

Minimum Installation Specifications for Turf

EDITOR'S NOTE: This issue emphasizes irrigation. It seemed appropriate, therefore, that we publish a guide of things to watch for when installing a system. One of the best check lists we've seen has been compiled by the national Sprinkler Irrigation Association, Washington, D.C. We publish it with special permission from SIA. Note that this guide is for installation only; a design and material specification should also be prepared.

1. Scope of Work

The work under this specification includes all labor, materials, taxes, tools and equipment necessary to furnish and install a sprinkler irrigation system as specified and shown on the drawings for the named location.

2. Plans and Contract Documents

The Contract Documents shall consist of Plan # _____ Dated _____ Prepared by _____ and Specification, Pages _____ Dated _____ together with the properly executed contract.

3. Time of Completion

The Contractor shall commence work within fifteen calendar days of receipt of written notice to proceed and shall complete the work within _____ working days, weather permitting. The intended starting date of this work is _____.

4. Bonds

Labor, material and performance bonds shall be furnished to the Owner by the Contractor, when requested by the Owner. The Owner shall reimburse the Contractor for the cost of the bonds.

5. Codes and Permits

The Contractor shall apply and pay for all necessary permits and fees required in the pursuit of his work as required by the governing codes. The Owner shall furnish and install the utilities necessary according to plan, at no cost to the Contractor, unless otherwise specified. All further site connections for Contractor's use shall be made by Contractor.

6. Insurance

The Contractor shall furnish to the Owner certificates of insurance in an "admitted carrier," evidencing coverage of:

- 1) Workmen's compensation and employer's liability insurance, and
- 2) Comprehensive General Liability and Comprehensive Auto Liability Insurance, (XCU exclusion not to apply). Minimum limits of liability shall be \$100M/300M Bodily Injury Liability and \$25M—each accident—Property Damage Liability.

These minimum limits should be raised when greater exposure to loss exists.

7. Errors or Conflicts in Drawings and Specifications

The Contractor shall immediately notify the Owner's representative should he find any errors or conflicts in the drawings and/or specifications. The Owner's representative will render his interpretation or instructions on the items submitted as soon as practicable.

8. Substitution of Material

The Contractor shall use materials as specified. Materials other than that specified will be permitted only after written application by the Contractor and written approval by the Owner.

9. Protection of Utilities and Other Work

Any and all damage to utilities, or other properties, caused by the Contractor shall be immediately repaired by the Contractor, at no addition to

the contract price. The Owner shall make available to the Contractor the location of existing utilities.

10. Working Area

The Contractor shall confine his operations to the areas to be improved, and to the areas allotted to him by the Owner for his operation, and for material and equipment storage.

11. Supervision by Contractor and Owner

The Contractor shall maintain continuously a competent superintendent satisfactory to the Owner, on the work during progress, with authority to act for him in all matters pertaining to the work. The Owner shall designate a representative with authority to act for him in all matters pertaining to the work.

12. Subletting and Assignment

The Contractor shall not assign or sublet any portion of this work without written approval of the Owner of the specific sub-contractor.

13. Payments, Partial and Final

On or about the first of each calendar month, a payment equal to ninety (90) percent of the work performed during the previous calendar month will be made to the Contractor. Payment of the ten (10) percent withheld from these monthly payments will be made to the Contractor upon completion and acceptance by the Owner, of all work called for under the original contract, regardless of any addition to the contract or any extension of completion time.

14. Claims for Extra Work

No claim by the Contractor for increased compensation for alterations or additions, except when done in pursuance of a written authorization from the Owner, will be considered unless written notice of claim is made to the Owner before the commencement of such work.

15. Layout of Work

The Owner shall furnish all surveys covering property lines and easements. The Contractor shall lay out all sprinkler work and be responsible for its location.

16. Progress of Work

The work shall be carried to completion with utmost speed, since time is of the essence.

17. Overtime

Overtime work will be at the Contractor's option unless required, in writing by the Owner, in which case the overtime premium will be paid by the Owner.

18. Sod Lifting and Replacing

Where piping is to be installed in areas containing established turf, the sod shall be removed from the trench line in the necessary width and to a suitable depth. The backfill shall be brought to grade by tamping before replacing the sod. Only light tamping will be permitted on the sod. The trench area shall then be cleared of all deleterious matter. The Contractor shall be responsible for maintaining removed sod and shall furnish replacement sod if existing sod fails to survive. As soon as the replacement sod has "knitted" the Contractor's responsibility for sod maintenance will terminate.

