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3.2.2.2 Hydrosowing: Mix seed, fertilizer, and wood cellulose fiber in required amount of water to produce a homogeneous slurry. After seed, water, and fertilizer have been thoroughly mixed, add 1,500 pounds of wood cellulose fiber per acre (dry weight) and apply the slurry. Seed shall not remain in water containing fertilizer for more than 1 hour prior to agitated distribution.

3.2.3 Mulch: Spread straw mulch evenly at the rate of 1.5 tons per acre. Anchor by pinning mulch with aerated discs or by spraying asphalt emulsion on the mulched surface at the rate of 3 gallons per 1000 square feet. Take precautionary measures to prevent asphalt materials from marking or detaching structures, pavements, utilities, or plantings.

3.3 PROTECTION OF SEEDED AREAS: Immediately after seeding, protect seeded areas against traffic and other use by erecting barricades, as required, and placing approved signs at appropriate intervals until final acceptance.

3.4 RESTORATION: Restore to original condition seeding lawn areas which have been damaged during seeding operations. Clean paving when work in adjacent areas is complete.

3.5 LAWN:

3.5.1 Duration: Lawn establishment period will be in effect until final acceptance.

3.5.2 Maintenance: During turf establishment period, mow the seeded area to an average height of two inches whenever the average height of grass becomes four inches. Remove excess clippings, eradicate weeds, apply water and/or fertilizer, overseed and perform other operations necessary to promote turf growth.

3.5 FINAL ACCEPTANCE:

3.5.1 Final Inspection and Acceptance: At the end of the turf establishment period, final inspection will be made upon written request at least 10 days prior to the anticipated date. Final acceptance will be based upon a satisfactory stand of turf, defined as 95 percent ground cover of the established species.

3.5.2 Replanting: In areas which do not have a satisfactory stand of turf, as determined by the Owners Representative, the Contractor will resurface, fertilize, lime and mulch the deficient areas. The deficient areas will be subject to an additional lawn establishment period and reinspected by Owners Representative.

3.5.3 Inspection to terminate guarantee: At the end of the guarantee period, an inspection will be made upon written notice requesting such inspection submitted to the Owner and Owners Representative by the contractor at least ten (10) days before the desired date. Unless notified until this inspection is called by the contractor, the lawn guarantee shall remain in effect indefinitely. Any areas under this contract that are dead or not showing satisfactory growth shall be repaired. Only one replacement will be required.

*** END OF SECTION ***

SODDING

PART 1 - GENERAL

1.1 SCOPE OF WORK: Furnish all material, equipment and labor necessary for preparation of final subgrades in lawn areas; distribution and application of topsoil; grading, soil treatments; lawn construction; irrigation maintenance, quantity and replacement of lawn; and related items required to complete the work indicated on the drawings and specifications.

1.2 SUBMITTALS:

- Contractor shall furnish Certificates of Conformance from manufacturers or agencies.
- Soil
- Fertilizer
- Lime
- Soil Testing Recommendation - NC Department of Agriculture

PART 2 - PRODUCTS

2.1 Topsoil: Topsoil furnished shall be a natural, fertile, friable soil, possessing characteristics of representative productive soils in the vicinity. It shall be obtained from naturally well-drained areas. It shall not be excessively acid or alkaline nor contain toxic substances which may be harmful to plant growth. Topsoil shall be without admixture of subsoil and shall be cleaned and reasonably free from clay lumps, stones, stumps, roots, or similar objectionable materials or more in diameter, depth, or other objects which might be a hindrance to planting operations.

2.2 Lime: Lime shall be ground limestone containing not less than 85 percent of total carbonates and shall be ground to such a fineness that 50 percent will pass through a 100-mesh sieve and 90 percent will pass through a 20-mesh sieve. Coarser material will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve.

2.3 Fertilizer: All fertilizer shall be uniform in composition, free-flowing and suitable for application with approved equipment. Fertilizer shall be delivered to the site fully labeled according to applicable State fertilizer laws and shall bear the name, trade name or trade mark, and warranty of the producer. Fertilizer application rates shall be as determined by approved soil tests. If soil tests are waived when there is insufficient time for complete tests, fertilizer shall be of a 1-2-2 ratio, shall be 10 to 20 percent phosphorus and shall be applied at a rate of 800-1000 pounds per acre.

