

CITY OF  
PANAMA CITY BEACH  
UTILITIES DEPARTMENT  
ENGINEERING DIVISION



MAY 2024

STANDARDS FOR  
CITY OF P.C.B.  
UTILITY SYSTEM

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THE DESIGNER MUST RECOGNIZE THAT NO HANDBOOK OR CODE CAN BE A SUBSTITUTE FOR EXPERIENCED ENGINEERING JUDGEMENT.

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THESE STANDARDS ARE UNDER CONSTANT REVIEW AND ARE SUBJECT TO CHANGES APPROVED BY THE UTILITIES DIRECTOR OF THE CITY OF PANAMA CITY BEACH.



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INTRODUCTION CITY OF  
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DATE: MAR 2012

INTRO 1

	6"WM	WATER MAIN (PROPOSED)
	6"WM	WATER MAIN (EXISTING)
	6"RWM	RECLAIMED WATER MAIN (PROPOSED)
	6"RWM	RECLAIMED WATER MAIN (EXISTING)
	6"FM	FORCE MAIN (PROPOSED)
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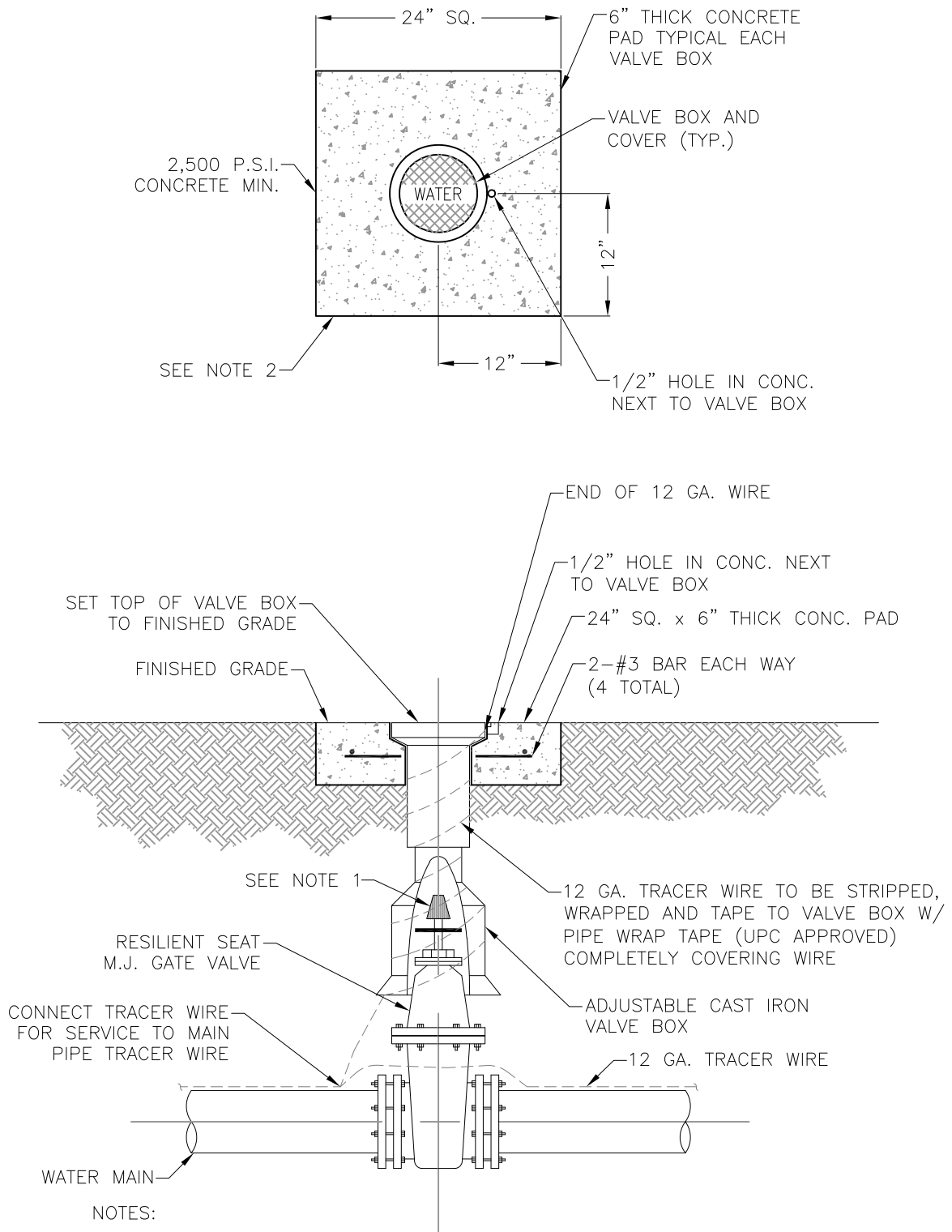
CITY OF P.C.B  
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SYMBOLS FOR CITY OF  
P.C.B. UTILITY  
STANDARDS

DATE: MAR 2012

SYM 1

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NOTES:

- 1.) THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 4 FOOT DEPTH BELOW FINISHED GRADE.
- 2.) FOR VALVE COLLAR PADS THAT FALL ON SLOPES GREATER THAN 1:6, SEE DETAIL W-20 FOR PAD.

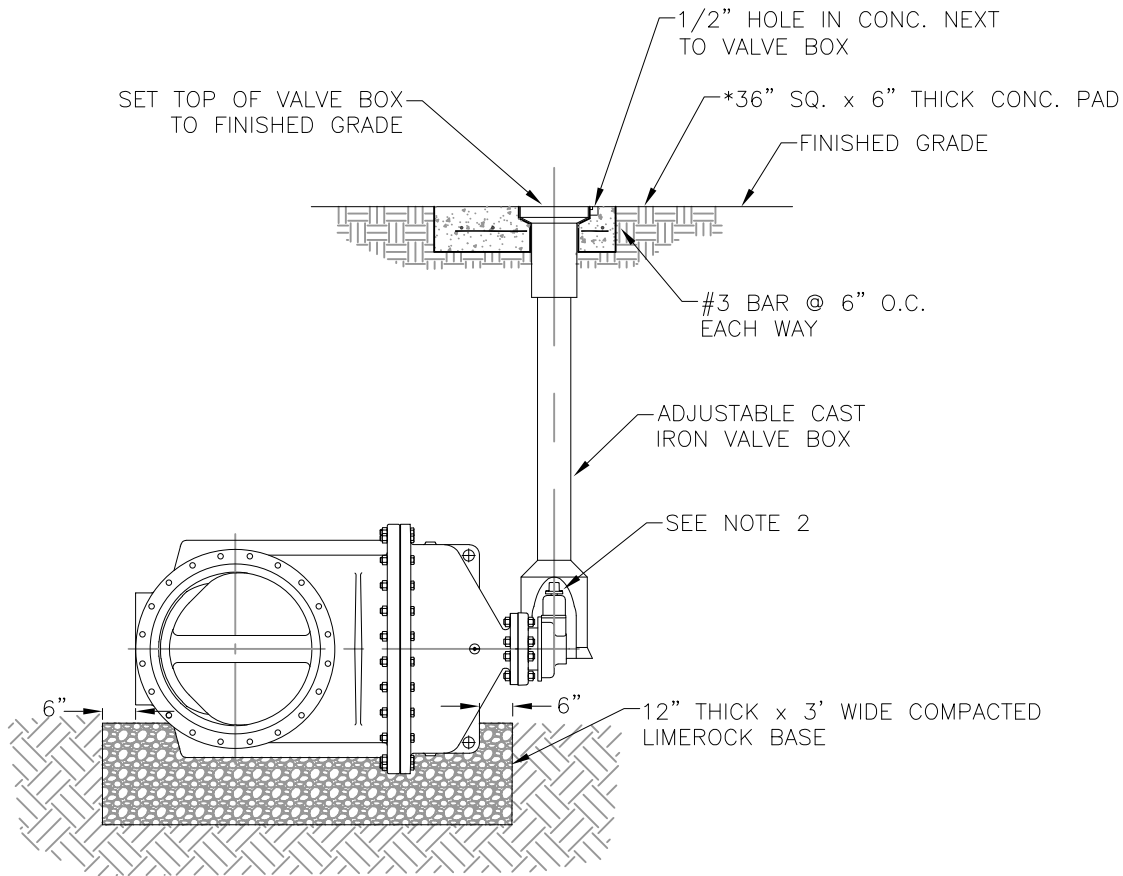
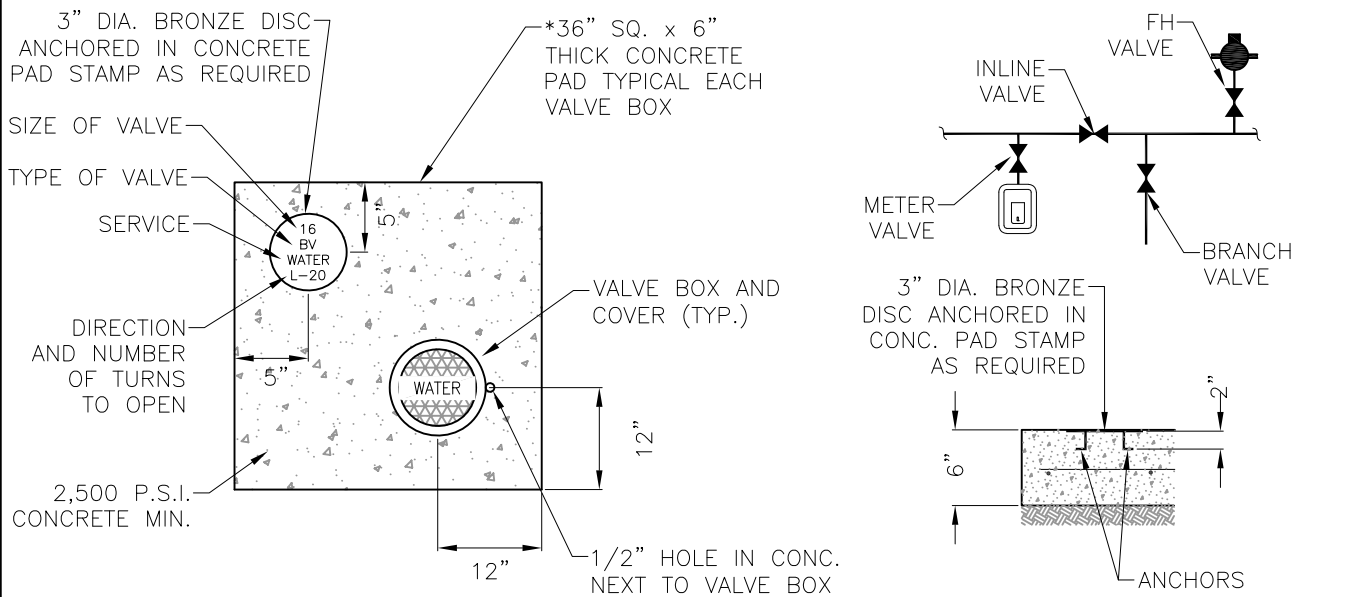


CITY OF P.C.B  
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**WATER GATE VALVE &  
BOX DETAIL  
(4" TO 12")**

DATE: JAN 2020

**W-1**



NOTES:

- 1.) PVC EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.
- 2.) THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 4 FOOT DEPTH BELOW FINISHED GRADE.
- 3.) ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS ESTABLISHED IN THE FIELD.
- 4.) VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
- 5.) ALL EXPOSED EDGES OF CONCRETE PAD SHALL BE CHAMFERED 1/2".

\*NOTE: 24" SQ. PAD TO BE CONSTRUCTED INSIDE RESIDENTIAL AREAS.

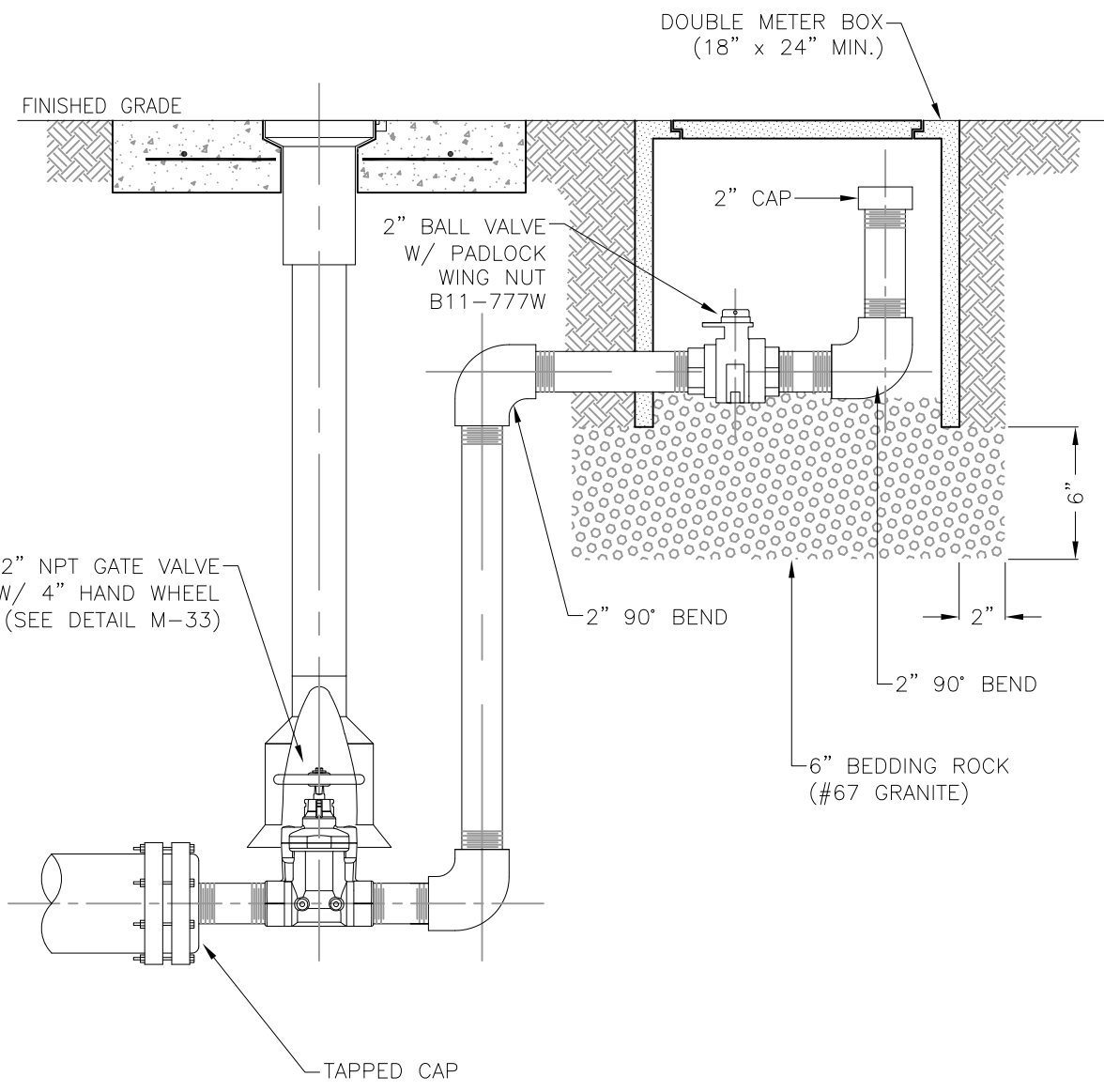


CITY OF P.C.B  
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**WATER GATE VALVE  
& BOX DETAIL  
(16" & LARGER)**

DATE: JUL 2019

**W-2**



NOTE:  
ALL 2" PIPE AND FITTINGS SHALL BE  
SCHEDULE 40 BRASS WITH THREADED  
(NPT) JOINTS.



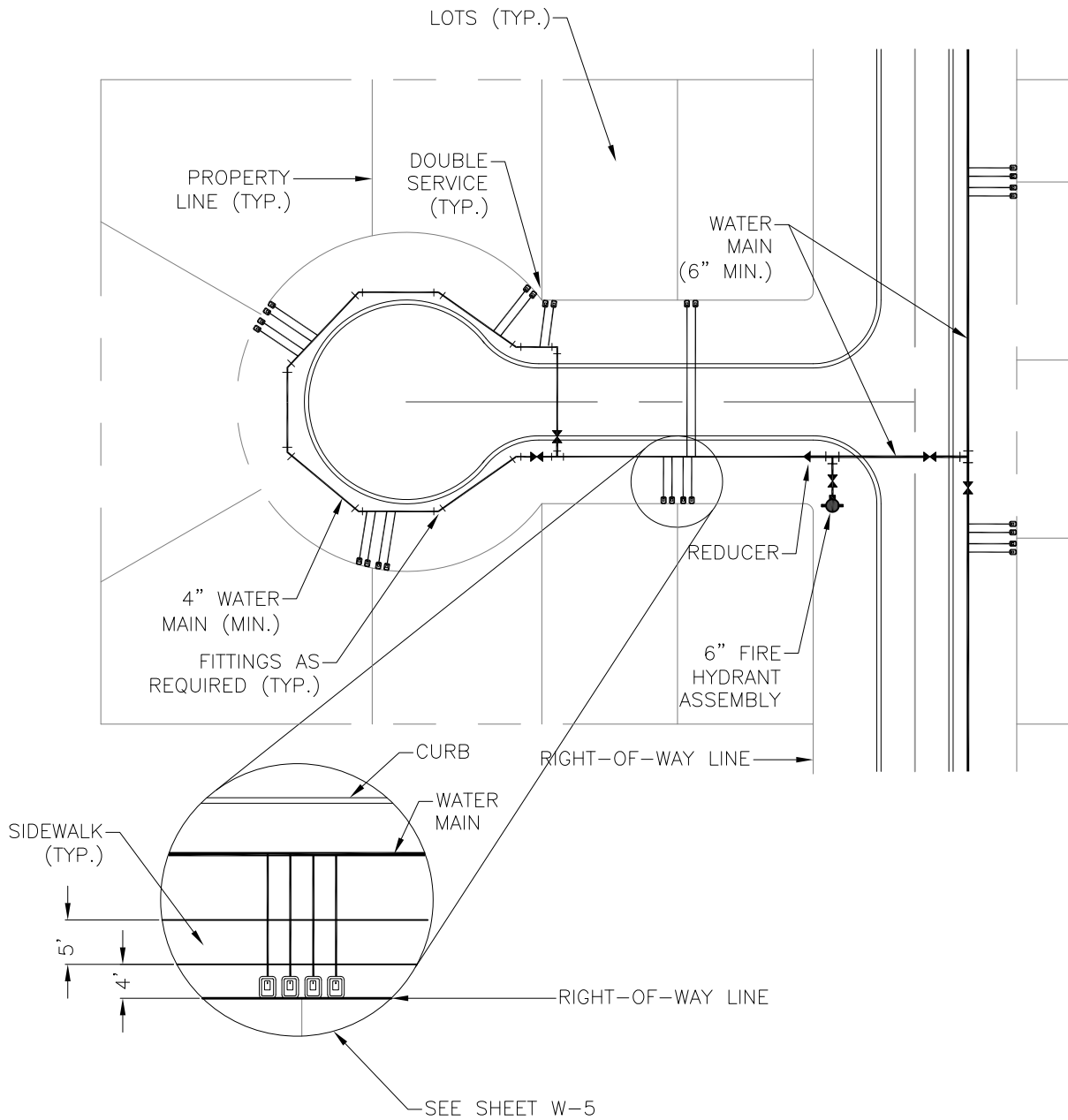
CITY OF P.C.B  
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**BLOWOFF VALVE  
DETAIL**

DATE: OCT 2015

**W-3**





NOTE:

PROVIDE SINGLE SERVICE ONLY IF RECLAIMED WATER METER IS PROVIDED.

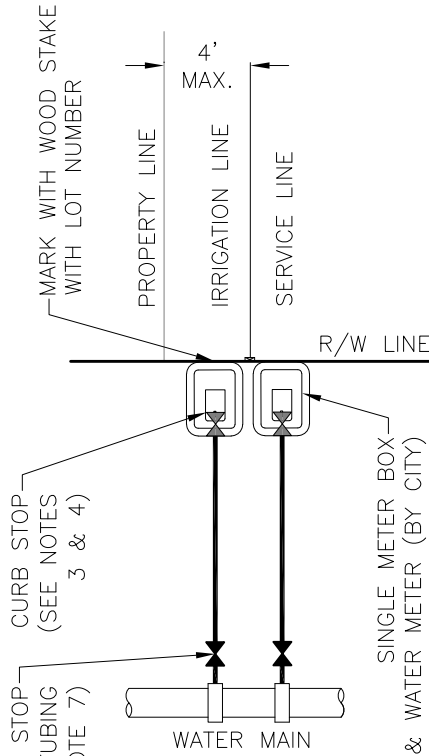


CITY OF P.C.B  
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WATER SERVICE  
 LOCATION DETAIL

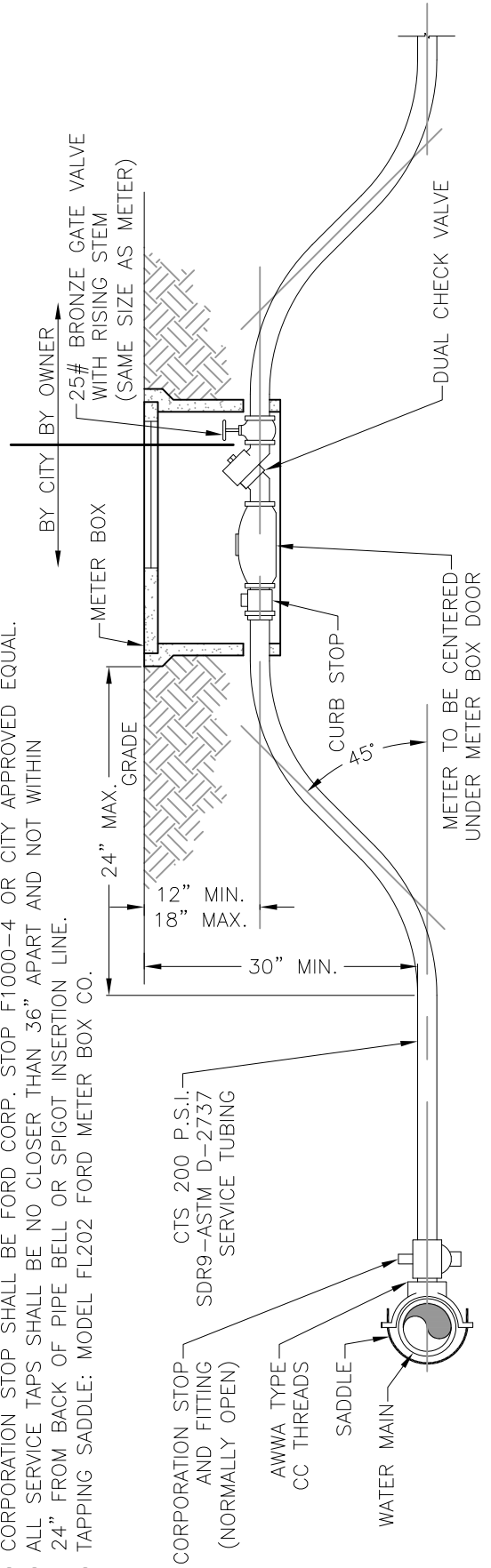
DATE: MAR 2012

W-4



TYPICAL CITY SERVICE WITHOUT REUSE  
(PER. LOT)

- NOTES:
- 1.) ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
  - 2.) NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
  - 3.) EACH SERVICE LINE SHALL TERMINATE AT A CURB STOP WHICH SHALL BE FASTENED TO A 1" x 4" x 30" STAKE PAINTED WHITE AND MARKED WITH THE NUMBER OF THE LOT TO BE SERVED.
  - 4.) CURB STOP SHALL BE A FORD BALL METER VALVE B43-342WG, B43-444WG OR CITY APPROVED EQUAL.
  - 5.) ALL SERVICE TAPS TO BE LOCATED IN FIELD. TAPS SHALL BE NO CLOSER THAN AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.
  - 6.) METER BOXES & YOKE ARE TO BE INSTALLED BY THE INFRASTRUCTURE CONTRACTOR AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.
  - 7.) CORPORATION STOP SHALL BE FORD CORP. STOP F1000-4 OR CITY APPROVED EQUAL.
  - 8.) ALL SERVICE TAPS SHALL BE NO CLOSER THAN 36" APART AND NOT WITHIN 24" FROM BACK OF PIPE BELL OR SPIGOT INSERTION LINE.
  - 9.) TAPPING SADDLE: MODEL FL202 FORD METER BOX CO.

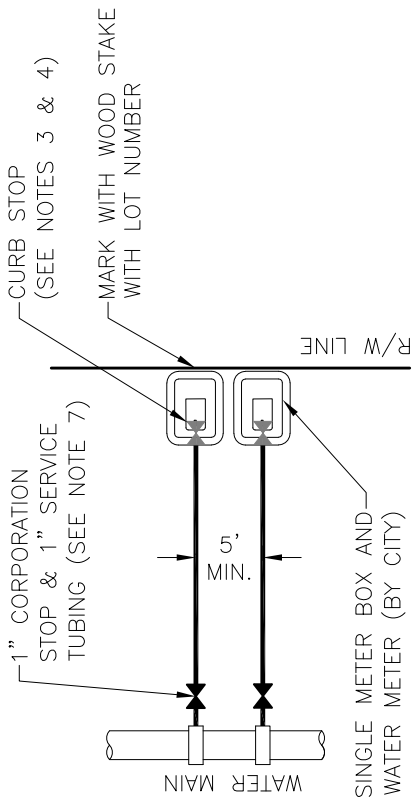


CITY OF P.C.B  
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**3/4" & 1"**  
**WATER METER**  
**ASSEMBLY DETAIL**

DATE: MAY 2017

**W-5A**

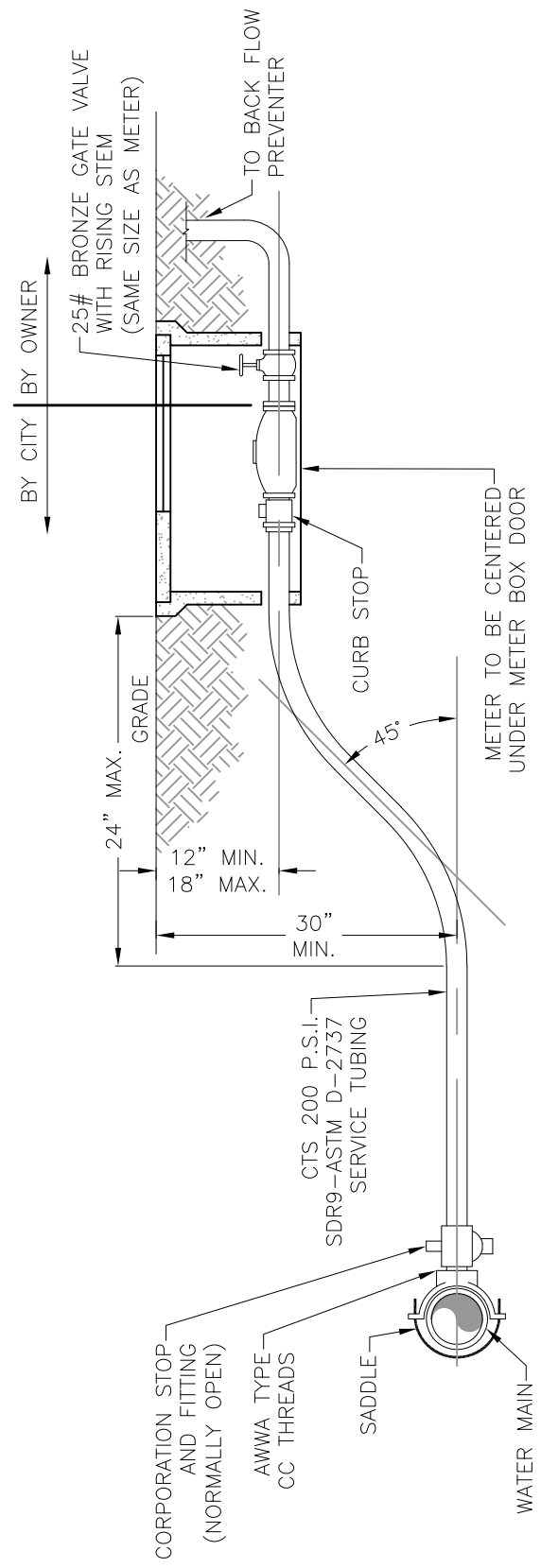


**TYPICAL CITY SERVICE**

(PER. LOT)

**NOTES:**

- 1.) ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
- 2.) NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
- 3.) EACH SERVICE SHALL TERMINATE AT A CURB STOP WHICH SHALL BE FASTENED TO A 1"x4"x30" STAKE PAINTED WHITE AND MARKED WITH THE NUMBER OF THE LOT TO BE SERVED.
- 4.) CURB STOP SHALL BE A FORD BALL METER VALVE B43-344WG OR CITY APPROVED EQUAL.
- 5.) ALL SERVICE TAPS TO BE LOCATED IN FIELD. TAPS SHALL BE NO CLOSER THAN 3'-0" INTERVALS OR WITHIN 2'-0" FROM BELL OR SPIGOT ENDS.
- 6.) METER BOXES & YOKE ARE TO BE INSTALLED BY THE INFRASTRUCTURE CONTRACTOR AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS. AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.
- 7.) CORPORATION STOP SHALL BE FORD CORP. STOP F1000-4 OR CITY APPROVED EQUAL.



CITY OF P.C.B  
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**1" WATER METER  
ASSEMBLY DETAIL  
(COMMERCIAL USE)**

DATE: DEC 2015

**W-5B**

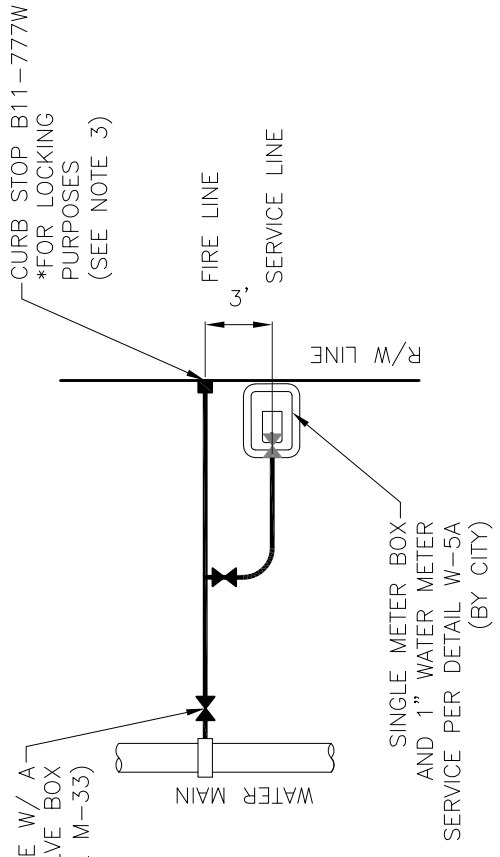


CITY OF P.C.B  
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2" FIRE LINE W/  
1" WATER METER  
ASSEMBLY DETAIL

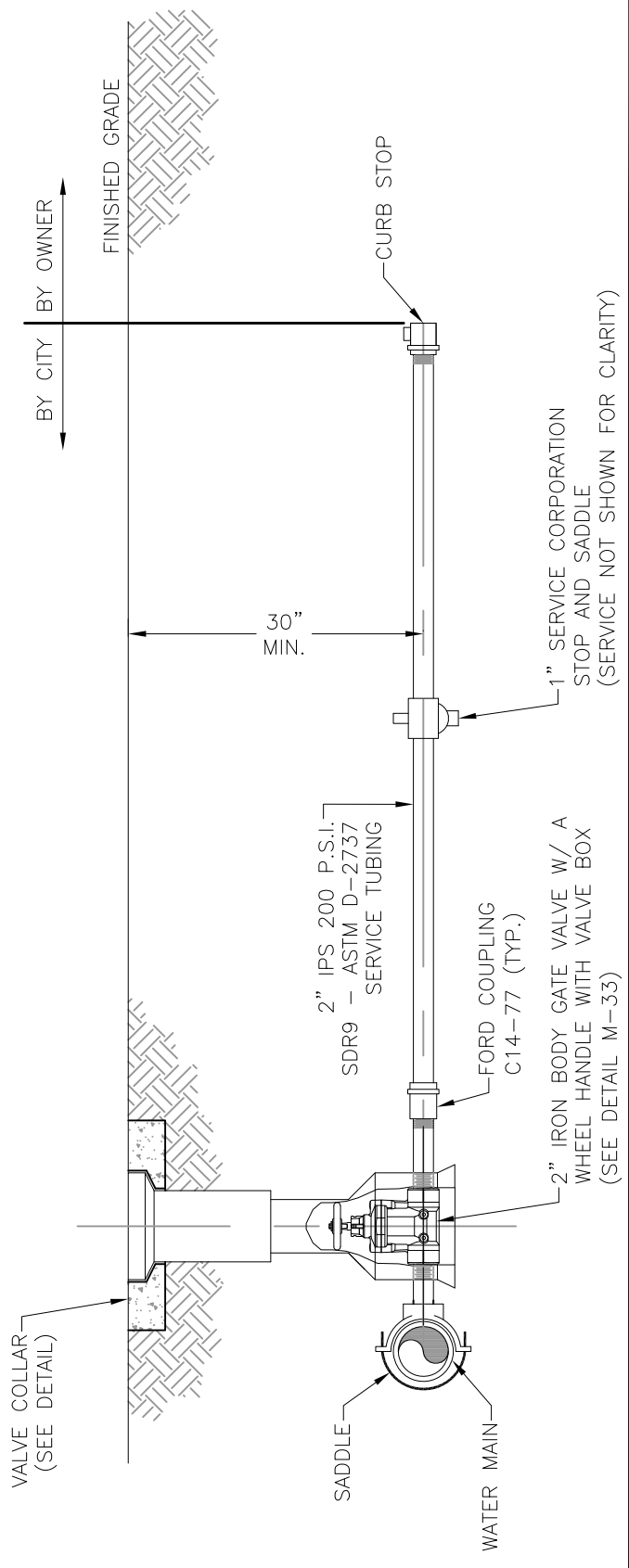
DATE: FEB 2023

W-5C



- NOTES:
- 1.) ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
  - 2.) NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
  - 3.) EACH 2" SERVICE SHALL TERMINATE AT A BALL VALVE WHICH SHALL BE FASTENED TO A 1" x 4" x 30" STAKE PAINTED RED.
  - 4.) ALL SERVICE TAPS TO BE LOCATED IN FIELD. TAPS SHALL BE NO CLOSER THAN 36" APART AND NOT WITHIN 24" FROM BACK OF PIPE BELL OR SPIGOT INSERTION LINE AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.
  - 5.) TAPPING SADDLE: MODEL FL202 FORD METER BOX CO.

**TYPICAL CITY SERVICE**





CITY OF P.C.B  
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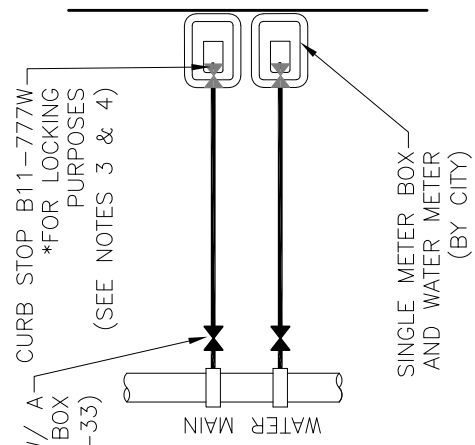
# 2" WATER METER ASSEMBLY DETAIL

DATE: SEP 2020

W-6

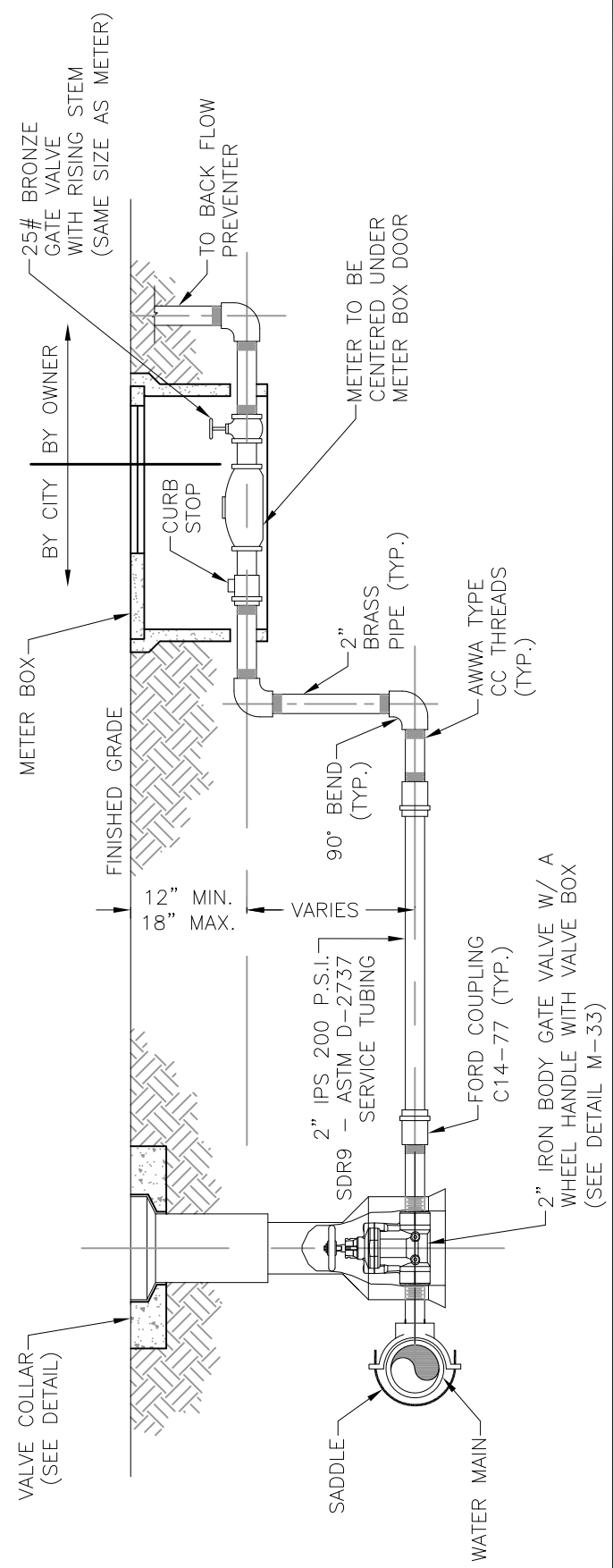
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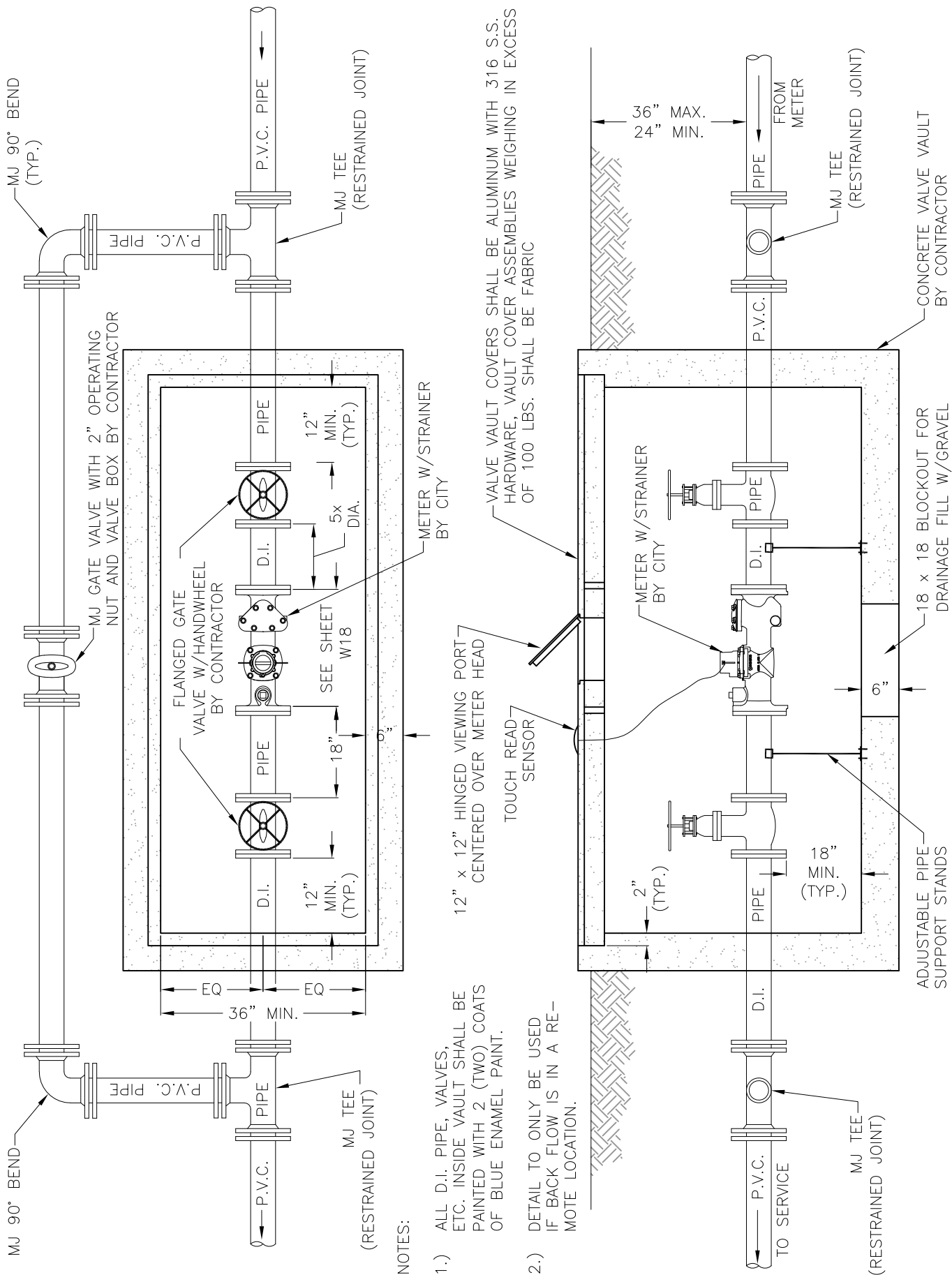
- 1.) ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
- 2.) NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
- 3.) EACH SERVICE SHALL TERMINATE AT A BALL VALVE WHICH SHALL BE FASTENED TO A 1" x 4" x 30" STAKE PAINTED WHITE.
- 4.) CURB STOP SHALL BE A 2" FORD BALL METER VALVE B11-777W OR CITY APPROVED EQUAL.
- 5.) ALL SERVICE TAPS TO BE LOCATED IN FIELD. TAPS SHALL BE NO CLOSER THAN 36" APART AND NOT WITHIN 24" FROM BACK OF PIPE BELL OR SPIGOT INSERTION LINE AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.



**TYPICAL CITY SERVICE**

- 6.) TAPPING SADDLE: MODEL FL202 FORD METER BOX CO.
- 7.) 1-1/2" METERS WILL REQUIRE A 2" TAP & GATE VALVE, THEN REDUCED.





NOTES:

- 1.) ALL D.I. PIPE, VALVES, ETC. INSIDE VAULT SHALL BE PAINTED WITH 2 (TWO) COATS OF BLUE ENAMEL PAINT.
- 2.) DETAIL TO ONLY BE USED IF BACK FLOW IS IN A REMOTE LOCATION.

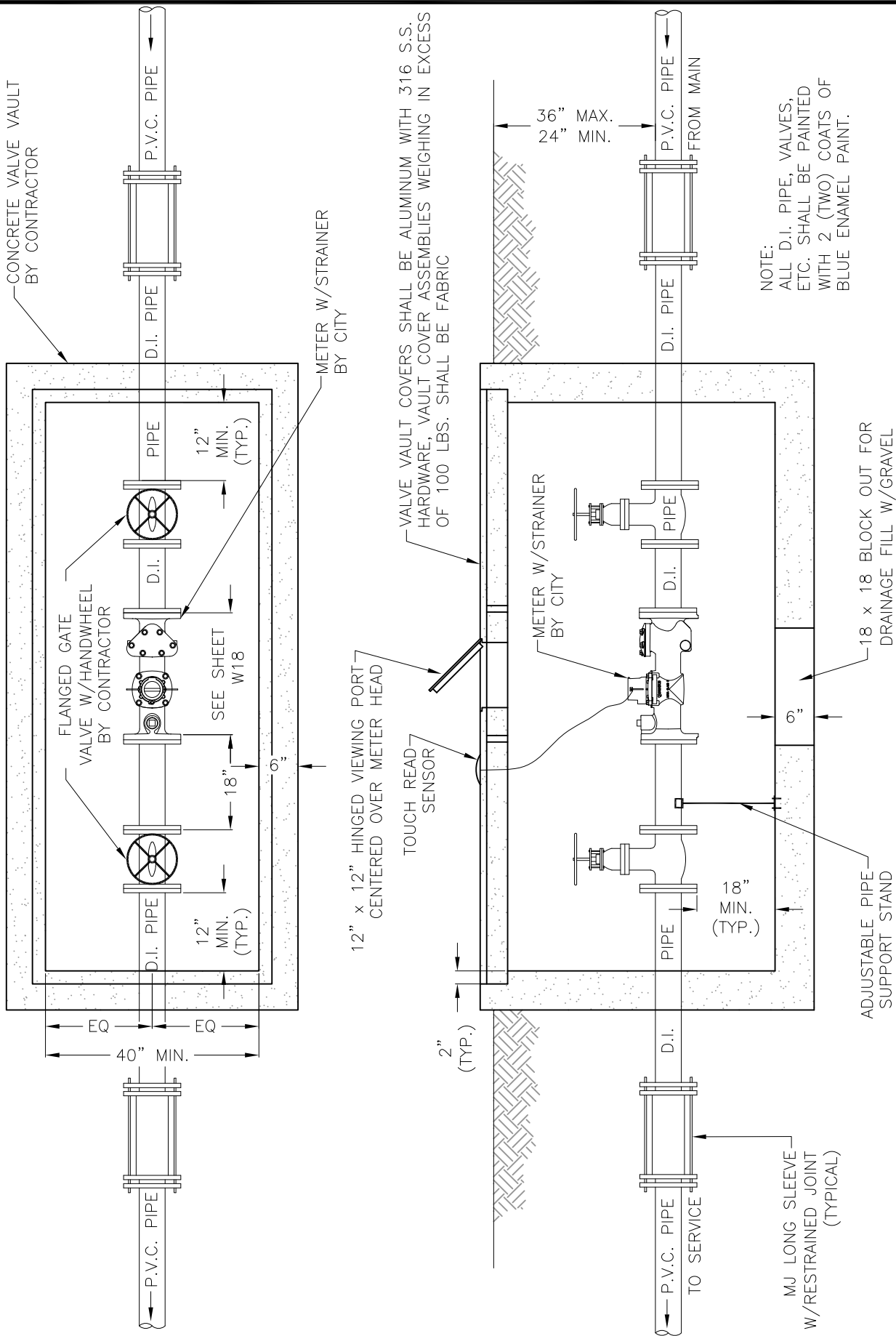


CITY OF P.C.B  
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3", 4" AND 6" WATER  
METER DETAIL W/ BYPASS  
(BACK FLOW PREVENTER IN REMOTE LOCATION)

DATE: MAR 2012

W-7



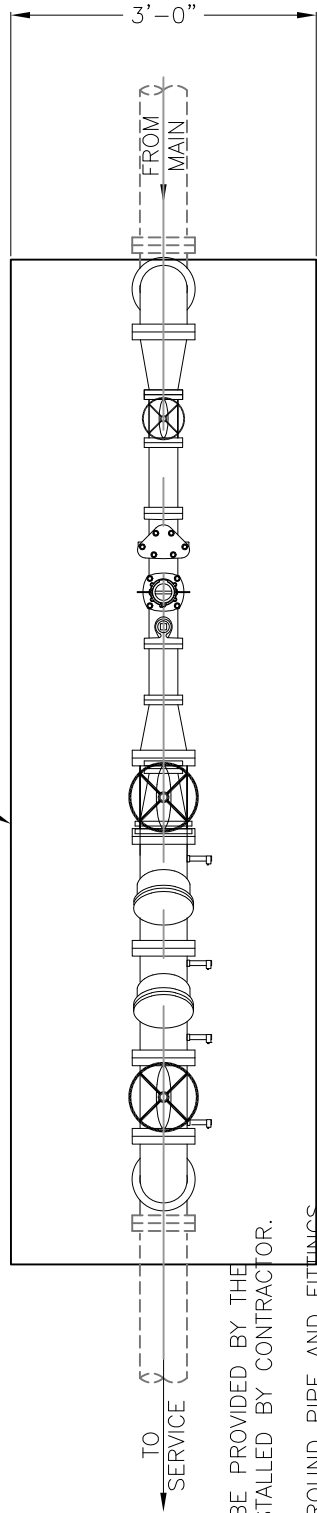
CITY OF P.C.B  
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3", 4" AND 6" WATER  
METER ASSEMBLY DETAIL  
(BACK FLOW PREVENTER IN REMOTE LOCATION)

DATE: MAR 2012

W-8

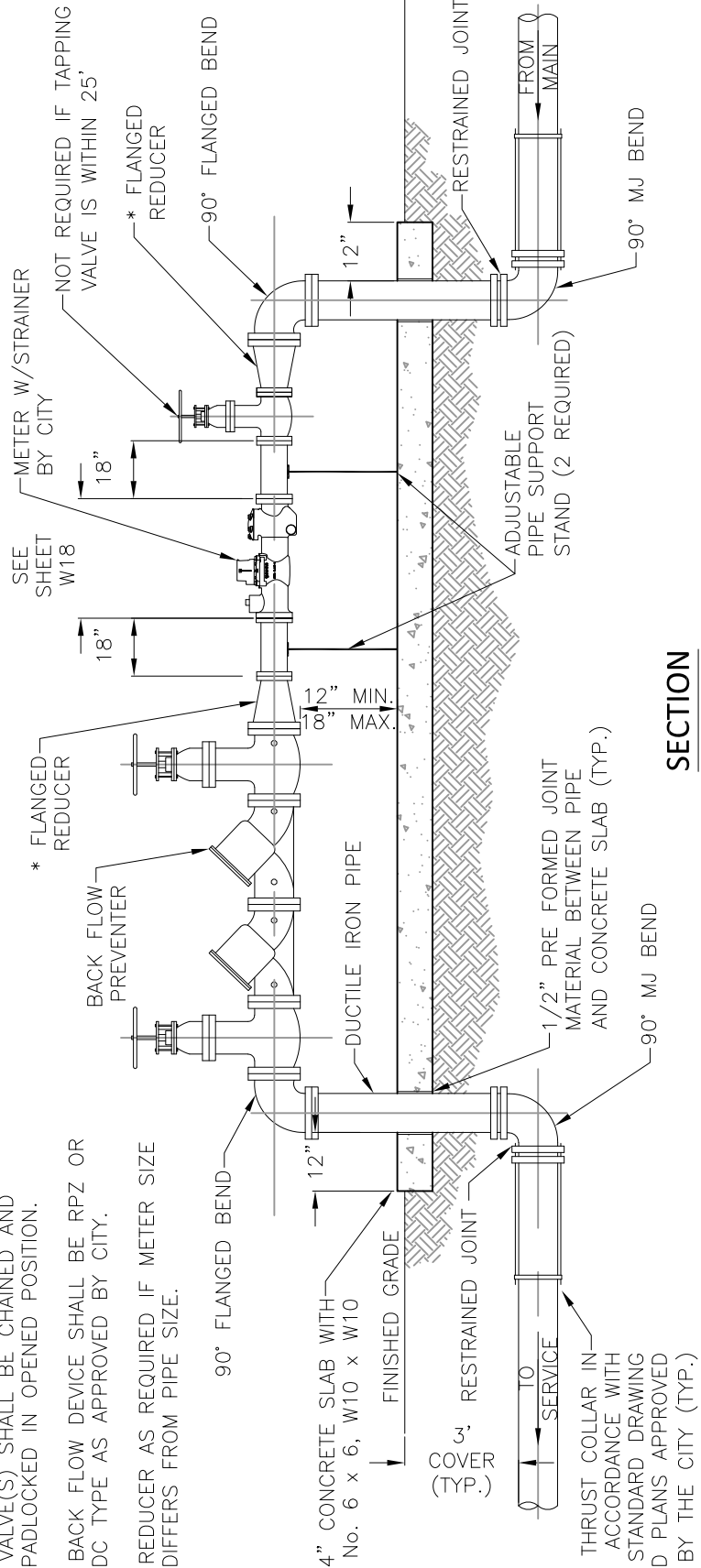
CONCRETE SLAB



**PLAN VIEW**

NOTE:

1. METER WILL BE PROVIDED BY THE CITY, AND INSTALLED BY CONTRACTOR.
2. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
3. ALL ITEMS ABOVE GRADE SHALL HAVE TWO COATS OF APPROVED EPOXY BLUE ENAMEL PAINT.
4. ALL VALVES SHALL HAVE HANDWHEELS.
5. VALVE(S) SHALL BE CHAINED AND PADLOCKED IN OPENED POSITION.
6. BACK FLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
- \* 7. REDUCER AS REQUIRED IF METER SIZE DIFFERS FROM PIPE SIZE.



**SECTION**



**CITY OF P.C.B  
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**4" AND 6" WATER  
METER & BACK FLOW  
ASSEMBLY DETAIL**

DATE: JAN 2020

**W-9A**

THRUST COLLAR IN ACCORDANCE WITH STANDARD DRAWING AND PLANS APPROVED BY THE CITY (TYP.)



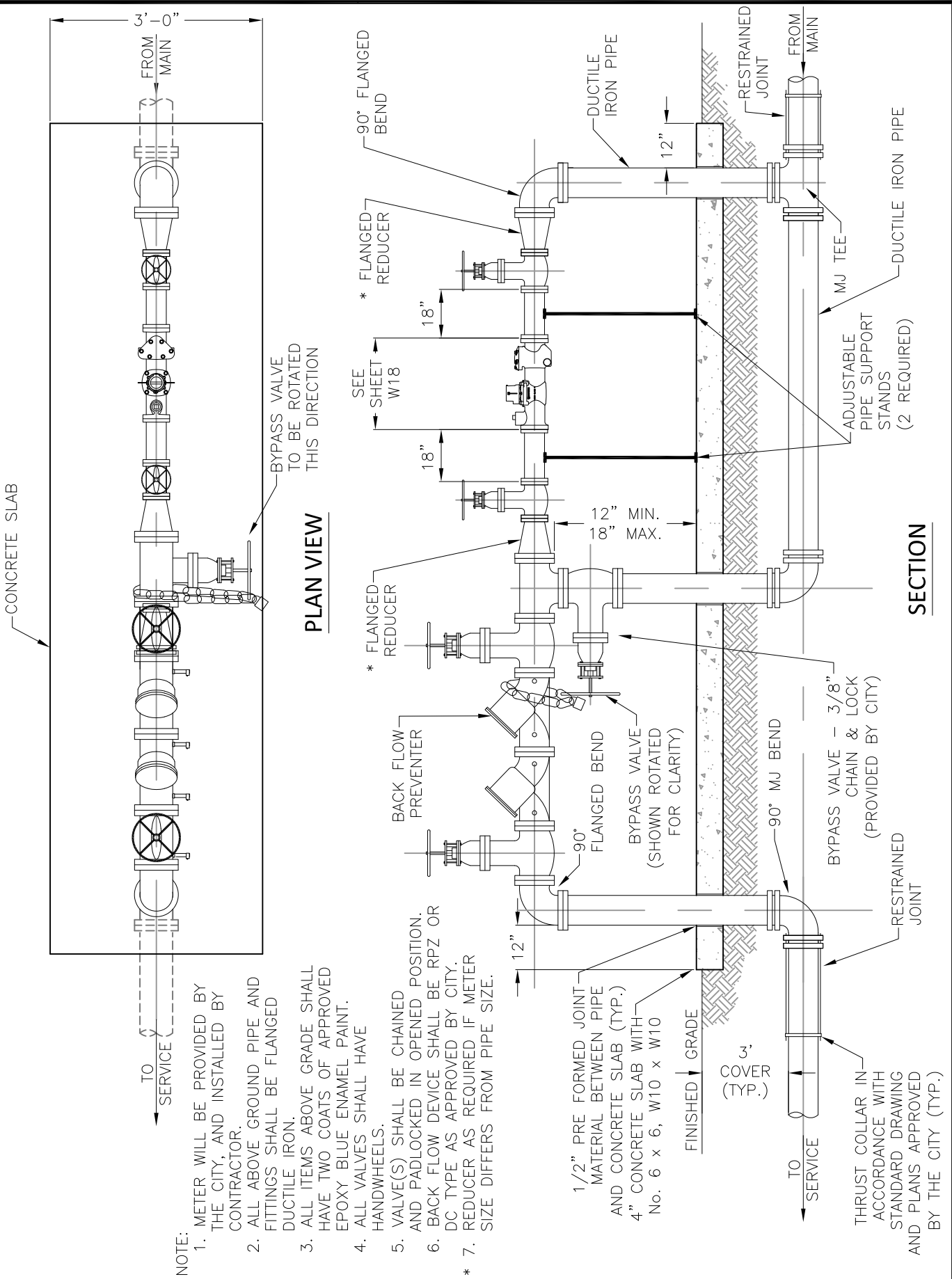


**CITY OF P.C.B  
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**4" AND 6" WATER  
METER & BACK FLOW  
WITH BYPASS**

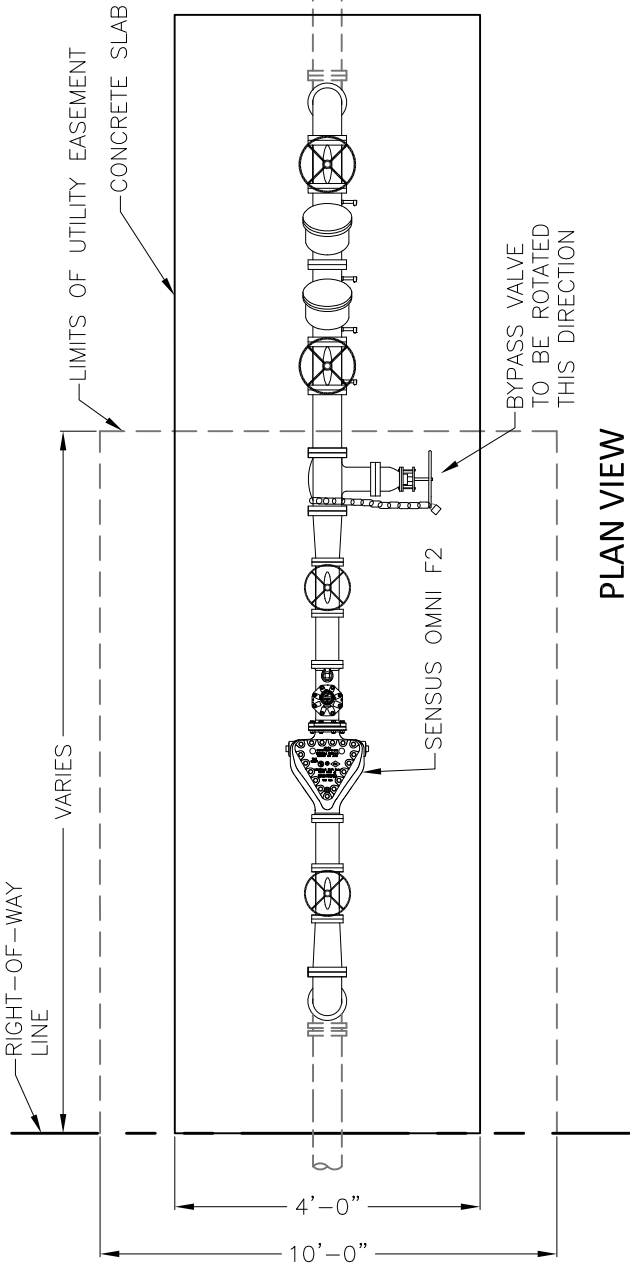
DATE: JAN 2020

**W-9B**



- NOTE:
1. METER WILL BE PROVIDED BY THE CITY, AND INSTALLED BY CONTRACTOR.
  2. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
  3. ALL ITEMS ABOVE GRADE SHALL HAVE TWO COATS OF APPROVED EPOXY BLUE ENAMEL PAINT.
  4. ALL VALVES SHALL HAVE HANDWHEELS.
  5. VALVE(S) SHALL BE CHAINED AND PADLOCKED IN OPENED POSITION.
  6. BACK FLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
  7. REDUCER AS REQUIRED IF METER SIZE DIFFERS FROM PIPE SIZE.

