

SECTION 2.2A: IRRIGATION

PART 1: GENERAL

- A. The scope of work covered under this section includes all material and labor to provide complete and properly operating automatic irrigation systems and other specific work as called for or implied in the plans and specifications. All electrical connections shall be by the Contractor. All electrical work shall be performed by a licensed electrician.
- B. The Contractor shall be responsible for the work under this section until the job is complete as determined by the Landscape Architect (see PART 3, Item Q.1.) and also be responsible for provisions requested for final acceptance (see PART 3, Item Q).
- C. The water source and backflow prevention device shall be as indicated in the plans.

The contractor shall be responsible for determining and installing the proper irrigation components to complete the job, determining if the water source is or is known to possibly be reclaimed (effluent). All irrigation installation must be in compliance with the latest local, county, and/or state mandated requirements.

The Contractor shall be responsible for determining and submitting documentation of actual water supply performance (gpm and psi) to the Landscape Architect prior to commencing installation of the system, in order to confirm that the system will perform properly; the Contractor shall also be responsible for making any necessary adjustments in the system to compensate for reasonable variation from the design flow data, when it is specified in the contract documents.

- D. The Contractor shall be responsible for confirming that the sizing, zoning, and routing of the mainline and lateral lines will result in the proper performance of the system; no major changes may be undertaken, however, without prior notification and authorization of the Landscape Architect.
- E. All required coordination with the Landscape Architect, Owner, and others during installation, and checking and adjustments required after installation to insure satisfactory operation, shall be included in the work required.
- F. All work shall be installed in accordance with the regulations of the local, county, or other governing authorities. Fees for all permits and inspections required shall be included as work required. Any applicable impact fees shall be paid by the Owner.
- G. All irrigation components shall be installed in accordance with the manufacturer's specifications.

- H. A written guarantee as described in PART 3 shall be provided to the Owner. This guarantee shall also cover all adjustments and balancing of the system for a 90-day period necessary for proper performance of the system.
- I. For any Maxicom System, all components, materials, and methods of installation, the contractor must refer to the "Maxicom Pedestals and Central Control Irrigation Projects Manual."
- J. For any Rainmaster System, all components, materials, and methods of installation shall be installed pursuant to the "Rainmaster Pedestals and Central Control Irrigation Projects Manual."
- K. Performance Standards
1. All materials, brands, and installation methods shall be per these requirements. Read and follow the specifications.
 2. 100% overlapping head-to-head coverage shall be required in all areas requiring spray and rotor coverage, as reasonably possible, except as noted on the landscape plan.
 3. Separation of zones covering turf areas and bed areas shall be required to the maximum extent possible, even where such areas are spray zones. Where applicable, separate zones shall be provided for annual beds. Zones shall be properly balanced.
 4. All trees and specimen material 30 gallon size and larger shall have coverage provided by a separate zone, using Maxijets, or by using Hunter AFB adjustable flood bubblers on a rotor zone.
 5. Where sprays are in turf, they shall be 6" popups; all popups in groundcover and dwarf shrub masses shall be 12" popups (such plants include Evergreen Giant, Blue Pacific and Parsoni Juniper, Indian Hawthorn, Dwarf or Fashion Azaleas, and other plants generally maintained at 24" ht.). In locations where taller shrub masses or hedges (such as Ligustrum, Podocarpus, Nandina, Pittosporum, or Viburnum) are spaced back 2' or more from the curb in parking areas or where parking does not abut certain curbs, 6" popup sprays shall be used at the back of curb to underspray the plants. Only in unique situations where necessary may risers be used, and then only if approved by the Landscape Architect.
 6. Where drip irrigation is required, a combination of hard pipe and polypipe may be used to insure that sufficient gallonage and pressure is provided.
 7. There shall be no or minimal overspray onto walkways, and there shall be no overspray onto buildings, walls, or structures. Adjustable heads shall be used where possible for this purpose.

8. "Approved equals" for specified items may only be bid if approved by the Landscape Architect, prior to submittal of the bid.

L. As-built drawings: During the course of the installation, the Contractor shall record dimensioned locations of mainlines, wiring, control tubing, valves, and specific areas watered by each zone along with the zone/valve number and gallonage of each zone. Upon completion of the installation, this **as-built data shall be transferred to copies of the landscape plans in a clear, clean, neat, and professional manner.** These plans shall be submitted to the Landscape Architect prior to final acceptance for review and approval, and as an absolute condition of job completion and final payment. Used plans, poorly drawn or illegible plans, or plans otherwise not representative of professional quality and thorough information in the opinion of the Landscape Architect, shall not be acceptable.

M. A written guarantee as described in PART 3 shall be provided to the Owner. This guarantee shall cover all adjustments and balancing of the system for a 90-day period necessary for proper performance of the system.

PART 2: MATERIALS

A. Piping

1. All PVC mainline 2 ½" O.D. and greater except as specifically noted on the plans shall be Class 200 IPS Polyvinyl Chloride (PVC 1120) gasketed pipe conforming to the ASTM-D2241, Type 1 requirements, NSF approved.
2. All PVC pipe installed downstream of the zone valve, except risers, shall be Class 160 IPS Polyvinyl Chloride (PVC 1120) solvent weld pipe conforming to the ASTM-D2241, Type 1 requirements, NSF approved. Risers shall be ½" Schedule 40 PVC.
3. Where a part of this work, all crossings under paved areas for water lines and conduit lines shall be Class 160 PVC pipe conforming to the ASTM-D2241, Type 1 requirements.
4. Flexible pipe connections to gear-driven and spray heads shall be approved flexible pipe (funny pipe), threaded into a barb x thread PVC fitting. Length of funny pipe shall be at least 6" longer than the depth of the zone lateral and a minimum of 22". Kaf-flex and glued connections may be acceptable with approval by the Landscape Architect prior to bidding.
5. All above-ground piping upstream of zone valves shall be ductile iron or galvanized steel through the first underground elbow. Transition couplers and mechanical joint fittings shall be used as necessary to convert to PVC.

B. Fittings

1. Ductile iron mechanical joint fittings shall be used on all mainline bends and tees 3" and greater except for the tees that feed directly to individual valves. Tees that feed directly to an individual valve shall be ductile iron gasket by FPT service tees with a 2" nipple, 2" threaded gate valve with 2" operating nut (American Darling or approved equal), another 2" nipple and control valve. If a reduction in the mainline pipe size is specified, a ductile iron reducer shall be used and restrained to the tee mechanical restraints as recommended by the fitting manufacturer; each individual valve shall also be restrained with all-thread steel.
2. All solvent weld and gasketed PVC fittings up to 2 1/2" shall be Schedule 40 (or better) Type 1, NSF approved conforming to the ASTM-D2466 requirements. Funny pipe fittings shall be barbed PVC specifically designed for use with funny pipe.
3. Pipe fittings 3" and larger shall be gasketed ductile iron or ductile iron mechanical joint. The gaskets shall be by the same manufacturer as the gasketed fittings.
4. The use of barbed insertion type fittings (couplings, tees, ells, etc.) between the sprinkler and the PVC service is prohibited.

