

**BOISE CITY PUBLIC WORKS  
PRESSURE IRRIGATION SYSTEM**

**POLICY  
DESIGN STANDARDS  
AND  
CONSTRUCTION SPECIFICATIONS**

**Revision Date: November 1999**

**AS ADOPTED BY  
THE  
BOISE CITY IRRIGATION COMMITTEE**

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**FINAL RECOMMENDATIONS OF  
BOISE CITY  
IRRIGATION COMMISSION**

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## **I. BOISE CITY PRESSURE IRRIGATION POLICY**

**BOISE CITY  
PRESSURE IRRIGATION SYSTEM  
POLICY**

**I. INTRODUCTION**

By Ordinance No. 5638, Amended 06/27/95, the City of Boise required the developer of new subdivisions for residential development within the incorporated Boise City limits and Boise City impact area, to provide for pressure irrigation facilities separate from the potable water system where surface irrigation water rights are available. The goal of the ordinance is to provide for the continued use of developed irrigation water rights and to preserve higher quality water for human consumption. The ordinance also requires that all new pressure irrigation systems meet minimum adopted standards for design and construction.

This policy statement outlines the basic conceptual goals for pressure irrigation systems. These goals will serve as a guide to Owners, Developers, and the Irrigation Commission for designing and evaluating pressure irrigation systems within new subdivisions.

**II. PRESSURIZED IRRIGATION SYSTEMS REQUIRED**

A separate pressurized irrigation system using non-potable water shall be required for external landscaping in all new residential subdivisions including multifamily, when the underlying land has, or is able to obtain, valid surface irrigation water rights.

**III. SYSTEM OWNERSHIP**

Any irrigation system installed under the requirements of the above referenced ordinance shall be required to be owned by an entity of long standing, that has the capacity to provide for long term operations and maintenance; and positive means for assessment of system costs. The preferred choice of ownership is the irrigation district, canal company or other irrigation entity that supplies the water. An alternative ownership option will be the City of Boise through the creation of and annexing to, a municipal irrigation district.

There are three options for ownership of the completed pressure irrigation system:

**1. Municipal Irrigation District**

Under the Municipal Corporations Code, the process would begin with the Boise City Council establishing an ordinance to create the Municipal Irrigation District. It would allow for parts, or all, of the City being in the district. Once that is done, the property owners would then petition the Council to be brought into the system. The Council would then pass an ordinance modifying the District boundaries.

**2. Irrigation Entity Supplying Water**

The irrigation district, or canal company, may accept ownership of the pressure irrigation system (at this time the Nampa Meridian Irrigation District is the only irrigation entity within the area of impact accepting ownership of pressure irrigation systems).

**3. Homeowner's Associations and/or Lateral Water User's Associations**

The Homeowner's or Lateral Water User's Association can be declared in the Covenants, Conditions, and Restrictions as the owner of the pressure irrigation system.

The intended ownership of the pressure irrigation system must be documented prior to the Boise City Engineer signing the subdivision plat.

Although the City Ordinance addresses the installation of pressure systems in new residential subdivisions, it is the policy of the City of Boise to offer the same options for ownership to existing residential subdivisions that have pressure irrigation systems or install them after this requirement is implemented.

**IV. DESIGN AND CONSTRUCTION STANDARDS**

All irrigation systems installed shall be designed and constructed for long term operation and low maintenance. Systems shall be designed and constructed to meet or exceed the minimum system standards adopted by Boise City.

**V. OPERATION AND MAINTENANCE**

Any irrigation system installed under the provisions of the above referenced ordinance shall be operated and maintained (O&M) by a business or entity that has the capability to provide said O&M in accordance to the system operation standards and minimum service standards adopted by Boise City, or higher standards if required by the irrigation entity taking ownership. O&M services shall be provided by the City of Boise for systems included within the municipal irrigation district.

The owner of the pressure irrigation system shall be responsible for the ongoing O&M of the pressure irrigation to provide service to the lots served by the system. The system is defined as the water source, pumping equipment, main distribution lines, and their appurtenances such as drains, blow-off valves, fencing and driveways, and the individual service line up to and including the first shut off valve. O&M can be done by employees, members, or by contract.

Any lot served by a pressure irrigation system has the right to utilize the water provided in accordance with the system's delivery schedule. Each lot is

obligated to pay the normal user fees for pressure irrigation, **WHETHER OR NOT** the pressure irrigation system is utilized.

**VI. PUBLIC EDUCATION**

Owners and operators of pressured irrigation systems shall be encouraged to provide customers with information on potential risks associated with the operation of the pressurized irrigation system. The City of Boise recommends that:

1. The pressurized irrigation system be clearly labeled during construction and the labeling be maintained as a part of the ongoing operation of the system;
2. System operators and employees be knowledgeable of the risks associated with cross connection of irrigation and potable water systems, the allowable means of cross connecting the two systems and means available for preventing or eliminating illegal cross connections;
3. Providing at least annual reminders to customers of the significance of having separate water systems in their subdivision and the risks associated with illegal cross connections.

**VII. EXCLUSION FROM REQUIREMENT TO INSTALL A PRESSURE IRRIGATION SYSTEM**

A pressure irrigation system is required to be installed in all new residential developments requiring subdivision unless the City Engineer issues a waiver of the requirement. The following are legitimate reasons for requesting a waiver of the irrigation requirement:

**1. Development of Area Without a Surface Irrigation Water Right**

The installation of a pressure irrigation system is not required in an area where a sufficient surface irrigation water right does not exist. If a pressure irrigation system is not to be installed, the lack of a surface irrigation water right shall be documented in writing by the appropriate Irrigation District or Canal Company and the Idaho Department of Water Resources and submitted with the subdivision plat. Sale or transfer of a water right may not be grounds for requesting a waiver from the requirement of constructing a pressure irrigation system.

**2. Development Within an Area Where an Existing Surface Water Right Cannot be Delivered**

In an area being subdivided (with an existing water right) it is possible that the local Irrigation District or Canal Company may not be able to provide the irrigation water needed for a pressure irrigation system due to current delivery capacity or scheduling. In these situations, it may be required that a pressure irrigation system be installed and supplied by a well or a

separate metered connection from the domestic water supply. This will be done in anticipation of the Irrigation District or Canal Company making improvements to their delivery system so irrigation water can be used to supply the pressure irrigation system within two (2) years from the final plat being recorded.

**3. Development in an Area Where Existing Surface Water Rights Are Not Deliverable in a Manner Which Allows for Every Day Delivery**

For instance, water delivery on a rotation basis so pump station supply would not be available 24 hours a day, seven (7) days per week, could be the basis for requesting a waiver.

**4. Delivery of Irrigation Water by Other than a Pressurized Irrigation System**

This policy and criteria are written assuming a pressurized irrigation system will be installed to provide irrigation. Other means of delivery, such as flood irrigation, may be acceptable but not addressed specifically by the policy/criteria. The developer should present their proposed irrigation water delivery system to be used in lieu of a pressurized irrigation system with the request for a waiver.

**5. Economic Hardship**

The requirements to provide a pressurized irrigation system may be waived by the Boise City Engineer when the City Engineer finds that due to the specific circumstances surrounding a new subdivision, the cost of obtaining water rights, reestablishing water rights, or developing the system would impose an undue economic hardship on the developer. Undue economic hardship may be demonstrated if the cost per lot to develop the pressurized irrigation system is 25% higher than the cost per lot to serve subdivisions of similar size and density constructed within the previous two (2) years; or that the cost per lot of the pressurized irrigation system would exceed 5% of the expected per lot market value of the subdivision. The developer shall bear the burden of providing documentation, acceptable to the Boise City Engineer, demonstrating and supporting the estimated costs of construction of the pressurized irrigation system and the expected market value of the subdivision lots. For phased developments, costs will be analyzed over all phases of the development rather than the first phase only.

**6. Irrigation Report Required**

If a pressure irrigation system is not to be installed, an irrigation report shall be submitted with the subdivision plat by a licensed professional engineer to the Boise City Engineer stating the location and availability of surface irrigation water and the reasons a pressure irrigation water system is not feasible. If applicable, this report shall be accompanied by a letter from the secretary/treasurer of the Irrigation District or Canal Company

stating that they can not commit to having an irrigation source available to the subdivision within two (2) years.

