

| TYPE OF WORK | | | | REQUIREMENTS |
|--|---|--|---|---|
| 170-6002 IRRIGATION SYSTEM (TY I) LS | 170-6003 IRRIGATION SYSTEM (TY II) LS | 170-6004 IRRIGATION SYSTEM (TY III) LS | 170-6005 IRRIGATION SYSTEM (TY IV) LS | FOR ALL IRRIGATION SYSTEM TYPES, THE DESIGN, FURNISH, INSTALLATION, REMOVAL, AND MAINTENANCE OF IRRIGATION SYSTEMS IS INCIDENTAL TO ITEM 170 AND WILL NOT BE PAID FOR SEPARATELY UNLESS OTHERWISE SHOWN. |
| ✓ | | | | Furnish and install irrigation system in accordance with Item 170 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014, plans, details, and notes. |
| | ✓ | | | Design, furnish, and install irrigation system in accordance with Item 170 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014, plans, details, and notes. Design is incidental to this item and not paid for separately. |
| | | ✓ | | Design, furnish, install, and remove irrigation system in accordance with Item 170 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014, and notes. Power supply must not involve the purchase of electricity. Water distribution must utilize a drip system. Design and removal are incidental to this item and not paid for separately. |
| | ✓ | ✓ | | Provide shop drawings with layout, details, and specifications for approval prior to work. |
| | | ✓ | | Remove all above ground components at end of contract. |
| ✓ | ✓ | ✓ | | Provide as-built drawings at completion of irrigation system. As-built drawings must be sealed by Licensed Irrigator. See additional notes this sheet for requirements. |

IRRIGATION SYSTEM NOTES

GENERAL

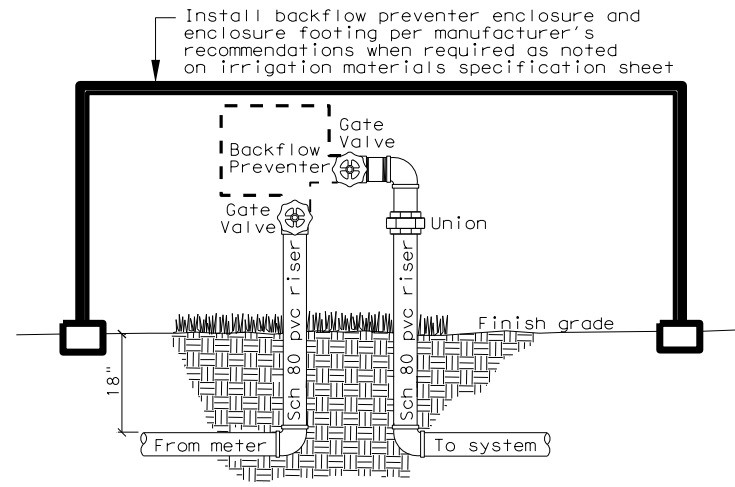
- Reference Item 170 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements not shown.
- Locate and stake all underground conduits and utilities associated with but not limited to: CTMS, CTMS power supply, lighting, signal wires and detectors, gas, electrical, telephone, fiber optics, etc.
- Locate and stake existing ground boxes, inlets, culverts, manholes, etc. within the project area with a 4' wooden stake painted orange. Maintain the stakes in place for duration of contract. Remove stakes as directed by engineer.
- The drawings are diagrammatic of the work to be performed. Changes may be required due to varying conditions or as directed by the engineer.
- Conduct a complete inventory and analysis of site conditions, incidental construction such as boring, mainline adjustment, sidewalk removal and replacement, utility adjustments, etc. will not be paid for separately unless shown on plans.
- See IRRIGATION DETAILS AND MATERIALS SHEET 3 of 3 for materials specifications, sizes, and requirements.
- Reference Item 5.10 Inspection of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges 2014. At any time during all phases of the contract, any materials or work performed not in accordance with the plans and specifications will be replaced and/or reworked until in compliance.
- Any adjustments due to the failure to comply with plans and specifications shown will be at contractors expense.

