

1100's – Water Supply Systems

Section 01120 – Irrigation Systems

This work consists of constructing irrigation systems.

Quality

Quality requirements for most materials are specified, and in the [Non-Field Tested Materials Acceptance Guide](#). Quality requirements for bedding material, concrete, and other field-tested materials are specified in the [Manual of Field Test Procedures](#) – Field Tested Materials Guide.

Check that the Contractor is aware of those requirements, performs required testing, and provides quality documentation before the material is incorporated.

Gather and submit required quality documentation.

Construction

Check that:

- ODOT and the Contractor have obtained the required permits and the Contractor is aware of all permit requirements.
- ODOT has arranged for water service, if needed, or that the Contractor pressure tests the existing supply to ensure water and pressure for the intended work.
- ODOT has arranged for electrical service and the Contractor has contacted the provider of electrical service before installing the meter base at the power source.
- The Contractor conducts a training session, arranged by the Project Manager, for personnel who will operate and maintain the system, as specified.

Ensure that:

- The Contractor marks the layout of the irrigation system before starting construction, ensuring that the finished system will provide complete coverage. If alterations or changes are needed notify the Project Manager.
- The Contractor has identified buried facilities and utilities and others have located and marked their buried facilities.
- The Contractor records locations of all installations for inclusion on the As Constructed drawings.

- For excavation:
 - Topsoil is kept separate from other excavation, for replacement as the top layer of backfill, or the Contractor must replace the layer of topsoil at its own expense.
 - Trenching is done in a manner that protects existing plants, as specified.
 - Trenching is performed to the specified depth and width.
 - The trench bottom is relatively smooth and free of rock or other unsuitable material. Rock or other unsuitable material must be excavated to an additional depth and replaced with sand or other suitable material, as specified.
 - Detectable marking tape is placed with the pipe in the trench as specified.
- For piping:
 - Piping is constructed as specified.
 - Drain valves are installed at all section low points.
 - Ends of all pipes are plugged or capped to prevent entry of unwanted material.
 - All joints are constructed as specified.
 - Concrete thrust blocks are constructed as specified.
- For electrical installation:
 - Wiring is of the specified specification, size, and numbers.
 - Splicing is done only at specified locations.
 - Wires are bundled as specified.
 - Wires are placed in the trench as specified.
- All piping is flushed to remove foreign material, air is purged, and piping is pressure tested, as specified.
- All sprinkler heads and other appurtenances are constructed as specified, and at required locations elevations, and are protected during construction, as specified.
- For backfilling pipes:
 - Backfilling is not done until all piping has been inspected, tested, and approved by the Project Manager.
 - If sufficient backfill material is not available notify the Project Manager.
 - Backfill type, material, method and compaction is as specified.
 - The top material is topsoil or other specified material.
- All sprinkler heads are tested and adjusted to provide uniform coverage, with no spray on pavement, walks, or structures.
- The Contractor marks facilities, as required, to allow later identification for maintenance or other needs.

- The Contractor operates the installation through all required phases and situations to ensure specified operation.
- The Contractor performs all needed maintenance, testing, and inspection until all contract work is complete.
- The Contractor submits all drawings, schematics, and layouts needed for ODOT to complete the As Constructed drawings.
- The Contractor cleans up and disposes of unwanted material.
- The affected areas are smoothed and restored.
- The Contractor provides all parts lists and service manuals, as specified.

Measurement

No measurement of quantities will be made for this work. Payment is on a lump sum basis unless specified otherwise. As work is performed, prepare and submit a source document, such as an [Installation Sheet \(form 734-2605\)](#), to justify payment.

Section 01140 – Potable Water Pipe and Fittings

Section 01150 – Potable Water Valves

Section 01160 – Hydrants and Appurtenances

Section 01170 – Potable Water Service Connections, 2-Inch and Smaller

This work consists of constructing potable water pipe and fittings 16 inches in diameter and smaller within the Right of Way or easement.

Quality

Quality requirements for most materials are specified, and in the [Non-Field Tested Materials Acceptance Guide](#). Quality requirements for bedding material, concrete, and other field-tested materials are specified in the [Manual of Field Test Procedures – Field Tested Materials Guide](#).

