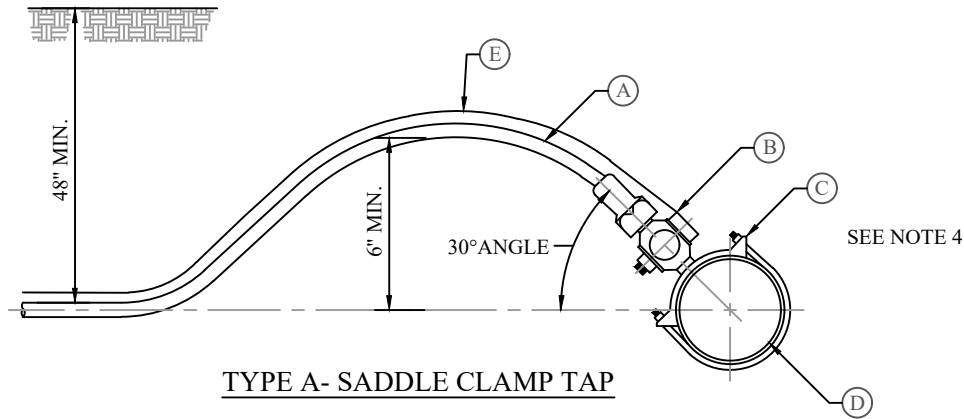
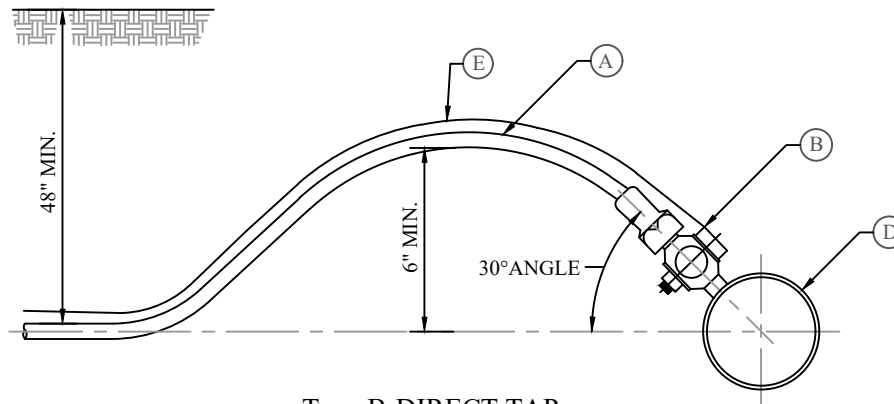


**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



**TYPE A- SADDLE CLAMP TAP**



**Type B-DIRECT TAP**

**NOTES FOR 1" MINIMUM SERVICE TAPS:**

1. **INSPECTION:** PRIOR TO BACKFILLING, SECURE INSPECTION OF INSTALLATION BY CITY.
2. **BACKFILL:** INSTALL ALL BACKFILL MATERIAL PER APWA SECTION 31 05 13 IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT EACH LIFT TO A MINIMUM RELATIVE DENSITY OF 95%.
3. **TAPPING:** PLACE TAPS A MINIMUM 24" APART. USE A TAPPING TOOL WHICH IS SIZED CORRESPONDING TO THE SIZE OF THE SERVICE LINE TO BE INSTALLED. NO TAPS WITHIN 24" OF THE END OF PIPE OR ANY FITTING.
4. **PVC PIPE:** A SERVICE SADDLE CLAMP IS REQUIRED ON ALL PVC PIPE.
5. **TAPE:** TEFLON TAPE IS REQUIRED ON ALL TAPS.

LEGEND			
NO.	ITEM	DESCRIPTION	
(A)	1" POLY PIPE	IPS POLY PIPE	
(B)	1" CORPORATION STOP	TYPE A SEE PARTS LIST*	TYPE B SEE PARTS LIST*
(C)	SERVICE SADDLE CLAMP	SEE PARTS LIST*	
(D)	WATER MAIN PIPE	(D.I., P.V.C.) *	
(E)	TRACER WIRE	TYPE K (SOFT)	

\* DI PIPE MAY BE DIRECT TAPPED, IF DIRECT TAP  
USE CC THREADS

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDs AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-01.DWG

1/9/2021 6:20 PM

NO.	REVISION DESCRIPTION	DATE

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



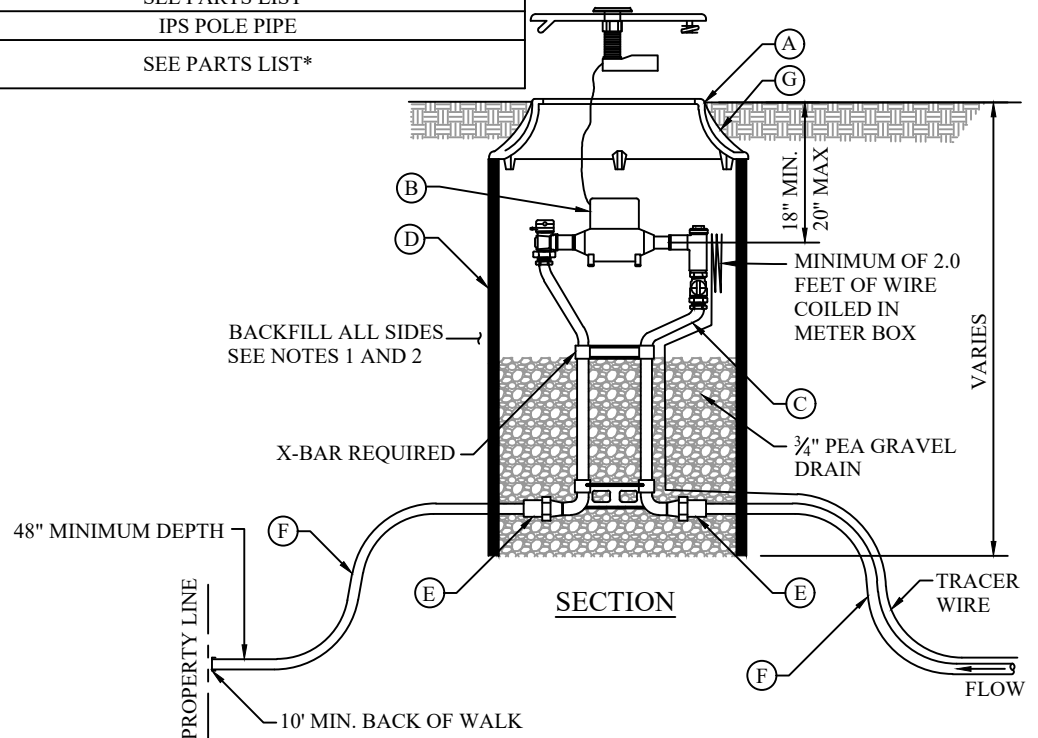
**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
**CULINARY WATER**  
**3/4" AND 1" WATER METER W/ 1" WATER SERVICE**

**CW-01**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**

LEGEND		
NO.	ITEM	DESCRIPTION
(A)	FRAME AND COVER	SEE PARTS LIST FOR SIZE INFORMATION THE WORDS "WATER METER" CAST INTO COVER RECESSED ANTENNA HOLE REQUIRED IN COVER
(B)	WATER METER	SEE PARTS LIST*
(C)	3/4" WATER METER YOKE	SEE PARTS LIST*
	1" WATER METER YOKE	SEE PARTS LIST*
(D)	METER BARREL	3/4" METER - 21" DIAM. - 36" HEIGHT WHITE HDPE BARREL 1" METER - 24" DIAM. - 36" HEIGHT WHITE HDPE BARREL 1.5" & 2" METER - 36" DIAM. - 36" HEIGHT HDPE BARREL (LANDSCAPE INSTALLATIONS ONLY)
(E)	1" CONNECTION	SEE PARTS LIST*
(F)	1" POLY PIPE	IPS POLE PIPE
(G)	WATER METER PIT ADJUSTING RING	SEE PARTS LIST*

**TYPICAL 3/4" METER**



**NOTES FOR 3/4" METER WITH 1" SERVICE LINE:**

- INSPECTION:** PRIOR TO BACKFILLING AROUND THE METER BOX, SECURE INSPECTION OF INSTALLATION BY ENGINEER.
- BACKFILLING:** INSTALL ALL BACKFILL MATERIAL PER APWA SECTION 31 05 13 IN LIFTS NOT EXCEEDING 6" AFTER COMPACTION. COMPACT EACH LIFT TO A MINIMUM RELATIVE DENSITY OF 95%.
- METER BOX:** NO GRADE RINGS ALLOWED TO RAISE METER BOX.
- METER IN TRAFFIC AREAS:** PROVIDE SAME TYPE OF METER BOX AS REQUIRED FOR 1 1/2" AND 2" SERVICE METERS (SEE CW-11).
- METER:** HERRIMAN CITY WILL PROVIDE AND INSTALL METER.
- PIPE:** INSTALL 1" IPS POLY PIPE TO 10' MIN. FROM BACK OF WALK.
- PLACEMENT:**
  - DO NOT INSTALL METER BOX UNDER DRIVEWAY APPROACHES, SIDEWALKS, OR CURB AND GUTTER
  - IN NEW CONSTRUCTION, INSTALL METER NEAR CENTER OF LOT IN PARKSTRIP. IF DRIVEWAY LOCATIONS ARE KNOWN, PLACE THE WATER SERVICE ON THE WIDE SIDE OF THE LOT.
  - 3' MIN. AWAY , FROM DRIVE APPROACH, MAILBOX, TREE, METER BOX, UTILITY BOX OR ANY OTHER OBSTRUCTION.
- INSERTS REQUIRED WITH ALL COMPRESSION FITTINGS.
- METER SETTER MUST BE PLACED AT 90° ANGLE TO STREET.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDs AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW-01A.DWG  
1/9/2021 6:18 PM

NO.	REVISION DESCRIPTION	DATE

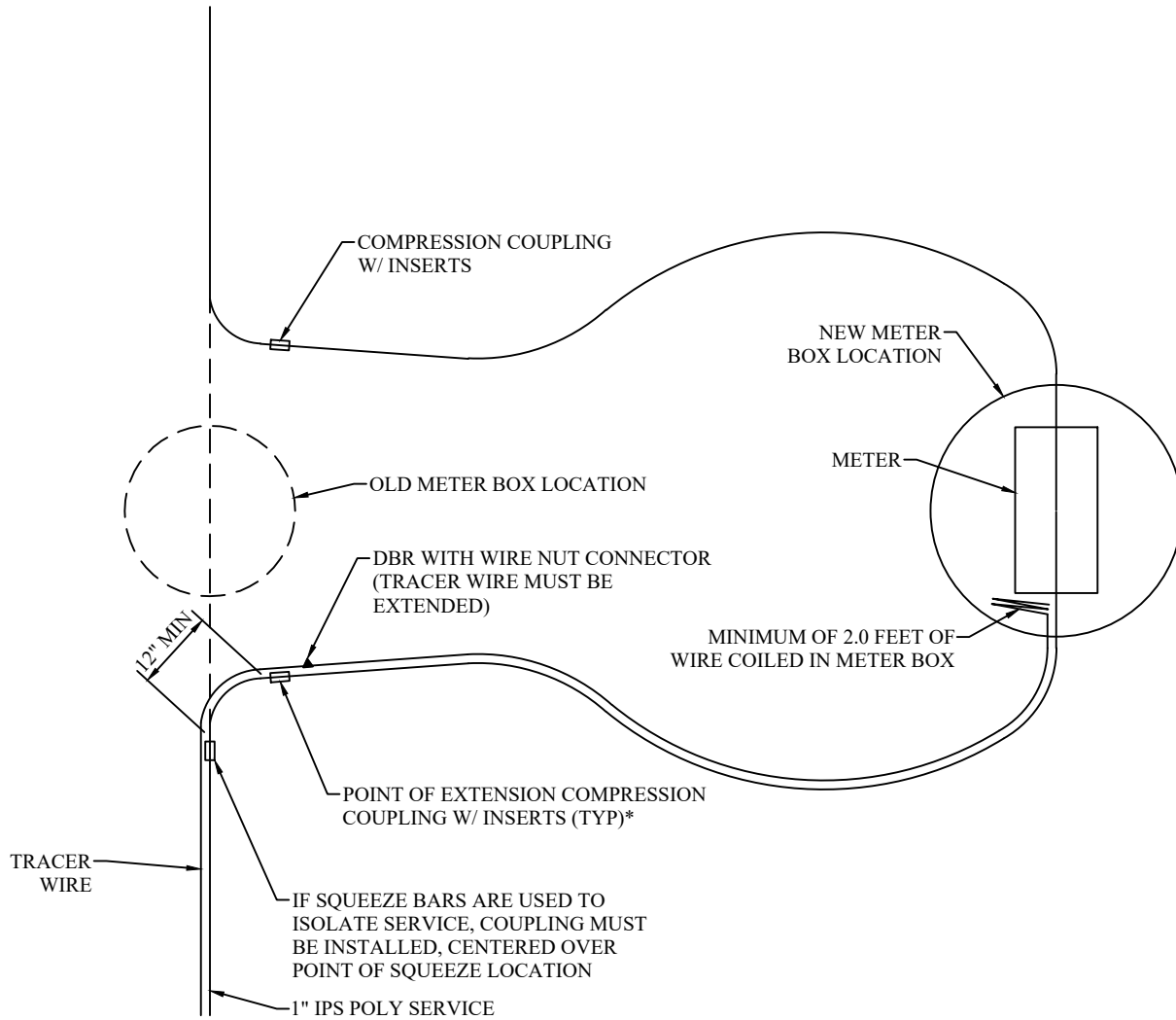
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
**CULINARY WATER**  
3/4" & 1" WATER METER W/ 1" WATER SERVICE