In addition to the fertilizer listed above, apply 500 to 800 pounds per acre of 20 percent superphosphate or equivalent.

2.4 Sod: Sod shall be "Rebel II Fescue" nursery-grown approved sod. The sod shall be of known origin, of overall good quality, and free of root rot. The sod shall be machine cut to a uniform soil thickness of 1" plus or minus 1/4". Measurement for thickness shall not include top growth and thatch. Sod shall not be heaved or transported when moisture content (too dry or wet) may adversely affect its survival. Sod shall be harvested, delivered, and transported within a period of 36 hours unless a suitable method of preservation is approved beforehand. Before stopping, sod shall be moved uniformly at a height of 3". Sod shall be free of diseases, nematodes, and soil-borne insects.

2.5 Water: Water used in this work shall be furnished by the contractor and shall be suitable for irrigation and free from ingredients harmful to plant life. Hoses and other watering equipment required for watering shall be furnished by the Contractor.

PART 3 - SOIL PREPARATION AND TRANSPLANTING THE SOD

3.1 Grading: Areas required to be sodded have been brought to required final grade. Any irregularities in the surface resulting from treading or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

3.2 Cleanup: After the final grades approved, the area shall be cleared of all grade stakes, surface trash and other objectionable material. Final grading shall be on cleared and planted areas. Paved areas around which seeding operations are conducted shall be kept clean, and any soil which may be brought upon the surface shall be kept clean to avoid tracking soil on the surface of roads, walks or other paved areas.

3.3 Transplanting:

- 3.3.1 Maintaining the Soil: During periods of higher than optimal temperature for species being specified and after all unevenness in the soil surface has been corrected, the soil shall be lightly misted immediately prior to laying the sod.
- 3.3.2 Starter Strip: The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to insure that the sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the sod.
- 3.3.3 Rolling Surfaces: On 3:1 or greater slopes, sod shall be laid with staggered joints and secured by tamping, pegging or other approved methods.

3.4 Watering and Rolling: Contractor shall water and immediately after transplanting to prevent excessive drying during progress of the work. As sodding is completed in any one section, the entire area shall be rolled. It shall then be thoroughly watered to a depth sufficient that the underside of the new sod pad and soil immediately below the sod are thoroughly wet. The contractor shall be responsible for having adequate water available at the site prior to and during transplanting of the sod.

3.4 Cleanup: Any materials which have been brought into paved areas by hauling operations or otherwise shall be removed promptly within the same working day and shall be allowed to remain overnight, leaving these areas clean at all times. Upon completion of the planting all excess sod should be removed from the site and disposed of in a safe and legal manner. All lawn areas shall be prepared for final inspection. All damage to the existing landscape caused by the operations shall be repaired at the Contractor's expense.

3.5 Lawn Establishment Period

3.5.1 Duration: Lawn establishment period will be in effect for at least 30 days after completion of sodding operation, or as much longer as needed to establish the specified stand of grass.

3.5.2 Watering:

3.5.2.1 First Week: The contractor shall provide all labor and arrange for all watering necessary for rooting of the sod. Sod on sod pads shall be kept moist at all times. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of at least 4 inches. Watering should be done during the heat of the day to help prevent wilting.

3.5.2.2 Second and Subsequent Weeks: The contractor shall water the sod as required to maintain adequate moisture in the upper 4 inches of soil necessary for the promotion of deep root growth.

3.5.3 Mowing and maintenance: The first mowing shall not be attempted until the sod is firmly rooted and secure in place. Not more than 40 percent of the grass leaf shall be removed by the initial or subsequent mowings. The grass shall be maintained between 1" and 1 1/2" unless otherwise specified. The contractor shall perform other operations such as watering, fertilizing as necessary to promote turf growth during establishment period.

