

COFFEE RUSH

CAPE CORAL, FLORIDA

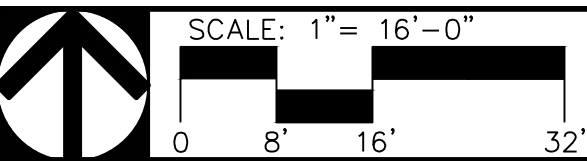
PREPARED FOR:
COFFEE RUSH FLORIDA, LLC
2315 Falcon Drive
West Elm, OR 97068

Sheet Title: IRRIGATION

IRRIGATION
SYSTEM PLAN
(Sheet 1 of 1)

Land Architects, Inc.

WILLIAM E. PRYSI, P.L.A., A.S.L.A.
REGISTERED LANDSCAPE ARCHITECT
FLORIDA LICENSE NO. 00001342

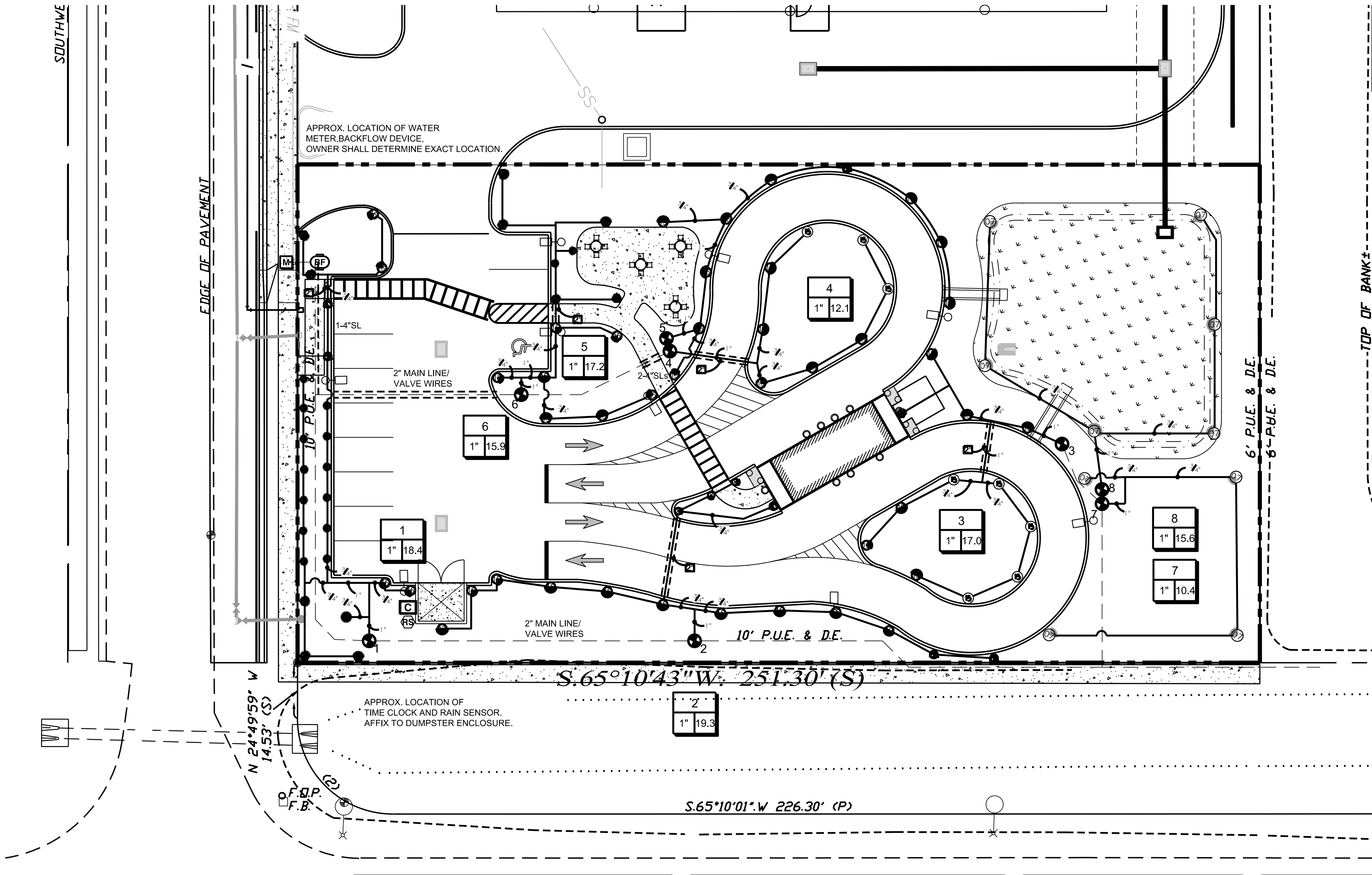


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Project No.	24033	Date	2024-09-26
PIC:	WEP	REVISIONS:	DATE: BY:
Design/Drawn By:	WEP/BV		
Plot C/TB File:	LAI-CTB_2024a		
File No.:	24033-IR01-Coffee Rush		
Attachments:	24033-IR01-Coffee Rush 24044-01-XLCase		

Sheet No.:

IR- 1.00
SHEET OF



NOTE:
ALL IRRIGATION EQUIPMENT AND PIPING ARE SHOWN FOR CLARITY PURPOSE ONLY AND SHALL BE
INSTALLED WITH IN ALL PROPERTY LINES AND AVOID ALL UTILITIES.

IRRIGATION SCHEDULE: (NOTE: IRRIGATION CONTRACTOR IS RESPONSIBLE FOR THEIR OWN MATERIAL TAKE-OFF QUANTITIES)

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	HUNTER INST-06-CV 4" STRIP TURF SPRAY 6" POPUP WITH CHECK VALVE HUNTER INST-06-CV 8" RADIUS		HUNTER MINI-CLIK RAIN SENSOR, MOUNT AS NOTED		HUNTER INST-12-CV 10' RADIUS SHRUB SPRAY 12" POPUP WITH CHECK VALVE, PRESSURE REGULATOR		HUNTER INST-04-CV-R-5-CST-B
	HUNTER INST-12-CV 12' RADIUS TURF SPRAY 6" POPUP WITH CHECK VALVE		WILKINS 2" PER LOCAL CODE		HUNTER INST-12-CV 15' RADIUS SHRUB SPRAY 12" POPUP WITH CHECK VALVE, PRESSURE REGULATOR		HUNTER PGJ-04
	HUNTER INST-06-CV 15' RADIUS TURF SPRAY 6" POPUP WITH CHECK VALVE		4" WELL WITH HOOVER HSRF-5LL-230/3-EL-W		HUNTER INST-00 4' STRIP SHRUB SPRAY ON FIXED RISER		HUNTER PGJ-04
	HUNTER INST-12-CV 8' RADIUS HUNTER INST-12-CV 4" STRIP SHRUB SPRAY 12" POPUP WITH CHECK VALVE, PRESSURE REGULATOR		IRRIGATION LATERAL LINE: PVC CLASS 160		HUNTER INST-00 8' RADIUS SHRUB SPRAY ON FIXED RISER		HUNTER PGJ-04
	HUNTER INST-12-CV 4' STRIP SHRUB SPRAY 12" POPUP WITH CHECK VALVE, PRESSURE REGULATOR		PIPE SLEEVE: PVC SCHEDULE 40 EXTEND SLEEVES 18 INCHES BEYOND EDGES OF PAVING OR CONSTRUCTION.		HUNTER INST-00 10' RADIUS SHRUB SPRAY ON FIXED RISER		HUNTER PGJ-04
	SHRUB SPRAY 12" POPUP WITH CHECK VALVE, PRESSURE REGULATOR		CLOW GASKETED ISOLATION VALVE SAME SIZE AS MAINLINE		HUNTER INST-00 12' RADIUS SHRUB SPRAY ON FIXED RISER		HUNTER PGJ-04
	HUNTER INST-00 15' RADIUS SHRUB SPRAY ON FIXED RISER		HUNTER INST-00 15' RADIUS SHRUB SPRAY ON FIXED RISER		HUNTER INST-00 15' RADIUS SHRUB SPRAY ON FIXED RISER		HUNTER PGJ-04

CONSTRUCTION APPLICATION NOTES:

- IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR ALL APPLICABLE FEES AND PERMITS.
- IRRIGATION CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL CODES AND SHALL CLARIFY ANY DISCREPANCIES ON THE PLAN PRIOR TO BIDDING.
- ALL PIPE AND WIRE UNDER PAVING SHALL BE PLACED IN SCHEDULE-40 PVC SLEEVES FOR THE FULL PAVEMENT COVERAGE LENGTH AND SHALL BE AT LEAST 24" (2 FEET) BELOW GRADE.
- MAINLINES SHALL BE BURIED TO PROVIDE A MINIMUM COVER OF 18", WHILE ALL LATERAL LINES SHALL HAVE A MINIMUM OF 12".
- THE CONTRACTOR SHALL TAKE CARE TO RE-ROUTE PIPING AS NECESSARY TO AVOID PLANT OR TREE ROOTS CONFLICTS.
- ALL IRRIGATION HEADS SHALL BE SITE ADJUSTED TO PREVENT WATER OVERTHROW ONTO BUILDING SURFACES, ROADWAYS, AND WALKWAYS.
- ALL PIPING DOWNSTREAM OF SOLENOID VALVE TO BE S.W. PR-160 PVC.
- ALL CONTROL WIRING TO BE 12/1 U.F. DIRECT BURIAL OR BETTER.
- INSTALL CONCRETE THRUST BLOCKS AT ALL DEAD END 90'S AND T'S, 2'-1/2" AND LARGER.
- MAINLINE, VALVES, ETC. MAY BE SHOWN OUT OF POSITION FOR GRAPHIC CLARITY. DRAWING IS DIAGRAMMATIC ONLY.

GENERAL LEGEND:

IRRIGATION LEGEND (LANDSCAPE PLAN SET ONLY):

SYMBOL	DESCRIPTION
	AUTOMATIC IRRIGATION TIMER / MOISTURE SENSOR (SEE DETAILS & SPECIFICATIONS)
	IRRIGATION WELL / PUMP STATION (SEE DETAILS AS APPLICABLE)
	IRRIGATION METER / BACK FLOW PREVENTION DEVICE (SEE DETAILS AS APPLICABLE)
	SLEEVING (SCH. 40 PVC) NOTE: ALSO SEE SITE UTILITY PLANS FOR SLEEVE LOCATIONS

IRRIGATION NOTES:

- FORMAL IRRIGATION PLANS FOR THIS PROJECT HAVE BEEN DEVELOPED AND ARE GENERALLY PART OF THE PERMIT SUBMITTAL DOCUMENTS. THE CONTRACTOR SHALL ADHERE TO THESE IRRIGATION DESIGNS AND SUBMIT BID IN ACCORDANCE THERETO. THE CONTRACTOR WILL MAINTAIN AS-BUILT DRAWINGS AS PART OF THE EXECUTION OF ANY WORK ON THE PROJECT. AS-BUILT DRAWINGS ARE REQUIRED AS PART OF THE CERTIFICATE OF COMPLIANCE PROCESS DEFINED BY THE LOCAL PERMITTING AGENCY.
- SHEET IR-1 (IRRIGATION GUIDELINES & DETAILS) IS PART OF AND INCLUDED WITH THESE PERMIT DOCUMENTS. THE CONTRACTOR WILL BE RESPONSIBLE FOR FOLLOWING THE TERMS OF THIS SHEET AND THE RESULTING IRRIGATION SYSTEM INSTALLED MUST BE COMPLIANT WITH THOSE TERMS AS A PREREQUISITE FOR SUBSTANTIAL COMPLIANCE.
- A WATER USE PERMIT (CONSUMPTIVE USE PERMIT) MUST BE OBTAINED PRIOR TO THE EXECUTION OF WORK ON THIS PROJECT. IF A METER IS SPECIFIED OR BEING USED, COORDINATION WITH THE RELATIVE UTILITY IS REQUIRED (IMPACT FEES MAY BE REQUIRED). IF AN APPLICABLE WATER USE PERMIT IS ALREADY ENFORCE, THE CONTRACTOR WILL ACQUIRE A COPY OF IT AND TAKE ASSURANCE TO BE COMPLIANT WITH IT.

IRRIGATION INSTALLATION DETAILS:

IRRIGATION DETAILS (Substitutions Only with Written Approval):

WELL SIZE:
CONTRACTOR TO PROVIDE A SIX INCH (6") WELL TO A DEPTH AS DEFINED BY THE WATER USE PERMIT.

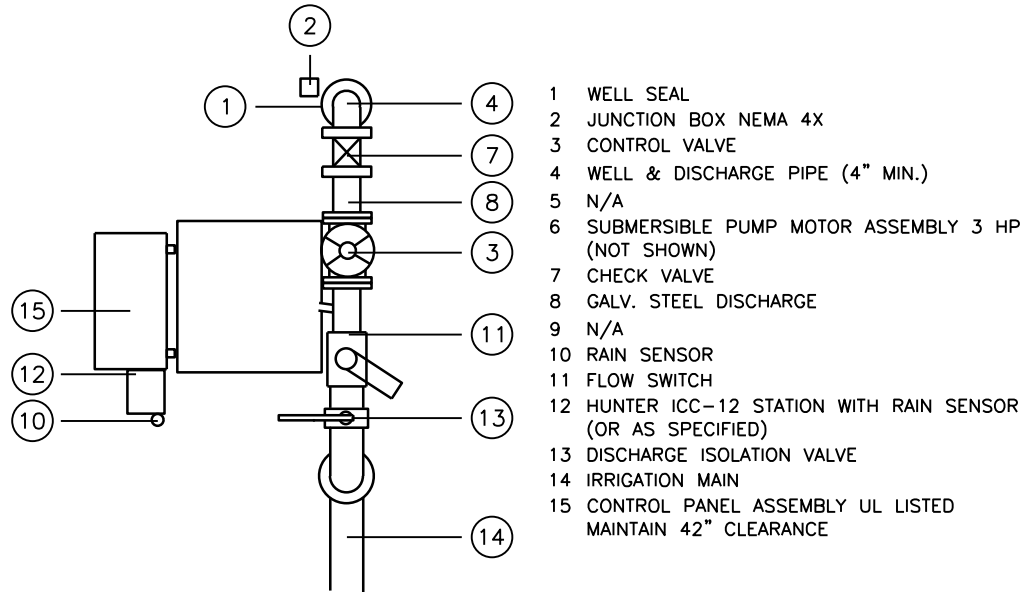
POWER:
THIS SYSTEM WILL FUNCTION ON SINGLE-PHASE POWER AND MUST BE PROVIDED TO THE SOURCE LOCATION.

NOTE:
DISCHARGE PIPES & HEADER TO IRRIGATION MAIN SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE WITH GALV. ROLL GROOVE FITTINGS. PUMP DROP PIPE SHALL BE SCHEDULE 80 PVC CERT-A-LOK. SET PUMP 60" ON 2" PIPE. ALL EXPOSED SUCTION & DISCHARGE PIPE SHALL BE GALVANIZED STEEL. WELL SHALL BE ONE SIZE LARGER THAN PUMP/MOTOR ASSEMBLY.

* OPTIONAL FEATURE INCLUDED IF NOTED IN MODEL NUMBER.

MINIMUM PUMP/WELL PERFORMANCE:
55 GPM @ 175 TDH

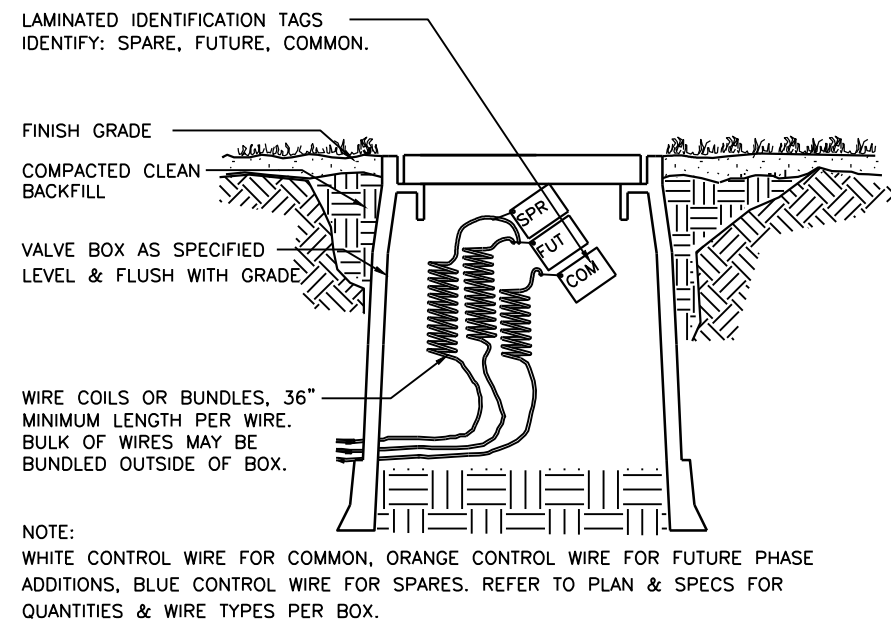
SAFETY FEATURES:
CLOCK START
-TRANSIENT SURGE
-NO FLOW