**CW-01A**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



**NOTES:**

1. POINT OF CONNECTION MUST BE FRESHLY CUT.
2. CRIMP LOCATION MUST BE MINIMUM OF 12" FROM POINT OF EXTENSION.
3. INSPECTION MUST BE SCHEDULED WITH ENGINEERING DEPARTMENT MINIMUM 48 HOURS IN ADVANCE. (INSPECTION MUST BE MADE BEFORE BACKFILL OF EXCAVATION)
4. ALL CONNECTIONS AND NEW FITTINGS MUST BE SHOT BY G.I.S. DEPARTMENT.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDs AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW-CW-01.DWG

1/9/2021 6:21 PM

NO.	REVISION DESCRIPTION	DATE

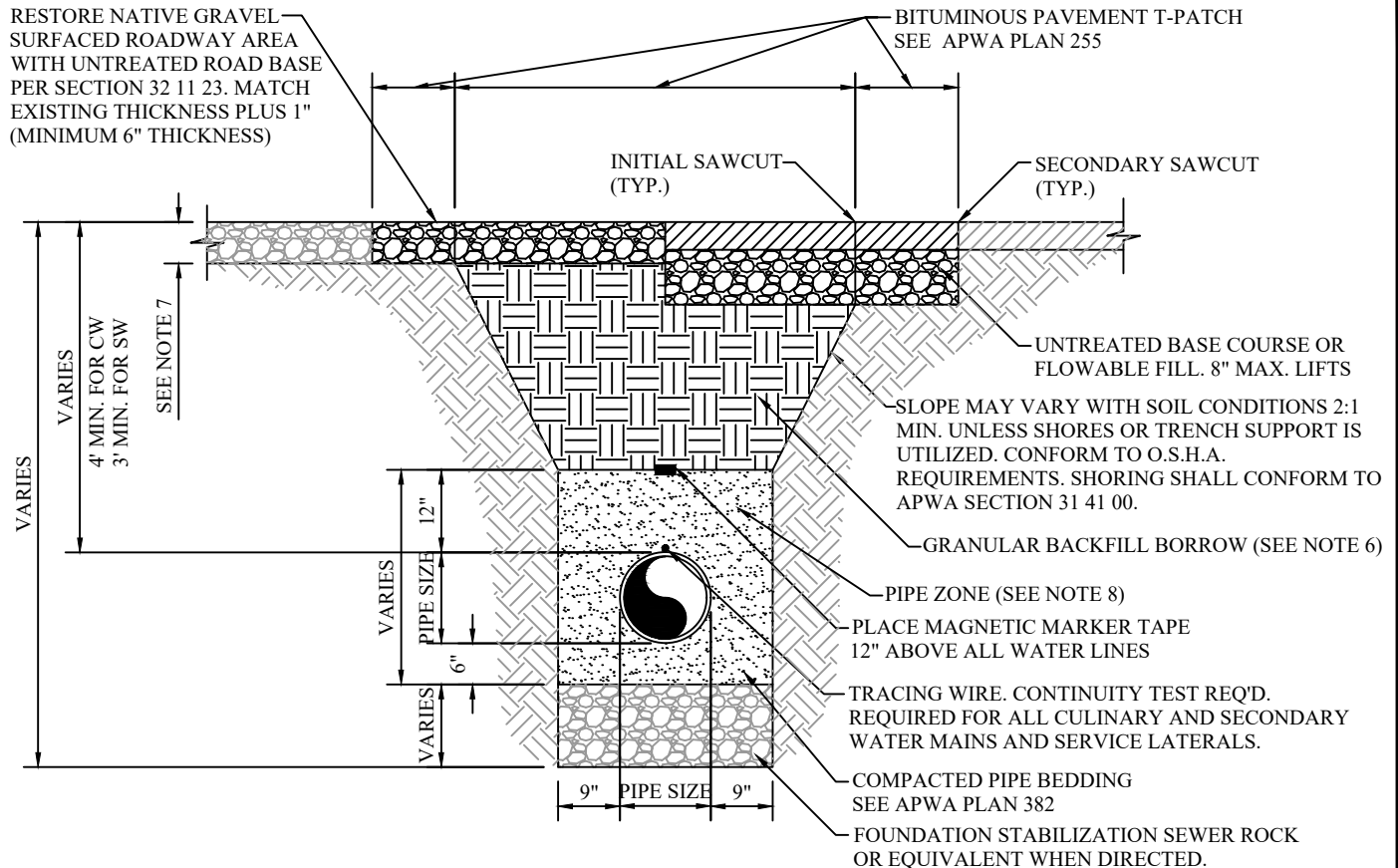
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
 CULINARY WATER  
 WATER SERVICE RELOCATION

**CW-01B**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



## TYPICAL TRENCH

### NOTES:

- ADDITIONAL PAVEMENT REMOVAL:** REMOVE ADDITIONAL PAVEMENT TO A PAINTED LANE STRIPE, A LIP OF GUTTER, A CURB, AN EXISTING PAVEMENT PATCH, OR AN EDGE OF PAVEMENT IF SUCH A FEATURE IS WITHIN 2' OF THE SECOND SAW-CUT. IF MORE THAN 50% OF THE PERMANENT SURFACING OF A TRAVELED LANE IS IMPACTED BY THE EXCAVATION, THE ENTIRE LANE WIDTH SHALL BE SAW-CUT, REMOVED, AND REPLACED.
- TACK COAT:** FULL TACK COAT COVERAGE ON ALL VERTICAL SURFACES PER SECTION 32 12 14.
- ASPHALT PAVEMENT:** USE ASPHALT H.M.A SPECIFIED IN SECTION 32 12 05 AND SECTION 32 12 03.
  - INSTALL IN LIFTS NO GREATER THAN 3" AFTER COMPACTION.
  - COMPACT EACH LIFT IN CONFORMANCE WITH SECTION 32 12 03.
  - PLANE OFF SURFACE DISTORTIONS THAT EXCEED 1/4" DEVIATION IN 10'. COAT PLANED SURFACES WITH A CATIONIC OR ANIONIC EMULSION AS APPROVED BY CITY ENGINEER.
  - USE 1/2" GRADATION PER SECTION 32 12 05.
- CRACK SEAL TRENCH JOINTS, COORDINATE WITH CITY ENGINEERING.
- EQUIPMENT:** ALL ASPHALT PAVEMENT SHALL BE INSTALLED WITH MECHANICAL PAVING EQUIPMENT UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
- TRENCH BACKFILL SHALL CONFORM TO APWA SECTION 33 05 20 "BACKFILLING TRENCHES." SPECIFICALLY SUBSECTION 2.1, "BACKFILL MATERIALS." USE "GRANULAR BACKFILL BORROW" PER APWA SECTION 31 05 13 FOR ALL AREAS UNDER EXISTING, NEW OR FUTURE ROADWAYS OR TRAILS.
- ASPHALT AND UBC THICKNESS SHALL BE THE MINIMUM THICKNESS OUTLINED IN HERRIMAN CITY STANDARD, OR ASPHALT AND UBC THICKNESS SHALL BE 1 INCH THICKER THAN THE EXISTING SECTION, WHICHEVER IS MORE STRINGENT.
- PIPE ZONE HAUNCHING AND BACKFILL MATERIAL SHALL BE SAND PER APWA SECTION 31 05 13. LIFTS AND COMPACTION SHALL BE PER APWA STANDARD PLAN 382.

1/9/2021 6:26 PM Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDs AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-02.DWG

NO.	REVISION DESCRIPTION	DATE

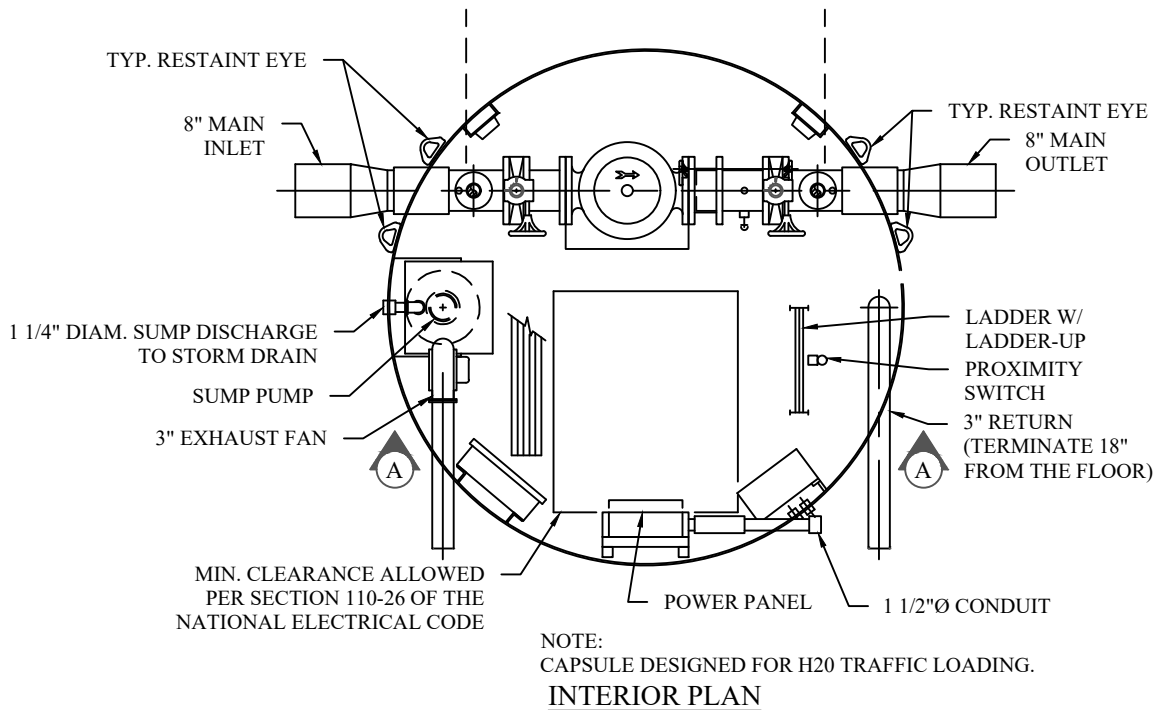
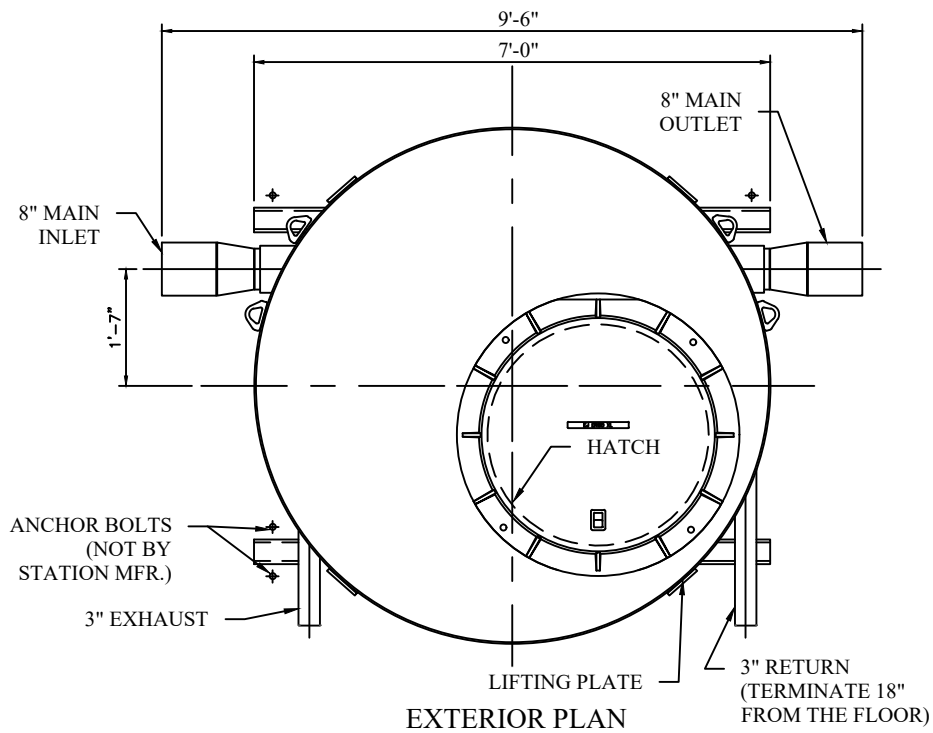
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
**CULINARY WATER**  
CULINARY AND SECONDARY WATER TRENCH

**CW-02**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



**GENERAL NOTES:**

1. ALL PIPING AND EQUIPMENT SHALL BE ADEQUATELY SUPPORTED AND BRACED
2. CONTRACTOR SHALL CONFORM TO THE MANUFACTURE PRODUCT SUBMITTAL.
3. INLET AND OUTLET PRESSURE SETTINGS SHALL BE VERIFIED WITH HERRIMAN CITY PRIOR TO ORDERING ASSEMBLY.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDs AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-07.DWG

1/9/2021 6:30 PM

NO.	REVISION DESCRIPTION	DATE

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.