**7. Process for Waiver**

- A. Submit request to Boise City Engineer;
- B. Boise City Engineer approves or denies;
- C. Decision can be appealed to the Irrigation Commission;
- D. The Commission can uphold the Boise City Engineer's decision or overrule it;
- E. If denied, appeal may be made to the Boise City Council;
- F. Boise City Council can uphold the Irrigation Commission's decision or overrule it.

## **II. BOISE CITY PRESSURE IRRIGATION SYSTEM DESIGN STANDARDS**

**BOISE CITY  
PRESSURE IRRIGATION SYSTEM  
DESIGN STANDARDS**

**I. DESIGN CRITERIA**

The intent of these design standards is to ensure dependable pressurized irrigation systems. Pressurized irrigation systems must be a reliable source of irrigation for the homeowners, in order to discourage cross connections between pressure irrigation and domestic water systems.

**1. Design of the Pressure Irrigation System Using Surface Water as a Source for Systems Supplied Surface Water by Irrigation Districts or Canal Companies**

The location and available supply of the pressure irrigation system shall be determined in coordination with both the Irrigation District or Canal Company providing the water and eventual system owner. The pump station and related facilities will be designed to maximize the water right available to the development by whatever means agreed upon by the Irrigation District or Canal Company and the eventual system owner. The ideal pressurized irrigation system should be able to provide water 24 hours per day, seven (7) days per week, under normal supply conditions for the irrigation water. However, consideration will be given for dual pressure irrigation systems which must be designed to operate less than 24 hours per day based on limitations of the source of irrigation water. Minimum requirements are to supply enough volume to deliver irrigation water at least three (3) days per week to each lot for a minimum of three (3) hours a day or approximately every other day. The design can supplement surface irrigation water by using another source (such as groundwater) or provide on site storage, but shall not require domestic water as a supplemental source during normal operation (when surface irrigation water is available).

The pressure irrigation system source (pumping plant) shall include, but not be limited to, a pressure pump or series of pumps including the intake screen, pump intake piping or manifold, pump control panels, discharge piping, filters, and control valves. Pumping plants shall be sized (or provide expansion) to accommodate a fully developed subdivision including future phases or additions. The pumping plant shall be capable of supplying water efficiently at the constant recommended pressure over a full range of low demand periods as well as high periods of demand. A small “jockey pump” may be required for small or single lot usage.

- A. Pumps shall be suitable for the installation with automatic controls and safeguard protection for both motor and pump. General rules are as follows:

1. Centrifugal pumps may be used where elevation of the pump is below the surface elevation of the water and allows a flooded suction.
  2. Vertical turbine type pumps shall be used where the elevation of the pump is above the surface elevation of the water being pumped.
  3. Submersible pumps may be used where adequate submersion is allowed and manufacturer's recommendations are followed.
- B. Intake screens shall be self-cleaning to divert moss and sized to allow now debris smaller than 1/16" to enter the system. Components of the screen that rotate shall have brass to brass bearing surfaces. Metal components shall be galvanized, epoxy coated, or stainless steel. Screens shall be continuously washed with water sprayed through a nozzle or series of nozzles onto the screen surface from a pressure line from the discharge side of the pump. Filters with 30 mesh equivalent screens shall be installed on the discharge side of the pumps. Screens shall be easily removed for maintenance and service. The filters shall have isolation valves to permit maintenance.
- C. Intake (suction end) piping shall be welded steel, flanged to allow for pump removal and serviceability. Discharge piping, larger than two (2") inches, shall be welded steel with flanged fittings to allow serviceability of all components. All steel piping components shall be epoxy coated or cold tar enameled to prevent rusting. All components shall be allowed above ground in the pumping plant as defined above. Bypass valving is recommended for future maintenance.
- D. Pump Motor Control Panels shall conform to the NEC (National Electrical Code). Conventional pump motor control panels may be substituted with Variable Frequency Drives to control motor speed which are approved by the motor manufacturer and do not void the pump motor warranty. Pumps shall be capable of both manual and automatic starts with proper devices to prevent caking. The controls shall include safety devices to shut the system down upon loss of intake water.
- E. Control valves, (i.e., pressure regulating valves, pressure relief valves, check valves, etc.), shall be metal and not plastic and sized according to the manufacturer's recommendations. Pumping plants shall have a minimum of one pressure relief

valve of adequate size to prevent over pressurization of the system in the event of a control failure.

*To document meeting these requirements, a design report shall discuss:*

- 1. The delivery schedule of the surface irrigation water to the pump station;*
- 2. The operation of the pump station to match the delivery of irrigation water by the irrigation entity the water right to the dual irrigation system;*
- 3. The amount of storage required (if any) to provide the difference between the surface water delivery schedule and the operation of the pump station;*
- 4. The range of flows the pump station is designed to operate to meet peak, medium, and low demand conditions. This may involve the use of different sized pumps, variable speed pumps, demand system bypasses, or other methods as agreed upon with the eventual system owner;*
- 5. Filtering equipment to be employed to provide filtering equivalent to a 30 mesh screen.*

**2. For Groundwater Source (Wells), New or Existing, for Supply of a Pressure Irrigation System (Optional)**

Pressure irrigation systems with groundwater wells as a source shall be designed to operate 24 hours per day, seven (7) days a week, without need for the domestic water source under normal conditions. The pumping facilities will be designed to maximize but not exceed the water right available as agreed upon with the entity that will own the system.

The ground water right from this well source shall be designed for operation at peak, medium, and low demand conditions with the use of different sized pumps, variable speed pumps, demand system bypasses, or other methods as agreed upon with the entity that will own the system.

*To document meeting these requirements, the design report shall discuss:*

- 1. The volume of irrigation water needed daily and the water right available;*
- 2. The minimum pumping rate of the well(s) and pumping equipment, in GPM, required to deliver the daily required volume of water to the dual irrigation system in 12 hours. This minimum pumping rate can be reduced by the amount of irrigation water provided to automatically controlled common area irrigation.*
- 3. The range of flows the pump station is designed to operate to meet peak, medium, and low demand conditions. This may involve the use of different sized pumps, variable speed pumps, demand system*

*bypasses, or other methods as agreed upon with the eventual system owner.*

**3. Backup Water Supply Connection for Surface Irrigation Water Systems for Early and Late Season Irrigation (Optional)**

For pressure irrigation systems with a surface irrigation water source, a reliable backup source may be provided by the developer to supply the system for a period of time before and after the period when irrigation water is normally distributed in the canal and ditch systems, and during which homeowners could expect to irrigate their residential lots. A normal irrigation season would be from approximately April 15 to October 15 each year. This backup source could be a groundwater well or a drain or ditch (assuming water rights are established), or a metered connection to a potable water supply.

If the backup connection is from the domestic water supply, the domestic supplier is not obligated to provide backup water supply during peak demand periods. It is possible, under conditions of peak demand on the domestic water system and lack of surface irrigation water, that the pressure irrigation system may be without a source of water supply, but these periods should be unusual and of short duration.

*To document meeting these requirements, the design report shall discuss:*

- 1. The capacity and design of the backup source should be at least as great as the surface irrigation source so its use does not require a change in operation of the dual irrigation system;*
- 2. If the backup source is the domestic water system, the arrangements for the delivery of the domestic water.*

**4. Hydraulic Design of Pressure Irrigation Distribution Systems**

The source and distribution system shall be designed to meet the requirements of the entity that will own the pressure irrigation system. In general, this criteria state that the source and distribution piping shall be sized for normal operating pressures of 45 to 80 PSI. Piping and pumping facilities should be sized so that under peak flow conditions the most critical service would receive 15 GPM at a minimum pressure of 45 PSI. Mainline distribution piping shall be a minimum 3 inches in diameter and shall utilize 3, 4, and 6 inch and larger diameter piping.

