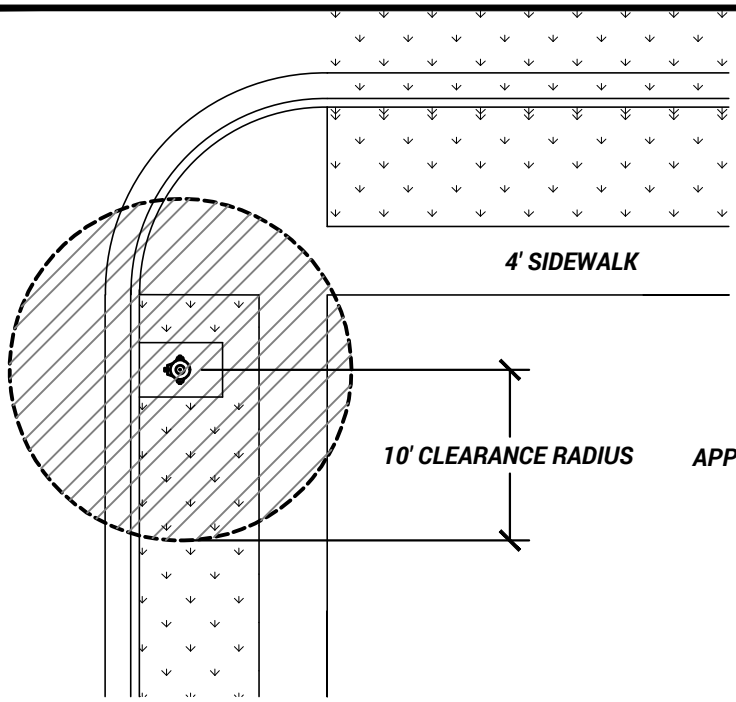
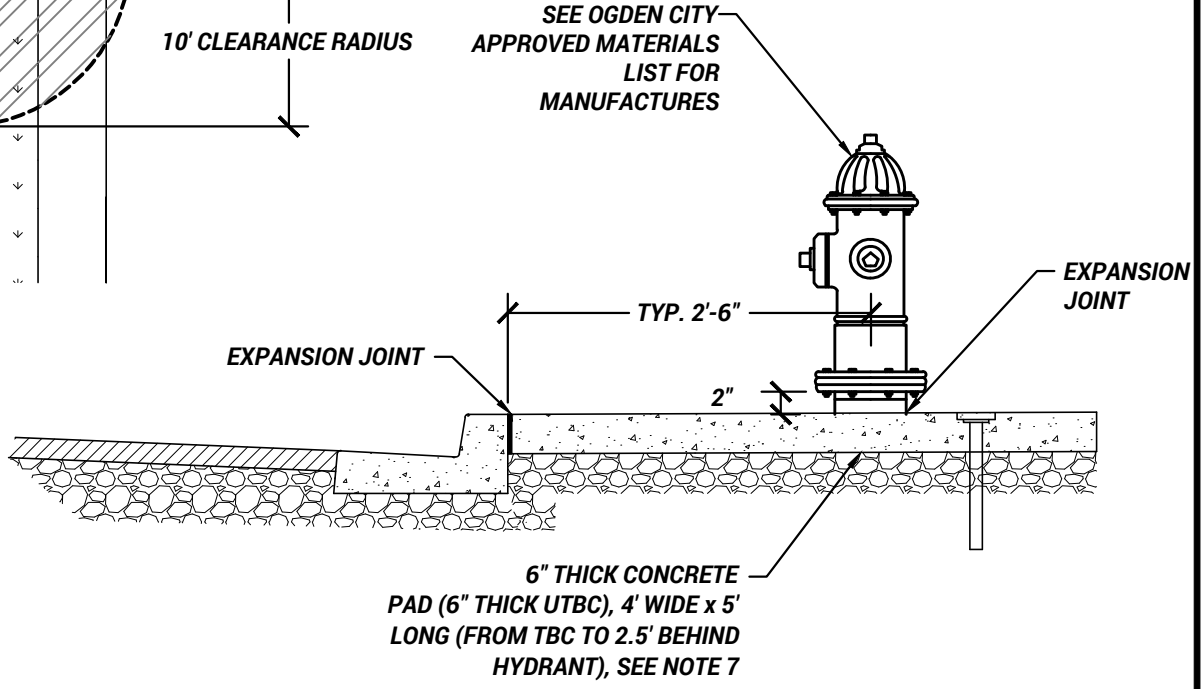
Ogden UTAH™
Engineering Division