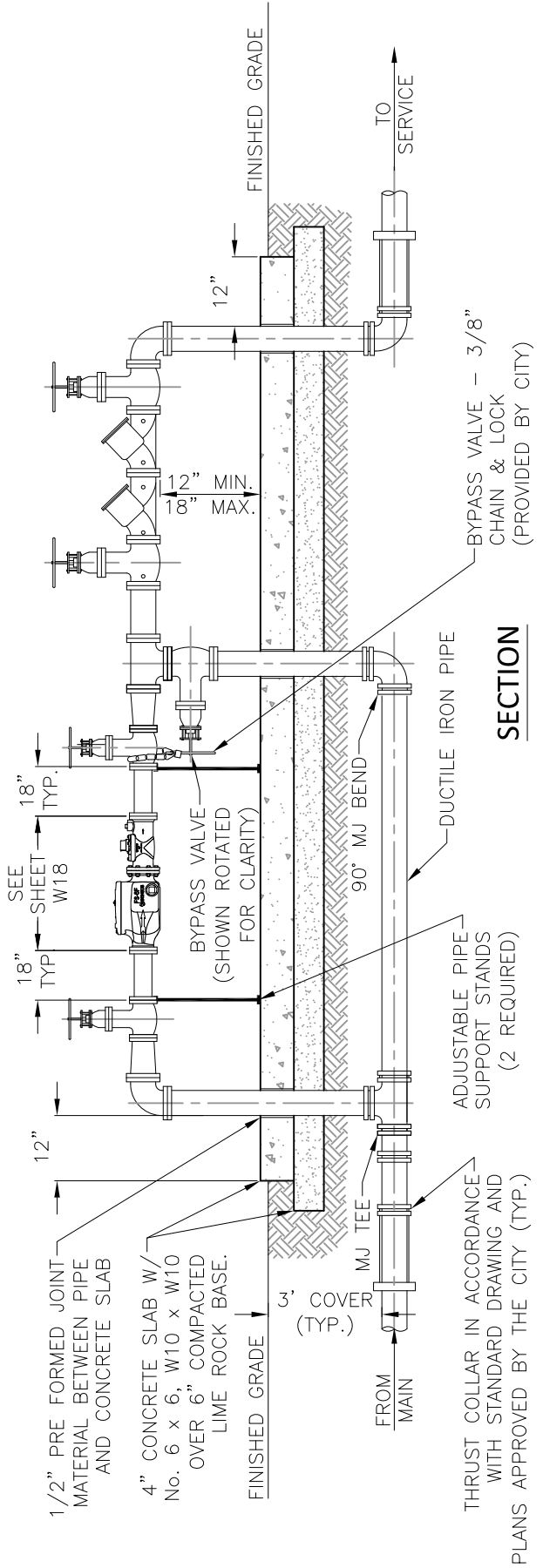
**SECTION**



**PLAN VIEW**

**NOTES:**

- 1.) METER WILL BE PROVIDED BY THE CITY, AND INSTALLED BY CONTRACTOR.
- 2.) ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
- 3.) PROVIDE PROTECTION AGAINST FREEZING FOR ALL ABOVE GROUND PIPE.
- 4.) ALL ITEMS ABOVE GRADE SHALL HAVE ONE COAT OF APPROVED EPOXY RED ENAMEL PAINT.
- 5.) ALL ABOVE GROUND VALVES SHALL HAVE HANDWHEELS.
- 6.) BACK FLOW DEVICE SHALL BE AS APPROVED BY CITY.



**SECTION**

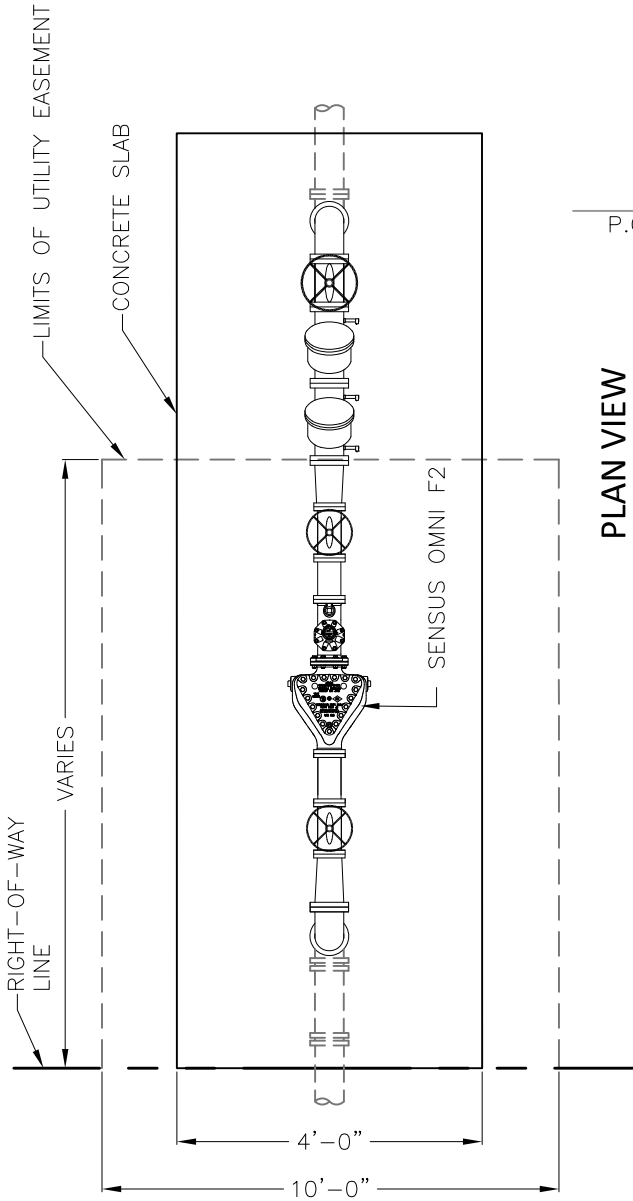


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**FIRE LINE MASTER  
METER ASSEMBLY  
DETAIL**

DATE: JAN 2020

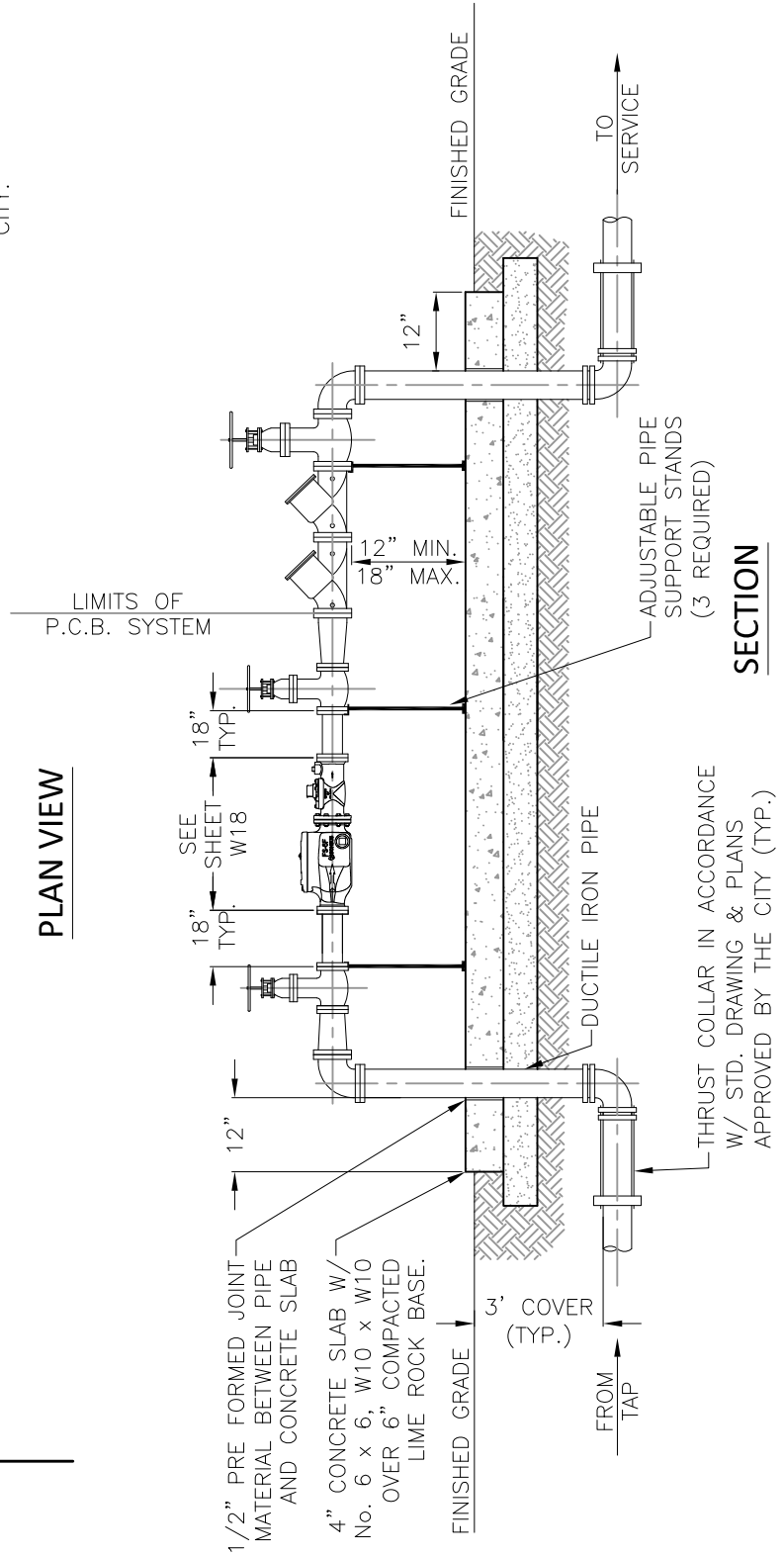
**W-10**



**PLAN VIEW**

**NOTES:**

- 1.) METER WILL BE PROVIDED AND INSTALLED BY THE CITY.
- 2.) ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
- 3.) PROVIDE PROTECTION AGAINST FREEZING FOR ALL ABOVE GROUND PIPE.
- 4.) ALL ITEMS ABOVE GRADE SHALL HAVE ONE COAT OF APPROVED EPOXY RED ENAMEL PAINT.
- 5.) ALL ABOVE GROUND VALVES SHALL HAVE HANDWHEELS.
- 6.) BACK FLOW DEVICE SHALL BE RPZ TYPE AS APPROVED BY CITY.



**SECTION**

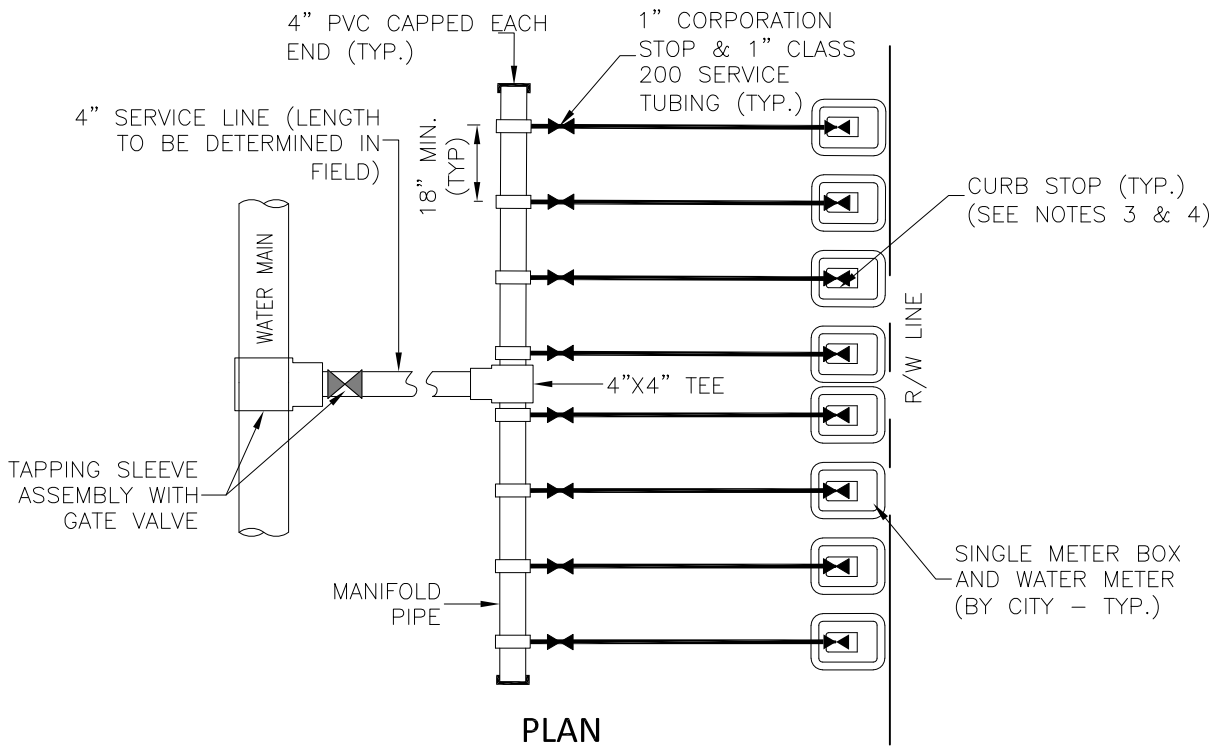


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**FIRE LINE MASTER  
METER ASSEMBLY  
DETAIL**  
(WITHOUT BYPASS)

DATE: JAN 2020

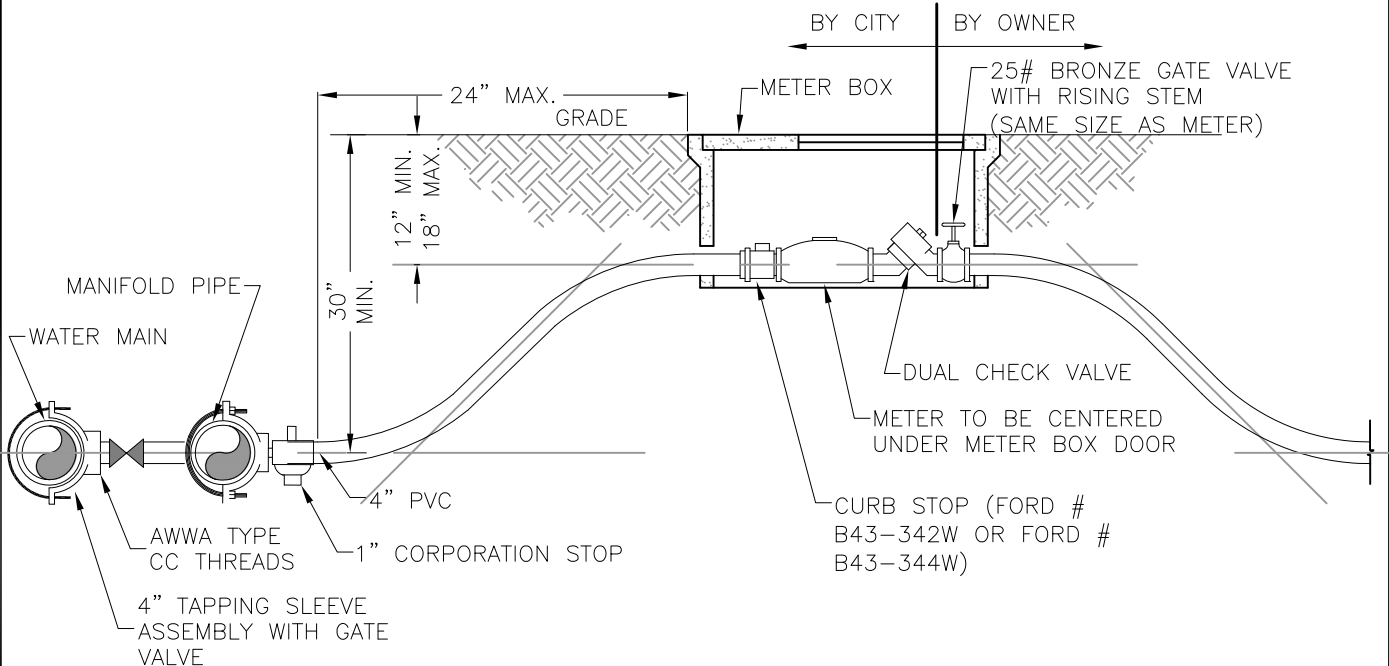
**W-10A**



**PLAN**

**NOTES:**

- 1.) ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
- 2.) NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
- 3.) EACH SERVICE SHALL TERMINATE AT A CURB STOP WHICH SHALL BE FASTENED TO A 1" x 4" x 30" STAKE PAINTED WHITE AND MARKED WITH THE NUMBER OF THE LOT TO BE SERVED.
- 4.) CURB STOP SHALL BE A FORD BALL METER VALVE B43-342W, B43-344W OR CITY APPROVED EQUAL.
- 5.) ALL SERVICE TAPS TO BE LOCATED IN FIELD. TAPS SHALL BE NO CLOSER THAN AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.
- 6.) METER BOXES & YOKE ARE TO BE INSTALLED BY THE INFRASTRUCTURE CONTRACTOR AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.



**SECTION**

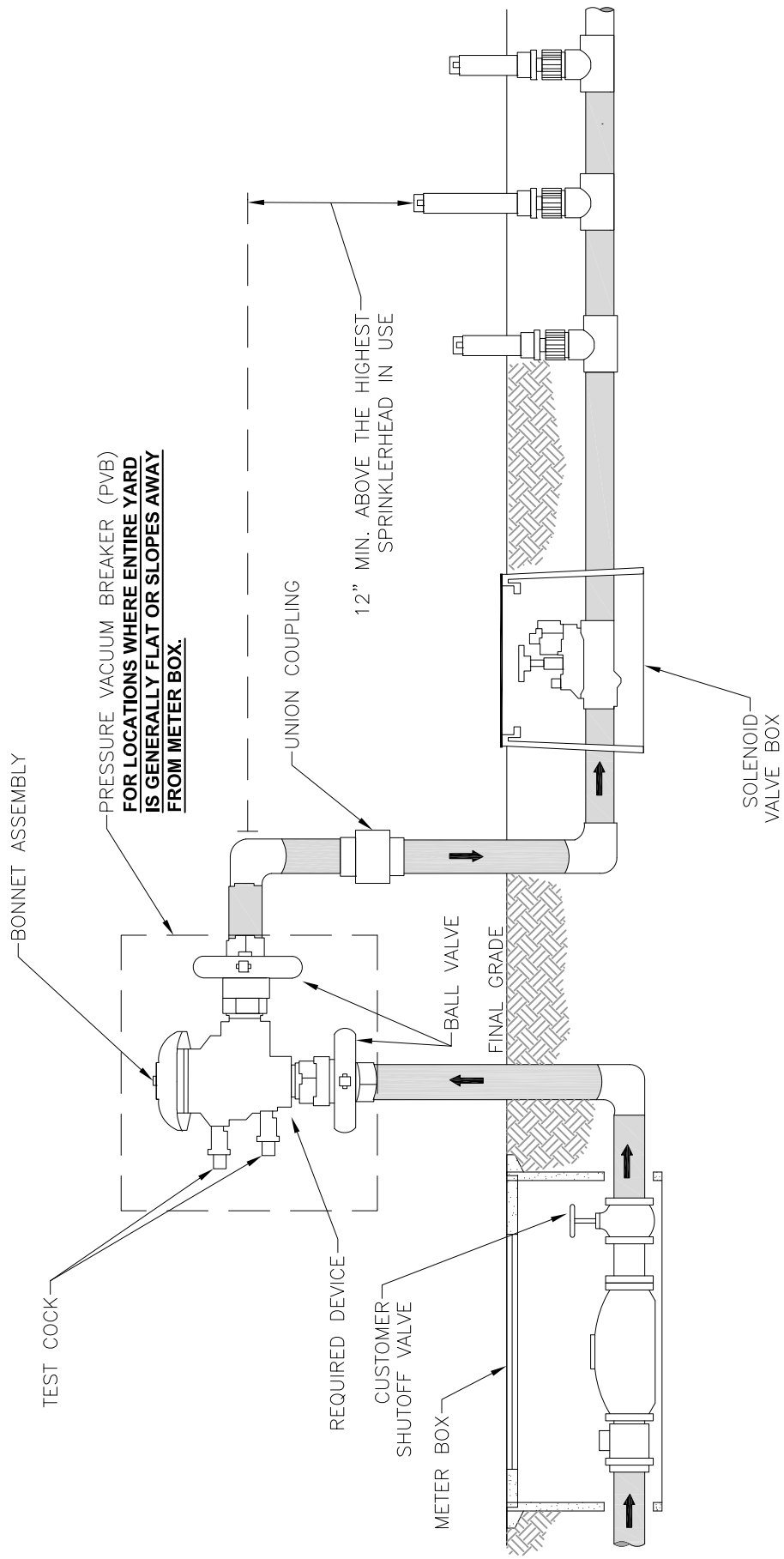


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**MULTI-METER  
ASSEMBLY DETAIL**

DATE: FEB 2018

**W-11**



**PRESSURE VACUUM BREAKER (PVB)  
FOR LOCATIONS WHERE ENTIRE YARD  
IS GENERALLY FLAT OR SLOPES AWAY  
FROM METER BOX.**

12" MIN. ABOVE THE HIGHEST  
SPRINKLERHEAD IN USE

SOLENOID  
VALVE BOX



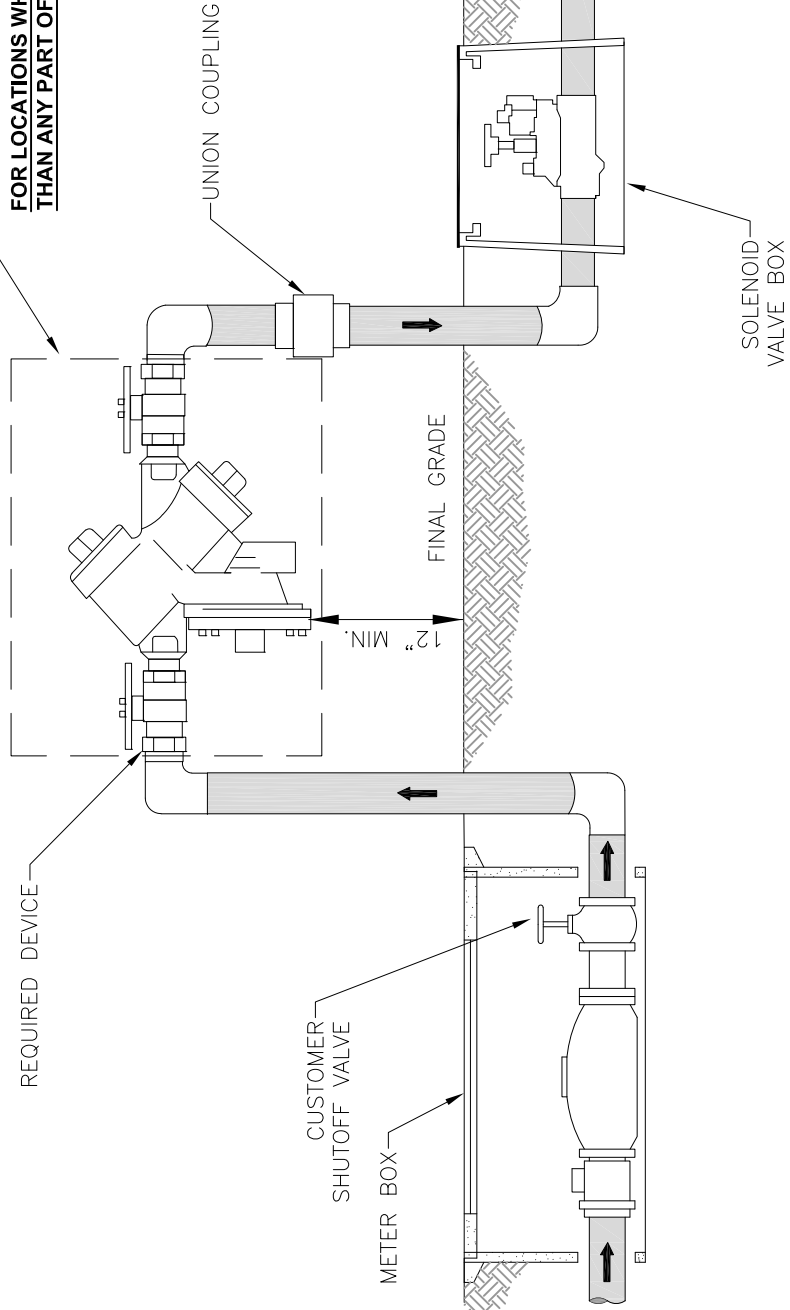
CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**RESIDENTIAL PRESSURE  
VACUUM BREAKER  
BACKFLOW  
PREVENTER ASSEMBLY**

DATE: OCT 2020

**W-12**

REDUCED PRESSURE ASSEMBLY (RPA)  
**FOR LOCATIONS WHERE METER BOX IS LOWER  
THAN ANY PART OF THE YARD.**



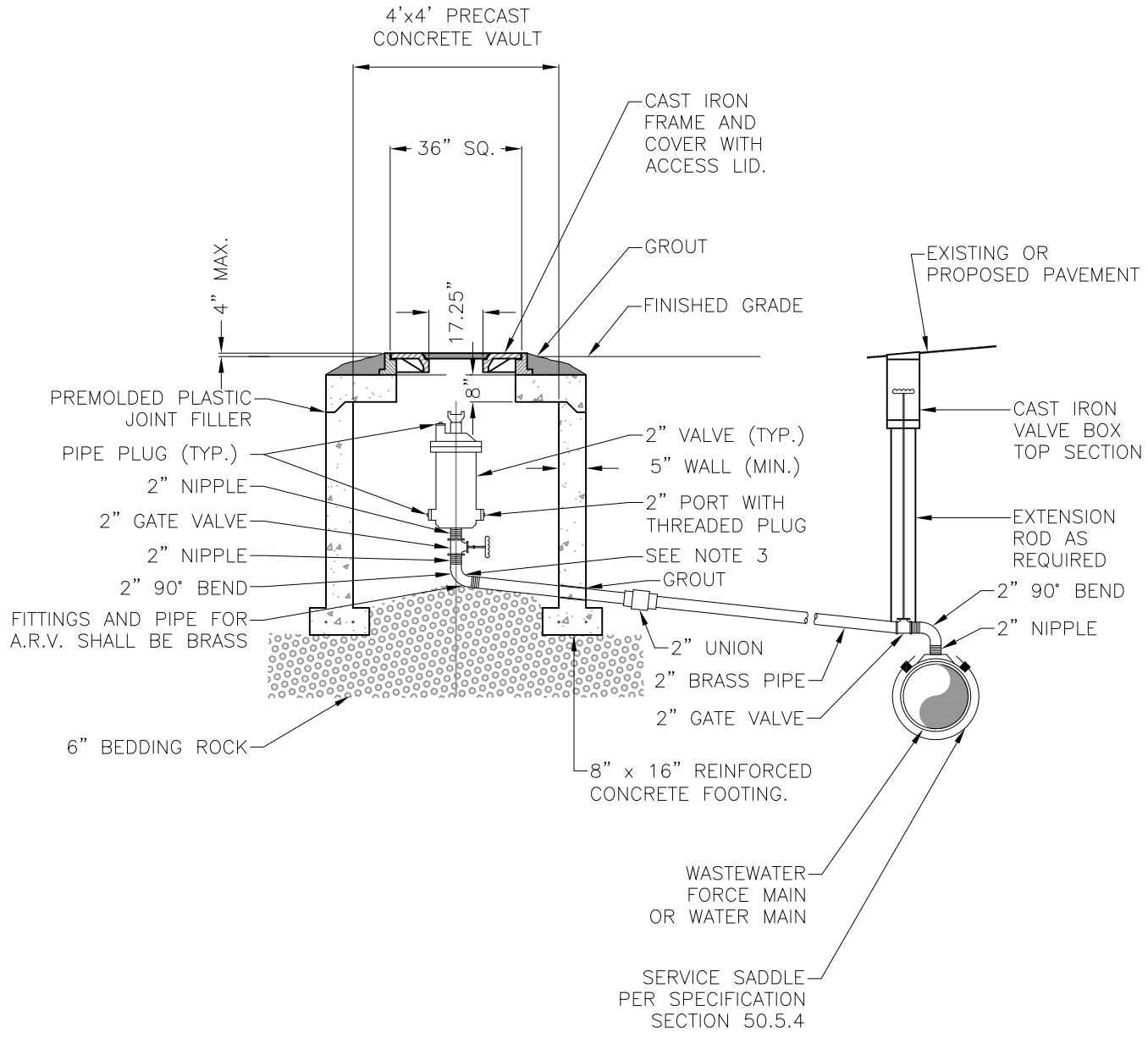
CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

# RESIDENTIAL REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY

DATE: OCT 2020

W-12A

I:\CAD\AutoCad Files\0-UTILITIES DEPARTMENT\UTILITY MAPS\DETAILS\_PCB\MOST CURRENT\0-DWG\0-PCB-UTL-DETAILS-1.dwg, 24x36monosurv.ctb



**NOTES:**

- 1.) ABOVE DETAIL IS BASED ON 2" COMBINATION AIR/VACUUM RELEASE VALVE.
- 2.) CHANGE PIPE AND FITTINGS ACCORDINGLY FOR OTHER VALVE SIZES AND TYPES. VALVE SIZES TO BE DETERMINED BY THE ENGINEER AND APPROVED BY THE COUNTY PRIOR TO INSTALLATION.
- 3.) THE MINIMUM DIMENSION FROM ELBOW INVERT TO FINISHED GRADE SHALL BE 4.0 FEET.

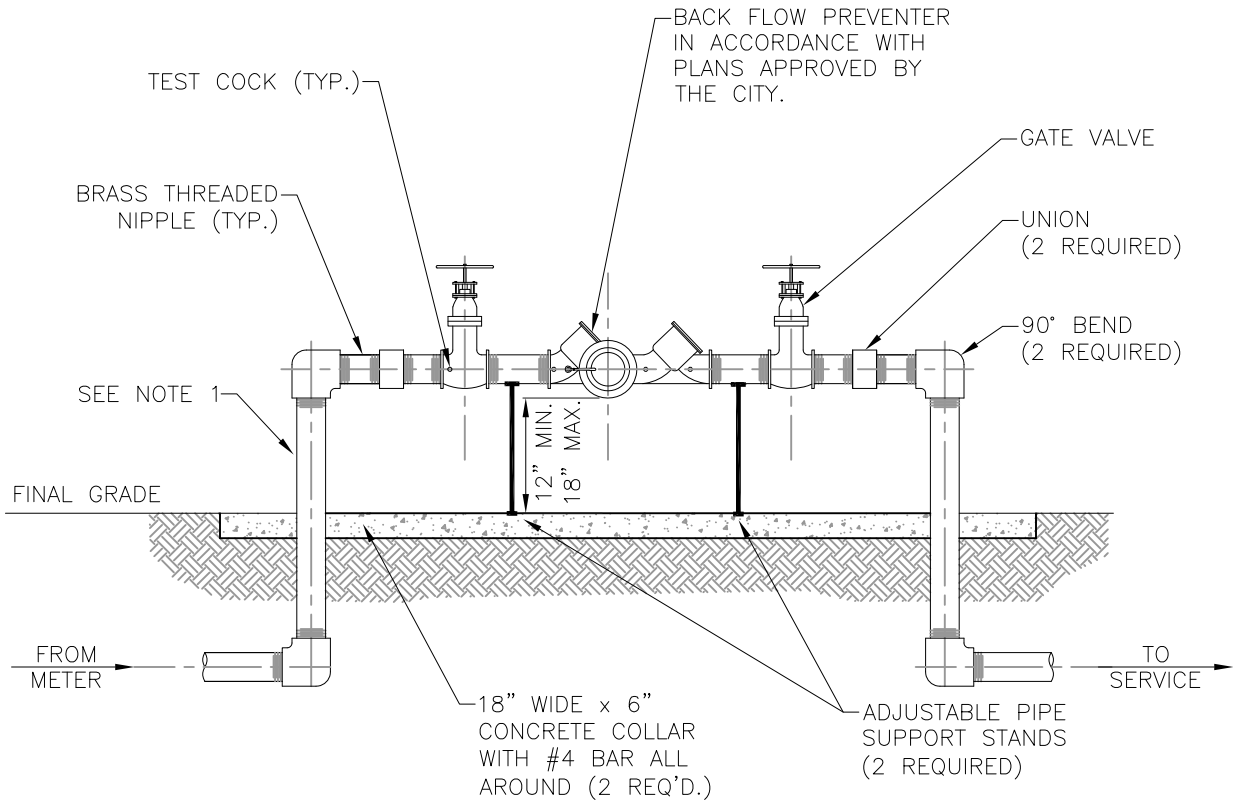


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**OFFSET AIR AND/OR  
VACUUM  
RELEASE VALVE DETAIL**

DATE: MAR 2012

**W-13**



NOTES:

- 1.) ALL PIPE AND FITTINGS 2" AND SMALLER SHALL BE THREADED TYPE K COPPER OR BRASS.
- 2.) PROVIDE PROTECTION AGAINST FREEZING, INSULATE OR "HOT BOX".
- 3.) TWO PIPE SUPPORTS REQUIRED.



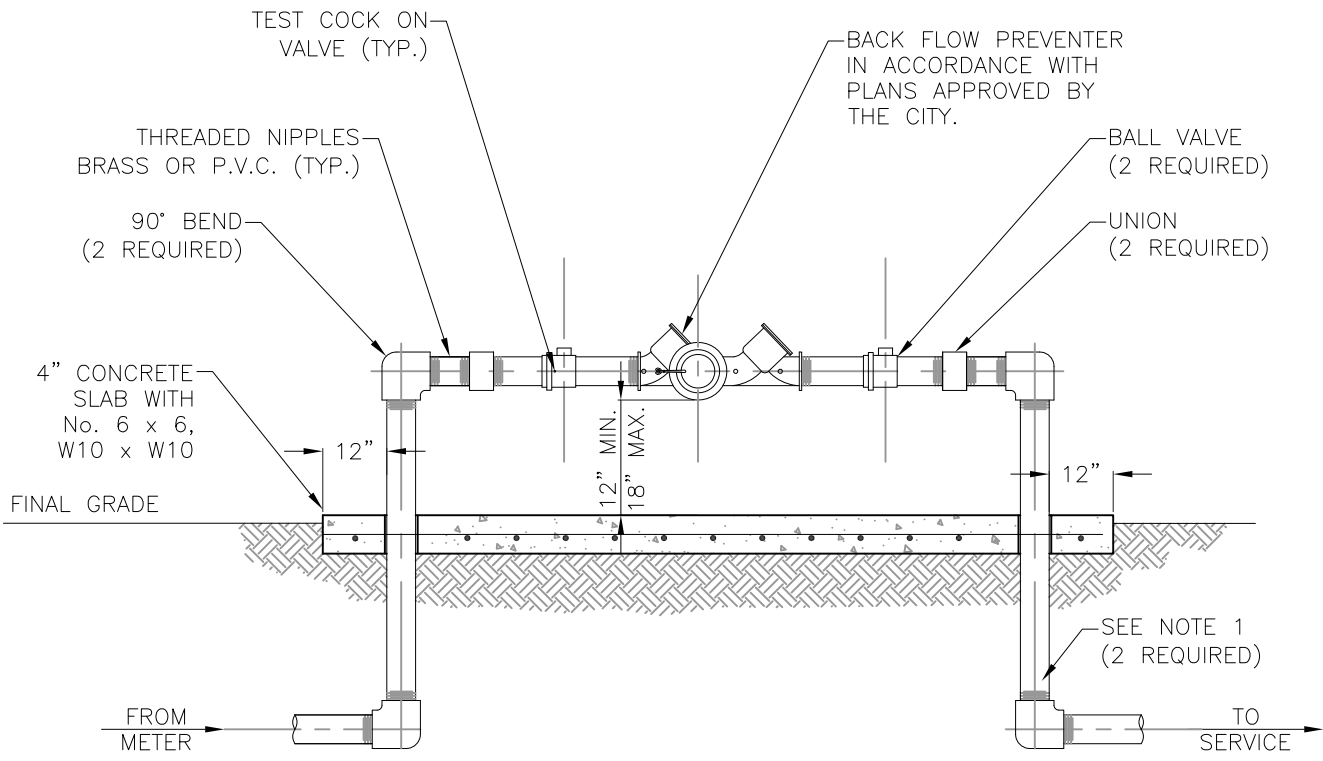
CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**BACK FLOW PREVENTER  
ASSEMBLY DETAIL**

DATE: AUG 2023

**W-14**





**NOTES:**

- 1.) ALL PIPE AND FITTINGS 2" AND SMALLER SHALL BE THREADED TYPE K COPPER OR BRASS.
- 2.) PROVIDE PROTECTION AGAINST FREEZING, INSULATION OR "HOTBOX".

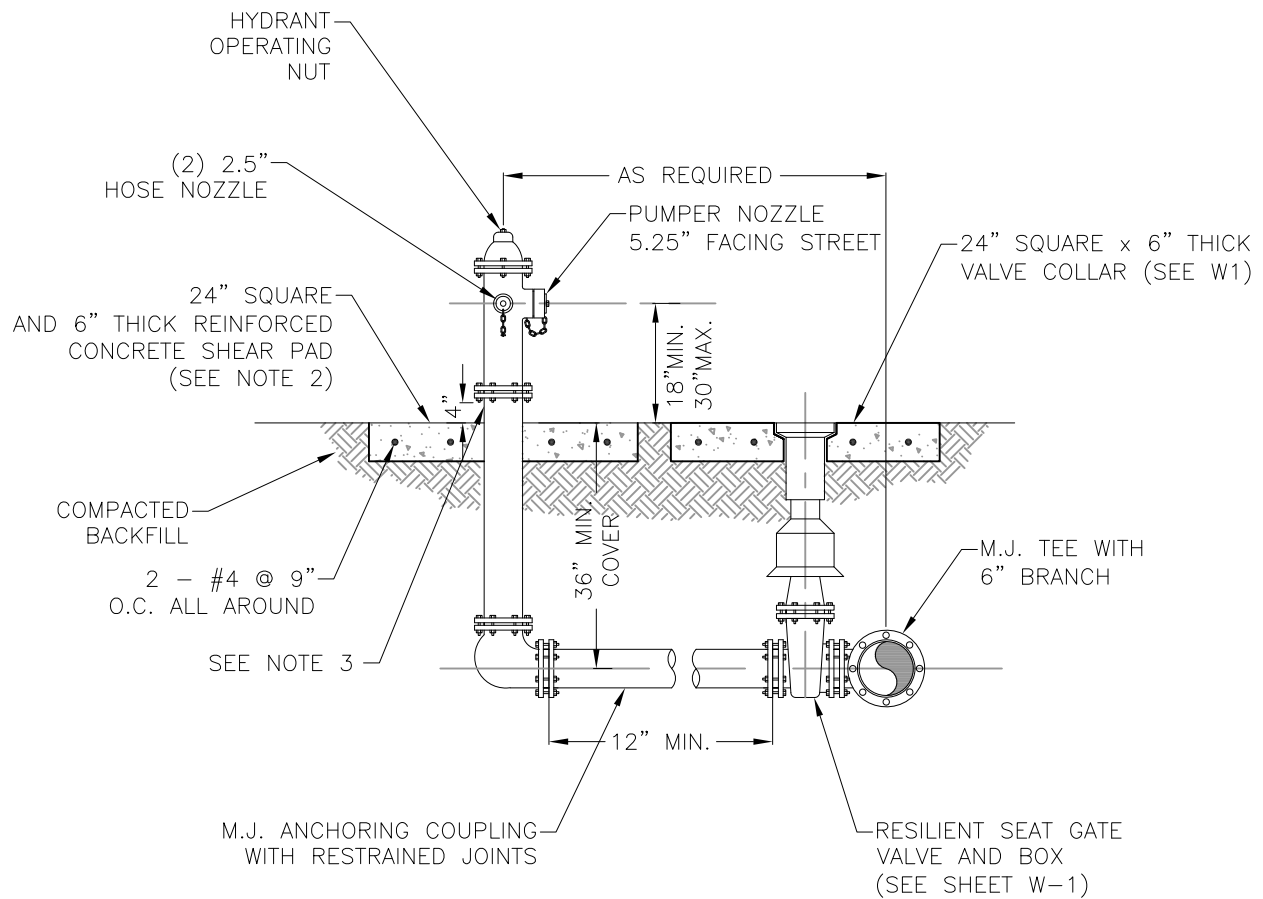


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**REDUCED PRESSURE  
BACK FLOW PREVENTER  
FOR 3/4, 1, 1-1/2 & 2"**

DATE: AUG 2023

**W-15**



**NOTES:**

- 1.) FIRE HYDRANT SHALL BE SUPPLIED WITH A WEEP HOLE.
- 2.) THE SHEAR PAD MAY BE RECESSED UP TO 6 INCHES BELOW FINISHED GRADE.
- 3.) CLEARANCE BETWEEN BOTTOM OF BOLTS AND TOP OF SHEAR PAD SHALL BE A 4" MINIMUM.
- 4.) HYDRANT SHALL BE AVK MODEL 2780 NOSTALGIC, AMERICAN DARLING B-84-B, CLOW MEDALLION OR US FIRE HYDRANT, MODEL SENTINEL 250 WITH SS VALVE ROD.
- 5.) A WEATHER SHIELD SHALL BE PROVIDED TO PROTECT OPERATING STEM OR NUT.
- 6.) THE HYDRANT'S UPPER AND LOWER STEM, BREAK COUPLING, INTERNAL PINS AND CLIPS, AND ALL EXTERNAL BOLTING SHALL BE MANUFACTURED OF 304 OR 316 STAINLESS STEEL.



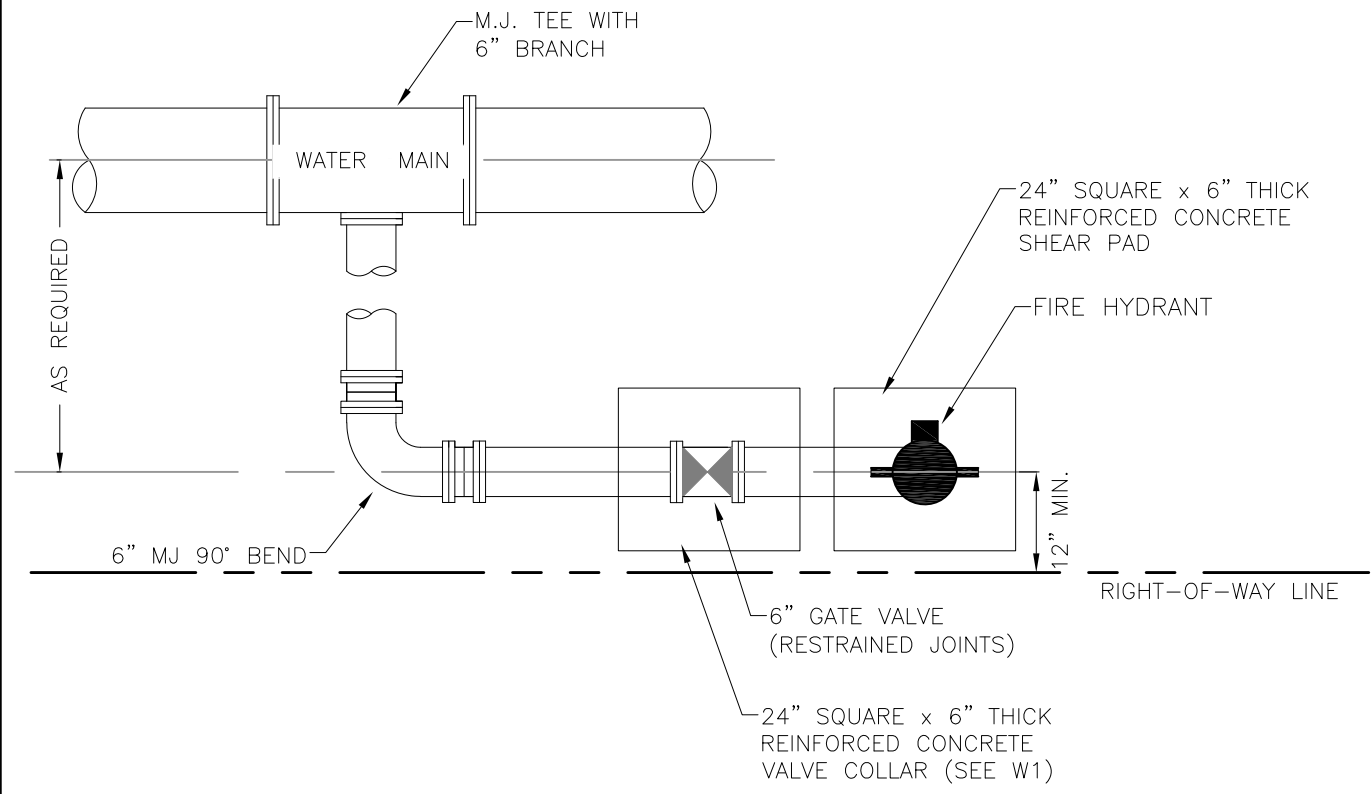
**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**5-1/4" FIRE HYDRANT  
ASSEMBLY DETAIL**

DATE: APR 2019

**W-16A**

I:\CAD\AutoCad Files\0-UTILITIES DEPARTMENT\UTILITY MAPS\DETAILS\_PCB\MOST CURRENT\DWG\PCB-UTL-DETAILS-1.dwg, 24x36monosurv.ctb



**PLAN**

**NOTE:**

THIS DETAIL FOR USE ONLY WHEN THE WATER MAIN IS LOCATED TOO CLOSE TO THE RIGHT-OF-WAY LINE TO USE DETAIL ON SHEET 16A.

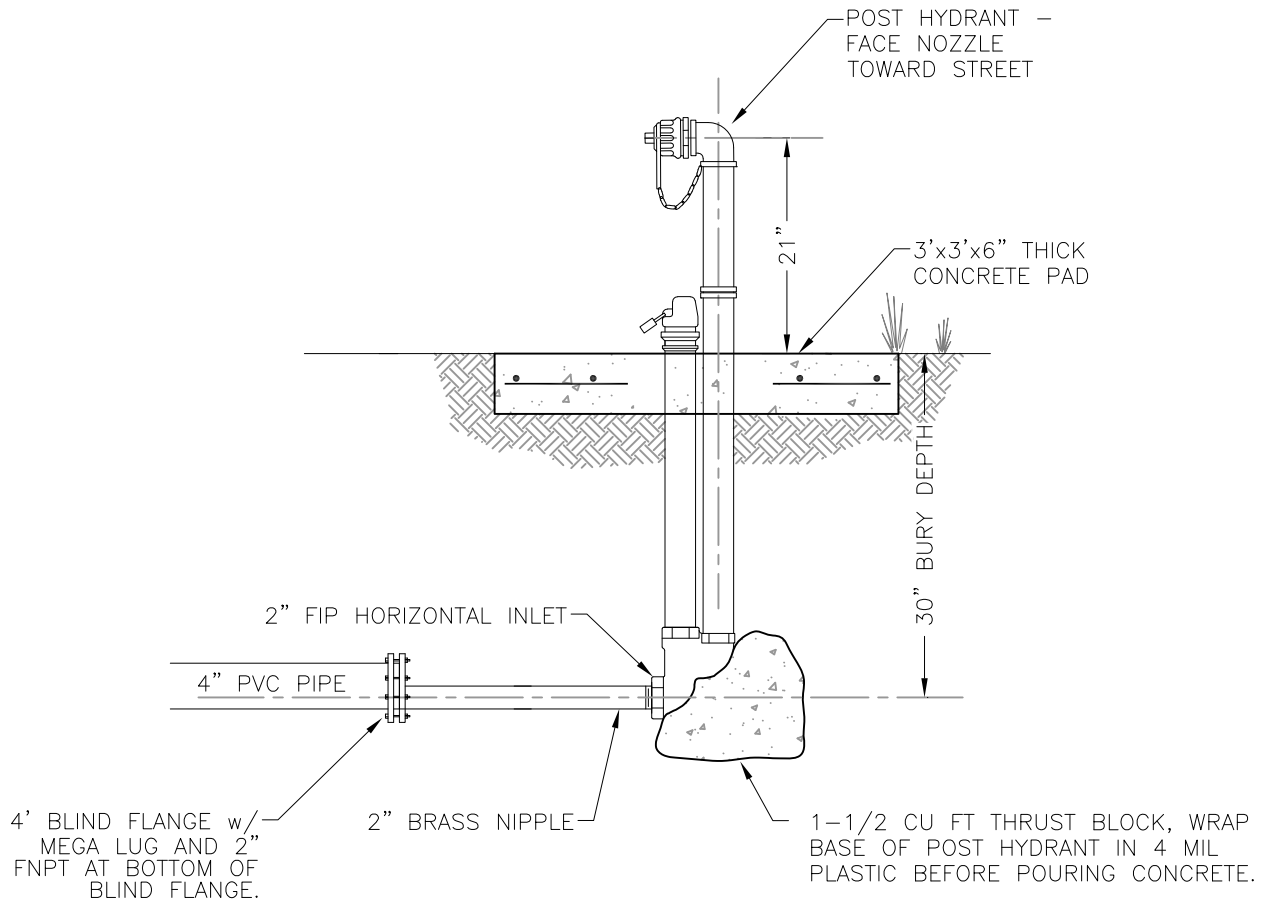


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**TYPICAL FIRE HYDRANT  
WITH 90° BEND  
ASSEMBLY DETAIL**

DATE: MAR 2012

**W-16B**



POST HYDRANTS SHALL BE NON-FREEZING, SELF DRAINING TYPE WITH A 30" BURY. HYDRANTS SHALL BE FURNISHED WITH A 2" FIP HORIZONTAL INLET, A NON-TURNING OPERATING ROD, AND SHALL OPEN LEFT. BRONZE OPERATING MECHANISM AND ALUMINUM PLUNGER DESIGN, AND BE SERVICABLE FROM ABOVE GRADE WITH NO DIGGING. THE OUTLET SHALL ALSO BE BRONZE AND BE 2-1/2" NST. HYDRANTS SHALL BE LOCKABLE TO PREVENT UNAUTHORIZED USE. MAINGAURD NO. 77 AS MANUFACTURED BY KUPFERLE FOUNDRY CO., ST. LOUIS, MO, OR CITY APPROVED EQUAL.

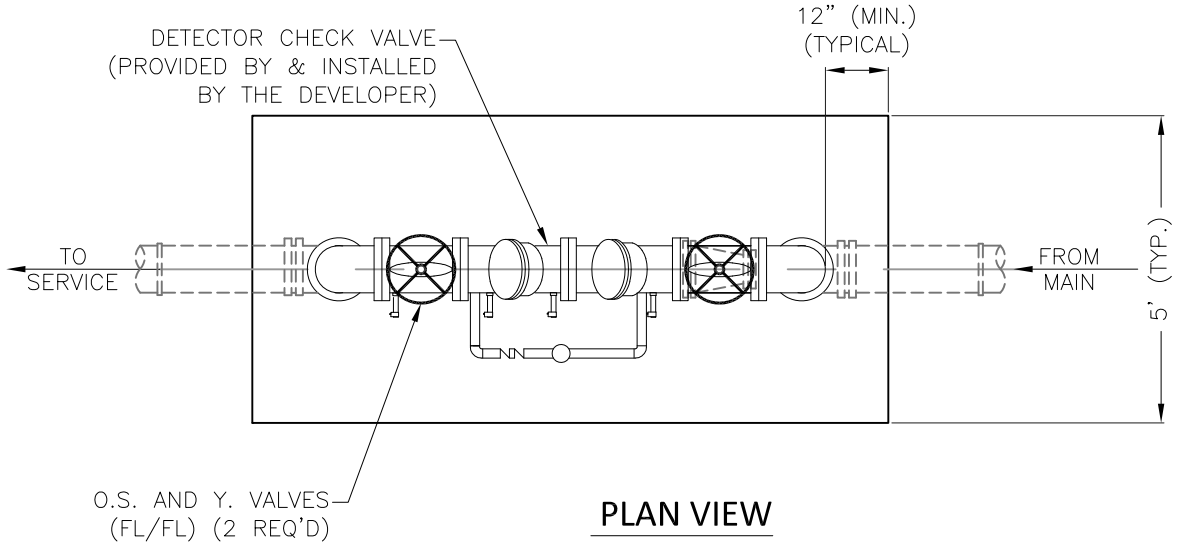


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

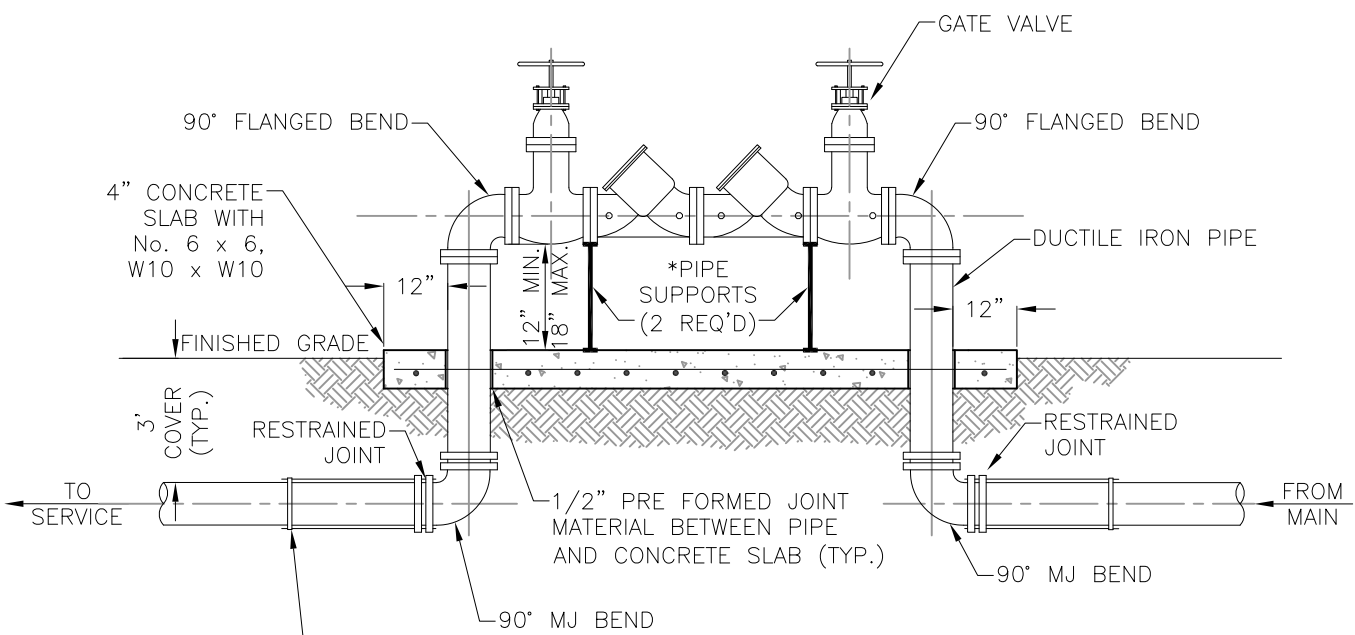
## FLUSHING POST HYDRANT ASSEMBLY DETAIL

DATE: APR 2019

W-16C



**PLAN VIEW**



**SECTION**

NOTE:  
 ALL ABOVE GROUND PIPE JOINTS SHALL BE FLANGED.  
 \* PIPE SUPPORTS:  
 1 REQ'D UNDER CENTER FOR 6",  
 2 REQ'D FOR 8" AND LARGER



CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

**DOUBLE DETECTOR  
 CHECK VALVE ASSEMBLY  
 DETAIL**

DATE: MAR 2023

**W-17**

METER & STRAINER LAYING LENGTH				
TYPE	SIZE			
	3"	4"	6"	8"
OMNI T2	17"	19"	23"	N/A
OMNI C2	17"	20"	24"	N/A
OMNI F2	N/A	51- $\frac{7}{8}$ "	67- $\frac{5}{8}$ "	N/A

METER LAYING LENGTH INCLUDES STRAINER.

