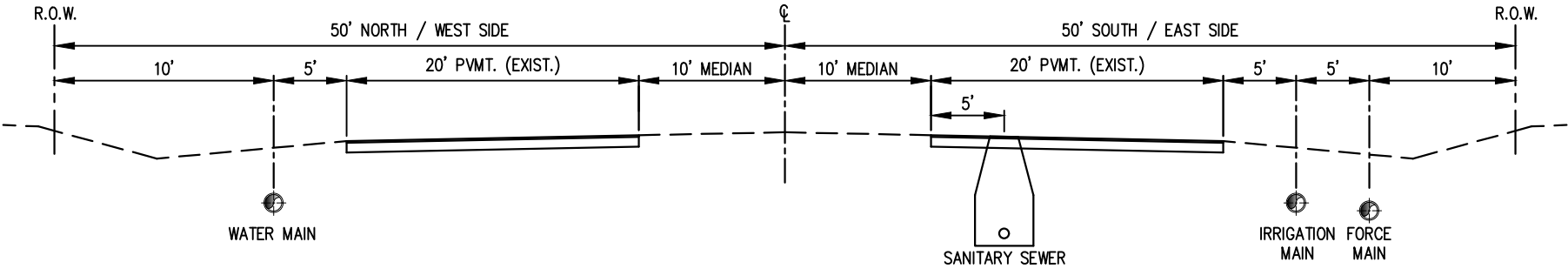
TYPICAL ROAD CROSSING DETAIL



TYPICAL 50' R.O.W.



TYPICAL 60' R.O.W.

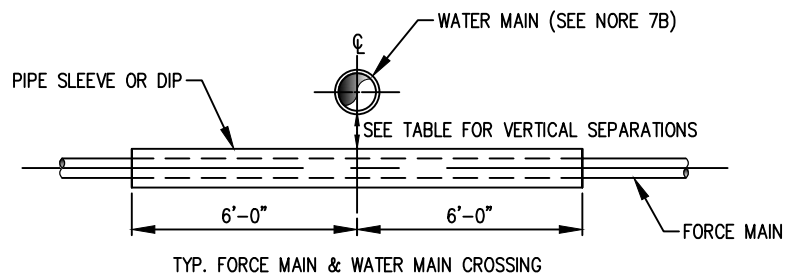
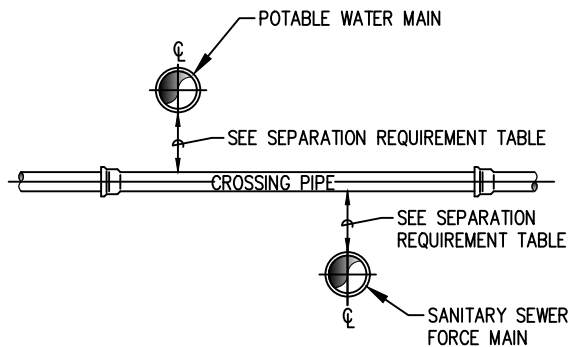


TYPICAL 100' R.O.W.

UG-101 TYPICAL ROADWAY AND UTILITY SECTIONS  
NOT TO SCALE

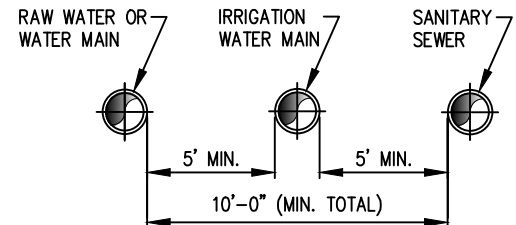
- NOTES:
1. EXISTING UTILITY LOCATIONS ARE TYPICAL.
  2. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES.

REVISION DATE	 <div>CITY OF CAPE CORAL UTILITIES DEPARTMENT P.O. BOX 150027 CAPE CORAL, FLORIDA 33915-0027</div>	DETAIL NAME	DETAIL NO.
07-14-2022		TYPICAL ROADWAY AND UTILITY SECTIONS	UG-101
ADOPTION DATE			
8-17-2022			



HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS								
PROPOSED UTILITY	POTABLE WATER		IRRIGATION WATER		SANITARY SEWER (GRAVITY & F.M.)		STORM DRAIN	
	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.
POTABLE WATER	-	12"	5' 0/0	12"	10' 0/0	12"	5' 0/0	12"
IRRIGATION WATER	5' 0/0	12"	12"	12"	5' 0/0	12"	5' 0/0	12"
SANITARY SEWER (GRAVITY & FM)	10' 0/0	12"	5' 0/0	12"	3' 0/0	12"	5' 0/0	12"
RAW WATER	3' 0/0	12"	3' 0/0	12"	10' 0/0	12"	3' 0/0	12"

SEE NOTE NO. 7



O/O - DENOTES OUTSIDE OF PIPE TO OUTSIDE OF PIPE

#### NOTES:

- THE TABLE REPRESENTS THE MINIMUM SEPARATION REQUIREMENTS FOR THE CITY OF CAPE CORAL AND MAY BE GREATER OR MORE STRINGENT THAN VALUES DESCRIBED IN F.D.E.P. RULES OF THE FLORIDA ADMINISTRATIVE CODE (F.A.C.). THESE SEPARATION REQUIREMENTS SHALL APPLY BETWEEN PROPOSED UTILITY LINES AND EXISTING OR PROPOSED UTILITY LINES.
- FOR THE PURPOSE OF THIS TABLE IRRIGATION WATER SHALL MEAN UNRESTRICTED PUBLIC ACCESS REUSE WATER AS DEFINED BY F.A.C. 62-610. OTHER TYPES OF RECLAIMED WATER ARE CONSIDERED RAW SEWAGE AND SEPARATIONS LISTED FOR SANITARY SEWER SHALL APPLY.
- ALL SEPARATION DISTANCES ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE UNLESS OTHERWISE SPECIFIED. CRITERION PRODUCING GREATEST CLEARANCE SHALL BE USED.
- MINIMUM DISTANCE BETWEEN PIPE AND ANY STRUCTURES TO BE 12" O/O.
- FOR VERTICAL SEPARATIONS ON WATER MAINS, 12" IS REQUIRED, HOWEVER, 6" IS ACCEPTABLE IF THE WATER MAIN IS ABOVE THE GRAVITY SANITARY SEWER OR STORM DRAIN, UPON RECEIVING PRIOR APPROVAL FROM THE CITY OF CAPE CORAL.
- FOR SEPARATIONS NOT INVOLVING WATER MAINS, 12" IS REQUIRED, HOWEVER, 6" IS ACCEPTABLE UPON RECEIVING PRIOR APPROVAL FROM CITY OF CAPE CORAL PROJECT REPRESENTATIVE.
- ACCEPTABLE VARIANCES:
  - WHERE HORIZONTAL SEPARATION IS NOT ATTAINABLE, DUCTILE IRON PIPE OR PVC ENCASEMENT MUST BE USED UNTIL MINIMUM CLEARANCE IS REGAINED. THE PIPE JOINTS SHALL BE STAGGERED AS FOLLOWS: 1) 3' BETWEEN WM AND VACUUM SEWERS, STORM SEWERS, AND RECLAIMED WATER MAIN JOINTS, 2) 6' BETWEEN WM AND GRAVITY SANITARY SEWER, SANITARY FORCE MAINS, SANITARY SEWER AND NON-REGULATED RECLAIMED WATER MAINS.
  - FOR SANITARY SEWERS OR STORM DRAINS CROSSING UNDER MAINS WHERE 6" MINIMUM VERTICAL SEPARATION IS NOT ATTAINABLE; FOR IRRIGATION AND FORCE MAINS, USE ONE FULL LENGTH OF PVC ENCASED PIPE CENTERED AT THE POINT OF CROSSING; AND FOR THE WATER MAIN, USE ONE FULL LENGTH OF PIPE CENTERED AT THE POINT OF CROSSING WITH NO LESS THAN 6' BETWEEN ANY TWO JOINTS.
  - IF MINIMUM DEPTH OF COVER IS NOT MAINTAINED, SPECIAL PROTECTION OR PIPE MATERIAL UPGRADE MAY BE REQUIRED PER CITY OF CAPE CORAL SPECIFICATIONS.
  - MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS & GRAVITY-TYPE SEWER MAY BE REDUCED TO 3' WHERE BOTTOM OF WATER MAIN IS 6" ABOVE TOP OF SEWER.
- FOR SANITARY SEWERS CROSSING OVER WATER MAINS, A MINIMUM VERTICAL DISTANCE OF 12 INCHES AND THE CRITERIA FOR MINIMUM SEPARATION OF JOINTS IN 7(B) ABOVE MUST BE MAINTAINED.
- NO WATER PIPE SHALL PASS THROUGH, OR COME IN CONTACT WITH, ANY PART OF A SANITARY MANHOLE OR STRUCTURE.
- A MINIMUM VERTICAL SEPARATION OF 6" SHALL BE KEPT BETWEEN SANITARY SEWER SERVICES AND MAIN LINE PIPES.
- UTILITY LINES SHALL HAVE A MINIMUM 3' VERTICAL AND HORIZONTAL SEPARATION FROM ELECTRICAL AND FIBER OPTIC LINES. WHEN FACILITY/UTILITY LINES WILL CROSS ELECTRICAL OR FIBER OPTIC LINES, HAND DIGGING SHALL BE REQUIRED TO LOCATE THESE LINES.



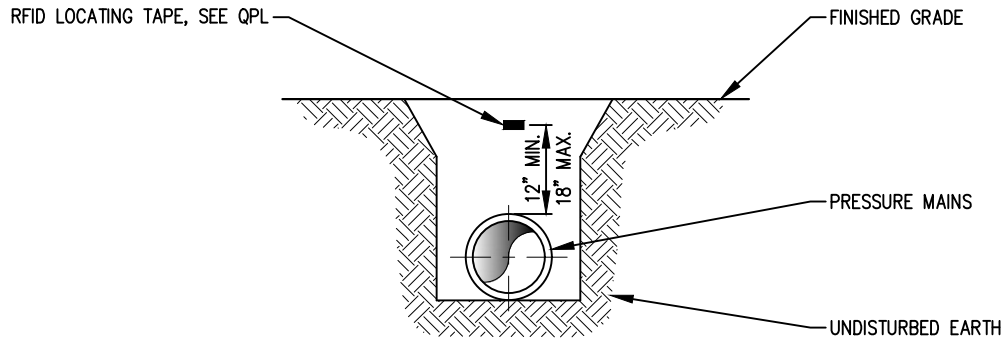
REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



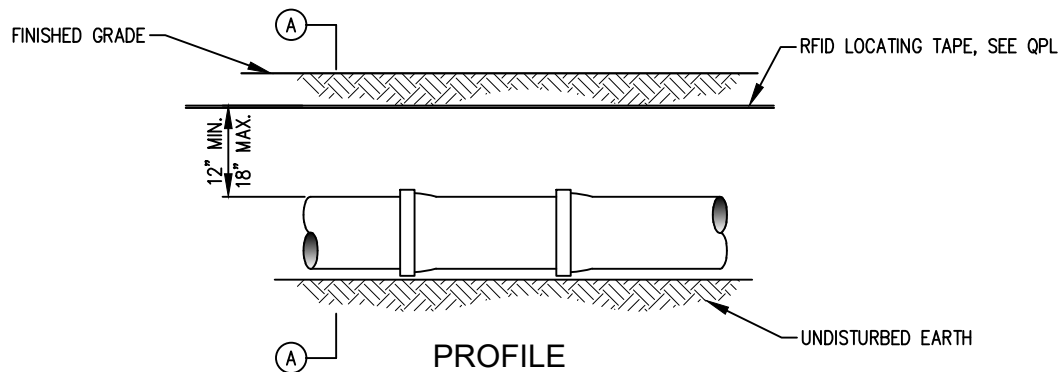
CITY OF CAPE CORAL  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME  
**UTILITY SEPARATION  
REQUIREMENTS**

DETAIL NO.  
**UG-102**



SECTION A-A



**NOTES:**

1. ALL MAINS SHALL HAVE AN RFID LOCATING/PROTECTION TAPE INSTALLED CONTINUOUSLY ALONG THE ALIGNMENT. THE PROTECTION TAPE SHALL BE AS REQUIRED BY THE SPECIFICATIONS. TAPE SHALL BE INSTALLED DURING BACKFILLING 12"– 18" DIRECTLY ABOVE THE PIPE AND BE CONTINUOUSLY MARKED FOR THE TYPE OF PIPE (EXAMPLE: "CAUTION WATER MAIN BURIED BELOW"). THE TAPE SHALL HAVE A METALLIC DETECTABLE STRIP INCLUDED AND COLOR CODED AS FOLLOWS:

BLUE -----POTABLE WATER  
 GREEN -----GRAVITY SEWER  
 GREEN -----SANITARY SEWER FORCE MAIN  
 LAVENDER -----IRRIGATION/REUSE WATER

2. PVC MAINS SHALL BE A SOLID COLOR AND PERMANENTLY MARKED WITH THE MANUFACTURER'S NAME, PIPE SIZE AND/OR PRESSURE RATING.
3. ELECTRONIC MARKERS SHALL BE PLACED AT ALL CHANGES OF DIRECTION, START AND END OF VERTICAL DEFLECTIONS, AND SERVICES AT THE CORPORATION STOP OR SEWER SERVICE WYE. DO NOT INSTALL ELECTRONIC MARKER FOR CORPORATION STOPS UNLESS LOCATED UNDER PAVEMENT. MARKERS SHALL BE LOCATED AT A MAXIMUM DEPTH OF 4 FEET. THE MARKERS SHALL NOT BE PLACED IN CONTACT WITH DIP FITTINGS. THE MARKERS SHALL BE:

POTABLE WATER ----- COLOR BLUE  
 SANITARY SEWER ----- COLOR GREEN  
 SANITARY SEWER FORCE MAIN ----- COLOR GREEN  
 IRRIGATION/REUSE WATER ----- COLOR LAVENDER

4. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.
5. RECORD DRAWINGS SHALL INCLUDE STATE PLANE COORDINATES AND ELEVATION FOR EACH ELECTRONIC MARKER.



**PIPE LOCATION TAPE, STRIPING AND MARKERS**  
NOT TO SCALE

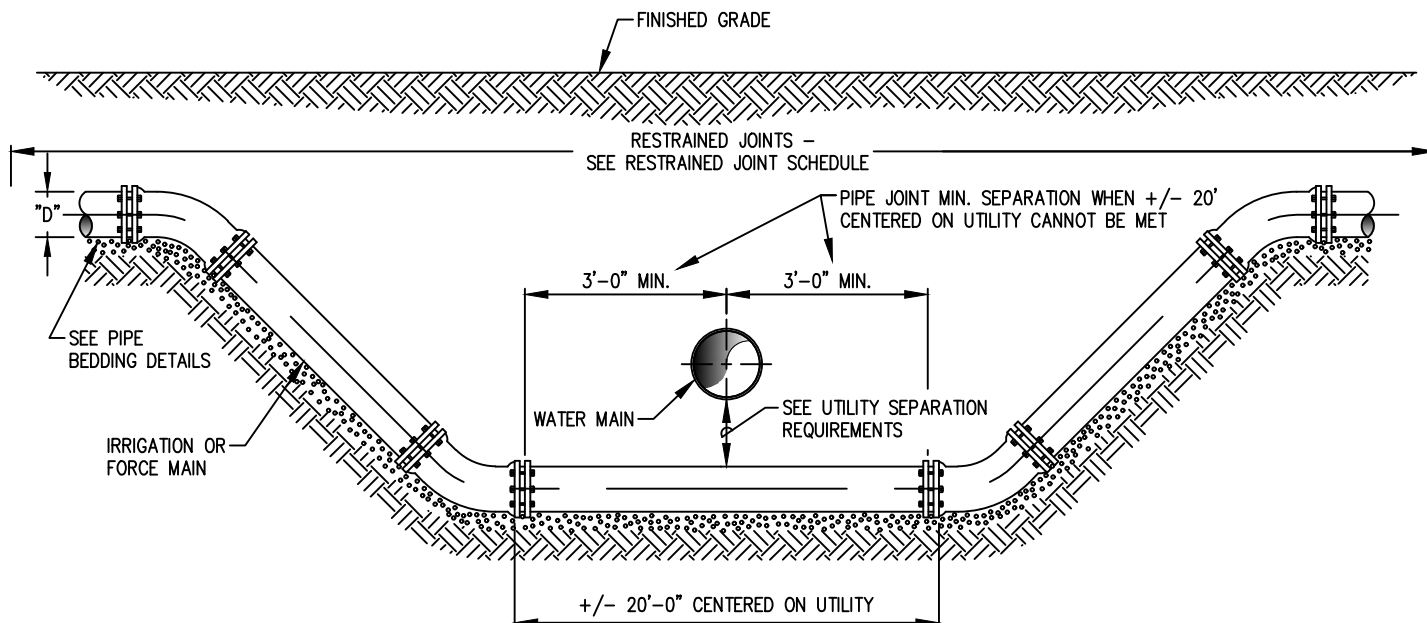
REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



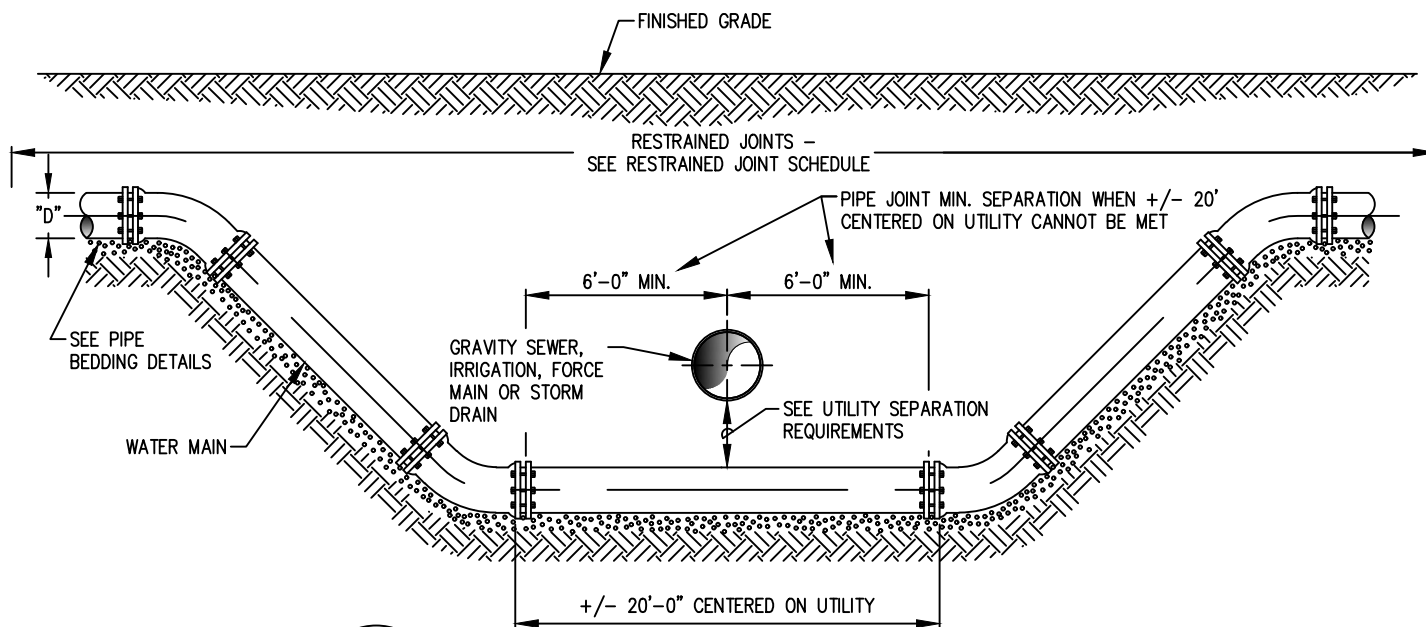
**CITY OF CAPE CORAL**  
 UTILITIES DEPARTMENT  
 P.O. BOX 150027  
 CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME  
**PIPE LOCATION TAPE,  
 STRIPING AND MARKERS**

DETAIL NO.  
**UG-103**



**UG-104** UTILITY CROSSING FOR IRRIGATION AND FORCE MAINS  
NOT TO SCALE



**UG-104** UTILITY CROSSING FOR WATER MAINS  
NOT TO SCALE

**NOTES:**

- ELECTRONIC MARKERS SHALL BE PLACED AT ALL CHANGES OF DIRECTION, START AND END OF VERTICAL DEFLECTIONS, AND SERVICES AT THE CORPORATION STOP OR SEWER SERVICE WYE. MARKERS SHALL BE LOCATED AT A MAXIMUM DEPTH OF 4 FEET. RECORD DRAWINGS SHALL INCLUDE LOCATION OF ALL ELECTRONIC MARKERS. THE MARKERS SHALL NOT BE PLACED IN CONTACT WITH DIP FITTINGS. THE MARKERS SHALL BE:  
  
 POTABLE WATER ----- COLOR BLUE  
 SANITARY SEWER ----- COLOR GREEN  
 SANITARY SEWER FORCE MAIN ----- COLOR GREEN  
 IRRIGATION/REUSE WATER ----- COLOR LAVENDER
- FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.
- ALL DIVERSIONS SHALL BE CONSTRUCTED USING DUCTILE IRON PIPE.