CONSTRUCTION METHODS

- Locate and stake irrigation system and related work in the field. Locate all irrigation valves, mainlines, dripline, etc., for approval by the engineer prior to installation. Any adjustments to work performed prior to approval will be incidental.
- Obtain all permits, licenses, tests, and approvals. Pay any fees and deposits and install or arrange for all water meters and taps for installation and operation as applicable. Deposits will not be refunded by TxDOT.
- Install water meter(s). WATER METERS WILL BE PLACED IN NAME OF THE CONTRACTOR THROUGHOUT ENTIRE CONTRACT. The contractor will pay for monthly water charges. Ensure water meter(s) remain operational and turned on for duration of the contract. Upon completion of the contract transfer water meter(s) into name of entity provided by the engineer.
- Install backflow preventer(s). BACKFLOW PREVENTERS WILL BE PLACED IN NAME OF THE CONTRACTOR THROUGHOUT ENTIRE CONTRACT. Pay all charges, fees, tests, and coordination for any backflow preventer(s) testing at installation or annual inspection required by local entity for duration of the contract. Upon completion of the contract transfer backflow preventer(s) into name of entity provided by the engineer.
- Excavation and Trenching Item 170.3.2. Exercise care when excavating near trees. No mechanical trenching is permitted below the canopy of existing trees. Adjust trench path, bore, and/or excavate by hand to avoid damage to existing tree root system. Keep trench bottom clean and smooth with all organic debris and sharp objects removed.
- Boring Item 170.3.3. Stake boring and sleeve locations for engineer's approval. Bore pit will be minimum of 5 feet from edge of base material or pavement unless otherwise approved by engineer. The size of the bore will not exceed the diameter of the encasement by more than 1 inch. Cover or fill bore pit during non-scheduled work hours.
- Encasement 170.3.5. Depth is minimum 36 inches below roadway pavement surface. All encasement is continuous and will extend the full width of the pavement and 5' on each side thereof. Encasement is incidental to irrigation system. Install encasement same day as boring.
- Pipe and Valve Assembly 170.3.6. Do not install pipe when air temperature is below 40 degrees Fahrenheit. Cut pipe in a manner that will ensure a square cut. Remove burrs prior to installation for a clean, smooth unobstructed flow. Install pipe to an even grade and support pipe continuously on bottom of trench. Snake pipe in trench to allow for contraction and expansion.
- Sprinkler Heads and Drip Tubing 170.3.7. See note 10 before installing dripline.
- Closing and Flushing of PVC Pipe 170.3.10. Thoroughly flush all water lines before installing dripline.
- Hydrostatic Tests 170.3.11. Engineer must be present.
- Backfill and Compaction 170.3.12. Backfill to correct soil settlement is incidental.

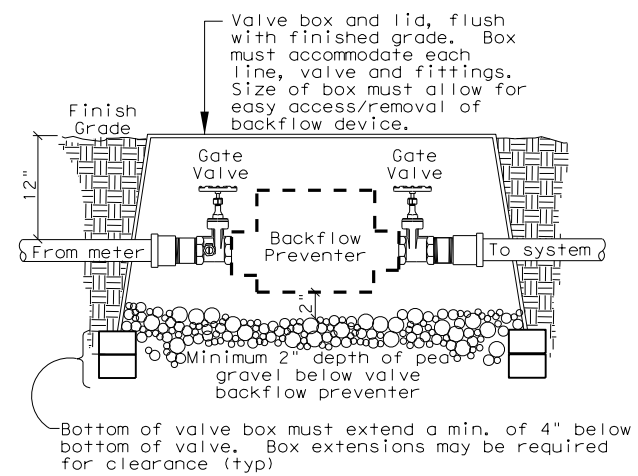
GUARANTEE AND ACCEPTANCE

- Maintenance period. Inspect irrigation system concurrently with, and subject to the same maintenance requirement period under Items 192 and 193. During the installation and maintenance period perform the following activities as a minimum and to the satisfaction of the engineer:
 - Install and maintain the controller program to ensure the proper distribution of water (includes replacement of any batteries).
 - Inspect, repair, and/or replace any equipment that is found defective, damaged or stolen.
 - Make any adjustments that may become necessary to ensure the proper delivery of water to the plant material.
- As-built drawings. Furnish the engineer a set of as-built drawings on reproducible 11x17 sheets upon completion of the installation of the irrigation system. The as-built drawings will be verified that they are a true record of the project conditions. Show all valve locations on drawings by triangulation from a fixed object. Show actual location of main and lateral lines from a fixed object. As-built drawings must be sealed by Licensed Irrigator.
- Operating and maintenance data. Provide instructions covering full operation, care and maintenance of the equipment, including a schedule showing time each valve is open to provide determined amount of water, and instruct personnel designated by engineer in proper operation of the system.



