

**PRESSURE URBAN IRRIGATION
SPECIFICATIONS**

**NAMPA & MERIDIAN IRRIGATION DISTRICT
Updated January 1, 2013**

All items unless otherwise modified herein shall conform to the "Idaho Standards for Public Works Construction" (I.S.P.W.C.), latest edition.

SMALL LOT INDIVIDUAL PARCELS LESS THAN 1 ACRE SHALL HAVE ¾" SERVICE

SYSTEM CAPACITY:

No pipe capacity shall be required in excess of the total acreage allotment. This acreage allotment shall be calculated at 6.5 GPM per irrigable acre or .733 minor inch per acre for all land served by the system. Irrigable acreage shall be determined by NMID.

Main line to make a complete loop of the subdivision from pump station with the first T-joint having isolation valve accessible in the pump station or immediately beside it.

None over forty-eight (48) inch in depth, finished grade.

Main line tube, minimum four (4) inch.

Any line serving more than one (1) lot is considered main line.

1. PIPELINE CONSTRUCTION:

1.1 MATERIALS:

1. PIPE: All pipe shall be polyvinyl chloride (PVC) Class 200, SDR 21 or better.
Pipe two (2) inches and larger shall be ring gasket joints.

2. FITTINGS: PVC pipe fittings.

Solvent weld fittings two (2) inches and smaller shall be on single service only. Fittings must be Schedule 40 or better and meet or exceed the pressure rating of the pipe. Threaded fittings shall be Schedule 80.

Fittings four (4) inches and larger shall be cast iron. Cast iron fittings must meet current AWWA requirements.

3. THRUST BLOCKING: Thrust blocks are required at tees, bends and dead ends on all pipe and fittings with rubber gasket joints. Thrust blocks are also required at elbows and tees before and after any compression type couplet and where shown on the drawings. Concrete for thrust blocks shall conform to I.S.P.W.C., CL-3000 and shall have a minimum 28-day compressive strength of 3,000 psi. Concrete thrust blocks are to be placed against undisturbed earth.

Thrust blocks shall have the following bearing areas unless otherwise called for on the drawings:

4" and small pipefittings	1.3 sq. ft.
6" pipefittings	2.0 sq. ft.
8" pipefittings	3.5 sq. ft.
12" pipefittings	8.0 sq. ft.

PRESSURE URBAN IRRIGATION SPECIFICATIONS

4. FINDER WIRE: No. 12 direct burial single strand copper wire (Type THHN or THWN) shall be laid adjacent to all water main and service lines. The wire shall be placed along the North and East side of the main and service lines. The finder wire shall also be extended up the valve boxes. All wire joints shall be connected with a King "One Step" 30 V twist on water tight wire nut enclosure or prior approved equal.
5. FLEXIBLE COUPLERS: Coupling center ring shall be constructed of ductile iron having a minimum yield of 30,000 psi. End rings shall be constructed of ductile or malleable iron. Ductile iron couplers shall have the manufacturer's standard coating. High strength, low alloy steel trackhead bolts and heavy hex nuts shall be used. (Examples: Romac 101, Rockwell 311)
6. TAPPING SADDLES: Saddles shall be ductile or malleable iron. Straps or bands shall be galvanized or stainless steel. Gaskets and coatings shall be the standard of the manufacturer. (Examples: Romac 101, Rockwell 311)

1.2 PIPE INSTALLATION:

GENERAL: All PVC pipe shall be assembled and installed in accordance with the pipe manufacturer's recommendations and as shown on the drawings.

1. PIPE INSTALLATION WITHIN STREET RIGHT-OF-WAYS

GENERAL: All work within street right-of-ways shall meet both the specifications of the agency having jurisdiction over the right-of-ways and current I.S.P.W.C. specifications.

EXCAVATION: All pipelines shall have a minimum of thirty (30) inches and a maximum of (48) inches finished grade. Utilities encountered in the pipe zone shall be crossed below by a minimum of 3'. Topsoil shall be stockpiled and used for the top layer during backfill.