METER FLOW OPERATING RANGE (GPM)				
TYPE	SIZE			
	3"	4"	6"	8"
OMNI T2	2.5-500	3-1,000	4-2,000	N/A
OMNI C2	1.0-400	1.5-800	3-1,600	N/A
OMNI F2	N/A	1.5-1,000	3-2,000	N/A

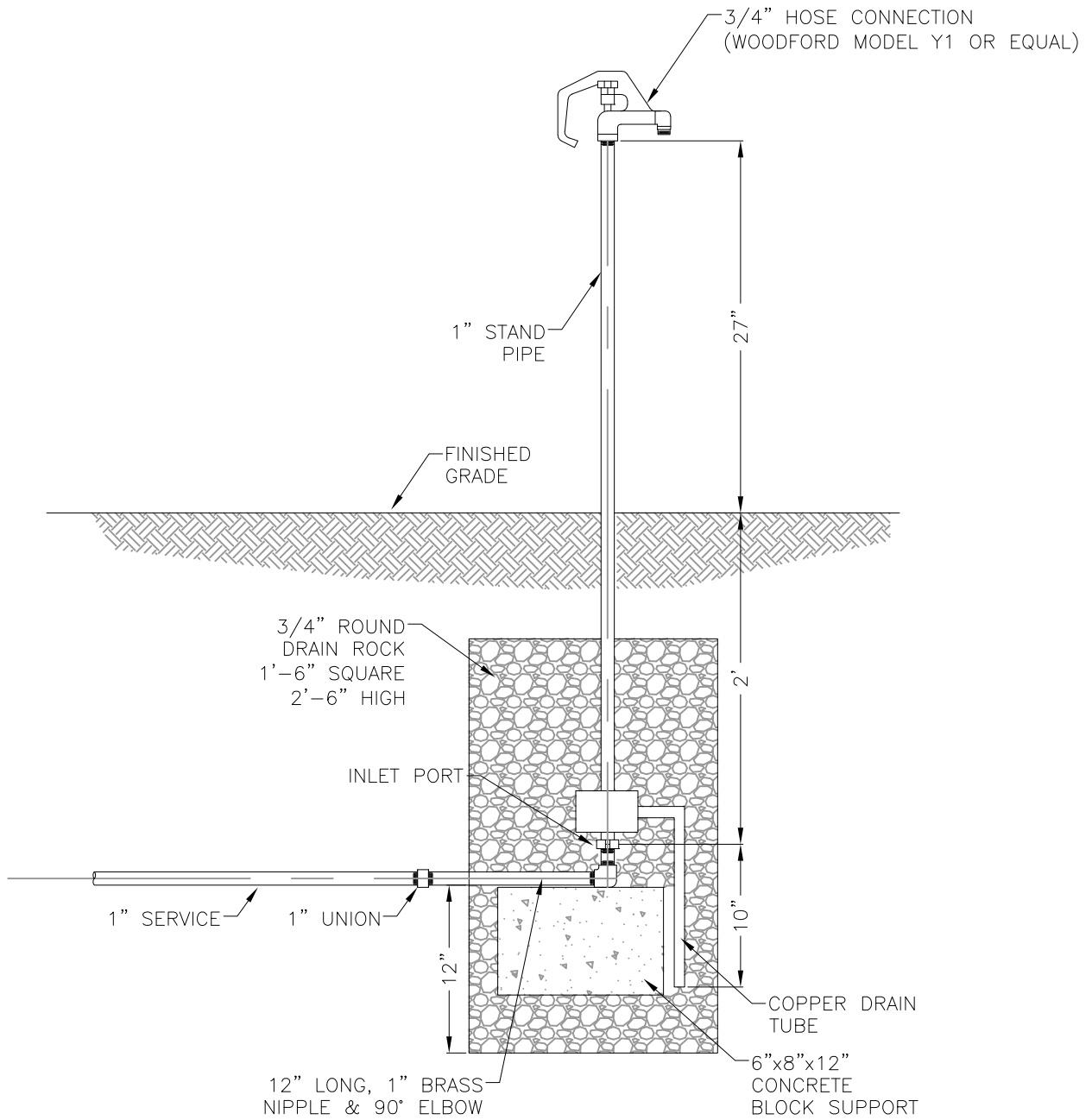


CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

METER LAYING LENGTHS  
 &  
 OPERATING RANGE

DATE: JAN 2020

W-18

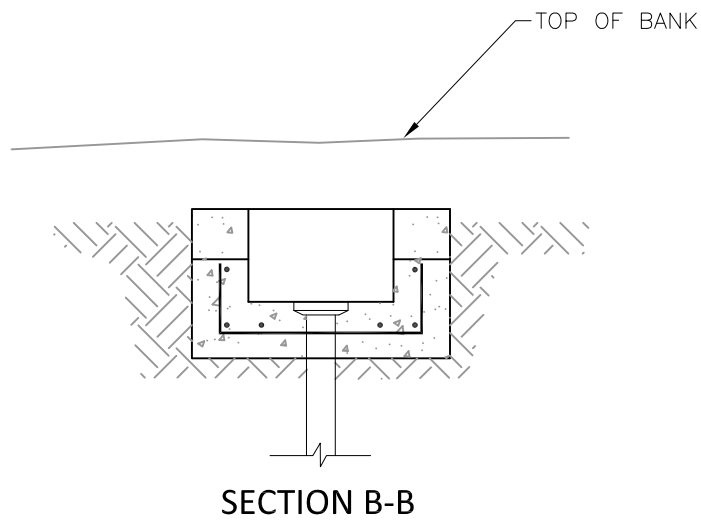
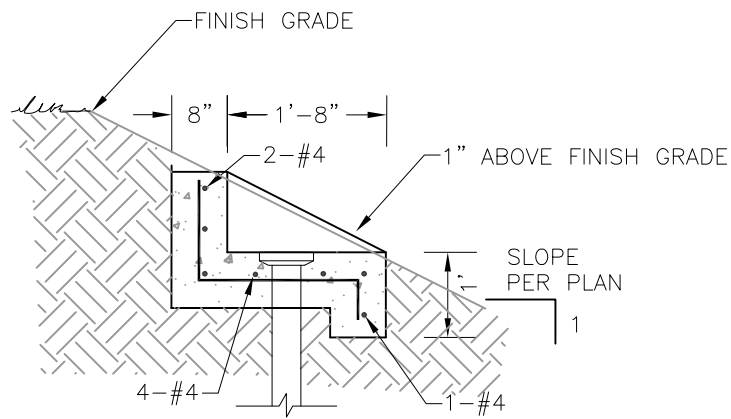
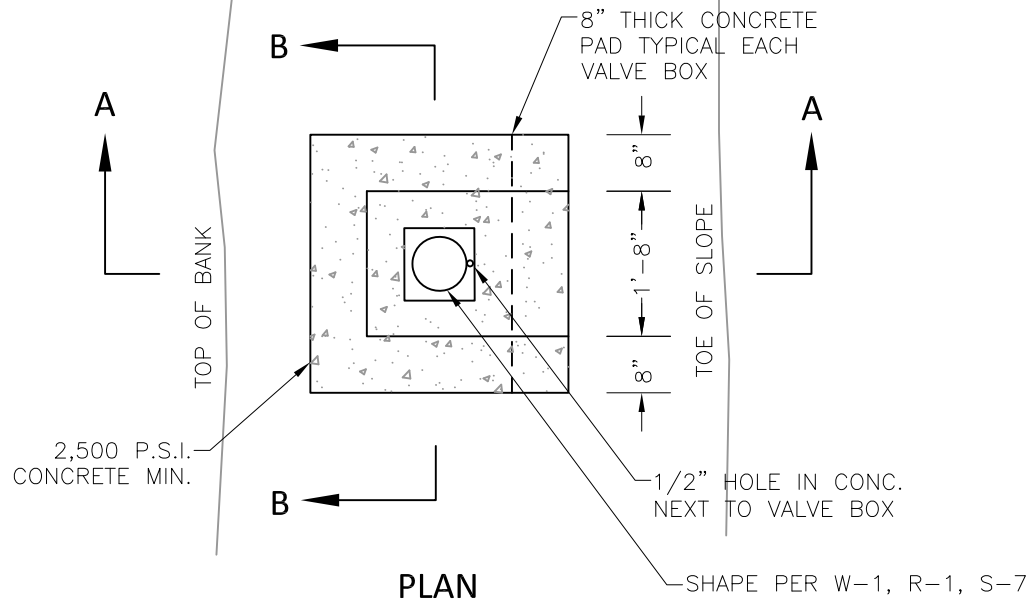


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**FREEZE-PROOF  
YARD HYDRANT**

DATE: MAR 2012

**W-19**



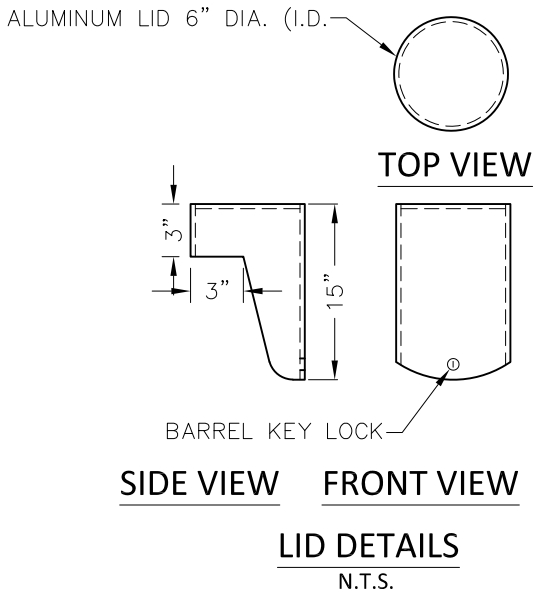
CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**WATER GATE VALVE &  
BOX DETAIL  
(ON SLOPES >1:6)**

DATE: FEB 2020

**W-20**

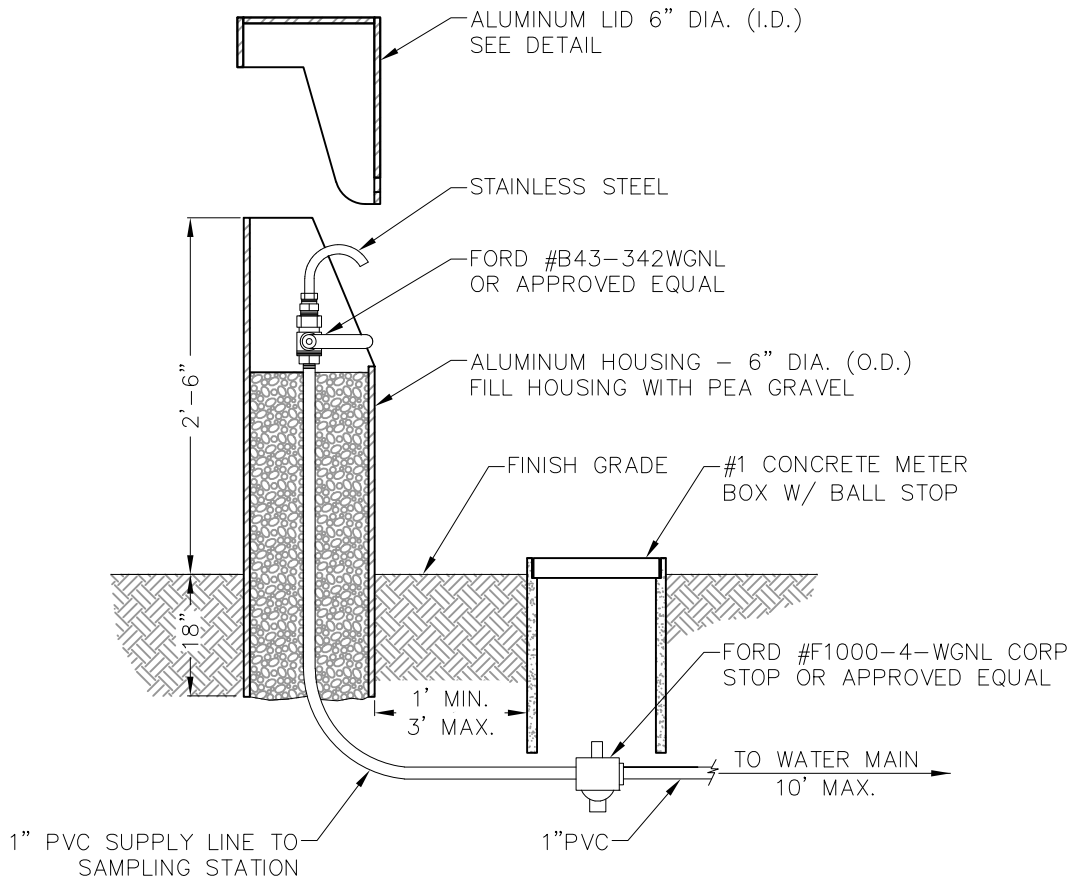




**NOTES:**

1. WATER QUALITY SAMPLING STATION TO BE KORALEAN OR APPROVED EQUAL.
2. KEYS TO LOCKS SHALL BE DELIVERED TO THE CITY WATER QUALITY DEPARTMENT UPON ACCEPTANCE.

**LID DETAILS**  
N.T.S.



**TYPICAL INSTALLATION**  
N.T.S.

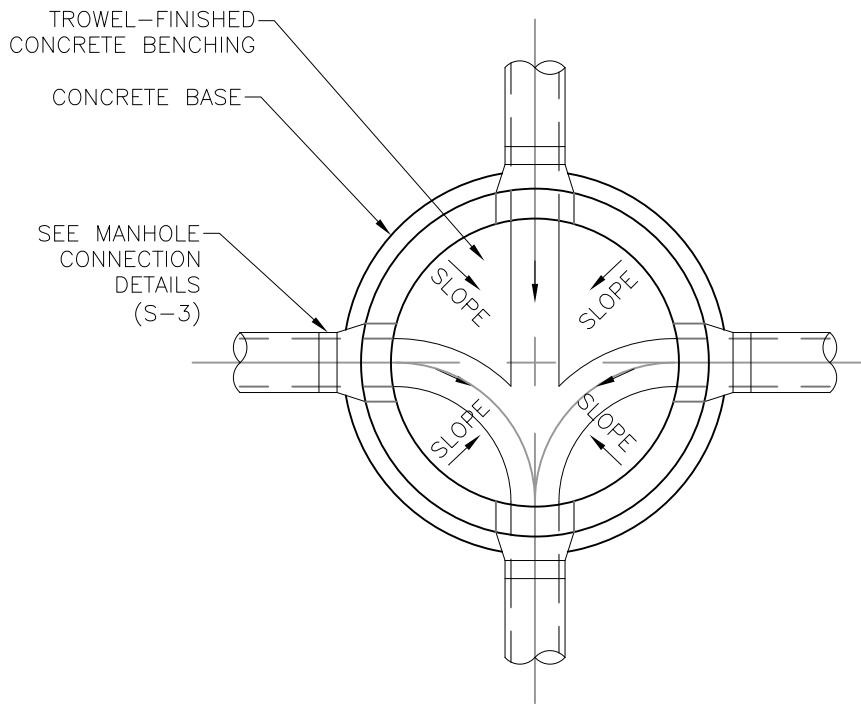


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

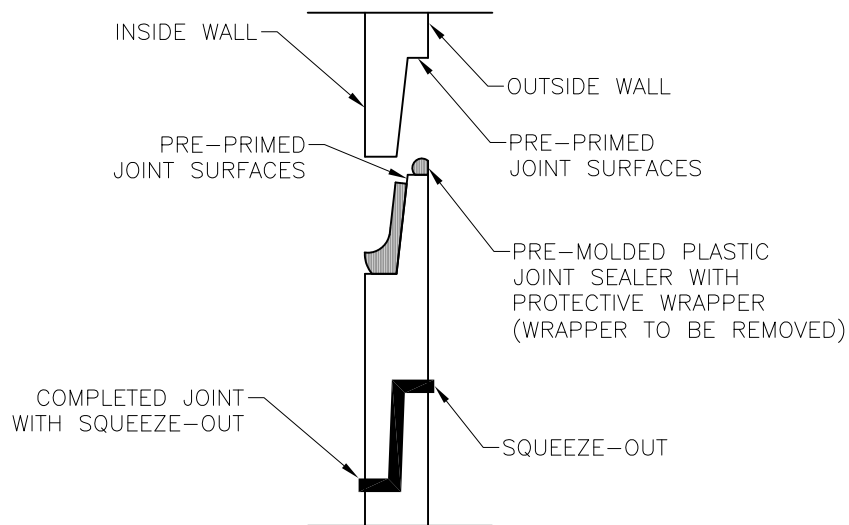
**WATER QUALITY  
SAMPLING STATION**

DATE: MAR 2012

**W-21**



\* SEE SHEET S-2 FOR CROSS SECTION AND NOTES

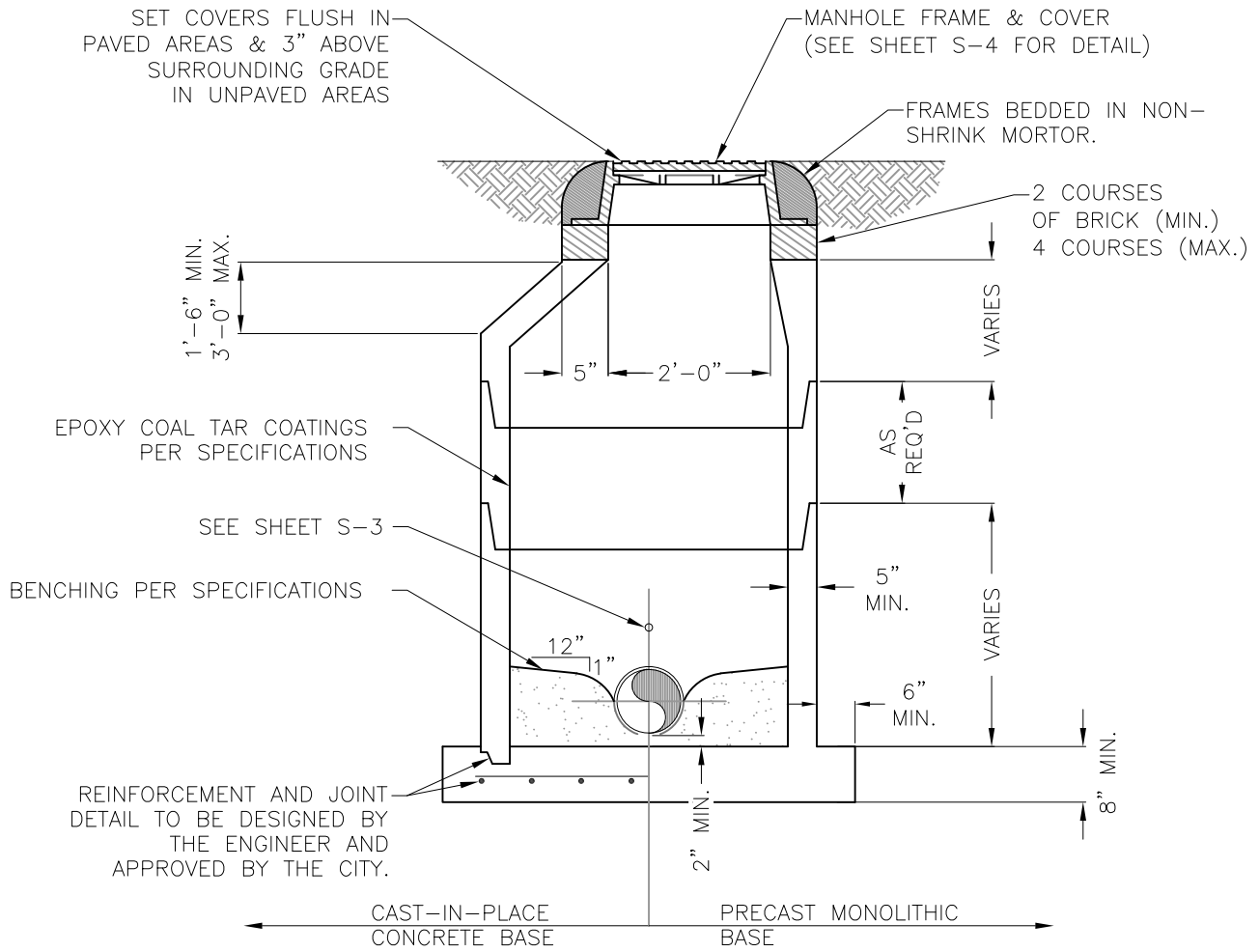


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

PRECAST CONCRETE  
MANHOLE DETAILS  
JOINTS & FLOW

DATE: MAR 2012

S-1



NOTES:

- 1.) MANHOLE SHOWN IS FOR SEWER SIZE 8" THRU 18", MANHOLE DIAMETER FOR SEWERS GREATER THAN 18" SHALL BE AS APPROVED BY CITY.
- 2.) DROP CONNECTIONS ARE REQUIRED WHENEVER INVERT OF INFLUENT SEWER IS 24" OR MORE ABOVE THE INVERT OF THE MANHOLE. SEE MANHOLE CONNECTION DETAILS.
- 3.) APPROVED CONCENTRIC CONE DESIGN MAY BE USED AS AN ALTERNATIVE.
- 4.) MANHOLE LIFT HOLES AND GRADE ADJUSTMENT RINGS SHALL BE SEALED W/ NON-SHIRNK MORTAR.
- 5.) MANHOLE COVERS IN SWALES OR DITCHES SHALL BE EXTENDED TO TOP OF BANK ELEVATION.

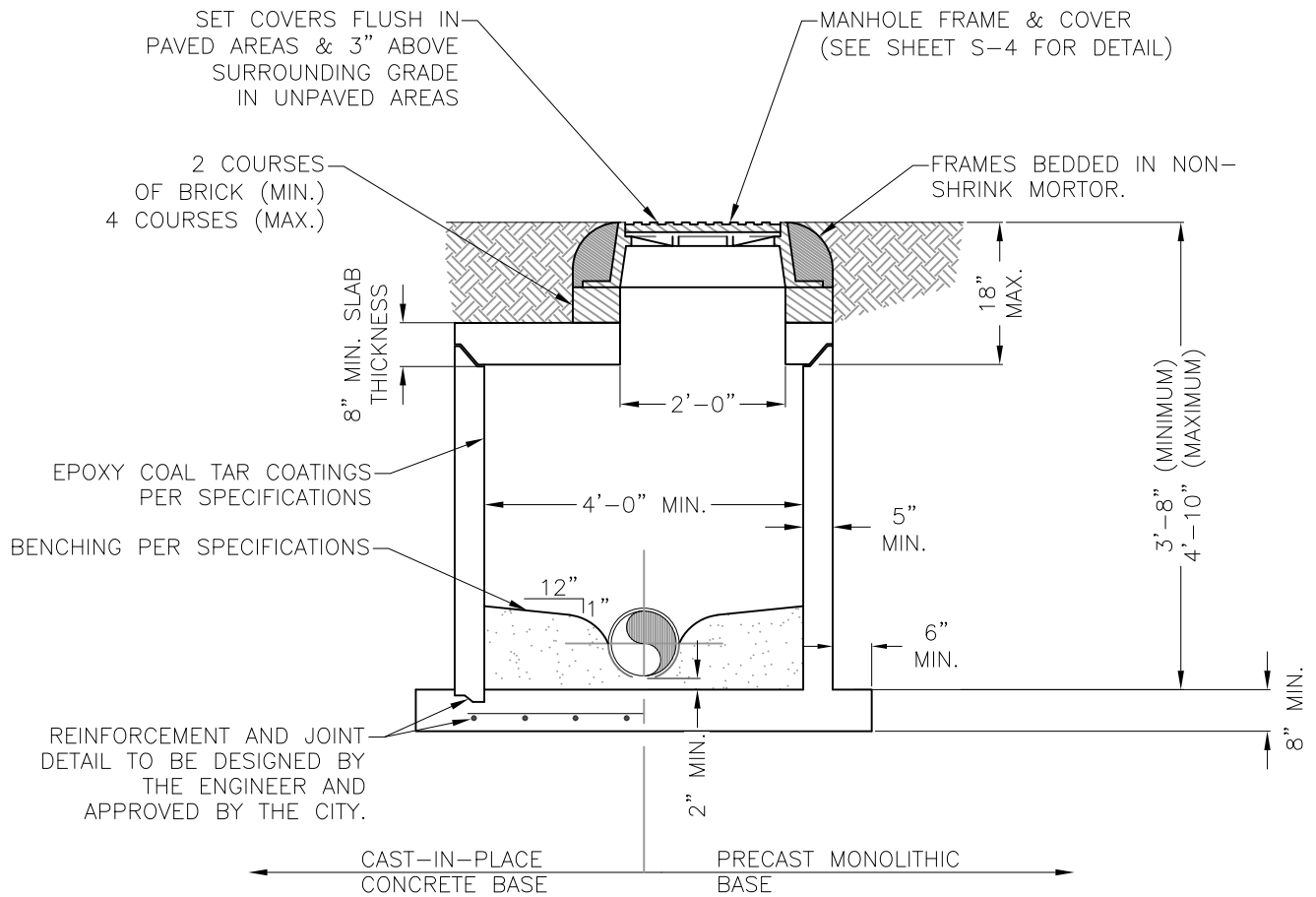


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

PRECAST CONCRETE  
MANHOLE DETAILS  
SECTION & NOTES

DATE: MAR 2012

S-2



NOTES:

- 1.) MANHOLE SHOWN IS FOR SEWER SIZE 8" THRU 18", MANHOLE DIAMETER FOR SEWERS GREATER THAN 18" SHALL BE AS APPROVED BY CITY.
- 2.) DROP CONNECTIONS ARE REQUIRED WHENEVER INVERT OF INFLUENT SEWER IS 24" OR MORE ABOVE THE INVERT OF THE MANHOLE. SEE MANHOLE CONNECTION DETAILS.
- 3.) APPROVED CONCENTRIC CONE DESIGN MAY BE USED AS AN ALTERNATIVE.
- 4.) MANHOLE LIFT HOLES AND GRADE ADJUSTMENT RINGS SHALL BE SEALED W/ NON-SHIRNK MORTAR.
- 5.) MANHOLE COVERS IN SWALES OR DITCHES SHALL BE EXTENDED TO TOP OF BANK ELEVATION.

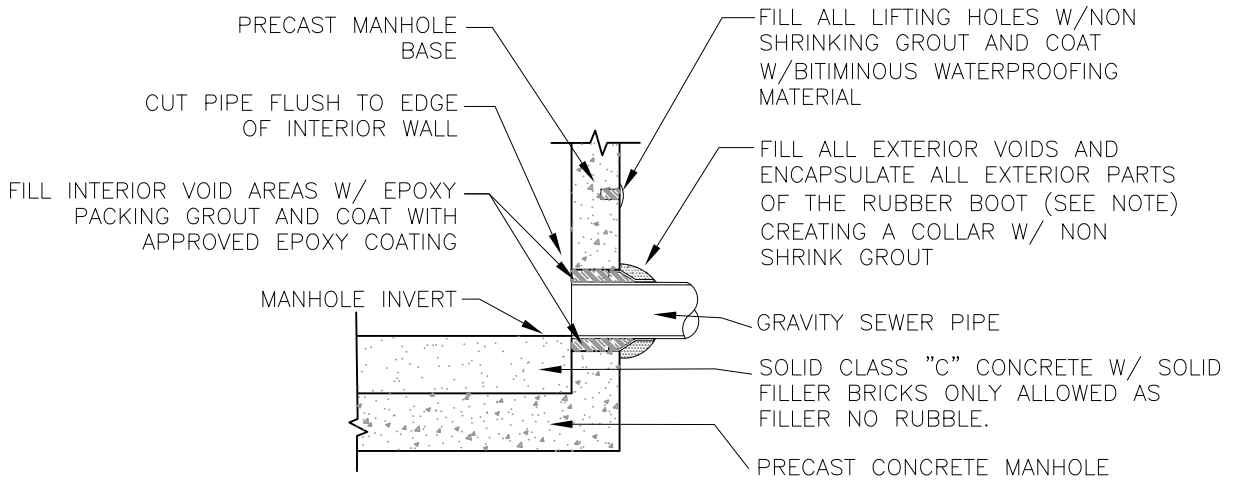


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

PRECAST SHALLOW  
CONCRETE MANHOLE  
DETAILS SECTION & NOTES

DATE: MAR 2012

S-2A

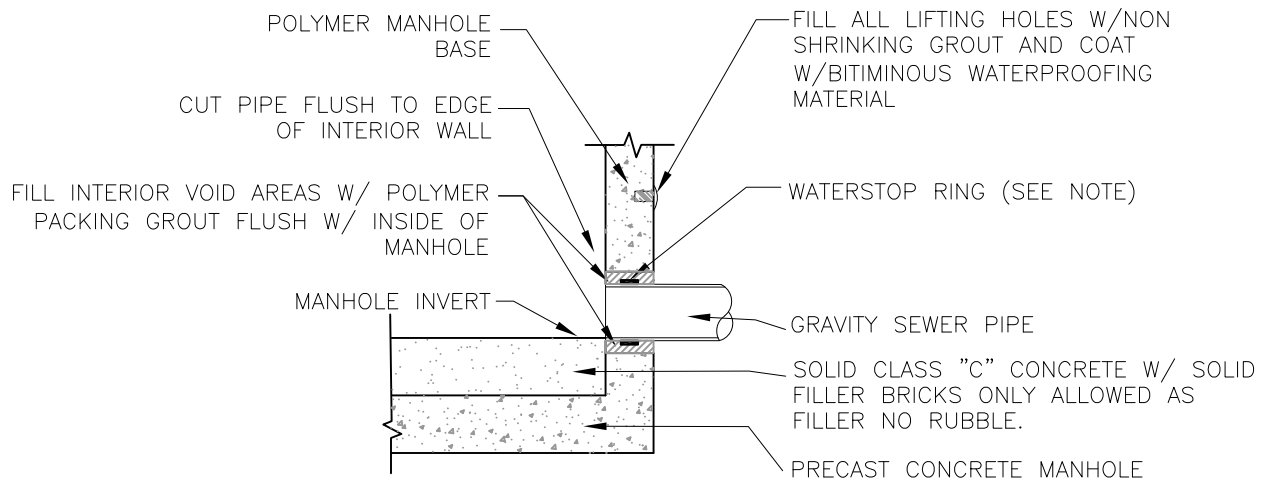


**NOTES:**

RUBBER BOOT, DOUBLE BANDED, 316 S/S CLAMPS, MEETING THE ASTM C923 STANDARD. Kor-N-Seal® I EX SERIES CONNECTOR WITH DOUBLE STAINLESS STEEL BANDS OR EQUAL.

**STANDARD PRECAST MANHOLE  
PIPE CONNECTION**

(MAXIMUM DEPTH 15 FT)



**NOTES:**

WATERSTOP RING SHALL BE "A-LOK" PRODUCTS OR ALTERNATE APPROVED BY PCB UTILITIES DEPT.

**SPECIAL DETAIL FOR 21" DIAMETER  
PIPE AND LARGER**

**NOTES:**

- 1.) AN INSIDE DROP CONNECTION SHALL BE REQUIRED FOR ALL INFLUENT WHICH HAVE AN INVERT 2' OR MORE ABOVE THE MANHOLE INVERT. (SEE DETAIL S-16A)
- 2.) FOR NEW MANHOLES, BOOT/WATERSTOP SHALL BE INSTALLED BY MANUFACTURER.
- 3.) FOR EXISTING MANHOLES, CORE BORE AND INSTALL BOOT/WATERSTOP.
- 4.) COORDINATE WITH CITY INSPECTOR 2 BUSINESS DAYS IN ADVANCE OF CONNECTION.



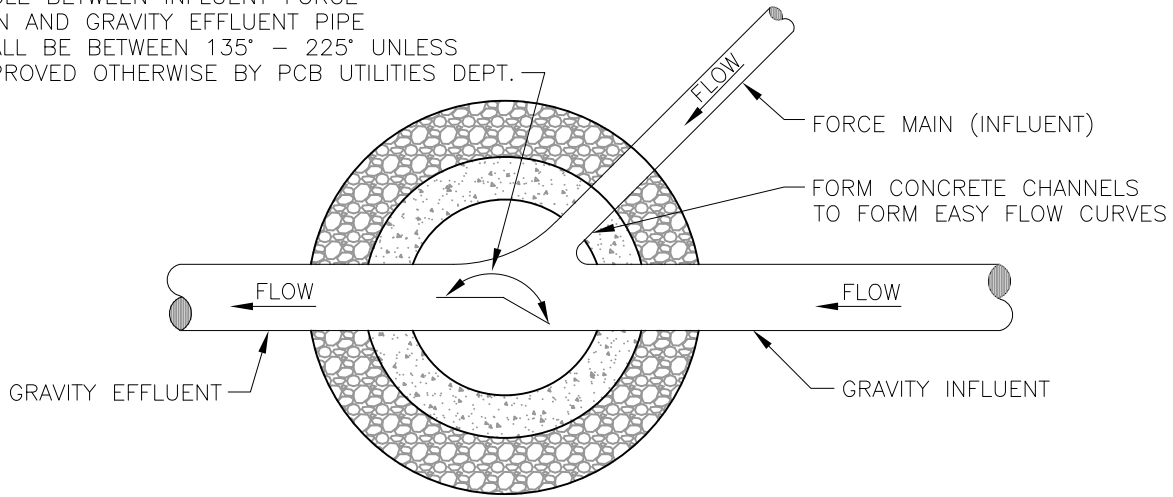
**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**MANHOLE CONNECTION  
DETAIL**

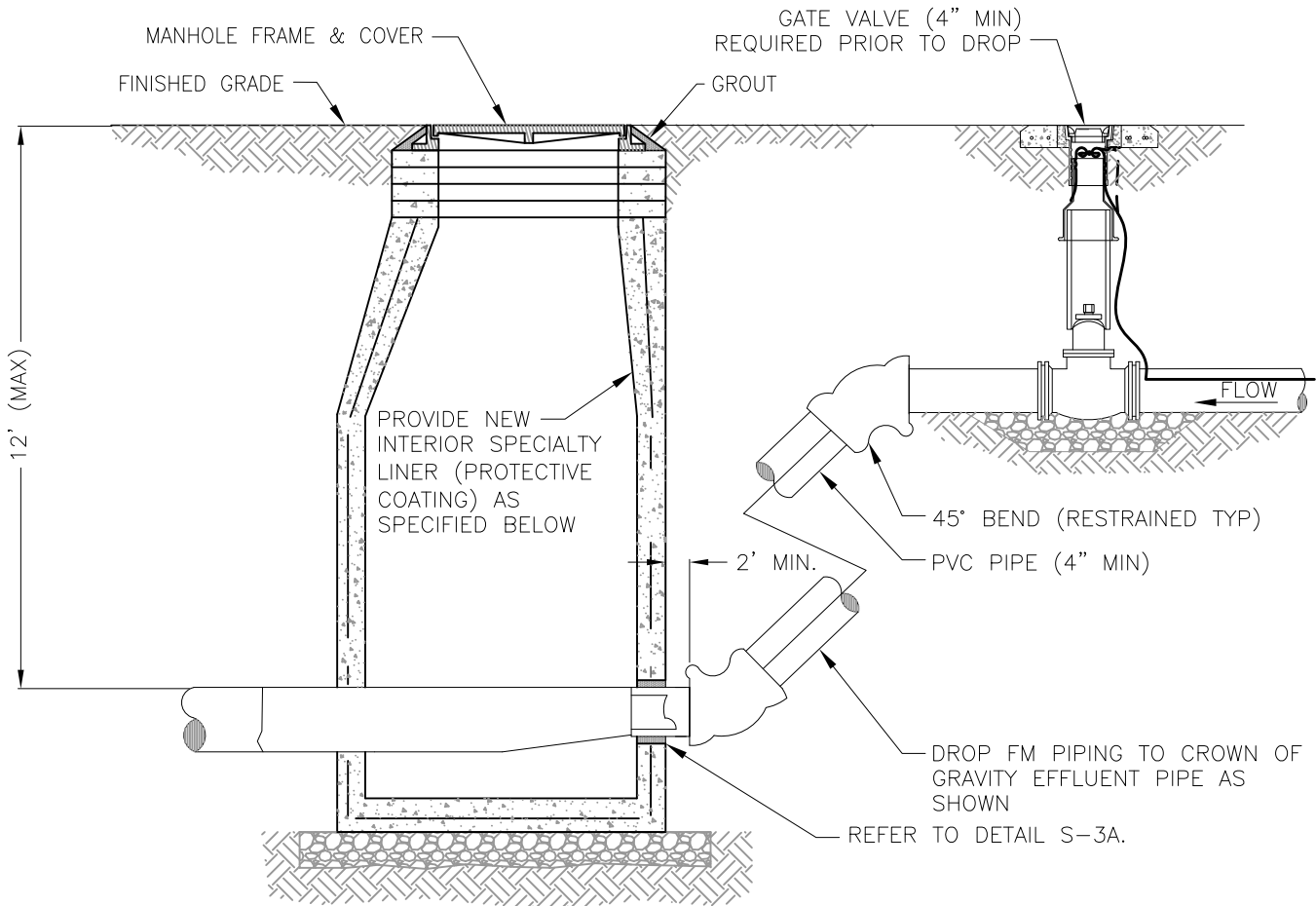
DATE: DEC 2023

**S-3A**

NOTE:  
 ANGLE BETWEEN INFLUENT FORCE  
 MAIN AND GRAVITY EFFLUENT PIPE  
 SHALL BE BETWEEN 135° - 225° UNLESS  
 APPROVED OTHERWISE BY PCB UTILITIES DEPT.



**PLAN**



**SECTION**

NOTES:

- 1.) MANHOLE LINER SHALL BE SPECTRASHIELD BY CCI SPECTRUM, INC. NOMINAL 500 MILS TOTAL THICKNESS OR EQUAL WITH WRITTEN APPROVAL BY PCB UTILITIES DEPT.



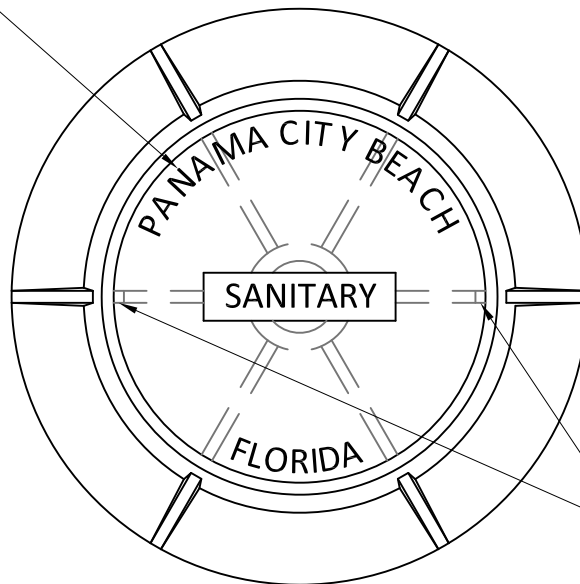
CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

**FORCE MAIN TO  
 MANHOLE CONNECTION  
 DETAIL**

DATE: DEC 2023

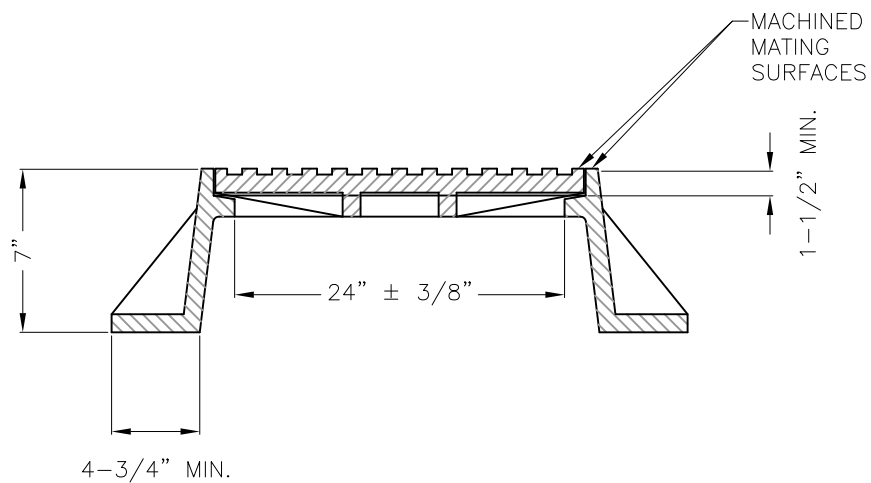
**S-3B**

RAISED 1-1/2" LETTERS  
FLUSH WITH TOP OF COVER



2 - NON PENETRATING  
PICK HOLES

PLAN



ELEVATION

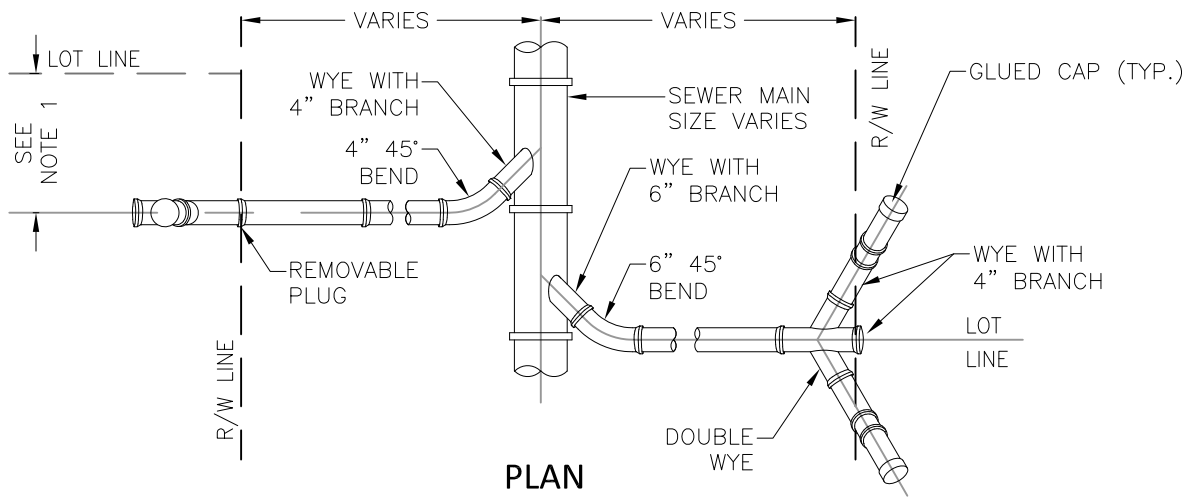


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

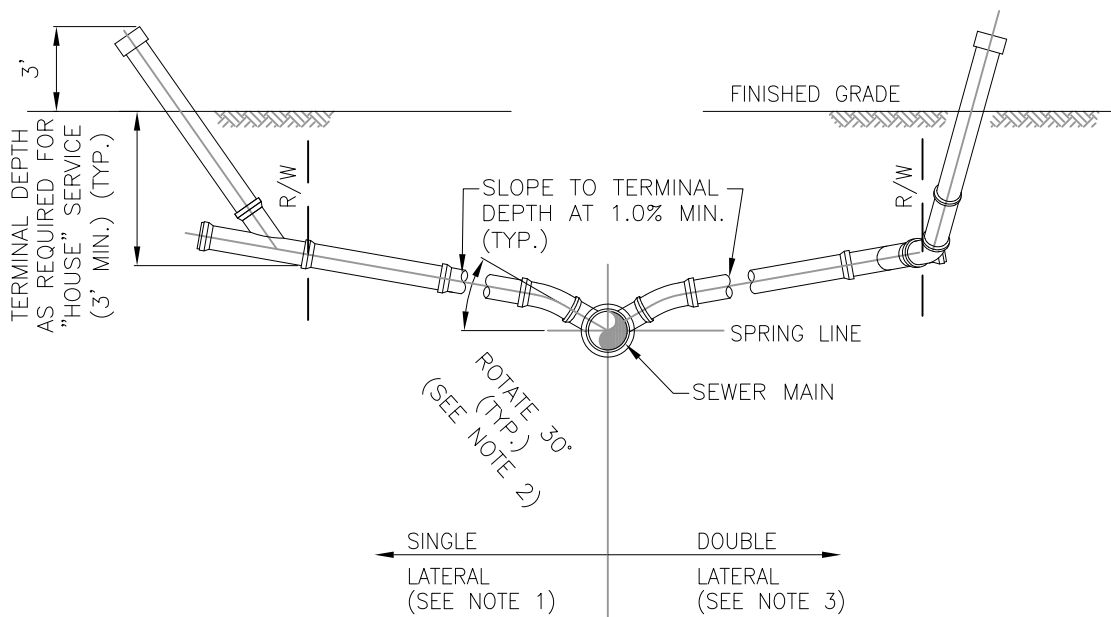
STANDARD MANHOLE  
FRAME AND COVER

DATE: AUG 2018

S-4



**PLAN**



**PROFILE**

NOTES:

- 1.) LOCATE SINGLE LATERAL AS NEAR TO CENTER OF LOT AS POSSIBLE.
- 2.) INVERT OF SERVICE LATERAL SHALL NOT ENTER SEWER MAIN BELOW SPRING LINE.
- 3.) DOUBLE SERVICE LATERALS ONLY PERMITTED ON TAPS TO EXISTING GRAVITY MAINS WERE EXISTING ROAD PAVEMENT MUST BE CUT.
- 4.) ALL PIPE FITTINGS SHALL BE PVC ASTM 3034 SDR35, GREEN IN COLOR.



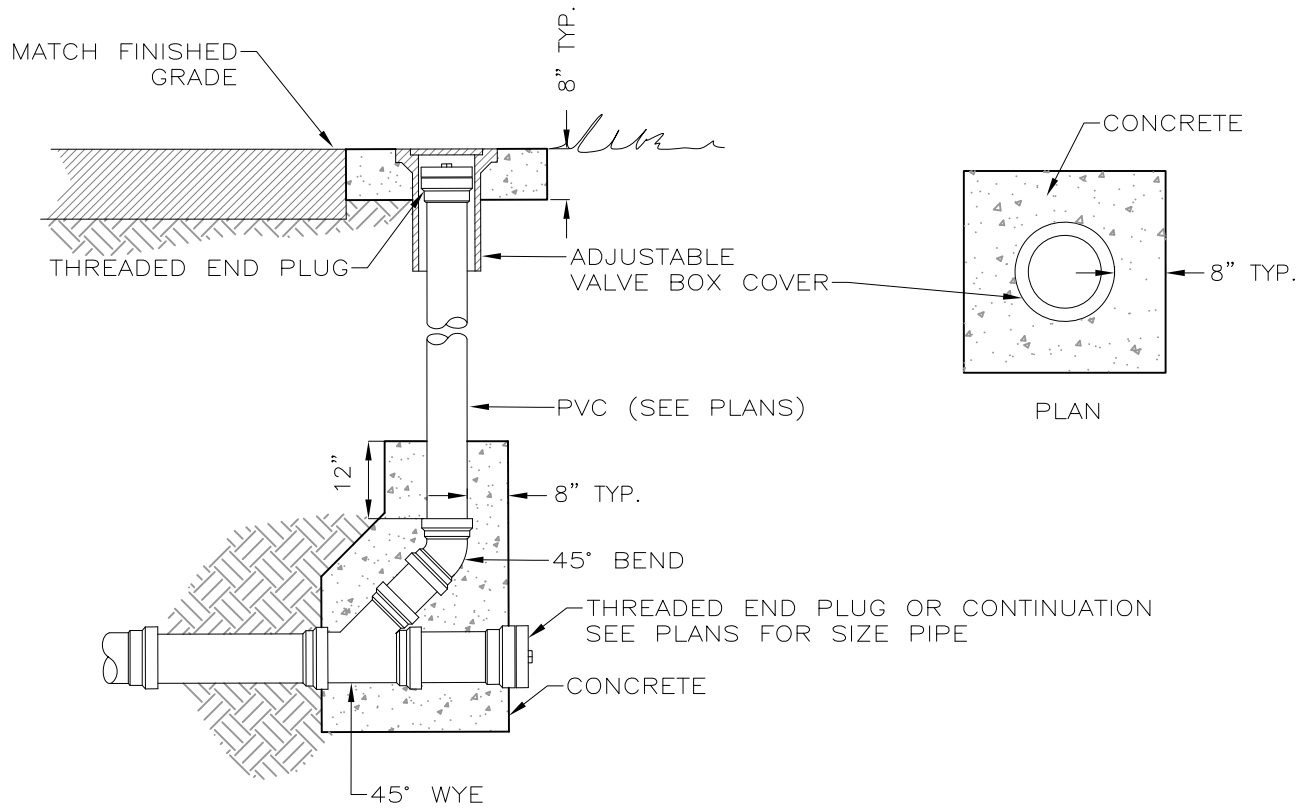
**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**SERVICE LATERAL  
DETAIL**

DATE: MAR 2012

**S-5**





NOTE: SEE SEWER SIZE IN PLANS

**CLEANOUT DETAIL**

NOT TO SCALE



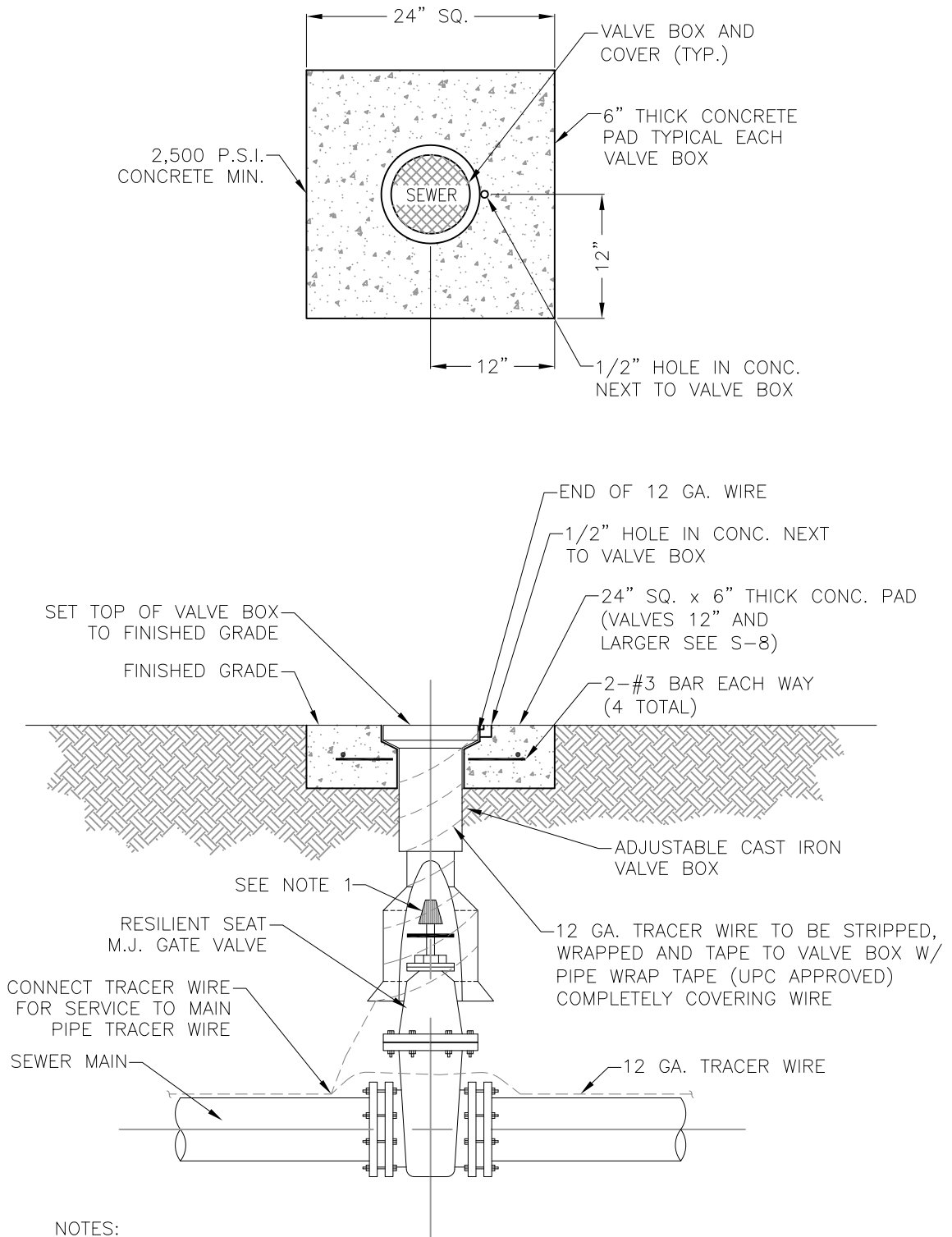
CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**SEWER CLEANOUT  
DETAIL**

DATE: MAR 2012

**S-6**

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NOTES:

- 1.) THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 4 FOOT DEPTH BELOW FINISHED GRADE.
- 2.) FOR VALVE COLLAR PADS THAT FALL ON SLOPES GREATER THAN 1:6, SEE DETAIL W-20 FOR PAD.

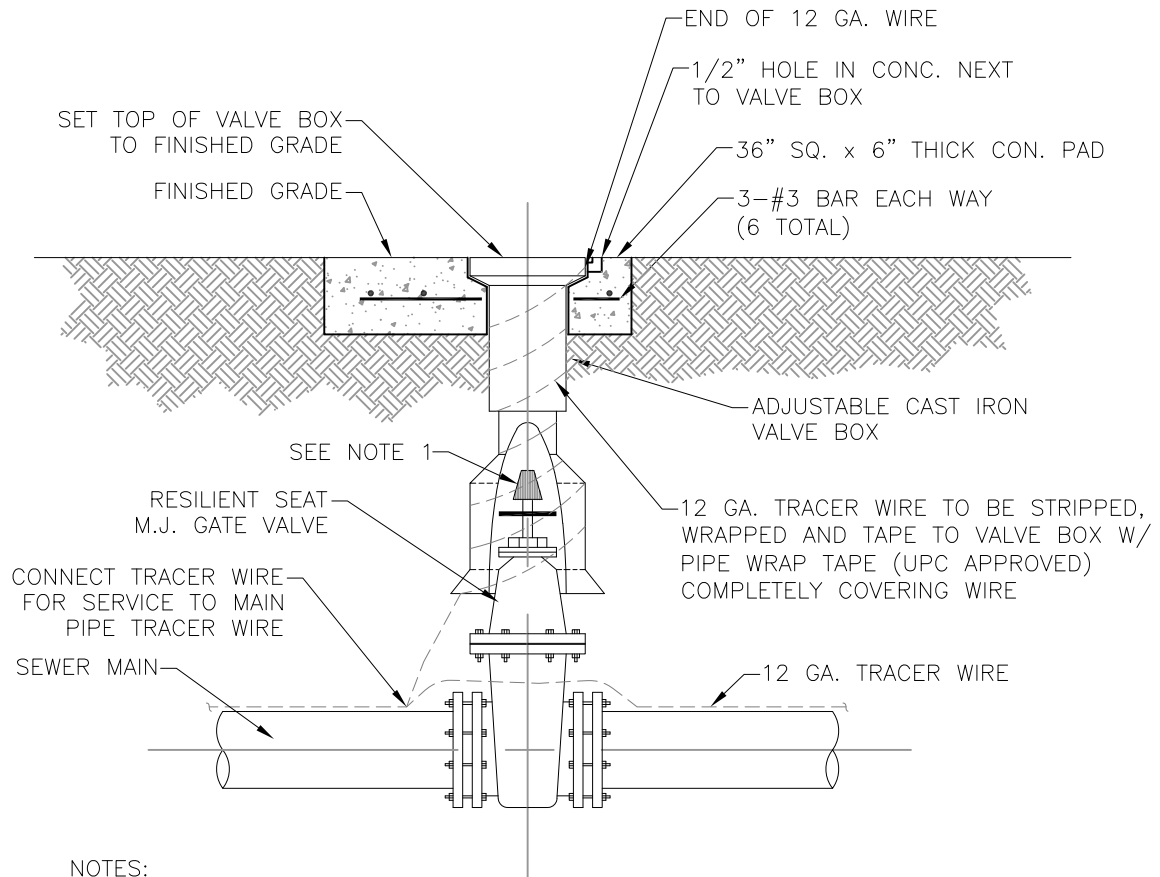
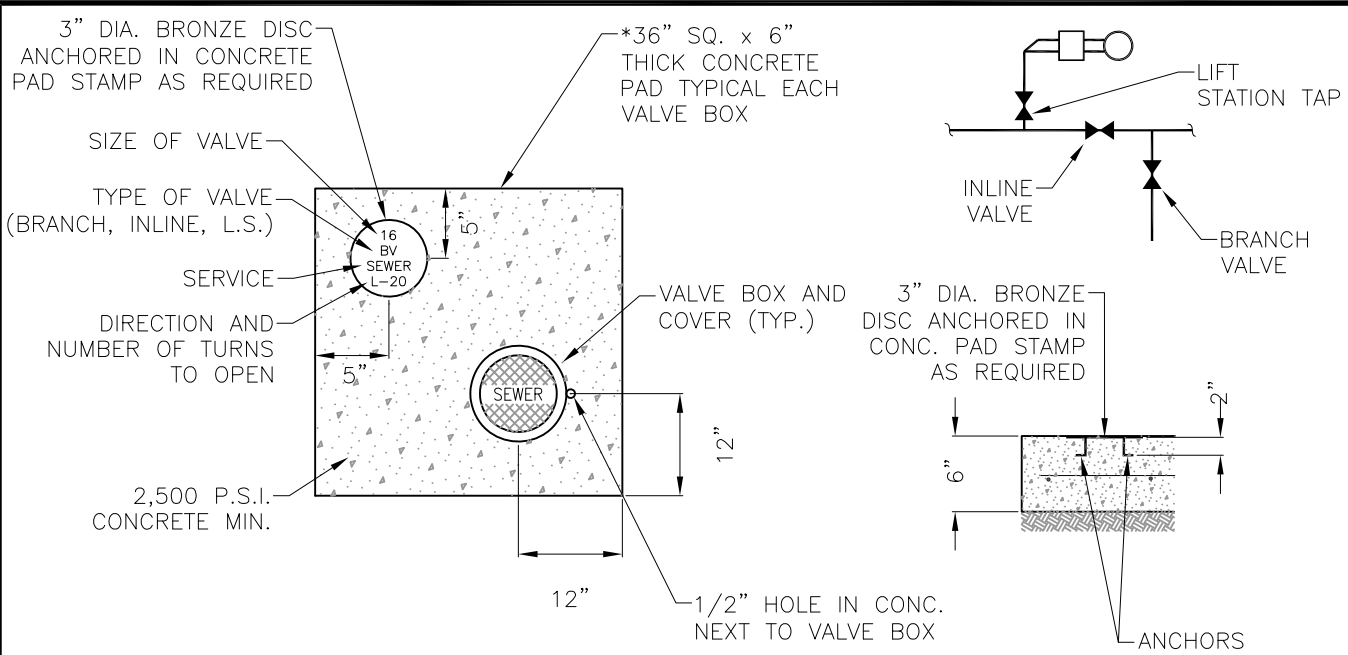


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

SEWER GATE VALVE &  
BOX DETAIL  
(4" TO 10")

DATE: JAN 2020

S-7



NOTES:

- 1.) THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 4 FOOT DEPTH BELOW FINISHED GRADE.
- 2.) VALVES 20" & LARGER SHALL HAVE BEVEL-GEAR OPERATORS UNLESS DEPTH IS ADEQUATE TO MAINTAIN 24" COVER ON VALVE NUT.

\*NOTE: 24" SQ. PAD TO BE CONSTRUCTED INSIDE RESIDENTIAL AREAS.

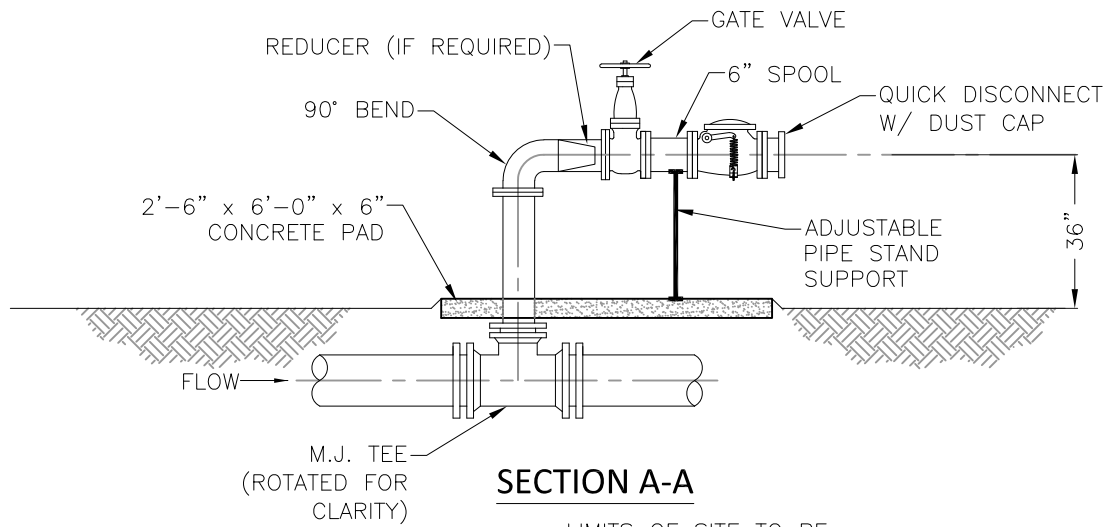


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

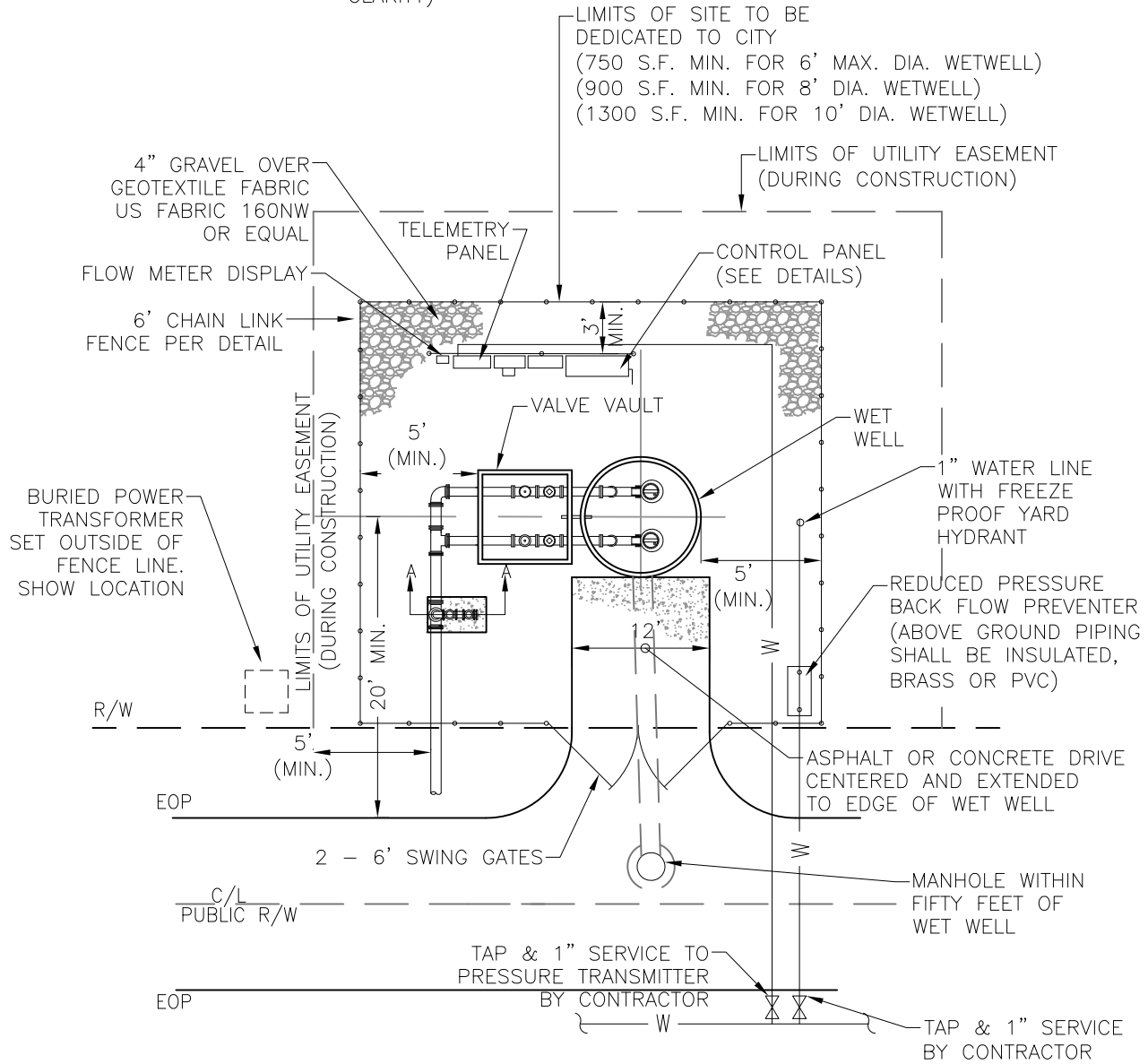
SEWER GATE VALVE  
& BOX DETAIL  
(12" & LARGER)

DATE: JUL 2017

S-8



**SECTION A-A**



ENGINEER SHALL PROVIDE A SCALED (1" = 10' MIN.) SITE SPECIFIC DETAIL

IF LIFT STATION SITE IS NOT CONTIGUOUS TO PUBLIC R/W, A 20' MINIMUM WIDTH EASEMENT APPROVED BY CITY MUST BE PROVIDED TO R/W.