C. Sprinklers

1. Gear-driven rotors shall be Hunter PGP Series.
2. Spray heads in groundcover or shrub areas shall be Hunter Institutional Spray Series 6" or 12" popup heads, or approved equal, as indicated in the plans. Nozzles shall be Hunter as indicated and/or as required per conditions.
3. Spray heads for sodded areas shall be Hunter Institutional Spray Series 6" popups, or approved equal.
4. Bubblers shall be Hunter AFB adjustable flood bubblers, or approved equal, mounted on funny pipe, staked down on uphill side of rootball, minimally visible above mulch and adjusted to 1 GPM or less. Soil saucers must contain flow from bubblers with no washouts during the set operation time of zones having bubblers.
5. Low volume heads shall be 6" popup Hunter Institutional Spray bodies with Rainbird Style Maxijet Pop-up Adapter kit ARCUHFU09H (includes blue, 10gph, 90° Top-Hat nozzle, adapter and filter screen). Heads shall be set specifically to cover the trees' root zones.

D. Drip/Special Irrigation (where applicable):

1. The ball valve shall be Nibco T-585-70-IC. The pressure regulator assembly (ICZ-101) for the drip irrigation shall be Hunter, or approved equal. These components may be accompanied by a remote control valve, where specified, with the ball valve and wye filter upstream of the remote control valve and the pressure regulator assembly downstream.
2. Poly tubing shall be Hunter PLD Maximum Line @ 1.0 gph. Poly tubing connections shall be barbed insert type with stainless steel hose clamps securing each connection. Compression type fittings are acceptable with permission from the Landscape Architect.
3. The emitters, where applicable, shall be single outlet, Hunter, or approved equal. One 1.0 gph emitter per shrub or tree, unless otherwise specified.

E. Valves

1. Remote Control Valves
 - a. Remote control valves, unless otherwise specified on the plan(s), shall be Hunter ICV or ICV Filter Sentry Series plastic electric valves (where applicable), or approved equal, with Accu-Set pressure regulating module. Valves shall have purple flow control handles, where applicable.
 - b. Remote control valves for systems operated by Hunter Smart Valve Controllers or Wireless Valve System shall be Hunter ICV Filter Sentry Series plastic electric valves (where applicable) or approved equal, with Hunter Accu-Set pressure regulating module; all Wireless Valve Systems must include a field programmer provided by the contractor. The contractor must consult with the Landscape Architect to determine whether to install a Smart Valve Controller or a Wireless Valve System. Both systems must include a Hunter Mini-Clik.
 - c. Where applicable, plastic remote control valves for drip or temporary systems operated by SV or WVS Hunter controllers shall be Hunter ICV or ICV Filter Sentry Series plastic electric valves (where applicable) with Hunter Accu-Set actuators.
2. Gate Valves/Ball Valves
 - a. Ball valves 2 inches and smaller shall meet Federal Specification WW-V-54 Type 1, Class A. Valves shall be threaded, bronze, rough bodied, and have finished trimmings. Ball valves shall be Nibco T-585-70-1C or approved equal.
 - b. Gate valves 2 inches and over in size shall be resilient-seat with cast

iron bodies meeting AWWA C509 - latest. Valves shall have either threaded or mechanical joint connections, non-rising stems, and 2" square operating nuts. Resilient-seated gate valves shall be American-Darling CRS 80, Kennedy 1500 Series, Clow F6103, or approved equal.

3. Master Valves
 - a. Where applicable, master valves for areas with a flow rate of 80 gpm or less shall be Hunter ICV Filter Sentry Series plastic electric valves. Valves shall have purple, if applicable, flow control handle, pressure regulation module (Accu-Set) and a B to A solenoid adapter.
 - b. Where applicable, master valves for areas with a flow rate of more than 80 gpm shall be ICV Filter Sentry Series plastic electric valves. Valves shall have purple, if applicable, flow control handle (BDE-NP-HAN), pressure regulation module (Accu-Set) and a B to A solenoid adapter.
4. Mainline isolation valves shall be threaded brass gate valves, sized according to the mainline size. Zone pipe ball valves shall be brass and sized according to the pipe sizes.
5. Valves shall be installed in durable, rectangular, plastic access boxes of proper size as required for easy access to the valve. Valve boxes installed in pavement shall be polymer concrete.
6. Quick-coupling valves shall be 1" (HQ-44-R). All quick couplers must be provided with a quick coupler key.
- F. The controller shall be a Hunter PRO-C mounted in the proposed location shown on the plan, subject to approval by the General Contractor. This controller is to be used when there are 15 zones or less.
- G. The controller shall be Hunter ICC-PL mounted in the proposed location shown on the plan, subject to approval by the General Contractor. This controller is to be used when there are more than 15 zones.
- H. The controller shall be Hunter ICC-SS pedestal mount in the proposed location shown on the plan, subject to approval by the General Contractor. This controller is to be used when there are more than 32 zones or pedestal mounting is required.
- I. The controller shall be Hunter ACC mounted in the proposed location shown on the plan, subject to approval by the General Contractor. This controller is to be used when centralized computer control is required.
- J. The controller shall be John Deere SA6 Sattelite Assembly mounted in the proposed location shown on the plan, subject to approval by the General

Contractor. This controller is to be used when noted. Ground per ASIC guidelines.

K. Control Wires:

1. Control wires shall be U.F. U.L. direct burial wires, or approved equal, or as otherwise indicated on the plans. All wire colors shall remain consistent throughout the course of the work. All wire splices shall be installed in 8" diameter round valve boxes with 1 cf gravel sump, with a minimum of 24" of coiled wire. The splice box locations shall then be recorded on the as-built plans.
2. Waterproof wire connectors shall be Spears DS-400, or approved equal.
3. Where applicable, wiring from the flow sensors to the pulse transmitter shall be 6 pair, #19 twisted, shielded wire or as indicated on the plans. Connections at the flow sensor shall be Super Serviseal or Ranger Serviseal containing Poly-Bee sealant, or approved equal.
4. Where applicable, master valve common wires shall be color coded as shown on the master valve wiring schematic and as indicated in notes.

L. Electrical Hookup (where applicable)

1. The power connection(s) to the proposed controller(s) shall be hard-wired by the job electrician.
2. All electrical work shall be in accordance with the applicable portions of the National Electric Code and all local codes.

M. A rain sensor, Mini-Clik-C, or approved equal, shall be provided, for each controller installed. On Maxicom systems, a Rainbird Raingauge and Anemometer shall be provided for each site or CCU location, in an unobstructed location approved by the Landscape Architect.

PART 3: EXECUTION

- A. The irrigation work shall not be started prior to approval of the rough grading by the Landscape Architect— to be requested by the Contractor. Changes or corrections to the irrigation system necessitated by rough grade adjustments shall be the Contractor's responsibility, should he fail to obtain the Landscape Architect's approval of the rough grade as described.
- B. Trenching shall be done with utmost care to avoid damage to any existing above or below ground improvements. The Contractor shall be entirely responsible for locating all utilities to avoid conflict with his operations, and to record the locations of piping crossing over said utilities. Trenching shall not be done within 10' of any existing tree unless otherwise impossible to route the line,

and in any event, only upon prior notification to the Landscape Architect.

