SECTION 02819

UNDERGROUND SPRINKLER IRRIGATION SYSTEM

PART 1 GENERAL

1.1 SUMMARY

Furnish all work and material, appliances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all operations in connection with the installation of underground sprinkler system complete, as shown on drawings and/or specified herein. When the term "Contractor" is used in this section, it shall refer to the irrigation Contractor.

1.2 APPLICABLE STANDARDS

ASTM D2241 Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)

ASTM D2464 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Threaded, Schedule 80

ASTM D2466 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Threaded and Socket, Schedule 40

ASTM D24647 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Socket, Schedule 80

ASTM D2564 Solvent cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings

ASTM D2855 Making Solvent - Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings

ASTM F-477 Gasket Pocket Pipe

1.3 GUARANTEE AND MAINTENANCE

A. The Contractor is required to guarantee the sprinkler irrigation system in accordance with form below. A copy of the guarantee form shall be included in the Operations and Maintenance Manual. The guarantee form shall be on the Contractor's letterhead and contain the following information:

GUARANTEE FOR SPRINKLER IRRIGATION SYSTEM

We hereby guarantee that the sprinkler irrigation system we provided is free from defects in materials and workmanship, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear, and unusual abuse or neglect excepted. We agree to repair or replace any defects in material or workmanship including repair of backfill settlement which may develop during the period of one year from date of Substantial Completion and to repair or replace any damage related to such defects at no additional cost to the Owner. We shall make such repairs or replacements within a reasonable time, as determined by Owner, after receipt of written notice from the Owner, we authorize the Owner to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

PROJECT:
LOCATION:
SIGNED:

SIGNED:
Contractor
ADDRESS:
PHONE:
DATE OF ACCEPTANCE:

B. Maintenance shall include, but not necessarily be limited to the following:

1. Adjustment of emitters to compensate for settlement and/or plant growth.
2. Backfilling of all trenches.
3. Unstopping emitters plugged by foreign material.
4. Adjustment of controller as necessary to insure proper sequence and watering time.
5. All maintenance necessary to keep the system in good operating order.

C. Guarantee and maintenance after final acceptance do not include alterations as necessitated by re-landscaping, re-grading, addition of trees or the addition and/or changes in sidewalks, walls, driveways, etc.

1.4 SUBMITTALS

A. The Contractor shall submit to the Owner's Representative two copies of shop drawings or manufacturer's "cut sheet" for each type of sprinkler head, pipe, controller, valves, check valve assemblies, valve boxes, wire, conduit, fittings and all other types of fixtures and equipment which he proposes to install on the job. The submittal shall include the manufacturer's name, model number, equipment capacity and manufacturer's installation recommendation, if applicable, for each proposed item.

B. No partial submittal will be accepted and submittals shall be neatly bound into a brochure and logically organized. After the submittal has been approved, substitutions will not be allowed except by written consent of the Owner's Representative.

C. Shop drawings shall include dimensions, elevations, construction details, arrangements and capacity of equipment, as well as manufacturer's installation recommendations.

1.5 SUBSTITUTION OF MATERIALS

A. This irrigation system has been designed around the irrigation components herein stated and as shown on the plans. Changes of brand name, trade name, trademarked, patented articles, or any other substitutions will be allowed only by written order signed by the Owner's Representative. The Owner is under no obligation to accept materials other than as specified. If a bidder wishes for a substitute item to receive consideration as an "approved equal," the bidder and each item must meet all of the following requirements without exceptions.

B. An item, to be considered a substitute, must meet the same specifications of materials, fabrication or construction, dimension or size, shape, finish, performance standards, warranty or guarantee, and any other pertinent and salient features of quality, as indicated in manufacturer's specifications for original specified item.

C. A sample of the item, along with a written request for consideration, shop drawings, and written specifications, must have been received by the Owner's Representative a minimum of 10 days before the bid opening date. The item shallthen be examined, and the bidder shall be notified, in writing, seven days later, whether or not the item is an "approved equal." The Owner's Representative shall be the final judge of whether or not an item submitted for consideration qualifies as being an acceptable substitute.

D. Under no circumstances shall an item be given consideration as an "approved equal" substitute later than 10 days before the bid opening. After that date, all items shall be bid per the original specifications. Likewise, unless certified as an "approved equal" per the time frame and the requirements above, the successful bidder (known as Contractor after signing the contract) shall install all items per the original plans and specifications. Equipment or material installed or furnished without prior approval of the Owner's Representative as herein specified, may be rejected and the Contractor required to remove such materials at his own expense.

E. The Contractor alone shall bear complete responsibility for the installation and operation of any material or equipment installed on the job (as a substitute for specified equipment or material) should such substituted material prove to be defective, inoperable or in-applicable.

1.6 QUALITY ASSURANCE

A. All work under this contract shall comply with the provisions of these specifications, as illustrated on the accompanying drawings, or as directed by the Owner's Representative, and shall satisfy all applicable local codes, ordinances, or regulations of the governing bodies and all authorities having jurisdiction over this project.

B. Installation of equipment and material shall be done in accordance with the requirements of the National Electric Code, adopted Plumbing Codes and standard plumbing procedures. The drawings and these specifications are intended to comply with all the necessary rules and regulations; however, some discrepancies may occur. Where such discrepancies occur, the Contractor shall immediately notify the Owner's Representative in writing of the discrepancies and apply for an interpretation. Should the discovery and notification occur after the execution of a contract, any additional work required for compliance with the regulations shall be paid for as covered by these contract documents.

