

Attachment B

Renovations to Gateway Park

Specification

1.0 CONCRETE SIDEWALKS

1.01 Scope of Work

Work done under this item shall consist of the construction of one-course concrete sidewalk in accordance with these specifications. It shall consist of the removal of obstructions for excavating and filling, for fine grading and compaction of subgrade, and all backfilling necessary to complete the work, including the disposal of surplus material and cleaning up of the work.

A. MATERIALS

1. Concrete - Concrete shall contain cement, coarse aggregate, and fine aggregate with a minimum of 3,000 pounds compressive strength per square inch at 28 days.
2. Water- Water shall be clean and free from salt, oil, or organic substances.

B. CONSTRUCTION METHODS – SIDEWALK

1. Sub-grade Preparation - The sub-grade for sidewalks shall be formed by excavating to the required depth, and shaped to the proper cross section, and shall be thoroughly compacted by rolling or tamping before placing any concrete to 95 % compaction.
 - a. Where tree roots are encountered, they shall be removed to a depth of one foot for the full width of the walk.
 - b. All soft and spongy places shall be removed, and all depressions filled with suitable material which shall be thoroughly compacted in layers not exceeding six (6) inches in thickness.
2. Protection of Sub-grade -Ditches and drains shall be provided and maintained to satisfactorily drain the sub-grade. In no case shall sidewalk and driveway be placed on frozen or muddy sub-grade. Sub-grade shall be allowed to dry before placing sidewalk. If ruts are formed in the prepared sub-grade, the sub-grade shall be scarified and thoroughly compacted. If borrow material is required because of improper handling or drainage, the cost of such will be borne by the Contractor.
3. Dimensions

The minimum thickness of a sidewalk shall be four (4) inches.
All sidewalks as shown on the Plans are dimensioned.
4. Alignment and Grades

Sidewalk shall have no more than a 2% cross slope.
Sidewalks shall be constructed in conformance with the existing grades and grades indicated on the plans. Since the survey is not a current survey grades are proposed for the purpose of insuring that no section of the Sidewalk has a grade greater than a 1:20 slope.
5. Forms - Forms used in construction sidewalks shall be of wood or metal for full depth of the concrete, straight, free from warp, and sufficient strength. They shall be staked securely enough to resist the pressure of the concrete without springing.

6. Placing Concrete

No concrete shall be placed until the forms and sub-grade have been approved by the Owner. The concrete shall be placed thereon in one course to the required depth. The concrete shall be thoroughly spaded and rammed and struck off with a template to the required grade and cross section. Successive batches of concrete shall be deposited in a continuous operation until individual sections are completed.

7. Joints

Contraction joints shall be provided uniformly to separate the slab and shall be cut in a straight line to a depth equal to at least one-third (1/3) of the total slab thickness. The maximum distance between transverse expansion joints shall be twenty (20) feet.

8. Finishing

After the freshly poured concrete has been brought to the establishing grade, it shall be floated with a wooden float to produce a surface free from irregularities. The final surface shall be obtained by troweling with a steel trowel or hand float and brushing lightly with a light weight brush in a transverse direction so as to produce a uniform gritty surface of the proper texture. All edges and joints shall be rounded to one-fourth inch (1/4").

No more concrete shall be laid than can be properly finished during daylight.

9. Protection

Immediately after finishing operations have been completed, contractor shall install sufficient barricades, signs, and warning devices to protect the finished concrete.

10. Removal of Forms and Backfilling

After the concrete has set sufficiently, the forms shall removed and the spaces on both sides shall be backfilled with suitable earth, uniformly spread and compacted. The areas between the curb and sidewalk, and immediately back of the sidewalk, shall be left in a smooth, neat, and workmanlike condition.

11. Protection of Concrete

Immediately after the forms have been removed, traffic shall be excluded from crossing the concrete for a period of approximately fourteen days (14) days by erection and maintenance of suitable barricades. The Contractor shall be responsible for any damage resulting from traffic within the fourteen (14) day period and he shall remove and replace any concrete damage.