PIPE BASE AND PIPE ZONE MATERIALS AND PLACEMENT: Pipe base and pipe zone shall include the full width of the trench from four (4) inches below the bottom of the pipe to six (6) inches above the top of the pipe. Backfill materials may be excavated native material containing no rock, organic matter or materials larger than 1/2 inches. Where the volume or quality of native excavated materials is inadequate, sand will be used for pipe base and pipe zone backfill. Pipe base material shall be placed and compacted sufficiently to preclude future settlement. Compaction of pipe zone and trench backfill material shall begin when there is sufficient cover to protect the pipe from damage. Pipe base and pipe zone shall be back-filled with commercial type bedding material or an approval alternate (free of humus, organic material, frozen material, and debris conforming to the gradation specified below:

U.S. Standard Sieve Size	Percent Passing By Weight
3/4"	100
3/8"	95-100
#4	90-100
#10	90-100
#40	15-80
#100	0-25
#200	1-10

PRESSURE URBAN IRRIGATION SPECIFICATIONS

Bedding shall be placed in lifts not to exceed six (6) inches, except for the initial lift, which shall be four (4) inches. Pipe base material shall be placed and compacted. Compaction of pipe zone and trench backfill material shall begin when there is sufficient cover to protect the pipe from damage. Pipe base and zone materials shall be compacted to 95% of maximum density in accordance with AASHTO T-99 by means of mechanical compaction. A minimum three (3) inch sand cushion shall be installed between the irrigation pipe and any existing pipes or conduits encountered.

FOUNDATION STABILIZATION: If unsuitable soil material is encountered in the floor of the trench, the floor shall be over-excavated and back-filled with three (3) inch minus granular material. The backfill material shall be uniformly graded from course to fine and free of excessive dirt and organic material. Backfill shall be compacted to 95% of maximum density in accordance with AASHTO T-99.

BACKFILL ABOVE PIPE ZONE: Where the pipe is located within the street right-of-way but outside areas to be overlaid with asphalt, suitable native material shall be used as backfill from the pipe zone to finish grade. Areas in which pavement repair is required shall be back-filled with ¾ inch minus crushed aggregate from the pipe zone to a point two (2) inches below finished pavement grade. Backfill shall be placed in lifts not to exceed six (6) inches and compacted to 95% of maximum density in accordance with AASHTO T-99. Compaction shall be done using mechanical compactors.

- 1.3 **SYSTEM FLUSHING:** The completed system shall be flushed of dirt and foreign material and all air shall be vented from any high points prior to placing the system in operation.

2. ISOLATION VALVES:

2.1 MATERIALS:

1. **VALVES:** Valve size unless otherwise noted on the drawings shall equal that of the pipe on which it is installed.

GATE VALVES:

2. **VALVES TWO (2) INCHES AND LARGER:** All gate valves shall meet the requirements of AWWA C 509 latest revision specifications for resilient wedge valves and shall be manufactured by Waterous, Clow or Mueller. The gate valves shall be two hundred (200) psi working pressure; non-rising bronze stem with o-ring rubber gaskets and with a two (2) inch square operating nut opening to the left.

3. **VALVE BOXES:** All gate valves shall be fitted with a standard adjustable cast iron valve box and five and one quarter (5 ¼) locking lid as manufactured by Tyler No. 6855.

4. **FLANGES / STEEL FLANGES:** Steel companion flanges shall be AWWA Class D steel ring flanges. Threaded or slip on, socket weld type as required.

5. **CONCRETE:** Concrete for valve box collars shall conform to I.S.P.W.C>, CI-3000 and shall have a minimum 28-day compressive strength of 3,000 psi.

PRESSURE URBAN IRRIGATION SPECIFICATIONS

2.2 CONSTRUCTION: Isolation valves shall be installed where shown on the plans. Valve boxes located in unpaved traffic bearing areas shall be provided with a six (6) inch thick concrete collar twenty-four (24) inches square. Valve boxes shall be installed flush with surrounding ground.

3. PAVEMENT REMOVAL AND RESTORATION:

3.1 REMOVAL OF PAVEMENT: Neatly cut all bituminous and concrete pavements regardless of the thickness prior to excavation of the trenches with an approved pavement saw or cutter. Pavement cuts shall be made a minimum of twelve (12) inches away from each side of the trench over material, which is to be left undisturbed.

3.2 PAVEMENT RESTORATION:

1. ASPHALT CONCRETE: Asphalt concrete used in conjunction with this project shall be furnished and placed in accordance with I.S.P.W.C.