C. The Contractor shall give all necessary notices, obtain all permits and pay all costs in connection with his work; file with all governmental departments having jurisdiction; obtain all required certificates of inspection for his work and deliver to the Owner's Representative before request of acceptance and final payment for the work.

D. The Contractor shall include in the work labor, materials, services, apparatus or drawings in order to comply with applicable laws, ordinances, rules and regulations whether or not shown on the drawings and/or specified.

E. Prequalification:

The installation of the irrigation system shall be made by an individual or firm duly licensed under the State of Utah Registrar of Contractors. The Contractor must demonstrate successful completion of at least five comparable projects within the last five years.

1.7 SUPERINTENDENT

A. The Contractor shall provide a superintendent satisfactory to the Owner's Representative.

B. The superintendent shall not be changed, except with the consent of the Owner's Representative.

C. The superintendent shall be authorized to represent the Contractor.

1.8 NOTIFICATION OF OWNER'S REPRESENTATIVE

A. The Owner's Representative shall have free access to the work whenever it is in preparation or progress and proper facilities, for such access and inspection. The Contractor shall notify the Owner's Representative when he will and will not be on the job. Should the Contractor work periodically on the job, the Owner's Representative shall have the right to require the Contractor to give a 24 hour notice of each and every day or partial day that he intends to work on the project. The Contractor shall perform no work, unless the Owner's Representative has been properly notified. Failure to notify the Owner's Representative may require the Contractor to redo, uncover pipe, expose for inspection, etc., all that the Owner's Representative was unable to inspect.

1.9 EXISTING UTILITIES - LOCATION AND ELEVATIONS

A. The Contractor shall examine the site and verify to his own satisfaction the locations and elevations of utilities and availability of utilities and services required. Contractor shall employ the services of a professional utility locator service to locate existing on site utilities in the construction area prior to beginning work and as needed to maintain clear indications of utility locations.
The Contractor shall inform himself as to their relation to the work and the submission of bids shall be deemed as evidence thereof. The Contractor shall repair at his own expense, and to the satisfaction of the Owner's Representative, for damage to utilities shown or not shown on the plans.

B. Should utilities not shown on the plans be found during excavations, Contractor shall promptly notify Owner's Representative for instructions as to further action.

C. Contractor shall make necessary adjustments in the layout as may be required to connect to existing stubouts, should such stubouts not be located exactly as shown and as may be required to work around existing work, at no increase in cost to the Owner. Such work will be recorded on record drawings and turned over to the Owner's Representative prior to final acceptance.

1.10 COOPERATION OF TRADES

Work under this contract may be accomplished with other Contractors and trades on the project site at the same time. The Contractor shall allow each Contractor and trade adequate time at the proper state of construction to fulfill his contract.

1.11 RECORD DRAWINGS

A. Record dimensioned locations and depths for each of the following:

1. Pressure line routing (provide dimensions for each 100 lineal feet (maximum) along each routing, and for each change in directions).
2. Controllers, pressure regulators and other items identified by the Owner's Representative.
3. Irrigation control valves
4. Control wire routing
5. Sleeves under paving

B. Locate dimensions from two permanent points (buildings, monuments, sidewalks, curbs or pavements).

C. Record changes which are made from the Contract Drawings, including changes in the pressure and non-pressure lines.

D. Record required information on a set of blackline prints of the Drawings. Do not use these prints for an other purpose.

E. Maintain information daily. Keep drawings at the site at all times and available for review by the Owner's Representative.

F. Reproducible bonds will be furnished by the Owner's Representative at cost for printing and handling.

1.12 CONTROLLER CHARTS

A. Do not prepare charts until record drawings have been approved by the Owner's Representative.

B. Provide one controller chart.

1. Chart may be a reproduction of the Record Drawing, if the scale permits fitting the controller door. If photo reduction prints are required, keep reduction to maximum size possible to retain full legibility.
2. Chart shall be blackline print of the actual system, showing the area covered by that controller.

C. Identify the area of coverage of each remote control valve, using a distinctly different pastel color, drawn over the entire area of coverage.

D. Following approval of charts by the Owner's Representative, they shall be hermetically sealed between two layers of 20 mil thick plastic sheet.

E. Charts must be completed and approved prior to final acceptance of the irrigation system.

1.13 OPERATING AND MAINTENANCE MANUALS

C. Provide two individually bound manuals detailing operating and maintenance requirements for irrigation systems.

D. Manuals shall be delivered to the Owner's Representative no later than 10 days prior to completion of work.

E. Provide descriptions of installed materials and systems in sufficient detail to permit maintenance personnel to understand, operate and maintain the equipment.

F. Provide the following in each manual:

1. Index sheet, stating Irrigation Contractor's name, address, telephone number and name of person to contact.
2. Duration of guarantee period.
3. Equipment list providing the following for each item:
   a. Manufacturer's name
   b. Make and model number
   c. Name and address of local manufacturer's representative
   d. Spare parts list in detail
   e. Detailed operating and maintenance instructions of major equipment.