12. Removal of Defective Work

The Owner shall have the authority to and shall require the removal of any sidewalk or portion thereof laid under these specifications which does not conform to the requirements as set forth herein. Upon notification in writing by the Owner, the Contractor shall take immediate action to correct the faulty work at his own expense.

13. Cleaning Site

Prior to the acceptance of the work, all surplus and rejected material and unsightly objects such as stones, stumps, limbs, roots, concrete, etc., shall be removed from the site and not be considered complete until all cleaning up has been done and the site is of a neat appearance, with appropriate seeding, fertilizer, etc., completed.

END OF SECTION

UNDERGROUND IRRIGATION SYSTEM

2.00 IRRIGATION SYSTEM

2.1 SYSTEM DESCRIPTION

A. The sprinkler system shall include sprinklers, valves, piping fittings, controller, wiring, all of sizes and types to cover 100% of all landscape and sod areas as shown on the drawings and specified. The system shall be constructed to grades and conform to areas and locations as shown on the drawings.

B. Unless otherwise specified or indicated on the drawings, the construction of the sprinkler system shall include the furnishing, installing, and testing of all mains, laterals, risers and fittings, sprinkler heads, gate valves, control valves, controllers, electric wire, controls, backflow preventer, enclosures, and other necessary specialties and the removal and/or restoration of existing improvements, excavating and backfill, and all other work in accordance with the plans and specifications a required for a complete system.

2.2 QUALITY ASSURANCE

A. Conference: Before any work is started a conference shall be held between the Contractor and the Owner concerning the work under this contract.

B. It is the Irrigation Contractor's responsibility to coordinate and cooperate with the other Contractors to enable work to proceed rapidly and efficiently.

C. The Contractor shall confine his operations to the area to be improved and to the areas allotted him by the Engineer and Contractor for material and equipment.

D. Contractor shall take all necessary measures to protect the existing site conditions and vegetation.

E. Standards of manufacture: Comply with specifications and the standards of the Irrigation Association.

2.3 SUBMITTALS

A. General: Submit in accordance with Product Data, and Samples.

B. Equipment Product Information:

1. Prior to purchasing materials, submit product information on all sprinkler heads, automatic valves, quick coupling valves, controller, and pipe to be used on the project.

2. Contractor shall review drawings and data to supply actual precipitation rates and times for each zone in maintenance package.

3. Prior to trenching, Contractor shall submit proposed trenching equipment to Owner for approval.

C. Record Drawings and Instructions

1. Upon completion of installation, furnish one set of reproducible and one set of printed record drawings showing all sprinkler heads, valves, drains, and pipelines to scale with dimensions. These drawings shall have dimensions from easily located stationary points as they relate to all valves, mainlines, and wire. Clearly note all approved substitutions of size, material, etc. Complete, concise instruction sheets and parts lists covering all operating equipment and weathering techniques shall be bound into folders and furnished to the Owner in three (3) copies. Submission of this information is a requirement for final acceptance.

2.4 SITE CONDITIONS

A. The Contractor shall examine the site, plans and specifications.

B. It shall be the Contractor's responsibility to report in writing to the Engineer any deviations between drawings, specification, and the site. Failure to do so prior to the installing of equipment shall be done at the Contractor's expense.

C. The Contractor, upon completion of installation shall adjust the sprinkler heads and automatic equipment, to provide optimum performance.

D. After completion, testing, and acceptance of the system, the Contractor shall verbally instruct the Owner's personnel in the operation and maintenance of the system. All written instruction shall be included in the bound maintenance package.

2.5 PIPE AND FITTINGS

A. The irrigation system shall have pipes sized to provide the required irrigation coverage. All pipe damaged or rejected because of defects shall be removed from the site at the time of said rejection.

B. All piping (2 1/2") two and one half inches and larger will be equipped for solvent weld.

C. All piping downstream of electric valves, sizes (3) inches and smaller, shall be rigid unplasticized PVC 200 PSI working pressure extruded from virgin parent material of the type specified on the drawings. The pipe shall be homogeneous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles and permanently marked with the manufacture's name, material, size, and schedule type. Pipe must bear the NFS seal.