Check that:

- The Contractor is aware of those requirements.

Ensure that:

- The Contractor performs testing as required.
- The Contractor provides quality documentation before the material is incorporated.
- All materials are delivered, handled, and stored in a manner that prevents damage and entry of unwanted material.
- Damaged material is either replaced or repaired.

Gather and submit required quality documentation.

Construction

Check that:

- The Project Manager or owner of the facility collects samples and conducts bacteriological tests.
- When connecting to existing water mains:
 - The Contractor submits a detailed sketch of the connection process for review and concurrence by the Project Manager or the owner of the water main.

Ensure that:

- Locations of installations are accurately located and marked and both the Contractor and Inspector understand the markings.
- The Contractor has arranged for all utilities and others to locate their facilities in the work area and those facilities have been located and marked.
- Where existing services are to be transferred from an old to the new facility, the work is coordinated with the owner of the facility and the owner concurs with the Contractor's planned procedures and schedule.
- The inspection issues in Section 00405 of this Manual are fulfilled for trench construction and backfill.
- Water in the trench area is removed until the ends of the pipes are sealed and the pipe is secured from floating.
- If conflicts with utilities or other contract work occur notify the Project Manager.
- Pipe is of the size, material, and construction for each installation, as specified.
- All foreign material is removed from the pipe before the pipe is placed in its final position.

- All cut ends of pipe are smoothed and reamed as specified.
- Pipe is laid as specified and in accordance with the recommendations of the manufacturer.
- Valves, hydrants, connections, and other appurtenances are constructed at the specified location, elevation, and orientation.
- Joints are cleaned, lubricated if required, and constructed as specified or recommended by the manufacturer.
- When specified, the pipe is encased, with polyethylene or other specified material, as specified or recommended by the manufacturer.
- Concrete for thrust blocks is mixed, tested, placed to the dimensions against undisturbed material, and allowed to develop the specified strength before the pipe is pressurized, as specified.
- For all non-metallic pipes, detectable marking tape or wire is installed above the pipe, as specified.
- Hydrants that are not in service are covered with a burlap or plastic bag, as specified.
- Valve boxes and similar appurtenances are marked as specified.
- The Contractor:
 - Flushes, disinfects, and tests all pipes as specified.
 - Performs the testing in the presence of the Inspector or owner of the facility, as specified.
 - Repairs or replaces any defective material or workmanship.
 - Disposes of the flushed or treated water as specified.
 - May observe as the Project Manager or owner of the facility collects samples and conducts bacteriological tests. The Contractor must take appropriate action if the test results are not acceptable.
 - If needed, repeats the original disinfection procedure.
- When connecting to existing water mains:
 - If water service must be interrupted, the Contractor notifies affected parties, as specified.
 - The owner of the facility is present during the connection process, if they so desire.
 - The Contractor constructs the connection according to the approved process and restores interrupted service as rapidly as possible.
- The inspection issues in Section 00495 (Trench Resurfacing) of this Manual are fulfilled for restoring existing surfacings in the trench areas.
- The Contractor cleans up and disposes of unwanted material.
- All affected areas are smoothed, finished, and restored as specified.

Measurement

Refer to the specifications for the method of measurement. Note depth of pipe installation. Measurement will be by one of the following methods, unless specified otherwise:

If measurement is by the unit basis, count each location where the unit is completed. Sketch and calculate the number of units completed daily and submit that calculation with an [Installation Sheet \(form 734-2605\)](#) as a source document to justify payment.

If measurement is by volume in the haul vehicle, measure each haul vehicle and record those measurements. If measurement is by volume on an in-place basis, ensure that material is placed to the specified depth throughout the specified area by performing spot checks for depth. Take measurements to calculate the area covered and the resulting volume. Do not include areas where material was placed contrary to the specifications. As work is performed sketch and calculate the volume of material placed daily and submit that calculation with an [Installation Sheet \(form 734-2605\)](#) as a source document to justify payment.

If measurement is by length, measure and record the length of material installed. As work is performed, sketch and total the length of material installed daily and submit that calculation with an [Installation Sheet \(form 734-2605\)](#) as a source document to justify payment.