1.14 CHECKLIST

A. Provide a signed and dated checklist and deliver to the Owner's Representative prior to final acceptance of the work.

B. Use the following format:

1. Plumbing permits: if none required, so note.
2. Material approvals: approved by and date
3. Pressure line tests: by whom and date
4. Record drawings: received by and date
5. Controller charts: received by and date
6. Operation and maintenance manuals: received by and date.
7. Manufacturer's warranties if required: received by and date.
8. Written guarantee: received by and date.

1.15 WATER SERVICE

The Contractor will install a new water service and a new point of connection for this project as shown on the drawings and described in these specifications.

1.16 SLEEVES AND ELECTRICAL CONDUITS

Sleeves and electrical conduits will need to be installed as noted on the drawings or required by the project. Not all required sleeves are shown on the drawings. Contractor shall be responsible for timely placement of sleeves and conduits at no additional cost to the Owner.

1.17 PROGRESS MEETINGS

Contractor shall attend all progress meetings as requested by Owner's Representative during installation.

SECTION 02819 - UNDERGROUND SPRINKLER IRRIGATION SYSTEM

PART 2 PRODUCTS

2.1 GENERAL

Unless otherwise noted on the plans, materials shall be new and unused. This irrigation system has been designed around the irrigation components herein stated and as shown on plan. Changes of brand name, trade name, trademarked, patented articles, or any other substitutions will be allowed only by written order as outlined in Section 1.6.

2.2 PVC PRESSURE MAINLINE PIPE AND FITTINGS)

A. Pipe shall be made from NSF approved type I, Grade I PVC compound conforming to ASTM specification D 2241. Piping SDR solvent weld.

B. Fittings for pressure mainline piping shall be PVC solvent-weld fittings Schedule 80, Type I NSF approved conforming to ASTM test procedure D 2466 and shall be as manufactured by Spears, Lasco or Dura.

C. Solvent cement and primer for PVC solvent-weld pipe and fittings shall be heavy duty gray Oatey Glue and Purple Primer or approved equal. Manufacturer's installation requirements shall be strictly adhered to.

D. PVC pipe shall bear the following markings:

1. Manufacturer's name
2. Nominal pipe size
3. Schedule or class
4. Pressure rating in psi
5. National Sanitation Foundation (NSF) approval.
6. Date of extrusion

A. Fittings shall bear the manufacturer's name or trademark, material designation, size, applicable IPS schedule and NSF seal of approval.

2.3 PVC NON-PRESSURE LATERAL LINE PIPING (used to connect new drip laterals to existing irrigation system).

A. Non-pressure buried lateral line piping shall be Sch. 40 PVC with solvent-weld joints.

B. Pipe shall be made from NSF approved, Type I, Grade II PVC compound conforming to ASTM resin specifications D1784. Pipe shall meet requirements set forth in Federal Specification PS-22-70, with an appropriate standard dimension ratio.

C. PVC solvent-weld fittings shall be Schedule 40, Type I NSF approved conforming to ASTM test procedure D2466 as manufactured by Spears, Lasco or Dura.

D. Unless otherwise noted, requirements for non-pressure lateral-line pipe and fittings shall be the same as for solvent-weld pressure mainline pipe and fittings.

2.4 SWING JOINTS

All swing joint assemblies, nipples and risers shall be manufacturer pre-assembled per the following, as detailed.

1" Lasco G 172-212 or approved equal.

3/4" Lasco T722-212. or approved equal.

1/2" Lasco TS22-212. or approved equal.

2.5 CONTROL WIRING

A. Connections between the automatic controllers and the electric control valves shall be made with direct burial copper wire AWG-UF 600 volt. Circuit wires shall be red with white common wires. Install in accordance with valve manufacturer's specifications.

Remote Control Valve circuit wire shall be #14 and common wire shall be #12.

B. Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines whenever possible.

C. Where more than one wire is placed in a trench, the wiring shall be taped together at intervals of 10 feet.

D. An expansion curl shall be provided within 3 feet of each wire connection. Expansion curl shall be of sufficient length at each splice connection at each electric control, so that in case of repair the valve bonnet may be brought to the surface without disconnection of the control wires. Control wires shall be laid loosely in trench without stress or stretching of control wire conductors.

E. Field splices between the automatic controller and electrical control valves will not be allowed without prior approval of the Owner's Representative.

F. Control wiring installed under paving shall be installed in UL listed Schedule 40 electrical conduit. Conduit shall terminate at least 2 feet inside of a planting area. Conduit joints and fittings shall be solvent weld. Size shall be 2" minimum and larger as required and/or shown on the plans.

G. Two #12 "spare" wires shall be run from the controller to the furthest valve location in each direction. Wires shall be white with color stripes or otherwise marked in an approved manner. This is addition to any designated future wires identified on the plans. Spare wires shall be indicated on the Record Drawings.

H. Wire connectors shall have a two-piece PVC housing which, when filled with resin epoxy and pressed together, forms a permanent, one-piece, moisture-proof wire splice. Connectors shall be UL listed, rated 600 volt, for PVC insulated wire. No wire splices shall be buried. Wire connectors shall be 3M models DBR, DBY or approved equal.