2. CONSTRUCTION: The pavement shall be cut to provide clean, solid, vertical joints. Whenever possible, cut lines shall be parallel to or at right angles to the street centerline.

Immediately before applying the tack coat, the surface to be treated shall be swept clean of all loose material, dirt, excess dust or other objectionable material. No application will be permitted when the surface is appreciable damp or when weather conditions are unsuitable.

Following the preparation of the base course and abutting edges, the contractor shall apply CSS-1 emulsified asphalt (tack coat) to all joined surfaces. Asphalt concrete shall be placed to a minimum compacted depth of two (2) inches, providing a smooth, even surface conforming to adjacent surfaces.

4. SERVICE RISERS:

4.1 MATERIALS:

1. PIPE: 200 PSI Poly
2. VALVES: Curb stop valves shall be Class 200, with non-rising stem, all bronze or brass construction, and screwed ends.
3. FITTINGS: All fitting to be brass.
4. Modified Type A risers.

4.2 CONSTRUCTION: Service risers are to be constructed in conformance with the attached standard details. Service risers located along property lines adjacent to public roads shall be Type "A" only. Lateral pipelines extending to single service risers shall be two (2) inch pipe meeting the requirements of Section 1.1.1.

Joint compound or Teflon tape shall be used on all threaded joints.

All risers shall be labeled "Irrigation Water-Not for Drinking" All valve boxes and risers to be marked with seven (7) foot steel t-bar fence posts driven twenty-four (24) inches in the ground with top twenty-four (24) inches painted purple.

PRESSURE URBAN IRRIGATION SPECIFICATIONS

5. DRAINS AND AIR RELEASE VALVES:

- 5.1 DRAIN VALVES: Will be one and one-half inch (1 ½") curb stop valve or equivalent AWWA approved valve.
- 5.2 AIR RELEASE VALVE: One and one-half (1 ½) inch 200 PSI rated and must extend from the top of main line not the sides.
- 5.3 DRAIN VAULT: Twenty (20) inch PVC vault with Ford X 43 cast iron frame and 13 ½" locking lid. Obliterate words "water meter" on lid. Drain and air release valves to be located in common area.
- 5.4 CONSTRUCTION: Drains, air release and blow-off are to be constructed in conformance with the attached standard detail. Drain and air release shall be installed at the end of all pipelines serving more than three (3) service risers or as indicated by NMID.

6. ADDITIONAL REQUIREMENTS:

- 6.1 DELIVERY POINT:
The Nampa & Meridian Irrigation District (NMID) will designate the site within the proposed subdivision, short subdivision, lot, tract, parcel or site for water delivery into the new system. Where NMID delivery facilities are located on the property being divided, piping shall be designed for delivery from that point. Where NMID facilities do not exist on the property being divided, NMID will designate the delivery point based on proximity to NMID facilities and ease of future delivery pipe installation. Connection of the new distribution system to NMID facilities shall be completed by NMID crews at the landowner's expense. A deposit equal to the estimated cost for making the connection must be paid to NMID before crews will perform the work.
- 6.2 CROSS CONNECTS:
Any cross connects made to potable water supplies must meet the specifications of the entity providing the potable water. Sizing of backflow **must** meet the size of the demand. No multiples at one location. When a cross-connection is installed a meter must be set **before** acceptance. Must have a shut-off valve (AWWA approved – wedge type 2" nut) between backflow assemblies and the main line.
- 6.3 ISOLATION VALVES:
Isolation valves shall be located in common areas and two (2) feet from sidewalk off of road side each time mainline crosses road or common area. All main lines are to be looped.
- 6.4 AS-CONSTRUCTED DRAWINGS:
As-constructed drawings (detailing pipe location, service riser locations and types and isolation valves) shall be provided to NMID following construction. Drawings shall be provided on reproducible copy and shall be clean, neat, and legible along with a digitized drawing (CD). **FINAL APPROVAL WILL NOT BE ISSUED UNTIL RECEIVED!**
- 6.5 INSPECTION:
The contractor or individual installing the facilities must contact the NMID inspector forty-eight (48) hours prior to beginning any work. All trenches shall be left open for inspection Monday through Thursday.