# Engineering Standards and Drawings for

## Water Projects

2025 Edition

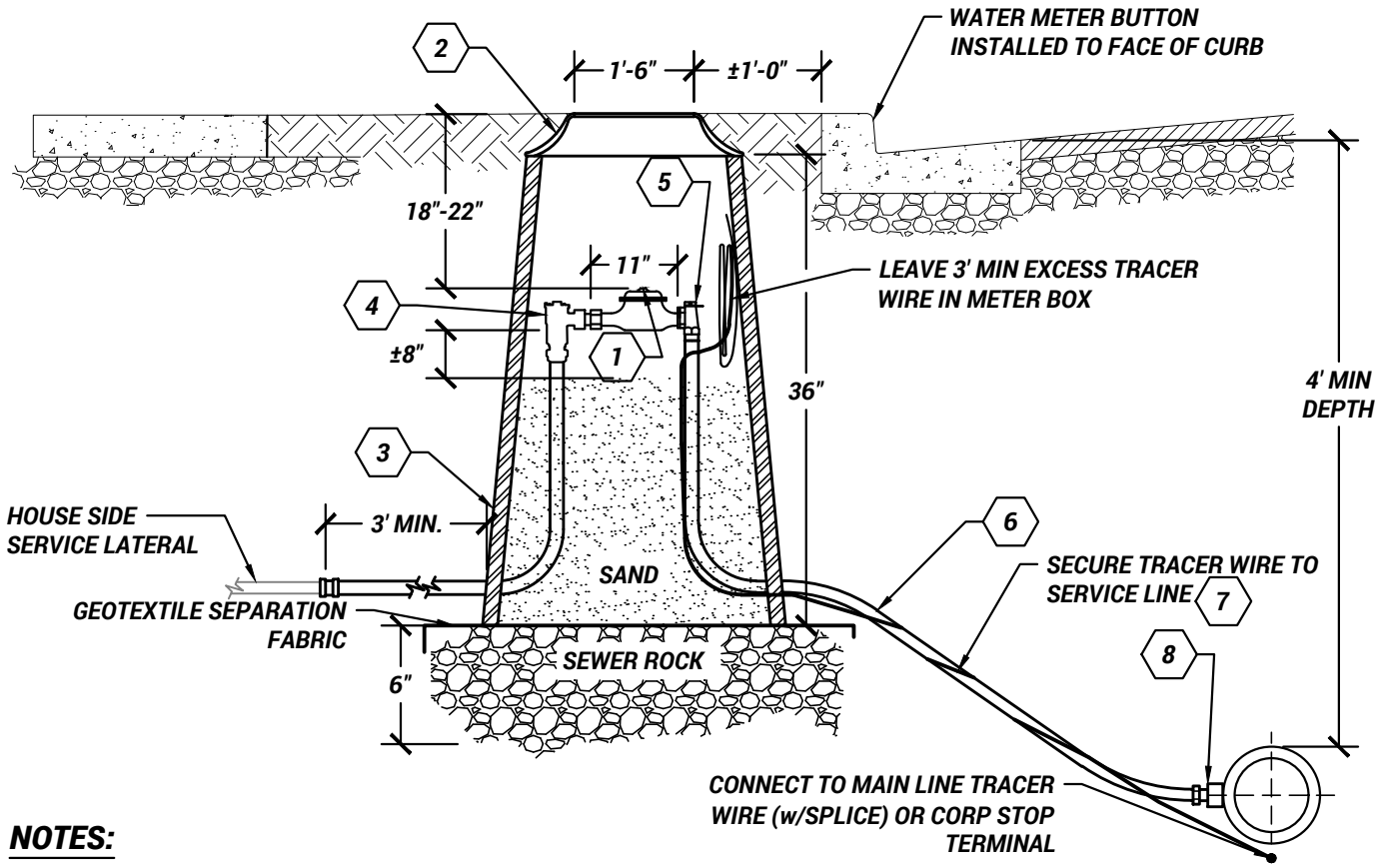



## NOTES:

1. PAINT TOP AND FACE OF CURB, 15' ON BOTH SIDES, WITH RED PAINT TO INDICATE NO PARKING.
2. NO TREES, PLANTS, FLOWERS, SHRUBS, OR ANY OTHER ITEM WHICH MAY OBSTRUCT THE VIEW OR ACCESS TO A FIRE HYDRANT, SHALL BE INSTALLED/PLANTED WITHIN 10' OF ANY FIRE HYDRANT.
3. HYDRANT SHALL BE 2'-6" BEHIND THE BACK OF CURB OR AS SPECIFIED BY THE CITY ENGINEER.
4. ARTERIAL ROADS SHALL HAVE FIRE HYDRANTS ON BOTH SIDES OF THE ROADWAY.
5. INSTALL A 4'x4' 6" THICK CONCRETE PAD AROUND THE BASE IF NO CURB AND GUTTER IS PRESENT.
   5.1. BOLLARD INSTALLATION MAY BE REQUIRED BASED ON THE HYDRANT LOCATION.
6. FIRE HYDRANT SPACING:
   6.1. SHALL NOT EXCEED A 500' RADIUS IN AREAS WITH SINGLE FAMILY DWELLINGS.
   6.2. SHALL NOT EXCEED A 300' RADIUS IN ALL OTHER AREAS.
   6.3. OR AS DETERMINED BY THE FIRE MARSHAL.
7. CONCRETE PAD ON HYDRANTS SHALL BE REQUIRED ON ALL ARTERIAL CLASSIFIED ROADWAYS AND IN THE DOWNTOWN AREA (20TH STREET TO 30TH STREET, WALL AVE THRU ADAMS AVE)

| OGDEN CITY ENGINEERING - STANDARD DRAWINGS | | |
|---|---|---|
| Ogden UTAH Still Untamed™ | FIRE HYDRANT LOCATION | W-2 |
| | TAYLOR NIELSEN, CITY ENGINEER | SHEET 1 OF 1 — 2025 |




## NOTES:

1. CONTRACTOR TO PROVIDE AND INSTALL ALL MATERIALS AS SHOWN ON THE DETAIL, UNLESS DIRECTED OTHERWISE BY OGDEN CITY WATER.
2. METERS TO BE INSTALLED IN THE PARK STRIP, 1' BEHIND THE BACK OF CURB, OR 1' BEHIND THE SIDEWALK WHERE THE SIDEWALK IS ADJACENT TO THE CURB. DO NOT PLACE METER BOXES IN OR UNDER DRIVEWAY APPROACHES, SIDEWALKS, OR CURB AND GUTTER. IN THE CASE OF NO CURB AND GUTTER, PLACE METER WITHIN 7' OF THE PROPERTY LINE (STREET SIDE).
3. FILL METER BOX WITH SAND IN 8" THICK LIFTS UP TO APPROXIMATELY 8" FROM BOTTOM OF METER. TAMP SAND TO STABILIZE METER. SEPARATE SAND FROM SEWER ROCK WITH A GEOTEXTILE SEPARATION FABRIC
4. PROVIDE AND PLACE IMPORT BACKFILL PER APWA SECTION 33 05 20 SURROUNDING THE METER ASSEMBLY. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER, MODIFIED PROCTOR DENSITY. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.
5. ALL TRACER WIRE SHALL BE TESTED FOR CONTINUITY IN THE PRESENCE OF A REPRESENTATIVE FROM OGDEN CITY WATER PRIOR TO ASPHALT PLACEMENT. ANY TRACER WIRE FOUND NOT TO BE CONTINUOUS AFTER TESTING SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE PRIOR TO ASPHALT PLACEMENT.
6. ALL TRACER WIRE WILL BE RE-TESTED AT THE 1-YEAR WARRANTY INSPECTION. ANY TRACER WIRE FOUND NOT TO BE CONTINUOUS AFTER TESTING SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
7. DO NOT CONNECT THE HOUSE SIDE LATERAL DIRECTLY BENEATH THE SIDEWALK.

| ITEM | QTY | DESCRIPTION |
|---|---|---|
| 1 | 1 | 1" OR SMALLER WATER METER (CITY PROVIDED WITH METER/TAPPING FEE) |
| 2 | 1 | 18" FRAME AND COVER WITH RECESSED HOLE FOR ANTENNA READ WITH LARGE BOLT "LB" OPTION |
| 3 | 1 | RAVEN METER BOX OR APPROVED EQUAL |
| 4 | 1 | 1" ASSE 1024 DUAL CHECK VALVE (BACKFLOW PREVENTER, TOP ENTRY ONLY) |
| 5 | 1 | 1" BALL ANGLE VALVE - FORD BA43-444W-Q-NL, MUELLER - B-24258N |
| 6 | VARIES | 1" AWWA C901 CTS POLY TUBING |
| 7 | VARIES | TRACER WIRE |
| 8 | 1 | CORP STOP WITH TEE-HEAD CAP ADAPTOR (TAP HORIZONTALLY) |

OGDEN CITY ENGINEERING - STANDARD DRAWINGS

Ogden UTAH Still Untamed™

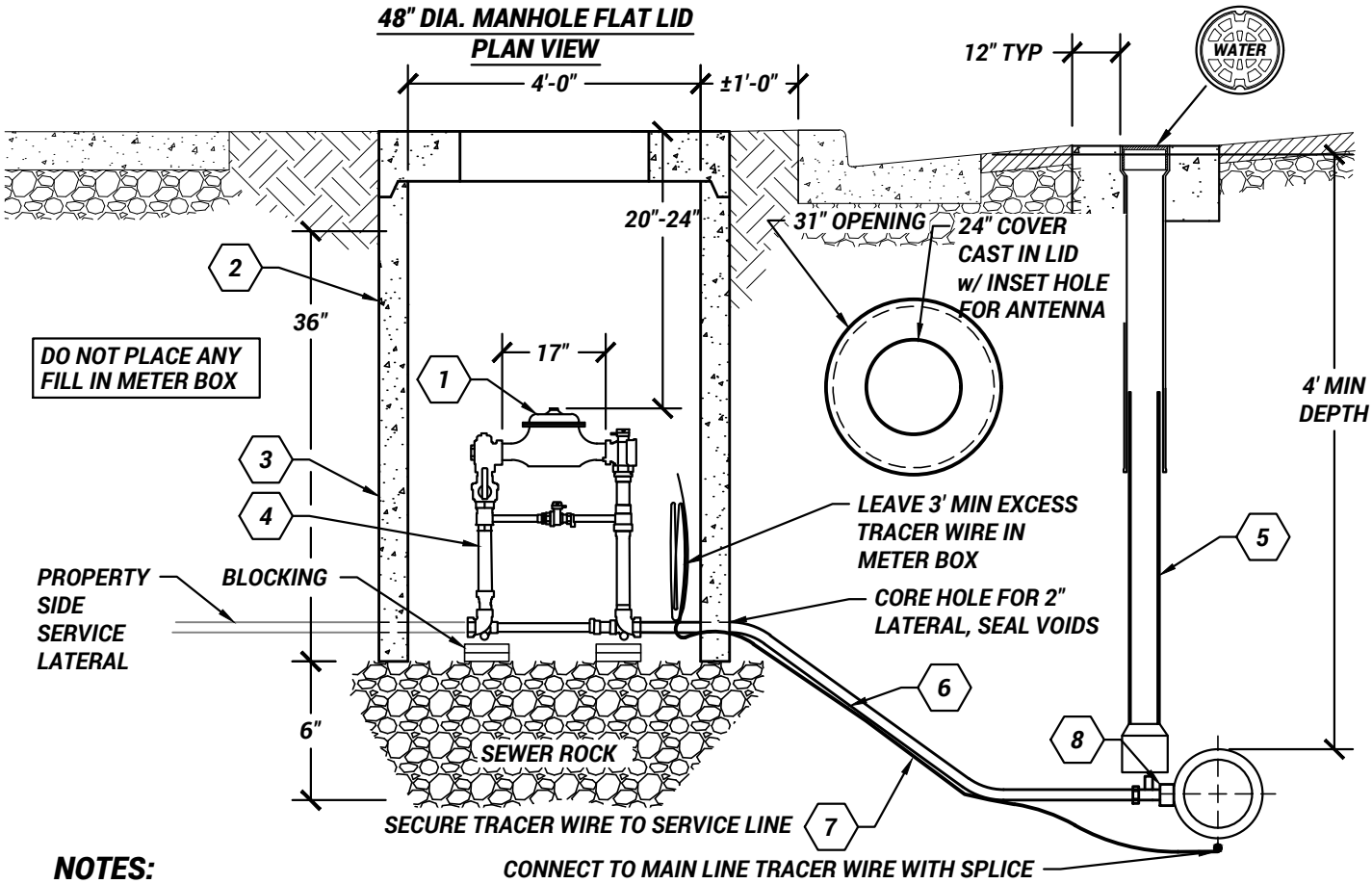
# TYPICAL SERVICE INSTALLATION FOR WATER METERS 1" OR SMALLER