*To document meeting these requirements, the design report shall discuss:*

- 1. The control of the pumping equipment to maintain operating pressures between 45 and 80 PSI;*
- 2. The hydraulic analysis of the distribution piping and pumping equipment that demonstrates the pressure irrigation system is capable of providing at least 15 GPM at 45 PSI to the most critical service line on the system (highest elevation/furthest from the source, (i.e. the*

*service with the lowest delivery pressure) under peak flow conditions) (two thirds of the capacity of the source being delivered to one third of the system connections).*

**5. System Winterization**

The system shall be provided with a drain(s) or blow-off valves to provide for winterization. Blow-off valves can also be used to provide a means to provide for removing water from the irrigation system for winter time freeze protection.

**6. Color of Materials and Other Labeling of Pressure Irrigation Systems**

It is important that the non-potable pressure irrigation system be clearly labeled and marked in the field so it is not confused with potable water sources. All mainline piping in the distribution system shall be marked with purple warning tape.

**7. Location of Pressure Irrigation Distribution Systems**

The distribution system shall be located within the development as agreed with the entity that will own the pressure irrigation system. Distribution piping should be located in the public right-of-way in front of the residential lots or within a utility easement at any other location on the residential lots. Distribution piping may also be located in a dedicated alley at the rear of residential lots. If placed on rear lot lines the recommended location of the mainline and service lines shall be as noted in the standard off-set detail for service lines. If located in the front of the lots, the location shall be as recommended by the local Utility Coordinating Council.

**8. Valving of Pressure Irrigation Distribution Systems**

Distribution isolation valves shall be provided as agreed with the entity that will own the pressure irrigation system. The general criteria is that a valve is required for any lateral with more than four service lines, and at other locations as necessary to allow for isolation of each section of a looped system. Valves shall also be provided to isolate water sources from the distribution system. Valves shall be located so as not to be buried, covered, or otherwise “lost” by normal improvements made to residential lots. For example, necessary valves should be located if at all possible near road crossings.

An approved reduced pressure type back flow prevention valve shall be installed between the two systems at any location where the pressure irrigation is connected to the domestic water system to provide the backup water source.

Air Release valves should be designed for installation at high points in the distribution system if necessary.

**9. Sleeves for Road Crossings**

All road crossings shall be sleeved. Maximum nominal diameter of the sleeve pipe shall be no more than 2 times the nominal diameter of the carrier pipe. Sleeve piping material shall be 160 PSI PR-SDR PVC pipe or better.

**10. Combined Use of the On-site Water Amenities**

The entity delivering the water shall be notified if an on-site water amenity is to be utilized as part of the irrigation delivery system. Documentation of notification will be provided in the Irrigation Design Report.

**II. DEVELOPER REQUIREMENTS**

The Owner/Developer of new subdivisions located within the incorporated Boise City limits and within the Boise City impact area shall provide for pressure irrigation systems according to this Pressure Irrigation System policy. The Owner/Developer shall be responsible for all costs incurred in designed and installing the pressure irrigation systems in cooperation with the entity identified to own the pressure irrigation system.

Contractors employed by the Owner/Developer to install the pressure irrigation system shall have three (3) years experience installing large diameter (6 inch or larger) pressure water distribution systems, possess a current Idaho Public Works Contractors License, or be a Certified Irrigation Contractor certified by the Irrigation Association of Fairfax, VA.

All pressure irrigation plans prepared by the Owner/Developer's engineer shall be according to this Pressure Irrigation Policy. Plans shall be submitted to the entity or entities identified to own the pressure irrigation system. These entities shall document final approval of the pressure irrigation plan in writing, before the Boise City Engineer will sign the plat.

Documentation of the design of the pressure irrigation system shall be with plans signed by a Professional Engineer. Documentation that the entity identified to own the pressure irrigation system has reviewed and approved the design and construction, and has completed contracts for the O&M of the system (if applicable), shall be submitted with the subdivision final plat for its approval by the City of Boise and will be required before the signature on the final plat by the Boise City Engineer. A performance agreement between the Owner/Developer and the City shall be submitted before signature on the final plat, in lieu of construction of the pressure irrigation system.

Two sets of As-Constructed drawings for the pressure irrigation system and an Operation and Maintenance Manual (O&M) shall be provided to the entity responsible for the O&M. Drawings provided shall be reproducible. The design engineer will also be responsible for compiling an O&M Manual to be

provided to the entity identified to operate and maintain the pressure irrigation system. Information to be included in the O&M Manual includes:

- Equipment cut sheets for all specialized equipment with the name of the local supplier, such as for:
  - Pumps
  - Pump Controls
  - Supplies
  - Filters
- A narrative description of how the system is designed to operate.
- A description of how the system is to be winterized in the fall.
- A description of how the system is to be activated in the spring.

### **III. BOISE CITY PRESSURE IRRIGATION CONSTRUCTION SPECIFICATIONS**

**BOISE CITY  
STANDARD SPECIFICATIONS  
PRESSURE IRRIGATION WATER DISTRIBUTION SYSTEMS**

**BOISE CITY IRRIGATION COMMISSION RECOMMENDATION**

All items unless otherwise modified herein shall conform to the "Idaho Standards for Public Works Construction" (ISPWC), as revised by the City of Boise.

**1. CONTRACTOR QUALIFICATIONS:**

1.1 EXPERIENCE OR LICENSING REQUIREMENTS:

The contractor shall have at least three (3) years experience in the installation of large diameter (6 inch or larger) pressure water distribution systems, or shall hold a State of Idaho Public Works Contractors license, or shall be a Certified Irrigation Contractor, certified by the Irrigation Association of Fairfax, VA.

**2. DISTRIBUTION PIPELINE CONSTRUCTION (3" & larger):**

2.1 MATERIALS:

1. PIPE: All pipe shall be polyvinyl chloride (PVC) ASTM D 2241 (SDR-PR) Class 200, SDR 21 or better. Pipe shall use gasketed push on joints.
2. FITTINGS: PVC pipe fittings.
  - a) Fittings shall be slip on or mechanical joint.
  - b) Fittings larger than six (6) inches shall be cast iron or other material pressure rated to class 200 or better. Cast iron fittings must meet current AWWA requirements.
3. THRUST BLOCKING: Thrust blocks are required at tees, valves, bends, and dead ends on all pipe and fittings with rubber gasketed joints, except tees leading to single service risers. Thrust blocks are also required at elbows and tees located before and after any gasketed type joint and where shown on the drawings. Concrete for thrust blocks shall have a minimum 28 day compressive strength requirement of 2500 psi.
  - a) Concrete thrust blocks are to be placed against undisturbed earth.
  - b) Thrust blocks shall have the following bearing areas unless otherwise called for on the drawings:

|                              |             |
|------------------------------|-------------|
| 4" and Smaller Pipe Fittings | 1.3 Sq. Ft. |
|------------------------------|-------------|

|                   |             |
|-------------------|-------------|
| 6" Pipe Fittings  | 2.0 Sq. Ft. |
| 8" Pipe Fittings  | 3.5 Sq. Ft. |
| 12" Pipe Fittings | 8.0 Sq. Ft. |

c) Engineered restrained joints made for use with PVC may be used in lieu of thrust blocking.

4. PIPE LOCATING WIRE AND IDENTIFYING TAPE: Pipe locating wire shall be one 10 AWG single strand soft drawn copper wire with 4/64" PVC insulation. Pipe tape shall be two (2) inches wide and shall be clearly marked "CAUTION-BURIED IRRIGATION WATER LINE" continuously along the length of the tape with a minimum of 1-1/2" inch letters. The tape shall be purple in color.
5. MECHANICAL COUPLERS: Coupling center ring shall be constructed of ductile iron or carbon steel having a minimum yield of 30,000 psi. End rings shall be constructed of ductile or malleable iron. Steel couplers shall be epoxy coated. High strength, low alloy steel trackhead bolts and heavy hex nuts shall be used. (Examples: Romac 501, Rockwell 411.)
6. SERVICE CONNECTIONS:
  - a) PVC Tees: Tapped or reducing tees will be 200 PSI rated and supplied or recommended by the manufacturer of the distribution piping.
  - b) Tapping Saddles: Saddles shall be ductile or malleable iron. Straps or bands shall be stainless steel with a minimum two (2) inch wide strap. Gaskets and coatings shall be the standard of the manufacturer. (Examples: Romac 101, Rockwell 311.) C clamp saddles shall not be permitted.

