

CHAPTER 10

LANDSCAPING AND SPRINKLING SYSTEMS

SECTION 10.01 GENERAL DESCRIPTION

- A. Sprinkler systems shall be constructed to the sizes, grades and locations as stated herein. Locations of all sprinkler heads, shrub heads, etc., shall be subject to the approval of the Lehi City Parks Department.
- B. The construction of sprinkler systems shall include the furnishing, installing and pressure testing of mains, and furnishing and installing of sprinkler heads, gate valves, control valves, automatic valves, automatic controllers, and the electrical connection. The removal and/or restoration of existing improvements, excavation and backfill, and all other work shall be in accordance with Lehi City standards and specifications.
- C. The contractor shall provide a topsoil certification for all projects requiring topsoil. Topsoil certifications shall meet the requirements set forth by the Lehi City Parks Department for the specified use.
- D. The contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damage, injury, or loss due to his acts or neglect.
- E. The contractor shall, at all times during construction, maintain safe pedestrian ways around all areas of construction. This may require proper and adequate signs, fences, barricades or other approved devices as required by the Public Works Department or Parks Department.
- F. The contractor shall not allow or cause any of the work to be covered or enclosed until it has been inspected, tested and approved by the Parks Department. Should any of the work be enclosed or covered before inspection and test, the contractor shall uncover the work at his/her own expense and after it has been inspected, tested and approved shall make all repairs with like materials to bring the work to acceptable standards if necessary.

SECTION 10.02 GENERAL CONDITIONS

- A. ORDINANCES AND REGULATIONS All local, Municipal and State laws and rules and regulations governing or relating to any portion of this work are to be incorporated into and made a part of all plans and specifications and their provisions shall be carried out by the Landscape Architect/Engineer and contractors. Anything contained in these specifications shall not be constructed to conflict with any of the ordinances and regulations of the City of Lehi. However, these specifications take precedence over the requirement of said rules and regulations when they describe materials, workmanship, or construction of a higher standard or larger size.

B. BONDING AND INSPECTION The sprinkler system and landscape planting will be bonded as part of the entire development project. Bond releases will be handled through the Lehi City Parks and Planning Departments.

C. MATERIALS Whenever any material is specified by name and/or number, such specifications shall be deemed to be used for the purpose of facilitation a description of the materials, and establishing quality. No substitution will be permitted unless approved by the Parks Department.

D. INSPECTIONS AND PROCEDURES

1. The irrigation contractor shall set up an inspection schedule with the Public Works and Parks Department. Prior to each inspection date, the contractor shall give a minimum of one business day notice to the City Parks Department.
2. In the event the contractor requests inspection of work and said work is substantially incomplete, the contractor shall be responsible for reinspection fees.
3. The developer, after installing the irrigation system, shall request from the City, the first final inspection and approval.
4. From the date the development project being substantially complete is termed "satisfactory" by the inspector, the developer shall maintain, replace, and install the irrigation system for a period of 30 days.
5. At the end of one year the City Parks Department will, upon satisfactory inspection, release the contractor and developer from the one year guarantee of the irrigation system and any other landscape items on the project.
6. The developers shall obtain written approval, as substantiated with a bond release for the completion of all items, from the Parks Department that the City has officially assumed maintenance and that all work has been performed satisfactorily.

E. RECORD DRAWINGS

1. The Landscape Architect will furnish the Parks Department with four preliminary sets of blueline prints for review, showing all sprinkler work required. After initial review by the City, the Landscape Architect/Engineer shall make all noted corrections as discussed with staff. The Landscape Architect/Engineer shall submit four final sets of blueline prints.
2. Upon completion of installation the contractor/developer will submit to the Parks Department an as-built set of plans. The City Public Works Department and Parks Department shall receive a corrected set of as-built plans prior to accepting the project.