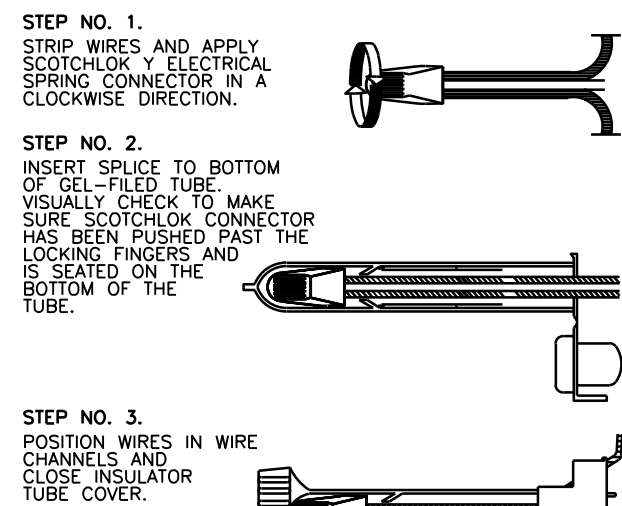
PLAN VIEW NTS
HOOVER PUMPING MODEL: HSE-5.0CS-A-E-24.W
Hoover Pumping Systems, Inc. Pompano Beach, Florida, Tel: 954-971-7350
FILE: PN6006 07/04 (CLATI ECONO CS)
CLATI: FILE: IS-D-HooverPS(Open5HP-1Phase)-SubPump(ClockStart)_v1a.dwg

SUBMERSIBLE PUMP SYSTEM DETAIL

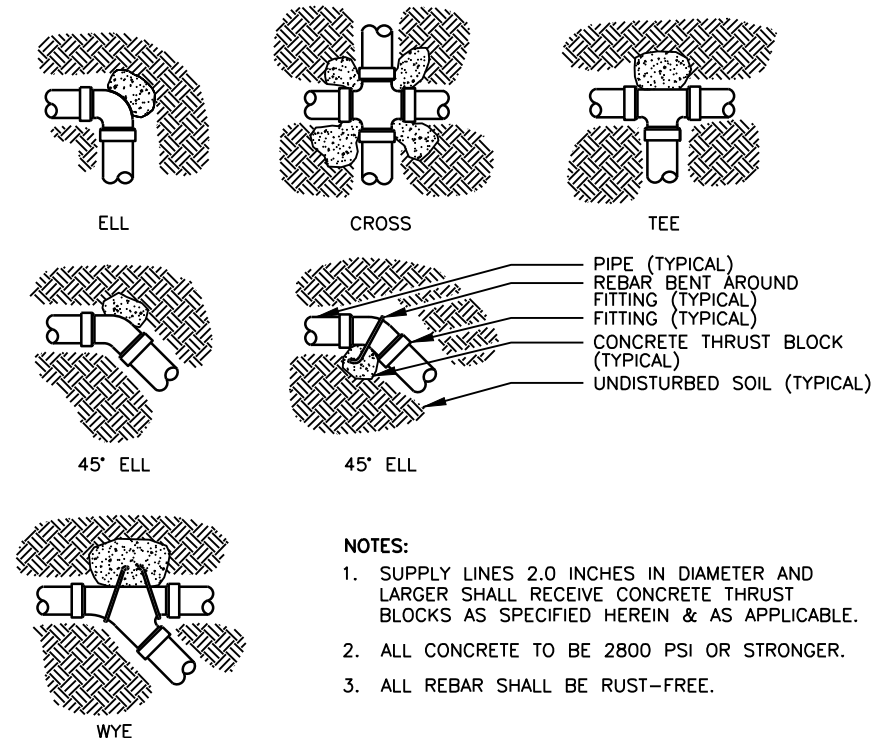
ECONO OPEN SYSTEM SINGLE WELL (5HP Single-Phase)
CLOCK START



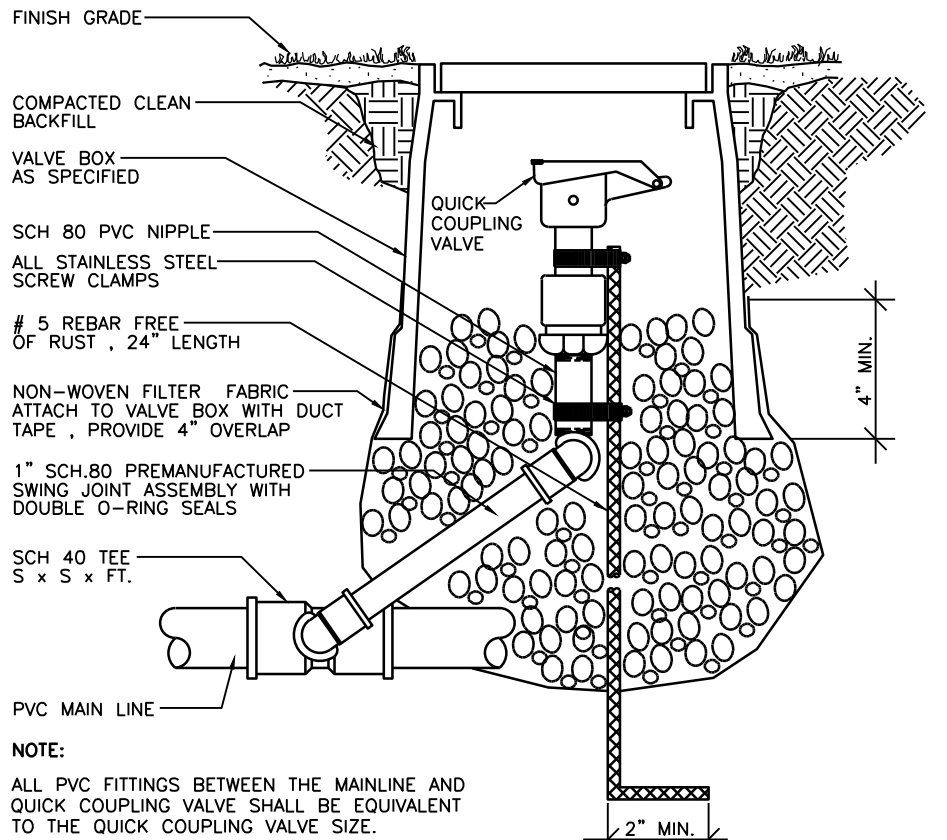
SPARE WIRE JUNCTION BOX DETAIL -TYPICAL
N.T.S.