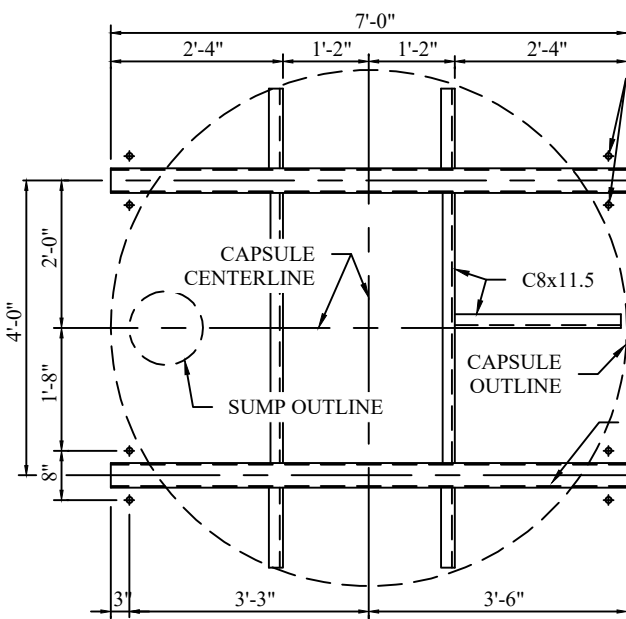
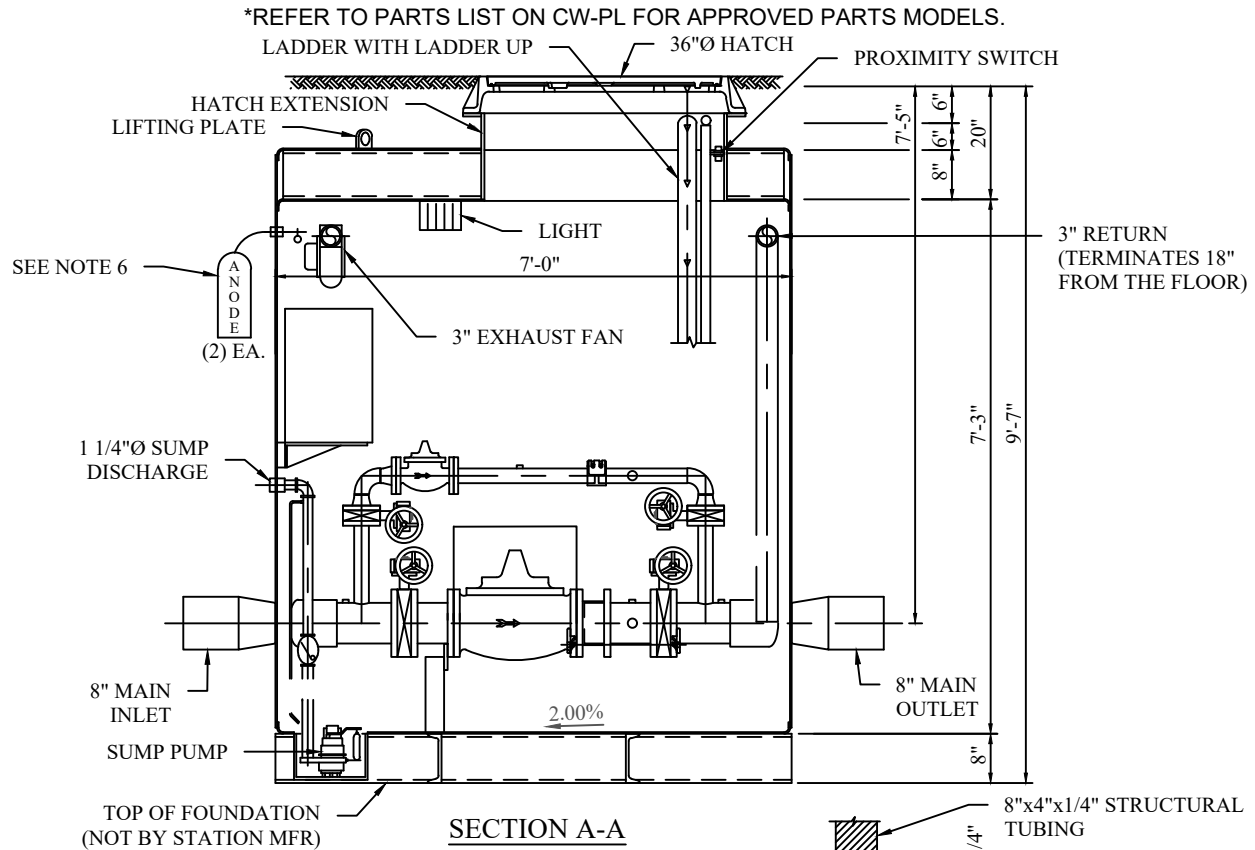


**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
 CULINARY WATER  
 PRESSURE REDUCING VALVE (PRV) EFI STATION

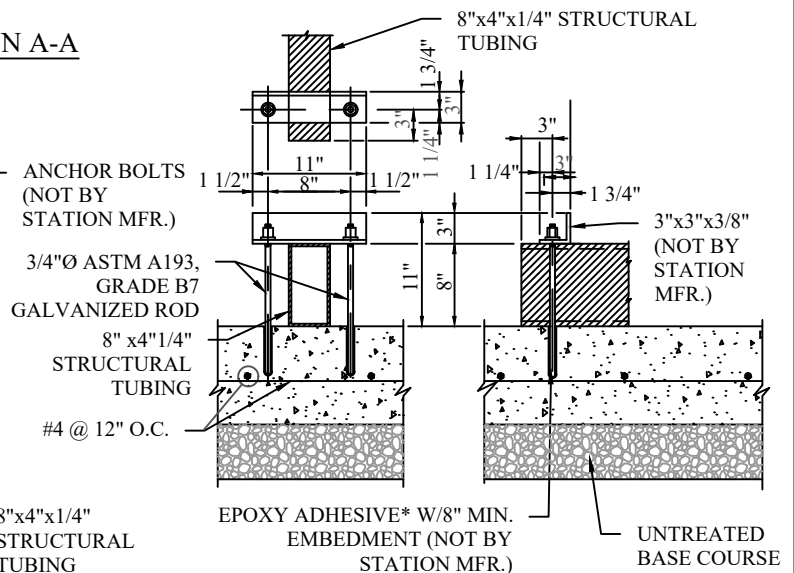
**CW-07**

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDs AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-07.DWG

1/9/2021 6:34 PM



**SKID PLAN**



**TYPICAL ANCHOR DETAIL**

**NOTES:**

1. ANCHOR ANGLE, BOLTS, NUTS, & ADHESIVE CAPSULE NOT BY STATION MFR. CONCRETE MUST HAVE A MINIMUM F<sub>c</sub> OF 3500 PSI FOR PROPER ANCHORAGE.
2. PAD IS TO BE SIZED TO ACCOMMODATE THE PRV SIZE.

**CONTRACTORS NOTES:**

1. INSTALLING CONTRACTOR PROVIDED EXHAUST AND AIR VENT PIPING SHALL BE GALVANIZED STEEL.
2. EXHAUST AND AIR VENT CAPS PROVIDED BY INSTALLING CONTRACTOR, SHALL BE MUSHROOM TYPE.
3. INSTALLING CONTRACTOR SHALL PROVIDE FULL METER ENCLOSURE (NEMA 4X STAINLESS STEEL) FOR METER BASE AND PROVIDE POWER TO METER BASE. PRESSURE REDUCING STATION SHALL BE FULLY FUNCTIONING STATION.
4. SUMP PUMP AND DEHUMIDIFIER MUST BE POWERED UP AND TURNED ON IMMEDIATELY AFTER STATION IS INSTALLED.
5. VAULT FLOOR IS LEVEL. PAD MUST BE SET AT 2% GRADE TOWARDS DRAIN. DO NOT SHIM STATION. IT IS INTENDED THAT THE MAIN FLOOR MEMBERS BE IN CONTINUOUS CONTACT WITH THE CONCRETE PAD.
6. ANODE SHALL BE PLACED WITHIN RIGHT OF WAY BUT OUTSIDE OF ROADWAY (E.G. PARKSTRIP). AN ANODE TEST STATION MUST BE INCLUDED.

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



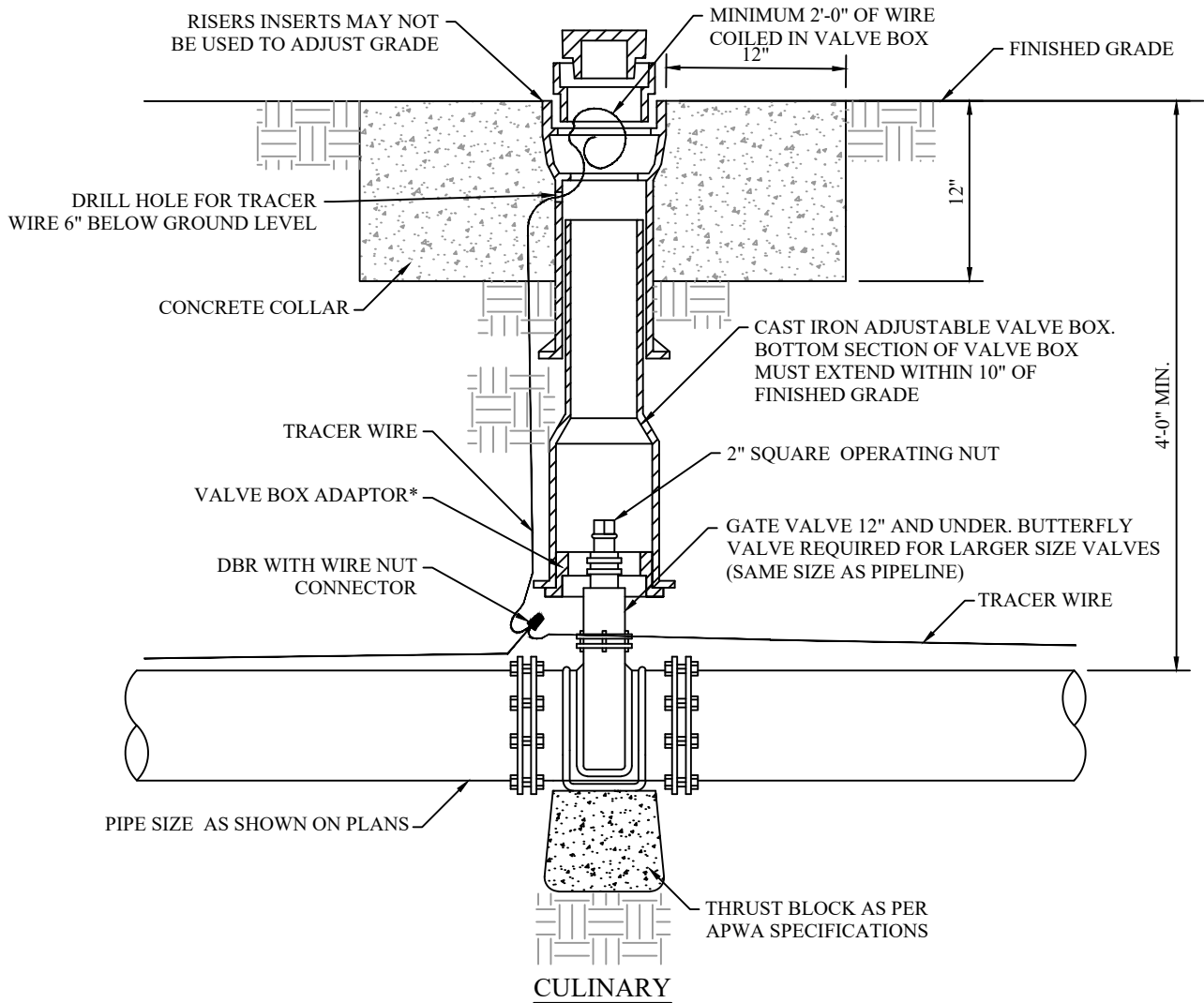
**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
CULINARY WATER