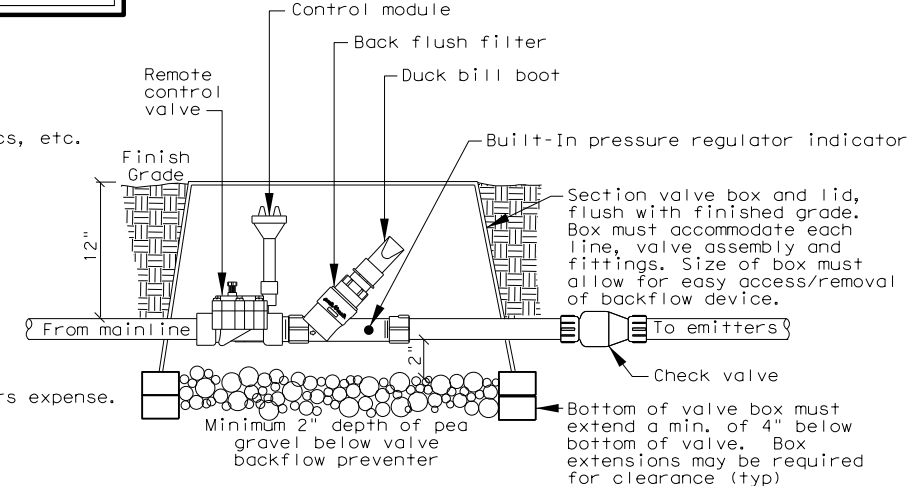
BACKFLOW PREVENTER ABOVE GROUND INSTALLATION

Type shall meet local code. Local code will have precedence over this detail.



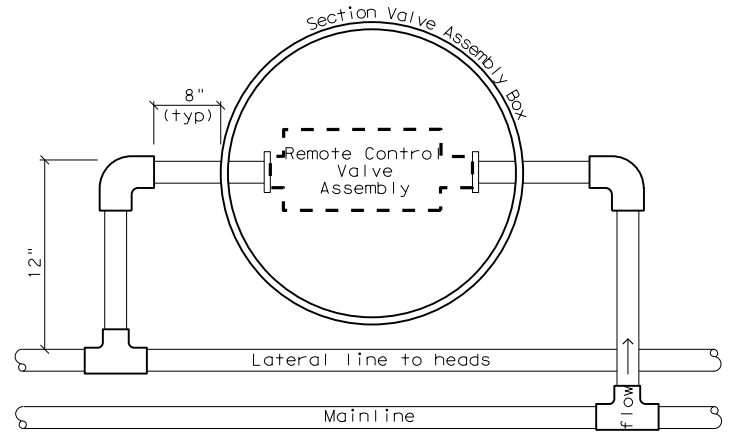
BACKFLOW PREVENTER IN GROUND INSTALLATION

Type shall meet local code. Local code will have precedence over this detail.



SECTION - PIPING TO/FROM REMOTE CONTROL VALVE ASSEMBLY

REMOTE CONTROL VALVE ASSEMBLY



PLAN - PIPING TO/FROM REMOTE CONTROL VALVE ASSEMBLY



IRRIGATION DETAILS AND MATERIALS SHEET 1 OF 3

| Details not to scale | | | | | | |
|--------------------------|----------|--------|----------------|------|-------|---------|
| FILE: | FED DIST | STATE | PROJECT NUMBER | | SHEET | |
| | 6 | TEXAS | | | | |
| REVISED: | DIST | COUNTY | CONTROL | SECT | JOB | HIGHWAY |
| FEB 2015 for 2014 specs. | 12 | | | | | |