W-3

TAYLOR NIELSEN, CITY ENGINEER

SHEET 1 OF 1

2025




## NOTES:

1. CONTRACTOR TO PROVIDE AND INSTALL ALL MATERIALS AS SHOWN ON THE DETAIL, UNLESS DIRECTED OTHERWISE BY OGDEN CITY WATER (OCW).
2. METERS TO BE INSTALLED IN THE PARK STRIP, 1' BEHIND THE BACK OF CURB, OR 1' BEHIND THE SIDEWALK WHERE THE SIDEWALK IS ADJACENT TO THE CURB. DO NOT PLACE METER BOXES IN OR UNDER DRIVEWAY APPROACHES, SIDEWALKS, OR CURB AND GUTTER. IN THE CASE OF NO CURB AND GUTTER, PLACE METER WITHIN 7' OF THE PROPERTY LINE (STREET SIDE).
3. INSTALL VALVE BOX PER STANDARD DRAWING W-12 OVER CORP STOP. DO NOT EXTEND TRACER WIRE UP VALVE BOX.
4. PROVIDE AND PLACE BACKFILL PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.
5. ALL TRACER WIRE SHALL BE TESTED FOR CONTINUITY IN THE PRESENCE OF A REPRESENTATIVE FROM OGDEN CITY WATER PRIOR TO ASPHALT PLACEMENT. ANY TRACER WIRE FOUND NOT TO BE CONTINUOUS AFTER TESTING SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE PRIOR TO ASPHALT PLACEMENT.
6. ALL TRACER WIRE WILL BE RE-TESTED AT THE 1-YEAR WARRANTY INSPECTION. ANY TRACER WIRE FOUND NOT TO BE CONTINUOUS AFTER TESTING SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

| ITEM | QTY | DESCRIPTION |
|---|---|---|
| 1 | 1 | 1.5" OR 2" (MACH 10) WATER METER (CITY PROVIDED, FEE REQ'D) |
| 2 | 1 | 48" CENTER MANHOLE LID (FLAT) |
| 3 | 1 | 4' MANHOLE BASE |
| 4 | 1 | 2" SETTER (18" HEIGHT) - FORD 1-VBHH77-18HB-11-77-TP6-NL |
| 5 | 1 | SLIP-TYPE VALVE BOX |
| 6 | VARIES | 2" CTS POLY TUBING |
| 7 | VARIES | 12 GA, INSULATED BLUE TRACER WIRE |
| 8 | 1 | CORP STOP (FORD FB1100-7-TA-Q-NL), TAP FEE PAID BY CONTRACTOR - OCW TO TAP THE MAIN |

OGDEN CITY ENGINEERING - STANDARD DRAWINGS

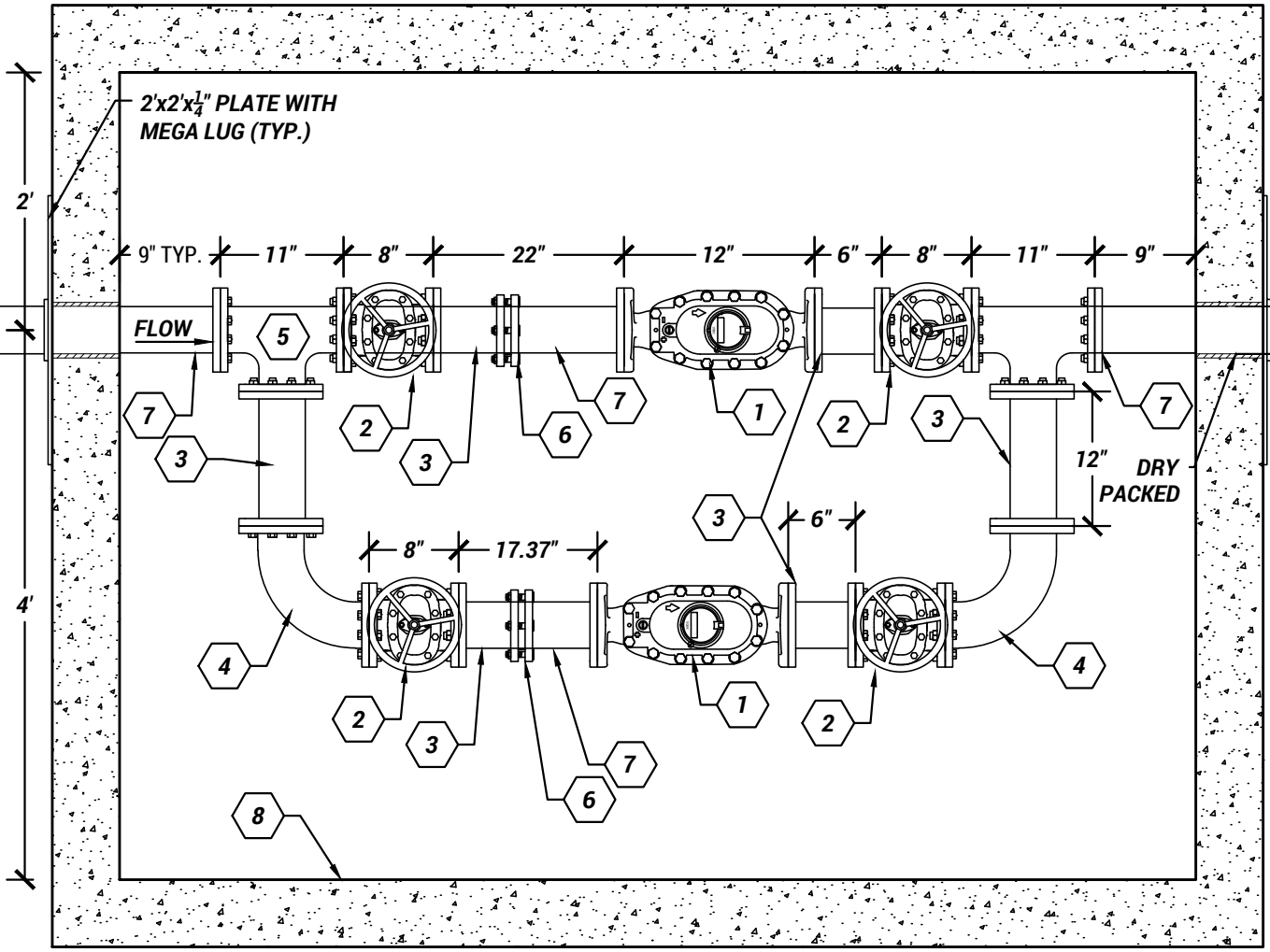
# TYPICAL SERVICE INSTALLATION FOR 1.5" & 2" WATER METERS

W-4

TAYLOR NIELSEN, CITY ENGINEER

SHEET 1 OF 1

2025




## NOTES:

1. CONTRACTOR TO PROVIDE AND INSTALL ALL MATERIALS AS SHOWN ON THE DETAIL, UNLESS DIRECTED OTHERWISE BY OGDEN CITY WATER. REFER TO W-19 DETAIL FOR HATCH/LID.

2. PROVIDE AND PLACE BACKFILL PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.

3. SEE STANDARD DRAWING W-9 FOR ADDITIONAL VAULT DETAILS. ALLOW 1" CLEARANCE AROUND THE LINE THROUGH THE VAULT WALL. DRY PACK REMAINING SPACE AROUND THE PIPE. SUPPORT WATER METER ON LATERAL AND BYPASS WITH JACK STANDS. ANY REQUIRED REDUCERS (4"x 3") ARE TO BE INSTALLED OUTSIDE OF THE VAULT.