19. Excavation

The Contractor shall do all necessary excavation for the proper installation of his work. Over-excavation shall be backfilled and hand tamped prior to installing pipe. Any pumping, shoring or bracing will be done by the Contractor. If the Owner suspects rock conditions and/or the Con-

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tractor and Owner shall negotiate the extra compensation to be paid the Contractor. The Contractor shall barricade and/or light the excavation to prevent undue hazard to the public.

20. Pipe Installation

In general, when a manufacturer's specification exists covering installation of its material underground, it shall be followed. This shall apply to thrust blocking, handling, storage, minimum depth of cover, cathodic protection, coating protection and testing.

Underground lines up to 2" inclusive shall have a minimum horizontal clearance of four inches of each other. All other lines shall have a minimum horizontal clearance of 12" of each other. All lines shall have a minimum horizontal clearance of 12" from the lines of other trades. This requirement does not apply to lines crossing one another at angles of 45 to 90 degrees. A minimum 1" vertical clearance shall be maintained between lines which cross between these angles. Minimum depth of cover over piping 1¼" and smaller shall be 10"; 1½" to 2" inclusive shall be 14"; and 2½" and larger shall be 18", or at a sufficient depth to accommodate valves and other equipment, whichever is greater. When pipe laying is not in progress, or at the end of each day, the pipe ends shall be closed by means of a tight plug, or cap. All work shall be performed in accordance with good practices prevailing in the piping trades.

21. Drainage

When the piping system is installed in a freezing climate, it shall be equipped with automatic ball check drains on the zone lines and manual drain valves on the main lines. These shall be installed a suitable porous material sump. Minimum pitch at the low points of the system and discharged into of piping to drains shall be 3" per 100 ft.

22. Backfill

The Contractor shall do all necessary backfilling and compaction required for complete installation of the system. Compaction shall be such that the original density of the material is obtained. Backfill material shall be free from rock, large stones or other unsuitable substances. In the spring following the year of installation, this Contractor shall repair any settlement of the trenches by bringing them to grade with topsoil and seeding. Watering and maintenance of the repaired areas shall be the Owner's responsibility. Backfilling of trenches containing plastic pipe and copper pipe shall be done when the pipe is cool to avoid excessive contraction in cold weather.

23. Sprinklers and Quick Coupling Valves

Sprinklers and quick coupling valves shall be set plumb and level with the turf at locations called for on the drawings. Heads in lawn or turf areas, where grass has not been established, shall be installed on temporary risers extending at least 3" above grade.

After the lawn or turf is established and the ground has settled, the Contractor shall, within ten (10) days of notification, lower heads to finish grade. Where heads are installed along walk, roads, etc., they shall be permanently positioned. Sprinkler piping shall be thoroughly flushed before the installation of the sprinkler heads.

Elevation of the sprinkler heads and quick coupling valves is critical and the Contractor shall exercise care and set them exactly at or slightly above grade.

24. Manual Valves

Manually operated control valves shall be installed in locations as shown on plans and shall be ac-

cessible for proper use. Valves shall be installed with enough clearance for proper maintenance. Valves shall be installed with a minimum of 4" cover from finish grade, and shall be provided with a proper valve sleeve and cover extending from grade to the body of the valve.

25. Automatic Valves

Automatic control valves shall be installed at sufficient depth to provide not less than 4" cover from the very top of the valve to finish grade. Valves shall be installed in a plumb position with enough clearance from other equipment for proper maintenance. Valves shall be provided with a valve sleeve and cover extending from grade to the body of the valves. Where an automatic valve is installed under each sprinkler head, the valve box and cover may be omitted.

26. Pipe Sleeves, Augering and Boring

Where pipes are installed under roads or walks by jacking, augering, boring or open cut, the excavated material shall be replaced around the pipe to provide original density so no settlement will result. Where possible, sleeves should be installed around the pipe line. Where control wires or tubing pass beneath planting beds, sidewalks, roads or drives, they shall be installed in their own suitable sleeve. At other locations they shall be installed in the pipe trench and protected by the pipe where possible.