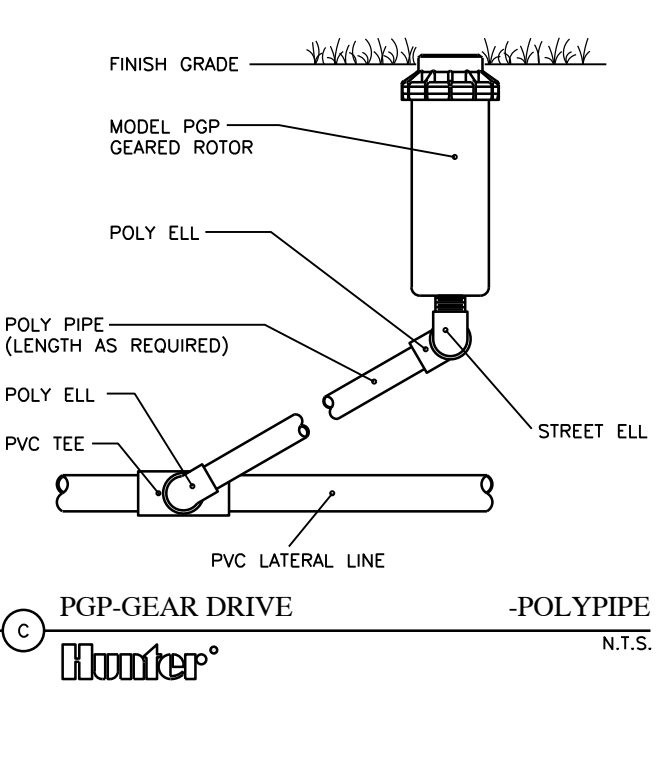
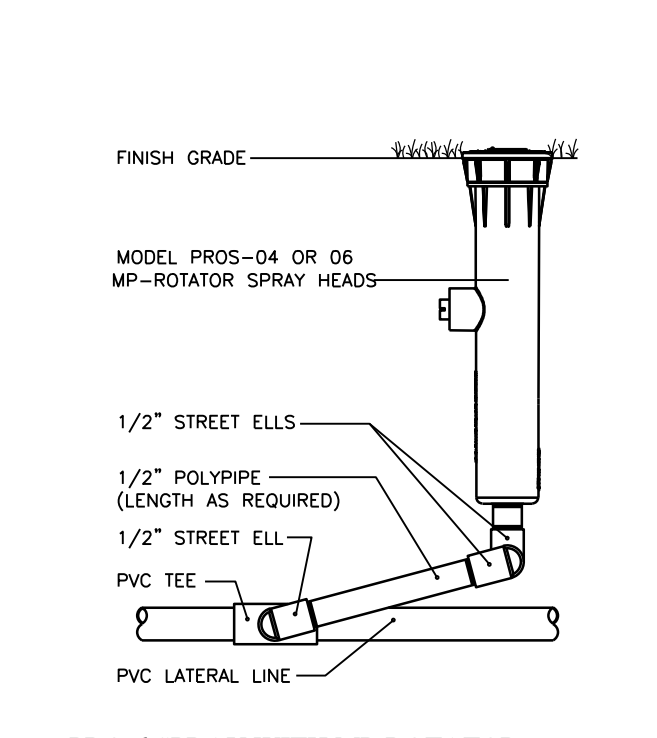
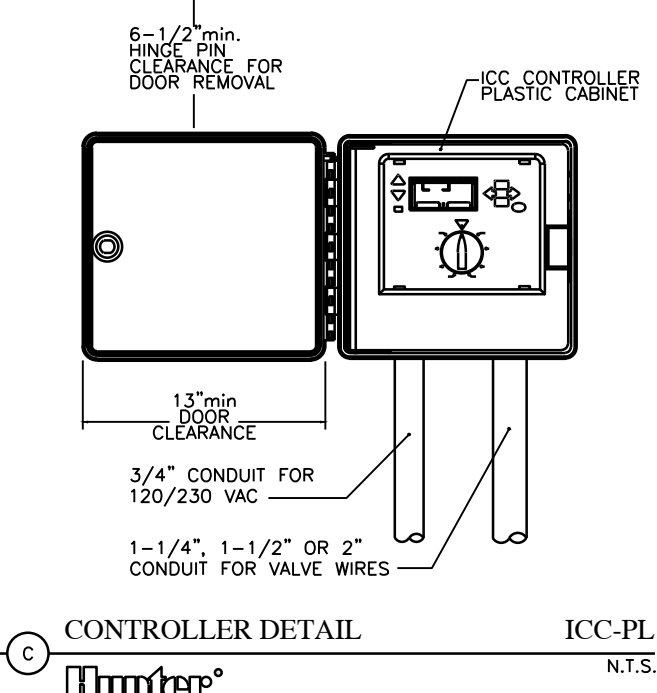
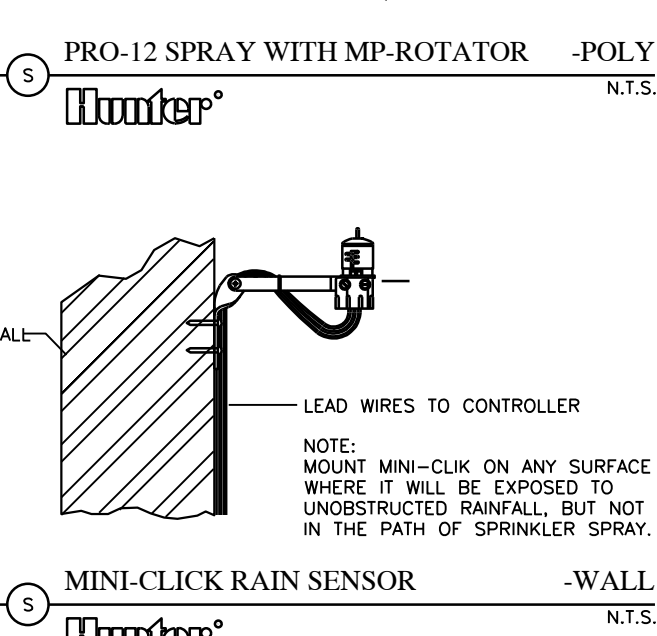
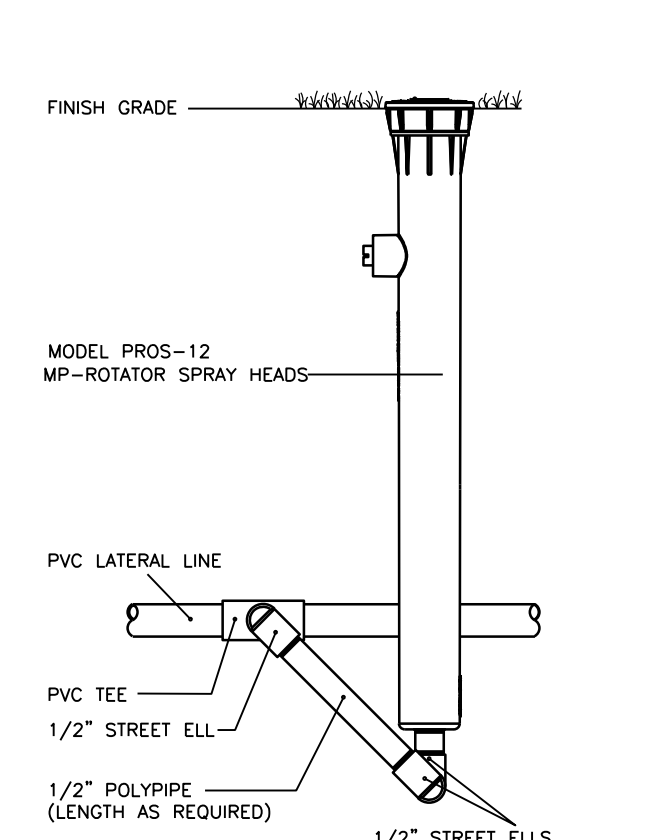
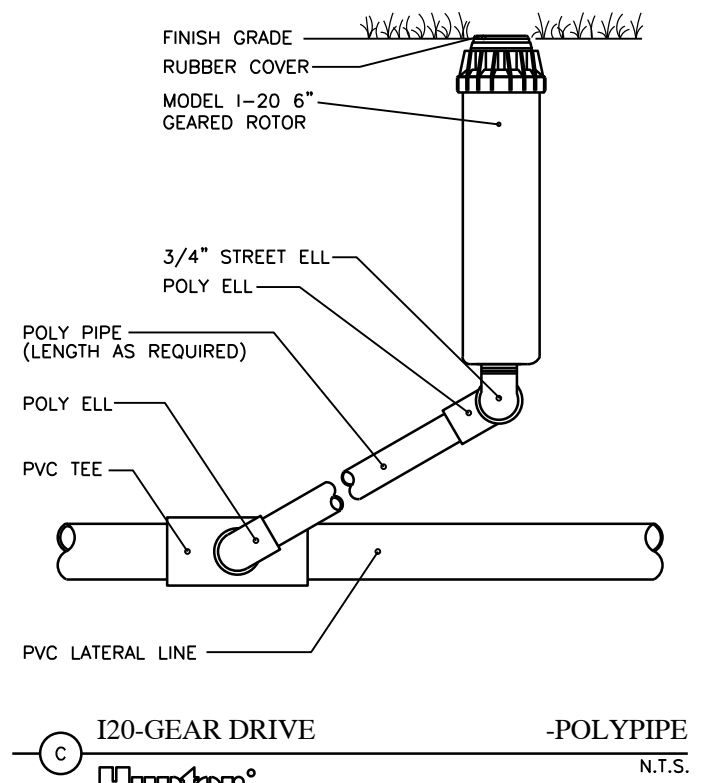
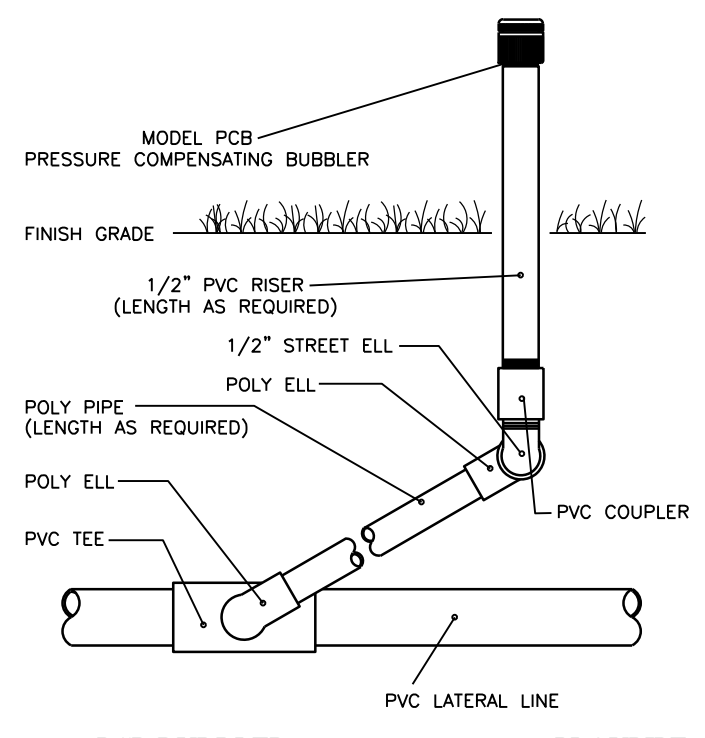
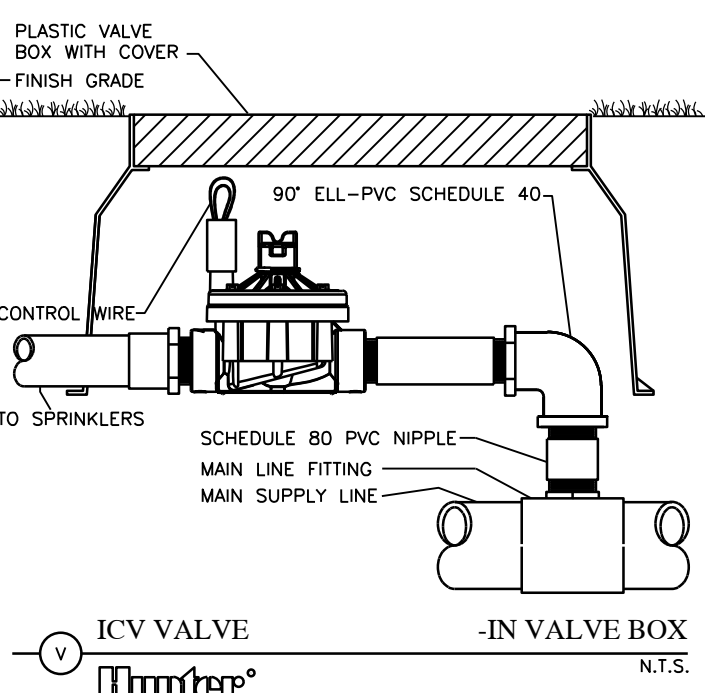
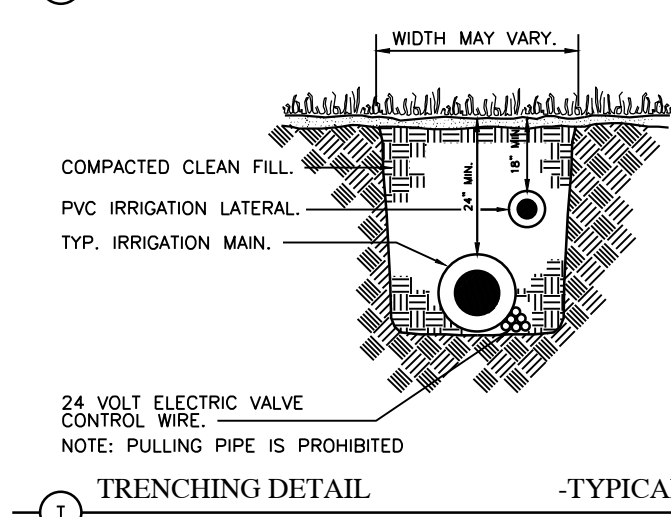
24-VOLT WIRE CONNECTION DETAIL -TYPICAL
N.T.S.