4. ALL FITTINGS TO BE FLANGED, AND ALL JOINTS MUST BE RESTRAINED.
5. IF GROUNDWATER CONDITIONS ALLOW, CORE A 6" Ø HOLE IN THE LOWEST POINT OF THE FLOOR FOR A RELIEF DRAIN.

| ITEM | QTY | DESCRIPTION |
|---|---|---|
| 1 | 2 | 3" NEPTUNE MACH 10 WATER METER (CITY PROVIDED - FEE REQUIRED) EU3B2G1SG90 |
| 2 | 4 | 3" GATE VALVE (FLxFL) WITH HANDWHEEL |
| 3 | 6 | 3" DUCTILE IRON SPOOL (FLxFL) |
| 4 | 2 | 3" LONG RADIUS 90° BEND (FLxFL) |
| 5 | 2 | 3"x3"x3" TEE (FLxFLxFL) |
| 6 | 2 | 3" DRESSER (FLANGED COUPLING ADAPTER) |
| 7 | 4 | 3" DUCTILE IRON PIPE (FLxCUT TO FIT) |
| 8 | 1 | 6'x8' (INTERIOR) PRECAST CONCRETE VAULT (SEE STD DWG W-9) |

**OGDEN CITY ENGINEERING - STANDARD DRAWINGS**

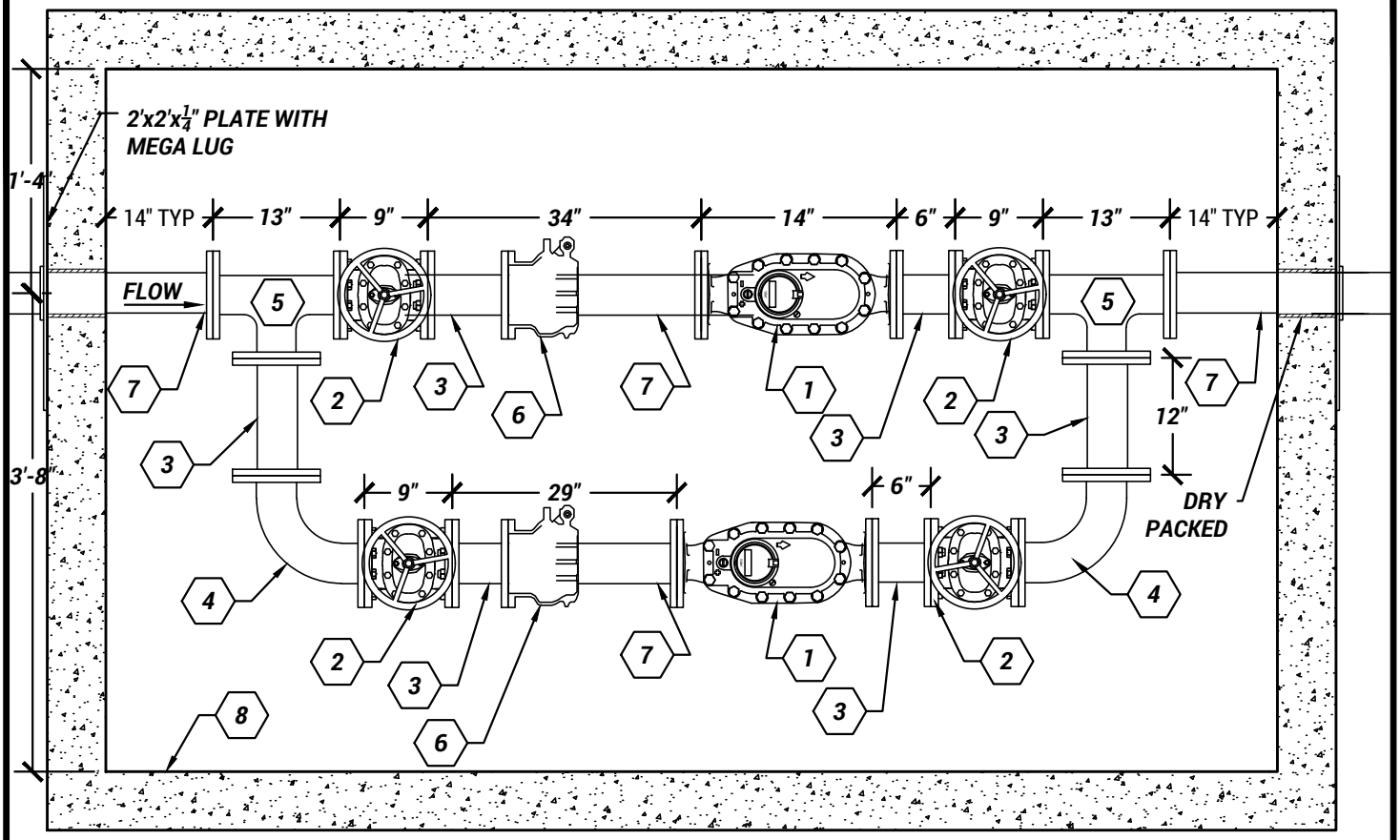
Ogden UTAH Still Untamed™

# 3" MACH 10 ULTRASONIC WATER METER WITH 3" BYPASS

**W-5**

TAYLOR NIELSEN, CITY ENGINEER

SHEET 1 OF 1 | 2025



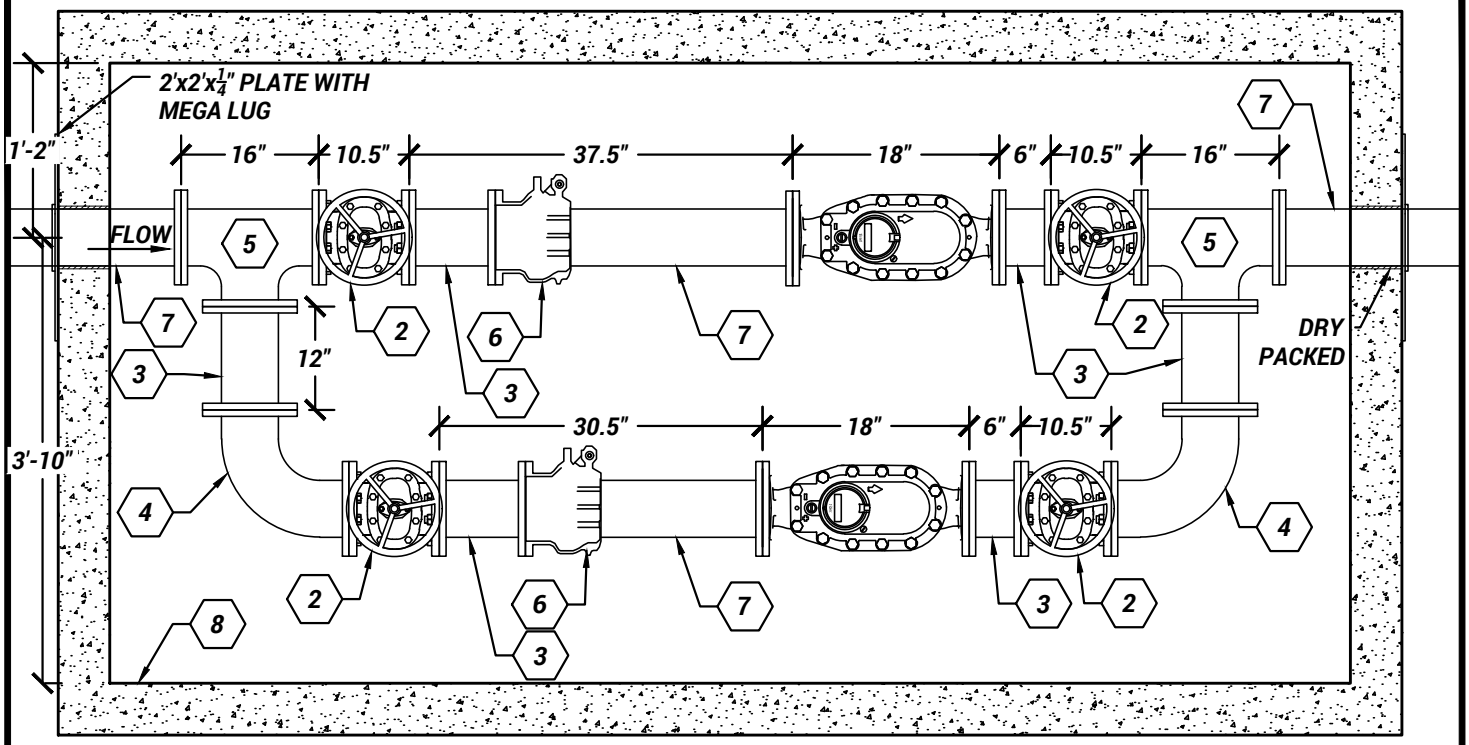

## NOTES:

*CONTRACTOR TO PROVIDE AND INSTALL ALL MATERIALS AS SHOWN ON THE DETAIL, UNLESS DIRECTED OTHERWISE BY OGDEN CITY WATER. REFER TO W-19 DETAIL FOR HATCH/LID.*