REVISION DATE  
**07-14-2022**  
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**08-17-2022**



**CITY OF CAPE CORAL**  
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DETAIL NAME  
**UTILITY CROSSING FOR IRRIGATION  
AND FORCE MAINS  
UTILITY CROSSING FOR WATER MAINS**

DETAIL NO.  
**UG-104**



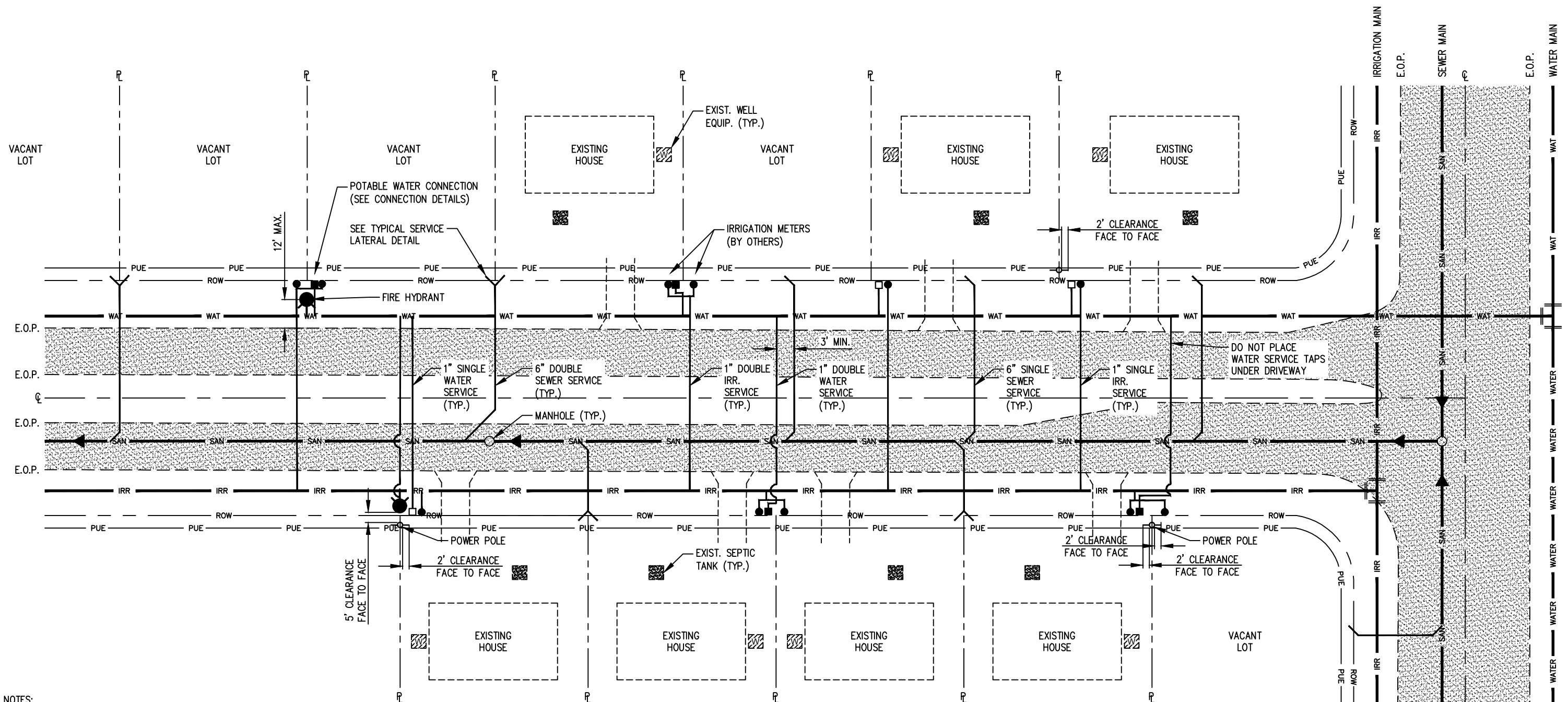
PIPE DIA (INCHES)	RESTRAINED LENGTH EACH SIDE OF RESTRAINED FITTING (FEET)								RESTRAINED LENGTH FOR REDUCERS (FEET)									
	DIP				PVC				SMALL END (INCHES)									
	90°	45°	22–1/2°	11–1/4°	90°	45°	22–1/2°	11–1/4°	4	6	8	10	12	16	20	24	30	36
4	35	15	10	5	55	25	20	10	*	*	*	*	*	*	*	*	*	*
6	55	25	10	5	80	35	20	20	46	*	*	*	*	*	*	*	*	*
8	65	30	15	10	90	40	20	20	74	51	*	*	*	*	*	*	*	*
10	80	35	20	10	110	50	25	20	97	79	53	*	*	*	*	*	*	*
12	98	40	20	10	130	55	30	20	120	105	84	56	*	*	*	*	*	*
16	136	65	25	15	165	70	35	20	*	152	136	116	91	*	*	*	*	*
20	173	100	30	15	200	104	40	20	*	197	184	168	148	96	*	*	*	*
24	209	134	35	20	216	139	45	25	*	240	229	215	199	156	101	*	*	*
30	263	154	41	20	275	194	50	25	*	305	297	285	272	237	193	138	*	*
36	317	235	86	25	333	248	95	30	*	*	*	*	*	312	275	229	146	*
42	368	283	129	25	388	300	140	30	*	*	*	*	*	*	348	309	238	151
48	420	331	172	30	444	352	187	35	*	*	*	*	*	*	419	385	323	247

RESTRAINED LENGTHS FOR VALVES, PLUGS, DEAD ENDS, TEE BRANCHES AND HDPE TO PVC TRANSITIONS SHALL BE THE SAME AS FOR 90° BENDS.  
RESTRAINED LENGTHS FOR WYES SHALL BE THE SAME AS FOR 45° BENDS.  
IF A JOINT FALLS AT THE MAXIMUM DISTANCE, IT SHALL BE RESTRAINED.  
TABLE BASED ON DUCTILE IRON FITTINGS WITH A TEST PRESSURE 150 PSI AND 36” OF PIPE COVER.  
”\*” REDUCER SIZE NOT AVAILABLE.

UG-105

RESTRAINED JOINT SCHEDULE

NOT TO SCALE



NOTES:

- FOR INSTALLATIONS WHERE THE SERVICE CONNECTION CROSSES DIVIDED STREETS A MINIMUM 2" SCH 40 PVC CASING SLEEVE FOR RESIDENTIAL AND A MINIMUM 3" SCH 40 PVC CASING SLEEVE FOR COMMERCIAL WILL BE REQUIRED AND MUST EXTEND CONTINUOUS THROUGH THE MEDIAN AND TERMINATE AT LEAST 1 FOOT PAST THE EDGE OF THE PAVED SURFACE. CASING SLEEVE UNDER THE STREET MAY BE BORED/BULLETED INTO POSITION. A MINIMUM OF 24" (2') COVER TO BE MAINTAINED BETWEEN CASING SLEEVE AND PAVED SURFACE. MUST BE CALLED OUT ON PLANS.
- MAINTAIN REQUIRED SEPARATION BETWEEN IRRIGATION AND POTABLE WATER SERVICE PIPING.
- REFER TO TYPICAL SECTION SDR 9 POLYETHYLENE POTABLE WATER/IRRIGATION SERVICE BEDDING DETAIL FOR BEDDING REQUIREMENTS.
- CONTRACTOR TO FIELD VERIFY EXISTING SEPTIC TANK AND POTABLE WATER WELLS FOR FINAL LATERAL LOCATION.
- WHERE POSSIBLE, DO NOT LOCATE FIRE HYDRANT AT POWER POLE.
- WATER SERVICE SHALL ALWAYS BE LOCATED CLOSEST TO PROPERTY LINE.

- SINGLE SERVICE (SAN SEWER) SHALL BE INSTALLED AT MIDDLE OF LOT TO PREVENT PRIVATE SERVICE CONNECTION CROSSING DRIVEWAY AT EXISTING HOUSE.
- FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.
- METER BOXES SHALL NOT BE PROVIDED FOR UNDEVELOPED PROPERTIES UNLESS OTHERWISE INDICATED.
- SEE TYPICAL SERVICE LATERAL SECTION AND TYPICAL SERVICE LATERAL PLAN FOR SANITARY SEWER CONNECTIONS.
- SEE SINGLE SERVICE WITH HYDRANT LAYOUT, SINGLE SERVICE WITHOUT HYDRANT LAYOUT, DOUBLE SERVICE WITH HYDRANT LAYOUT, AND DOUBLE SERVICE WITHOUT HYDRANT LAYOUT FOR POTABLE WATER AND IRRIGATION LAYOUT DIMENSIONS AND NOTES.
- SEE CONNECTION DETAILS FOR POTABLE WATER AND IRRIGATION ON IMPROVED AND UNIMPROVED PROPERTIES FOR DIMENSIONS AND NOTES.

UG-106 SERVICE LATERAL LAYOUT  
NOT TO SCALE

LEGEND

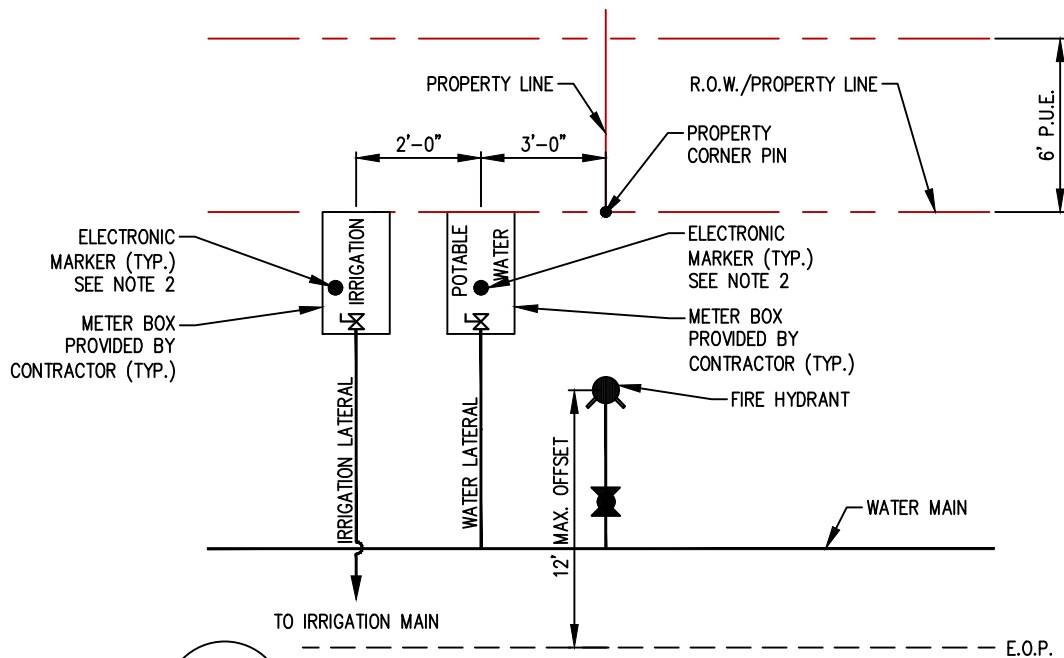
- FIRE HYDRANT
- SANITARY SEWER MANHOLE
- WATER METER BOX (DOUBLE)/POTABLE SERVICE CONNECTION
- WATER METER BOX (SINGLE)/POTABLE SERVICE CONNECTION
- IRRIGATION METER BOX/SERVICE CONNECTION
- POWER POLE
- EXISTING SEPTIC TANK
- EXISTING WELL EQUIPMENT
- MAIN TEE

REVISION DATE
07-07-2022
ADOPTION DATE
08-17-2022



CITY OF CAPE CORAL  
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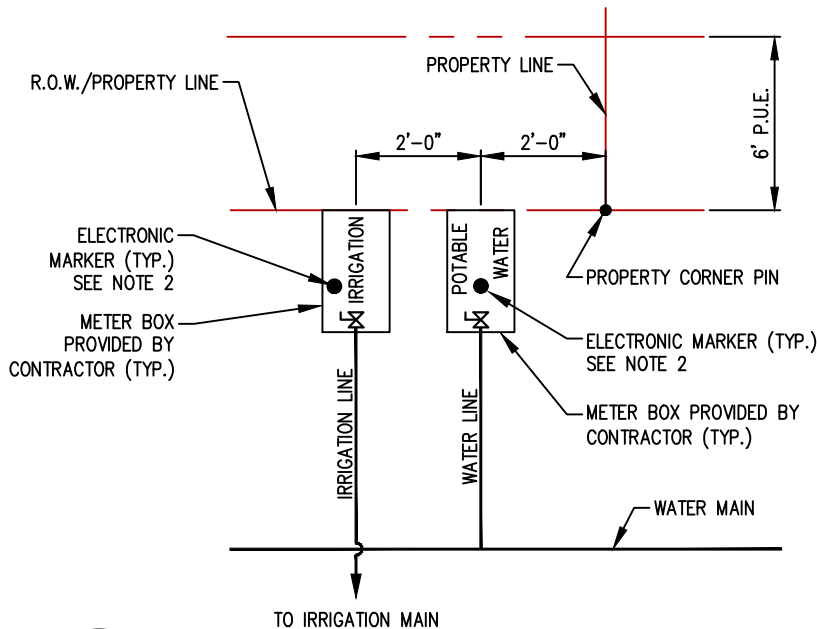
DETAIL NAME	DETAIL NO.
SERVICE LATERAL LAYOUT	UG-106



**UG-107** SINGLE SERVICE WITH HYDRANT LAYOUT IN R.O.W.  
NOT TO SCALE

**NOTES:**

1. IF A POWER POLE IS LOCATED AT A PROPERTY CORNER , PROVIDE 2' CLEARANCE BETWEEN THE SERVICE AND THE POWER POLE.
2. PROVIDE ELECTRONIC MARKERS FOR ALL POTABLE AND IRRIGATION WATER METER BOX LOCATIONS PER SPECIFICATIONS AND APPLICABLE SERVICE CONNECTION DETAILS.
3. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.



**UG-107** SINGLE SERVICE WITHOUT HYDRANT LAYOUT IN R.O.W.  
NOT TO SCALE

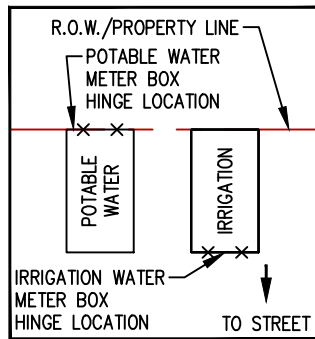
REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



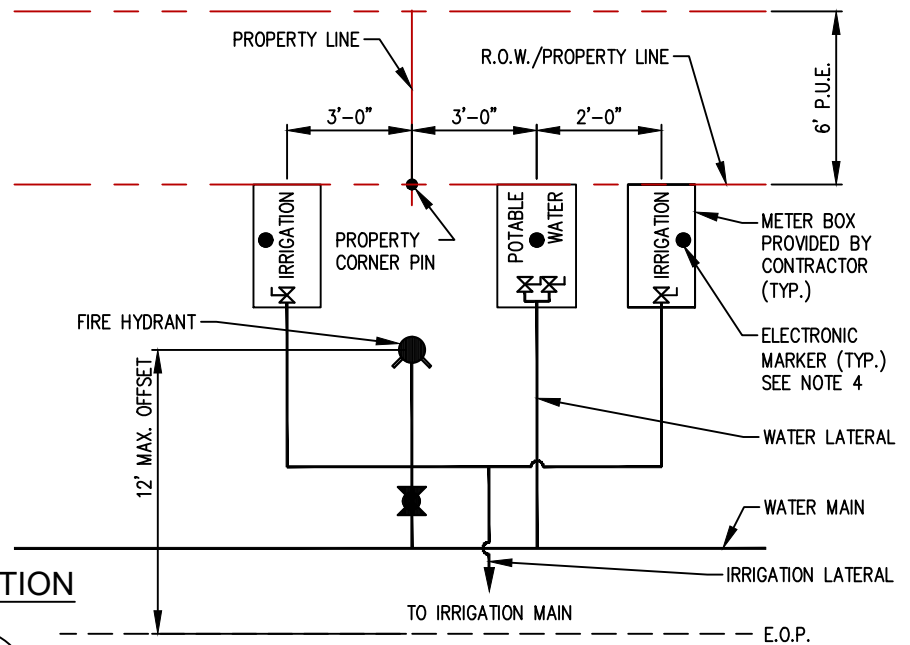
**CITY OF CAPE CORAL**  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME
<b>SINGLE SERVICE WITH HYDRANT</b> <b>SINGLE SERVICE WITHOUT HYDRANT</b> <b>(IN RIGHT-OF-WAY)</b>

DETAIL NO.
<b>UG-107</b>



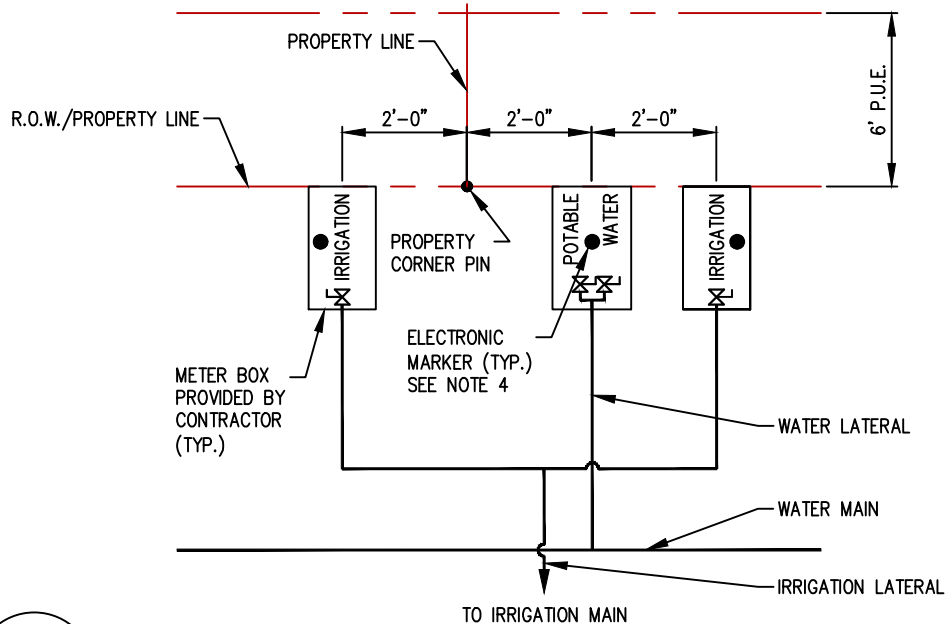
**UG-109 METER BOX HINGE LOCATION**  
NOT TO SCALE



**UG-109 DOUBLE SERVICE WITH HYDRANT LAYOUT IN R.O.W.**  
NOT TO SCALE

**NOTES:**

1. FOR LOCATIONS WHERE BOTH PROPERTIES ARE UNDEVELOPED THE DOUBLE WATER SERVICE CAN BE PROVIDED ON EITHER SIDE OF THE PROPERTY LINE, AT CONTRACTOR'S OPTION.
2. IF A POWER POLE IS LOCATED ADJACENT TO A PROPERTY CORNER WITH A DOUBLE POTABLE WATER SERVICE, LOCATE THE DOUBLE POTABLE WATER SERVICE ON THE SIDE OF THE PROPERTY LINE OPPOSITE OF THE POWER POLE, PROVIDE 2' CLEARANCE BETWEEN SERVICE AND POWER POLE.
3. IF DOUBLE POTABLE WATER SERVICES SUPPLY DEVELOPED AND UNDEVELOPED PROPERTIES, POTABLE WATER METER BOX SHALL BE LOCATED ON DEVELOPED SIDE OF PROPERTY LINE.
4. PROVIDE ELECTRONIC MARKERS FOR ALL POTABLE AND IRRIGATION WATER METER BOX LOCATIONS PER SPECIFICATIONS AND APPLICABLE SERVICE CONNECTION DETAILS.
5. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.