E. All mainline piping and underground piping under continuous pressure shall be rigid unplasticized PVC-Class 200 PSI working pressure extruded from virgin parent material. The pipe shall be homogeneous throughout and free from visible cracks, holes, and foreign materials, blisters, wrinkles, and dents.

F. All plastic fittings to be installed shall be molded fittings manufactured of the same material as the pipe and shall be suitable for solvent weld. NO fitting made of other material shall be used except as hereinafter specified.

2.6 SLEEVES

A. All sleeves shall be Class 200 PVC or stronger. Irrigation Contractor shall provide the material to the grading / concrete contractor. Irrigation Contractor shall clearly mark the locations for the installation of sleeves.

B. All sleeves shall be installed under proposed pavement areas prior to sub grade and base construction.

C. Sleeves shall have a minimum horizontal separation of 18" and a maximum of twenty-four (24) inch clearance below bottom of curb.

D. All sleeves shall have a minimum horizontal separation of twenty-four (24) and maximum of thirty-six inches from center to center.

E. Stub up sleeve pipe twelve (12) inches above ground surface and cap. Paint cap with fluorescent orange paint for easy identification.

2.7 CONTROL SYSTEM

A. The location of the automatic controllers shall be recommended by the Irrigation Contractor and approved by the Owner.

B. Install Rain Check or Mini-Click type shut off device to override the control timer in the event of rain.

2.8 CONTROL WIRE

A. Control wire shall be type UF, UL approved, for direct burial and shall be gauge 14 or larger for the control wire and gauge 12 or larger for common wire.

B. Joining of underground wires shall be made with watertight connectors in valve boxes. No splicing between boxes is acceptable.

2.9 IRRIGATION VALVES

A. Zone Control Valves - Globe-type diaphragm valves of normally closed design, with bronze bodies and covers. Operation accomplished by means of an integrally mounted heavy-duty 24 volt AC solenoid complying with National Electrical Code, Class II Circuit, solenoid coil potted in epoxy resin within a plastic-coated stainless steel housing. Solenoids shall be completely -waterproof, suitable for direct underground burial. Provide a flow stem adjustment in each valve.

2.10 VALVE BOXES

A. All valves shall be installed in thermoplastic valve access boxes of the size required to permit access to the valve. Valve boxes shall include black thermoplastic locking covers.

B. All valve boxes shall be installed on at least a two (2) cubic foot gravel base to provide foundation and drainage.

2.11 THRUST BLOCKS

A. Place one cubic ft. of concrete for each inch of pipe diameter for thrust block. Thrust shall not allow vertical or horizontal movement of pipe in any direction unless otherwise noted on design. Thrust blocking shall be provided on all piping three (3) inch diameter and larger.

2.12 EXCAVATION AND BACKFILL

A. Trenches for pipe sprinkler lines shall be excavated of sufficient depth and width to permit proper handling and installation by any other method the Contractor may desire if approved by the Owner, pipe manufacturer, and Designer. 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. In rocky areas the trenching depth shall be two (2) inches below normal trenching depth to allow for this bedding. The fill dirt or sand shall be used in filling (4) inches above the pipe. The remainder of the backfill shall contain no lumps or rocks larger than three (3) inches. The top twelve (12) inches of backfill shall be topsoil, free of rocks, subsoil, or trash. Any open trenches or partially backfilled trenches left overnight or left unsupervised shall be barricaded to prevent undue hazard to the public.

B. The Contractor shall backfill in six (6) inch compacted lifts as needed to bring the soil to its original density.

C. In the spring following the year of installation, the Contractor shall repair any settlement of the trenches by bringing them to grade with topsoil, and seeding with the existing lawn type(s). Watering and maintenance of the repaired areas shall be the Owner's responsibility.

2.13 INSTALLATION OF PLASTIC PIPE

A. Plastic pipe shall be installed in a manner that permits expansion and contraction as recommended by the manufacturer.