C. Where piping must pass under existing concrete or pavement, it shall be jacked or jetted where possible. Only if impossible to get in place without cutting pavement, permission will be given by the Owner to cut paving. If this is necessary, all cutting and replacing of the paving to match the existing shall be included under this section of the specifications.

D. Where a part of this work, sleeves shall be buried at a minimum depth of two feet. Ends of the piping shall extend a minimum of 24" beyond the edges of pavement.

E. Valve Locations

Valve locations as represented on the plans are schematic, as required for graphic clarity. Actual locations for valves shall be determined based on the following criteria:

1. Valve locations shall be in logical groupings of two or three valves and one isolation ball valve in an adjacent, separate valve box for convenience of maintenance. Without specific permission from the Landscape Architect, groupings of more than three valves shall be prohibited, regardless of schematic representation of the plans.
2. Valves shall be located in unobtrusive turf areas rather than bed areas where plant growth may impede access, where possible and unless otherwise indicated in the plans or directed by the Landscape Architect.
3. Valve boxes shall not be situated on sloped surfaces where they are visibly obtrusive, particularly where seen from public rights-of-way or primary user areas.
4. The Contractor shall relocate valves and valve boxes at his cost where these parameters are not followed, if so directed by the Landscape Architect.

F. Pipe Laying

1. All PVC piping shall be installed in the trenches with a **minimum depth of 12" and a maximum depth of 24"**, with the following exceptions, where applicable.
 - a. Where piping is to run along residential lot lines, between individual lots and along golf course boundaries, the minimum depth shall be 18".
 - b. Where required due to the depths of existing sleeves, piping shall be as deep as required.

- c. Where specific permission is obtained from the Landscape Architect, less cover may be allowed due to existing conditions.
 - d. Where necessary because of landscaping, cover shall be as deep as required.
2. Before the pipe is laid in the trench, the earth forming the bed shall be carefully freed of all stones, roots, etc. The bottom of the trench will be excavated by hand and a firm full length support formed for all pipe, valves and fittings.
3. Preparatory to making pipe joints, all surfaces of the portions of the pipe and jointing material to be joined shall be clean and dry. For the installation of pipe with the "compression ring" fitting, a bell ring lubricant shall be applied to the beveled portion of the spigot end. Such lubricant shall be of the type and quality as recommended by the pipe manufacturer. Care shall be exercised to insure that the compression ring is properly seated and the pipe is completely inserted so that the reference marks on the spigot end can just be seen.
4. For glued pipe joints and fittings, purple primer shall be used to clean pipe prior to gluing.
5. Thrust blocks shall be provided for all mainlines and zone laterals 2" O.D. and larger at all points where the line bends greater than 10 degrees and at all wyes, tees, caps, valves, and reducers. The thrust blocks will be sized and placed according to the details or according to the pipe manufacturer's recommendations when details are not shown on the plans. Clear plastic sheeting (3 mil or heavier) shall be wrapped around fittings prior to thrustblocking. Concrete encasement of the fittings, such that the piping and fittings are completely covered with concrete and cannot be visually identified, shall be unacceptable. All mainline bends, tees, and other major connections shall be inspected by the Landscape Architect and Owner's representative prior to thrustblocking, and adequate notice shall be given by the Contractor that such inspections are needed.
6. At the end of each work day and/or when the pipe is left open for long periods, all open ends of the pipe will be sufficiently covered to prevent entrance of trash or vermin.
7. All drip irrigation tubing shall be 5/8" O.D. polyethylene tubing; all tubing ends and tees shall be securely clamped with stainless steel metal clamps to prevent leakage. Each emitter shall be connected directly to the dripline although several emitters may be connected with tubing and then tied to "main" tubing as distances may determine. Use of spaghetti tubing shall not be acceptable.

8. The polytubing providing supplemental water to the plants indicated shall be buried at least 4" deep except where it crosses the rootball and surfaces for the emitter. The emitter shall be located between the tree trunk and the rootball or container limit and be minimally visible above the mulch; no more than 4" of tubing shall remain beyond the emitter. The tubing and emitters for shrubs shall be installed on finish grade and placed at the plant crown and shall have 3" minimum of mulch cover. Where tubing crosses a bedline, it shall be buried at least 4" deep to avoid severing by an edger.
9. Connections will be made to the existing and/or constructed facilities in accordance with standard plumbing practice. Any connections made between any water pipe and any other tube pipe shall be made using connectors and adaptors designed for the purpose of connecting the two types of pipe.
10. Any pipe installed and subsequently removed shall not be reinstalled and shall immediately be removed from the job site.

G. A #14/1 U.F. locator wire (color coded) shall be installed with all mainline, and with zone lines in the instances where zone lines are located between lots or along golf course boundaries, or where directed. This wire shall be taped to the piping at no more than 10' intervals using fiber-reinforced strapping tape. On the mainline, this wire shall be installed between the gate valves and zone valves and connected to each valve by generously looping the wire within the valve box. On applicable zone lines, the wire shall be installed anywhere lines run between lots or along golf course boundaries.

H. Wiring

1. Any wiring or control tubing which cannot be installed with the mainline or zone line shall be run in conduit installed with proper fittings and connectors, at the depth specified by the electric code, or as otherwise directed.
2. Spare control wires shall be run from the controller to each end of the mainline, or the furthest point away from the controller. A total of two wires in each direction shall be installed totaling four spares.

I. Metallic blue identifying tape indicating that the piping is "non-potable" (in the case of such a source being used) shall be laid 12" above all pipe 2" O.D. and larger. Where sleeving is a part of this work, mylar warning tape 2" wide labeled "Sleeve Buried Below" shall be installed directly on top of sleeving.

J. Valve Installation

1. All gate valves and zone valves shall be installed at a depth of 12" to 15"

from finish grade to the top of the valve. The valve box and extension (as necessary) shall fully encompass the valve with all unused side openings well taped and/or blocked to minimize sedimentation. Gravel, per Part 3, Item J.2, shall be installed below the valve allowing for accessibility to the valve.

2. All valve access boxes shall be installed with support bricks on a suitable base of gravel for proper foundation of box and easy leveling of box to proper grade. The gravel base shall also have a sump consisting of 1 cf of 3/4" drain gravel to provide drainage of the access box. All valve box covers shall be branded with a heat branding kit with two inch stenciled letters/numbers to identify their respective components and zone designations (as applicable). All valves shall be labeled with plastic tags with the zone numbers and types either preprinted or labeled with indelible ink.
3. All remote control valves shall be installed with Schedule 80 nipples entering and leaving the valve. Nipples will be of sufficient length so that no fittings are present inside of valve box.
4. Where applicable, install quick-coupling valves on a separate swing joint and upstream of the remote control valve in such cases as annual plantings, median islands, and other roadway plantings. All quick-coupling valve locations shall be flagged and approved by the Landscape Architect prior to installation.
5. Install a quick-coupling valve a maximum of 100' from the end of each median island, and a maximum of 200' O.C. A quick-coupling valve shall be installed no more than 50' from any annual planting area where such planting is specified.
6. Quick coupling valves shall be located in separate valve boxes and secured with a minimum 24" angle iron and a stainless steel hose clamp.