3.5.4 Final Inspection and Acceptance: At the end of the guarantee period, final inspection will be made upon written request at least 10 days prior to the anticipated date. Final acceptance will be based upon a satisfactory stand of turf, defined as 95 percent ground cover of the established species.

3.5.2 Replanting: In areas which do not have a satisfactory stand of turf, as determined by Landscape Architect, the Contractor will resurface, fertilize, lime and mulch the deficient area. The deficient area will be subject to an additional lawn establishment period and reinspected by Landscape Architect.

3.5 FINAL ACCEPTANCE:

3.5.1 Final Inspection and Acceptance: At the end of the turf establishment period, final inspection will be made upon written request at least 10 days prior to the anticipated date. Final acceptance will be based upon a satisfactory stand of turf, defined as 95 percent ground cover of the established species.

3.5.2 Replanting: In areas which do not have a satisfactory stand of turf, as determined by Landscape Architect, the Contractor will resurface, fertilize, lime and mulch the deficient area. The deficient area will be subject to an additional lawn establishment period and reinspected by Landscape Architect.

4.1 GUARANTEE

4.1 Guarantee Period: Lawns shall be guaranteed to be alive and healthy for one year after planting.

4.2.1 Inspection to terminate guarantee: At the end of the guarantee period, an inspection will be made upon written notice requesting such inspection submitted to the Owner and Landscape Architect by the contractor at least ten (10) days before the desired date. Unless notified until this inspection is called by the contractor, the lawn guarantee shall remain in effect indefinitely. Any lawn areas under this contract that are dead or not showing satisfactory growth shall be repaired. Only one replacement will be required.

PART 5 - PAYMENT

5.1 Method of Payment: Payment to the Contractor shall be made when the work is accomplished based on the schedule of values.

*** END OF SECTION ***

ANNUAL BED AND BULB AREA PREPARATION

1. EXECUTION

- Thoroughly till the following mixture to a minimum depth of 12" with 4 parts existing topsoil, 4 parts pine bark 1 part pine mulch, 1/2 part manure.
- Apply lime as needed for annual areas only to provide pH level between 6 and 6.5.
- Round beds to provide positive drainage.
- Apply superphosphate fertilizer at a rate of 3 pounds per 100 sq. ft. and 1.5 pounds per 100 sq. ft. of 10-10-10. Also apply controlled release fertilizer as a supplement for future plantings.
- Apply pre-emergent herbicide per manufacturers recommendations to maintain weed-free flower beds.

Contractor to apply pine straw mulch to a uniform minimum depth of 4" and maintain this depth at all times.

Provide adequate watering to maintain vigorous and healthy plants at all times. The Contractor shall notify the Owner of any excesses or deficiencies.

Upon identification of fungus or disease problems, provide approved fungicides as needed to maintain healthy areas.

Locations of annuals and bulbs are noted on plan.

II. PRODUCTS

- Lime shall be ASTM C 602, commercial agricultural limestone containing a minimum of 94 percent magnesium. Provide the following ASTM E 11 gradation: minimum 100 percent passing the No. 20 sieve and 75 percent passing the No. 100 sieve.
- Use soil conditioners singly or in combination as required to meet specified requirements for annual beds.
- Natural product of peat mass derived from a freshwater site. Shred and granulate peat to pass a 1/2-mesh screen and condition in storage pile for minimum six months after excavation.

Well rotted, horse or cattle manure containing maximum 25 percent by volume of straw, sawdust, or other bedding material free of stones, sticks, soil and toxic substances harmful to plants. Manure used in annual beds only.

Aged ground bark, sawdust, or other wood waste material free of stones, sticks, soils and toxic substances harmful to plants established with nitrogen and having the following properties:

Particle Size: Minimum percent by weight passing:	
No. 4 mesh screen	95
No. 8 mesh screen	80
Nitrogen Content: Minimum percent based on dry weight:	
Redwood Sawdust	0.5
Pine Sawdust	0.7
Pine Bark	1.0
Fertilizer shall be granular, free flowing, and uniform in composition, with nitrogen-phosphorus-potash ratio of 10 and available phosphorus, and 10 percent potash for annual bed only.	
Controlled release fertilizer shall be magnesium ammonium phosphate and magnesium potassium phosphate with a nitrogen-phosphorus-potash ratio of 10 percent nitrogen, 20 percent phosphorus, and 20 percent potassium, granulated to pass 1/8-inch screen for annual beds only.	
Superphosphate with 18 percent nitrogen, 50 percent phosphorus and 0 percent potash for bulb areas. (This may be replaced by surface casting and watering in year).	
Pre-emergent shall be Ronstar or approved equal.	