**UG-109 DOUBLE SERVICE WITHOUT HYDRANT LAYOUT IN R.O.W.**  
NOT TO SCALE

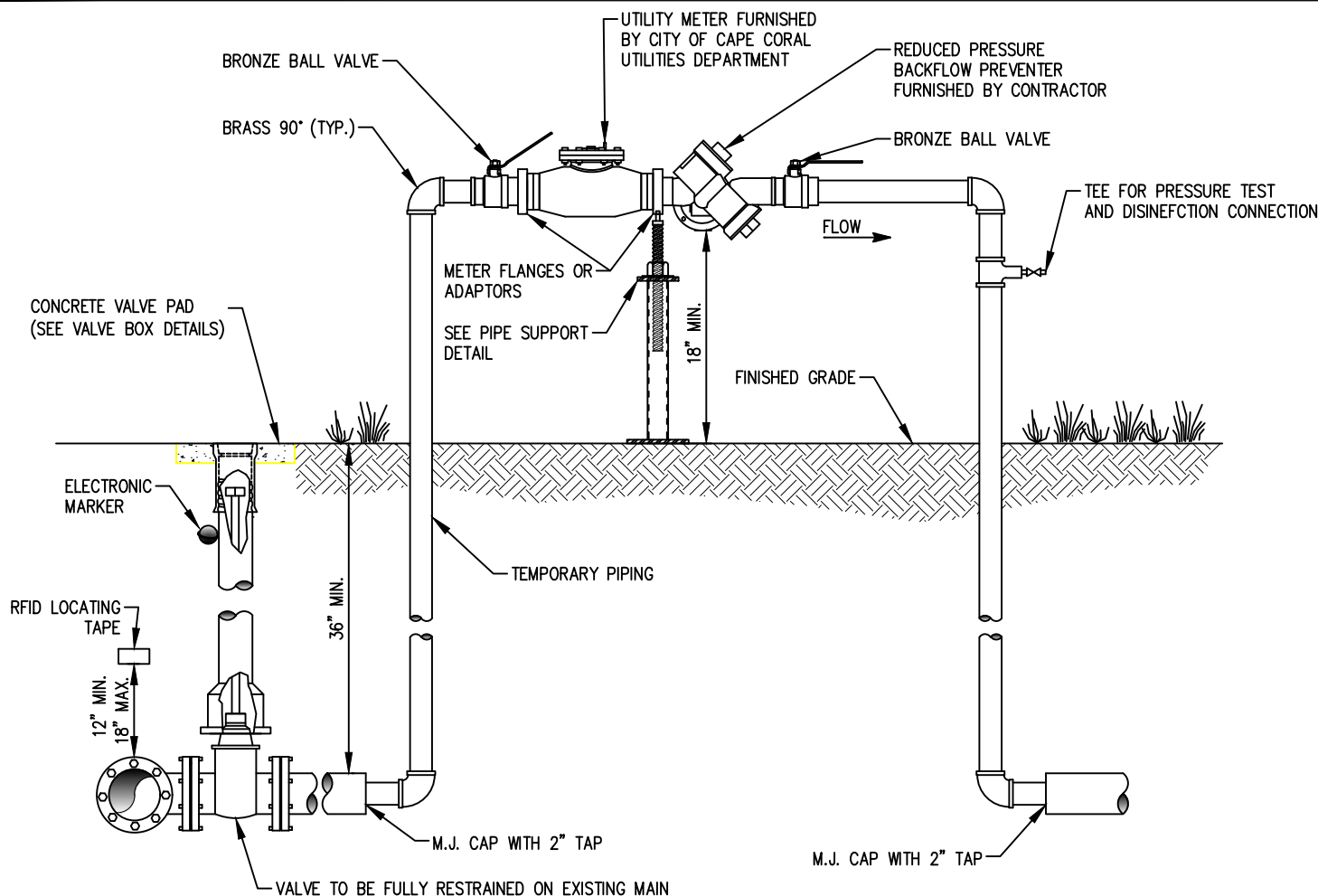
REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



**CITY OF CAPE CORAL**  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME
<b>DOUBLE SERVICE WITH HYDRANT</b> <b>DOUBLE SERVICE WITHOUT HYDRANT</b> <b>(IN RIGHT-OF-WAY)</b>

DETAIL NO.
<b>UG-109</b>



**NOTES:**

1. TEMPORARY JUMPER SHALL BE ADEQUATELY SIZED TO PROVIDE MIN. 2 FPS FLUSHING VELOCITY. FOR LARGER ASSEMBLIES, CONTACT CITY OF CAPE CORAL UTILITIES DEPARTMENT.
2. A TEMPORARY JUMPER CONNECTION IS REQUIRED AT ALL CONNECTIONS BETWEEN EXISTING ACTIVE POTABLE WATER MAINS AND PROPOSED NEW POTABLE WATER MAIN IMPROVEMENTS.
3. THE DETAIL SHOWN IS TO BE USED FOR FILLING ANY NEW POTABLE WATER MAIN OF ANY SIZE FROM EXISTING ACTIVE POTABLE WATER MAINS AND FOR FLUSHING OF NEW POTABLE MAINS UP TO 12" DIAMETER AND FOR PULLING BACTERIOLOGICAL SAMPLES FROM ANY NEW WATER MAIN. THE JUMPER CONNECTION SHALL BE MAINTAINED UNTIL AFTER FILLING, FLUSHING, PRESSURE AND BACTERIOLOGICAL TESTING AND DISINFECTION OF THE NEW MAIN HAS BEEN SUCCESSFULLY COMPLETED AND CLEARANCE FOR USE FROM THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) OR THEIR DESIGNATED REPRESENTATIVE (LCHD) AND OTHER PERTINENT AGENCIES HAS BEEN RECEIVED. ALL INSTALLATION AND MAINTENANCE OF THE TEMPORARY JUMPER CONNECTION AND ASSOCIATED BACKFLOW PREVENTION DEVICE, FITTING VALVES, ETC., SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AS REQUIRED, PIPE AND ALL FITTINGS USED FOR CONNECTING THE NEW PIPE TO THE EXISTING PIPE SHALL BE DISINFECTED IN ACCORDANCE WITH SPECIFICATION 02666.
4. THE CONTRACTOR SHALL PROVIDE CERTIFICATION DEMONSTRATING THAT THE REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY HAS BEEN TESTED AND IS IN GOOD WORKING ORDER AT THE TIME OF INSTALLATION. METER TO BE SUPPLIED BY CITY, ALL OTHER EQUIPMENT SHALL BE SUPPLIED BY CONTRACTOR (CERTAIN SIZES MAY BE AVAILABLE FROM THE CITY UPON REQUEST).
5. UPON RECEIPT OF CLEARANCE FOR USE FROM THE HEALTH DEPT. AND ALL OTHER PERTINENT AGENCIES, THE CONTRACTOR SHALL REMOVE THE TEMPORARY JUMPER CONNECTION AND MAKE FINAL CONNECTION TO EXISTING WATER MAIN AS PER PLANS AND SPECIFICATIONS.
6. ALL INSTALLATION AND MAINTENANCE OF THE TEMPORARY JUMPER CONNECTION AND ASSOCIATED BACKFLOW PREVENTION DEVICE, FITTINGS VALVES, ETC., SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ADEQUATE THRUST BLOCKING AND/OR RESTRAINTS SHALL BE PROVIDED.
7. SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.

UG-209

**2" TEMPORARY JUMPER**

NOT TO SCALE

REVISION DATE
<b>07-14-2022</b>
ADOPTION DATE
<b>08-17-2022</b>



**CITY OF CAPE CORAL**  
**UTILITIES DEPARTMENT**  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

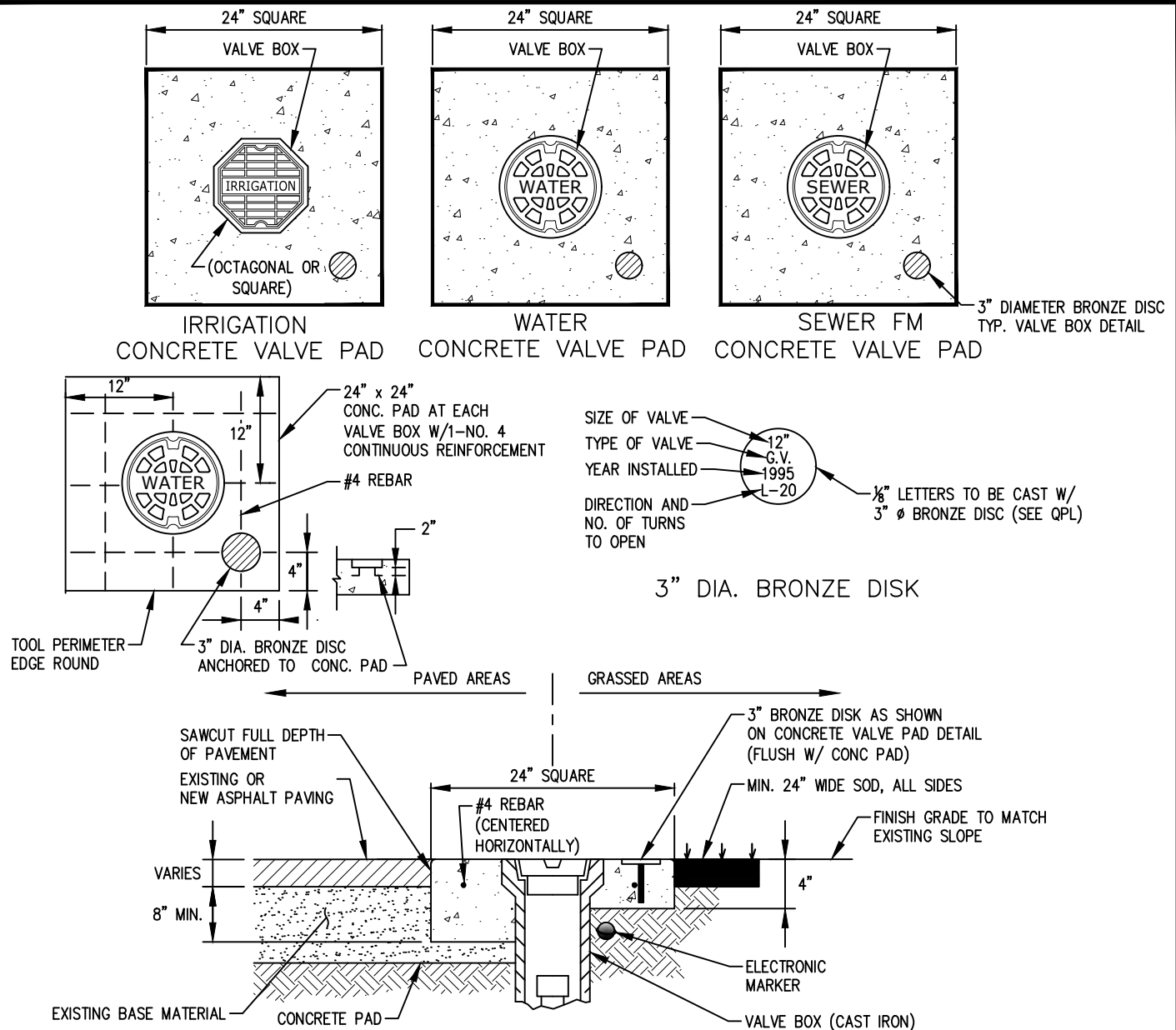
DETAIL NAME

**2" TEMPORARY JUMPER**

DETAIL NO.

**UG-209**





**NOTES:**

1. CAUTION SHOULD BE TAKEN NOT TO ALLOW ANY MATERIAL TO FALL INTO THE VALVE BOX CYLINDER. CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING ANY AND ALL MATERIAL RESULTING FROM THEIR VALVE BOX INSTALLATION AND/OR ADJUSTMENT OPERATION.
2. ELECTRONIC MARKERS SHALL BE REQUIRED AT ALL VALVES 2" OR LARGER.
3. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.
4. EDGE OF VALVE PAD TO BE INSTALLED PARALLEL WITH CENTERLINE OF ROADWAY.
5. VALVE PAD SHALL NOT STRADDLE PAVEMENT EDGE. PROVIDE A MINIMUM OF 6 INCHES OF ASPHALT PAVEMENT BETWEEN CONCRETE PAD AND EDGE OF PAVEMENT.
6. FOR DEPTHS GREATER THAN 4' FROM FINISH GRADE TO VALVE NUT PROVIDE EXTENSION WITH COLLAR AS REQUIRED AND BOLT TO VALVE NUT.
7. INSTALL TO ADA SLOPE COMPLIANCE IF LOCATED WITHIN SIDEWALK.
8. ANY DAMAGE TO THE EXISTING ASPHALT SURFACE SHALL BE REPAIRED AS DEFINED IN THE ENGINEERING DESIGN STANDARDS.

UG-210
**VALVE BOX (PAVED AREAS/GRASSED AREAS)**  
 NOT TO SCALE

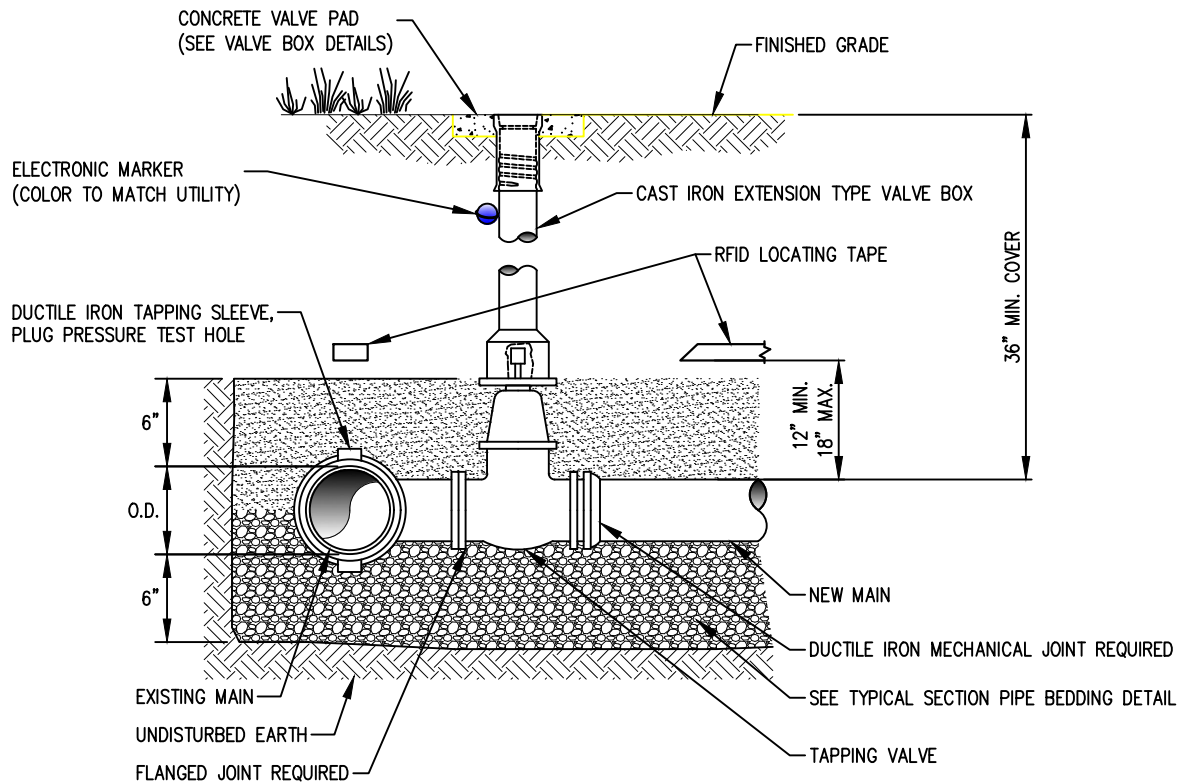
REVISION DATE  
**07-14-2022**  
 ADOPTION DATE  
**08-17-2022**



**CITY OF CAPE CORAL**  
 UTILITIES DEPARTMENT  
 P.O. BOX 150027  
 CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME  
**VALVE BOX**  
**(PAVED AREAS/GRASSED AREAS)**

DETAIL NO.  
**UG-210**



**NOTES:**

1. CAUTION SHOULD BE TAKEN NOT TO ALLOW ANY MATERIAL TO FALL INTO THE VALVE BOX CYLINDER. CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING ANY AND ALL MATERIAL RESULTING FROM THEIR VALVE BOX INSTALLATION AND/OR ADJUSTMENT OPERATION.
2. ELECTRONIC MARKERS SHALL BE REQUIRED AT ALL VALVES 2" OR LARGER.
3. NO REVERSE TAPS, UNLESS APPROVED BY THE CITY.
4. NO TAPS CLOSER THAN 18" FROM OTHER TAPS, BELLS, OR MJ FITTINGS.
5. NO SIZE ON SIZE TAPS.
6. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.
7. INSTALL RFID LOCATING TAPE PER MANUFACTURER'S INSTRUCTIONS.

UG-211
**MECHANICAL JOINT TAPPING SLEEVE AND VALVE**  
 NOT TO SCALE

REVISION DATE
<b>07-14-2022</b>
ADOPTION DATE
<b>08-17-2022</b>

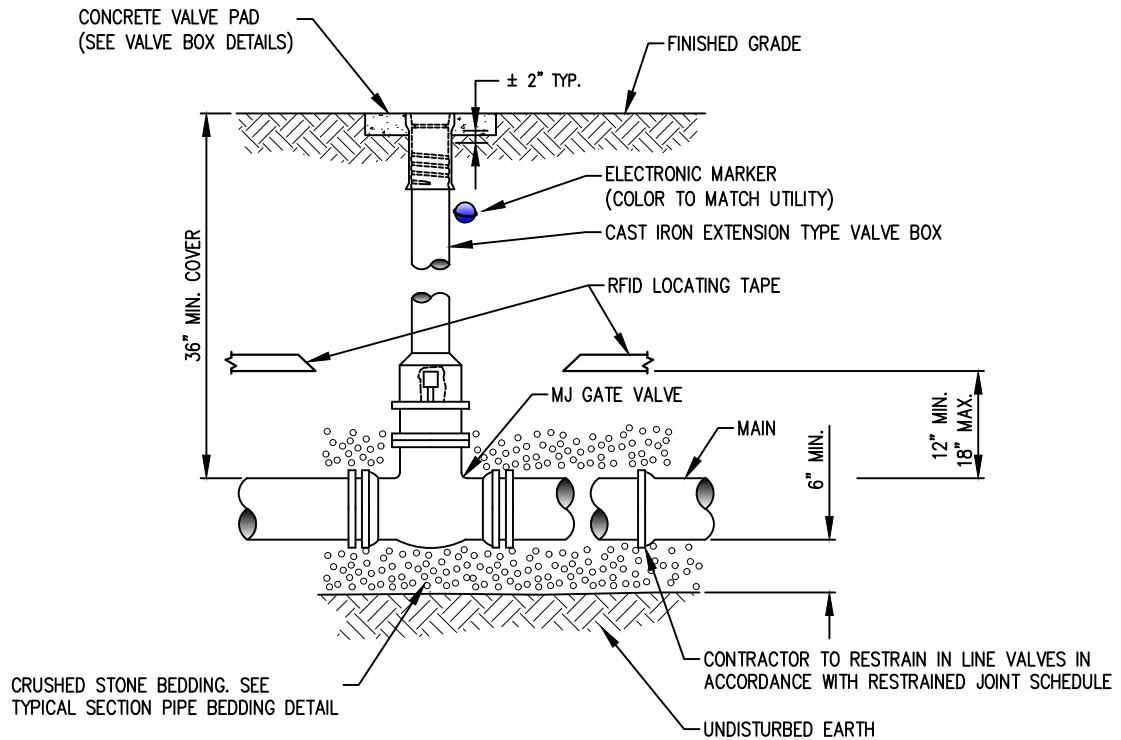


**CITY OF CAPE CORAL**  
 UTILITIES DEPARTMENT  
 P.O. BOX 150027  
 CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME  
**MECHANICAL JOINT TAPPING  
 SLEEVE AND VALVE**

DETAIL NO.  
**UG-211**





**NOTES:**

1. FOR DEPTHS GREATER THAN 4 FEET FROM FINISH GRADE TO VALVE NUT, PROVIDE EXTENSION WITH COLLAR AS REQUIRED AND BOLT TO VALVE NUT.
2. ELECTRONIC MARKERS SHALL BE REQUIRED AT ALL VALVES 2" OR LARGER.
3. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.
4. INSTALL RFID LOCATING TAPE PER MANUFACTURER'S INSTRUCTIONS.

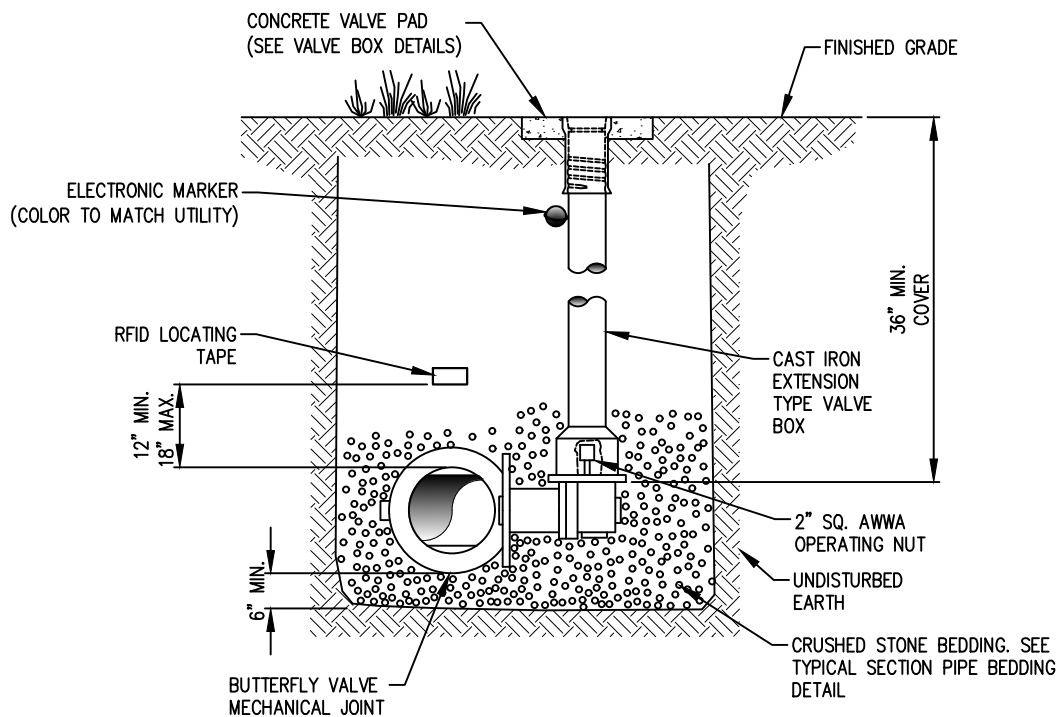


REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



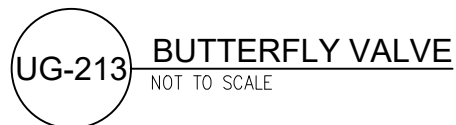
**CITY OF CAPE CORAL**  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME	DETAIL NO.
GATE VALVE	UG-212



**NOTES:**

1. FOR DEPTHS GREATER THAN 4' FROM FINISH GRADE TO VALVE NUT, PROVIDE EXTENSION WITH COLLAR AS REQUIRED AND BOLT TO VALVE NUT.
2. ELECTRONIC MARKERS SHALL BE REQUIRED AT ALL VALVES 2" OR LARGER.
3. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.
4. INSTALL RFID LOCATING TAPE PER MANUFACTURER'S INSTRUCTIONS.



REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022

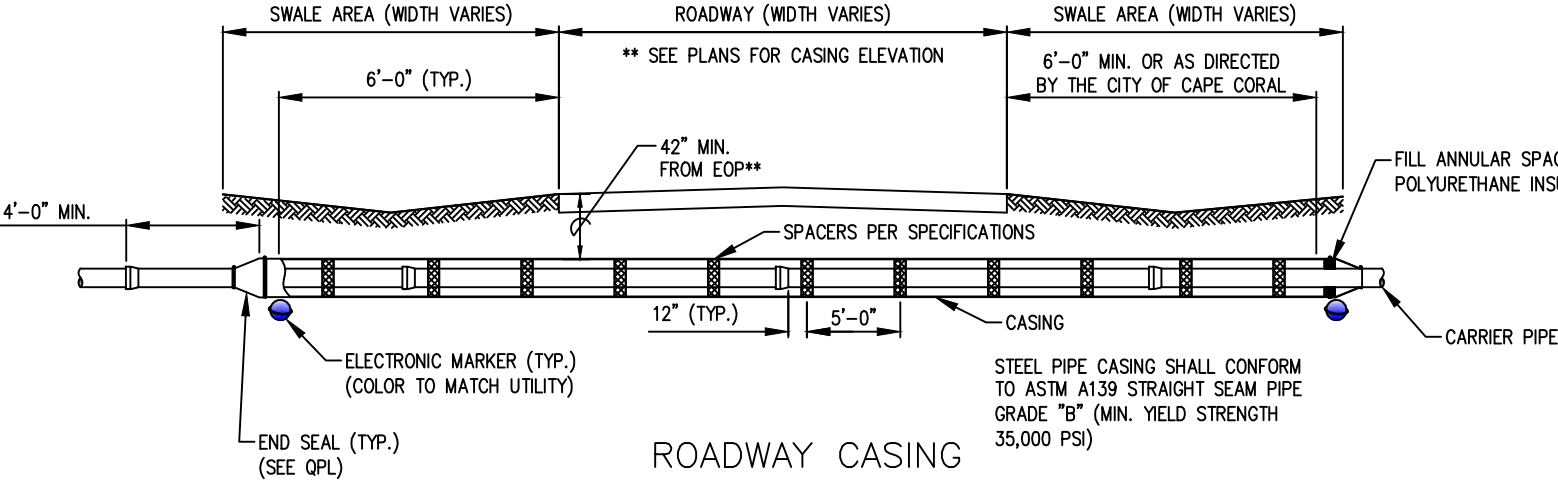


**CITY OF CAPE CORAL**  
**UTILITIES DEPARTMENT**  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME	DETAIL NO.
BUTTERFLY VALVE	UG-213

STEEL CASING PIPE SCHEDULE			
CARRIER PIPE NOMINAL DIAMETER	STEEL CASING PIPE NOMINAL DIAMETER	ROADWAY CASING WALL THICKNESS	DRIVEWAY CASING WALL THICKNESS
4"	14"	0.250"	0.188"
6"	16"	0.281"	0.219"
8"	18"	0.312"	0.250"
10"	22"	0.344"	0.281"
12"	24"	0.375"	0.312"
16"	30"	0.469"	0.406"
20"	36"	0.531"	0.469"
24"	42"	0.625"	0.562"
30"	48"	0.688"	0.625"

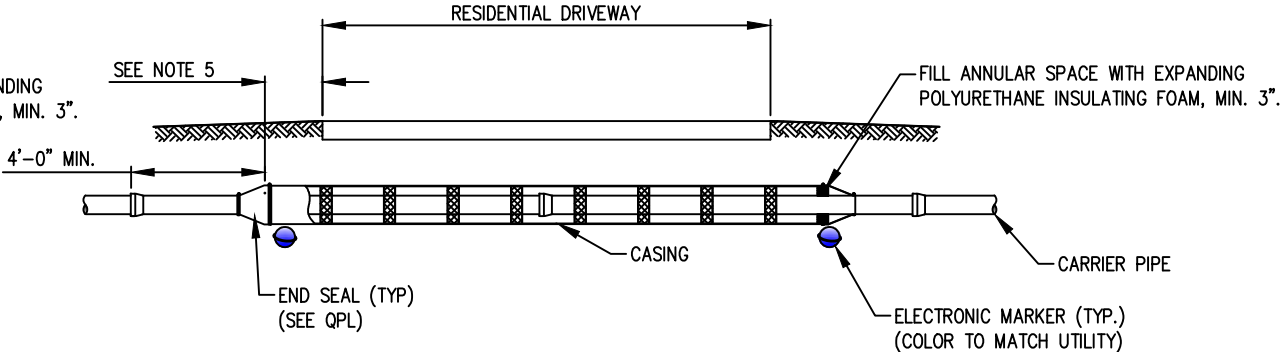
NOTE:  
ALL STEEL CASING JOINTS SHALL BE WELDED PER AWS STANDARDS



- NOTES:
1. SPACERS REQUIRED FOR ALL JACK AND BORE INSTALLATIONS.
  2. CARRIER PIPE SHALL BE RESTRAINED PER SPECIFICATIONS.
  3. CASING SHALL BE SIZED PER THE STEEL CASING PIPE SCHEDULE SHOWN ABOVE.
  4. EXTEND CASING 6 FEET MINIMUM BEYOND EDGE OF PAVEMENT AND/OR BACK OF CURB FOR LEE COUNTY DOT MAINTAINED ROW AND 8 FEET FOR STATE ROADWAYS.
  5. ELECTRONIC MARKERS SHALL BE PLACED AT THE ENDS OF THE CASING PIPE, ALL CHANGES OF DIRECTION, START AND END OF VERTICAL DEFLECTIONS, AND SERVICES AT THE CORPORATION STOP OR SEWER SERVICE WYE. MARKERS SHALL BE LOCATED AT A MAXIMUM DEPTH OF 4 FEET. THE MARKERS SHALL NOT BE PLACED IN CONTACT WITH DIP FITTINGS.

POTABLE WATER ----- COLOR BLUE  
SANITARY SEWER ----- COLOR GREEN  
SANITARY SEWER FORCE MAIN ----- COLOR GREEN  
IRRIGATION/REUSE WATER ----- COLOR LAVENDER

6. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.




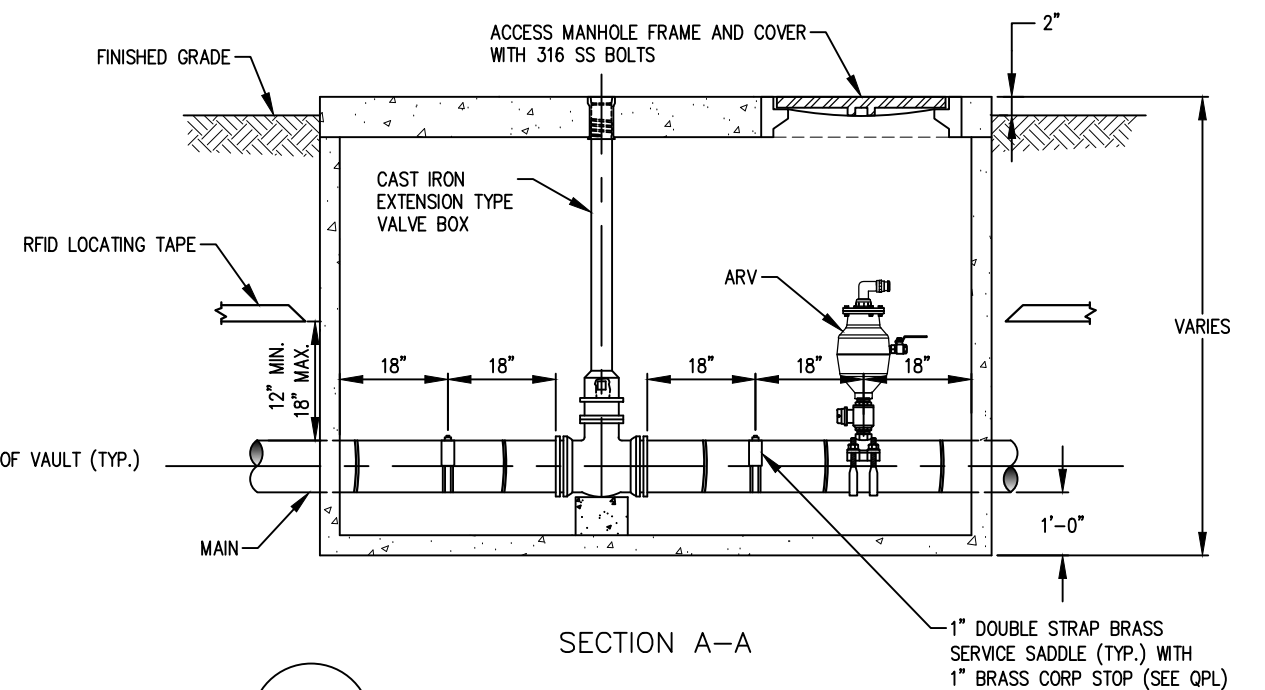
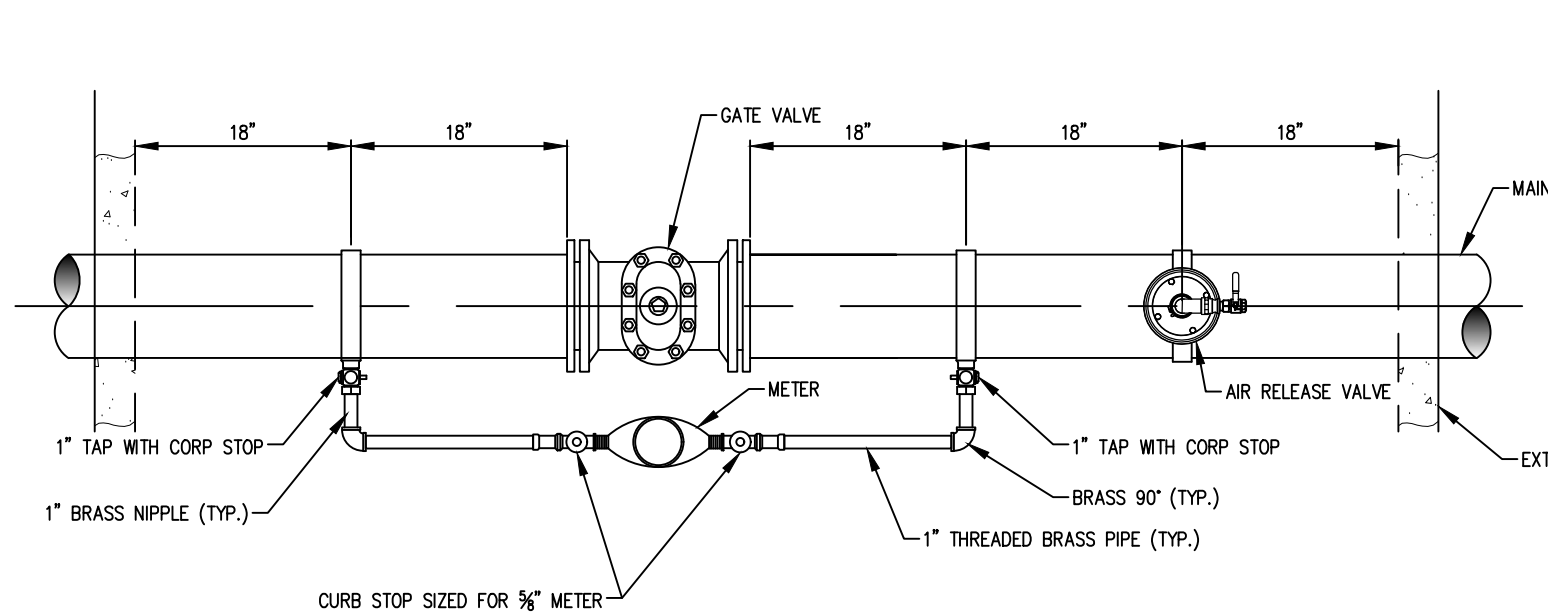
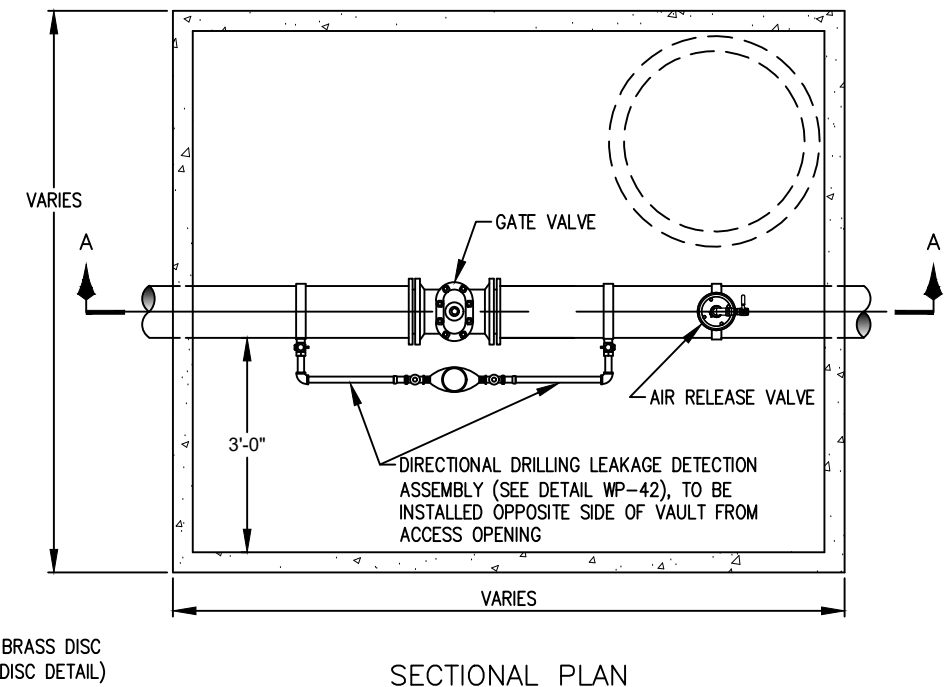
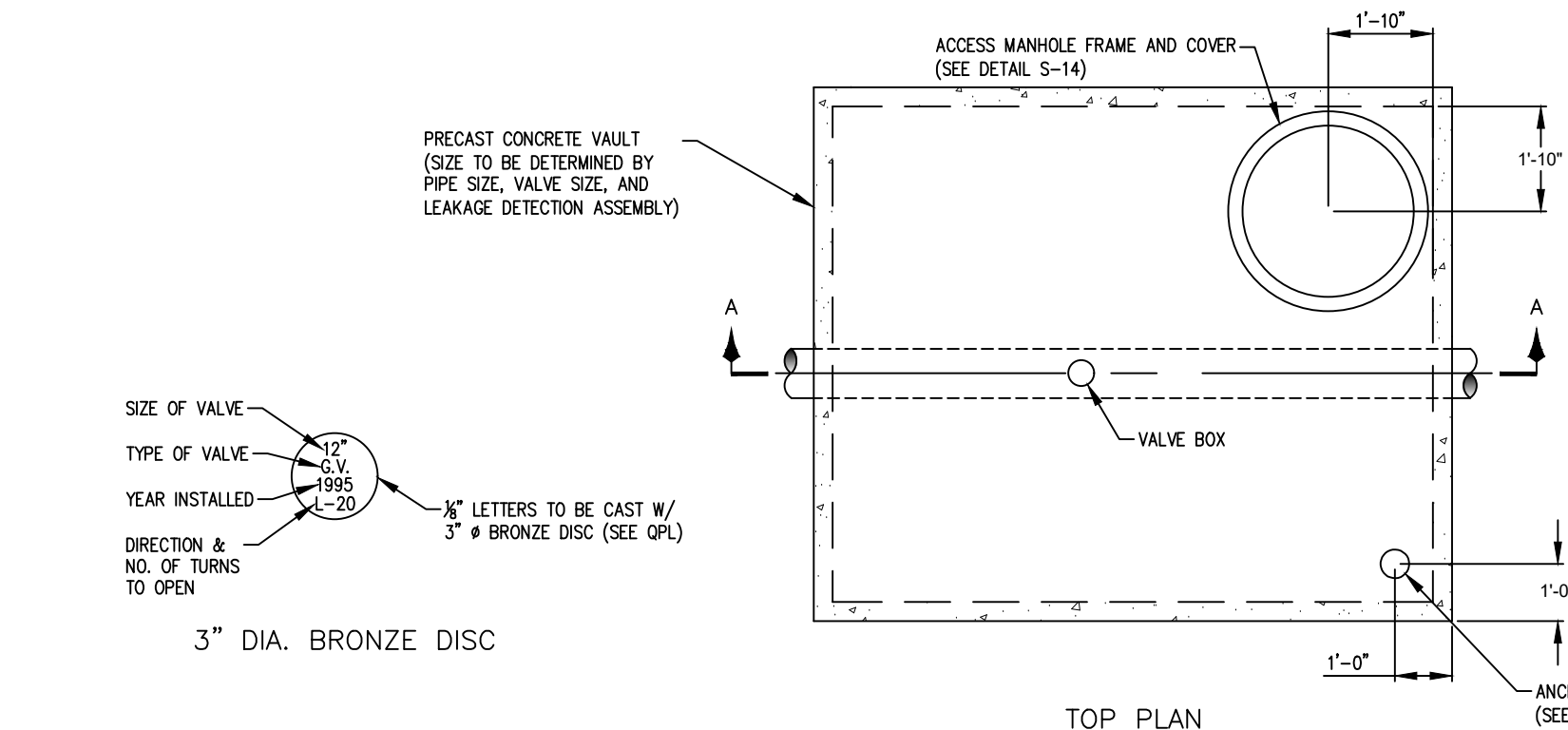
- NOTES:
1. SPACERS REQUIRED FOR ALL CASING INSTALLATIONS.
  2. CARRIER PIPE SHALL BE RESTRAINED PER SPECIFICATIONS.
  3. CASING PIPE MAY BE STEEL (PER TABLE) OR HDPE SDR11.
  4. CASING PIPE SHALL BE SIZED PER THE STEEL CASING PIPE SCHEDULE SHOWN.
  5. EXTEND CASING 3 FEET MINIMUM BEYOND EDGE OF DRIVEWAY PAVEMENT AND ASSOCIATED BORDERS.
  6. ELECTRONIC MARKERS SHALL BE PLACED AT THE ENDS OF THE CASING PIPE, ALL CHANGES OF DIRECTION, START AND END OF VERTICAL DEFLECTIONS, AND SERVICES AT THE CORPORATION STOP OR SEWER SERVICE WYE. MARKERS SHALL BE LOCATED AT A MAXIMUM DEPTH OF 4 FEET. THE MARKERS SHALL NOT BE PLACED IN CONTACT WITH DIP FITTINGS.

POTABLE WATER ----- COLOR BLUE  
SANITARY SEWER ----- COLOR GREEN  
SANITARY SEWER FORCE MAIN ----- COLOR GREEN  
IRRIGATION/REUSE WATER ----- COLOR LAVENDER

7. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.
8. THE COST OF CASING INSTALLATION SHALL BE INCLUDED IN THE COST OF DRIVEWAY RESTORATION.

UG-220 PIPE CASING  
NOT TO SCALE

REVISION DATE	 <b>CITY OF CAPE CORAL</b> UTILITIES DEPARTMENT P.O. BOX 150027 CAPE CORAL, FLORIDA 33915-0027	DETAIL NAME	DETAIL NO.
07-14-2022		PIPE CASING	UG-220
ADOPTION DATE			
08-17-2022			



**UG-223** DIRECTIONAL DRILLING LEAKAGE DETECTION ASSEMBLY  
NOT TO SCALE

**UG-223** SUBAQUEOUS MAIN VALVE VAULT  
NOT TO SCALE

**NOTES:**

1. THIS DETAIL IS ONLY APPLICABLE FOR VALVES THAT HAVE BEEN SPECIFICALLY CALLED TO BE INSTALLED IN A VAULT.
2. VAULT SHALL BE A FLAT TOP TYPE J, SCHEDULE D STRUCTURE WITH A TYPE 7 MANHOLE TOP, IN ACCORDANCE WITH FLORIDA D.O.T. STANDARD INDICES NO. 200 AND 201.
3. ALL VALVES SHALL BE OF THE RESILIENT SEATED TYPE IN ACCORDANCE WITH AWWA C 509.
4. LETTERING FOR THE VALVE COVER BOX SHALL READ "WATER".
5. INSTALL RFID LOCATING TAPE PER MANUFACTURER'S INSTRUCTION.

REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



CITY OF CAPE CORAL  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME  
**DIRECTIONAL DRILLING LEAKAGE  
DETECTION ASSEMBLY  
SUBAQUEOUS MAIN VALVE VAULT**

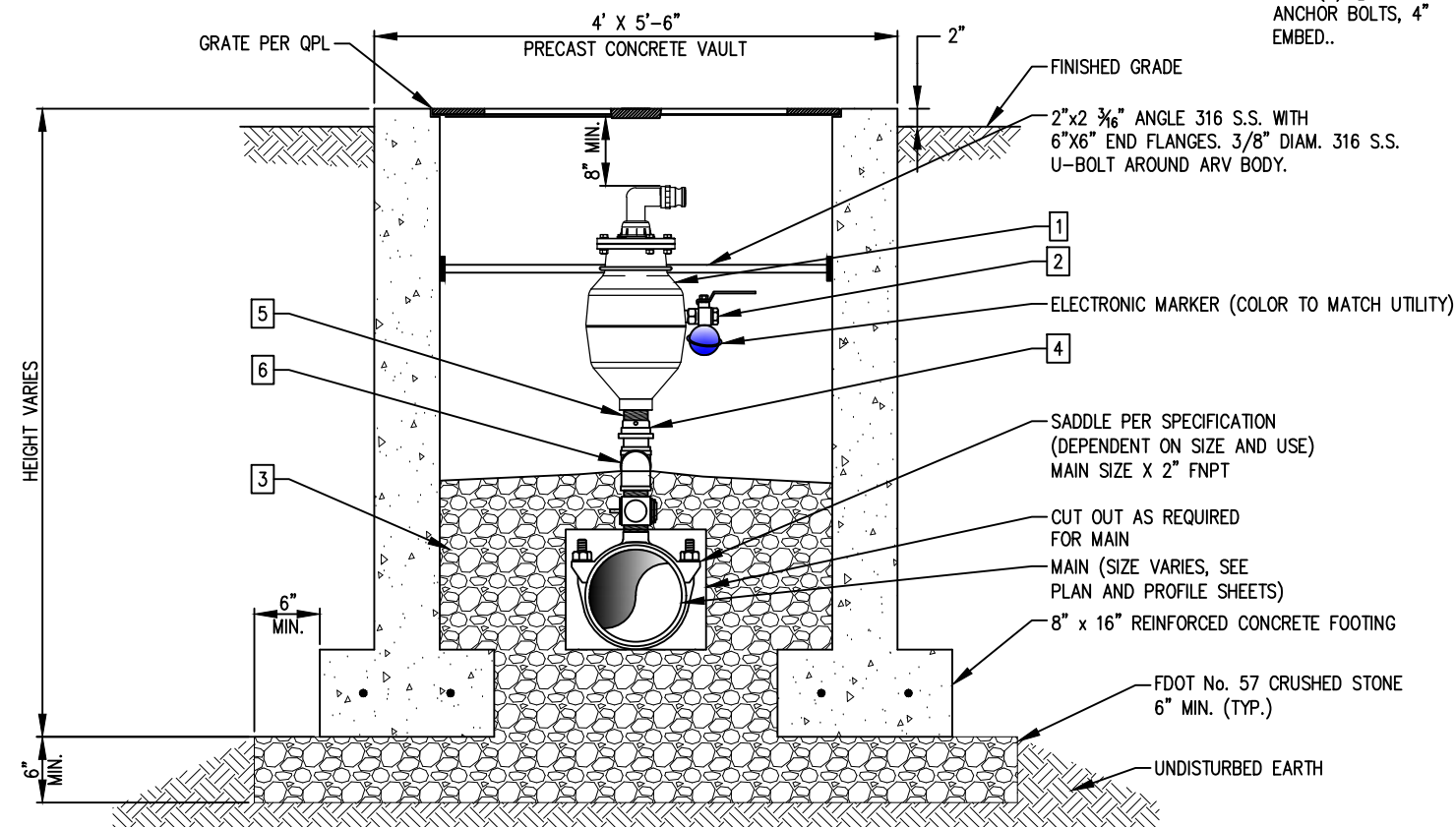
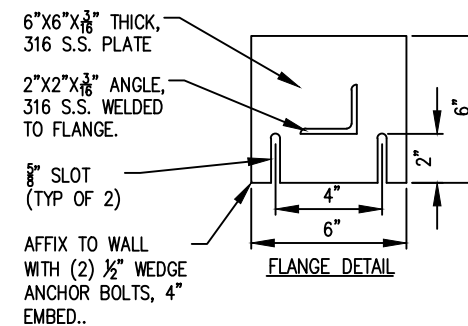
DETAIL NO.  
**UG-223**



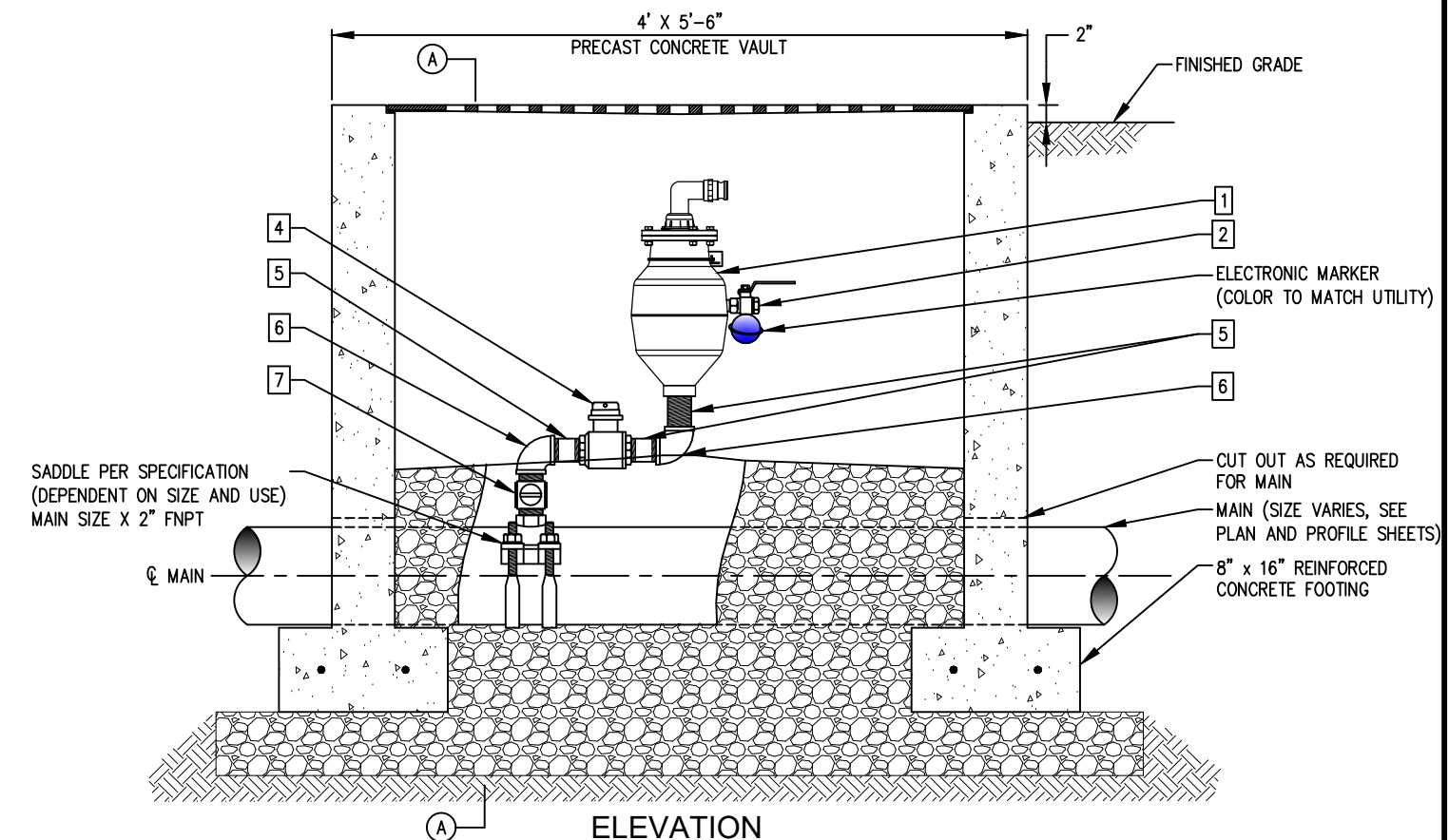
NOTES:

1. ALL PIPING, VALVES, AND APPURTENANCES TO BE BRASS OR 316 S.S EXCEPT WHERE SPECIFIED OTHERWISE.
2. SEE QUALIFIED PRODUCTS LIST FOR SPECIFIC TYPE.

SADDLE PER SPECIFICATION  
(DEPENDENT ON SIZE AND USE)  
MAIN SIZE X 2" FNPT



SECTION A-A



ELEVATION

(UG-224)

## AIR RELEASE VALVE - STANDARD INSTALLATION

NOT TO SCALE

REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



**CITY OF CAPE CORAL**  
**UTILITIES DEPARTMENT**  
**P.O. BOX 150027**  
**CAPE CORAL, FLORIDA 33915-0027**

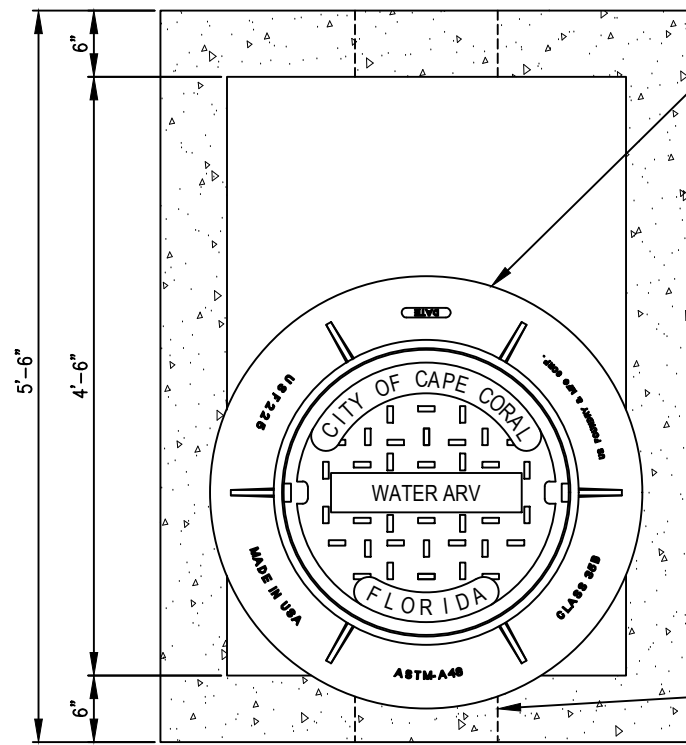
DETAIL NAME

### AIR RELEASE VALVE - STANDARD INSTALLATION

DETAIL NO.

**UG-224**





PLAN VIEW

SEE MANHOLE RING AND COVER -  
STANDARD WATER MAIN DETAIL  
FOR CASTING DIMENSIONS

BILL OF MATERIALS		
ITEM	QTY	DESCRIPTION
1	1	2" AIR & VAC RELEASE VALVE
2	1	3/4" CURB STOP
3	1	DRAINAGE BED, #57 STONE
4	1	2" FEM TO FEM CURB STOP
5	3	2" BRASS NIPPLE
6	2	2" BRASS 90° FITTING
6	1	2" BRASS CORP STOP (M.I.P. ENDS)

NOTES:

- ALL PIPING, VALVES, AND APPURTENANCES TO BE BRASS OR 316 S.S. EXCEPT WHERE SPECIFIED OTHERWISE.
- SEE QUALIFIED PRODUCTS LIST FOR SPECIFIC TYPE.

CUT OUT AS REQUIRED  
FOR MAIN

CONCRETE SIDEWALK  
(THICKNESS MAY VARY, SEE  
PLAN AND PROFILE SHEETS)

APPROVED SUB-GRADE MATERIAL

MORTAR OR BITUMASTIC (TYP.)  
2"x2 3/16" ANGLE 316 S.S. WITH  
6"x6" END FLANGES. 3/8" DIA.  
316 S.S. U-BOLT AROUND ARV BODY.

ELECTRONIC MARKER  
(COLOR TO MATCH UTILITY)

SADDLE PER SPECIFICATION  
(DEPENDENT ON SIZE AND USE)  
MAIN SIZE X 2" FNPT

CUT OUT AS REQUIRED  
FOR MAIN

MAIN (SIZE VARIES, SEE  
PLAN AND PROFILE SHEETS)

8" x 16" REINFORCED CONCRETE FOOTING

FDOT No. 57 CRUSHED STONE  
6" MIN. (TYP.)

UNDISTURBED EARTH

6"x6"x3/16" THICK,  
316 S.S. PLATE

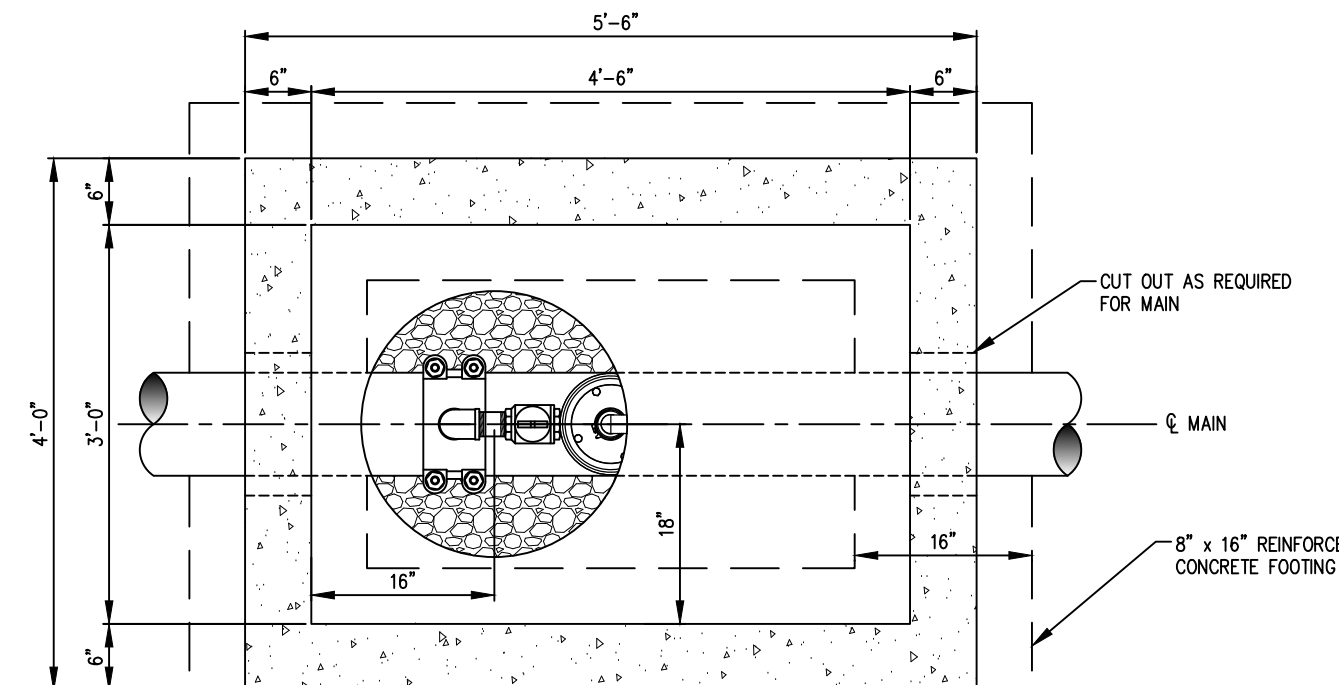
2"x2"x3/16" ANGLE,  
316 S.S. WELDED  
TO FLANGE.

3/8" SLOT  
(TYP OF 2)

AFFIX TO WALL  
WITH (2) 1/2" WEDGE  
ANCHOR BOLTS, 4"  
EMBED..

SEE MANHOLE RING AND COVER  
STANDARD WATER MAIN DETAIL  
FOR CASTING DIMENSIONS

SADDLE PER SPECIFICATION  
(DEPENDENT ON SIZE AND USE)  
MAIN SIZE X 2" FNPT



PLAN VIEW

CUT OUT AS REQUIRED  
FOR MAIN

8" x 16" REINFORCED  
CONCRETE FOOTING

CONCRETE SIDEWALK  
(THICKNESS MAY  
VARY, SEE PLAN AND  
PROFILE SHEETS)

APPROVED SUB-BASE  
MATERIAL

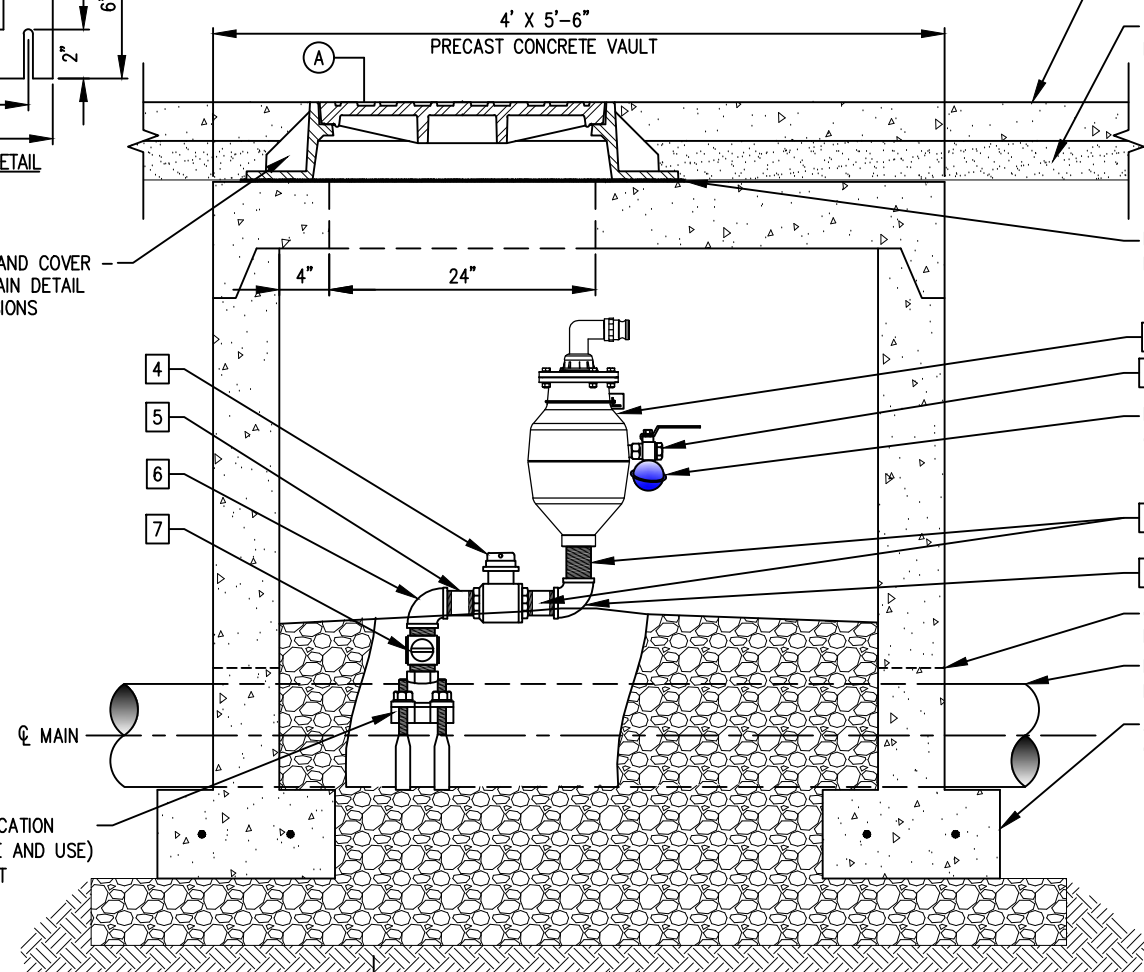
MORTAR OR  
BITUMASTIC (TYP.)