K. Pressure Testing

1. After the pipe has been connected and laid in the trenches, enough backfill between joints shall be installed to insure the anchorage of the pipe in the trench and all mainlines 4" or larger in diameter shall be pressure tested. The Contractor shall notify the Landscape Architect and/or the Owner's representative a minimum of 24 hours in advance of the pressure testing in order that they may be present to observe the results.
2. All lines being tested shall be subjected to 150 psi pressure and maintained for at least 2 hours with no loss of pressure. Any defects or leaks revealed will be located and repaired and another pressure test run before backfilling.

L. Backfilling

1. All thrustblocking shall be inspected by the Landscape Architect and/or Owner's representative prior to backfilling. The Contractor shall notify the Landscape Architect directly at least two days in advance of the need for such inspections. Should the Contractor fail to notify the Landscape Architect and obtain such inspections, the Contractor shall expose any areas for which thrustblocking is required, if so directed by the Landscape Architect.
2. All lines, whether subject to pressure testing or not, shall be visually inspected for leaks by conducting an operation test prior to backfilling of trenches.
3. Backfill shall be the original soil excavated, except that any rocks, debris, and other foreign matter encountered shall not be put back, but shall be disposed of by removal from the site. Any new fill required shall be suitable for the service intended, and shall be approved by the Landscape Architect.
4. The trenches shall be backfilled with the excavated materials approved for backfilling, deposited in 6" layers and compacted until the installation has a cover equal to but not greater than 2" above existing ground. Backfilling shall occur simultaneously on both sides of the trench to avoid injurious pressures. The compaction of the filled trench shall be at least equal to that of the surrounding undisturbed material. Settling with water shall not be permitted. Sleeving locations shall be marked with painted 2 x 4's and maintained until unnecessary for irrigation.
5. Whenever the trenches have not been properly filled, or if settlement occurs, they shall be refilled, compacted, smoothed off, and finally made to conform to the surface of the ground, and the Contractor shall be responsible for the restoration of sod and other landscaping.

M. Layout and Installation of Heads

1. The irrigation system shall be installed with careful consideration to the location of plant material in order to avoid blockage of spray to ensure that all plants receive sufficient water.
2. All irrigation heads installed in the vicinity of any structure shall be a minimum of 12" from walls, and shall be adjusted to prevent excess water from hitting the buildings, walls, walks, etc. All sprinklers shall also be adjusted to minimize overspray onto paved surfaces. Low angle and adjustable nozzles shall be used where needed to avoid overspray.
3. All heads shall be installed no more than 3" away from curbed pavement and no more than 10" away from uncurbed edges of pavement. In sodded

areas, heads shall be located abutting the gravel wall base and far enough from the edge of pavement to allow for edging without damage to the head, yet be within the parameters stated.

4. Adjusting of the heads in regard to height, pattern, and radius shall be done in all areas to obtain the best coverage with regard to the areas and the landscaping.
 5. Risers are prohibited unless specified by the plans or approved by the Landscape Architect. All irrigation heads on risers shall be rigidly secured in a plumb position using 30-inch angle iron stakes and stainless steel clamps. Risers located in beds shall be no closer than 18" to the edge of the bed.
 6. Where specified, all risers and exposed distribution piping shall be painted with flat dark brown or black enamel. Risers and stake heights may require increases in certain areas for optimum performance.
 7. When heads or nozzles are set, risers where specified shall be finally adjusted to be even with or no more than 4" above installed plants.
- N. Wiring or tubing to the valves shall be installed in the same trench as the mainline where possible, and shall otherwise be installed in conduit with proper fittings and connectors. All electrical work shall be in accordance with the applicable portions of the National Electric Code and all local codes. All zone wire and common wires shall be coiled within the valve box. Wiring entering each controller shall be installed in a neat and orderly fashion.
- O. After installation, the system shall be operated by the Contractor long enough for the flows, coverage, and water patterns to be observed. During this period, any adjustment of nozzle pattern or relocation of heads required to produce uniform, satisfactory coverage shall be performed. Any objectionable splash shall be corrected by baffles, shields, or other methods approved by the Landscape Architect.
- P. Programming of the controller(s) shall be performed by the Contractor under the direction of the Landscape Architect and/or Owner. Operating instructions and laminated zone schedules shall be mounted inside the controller covers, or as otherwise directed by the Landscape Architect; all labeling of zones and schedules shall be done in permanent ink. An additional set of instructions and zone schedule copies shall be submitted to the Landscape Architect as a condition of final payment certification.
- Q. Completion and Acceptance:
1. Completion of work shall mean the full and exact compliance and conformity with provisions expressed or implied in the drawings and specifications, and as otherwise directed by the Landscape Architect, as

well as submittal of the required as-built plans, warranties, operational information, and other required documents comprising the Owner's Manual.

2. All work under this contract shall not be finally accepted until expiration of the guarantee period which shall commence on the date of the retainage release.
3. The Contractor shall demonstrate the entire system to the Landscape Architect, proving that all remote control valves are properly balanced, that all heads are properly adjusted for radius and arc of coverage, and that the system is workable, clean and efficient. This shall be a requirement for acceptance of the work.
4. The Contractor shall also furnish two copies of an Owner's Manual containing all operational information, directions, manufacturer's manuals, warranties and cut sheets or catalog pages for the major system components; the Owner's Manual shall be well-organized and neatly bound in a three-ring binder, and submitted along with other necessary items, such as keys for the controllers, as necessary.

R. Final Inspection and Job Closeout Procedures

1. A final inspection will not be scheduled until the work meets the definition of being "substantially complete," meaning that all work is complete per the plan, specs, and field direction provided by the Landscape Architect. The Contractor is responsible for determining that the job is substantially complete and has been properly maintained, before requesting a final inspection.
2. The following documents shall be submitted to MPA and determined to be in complete and acceptable condition before the final inspection will be scheduled:
 - a. Checklist (form provided with Specifications).
 - b. As-Built Landscape Plan.
 - c. As-Built Irrigation Plan.
 - d. Zone Schedule and Operating Times (on the plan).
 - e. Confirmation that zones are properly identified on the chart mounted inside the controller, with standardized designations and clear area locations.
 - f. Irrigation Operations manuals (2 copies).
 - g. Warranty Statement (with blanks for dates to be filled in by MPA).
 - h. Grounding Certification for controller(s), if applicable.
 - i. Contractor's Affidavits and Lien Releases
3. If the Landscape Architect finds that the job for which an inspection has been scheduled has numerous, obvious, or significant deficiencies, which

the Contractor should know to be unacceptable, the Landscape Architect reserves the right to cancel the inspection and reschedule it when the job is actually ready for inspection.