1. *PROVIDE AND PLACE BACKFILL PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.*
2. *SEE STANDARD DRAWING W-9 FOR ADDITIONAL VAULT DETAILS. ALLOW 1" CLEARANCE AROUND THE LINE THROUGH THE VAULT WALL. DRY PACK REMAINING SPACE AROUND THE PIPE. SUPPORT WATER METER ON LATERAL AND BYPASS WITH JACK STANDS.*
3. *ALL FITTINGS TO BE FLANGED, AND ALL JOINTS MUST BE RESTRAINED.*
4. *IF GROUNDWATER CONDITIONS ALLOW, CORE A 6" Ø HOLE IN THE LOWEST POINT OF THE FLOOR FOR A RELIEF DRAIN.*

| ITEM | QTY | DESCRIPTION |
|---|---|---|
| 1 | 2 | 4" NEPTUNE MACH 10 WATER METER (CITY PROVIDED - FEE REQUIRED) - EU3D2G1SG90 |
| 2 | 4 | 4" GATE VALVE (FLxFL) WITH HANDWHEEL |
| 3 | 6 | 4" DUCTILE IRON SPOOL (FLxFL) |
| 4 | 2 | 4" LONG RADIUS 90° BEND (FLxFL) |
| 5 | 2 | 4"x4"x4" TEE (FLxFLxFL) |
| 6 | 2 | 4" RESTRAINED FLANGE COUPLING ADAPTOR |
| 7 | 4 | 4" DUCTILE IRON PIPE (FLxCUT TO FIT) |
| 8 | 1 | 5'x10'-6" (INTERIOR) PRECAST CONCRETE VAULT (SEE STD DWG W-9) |

| OGDEN CITY ENGINEERING - STANDARD DRAWINGS | | |
|---|---|---|
| Ogden UTAH Still Untamed™ | 4" MACH 10 ULTRASONIC WATER METER WITH 4" BYPASS | W-6 |
| | TAYLOR NIELSEN, CITY ENGINEER | SHEET 1 OF 1 — 2025 |



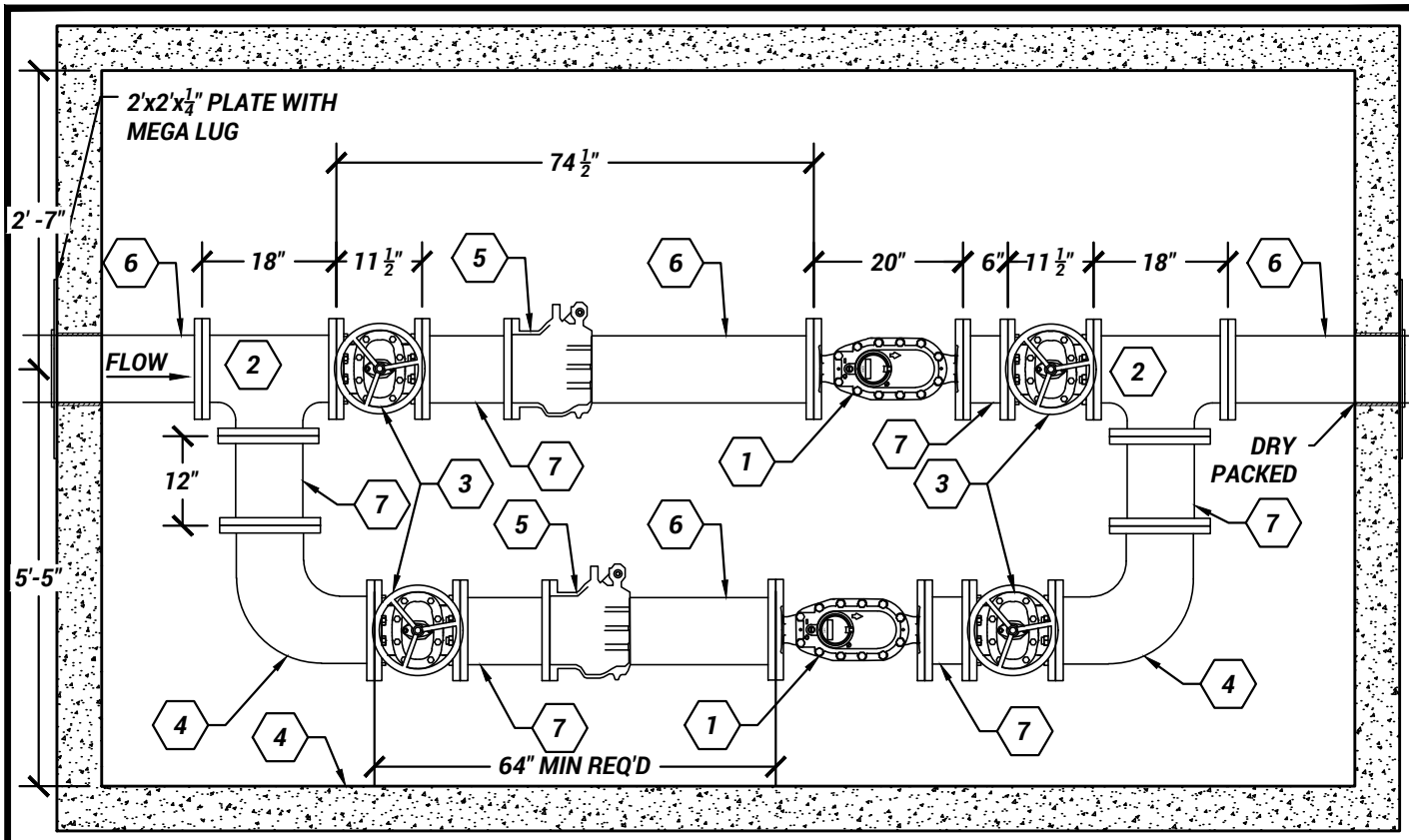

## NOTES:

*CONTRACTOR TO PROVIDE AND INSTALL ALL MATERIALS AS SHOWN ON THE DETAIL, UNLESS DIRECTED OTHERWISE BY OGDEN CITY WATER. REFER TO W-19 DETAIL FOR HATCH/LID.*

1. *PROVIDE AND PLACE BACKFILL PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.*
2. *SEE STANDARD DRAWING W-9 FOR ADDITIONAL PRECAST VAULT DETAILS. ALLOW 1" CLEARANCE AROUND THE LINE THROUGH THE VAULT WALL. DRY PACK REMAINING SPACE AROUND THE PIPE. SUPPORT WATER METER ON LATERAL AND BYPASS WITH JACK STANDS.*
3. *ALL FITTINGS TO BE FLANGED, AND ALL JOINTS MUST BE RESTRAINED.*
4. *IF GROUNDWATER CONDITIONS ALLOW, CORE A 6" Ø HOLE IN THE LOWEST POINT OF THE FLOOR FOR A RELIEF DRAIN.*

| ITEM | QTY | DESCRIPTION |
|---|---|---|
| 1 | 2 | 6" NEPTUNE MACH 10 WATER METER (CITY PROVIDED - FEE REQ'D) EU3F2G1SG90 |
| 2 | 4 | 6" GATE VALVE (FLxFL) WITH HANDWHEEL |
| 3 | 6 | 6" DUCTILE IRON SPOOL (FLxFL) |
| 4 | 2 | 6" 90° BEND (FLxFL) |
| 5 | 2 | 6"x6"x6" TEE (FLxFLxFL) |
| 6 | 2 | 6" RESTRAINED FLANGE COUPLING ADAPTOR |
| 7 | 4 | 6" DUCTILE IRON PIPE (FLxCUT TO FIT) |
| 8 | 1 | 5' x 10'-6" (INTERIOR) PRECAST CONCRETE VAULT (SEE STD DWG W-9) |

| OGDEN CITY ENGINEERING - STANDARD DRAWINGS | | |
|---|---|---|
| Ogden UTAH Still Untamed™ | 6" MACH 10 ULTRASONIC WATER METER WITH 6" BYPASS | W-7 |
| | TAYLOR NIELSEN, CITY ENGINEER | SHEET 1 OF 1 — 2025 |




## NOTES:

CONTRACTOR TO PROVIDE AND INSTALL ALL MATERIALS AS SHOWN ON THE DETAIL, UNLESS DIRECTED OTHERWISE BY OGDEN CITY WATER. REFER TO W-19 DETAIL FOR HATCH/LID.