ELECTRONIC MARKER  
(COLOR TO MATCH UTILITY)

CUT OUT AS REQUIRED  
FOR MAIN

MAIN (SIZE VARIES, SEE  
PLAN AND PROFILE SHEETS)

8" x 16" REINFORCED  
CONCRETE FOOTING



ELEVATION

SECTION A-A

UG-225 AIR RELEASE VALVE - STANDARD INSTALLATION W/ MANHOLE RING AND COVER  
NOT TO SCALE

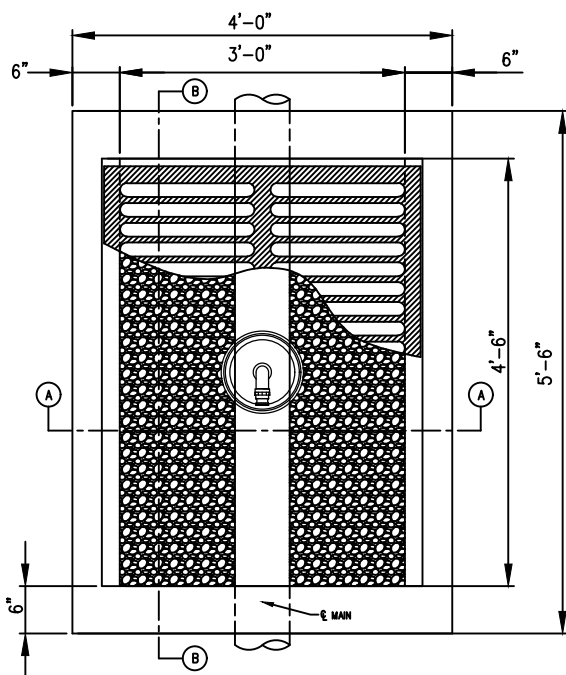
REVISION DATE
07-14-2018
ADOPTION DATE
08-17-2022



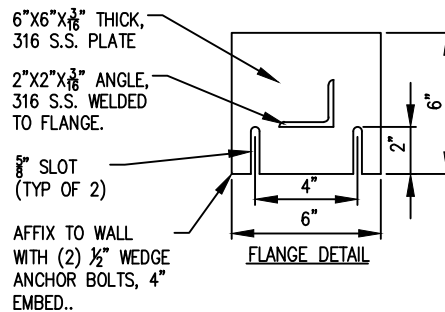
CITY OF CAPE CORAL  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME  
AIR RELEASE VALVE - STANDARD INSTALLATION  
WITH MANHOLE RING AND COVER

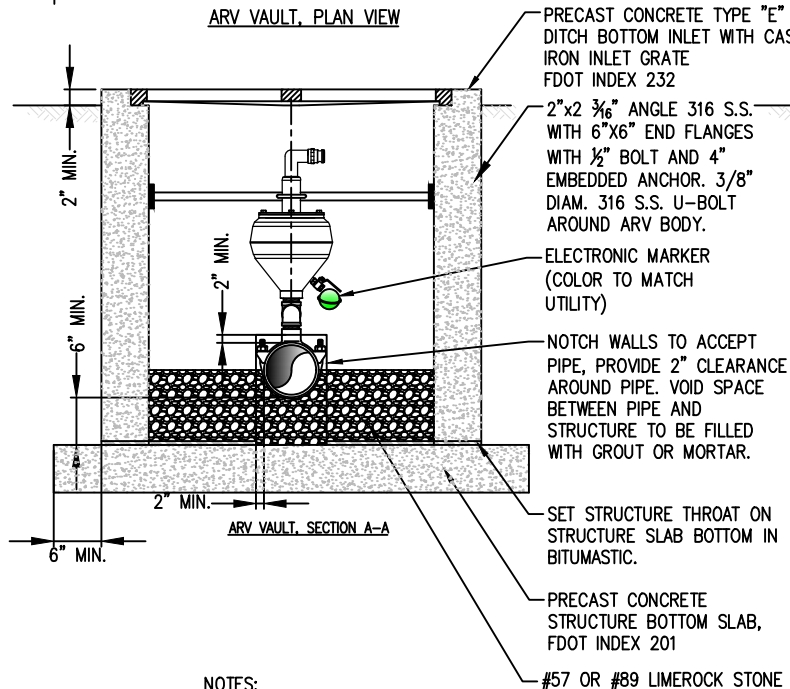
DETAIL NO.  
UG-225



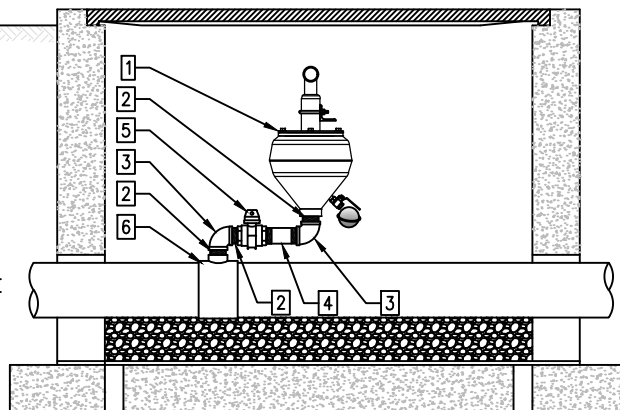
ARV VAULT, PLAN VIEW



BILL OF MATERIALS		
ITEM	QTY	DESCRIPTION
1	1	SHORT BODY A.A.V.V. - H-TEC 989-00
2	3	2"Ø X CLOSE BRASS NIPPLE
3	2	2"Ø 90° BEND, F.I.P. ENDS
4	1	2"Ø X 6" BRASS NIPPLE
5	1	2" CURB STOP F.I.P. INLET/OUTLET
6	1	SADDLE, TPS SERIES "T3"



ARV VAULT, SECTION A-A



ARV VAULT, SECTION B-B

**NOTES:**

1. ALL PIPING, VALVES, AND APPURTENANCES TO BE BRASS OR 316 S.S EXCEPT WHERE SPECIFIED OTHERWISE.
2. THIS DETAIL IS TO BE USED ONLY FOR NON PAVED LOCATIONS WHERE THE REQUIRED 36" COVER OVER THE TOP OF PIPE CANNOT BE ACHIEVED. THIS DETAIL REQUIRES CITY OF CAPE CORAL UTILITIES DEPARTMENT APPROVAL PRIOR TO USE.
3. SEE QUALIFIED PRODUCTS LIST FOR SPECIFIC PRODUCT MFG AND TYPE.

UG-225B

**AIR RELEASE VALVE - ALTERNATE - MIN COVER W/ GRATE**

NOT TO SCALE

REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



**CITY OF CAPE CORAL**  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

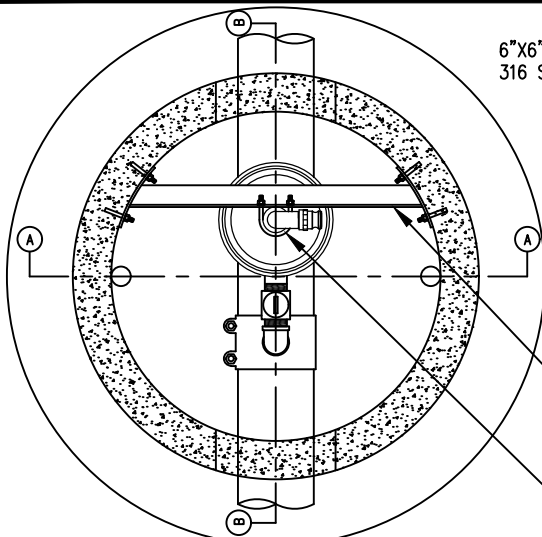
DETAIL NAME
<b>AIR RELEASE VALVE ALTERNATE - MINIMUM COVER VAULT WITH INLET GRATE</b>

DETAIL NO.
<b>UG-225B</b>

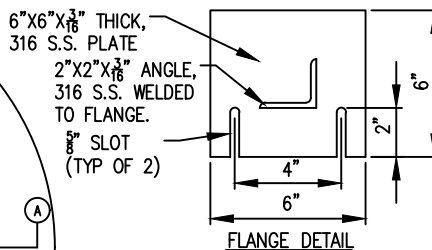






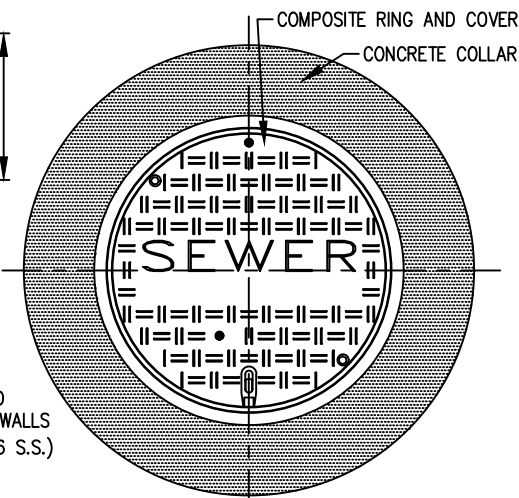


ARV VAULT, PLAN VIEW



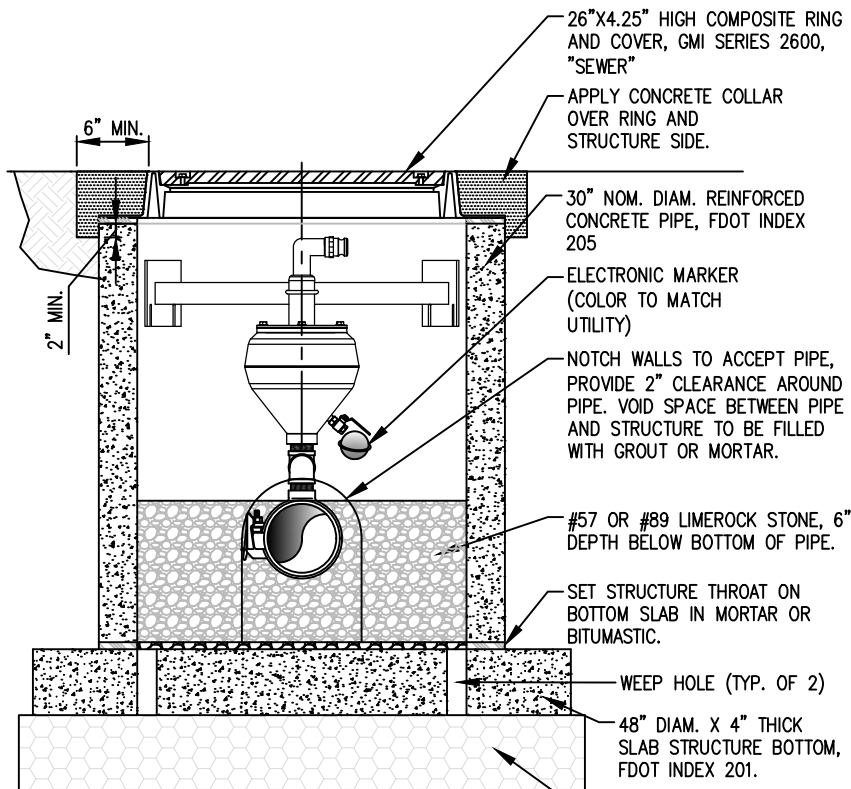
ARV SUPPORT:  
2"x2"x $\frac{3}{16}$ " ANGLE (316 S.S.) WITH WELDED  
FLANGES. FLANGES TO BE MOUNTED TO WALLS  
WITH (4)  $\frac{1}{2}$ "  $\phi$  WEDGE ANCHOR BOLTS (316 S.S.)

$\frac{1}{2}$ "  $\phi$  U-BOLT (316 S.S.)

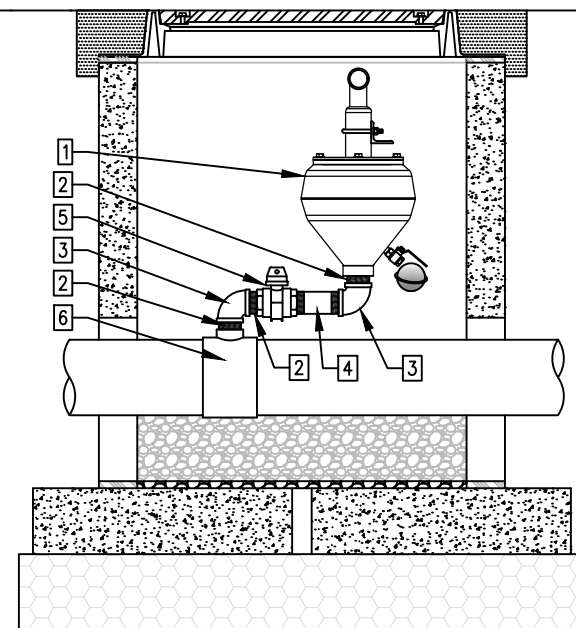


ARV VAULT COVER, PLAN VIEW

BILL OF MATERIALS		
ITEM	QTY	DESCRIPTION
1	1	SHORT BODY A.A.V.V. - H-TEC 989-00
2	3	2" $\phi$ X CLOSE BRASS NIPPLE
3	2	2" $\phi$ 90° BEND, F.I.P. ENDS
4	1	2" $\phi$ X 6" BRASS NIPPLE
5	1	2" CURB STOP F.I.P. INLET/OUTLET
6	1	SADDLE, TPS SERIES "T3"



ARV VAULT, SECTION A-A



ARV VAULT, SECTION B-B

NOTES:

1. ALL PIPING, VALVES, AND APPURTENANCES TO BE BRASS OR 316 S.S EXCEPT WHERE SPECIFIED OTHERWISE.
2. THIS DETAIL IS TO BE USED ONLY FOR NON-PAVED LOCATIONS AWAY FROM TRAFFIC AREAS WHERE THE REQUIRED 36" COVER OVER THE TOP OF PIPE CANNOT BE ACHIEVED.
3. SEE QUALIFIED PRODUCTS LIST FOR SPECIFIC PRODUCT MFR AND TYPE.
4. USE OF THIS DETAIL REQUIRES CITY APPROVAL PRIOR TO CONSTRUCTION.
5. SUPPORT BRACKET FLANGES TO BE SHOP BENT TO MATCH WALL CURVATURE.

UG-228

AIR RELEASE VALVE - ALTERNATE - MIN COVER W/ MANHOLE RING & COVER  
NOT TO SCALE

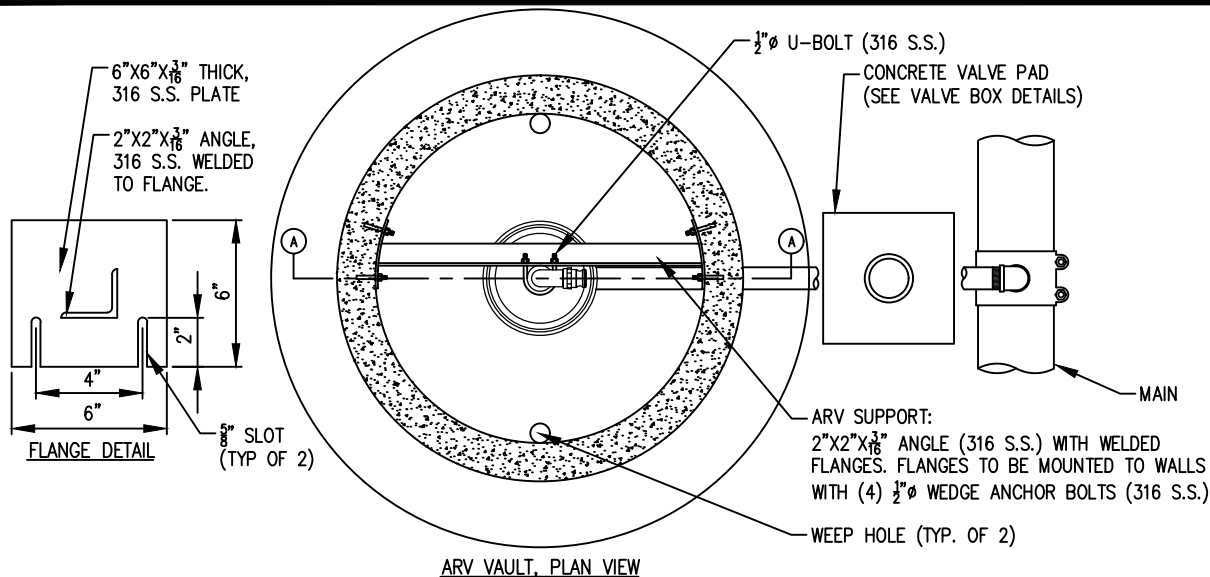
REVISION DATE  
07/14/2022  
ADOPTION DATE  
08-17-2022



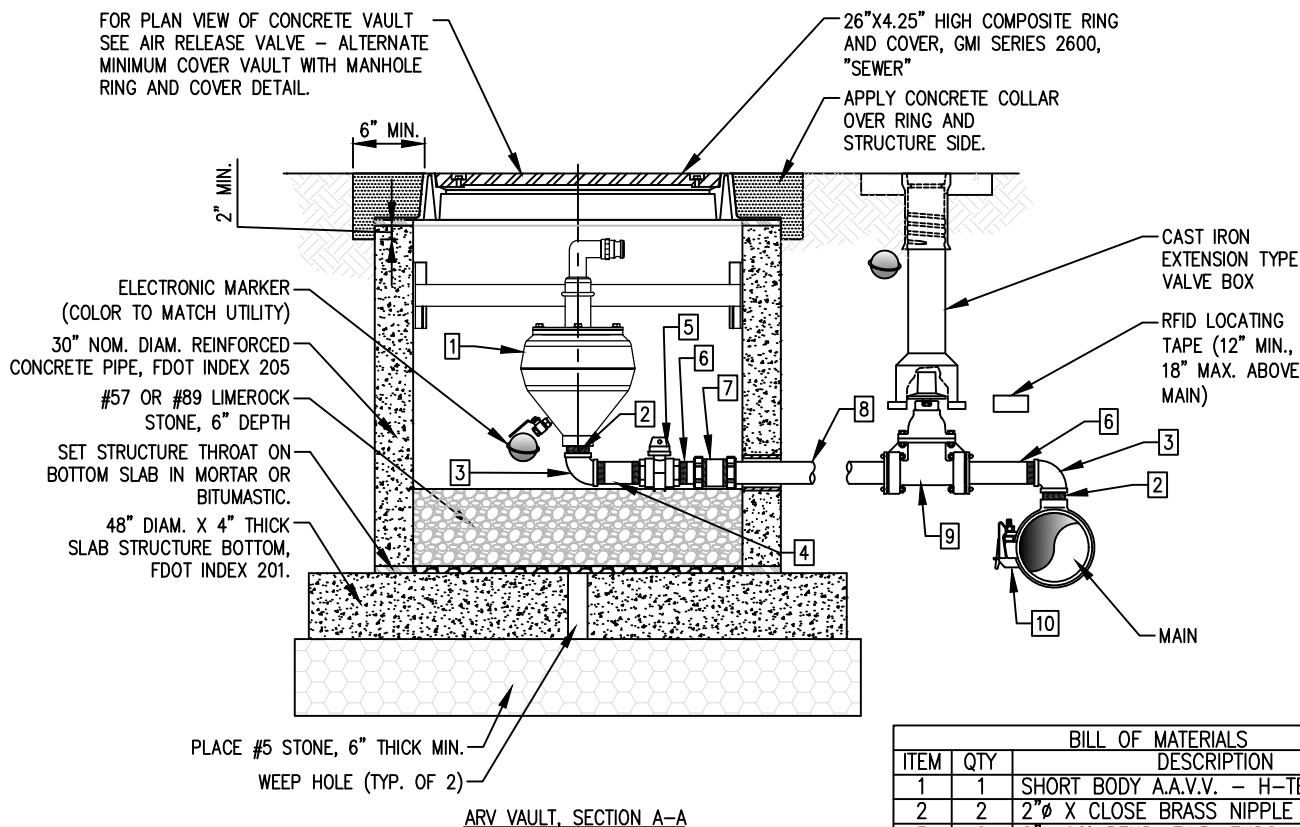
CITY OF CAPE CORAL  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME  
AIR RELEASE VALVE  
ALTERNATE - MINIMUM COVER VAULT  
W/ MANHOLE RING AND COVER

DETAIL NO.  
UG-228



ARV VAULT, PLAN VIEW



ARV VAULT, SECTION A-A

**NOTES:**

1. ALL PIPING, VALVES, AND APPURTENANCES TO BE BRASS OR 316 S.S EXCEPT WHERE SPECIFIED OTHERWISE.
2. THIS DETAIL IS TO BE USED ONLY FOR NON-PAVED LOCATIONS AWAY FROM TRAFFIC AREAS WHERE THE REQUIRED 36" COVER OVER THE TOP OF PIPE CANNOT BE ACHIEVED.
3. SEE QUALIFIED PRODUCTS LIST FOR SPECIFIC PRODUCT MFG AND TYPE.
4. USE OF THIS DETAIL REQUIRES CITY APPROVAL PRIOR TO CONSTRUCTION.
5. SUPPORT BRACKET FLANGES TO BE SHOP BENT TO MATCH WALL CURVATURE.