27. Control Wire or Control Tube

Control lines shall be at least the minimum size recommended by the Automatic Equipment Manufacturer and shall be a product approved for underground direct burial use. The connections at joints shall be by an approved method for underground use. Allowance shall be made for thermal contraction of the control lines. Control tubing shall be flushed prior to connection to the valve and/or controller. Control wire shall have an 18" loop at the valve to facilitate servicing.

28. Automatic Controller

The automatic controller shall be mounted in a manner recommended by the manufacturer and at the location called for on the plans and approved by the Owner. The Owner will provide electrical power to the controller location in accordance with the manufacturer's specifications unless noted otherwise on the plans.

29. Pumping Plant and Pump House

Motors, pumps, piping and all mechanical work shall be installed by this Contractor for a complete and operating pumping plant. Pump house, floor and footings will be installed by this Contractor unless noted otherwise on plans.

The electrical service to the pumping plant shall be provided by the Owner. All other electrical wiring and equipment shall be provided by the Contractor.

30. Backflow Prevention and Connection to Main

Where applicable, the connection to the main shall be made by this Contractor and will include a master control valve. An Approved backflow prevention assembly shall be provided and, unless the governing code specifies otherwise, shall consist of a line size check valve downstream of the master control valve.

31. Electrical Wiring and Controls

All electrical equipment and wiring shall comply with local and state codes and be installed by those skilled and licensed in the trade. Unless the governing code specifies otherwise, low voltage control wire may be installed by the Sprinkler Irrigation Contractor.



98 Sprinklers
1/2" - 1-1/2"

16 Controllers
1-24 Stations

54 Valves
3/4" - 6"

79
Vacuum
Breakers
1/4" - 8"

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32. Concrete and Asphalt Repair

Any concrete or asphalt pavement cut or damaged by the Contractor will be repaired by the Contractor. Where pipes are installed through walls below grade, the repaired wall shall be suitably waterproofed.

33. Clean Up of Area

The entire area shall be left clean and in the condition that the Contractor received the area.

34. Testing and Flushing

All main lines and lines having continuously applied pressure shall be tested at a pressure of 100 p.s.i. or at the rated pressure of the pipe, whichever is lower, and upon visual inspection of the ground, should any leak be found, it shall be repaired. The line shall then be retested until satisfactory.

Zone lines shall be tested at the operating pressure of the zone and, should any leak be found, it shall be repaired and the zone retested. After testing, the system shall be thoroughly flushed with a minimum of 150% of the operating flow passing through each pipe, beginning with the larger mains and continuing through the smaller mains in sequence. When the testing and flushing is complete, the Contractor, in the presence of the Owner, will demonstrate the sprinkling system with particular attention to coverage and method of operation.

35. Adjusting of System

Adjustment of the sprinkler heads and automatic equipment will be done by the Contractor, upon completion of installation, to provide optimum performance. Minor adjustments during the guarantee period will be made by the Owner.

36. Loose Equipment to Furnish

Loose sprinkling equipment, operating keys and spare parts will be furnished by the Contractor in quantities shown on the plans.

37. Instructions and Record Drawings

After completion of the piping installation, the Contractor shall furnish an "as-built" drawing showing all sprinkler heads, valves, drains and pipelines to scale with dimensions where required. Instruction sheets and parts lists covering all operating equipment will be bound into a folder and furnished to the Owner in two copies.

38. Owner's Acceptance

Within ten days of the Contractor's notification that the installation is complete, the Owner will inspect the installation and, if final acceptance is not given, will prepare a "punch list" which, upon completion by the Contractor, will signify final acceptance by the Owner.

39. Guarantee

For a period of one year from date of final acceptance of the Contract, the Contractor shall promptly furnish and install, without cost to the Owner, any and all parts which prove defective in material or workmanship. Draining of the system to prevent freezing in the fall following installation will be the Contractor's responsibility.

40. Owner's Responsibility for Maintenance

It will be the Owner's responsibility to maintain the system in working order during the guarantee period, performing necessary minor maintenance, keeping grass from obstructing the sprinkler heads, protecting against vandalism and preventing damage during the landscape maintenance operation.

41. Service by Contractor

The Contractor shall service the system at the Owner's request during the guarantee period and shall be paid for work performed which is not covered by the guarantee. If requested by the Owner, the Contractor will furnish the Owner with a schedule of service fees.

42. Addenda