## 2.2 PIPE INSTALLATION:

1. GENERAL: All PVC pipe shall be assembled and installed in accordance with the pipe manufacturer's recommendations and as shown on the drawings.
  - a) Pipe joints and fittings shall be wiped clean of all dirt, grease, and foreign matter. When work is halted, all open ends of the installed pipe shall be sealed to prevent undesirable material from entering the pipe.
  - b) Field cut pipe ends shall be beveled to match factory-finished beveled pipe ends.
  - c) When assembling gasketed pipe and fittings, clean and inspect gaskets, pipe bells, and spigots thoroughly. Use only lubricant furnished or

specified by the pipe manufacturer and apply as specified by the manufacturer.

- d) Pipe being assembled outside the trench must be assembled on supports directly above the open trench so it can be lowered down into the trench without rolling or twisting the pipe.
  - e) Thrust blocks shall be placed at locations described in Section 2.3 and shown on approved plans. Installation shall be as described in Section 2.3. Thrust blocks shall be placed such that accessibility to the pipe and fittings is not impaired, unless otherwise specifically shown on the plans or called for by the engineer.
  - f) Separation of pressure irrigation lines and potable water lines shall be done in accordance of Section 400 of the ISPWC and Department of Environmental Quality Regulations.
2. EXCAVATION AND BACKFILL: All pipelines shall have a minimum of thirty (30) inches of cover. Utilities encountered in the pipe zone shall be crossed below.
- a) All trench excavation, placement of pipe bedding, backfill and surface repair shall be in accordance with Section 300 of the Idaho Standards for Public Works Construction (ISPWC), except Section 302—Pipe Bedding. Trench width and alignment shall provide sufficient clearance so the pipe can be lowered to the bottom of the trench without requiring extraordinary force to be applied on top of the pipe. Pipe may be laid on the bottom of the trench and bedded to the top of the pipe zone with native materials containing no rock, organic matter, or materials larger than  $\frac{3}{4}$  inches for three (3) and four (4) inch diameter pipe and materials larger than 1  $\frac{1}{2}$  inches for pipe of six (6) inch or larger diameter. Mechanical compaction of the bedding material is not required. Bedding material must continuously support and surround the pipe.
  - b) Unless otherwise specified, the trench backfill for pipelines outside the public right-of-way shall be compacted to Type “C” backfill requirements.
  - c) The trench backfill for pipelines within the public right-of-way shall be compacted to Type “A” backfill requirements and shall meet Ada County Highway District (ACHD) requirements.
3. STREET CROSSINGS: All irrigation pipeline crossings within street right-of-way shall be sleeved with a minimum of 160 PSI PR-SDR PVC pipe. Sleeve size shall be a maximum 2 x sleeved pipeline diameter.

4. **INSTALLING PIPE LOCATING WIRE AND MARKING TAPE:** The locating wire shall be laid on top of the PVC main and shall be taped to it with electrical tape, ten feet on center maximum. The Contractor shall terminate the locating wire and provide a minimum of twelve inches (12") of slack wire above ground at each main line gate valve box. The excess slack wire will be coiled in the top of the gate valve box. The wire shall be continuous between gate valves although splices overlapped at least two inches and covered with electrical tape are allowable. Identifying tape shall be installed twelve (12) inches below finished grade over all main line PVC pipe.

2.3 **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.

**3. ISOLATION VALVES:**

3.1 **MATERIALS:**

1. **GENERAL:** Valve size and class rating, unless otherwise noted on the drawings, shall equal that of the pipe on which it is installed.
2. **GATE VALVES:** Valves four (4") inches and smaller shall be gate valves. All valves shall be on a non-rising stem gate with an "O" ring seal and double disc gate. The working pressure will be 125 psi or greater. All valves shall have mechanical joint or push on connections, provided with a two (2") inch square wrench nut for key operation and must meet or exceed the current AWWA standard for gate valves, AWWA C500 or resilient seated gate valves, AWWA C509.
3. **BUTTERFLY VALVES:** Valves larger than four (4") inches may be butterfly type. Butterfly valves must be rubber seated and tight closing with a pressure rating of 125 psi or greater. Butterfly valves must meet or exceed the performance requirements of AWWA C 504. Shaft seals shall be standard "O" ring seals. Valve operator shall be of the traveling square nut type, sealed, gasketed, and permanently lubricated for underground service. Minimum number of turns required for complete closure of the valve shall be 15 unless otherwise specified. Valve operator shall be constructed to the standards of the valve manufacturer to withstand all anticipated operating torques. Valve body shall be wafer style.
4. **FLANGES:** Steel companion flanges shall be AWWA Class D steel ring flanges. Threaded or slip on type as required.

5. VALVE BOXES: Valve boxes shall be installed on all buried valves. In paved areas, valve boxes shall be a Brooks Adjustable Height, two-piece standard design, or equal, with a base corresponding to the total size of the valve. The valve box shall be protected with coal-tar or other approved coatings, applied by the manufacturer.

In non-paved areas, an eight (8") inch diameter Class 200 pipe section notched for the pipe with a ten (10") inch round box lid is acceptable.

6. CONCRETE: Concrete for valve box collars shall conform to ISPWC, CL-3000, and shall have a minimum 28 day compressive strength of 3,000 psi.

### 3.2 CONSTRUCTION:

Isolation valves shall be installed where shown on the plans. Valve boxes located in unpaved traffic bearing areas, or in street rights-of-way, shall be provided with a six (6") inch thick concrete collar twenty-four (24") inches in diameter. Valve boxes shall be installed flush with surrounding ground.

## 4. SERVICE LINES AND RISERS:

### 4.1 MATERIALS:

1. PIPE: **PVC Pipe** shall be Schedule 40 conforming to ASTM D 1785 or 200 PSI, SDR21 pipe conforming to ASTM D 2241 (SDR-PR) or better. **Polyethylene pipe** shall be Class 160 PSI conforming to AWWA specification C-901.
2. VALVES: Valves shall be 200 PSI, with non-rising stem, x-handle operator wedge disk, all bronze or brass construction, and female-threaded ends, Nibco Model T29x or equal.
3. FITTINGS: PVC Solvent weld fittings must be Schedule 40 or better conforming to ASTM D 2466 and meet or exceed the pressure rating of the pipe. Threaded fittings shall be Schedule 80 conforming to ASTM D 2467.

Fittings for polyethylene pipe, shall be threaded by insert brass fittings with two (2) stainless steel clamps installed over the insert end of each fitting.

4. VALVE BOX: Valve boxes for PVC risers shall be four (4") inch sewer and drain pipe conforming to ASTM D 3034, SDR 35, provided with a "Toro" or equal, valve cover.

Fiberglass valve boxes shall have minimum dimensions of thirteen (13") inches by eighteen (18") inches and twelve (12") inches in depth. (Example: Carson 1419.)

4.2 **CONSTRUCTION:**

The individual lot hookups are to be constructed in conformance with the attached standard drawings for PVC or fiberglass valve boxes.

Individual lot hookups with fiberglass valve boxes shall be installed in areas of existing homes and complete landscaping. All other lot hookups shall be with 4" PVC valve boxes.

1. Joint compound or Teflon tape shall be used on all threaded joints.
2. Where fiberglass valve boxes are used, they shall be installed flush with finished ground surface.
3. PVC primer and cement, as recommended by the manufacturer, shall be used on the mating surfaces of all solvent weld joints. All excess solvent shall be wiped clean from pipe after joining.
4. The two (2) stainless steel clamps shall be installed at opposite directions over the polyethylene pipe at each insert fitting.

**5. DRAINS/AIR RELEASE VALVES:**

5.1 **MATERIALS:**

1. PIPE: Polyvinyl Chloride (PVC) pipe shall conform to Section 4.1 of this document.
2. FITTINGS: PVC fittings shall conform to Section 4.1 of this document.
3. VALVES: Valves shall conform to Section 3.1 of this document.
4. VALVE BOXES: Valve boxes shall conform to Section 3.1 of this document.