SECTION 10.03 EXCAVATION AND BACKFILL

- A. Trenches for irrigation pipe (plastic, brass, and/or galvanized) sprinkler lines shall be excavated either by hand or machine and shall be sufficient width to permit proper handling and installation of the pipe and fittings. The backfill shall be thoroughly compacted and evened off with the adjacent soil level. Selected fill dirt or sand shall be used if soil conditions are rocky or obstructive. Trenching depth shall be 2 inches below normal trench depth to allow for proper bedding.
- B. Fill dirt or sand shall be used in filling 4 inches above the pipe. The remainder of the backfill shall contain no lumps, frost pieces, or rocks larger than 2 inches. The top 6 inches of backfill shall be free of rocks over one inch. Pipe depth for all plastic pipe shall be 18-24 inches on main lines and 12-18 inches on lateral lines with the appropriate fill as above.

SECTION 10.04 PIPE AND TUBE

A. GENERAL REQUIREMENTS

- 1. All piping under paving shall be installed in Schedule 40 PVC sleeves (See Details). Piping under the road to the water meter box, must be polyethelene.
- 2. Piping under paving shall be installed by jacking, boring or hydraulic driving. Cutting or breaking of sidewalks and/or concrete work is not permitted unless no other alternative is possible. Piping shall be located in such a way that a minimum of pipe will be located under paving.
- 3. All sprinkler system controllers shall be equipped with a rain, evapotranspiration (ET) and flow sensors as approved by the Lehi City Parks Department.
- 4. All sprinkler systems shall be equipped with a 300 micron system filter, unless otherwise required/approved by the Lehi City Parks Department.
- 5. All “drip” sprinkler systems shall be equipped with a low flow valve and pressure reducing filter as approved by the Lehi City Parks Department.

- B. **PLASTIC PIPE AND TUBING** Plastic pipe shall be extruded from PVC 1120-1220 compound and shall be so labeled. All PVC pipe shall be Schedule 40.

C. PLASTIC PIPE FITTINGS AND CONNECTIONS

- 1. All plastic pipe fittings shall be suitable for either solvent weld or screwed connection. Fittings shall be factory assembled fittings or appropriate alternate. All fittings shall be Schedule 40 PVC.

2. When connection is plastic to metal, Schedule 80 female adapters shall be used. The female adapter shall be hand tightened, plus one turn with a strap wrench. All threaded joints are to be wrapped with Teflon tape.
 3. All PVC slip joints shall be primed prior to being glued. Burrs at cut ends shall be removed prior to installation to necessitate a smooth unobstructed water flow.
- D. FLUSHING AND TESTING After all new sprinkler piping and risers are in place and connected, and all the necessary work has been completed prior to the installation of sprinkler heads, control valves shall be opened and a full head of water used to flush out the system. Sprinkler main lines shall be tested before backfilling for a period of not less than one hour, and shall show no leakage or loss of pressure.
- E. WIRING
1. All wiring, pull box details shall be in accordance with the following:
 - a. National Electric Code
 - b. Recommendations by the Parks Department and the Public Works Department
 - c. All wiring to be continuous
 - d. If splices are necessary they are to be in a valve box with a dry splice or approved equivalent.
 - e. All wiring under payment or asphalt to be in conduct (See Details).
 2. It shall be the Landscape Architect's/Engineer's and Contractor's responsibility to call out any conflict between the above listed codes.

SECTION 10.05 SPRINKLER HEADS, GATE VALVES AND QUICK COUPLERS

All sprinkler heads, valves, quick couplers, sprinkler risers and control valve manifolds shall be commercial grade brand products as currently deemed acceptable by Lehi City Parks Department. All products must be approved prior to installation. This is done for standardization purposes and inventory control.

- A. SPRINKLER HEADS All sprinkler heads shall be set to grade and perpendicular to the finished grades unless otherwise specified. Heads adjacent to curbs and walks shall be from 1/2 inch to 1 inch away from the curb or walkway. All nozzles shall be tightened and adjusted for the proper radius, arc, and gallonage. Impact heads shall not be approved within Lehi City.
- B. GATE VALVES All gate valves shall be resilient wedge with square key or domestic manufacture non rising stem. 200lb water, oil, gas rated. All gate valves shall be installed with valve boxes. Six or twelve inch extensions shall be added when necessary to bring the valve boxes level with finish grade.