B. Plastic pipe shall be cut with a handsaw or hacksaw with the assistance of a square in sawing vice or in a manner to ensure a square cut. Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained.

C. All plastic-to-plastic joints shall be solvent weld joints. Only the solvent recommended for the pipe and fittings shall be installed as outlined and instructed by the pipe manufacturer. The Contractor shall assume full responsibility for the correct installation.

D. The joints shall be allowed to set at least twenty-four (24) hours before pressure is applied to the system on PVC pipe.

2.14 CONTROLLER AND ELECTRICAL CONNECTIONS

A. All electrical connections shall conform to the National Electrical Code, latest edition.

B. Control wires installed beneath walks, drives, or other permanent surfaces shall be placed in sleeves.

C. Wires shall be spliced only at valve boxes.

D. Leave twenty-four (24) inch loop of wire at each valve for expansion/contraction and servicing.

E. Controllers and valves shall be from the same company e.g. (Hunter, Rain Bird, Toro or approved equal).

F. 120 VAC electrical power supply to the controller location shall be supplied by others.

2.15 FLUSHING AND TESTING

A. After all new sprinkler piping and risers are in place and connected for a given - section and all necessary division work has been completed and prior to the installation of sprinkler heads all control valves shall be opened and a full head of water used to flush out the system.

B. Sprinkler main shall be tested under normal water pressure for a period of twelve (12) hours. If leaks occur, repair and repeat the test.

C. Testing of the system shall be performed after completion of the entire installation and any necessary repairs shall be made at the Contractor's expense to put the system in good working order before final payment by the Owner.

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

E. After completion, testing, and acceptance of the system, the Contractor will instruct the Owner's personnel in the operation and maintenance of the system.

2.16 CODES AND ORDINANCES

A. All materials and operations shall conform to all applicable codes and ordinances. It is the Contractor's responsibility to investigate and follow all regulations.

2.17 PERMITS AND FEES

A. The Contractor shall obtain, at his expense, all required permits and shall pay all required fees. Any penalties imposed due to failure to obtain any permit or pay any fee shall be the responsibility of the Contractor. '

2.18 WARRANTY AND GUARANTEE

A. The Contractor shall furnish a certificate of warranty registration and a written guarantee of work and materials for a one-year period from the date of final acceptance of the Irrigation System by the Owner and the Designer.

END OF SECTION

LANDSCAPE PLANTING

3.01 SUBMITTALS

A. General Requirements:

1. Plant Material Photographs:
 - a. At least 14 days prior to submittal of plant material location data, submit color photographs each of representative plants of each type of plant material.
 - b. Include a scale object in each photograph such as a ruler or person.

B. Plant Material Location Data Including the Following:

- 1 Quantities of each plant material type at each nursery or other place of growth.
2. Address, phone number, and contact person for each nursery or other place of growth.

C. Test Reports: Soil percolation test results keyed to location plan.

3.02 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over Work.
2. Provide for inspections and permits required by federal, state and local authorities in furnishing, transporting, and installing materials.

3.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Handling Plants:

1. Do not lift or handle container plants by tops, stems, or trunks at any time.
2. Do not bind or handle plants with wire or rope at any time.

B. Digging Plants: Dig ball and burlap plants with firm, natural balls of earth of diameter meeting requirements of ANSI Z60.1 and of sufficient depth to include the fibrous and feeding roots.

C. Plant Storage Prior to Installation:

1. Protect plant root balls from sun and drying, winds.
2. Keep root balls moist.
3. Keep sun-sensitive plants shaded.
4. Anchor plants to prevent damage from strong winds.

3.04 SITE CONDITIONS

A. Existing Conditions:

1. Review and clearly mark in field horizontal and vertical locations of public existing underground utilities and structures with respective utility companies.
2. Review and clearly mark in field horizontal and vertical locations of private underground utilities and structures with the Owner.