5.2 **CONSTRUCTION:**

Drains and blow-off valves are to be constructed in conformance with the attached standard drawings and the construction drawings.

**6. ADDITIONAL REQUIREMENTS:**

6.1 **ISOLATION VALVES:**

Whenever possible, isolation valves should be located in the street right-of-way.

6.2 AS-CONSTRUCTED DRAWINGS:

Any changes from the proposed construction drawings will be noted on the construction drawings and provided to the engineer for development of as-constructed drawings.

6.3 INSPECTION:

The contractor, irrigation district, or individual installing the facilities must contact the project engineer forty-eight (48) hours prior to beginning any work. All trenches must be left open until approval has been received from the project engineer.

6.4 SEALING OPEN ENDS OF PIPE:

Where the system is installed in sections or will not immediately be connected to an irrigation district or canal company delivery point, the open end(s) of the system shall be capped and sufficiently secured to be able to withstand a pressure test in accordance with ISPWC prior to backfill.

6.5 PRESSURE TEST

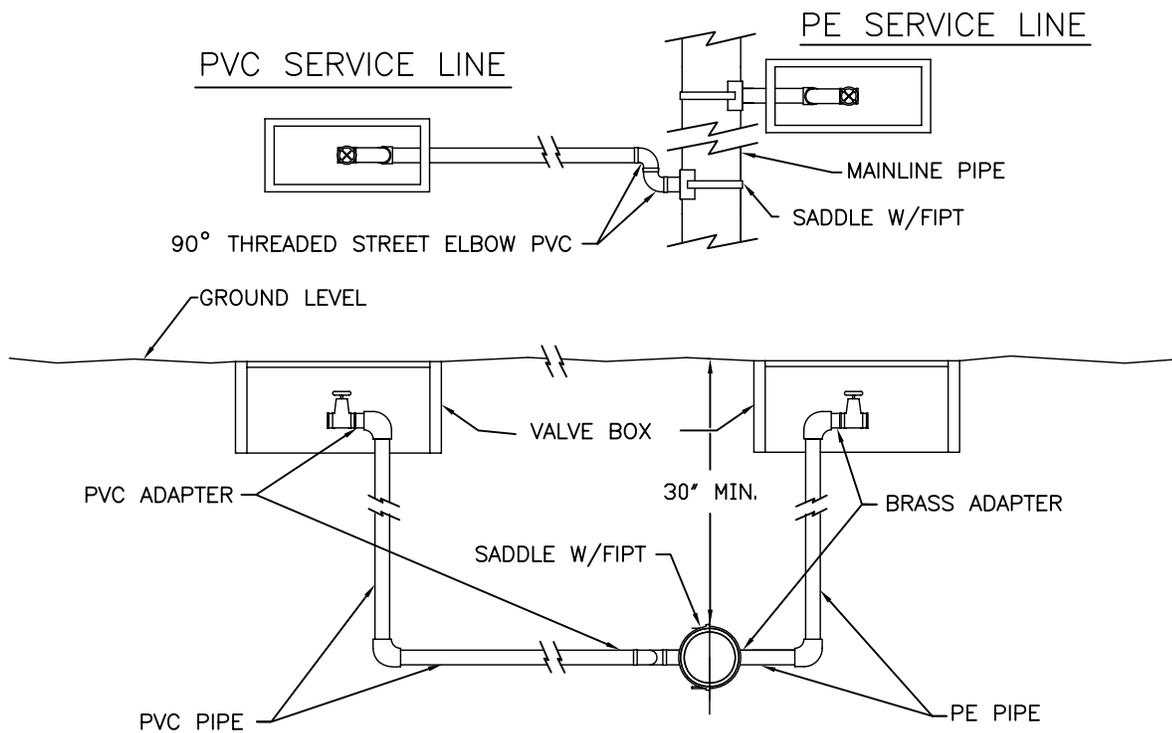
A hydrostatic pressure test and leakage test to conform to ISPWC requirements for water mains is required (Sections 404.3 and 404.4). The duration of the pressure test shall be 30 minutes.

6.6 O & M MANUALS:

Two copies of operation and maintenance information and two (2) sets of as-constructed drawings for the system shall be provided to the project engineer, by the contractor, prior to final payment.

6.7 SURFACE MARKING SYSTEM:

Distribution system, valves, and risers shall be identified using the surface marking system identified in the standard drawings.



MATERIAL - PVC SERVICE LINE

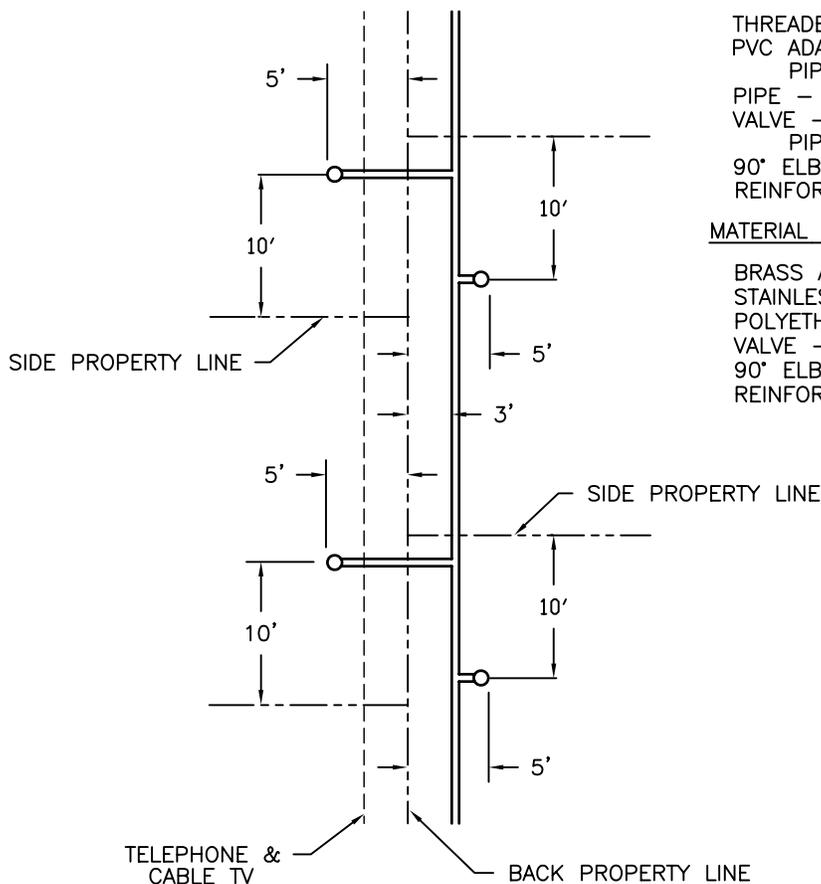
- THREADED STREET ELBOW - SCHD 80
- PVC ADAPTER - SCHD 80 - SOLVENT WELD X MALE IRON PIPE THREAD (MIPT)
- PIPE - PVC - SCHD 40
- VALVE - BRASS, 200 PSI GATE VALVE, FEMALE IRON PIPE THREAD (FIPT)
- 90° ELBOW - SOLVENT WELD X SOLVENT WELD - SCHD 40
- REINFORCED FIBERGLASS VALVE BOX W/LID

MATERIAL - PE SERVICE LINE

- BRASS ADAPTER - MIPT x INSERT
- STAINLESS STEEL CLAMPS - 2 FOR EACH INSERT
- POLYETHYLENE (PE) PIPE - 160 PSI, AWWA C-901
- VALVE - BRASS, 200 PSI GATE VALVE, FIPT
- 90° ELBOW - BRASS - INSERT X INSERT
- REINFORCED FIBERGLASS VALVE BOX W/LID

NOTE

DRAWING AND MATERIAL LIST APPLICABLE TO 1" AND 1 1/2" SIZE SERVICE LINE.