- C. QUICK COUPLING VALVES A quick coupling valve shall be installed on all main lines immediately after the backflow prevention device. In addition a quick coupling valve shall be installed at every valve box or valve box cluster (See Details). All quick coupler valves shall be installed in a 10 inch round valve box.
- D. QUICK COUPLING VALVE KEYS All quick coupling valve keys shall have a hose swivel attached to the key. One key to be turned over to the City Parks Department at completion of the project.
- E. SPRINKLER RISERS All rotor pop-up sprinklers shall have an adjustable riser assembly (double swing joint) (See Details). Spray pop-up sprinkler heads shall have a double swing joint riser constructed of funny pipe, barbed fittings and marlex street ells on the head side (See Details).
- F. CONTROL VALVE MANIFOLDS All Control Valve Manifolds shall include ball valve and union fittings on inlet and outlet sides of valve.

SECTION 10.06 IRRIGATION CONTROLLER

- A. Irrigation controller shall be pedestal or wall mounted. All controllers shall be mounted on a stable wall, power rack, or a formed and constructed concrete based pedestal mount. All controllers shall be mounted in vandal proof and weather proof boxes.
- B. The contractor/developer is responsible for 110 volt electrical service, this service must be metered. This connection shall be inspected and approved by the City Parks Department.
- C. All 110 volt wires will be in conduit and buried at least 24 inches deep. All control wire will run in the main line trench and be taped to the main line every 10 feet.
- D. All local, State and National Codes shall take precedence in the furnishing and connecting a 110 volt electrical service to the controller.

SECTION 10.07 ELECTRIC REMOTE-CONTROL VALVES

- A. Valves shall be as specified on drawings and approved by the Parks Department. Valves shall be installed in a 17 inch x 11.75 inch valve box (Note: this is the minimum size). No more than two valves per box and valves must be positioned such that the tops-of the valve can be removed without removing the valve box.

SECTION 10.08 CONNECTION

- A. The Contractor/Developer shall pay the appropriate Lehi City fees, prior to any construction.

- B. CONNECTION TO MAIN LINE Developer/contractor shall be responsible for constructing the tap to the City water main, including all applicable labor, materials, road cuts and road cut permits.

SECTION 10.09 PLANTING SPECIFICATIONS

- A. All landscaping and sprinkler system installation shall be inspected and approved by the Parks Department. Prior to commencing of any landscaping and sprinkler system work in this section, approval shall be obtained by the contractor/developer in writing from the Parks Department.

SECTION 10.10 SCOPE OF WORK

- A. The work consists of furnishing all equipment, labor and materials necessary for the planting of areas indicated on the plans.
- B. Plant totals on the plant list shall be consistent with the illustrated quantities on the plans. The Parks Department shall approve all sizes and quantities.

SECTION 10.11 DRAWINGS AND SPECIFICATIONS

- A. The Landscape Architect will furnish the Parks Department with four preliminary sets of blueline prints for review, showing all sprinkler work required. After initial review by the City, the Landscape Architect/Engineer shall make all noted corrections as discussed with staff. The Landscape Architect/Engineer shall submit four final sets of blueline prints.
- B. In the event of any changes in locations other than shown, the contractor shall clearly notify the Parks Department and indicate such by signature of contractor and authorized city official such changes on all sets of plans.

SECTION 10.12 OBSTRUCTIONS BELOW GROUND

- A. Prior to excavation for planting or the driving or placing of stakes, the contractor shall locate all electrical cables, conduits and other utility lines so that proper precautions may be taken not to disturb or damage such improvements. In the event of a conflict between such lines and plant locations, promptly notify the appropriate utility agency. Failure to follow this procedure places the responsibility and expense upon the contractor for making any and all repairs.
- B. Remove rock, road base, or other underground obstructions, except utility lines or portions of project construction, to a minimum of depth of one foot to permit proper installation of lawns and planting.

SECTION 10.13 SPACING

- A. When plant material is spaced in rows the total dimension shall be verified and the plants equally spaced within the designated area. Where plant material is shown in a "loose" pattern, the contractor shall space the material as shown at all times maintaining an unequal spacing as shown on the approved plan. Ground cover material shall be at the spacing indicated (a maximum distance of 8 inches on center).