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**PUMP STATION  
SITE PLAN**

DATE: FEB 2023

**S-9**

SEE NOTE 1

STAINLESS STEEL MESH WITH 1/4" OPENING AND COMPANION FLANGE

(2) 4" 90° FLANGE BENDS

4" D.I. FLANGE VENT PIPE SEE PLAN VIEW ABOVE FOR LOCATION

ALUMINUM ACCESS HATCH W/ LOCKSET AND RECESSED HANDLE

FLOAT BAR W/ FLOATS TO BE HUNG SEPARATELY

POWER CABLE

2" DIA. SCH. 40

STAINLESS STEEL PIPE

MIN. 3/8" HEAVY DUTY STAINLESS STEEL LIFTING CHAIN

SHOWN ROTATED FOR CLARITY

24 VOLT FLOAT LIQUID LEVEL CONTROLS

SEE NOTE 4  
DETAIL S-12

ELEV. S

MIN 12"

9"

ELEV. Z

LOW LEVEL ALARM ELEV. T

BOTH PUMPS OFF ELEV. U

REDUCER AS REQUIRED

LEAD PUMP ON ELEV. V

LAG PUMP ON ELEV. W

HIGH LEVEL ALARM ELEV. X

FLANGE COUPLING ADAPTER

GROUT

12" MIN.

12" MIN.

2" MIN.

4"

2"

12"

6"

ELEV. Y

EXIST. GRADE

(MIN) 24"

(MIN) 36"

PIPE BEND

RADIUS/DEFLECTION SHALL BE PER MANUFACTURER RECOMMENDATION.

D.I. PIPE P.V.C. PIPE

CHECK VALVES W/ LEVER & WEIGHT EXTERNAL SWING ARM (AVK SERIES 41 OR EQUAL)

3" P.V.C. FLOOR DRAIN W/ "P" TRAP FITTED W/ SURESEAL PLUS BY RECTORSEAL (REC97046) TRAP SEAL OR EQUAL.

SLOPE OUTLET PIPE 1/2" PER FOOT

12" MIN. NO. 57 GRANITE STONE IN GEOTEXTILE FABRIC (US FABRICS 160NW OR EQUAL) EXTENDING 1' MIN. BEYOND BASE SLAB PERIMETER

COAT INSIDE BASE EL (SEE NOTE)

MIN. 3/4" DIA. x 11" STAINLESS STEEL ANCHOR BOLTS TO EXTEND 7" INTO BASE.

#6-12" O.C.E.W.

7"

2"

12"

4"

12"

12"

2"

12"

12"

12"

12"

12"

12"

12"

12"

12"

12"

12"

12"

**NOTES:**

1. LIFT STATION WET WELL RIM SHALL BE SET AT THE HIGHER OF THE FOLLOWING:
  - A. 12" ABOVE ADJACENT ROADWAY CROWN OR BACK OF CURB (WHICHEVER IS HIGHER).
  - B. 8" ABOVE PROPOSED FINISHED GRADE.



CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

PUMP STATION  
SECTION VIEW

DATE: AUG 2020

S-10



PUMPING STATIONS	DIMENSIONS	ELEV. AT CONST.	PUMPING STATIONS	DIMENSIONS	ELEV. AT CONST.
DIM A		—	DIM L	4'-0" MIN.	—
DIM B		—	ELEV M	4'-8" MIN.	
DIM C		—	ELEV S	—	
DIM D	*	—	ELEV T	—	
DIM E	*	—	ELEV U	—	
DIM F	*	—	ELEV V	—	
DIM G	*	—	ELEV W	—	
DIM H	*	—	ELEV X	—	
DIM J	6'-0" MIN.	—	ELEV Y	—	
DIM K	4'-0" MIN.	—	ELEV Z	—	

\* PER PUMP MANUFACTURERS REQUIREMENT

GENERAL NOTES:

- 1.) ALL EXPOSED METAL SHALL BE PAINTED WITH 2 COATS OF INDUSTRIAL EXTERIOR ENAMEL, GLIDDEN HUNTER GREEN, (HEX#355E3B) OR CITY APPROVED EQUAL.
- 2.) WET WELL AND VALVE VAULT SHALL BE COATED WITH COAL TAR INSIDE AND OUT EXCEPT TOP SURFACE OF COVERS. (TWO COATS, 9 MILS EACH.)
- 3.) BASE AND FIRST RISER UNIT TO BE CAST MONOLITHIC.
- 4.) THE WETWELL SHALL BE INSTALLED PLUMB AND WATERTIGHT WITH A MAXIMUM DEVIATION OF 3/16 INCH PER FOOT OF HEIGHT. THE BOTTOM SECTION SHALL BE VERIFIED WITH A SURVEY LEVEL FOR ELEVATION AND PLUMBNESS. DATA MUST BE SUBMITTED TO CITY FOR APPROVAL PRIOR TO SETTING ANY ADDITIONAL RISERS.
- 5.) VALVE VAULT SHALL BE SIZED TO PERMIT EASY REMOVAL OF CHECK VALVE SPINDLES WITH MINIMUM CLEARANCES AS SHOWN FOR 6" DIAMETER PIPE AND SMALLER. CLEARANCES SHALL INCREASE AS REQUIRED FOR LARGER PIPE SIZES.
- 6.) VALVE VAULT SHALL HAVE SEALED FLOOR AND DRAIN.
- 7.) ALL LOCATIONS WHERE PIPES ENTER OR LEAVE THE WET WELL OR VALVE VAULT SHALL BE MADE WATERTIGHT WITH WALL SLEEVE OR NON-SHRINK GROUT.
- 8.) THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN WET WELL.
- 9.) WET WELL AND VALVE VAULT COVERS SHALL BE ALUMINUM WITH 316 S.S. HARDWARE AND LOCK BRACKET. SIZE AS REQUIRED BY PUMP MANUFACTURER AND APPROVED BY THE CITY.
- 10.) FLEXIBLE COUPLING SHALL BE SLEEVE TYPE.
- 11.) PUMPS SHALL BE:

MANUFACTURER: WILO-EMU; MODEL: \_\_\_\_\_; IMP: \_\_\_\_\_; DIA: \_\_\_\_\_;  
MM, SPEED: \_\_\_\_\_ RPM; DISCHARGE SIZE: \_\_\_\_\_ IN.; VOLTAGE: \_\_\_\_\_;  
HZ.: \_\_\_\_\_; PHASE: \_\_\_\_\_; H.P.: \_\_\_\_\_;  
MIN. SOLID SIZE: \_\_\_\_\_ IN.; CURVE: \_\_\_\_\_.

MANUFACTURER: FLYGT; MODEL: \_\_\_\_\_; IMP: \_\_\_\_\_; DIA: \_\_\_\_\_;  
MM, SPEED: \_\_\_\_\_ RPM; DISCHARGE SIZE: \_\_\_\_\_ IN.; VOLTAGE: \_\_\_\_\_;  
HZ.: \_\_\_\_\_; PHASE: \_\_\_\_\_; H.P.: \_\_\_\_\_;  
MIN. SOLID SIZE: \_\_\_\_\_ IN.; CURVE: \_\_\_\_\_.

- 12.) OPERATING CONDITIONS SHALL BE \_\_\_\_\_ GPM AT \_\_\_\_\_ FEET TDH.
- 13.) ALL NUTS, BOLTS, WASHERS, ETC. IN WET WELL AND VALVE BOX TO BE 316L STAINLESS STEEL.
- 14.) APPLY TWO COATS OF CERAMIC EPOXY ON THE ENTIRE INSIDE OF EACH BASE ELBOW IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS INCLUDING COATING THICKNESS. SURFACE PREPARATION SHALL ALSO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. ACCEPTABLE COATINGS ARE BELZONA CERAMIC CARBIDE NO. 1811 OR ENGINEER APPROVED EQUAL.



CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

PUMP STATION NOTES  
AND TABLE

DATE: APR 2018

S-12

# BASIC ELECTRICAL REQUIREMENTS

## SCOPE

THIS SCOPE COVERS THE FURNISHING, INSTALLATION, TESTING, ADJUSTING AND PLACING IN OPERATION ALL ELECTRICAL EQUIPMENT, DEVICES, FACILITIES, MATERIALS, AND AUXILIARY ITEMS NECESSARY FOR THE COMPLETE AND SUCCESSFUL OPERATION OF ALL ELECTRICAL EQUIPMENT AS HEREIN DESCRIBED, SHOWN ON THE PLANS, OR DEEMED NECESSARY FOR THE COMPLETION OF THE ELECTRICAL PORTION OF THE PROJECT. IT IS THE INTENT TO OUTLINE THE ELECTRICAL REQUIREMENTS OF THE CONTRACT IN ORDER TO PROVIDE THE INFORMATION NECESSARY FOR THE CONSTRUCTION OF A FULLY OPERATIONAL SYSTEM AS SHOWN ON THE PLANS AND AS HEREIN DESCRIBED. A COMPREHENSIVE ELECTRICAL SCOPE OF WORK IS AS FOLLOWS:

- POWER/ELECTRICAL SYSTEM
- SCADA
- LIFT STATION ELECTRICAL
- UTILITY WORK
- CONNECTION OF ELECTRICALLY POWERED MECHANICAL EQUIPMENT
- TEMPORARY CONSTRUCTION POWER
- ALL INCIDENTALS NECESSARY FOR A COMPLETE AND FULLY OPERATIONAL ELECTRICAL SYSTEM.

## WORKING CLEARANCES

WORKING CLEARANCES AROUND EQUIPMENT REQUIRING ELECTRICAL SERVICES SHALL BE VERIFIED BY CONTRACTOR TO COMPLY WITH CODE REQUIREMENTS. SHOULD THERE BE APPARENT VIOLATIONS OF CLEARANCES, THE CONTRACTOR SHALL NOTIFY THE ENGINEER BEFORE PROCEEDING WITH CONNECTION OR PLACING OF EQUIPMENT.

IN THE CASE OF PANEL BOARDS, SAFETY SWITCHES AND OTHER EQUIPMENT REQUIRING WIRE AND CABLE TERMINATION'S, THE CONTRACTOR SHALL ASCERTAIN THAT LUG SIZES AND WIRING GUTTERS OR SPACE ALLOWED FOR PROPER ACCOMMODATION AND TERMINATION OF THE WIRES AND CABLES ARE ADEQUATE.

## WORKMANSHIP

ALL WORK SHALL BE ACCOMPLISHED BY PERSONS SKILLED IN PERFORMANCE OF THE REQUIRED TASK. ALL WORK SHALL BE DONE IN KEEPING WITH CONVENTIONS OF THE TRADE. WORK OF THIS DIVISION SHALL BE CLOSELY COORDINATED WITH WORK OF OTHER TRADES TO AVOID CONFLICT AND INTERFERENCE. ALL CONDUCTORS INSIDE THE LIFT STATION ENCLOSURE SHALL BE IDENTIFIED WITH STANDARD VINYL-CLOTH SELF ADHESIVE CABLE/CONDUCTOR MARKERS OF WRAP-AROUND TYPE. MARKERS SHALL BE PLASTIC COATED AND PRE-NUMBERED TO SHOW CIRCUIT IDENTIFICATION. WRITE-ON TYPE MARKERS WILL NOT BE ACCEPTED. CONDUCTORS AND CABLES IN MANHOLES AND HANDHOLES SHALL BE IDENTIFIED BY BRASS TAGS WITH DIE STAMPED LETTERING.

## UTILITIES

ARRANGE WITH GULF POWER FOR THE SERVICES AND INSTALL THE SERVICES IN ACCORDANCE WITH THEIR REQUIREMENTS, REGULATIONS AND RECOMMENDATIONS.

## GUARANTEE

THE CONTRACTOR SHALL GUARANTEE ALL OTHER ELECTRICAL SYSTEMS, MATERIALS AND WORKMANSHIP TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE. HE SHALL CORRECT ALL DEFECTS ARISING WITHIN THIS PERIOD UPON NOTIFICATION BY THE OWNER OR ENGINEER, WITHOUT ADDITIONAL COMPENSATION.

## MATERIAL STANDARDS

MATERIAL SHALL BE NEW AND COMPLY WITH STANDARDS OF UNDERWRITERS' LABORATORIES, INC., WHERE STANDARDS HAVE BEEN ESTABLISHED FOR THE PARTICULAR PRODUCT AND THE VARIOUS NEMA, ANSI, ASTM, IEEE, AEC, IPCEA OR OTHER PUBLICATIONS REFERENCED.

## TEST EQUIPMENT

THE CONTRACTOR SHALL PROVIDE ALL TEST EQUIPMENT AND SUPPLIES DEEMED NECESSARY BY THE ENGINEER/INSPECTOR AT NO EXTRA COST TO THE OWNER. THESE SUPPLIES SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: VOLT METERS, AMP METERS, LIGHT METERS, FUEL, GENERATOR LOAD BANKS, WATT METERS, HARMONIC DISTORTION TEST EQUIPMENT, AND OSCILLOSCOPES.

## SUBMITTAL

SUBMIT SHOP DRAWING FOR APPROVAL BY THE OWNER. SUBMIT SHOP DRAWINGS AND PRODUCT DATA GROUPED TO INCLUDE COMPLETE SUBMITTAL OF RELATED SYSTEMS, PRODUCTS, AND ACCESSORIES IN A SINGLE SUBMITTAL. NO ELECTRICAL WORK MAY BE PERFORMED UNTIL ALL SHOP DRAWINGS ARE APPROVED. SUBMIT SHOP DRAWINGS ON THE FOLLOWING SYSTEMS AS GROUPED BELOW:

- POWER/ELECTRICAL SYSTEM
  - CONDUIT
  - WIRE
  - PULL BOXES
  - PANEL BOARDS
  - PANEL BOARD LAYOUTS
  - BREAKERS
  - DISCONNECTS
  - FUSES
  - CONDUIT SUPPORT SYSTEMS
  - WIRING DEVICES
  - PUMP STARTERS
  - TRANSFORMERS
  - SURGE PROTECTION DEVICES
- LIFT STATION CONTROL SYSTEM
  - PUMP CONTROLLER
  - FLOATS
  - H-O-A SWITCHES
  - OUR METERS
  - NAME PLATES
  - PUMP STARTERS
  - CONTROL RELAYS
  - CONTROL SCHEMATICS
- SCADA
  - RTUS
  - SOFTWARE
  - I/O POINTS
  - RADIO EQUIPMENT
  - SYSTEM DIAGRAMS
  - MAIN COMPUTER EQUIPMENT
  - FCC INFORMATION
  - CAD SCHEMATICS OF RTU
  - PRESSURE TRANSMITTER
- UTILITY WORK
  - UTILITY COORDINATION INFORMATION
  - UTILITY CONDUIT
  - MISC.

MARK DIMENSIONS AND VALUES IN UNITS TO MATCH THOSE SPECIFIED.

## REGULATORY REQUIREMENTS

CONFORM TO APPLICABLE SECTIONS OF THE BUILDING CODE FOR THE CITY OF PANAMA CITY BEACH AND ALL LOCAL RULES, REGULATIONS AND ORDINANCES.

FLORIDA DEP FORM 62-604.300(8)(g) NOTIFICATION/APPLICATION FOR CONSTRUCTING A DOMESTIC WASTEWATER COLLECTION/TRANSMISSION SYSTEM.

ELECTRICAL: CONFORM TO NFPA 70 NEC (LATEST EDITION).  
CONFORM TO NFPA 820 (LATEST EDITION).

OBTAIN PERMITS, AND REQUEST INSPECTIONS FROM AUTHORITY HAVING JURISDICTION.

## FINAL INSPECTION AND TESTING

AFTER THE ELECTRICAL INSTALLATION IS COMPLETE, THE CONTRACTOR SHALL DELIVER TO THE ENGINEER THE FOLLOWING INFORMATION WITH HIS REQUEST FOR FINAL INSPECTION: THE ELECTRICAL WORK SHALL BE THOROUGHLY TESTED TO DEMONSTRATE THAT THE ENTIRE SYSTEM IS IN PROPER WORKING ORDER AND IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. EACH MOTOR WITH ITS CONTROL SHALL BE RUN AS NEARLY AS POSSIBLE UNDER OPERATING CONDITIONS FOR A SUFFICIENT LENGTH OF TIME TO DEMONSTRATE CORRECT ALIGNMENT, WIRING CAPACITY, SPEED AND SATISFACTORY OPERATION. ALL MAIN SWITCHES AND CIRCUIT BREAKERS SHALL BE OPERATED, BUT NOT NECESSARILY AT FULL LOAD, CONTRACTOR MAY BE REQUIRED DURING FINAL INSPECTION, AT THE REQUEST OF THE ENGINEER TO FURNISH TEST INSTRUMENTS FOR USE DURING THE TESTING.

ALL PANEL BOARD AND ALL OTHER MAIN FEEDER CIRCUITS SHALL BE GIVEN A MEGGER TEST USING A 1000 VOLT MEGGER. THIS TEST SHALL BE PERFORMED AFTER CONDUCTORS ARE PULLED, BUT BEFORE FINAL CONNECTIONS ARE MADE. THE ENGINEER SHALL BE GIVEN TWO (2) DAYS' WRITTEN NOTICE OF THE ANTICIPATED TEST DATE SO THAT HE MAY WITNESS THE TEST IF SO DESIRED. IN ANY EVENT, THE CONTRACTOR SHALL RECORD THE CIRCUIT DESIGNATION AND THE MEGGER READING ON EACH PHASE. THIS WRITTEN RECORD SHALL BE SUBMITTED TO THE ENGINEER. THE COST OF THIS TEST OR ANY RETEST CAUSED BY INSUFFICIENT MEGGER READINGS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

## AS-BUILT DRAWINGS

THE CONTRACTOR SHALL PROVIDE DETAILED AS-BUILT DRAWINGS FOR ALL WORK INDICATING ALL CONTROL AND POWER WIRING. THE AS-BUILT DRAWINGS SHALL ALSO INCLUDE DETAILED CONTROL SCHEMATIC FOR THE CONTROL SYSTEM. (ALL DRAWINGS SHALL BE DELIVERED TO THE OWNER IN AN AUTOCAD 2011 OR NEWER FORMAT.)

## OVER-CURRENT PROTECTION DEVICES

PUMP CIRCUITS SHALL INCLUDE GROUND FAULT CIRCUIT INTERRUPTION PROTECTION. PROVIDE EITHER A THERMAL-MAGNETIC CIRCUIT BREAKER WITH BUILT-IN GFCI OR MOTOR CIRCUIT PROTECTOR WITH EXTERNAL TRIPPING MEANS CONNECTED TO A GROUND-FAULT RELAY CIRCUIT.

## SUPPORTING DEVICES

ALL SUPPORTING DEVICES SHALL BE STAINLESS STEEL UNLESS OTHERWISE INDICATED. ALL CABLES WITHIN WET WELL SHALL BE SUPPORTED W/ STAINLESS STEEL CABLE STRAIN RELIEF.

## CONDUIT

CONDUIT BELOW GRADE SHALL BE RNC, SCH. 40, CONCRETE ENCASED. EXPOSED CONDUIT SHALL BE RIGID ALUMINUM, WHERE IN CONTACT WITH CONCRETE OR EARTH, PROTECT CONDUIT WITH 3M SCOTCHCRAP PIPE PRIMER AND THEN WRAPPED WITH ONE LAYER OF 3M SCOTCHCRAP 51-ALL WEATHER CORROSION PROTECTION TAPE PER MANUFACTURER'S RECOMMENDATIONS. CONDUIT SUPPORTS SHALL BE STAINLESS STEEL. CONDUIT SHALL BE SIZED PER THE NEC.

## DISCONNECT SWITCHES

ALL DISCONNECT SWITCHES SHALL BE 200,000 AIC FUSED DISCONNECT SWITCHES. ALL SWITCHES SHALL BE NEMA 4X STAINLESS STEEL.

## GROUNDING

ALL CONDUIT RUNS SHALL HAVE A GROUND CONDUCTOR (color green) SIZED PER NEC. GROUND RODS: 3/4"x10", STEEL COPPER-CLAD

## LIFT STATION PUMPS 20HP AND GREATER

SOFT STARTS ARE REQUIRED FOR PUMPS OF 20HP OR GREATER. THE SOFT START SHALL BE OF MODULAR CONSTRUCTION, CONSISTING OF A POWER CONTROL BOARD (PCB) AND POWER STRUCTURE. THE PCB SHALL BE COMPATIBLE THE FULL RANGE OF POWER STRUCTURES. IN THE SIZES FROM 17-1200 AMPS ALL PHASES SHOULD BE CONTROLLED DURING START/STOP. THE POWER STRUCTURE SHALL CONSIST OF SIX SCR'S MOUNTED ON A HEATSINK FOR RATINGS UP TO AND INCLUDING 1200 AMPS.

## SCADA SYSTEMS

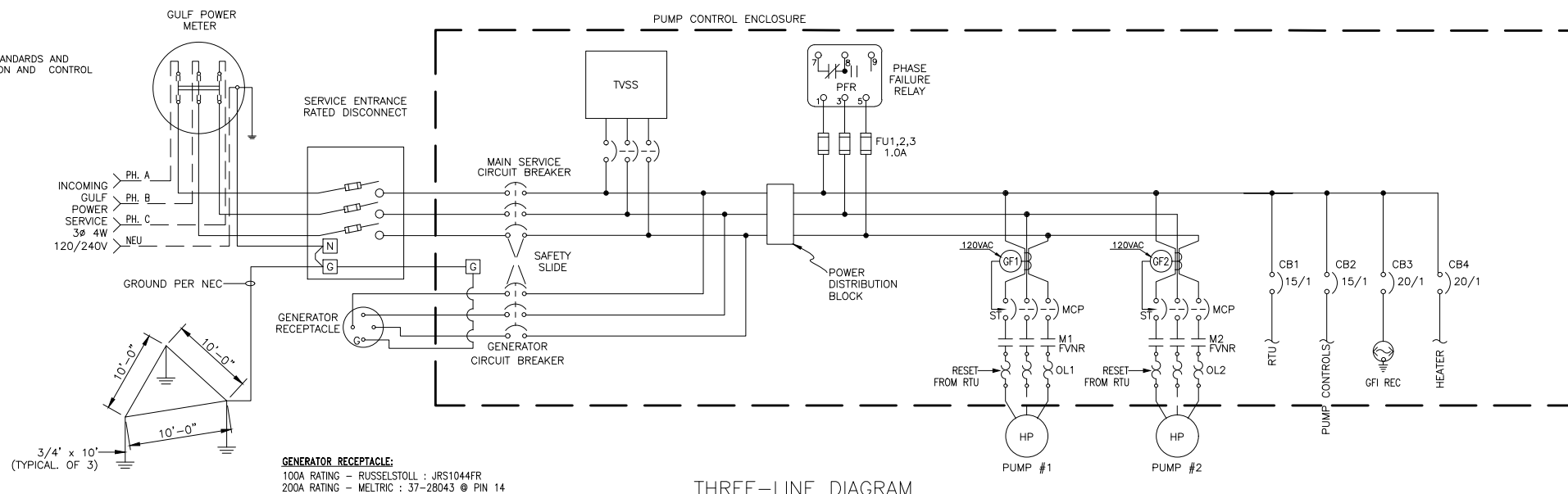
### WORK INCLUDED

PROVIDE ALL LABOR, MATERIALS, NECESSARY EQUIPMENT, AND SERVICES TO DESIGN AND INSTALL A FULLY OPERATIONAL SCADA AND CONTROL SYSTEM FOR THE PROPOSED NEW LIFT STATIONS AS INDICATED ON THE DRAWINGS, AND AS SPECIFIED HEREIN OR BOTH.

THE SCADA SYSTEM SUPPLIER SHALL PROVIDE ALL REQUIRED HARDWARE AND SOFTWARE REQUIRED FOR A FULLY OPERATIONAL SYSTEM.

### REFERENCES

- NEMA - INDUSTRIAL CONTROL
- NFPA - 70 & 820
- ISA - INSTRUMENT SOCIETY OF AMERICA - STANDARDS AND RECOMMENDED PRACTICES FOR INSTRUMENTATION AND CONTROL
- JIC - JOINT INDUSTRIAL COUNCIL



GENERATOR RECEPTACLE:  
100A RATING - RUSSELSTOLL : JRS1044FR  
200A RATING - MELTRIC : 37-28043 @ PIN 14

THREE-LINE DIAGRAM

## PLC PROGRAMMING

PROGRAMMING SHALL BE IN A SIMPLE LADDER DIAGRAM LANGUAGE OR HIGH LEVEL LANGUAGE (NO ASSEMBLY LANGUAGE ALLOWED). THE NUMBERING SYSTEM SHALL BE UNIFORM AND SHALL BE BASED ON A RACK, CARD, INPUT/OUTPUT SEQUENCE. THE PROGRAM SHALL BE WRITTEN FOR THIS SPECIFIC PROJECT AND SHALL USE THE INFORMATION FROM THE DRAWINGS AND THE SPECIFICATIONS AS A BASIS. THE CONTRACT DOCUMENTS ARE INTENDED AS A GUIDE IN THE CREATION OF THE PROGRAM AND ARE NOT TO BE CONSTRUED AS LIMITATIONS IN THE MANNER IN WHICH THE PROGRAM IS TO BE WRITTEN. THE CONTRACT DOCUMENTS PRESENT A FRAMEWORK AROUND WHICH THE PROGRAM SHALL BE WRITTEN. THEREFORE, THE PROGRAMMER WILL BE EXPECTED TO BECOME INTIMATE WITH THE PROCESS WHICH IS TO BE CONTROLLED.

**SCOPE OF CONTROL SYSTEMS** LIFT STATIONS: THE SCADA SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR TO PROVIDE CONTROL OF THE OWNER'S PROPOSED SEWAGE LIFT STATIONS. THE SYSTEM SHALL ALLOW THE OWNER TO MONITOR: PUMP RUN TIMES, PUMP SEAL FAILURES, PUMP OVER TEMPS, WET WELL LEVELS, POWER FAILURES, AND POWER PHASE FAILURES.

THE RTU SHALL CONTROL THE PROPOSED PUMP STATIONS.

## REPORTS

- ALARM REPORTS
- SYSTEM MAINTENANCE REPORTS
- FLOW REPORTS
- PUMP RUN TIME REPORTS

## SPARE PARTS

THE CONTRACTOR SHALL PROVIDE THE OWNER 1 SPARE SETS OF ALL EQUIPMENT USED FOR THE LIFT STATION SCADA SYSTEM. THIS INCLUDES ALL PLC MODULES, RELAYS, ETC. (TO BE PROVIDED AS AN ALTERNATE BID)

## FIELD QUALITY CONTROL

PROVIDE INSTRUCTION ON SITE SYSTEM OPERATION AS REQUIRED BUT NOT LESS THAN 1 DAY. TEST EACH FIELD INPUT AND ASSOCIATED OUTPUT.

## DOCUMENTATION

THE CONTRACTOR OF THE CONTROL SYSTEM SHALL PROVIDE A COMPLETE SET OF OM MANUALS AND SCHEMATICS IN A AUTOCAD 2011 OR NEWER FORMAT. THE OM MANUALS SHALL INCLUDE INFORMATION ON THE PLC EQUIPMENT AS WELL AS SYSTEM TROUBLE SHOOTING INFORMATION.

THE CONTRACTOR SHALL DELIVER DETAILED POINT-TO-POINT DRAWINGS TO THE OWNER IN BOTH A PAPER AND AUTOCAD 2011 AND NEWER FORMAT. THE INTEGRATOR SHALL PROVIDE DOCUMENTED PLC CODE AND DETAILED INSTRUCTIONS FOR THE INSTALLATION OF ADDITIONAL RTUS.

## RADIO SURGE PROTECTION

PROVIDE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

### REVISIONS

NO.	DATE	BY	GENERAL
1	FEB. 2023	L.J.S.	GENERAL

DATE: 9/13/2013

SCALE: N.T.S.

DESIGNED BY: ...

DRAWN BY: M.A.S.

CHECKED BY: K.P.J.

FILE NO: 0-PCB-UTL-DETAILS-1.dwg

CITY OF  
**PANAMA CITY BEACH**

116 SOUTH ARNOLD ROAD

PANAMA CITY BEACH, FLORIDA 32413

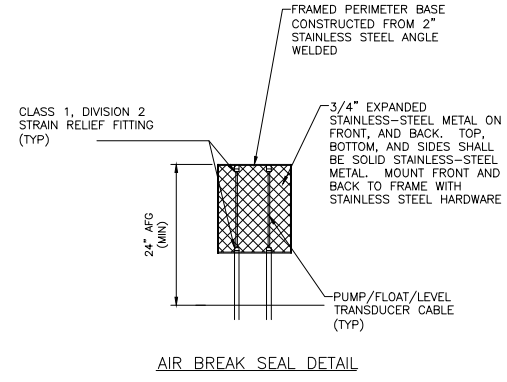
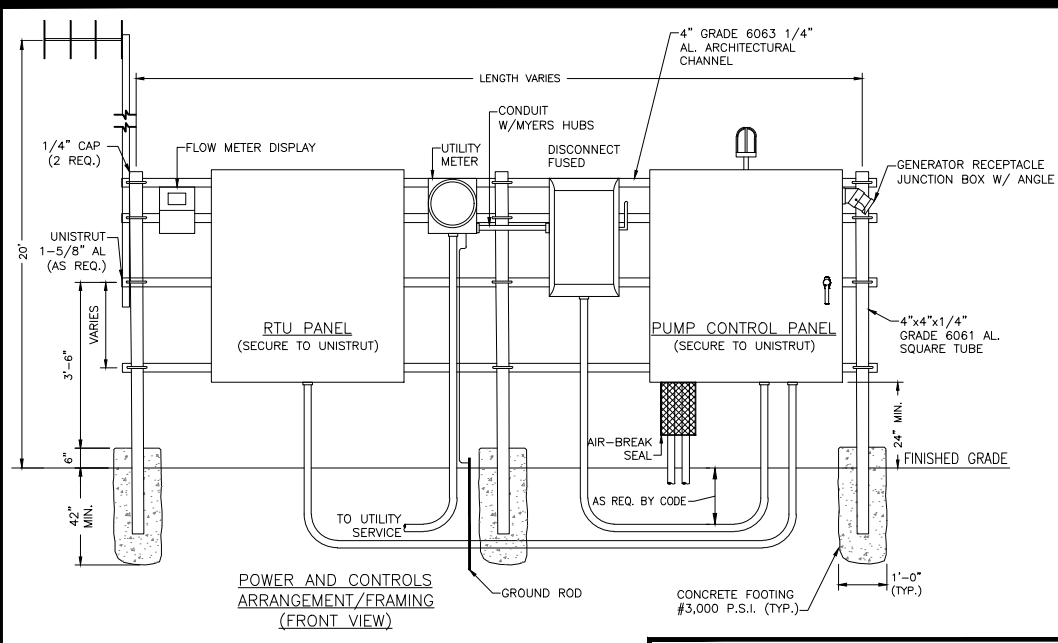


**ELECTRICAL NOTES**

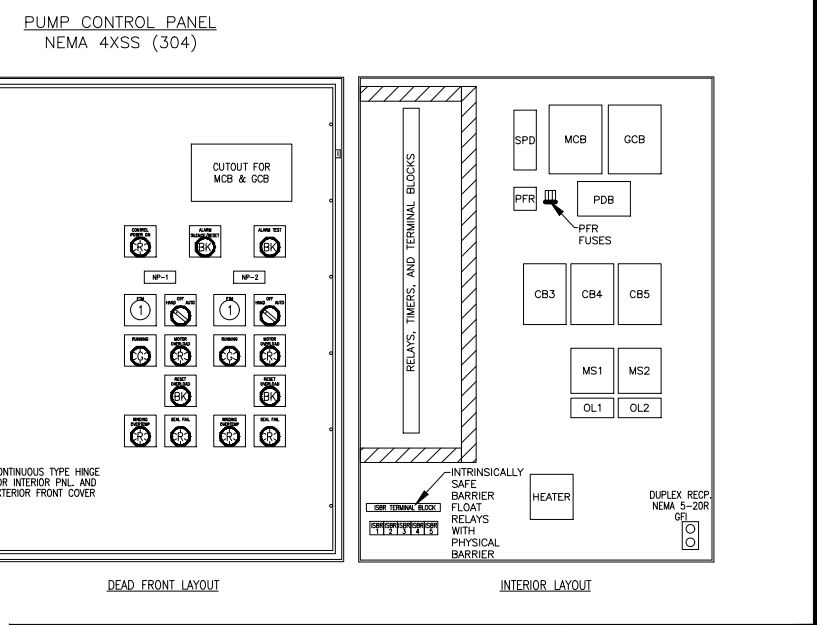
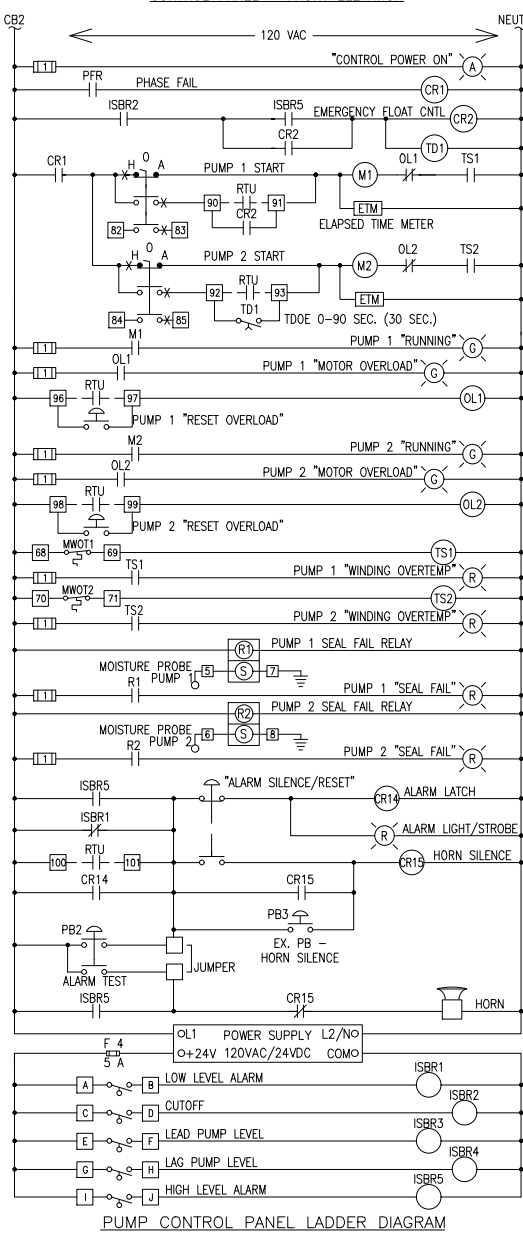
SHEET NUMBER

S-12EL(1)



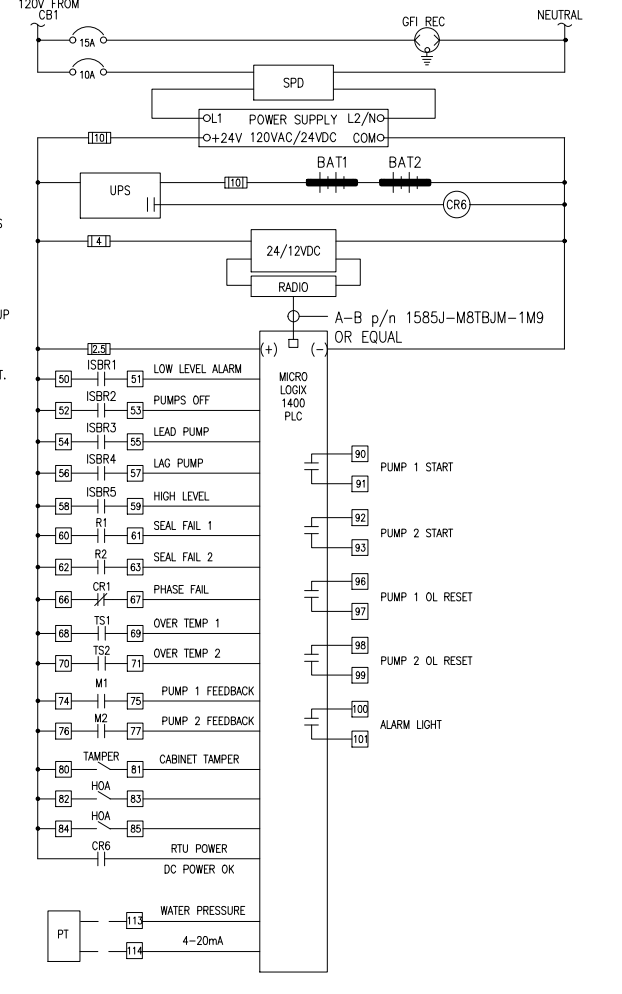
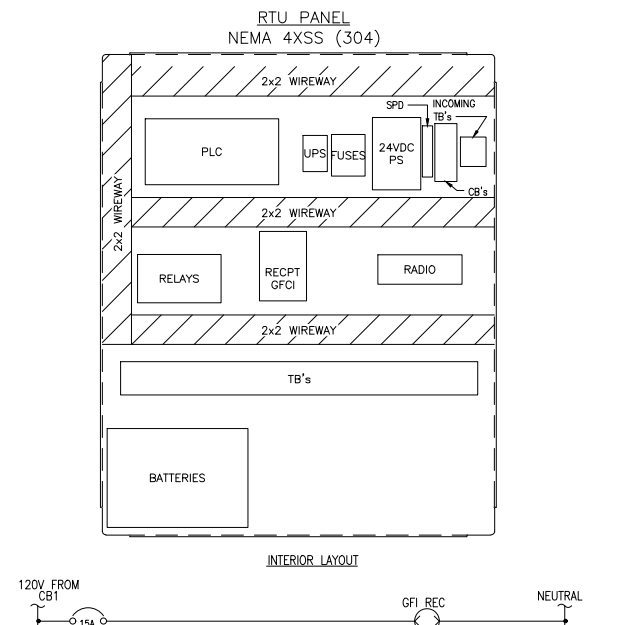
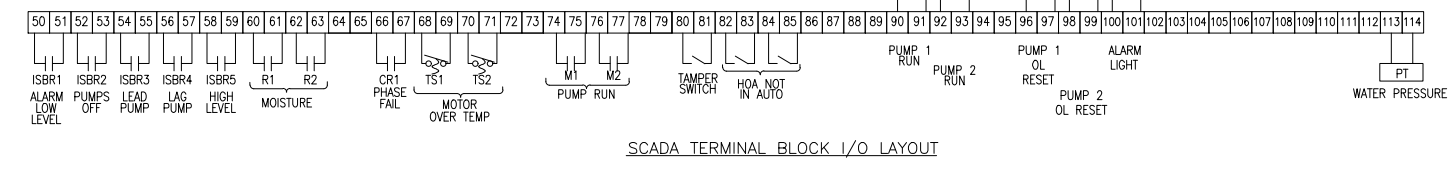


- PUMP CONTROL PANEL B.O.M. INCLUDING, BUT NOT LIMITED TO:**
- | SYMBOL   | DESCRIPTION   |
|----------|---|
| 1        | NEMA 4X STAINLESS STEEL ENCLOSURE SHALL BE HOFFMAN 304 STAINLESS WITH POWERGLIDE 3-PT LATCHING HANDLE RUNNING TIME METER-SEMI FLUSH MTD., NON-RESET TYPE, TO INDICATE 9999.9 HOURS. |
| 2        | SELECTOR SWITCH-HEAVY DUTY, OIL TIGHT TYPE, 3-POS WITH "HAND-OFF-AUTO" LEGEND PLATE.  |
| 3        | EXTERIOR ALARM LIGHT-WEATHERPROOF BRACKET TYPE WITH CAST ALUM. HOUSING, NEOPRENE GASKET, RED POLY CARBONATE LENS, AND 1-100W I.F. LAMP. (FLASHER STROBE)                            |
| 4        | SIREN, 4", NEMA 4, 120VAC (FEDERAL SIGNAL OR EQUAL)   |
| 5        | GENERATOR OUTLET 100A RATING - RUSSELLSTOLL : JRS1044FR 200A RATING - MELTRIC : 37-28043 @ PIN 14 INDICATOR LIGHTS, 120VAC, COLOR AS SHOWN  |
| 6        | "PUMP #1"   |
| NP-1     | "PUMP #2"   |
| NP-2     | NAMEPLATES SHALL HAVE 1/4 INCH HIGH BLACK ENGRAVED CHARACTERS ON A FLAT WHITE LAMINATED PLASTIC BACK PLATE AND SHALL BE FASTENED WITH SCREWS.                                       |
| TDx      | TIME-DELAY RELAY - 120VAC, TIME DELAY VALUES AS SHOWN   |
| CRx, TSx | CONTROL RELAY - 120VAC, 10 AMPS, WITH TYPE C CONTACTS, NUMBER OF POLES AS SHOWN. (ICE CUBE STYLE)   |
| R1,R2    | SEAL FAIL RELAY PER PUMP MANUFACTURER'S REQUIREMENTS  |
| PFR      | PHASE FAILURE RELAY UNIT-ENCLOSED TYPE PLUG-IN 8 PIN STYLE WITH SOCKET. 190 TO 270 VOLT-RANGE (DIVERSIFIED OR EQUAL)  |
| ISBRx    | INTRINSICALLY-SAFE BARRIER RELAY, SIEMENS IS6 OR EQUAL INTRINSIC BARRIER  |
| FLOATS   | "ROTO-FLOAT" MODEL #530N0NC   |
| FUSES    | CURRENT LIMITING TYPE, AMP RATING AS SHOWN, BUSS "KIT", OR EQUAL, WITH SWITCH TYPE MOUNT.   |
| CB       | POWER/CONTROL CIRCUIT BREAKERS, SQUARE D TYPE "FAL" OR EQUAL  |
| MCB, GCB | POWER CIRCUIT BREAKERS, SQUARE D POWERPACT  |
| STARTERS | NEMA 600V 3-PHASE   |



- RTU PANEL B.O.M. INCLUDING, BUT NOT LIMITED TO:**
- | ABBR.     | DESCRIPTION  |
|-----------|--|
| ENCLOSURE | 36"x36"x12", NEMA 4X, POWDER-COATED WHITE INSIDE AND OUT, POWERGLIDE 3-PT LATCH, LOCKABLE QUARTER TURN HANDLE.   |
| RTU       | HOFFMAN P/N A36H3612SSL3PTW, OR EQUAL.   |
| PLC       | ALLEN-BRADLEY MICROLOGIX 1400 PLC, 1766-L328XB, SERIES B, FIRMWARE 11 OR LATER, EXTRA SPACE (5 INCHES) TO THE RIGHT OF PLC TO ALLOW FUTURE ADDITION OF UP TO 3 1762 EXPANSION MODULES.                                       |
| RADIO     | OR450 RADIO MODEM AT 451.1375MHZ. PREFER HORIZONTAL MOUNTING WITH LEADS FACING OUTWARD. RF FEEDLINE ISOLATOR / SURGE SUPPRESSOR. PREFERRED PLACEMENT IS ON RIGHT HAND SIDE BOTTOM.   |
| SPD       | SURGE PROTECTION DIN RAIL MOUNTED BY PHOENIX CONTACT OR EQUAL  |
| PS        | POWER SUPPLY 24 VOLT POWER SUPPLY TO POWER RTU AND ALL I/O. 24VDC, 10A RATED WITH AN OUTPUT FOR POWER SUPPLY OK.   |
| UPS       | BATTERY BACKUP 24 VOLT BATTERY SYSTEM WITH AUTOMATIC CHARGER AND BACKUP POWER ADEQUATE TO SUPPLY RADIO, RTU AND ALL I/O 24 VOLT POWER FOR 24 HOURS. A BUMPLESS BATTERY TRANSFER RELAY, TRANSTRONICS BVUPS-PFA OR EQUIVALENT. |
| BATTERIES | 2 -12V, 55AH BATTERIES. PREFERRED PLACEMENT IS LEFT HAND SIDE OF CABINET. PROVIDE FOR ADEQUATE CLEARANCE BETWEEN BATTERIES.  |
| RELAYS    | MINIMUM 8 2POT OUTPUT RELAYS FOR PLC OUTPUTS. RELAYS WILL HAVE AN LED INDICATION FOR ENERGIZED AND A MANUAL LOCKING TAB TO HOLD CONTACTS IN ENERGIZED POSITION.  |
| RECPMT    | 120 VAC CONVENIENCE RECEPTACLE.  |
| TB        | TERMINAL BLOCKS, EXTRA SPACE ON THE TERMINAL STRIP DIN RAIL.   |
| PT        | PRESSURE TRANSMITTER SHALL BE IFM EFECTOR TYPE PX3224 PRESSURE TRANSMITTER (0 TO 150 P.S.I.).  |

SCADA RTU I/O LISTING					
SIGNAL NO.	FROM	DESCRIPTION	24 V INPUT	RELAY OUT	ANALOG IN
DI-1	PUMP CUTOFF FLOAT SWITCH	PUMP CUTOFF (BACKUP)	X		
DI-2	HIGH LEVEL FLOAT SWITCH	HIGH LEVEL INDICATOR (BACKUP)	X		
DI-3	LEAD PUMP FLOAT SWITCH	FLOAT SWITCH	X		
DI-4	LAG PUMP FLOAT SWITCH	FLOAT SWITCH	X		
DI-5	PUMP NO. 1 H-O-A SWITCH	SELECTOR SWITCH IN AUTO	X		
DI-6	PUMP NO. 2 H-O-A SWITCH	SELECTOR SWITCH IN AUTO	X		
DI-7	PUMP NO. 1	SEAL FAIL	X		
DI-8	PUMP NO. 1	MOTOR WINDING TEMP	X		
DI-9	PUMP NO. 1	MOTOR RUNNING FEEDBACK SIGNAL	X		
DI-10	PUMP NO. 1	PUMP OVERLOAD TRIPPED	X		
DI-11	PUMP NO. 2	SEAL FAIL	X		
DI-12	PUMP NO. 2	MOTOR WINDING TEMP	X		
DI-13	PUMP NO. 2	MOTOR RUNNING FEEDBACK SIGNAL	X		
DI-14	PUMP NO. 2	PUMP OVERLOAD TRIPPED	X		
DI-15	CONTROL PANEL	TAMPER SWITCH	X		
DI-16	PHASE FAILURE RELAY	POWER FAILURE	X		
DI-17	LOW FLOAT SWITCH	LOW LEVEL ALARM	X		
DO-1	RTU	PUMP NO. 1 START/STOP		X	
DO-2	RTU	PUMP NO. 1 OVERLOAD RESET		X	
DO-3	RTU	PUMP NO. 2 START/STOP		X	
DO-4	RTU	PUMP NO. 2 OVERLOAD RESET		X	
DO-5	RTU	SPARE		X	
DO-6	RTU	SPARE		X	
DO-7	RTU	ALARM LIGHT (FLASHING)		X	
DO-8	RTU	SPARE		X	
AI-1	RTU	WATER PRESSURE			X



REVISIONS				DATE: 9/13/2013	
NO.	DATE	BY	GENERAL	SCALE:	N.T.S.
1	FEB. 2023	L.J.S.	GENERAL	DESIGNED BY:	...
				DRAWN BY:	M.A.S.
				CHECKED BY:	K.P.J.
				FILE NO:	0-PCB-UTL-DETAILS-1.dwg

CITY OF  
**PANAMA CITY BEACH**

116 SOUTH ARNOLD ROAD

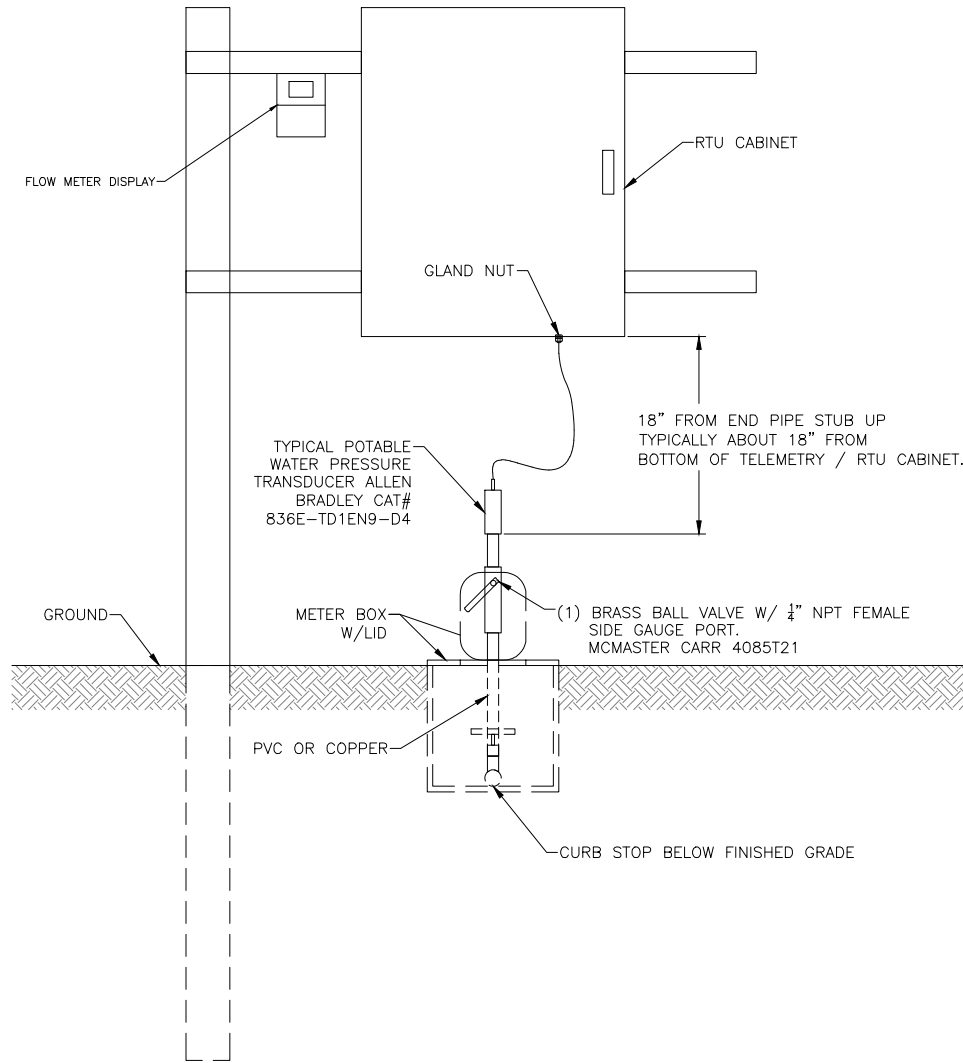
PANAMA CITY BEACH, FLORIDA 32413

SHEET NUMBER

**ELECTRICAL DETAILS**

S-12EL(2)

TYPICAL POTABLE WATER PRESSURE TRANSDUCER  
 INSTALLATION AT LIFT STATION RTU / CABINET.  
 PCQ 3/27/15



REVISIONS

NO.	DATE	BY	DESCRIPTION
1	FEB. 2023	L.J.S.	GENERAL

DATE:	12/22/2015
SCALE:	N.T.S.
DESIGNED BY:	...
DRAWN BY:	L.J.S.
CHECKED BY:	A.E.S.
FILE NO:	0-PCB-UTL-DETAILS-1.dwg

CITY OF  
**PANAMA CITY BEACH**

110 SOUTH ARNOLD ROAD

PANAMA CITY BEACH, FLORIDA 32413

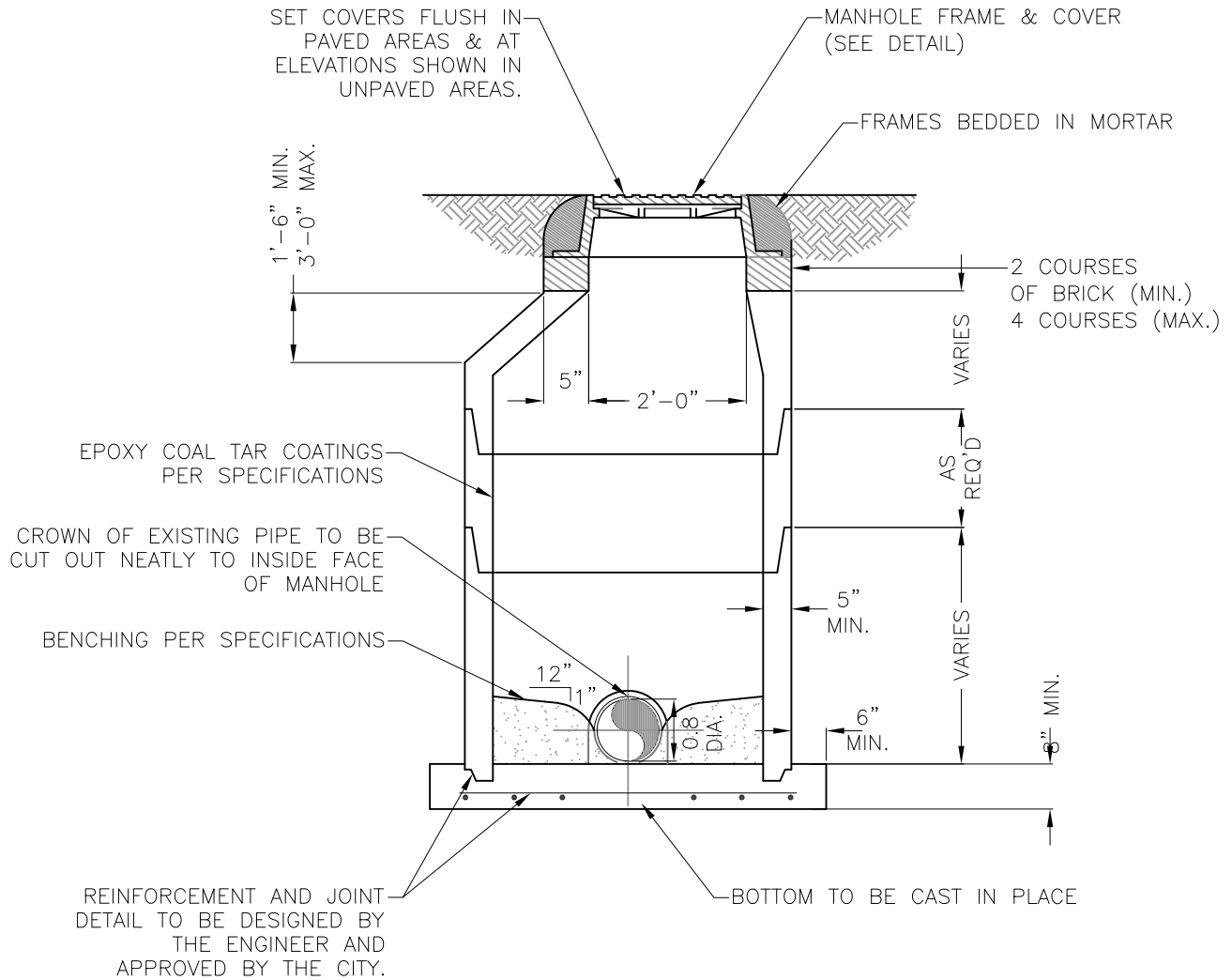


**ELECTRICAL DETAILS**

SHEET NUMBER

S-12EL(3)

I:\CAD\AutoCad Files\0-UTILITIES DEPARTMENT\UTILITY MAPS\DETAILS\_PCB\MOST CURRENT\0-DWG\0-PCB-UTL-DETAILS-1.dwg, 3/1/2023 10:31:58 AM, DWG To PDF.pc3



NOTES:

- 1.) MANHOLE SHOWN IS FOR SEWER SIZE 8" THRU 18", MANHOLE DIAMETER FOR SEWERS GREATER THAN 18" SHALL BE AS APPROVED BY CITY.
- 2.) DROP CONNECTIONS ARE REQUIRED WHENEVER INVERT OF INFLUENT SEWER IS 24" OR MORE ABOVE THE INVERT OF THE MANHOLE. SEE MANHOLE CONNECTION DETAILS.
- 3.) APPROVED CONCENTRIC CONE DESIGN MAY BE USED AS AN ALTERNATIVE.
- 4.) MANHOLE LIFT HOLES AND GRADE ADJUSTMENT RINGS SHALL BE SEALED W/ NON-SHIRNK MORTAR.

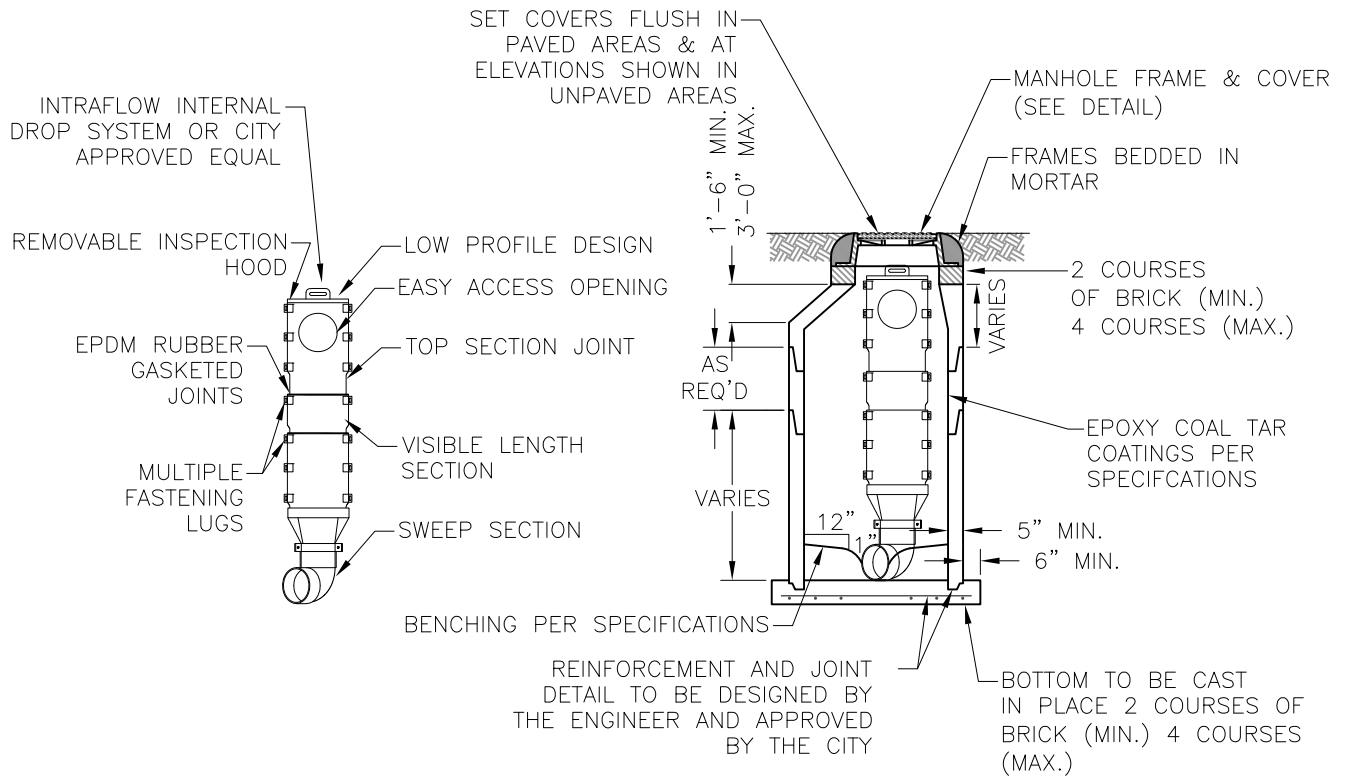


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

DOGHOUSE MANHOLE  
DETAIL

DATE: MAR 2012

S-16



NOTES:

1. MANHOLE SHOWN IS FOR SEWER SIZE 8" THRU 18", MANHOLE DIAMETER FOR SEWERS GREATER THAN 18" SHALL BE AS APPROVED BY CITY.
2. DROP CONNECTIONS ARE REQUIRED WHENEVER INVERT OF INFLUENT SEWER IS 24" OR MORE ABOVE THE INVERT OF THE MANHOLE. SEE MANHOLE CONNECTION DETAILS.
3. APPROVED CONCENTRIC CONE DESIGN MAY BE USED AS AN ALTERNATIVE.
4. MANHOLE LIFT HOLES AND GRADE ADJUSTMENT RINGS SHALL BE SEALED W/ NON-SHIRNK MORTAR.