3.05 WARRANTY

- A. Trees, Shrubs and Ground Covers: Warrant that trees, shrubs and ground covers will be healthy and in vigorous, flourishing condition of active growth one year from date of Final Completion.
- B. Delays: Delays in completion of planting operations, which extend the planting into more than one planting season, shall extend the Warranty Period correspondingly.
- C. Condition of Plants: Plants shall be free of dead or dying branches and branch tips, with foliage of a normal density, size, and color.

D. Incorrect Materials:

1. During Warranty Period, replace at no cost to the Owner, plants revealed as being untrue to name.
2. Provide replacements of a size and quality to match the planted materials at the time the mistake is discovered.

E. Replacements:

1. As soon as weather conditions permit, replace, without cost to the Owner, dead plants and plants not in a vigorous, thriving condition, as determined by the Engineer during and at the end of Warranty Period.

2. Apply requirements of this Specification to replacements.

F. Exceptions: Contractor shall not be held responsible for failures due to neglect by the Owner, vandalism, and other causes outside the Contractor's control.

3.06 MAINTENANCE

- A. Contractor shall maintain all plant material for the construction period.

3.07 SUBSTITUTIONS

A. Plant Substitutions:

1. Accepted substituted plants shall be true to species and variety and shall conform to measurements specified except that plants larger than specified may be used if accepted. All substitutions must be approved by the Engineer in writing.
2. Use of such plants shall not increase Contract price.
3. If larger plants are accepted, increase the ball of earth in proportion to the size of the plant.

3.08 MATERIALS

A. Plants:

1. Growing Practices: Nursery grown in accordance with good horticultural industry practices.
2. Nomenclature: Meet requirements of ICBN and ICNCP.
3. Climatic Growing Conditions: Grown under climatic conditions like those of project for at least two years unless otherwise accepted.
4. Container Growth Limitations: Container stock shall have been grown in the containers in which delivered for at least six months, but not over two years.
5. Root Ball Size: Meet requirements of ANSI 260.1 and the American Association of Nurserymen.
6. Appearance: Exceptionally heavy, symmetrical, tightly knit, so trained or favored in development and appearance as to be superior in form, number of branches, compactness, and symmetry.
7. Vigor: Sound, healthy and vigorous, well branched and densely foliated when in leaf
 1. Disease and Pests: Free of disease, insect pests, eggs, or larvae.
9. Condition of Root System: Healthy well-developed root system, free of kinked; circling, girdling and center roots, root-bound condition and cracked or broken - root balls.
10. Measurements: Measure plants when branches are in their normal upright position.
11. Height and Spread Dimensions: Height and spread dimensions specified refer to main body of plant and not branch tip to tip.
12. Caliper: Take caliper measurement at a point on the trunk 6 inches above natural ground line for trees up to 4 inches in caliper, and at a point 12 inches above the natural ground line for trees over 4 inches in caliper.
13. Pruning: Do not prune, thin or shape plants before delivery without acceptance.
14. Unacceptable Conditions: Multiple leaders, unless specified, damaged or crooked leaders, bark abrasions, sun-scalds, disfiguring knots, or fresh cuts of limbs over 3/4 inch diameter which have not completely callused.
 - A. Water: Clean, fresh and potable. Available at the site.
 - B. Mulch: Pine Straw.
 - C. Amended Backfill Mix: 1/3 native soil, 1/3 cow manure and 1/3 Nature's Helper or an approved equal.

3.09 SOURCE QUALITY CONTROL

- A. Plant Material Review and Tagging:

1. Trees and shrubs will be reviewed, photographed, and tagged by the Contractor at the nursery, or other place of growth prior to delivery of trees to site.
2. Tagging of plant material at the nursery or place of growth does not cancel the right of the Owner to reject plant material at the site, if damaged or unacceptable conditions are found that were not detected at the nursery, place of growth or in the submitted photographs.

3.10 EXAMINATION

A. General: Examine site and verify that conditions are suitable to receive Work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.