SECTION 10.14 PLANTS TO BE FURNISHED

- A. The owner/contractor shall furnish plants as listed on the drawings and herein specified. All quantities and sizes shall be as follows:
 - 1. All shrubs shall be a minimum 5 gallon size unless written approval is obtained and variety, size and spacing is stated.
 - 2. All trees shall be a minimum of 2 inch caliper measured 20 inches above the planted ground level.
- B. The developer shall pay the cost of installation of parkway trees. Parkway trees shall be installed on all streets, in conformance to the Standard Details, including arterial streets as required by Planning and Zoning.
- C. All plants delivered to the site must be first class representatives of their species or varieties, free from disfiguration, with well developed branch systems and vigorous and fibrous root systems. Plants not conforming to these requirements must be removed, whether in place or not and replaced with acceptable plant material.
- D. All plant material must meet the specifications of Federal, State and County laws requiring inspection for plant disease and insect infestation. Tag all plants with name and size of the plants in accordance with Standard of Practice recommended by the American Association of Nurserymen. Final determination of plant species or variety will be made by the Parks Department.
- E. Root conditions of plants furnished in containers may be determined by the Parks Department. The selection of plants shall be made by the landscape architect with final approval reserved by the Parks Department and any plant rendered unsuitable as samples will not be accepted by the City and must be replaced at the owner's/contractor's expense.

SECTION 10.15 SUBSTITUTIONS

- A. No substitutions for the indicated plant materials will be permitted unless approved in advance by the Planning Commission and Parks Department. Any substitutions shall be of a quality and size equal to that specified on the plans. Except for the variations so

authorized, all substitute plant materials shall conform to the requirements of these specifications.

SECTION 10.16 FINISH GRADING AND SOIL PREPARATION

- A. Finish grading shall consist of the following:
1. Planting areas shall conform to the uniform grade by floating or hand raking.
 2. It shall be the responsibility of the landscape contractor to insure proper drainage. Surface drainage shall be modeled to facilitate the natural runoff of water. Low spots and pockets must be graded to drain properly.
 3. Finish grade of all lawn areas shall be 1/2 inches below grade of adjacent pavement of any kind. Roll all lawn areas with a water fill roller to obtain uniform compaction and level surfaces (50 pounds minimum weight).
 4. Import a minimum of 6 inches of screened certified topsoil as per Lehi City Parks Department specifications. No road base is to be in planting areas for a minimum of 1 foot depth.

SECTION 10.17 PLANTING

- A. SOD. Sod may be accepted 30 days after inspection and at the completion of at least four cuttings (once every 7 days). If sod improvements are not accepted after this time period, developer shall be required to continue maintenance until acceptance/approval is granted.
1. Prepare lawn areas as specified under soil preparation. Slope all areas to drain according to the Architect's drawings, Public Works Department's and Parks Department's approval.
 2. Rake these areas as specified under soil preparation, until the surfaces are smooth and of uniformly fine texture immediately prior to planting the turf.
 3. Finish grade of all sod areas shall be such that after the sod is installed the finish grade will be between 0 and 1/4 inches below the sidewalk or adjacent pavement areas.
 4. Sod must be installed during the normal growing season. If dormant sod is installed, it will not be accepted until the following normal growing season.
 5. Roll sod bed after grading with a water roller (50 pounds minimum weight).

6. Apply commercial grade fertilizer as per the following specifications:
 - a. 46-0-0 with dimension coated nitrogen (pre-emergent) from January 1st to May 31st at a rate of 2 pounds per 1,000 sq. ft.
 - b. 25-5-6 from June 1st to August 31st at a rate of 4 pounds per 1,000 sq. ft.
 - c. 46-0-0 (50% slow release) sulphur coated urea from September 1st to December 31st at a rate of 2 pounds per 1,000 sq. ft.
7. Lay sod with staggered seams.
8. After sod has been laid, water soil then roll sod with water roller with 50 pound minimum weight to level sod and insure positive contact with soil.