THE INTRAFLOW INTERNAL DROP SYSTEM SHALL BE A ROTATIONAL MOLDED; SECTIONAL ENCLOSURE MADE OF POLYETHYLENE (PE). THE INSIDE DROP ASSEMBLY SHALL CONTAIN, AND DIRECT SEWAGE FLOW FROM THE UPPER PORTION OF THE MANHOLE TO THE INVERT CHANNEL. THE SECTIONS SHALL BE OF LOW PROFILE DESIGN WITH MOLDED FASTENING LUGS CONFORMING TO THE INSIDE MANHOLE WALL. THE INTERMEDIATE SECTIONS SHALL BE SUPPLIED IN THREE AND FOUR FOOT SECTIONS. THE TOP SECTION SHALL HAVE A 9" ADJUSTMENT JOINT AT THE BOTTOM AND REMOVABLE INSPECTION HOOD AT THE TOP. THE INSIDE OF THE TOP SECTION SHALL HAVE AN OPENING FOR 4" THROUGH 12" PIPE ENTRY. THE OUTSIDE OF THE TOP SECTION SHALL HAVE A NOMINAL 13" INSPECTION / CLEANOUT OPENING. THE BOTTOM SECTION SHALL BE ELONGATED AT THE TOP WITH A TRANSITION TO A 10" ROUND PIPE AT THE BOTTOM. A 90° 10" PVC SWEEP SHALL ATTACH TO THE BOTTOM TRANSITION SECTION. SECTIONS SHALL BE SECURED TO THE MANHOLE WALL THROUGH THE FASTENING LUGS USING TYPE 302 OR 304 STAINLESS STEEL ANCHOR BOLT ASSEMBLIES.

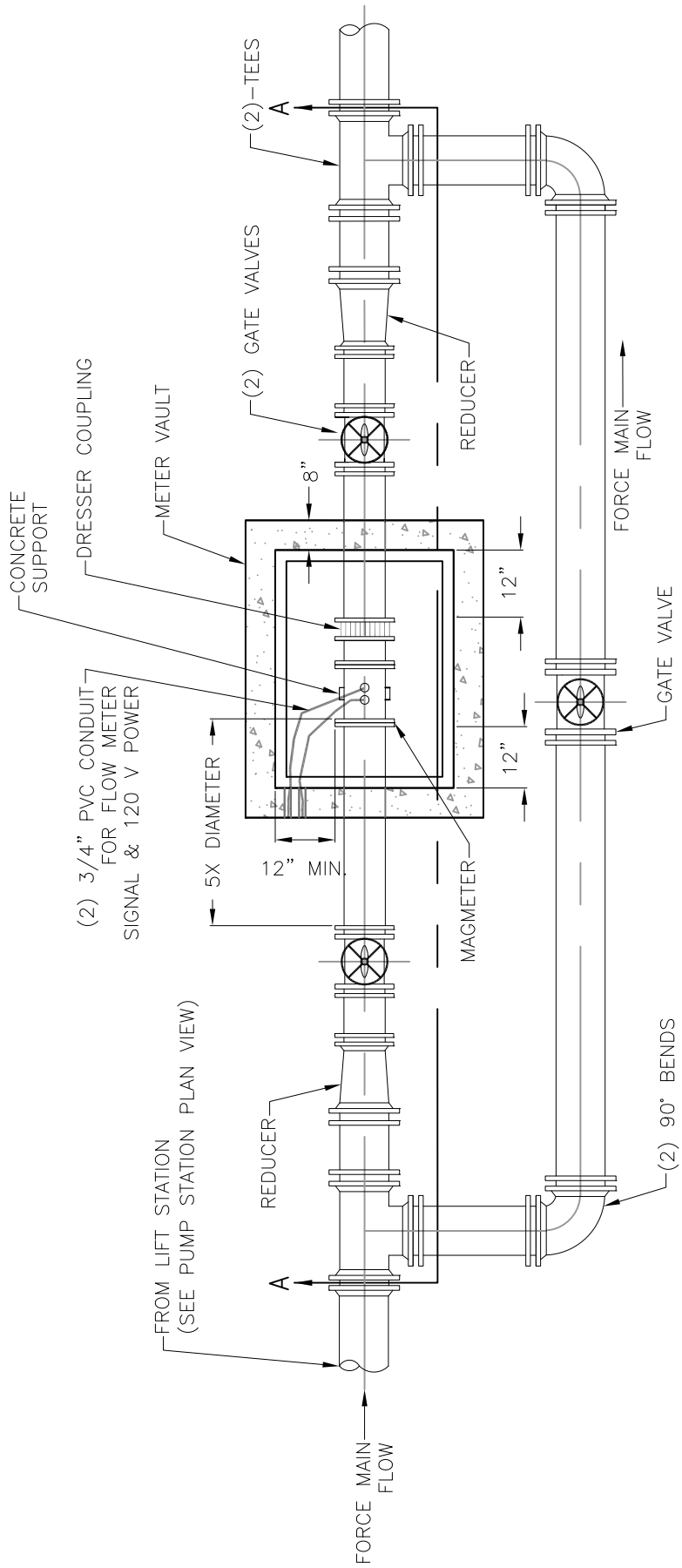


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

DROP MANHOLE  
DETAIL

DATE: MAR 2012

S-16A



**FLOW METER PLAN VIEW**

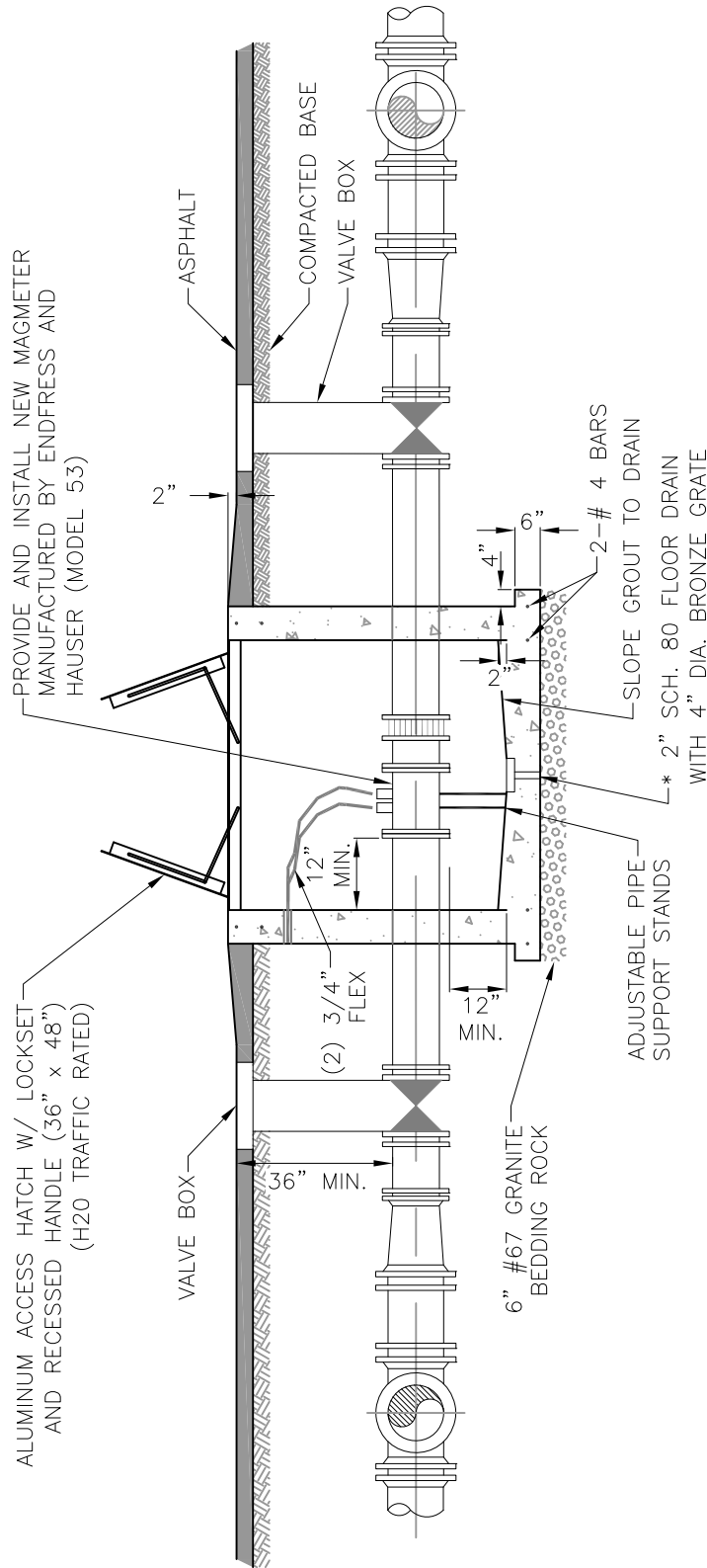


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**SEWER FLOW METER  
PLAN VIEW**

DATE: MAR 2012

**S-17A**



**SECTION "A-A"**

\* AREAS W/ HIGH WATER TABLE SHALL HAVE SUMP PUMP IN LIEU OF DRAIN

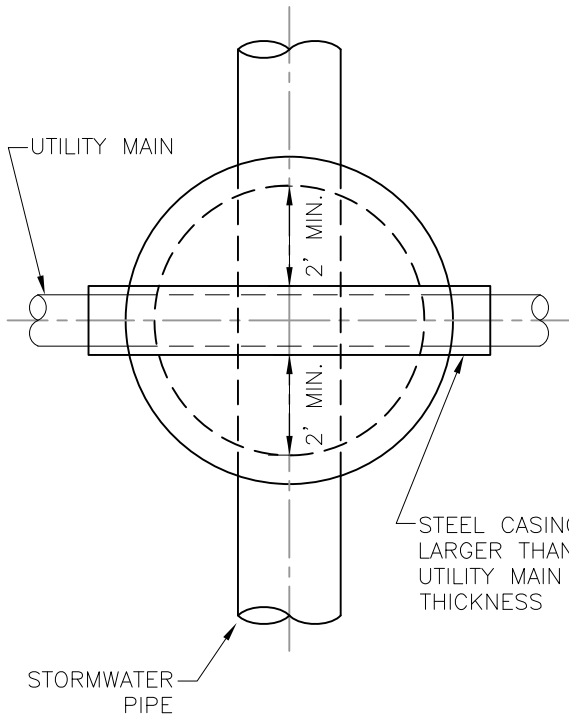


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

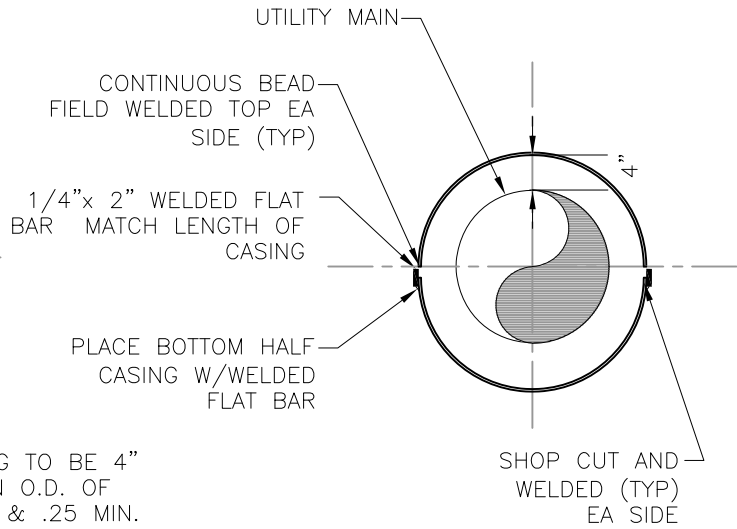
**SEWER FLOW METER  
SECTION**

DATE: MAR 2012

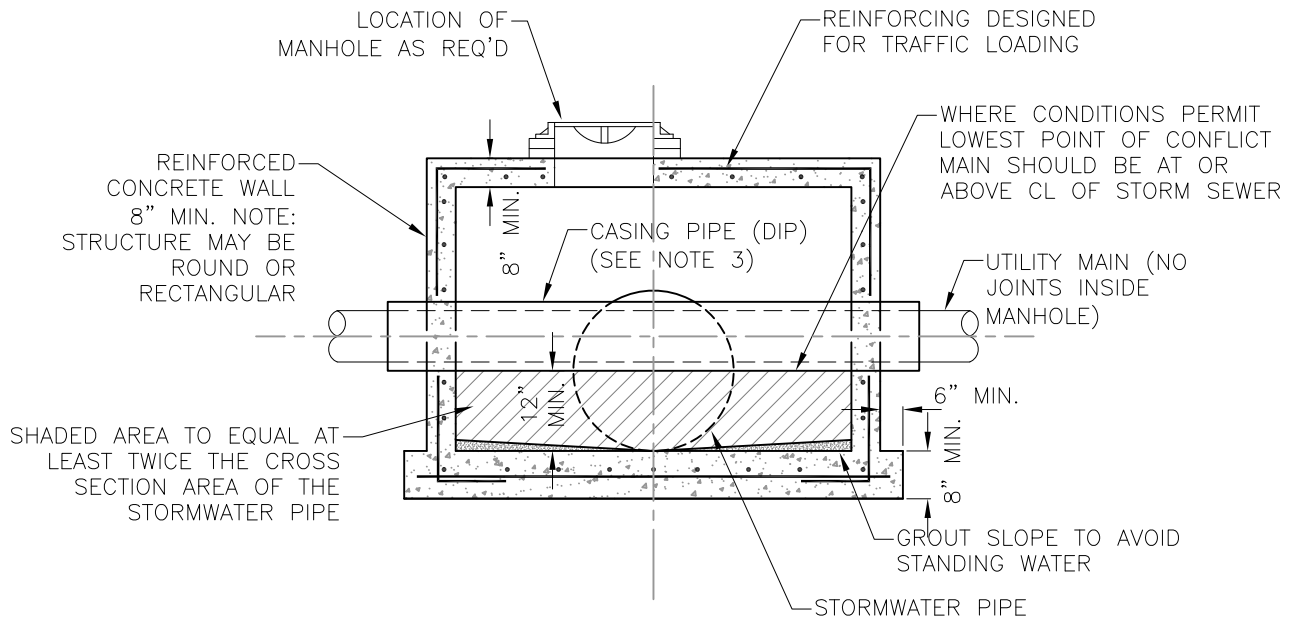
**S-17B**



**PLAN VIEW**  
N.T.S.



**SPLIT SLEEVE CASING**  
**PIPE SECTION**  
N.T.S.



**NOTES:**

1. CONFLICT MANHOLE WILL BE ALLOWED WHERE DESIGN PROBLEMS AND ECONOMICS PROVE THEM TO BE THE ONLY VIABLE SOLUTION AS APPROVED BY THE THE ENGINEER AND OWNERS.
2. CONFLICT MANHOLES WILL NOT BE ALLOWED FOR WATER MAINS CROSSING GRAVITY WASTEWATER SYSTEMS.
3. WHEN NECESSARY FOR EXISTING UTILITY MAINS, THE CARRIER PIPE SHALL BE SPLIT SLEEVED STEEL CASING. (SEE DETAIL)

**CONFLICT MANHOLE**  
N.T.S.



**CITY OF P.C.B**  
**UTILITIES**  
**STANDARD**  
**DETAILS**

**CONFLICT MANHOLE**  
**DETAIL**

DATE: MAR 2012

**S-18**

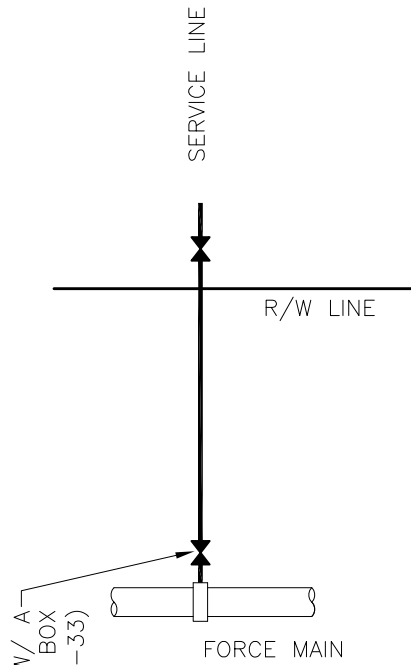


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

GRINDER PUMP SERVICE  
DETAIL

DATE: AUG 2020

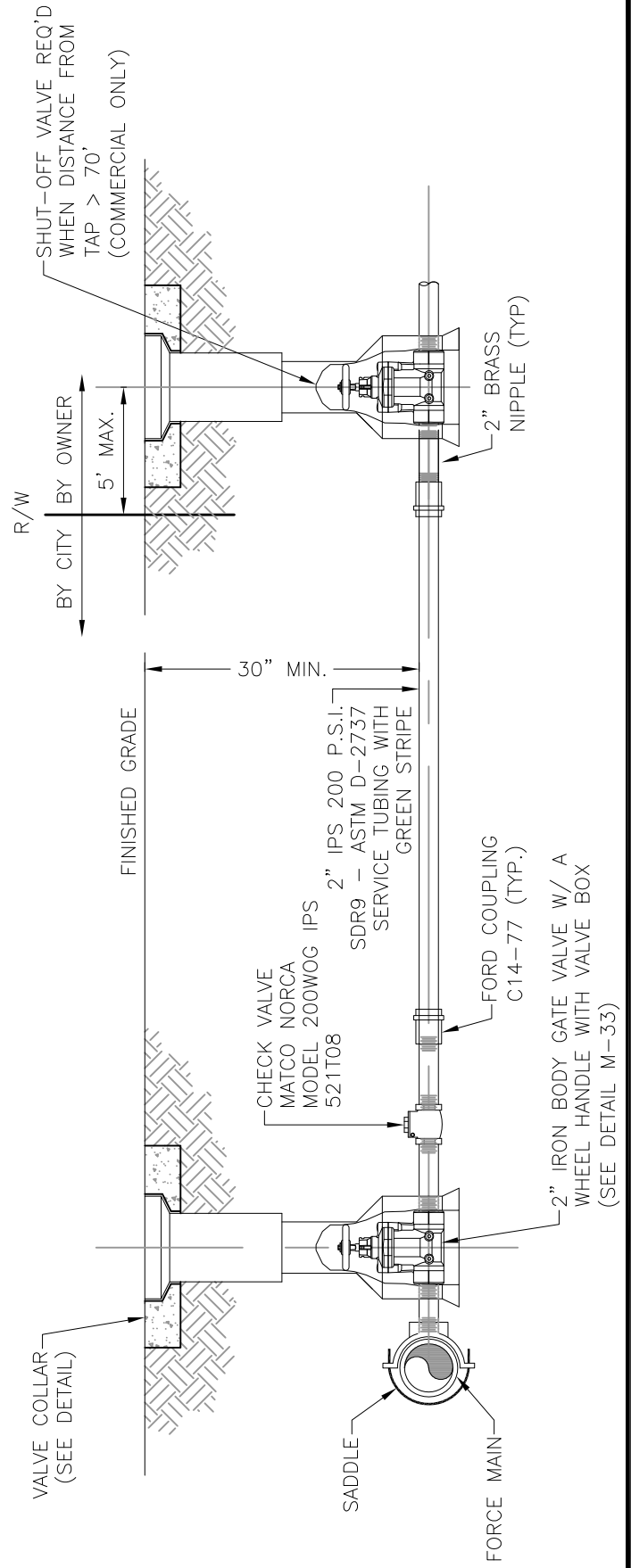
S-19



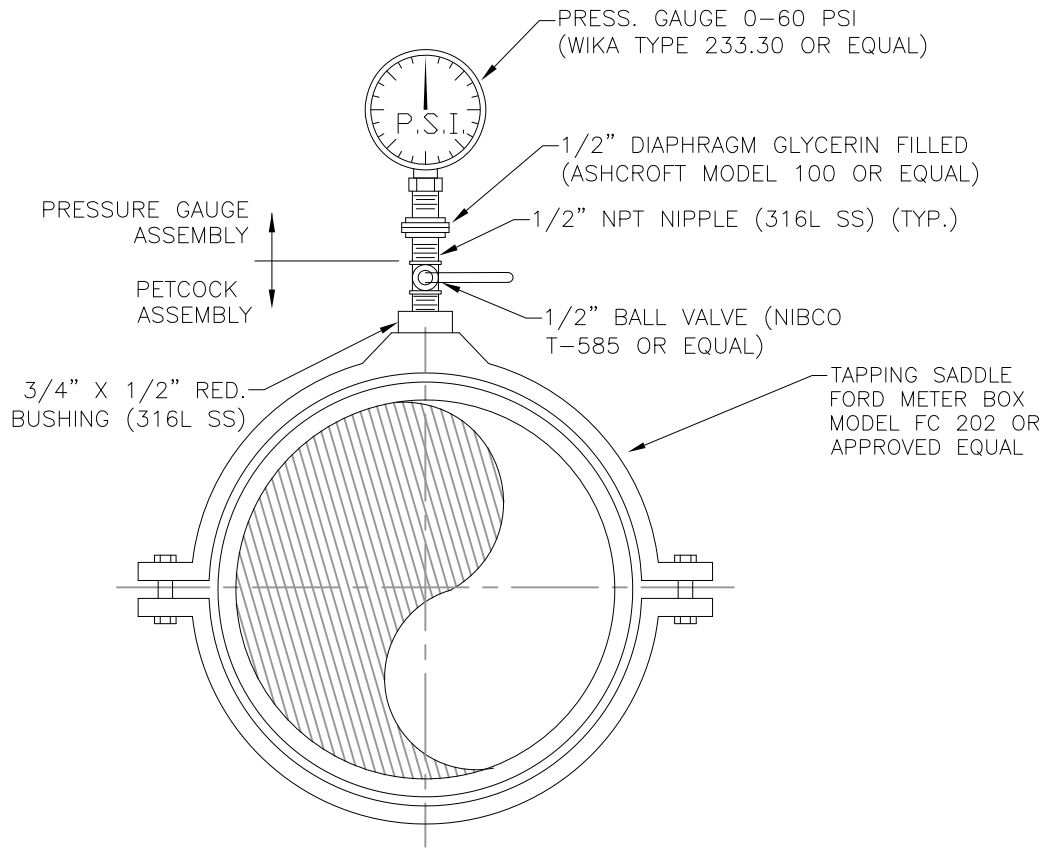
NOTES:

- 1.) ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
- 2.) NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
- 3.) TAPPING SADDLE: SHALL BE MODEL FC202 FORD METER BOX CO., INC. WITH EPOXY GATED BODY (NSF 61) AND 304 SS BAND AND HARDWARE. ALL OUTLETS SHALL BE IRON PIPE THREAD.
- 4.) ALL SERVICE TAPS TO BE LOCATED IN FIELD. TAPS SHALL BE NO CLOSER THAN 36" APART AND NOT WITHIN 24" FROM BACK OF PIPE BELL OR SPIGOT INSERTION LINE.
- 5.) TAPS SHALL NOT BE SET IN DRAINAGE SWALES, EASEMENTS, OR SIDEWALKS.

TYPICAL CITY SERVICE







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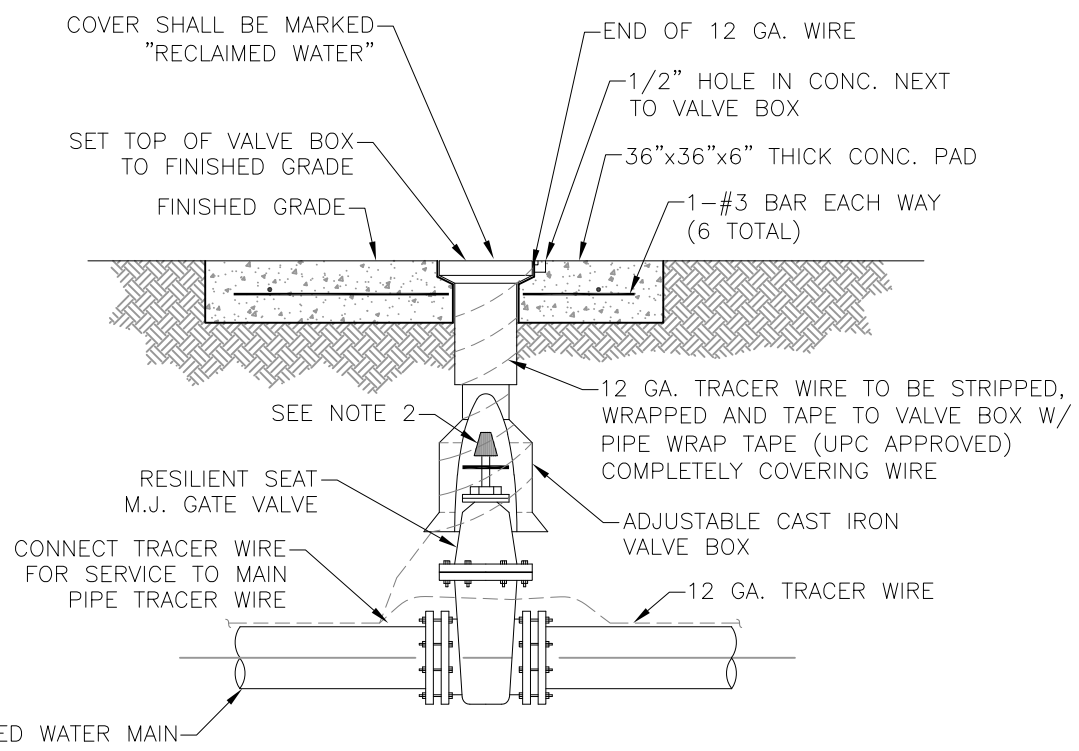
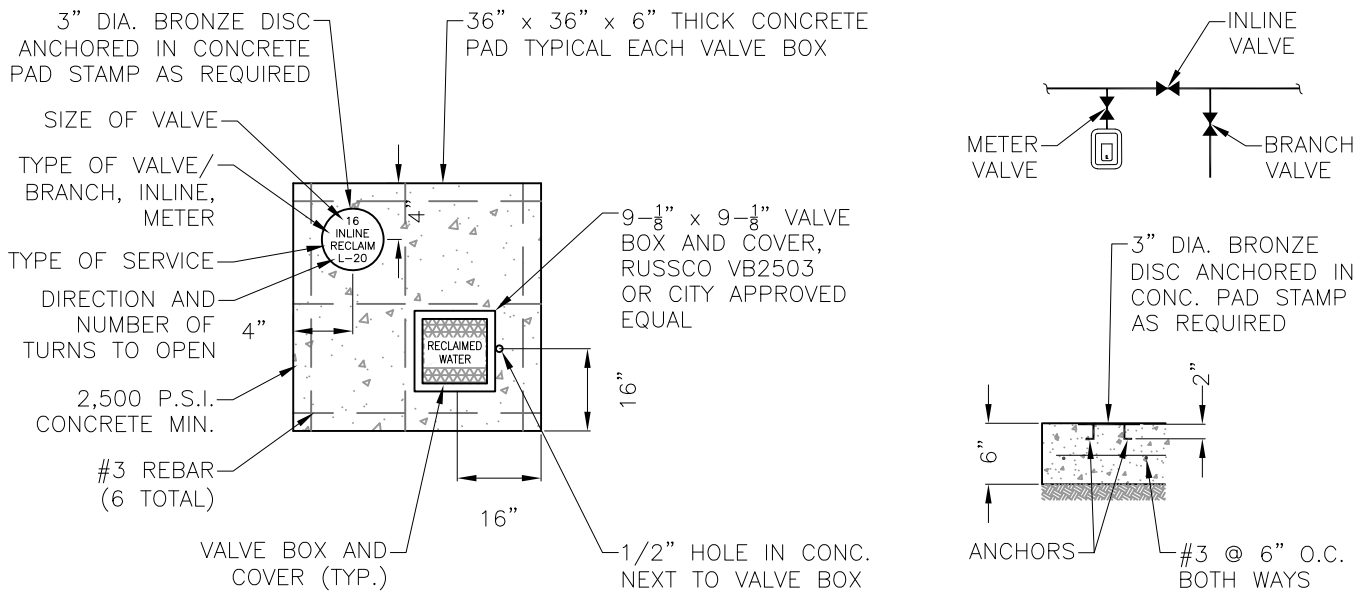


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

PETCOCK/ PRESSURE  
GAUGE ASSEMBLY

DATE: APR 2019

S-20



- NOTES:
- 1.) PVC EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.
  - 2.) THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 4 FOOT DEPTH BELOW FINISHED GRADE.
  - 3.) ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS ESTABLISHED IN THE FIELD.
  - 4.) VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
  - 5.) ALL EXPOSED EDGES OF CONCRETE PAD SHALL BE CHAMFERED 1/2"
  - 6.) FOR VALVE COLLAR PADS THAT FALL ON SLOPES GREATER THAN 1:6, SEE DETAIL W-20 FOR PAD.



CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

## GATE VALVE 12" & SMALLER

DATE: JAN 2020

R-1

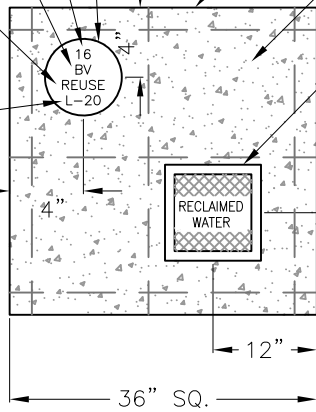
3" DIA. BRONZE DISC ANCHORED IN CONCRETE PAD STAMP AS REQUIRED W/2" HOOKED ANCHORS

SIZE OF VALVE

TYPE OF VALVE

SERVICE

DIRECTION & NUMBER OF TURNS TO OPEN

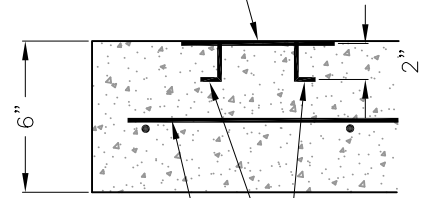


6" THICK CONCRETE PAD TYPICAL EACH VALVE BOX

2,500 P.S.I. CONCRETE MIN.

9-1/8" x 9-1/8" VALVE BOX AND COVER RUSSCOVB2503 OR CITY APPROVED EQUAL

3" DIA. BRONZE DISC ANCHORED IN CONC. PAD STAMP AS REQUIRED



#3 BAR @ 6" O.C. EACH WAY

ANCHORS

SET TOP OF VALVE BOX TO FINISHED GRADE

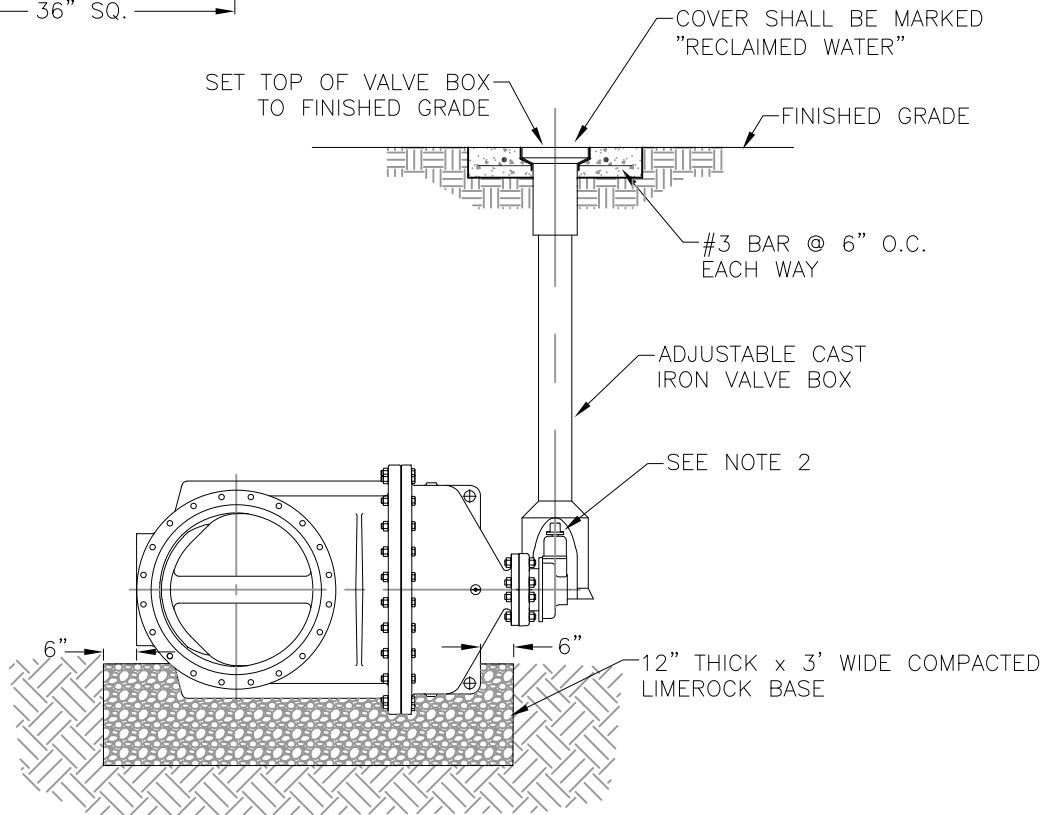
COVER SHALL BE MARKED "RECLAIMED WATER"

FINISHED GRADE

#3 BAR @ 6" O.C. EACH WAY

ADJUSTABLE CAST IRON VALVE BOX

SEE NOTE 2



NOTES:

- 1.) PVC EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.
- 2.) THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 4 FOOT DEPTH BELOW FINISHED GRADE.
- 3.) ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS ESTABLISHED IN THE FIELD.
- 4.) VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
- 5.) ALL EXPOSED EDGES OF CONCRETE PAD SHALL BE CHAMFERED 1/2".

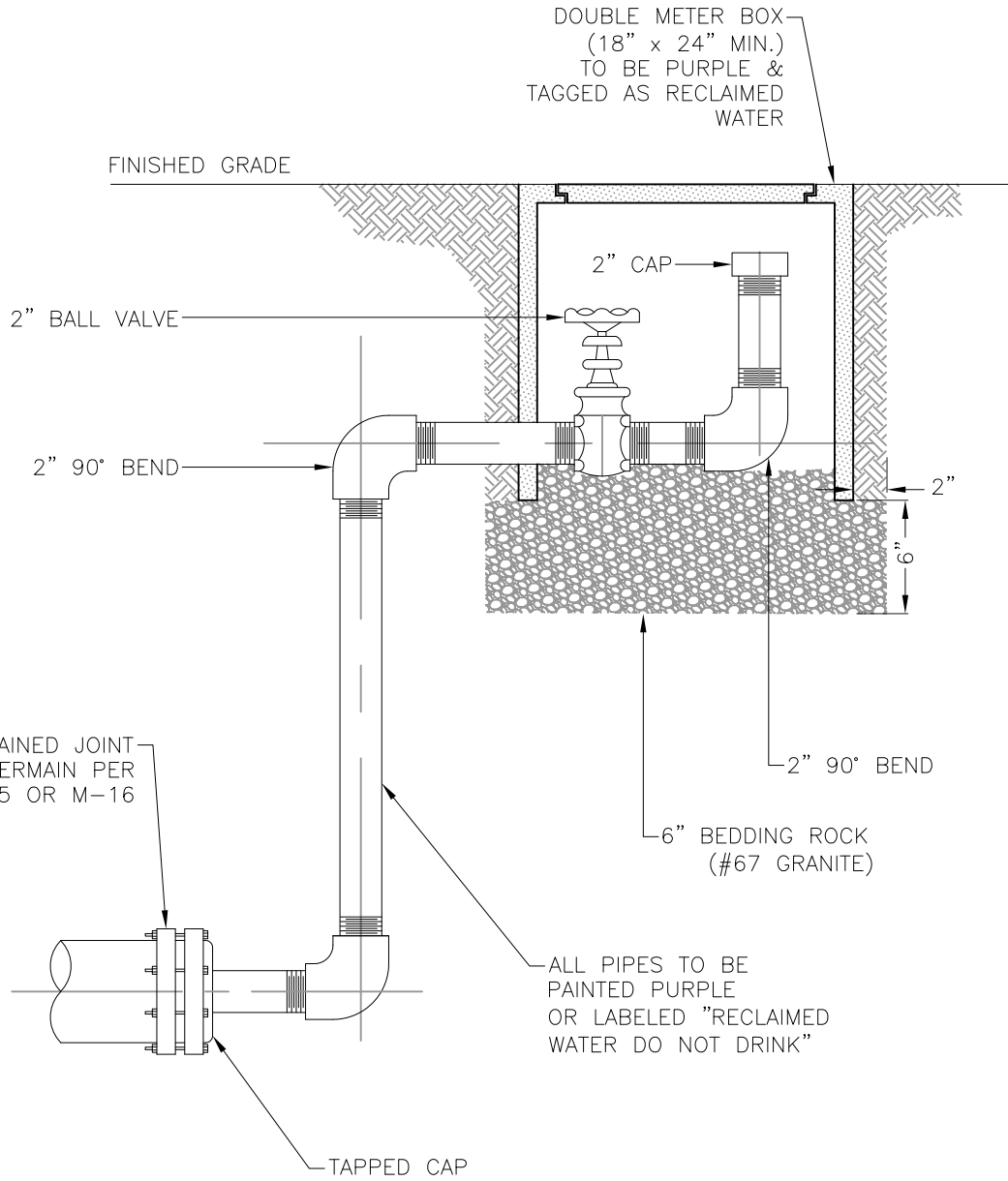


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

RECLAIM GATE VALVE &  
BOX DETAIL  
(16" & LARGER)

DATE: JUL 2019

R-2



NOTE:

ALL 2" PIPE AND FITTINGS SHALL BE SCHEDULE 40 BRASS WITH THREADED (NPT) JOINTS.

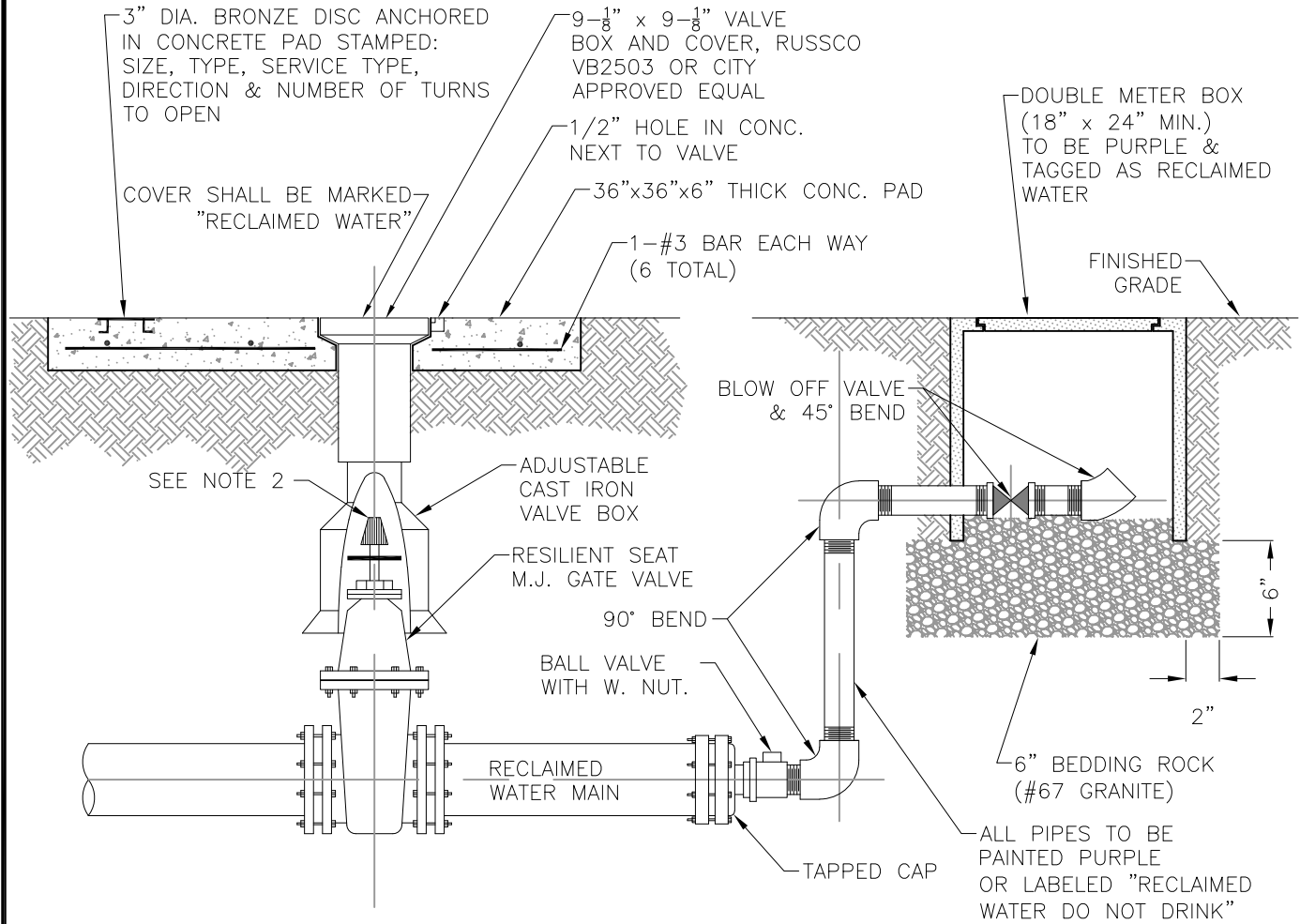


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

END OF LINE  
2" BLOW-OFF ASSEMBLY

DATE: DEC 2023

R-4A



NOTES:

- 1.) PVC EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.
- 2.) THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 4 FOOT DEPTH BELOW FINISHED GRADE.

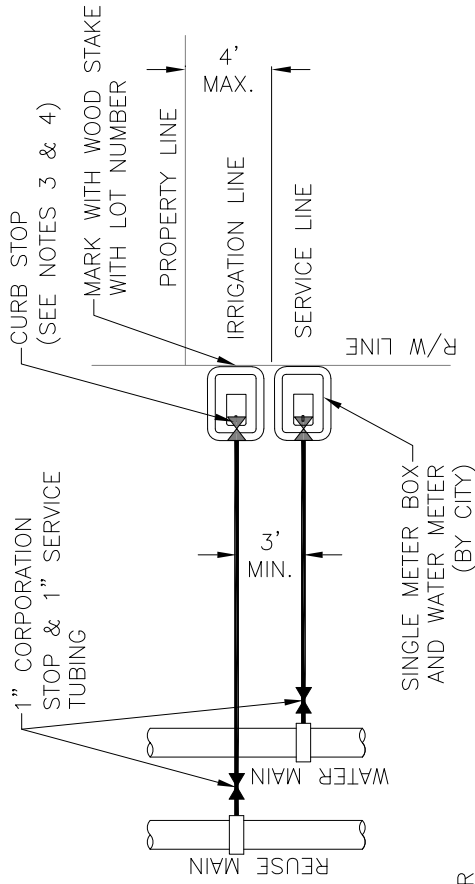


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

END OF LINE  
4" AND LARGER  
BLOW-OFF ASSEMBLY

DATE: MAR 2012

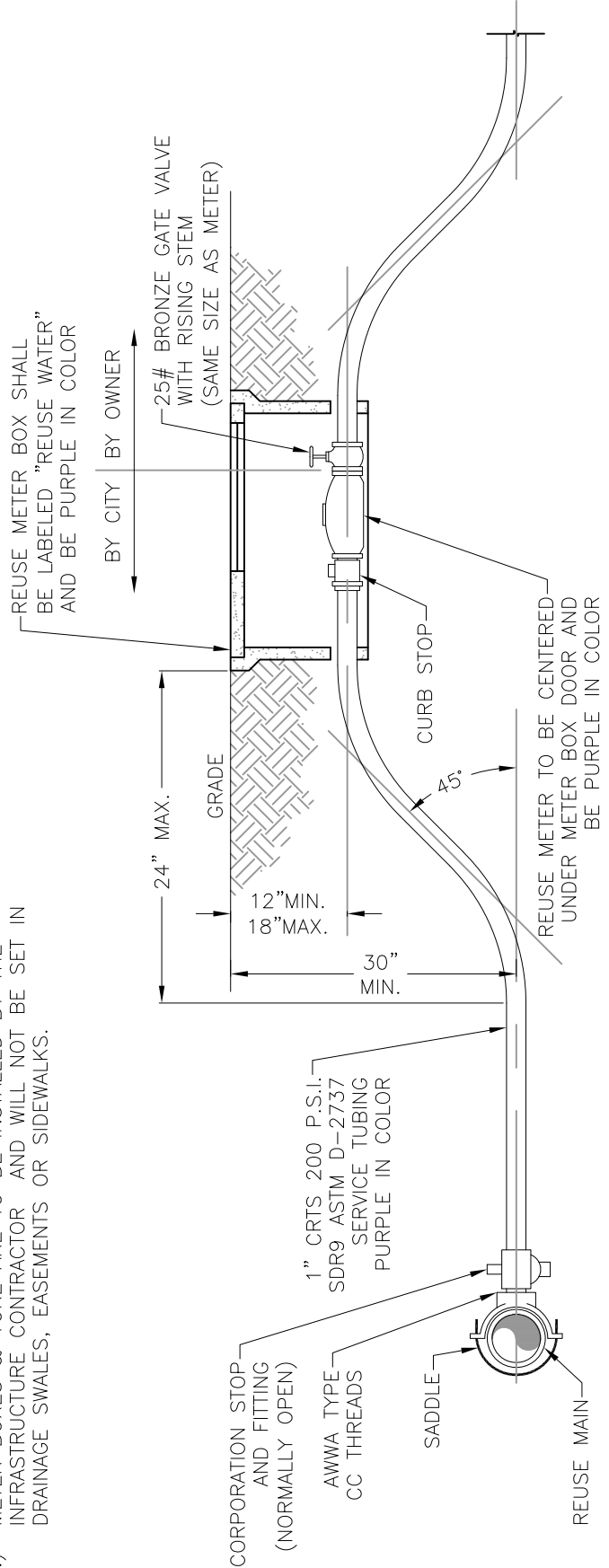
R-4B



**NOTES:**

- 1.) ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
- 2.) NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
- 3.) EACH SERVICE SHALL TERMINATE AT A CURB STOP WHICH SHALL BE FASTENED TO A 1" x 4" x 30" STAKE PAINTED PURPLE AND MARKED WITH THE NUMBER OF THE LOT TO BE SERVED.
- 4.) CURB STOP SHALL BE A FORD BALL METER VALVE B43-342W-G OR CITY APPROVED EQUAL.
- 5.) ALL SERVICE TAPS TO BE LOCATED IN FIELD. TAPS SHALL BE NO CLOSER THAN 2'-0" STAGGERED INTERVALS OR WITHIN 2'-0" FROM BELL SPIGOT ENDS.
- 6.) METER BOXES & YOKE ARE TO BE INSTALLED BY THE INFRASTRUCTURE CONTRACTOR AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.

**TYPICAL CITY SERVICE WITH REUSE**  
(PER. LOT)



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**3/4" & 1" RECLAIMED  
WATER METER  
DETAIL**

DATE: MAR 2012

**R-5**



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

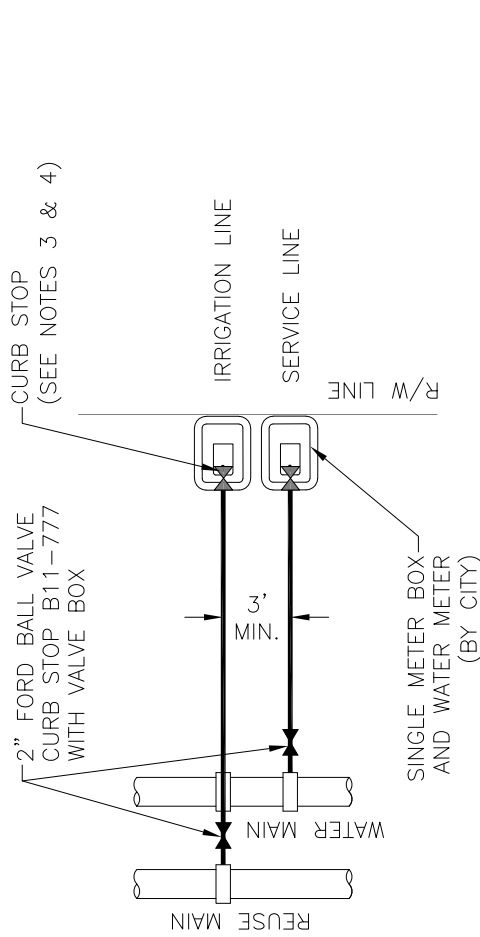
**2" RECLAIMED WATER  
METER DETAILS**

DATE: DEC 2023

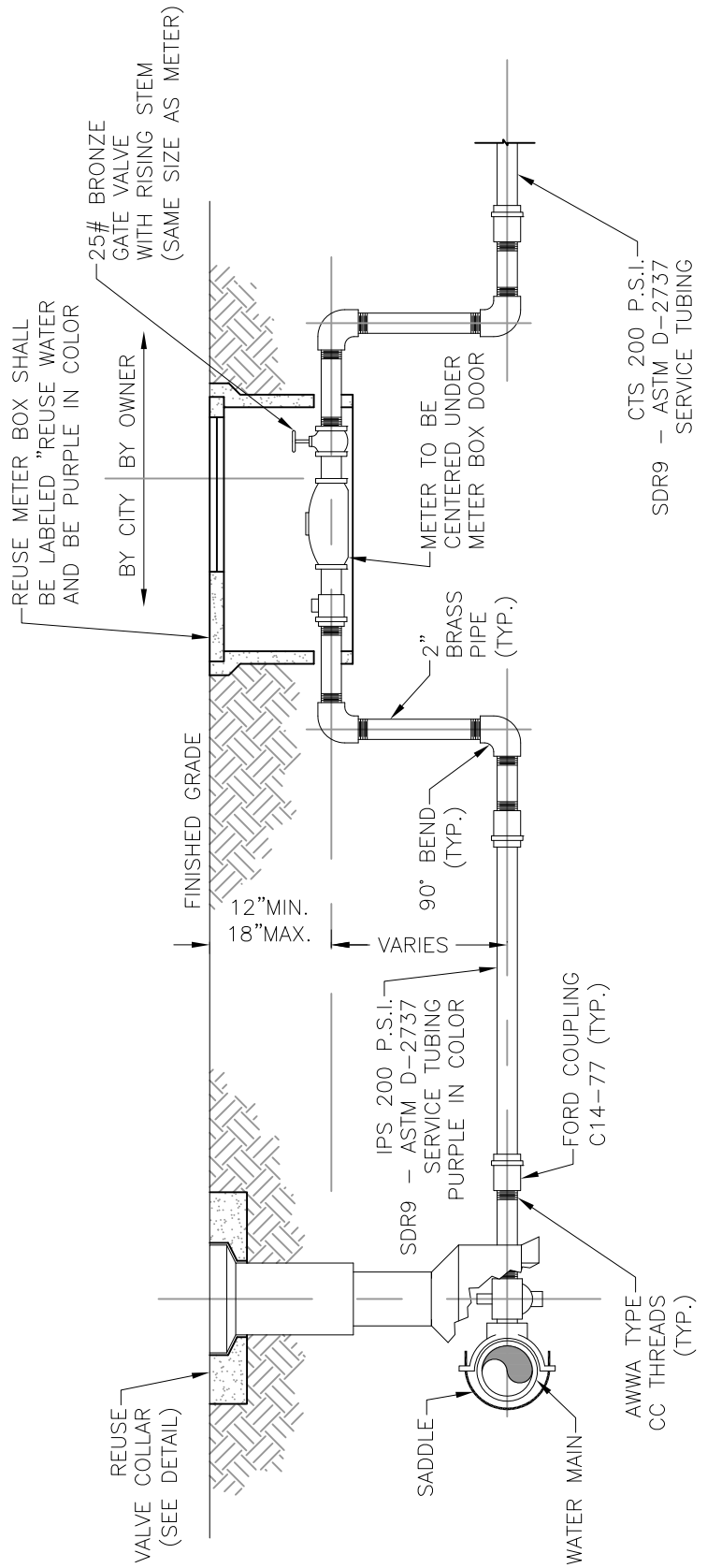
**R-6**

**NOTES:**

- 1.) ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
- 2.) NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
- 3.) EACH SERVICE SHALL TERMINATE AT A BALL VALVE WHICH SHALL BE FASTENED TO A 1" x 4" x 30" STAKE PAINTED WHITE.
- 4.) CURB STOP SHALL BE A 2" FORD BALL METER VALVE B14-777W OR CITY APPROVED EQUAL.
- 5.) ALL SERVICE TAPS TO BE LOCATED IN FIELD. TAPS SHALL BE NO CLOSER THAN AND WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.

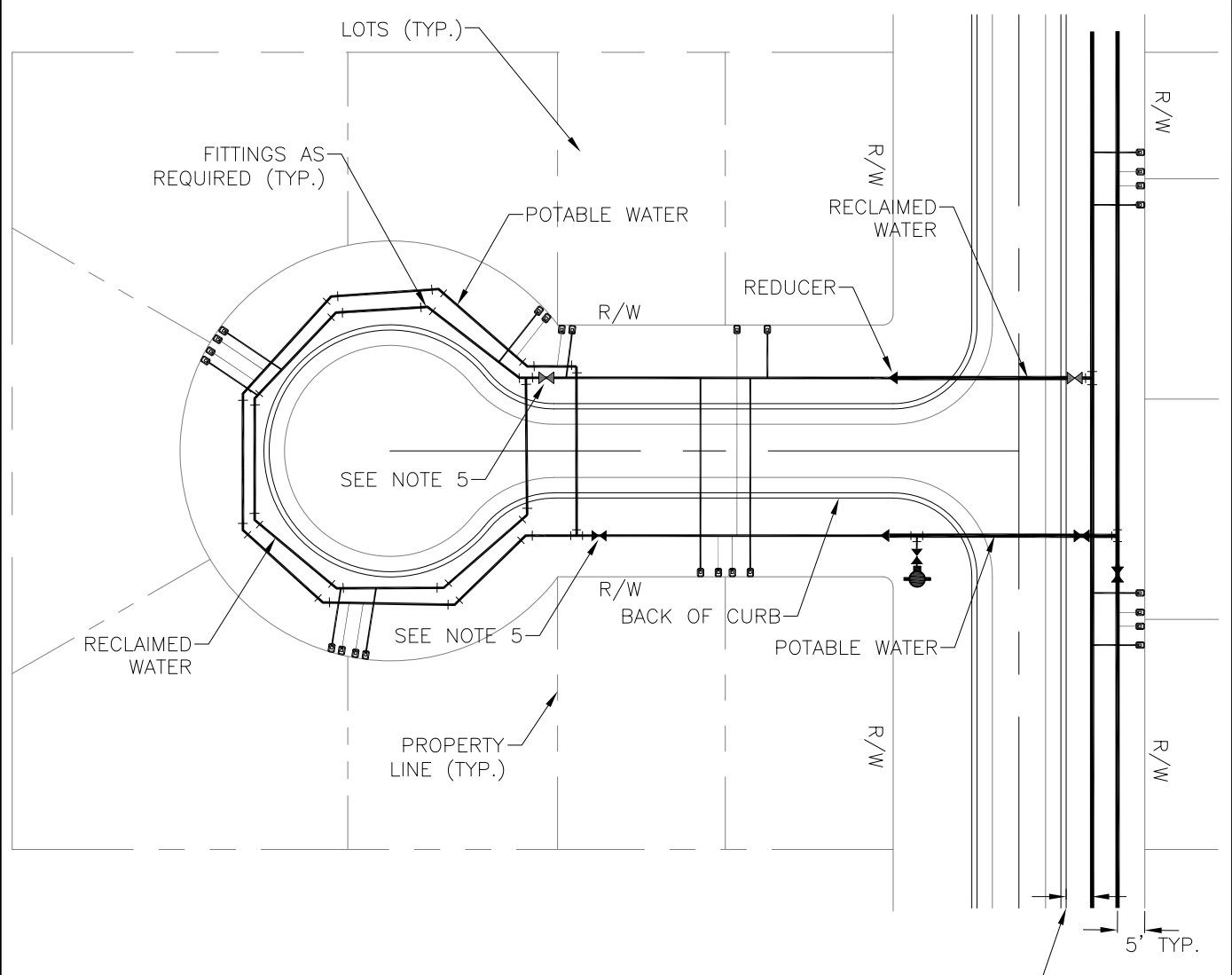


**TYPICAL CITY SERVICE**



CTS 200 P.S.I.  
SDR9 - ASTM D-2737  
SERVICE TUBING

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NOTES:

1. REDUCE MAIN TO 4" PVC (C-900) FOR PERMANENT CUL-DE-SAC CONNECTIONS ONLY. FITTINGS AS REQUIRED.
2. 5'-0" MIN. SEPARATION BETWEEN POTABLE WATER, RECLAIMED WATER AND WASTE WATER SHALL BE MAINTAINED.
3. ABOVE GROUND PIPING TO BE PAINTED PURPLE WITH NON-POTABLE MARKINGS.
4. WHERE POSSIBLE LOCATE ON NORTHERLY AND WESTERLY SIDE OF ROAD AND ON THE OPPOSITE SIDE OF ROAD FROM THE WATER LINE.
5. GATE VALVE REQUIRED IF CUL-DE-SAC EXCEEDS 500' IN LENGTH.

5' MIN. FROM BACK OF CURB, 7' FROM EDGE OF PAVEMENT.