PRESSURE REDUCING VALVE (PRV) EFI STATION

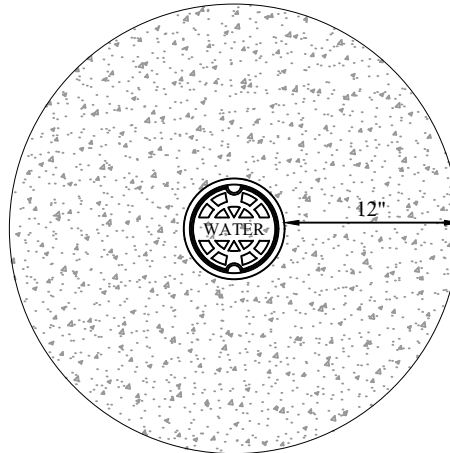
**CW-07A**

NO.	REVISION DESCRIPTION	DATE

**\*REFER TO PARTS LIST ON CW-00 FOR APPROVED PARTS MODELS.**



CULINARY



PLAN

**NOTES:**

1. VALVE BOX SHALL BE CLEAN, PLUMB AND PROPERLY ALIGNED ON THE VALVE.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDS AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-08.DWG

1/9/2021 6:38 PM

NO.	REVISION DESCRIPTION	DATE

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



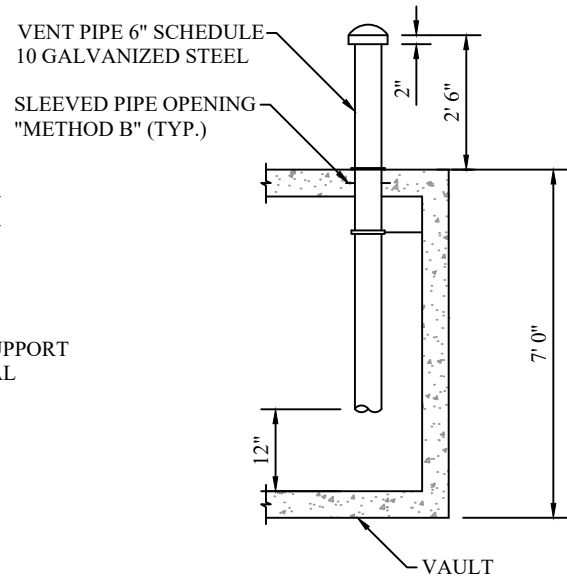
**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
**CULINARY WATER**  
**WATER VALVE**

**CW-08**

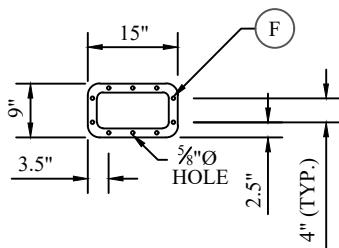


Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDS AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-09.DWG

## MUSHROOM VENT CAP DETAIL

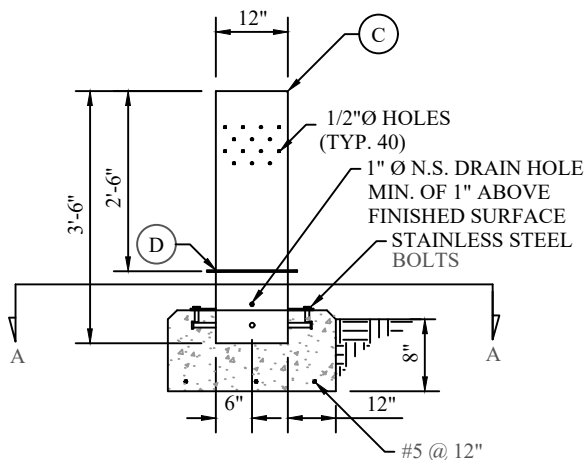


1. ALL VAULT PENETRATIONS MUST BE SEALED USING LINK SEAL OR APPROVED EQUAL.

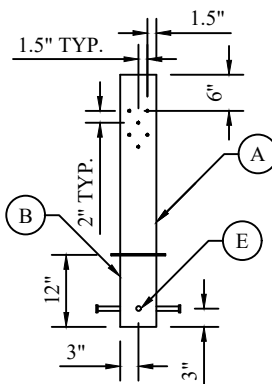


PARTS LIST		
ITEM	QTY	DESCRIPTION
(A)	1	TS 1/4" x 12" x 6" x 2'-6"
(B)	1	TS 1/4" x 12" x 6" x 12"
(C)	1	1/4" PL - 6" x 12"
(D)	2	1/4" PL - 9" x 15"
(E)	4	3/4" DIAM. x 4" H.S.A.
(F)	10	1/2" DIAM. x 3" BREAKAWAY BOLTS

1. SIZE OF VENT COVER CAN VARY DEPENDING ON SIZE OF VENT.
2. OPEN TO AIR- PLACE A NO. 14 MESH S.S. SCREEN OVER THE OPEN END OF PIPE. ATTACH W/S.S. FASTENERS.
3. HOT DIPPED GALVANIZED STEEL STAND PIPE FOR AIR VENT.
4. 1 1/2" MIN. CHAMFER ALL AROUND CONCRETE BASE.
5. 36" CONCRETE BASE FRONT OF WALK TO TOP BACK OF CURB.
6. WHEN ATTACHING NO. 14 SCREEN TO VENT COVER USE STAINLESS STEEL FASTENERS.
7. TOP BACK OF CURB TO VENT COVER SHALL BE A MINIMUM DISTANCE OF 18".



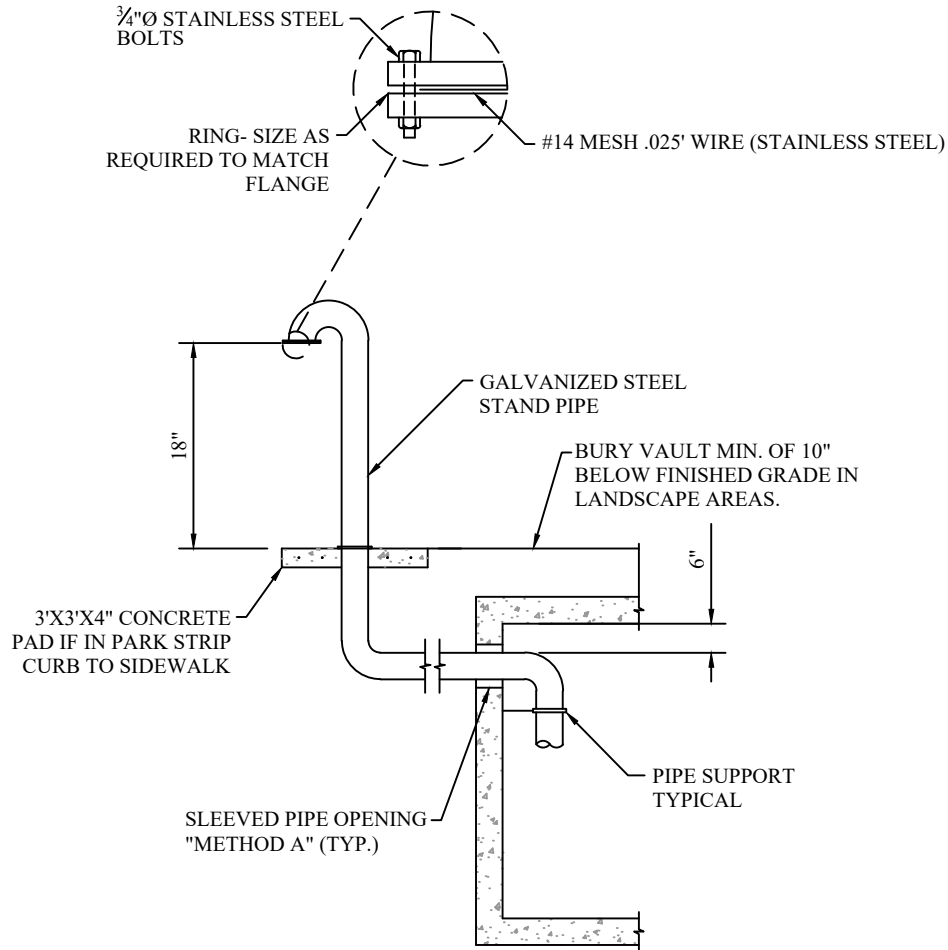
SIDE VIEW A-A  
(ITEMS REMOVED FOR CLARITY)





**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**

GOOSENECK VENT DETAIL



Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDS AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-09.DWG

1/9/2021 6:44 PM

NO.	REVISION DESCRIPTION	DATE

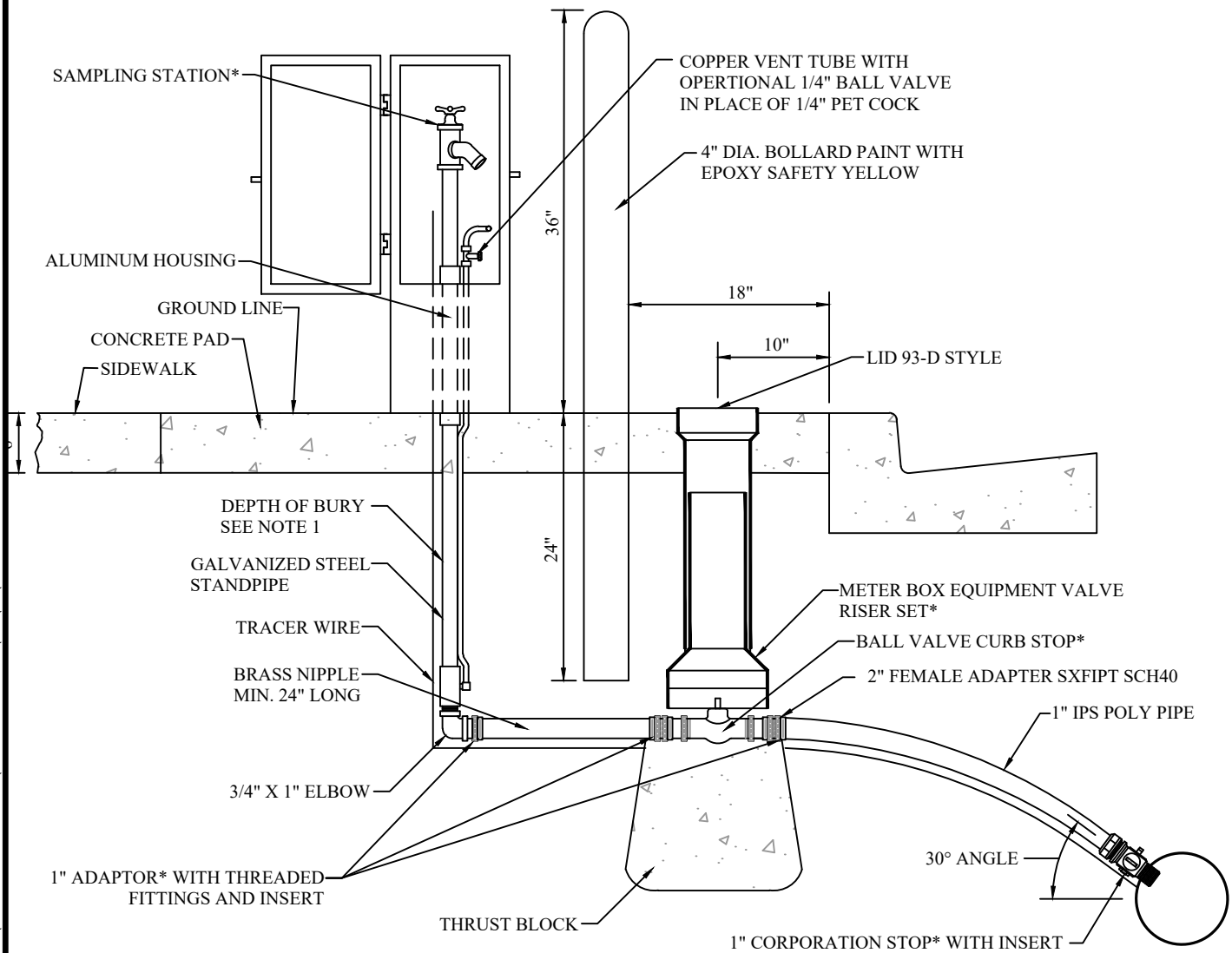
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
**CULINARY WATER**  
**VENT DETAIL**