THRUST BLOCK DETAILS -TYPICAL
N.T.S.



QUICK COUPLER DETAIL -TYPICAL
N.T.S.



IRRIGATION REQUIREMENTS & GUIDELINES:

IRRIGATION SYSTEM PLAN and LAYOUT

FORMAL IRRIGATION SYSTEM DESIGN DOCUMENTS:

Formal Irrigation System Design Documents (Plans) have been prepared by the LANDSCAPE ARCHITECT, but are not a part of the Contract Documents for the work defined herein. Said Irrigation Design Documents are, however, part of the LDC submittal documents and act as a requirement for any system design for this project. The CONTRACTOR shall assume full responsibility in contacting the Landscape Architect prior to bidding on or building the irrigation system to acquire said documents if they're included with the set received. The aforementioned designs shall be inserted into these submittal documents upon receipt of the Lee County Development Order for this project and made part of the Contract Documents for the work depicted and described therein. Irrigation Designs by the Contractor must be submitted to the LANDSCAPE ARCHITECTS as As-Built Drawings prior to the request for an inspection for Substantial Compliance.

If Mitigation, Abatement or other type of required planting in preserve or natural areas is illustrated on these documents, irrigation is required for those areas and must be 100% coverage as defined herein. The irrigation for these areas shall be temporary in nature and must remain operational for not less than 18 months. The project cannot be certified as compliant to these documents unless executed accordingly.

IRRIGATION SYSTEM CONDITIONS PER LDC:

- The applicant shall, at a minimum provide an irrigation system that maintains 100% coverage (head to head) for plant materials installed in compliance with all applicable codes, regulations, and resolutions. The irrigation shall, at a minimum, contain the following elements: (1. Irrigation heads providing 100% coverage, 2. complete delivery system, 3. water source, well, potable, or effluent, 4. Rain Sensor Device, 5. Backflow Prevention Device; where applicable).
- All components of the irrigation system will be designed, installed, and maintained to minimize the overthrow of water to oil and any indigenous or natural preserve areas as defined by code and to minimize any overthrow onto impervious surfaces.
- Where special circumstances exist, such as mitigation areas, abatement plantings, or other plant required by code and illustrated on these drawings, irrigation must be provided to those materials in accordance with the standards defined herein (100% head-to-head coverage). Irrigation for mitigation areas may be temporary and must remain functional for not less than 18 months.

TYPICAL CONSTRUCTION STANDARDS:

- Rotor type spray heads will NOT be accepted for irrigating shrub beds unless specifically approved by the Landscape Architect. All shrub beds shall be provided with irrigation from not less than two (2) directions. Single head irrigation strips in beds larger than three feet (3') are not acceptable.
- Irrigation System As-Built Drawings shall be kept at all times and shall be made available for review on demand. As-Built Drawings must be made available prior to the required Certification walkthrough.
- The Irrigation Contractor shall review these and the Engineer's Paving and Grading Plans for the sleeve size and locations and shall verify if said sleeve sizes and locations are compatible with the intended system to be installed prior to construction.

NOTE: SUBMITTAL DOCUMENTS REQUIRED

- Irrigation Contractor shall provide Record Drawings to the Landscape Architect prior to the commencement of the required walkthrough all components defined herein for approval. Failure to do so may result in the re-execution of work or delay in receiving the Certificate of Compliance.
- Irrigation Contractor shall provide Shop Drawings to the Landscape Architect prior to the commencement of work for all components of the proposed irrigation system for approval. Failure to do so may result in the re-execution of work or delay in receiving the Certificate of Compliance.

REQUIRED PERMITS:

- Irrigation Contractor shall be responsible for acquiring all necessary permits to install the system defined by these documents to include all well and water use permits required by all local jurisdictions, including the South Florida Water Management District, where and when applicable.