I. A #14 green tracer wire shall be installed along the path of main lines. Tracer wire to be looped in valve boxes.

2.6 ELECTRIC REMOTE CONTROL VALVES

Rain Bird XCZ-100-PRF-BF Drip Control Zone Kit (DV series valve and BFF series pressure regulating back flush filter).
Hunter ICV series plastic globe valve.

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Reserved for permit stamp

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BRC Acoustics
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project manager Grant Hardy
drawn by Grant Hardy
checked by Checker
job no. 20052
date November 18, 2022

revisions:

no. date by

PERMIT SET

NOVEMBER 18, 2022

IRRIGATION SPECIFICATIONS

L800

2.7 VALVE BOXES

A. Use plastic rectangular box for all electrical control valves as required. Detail as shown. Provide stainless steel bolts.

B. Provide extensions as required to ensure box rests on continuous soil base.

C. All openings including the bottom to be sealed with geotextile fabric.

D. Valve boxes shall be as follows:

Quick Coupling Valve	Carson Model 910 with T Style Cover
Junction Box, Pull Box	Carson Model 1419 with T Style Cover
Remote Control Valve	Carson Model 1220 with T Style Cover
Valve	Carson Model 1324 with T Style Cover

2.8 SLEEVES

Sleeves shall be provided where shown on the drawings, where required and/ or specified herein. Not all required sleeves are shown on the drawings.

A. Mainlines, lateral line piping, emitter headers and lateral piping and control wire shall be installed in a sleeve under paving walls and concrete surfaces.

B. Sleeving shall be Schedule 40 or SDR 35 PVC solvent weld pipe.

C. Joints shall be solvent welded. Welds to be primed and glued as per pipe size.

D. Sleeves shall be capped and kept clean of dirt and debris.

E. Excavation and backfill shall be as specified in Section 3.3.

F. All sleeves shall extend a minimum of 2 feet into the planting area.

G. Location of sleeves shall be shown on the record drawings.

H. Each sleeve shall be taped along its entire length with metallic locator tape manufactured for that purpose.

I. Sleeves shall have a minimum horizontal clearance of 12" from each other and other piping. Sleeves shall not be installed parallel and directly over another line. Sleeves shall have a minimum of 6 inches vertical clearance where they cross other lines.

J. Sleeves shall be a minimum size of 2" or 2 pipe sizes larger than the pipe being sleeved. Each pipe shall have its own sleeve unless approved by the Owner's Representative.

2.9 COPPER PIPE AND FITTINGS

H. Where indicated on the drawings, use Type K rigid conforming to ASTM Standard B88.

I. Fittings shall be wrought copper or bronze. Use a 95% tin and 5% antimony solder.

2.10 BACKFLOW PREVENTER AND ENCLOSURE

A. The backflow preventer shall be Wilkins 975XL as shown on the plans and installed per city of West Jordan standard details PK-155 and CW-240.

B. Enclosure must be a minimum of 12" above grade per West Jordan City Public Works Guidelines.

2.11 QUICK COUPLING VALVES

C. As shown on drawings.

SECTION 02819 - UNDERGROUND SPRINKLER IRRIGATION SYSTEM

PART 3 EXECUTION

3.1 INSTALLATION

A. General

1. Contractor Responsibility: The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstructions, grade differences or discrepancies in equipment usage, area dimensions or static water pressure exist that might not have been considered in the engineering. Such obstructions or differences shall be brought to the attention of the Owner's Representative. In the event this notification is not performed, the Contractor shall assume full responsibility for any revision necessary.

2. Material and equipment shall be delivered to the job site in unbroken reels, cartons or other packaging to demonstrate that such material is new and of a quality and grade in keeping with the intent of these specifications.

B. Site Conditions

1. Scaled dimensions are approximate. The Contractor shall check and verify size dimensions and receive Owner's Representative approval prior to proceeding with work under this Section.

2. Exercise extreme care in excavating and working near existing utilities. Contractor shall be responsible for damage to utilities which are caused by his operation or neglect. Contractor to employ the services of a professional utility locator service to locate existing on site utilities in the construction area prior to beginning work and as needed to maintain clear indications of utility locations.

3. Coordinate installation of irrigation materials, including pipe, so there shall be no interference with utilities or other construction or difficulty in planting trees, shrubs, and ground covers. Contractor shall coordinate with other Contractors to insure timely placing of necessary sleeves, wires and pipes under walks, curbs and paving.

4. Design Pressure: This irrigation system has been designed to operate with a minimum static inlet water pressure as shown on the notes and drawings. The Contractor shall take a pressure reading prior to beginning construction. If the pressure reading is less than indicated, the Contractor shall notify the Owner's Representative.

3.2 PREPARATION

A. Physical Layout

1. Prior to installation, the Contractor shall stake out pressure supply lines, location of remote control valves, specialty valves, sprinkler heads and controllers.

2. Layout shall be approved by Owner's Representative prior to installation. Prior approval shall be obtained for valves, controllers, main line routing and sprinkler locations.

3. Strict adherence shall be made to provide clearances between potable and irrigation lines as required by Municipality standards.

B. Water Supply

1. Irrigation system shall be connected to water supply points of connection as indicated on the drawings.

2. Connections shall be made at approximate locations as shown on drawings. Contractor is responsible for minor changes caused by actual site conditions.