**CW-09A**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



### SECTION VIEW

#### NOTES:

1. SAMPLING STATIONS SHALL BE 4'-0" BURY, WITH A 3/4" FIP INLET, AND A 3/4" UNTHREADED NOZZLE.
2. ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NONREMOVABLE, ALUMINUM- CAST HOUSING.
3. WHEN OPENED, THE STATION SHALL REQUIRE NO KEY FOR OPERATION, AND THE WATER WILL FLOW IN AN ALL BRASS WATERWAY.
4. ALL WORKING PARTS WILL ALSO BE OF BRASS AND BE REMOVABLE FROM ABOVE GROUND WITH NO DIGGING.
5. A COPPER VENT TUBE WILL ENABLE EACH STATION TO BE PUMPED FREE OF STANDING WATER TO PREVENT FREEZING AND TO MINIMIZE BACTERIA GROWTH.
6. ALL DEVELOPERS ARE REQUIRED TO INSTALL A SAMPLING STATION FOR EVERY 80 LOTS OR ONE PER DEVELOPMENT FOR DEVELOPMENTS SMALLER THAN 80 LOTS.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDs AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-10.DWG

1/9/2021 6:53 PM

NO.	REVISION DESCRIPTION	DATE

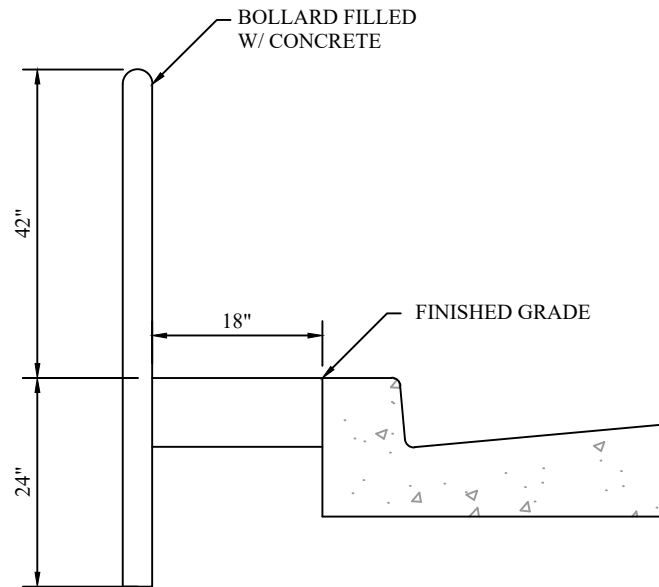
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



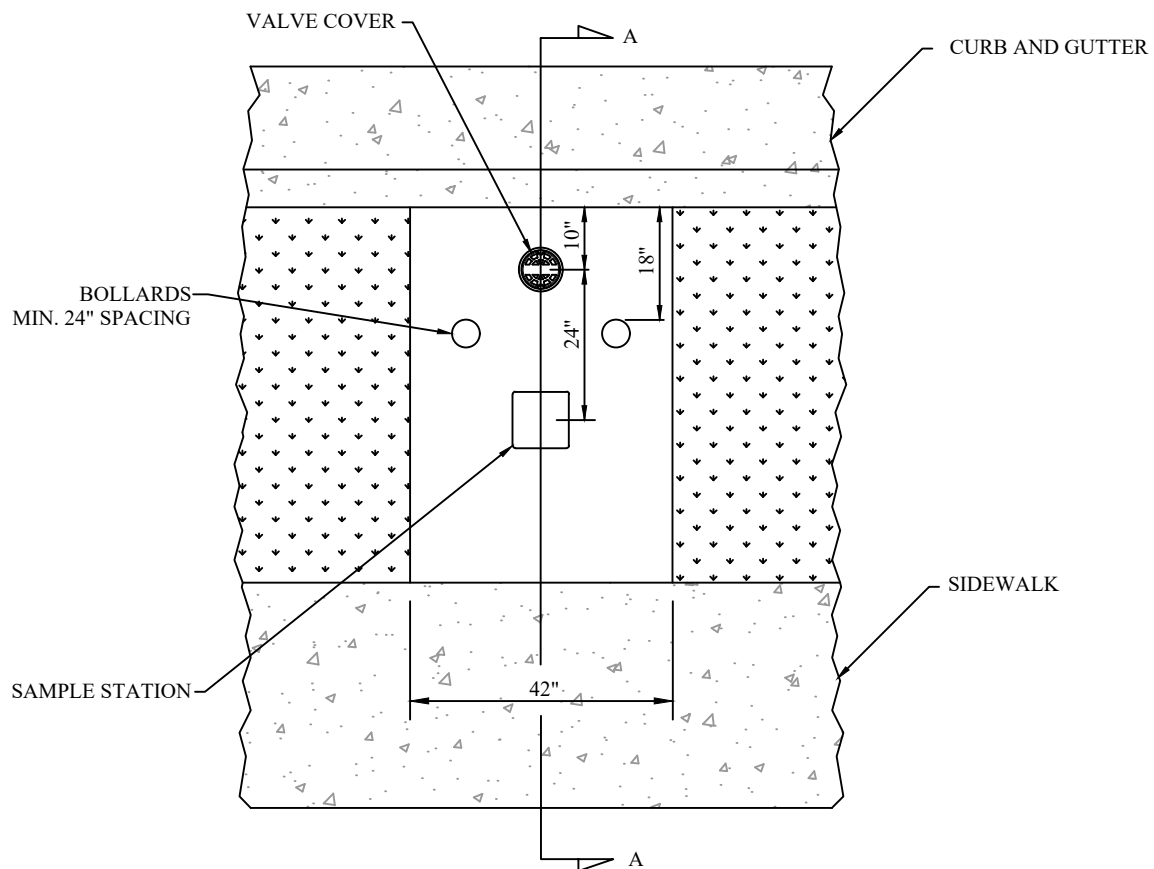
**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
 CULINARY WATER  
 SAMPLING STATION

**CW-10**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



**SECTION A-A**



**PLAN VIEW**

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDS AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-10.DWG

1/9/2021 6:53 PM

NO.	REVISION DESCRIPTION	DATE

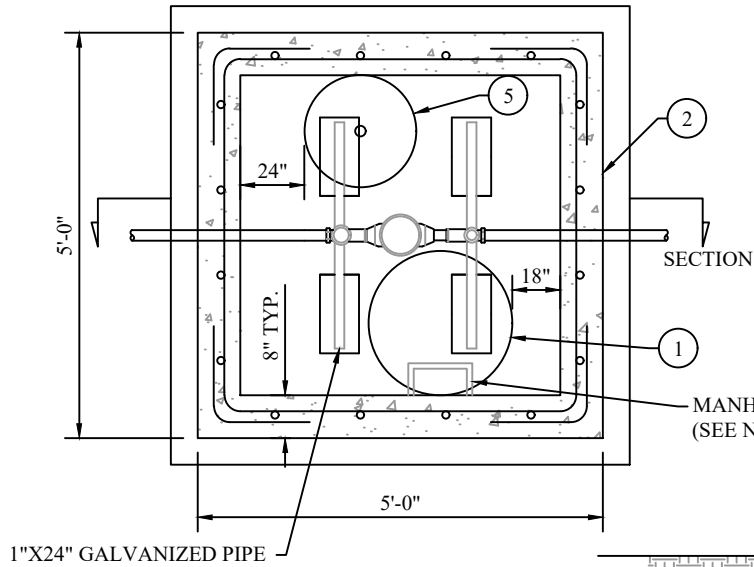
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
 CULINARY WATER  
 SAMPLING STATION

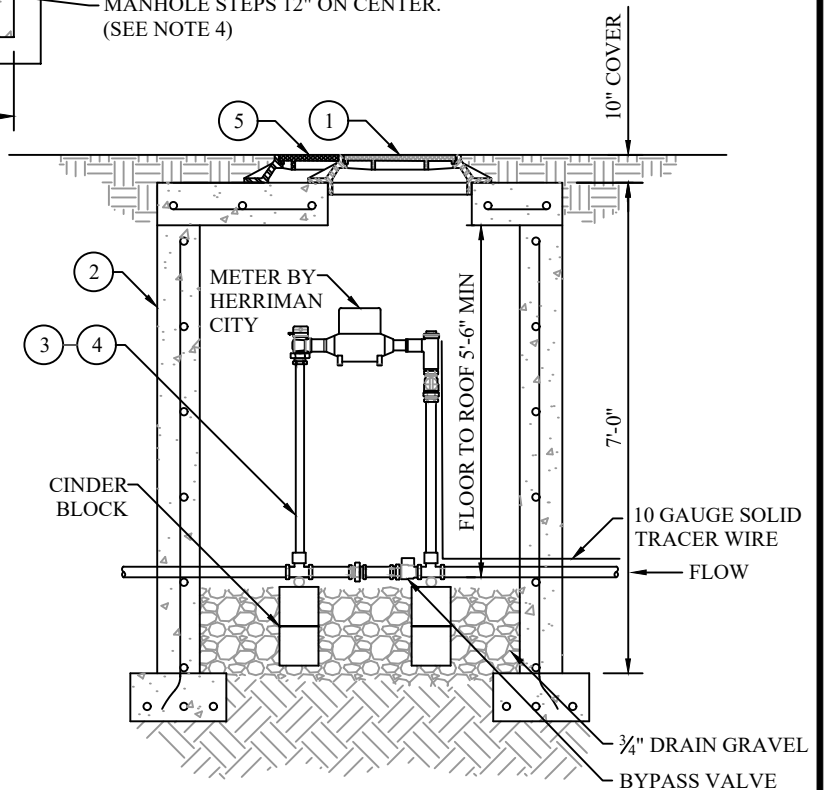
**CW-10A**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



**PLAN**

LEGEND		
NO.	ITEM	DESCRIPTION
①	30" FRAME & COVER	APWA PLAN NO. 502
②	CONCRETE BOX	APWA PLAN NO. 522
③	1-1/2" CUSTOM SETTER WITH BYPASS	SEE PARTS LIST*
④	2" CUSTOM SETTER WITH BYPASS	SEE PARTS LIST*
⑤	23" FRAME & COVER W/2" HOLE	SEE CW-01A
⑥	METER BARREL	SEE CW-01



**SECTION**

**NOTES:**

- ALL VAULTS THAT REQUIRE MECHANICAL OR ELECTRICAL COMPONENTS SHALL BE EQUIPPED WITH TWO 120 VAC/ GFCI COMMERCIAL GRADE RECEPTACLES WITH WATER TIGHT COVERS, A 100 WATT INCANDESCENT VAPOR TIGHT LED LIGHT FIXTURE WITH PROTECTIVE CAGE, A FRACTIONAL HP HERMETICALLY SEALED EXHAUST FAN TO REMOVE TOTAL AIR VOLUME 30 TIMES PER HOUR, AND ALL CONDUIT SHALL BE RIGID STEEL. THE FAN AND LIGHT SWITCHES SHALL BE LOCATED WITH ARM'S REACH OF THE ENTRANCE. A 100 AMP SERVICE PANEL SHALL BE PROVIDED.
- WHEN VAULTS ARE LOCATED IN PAVEMENT, TRAFFIC RATED LIDS ARE REQUIRED.
- ALL 1 1/2" AND 2" METER VAULTS SHALL BE 5' X 5' X 5'-6" AND SHALL HAVE A 30" RING AND LID, 23" STANDARD METER BOX RING AND LID AND STAIRS. ALL VAULTS IN LANDSCAPED AREAS MUST HAVE A MINIMUM OF 10" OF COVER TO FINISHED GRADE.
- FIRST MANHOLE STEP MUST BE PLACED WITHIN 24" OF FINISHED GRADE.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDs AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW-11.DWG

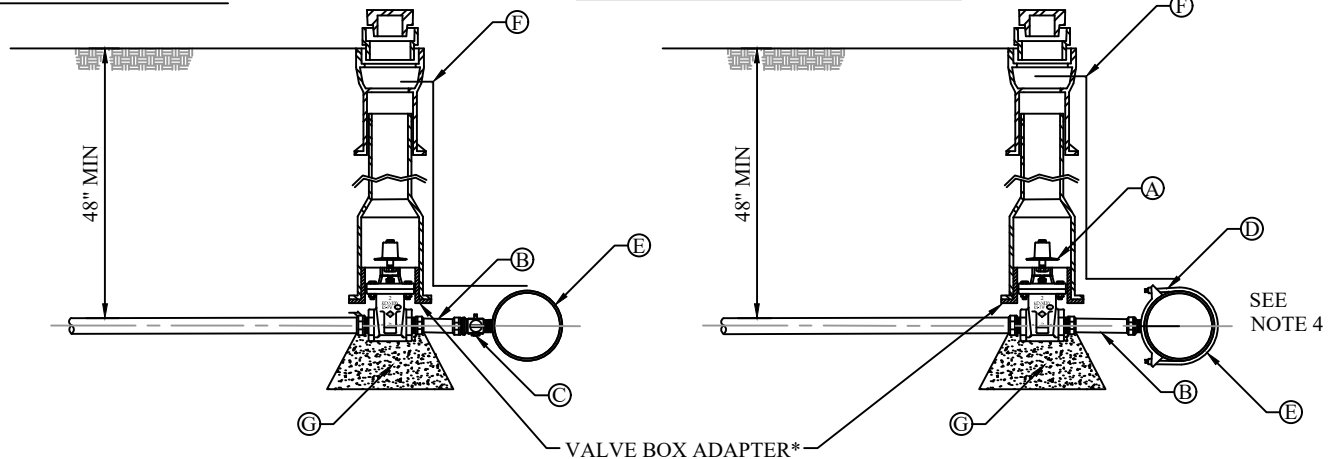
1/9/2021 6:57 PM

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.		 <p><b>HERRIMAN CITY</b> ENGINEERING DEPARTMENT CULINARY WATER 1 1/2" AND 2" METER</p>	CW-11
NO.	REVISION DESCRIPTION		

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**

**TYPE B-DIRECT TAP**

**TYPE A-SADDLE CLAMP TAP**



**TYPICAL 1- 1/2" AND 2" SERVICE TAPS**

**NOTES:**

- ALL FITTINGS SHALL BE COMPRESSION FITTINGS WITH INSERTS.
- REFER TO CW-08 FOR VALVE BOX DETAILS.