PRESSURE URBAN IRRIGATION SPECIFICATIONS

- 6.6 **SEALING OPEN ENDS OF PIPE:**
Where the system is installed in sections or will not immediately be connected to the NMID delivery point, the open end(s) of the system shall be capped prior to backfill.
- 6.7 **STREET CROSSINGS:**
All street crossings will be marked on each side with purple fiberglass stakes saying pressure irrigation present.
- 6.8 **PROFESSIONAL ENGINEERING REQUIREMENT:**
Any short plat, plat or subdivision containing in excess of five (5) lots will be required to have irrigation system designed and stamped by a professional engineer licensed in the State of Idaho.

LARGE LOT, INDIVIDUAL PARCELS ONE (1) ACRE AND LARGER:

7. **GENERAL:** All design, material and construction requirements for large lot irrigation systems shall be the same as those for small lot irrigation systems with the following exceptions:
- 7.1 **SYSTEM CAPACITY:** Design flow rates for pipe sizing shall be determined by NMID based on parcel sizes. The maximum design flow rate, regardless of lot size, shall be 8 gpm per irrigable acre. Irrigable acreage shall be determined by NMID.
8. **TESTING:**
- 8.1 **HYDROSTATIC TESTS:** Pressure and leakage tests shall be made on all newly laid pipe or any valved section of it or both. NMID will monitor the tests as conducted by the Contractor. The contractor shall furnish all necessary assistance, equipment and material and shall make all taps in the pipe as required for the tests. The Contractor prior to placement of final surface coverings shall test the finder wire for continuity.

When any section of pipe is provided with concrete thrust blocking, the pressure test shall not be made until at least five (5) days have elapsed after the concrete thrust blocking is installed. If high-early cement is used for the concrete thrust blocking, the time may be reduced to two (2) days.

The pressure test shall be one hundred fifty (150) pounds per square inch.

- a) **DURATION:** The duration of each pressure test shall be a minimum of sixty (60) minutes.
- b) **EXPELLING AIR:** Before applying the specified test pressure, all air shall be expelled from the pipe.
- c) **PROCEDURE:** Each valve section of pipe shall be slowly filled with water to replace any water lost. The specified test pressure, measured at the point of lowest elevation by a gauge of at least two hundred fifty-five (255) psi measuring capability divided into two (2) psi increments shall be applied by means of a pump connected to the pipe in a satisfactory manner.

PRESSURE URBAN IRRIGATION SPECIFICATIONS

- d) **LEAKAGE:** Leakage shall be defined as the quantity of water necessary to restore the specified test pressure at the end of the test period. No pipe installation will be accepted until the leakage is less than the number of gallons per hour as determined by the following formula.

$$L = \frac{ND \sqrt{P}}{7400}$$

in which

L = allowable leakage in gallons per hour

N = number of joints in the length of pipe tested

D = nominal diameter of pipe in inches

P = average test pressure during the leakage test in pounds per square inch

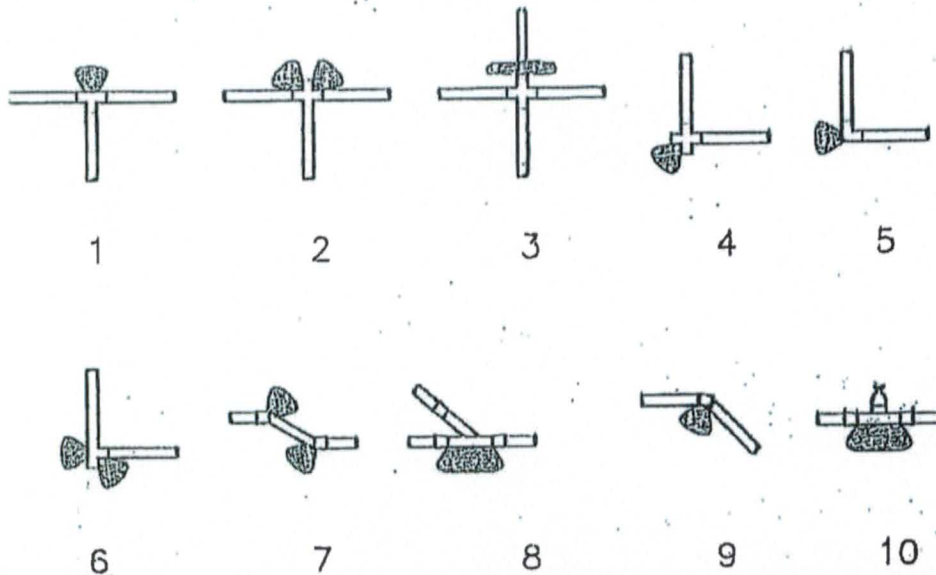
Should any test of pipe laid disclose leakage greater than that allowed above, the Contractor shall, at his own expense, locate and repair the defective joints or pipe until the leakage is within the specified allowance.