BILL OF MATERIALS		
ITEM	QTY	DESCRIPTION
1	1	SHORT BODY A.A.V.V. -- H-TEC 989-00
2	2	2" X CLOSE BRASS NIPPLE
3	2	2" 90° BEND, F.I.P. ENDS
4	1	2" X 6" BRASS NIPPLE
5	1	2" CURB STOP F.I.P. INLET/OUTLET
6	2	2" BRASS NIPPLE, ONE END M.I.P.
7	1	2" BRASS IPS COMPRESSION FITTING
8	1	2" IPS PIPE (HDPE)
9	1	2" MJ RESILIENT WEDGE GATE VALVE
10	1	SADDLE, TPS SERIES "T3"



**AIR RELEASE VALVE - ALT. - MIN COVER OFFSET W/ MANHOLE RING & COVER**  
NOT TO SCALE

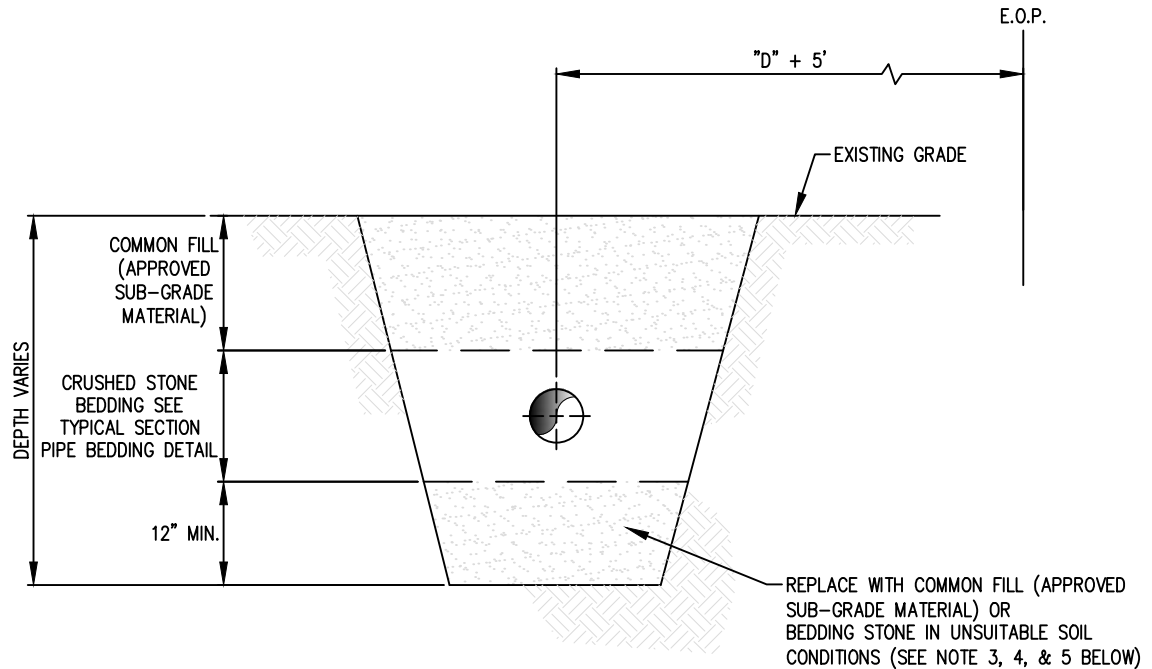
REVISION DATE
07/14/2022
ADOPTION DATE
08-17-2022



**CITY OF CAPE CORAL**  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

**DETAIL NAME**  
**AIR RELEASE VALVE - ALTERNATE**  
**MINIMUM COVER OFFSET VAULT**  
**WITH MANHOLE RING AND COVER**

**DETAIL NO.**  
**UG-228B**



**NOTES:**

1. USE OF THE OVER EXCAVATION DETAIL IS FOR UNSUITABLE SOIL CONDITIONS AS DEFINED IN THE SPECIFICATIONS OR AS AUTHORIZED OR DIRECTED BY THE CITY OF CAPE CORAL'S PROJECT REPRESENTATIVE.
2. USE OF OVER EXCAVATION FOR CONTRACTOR PREFERENCE SHALL BE AT THE CONTRACTOR'S OPTION AND EXPENSE.
3. COMMON FILL (APPROVED SUB-GRADE MATERIAL) SHALL BE COMPACTED TO AT LEAST 95% MAXIMUM DENSITY (AASHTO T-180). WHEN THE CENTERLINE OF THE TRENCH IS WITHIN A DISTANCE OF "D" + 5' FROM THE EDGE OF A PAVED ROAD OR DRIVEWAY, COMMON FILL (APPROVED SUB-GRADE MATERIAL) (LBR 40) MINIMUM SHALL BE USED AND COMPACTED TO AT LEAST 98% MAXIMUM DENSITY (AASHTO T-180).
4. BEDDING MATERIAL SHALL BE FDOT #57 STONE IF IN OR BELOW THE GROUNDWATER TABLE, OR FDOT #4 STONE IF ABOVE THE GROUNDWATER TABLE.
5. BEDDING FOR GRAVITY SEWER SHALL BE #57 STONE.



**TYPICAL SECTION: TRENCH OVER-EXCAVATION**

NOT TO SCALE

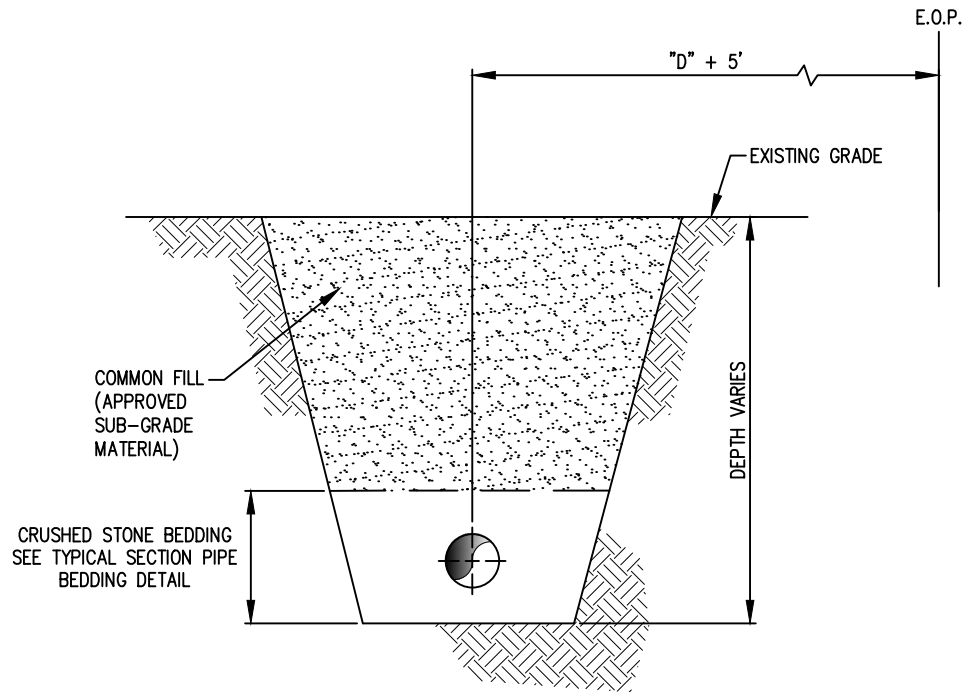
REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



**CITY OF CAPE CORAL**  
**UTILITIES DEPARTMENT**  
 P.O. BOX 150027  
 CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME
<b>TYPICAL SECTION TRENCH OVER-EXCAVATION</b>

DETAIL NO.
<b>UG-230</b>



**NOTE:**

1. COMMON FILL (APPROVED SUB-GRADE MATERIAL) SHALL BE COMPACTED TO AT LEAST 95% MAXIMUM DENSITY (AASHTO T-180). WHEN THE CENTERLINE OF THE TRENCH IS WITHIN A DISTANCE OF "D" + 5' FROM THE EDGE OF A PAVED ROAD OR DRIVEWAY, COMMON FILL (APPROVED SUB-GRADE MATERIAL) (LBR 40) MINIMUM SHALL BE USED AND COMPACTED TO AT LEAST 98% MAXIMUM DENSITY (AASHTO T-180).

**UG-231** **TYPICAL SECTION: BACKFILL - UNPAVED AREAS**  
NOT TO SCALE

REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022

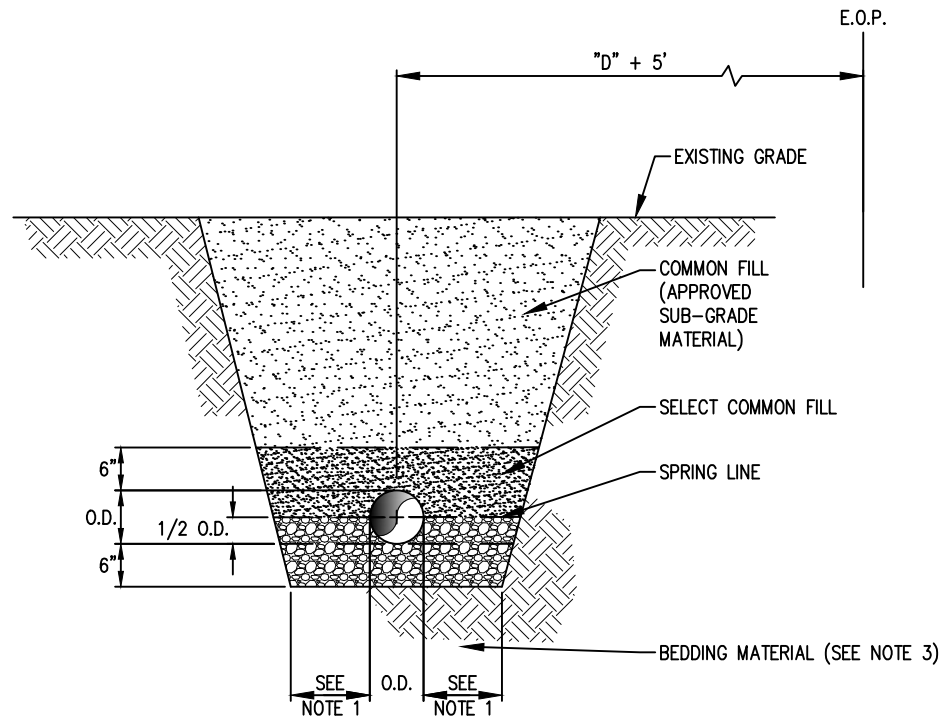


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P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

**DETAIL NAME**  
**TYPICAL SECTION**  
**BACKFILL - UNPAVED AREAS**

**DETAIL NO.**  
**UG-231**





**NOTES:**

1. DIMENSION VARIES WITH PIPE DIAMETER:  
 10" FOR NOMINAL PIPE DIAMETER OF 24" OR LESS.  
 12" FOR NOMINAL PIPE DIAMETER OF MORE THAN 24" AND LESS THAN 42".  
 24" FOR NOMINAL PIPE DIAMETER OF 42" OR MORE.
2. COMMON FILL (APPROVED SUB-GRADE MATERIAL) SHALL BE COMPACTED TO AT LEAST 95% MAXIMUM DENSITY (AASHTO T-180). WHEN THE CENTERLINE OF THE TRENCH IS WITHIN A DISTANCE OF "D" + 5' FROM THE EDGE OF A PAVED ROAD OR DRIVEWAY, COMMON FILL (APPROVED SUB-GRADE MATERIAL) (LBR 40) MINIMUM SHALL BE USED AND COMPACTED TO AT LEAST 98% MAXIMUM DENSITY (AASHTO T-180).
3. BEDDING MATERIAL SHALL BE FDOT #57 STONE IF IN OR BELOW THE GROUNDWATER TABLE, OR FDOT #4 STONE IF ABOVE THE GROUNDWATER TABLE.
4. BEDDING FOR GRAVITY SEWER SHALL BE #57 STONE.
5. PROVIDE A "STONE BREAK" AT EVERY 100' TO PREVENT GROUNDWATER CONVEYANCE. SAND BREAK SHALL BE A MINIMUM 24" WIDE.

**UG-232** **TYPICAL SECTION: PIPE BEDDING DETAIL**  
 NOT TO SCALE

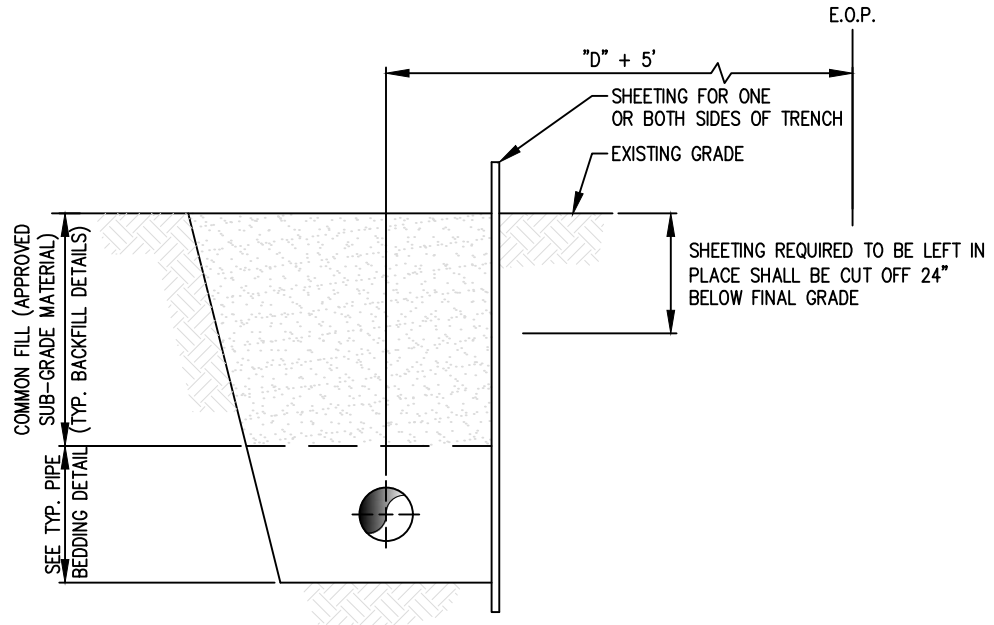
REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



**CITY OF CAPE CORAL**  
 UTILITIES DEPARTMENT  
 P.O. BOX 150027  
 CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME	DETAIL NO.
<b>TYPICAL SECTION PIPE BEDDING DETAIL</b>	<b>UG-232</b>





**NOTES:**

1. SHORING MAY BE UTILIZED AT CONTRACTOR'S DISCRETION & EXPENSE AS REQUIRED.
2. COMMON FILL (APPROVED SUB-GRADE MATERIAL) SHALL BE COMPACTED TO AT LEAST 95% MAXIMUM DENSITY (AASHTO T-180). WHEN THE CENTERLINE OF THE TRENCH IS WITHIN A DISTANCE OF "D" + 5' FROM THE EDGE OF A PAVED ROAD OR DRIVEWAY, COMMON FILL (APPROVED SUB-GRADE MATERIAL) (LBR 40) MINIMUM SHALL BE USED AND COMPACTED TO AT LEAST 98% MAXIMUM DENSITY (AASHTO T-180).

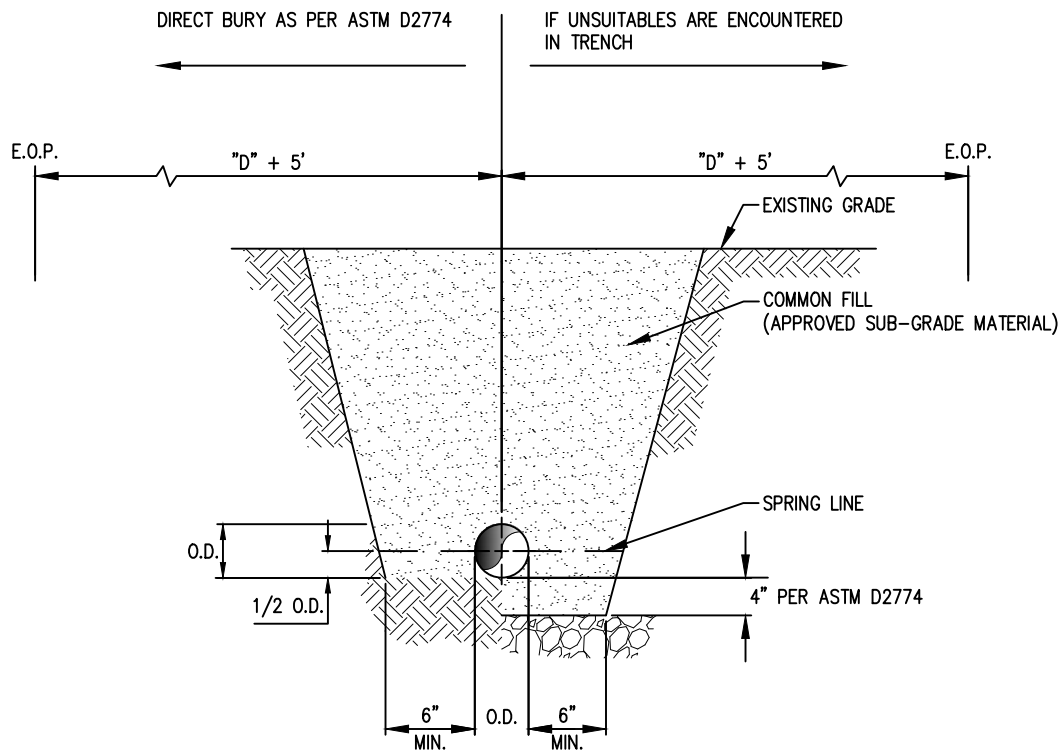
**UG-234** **TYPICAL SECTION: TRENCH SHORING**  
NOT TO SCALE

REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



**CITY OF CAPE CORAL**  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME	DETAIL NO.
<b>TYPICAL SECTION TRENCH SHORING</b>	<b>UG-234</b>



**NOTES:**

1. COMMON FILL (APPROVED SUB-GRADE MATERIAL) SHALL BE COMPACTED TO AT LEAST 95% MAXIMUM DENSITY (AASHTO T-180). WHEN THE CENTERLINE OF THE TRENCH IS WITHIN A DISTANCE OF "D" + 5' FROM THE EDGE OF A PAVED ROAD OR DRIVEWAY, COMMON FILL (APPROVED SUB-GRADE MATERIAL) (LBR 40) MINIMUM SHALL BE USED AND COMPACTED TO AT LEAST 98% MAXIMUM DENSITY (AASHTO T-180).
2. 24 INCHES MINIMUM COVER UNDER PAVEMENT/PAVED SURFACES.
3. MINIMUM 2 INCH SLEEVE FOR 1 INCH PE 4710 SDR 9 POLYETHYLENE WATER/IRRIGATION SERVICE TUBING OR A MINIMUM 3 INCH SLEEVE FOR 2 INCH PE 4710 SDR 9 POLYETHYLENE WATER/IRRIGATION SERVICE TUBING UNDER PAVEMENT/PAVED SURFACES. EXTEND SLEEVES A MINIMUM OF 1 FOOT PAST EDGE OF PAVEMENT.
4. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.

UG-235

**TYPICAL SECTION: SDR 9 POLYETHYLENE POTABLE WATER SERVICE BEDDING**  
NOT TO SCALE

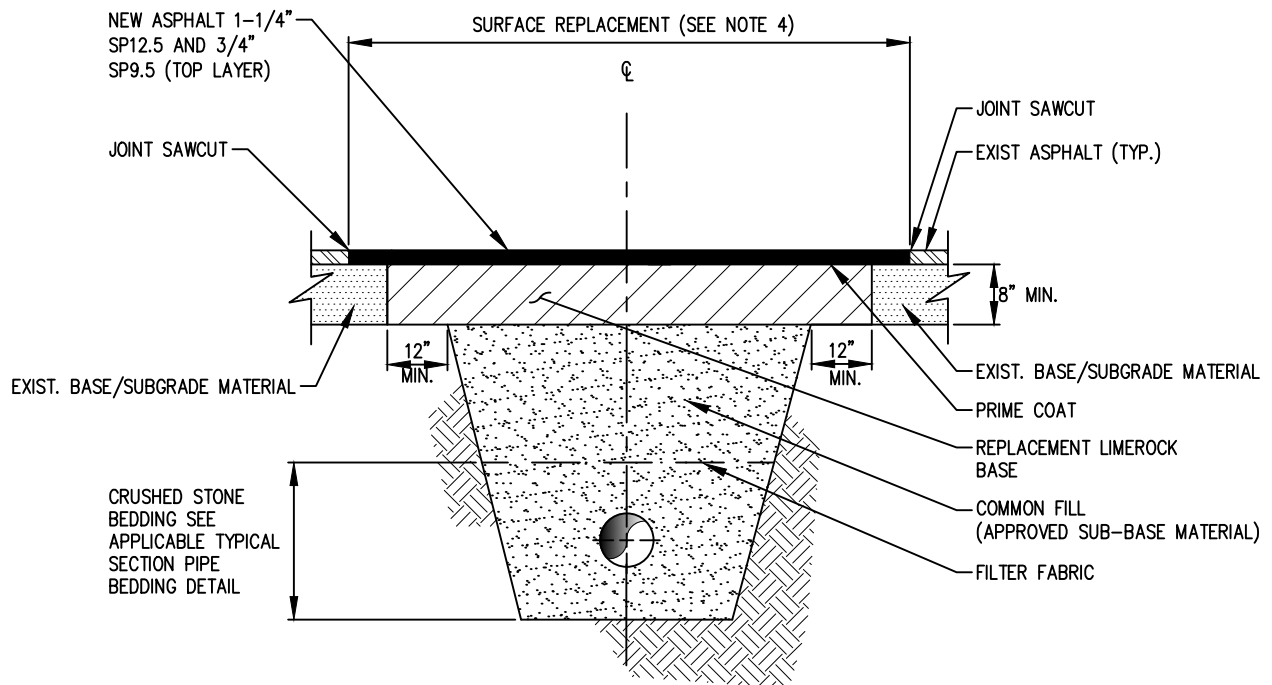
REVISION DATE  
**07-14-2022**  
ADOPTION DATE  
**08-17-2022**



**CITY OF CAPE CORAL**  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME  
**TYPICAL SECTION  
SDR 9 POLYETHYLENE  
POTABLE WATER SERVICE BEDDING**

DETAIL NO.  
**UG-235**



**NOTES:**

1. BASE AND SUBGRADE MATERIAL SHALL BE REPLACED IN KIND.
2. LIMEROCK MATERIAL (MIN. LBR 100) FOR BASE SHALL BE COMPACTED TO AT LEAST 98% MAXIMUM DENSITY (AASHTO T-180).
3. SUBGRADE MATERIAL (MIN. LBR 40) SHALL BE COMPACTED TO AT LEAST 98% MAXIMUM DENSITY (AASHTO T-180 IN MINIMUM 6" LIFTS).
4. TYPICALLY, ASPHALT REPLACEMENT SHALL ENCOMPASS ONE FULL LANE WIDTH AND EXTEND A 20' MINIMUM LONGITUDINALLY ON LOCAL ROADS AND 100' MINIMUM ON COLLECTOR ROADS. SEE PUBLIC WORKS FOR EACH CASE.
5. APPLY TACK COAT TO ALL VERTICAL FACES OF ASPHALT.
6. FLOWABLE FILL (PER FDOT SPECIFICATION SECTION 121) MAY BE USED IN LIEU OF FILTER FABRIC AND APPROVED SUBGRADE.