LEGEND		
NO.	ITEM	DESCRIPTION
(A)	GATE VALVE	2"
(B)	BRASS NIPPLE	BRASS NIPPLE. 6" MAX. LENGTH
(C)	1-1/2" OR 2" CORPORATION STOP	SEE PARTS LIST*
(D)	SERVICE SADDLE CLAMP	SEE PARTS LIST*
(E)	WATER MAIN PIPE	SEE NOTE 4
(F)	TRACER WIRE	
(G)	THRUST BLOCK	

**NOTES FOR 1- 1/2" AND 2" SERVICE TAPS:**

- INSPECTION:** PRIOR TO BACKFILLING, SECURE INSPECTION OF INSTALLATION BY CITY.
- BACKFILL:** INSTALL AND COMPACT ALL BACKFILL MATERIAL PER APWA SECTION 31 05 20.
- TAPPING:** PLACE TAPS A MIN. 24" APART. USE A TAPPING TOOL WHICH IS SIZED CORRESPONDING TO THE SIZE OF THE SERVICE LINE TO BE INSTALLED. NO TAPS WITHIN 24" OF THE END OF PIPE OR ANY FITTING.
- PVC PIPE:** A SERVICE SADDLE CLAMP IS REQUIRED ON ALL PVC PIPE.  
**DUCTILE IRON PIPE:** DUCTILE IRON PIPE MAY BE DIRECT TAPPED USING CC THREADS.
- TAPE:** TEFLON TAPE IS REQUIRED ON ALL TAPS AND THREADED FITTINGS

**NOTES FOR 1 1/2" AND 2" SERVICE LINE:**

- INSPECTION:** PRIOR TO BACKFILLING, SECURE INSPECTION OF INSTALLATION BY ENGINEER.
- BACKFILLING:** INSTALL ALL BACKFILL MATERIAL PER APWA SECTION 31 05 20 IN LIFTS NOT EXCEEDING 6" AFTER COMPACTION. COMPACT EACH LIFT TO A MIN. RELATIVE DENSITY OF 95%.
- METER:** HERRIMAN CITY WILL PROVIDE AND INSTALL METER.
- PIPE:** INSTALL IPS POLY PIPE TO PROPERTY LINE.
- PLACEMENT:**  
A) DO NOT INSTALL METER BOX UNDER DRIVEWAY APPROACHES, SIDEWALKS, OR CURB AND GUTTER.  
B) IN NEW CONSTRUCTION, INSTALL METER NEAR CENTER OF LOT IN PARKSTRIP.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDs AND REQ UPDATE\5-UPDATED DELIVERABLE\STANDARD DRAWINGS\CAD\CW\CW-11A.DWG 1/9/2021 6:58 PM

NO.	REVISION DESCRIPTION	DATE

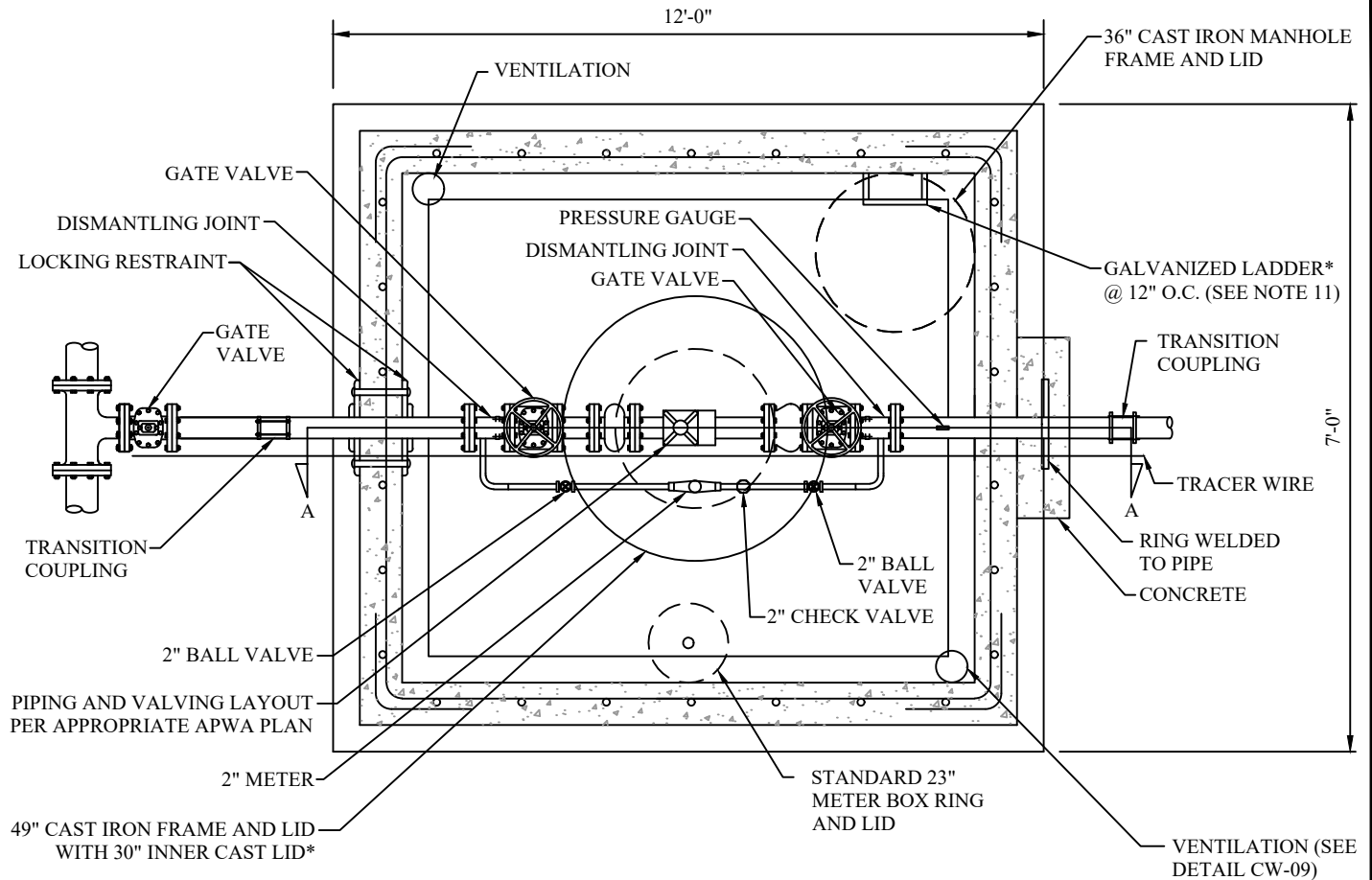
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
CULINARY WATER  
1 1/2" AND 2" METER

**CW-11A**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



**PLAN VIEW**

**NOTES:**

1. ALL VAULT PENETRATIONS MUST BE SEALED USING LINK SEAL OR APPROVED EQUAL.
2. METER VAULTS SHALL MEET HERRIMAN CITY STANDARDS 4.10.19
3. ALL 3" AND LARGER METER VAULTS SHALL BE CONSTRUCTED WITH A 2" BY-PASS LINE. THE BY-PASS LINE SHALL HAVE A 2" METER\* (2) ISOLATION VALVES, AND A DISMANTLING JOINT. BY-PASS PIPING MUST BE ALL BRASS.
4. THE PIPING AND VALVING LAYOUTS SHALL FOLLOW THOSE FOUND IN THE APWA MANUAL PLAN NO. 523, 525, 527, AND 529. HOWEVER THE HERRIMAN CITY ENGINEER WILL GIVE FINAL APPROVAL OF DESIGN. MAINLINE PIPING SHALL BE D.I.P. TO TRANSITION COUPLINGS.
5. PIPE SUPPORTS\* SHALL BE SPACED SUCH THAT THE MAXIMUM SPAN BETWEEN SUPPORTS AND THE WALL IS 6'-0".
6. RESTRAINTS SHALL BE EITHER A LOCKING RESTRAINT OR A THRUST RESTRAINT.
7. 3" METERS AND LARGER SHALL BE PURCHASED AND INSTALLED BY THE DEVELOPER OR CONTRACTOR AND THE CITY WILL INSPECT. METER BRAND AND TYPE MUST BE APPROVED BY CITY.
8. VAULT AND LID- VAULT APWA NO. 505 STANDARD (REBAR)  
RATED- PEDESTRIAN H:10  
TRAFFIC H:20
9. PAINT ALL BLACK DIP PIPE EPOXY COATED SAFETY BLUE.
10. EPOXY PAINT ALL DIP AND APPURTENANCES IN ACCORDANCE TO SECTION 5.
11. FIRST STEP MUST BE PLACED WITHIN 24" OF FINISHED GRADE.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDS AND REQ UPDATE\5-UPDATED DELIVERABLE\CAD\CW-CW-12.DWG

1/13/2021 4:04 AM

NO.	REVISION DESCRIPTION	DATE

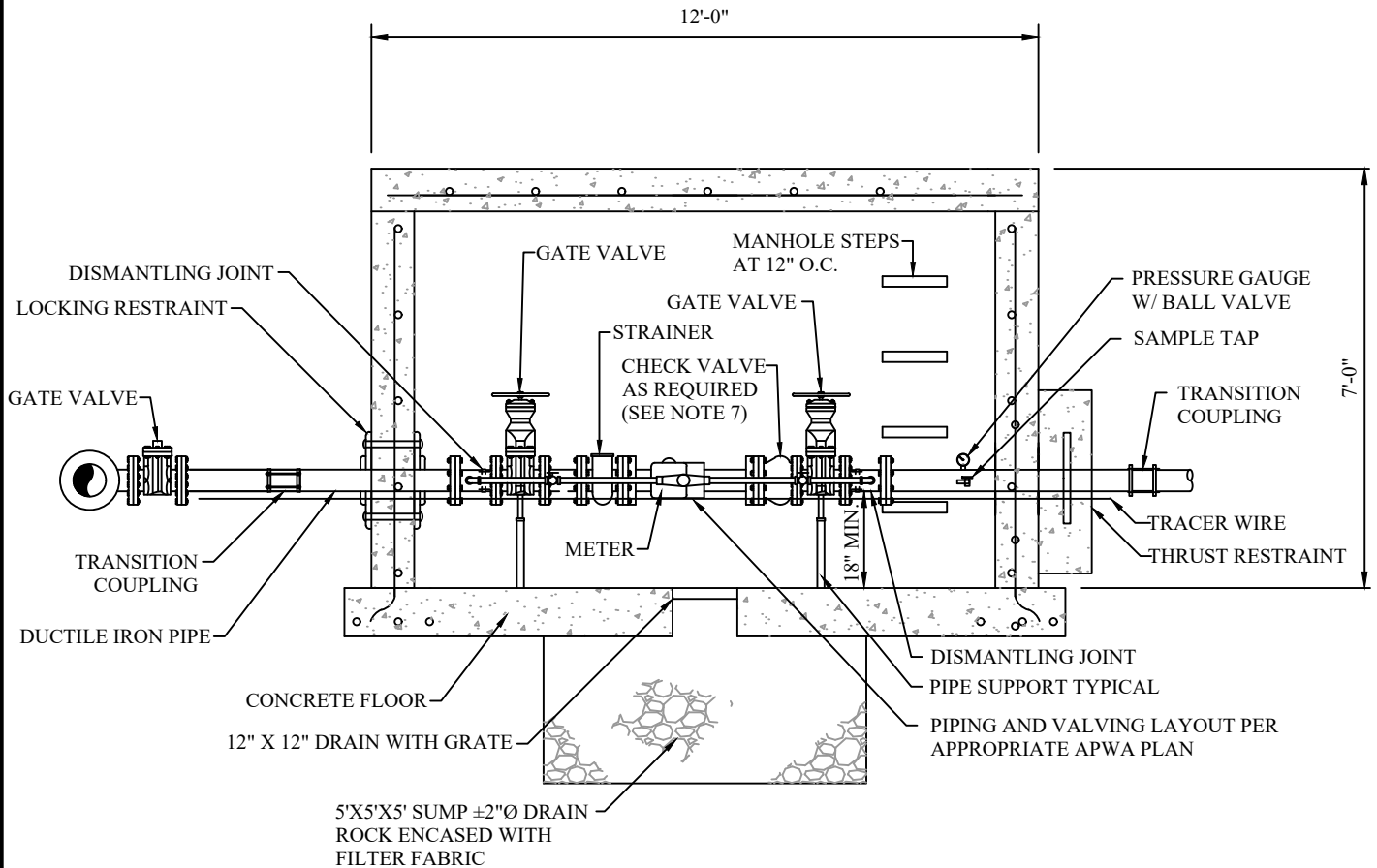
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
**CULINARY WATER**  
**TYPICAL 3" + METER VAULT**