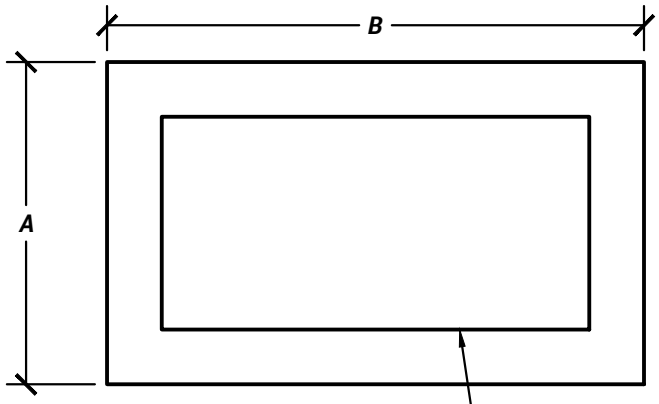
1. PROVIDE AND PLACE BACKFILL (IMPORT) PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" WHEN USING RIDING COMPACTION AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.

2. PRECAST VAULT TO BE DESIGNED BY A LICENSED STRUCTURAL ENGINEER. SEE STANDARD DRAWING W-9 FOR ADDITIONAL PRECAST VAULT DETAILS. VAULT LAYOUT FOR AN 8" WATER METER WITH BYPASS MUST BE APPROVED BY OGDEN CITY ENGINEERING. ALLOW 1" CLEARANCE AROUND THE LINE THROUGH THE VAULT WALL. DRY PACK REMAINING SPACE AROUND PIPE. SUPPORT WATER METER, PIPING, AND BYPASS WITH PIPE JACK STANDS ANCHORED TO FLOOR.

3. ALL FITTINGS TO BE FLANGED, AND ALL JOINTS MUST BE RESTRAINED.

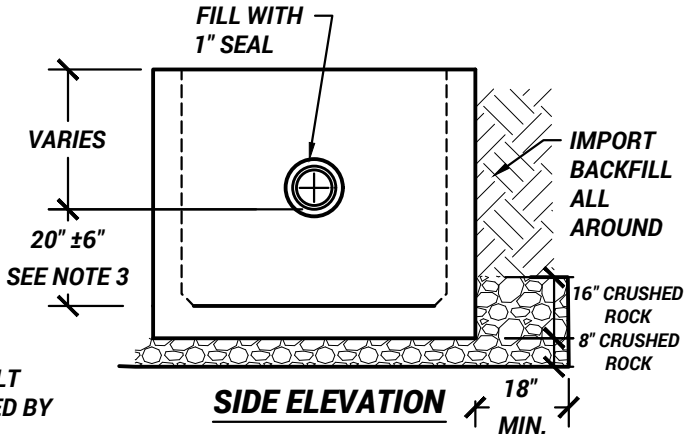
5. IF GROUNDWATER CONDITIONS ALLOW, CORE A 6" Ø HOLE IN THE LOWEST POINT IN THE FLOOR FOR A RELIEF DRAIN.

| ITEM | QTY | DESCRIPTION |
|---|---|---|
| 1 | 2 | 8" WATER METER WITH RADIO HEAD (CITY PROVIDED - FEE REQUIRED) |
| 2 | 2 | 8"x8"x8" TEE (FLxFLxFL) |
| 3 | 4 | 8" GATE VALVE (FLxFL) WITH HANDWHEEL |
| 4 | 2 | 8" LONG RADIUS 90° BEND (FLxFL) |
| 5 | 2 | 8" RESTRAINED FLANGE COUPLING ADAPTOR |
| 6 | 4 | 8" DUCTILE IRON PIPE (FLxCUT TO FIT) |
| 7 | 6 | 8" DUCTILE IRON SPOOL PIECE (FLxFL) |
| 8 | 1 | 8'x14' (INTERIOR) PRECAST CONCRETE VAULT (SEE STD DWG W-9) |

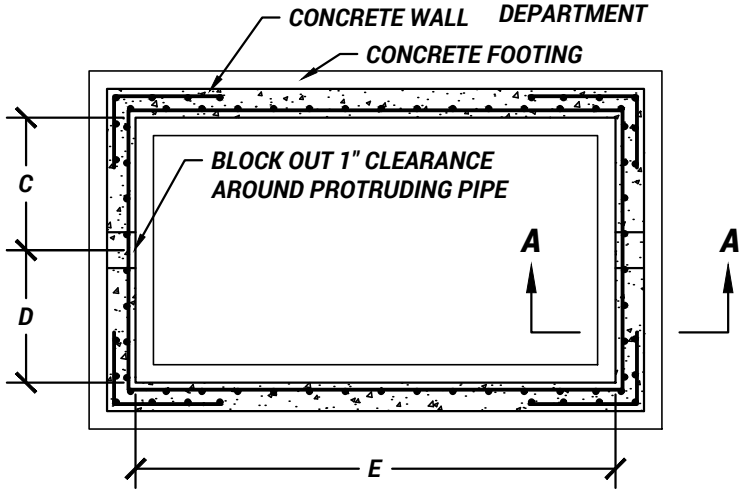



**LID PLAN**

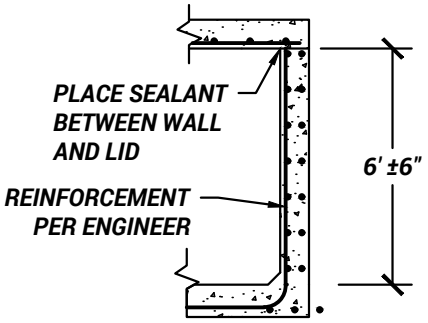
HYDRAULIC VAULT HATCH APPROVED BY THE WATER DEPARTMENT




**SIDE ELEVATION**




BOX PLAN



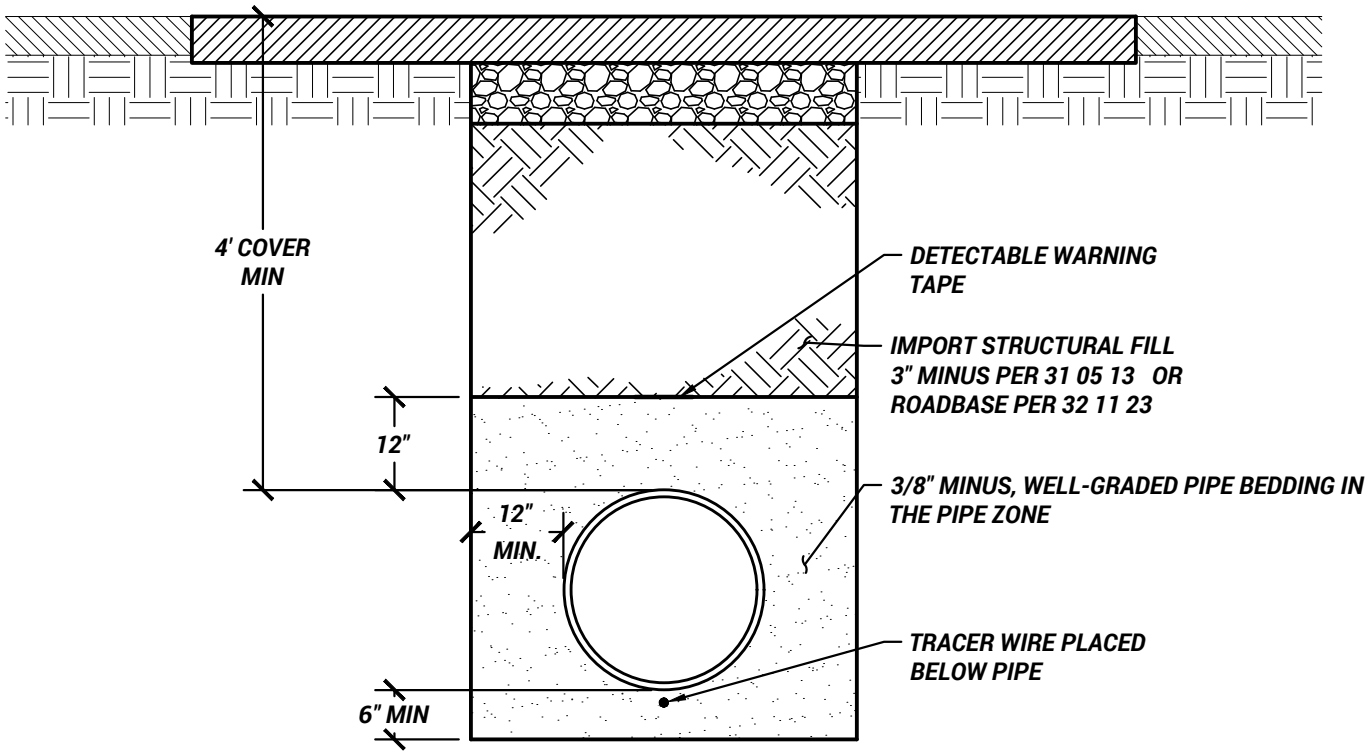

SECTION A-A

| PRECAST BOX DIMENSIONS | | | | |
|---|---|---|---|---|
| No. | METER SIZE | | | |
| | 8" | 6" | 4" | 3" |
| A | 9'-0" | 7'-0" | 6'-0" | 7'-0" |
| B | 15'-0" | 13'-0" | 11'-6" | 9'-0" |
| C | 3'-4" | 1'-8" | 1'-11" | 1'-11" |
| D | 4'-8" | 4'-4" | 4-1" | 4-1" |
| E | 14'-0" | 12'-0" | 10'-0" | 8'-0" |