LANDSCAPE IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 SCOPE OF WORK: Provide all labor, equipment, materials, etc. for complete installation of irrigation system including but not limited to layout, trenching, backfilling, laying pipe, installing heads, and final testing. The Contractor shall be held responsible for the work as indicated on the plans. The Landscape Contractor is responsible for purchasing and installing the equipment and materials to be located in coordination with the Landscape Architect. The Landscape Contractor shall obtain all permits and pay all top-on fees associated with work. In the absence of a specific specification, the Contractor shall apply the word "Contractor" shall apply to the irrigation installer for the remainder of this section.

1.2 SUBMITTALS:

- Manufacturer's certificates of conformance
- Piping, fittings, risers, and connections
- Controllers, wiring, and associated equipment
- Sprinklers, valves, automatic control valves
- Calc couplers

1.3 Ordinances, Regulations, Codes, Permits and Inspections: A Contractor is obligated to follow all regulations, ordinances, and codes governing the type of work he is doing on the job site. Permits that are needed for the installation or construction of any work included under this contract which are required by authorities of jurisdiction, or require inspection at said points of the installation, the Contractor shall arrange for, and be present at, any such inspection. The Contractor shall be familiar with local ordinances concerning irrigation systems.

Additional work or furnishing of job materials required due to inspection by the authorities of jurisdiction shall be furnished at no cost to the Owner.

PART 2 - PRODUCTS

2.0 GENERAL: All materials used in the system shall be new and without flaws or defects of any type unless otherwise specified in the specifications. All materials shall have a minimum guarantee of one year against material defects or defective workmanship.

2.1 PVC Pipe and Fittings for Water Distribution: All 1/2" and smaller piping shall be Class 200 solvent weld PVC pipe.

All solvent weld fittings shall have a minimum Schedule 40 PVC rating.

All pipe and fittings shall be assembled with the lubricant supplied by the pipe manufacturer or an approved equal shall be used in the assembly of gasketed pipe and fittings.

2.2 RISER AND SWING JOINT CONNECTIONS: Risers and swing joints shall be as detailed on the irrigation drawing and to the very least shall be constructed on Schedule 80 PVC and threaded elbows and nipples as required.

All threaded fittings employed in the system construction shall be assembled with teflon thread sealing tape unless specifically notified otherwise.

2.3 115 VAC ELECTRIC POWER WIRING: All 115 V.A.C. electric wiring shall be installed in accordance with applicable installation codes. 115 V.A.C. services to controllers shall consist of one black wire, one white wire, and one ground wire. #10 AWG and smaller gauge power wire shall be supplied as a single three conductor UP cable (10000' vols minimum). All wiring shall be buried to a depth of 12" (minimum) and to the depth of the pipe when new pipe is installed. Wire appies shall be kept to an absolute minimum number. Concentrations of wire appies shall be placed in a splice or valve box, Ametek #10-181-014 with #10-181-015 cover or approved equal.

All wiring installation shall be sized and located as shown on the wiring plans and/or described in the drawing notes.

All wiring appies shall be made water tight using approved methods involving the use of epoxy-resin waterproofing materials.

When a central satellite control system is employed, the pulse wire(s) shall be of epoxy-resin waterproofing materials.

When a central satellite control system is employed, the pulse wire shall be of a different color(s) than the 115 V.A.C. power wires. These wires shall also be of a different color from each other, if and when multiple pulse wires are required.