4. When a final inspection is scheduled, the job shall be in a maintained condition, as described in these specifications. The inspection will be cancelled for any job found not to meet this requirement. At no time before turnover shall the job be allowed to have an unkempt or poorly maintained appearance.
5. Upon the Landscape Architect's determination that all submittals are complete and professionally acceptable, and the Contractor's affirmation that the job is substantially complete and will be in the properly maintained condition, an inspection will be scheduled. It may take up to one week for this to occur, due to scheduling and notification requirements.
6. The Contractor is required to visit the job within 24 hours of the scheduled inspection to make sure that the job is ready, with the irrigation system properly operating, and with all required maintenance having been performed. The Landscape Architect shall be notified immediately if the inspection cannot occur for any reason.
7. The Contractor shall provide a minimum of two personnel for the final inspection. The owner or other senior person shall accompany the Landscape Architect's representative during the inspection, and another qualified employee shall be stationed at the irrigation controller, fully capable of operating it per instructions given via radio during the inspection. The final inspection will be cancelled if this requirement is not met.
8. During the inspection, the Contractor shall be responsible for taking thorough notes on all deficiencies identified, to insure that they are properly addressed and corrected. Minor deficiencies that are immediately corrected by the Contractor's personnel, may not be necessarily included on the punchlist. The Contractor shall not rely on receiving the punchlist to begin correcting the noted deficiencies, as the punchlist may take up to one week to be prepared and issued. Rather, the Contractor shall rely on his own notes from the final inspection to begin making the required corrections as soon as possible, and in no instance shall these corrections take longer than the 14 calendar days allowed to complete all punchlist requirements.
9. A maximum of 14 days is allowed for punchlist completion. Liquidated damages may be assessed if this is neglected. A reinspection shall be requested by the Contractor when the punchlist is complete. The reinspection may be handled informally by the Landscape Architect, or with the Contractor's attendance required, at the sole discretion of the

Landscape Architect.

10. When the punchlist is complete as determined by the reinspection, the turnover will be confirmed via memo to the Landscape Architect, and the Contractor's Affidavit shall be faxed to the Landscape Architect and the original copy mailed to the Landscape Architect within three days of the turnover memo date.
11. The Landscape Architect will establish specific, additional requirements for turnover of any Maxicom jobs, including requiring third party certification of Maxicom systems to insure strict compliance with installation and performance standards. Such requirements shall be coordinated with the Contractor prior to job turnover.

S. Guaranty and Replacement:

1. The Contractor shall guarantee all materials and work for a period of no less than one year from the date of release of retainage for the job, or any defined phase of the job. The Contractor shall furnish warranties in writing, certifying that the quality and workmanship of all materials and installation furnished are in accordance with these specifications and in accordance with original manufacturers' warranties. The Contractor shall further see to the fulfillment of all manufacturers' warranties.
2. Should the Contractor be notified that work or replacements are warranted under these conditions, the required service and/or replacements shall be provided promptly within 3 calendar days.

• END SECTION 2.2A •

SECTION 2.2B: LANDSCAPING

PART 1: GENERAL

- A. The Landscape Contractor (hereinafter, the Contractor) shall be responsible for: site preparation; finish grading, including 4" +/- to final grade; grassing; supplying and planting of trees, shrubs, and other plant material in accordance with sound nursery practices; and maintaining and watering them until final completion and acceptance by the Owner; and other specific work as called for or implied in the plans and specifications.
- B. The Landscape Architect or his representative(s) shall have the right, at any stage of the operations, to reject any and all work and materials which, in his opinion, do not meet the requirements set forth in the plans and specifications. Such rejected material shall be immediately removed from the site and acceptable material substituted in its place.
- C. The Contractor shall be responsible for the careful and thorough removal of weeds, grass, and other vegetation in the areas to be planted and sodded, unless otherwise directed by the Landscape Architect. Repeated applications of appropriate herbicides before and after plant installation to kill and to prevent regeneration of weeds and grass in such areas shall be performed by the Contractor.
- D. The Contractor shall ensure that the Landscape Architect is notified of any excess limerock or other unsuitable materials found in the planting areas. Planting in limerock contaminated soil shall be absolutely unacceptable, and failure to notify the Landscape Architect of such conditions will make the Contractor entirely responsible for corrective measures – including removals and replacements of plant materials and soil – if such conditions are discovered after the fact during installation through the warranty period, regardless whether such conditions previously escaped detection. Should any objectionable materials such as old concrete, bricks, or other debris be encountered during planting operations, they shall be removed from the site by the Contractor and properly disposed of.
- E. The Contractor is entirely responsible for the work until the job is substantially complete as determined by the Landscape Architect (see PART 3, Item Q.1.), and shall also be responsible for provisions required for final acceptance (see PART 3, Items Q and R).

PART 2: MATERIALS

A. Fertilizer:

All fertilizer for shrubs, specimens, trees, and palms shall be Agriform® tablets, or approved equal, applied according to the manufacturer's instructions. Plants shall be fertilized with Agriform tablets applied according to the manufacturer's instructions. Fertilizer for sod areas shall be pelletized organic 6-6-6 with minor

elements, applied prior to sodding at the rate of 16 lbs. per 1000 sq. ft. Proof of purchase, delivery, and/or use on the job of all fertilizers shall be provided to the Landscape Architect via invoices, delivery slips, bills of lading, or any other such documents satisfactory to the Landscape Architect.

Fertilizer for annuals shall be "Flower Saver Plus" by Plant Health Care, Inc. (800/421-9051), applied per the manufacturer's directions as outlined in the data sheet attached to these Specifications.

B. Backfill:

Backfill used for all plantings except annual beds shall consist of two parts of the existing soil amended with one part of domestic peat or planting mix, or with one part of sandy fill in heavy soils; (excessively heavy soils, if encountered by the Contractor, shall be reported promptly to the Landscape Architect).

Backfill for annuals shall be amended with "Flower Saver Plus" by Plant Health Care, Inc. (800/421-9051), applied per the manufacturer's directions as outlined in the data sheet attached to these Specifications.

C. Sod areas shall be fertilized prior to sodding at the rate of 16 lbs. per 1000 sq. ft. using pelletized organic 6-6-6 with minor elements.

D. Terra-Sorb®, or approved equal, shall be incorporated into the planting soil of all trees and palms in sandy soils only at the following rates:

15-gallon containers	= one (3 oz.) Handy Pac
30-gallon containers	= two (3 oz.) Handy Pacs
Up to 3 ½" caliper	= one (3 oz.) Handy Pac
4" to 5 ½" caliper	= two (3 oz.) Handy Pacs
Palms greater than 12 feet (OA ht)	= two (3 oz.) Handy Pacs

Broadcast ½ throughout the planting pit; mix ½ with backfill.