SYSTEM SPECIFICATIONS and GUIDELINES:

CONDITIONS OF LEE COUNTY LDC:

Note: The Contractor acknowledges that Irrigation System components are required per applicable Code. It is the specific responsibility of the CONTRACTOR to acquire the formal irrigation system design documents from the LANDSCAPE ARCHITECTS in accordance to these guidelines and specifications. The required As-Built drawings that will be prepared by the CONTRACTOR shall be submitted to the LANDSCAPE ARCHITECT in conjunction with the system walkthrough prior to the issuance of the Certificate of Compliance. The CONTRACTOR acknowledges that the LANDSCAPE ARCHITECT can not & will not approve the system for Compliance without approved Walkthrough. DEVIATIONS TO THE SYSTEM DESIGN WILL REQUIRE A FEE FROM THE CONTRACTOR IF DEVIATIONS ARE NOT OWNER DIRECTED IN WRITING OR RESULT IN DEVIATIONS FROM THE APPROVED PERMIT. FEE DUE PRIOR TO SUBMITTAL FOR CC.

SCOPE OF WORK:

- The CONTRACTOR shall adhere to the standards defined in these Permit documents and to install the product specifications illustrated. Where conventional practices and these standards conflict, the standard defined herein shall govern.
- CONTRACTOR shall provide all labor, materials, services, specified products, and equipment necessary or the complete installation of depicted irrigation system.
- CONTRACTOR hereby concedes to the OWNER that time is of the essence and that any damages occasioned by the CONTRACTOR'S failure to complete the work by the dates established in the contract, where applicable, shall be reimbursable to the OWNER.
- If at any time, conflicts between the CONTRACTOR'S installation and the Contract Documents are encountered, the LANDSCAPE ARCHITECT or OWNER, at his discretion, shall have the CONTRACTOR revise, modify, rework, or repair the work product in question at the CONTRACTOR'S expense.

QUALITY ASSURANCE:

- The CONTRACTOR shall be responsible for thoroughly reviewing the Contract Documents herein and made part of these standards. The CONTRACTOR shall be responsible for providing 100% (Head-to-Head) coverage to all plant material shown and identified, including turf area, unless depicted otherwise on the Formal Irrigation Design Documents.
 - CONTRACTOR qualifications: shall be a firm specializing in irrigation work with not less than five (5) years of experience in installing irrigation systems similar to the type and scope herein referenced. The CONTRACTOR shall also be fully licensed to practice irrigation work in the state and local jurisdiction.
 - The OWNER or LANDSCAPE ARCHITECT shall have full authority to approve or reject work performed by the CONTRACTOR. The OWNER and LANDSCAPE ARCHITECT shall also have full authority to make field adjustments as deemed necessary.
- SUBMITTALS:**
- Record Drawings: The OWNER shall furnish the CONTRACTOR with a set of clean original Irrigation drawings provided for the project for the purpose of having the CONTRACTOR record all the primary components of the irrigation system on said drawings. The CONTRACTOR shall delineate on the prints the following minimum components (Where Irrigation Drawings are not available, the Record Drawings shall be issued on the Landscape Plans themselves):
 - Mainline and sleeves.
 - Valves, quick couplers, gate valves, etc.
 - Controller & Rain Sensor.
 - See Supplemental Notes for further detail of As-Built submittal requirements.
 - The CONTRACTOR will submit the Record Drawings to the LANDSCAPE ARCHITECT prior the issuance of the Certificate of Compliance and review. Failure of the CONTRACTOR to record all required and relevant system information and to submit in a timely fashion may result in non-compliance with the Code in effect. The LANDSCAPE ARCHITECT requires, at a minimum, 48 hours to review and respond.
 - CONTRACTOR shall furnish to the OWNER the following loose equipment:
 - Three (3) quick coupler keys and matching swivel hose ells (if applicable).
 - Two (2) gate valve keys and two (2) controller keys.

PROTECTION OF PROPERTY - PUBLIC HEALTH, SAFETY, AND WELFARE:

- The CONTRACTOR will be responsible for the location and protection of utilities and services both underground and overhead. The CONTRACTOR assumes all liability for damages to said utilities and services.
 - Refer to the General Landscape Specifications, Section 3 for additional standards under this category (when applicable).
- COMPLETION AND ACCEPTANCE:**
- The completion of work to the irrigation system will be accepted only when the entire system is completed to the satisfaction of the LANDSCAPE ARCHITECT or OWNER. The CONTRACTOR shall delineate on the drawings shall have complete (100%) coverage before the work will be accepted. By completion of the work depicted by the Contract Documents, the CONTRACTOR assumes all assurances to apply and abide by all applicable permits.
 - The acceptability of material, components, workmanship, labor, and compliance with these specifications shall be solely determined by the LANDSCAPE ARCHITECT.
 - Right to Reject: The LANDSCAPE ARCHITECT will have the right, at any stage of the work, to reject any and all work, materials, and components which, in his opinion, does not meet the requirements herein set forth. 5.4 Record drawings shall be delivered to the LANDSCAPE ARCHITECT for approval. Upon approval, the LANDSCAPE ARCHITECT will forward the record drawings to the OWNER. Approval by the LANDSCAPE ARCHITECT is solely in reference to meeting the intent of applicable local regulations. No assertion is warranted on quality or application.

WARRANTY:

- The CONTRACTOR shall warrant and guarantee from defect and malfunction all workmanship and materials for a period of one (1) year from the date of Final Acceptance.
- The CONTRACTOR further agrees that he will, at his own expense, repair and/or replace all such defective work and materials and all other work damaged thereby and which becomes defective during the term of the guarantee-warranty in an expedient manner.
- The OWNER retains the right to make emergency repairs without relieving the CONTRACTOR'S guarantee obligation. In the event the CONTRACTOR does not respond the OWNER'S request for repair work under the CONTRACTOR'S warranty within a period of 48 hours, the OWNER may make such repairs as he deems necessary, at the full expense of the CONTRACTOR.

LIMITATION OF LIABILITY

- These Contract Documents (drawings, illustrations, specifications, etc.) are provided by the LANDSCAPE ARCHITECT for the sole purpose of depicting a professional irrigation system application which yields 100% coverage over the plant materials shown and specified on the drawings. The CONTRACTOR is responsible for providing the Owner with the specified product and work that meets the minimum standards defined herein. The CONTRACTOR shall also be responsible for coordinating with others and n applying for and receiving all permits from all applicable Jurisdictional Agencies (where & when applicable). The LANDSCAPE ARCHITECT has not applied for any Permits, unless noted.
- The CONTRACTOR shall be responsible for providing As-Built Drawings that clearly documents the system installed as defined herein. The CONTRACTOR shall also be responsible for submitting said As-Built Drawings to the LANDSCAPE ARCHITECT for review and approval. The CONTRACTOR shall assume full liability and shall hold harmless the LANDSCAPE ARCHITECT against any claim for failure of the system or to prepare & submit acceptable As-Built documents of the system installed.

RAIN SENSOR DEVICES:

- The CONTRACTOR shall provide an automatic Rain Sensor Device that is appropriately connected to the controller for the system. Said device shall be located in a manner to serve its function (i.e. not located under cover or shelter). The device shall be provide by an common and acceptable manufacturer unless specified on the drawings.

CONTROLLERS:

- The CONTRACTOR shall be responsible for providing the specified automatic controller that services the entire irrigation system. Said controller shall be zoned to address water restriction windows and shall also be protected from lightning and power surges.
- The CONTRACTOR shall coordinate the installation of the specified Controller with the Owner, as detailed, if located other than shown on the drawings.

MATERIALS:

- The CONTRACTOR shall provide products from the following list of acceptable manufacturers for the specified components: (Failure on part of the CONTRACTOR to furnish the listed acceptable products are at their risk of rejection & replacement) *PRODUCTS LISTED ON FORMAL DRAWINGS SHALL BE INSTALLED AS SPECIFIED

Rotor, Spray, and Bubbler heads (Shop Drawings Required):

- HUNTER (i-Series)
- HUNTER (PGP-Series)
- HUNTER (Rotorator series - 6"Pop or over)

Automatic Control Valves (Shop Drawings Required):

- HUNTER (PGV or HPV Series)
- HUNTER (HBV Brass Series)
- HUNTER (ASV Anti-Siphon Series)

Controllers (Shop Drawings Required):

- HUNTER (ICC Series)
- HUNTER (SRC Series), Light usage only

Backflow Preventors & Meters (Shop Drawings Required):

- FEBCO
- FRANKLIN

c. or as required by local authorities.

DEVIATION TO OR ALTERNATIVE PRODUCT USAGE SHALL REQUIRE THE WRITTEN APPROVAL OF THE OWNER AND/OR LANDSCAPE ARCHITECT. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE INSTALLATION OF THE SYSTEM AND PRODUCTS HEREIN SPECIFIED.