- PUMPS:** All pumps to be high electrical efficient submersible or vertical turbines not to exceed 1800 Rpm unless stated otherwise by NMID and controlled by ABB variable frequency drive. Any pump system 15 hp or larger shall be of vertical turbine type. Jockey pump to run clear water screen continuously, minimum three (3) hp. controlled by its own VFD. Pumps are to be 3 phase unless otherwise approved.
- MANIFOLDS:** Must be built out of Schedule 40 pipe minimum.
- FILTER SYSTEMS:** All systems must have automatic self-cleaning suction scanning type filter system installed. Screen to be 200 micron (i.e. Orival, VAF, Amiad).
- PUMP STATIONS:** All pump stations to have enclosed building two (2) foot minimum clearance between walls and pump manifolds and control boxes. Pump Station must have access through roof to remove pumps. Each side to have minimum twelve (12) by twelve (12) inch vent – one of which will have twelve (12) inch thermostat controlled exhaust fan.
- “Self-contained” pump systems must have prior management approval before acceptance. If acceptance is granted, system must have lighting, a 110v power outlet installed and have access to the wet well for cleaning.
- LIGHTING:** Fluorescent lighting – two (2) four (4) foot tubes with cold weather ballast. The pump station shall include at least one thirty (30) amp 110 V dual outlet power supply.

PRESSURE URBAN IRRIGATION SPECIFICATIONS

- WET WELLS:** Systems up to 50 hp minimum vault size shall be sixty-inch (60") diameter concrete sized to number of pumps keeping twenty (20) inches of clearance minimum from pump to wall and pump to pump. 50 hp or larger systems change the minimum vault size requirement is 72". Will have steel plate cover with access door twenty-five (25) inches by twenty-five (25) inches minimum aligned with standard manhole steps to bottom of well. Steps to be copolymer polypropylene coated one-half (1/2) inch ASTM A-615 grade sixty (60) steel to meet or exceed ASTM 6-478, AASH to M-199 specifications.
- SCREENS:** ALL systems must have either a Clemens or First Street screen.
- CLEMANS SCREENS** Intake screen structures will be concrete having twenty-five (25) inches clearance on each side and non-flag end of screen and six (6) inches minimum between screen and floor. Overflow pipe invert will be six (6) inches above top of screen. Screens will have eighteen (18) mesh stainless steel wire and sealed bearings on rotating assembly.
- FIRST STREET
WELDING SCREEN:** Structures will be concrete having twenty-five (25) inch clearance to sides. Screens will have eighteen (18) mesh stainless steel wire.
- OTHER SCREENS:** Other types of rotating clear water screens will need to be approved in writing on a case-by-case basis.
- FLOW METER:** All systems must have a magnetic type flow meter installed.
- HARMONIC FILTERS:** All systems must meet Idaho Code IEEE519 and must install harmonic filters when necessary.