E. Herbicide:

Liquid herbicide shall be of a formulation capable of acting systemically to kill the root systems of existing grasses and weeds in bed areas to be planted, and shall have no residual effect on new plantings. Pre-emergent herbicide shall be of a formulation capable of controlling most broadleaf weed germination. Specific brands and formulations shall be submitted for approval by the Landscape Architect, prior to application.

F. Plant Material:

1. Nomenclature: Names used are intended to conform to the those given in Standardized Plant Names (most current edition) prepared by the American Joint committee on Horticultural Nomenclature. Names not

included therein are to conform generally with names accepted in the nursery trade of the Central Florida region. The Landscape Architect shall be consulted in reference to any issues of nomenclature.

2. Quality:

- a. New plant material shall be graded Florida No. 1 or better as outlined in the current edition of Grades and Standards for Nursery Plants, State Plant Board of Florida, 1998.
- b. All plants not listed in Grades and Standards for Nursery Plants shall conform to a Florida No. 1 as to: (1) health and vitality, (2) condition of foliage, (3) root system, (4) freedom from pest or mechanical damage, (5) heavily branched and densely foliated according to the accepted normal shape of the species.
- c. All plant material must have fully developed root systems; be heavily branched and foliated; have appropriate growth habit for the species; be healthy and pest and disease-free; and be selected for size based on balanced height, spread and form, rather than on extreme dimensions.
- d. Verification of specified grades is to be determined at the time of delivery by the Contractor. Grades determined at the time of inspection by the Landscape Architect shall be based on the growth characteristics and condition of the plant at the time of inspection. The grade shall not be based on any future or predicted growth potential of the plant.
- e. All plant material shall be subject to inspection at any time by the Landscape Architect to determine adherence to quality and size.

3. Root Systems: Plant material specified by container size shall have fully developed root systems consistent with the size of the container specified. Evidence that any plant material has recently been transplanted from smaller containers or from "grow bags" into the size of container specified for the job without sufficient development of the root systems shall be cause for rejection. Likewise, any plant material having encircling roots, or an insufficiently developed root system or undersized rootball for the specified size shall not be acceptable.

4. State Certification: The Contractor shall be responsible for all Certificates of Inspection of plant material shipments required by local and federal authorities.

5. Substitutions: Where the plans or specs identify approved sources for any plant materials, no alternative source(s) shall be approved without written authorization by the Landscape Architect during the bid process. Substitutions or decreases in specified sizes of plants will be permitted

only with authorization of the Landscape Architect upon submission of proof that the plant is not obtainable as specified from at least six approved sources.

- G. Sod shall be of the species and variety noted in the plans, as indicated in the areas shown. If requested, the Contractor shall submit certifications substantiating that sod supplied is the variety specified. The sod shall be of firm, tough texture having a compact growth of grass with good root development. It shall contain no visible broadleaf weeds and shall be visibly consistent with no obvious patches of foreign grasses. The sod shall have a good layer of earth and be free from fungus, vermin, and disease. It shall be neatly mowed and be mature enough that when grasped at one end, it can be picked up and handled without damage. Sod shall not be accepted if it has not been (or does not appear to have been) freshly cut.
- H. Seeding: If applicable, areas to be seeded shall be fertilized with pelletized organic 6-6-6 with minor elements at the rate of 16 lbs./1000 sf. Argentine Bahia seed and brown top millet seed, or annual rye, as applicable, shall be distributed or broadcast evenly at the rate of 8 lbs/1000 sf and 2 lbs/1000 sf, respectively.
- I. Mulch shall be clean, fresh baled Pine Straw, unless otherwise noted in the plans. Source shall be approved via sample submittal to the Landscape Architect.
- J. B&B Plants: B&B plants shall have been dug and hardened off at the nursery for a minimum of 30 days. All rootballs shall be burlapped or otherwise bound in biodegradable material and tied securely, in accordance with standard nursery practice. No plant shall be accepted when the ball of earth surrounding the roots has been damaged or broken. The diameter of the ball must be sufficient to encompass the fibrous and feeding root systems necessary for the best development of the plant.
- K. All palms on the job shall have reasonably matched straight trunks and shall be planted perpendicular to normal ground plane, unless otherwise specified. Palms having misshapen, inconsistently narrow, excessively scarred or scraped, curved, or burned trunks will not be accepted. Sabal palmetto and Washingtonia robusta clear trunk heights shall be measured after all dead leaf-bases (boots) have been removed and shall be taken from the lowest living leaf-base to the finished grade of the immediate area. Sabal Palm fronds shall be "hurricane-cut", unless otherwise directed. Phoenix spp. and Butia capitata clear trunk heights shall be measured from the base of the bud to the finished grade of the immediate area. All Palms shall be delivered to the job site with clear trunk heights as specified. Planting any palms (including Sabals) deeper than the depth at which they were grown to adjust the clear trunk heights or to avoid bracing shall not be acceptable.
- L. Transplanted plant material shall be dug to minimize root damage and shock. The plants shall be set perpendicular to normal ground plane, so that the final level of ground around the plant conforms generally to the surrounding grades

and shall be settled by at least one thorough watering-in of the plant. Soil berms or "saucers" shall be formed around the plants to hold and retain water.

PART 3: EXECUTION

- A. The Contractor is responsible for ensuring that surface drainage is not affected or hindered in any manner due to any reason. The Contractor shall notify the Landscape Architect of any situation where the existing subsoil is substandard and may affect natural drainage, and where the proposed grading conflicts with drainage conditions in order to determine appropriate field changes. The Contractor shall familiarize himself with the site, notify the Landscape Architect of any conflicting elements or required adjustments in grading, and plan to gain an understanding of these requirements. Any questions as to the intent or form of the site grading shall be directed to the Landscape Architect.
- B. The Contractor shall be responsible for providing the source of water during the entire landscape installation period (i.e., watering truck) if a source of water does not exist on site. Whether or not the irrigation system becomes operational during the landscape installation, the Contractor shall remain solely responsible for providing sufficient water until job completion.
- C. The Contractor shall be responsible for ensuring that all plant material delivered to the site is maintained and protected from damage, both prior to and after planting.
All plants shall be maintained and watered as necessary at the site. No plants shall remain stockpiled on the site for an undue period of time, as determined by the Landscape Architect. B&B plants which cannot be planted immediately shall have their earth balls covered with moist soil or mulch for protection from drying out.
- D. Prior to commencing work, the Contractor shall apply post-emergent herbicide to any existing weeds, grass, and other vegetation, allowing sufficient time for the chemical to work and the results to be noticeable. Repeated applications shall occur in order to achieve a thorough kill. Vegetation shall then be mechanically removed during finish grading operations. Pre-emergent herbicide shall be applied in conjunction with the landscape installation. The objective of these measures is to provide the Owner with a reasonably weed-free installation. The presence or regeneration of significant weeds and grasses in the turf and beds, at the time of completion and within a period of one month afterwards, shall be unacceptable and the Contractor shall be required to initiate additional efforts to successfully meet the performance requirements of this section, as a condition for final payment (retainage) release.
- E. The Contractor shall make no changes or substitutions without approval by the Landscape Architect. The Contractor shall advise the Landscape Architect of any conditions that differ from the plan, and that may require a change in the landscape design. The Landscape Architect maintains the responsibility and

right to inspect the locations of trees, shrub and groundcover masses, and bedlines before the plant material is installed. The Contractor shall request the Landscape Architect's approval of field locations prior to planting. The Contractor shall be responsible for relocating any plantings for which the Landscape Architect's approval was not specifically requested and given, if in the Landscape Architect's opinion there is reason to do so.