B. Verification of Surface Drainage: Verify positive surface drainage of areas to be planted.

C. Notification: Before proceeding with Work, notify the Owner and Designer in writing of unsuitable conditions.

3.11 PREPARATION

A. Fine Grading and Soil Preparation: Landscape Contractor shall undertake all fine grading and soil preparation work needed for a complete project.

B. Protection of Existing Conditions:

1. Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, plant materials and walks on or adjacent to the site of the Work.

2. Provide barricades, fences, or other barriers to protect existing conditions to remain from damage during construction.

3. Do not store materials or equipment, permit burning, or operate or park equipment under the branches of existing plants to remain.

4. Submit written notification of damaged plants and structures to the Owner immediately.

3.12 SOIL PERCOLATION TESTS

A. Tests Prior to Plant Pit Excavation: In areas of suspected poor drainage drill 8-inch diameter minimum, 4 feet deep holes and fill with water twice in succession. Submit to the Owner written notification of retention of water in holes for more than 24 hours with scale plan showing, locations of holes failing test.

3.13 SUBSURFACE OBSTRUCTIONS

A. Plant Pit Excavation: If rock, underground utilities, structures, tree roots or other obstructions are encountered in the excavation of plant pits, alternate locations may be accepted by the Engineer.

B. Cost for Removal of Obstructions: Where locations cannot be changed, submit cost estimate for Work to remove the obstructions to a depth of not less than 6 inches below the required pit depth, and proceed with Work after the Owner's approval.

3.14 EXCAVATION OF PLANT PITS

A. Equipment: Excavate pits with a backhoe, auger or hand digging.

B. Plant Pit Size: Minimum Standard

1. All plant pits must be excavated to a depth that is 12" below the depth of the root ball or container size of the plant.
2. The width of all plant pits is to be double the widest width size of the root ball or double the width of the container.

3.15 PLANTING AND BACKFILL OPERATIONS

A. Protection of Plants Prior to Installation:

1. Protect plant root balls from sun or drying winds.
2. Keep root balls of plants that cannot be planted immediately upon delivery in the shade, well protected and well watered.

B. Removal of Containers:

1. Remove canned stock carefully after cans have been cut on two sides with accepted cutter.

2: Do not use spade to cut containers.

C. Scarification: After removing plant from container, scarify side of root ball to prevent root-bound condition.

D. Unamended Backfill Placement:

1. To allow for settlement, fill bottom of the pits with unamended topsoil to a level that will place the top of the root ball 1 inch above finish grade when the planting is installed.

2. Set plants higher if more settlement is anticipated.

E. Unamended Backfill Compaction: Compact unamended topsoil by saturating the entire plant pit with water.

F. Unamended Backfill Filling of Settlement: Fill settled topsoil as required to bring top of soil to a level that places the top of the root ball even with finish grade.

G. Plant Placement: Handling plant carefully, set plant root ball on unamended topsoil. Set root ball so that when backfilled the top of the root ball will be even with or slightly above finished grade.

H. Removal of Root Ball Wrapping Materials: Remove burlap, nylon cord, twine and cut wire baskets back to below finished grade prior to backfilling.

I. Amended Backfill Mix Placement:

1. Complete filling pit until top of amended backfill mix is even with top of root ball.
2. Place mix carefully as not to damage the plant root ball, trunk, branches, or foliage.

J. Settled Plant Adjustment: Raise plant root balls which settle below finish grade so that top of root balls are even with or slightly adjacent finish grade.

K. Final Filling of Settlement: Fill settled backfill mix with additional soil mix as required to bring it even with top of root ball.

L. Final Compaction: Compact soil mix by saturating with water.

3.07 MULCH INSTALLATION

A. Depth: Install a 3-inch deep layer of mulch (pine straw) over tree watering basins, shrub, and ground cover areas.

B. Woody Plant Stems: Slope mulch away from woody plant stems so that mulch does not touch stems.

END OF SECTION

LAWNS AND GRASS

4.00 GENERAL

4.01 SUMMARY

- A. Work described in this section includes sodding of grass over areas indicated. Work to be performed shall include furnishing labor, materials, equipment, transportation, services and guarantee necessary for spreading of topsoil; proper soil preparation, including fine raking and necessary fertilization; laying of sod at prescribed locations and as indicated on drawings.
- B. Satisfactory stand of grass: Full lawn cover over disturbed areas, with living grass free of weeds and with no bare spots exceeding 2" square.