**UG-236** TYPICAL SECTION: BACKFILL WITH PAVEMENT PATCHING  
NOT TO SCALE

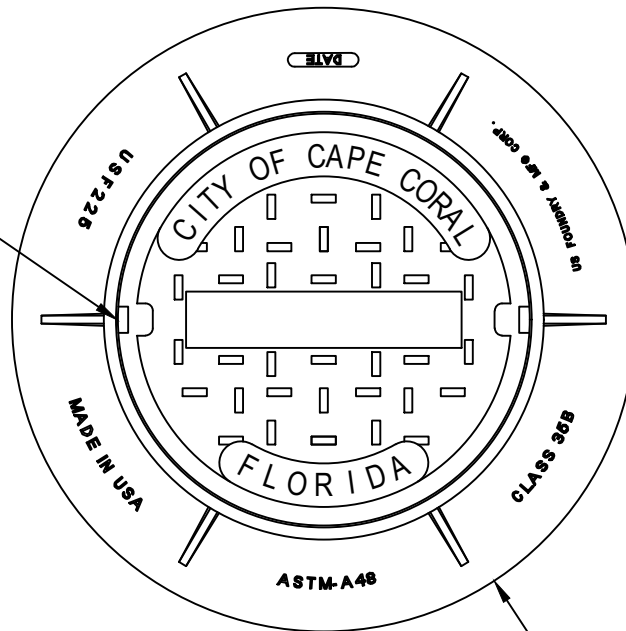
REVISION DATE
07-14-2022
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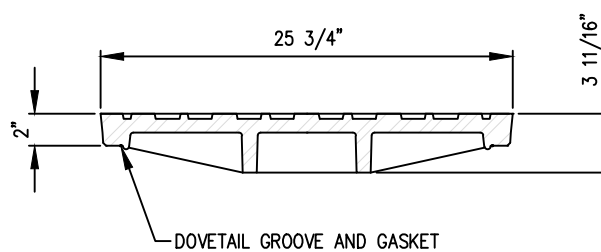
DETAIL NAME	DETAIL NO.
TYPICAL SECTION BACKFILL WITH PAVEMENT PATCHING	UG-236

(2) - NON-PENETRATING PICK HOLES

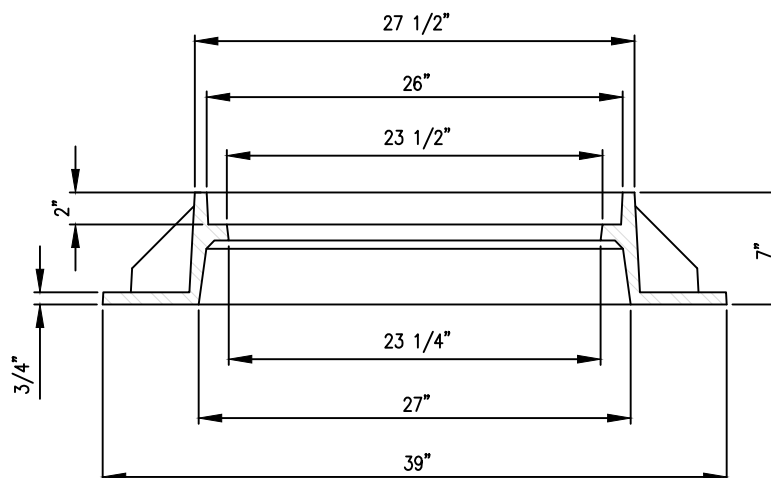


PLAN

STANDARD CAST IRON RING AND COVER LID  
TYPE (O-RING). (TRAFFIC GRADE H-20)  
IN ACCORDANCE WITH SPECIFICATIONS SECTION 03400,  
AS APPROVED BY THE CITY OF CAPE CORAL AND QPL.



DOVETAIL GROOVE AND GASKET



SECTION



UG-301

# MANHOLE RING AND COVER

NOT TO SCALE

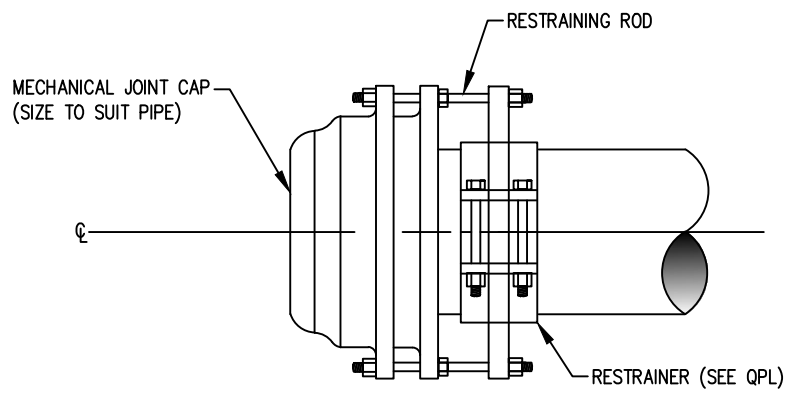
REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



CITY OF CAPE CORAL  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME  
MANHOLE RING AND COVER

DETAIL NO.  
UG-301



UG-304

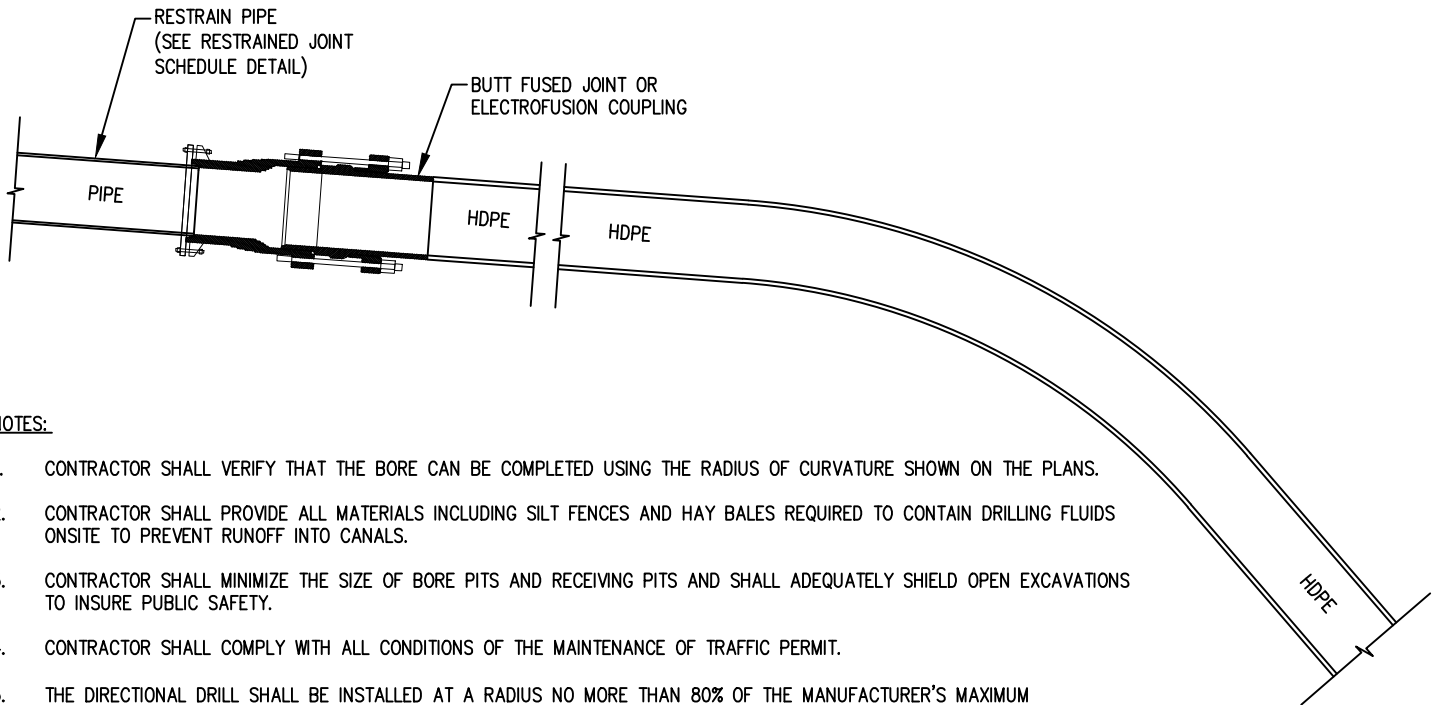
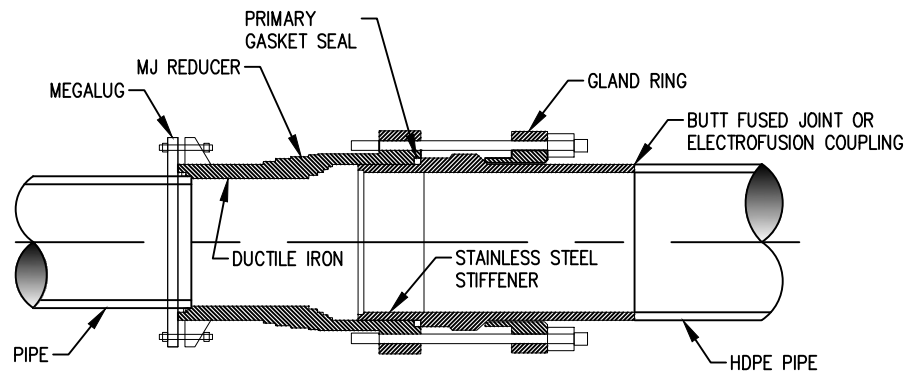
**RESTRAINED PIPE PLUG**  
 NOT TO SCALE

REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



**CITY OF CAPE CORAL**  
 UTILITIES DEPARTMENT  
 P.O. BOX 150027  
 CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME	DETAIL NO.
<b>RESTRAINED PIPE PLUG</b>	<b>UG-304</b>



#### NOTES:

1. CONTRACTOR SHALL VERIFY THAT THE BORE CAN BE COMPLETED USING THE RADIUS OF CURVATURE SHOWN ON THE PLANS.
2. CONTRACTOR SHALL PROVIDE ALL MATERIALS INCLUDING SILT FENCES AND HAY BALES REQUIRED TO CONTAIN DRILLING FLUIDS ONSITE TO PREVENT RUNOFF INTO CANALS.
3. CONTRACTOR SHALL MINIMIZE THE SIZE OF BORE PITS AND RECEIVING PITS AND SHALL ADEQUATELY SHIELD OPEN EXCAVATIONS TO INSURE PUBLIC SAFETY.
4. CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS OF THE MAINTENANCE OF TRAFFIC PERMIT.
5. THE DIRECTIONAL DRILL SHALL BE INSTALLED AT A RADIUS NO MORE THAN 80% OF THE MANUFACTURER'S MAXIMUM RECOMMENDED VALUE.
6. CONTRACTOR SHALL RECORD LOCATION AND DEPTH OF DIRECTIONAL DRILL PIPE IN ACCORDANCE WITH THE SPECIFICATIONS SECTION 02347.
7. NO DEFLECTIONS OF PIPE (NOT INCLUDING BENDS) WITHIN 10 PIPE DIAMETERS OF MJ ADAPTER.
8. MINIMUM LENGTH BETWEEN BUTT FUSED JOINTS IS TO BE 15'.
9. TRANSITION INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
10. MJ ADAPTER SHALL BE BUTT-FUSED TO HDPE PIPE.
11. INSPECT, LABEL & TEST PER MANUFACTURER'S RECOMMENDATIONS.
12. CHUCK MARKS ON GASKET END ARE NOT ACCEPTABLE.
13. FOR PRODUCTS AND MATERIALS SEE THE PROJECT SPECIFICATIONS AND THE CITY OF CAPE CORAL QUALIFIED PRODUCTS LIST.

UG-305 **PIPE TO HDPE TRANSITION**  
NOT TO SCALE

REVISION DATE  
**07-14-2022**  
ADOPTION DATE  
**08-17-2022**



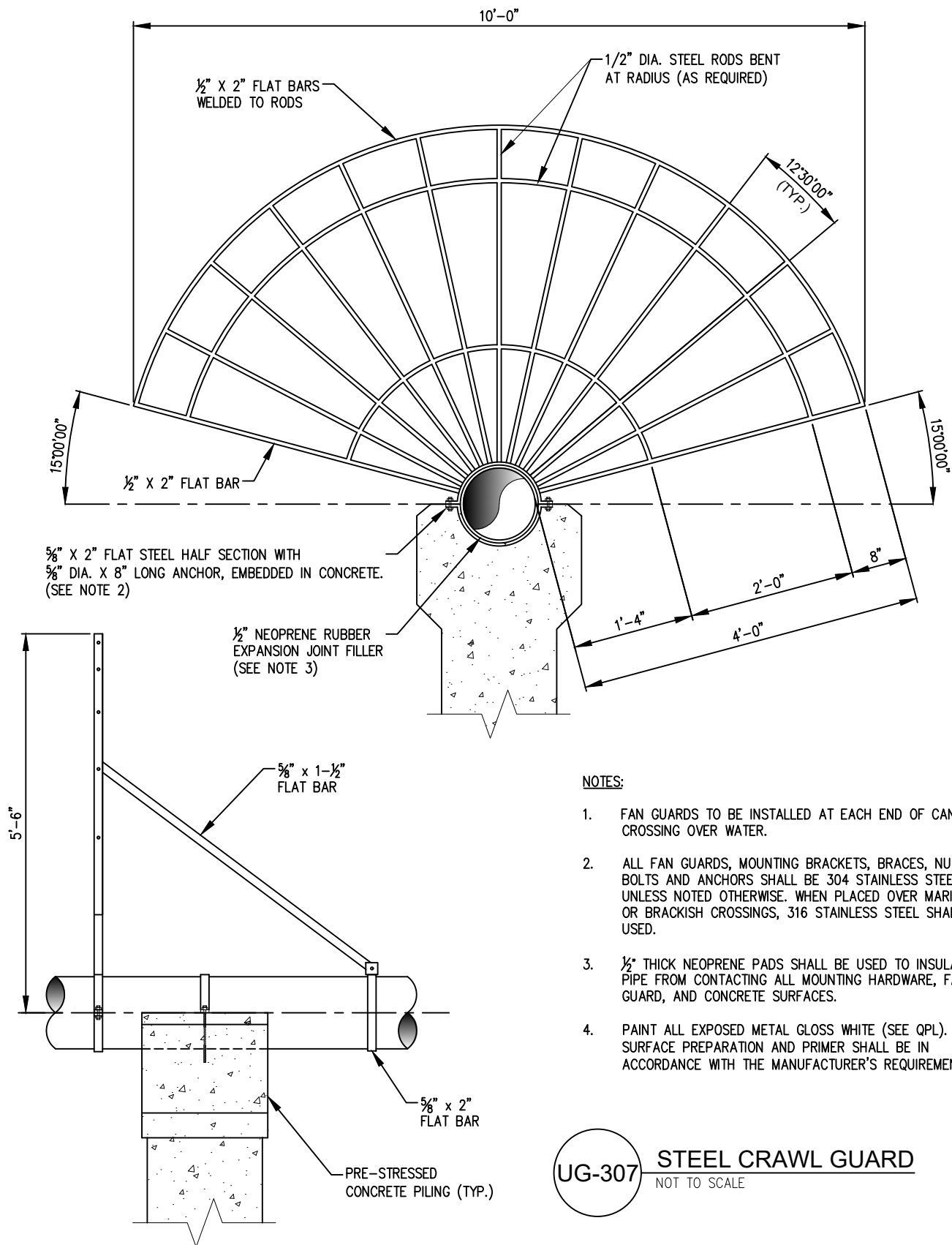
**CITY OF CAPE CORAL**  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME

**PIPE TO HDPE TRANSITION**

DETAIL NO.

**UG-305**



**NOTES:**

1. FAN GUARDS TO BE INSTALLED AT EACH END OF CANAL CROSSING OVER WATER.
2. ALL FAN GUARDS, MOUNTING BRACKETS, BRACES, NUTS, BOLTS AND ANCHORS SHALL BE 304 STAINLESS STEEL UNLESS NOTED OTHERWISE. WHEN PLACED OVER MARINE OR BRACKISH CROSSINGS, 316 STAINLESS STEEL SHALL BE USED.
3. 1/2" THICK NEOPRENE PADS SHALL BE USED TO INSULATE PIPE FROM CONTACTING ALL MOUNTING HARDWARE, FAN GUARD, AND CONCRETE SURFACES.
4. PAINT ALL EXPOSED METAL GLOSS WHITE (SEE QPL). SURFACE PREPARATION AND PRIMER SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

UG-307

**STEEL CRAWL GUARD**

NOT TO SCALE

REVISION DATE
07-14-2022
ADOPTION DATE
08-17-2022



**CITY OF CAPE CORAL**  
**UTILITIES DEPARTMENT**  
 P.O. BOX 150027  
 CAPE CORAL, FLORIDA 33915-0027

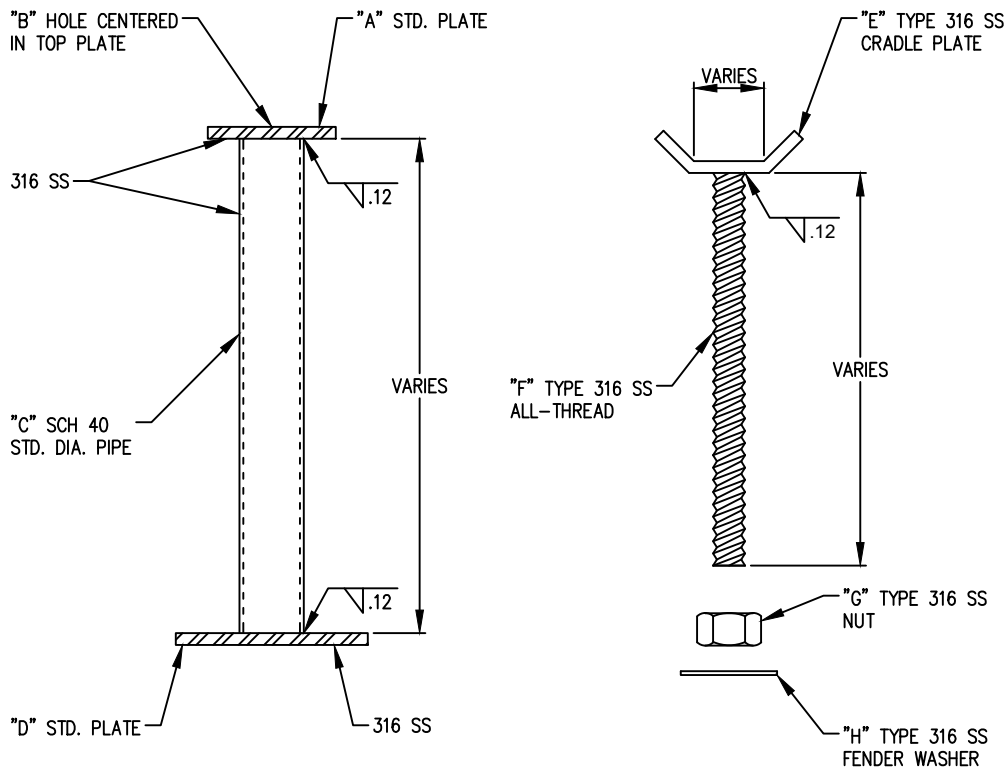
DETAIL NAME

**STEEL CRAWL GUARD**

DETAIL NO.

**UG-307**





PIPING SUPPORT DIMENSIONS			
	FOR 3/4" & 1"	FOR 1-1/2" TO 3"	FOR 4" & LARGER
A	1/4" X 3" X 3"	1/4" X 3-1/4" X 3-1/4"	1/4" X 5" X 5"
B	1.0"	1.0"	1-1/2"
C	2.0"	2-1/2"	4"
D	1/4" X 6" X 6"	1/4" X 8" X 8"	1/4" X 10" X 10"
E	1/4" X 2" X 4"	1/2" X 2" X 4"	1/2" X 4" X 6"
F	3/4"	7/8"	1-1/4"
G	3/4"	7/8"	1-1/2"
H	1.0"	1.0"	1-1/2"

UG-308 PIPE SUPPORT  
NOT TO SCALE

REVISION DATE  
07-14-2022  
ADOPTION DATE  
08-17-2022



CITY OF CAPE CORAL  
UTILITIES DEPARTMENT  
P.O. BOX 150027  
CAPE CORAL, FLORIDA 33915-0027

DETAIL NAME

PIPE SUPPORT

DETAIL NO.

UG-308