- F. Circular holes with vertical sides shall be excavated for all plants. The diameter of pits for trees 10 feet or less in height or grown in a 15-gallon container (or equivalent) or smaller shall be twice the diameter of the rootball. The diameter of pits for all palms and for trees greater than 10 feet in height or grown in a container larger than 15-gallon (or equivalent) shall be 2 feet greater than the diameter of the rootball. Diameter of holes for shrubs shall be at least 1 foot greater than the rootball. Earth below where the rootball will rest shall be loosened and shall be amended with coarse sand where heavy soil or clay conditions are encountered.
- G. New plantings shall be set so that the final level of ground around the plant, after settling, shall conform to the surrounding grades, or as otherwise specified; this requires the plants to be set between 1" to 4" above new grade to allow for settling.
- H. Special Bed Preparation
 - 1. Beds for annuals shall be excavated to a depth of 12 inches. Should poor soils be found below the excavated fill, the Contractor shall notify the Landscape Architect prior to backfilling. Backfill shall consist of equal parts of clean sandy fill and potting soil mix, well mixed. "Flower Saver Plus" shall be incorporated into the entire bed area at the rate recommended by the manufacturer, broadcast by shaker, spreader, or hand, then rototilled in. The finished surface, compacted and settled, shall conform generally to the required grade.
 - 2. Beds for plant material 3 gallon or smaller shall be amended first by rototilling the planted areas to a depth of 6-8". Three inches of organic planting soil mix shall then be thoroughly amended into the previously rototilled area to a depth of 6-8". If necessary, existing soil shall be removed so that the finished bed area is at the appropriate elevation in respect to adjacent landscape, lawn, and hardscape areas, and to adjacent structures. This measure shall be included in the line item cost for Site Preparation.
- I. Setting Plants: All plants shall be centered in the planting holes and set upon at least 4 inches of compacted planting soil to such a depth that the top of the rootball is 1 to 2 inches above finished grade so that finished grade level at which the plant rests after settlement and mulching will be the same at which the plant was grown. Container-grown plants shall be carefully removed from the container so as to avoid damage to the root system. No burlapped plants shall be completely unwrapped; rather the burlap loosened and pulled down from the

top 1/3 or so of the rootball. Wire mesh shall also be bent down from the top 1/3 of the rootball and tucked under or snipped off. Nylon straps and any other non-biodegradable material shall be completely removed prior to installation. All root control bags and synthetic burlap shall not be entirely removed, but the sides and bottom thoroughly sliced to allow unrestricted root growth. The top edge of the bag shall be pulled down so as to not become a "wick" for water absorption. Roots shall be spread in their normal position, and all frayed or broken roots shall be cut off cleanly. Planting holes shall be thoroughly backfilled with the specified soil mixture to 3-4" from the top of the root ball. Specified fertilizer and fertilizer tabs shall be installed pursuant to the manufacturer's instructions. Soil "saucers" shall be formed around the trees and shrubs to hold and retain water. No filling around the trunks will be permitted. Care must be taken by the Contractor to set the plants to achieve the intended compositional character of the landscape, with consideration for the best exposure of each plant's "good side" to adjacent structure, walks, etc.

- J. The Contractor shall ensure that all plant beds abutting a curb or pavement edges are graded so that washing of soil and/or mulch is prevented. This shall be done by cutting a "lip" along such edges, and grading a flat strip or back-sloped area that will intercept rainfall and drainage wash under normal conditions. In no case shall a sloped bed abut a curb or pavement edge in a way that soil and/or mulch would frequently wash out, creating maintenance problems.
- K. All trees 10' or more in height shall be securely anchored using either the Terra Toggle Root Ball Tree Anchor System, manufactured by Accuplastics, or the Root Ball Anchoring System, manufactured by Arborguy. When using the Arborguy Systems, HD anchors will be required. Anchors must be installed at a minimum depth of 48". All trees 10' or less in ht. shall be guyed using two lodge poles or 2" x 2" stakes with secure ties or straps that allow adjustment to maintain tightness. Palms shall be braced with 2" x 4" wood braces. If site specific conditions require, alternate guying and staking methods and materials may be used if approved in advance by the Landscape Architect. The Contractor may request a waiver of the requirement to brace palms and guy certain other trees, subject to approval by the Landscape Architect. Under any circumstances, the Contractor shall be responsible for any and all consequences of any material which leans or falls during the one year warranty period, including resetting and restaking/reguying or replacing the material and repairing any damages, except under circumstances where documented wind conditions exceed 35 mph.
- L. All planting areas shall be raked smooth, and all rocks and debris shall be removed. The finished planting areas shall be top-dressed with 3" of the mulch material specified in Part 2 and/or on the plan.
- M. Pruning shall be done as necessary, but shall be limited to removing dead or injured twigs and branches to compensate for the loss of roots as a result of the transplanting process or as directed by the Landscape Architect for visibility. Pruning shall be done in such a manner as not to change the natural habit or

shape of a plant, unless specifically requested.

- N. Sodding: All areas to be sodded must be fine-graded, eliminating all bumps, depressions, stones, and other debris. Fertilizer shall be applied prior to sodding, using pelletized organic 6-6-6 with minor elements at 16 lbs per 1000 sf. The solid sod shall be neatly laid, in the areas indicated in the plans, with closely abutting joints. All gaps must be plugged with pieces of sod and the finished lawn must be machine rolled within 24 hours to achieve a uniform surface. The Contractor shall be responsible for bringing the sod edge in a neat, clean manner to the edge of all pavements and planting beds. Where the area to be sodded abuts existing sod, curbs, edgings, and/or pavements, the new sod shall be laid in a clean, level manner without noticeable grade differences, rough edges, or gaps.
- O. Where seeding is a part of the work, grass seed shall be distributed or broadcast evenly at the rates specified in Part 2, Item H. Seed and fertilizer shall be incorporated into the soil at a depth of ½ to 1 inch and rolled two directions with a 200 lb. roller immediately after seeding. Clean shredded straw, free from insects, sticks and other debris, shall be blown or distributed evenly to provide a solid uniform cover. The entire area shall be disked to a depth of 1 to 2 inches to ensure that the straw makes contact with the soil.
- P. Maintenance:
1. The Contractor shall be responsible for maintenance of the project during construction and shall bear all risk of loss, theft, or damage to the project by any cause whatsoever during the term of construction, and until all punchlist items are satisfactorily resolved and the job is officially turned over by the Landscape Architect to the Owner for maintenance.
 2. Maintenance by the Contractor shall commence after each plant is planted and shall continue until all plants are installed and the job is completed and all punchlist items are satisfactorily resolved, as determined by inspection by the Landscape Architect.
 3. Plantings shall be maintained by watering, removing dead branches, resetting plants to proper grades and upright positions, staking to ensure vertical growth, weeding, mowing, and any other operations necessary to complete maintenance, including the replacement of any material that exhibits visible and unsightly evidence of "shocking" without full recovery prior to job completion and final inspection. Areas without irrigation and transplanted material shall be watered until all punchlist items are satisfactorily resolved.
 4. The job shall be in a well-maintained condition at the time of final inspection, as well as at the time of punchlist completion, whereby as a condition for acceptance and maintenance turnover, the job shall have been mowed and groomed within a period of three (3) days.