MINIMUM SERVICE LINE & VALVE SIZE

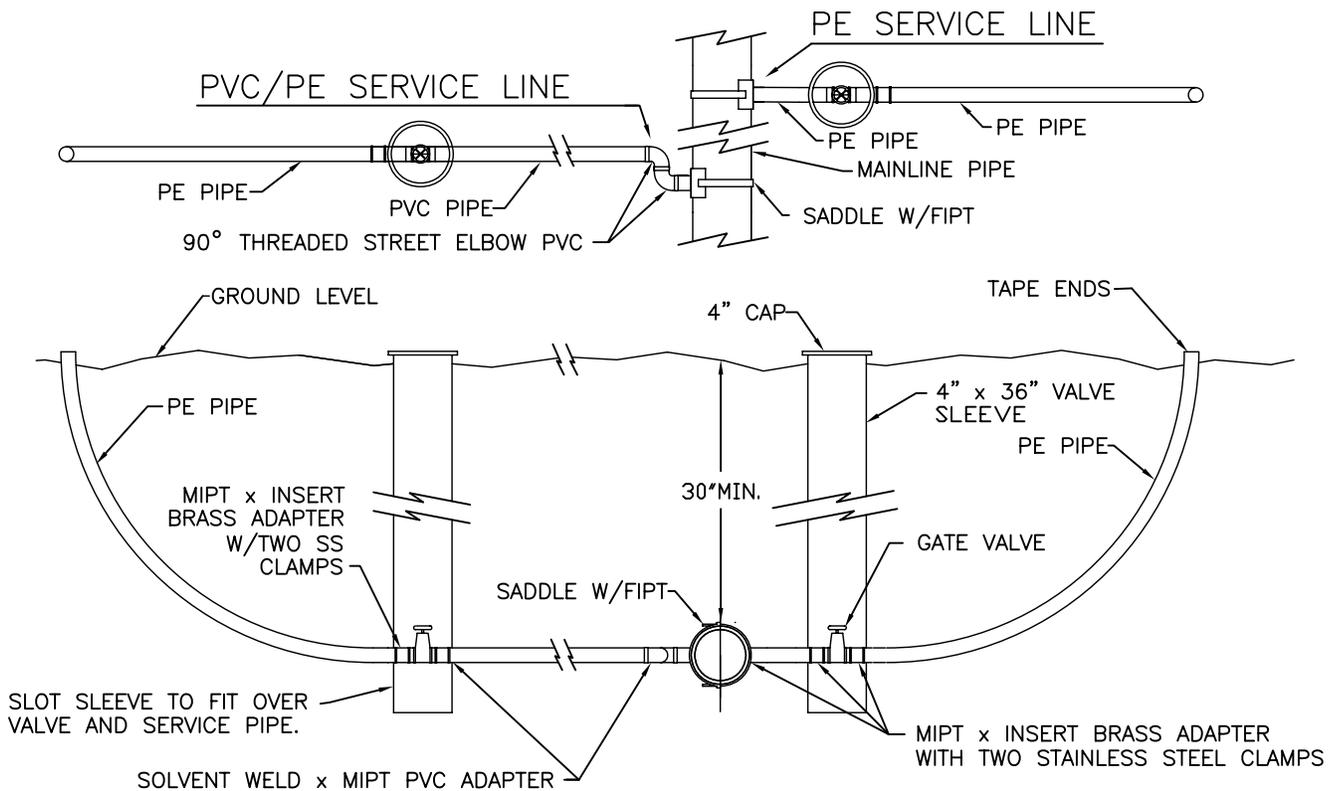
- FOR LOTS UP TO 22,000 GROSS SQUARE FEET 1"
- FOR LOTS LARGER THAN 22,000 SQUARE FEET UP TO AN ACRE 1 1/2"

REVISED 2/97 SD

CITY OF BOISE  
DEPARTMENT OF  
PUBLIC WORKS

IRRIGATION  
LOT HOOKUP  
w/FIBERGLASS VALVE BOX

STANDARD DRAWING  
NO. SD-1202



**MATERIAL - PVC/PE SERVICE LINE**

- THREADED STREET ELBOW - SCHD 80
- PVC ADAPTER - SCHD 80 - SOLVENT WELD X MALE IRON PIPE THREAD (MIPT)
- PIPE - PVC - SCHD 40
- VALVE - BRASS, 200 PSI GATE VALVE, FEMALE IRON PIPE THREAD (FIPT)
- BRASS ADAPTER - MIPT X INSERT
- STAINLESS STEEL CLAMPS - 2 FOR EACH INSERT
- POLYETHYLENE (PE) PIPE - 160 PSI, AWWA C-901
- PVC RISER PIPE - PVC, ASTM 3034, SDR35
- CAP

**MATERIAL - PE SERVICE LINE**

- BRASS ADAPTER - MIPT X INSERT
- STAINLESS STEEL CLAMPS - 2 FOR EACH INSERT
- POLYETHYLENE (PE) PIPE - 160 PSI, AWWA C-901
- VALVE - BRASS, 200 PSI GATE VALVE, FIPT
- PVC RISER PIPE
- CAP

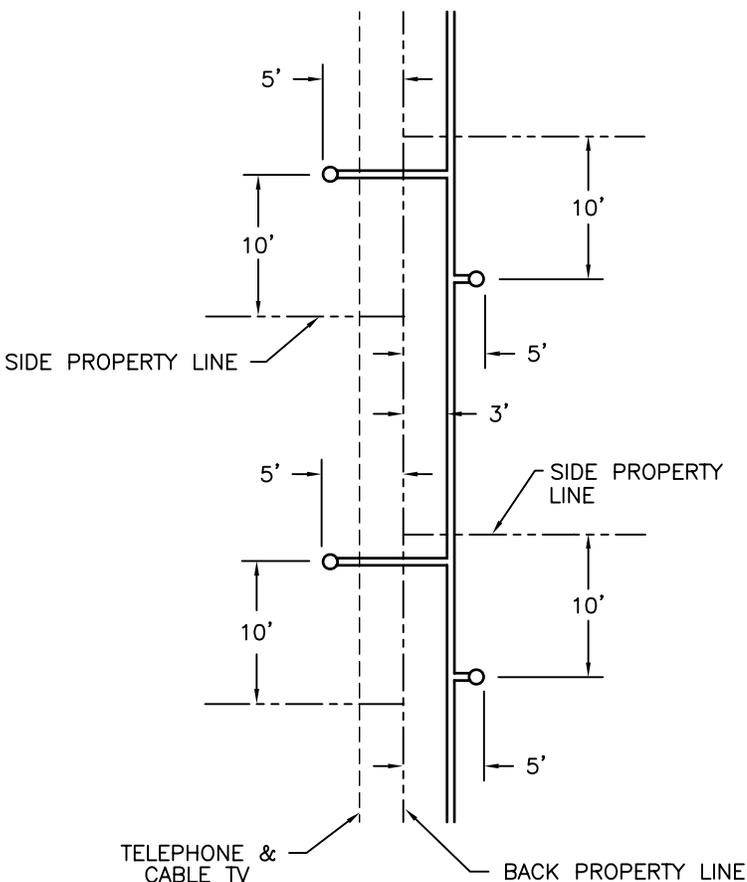
**NOTE**

DRAWING AND MATERIAL LIST APPLICABLE TO 1" AND 1 1/2" SIZE SERVICE LINE.

**MINIMUM SERVICE LINE & VALVE SIZE**

|   |        |
|---|--------|
| FOR LOTS UP TO 22,000 GROSS SQUARE FEET               | 1"     |
| FOR LOTS LARGER THAN 22,000 SQUARE FEET UP TO AN ACRE | 1 1/2" |

REVISED 2/97 SD



CITY OF BOISE  
DEPARTMENT OF  
PUBLIC WORKS

IRRIGATION  
LOT HOOKUP  
W/4" PVC VALVE BOX

STANDARD DRAWING  
NO. SD-1201

**IV. PRESSURE IRRIGATION PORTIONS OF BOISE CITY SUBDIVISION  
ORDINANCE**

# **Pressure Irrigation Portions of Boise City Subdivision Ordinance**

## **Chapter 9-20**

### **BOISE CITY SUBDIVISION ORDINANCE**

#### **Section 9-20-03      DEFINITIONS**

##### **PRESSURIZED IRRIGATION SYSTEMS FOR INDIVIDUAL LOTS:**

A pressurized water distribution system that distributes non-potable water to individual lots for irrigation purposes. Typical sources of water include non-treated Boise River water, canal water, irrigation return water or well water.