4.02 SUBMITTALS

- A. Submit grower's certificates for sod. Indicate grass species, weed content, location from where cut and dates cut.
- B. Test reports and certificates of fertilize analysis.

4.03 DELIVERY, STORAGE AND HANDLING:

- A. Deliver sod on pallets with identification attached. Deliver only quantity, which can be placed within 48 hours of harvesting.
- B. Protect sod against dehydration and contamination during transportation and delivery. Keep materials moist. Sod, which has been broken in transit, stored more than 36 hours, or delivered in any condition that renders survival doubtful, will be rejected.
- C. Fertilizer and lime shall be delivered to Project site in original containers bearing manufacturer's guaranteed statement of analysis, and stored in weatherproof locations.

4.04 QUALITY ASSURANCE:

- A. Reference standards of the following organizations apply to materials furnished under this section: American Sod Producers Association (ASPA), Georgia Seed Laws and Rules and Regulations, Grassing Bulletins by the Cooperative Extension Service of University of Georgia College of Agriculture:

4.05 PRODUCTS

A. Fertilizer:

1. Regular type: Nitrogen content derived from organic or inorganic sources; bearing manufacturer's statement of analysis. Minimum requirements: 12% nitrogen, 4% phosphoric acid, 8% potash.

2. Slow-release type: 50% of nitrogen is in slow release form, the content derived from organic or inorganic sources; bearing manufacturer's statement of analysis. Minimum requirements: 12% nitrogen, 4% phosphoric acid, 8% potash.

3. Commercial mixed type: Nitrogen content derived from organic or inorganic sources; bearing manufacturer's statement of analysis. Minimum requirements: 10% nitrogen, 10% phosphoric acid, 10% potash

- B. Lime: Ground limestone containing not less than 85% calcium carbonates; 50% passing 100-mesh sieve and 90% passing 20 mesh sieve.
- C. Tiftuf Bermuda Grass sod: Blue Tag Certified from a source not more than 100 miles from the project site.
- D. Straw bales: Clean bales of straw of hay, wheat, rye, oats, or barley.
- E. Water: Clean, potable. All water needed during sodding operations, shall be supplied by Owner.
- F. Sand and Topsoil Mix: 2" compacted layer of topsoil composed of $\frac{3}{4}$ sand and $\frac{1}{4}$ native soil.
 - 1. Fertile, friable, sandy loam free of lumps, stones, sticks, and debris in excess of 1" in any dimension.
 - 2. Natural soil uniform in composition without admixture of subsoil capable of sustaining vigorous plant growth.
 - 3. Imported sand will be free of stones and debris in excess of 1/8" in any dimension.

4.06 PREPARATION:

A. Grade lawn areas to finish grades at a smooth, uniform grade. Lawn areas shall slope to drain properly. Allow for settlement and compaction by rollers.

1. Where no grades are shown, areas shall have a smooth and continual grade between existing or fixed controls such as walks, curbs, catch basins, elevations at steps or building as shown on plans. Scarify, rake and level as necessary to obtain true, even lawn surfaces.

2. Areas shall be carefully raked by hand or by approved power equipment.

3. Stones 1" or more in diameter and all vegetation or debris brought to the surface during operations shall be collected and removed from Project site. Finish grade shall be even, smooth, and free of any depressions, thin basins, lumps, and flat mounds.

4. Spreading of topsoil and finish grading:

a. Prior to start of Work, sub grade shall be inspected by Owner and if required, checked for elevations and grade. Any necessary adjustments shall then be made.

b. Prior to spreading of topsoil, sub grade shall be loosened by disking or scarifying to a depth of at least 4" to promote proper drainage and bonding of topsoil.

c. Sand and Topsoil Mix shall be spread over approved sub grade to a depth of 2" bringing finished grade to 1" above existing grades.