2.4 CONTROL LINES: All 24 V.A.C. control wiring shall be #14 AWG single strand copper wire with polyethylene UF insulation rated for 300 V.A.C. minimum unless otherwise noted. Common wires from controllers shall be black in color while hot wires shall be red in color.

If hydraulic control methods are to be employed the 1/4" O.D. polyethylene control tubing.

2.5 SPRINKLER HEADS: All sprinkler heads located in the lawn areas shall be of the pop-up variety with positive spring retention. The body of an individual sprinkler shall be constructed of cycloal material, the interior assembly shall be easily accessible from the outside, the manufacturer's specifications concerning diameter of throw end openings at given pressures. Spacing of the heads on this project shall not exceed the manufacturer's maximum recommended spacings.

Refer to drawing notes for models of sprinkler heads to be employed.

2.6 CONTROL EQUIPMENT: Location of automatic controllers shall be approved by the Owner's Representative.

2.7 AUTOMATIC CONTROL VALVES: All automatic control valves shall be installed in valve boxes to provide for easy access and location. Valve boxes shall be Ametek #10-170-001 with #10-170-134 cover or approved equal.

2.8 SLEEVEING BENEATH PAVED AREAS: Sleeveing for pipe and wire under paved areas shall be provided and installed by the Landscape Contractor. This sleeveing shall be Schedule 40 PVC, and two times the size of the irrigation pipe.

2.9 SURGE PROTECTION: It is the responsibility of the Contractor to place a "Good Grounding" electrode at each control location (Good Grounding protection means 16-25 ohms). This ground electrode should be such as large rod event 5' driven electrodes, one or more copper plates 1/8" thick x 12" x 18" may be used. The grounding electrode used should have a resistance to the ground of not more than 25 ohms resistance to the ground in which it is driven or placed.

NOTE:

0 - 15 ohms -	Excellent Grounding Protection
16 - 25 ohms -	Good Grounding Protection
26 - 50 ohms -	Marginal Grounding Protection
Above 50 ohms -	Resistance is considered a poor ground and steps should be taken to improve the grounding condition

PART 3 - EXECUTION

3.1 STAKING OF SPRINKLER LOCATIONS: Staking and leveling locations shall be done by the Contractor and approved by the Owners Representative.

3.2 EXCAVATION, TRENCHING, AND BORING: All excavation shall be undisturbed and shall include all materials which can not be excavated by normal mechanical means (i.e. boulders and/or chain trench).

Perform all excavations as required for the installation of work included under this section, including clearing of earth banks to prevent cave ins and as required by applicable codes. Restore all surfaces, existing underground installations, etc., damaged or cut as a result of the excavations to their original condition and in a manner approved by the Owner.

Trenches shall be made wide enough to allow a minimum clearance of 4" between parallel pipe lines. Trenches for pipe lines shall be made of sufficient depth to provide the minimum cover from finished grade and shall be as follows: (1) 18" cover over 1/2" minimum cover over lateral pipe lines and (2) 12" minimum cover over control wires, tubing, or power lines. All wiring shall be installed in accordance with applicable legal codes.

Boring beneath roads and walks shall be performed as required. Holes with a bored diameter less than 2-1/2" shall be a minimum of 18" below the paved surface. Borings with a diameter 2-1/2" and larger shall be at least 24" below the paved surface. Damage which occurs to pavement and associated structures as a result of boring activities shall be the Contractor's responsibility.

3.3 INSTALLATION OF SYSTEM PIPING: Installation of the system piping shall be in accordance with the manufacturer's instructions and shall proceed from the point of connection of supply for the system pumping station, reservoir, or existing water line. Trust blocks shall be installed at directional change in the pipe line if the line is 2-1/2" or greater in nominal size and in all cases if the pipe is of gasketed bell and spigot construction.

All pipe and fittings shall be installed in accordance with the manufacturer's recommendations. Pipe and fittings shall be thoroughly cleaned of dirt, dust, and moisture before application of required solvent or lubricant.

Piping may be assembled and welded (where applicable) on the surface. Pipe must be "snaked" from side to side in the trench to allow for expansion and contraction.