#### **Section 9-20-08      IMPROVEMENTS**

##### **J. PRESSURE IRRIGATION FACILITIES**

1. No subdivision plat shall be approved for residential development unless the applicant has provided for the design, construction, and installation of a pressurized individual lot irrigation system.

Irrigation system maintenance and operation shall be provided by the irrigation district or canal company within which the development lies, by a municipal irrigation district or by the formation of another entity capable of operating and maintaining a pressurized irrigation system. Should a pressurized irrigation system not be installed, compliance to Idaho Code 31-3805 is still required.

2. The requirement for installation of a pressurized irrigation system in all new residential developments may be waived by the City Engineer when the applicant has established that any of the following situations exist:
  - a. Where a sufficient surface irrigation water right does not exist for the property. The lack of surface irrigation water right shall be documented in writing by the appropriate Irrigation District or Canal Company and the Department of Water Resources and shall be submitted with the subdivision plat. The sale or transfer of an water right may not be grounds for requesting a waiver pursuant to this provision.
  - b. Where an existing surface water right cannot be delivered to the property by an Irrigation District or Canal Company due to current delivery capacity or scheduling. In these situations the City Engineer may still require the installation of the pressure irrigation system, provided that an Irrigation District or Canal Company will commit in writing to make improvements to their delivery system so irrigation water can be supplied within two (2) years.
  - c. Where the applicant has provided for another means of delivery such as flood irrigation. The applicant shall present the proposed alternative delivery system to the City Engineer at the time the waiver is requested.

d. The requirements to provide a pressurized irrigation system may be waived by the City Engineer when the City Engineer finds that due to the specific circumstances surrounding a new subdivision, the cost of obtaining water rights, re-establishing water rights or developing the system would impose an undue economic hardship on the applicant. Undue Economic Hardship may be demonstrated if the cost per lot to develop the pressurized irrigation system is 25% higher than the cost per lot to serve subdivisions of similar size and density constructed in Boise City within the previous two years; or that the cost per lot of the pressurized irrigation system would exceed 5% of the expected per lot market value of the subdivision. The applicant shall bear the burden of providing documentation, acceptable to the City Engineer, demonstrating and supporting the estimated costs of construction of the pressurized irrigation system and the expected market value of the subdivision lots. For phased developments, costs will be analyzed over all phases of the development rather than the first phase only.

3. Requests for waivers shall be submitted to the City Engineer and shall be accompanied by an irrigation report prepared by a licensed professional engineer stating the location and availability of surface irrigation water and documenting the basis for the waiver request. If applicable, the irrigation report shall be accompanied by a letter from the Irrigation District or Canal Company stating that they will not commit to make improvements to its delivery system so irrigation water can be supplied within two (2) years.

4. The decision of the City Engineer denying a waiver may be appealed to the Boise City Irrigation Commission by filing a written request to appeal with the Public Works Department, detailing the basis for the appeal and waiver request, within sixty (60) days of receipt of the written decision of the City Engineer. The Irrigation Commission shall review the appeal and may uphold, overrule or modify the decision of the City Engineer. The decision of the Irrigation Commission shall be in writing and may be appealed to the Boise City Council.

5. If the installation of a pressurized irrigation system is provided for, prior to the signing of the Final Plat by the City Engineer, the applicant shall provide written assurance that provisions have been made for ownership, operation and maintenance of the system. Such written assurance shall include:

a. A letter from an existing entity capable of owning, operating and maintaining the system assuming responsibility for such operation and maintenance; or

b. If the system is to be owned, operated and maintained by a Homeowners Association, the applicant shall create binding Covenants, Conditions and Restrictions, approved by the Boise City Attorney, providing for control, use, maintenance and operation of the system.

6. Prior to signing of the final plat by the City Engineer, proof of compliance with this section and with Idaho Code Section 31-3805(1)(b) regarding requirements for water delivery shall be required. Proof of compliance shall be in the form of one of the following:

a. Written documentation that provisions have been made to install an individual pressurized irrigation system which at a minimum either conforms to the design standards and specifications of Boise City or of the Irrigation entity, with adopted standards and specifications, which will provide operation and maintenance of the system; or

b. Written documentation that a valid waiver of the requirement to provide a pressure irrigation system has been obtained and that Idaho Code 31-3805(1)(a) regarding the transfer of water rights, has been complied with.

(6173, Amended, 08/13/2002; 5819, Amended, 10/28/1997; 5638, Amended, 06/27/1995; 5589, Amended, 1/15/1994)

## **V. BOISE CITY PRESSURE IRRIGATION CHECKLIST**

**BOISE CITY PUBLIC WORKS  
PRESSURE IRRIGATION CHECKLIST  
FOR APPROVAL OF CONSTRUCTION DRAWINGS AND  
ACCEPTANCE OF THE COMPLETED SYSTEM  
SEPTEMBER 1999**

**PREFACE:** The purpose of this document is to outline the requirements of Developers, Consulting Engineers and Contractors for the design and construction of Pressure Irrigation System within the City of Boise Impact Area. It is suggested that this checklist be utilized to streamline the pressure irrigation design and construction process for all parties involved. The Developer's Engineer may want to use this as a cover page for the submittal of proposed construction drawings (optional), but the Public Works Department will use it to determine if the submittals, design, and construction drawings meet minimum requirements. Review comments will be made at the end of each section, and a copy of the form sent to the engineer and developer to document the review comments.

The Pressure Irrigation requirements for new residential development became effective November 1997. Any subdivision with a Preliminary Plat approval date later than October 1997 is subject to pressure irrigation requirements in the Boise City Subdivision Ordinance and must meet the system design and construction standards adopted by the City of Boise.

The requirements for subdivisions approved earlier than November 1997 continue to be: 1) Irrigation system plans stamped by a Professional Engineer and 2) deliver water to each lot in the subdivision. Although this is a minimum requirement, it is suggested that a developer consider meeting the current requirements. They were developed to insure that the pressure irrigation system is constructed to a minimum standard, so the City's municipal irrigation district or an irrigation entity would accept operation and maintenance responsibilities for a system, now or in the future.

**DEVELOPMENT DATA**

|                                |   |  |
|--------------------------------|---|--|
| <b>Subdivision Name</b>        | <b>Developer</b>                                      | <b>Engineer/Firm</b>   |
| <b>Subdivision #/IRR Prj #</b> | <b>Initial Review Date</b>                            | <b>Subsequent Review Dates</b>                                       |
| <b>Irrg Dist/Canal Company</b> | <b>Preliminary Plat Approval Date<br/>Subdivision</b> | <b>Yes or No</b><br><br><b>Must Meet<br/>Ordinance Requirements?</b> |

**I. Requirements for Plan Review and Approval by Boise City Public Works Department**

**IA. Design Report Requirements**

The engineer shall provide a design report for the pressure irrigation system, which addresses the following (if applicable):

- | NA                       | Yes                      | No                       |  |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. Delivery schedule of the surface irrigation water to the pump station.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2. Operation of the pump station to match the delivery of irrigation water.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3. Letter from Irrigation Entity approving any construction within their facilities.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. Amount of storage required to provide the difference between delivery schedule and the operation of the pump station.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5. Irrigation rotation schedules within the development.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. Is this design report for a master plan for:<br>A. all phases of build out, or<br>B. or just a single phase.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. Is this a phase of development covered by a previously approved master plan.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. For ground water based irrigation systems, identify the volume of irrigation water needed daily and the water right available.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9. Minimum pumping rate of ground water well(s) based system needed to deliver the daily required volume of water in 12 hours, reduced by the amount of irrigation demand provided to automatically controlled common area irrigation. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10. Range of flows at which the pump station will operate to meet peak, medium and low demand conditions.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 11. Filtering equipment employed to provide filtering equivalent to a 30 mesh screen.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 12. Capacity of a back up source, if provided, and the arrangements for delivery of that water if it is from the domestic water system.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13. How the pumping equipment will be controlled to provide operating pressure in the distribution system between 45 and 80 PSI.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 14. Hydraulic analysis of the distribution system and pumping equipment that demonstrates that the system is capable of providing at least 15 GPM at 45 PSI to the most critical service line on the system.                           |