10.2 Polyvinyl Chloride Pipe (PVC):

- All PVC pipe shall be homogeneous throughout, free from visible cracks, holes, and foreign materials. The pipe shall be free from blisters, dents, ripples, extrusions die and heats marks.
 - All PVC pipe shall be continuously and permanently marked with the manufacturer's name or trademark, kind and size (IPS) of pipe, material, manufacturer's lot number, schedule, class, or type, and the NSF seal of approval.
 - Piping under constant pressure, upstream of control valves shall be, at a minimum, PVC 1120/1220, SCH-40. Pipe sizes 3" or larger shall be bell and gasket type. Pipe size 2-1/2" or smaller shall be solvent weld type.
 - Piping on non-constant pressure side of control valves shall be, at a minimum, PVC 1120/1220, Class 200. Pipes shall be solvent weld type.
 - Sleeves shall be provided for all piping running under concrete, paving or any fixed elements. All sleeves shall be PVC 1120/1220, Schedule 40, not less than 2 sizes larger than the pipe size running through it.
 - Pipe fittings shall be PVC 1120/1220, Schedule 40.
- 10.3 Automatic field controllers shall be equipped with all available electrical surge and lightning protection devices provided by the manufacturer. Protection devices not supplied by the manufacturer shall be as recommended by the manufacturer as to provide a maximum degree of protection.
- 10.4 Low voltage control wire (24 Volt) shall be #14 AWG UL listed single conductor solid copper, type UF, 600 volt tested wire for direct burial installation. 10.5 All risers shall be sized appropriately to the head and shall be PVC 1120/1220, SCH-40.

BACKFLOW PREVENTION DEVICES (WHERE APPLICABLE):

- The CONTRACTOR shall be responsible for coordinating and receiving approvals from the relative water service utility agency in effort to gain approval for connection of the proposed irrigation system to the potable water source.
- No detail is given for backflow prevention devices. The CONTRACTOR coordinate the installation of the appropriate device as required by the relative agency's standards.

IRRIGATION WELL AND PUMPS (WHERE APPLICABLE):

- The CONTRACTOR shall be responsible for coordinating and receiving approvals from the County and Water Management District in effort to gain approval for the drilling and encasement of an adequate well and pump system suitable for the project. The CONTRACTOR shall be responsible for providing a full operational well system.
- A Pre-Manufactured Well & Pump Station Detail is provided, any variation of this design by the CONTRACTOR shall assume full responsibility and hold harmless the LA thereto.

EXECUTION:

- Layout: The CONTRACTOR shall carefully review the landscape plans prepared for this project to fully understand the nature, complexity, and necessary coverage to be provided by the irrigation system. The CONTRACTOR concedes to the OWNER that the CONTRACTOR shall provide complete coverage to all plants herein indicated and referenced to the satisfaction of the LANDSCAPE ARCHITECT. The CONTRACTOR shall provide head coverage to plant beds from at least two (2) directions, three (3) if the plant bed is greater than 18 feet in width. Linear applications count as a single source.
 - Spacing: Rotor head types and spacings shall not exceed 30 feet. Spray head types and spacings in plant beds shall not exceed 12 feet. Bubblers shall be set as noted.
 - Rotor Heads: All turf applications shall utilize rotor heads whenever possible. All turf area coverage shall be zoned independently from plant bed zones. Rotors whose head capacity exceeds 8 GPM shall be installed with triple swing joints. At no time shall rotor head coverage be used to irrigate plant (shrub) beds.
 - Spray Heads (Rotators): all plant beds shall be irrigated with spray applications on centers not to exceed 12 feet. Risers may be used and existing plant material complete hides the riser from view. If risers are visible, the CONTRACTOR shall be responsible for converting said risers to pop-up type heads. All ground cover materials shall utilize 12 inch pop-ups. All shrub materials and turf areas shall utilize 6 inch pop-up type heads.
 - Use of Risers: The use of spray or rotor heads on risers is strictly prohibited. Bubblers on risers may not exceed four inches (4") above grade.
 - Control Valves: install control valves in valve boxes, grouping together where possible. Place valve boxes no closer than 12 inches from walks, buildings, and walls.
 - Valve Boxes: shall be set flush with the ground (finished grade) in lawn areas and one half inch (1/2") above finished grade in ground cover and shrub bed areas. Install all valve boxes to avoid direct contact with PVC irrigation piping. Following valve box installation, place gravel or sand as indicated in the detail. CONTRACTOR shall label and number all zone valve box covers with the corresponding controller zone number. Numbers shall be applied using a weather resistant tape or point.
 - Controllers: shall be field located by the OWNER or LANDSCAPE ARCHITECT. Controllers shall be installed as referenced and by the manufacturer's recommendations. See are acceptable manufacturers for type.
 - The CONTRACTOR shall pressure test and flush all irrigation lines prior to head applications and system completion.
- SUPPLEMENTAL NOTES & REQUIRED AS-BUILT DRAWINGS:**
- These Specifications, Details, and Guidelines along with the Formal Design Drawings constitute the Contract basis for the work depicted herein. If not followed in strict accordance thereto: These documents are for the sole purpose of providing guidelines for the design and installation of an irrigation system by others. The LANDSCAPE ARCHITECT assumes no responsibility for the actual system implemented. The OWNER/Applicant shall be responsible for coordinating the installation of a system that meets the requirements set forth by the applicable regulations and industry standards.
 - The CONTRACTOR shall be responsible for preparing and submitting a complete set of As-Built drawings that clearly illustrates all the components of the system installed. Said As-Built drawings shall include the following: All Sleeves locations, Stub-outs w/ pipe sizes. All Delivery System components: heads, valves, couplers, & piping with sizes. All supporting component elements: gate valves, controllers, rain sensors, etc. A Complete and Accurate List of Manufacturers, cross referenced with parts. The Date of System installation and Total Cost. If the system installed is exactly per the Formal Drawings provided, the CONTRACTOR shall submit written testimony to attest that the installation is per plan.

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Sheet Title: IRRIGATION SYSTEM

IRRIGATION DETAILS & GUIDELINES

Land Architects, Inc.

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REGISTERED LANDSCAPE ARCHITECT
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Design/Drawn By:	WEP/BV		
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Sheet No.: IR-5.00
SHEET OF

IRRIGATION SYSTEM SPECIFICATIONS (Sheet 1 of 2):

SECTION 02810 IRRIGATION SYSTEMS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and provisions of the Contract, including Contract Conditions and Division 1 and Division 2 Specification Sections, apply to work of this section.

1.02 SCOPE

- A. The work covered by this specification shall include the furnishing of all labor, materials, tools and equipment necessary to perform and complete the installation of an automatic irrigation system as specified herein and as shown on the drawings and any information not shown or specified which can reasonably be determined to be the work and necessary to provide a complete and functional system.
- B. The work covered by this specification also includes all permits, federal, state and local fees and all other costs and tests, both foreseeable and unforeseeable at the time of construction.
- C. No deviation from these specifications, the accompanying drawings, or agreement is authorized or shall be made without prior written authorization signed by the OWNER or his duly appointed representative.

1.03 RELATED WORK

- A. Section 02485 – Landscape Scheduling
- B. Section 02480 – Landscape Work

1.04 MANUFACTURER

- A. The manufacturer(s) for the components of the irrigation system will be as specified on the drawings. Approved equals must be submitted to the LANDSCAPE ARCHITECT, in writing, no less than ten (10) days prior to bid deadline. LANDSCAPE ARCHITECT shall determine acceptance of approved equals.

1.05 QUALITY ASSURANCE

- A. Contractor Qualifications: A firm specializing in irrigation work with at least five (5) years of experience in installing irrigation systems similar to those required for this project.
- B. The CONTRACTOR, as part of his bid, shall list not less than six (6) projects completed by his company of similar size and scope to be worked herein. The six (6) or more projects shall be listed by project, name, location, owner's name and phone number, and the total paid cost of work executed. The listed project shall be considered as representative of the CONTRACTOR's ability to execute the work specified herein. In the exercise of his sole discretion, reserves the right to reject any bids which either do not respond to this condition or do not represent satisfactory performance of prior work of similar size and scope as that specified herein.

- C. Coordination: Coordinate and cooperate with other CONTRACTORS to enable the work to proceed as rapidly and efficiently as possible.

- D. Codes and Inspections: The entire installation shall comply fully with all local and state laws and ordinances and with all established codes applicable thereto. The CONTRACTOR shall obtain all required permits, arrange for all necessary inspections and pay all fees and costs or those scheduled to do underground work in the vicinity. The CONTRACTOR is responsible for minor adjustments in the layout of the work to accommodate existing facilities.