3.3 EXCAVATION AND BACKFILL

A. Trenching: Dig trenches straight and support pipe continuously on bottom of trench. Lay pipe to an even grade. Trenching excavation shall follow layout indicated on drawings and as noted. If the bottom of a pipe trench excavation is found to consist of rock, caliche, or any other material that, by reason of its hardness, cannot be excavated to give a uniform bearing surface, said rock or other material shall be removed for at least 2" below the specified trench depth, and be refilled to specified trench depth with sand or similar material thoroughly tamped into place.

B. Trenching and installation of mainline and lateral lines shall occur after excavation of existing grass and soil, but before the placement of imported soil.

C. Burial of Pipe: Burial of pipe shall be as indicated on drawings:

D. Backfilling

1. The trenches shall not be backfilled until all required tests are performed. Trenches shall be carefully backfilled in 6" lifts with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand, or other approved materials, free from clods of earth or stones larger than 1" in diameter. Backfill shall be mechanically compacted in landscaped areas to a dry density equal to adjacent undisturbed soil in planting areas. Backfill will conform to adjacent grades without dips, sunken areas, humps or other surface irregularities. Backfilling shall not be performed while trenches or backfill material is in a wet or muddy condition.

2. A fine granular material backfill will be initially placed on all lines to a depth of 3". No foreign matter larger than 1/2" in size will be permitted in the initial backfill.

3. Flooding of trenches will be permitted only with approval of the Owner's Representative.

4. If settlement occurs and subsequent adjustments in pipe, valves, sprinkler heads, lawn or planting, or other construction are necessary, the Contractor shall make required adjustments without cost to the Owner.

A. Trenching and Backfill Under Paving

1. Trenches located under areas where paving, asphaltic concrete or concrete will be installed shall be backfilled with sand (a layer 6" below the pipe and 3" above the pipe) and compacted in layers to 90% compaction, using manual or mechanical tamping devices. Trenching for piping shall be compacted to equal the compaction of the existing adjacent undisturbed soil and shall be left in a firm, unyielding condition. Trenches shall be left flush with the adjoining grade. The sprinkler irrigation Contractor shall set in place, cap, and pressure test all piping under paving prior to the paving work.

2. Provide for a minimum cover of 24" between the top of the pipe and the bottom of the aggregate base for all pressure and non-pressure piping installed under asphaltic concrete paving.

3. Where the plans or site conditions require the existing paving to be cut, the saw cut method shall be used. The removed paving shall be replaced in kind.

F. Trenching Adjacent to Existing Trees

Where it is necessary to excavate adjacent to existing trees, the Contractor shall use all possible care to avoid injury to trees and tree roots. Excavation in areas where 2" and larger roots occur shall be done by hand. All roots 6" and larger in diameter, except directly in the path of pipe or conduit, shall be tunneled under and shall be heavily wrapped with burlap to prevent scarring or excessive drying. Where a ditching machine is run close to trees having roots smaller than 51 mm in diameter, the wall of the trench adjacent to the tree shall be hand trimmed, making clean cuts. Roots 1" and larger in diameter shall be painted with two coats of Tree Seal or equal. Trenches adjacent to trees should be closed within 24 hours, and where this is not possible the side of the trench adjacent to the tree shall be kept shaded with burlap or canvas.

3.4 ASSEMBLIES

A. Routing of sprinkler irrigation lines as indicated on the drawings is diagrammatic. Install lines and various assemblies to conform with the details shown on drawings and in accordance with the manufacturer's recommendations.

B. Install no multiple assemblies on plastic lines. Provide each assembly with its own outlet.

C. Install assemblies specified herein in accordance with respective detail. In absence of detail drawings or specifications pertaining to specific items required to complete work, perform such work in accordance with best standard practice with prior approval of Owner's Representative.

D. PVC pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before installation. Installation and solvent-welding methods shall be recommended by the pipe and fitting manufacturer. Primer shall be used on solvent weld joints. No solvent weld joint shall be submitted to water pressure until curing for 24 hours minimum.

E. On PVC to metal connections, the Contractor shall work the metal connections first. Teflon paste or approved equal shall be used on threaded PVC to PVC joints, and on threaded PVC to metal joints. Light wrench pressure is all that is required. Where threaded PVC connections are required, use threaded PVC adapters into which the pipe may be welded.

3.5 PVC PIPE INSTALLATION

A. Piping shall be snaked in the trench to allow for thermal expansion and contraction.

B. After curing of solvent weld joint and after having received the approval of the Owner's Representative, the mainline shall be filled. Extreme care will be taken to slowly fill the piping while releasing entrapped air at the ends of the main line.

C. Lines shall have a minimum clearance of 6" from each other, and from lines of other trades. Parallel lines shall not be installed directly over one another.

D. Manufacturing's installation recommendations shall be strictly adhered to.

3.6 FLUSHING OF SYSTEM

A. After new sprinkler pipe lines and risers are in place and connected, necessary diversion work has been completed, and prior to installation of sprinkler heads, emitters, the control valves shall be opened and a full head of water used to flush out the system.

B. Sprinkler heads and emitters shall be installed only after flushing of the system has been accomplished to the complete satisfaction of the Owner's Representative.