PRESSURE URBAN IRRIGATION SPECIFICATIONS

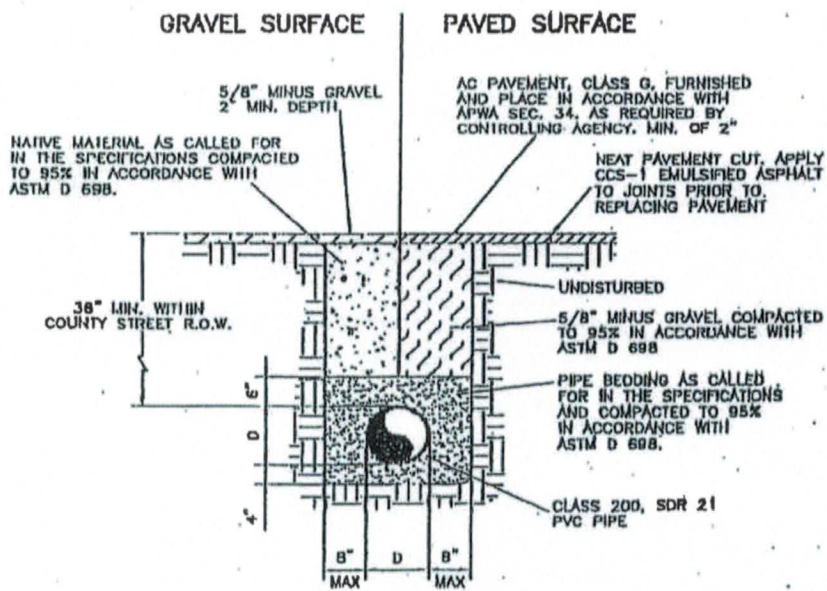


THROUGH LINE CONNECTION, TEE
 THROUGH LINE CONNECTION, CROSS USED AS TEE
 CHANGE IN LINE SIZE WITH REDUCER
 DIRECTION CHANGE, CROSS USED AS ELBOW
 DIRECTION CHANGE 90° ELBOW
 DIRECTION CHANGE, TEE USED AS ELBOW
 DIRECTION CHANGE
 THROUGH LINE CONNECTION, WYE
 VERTICAL DIRECTION CHANGE, BEND ANCHOR, SEE NOTE BELOW
 VALVE ANCHOR, SEE NOTE BELOW

E: IF THRUST, DUE TO HIGH PRESSURE, ARE EXPECTED, ANCHOR
 VALVES AS SHOWN IN DETAIL #10, AT VERTICAL BENDS, ANCHOR
 TO RESIST OUTWARD THRUSTS.

**PRESSURE URBAN IRRIGATION
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NAMPA & MERIDIAN IRRIGATION DISTRICT

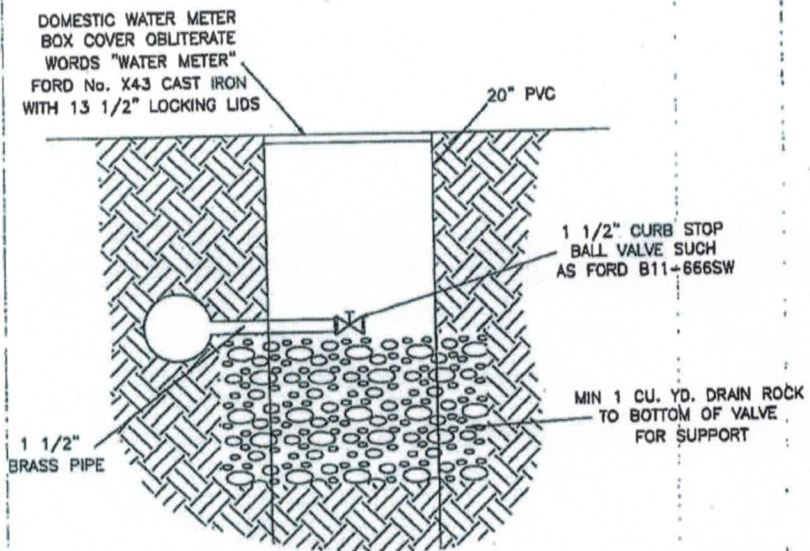


TYPICAL STREET CROSSING

SCALE 1" = 1' - 0"
(SEE NOTES 1 THRU 4)