B. GROUND COVER

1. Prepare ground cover areas as specified under soil preparation, including commercial fertilizer (16-16-16) at the rate of 6 pounds per 1,000 square feet.
2. Spacing of ground cover shall be no greater than 8 inches on center.

C. TREES AND SHRUBS Plant material may be accepted after 30 days maintenance time from inspection, provided it is weed free and of normal acceptable growth for the time of year.

1. Plant to their normal depth and puddle with a running stream of water from a hose. Prepare planting holes and stake the trees as shown on the standard tree staking detail.
2. The spacing and species of trees shall conform to the requirements of the Planning Commission.
3. Location: Trees shall be kept:
 - a. Outside of the intersection sight triangles as defined within Section 12 of the Development Code.
 - b. Not less than 20 feet from lamp standards and power poles.
 - c. Not less than 10 feet from fire hydrants.
 - d. Not less than 5 feet from service walks and driveways.
 - e. Not less than 5 feet from water meters.

4. All containers, wire baskets, etc., shall be removed from trees and shrubs prior to planting. All B & B stock shall have the bailing twine removed and burlap folded down below ground level.
5. Any trees or shrubs planted too deep will not be accepted. Root ball should be level with finished grade.

SECTION 10.18 STAKING

- A. Stake all trees at the time of planting, by placing two 1½ inch – 2 inch diameter wood tree stakes 1 to 2 feet from the center and driving stake 24 inches into solid ground. Fasten the tree to the upper end of the stake in at least two locations using "cinch ties" or equivalent. (See Details). Metal T-posts will not be approved as tree stakes.

SECTION 10.19 MAINTENANCE

- A. Plant maintenance work shall consist of watering, weeding, caring for plants, edging and mowing the lawn, fertilizing, and performing the following plant establishment work:
 1. The entire project shall be satisfactorily maintained for a period of 30 days and the completion of at least 4 mowings (once every 7 days). The maintenance period will begin when all items of work have been completed as specified in the foregoing articles and to the satisfaction of the Parks Department and Public Works Department 30 days after inspection. If project not accepted, developer shall be required to continue maintenance until project is accepted.
 2. The lawn and turf shall be completely irrigated according to the approval of the Parks Department until written acceptance of work. Water shall be applied to all lawn areas by means of the sprinkling system, and the areas shall be kept moist, but not wet, until the first cutting of grass. After first cutting, water lawn to maintain a thriving condition.
 3. Lawns shall be kept green and vigorously growing at all times.
 4. If the project has not been accepted at the end of the 30 day maintenance period an application of fertilizer (as specified within the Planting and Ground Cover sections of this specification) shall be applied as directed on the 35th and 60th day, and every 45 days thereafter until accepted and approved by the Parks Department.
 5. At completion of maintenance period, all areas including sidewalks and gutters shall be clean and free of debris and weeds. All plant materials shall be live, healthy, and free of infestations. The contractor shall obtain written release from the Parks Department before ending maintenance obligations.

SECTION 10.20 INSPECTIONS AND PROCEDURES

- A. The contractor shall comply with the following:
1. Contractor shall give a minimum of one business day notice for all inspections.
 2. A tree and shrub spotting inspection shall be called when plant material is on the site and ready to be located.
 3. The developer, after installing the irrigation system and landscaping, shall request from the City, inspection and approval.
 4. If the irrigation system and landscaping are satisfactory, the developer shall be granted written approval from the City.
 5. The developer shall maintain said irrigation system and landscaping until accepted by the City.
 6. At the end of the one year period, the City will inspect the irrigation system and landscaping and if it is satisfactory, the City will release the contractor/developer from guarantee.
 7. At the end of the one year period, if either the irrigation system or landscaping is found unsatisfactory, the developer shall be responsible for all required corrections. Corrections may include either extension of the one year period, re-installing irrigation parts and larger plants, or both.
 8. The bonds posted for construction of the approved plan, shall not be exonerated until the maintenance of landscaping has been assumed by the City and the guarantee period has been satisfied.