3.7 REMOTE CONTROL VALVES

Install remote control valves where shown on drawings and details. Drawings are schematic and valves shall be located adjacent and perpendicular to walks or curbs where possible. When grouped together, allow at least 1" between valve boxes. Install each remote control valve in a separate valve box. Electric control valves shall be tagged with permanent tags and markings indicating valve number, controller, controller station and type and location of heads and emitters on the valve. Each remote control valve box shall be branded with the controller and station number in an approved manner. Piping connecting the main line with the valve shall be the same size as the largest lateral pipe size for that zone. Reducing fitting shall occur at the unions and ball valve on either side of the valve. Each remote control valve shall have a separate tee from the main line. Boxes shall be aligned in a manner acceptable to the Owner's Representative.

3.8 CONTROL WIRE INSTALLATION

Control wire less than 2500 feet in length shall be continuous without splices or joints from the controller to the valves. Connections to the electric valves shall be made within 18" of he valve using connectors specified in Paragraph 2.5, unless otherwise approved by the Owner's Representative in writing.

Control wires shall be installed at least 16" deep. Contractor shall obtain the Owner's Representative's approval for wire routing when installed in separate ditch. Control wires may be installed in a common ditch with piping; however, wires must be installed a minimum of 4" below or to one side of piping.

3.9 FIELD QUALITY CONTROL

A. Adjustment of the system

1. The Contractor shall flush system for optimum performance.

2. All parts of the irrigation system and associated equipment shall be adjusted to function properly and shall be turned over to the Owner in operating condition.

B. Testing of Irrigation System:

1. The Contractor shall request the presence of the Owner's Representative at least 48 hours in advance of testing.

2. Test pressure lines under hydrostatic pressure of 150 psi and prove water tight.

3. Piping under paved areas shall be tested under hydrostatic pressure of 150 psi and proved water tight prior to paving.

4. PVC lateral line pipe shall be tested at working line pressures with couplings exposed and swing joints and other outlets capped.

5. Sustain pressure in lines for not less than two hours. Pipe sections shall be center loaded and couplings shall be exposed. Before testing, the line shall have been filled with water for at least four hours and provisions made for thoroughly bleeding the line of air.

6. All hydrostatic tests shall be made only in the presence of Owner's Representative. No pipe shall be backfilled until it has been inspected, tested and approved in writing.

7. Furnish necessary force pump and other test equipment.

8. Upon completion of each phase of work, entire system shall be tested and adjusted to meet site requirements.

3.10 MAINTENANCE

A. Contractor shall provide job maintenance of the entire irrigation system and shall continue until job acceptance by the Owner. Maintain system components and assure proper watering of plants. Repair leaks and replace defective components. After landscape and irrigation
operations are complete and in conformance with the contract documents, the Owner shall grant provisional acceptance.

D. Following provisional acceptance, the Contractor shall provide job maintenance for 1- year consisting of all items covered under maintenance alone. Following the 1-year maintenance period, the Owner shall grant final job acceptance after verifying all work and system components are in conformance with the contact documents.

3.11 CLEANUP

Cleanup shall be made as each portion of work progresses. Refuse and excess dirt shall be removed from the site, walks and paving shall be broomed or washed down, and any damage sustained on the work of others shall be repaired to the original conditions acceptable to the Owner's Representative.

3.12 FINAL OBSERVATION PRIOR TO ACCEPTANCE

The Contractor shall operate each system in its entirety for the Owner's Representative at the time of final observation. Items deemed not acceptable shall be reworked to the complete satisfaction of the Owner's Representative.

The Contractor shall show evidence to the Owner's Representative that the Owner has received accessories, charts, record drawings, and equipment as required before final observation can occur.

3.13 OBSERVATION SCHEDULE

A. Contractor shall be responsible for notifying the Owner's Representative in advance for the following observations according to the time indicated:

1. Pre-job conference - 7 days

2. Main line layout, pump installation, remote control valve locations 72 hours

3. Pressure supply line installation and testing - 72 hours

4. Automatic controller hook up - 72 hours

5. Control wire installation - 72 hours

6. Final observation - 7 days

B. When the inspections have been conducted by other than the Owner's Representative, show evidence of when and by whom these inspections were made.

C. No observation shall commence without as-built drawings. In the event the Contractor calls for an observation without as-built drawings, without completing previously noted corrections, or without preparing the system for observations, he shall be responsible for reimbursing the Owner's Representative at the hourly rate in effect at the time.

END OF SECTION

Reserved for permit stamp

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drawn by: Grant Hardy
checked by: Checker
job no. 20052
date November 18, 2022

revisions:

no. date by

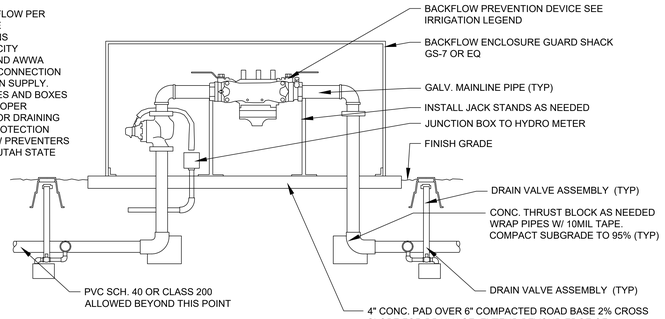
PERMIT SET

NOVEMBER 18, 2022

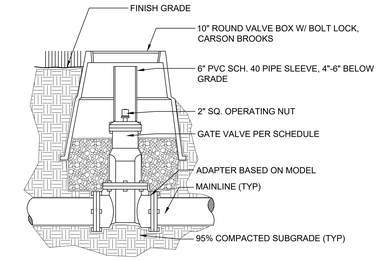
IRRIGATION SPECIFICATIONS

L801

NOTE:
1. INSTALL BACKFLOW PER MANUFACTURE SPECIFICATIONS
2. CONFORM TO CITY STANDARDS AND AWWA CODES WHEN CONNECTION TO WATER MAIN SUPPLY.
3. ALL STANDPIPES AND BOXES MUST HAVE PROPER PROVISIONS FOR DRAINING AND FROST PROTECTION
4. ALL BACKFLOW PREVENTERS ARE TO MEET UTAH STATE CODES.