**PRESSURE URBAN IRRIGATION
SPECIFICATIONS**

NAMPA & MERIDIAN IRRIGATION DISTRICT

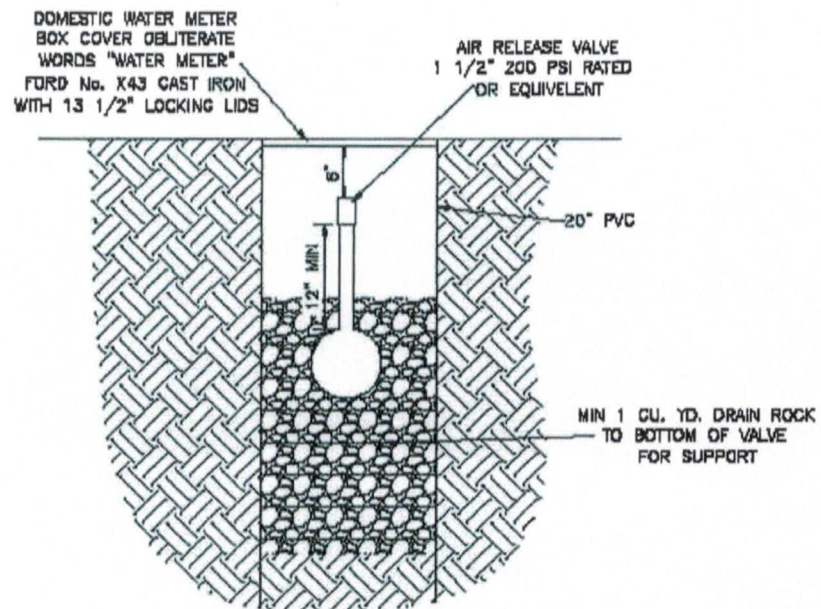


DRAIN VALVE

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SPECIFICATIONS**

NAMPA & MERIDIAN IRRIGATION DISTRICT

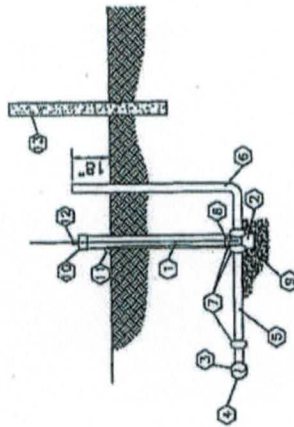


AIR RELEASE

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NAMPA & MERIDIAN IRRIGATION DISTRICT

- ① 3" SUR 21" PVC RISER EXTEND 16" ABOVE GROUND
- ② 3" x 4" x 6" CINDER BLOCK (OR EQUAL)
- ③ 4" x 3/4" SADDLE MINIMUM
- ④ 4" MAIN LINE MINIMUM
- ⑤ 3/4" POLY PIPE 200 PSI
- ⑥ 6" x 3/4" 200 PSI POLY 16" ABOVE GROUND
- ⑦ 3/4" BRASS COMP. COUPLINGS
- ⑧ 3/4" BRASS CURB STOP
- ⑨ ROCK CHIPS
- ⑩ 3" FEMALE ADJ.
- ⑪ LOCATOR WIRE
- ⑫ 3" PVC PLUG
- ⑬ MARKER STEEL "T" POST



LONG SIDE SERVICE

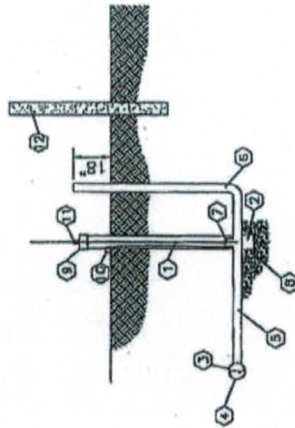
"MODIFIED"
TYPE A RISER
 LONG SIDE SERVICE

--NTS--

SINGLE FAMILY RESIDENT
 NAMPA, MERIDIAN IRRIGATION DISTRICT

NAMPA & MERIDIAN IRRIGATION DISTRICT

- ① 3" SDR 21" PVC RISER EXTEND 18" ABOVE GROUND
- ② 3" x 4" x 6" CURB BLOCK (OR EQUAL)
- ③ 4" x 3/4" SHOULDER MINIMUM
- ④ 4" MAIN LINE MINIMUM
- ⑤ 6" x 1/4" BRASS NEFFLE
- ⑥ 6" x 3/4" 200 PSI POLY 18" ABOVE GROUND
- ⑦ 3/4" BRASS CURB STOP
- ⑧ ROCK CHIPS
- ⑨ 3" FEMALE A.D.
- ⑩ LOCATOR WIRE
- ⑪ 3" PVC FLUG
- ⑫ MARKER STEEL T POST



LONG SIDE SERVICE

"MODIFIED"
TYPE A RISER
SHORT SIDE SERVICE

--NTS--

SINGLE FAMILY RESIDENT
NAMPA MERIDIAN IRRIGATION DISTRICT