## NOTES:

1. ALL VAULTS TO BE TRAFFIC RATED, DESIGNED, AND APPROVED BY A LICENSED STRUCTURAL ENGINEER.
   1.1. PROVIDE CLASS 4000 CONCRETE, APWA 03 30 04. VAULT SHALL BE APPROVED BY OGDEN CITY ENGINEERING PRIOR TO INSTALLATION. VAULT LAYOUT FOR AN 8" WATER METER WITH BYPASS MUST BE APPROVED BY OGDEN CITY ENGINEERING.
2. BACKFILL: PROVIDE AND PLACE PER APWA SECTION 31 23 23. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.
3. 8" MINIMUM OF CRUSHED ROCK (WITH SEPARATION FABRIC) TO BE PLACED BELOW FOOTING. 12" MINIMUM CLEAR SPACE FROM BOTTOM OF PIPE TO CRUSHED ROCK.
4. FILL ANNULAR SPACE AROUND PIPE WALL PENETRATIONS WITH WATERPROOF SEAL.
5. PRE-CAST VAULTS ARE ALLOWED, DRAWINGS MUST BE APPROVED BY THE CITY. REFER TO W-19 DETAIL FOR HATCH/LID.
6. PRE-PLUMBED VAULTS ARE ALLOWED, DRAWINGS MUST BE APPROVED BY THE CITY.
7. CENTER THE VAULT HATCH LID OVER THE METER.
8. ALL METER VAULTS (AND PRV VAULTS) ARE REQUIRED TO HAVE A BOLT-ON ALUMINUM LADDER WITH SAFETY EXTENSION DEVICE. SUBMITTAL OF LADDER/EXTENSION DEVICE ALONG WITH LOCATION WILL BE REQUIRED FOR APPROVAL ON ALL VAULTS.

*SEE DRAWINGS RD-3 FOR ASPHALT PATCH DETAILS*




## NOTES:

1. PIPE ZONE WIDTH IS RECOMMENDED BY THE MANUFACTURE OF THE PIPE. WIDTH OF THE PIPE ZONE IS MEASURED AT THE PIPE SPRING LINE AND INCLUDES ANY NECESSARY SHEATHING. FOLLOW MANUFACTURER RECOMMENDATIONS FOR ANY TRENCH BOX APPLICATIONS.
2. INSTALL THE PIPE IN THE CENTER OF THE TRENCH.
3. BASE COURSE PER APWA SECTION 32 11 23.
4. WIDTH OF EXCAVATION IS MEASURED AT THE PIPE SPRING LINE AND INCLUDES ANY NECESSARY SHEATHING.
5. USE 3/8" MINUS WELL-GRADED PIPE BEDDING IMPORT FILL IN THE PIPE ZONE. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.
6. DO NOT USE RECYCLED RAP AGGREGATE IN THE TRENCH. IF MANUFACTURER RECOMMENDS ANYTHING CONTRARY TO WHAT IS LISTED BELOW, CONSULT WITH THE ENGINEERING DEPARTMENT.
   - 6.1. HAUNCHING/BEDDING: INSTALL AND COMPACT PER MANUFACTURER RECOMMENDATIONS AND ASTM SPECIFICATIONS.
     - 6.1.1. WATER JETTING IS NOT ALLOWED.
     - 6.1.2. SUBMISSION OF COMPACTION TEST DATA FOR THE HAUNCHING AREAS MAY BE REQUESTED AT ANY TIME.
   - 6.2. BACKFILL: INSTALL AND COMPACT PER MANUFACTURER RECOMMENDATIONS AND ASTM SPECIFICATIONS. DO NOT PLACE IN LIFTS GREATER THAN 8" BEFORE COMPACTION.
     - 6.2.1. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8" WHEN USING RIDING AND 6" WHEN USING HAND COMPACTION EQUIPMENT.
7. PEA GRAVEL OR ANY GRAVEL LESS THAN $\frac{3}{4}$" NOMINAL SIZE IS NOT ALLOWED IN ANY PART OF THE TRENCH.
8. REFER TO APWA SECTION 33 05 07 FOR ADDITIONAL INFORMATION ON PVC PIPE.
9. ALL TRACER WIRE SHALL BE TESTED FOR CONTINUITY IN THE PRESENCE OF A REPRESENTATIVE FROM OGDEN CITY WATER PRIOR TO ASPHALT PLACEMENT. ANY TRACER WIRE FOUND NOT TO BE CONTINUOUS AFTER TESTING SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE PRIOR TO ASPHALT PLACEMENT.
10. ALL TRACER WIRE WILL BE RE-TESTED AT THE 1-YEAR WARRANTY INSPECTION. ANY TRACER WIRE FOUND NOT TO BE CONTINUOUS AFTER TESTING SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

| OGDEN CITY ENGINEERING - STANDARD DRAWINGS | | |
|---|---|---|
| Ogden UTAH Still Untamed™ | **TYPICAL WATERLINE TRENCH** | **W-18** |
| | TAYLOR NIELSEN, CITY ENGINEER | SHEET 1 OF 1 — 2025 |

## 5-2 Water System Design Standards

All Water System installation and design must conform to Ogden City's Culinary Water Master Plan.

All water system installation and design must conform to State of Utah Drinking Water Rules. R309-550 is of relevance to this section and should be consulted frequently. If a conflict arises between Ogden City Standards and Utah Drinking Water Rules, Utah Drinking Water Rules shall govern.

### A. Culinary Pipe Main Standards

1. All material that comes in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61. Pipe, joints, fittings, valves and fire hydrants shall also conform to AWWA Standards (C104-A21.4-08 through C550-05 and C900-07 through C950-7). All components shall be appropriately stamped with the NSF logo (R309-550-6).

2. Installation shall conform to Utah Drinking Water Rule R309-550-8. This rule references AWWA standards for various pipe materials.

3. Under no circumstances shall the pipe or accessories be dropped into the trench (R309-550-8(4)).

4. The pipe diameter used shall be approved by the City Engineer (or his representative) and must adhere to the Culinary Water Master Plan.
   a. Minimum allowable main shall be eight inches (8") in diameter.
   b. If the Master Plan is not clear in the area about pipe size and location, then the City Engineer shall give final approval.

5. All culinary water pipe shall be designed using a 120-psi design and a surge pressure of 225-psi unless otherwise indicated by the City Engineer or his designee.

6. Allowable culinary water pipe material for all projects within the City of Ogden:
   a. PVC C900 (8")
   b. Ductile Iron Pressure Class 350 (12"-48" diameter)
   c. Where highly corrosive soils are known in the City, the use of PVC is allowed for larger diameter pipe under direction of the City Engineer.
   d. Coated, Welded Steel is allowable for large diameter pipe with approval from the City Engineer.

7. Standard centerline alignment within the public right-of-way shall be 10 feet (10') north or 10 feet (10') east of the centerline.

8. Horizontal clearance between a water main and any parallel aligned utility shall be at least 10 feet (10'). When another utility crosses a water line then:
   a. The other utility shall cross perpendicularly.

b. Sanitary sewer lines shall not cross above the water main. If this is determined to be unfeasible by the City Engineer, then:
   1) A minimum 20 foot (20') long sleeve is required for the sewer line.
c. A minimum of 18 inch (18") vertical separation is required between the two mains.
   1) If a vertical separation of 18 inches (18") is determined unfeasible by the City Engineer, then:
      a) A reinforced concrete cradle is required (reinforcement shall meet current specifications).
      b) No joints of either utility will be allowed within a 10-foot (10') radius of the crossing.

9. Minimum cover required shall be 48 inches (48").
   a. Cover over utilities and between roadways or railroad tracks shall be sufficient to protect from potential loading either during construction or final finished surface.
      1) Should cover be insufficient to adequately protect the utility from any loading, encasement or casings shall be provided to protect affected utility.
10. Maximum allowable lay depth cover for any main line or service line shall not exceed 5' – 6" without a variance approved by the City Engineer.