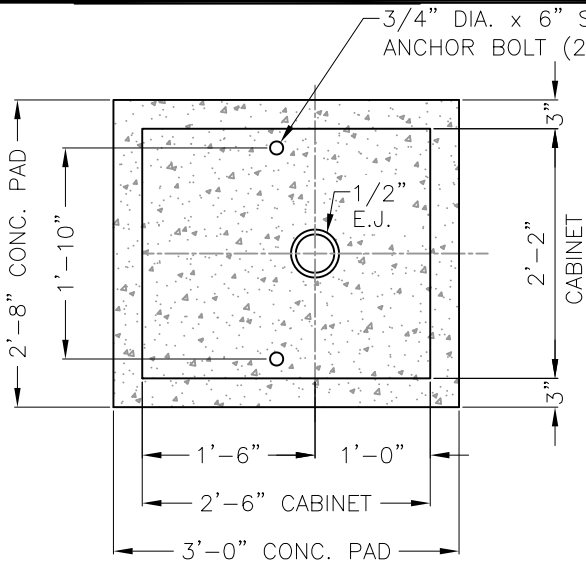
CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

RECLAIMED WATER  
LOCATION DETAIL

DATE: MAR 2020

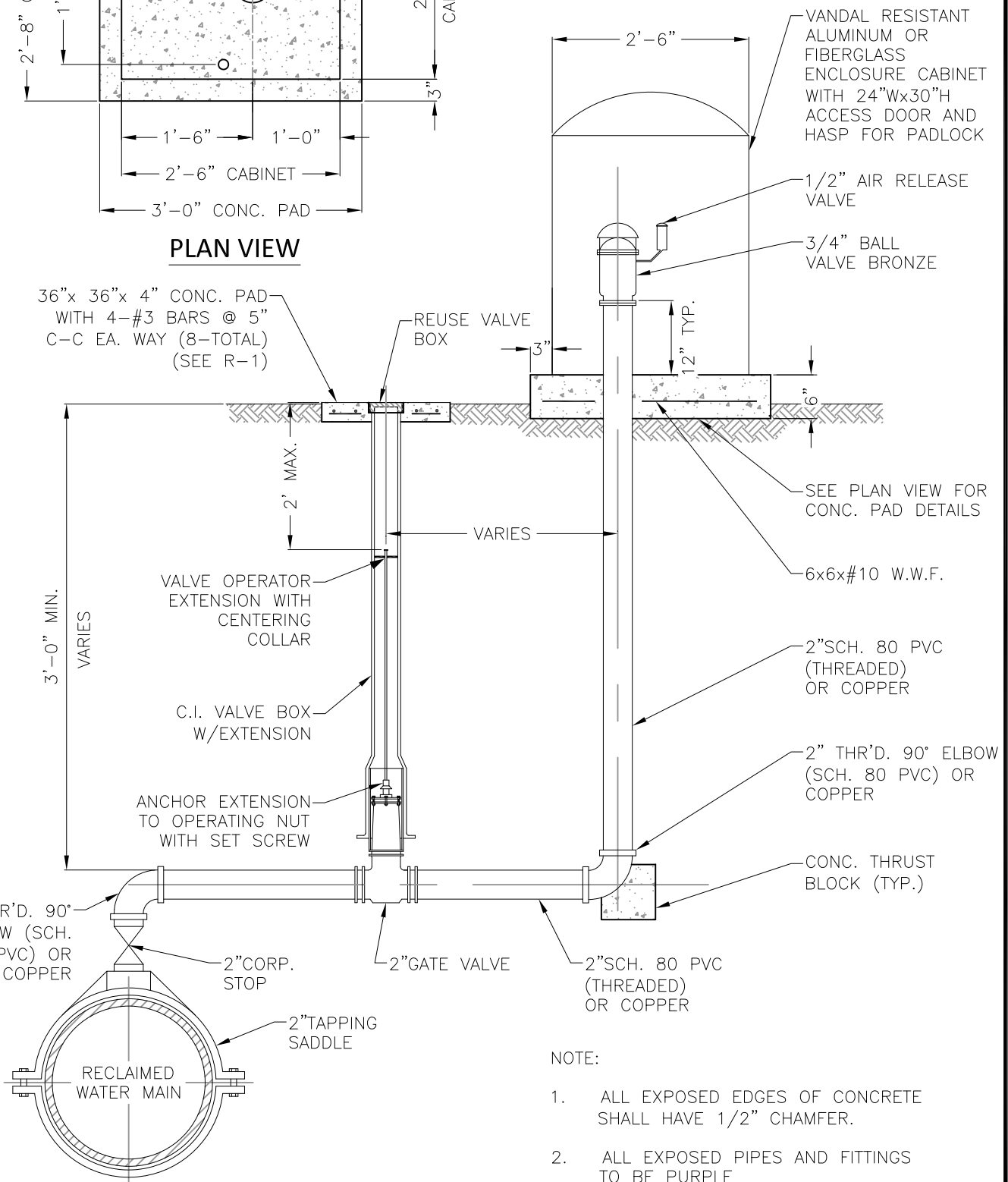
R-7





**PLAN VIEW**

36"x 36"x 4" CONC. PAD WITH 4-#3 BARS @ 5" C-C EA. WAY (8-TOTAL) (SEE R-1)



**NOTE:**

1. ALL EXPOSED EDGES OF CONCRETE SHALL HAVE 1/2" CHAMFER.
2. ALL EXPOSED PIPES AND FITTINGS TO BE PURPLE



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**OFFSET COMBINATION  
AIR/VACUUM & AIR RELEASE  
ASSY. FOR 18" & LARGER  
MAINS**

DATE: MAR 2012

**R-8**

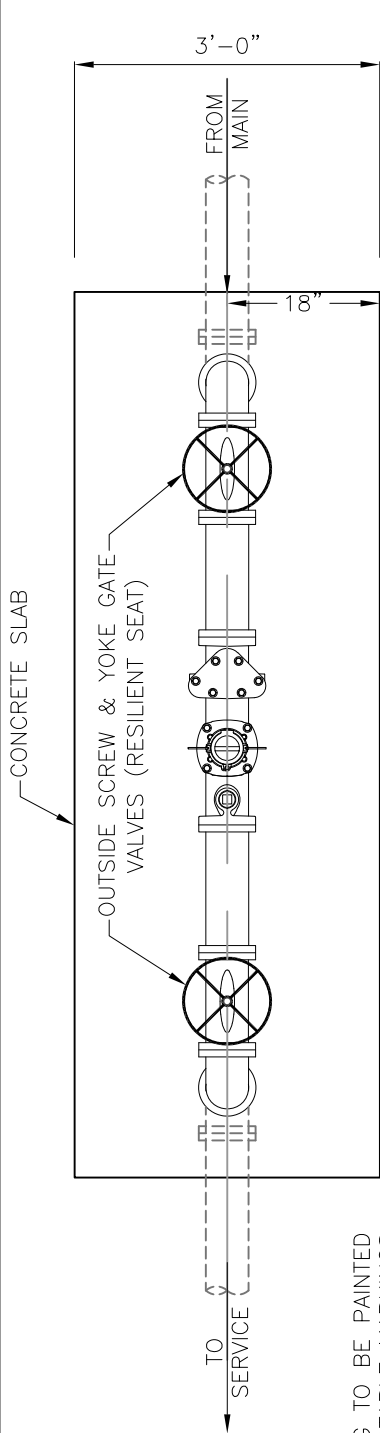


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**4" AND LARGER  
RECLAIMED METER  
DETAIL**

DATE: MAR 2012

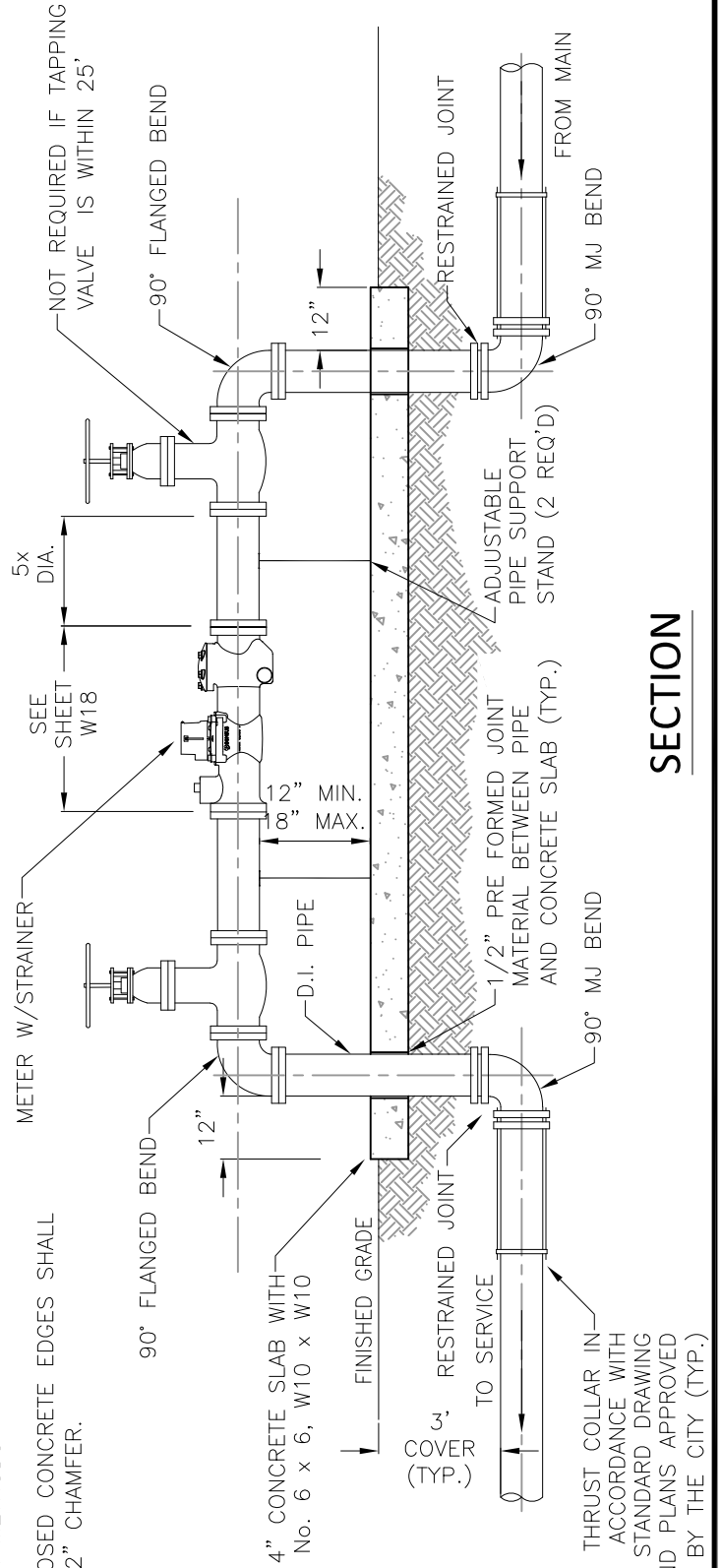
**R-9**



**PLAN VIEW**

**NOTES:**

- 1.) ABOVE GROUND PIPING TO BE PAINTED PURPLE WITH NON-POTABLE MARKINGS.
- 2.) DEVICES MUST BE INSTALLED LEVEL.
- 3.) ALL JOINTS SHALL BE FLANGED UNLESS OTHERWISE NOTED.
- 4.) BACK FLOW PREVENTER ONLY IF REQUIRED TO PREVENT CONTAMINATION BY ATTACHED CHEMICAL/FERTILIZER INJECTION METHODS.
- 5.) ALL EXPOSED CONCRETE EDGES SHALL HAVE 1/2" CHAMFER.



**SECTION**

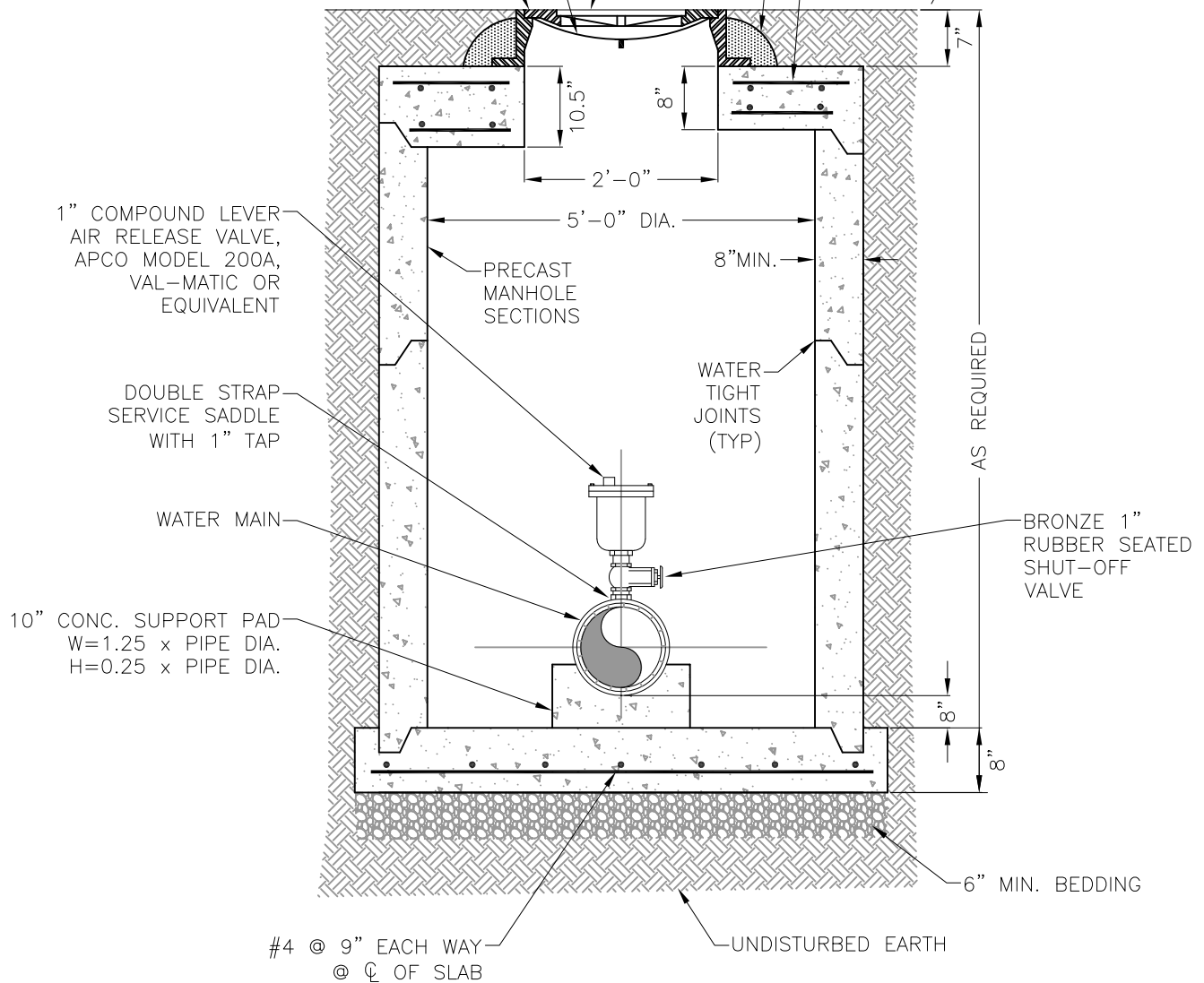
F.R.W. RAIN WATER PROTECTOR WITH GASKET OR EQUIVALENT

ST'D. MANHOLE COVER MARKED "CITY OF PANAMA CITY BEACH RECLAIMED WATER". OMIT "CITY OF PANAMA CITY BEACH" IF PRIVATELY MAINTAINED

LOCATION AND MANHOLE FRAME ELEVATION SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD AND AS APPROVED BY THE CITY OF PANAMA CITY BEACH

CEMENT GROUT

MIN. REINFORCING FOR 8" SLAB: #5 @ 6" EACH WAY TOP & BOTTOM PLUS (4) #5 DIAGONAL BARS IN BOTTOM w/ 2" COVER



NOTES:

1. WHEREVER POSSIBLE AIR RELEASE VALVES SHALL BE PLACED ABOVE GROUND IN STAINLESS STEEL CABINET.
2. ALL PIPE STUBS, NIPPLES AND HARDWARE TO BE 304 STAINLESS STEEL.
3. TO PREVENT DAMAGE TO VALVE FROM TIPPED MANHOLE COVERS IN SHALLOW BOXES IT MAY BE NECESSARY TO OFFSET VALVE FROM CENTERLINE.
4. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS OF MAIN AS DIRECTED BY THE ENGINEER.
5. ALL PIPE APPURTENANCES AND SIZING IN ACCORDANCE WITH SPECIFIC DEVICE APPLICATION.
6. WHERE AIR RELEASE VALVE IS 12' OR FURTHER FROM CURB OR SHOULDER OF ROADWAY SERIES H1R3030 ACCESS DOOR OR APPROVED EQUAL MAY BE USED.

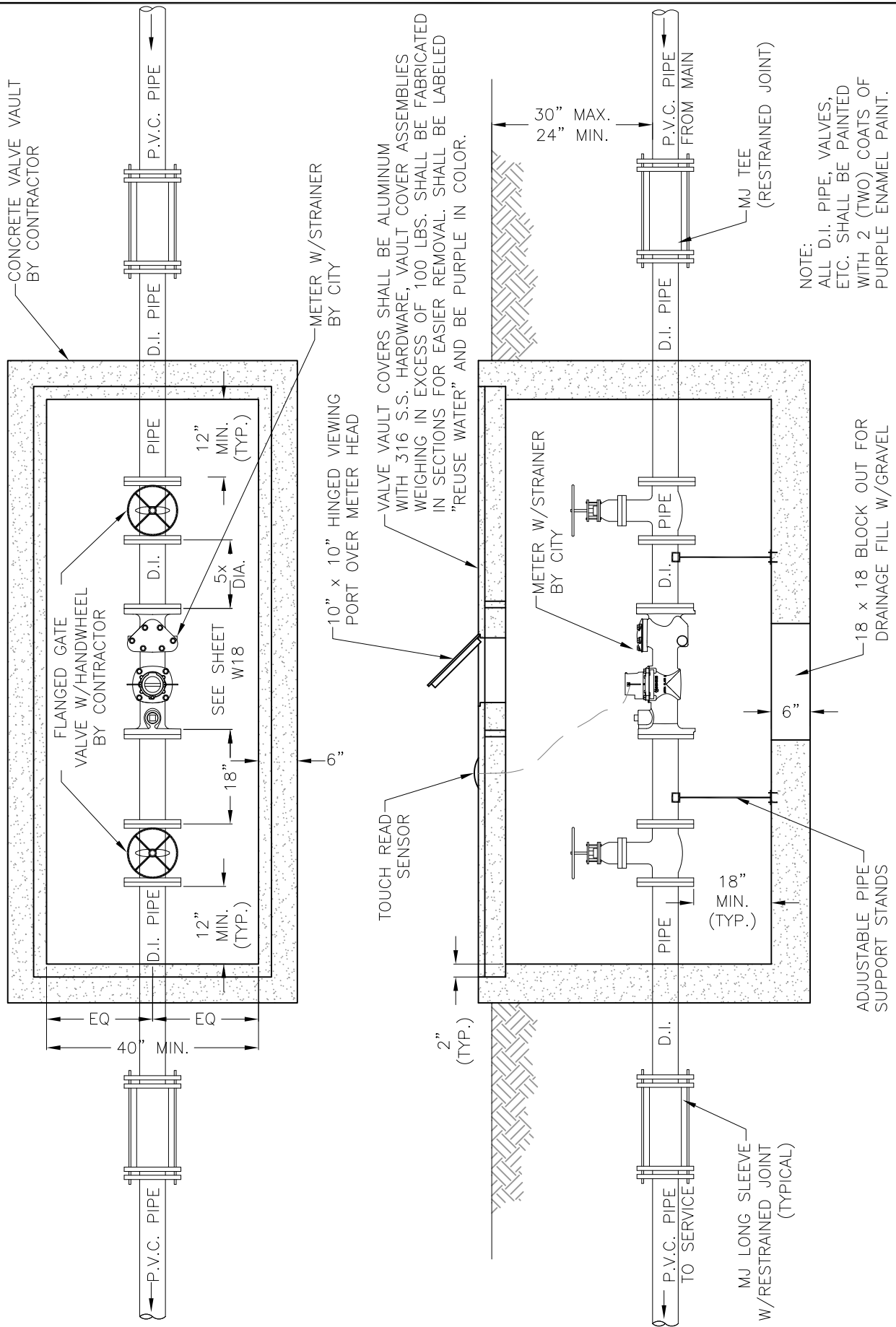


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

BELOW GRADE  
AIR RELEASE VALVE

DATE: MAR 2012

R-10



NOTE:  
 ALL D.I. PIPE, VALVES,  
 ETC. SHALL BE PAINTED  
 WITH 2 (TWO) COATS OF  
 PURPLE ENAMEL PAINT.

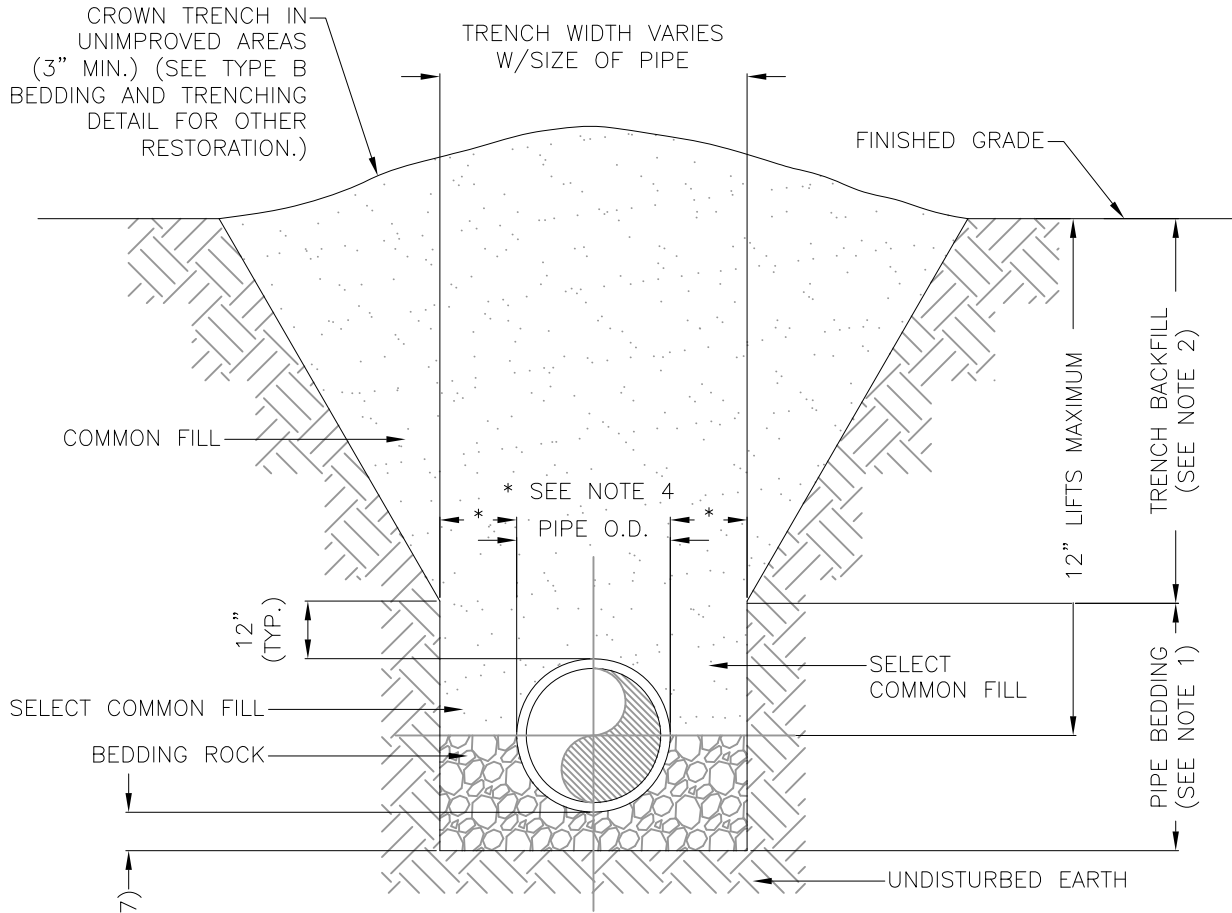


CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

### 3" REUSE WATER METER ASSEMBLY DETAIL

DATE: MAR 2012

R-11



NOTES:

- 1.) PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 95% OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
- 2.) TRENCH BACKFILL: COMMON FILL COMPACTED TO 95% OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
- 3.) USE TYPE A BEDDING TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE CITY.
- 4.) (\*): 15" MAX. FOR PIPE DIAMETER LESS THAN 24", AND 24" MAX. FOR PIPE DIAMETER 24" AND LARGER.
- 5.) ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
- 6.) GRAVITY SEWERS SHALL UTILIZE TYPE A BEDDING, IF REQUIRED BY THE CITY. BEDDING DEPTH SHALL BE 4" MINIMUM FOR PIPE DIAMETER LESS THAN 15", AND 6" MINIMUM PIPE DIAMETER 16" AND LARGER.
- 7.) DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL GOVERN DEPTH OF BEDDING ROCK BELOW THE PIPE. CITY SHALL DETERMINE IN THE FIELD REQUIRED REMOVAL OF UNSUITABLE MATERIAL TO REACH SUITABLE FOUNDATION.

PIPE BEDDING  
(SEE NOTE 6 & 7)

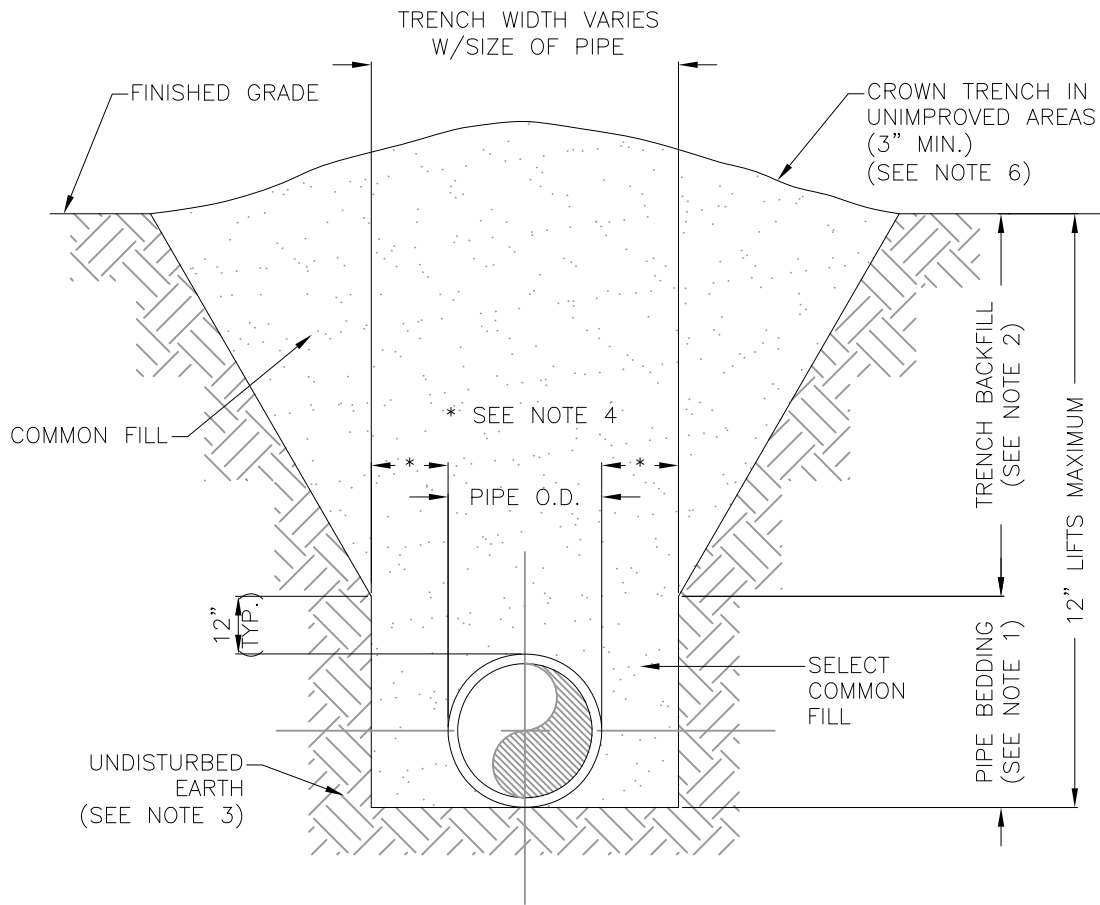


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

TRENCH DETAIL TYPE A  
BEDDING

DATE: MAR 2012

M-1



NOTES:

- 1.) PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 95% OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
- 2.) TRENCH BACKFILL: COMMON FILL COMPACTED TO 95% OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
- 3.) PIPE BEDDING UTILIZING SELECT COMMON FILL OR BEDDING ROCK IN ACCORDANCE WITH TYPE A BEDDING AND TRENCHING DETAIL MAY BE REQUIRED AS DIRECTED BY THE CITY.
- 4.) (\*): 15" MAX. FOR PIPE DIAMETER LESS THAN 24", AND 24" MAX. FOR PIPE DIAMETER 24" AND LARGER.
- 5.) ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
- 6.) FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES. SURFACE RESTORATION WITHIN FDOT, BAY COUNTY & CITY RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF RIGHT-OF-WAY UTILIZATION REGULATIONS AND ROAD CONSTRUCTION SPECIFICATIONS.

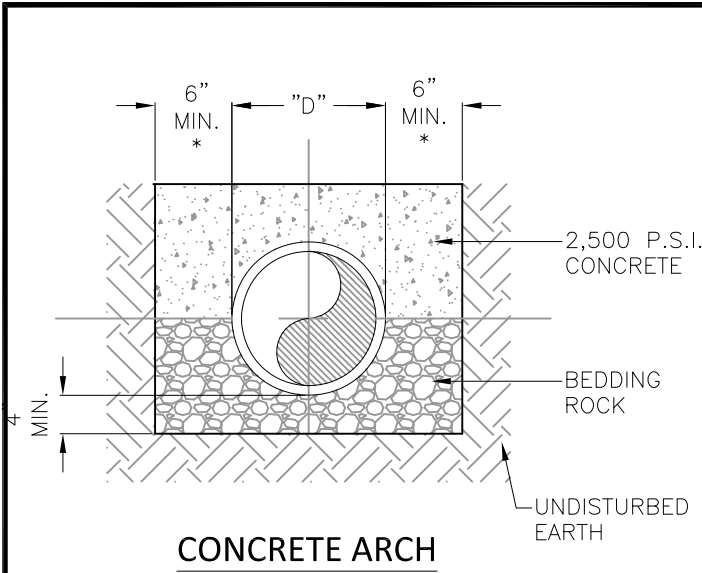


CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

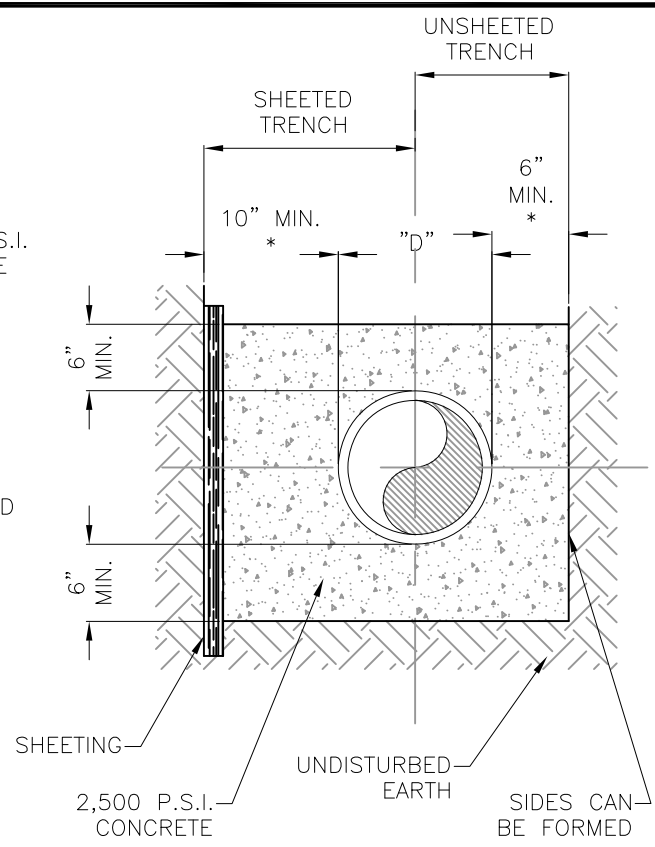
TRENCH DETAIL TYPE B  
 BEDDING

DATE: MAR 2012

M-2



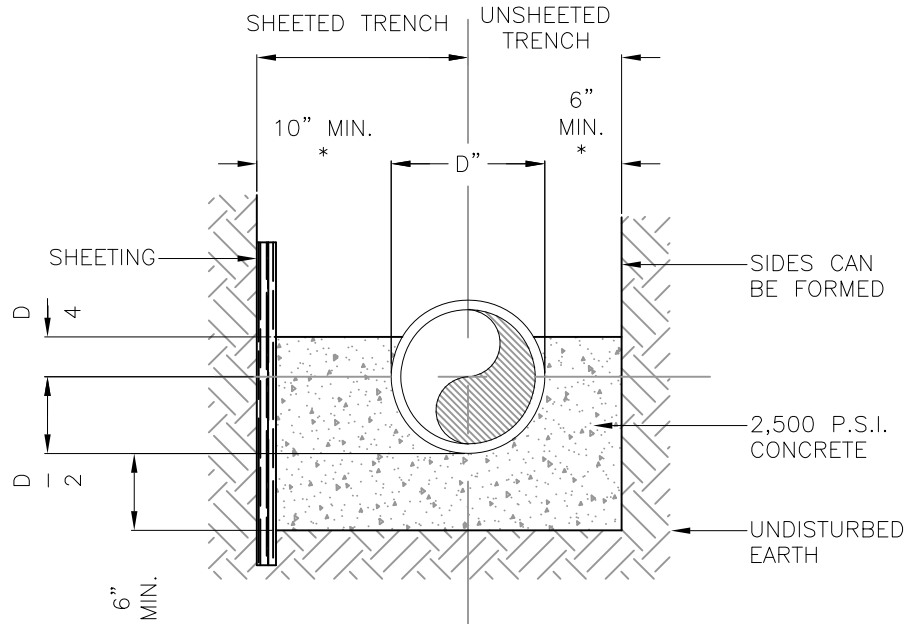
**CONCRETE ARCH**



**FULL ENCASEMENT**

NOTES:

- 1.) (\*): 15" MAX. FOR PIPE DIAMETER LESS THAN 24", AND 24" MAX. FOR PIPE DIA. 24" AND OVER.
- 2.) "D" REFERS TO THE DIAMETER OF THE PIPE.
- 3.) USE OF CONCRETE ARCH HALF ENCASEMENT OR FULL ENCASEMENT TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE CITY.



**CRADLE OR HALF ENCASEMENT**

\* SEE NOTE 1 (TYPICAL)

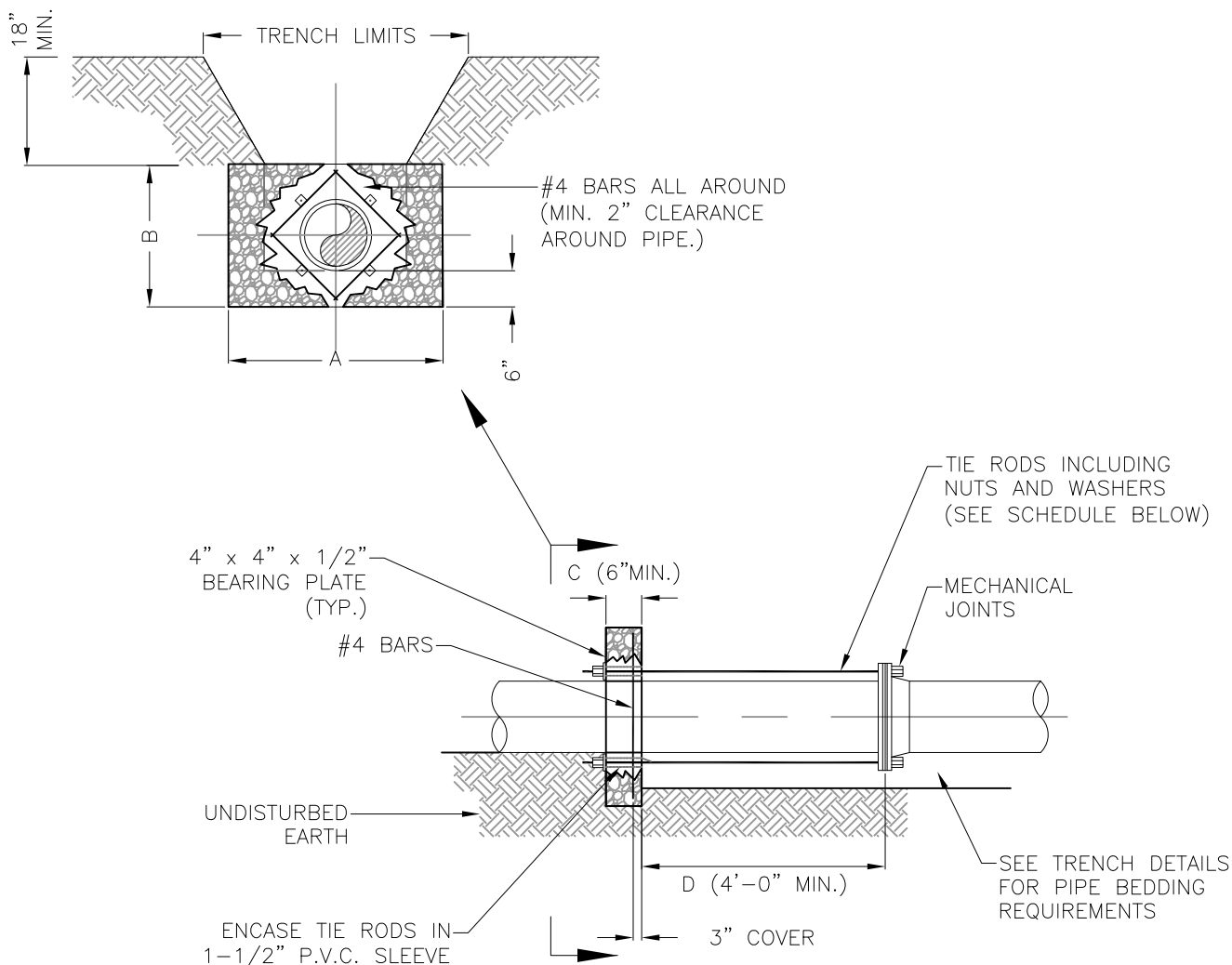


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**CONCRETE ARCH &  
ENCASEMENT DETAIL**

DATE: MAR 2012

**M-3**



**NOTES:**

- 1.) ADDITIONAL REINFORCEMENT SHALL BE AS SPECIFIED BY THE ENGINEER.
- 2.) MINIMUM COMPRESSIVE STRENGTH FOR CONCRETE SHALL BE 2500 PSI.
- 3.) ALL FORM BOARDS SHALL BE REMOVED PRIOR TO BACKFILL.
- 4.) NO ALLOWANCE SHALL BE MADE FOR FRICTION BETWEEN THE PIPE WALL AND THE THRUST COLLAR.
- 5.) DESIGN PRESSURE: \_\_\_\_\_ P.S.I.\*

PIPE SIZE (INCHES)	DIMENSIONS				TIE RODS REQ'D	
	A	B	C	D	DIA.	NO.

NOTE:  
THRUST BLOCK AREAS TO BE COMPUTED ON BASIS OF \_\_\_\_\_ LBS. PER SQ. FT. SOIL RESTRAINT BEARING. (1,500 MIN)  
SEE NOTE 5 \_\_\_\_\_ \* TO BE COMPLETED BY ENGINEER



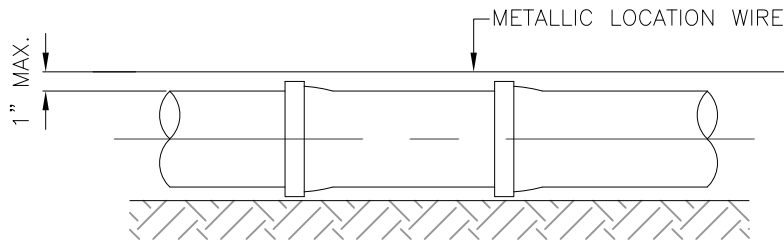
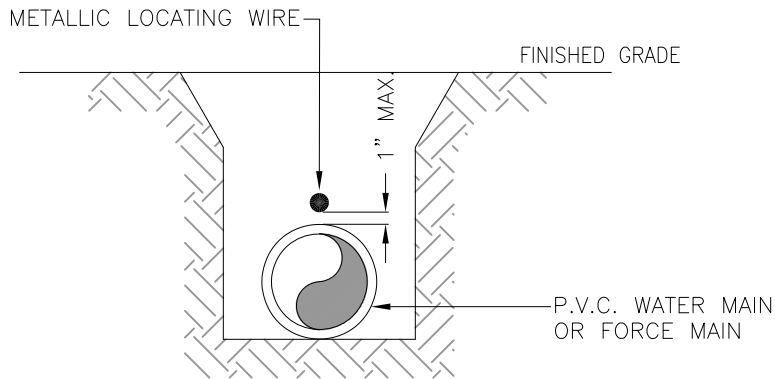
**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**WATER MAIN THRUST  
COLLAR DETAIL**

DATE: MAR 2012  
  
**M-6**

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NOTES:

- 1.) PVC PIPE SHALL REQUIRE INSULATED METALLIC LOCATING WIRE (12 GAUGE COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE BURIED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE.
- 2.) LOCATING WIRE SHALL TERMINATE AT THE TOP OF EACH VALVE BOX AND BE CAPABLE OF EXTENDING 12" ABOVE TOP OF BOX IN SUCH A MANNER SO AS NOT TO INTERFERE WITH VALVE OPERATION.
- 3.) USE DUCT TAPE AS NECESSARY TO HOLD WIRE ON THE TOP OF THE PIPE.
- 4.) ALL SPLICES SHALL BE MADE USING A WATER-TIGHT SEALING METHOD APPROVED BY THE CITY.

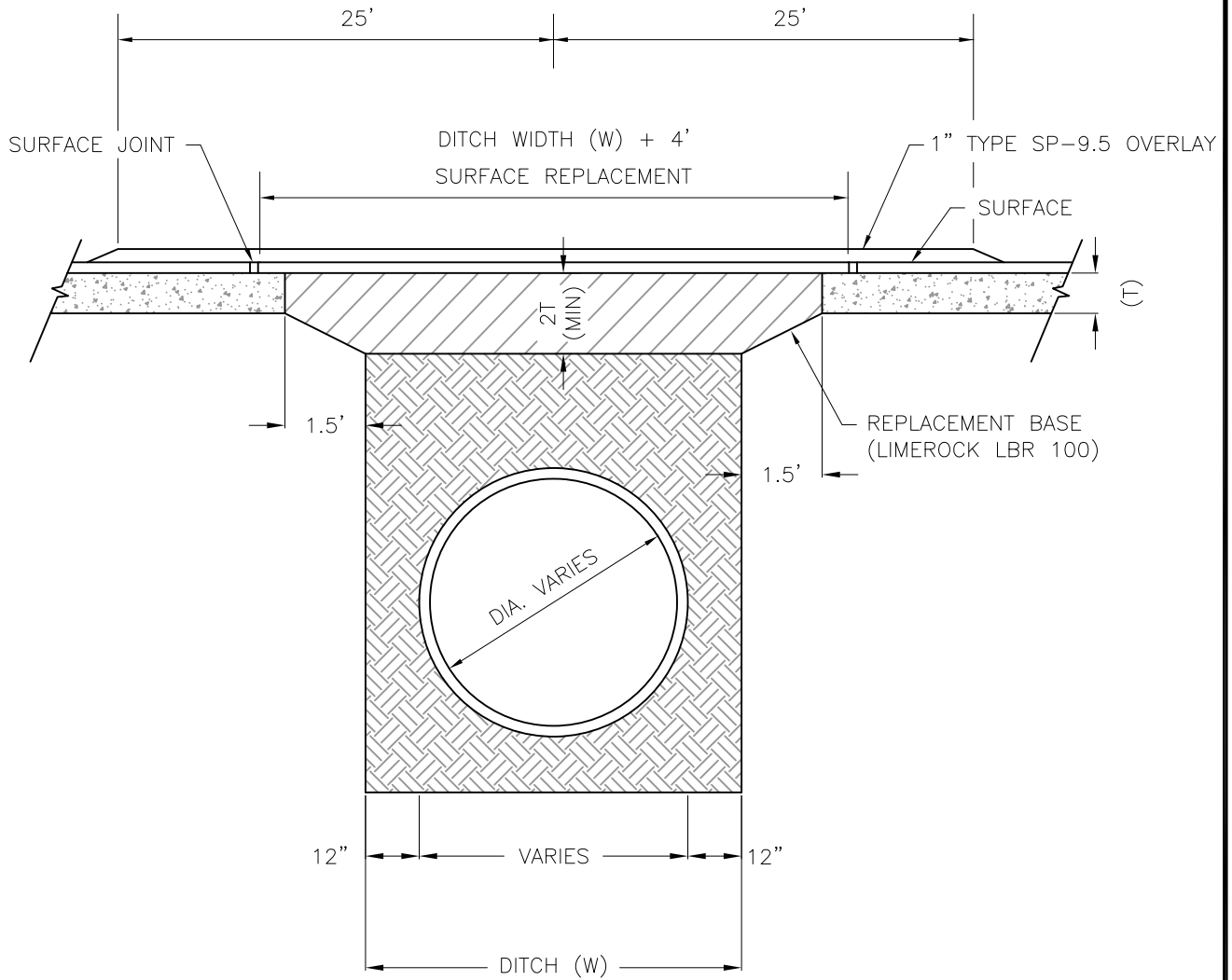


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

PVC PIPE LOCATING  
WIRE DETAIL

DATE: MAR 2012

M-7



GENERAL NOTES:

- 1.) REPLACEMENT BASE OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE, BUT NOT LESS THAN 8" THICK.
- 2.) BASE MATERIAL SHALL BE COMPACTED TO A DENSITY NOT LESS THAN 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.
- 3.) ASPHALT CONC. PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED
- 4.) SURFACE TREATED PAVEMENT JOINTS SHALL BE LAPPED AND FEATHERED.
- 5.) SURFACE PATCH MATERIAL SHALL BE FDOT SP-12.5 AND MATCH EXISTING ASPHALT THICKNESS, BUT NOT LESS THAN 1-1/2" THICK. FOR SMALL PATCHES SP-9.5 MAY BE USED WITH PRIOR WRITTEN APPROVAL BY THE CITY.

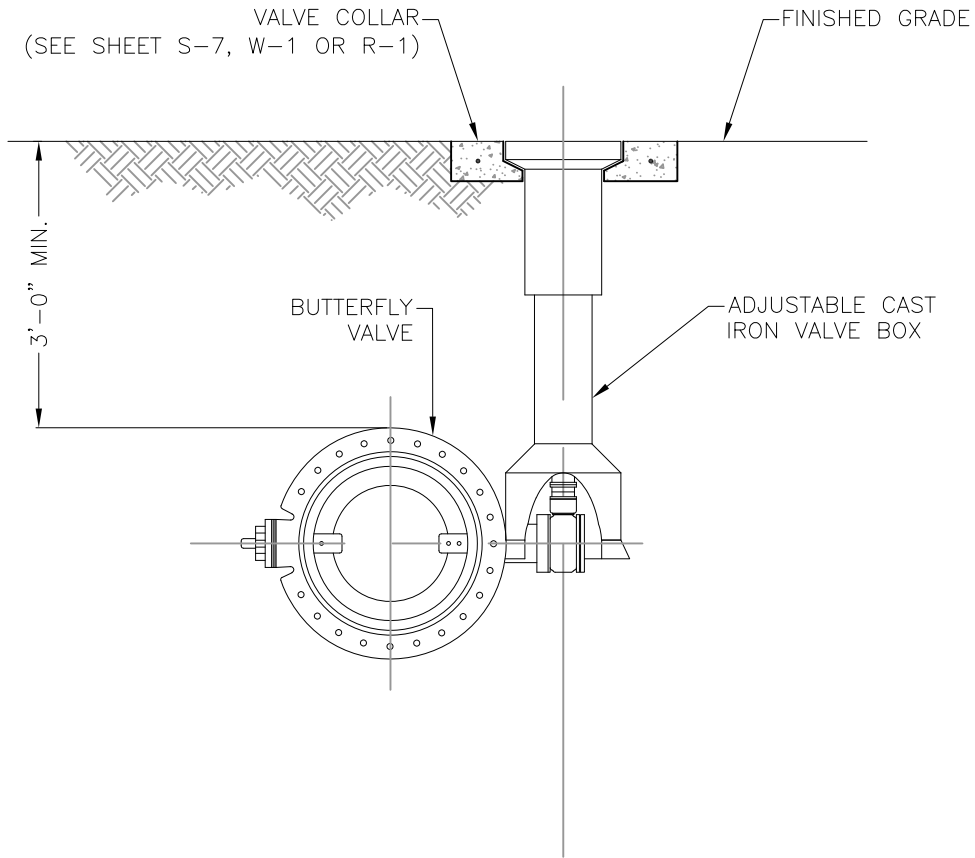


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

ASPHALT PAVEMENT  
PATCH DETAIL

DATE: JAN 2017

M-8



NOTE:

PVC EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.



CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**BUTTERFLY VALVE  
AND BOX DETAIL**

DATE: MAR 2012

**M-9**

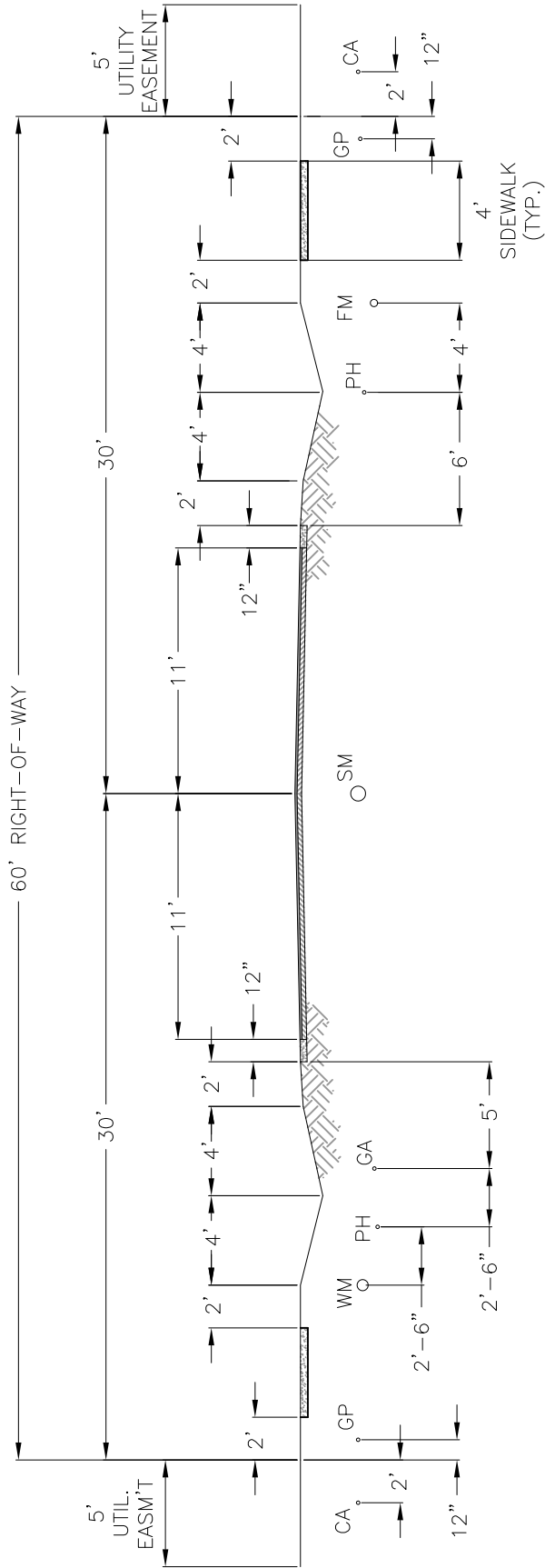


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

TYPICAL UTILITY  
LOCATIONS

DATE: MAR 2012

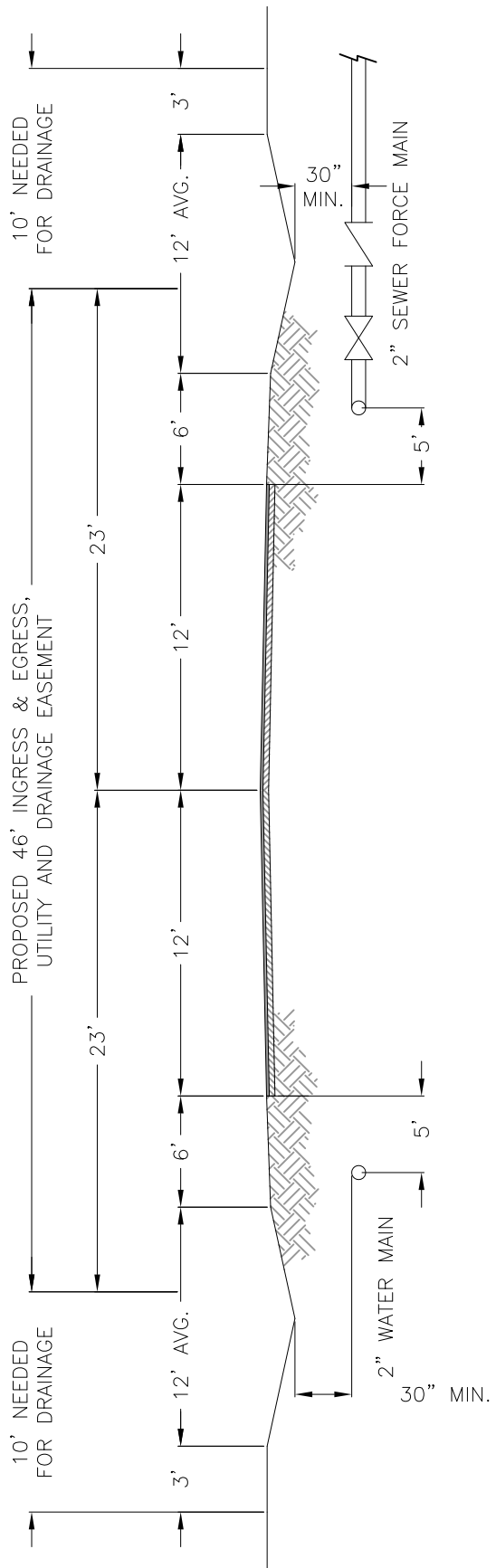
M-10A



STREET SECTION

- FM - FORCE MAIN
- WM - WATER MAIN
- SM - SEWER MAIN
- GP - GULF POWER
- PH - PHONE
- GA - GAS
- CA - CABLE

NOTE: ALL UTILITIES TO HAVE  
36" MINIMUM COVER &  
48" MAXIMUM COVER.



**STREET SECTION**

- NOTES:
- 2" GATE VALVE & CHECK VALVE AT EACH HOUSE
  - 1 1/2" HOUSE CONNECTION (TYPICAL)

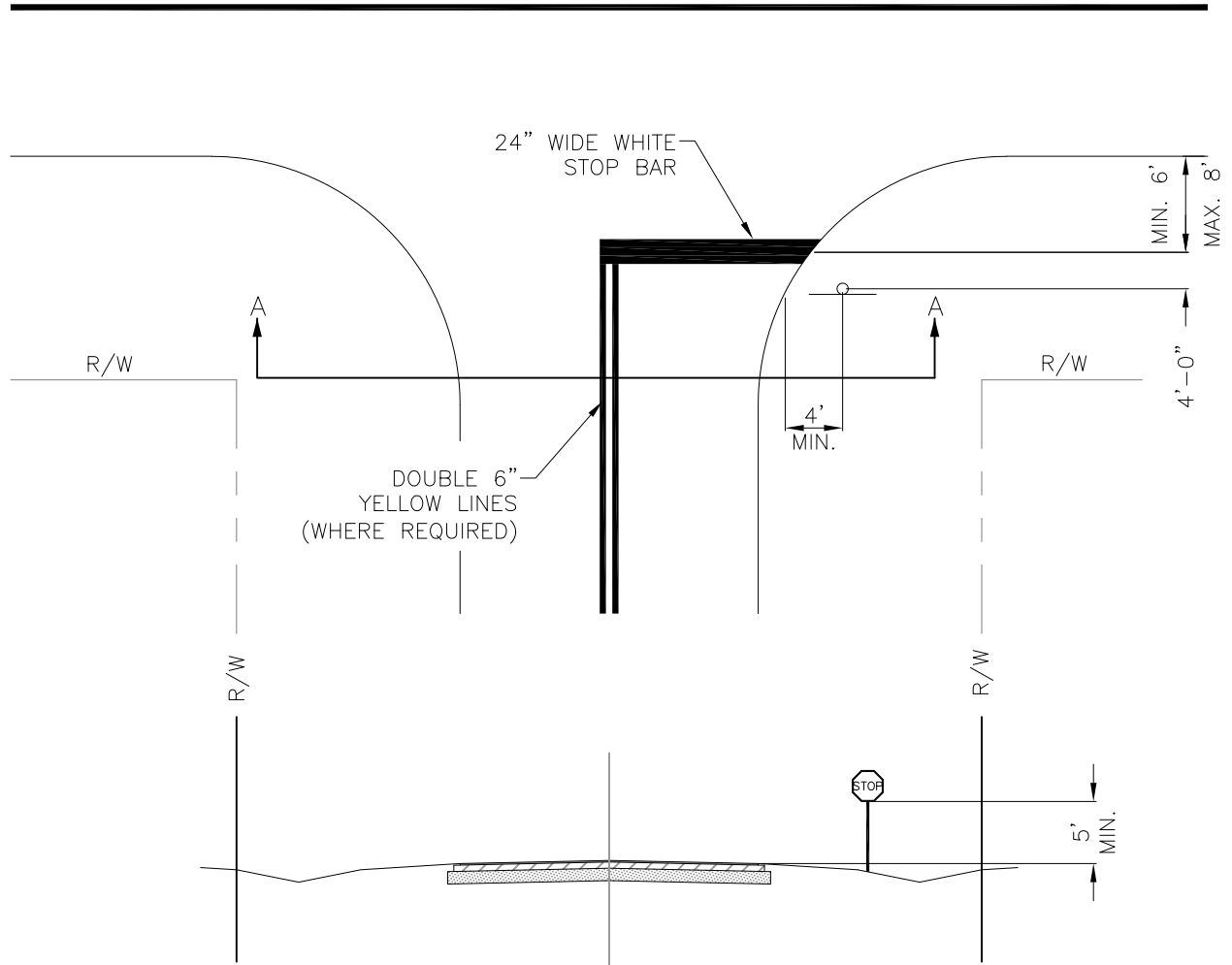
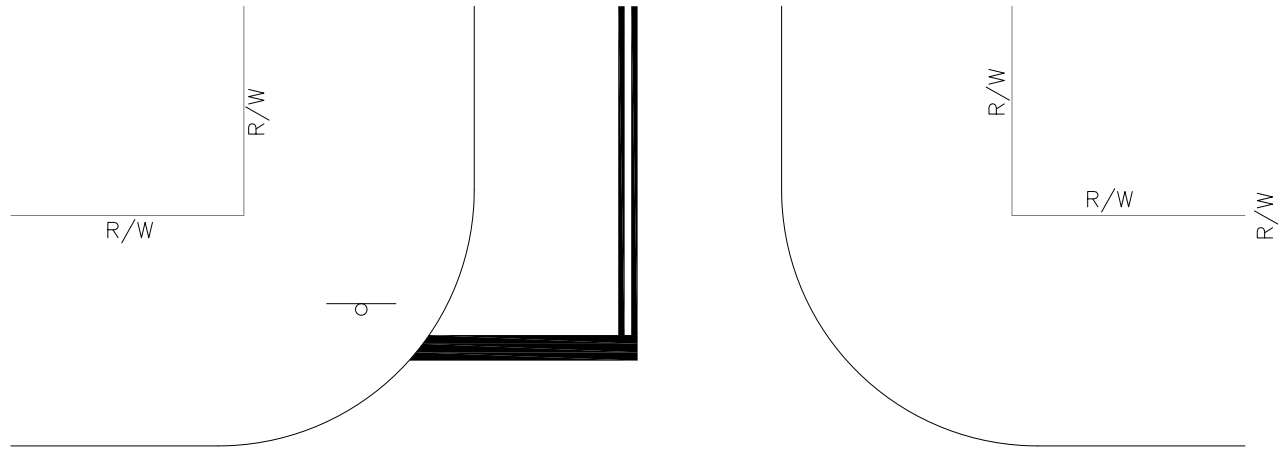


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**TYPICAL UTILITY  
LOCATIONS**

DATE: MAR 2012

**M-10B**



NOTE:

**SECTION A-A**

THIS DETAIL DOES NOT APPLY FOR F.D.O.T. RIGHT-OF-WAYS.