All connections between plastic pipe and metal valves or metal pipe shall be made using plastic male adapters. All threads shall be sealed with teflon thread sealing tape.

Install remote control valves in the area shown and group together where practical; place no closer than 12" to wall edges, buildings, and walls.

Irrigation lines may be installed by standard trenching techniques or by pulling-in with a vibratory plow. If pipe is pulled in, the vibratory plow shall be equipped with a turf roller device to prevent tearing of the turf. The "bullet" which precedes the pipe and is used to form the opening for the pipe, shall not be less than 1" larger in diameter than the outside diameter of the pipe. Starting and finishing holes shall not exceed a 1' square opening, with soil removed from such holes to be preserved and replanted. All disruption shall be replaced with the rolled level the same day as installation. If trenching is used, soil shall be removed and replaced the same day as the installation of the pipe.

3.4 AUTOMATIC CONTROL VALVES: All control valves shall be installed in valve boxes to provide for accessibility for maintenance operations. Valve boxes shall be mounted with lids at finished grade level.

3.5 SPRINKLER HEADS: Lawn pop-up sprinkler shall be installed so that the top of the head is slightly above finished grade level. The riser size shall match the inlet size of the particular head to be mounted. If a flexible joint is required for adjustment of the head and riser to plumb, then two PVC threaded street ends shall be installed to provide flexibility. In all cases connection to the lateral pipe line shall be with the use of a PVC tee or elbow with a female threaded outlet.

All exposed riser surfaces shall be painted a natural tone of brown to blend with surrounding natural materials. All 1/2" pop-up heads shall be installed by such a manner so as to provide for an unobstructed spray pattern during operation while the head in the retracted state shall be judged by the surrounding plant materials. If necessary, taller risers shall be "capped" with a supporting steel pipe or rebar and clamped with stainless steel clamps to prevent "whipping" or lay-over of the sprinkler riser during operation. These materials shall also be painted to blend with the natural materials.

If shrub models of a particular head series are to be installed in lieu of 1/2" pop-up, then the above riser requirements shall be applied to mount these heads also.

Height of the shrubbery risers must be closely coordinated with the landscape architect, landscaper, or the Owner. It shall be the responsibility of all parties involved to establish the height of the risers to be installed.

3.6 CONTROL EQUIPMENT: All automatic valves and controllers shall be installed following the recommendations of the manufacturer of said equipment. The location of all controllers shall be approved by the Owner's Representative before the actual installation of said controllers. All controllers shall be installed in a neat workmanlike manner with accompanying necessary conduits, fixtures, etc. Exterior pedestal mounted controllers shall be set on a concrete pad, with edges 1/2" above finished grade and pad crowned slightly to avoid collection of water behind the controller base. Provide for necessary wire or tubing sleeves, (with sweep elbows) through the pad at time of construction.

Install controller surge protection as required and specified.

3.7 AUTOMATIC CONTROL WIRING: Automatic control wiring shall be installed in a common trench with the system piping where feasible, but wiring shall be installed at least 12" below finished grade and to the side and below the irrigation piping. The Contractor shall provide loose slack at the valve locations and at all wires in the trench to allow for easier connection of the wires. Wiring shall be bundled and tied or taped at 10' intervals.

The Contractor shall provide two additional control wires per controller extending to the furthest valves in the system.

Control wiring/tubing appies shall be allowed only in runs of 500' or more. Splices shall be kept to a minimum and shall be made with approved materials. Concentrations of appies, where necessary, shall be installed in Ametek valve boxes (Section 4.03).

All wire passing beneath existing or future paving, construction, etc., shall be encased in Schedule 40 PVC pipe extending at least 12" beyond the edges of the paving or construction.

3.8 CLOSING OF PIPE AND FLUSHING LINES: Cap or plug all openings as soon as lines have been installed to prevent entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of or after the system.

Thoroughly flush out all water lines before installing heads, valves, and other hydrants.

Test in accordance with paragraph on Hydrostatic Tests.

After completion of testing, complete system assembly backfilling of trenches and adjust sprinkler heads for proper distribution.