3. Spread 30 lbs. of lime and 16 lbs. of fertilizer per 1000 sq. ft. Thoroughly mix soil, lime and fertilizer to a depth of 4". In areas adjacent to existing trees, which are to be retained, mix depth shall be adjusted to avoid disturbance of roots.

4.07 SODDING

A. Transplant sod within 48 hours after harvesting.

- B. Sod bed shall be rolled firm before placing sod and free of depressions. Begin sodding at bottom of slopes. Lay first row of sod in straight line with long dimensions of pads parallel to slope contours. Butt side and end joints. Stagger end joints in adjacent rows. Do not stretch or overlap.
- C. Sprinkle sod with water immediately after transplanting. Roll sod with roller weighing not more than 150 lbs. per ft. of roller width.
- D. Water sod and soil to a depth of 4" within four hours of rolling.

4.08 MAINTENANCE

- A. Provide straw bale silt dams as temporary erosion control measures. Maintain dams during construction period to prevent erosion. Remove straw bales at completion of Work, after areas have been stabilized by grassing.
- B. Maintain sodded areas in a moist condition for seven days after placing.
- C. Water grassed areas and maintained at a height of 1-1/2" to 2" until Date of Substantial Completion. First mowing of sodded areas shall not take place until sod is rooted. Remove grass clippings.
- D. Maintain and fertilize grassed areas in accord with the latest editions of University of Georgia college of Agriculture Bulletins.
- E. Resod areas larger than two inches square not having a uniform stand of grass. Eradicate weeds appearing in grassed areas.
- F. Remove excess soil and debris from Project site at completion of grassing operation.

4.09 RESTORATION AND CLEAN-UP

- A. Excess and waste material shall be removed daily. When turfing in an area has been completed, areas shall be cleaned of all debris and excess material. When existing turf areas have been damaged during turfing operations, Contractor shall restore areas to their original condition at his expense. At least one paved pedestrian access route and one paved vehicular access route to each building shall be kept at all times. Other paving shall be cleaned when Work in adjacent areas is completed.

4.10 TURF ESTABLISHMENT PERIOD

- A. Establishment of turf shall be considered successful when 100% of the area sodded is covered with grass. All areas larger than 2 inches square, which fail to show a uniform stand of grass, shall be resodded.
- B. Maintenance during establishment period shall include mowing, removal of excess clippings, eradication weeds, watering, and any other operation necessary to promote growth of grass. Sodded areas shall be mowed to a height of 2" whenever the sod is rooted and the average height becomes 2-1/2".
- C. When the sod areas have been cut a minimum of three times and a uniform catch of the specified grass is established without evidence of excessive weed or crab grass infestation, Contractor shall submit a written request to the Owner for an inspection of the established lawn. The Owner will inspect the site within ten days of receipt of written request for inspections. Acceptance will be based upon a satisfactory stand of turf as defined in Section 8.01B

END OF SECTION

ELECTRICAL - LIGHTING

5.0 SUMMARY

- A. This section includes providing all electrical work needed for lighting for the Park, outdoor power at the Plaza for events and power as needed for irrigation controller. Light fixture locations are included on the plan.

5.01 PRODUCTS

- A. Power for the Plaza – waterproof and lockable boxes for power as needed for events. Number and location will be confirmed with Owner.
- B. Light Fixtures – The fixtures for this project will be the Macon Fixture that has been approved by Macon-Bibb Facilities in conjunction with agreements with Phillips. Specification will be attached to this Section.

5.02 EXECUTION

- A. Handle and store the fixtures according to the manufacturer's recommendations.
- B. Coordinate with concrete contractor for the installation of the needed footings for the light poles and fixtures.
- C. Place and install lighting in locations indicated on the drawings. Installation of lighting shall be completed as per the manufacturer's instructions and in coordination with Macon-Bibb Facilities Department.

END OF SECTION