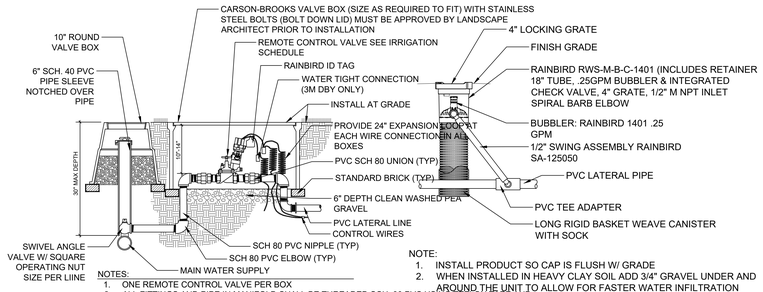


1 BACKFLOW PREVENTION ASSEMBLY
3/4" = 1'-0" P-PU-DIM3.2W-94



NOTE:
1. TOP OF MAINLINE DEPTH PER TRENCHING DETAIL OR 18" TO 30" (TYP)

2 GATE VALVE
1" = 1'-0" P-PU-DIM3.2W-89

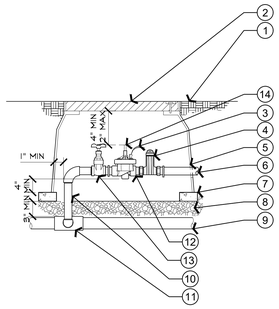


NOTES:
1. ONE REMOTE CONTROL VALVE PER BOX
2. ALL FITTINGS AND PIPE IN MANIFOLD SHALL BE THREADED SCH. 80 PVC USING TEFLON TAPE AND #5 RECTOR SEAL
3. MAX. TWO CONTROL VALVE PER ANGLE VALVE
4. EACH FITTING AND VALVE BELL MUST BE RESTRAINED TO THE LENGTH OF FITTINGS AS SHOWN IN HARCO DI FITTINGS TABLE USING THE FITTING TO PIPE RESTRAINT VALVE TO PIPE RESTRAINT AND PIPE TO PIPE RESTRAINT AS REQUIRED

3 REMOTE CONTROL VALVE
1/4" = 1'-0" P-PU-DIM3.2W-92

NOTE:
1. INSTALL PRODUCT SO CAP IS FLUSH W/ GRADE
2. WHEN INSTALLED IN HEAVY CLAY SOIL ADD 3/4" GRAVEL UNDER AND AROUND THE UNIT TO ALLOW FOR FASTER WATER INFILTRATION AND ROOT PENETRATION, SCARIFY AND AMEND SOIL PER PLANTING DETAIL
3. ONCE SWS IN HAS BEEN INSTALLED FILL THE BASKET WITH CLEAN WASHED GRAVEL BEFORE LOCKING LID

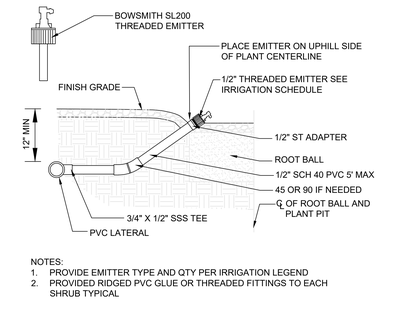
4 ROOT WATER SYSTEM
1" = 1'-0" P-PU-DIM3.2W-84



1. FINISHED GRADE
2. JUMBO VALVE BOX W/ "T" TYPE BOLT DOWN COVER
3. CONTROL WIRE TO CONTROLLER (SEE PLAN)
4. PRESSURE REGULATOR
5. NOTCH VALVE BOX TO PROVIDE MIN 1" SPACE AROUND PIPE
6. LATERAL LINE PER PLAN
7. 4" X 8" BRICK, TYP ON ALL SIDES
8. CLEAN GRAVEL PER SPECIFICATIONS
9. MAINLINE SEE PLANS
10. THREADED SCH 80 PVC RISER
11. PVC FITTING TURNED ON ITS SIDE W/ THREADED OUTLET SAME SIZE AS THE VALVE USE ALL THREADED SCH 80 FITTINGS UP TO THE VALVE AS SHOWN
12. ACTION BUTTRESS #18010 & #18011, 2 PER VALVE
13. BRASS GATE VALVE
14. VALVE

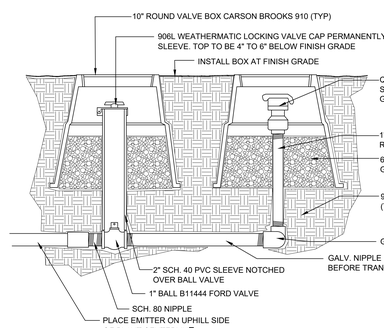
NOTE:
1. MAINTAIN 6" MIN CLEARANCE BETWEEN VALVES IF TWO (2) VALVES ARE PLACED IN ONE BOX.
2. CONTRACTOR TO INSTALL ONE ADDITIONAL WIRE TO EACH VALVE FROM CONTROLLER W/ 2' MIN EXCESS WIRE LOOP IN VALVE BOX. USE WATERPROOF CONNECTORS PER SPECIFICATIONS.