3.10 BACK FILL AND COMPACTING: All back fill material shall be free of rock, stones, lumps, or debris. Back filled trenches shall be compacted to a minimum density of 90%. Trenches may be tamped mechanically or by thorough flooding with water. All disturbed areas shall be dressed off to finish grade. Contractor shall be responsible for setting of the irrigation trenches for a period of one year from date of the Owner's acceptance and shall refill trenches as needed.

3.11 QUICK COUPLING VALVES: A globe type valve or quick coupling valve shall be installed at or near the point of water supply valve for the purpose of air injection at times of winterization. The Contractor shall be responsible for winterization of the system during the guarantee period. Compressed air, 80 PSI max, shall be injected at this valve and each control station area shall be blown clear of water in succession and then blown clear again.

If a gravity drainage method is specified in addition, manual drain valves (3/4" 200 VSI WAG Globe Type Valve) shall be mounted at the low points in the main line piping.

3.12 TESTING OF SYSTEM: Upon completion of the irrigation system, the entire system shall be tested for proper operation. All air will be flushed from the system and all components will be checked for proper operation by the Contractor.

3.13 BALANCING AND ADJUSTMENT: The contractor shall balance and adjust the various components of the sprinkler system as the overall operation of the system is most efficient. This includes a synchronization of the controllers, adjustments to pressure regulators, pressure relief valves, part circle sprinkler heads, and individual station adjustments on the controllers.

3.14 FINAL INSPECTION AND ACCEPTANCE: Upon completion of the work final inspection will be made upon written request at least 10 days prior to the anticipated date. The system will be accepted by the Owner upon completion of all punch list items.

3.15 AS-BUILT PLAN ACCEPTANCE: Acceptance of the system is based on the furnishing by the Contractor of a completed as-built plan which is acceptable to the Owner and Landscape Architect. Said as-built plan will include locations of all valves (automatic and manual) and splices of all wires (automatic and manual) and splices of all wires (automatic and manual) and splices of all wires (automatic and manual) and splices of all wires (automatic and manual).

3.16 TRAINING OF MAINTENANCE PERSONNEL IN OPERATION AND MAINTENANCE OF SYSTEM: The Contractor's responsibility of training maintenance personnel in the operation and maintenance of the system, as outlined in a previous section of these specifications, shall not be waived due to acceptance to the system. If this responsibility is not fulfilled, the cost of obtaining this training by the Owner shall be shown as a deduction in the final payment.

3.17 WARRANTY AND GUARANTEE CERTIFICATES: The Contractor shall furnish a certificate of warranty registration and a guarantee of work and materials for a one-year period from date of final acceptance of the system. Final payment for the system shall not be made unless this certification is presented to the owner.

PART 4 - PAYMENT

4.1 Method of Payment: Payment to the Contractor shall be made when the work is accomplished based on the schedule of values.

*** END OF SECTION ***

NOTES:

BACKFLOW PREVENTER TO BE INSTALLED UNDER ALL LOCAL CODES. ALL PIPE AND FITTINGS TO BE SCHEDULE 40.



Install controller surge protection as required and specified.

3.7 AUTOMATIC CONTROL WIRING: Automatic control wiring shall be installed in a common trench with the system piping where feasible, but wiring shall be installed at least 12" below finished grade and to the side and below the irrigation piping. The Contractor shall provide loose slack at the valve locations and at all wires in the trench to allow for easier connection of the wires. Wiring shall be bundled and tied or taped at 10' intervals.

The Contractor shall provide two additional control wires per controller extending to the furthest valves in the system.

Control wiring/tubing appies shall be allowed only in runs of 500' or more. Splices shall be kept to a minimum and shall be made with approved materials. Concentrations of appies, where necessary, shall be installed in Ametek valve boxes (Section 4.03).

All wire passing beneath existing or future paving, construction, etc., shall be encased in Schedule 40 PVC pipe extending at least 12" beyond the edges of the paving or construction.

3.8 CLOSING OF PIPE AND FLUSHING LINES: Cap or plug all openings as soon as lines have been installed to prevent entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of or after the system.