REVIEW COMMENTS: \_\_\_\_\_  
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**IB. Plan Set Requirements**

- | NA                       | Yes                      | No                       |   |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. Two (2) sets of plans and specifications, stamped by PE, submitted to Boise City Pressure Irrigation Coordinator for <u>initial review</u> .   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2. Six (6) sets of plans and specifications, stamped by PE, submitted to Boise City Pressure Irrigation Coordinator for <u>final approval</u> .<br>Four (4) sets will be returned to Developer/Consulting Engineer, of which two (2) sets should be given to the contractor installing the pressure irrigation system. One (1) set will be given to the Public Works Inspection Group. One (1) set will be retained by the Pressure Irrigation Coordinator. |

REVIEW COMMENTS: \_\_\_\_\_

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**I.B.1. Review Checklist for Drawings**  
**Distribution Piping**

- | NA                       | Yes                      | No                       |  |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. All facilities within easements or provided with access agreements.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2. Service lines provided to each lot, including common areas.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3. Valving on any lateral with more than four services, and to provide for isolation of portions of a looped system. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. Sleeves under road crossings.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5. Provisions made for winterizing the system (drains, etc.).  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. Locator wire AND finder tape required.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. Latest edition of construction specifications used.   |

REVIEW COMMENTS: \_\_\_\_\_

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**I.B.2. Booster Stations**

- | NA                       | Yes                      | No                       |  |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. Automatic Controls with low water safeguards for motors and pumps.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2. Centrifugal pumps with flooded suctions only.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3. Vertical turbine pumps OK with suction lift.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. Submersion to manufacturer's recommendations for submersible pumps.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5. Self cleaning intake screens.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. Filters to 30 mesh equivalent.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. Intake piping and discharge piping larger than two (2) inches flanged to allow for pump removal and serviceability. No PVC pipe exposed to direct sunlight. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. No above ground PVC piping allowed.   |

NA Yes No

- 9. Variable Frequency Drives to control pumps acceptable if documented they do not void the pump and motor warranty.
- 10. Pressure regulating valves, pressure relief valves, and check valves shall be metallic (non-plastic) and installed according to manufacturers recommendation.
- 11. Minimum of one (1) pressure relief valve of adequate size to prevent over pressurization of the system in the event of a control failure.

REVIEW COMMENTS: \_\_\_\_\_

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**I.C. Other Entity Plan Approval and System Acceptance**

If the irrigation entity committed to own, operate, and maintain the pressure irrigation system will also be reviewing and approving the plans, and perform the final inspection of the completed facilities, their submittal requirements will have to be met. Copies of the irrigation entity’s approvals and acceptance of the system should be submitted to the Pressure Irrigation Coordinator to show conformance with the pressure irrigation condition, and will eliminate the need for submittals for a normal review by the Boise City Public Works Department, and will eliminate the pressure irrigation review and inspection fee.

Yes No

- 1. One (1) set of the plans and a copy of the plan approval letter from the irrigation entity.
- 2. the final acceptance letter from the irrigation entity.
- 3. documentation that a contract for the O&M of the pressure irrigation system has been completed (if applicable).

REVIEW COMMENTS: \_\_\_\_\_

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**II. Requirements for Acceptance of a Constructed System by Boise City Public Works Department**

Yes No

- 1. Developer's Engineer's certification that the pressure irrigation system was constructed in substantial conformance to the approved construction drawings.
- 2. Boise City Public Works Department witnessed pressure test of the pressure irrigation system.
- 3. Boise City Public Works Department Inspection Group's completed Final Inspection of the pressure irrigation system with the Developer's Engineer.
- 4. Two (2) reproducible sets of the record drawings of the pressure irrigation system provided to the entity that will operate the system.
- 5. An Operation and Maintenance (O&M) Manual provided to the entity that will operate the system; the O&M Manual shall include:

Yes No

- a. Equipment cut sheets for all specialized equipment with the name of the local supplier, such as: Pumps \_\_, Pump Controls \_\_, Supplies \_\_, Filters \_\_\_\_
- b. Equipment manufacturer's maintenance manuals.
- c. Equipment warranty documents.
- d. A narrative description of how the system is designed to operate.
- e. A description of how the system is to be winterized in the fall.
- f. A description of how the system is to be activated in the spring.
- g. A copy of the Record Drawings.
- i. A rotation schedule for system users.

REVIEW COMMENTS:

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**For systems that will be operated by an irrigation entity; see I.C.**

REVIEW COMMENTS:

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**BOISE CITY PUBLIC WORKS  
PRESSURE IRRIGATION CHECKLIST  
TO OBTAIN CITY ENGINEER FINAL PLAT SIGNATURE  
SEPTEMBER 1999**

**PREFACE:** The purpose of this document is to outline the requirements of Developers and Consulting Engineers to meet the pressure irrigation condition for a subdivision plat so the City Engineer can sign the Final Plat. It is suggested that this checklist be utilized to streamline the Final Plat signature process, at least as it is affected by the pressure irrigation condition. The Developer or the Engineer may want to use this as a cover page for a package to document the pressure irrigation condition has been met, for the purposes of having the Final Plat signed by the City Engineer. The Public Works and Planning and Development Services Departments will use it to determine if the pressure irrigation condition has been met. If there are any deficiencies they will be noted in the review comments and a copy of the form sent to the Developer and Engineer to document the review comments.

The Pressure Irrigation requirements for new residential development became effective in November 1997. Any subdivision with a Preliminary Plat approval date later than October 1997 is subject to pressure irrigation requirements in the Boise City Subdivision Ordinance and must meet these requirements for acceptance of the completed facilities by Boise City Public Works and provide documentation that provisions have been made for the operation and maintenance of the pressure irrigation system.

**DEVELOPMENT DATA**

|                                |                                       |  |
|--------------------------------|---------------------------------------|--|
| <b>Subdivision Name</b>        | <b>Developer</b>                      | <b>Engineer/Firm</b>                                 |
| <b>Subdivision #/IRR Prj #</b> | <b>Initial Review Date</b>            | <b>Subsequent Review Dates</b>                       |
| <b>Irrg Dist/Canal Company</b> | <b>Preliminary Plat Approval Date</b> | Yes or No  |
|                                |                                       | <b>Must Meet Subdivision Ordinance Requirements?</b> |

**Requirements for City Engineer's Signature on Final Plat**

Yes No

Bond for Construction prior to Final Plat

1. Provisions made for Operation and Maintenance of the pressure irrigation system (see below—Verification of Operation and Maintenance Provisions), and

2. Plans for the pressure irrigation system approved by the Boise City Public Works Department or the irrigation entity that will operate the system, and
3. Evidence of contract with professional engineer for inspection of irrigation system installation.
4. Surety provided for 110% of the estimated construction cost of the pressure irrigation system.

**OR**

Yes No

Construction complete prior to Final Plat

1. Provision made for Operation and Maintenance of the pressure irrigation system, and
2. Plans for the pressure irrigation system approved by the Boise City Public Works Department or the irrigation entity that will operate the system, and
3. The pressure irrigation system constructed, and
4. The system accepted by the Boise City Public Works Department (see H.), or the irrigation entity that will operate the system.

REVIEW COMMENTS: \_\_\_\_\_  
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 \_\_\_\_\_  
 \_\_\_\_\_

**Verification of Operation and Maintenance Provisions**

Yes No

1. Provide a copy of a letter from an existing entity capable of owning, operating and maintaining the system that says that entity will assume those responsibilities for the pressure irrigation system.

**OR**

2. If the pressure irrigation system is to be owned and operated by the Homeowners Association, the Covenants, Conditions, and Restrictions (CC&R's), shall be approved by the City Attorney, and shall provide for control, use, maintenance and operation of the pressure irrigation system.

**OR**

3. Provide a copy of the application to the City of Boise to have the subdivision included in the Municipal Irrigation District (to be operated by the City of Boise).

REVIEW COMMENTS: \_\_\_\_\_  
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