**CW-12**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



### SECTION A-A

#### NOTES:

- DISMANTLING JOINTS SHALL BE USED ON ALL PIPING BETWEEN ISOLATION GATE VALVES FOR CASE OF MAINTENANCE; PLACEMENT SHALL BE APPROVED BY THE CITY ENGINEER. SEE PARTS LIST FOR APPROVED DISMANTLING JOINTS.
- ALL VAULTS THAT REQUIRE MECHANICAL OR ELECTRICAL COMPONENTS SHALL BE EQUIPPED WITH TWO 120 VAC/ GFCI COMMERCIAL GRADE RECEPTACLES WITH WATER TIGHT COVERS, A 100 WATT INCANDESCENT VAPOR TIGHT LED LIGHT FIXTURE WITH PROTECTIVE CAGE, A FRACTIONAL HP HERMETICALLY SEALED EXHAUST FAN TO REMOVE TOTAL AIR VOLUME 30 TIMES PER HOUR, AND ALL CONDUIT SHALL BE SCHEDULE 80 PVC. THE FAN AND LIGHT SWITCHES SHALL BE LOCATED WITH ARM'S REACH OF THE ENTRANCE. A 100 AMP SERVICE PANEL SHALL BE PROVIDED.
- ALL ISOLATION VALVES LOCATED INSIDE VAULTS SHALL BE HAND OPERATED WITH A WHEEL.
- ALL VAULTS SHALL BE EQUIPPED WITH INTAKE AND EXHAUST VENTS. THE VENTS SHALL BE LOCATED AT OPPOSITE ENDS OF THE VAULT WITH THE INTAKE TERMINATING 12 INCHES FROM THE FLOOR AND THE EXHAUST TERMINATING WITHIN 12 INCHES OF THE CEILING.
- WHEN VAULTS ARE LOCATED IN PAVEMENT, TRAFFIC RATED LIDS ARE REQUIRED.
- ALL VAULTS SHALL HAVE 23" STANDARD METER BOX RING AND LID FOR METER READING EQUIPMENT. ALL VAULTS IN LANDSCAPED AREA MUST HAVE A MINIMUM OF 10" OF COVER TO FINISHED GRADE.
- CHECK VALVE ONLY REQUIRED IF INSTALLED ON A CLOSED SYSTEM. IF WATER SYSTEM LOOPING IS REQUIRED, DO NOT INSTALL A CHECK VALVE.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDS AND REQ UPDATE\5-UPDATED DELIVERABLE\CAD\CW-CW-12.DWG

1/13/2021 4:05 AM

NO.	REVISION DESCRIPTION	DATE

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.

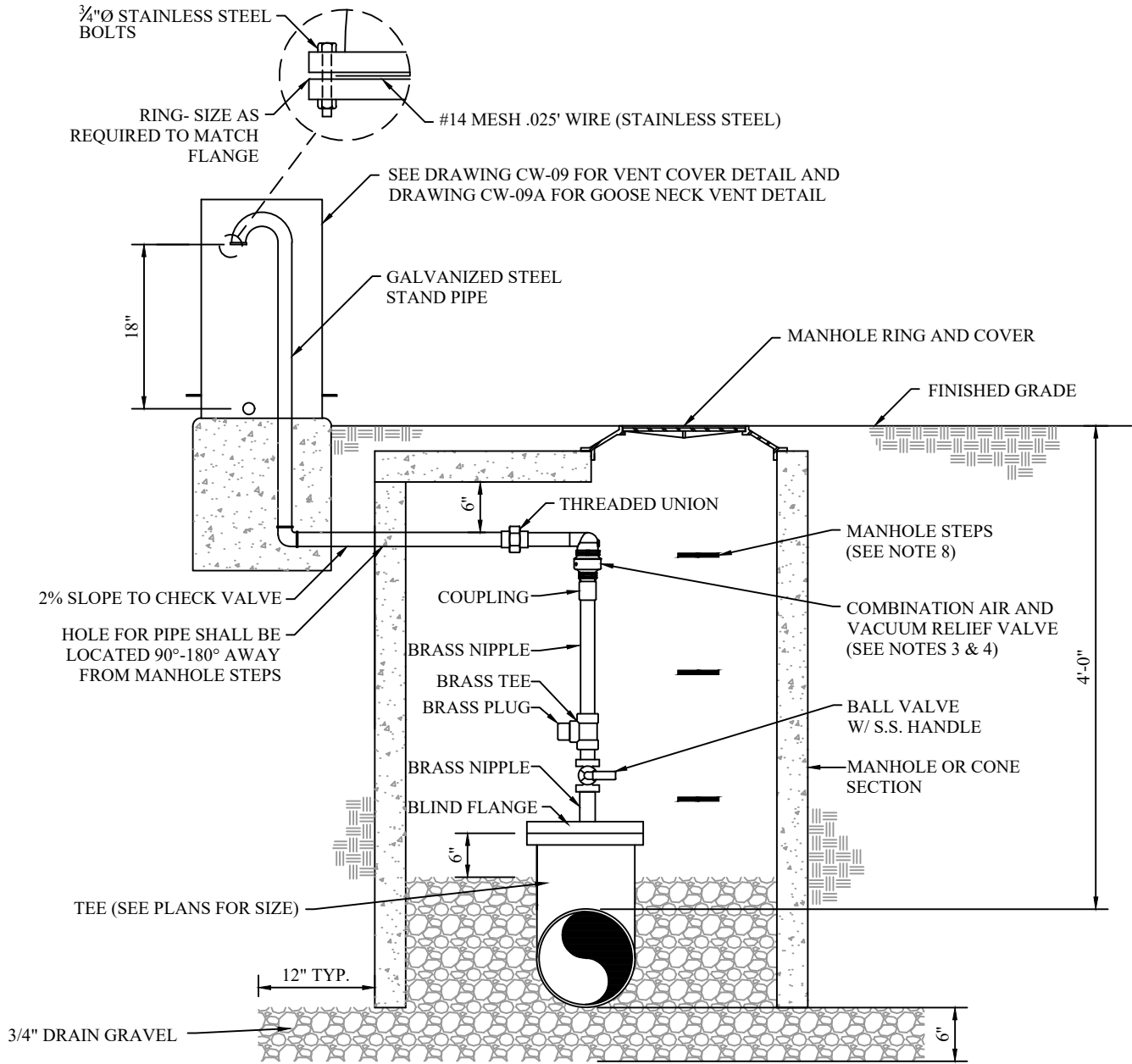


**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
 CULINARY WATER  
 TYPICAL 3" + METER VAULT

**CW-12A**



**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



**NOTES:**

- VENT SHALL BE LOCATED IN PARK STRIP OR CITY PROPERTY.
- SCHEDULE 80 PVC OR POLY PIPE MAY BE USED BETWEEN AIR/ VAC VALVE AND THE STAND PIPE.
- SEE PARTS LIST FOR APPROVED COMBINATION AIR VALVES.
- AIR VALVE SHALL BE SIZED BY PROFESSIONAL ENGINEER OF RECORD. (2 INCH MINIMUM).
- AIR VACUUM VALVES OR AIR RELEASE VALVES ARE NOT ALLOWED WITHOUT APPROVAL FROM THE CITY ENGINEER.
- 2" AIR VACUUM RELIEF VALVES MAY USE TAP W/ SADDLE.
- 4" AIR VACUUM RELEASE VALVES AND LARGER REQUIRE A TEE (MJxMJxFLG).
- FIRST STEP MUST BE PLACED WITHIN 24" OF FINISHED GRADE.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDS AND REQ UPDATE\5-UPDATED DELIVERABLE\CAD\SECTION 6 STANDARD DRAWINGS\CAD\CW-CW-13.DWG

1/13/2021 4:07 AM

NO.	REVISION DESCRIPTION	DATE

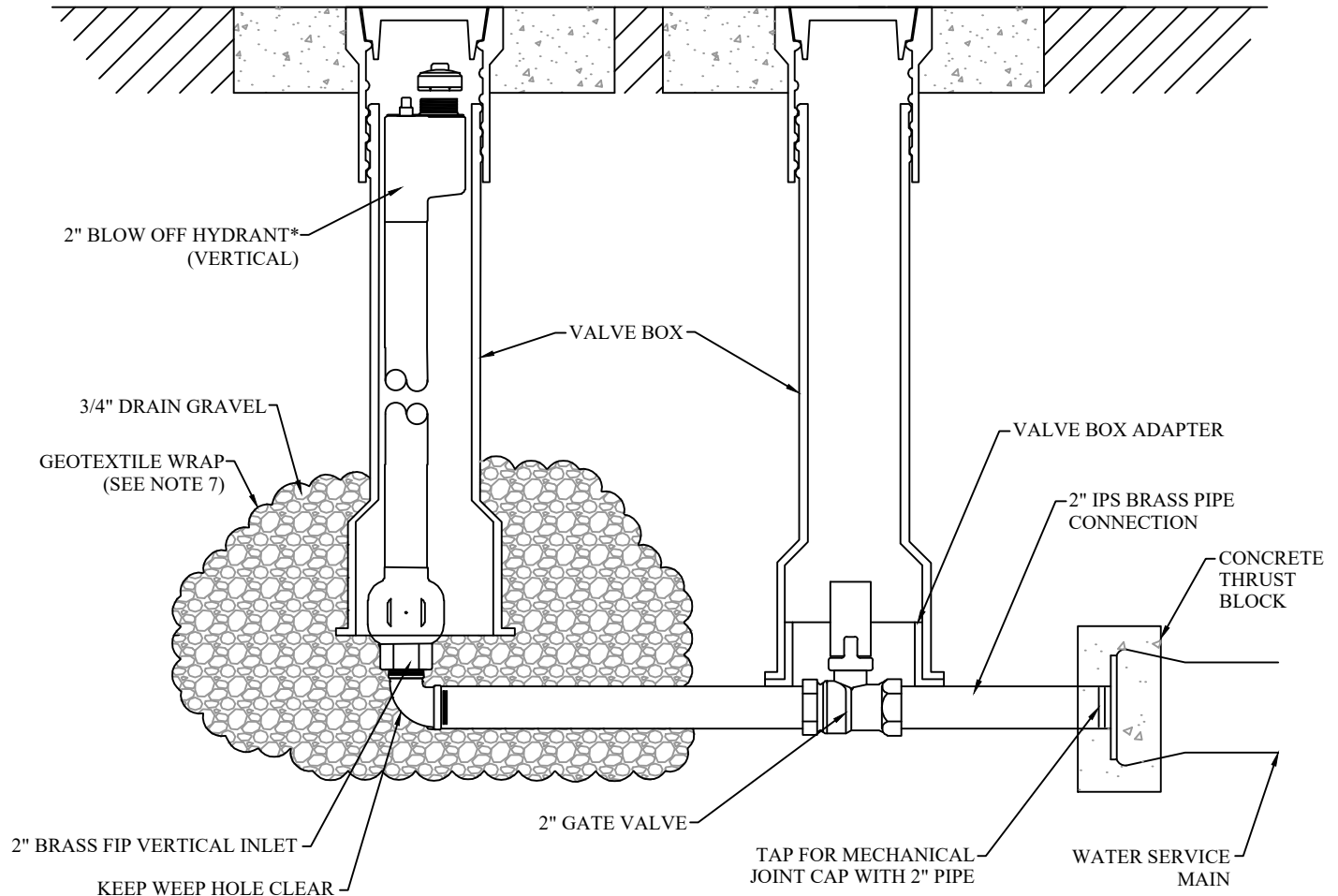
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
 CULINARY WATER  
 AIR COMBINATION VALVE