5 DRIP VALVE CONTROL ZONE KIT
1" = 1'-0" P-PU-DIM3.2W-04

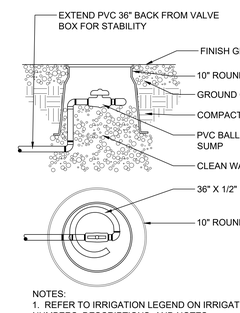


NOTES:
1. PROVIDE EMITTER TYPE AND QTY PER IRRIGATION LEGEND
2. PROVIDED RIDGED PVC GLUE OR THREADED FITTINGS TO EACH SHRUB TYPICAL

6 SHRUB EMITTER DETAIL
6" = 1'-0" P-PU-DIM3.2W-81

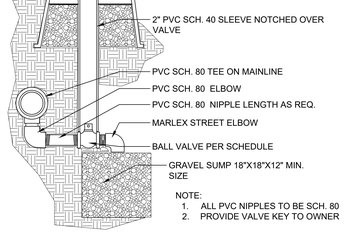


7 QUICK COUPLING VALVE
3" = 1'-0" P-PU-DIM3.2W-82



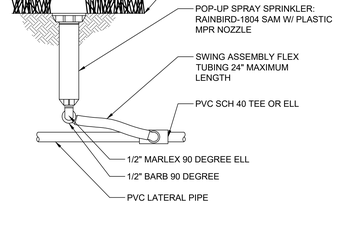
NOTES:
1. REFER TO IRRIGATION LEGEND ON IRRIGATION PLAN FOR MODEL NUMBERS, DESCRIPTIONS, AND NOTES.

8 FLUSH CAP
1" = 1'-0" P-PU-DIM3.2W-83

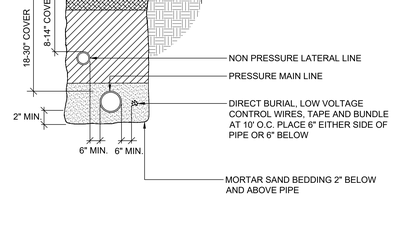


NOTE:
1. ALL PVC NIPPLES TO BE SCH. 80
2. PROVIDE VALVE KEY TO OWNER

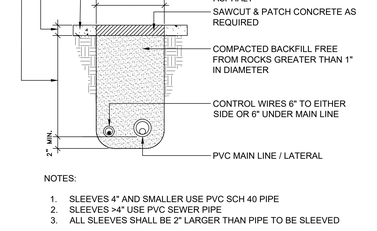
9 MANUAL DRAIN VALVE
1 1/2" = 1'-0" P-PU-DIM3.2W-85



10 POP UP SPRINKLER
3/8" = 1'-0" P-PU-DIM3.2W-88

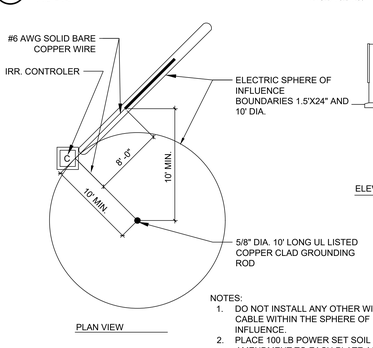


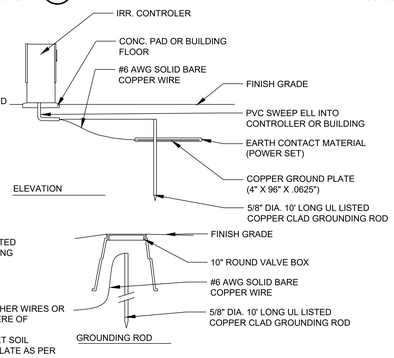
11 TRENCH DETAIL
3/8" = 1'-0" P-PU-DIM3.2W-90



NOTES:
1. SLEEVES 4" AND SMALLER USE PVC SCH 40 PIPE
2. SLEEVES >4" USE PVC SEWER PIPE
3. ALL SLEEVES SHALL BE 2" LARGER THAN PIPE TO BE SLEEVED

12 SLEEVING DETAIL
3/8" = 1'-0" P-PU-DIM3.2W-91





NOTES:
1. DO NOT INSTALL ANY OTHER WIRES OR CABLE WITHIN THE SPHERE OF INFLUENCE.
2. PLACE 100 LB POWER SET SOIL AMENDMENT TO EACH PLATE AS PER MANUF. SPECIFICATIONS.

13 GROUNDING ROD & PLATE
3/8" = 1'-0" P-PU-DIM3.2W-93

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IRRIGATION DETAILS

L802