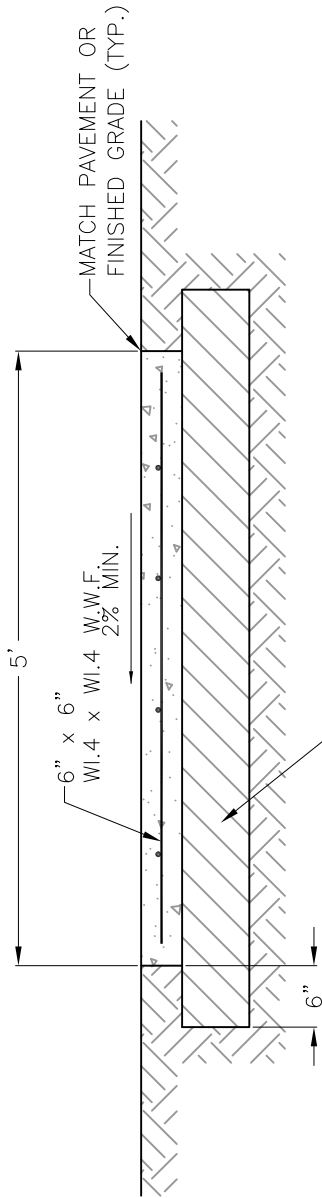


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

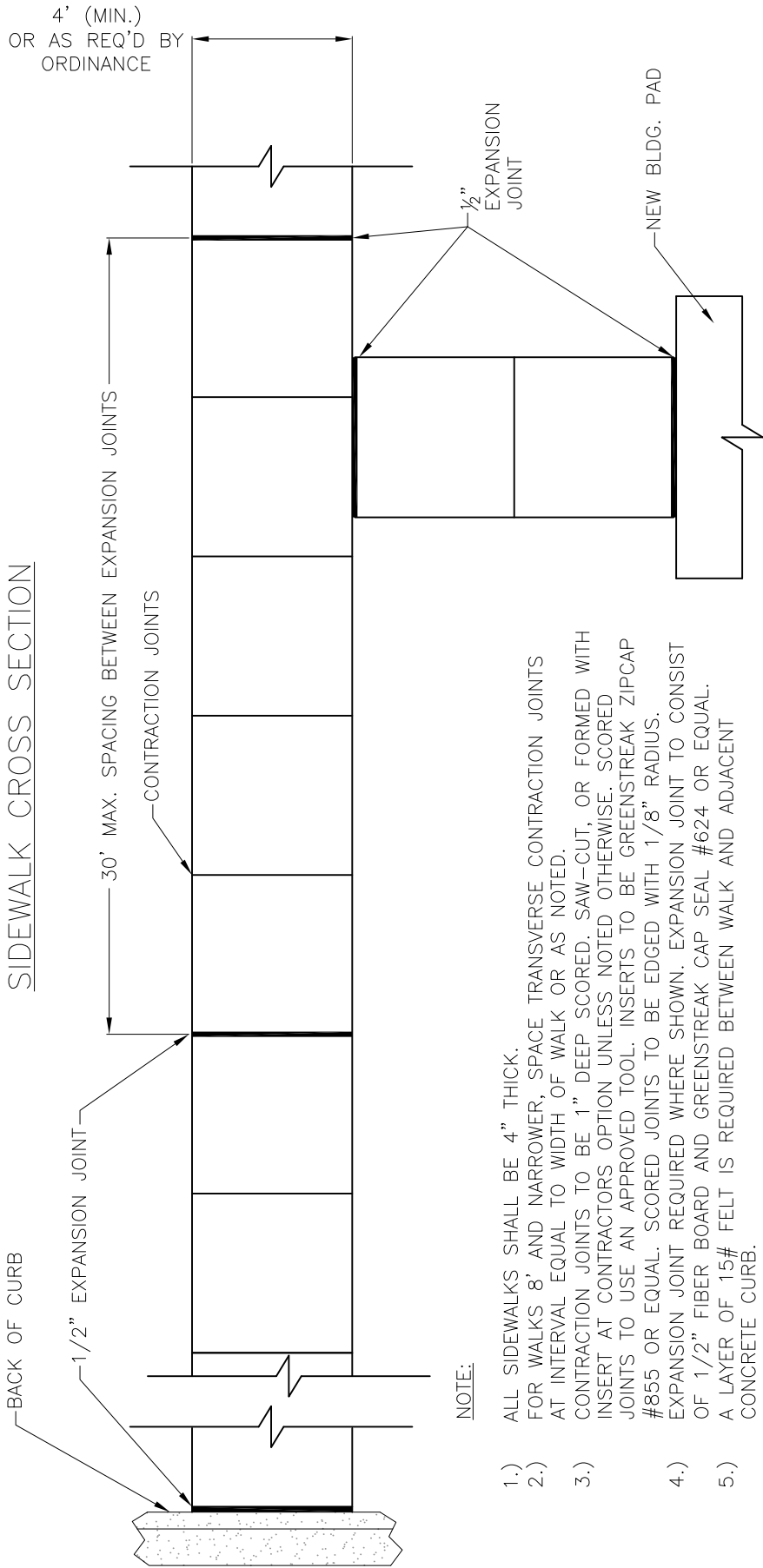
**STOP SIGN  
LOCATION DETAIL**

DATE: MAR 2012

**M-11**



SIDEWALK CROSS SECTION



**NOTE:**

- 1.) ALL SIDEWALKS SHALL BE 4" THICK.
- 2.) FOR WALKS 8' AND NARROWER, SPACE TRANSVERSE CONTRACTION JOINTS AT INTERVAL EQUAL TO WIDTH OF WALK OR AS NOTED.
- 3.) CONTRACTION JOINTS TO BE 1" DEEP SCORED. SAW-CUT, OR FORMED WITH INSERT AT CONTRACTORS OPTION UNLESS NOTED OTHERWISE. SCORED JOINTS TO USE AN APPROVED TOOL. INSERTS TO BE GREENSTREAK ZIPCAP #855 OR EQUAL. SCORED JOINTS TO BE EDGED WITH 1/8" RADIUS.
- 4.) EXPANSION JOINT REQUIRED WHERE SHOWN. EXPANSION JOINT TO CONSIST OF 1/2" FIBER BOARD AND GREENSTREAK CAP SEAL #624 OR EQUAL.
- 5.) A LAYER OF 15# FELT IS REQUIRED BETWEEN WALK AND ADJACENT CONCRETE CURB.

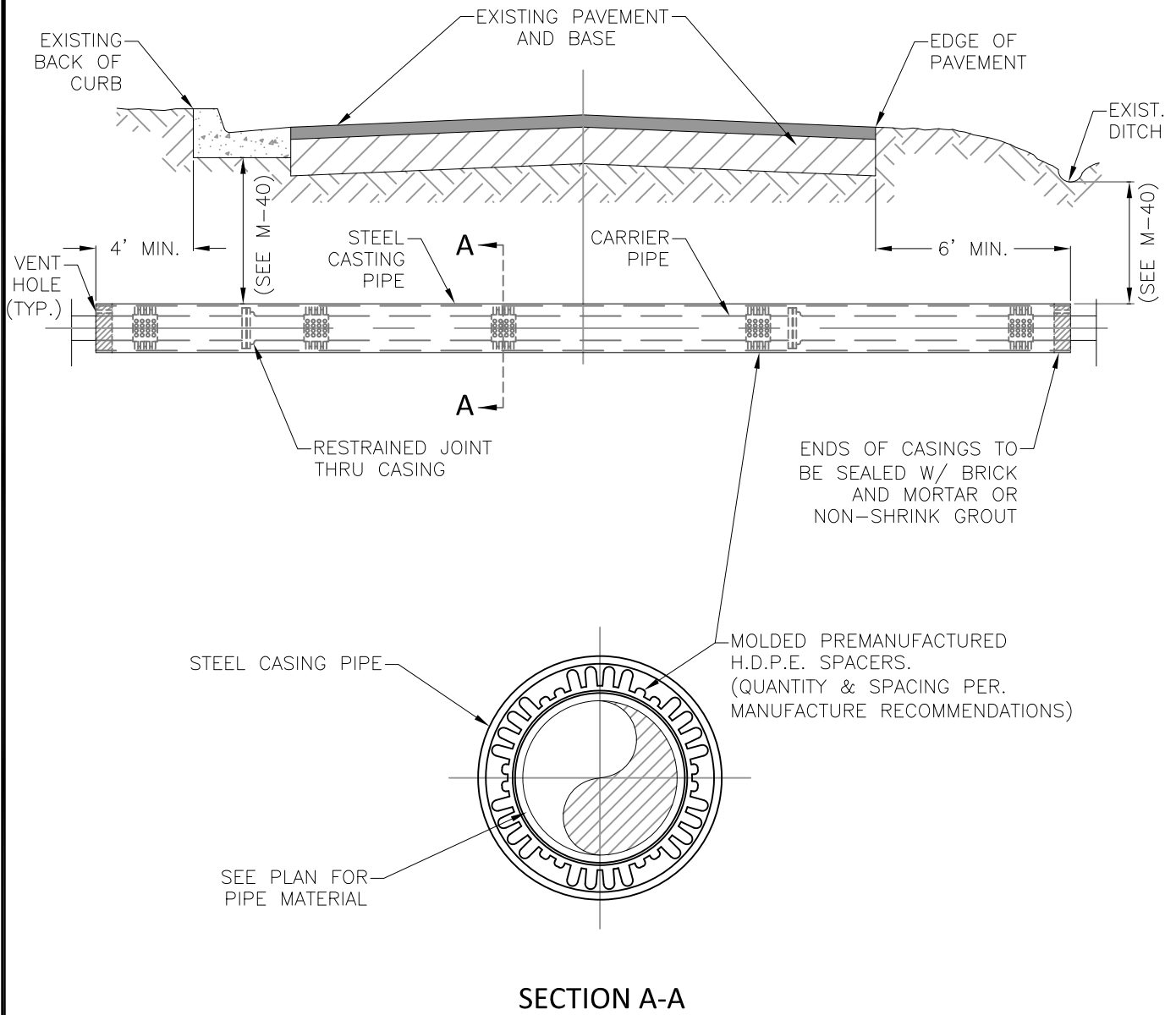


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**STANDARD JOINT  
LAYOUT FOR  
CONCRETE WALKS**

DATE: MAR 2012

**M-12**



NOTES:

- 1.) WHEN CONSTRUCTION IS WITHIN FDOT JURISDICTION, ADDITIONAL REQUIREMENTS OF THE UTILITY ACCOMMODATION GUIDE SHALL BE MET.
- 2.) WHERE PRACTICAL, CASING SHALL EXTEND 10' BEYOND EDGE OF PAVEMENT AND SHALL NOT BE LESS THAN 6' BEYOND EDGE OF PAVEMENT IN ANY CASE. THE CITY MAY REQUIRE LONGER CASING FOR DEEPER BORES.
- 3.) CASING PIPE JOINTS SHALL BE MADE BY USING A FULL CIRCUMFERENCE COMPLETE PENETRATION GROOVE WELD.

CARRIER & CASING SIZE										
CARRIER	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
CASING	12"	14"	16"	18"	20"	24"	30"	30"	30"	36"
CASING / WALL THICKNESS	0.250"	0.250"	0.250"	0.250"	0.250"	0.250"	0.312"	0.312"	0.312"	0.375"



CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

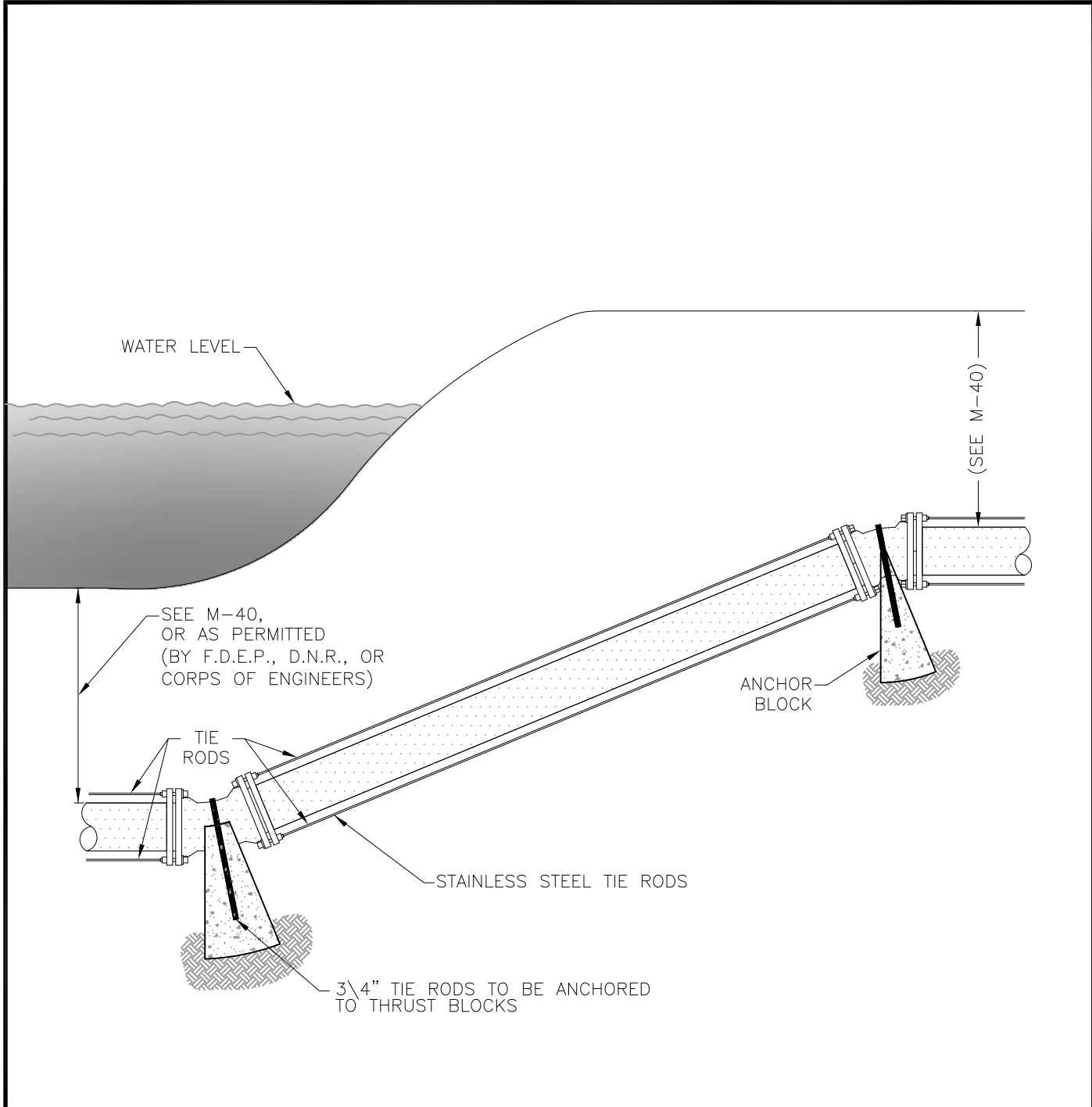
JACK & BORE UNDER  
PAVED ROADS

DATE: JUL 2019

M-13



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NOTES:

- 1.) RESTRAINED JOINT PIPE & FITTINGS MAY BE USED IN LIEU OF TIE-RODS & BLOCKS, J.C.M., M.J.R., "STAR GRIP", "ALL GRIP" OR APPROVED EQUAL. SUBMIT DETAILS TO THE CITY OF PANAMA CITY BEACH PUBLIC WORKS DEPARTMENT FOR APPROVAL.
- 2.) SEE SHEET M-4 FOR THRUST BLOCK DETAILS.
- 3.) ENGINEER TO DETERMINE REQUIRED LENGTH OF RESTRAINT EACH SIDE OF BEND.



CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

TYPICAL CANAL  
 CROSSING

DATE: JUL 2019

M-14

# REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR P.V.C. PIPE

MAIN PIPE SIZE	HORIZ. BENDS			*TEES					REDUCERS			PLUGS
	90°	45°	22.5°	SIZE					SIZE			
				LENGTH		LENGTH			LENGTH		LENGTH	
36	106	44	21	X36 163	X30 102	X24 39	X20 1	X16 1	X30 78	X24 141	X20 175	257
30	93	39	19	X30 132	X24 68	X20 22	X16 1	X12 1	X24 78	X20 121	X16 156	222
24	79	33	16	X24 99	X20 53	X16 3	X12 1	X10 1	X20 56	X16 101	X12 137	185
20	68	29	14	X20 75	X16 26	X12 1	X10 1	X8 1	X16 56	X12 100	X10 117	159
16	57	24	12	X16 51	X12 1	X10 1	X8 1		X12 56	X10 78	X8 96	131
12	45	19	9	X12 25	X10 1	X8 1	X6 1		X10 30	X8 54	X6 74	102
10	39	16	8	X10 11	X8 1	X6 1			X8 29	X6 53	X4 71	87
8	33	14	7	X8 1	X6 1	X4 1			X6 31	X4 52		72
6	25	11	5	X6 1	X4 1				X4 29			55
4	18	8	4	X4 1								39

**NOTES:**

- 1.) RESTRAIN TO NEXT FULL JOINT BEYOND GIVEN LENGTH.
- 2.) RESTRAIN 11.25° BENDS 50% OF LENGTH FOR 22.5° BENDS.
- 3.) ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
- 4.) PIPE ADJACENT TO IN-LINE VALVES 10" AND SMALLER SHALL BE RESTRAINED FOR 20' ON EACH SIDE, INCLUDING THE VALVE-TO-PIPE CONNECTION. ALL PIPE ADJACENT TO IN-LINE VALVES 12" AND LARGER SHALL BE RESTRAINED FOR A DISTANCE 1/4 OF REQ'D PLUG (DEAD END) LENGTH ON EACH SIDE, INCLUDING THE VALVE-TO-PIPE CONNECTION.
- 5.) PIPE SIZES ARE GIVEN IN INCHES.
- 6.) PIPE LENGTHS ARE GIVEN IN FEET.
- 7.) LENGTHS SHOWN ARE FOR A TEST PRESSURE OF 150 PSI.
- 8.) RESTRAINED LENGTHS FOR TEES REPRESENTS LENGTH ON BRANCH. RESTRAINED LENGTHS FOR REDUCERS REPRESENTS LENGTH ON LARGE END OF REDUCER.
- 9.) RESTRAINED LENGTHS ARE TO BE USED FOR POTABLE WATER.
- 10.) THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON THE USE OF LIGHTLY COMPACTED CLEAN SAND WITH AT LEAST A 95% COARSE PARTICLE CONTENT. ACTUAL SOIL CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY. SAFETY FACTOR OF 1.5:1 TO BE CALCULATED WITH A "SM" SOIL TYPE AND TRENCH TYPE "3".

\*MAIN TO BE RESTRAINED 20' ON EACH SIDE OF BRANCH



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**RESTRAINED LENGTHS  
FOR P.V.C. POTABLE &  
REUSE WATER**

DATE: MAR 2012

**M-15**

# REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR D.I.P. (NON-WRAPPED)

MAIN PIPE SIZE	HORIZ. BENDS			*TEES					REDUCERS			PLUGS
	90°	45°	22.5°	SIZE					SIZE			
				LENGTH		LENGTH			LENGTH		LENGTH	
48	104	43	21	X48 146	X42 108	X36 71	X30 32	X24 1	X42 48	X36 88	X30 122	203
42	95	40	19	X42 127	X36 89	X30 49	X24 9	X20 1	X36 48	X30 89	X24 122	183
36	86	36	17	X36 109	X30 68	X24 26	X20 1	X16 1	X30 50	X24 89	X20 111	163
30	75	31	15	X30 88	X24 45	X20 15	X16 1	X12 1	X24 50	X20 77	X16 100	141
24	63	27	13	X24 66	X20 35	X16 2	X12 1	X10 1	X20 36	X16 64	X12 87	118
20	55	23	11	X20 50	X16 18	X12 1	X10 1	X8 1	X16 36	X12 64	X10 75	101
16	46	19	10	X16 34	X12 1	X10 1	X8 1		X12 36	X10 50	X8 61	84
12	36	15	8	X12 17	X10 1	X8 1	X6 1		X10 20	X8 35	X6 48	65
10	31	13	7	X10 7	X8 1	X6 1			X8 19	X6 34	X4 45	56
8	26	11	6	X8 1	X6 1	X4 1			X6 20	X4 34		47
6	20	9	4	X6 1	X4 1				X4 19			36
4	15	6	3	X4 1								25

**NOTES:**

- 1.) RESTRAIN TO NEXT FULL JOINT BEYOND GIVEN LENGTH.
- 2.) RESTRAIN 11.25° BENDS 50% OF LENGTH FOR 22.5° BENDS.
- 3.) ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
- 4.) PIPE ADJACENT TO IN-LINE VALVES 10" AND SMALLER SHALL BE RESTRAINED FOR 20' ON EACH SIDE, INCLUDING THE VALVE-TO-PIPE CONNECTION. ALL PIPE ADJACENT TO IN-LINE VALVES 12" AND LARGER SHALL BE RESTRAINED FOR A DISTANCE 1/4 OF REQ'D PLUG (DEAD END) LENGTH ON EACH SIDE, INCLUDING THE VALVE-TO-PIPE CONNECTION.
- 5.) PIPE SIZES ARE GIVEN IN INCHES.
- 6.) PIPE LENGTHS ARE GIVEN IN FEET.
- 7.) LENGTHS SHOWN ARE FOR A TEST PRESSURE OF 150 PSI.
- 8.) RESTRAINED LENGTHS FOR TEES REPRESENTS LENGTH ON BRANCH. RESTRAINED LENGTHS FOR REDUCERS REPRESENTS LENGTH ON LARGE END OF REDUCER.
- 9.) RESTRAINED LENGTHS ARE TO BE USED FOR POTABLE WATER.
- 10.) THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON THE USE OF LIGHTLY COMPACTED CLEAN SAND WITH AT LEAST A 95% COARSE PARTICLE CONTENT. ACTUAL SOIL CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY. SAFETY FACTOR OF 1.5:1 TO BE CALCULATED WITH A "SM" SOIL TYPE AND TRENCH TYPE "3".

\*MAIN TO BE RESTRAINED 20' ON EACH SIDE OF BRANCH



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**RESTRAINED LENGTHS  
FOR D.I.P. POTABLE &  
REUSE WATER**

DATE: MAR 2012

**M-16**

# REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR P.V.C. PIPE

MAIN PIPE SIZE	HORIZ. BENDS			*TEES						REDUCERS			PLUGS			
	90°	45°	22.5°	SIZE			LENGTH			SIZE				LENGTH		
				SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH					
48	86	36	17	X48 117	X42 77	X36 36	X30 1	X24 1	X20 1	X16 1	X12 1	X8 1	X6 1	X4 1	214	
42	78	33	16	X42 100	X36 58	X30 14	X24 1	X20 1	X16 1	X12 1	X8 1	X6 1	X4 1	193		
36	71	30	14	X36 81	X30 37	X24 1	X20 1	X16 1	X12 1	X8 1	X6 1	X4 1	171			
30	62	26	13	X30 61	X24 14	X20 1	X16 1	X12 1	X8 1	X6 1	X4 1	148				
24	53	22	11	X24 40	X20 6	X16 1	X12 1	X10 1	X8 1	X6 1	X4 1	124				
20	46	19	9	X20 25	X16 1	X12 1	X10 1	X8 1	X6 1	X4 1	106					
16	38	16	8	X16 9	X12 1	X10 1	X8 1	X6 1	X4 1	88						
12	30	13	6	X12 1	X10 1	X8 1	X6 1	X4 1	68							
10	26	11	6	X10 1	X8 1	X6 1	X4 1	58								
8	22	9	5	X8 1	X6 34	X4 1	48									
6	17	7	4	X6 1	X4 1	37										
4	12	5	3	X4 1	26											

**NOTES:**

- 1.) RESTRAIN TO NEXT FULL JOINT BEYOND GIVEN LENGTH.
- 2.) RESTRAIN 11.25° BENDS 50% OF LENGTH FOR 22.5° BENDS.
- 3.) ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
- 4.) PIPE ADJACENT TO IN-LINE VALVES 10" AND SMALLER SHALL BE RESTRAINED FOR 20' ON EACH SIDE, INCLUDING THE VALVE-TO-PIPE CONNECTION. ALL PIPE ADJACENT TO IN-LINE VALVES 12" AND LARGER SHALL BE RESTRAINED FOR A DISTANCE 1/4 OF REQ'D PLUG (DEAD END) LENGTH ON EACH SIDE, INCLUDING THE VALVE-TO-PIPE CONNECTION.
- 5.) PIPE SIZES ARE GIVEN IN INCHES.
- 6.) PIPE LENGTHS ARE GIVEN IN FEET.
- 7.) LENGTHS SHOWN ARE FOR A TEST PRESSURE OF 100 PSI.
- 8.) RESTRAINED LENGTHS FOR TEES REPRESENTS LENGTH ON BRANCH. RESTRAINED LENGTHS FOR REDUCERS REPRESENTS LENGTH ON LARGE END OF REDUCER.
- 9.) RESTRAINED LENGTHS ARE TO BE USED FOR SEWER AND RECLAIM WATER.
- 10.) THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON THE USE OF LIGHTLY COMPACTED CLEAN SAND WITH AT LEAST A 95% COARSE PARTICLE CONTENT. ACTUAL SOIL CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY. SAFETY FACTOR OF 1.5:1 TO BE CALCULATED WITH A "SM" SOIL TYPE AND TRENCH TYPE "3".

\*MAIN TO BE RESTRAINED 20' ON EACH SIDE OF BRANCH



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**RESTRAINED LENGTHS  
FOR P.V.C. SEWER**

DATE: MAR 2012

**M-17**

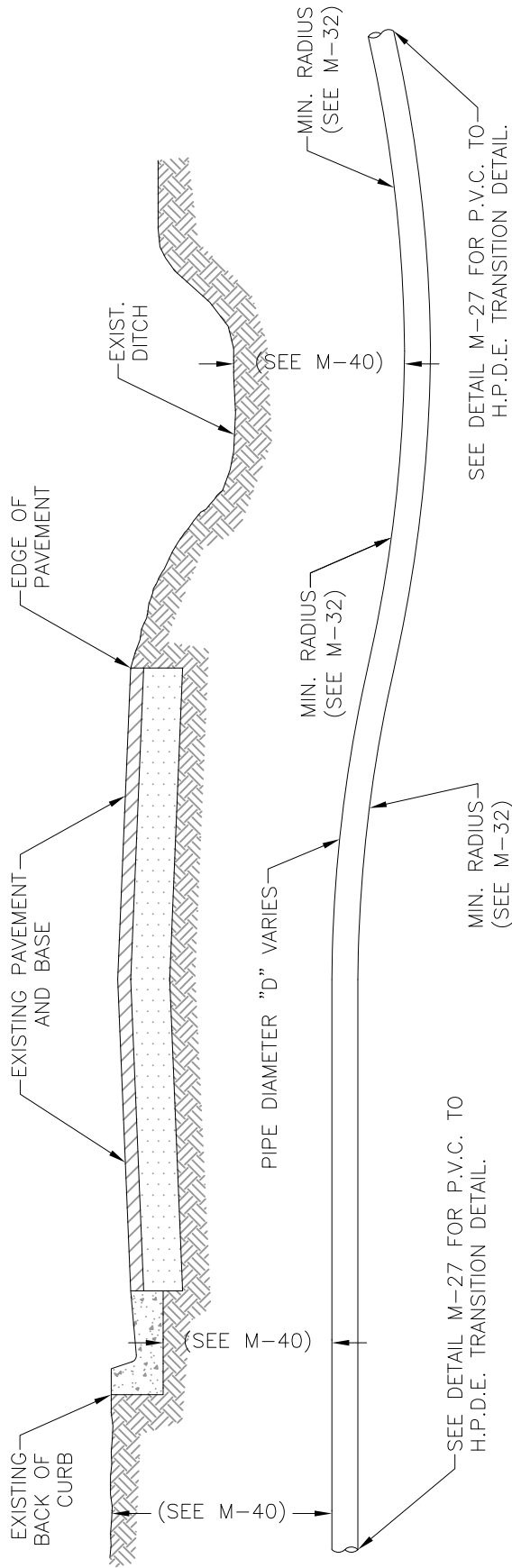


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**DIRECTIONAL BORE  
ROADWAY CROSSING**

DATE: JUL 2019

**M-18**



- 1.) ALL POLYETHYLENE PIPING SHALL MEET CITY OF PANAMA CITY BEACH STANDARDS AND SPECIFICATIONS
- 2.) SDR 9, CLASS 250, PE4710 RESIN HDPE FOR 1" SERVICE TUBING. SDR-11, CLASS 200, PE4710 RESIN HDPE FOR 2" DIAMETER AND LARGER POTABLE WATER & RECLAIMED WATER. SDR-11, CLASS 160, PE4710 RESIN HDPE FOR 2" DIAMETER AND LARGER SANITARY FORCE MAINS COLOR CODED BLUE FOR POTABLE WATER COLOR CODED PURPLE FOR RECLAIMED WATER COLOR CODED GREEN FOR SANITARY FORCE MAIN.
- 3.) THE COLOR CODING SHALL MEETING REQUIREMENTS IN ACCORDANCE WITH SUBPARAGRAPH 62-555.320 (21)(B) 3 F.A.C. AND SHALL BE CO-EXTRUDED DURING PIPE MANUFACTURING.
- 4.) ALL HDPE PIPE 2" DIAMETER AND LARGER MUST BE IPS, NO CTS IS ALLOWED. ALL 1" SERVICE TUBING SHALL BE CTS.
- 5.) ALL DIRECTIONAL BORES SHALL BE A MINIMUM OF 36 INCHES UNDER ALL ROADWAYS AND START AND TERMINATE A MINIMUM OF 6 FEET OFF THE EDGE OF PAVEMENT.
- 6.) CONTRACTOR SHALL PROVIDE A DETAILED "AS-BUILT" PROFILE OF ALL DIRECTIONAL BORE AND JACK AND BORE LOCATION OF ACTUAL PIPE ELEVATIONS AT 10 FOOT INTERVALS ON AS-BUILT PLAN SHEETS.

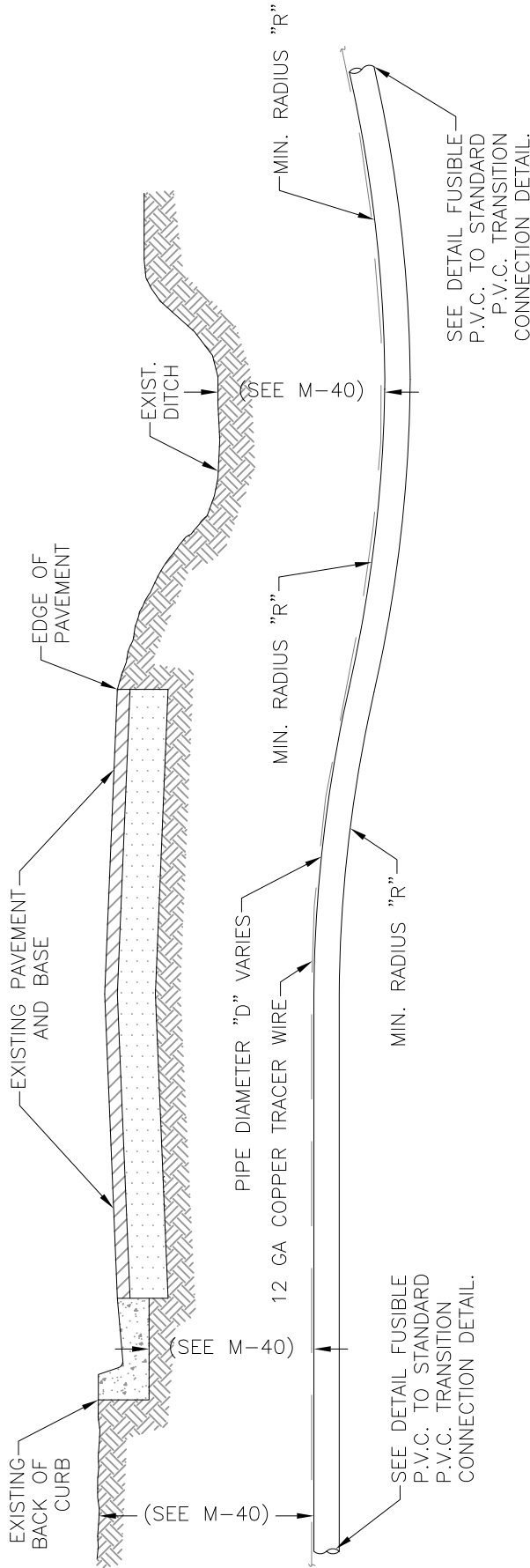


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**DIRECTIONAL BORE  
FUSIBLE P.V.C. MINIMUM  
RADIUS DETAIL**

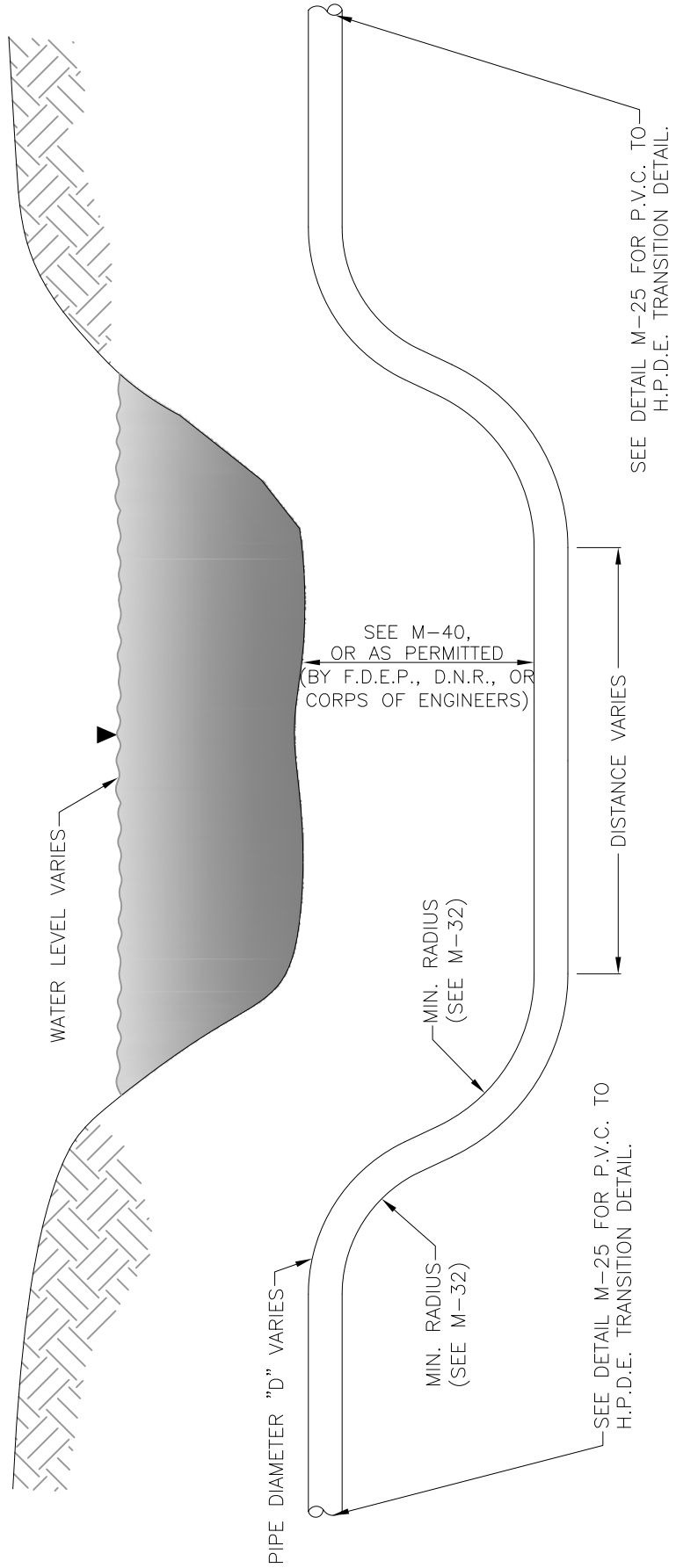
DATE: JUL 2019

**M-19**



- 1.) ALL PIPE MUST BE C900/C905.
- 2.) THE COLOR CODING SHALL MEETING REQUIREMENTS IN ACCORDANCE WITH SUBPARAGRAPH 62-555.320 (21)(B) 3 F.A.C. AND SHALL BE CO-EXTRUDED DURING PIPE MANUFACTURING.
- 3.) PIPE ROLLERS SHALL BE PROVIDED AS REQUIRED BY SPECIFICATIONS TO SUPPORT PIPE AND PROTECT PIPE FROM SCRATCHES AND GOUGES.
- 4.) ALL DIRECTIONAL BORES SHALL BE A MINIMUM OF 36 INCHES UNDER ALL ROADWAYS AND START AND TERMINATE A MINIMUM OF 6 FEET OFF THE EDGE OF PAVEMENT.
- 5.) CONTRACTOR SHALL PROVIDE A DETAILED "AS-BUILT" PROFILE OF ALL DIRECTIONAL BORE AND JACK AND BORE LOCATION OF ACTUAL PIPE ELEVATIONS AT 10 FOOT INTERVALS ON AS-BUILT PLAN SHEETS.

PIPE DIAMETER "D" IN INCHES	MIN. RADIUS FOR FUSIBLE PVC PIPE IN FEET
2	XX
3	73
4	100
6	144
8	189
10	231
12	275
16	363
18	406
20	450



**NOTE:**

ALL POLYETHYLENE PIPING SHALL MEET CITY OF PANAMA CITY BEACH STANDARDS AND SPECIFICATIONS:

SDR-9, CLASS 200 FOR POTABLE WATER & RECLAIMED WATER  
 SDR-11, CLASS 160 FOR SANITARY FORCE MAINS  
 COLOR CODED BLUE FOR POTABLE WATER  
 COLOR CODED PURPLE FOR RECLAIMED WATER  
 COLOR CODED GREEN FOR SANITARY FORCE MAIN

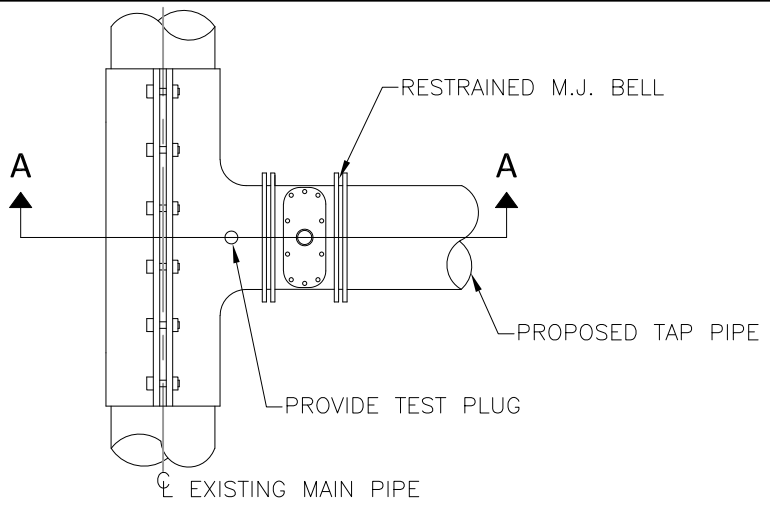


CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

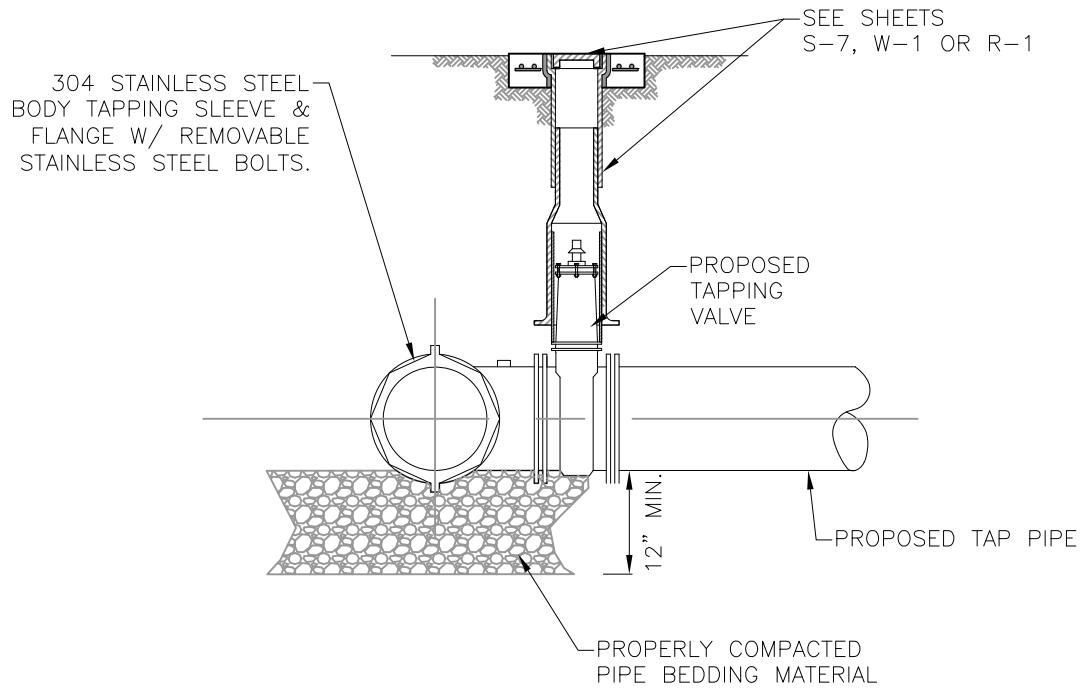
**DIRECTIONAL BORE  
 CANAL CROSSING**

DATE: JUL 2019

**M-20**



**PLAN**



**SECTION A-A**

NOTES:

- 1.) NO TAPPING CUTS SHALL BE MADE BEFORE:  
A 60 MINUTE TEST AT 100 P.S.I. FOR FORCEMAINS, OR 150 P.S.I. FOR POTABLE WATERMAINS AND RECLAIM WATERMAINS IS PERFORMED.
- 2.) ALL TAPS MUST BE PLACED NO CLOSER THAN 30" OR A DISTANCE EQUAL TO (1) MAIN PIPE DIAMETER PLUS (2) TAP PIPE DIAMETERS (WHICHEVER IS LARGER) FROM A JOINT OR FITTING.
- 3.) CONTRACTOR TO SUPPLY A DRY HOLE, PROPERLY CONFIGURED, FOR TAPPING CREW TO WORK AND A BACK-HOE TO LOWER MACHINE INTO HOLE. TAPPING ASSEMBLY MUST BE BOLTED ON & PRESSURE TESTED BY THE CONTRACTOR & WITNESSED BY THE CITY PRIOR TO TAP.



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**TAPPING SLEEVE &  
VALVE DETAIL**

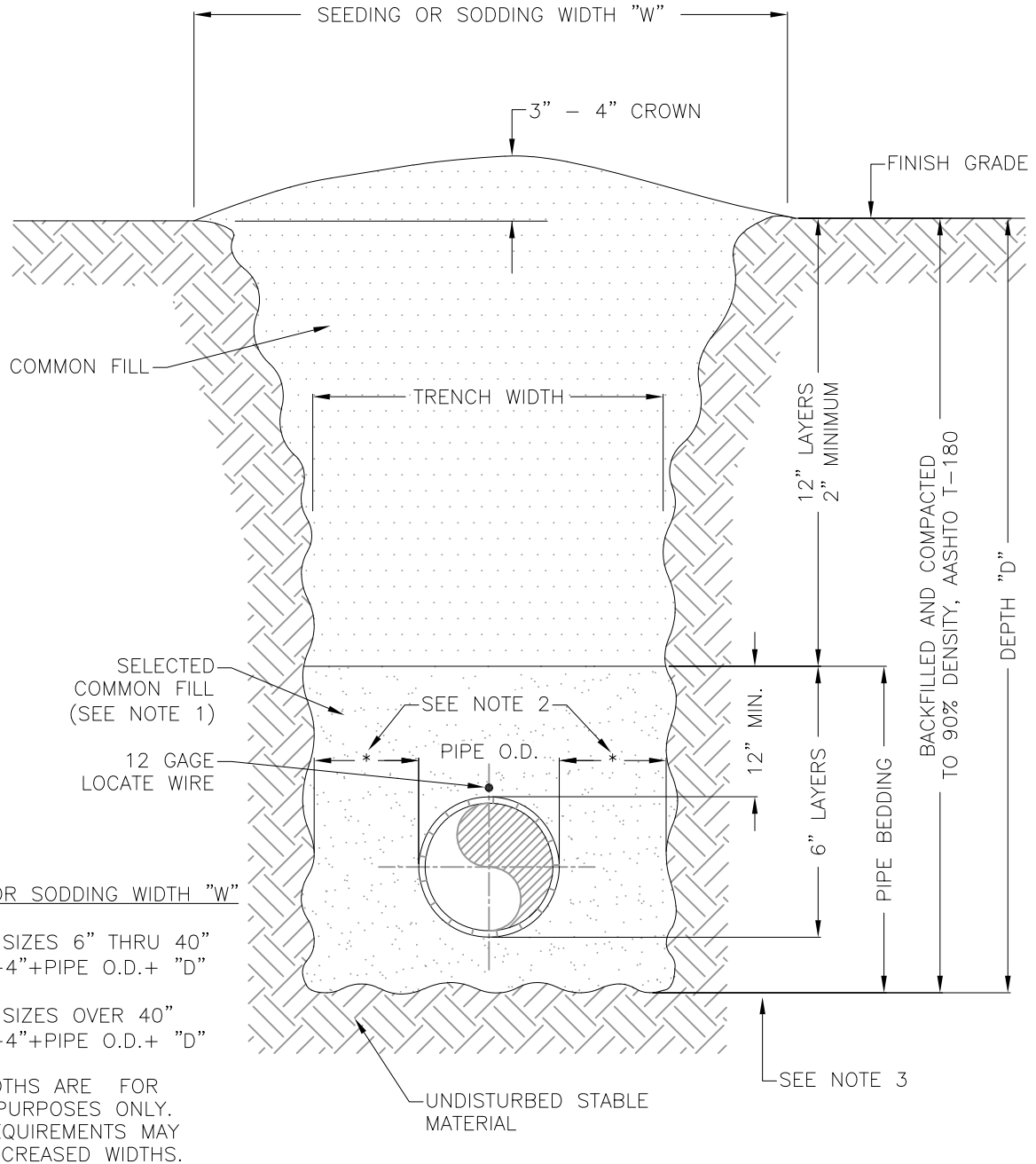
DATE: MAY 2017

**M-21**



**NOTES:**

- 1.) USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE 24" DIAMETER AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.
- 3.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX FOR PIPE 42" DIAMETER AND LARGER.
- 4.) INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.



SEEDING OR SODDING WIDTH "W"

FOR PIPE SIZES 6" THRU 40"  
 "W" = 2'-4" + PIPE O.D. + "D"

FOR PIPE SIZES OVER 40"  
 "W" = 4'-4" + PIPE O.D. + "D"

THESE WIDTHS ARE FOR  
 PAYMENT PURPOSES ONLY.  
 SAFETY REQUIREMENTS MAY  
 DICTATE INCREASED WIDTHS.



**CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS**

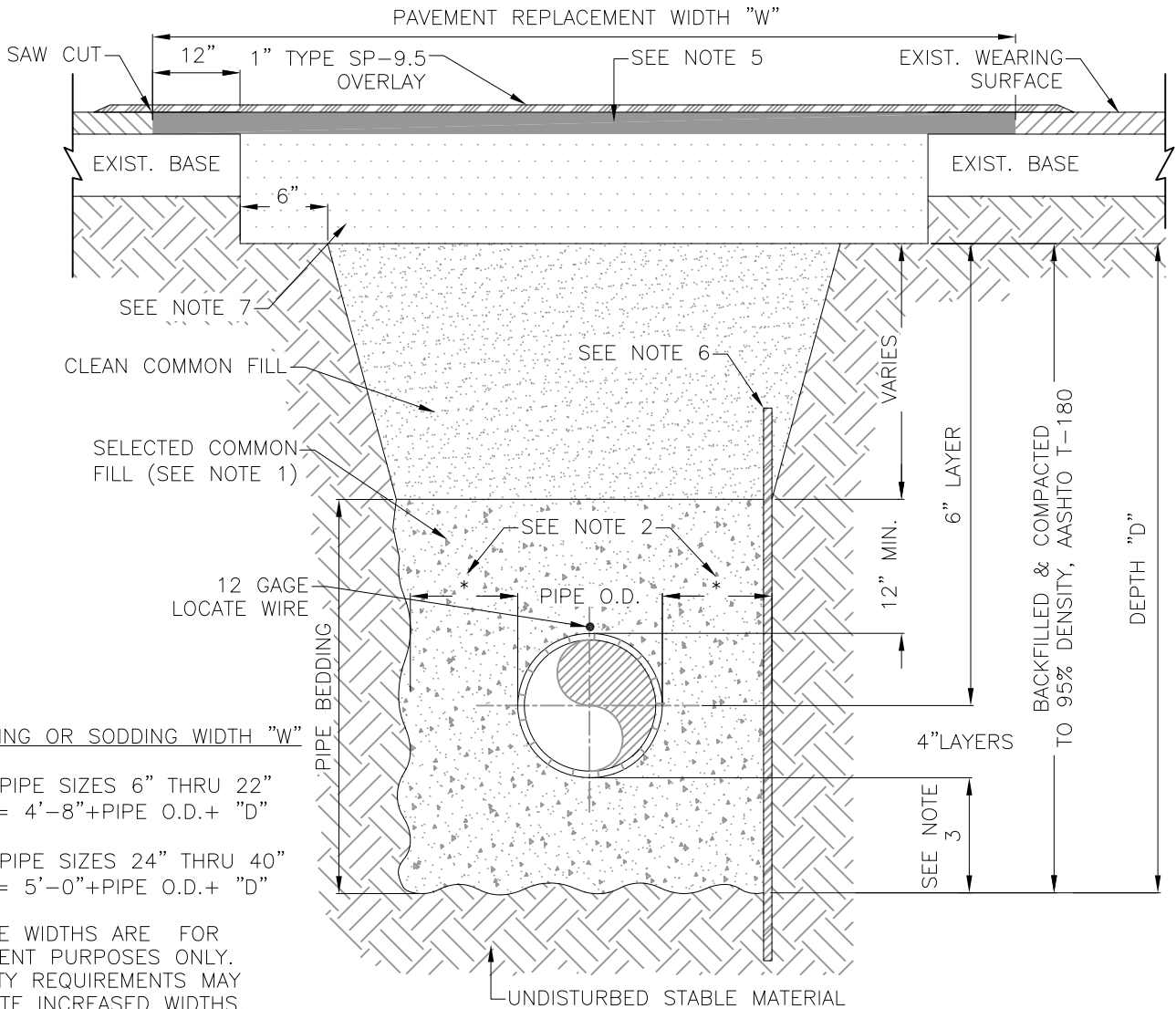
**TRENCH DETAIL  
 UNIMPROVED SURFACE  
 TYPE A-1 PIPE BEDDING**

DATE: MAR 2012

**M-22**

**NOTES:**

- 1.) USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2.) 10" MAX. FOR PIPE DIAMETERS LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.
- 3.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX. FOR PIPE 42" DIAMETER AND LARGER.
- 4.) INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
- 5.) WEARING SURFACE TO BE SAME TYPE & THICKNESS (1-1/2" MIN.) AS EXISTING PAVEMENT.
- 6.) SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.
- 7.) BASE SHALL BE 8" MINIMUM THICKNESS LIMEROCK OR CRUSHED CONCRETE BASE, OR APPROVED EQUAL.
- 8.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 95% AASHTO T-180 DENSITY.
- 9.) TEMPORARY PATCHES WILL BE INSTALLED TO PROVIDE A SMOOTH ALL WEATHER SURFACE AT ALL TIMES. PERMANENT REPLACEMENT TO BE MADE AS SOON AS POSSIBLE.
- 10.) NOTES 5.) THRU 9.) ARE MINIMUM REQUIREMENTS. REFER TO F.D.O.T. ROADWAY AND TRAFFIC DESIGN STANDARDS FOR ADDITIONAL REQUIREMENTS.



SEEDING OR SODDING WIDTH "W"

FOR PIPE SIZES 6" THRU 22"  
 "W" = 4'-8" + PIPE O.D. + "D"

FOR PIPE SIZES 24" THRU 40"  
 "W" = 5'-0" + PIPE O.D. + "D"

THESE WIDTHS ARE FOR PAYMENT PURPOSES ONLY. SAFETY REQUIREMENTS MAY DICTATE INCREASED WIDTHS.



**CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS**

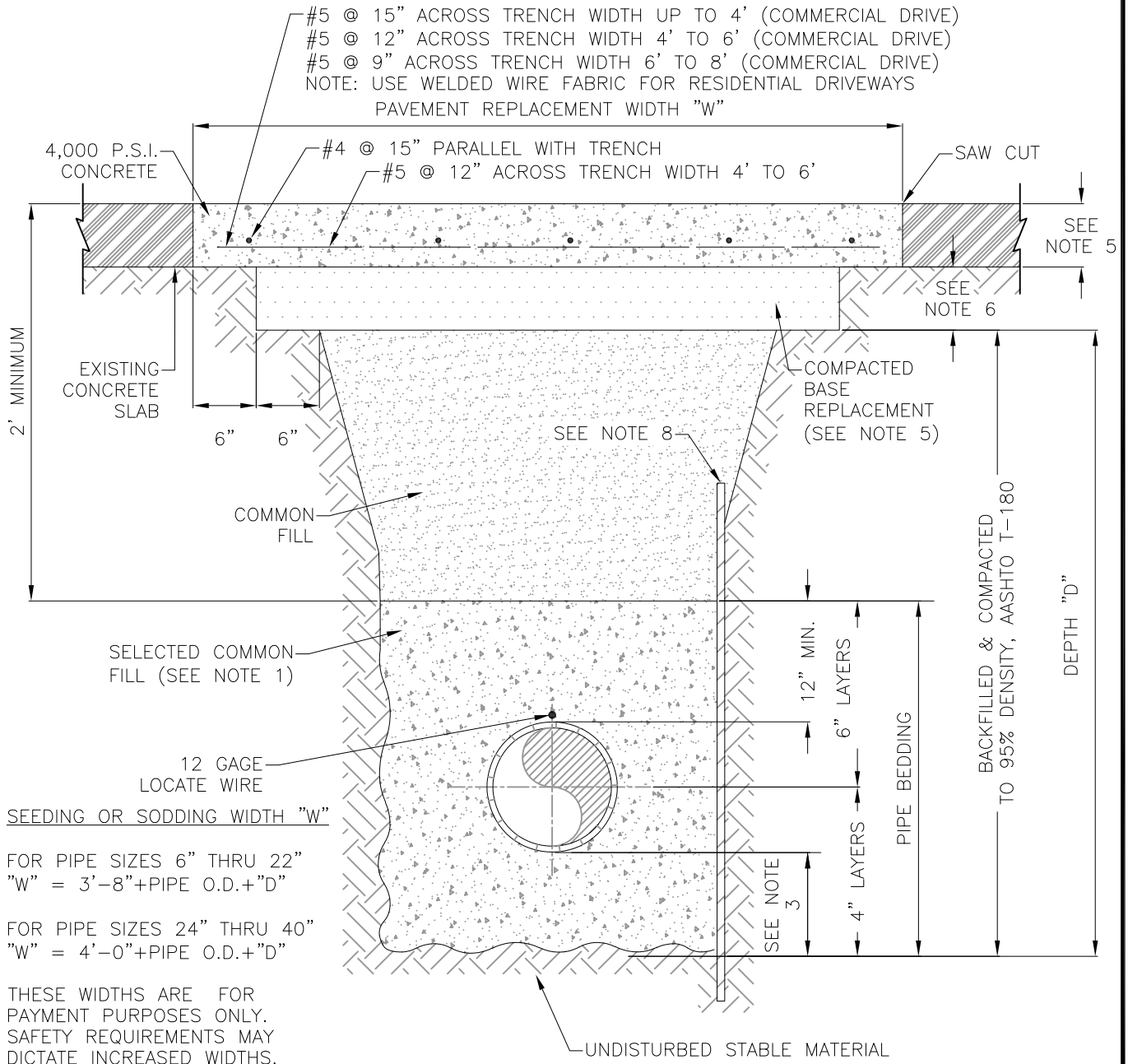
**TRENCH DETAIL ASPH.  
 PAVEMENT SURFACE  
 TYPE A-1 PIPE BEDDING**

DATE: JAN 2017

**M-23**

**NOTES:**

- 1.) USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.
- 3.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX. FOR PIPE 42" DIAMETER AND LARGER.
- 4.) INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
- 5.) THICKNESS TO MATCH EXISTING OR BE 4" MINIMUM, WHICHEVER IS GREATER.
- 6.) THICKNESS TO MATCH EXISTING OR BE 8" MINIMUM, WHICHEVER IS GREATER.
- 7.) IF ANY PART OF REQUIRED SAWCUT REMOVAL COMES WITHIN 3 FT. OF EXISTING JOINT ON EITHER SIDE OF TRENCH, REMOVE AND REPLACE TO EXISTING JOINT.
- 8.) SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.



**CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS**

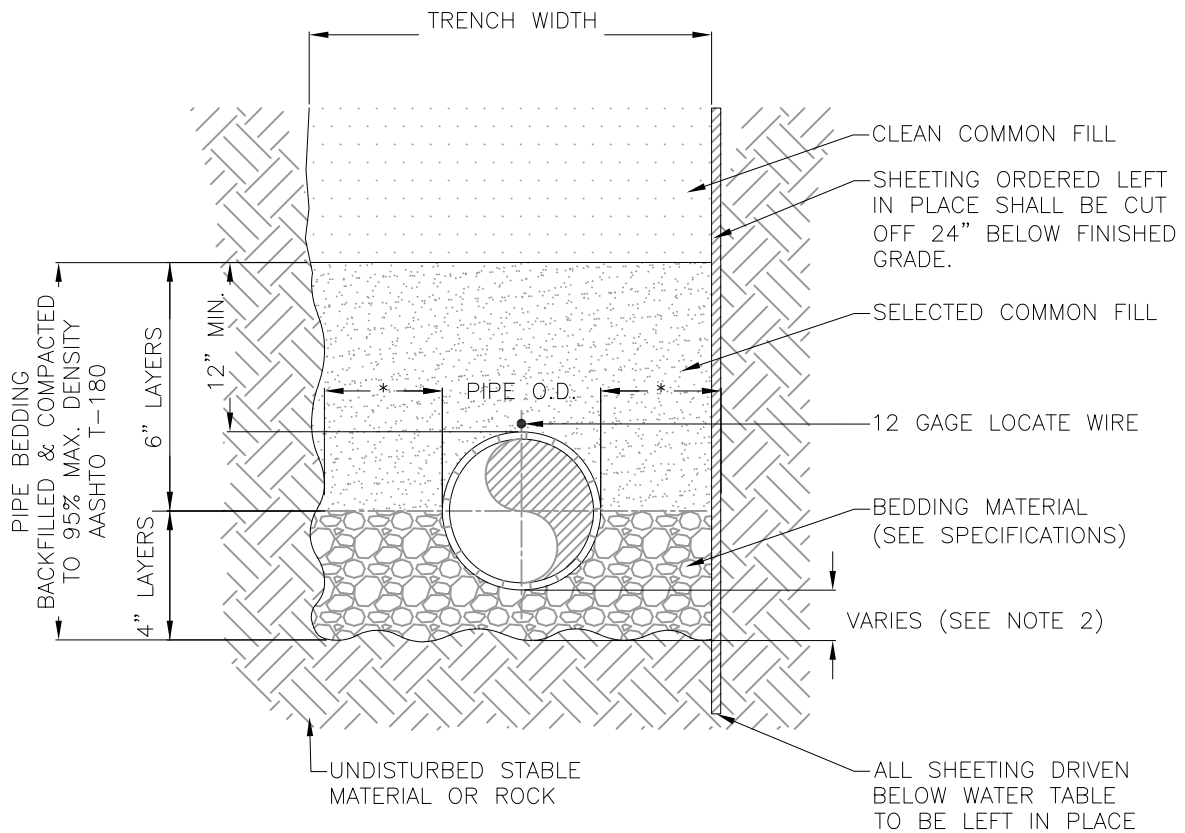
**TRENCH DETAIL CONC.  
 PAVEMENT SURFACE  
 TYPE A-1 PIPE BEDDING**

DATE: NOV 2016

**M-24**

NOTES:

- 1.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.
- 2.) 4" MAX. FOR PIPE 16" DIAMETER AND LESS; 6" MAX. FOR PIPE DIAMETER 18" TO 36" AND 9" MAX. FOR PIPE DIAMETER 42" AND OVER.
- 3.) INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.



CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

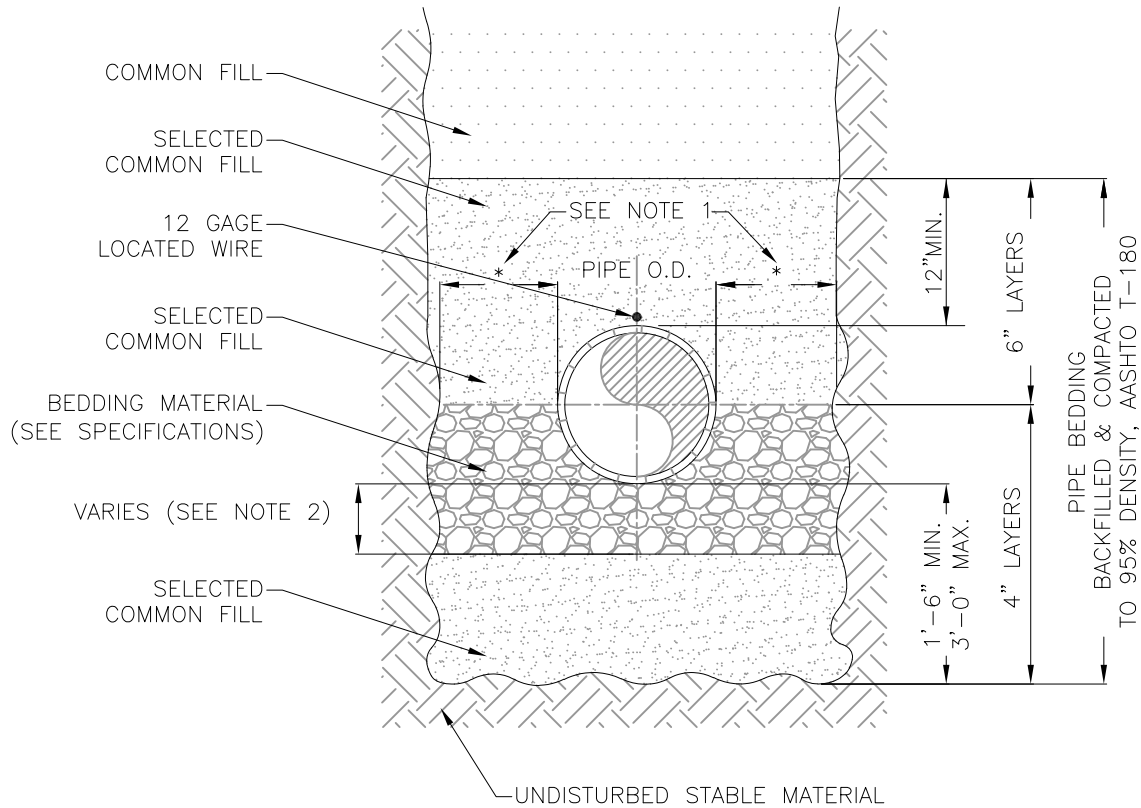
TRENCH DETAIL  
 TYPE A-2 PIPE BEDDING

DATE: NOV 2016

M-25

NOTES:

- 1.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.
- 2.) 4" MAX. FOR PIPE 16" DIAMETER AND LESS; 6" MAX. FOR PIPE DIAMETER 18" TO 36" AND 9" MAX. FOR PIPE DIAMETER 42" AND OVER.
- 3.) INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.