5. If any job requires on-going or excessive maintenance because the final inspection or turnover is delayed due to reasons beyond the Contractor's control, it is the Contractor's prerogative to raise the issue of fair compensation. For any jobs that may be maintained by the Contractor over an extended period with compensation for maintenance, an application of fertilizer shall occur prior to turnover.

Q. Completion and Acceptance:

1. Completion of work shall mean the full and exact compliance and conformity with provisions expressed or implied in the plans and Specifications, and as otherwise directed and determined by the Landscape Architect.
2. The job shall not be accepted as complete unless maintenance has been performed as specified in Item P, above.
3. All work under this Contract shall not be finally accepted until expiration of the warranty period, which shall commence on the date of the retainage release.

R. Final Inspection and Job Closeout Procedures

1. A final inspection will not be scheduled until the work meets the definition of being "substantially complete," meaning that all work is complete per the plan, specs, and field direction provided by the Landscape Architect. The Contractor is responsible for determining that the job is substantially complete and has been properly maintained, before requesting a final inspection.
2. The following documents shall be submitted to MPA and determined to be in complete and acceptable condition before the final inspection will be scheduled:
 - a. Checklist (form provided with Specifications).
 - b. As-Built Landscape Plan.
 - c. As-Built Irrigation Plan.
 - d. Zone Schedule and Operating Times.
 - e. Confirmation that zones are properly identified on the chart mounted inside the controller, with standardized designations and clear area locations.
 - f. Irrigation Operations manuals (2 copies).
 - g. Warranty Statement (with blanks for dates to be filled in by MPA).
 - h. Grounding Certification for controller(s), if applicable.
 - i. Contractor's Affidavits and Lien Releases
3. If the Landscape Architect finds that the job for which an inspection has

been scheduled has numerous, obvious, or significant deficiencies, which the Contractor should know to be unacceptable, the Landscape Architect reserves the right to cancel the inspection and reschedule it when the job is actually ready for inspection.

4. When a final inspection is scheduled, the job shall be in a maintained condition, as described in these specifications. The inspection will be cancelled for any job found not to meet this requirement. At no time before turnover shall the job be allowed to have an unkempt or poorly maintained appearance.
5. Upon the Landscape Architect's determination that all submittals are complete and professionally acceptable, and the Contractor's affirmation that the job is substantially complete and will be in the properly maintained condition, an inspection will be scheduled. It may take up to one week for this to occur, due to scheduling and notification requirements.
6. The Contractor is required to visit the job within 24 hours of the scheduled inspection to make sure that the job is ready, with the irrigation system properly operating, and with all required maintenance having been performed. The Landscape Architect shall be notified immediately if the inspection cannot occur for any reason.
7. The Contractor shall provide a minimum of two personnel for the final inspection. The owner or other senior person shall accompany the Landscape Architect's representative during the inspection, and another qualified employee shall be stationed at the irrigation controller, fully capable of operating it per instructions given via radio during the inspection. The final inspection will be cancelled if this requirement is not met.
8. During the inspection, the Contractor shall be responsible for taking thorough notes on all deficiencies identified, to insure that they are properly addressed and corrected. Minor deficiencies that are immediately corrected by the Contractor's personnel, may not be necessarily included on the punchlist. The Contractor shall not rely on receiving the punchlist to begin correcting the noted deficiencies, as the punchlist may take up to one week to be prepared and issued. Rather, the Contractor shall rely on his own notes from the final inspection to begin making the required corrections as soon as possible, and in no instance shall these corrections take longer than the 14 calendar days allowed to complete all punchlist requirements.
9. A maximum of 14 days is allowed for punchlist completion. Liquidated damages may be assessed if this is neglected. A reinspection shall be requested by the Contractor when the punchlist is complete. The reinspection may be handled informally by the Landscape Architect, or

with the Contractor's attendance required, at the sole discretion of the Landscape Architect.

10. When the punchlist is complete as determined by the reinspection, the turnover will be confirmed via memo to the Landscape Architect, and the Contractor's Affidavit shall be faxed to the Landscape Architect and the original copy mailed to the Landscape Architect within three days of the turnover memo date.
11. The Landscape Architect will establish specific, additional requirements for turnover of any Maxicom jobs, including requiring third party certification of Maxicom systems to insure strict compliance with installation and performance standards. Such requirements shall be coordinated with the Contractor prior to job turnover.

S. Warranty:

1. Warranty: All new plant material, except sod and trees, shall be guaranteed for 90 days, and shall be alive and in satisfactory growth for each specific plant at the end of the warranty period. Trees, Palms, and specimen plants shall be guaranteed for a period of 1 year, and sod for a period of 60 days. The warranty period shall commence upon the date of release of the retainage for the job, or for any defined phase of the job.
2. At the end of the warranty period, and at any time during that period, any plant material that has died or is not in satisfactory condition as determined by the Owner and the Landscape Architect, shall be removed and replaced with new healthy material of the original specified size and type within 10 calendar days. Excluded are replacements of plants due to acts of God, theft, vandalism, or acts of negligence on the part of others, and due to deleterious soil and/or drainage conditions which the Contractor documented to the attention of the Owner and Landscape Architect at the time of installation. The new material shall be guaranteed as outlined above, commencing the date accepted. The Contractor shall be responsible for the cost of all material and labor.
3. The time limit may be extended by agreement for any plant material in questionable condition at the time of the warranty period.

• END SECTION 2.2B •

Job Closeout Checklist

Date: _____

Project: _____

Contractor: _____

The following documents shall be submitted to MPA and determined to be in complete and acceptable condition before the Final Inspection will be scheduled.

_____ Landscape Plan for Markup (2 copies)

_____ Irrigation As-Built Plan for Markup (2 copies)

_____ Zone Schedule and Operating Times enclosed with Manual (1 copy)

* _____ Zone Schedule/Location that is properly identified on a chart, laminated and mounted inside the controller, with standardized designations and clear area locations. **Please do not submit a copy to MPA.**

_____ Owner's Manuals (2 copies)

_____ Contractor's Affidavit and Lien Release (1 copy)

_____ Warranty Statement (Leave blanks for dates to be filled in by MPA)

_____ Grounding Certification for Controllers (1 copy)

* **Only submit zone schedule and operating time with the manual if this information has not been provided on the plan.**

Please submit this form with the required documents.