**CW-13**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



**NOTES:**

1. INSPECTION: PRIOR TO BACKFILLING AROUND THE ASSEMBLY, SECURE INSPECTION OF INSTALLATION BY ENGINEER.
2. BACKFILL: INSTALL AND COMPACT BACKFILL MATERIAL PER APWA SECTION 31 05 13 IN LIFTS NOT EXCEEDING 6" AFTER COMPACTION. COMPACT EACH LIFT TO A MINIMUM RELATIVE DENSITY OF 95%.
3. WORKING PARTS: ALL WORKING PARTS SHALL BE BRONZE TO BRONZE DESIGN, AND BE SERVICEABLE FROM ABOVE GROUND WITH NO DIGGING.
4. POST HYDRANTS SHALL BE NON- FREEZING, SELF DRAINING TYPE WITH A 36" BURY. HYDRANTS WILL BE FURNISHED WITH A 2" FIP INLET, A NON- TURNING OPERATING ROD, AND SHALL OPEN TO THE LEFT.
5. LOCKING: HYDRANTS SHALL BE LOCKABLE TO PREVENT UNAUTHORIZED USE. SEE PARTS LIST FOR APPROVED HYDRANT LOCKS.
6. MAKE SURE TO PLACE THREAD SEALANT ON ALL THREADED CONNECTIONS.
7. INSTALL A GEOTEXTILE WRAP AROUND THE 3/4" DRAIN GRAVEL TO PREVENT SILTING.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDS AND REQ UPDATE\5-UPDATED DELIVERABLE\CAD\SECTION 6 STANDARD DRAWINGS\CAD\CW-CW-14.DWG

1/13/2021 4:06 AM

NO.	REVISION DESCRIPTION	DATE

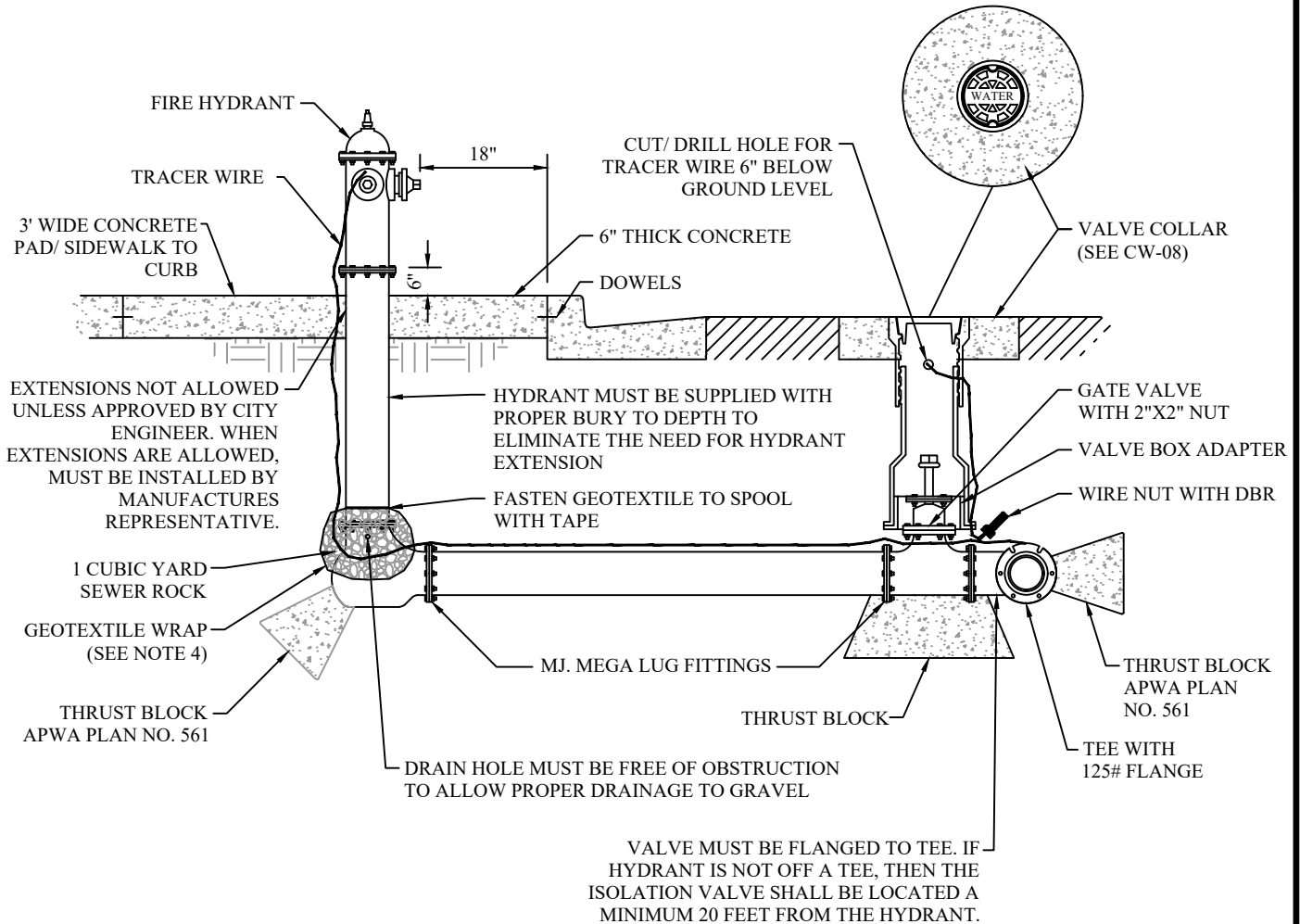
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
 CULINARY WATER  
 BLOW OFF HYDRANT

**CW-14**

**\*REFER TO PARTS LIST ON CW-PL FOR APPROVED PARTS MODELS.**



**NOTES:**

1. POLY WRAP HYDRANT TO BURY LINE.
2. DOWELS 6" CENTER OFF BACK OF SIDEWALK AND BACK OF CURB.
3. 3' MINIMUM AWAY, FROM DRIVE APPROACH, MAILBOX, TREE, METER BOX, UTILITY BOX, OR ANY OTHER OBSTRUCTION.
4. INSTALL A GEOTEXTILE WRAP AROUND THE SEWER ROCK TO PREVENT SILTING.

Q:\ENGINEERING\PROJECTS\06 MUNICIPAL\2016-17\1617-03 DEV STDS AND REQ UPDATE\5-UPDATED DELIVERABLE\CAD\SECTION 6 STANDARD DRAWINGS\CAD\CW-15.DWG

1/13/2021 4:09 AM

NO.	REVISION DESCRIPTION	DATE

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.



**HERRIMAN CITY**  
**ENGINEERING DEPARTMENT**  
 CULINARY WATER  
 FIRE HYDRANT WITH VALVE

**CW-15**

# HERRIMAN CITY APPROVED CULINARY WATER EQUIPMENT LIST

EQUIPMENT TYPE	Model
Dismantling Joints	Romac DJ400
Butterfly Valve	Mueller "Linesal III"
Gate Valves 3 Inches and Larger	Mueller Gate Valve or Resilient Seat Gate Valve
Swing Check Valve (2-inch to 24-inch)	Mueller Swing-Type
Globe Check Valve (2-inch to 24-inch)	VAL-MATIC model #VM:1400A/1800-S
Control Valve	CLA-VAL
Underground Packaged Pressure Reducing Station	Per Specification 33 12 18
Combination Valves	A.R.I. D-040
Ball Valve Curb Stop	Ford Ball Valve Curb Stop B11-333WOR Mueller 102883
Combination Air Valve	A.R.I. D-040 or Approved Equal
Valve Box	Tyler 564A Cast Iron
Valve box adaptor	Adaptor Inc. Model VBA-II
Service Saddle Clamp	Ford FB 202 B Mueller BR2B Series
Dry-Barrell Fire Hydrant	Mueller Super Centurion 250 Model A-423 Waterous WB67-250 Clow Medallion
2" Blow Off Hydrant	Mainguart No. 78 or Approved Equal Truflow #TF500
Hydrant Lock	As manufactured by Kupferle Foundry Co., St. Louis, MO. or approved Equal
1" Corporation Stop	Type A: Ford-FB 1101-4-Q-NL IPS Saddle Type A: Mueller B-25029N if direct tapped Type B: Ford-FB 1001-4-Q CC threaded Type B: Mueller B-25009N
1 1/2" Corporation Stop	Ford FB1600-67-NL Mueller B-20045N
2" Corporation Stop	Ford FB1600-7-NL Mueller B-20045N
3/4" Water Meter Yoke	Mueller 240B2434-2-49N A.Y. McDonald 728-218DWPP

1/14/2021 12:43 PM \\S:\FILES\PUBLIC\PROJECTS\JUB\HERRIMAN\83-17-040 CITY STANDARDS MANUAL UPDATE 2017\CAD\SHEET\CW-PL.DWG

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.				<b>HERRIMAN CITY</b> <b>ENGINEERING DEPARTMENT</b> CULINARY WATER CULINARY WATER EQUIPMENT LIST (pg 1 of 3)	<b>CW-PL1</b>
NO.	REVISION DESCRIPTION	DATE			

# HERRIMAN CITY APPROVED CULINARY WATER EQUIPMENT LIST

EQUIPMENT TYPE	Model
1" Water Meter Yoke	Ford Copper VBHC74-95581-03 A.Y. McDonald 728-218DWPP
1 1/2" Water Meter Yoke	Ford Copper VHHB76-C15745-002-NL
2" Water Meter Yoke	A.Y. McDonald 728-218DWPP #
Water Meter Setter	FORD VBHC72-95581-01 AY Mc Donald NL Meter Setter 728-218DWPP
1 1/2" Custom Setter with Bypass	VBHH76-18B-11-66-NL
2" Custom Setter with Bypass	VBHH77-18B-11-77-NL
Water Meter	Neptune 5/8" x 3/4" T-10 Meter with AutoDetect register
2" Water Meter	Neptune T-10 Model
Meter Barrel Frame and Cover (3/4" Meter)	#
Meter Barrel Frame and Cover (1" Meter)	#
Meter Barrel Frame and Cover (1 1/2" and 2" Meters)	#
Meter Box Equipment Valve Riser Set	692-3200
Water Meter Pit Adjusting Ring	30" Barrel: D&L L-2336 36" Barrel: D&L L-2338
Radio Unit	Neptune R900 Pit Meter Interface Unit (MIU) Radio
Sampling Station	Eclipse #88-SS Sampling Station (Manufactured by Kupferle Foundry, St Louis, MO 63102)
Restraint	Tyler Union Series 1500 Dual Wedge
1" Connection	1" Ford Compression Fitting 1644-Q w/ insert Mueller compression fittings w/ insert
1" Adaptor	Ford 1644-Q Mueller H-15429N
Compression Coupling with Inserts	Ford - C66-44-NL-Q Mueller - H-15400N
MJ Water Valve Connection Joint Restraints	EBAA Iron MEGALUG, Tyler TUFGRip, Star Fittings USA
Vent caps	Christy's Vent Caps manufactured by T. Christy Enterprises, Inc., Anaheim, CA

1/14/2021 12:43 PM \\S:\FILES\PUBLIC\PROJECTS\JUB\HERRIMAN\83-17-040 CITY STANDARDS MANUAL UPDATE 2017\CAD\SHEET\CW-PL2.DWG

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN HERRIMAN CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF HERRIMAN CITY. HERRIMAN CITY CANNOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.				<b>HERRIMAN CITY</b> <b>ENGINEERING DEPARTMENT</b> CULINARY WATER CULINARY WATER EQUIPMENT LIST (pg 2 of 3)	<b>CW-PL2</b>
NO.	REVISION DESCRIPTION	DATE			

# HERRIMAN CITY APPROVED CULINARY WATER EQUIPMENT LIST

EQUIPMENT TYPE	Model
Drinking Fountain	Elkay, Model LK4420BF1UDB
49" Cast Iron Frame and Lid with 30" Inner Cast Lid	D&L Supply DL A-1381 or equal
Pipe supports	Stanchion Saddle MSS Type 37 Grinnell Figure 264 of approved equal
Galvanized ladder	#
Epoxy Adhesive	Hilti Hit-RE-500 Epoxy Adhesive

\\slcfiles\public\projects\jhb\herriman\83-17-040 CITY STANDARDS MANUAL UPDATE 2017\CAD\SHEET\CW-PL.DWG

1/14/2021 12:43 PM

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--