11. Pressure Test on the water line is required to hold 225 pounds per square inch (225 psi) test pressure for two (2) hours unless otherwise required.
    a. If pipe fails the pressure test, locate and repair any defective materials in the line and retest.
    b. Pressure testing against any valve is prohibited.
    c. Any stretch of installed main greater than 20 feet (20') long will require a pressure test.

12. Tracer wire shall be installed on the underside of the culinary water pipe
    a. Tracer wire shall be 12-gauge, blue, insulated copper wire for direct burial.
    b. Continuity tests will be performed by or under the supervision of the Water Department. Schedule test one (1) week in advance. Contact Maintenance Supervisor at (801) 629-8363.

## B. Disinfection

1. Only materials that have been used previously for conveying drinking water may be reused. Used materials shall conform to drinking water rules, be thoroughly cleaned, and be restored to their original conditions (R309-550-6(4)).

2. All new waterlines are to be disinfected in accordance with AWWA Standard C651-05 and a passing bacteria test obtained prior to connecting any to any Ogden City infrastructure.
   a. Bacteria test will be performed by Ogden City Personnel, and tests will be performed Monday – Thursday before 2:30 p.m. Schedule tests a minimum of 48 hours ahead of time.
   b. If the first test if failed, Contractor will be required to pay for any additional bacteria tests on a costs basis.

c. The sample must be obtained from a sampling pipe of fitting no smaller than two inches in diameter.
d. Chlorination of the completed water lines shall be completed by the Contractor and no additional cost to the City.

3. Bacteria samples will be collected by Ogden City Personnel, with the approval of the City Inspector.

4. Any stretch of water main installed greater than 20 feet (20') shall require bacteriological test sampling.

5. In an effort to facilitate successful disinfection, the open ends of all pipelines under construction shall be covered and effectively sealed at the end of the day's work (R309-550-8(9)).

## C. Culinary Water Trench Standards

1. Maximum backfill particle size is 3/8 inch (3/8") in the pipe zone. The gradation shall be a well-graded mix that is typical for pipe bedding materials.

2. Pea Gravel is not allowed in any part of the trench.

3. Backfilling of the trench
   a. The pipe zone requirements are based on the manufacture recommendations but shall be no larger than 3/8 inch without special approval from the City Engineer.
      1) Any damage caused to the pipe system by the Contractor shall be replaced or repaired at the Contractor's expense as directed by the City.
   b. Compaction tests are required every 200 linear feet (200') at half and full depth for any water main installation. Contractor is responsible to provide test results to the City.
      1) Compaction shall be to a 95% or greater relative to a modified proctor density.
      2) If the City determines an additional test is required, then it shall be provided by the contractor.
   c. Excavated native material shall not be used as structural fill in any portion of the trench within the public Right-of-Way.

4. If groundwater is encountered, then:
   a. Trenches must be kept free from water during excavation, pipe installation, and the installation of material in the pipe zone.

5. Excavation of any trench must be to OSHA safety standards.

6. Do not use sewer rock or recycled RAP aggregate in the pipe zone without the approval of the City Engineer.

## D. Valves

1. Valves shall be located in all intersections and shall equal number of legs.

2. All valves 12 inch and larger (12") shall be butterfly design.

## E. Joints

1. Joints shall be restrained at all valves, tees, crosses, bends and wyes.

2. The number of joints that need to be restrained back from thrust producing fittings shall be determined by the design engineer. The lengths must also be approved by the City Engineer.

## F. Fire Hydrants

1. Fire Hydrant spacing:
   a. Shall not exceed 300 feet (300') in areas of multi-family dwellings, commercial and manufacturing uses.
   b. In single-family dwelling use areas hydrant spacing shall not exceed 500 feet.

2. Arterial roads shall have fire hydrants placed on both sides of the roadway every 300 feet (or 500 feet around single-family dwellings) to provide for Fire Department access to such hydrants.

3. Hydrants shall be connected to the main using a minimum six-inch (6") diameter ductile iron (D.I.) pipe.

4. All newly constructed fire hydrants shall be flow tested and then painted according to the NFPA color-coding.
   a. Ogden City Water and the Inspector must witness the flow test.
   b. The fire hydrant bonnet shall be painted by the developer or contractor and approved by Ogden City.
   c. All fire hydrants shall be classified based upon the actual flowrate and shall be painted based upon the following color-coding per NFPA:
      1) Blue – 1500 gallons per minute or more
      2) Green - 1000 to 1499 gallons per minute
      3) Orange - 500 to 999 gallons per minute
      4) Red – 0 to 499 gallons per minute

5. Permanent dead-end lines shall require a fire hydrant and in line valve installed.

6. Fire hydrants shall not be located within 10' of sanitary sewers and, where possible, within 10' of storm sewers (R309-550-6(5a)).

## G. Air Relief Valves and Blow-Offs

1. Blow-offs and air relief valves shall not be connected directly to a sewer R309-550-6(6c).

2. Drainage for vaults or manholes shall provide adequate drainage, preferably to daylight, in accordance with R309-550-6(7).

## H. Concrete Thrust Block

1. Provide concrete thrust blocks at all taps, temporary dead ends and at the base of all hydrants.
   a. Place thrust blocks directly against undisturbed earth.
   b. Provide bond breakers on all thrust blocks.
   c. For new waterline systems, new thrust blocks must cure for minimum 8 hours before hydrostatic testing.
   d. All concrete must be a minimum of 4,000 psi.
   e. No bag mixes will be allowed for thrust blocks.

2. All other locations shall rely on restrained joints to handle thrust unless directed otherwise by the City Engineer.

## I. Water Vaults/Meter Boxes

1. No meter box shall be allowed in any street, driveway, driveway flare, or sidewalk.

2. Drainage for vaults or manholes shall provide adequate drainage, preferably to daylight, in accordance with R309-550-6(7).

## J. Backflow Prevention Device or Assembly

1. Backflow prevention devices are required on all laterals 2 inches or smaller.

2. Refer to Section 33 12 17 – Backflow Prevention Device or Assembly in the Amendments to the APWA standards.

3. Backflow and Cross Connection Control shall adhere to Section 9, Chapter 4 of Ogden City Municipal Code. The Safe Drinking Water Act and Amendments of 1996, Utah Code 19-4-112 and Drinking Water Rule Section R309-105-12 are the authority under which Ogden City Ordinance operates. If a discrepancy arises between Ogden City Code and the codes that provide its authority, the strictest code shall govern.

## K. Service Laterals

1. Connection fees for a water tap and meter will be assessed at the time a permit is issued.
   a. Water taps two inches (2") or larger will be performed by Ogden City Personnel.

2. No common use laterals shall be allowed.

a. Common use laterals shall be eliminated as redevelopment of the site occurs, or if repair or replacement is needed. The construction or repair cost will be the responsibility of the Owner.

3. Allowable service line shall be constructed of, and shall meet Utah drinking water standards:
   a. CTS Grade Poly per AWWA C901
   b. CTS Grade Poly PEXa pipe per AWWA C904. See approved materials list for more details.
   c. Ductile iron leads shall be installed on all fire hydrants.

4. Minimum size shall be one inch (1″) diameter for residential connections. All commercial connections shall be sized using AWWA sizing standards but shall in no instance be smaller than a 1″ lateral and 1″ meter.

5. Location of water service shall generally run 10 feet to 15 feet from either property line of the lot served.

6. Location of water meter shall be placed to make the service line run perpendicular to the roadway and water main.

7. If an existing water service lateral is modified in any manner, the water meter assembly shall be replaced by the Contractor.

8. Joint trench with the sewer lateral is not allowed.
   a. The water lateral shall maintain a minimum of 1 foot (1′) vertical and 10′ horizontal clearance with a stepped trench, water above sewer.

9. Location of service line shall be marked onto the top of the adjacent curb with a "W"
   a. Location of extended service lateral towards building shall be located via a 2 x 4 minimum with a blue colored end visibly extended above adjacent surface.

10. Minimum static pressure allowed to each individual service shall not drop below 50 psi (50 pounds per square inch) as measured at the water main without approval of the City Engineer.

11. Three (3) piece unions shall not be allowed unless approved by the City Engineer.

12. Service lines shall be capped until they are connected for service (R309-550-11(4a)).

13. Any service lateral of 2″ or larger shall conform to the same requirements of Disinfection as mentioned in part B. above.