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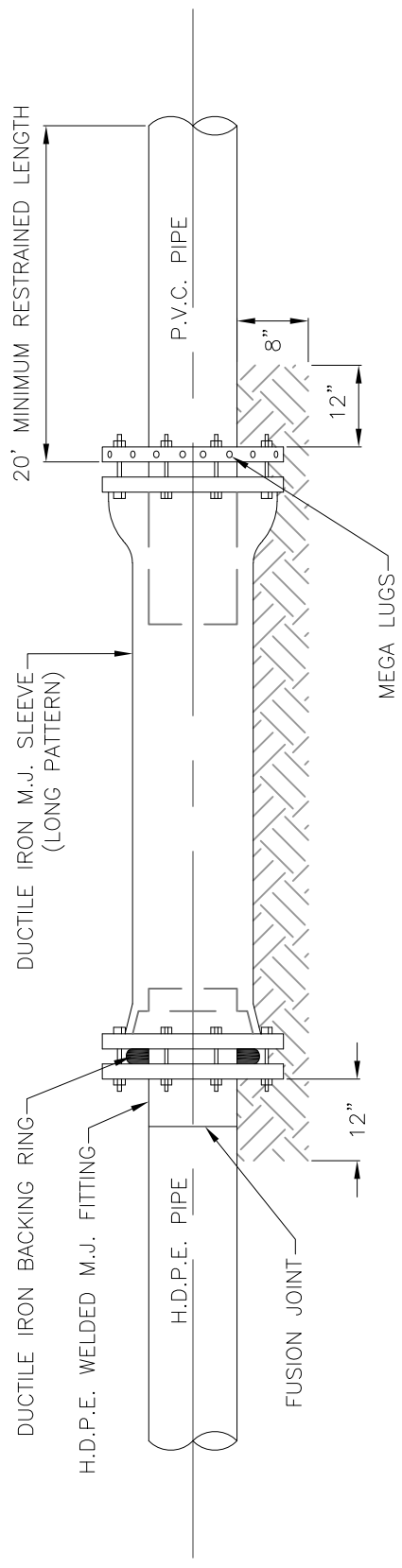


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

TRENCH DETAIL  
TYPE A-3 PIPE BEDDING

DATE: NOV 2016

M-26



CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

### H.D.P.E. TO P.V.C. TRANSITION CONNECTION DETAIL

DATE: MAR 2012

M-27

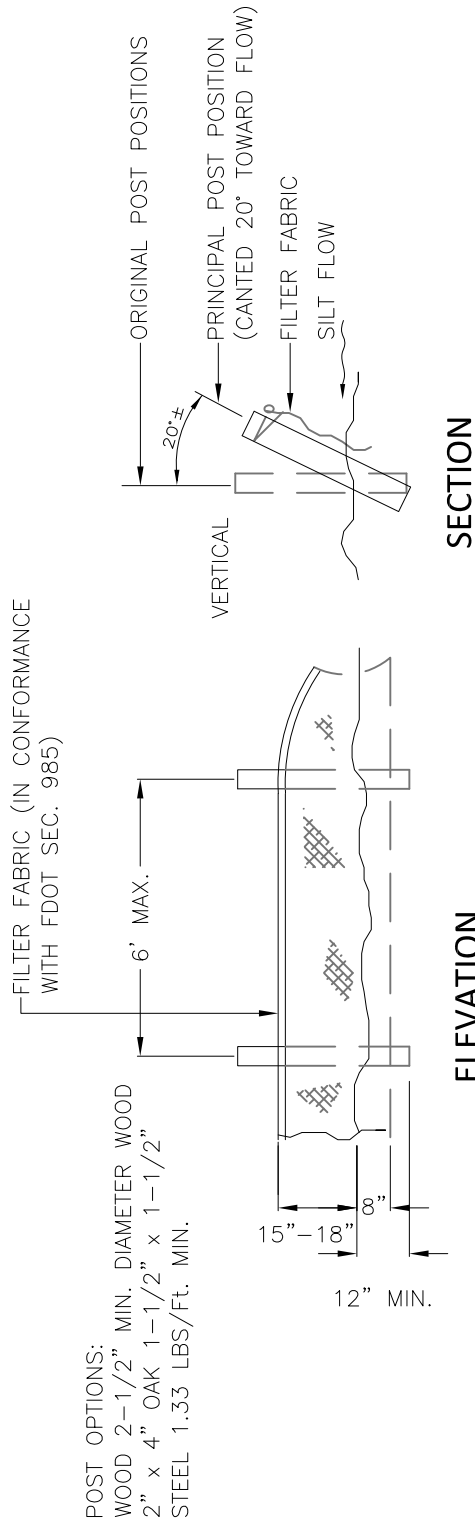


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

EROSION CONTROL SILT  
FENCE DETAIL

DATE: MAR 2012

M-28



NOTE:

DO NOT DEPLOY SILT FENCES IN A MANNER THAT WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND AS TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

**MINIMUM TECHNICAL STANDARDS CHECKLIST FOR UTILITY AS-BUILTS**

CITY OF PANAMA CITY BEACH  
DATED MAY, 2012

SURVEYORS AND MAPPERS MUST MEET THE FOLLOWING MINIMUM STANDARDS OF ACCURACY, COMPLETENESS, AND QUALITY FOR THE CITY OF PANAMA CITY BEACH TO ACCEPT AS-BUILTS:

1. MUST IDENTIFY THE RESPONSIBLE SURVEYOR AND MAPPER.
2. SHALL STATE THE TYPE OF SURVEY IT DEPICTS AND THE PURPOSE OF THE SURVEY.
3. MUST BEAR THE NAME, CERTIFICATE OF AUTHORIZATION NUMBER, AND STREET AND MAILING ADDRESS OF THE BUSINESS ENTITY ISSUING THE AS-BUILT SURVEY, ALONG WITH THE NAME AND LICENSE NUMBER OF THE SURVEYOR IN RESPONSIBLE CHARGE.
4. MUST REFLECT A SURVEY DATE, WHICH IS THE DATE OF ACQUISITION. WHEN THE GRAPHICS OF THE AS-BUILT SURVEY ARE REVISED, BUT THE SURVEY DATE STAYS THE SAME, THE AS-BUILT SURVEY MUST LIST DATES FOR ALL REVISIONS.
5. MUST BE SIGNED AND SEALED BY THE SURVEYOR IN RESPONSIBLE CHARGE.
6. A DESIGNATED "NORTH ARROW" AND EITHER A STATED SCALE OR GRAPHIC SCALE SHALL BE SHOWN.
7. APPROPRIATE LINE TYPES, LINE WEIGHTS, AND LINE WIDTHS SHALL BE USED ON THE AS-BUILT DRAWING TO DIFFERENTIATE EXISTING FROM PROPOSED AND WATER FROM SEWER, RECLAIM, AND STORM. ALL PHYSICAL ITEMS (I.E. PIPES, VALVES, ETC.), SURVEYED BOUNDARIES, AND EASEMENTS SHOULD BE CLEARLY MARKED, AND DIMENSIONED, AND IDENTIFIED BY SIZE AND MATERIAL.
8. ALL UTILITIES IN THE PUBLIC RIGHT OF WAY AND WITHIN EASEMENTS OR TO THE END OF THE PUBLICLY OWNED PORTION OF THE UTILITY (I.E. METER AND BACKFLOW PREVENTER, CLEANOUT, ETC.) SHALL BE SHOWN WITH ASSOCIATED SIZES LABELED. THIS INCLUDES, BUT IS NOT LIMITED TO, STUB-OUTS/LATERALS, METERS, BFP'S, WATER MAINS, FORCE MAINS, GRAVITY SEWER MAINS, MANHOLES, STORM WATER PIPING AND ASSOCIATED STRUCTURES, VALVES, FIRE HYDRANTS, LIFT STATIONS, ETC. ALL PIPE LINE WORK MUST BE CONNECTED WITHIN THE SITE AS WELL AS THE CONNECTION TO EXISTING UTILITIES ADJACENT TO THE SITE (IT IS THE SURVEYOR'S RESPONSIBILITY TO COORDINATE WITH ALL CONTRACTORS FOR LOCATIONS AND SIZING). ALL UTILITY CONNECTIONS TO THE BUILDINGS MUST BE SHOWN.
9. ALL PROPOSED UTILITY/INGRESS/EGRESS EASEMENTS MUST BE SHOWN ON THE DRAWING AND MUST HAVE THE ASSOCIATED LEGAL DESCRIPTION WRITTEN.
10. EDGE OF PAVEMENT, ROADS (ASPHALT SHADED), CURBS, DRIVEWAY CONNECTIONS, BUILDINGS, PARKING LOTS, RIGHT-OF-WAY, AND STREET NAMES MUST BE SHOWN IN ALL APPLICATIONS. ALL ITEMS MENTIONED ABOVE MUST BE FIELD LOCATED.
11. IF A LIFT STATION IS TO BE DEDICATED TO THE CITY THE PLAN MUST SHOW A DETAIL SCALED AT 1"=10' SHOWING ALL IMPROVEMENTS INCLUDING: WATER AND SEWER SERVICES, MANHOLES, INVERTS, RIMS, BFP'S, YARD HYDRANTS, CONTROL PANELS, FENCING, PARCEL BOUNDARY, LEGAL DESCRIPTION OF PARCEL BOUNDARY, WET WELL, VALVE BOX, FORCE MAIN, FLOW METER (IF APPLICABLE), DRIVEWAY, GATE.
12. PROPERTY BOUNDARY MUST BE CLEARLY LABELED AND DIMENSIONED.
13. INVERTS, GRATES, TOPS, RIMS MUST BE SHOWN FOR ALL STORM WATER DRAINAGE STRUCTURES. INVERTS (PIPES AND CLEANOUTS) AND RIMS MUST BE SHOWN FOR ALL GRAVITY SEWER MANHOLES. SLOPES MUST BE SHOWN ON EACH RUN OF PIPE FOR REVIEW AND APPROVAL.
14. "AS-BUILT" PROFILE OF ALL DIRECTIONAL BORES AND JACK-AND-BORES INDICATING GRADE AND PIPE ELEVATIONS AT 10 FOOT INTERVALS SHALL BE PROVIDED ON AS-BUILT PLAN SHEETS BASED ON BORE LOGS DEVELOPED BY BORING CONTRACTOR DURING INSTALLATION. PROFILES SHALL USE HORIZONTAL STATIONING WHICH TIES TO STATIONING ON PLANS. PROFILES SHALL ALSO SHOW EXISTING SURFACE ELEVATIONS AS WELL AS ANY PROPOSED SURFACE ELEVATIONS ON THE PROFILE. SURFACE PROFILES MUST SHOW ANY PAVEMENT, SIDEWALKS, DITCHES, SWALES ETC. NOTE THAT PROFILES LOCATING PIPE SOLELY BY "DEPTH BELOW EXISTING GROUND" WILL NOT BE ACCEPTED.
15. COASTAL SETBACK LINE OR COASTAL CONSTRUCTION CONTROL LINE SHOULD BE DESIGNATED.
16. ELEVATIONS AND LOCATION OF ANY FLOOD ZONES ALONG THE FLOOD HAZARD BOUNDARIES SHALL BE DELINEATED.
17. NEARBY WETLANDS AND OTHER ENVIRONMENTALLY SIGNIFICANT RESOURCES CLEARLY LABELED.
18. STORM WATER MANAGEMENT SYSTEM FEATURES INCLUDING DIMENSIONS OF : WET AND DRY SWALES, WET AND DRY PONDS, CONVEYANCE SYSTEMS, EASEMENTS, ALONG WITH ALL ASSOCIATED M.E.S. STRUCTURES AND INVERTS, OUTFALL STRUCTURES AND INVERTS, SKIMMERS, DISCHARGE STRUCTURES AND INVERTS AND SLOT ELEVATIONS, TOP OF BANK, SLOPE OF BANK AND BOTTOM OF ALL PONDS, SWALES, CLOSED AND OPEN CONVEYANCES. FOR FEMA LOMR SUBMITTALS ALSO PROVIDE: FINISHED FLOOR ELEVATIONS, SPOT ELEVATIONS AND/OR CONTOURS SHOWING LOWEST LOT ELEVATIONS.
19. THE ENGINEER OF RECORD SHALL REVIEW AND APPROVE THE AS-BUILT PRIOR TO SUBMISSION TO THE CITY FOR FINAL APPROVAL. WRITTEN APPROVAL BY THE ENGINEER OF RECORD SHALL BE NOTED ON A TRANSMITTAL WITH A STATEMENT OF NO EXCEPTIONS TO MINIMUM STANDARDS PROVIDED HEREIN.

STORM WATER REQUIREMENTS FOR THE AS-BUILT SURVEYS ONLY APPLY TO PARCELS WITHIN CITY LIMITS. PLEASE SUBMIT THREE (3) HARD COPIES AND ONE (1) DIGITAL (AUTOCAD FORMAT & PDF) FOR REVIEW AND APPROVAL.



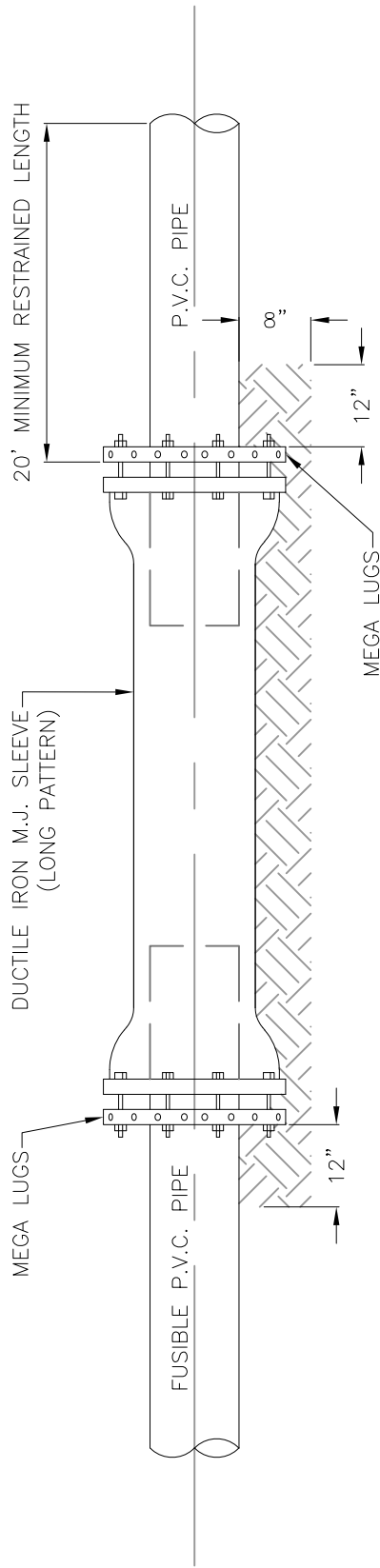
**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**MINIMUM TECHNICAL  
STANDARDS FOR  
AS-BUILTS**

DATE: MAY 2012

**M-29**



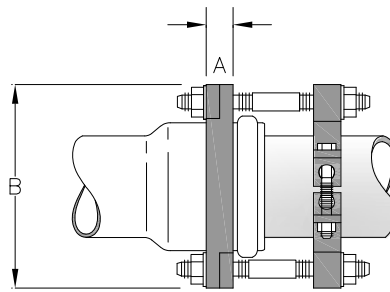


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

FUSIBLE  
P.V.C. TO STANDARD  
P.V.C. TRANSITION  
CONNECTION DETAIL

DATE: MAR 2012

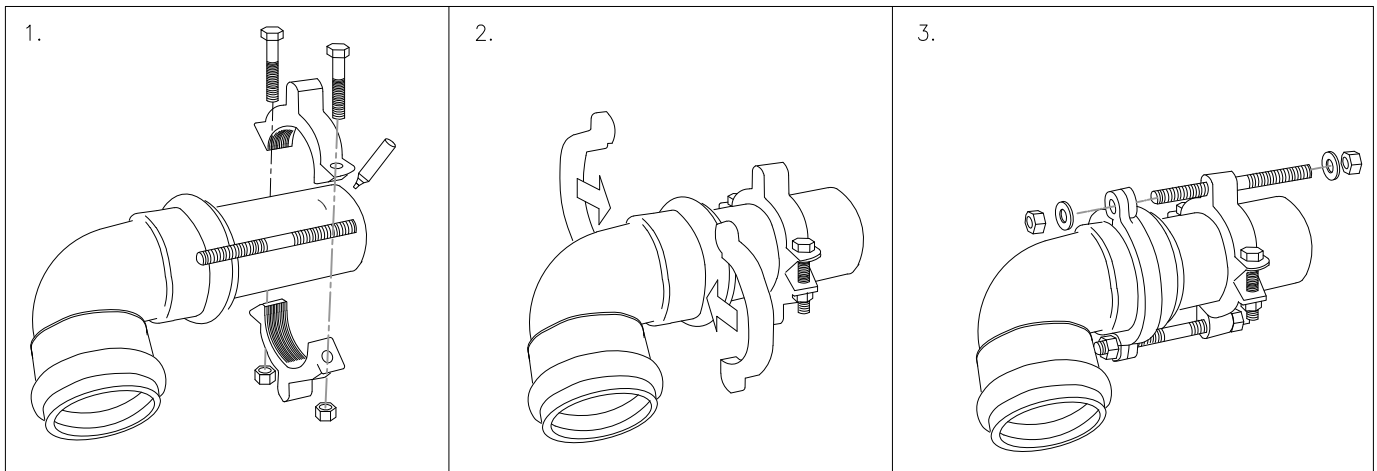
M-30



RESTRAINT DEVICE FOR IPS CLASS 200 PVC FITTINGS						
PIPE SIZE (INCHES)	PIPE O.D. (INCHES)	A	B	SIDE BOLTS NUMBER AND SIZE	CONNECTING RODS NUMBER AND SIZE	APPROX. WT. LBS.
2"	2.38	1-1/8"	6-3/8"	(2) 5/8"x11"	(2) 5/8"x3-1/2"	9.5
2-1/2"	2.88	1-1/8"	6-7/8"	(2) 5/8"x11"	(2) 5/8"x3-1/2"	10.0
3"	3.50	1-1/8"	7-5/8"	(2) 5/8"x11"	(2) 5/8"x3-1/2"	10.5

BASED ON UNI-FLANGE BLOCK BUSTER SERIES 1360 PIPE RESTRAINT.  
 ALTERNATE, EQUIVALENT RESTRAINTS MUST BE APPROVED BY THE CITY IN WRITING BEFORE USE.

INSTALLATION INSTRUCTIONS



- 1.) INSTALL PIPE INTO FITTING. INSTALL SERIES 1300 SPLIT CLAMPING RING ON THE SPIGOT END OF THE PIPE. (USE CONNECTING ROD AS A GUIDE TO POSITION SERRATED RESTRAINER.) TIGHTEN CLAMPING BOLTS EVENLY TO THE RECOMMENDED TORQUE.
- 2.) INSTALL SPLIT BACK-UP RING BEHIND GASKET RACE OF FITTING. MAKE SURE THE BEVEL FACES THE GASKET RACE. THE TWO HALVES INTERLOCK AT THE BOLT HOLES.
- 3.) INSERT RODS THROUGH SERIES 1300 AND BACK-UP RING. PLACE WASHERS AGAINST RESTRAINER AND BACK-UP RING EARS. SNUG RETAINING NUTS AGAINST WASHERS. DO NOT OVERTIGHTEN RETAINING NUTS. (HAND TIGHT, THEN ONE FULL TURN.)



CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

2"-3" PVC FITTING  
 RESTRAINT DEVICE  
 INSTALLATION DETAIL

DATE: MAR 2012

M-31

MINIMUM BEND RADIUS IN FEET					
NOMINAL DIAMETER	PVC		FPVC		HDPE (25 x O.D.)
	IPS (200 x O.D.)	C900/C905 (250 x O.D.)	IPS	C900/C905	
2	9		40		5
4	75	100	94	100	10
6	110	144	138	144	14
8	144	189	180	189	19
10	180	232	224	231	23
12	213	275	266	275	28
14	–	319	–	319	32
16	–	363	–	363	36
18	–	406	–	406	41
20	–	450	–	450	45
24	–	538	–	538	54
30	–	–	–	667	67
36	–	–	–	798	80

- 1.) ALL POLYETHYLENE PIPING SHALL MEET CITY OF PANAMA CITY BEACH STANDARDS AND SPECIFICATIONS
- 2.) SDR 9, CLASS 250, PE4710 RESIN HDPE FOR 1" SERVICE TUBING.  
SDR-11, CLASS 200, PE4710 RESIN HDPE FOR 2" DIAMETER AND LARGER POTABLE WATER & RECLAIMED WATER.  
SDR-11, CLASS 160, PE4710 RESIN HDPE FOR 2" DIAMETER AND LARGER SANITARY FORCE MAINS COLOR CODED BLUE FOR POTABLE WATER COLOR CODED PURPLE FOR RECLAIMED WATER COLOR CODED GREEN FOR SANITARY FORCE MAIN.
- 3.) THE COLOR CODING SHALL MEETING REQUIREMENTS IN ACCORDANCE WITH SUBPARAGRAPH 62-555.320 (21)(B) 3 F.A.C. AND SHALL BE CO-EXTRUDED DURING PIPE MANUFACTURING.
- 4.) ALL HDPE PIPE 2" DIAMETER AND LARGER MUST BE IPS, NO CTS IS ALLOWED. ALL 1" SERVICE TUBING SHALL BE CTS.
- 5.) ALL PVC PIPE MUST BE C900/C905.

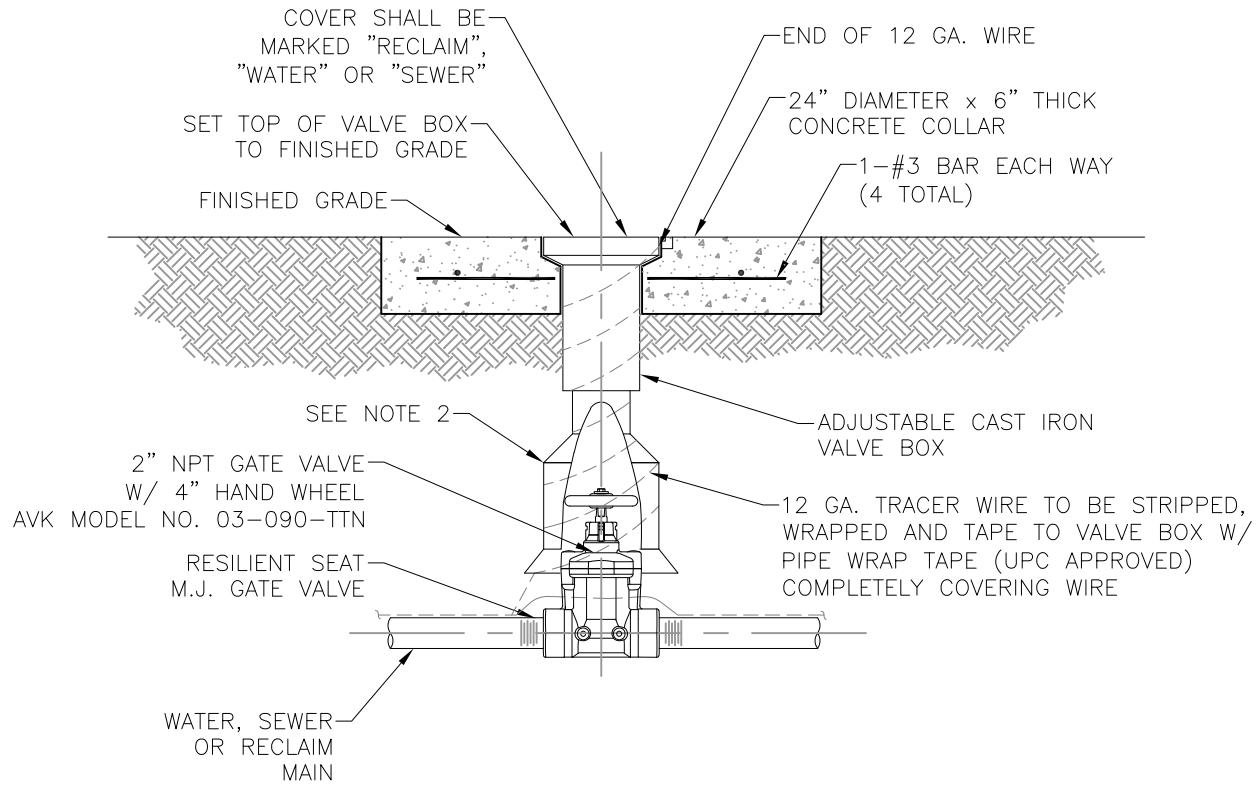
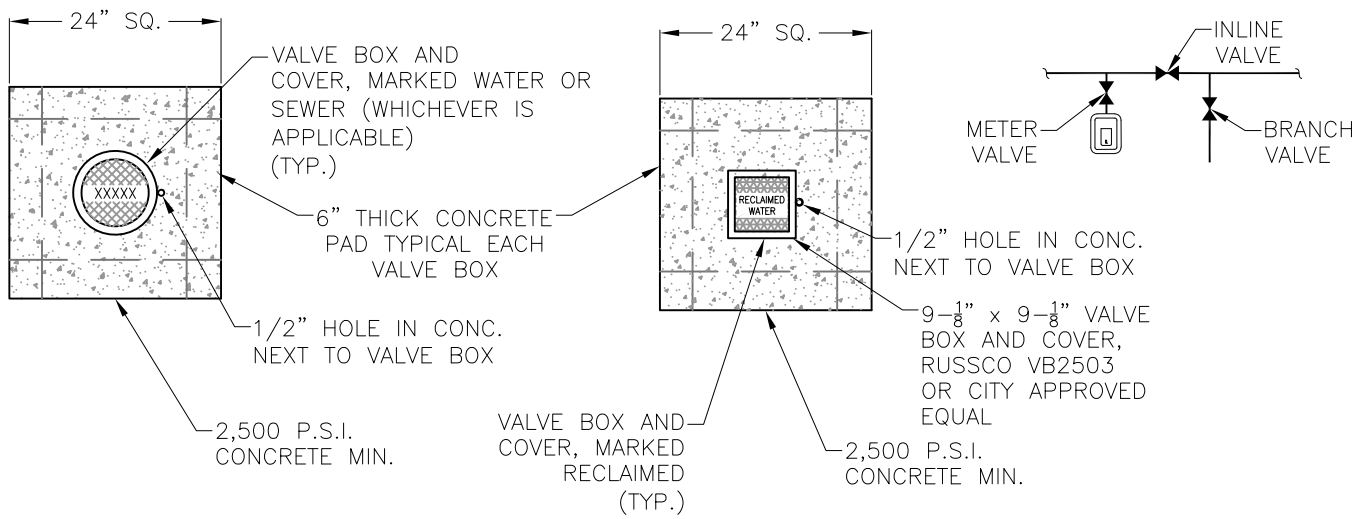


**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**MINIMUM PIPE BEND  
RADIUS TABLE**

DATE: JUL 2019

**M-32**



- NOTES:
- 1.) PVC EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.
  - 2.) THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO COME UP TO 4 FOOT DEPTH BELOW FINISHED GRADE.
  - 3.) ALL WATER, SEWER & RECLAIM MAINS 2" & BELOW SHALL HAVE HAND WHEEL INSTEAD OF THE OPERATING NUT.
  - 4.) PRECAST "DONUT" VALVE COLLARS ARE NOT ACCEPTABLE UNLESS WRITTEN AUTHORIZATION IS PROVIDED BY THE CITY.



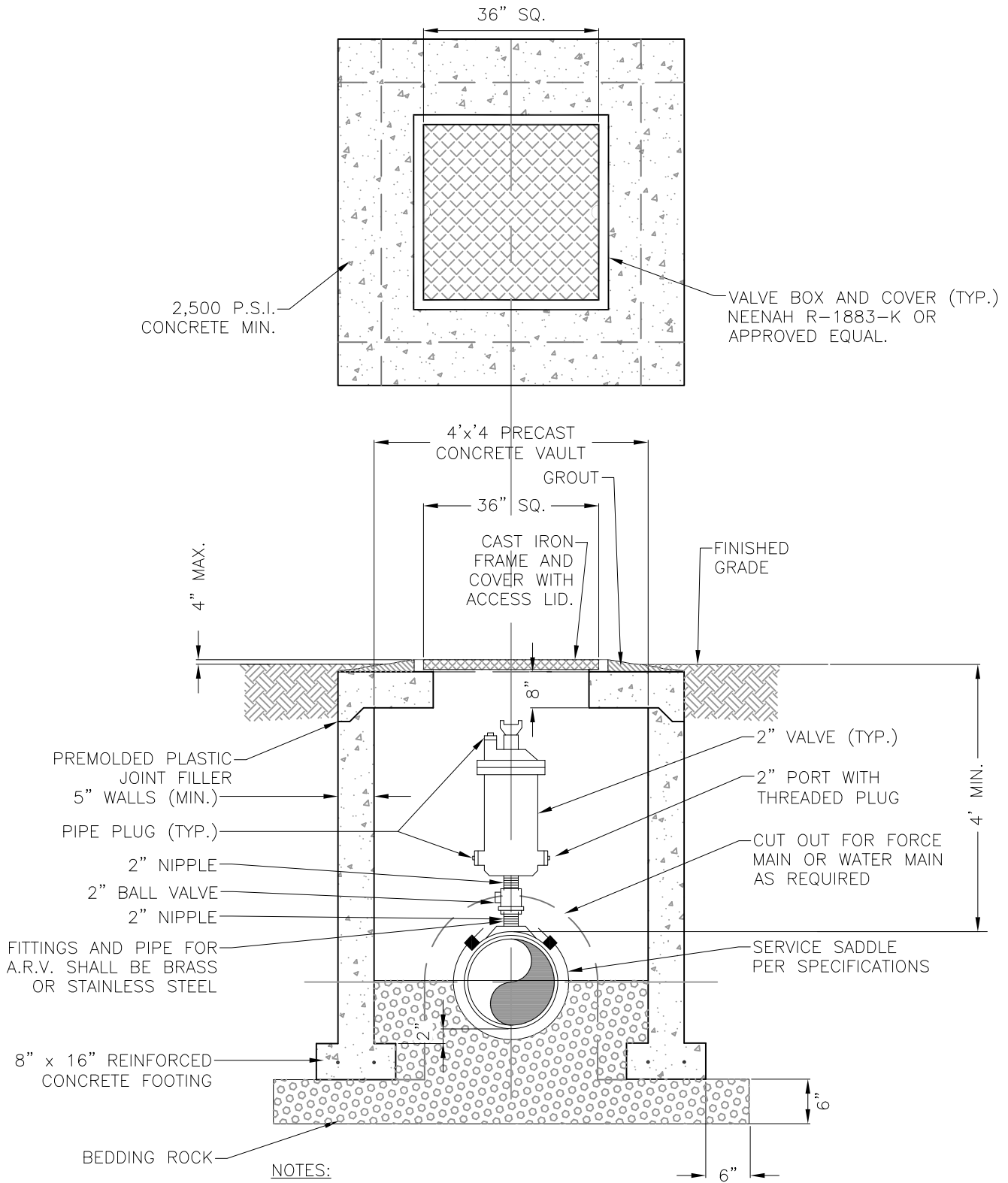
CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

**2"-3" DUCTILE IRON GATE  
 VALVE DETAIL (WATER,  
 SEWER & RECLAIM)**

DATE: JUL 2016

**M-33**

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**NOTES:**

- 1.) ABOVE DETAIL IS BASED ON 2" COMBINATION AIR/VACUUM RELEASE VALVE. CHANGE PIPE AND FITTINGS ACCORDINGLY FOR OTHER VALVE SIZES AND TYPES. VALVE SIZES TO BE DETERMINED BY THE ENGINEER AND APPROVED BY THE CITY.



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**AIR AND/OR VACUUM  
RELEASE VALVE DETAIL**

DATE: MAR 2012

**M-34**



CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

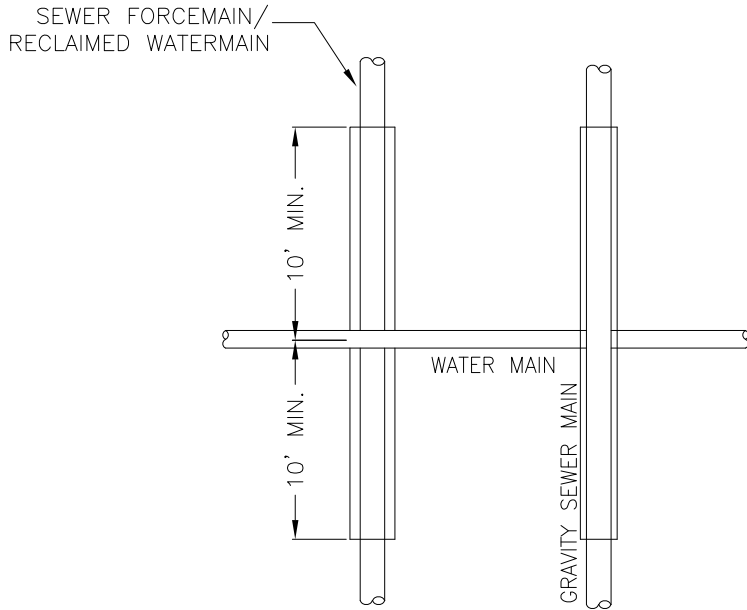
STANDARD  
MAIN CROSSING/  
SEPARATION DETAIL

DATE: MAR 2012

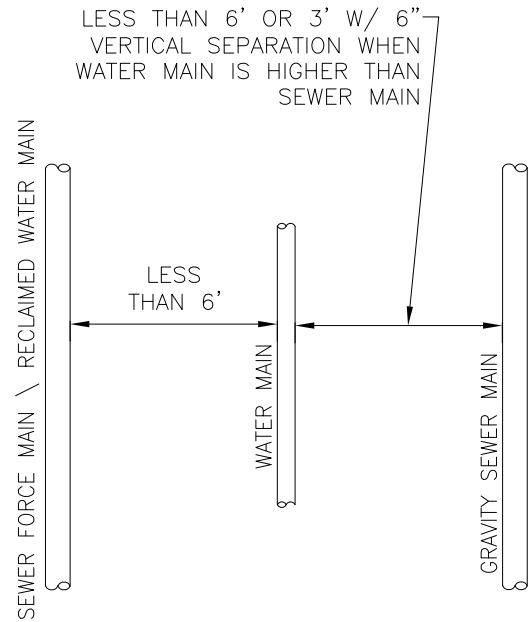
M-35A

OTHER PIPE	HORIZONTAL SEPARATION	CROSSINGS (SEE NTOE 1)	JOINT SPACING @ CROSSINGS (FULL JOINT CENTERED)
<p>STORM SEWER, STORMWATER FORCE MAIN, RECLAIMED WATER</p>	<p>3' MIN.</p>	<p>12" MIN. EXCEPT FOR STORM SEWER, THEN 6" IS THE MIN. AND 12" IS PREFERRED</p>	<p>ALTERNATE 3' MIN.</p>
<p>VACUUM SANITARY SEWER</p>	<p>10' PREFERRED 3' MIN.</p>	<p>12" PREFERRED 6" MIN.</p>	<p>ALTERNATE 3' MIN.</p>
<p>GRAVITY OR PRESSURE SANITARY SEWER, SANITARY SEWER FORCE MAIN</p>	<p>10' PREFERRED 6' MIN. (SEE NTOE 2)</p>	<p>12" MIN. EXCEPT FOR GRAVITY SEWER, THEN 6" IS THE MIN. AND 12" IS PREFERRED</p>	<p>ALTERNATE 6' MIN.</p>
<p>ON - SITE SEWAGE TREATMENT &amp; DISPOSAL SYSTEM</p>	<p>10' MIN.</p>	<p>-----</p>	<p>-----</p>
<p>(1) WATER MAIN SHOULD CROSS ABOVE OTHER PIPE. WHEN WATER MAIN MUST BE BELOW OTHER PIPE, THE MIN. SEPARATION IS 12".</p> <p>(2) 3' FOR GRAVITY SANITARY SEWER WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST 6" ABOVE THE TOP OF THE GRAVITY SANITARY SEWER.</p> <p>(3) IF REQUIRED SEPARATION CANNOT BE PROVIDED SEE DETAIL M-35B FOR REQ'D ADDITIONAL PROTECTION.</p>			

**TO BE USED ONLY WHEN STANDARD SEPARATION (DETAIL M35A) CANNOT BE PROVIDED. USE OF PROVISIONS OF THIS DETAIL TO BE APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION**



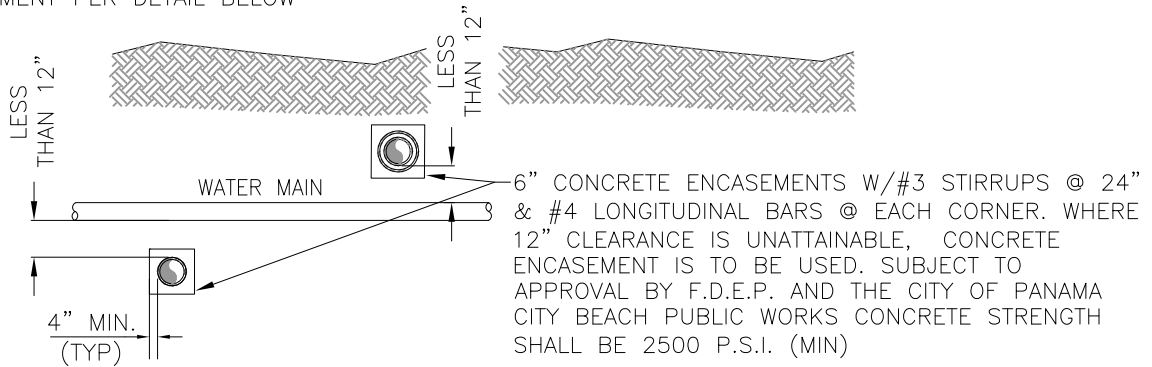
**CROSSING - PLAN**



**PARALLEL - PLAN**

USE ANY OF THE FOLLOWING:

- 1.) GRAVITY SEWER ONLY – USE PRESSURE RATED PIPE PER AWWA STDS.
- 2.) ALL MAIN TYPES – USE WELDED OR FUSED JOINTS FOR EITHER WATER OR OTHER MAIN
- 3.) ALL MAIN TYPES – USE WATERTIGHT CASING PIPE OR CONCRETE ENCASEMENT PER DETAIL BELOW



**CROSSING - SECTION**

**GENERAL NOTES:**

- A.) WHERE AN UNDERGROUND WATER MAIN IS BEING LAID LESS THAN THREE FEET HORIZONTALLY FROM ANOTHER PIPELINE AND WHERE AN UNDERGROUND WATER MAIN IS CROSSING ANOTHER PIPELINE AND IS BEING LAID LESS THAN THE REQUIRED MINIMUM VERTICAL DISTANCE FROM THE OTHER PIPELINE:
  - i. USE OF PIPE, OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25-INCH-THICK DUCTILE IRON PIPE) OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR THE WATER MAIN; AND
  - ii. USE OF PIPE, OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25-INCH-THICK DUCTILE IRON PIPE) OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR THE OTHER PIPELINE IF IT IS NEW AND IS CONVEYING WASTEWATER OR RECLAIMED WATER.
- B.) THE USE OF ANY ASPECT OF THIS DETAIL MUST BE APPROVED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE CITY OF PANAMA CITY BEACH PUBLIC WORKS



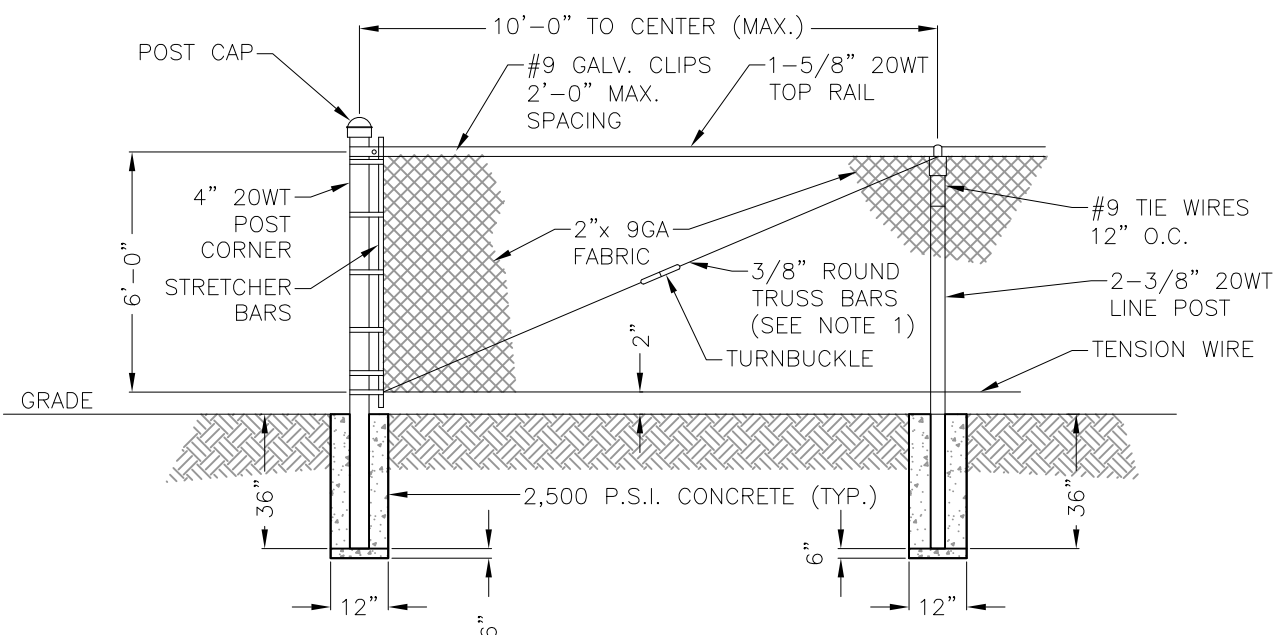
**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

**SPECIAL CASE  
MAIN CROSSING/  
SEPARATION DETAIL**

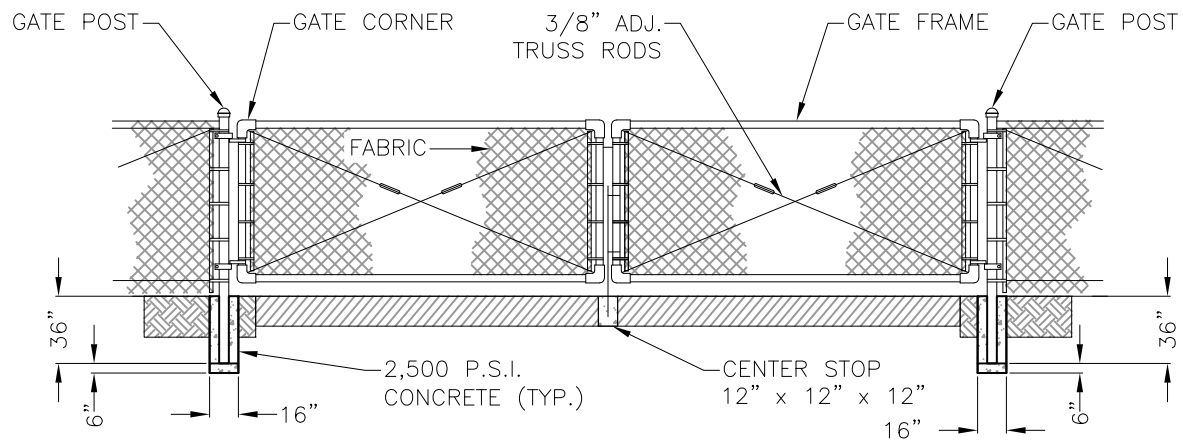
DATE: MAR 2018

**M-35B**

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**FENCE DETAIL**



**DOUBLE SWING GATE DETAIL**

NOTES:

- 1.) TRUSS BARS ARE REQUIRED FOR EACH GATE SECTION AND THE FIRST SPAN ON EACH SIDE OF A CORNER POST ONLY.
- 2.) SEE SHEET ~~S-14~~ <sup>M-37</sup> FOR PLAN AND CROSS SECTION VIEWS.
- 3.) FABRIC, POST, RODS & ACCESSORIES SHALL BE GALVANIZED WITH BLACK VINYL COATING.



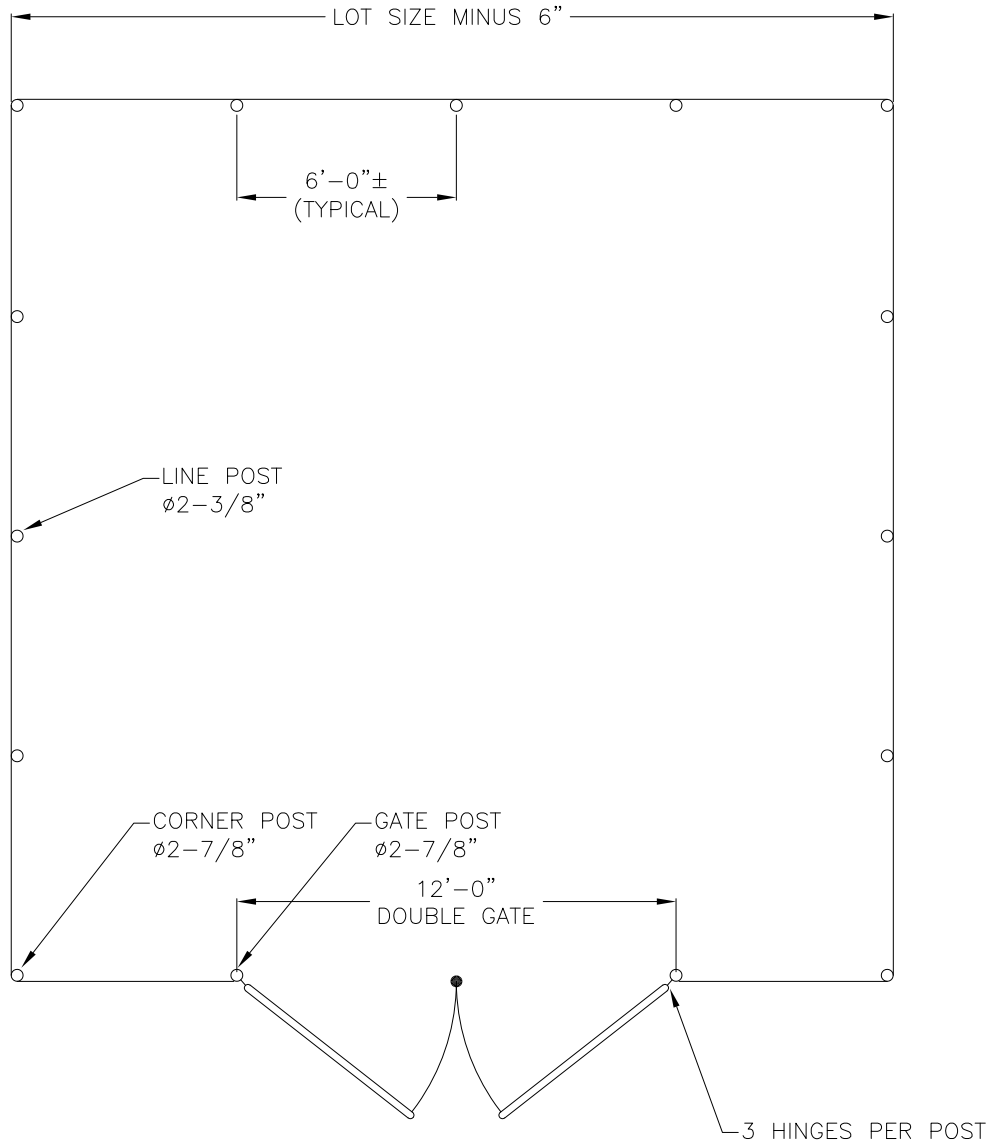
CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

**CHAIN LINK  
FENCE DETAIL**

DATE: JAN 2022

**M-36**





NOTE: **M-36**  
 SEE SHEET ~~S-13~~ FOR FRONT  
 AND SIDE VIEWS.

PLAN VIEW



CITY OF P.C.B  
 UTILITIES  
 STANDARD  
 DETAILS

TYPICAL LIFT STATION  
 FENCE

DATE: JAN 2022

M-37

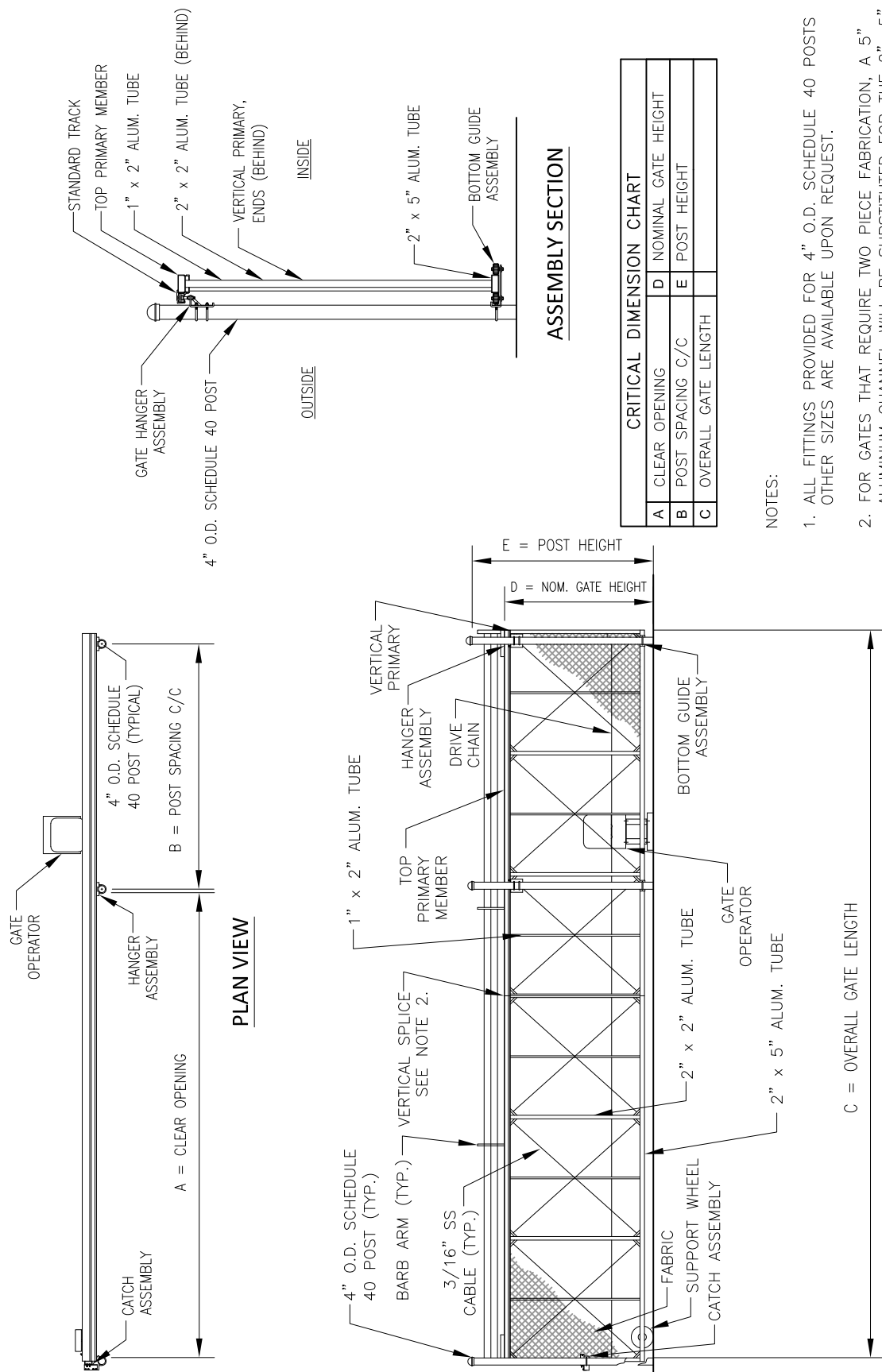


CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS

CANTILEVER SLIDE  
GATE DETAIL

DATE: MAR 2012

M-38

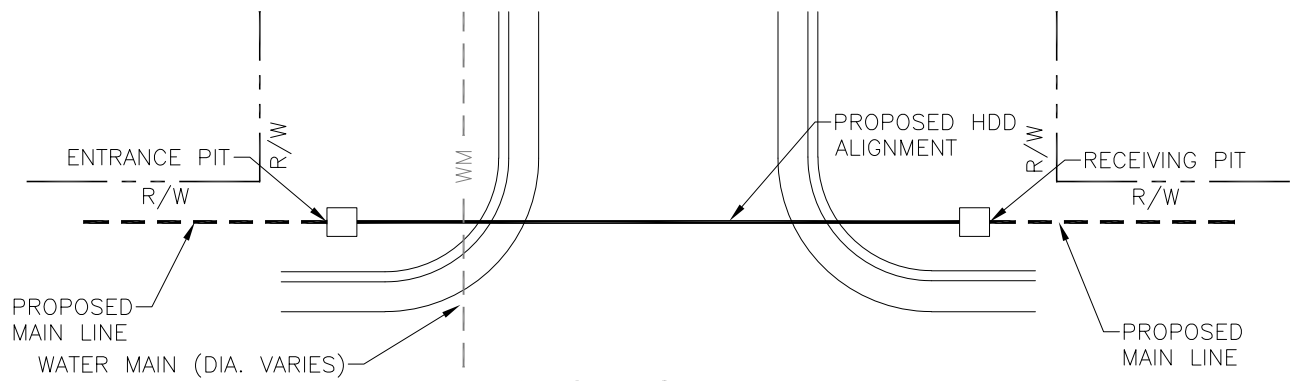


**CRITICAL DIMENSION CHART**

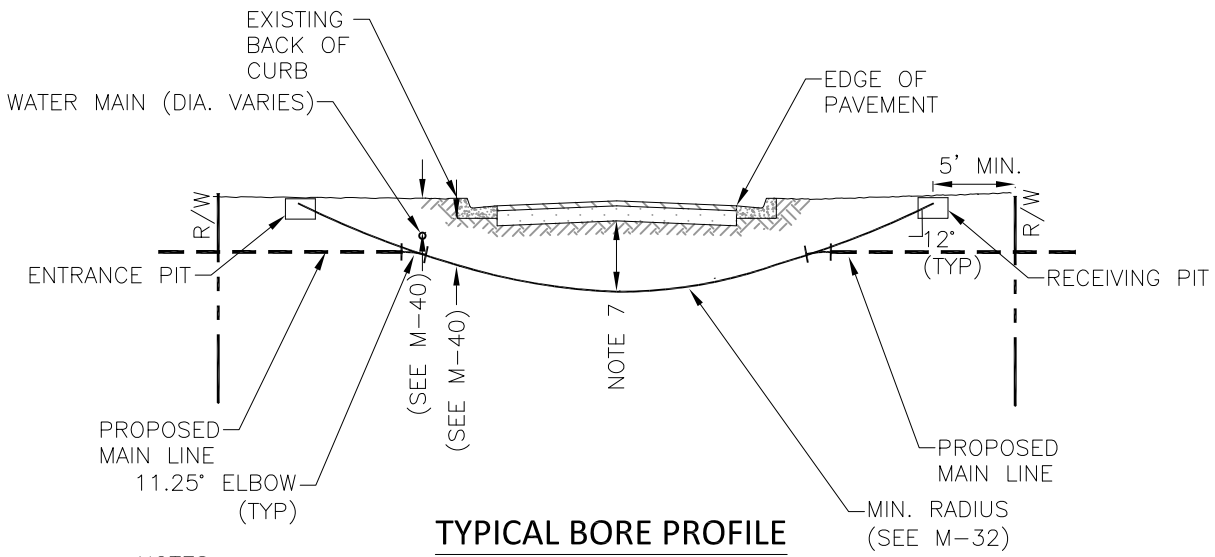
A	D
CLEAR OPENING	NOMINAL GATE HEIGHT
B	E
POST SPACING C/C	POST HEIGHT
C	
OVERALL GATE LENGTH	

NOTES:

1. ALL FITTINGS PROVIDED FOR 4" O.D. SCHEDULE 40 POSTS OTHER SIZES ARE AVAILABLE UPON REQUEST.
2. FOR GATES THAT REQUIRE TWO PIECE FABRICATION, A 5" ALUMINUM CHANNEL WILL BE SUBSTITUTED FOR THE 2" x 5" ALUM. TUBE, AND A VERTICAL SPLICE WILL BE ADDED.
3. GATE ELEVATION IS VIEWED FROM THE OUTSIDE OF THE SECURE AREA LOOKING IN.



**TYPICAL BORE PLAN**



**TYPICAL BORE PROFILE**

**NOTES:**

1. ALL HDD INSTALLATION ACTIVITIES SHALL BE IN ACCORDANCE WITH THE FLORIDA D.O.T. UTILITY ACCOMMODATIONS MANUAL.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFICATION OF AFFECTED AGENCIES AND COORDINATION WITH ALL UTILITIES PRIOR TO CONSTRUCTION.
3. ALL CONSTRUCTION MATERIALS, INCLUDING DRILLING FLUID, SHALL BE REMOVED FROM THE SITE PRIOR TO RESTORATION OF DISTURBED AREAS.
4. ALL RESTORATION WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE R/W OWNER.
5. EXCAVATIONS SHALL BE RESTORED IN ACCORDANCE WITH THE REQUIREMENTS OF THE R/W OWNER.
6. ANY DEVIATION FROM THE PROPOSED BORE PLAN (ENTRY ANGLE, DEPTH, ETC.) MUST BE APPROVED BY THE ENGINEER OF RECORD PRIOR TO CONSTRUCTION.
7. A) UP TO 12" DIAMETER PIPE, GREATER OF:
  - a) 10 X PIPE DIAMETER
  - b) 6' MINIMUM
 B) FOR PIPE OVER 12" DIAMETER, DETERMINED BY ANALYSIS.  
 C) BORE PATH SHALL NOT EXCEED DESIGN BY MORE THAN 5% OF DEPTH OVER 100 FT LENGTH.



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

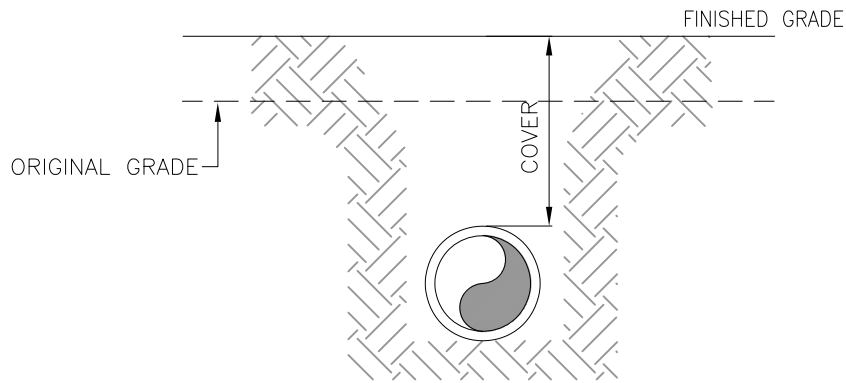
**HORIZONTAL  
DIRECTIONAL DRILL  
DETAIL**

DATE: MAY 2012

**M-39**

## PIPE COVERAGE TABLE

PIPE DIAMETER	REQUIRED COVER
UP TO 12"	36"
ABOVE 12" UP TO 24"	42"
30" AND ABOVE	48"



**NOTES:**

1. COVER SHALL BE MEASURED WHEN FINISH GRADES ARE ESTABLISHED.
2. COVER TOLERANCES ARE +6", -3", PROVIDED THE AVERAGE COVER MEETS TABLE REQUIREMENTS.



**CITY OF P.C.B  
UTILITIES  
STANDARD  
DETAILS**

## REQUIRED PIPE COVERAGE TABLE

DATE: MAR 2012

# M-40