- E. The CONTRACTOR shall keep on his work, during its completion and until the work is accepted by the OWNER's representative, all satisfactory to the OWNER, or OWNER's representative.

- F. The superintendent shall represent the CONTRACTOR in his absence and all directions given to him shall be as binding as if given to the CONTRACTOR.

- G. The OWNER's Landscape Architect or designated individual, herein referred to as the OWNER's Representative or LANDSCAPE ARCHITECT shall have full authority to approve or disapprove the work of the CONTRACTOR. The OWNER's Authorized Representative shall also have full authority to make field changes that are deemed necessary.

- H. In all cases where observation of the irrigation system work is required and/or where part of the work specified to be performed under the direction of the OWNER's Representative, the CONTRACTOR shall notify same, at least 48 hours prior to the time such observation or direction is required.

- I. Any necessary re-excavation or changes to the system needed because of failure of the CONTRACTOR to have the work re-observed shall be performed at the CONTRACTOR's expense.

1.06 SUBMITTALS

- A. Refer to Division 1-General Requirements, Section 01350 Operation and Maintenance Data, Section 01350 – Submittals, and Section 01003 – Supplementary Technical Specifications (when applicable to this contract).

- B. All materials shall be those specified and or approved by the LANDSCAPE ARCHITECT.

- C. Product Data: After the award of the contract and prior to beginning work, the CONTRACTOR shall submit for approval by the OWNER and LANDSCAPE ARCHITECT, six (6) copies of the complete list of materials, manufacturer's technical data, shop drawings, and installation instructions which he proposes to install. The CONTRACTOR shall forward all required submittals to the LANDSCAPE ARCHITECT within 14 days of award of contract.

- D. Installation Schedule: Submit a planting schedule, indicating the dates of installation anticipated for this project. Once accepted, revise dates only as approved in writing by the LANDSCAPE ARCHITECT, after consultation and reasons for delay.

- E. Commence no work before approval of material list and descriptive material by the LANDSCAPE ARCHITECT.

- F. Record Drawings: The OWNER shall furnish the CONTRACTOR with one set of reproducible reverse mylar sheets showing all work required under this contract and the purpose of having the CONTRACTOR record on these reproduces all changes that may be made during actual installation of the system. Location shall include dimensions from two (2) permanent points of reference (building corner, street corner, fence line, etc.).

1. Immediately upon installation of any piping, valves, wiring, sprinklers, etc., all locations other than shown on the original drawings or at sizes other than indicated, the CONTRACTOR shall clearly indicate such changes on a set of blue line prints. Records shall be made on a daily basis. All records shall be neat and subject to the approval of the OWNER and LANDSCAPE ARCHITECT.
2. The CONTRACTOR shall also indicate on the record prints the location of all wire splices, original or due to repair, that are installed underground in a location other than a control panel, pedestal, remote control valve box, power source or connection to a valve-in-head sprinkler.
3. Identify field changes of dimension and detail of changes made by Change Order or Field Order.

4. These drawings shall also serve as work progress sheets. The CONTRACTOR shall make neat and legible notations thereon daily as the work proceeds, showing the work as actually installed. These drawings shall be available at all times for review and shall be kept in a location designated by the OWNER's Representative.

5. Each month when CONTRACTOR submits his progress payment request to the OWNER it shall include the up to date record drawing information for all material installed to that date.

6. Progress payment request and record drawing information must be approved by the LANDSCAPE ARCHITECT before payment is made.

7. If in the opinion of the OWNER or LANDSCAPE ARCHITECT, the record drawing information is not being properly or promptly recorded, construction payment may be stopped until the proper information has been recorded and submitted.

8. Upon completion, all information noted on the prints shall be transferred to a reproducible reverse mylar by the CONTRACTOR. Drawings shall be to scale and all information shall be recorded in a neat, orderly way.

9. Record Drawings: Before the date of the final site observation and approval, the CONTRACTOR shall deliver two (2) sets (of blue line prints) of the record drawing plans and notes to the LANDSCAPE ARCHITECT. Upon approval of the record drawings, the CONTRACTOR will forward the originals to the OWNER. Record drawing information shall be approved by the LANDSCAPE ARCHITECT and OWNER prior to final payments, including retainers. The delivery of the prints shall not relieve the CONTRACTOR of the responsibility of furnishing required information that may have been omitted. Incorrect or unacceptable record drawings will be returned to the CONTRACTOR for corrections and resubmittal.

- G. CONTRACTOR shall furnish one (1) Manufacturer's service manual each to the OWNER, or Tenant. Manuals may be loose-leaf and shall contain complete exploded drawings of all equipment installed showing components and catalog numbers together with the manufacturer's name and address.

- H. Loose equipment to furnish: Loose irrigation equipment, operating keys and spare parts will be furnished by the irrigation Contractor in quantities as shown on the plans.

1. Three (3) quick coupler keys and matching swivel hose ends (if required).
2. Two (2) valve keys for gate valves (if required).
3. Two (2) keys for each controller.

1.07 JOB CONDITIONS

- A. Examination of the Site: The bidder acknowledges that he has examined the site, with the plans and specifications. The submission of a quotation shall be considered evidence that examinations have been made.

- B. Field Conditions: The CONTRACTOR shall acquaint himself with all site conditions, including underground utilities before construction is to begin. CONTRACTOR shall coordinate placement of underground materials with the CONTRACTOR previously working underground in the vicinity or those scheduled to do underground work in the vicinity. The CONTRACTOR is responsible for minor adjustments in the layout of the work to accommodate existing facilities.

- C. The CONTRACTOR shall verify the correctness of all finish grades within the work area to insure the proper soil coverage of the irrigation system pipes.

- D. Protection of Existing Plants and Site Conditions: The CONTRACTOR shall take necessary precautions to protect all existing vegetation (existing vegetation, trees, shrubs, etc.) and make any necessary adjustments or minor adjustments are not sufficient to protect existing site conditions. All existing grades shall be maintained and restored to their previously existing condition immediately following installation and testing.

- E. Protection of Work and Property: The CONTRACTOR shall be liable for and shall take the following actions as required with regard to damage to any of the OWNER's property.

1. Any existing building, equipment, piping, pipe covers, electrical systems, sewers, sidewalks, roads, grounds, landscaping or structure of any kind (including without limitation, damage from leaks in the piping system being installed or having been installed by the CONTRACTOR) damaged by the CONTRACTOR, or by his agents, employees, or subcontractors, during the course of his work, whether through negligence or otherwise, shall be replaced or repaired to the satisfaction of the OWNER at the expense of the CONTRACTOR, who shall repair or replacement shall be a condition precedent to the OWNER's obligation to make final payment under the contract.
2. CONTRACTOR shall also be responsible for damage to any work covered by these specifications before final acceptance of the work. The CONTRACTOR shall cover all openings into the systems and over all apparatus, equipment and appliances, both before and after being set in place to prevent damage to the pipes and the breakage, misuse or disfigurement of the apparatus, equipment or appliance.

1.08 MATERIALS STORAGE AND CLEANUP

- A. The CONTRACTOR shall keep the premises free from rubbish and all debris at all times and shall arrange his material storage so as to not interfere with the operation of the project. All unused materials, rubbish and debris shall be removed from the site.

- B. Storage and Handling: Use care in handling, loading, storing and assembling components to avoid damage. Store plastic pipe and fittings under cover and protect from sunlight before using. Discolored plastic pipe and fittings shall be rejected.

- C. All metallic pipe and fittings shall be handled, stored, loaded and assembled with the same care used for plastic components. Metallic components shall be stored in an enclosure to prevent rusting and general deterioration.

- F. Record Drawings: The OWNER shall furnish the CONTRACTOR with one set of reproducible reverse mylar sheets showing all work required under this contract and the purpose of having the CONTRACTOR record on these reproduces all changes that may be made during actual installation of the system. Location shall include dimensions from two (2) permanent points of reference (building corner, street corner, fence line, etc.).

1. Immediately upon installation of any piping, valves, wiring, sprinklers, etc., all locations other than shown on the original drawings or at sizes other than indicated, the CONTRACTOR shall clearly indicate such changes on a set of blue line prints. Records shall be made on a daily basis. All records shall be neat and subject to the approval of the OWNER and LANDSCAPE ARCHITECT.

2. The CONTRACTOR shall also indicate on the record prints the location of all wire splices, original or due to repair, that are installed underground in a location other than a control panel, pedestal, remote control valve box, power source or connection to a valve-in-head sprinkler.
3. Identify field changes of dimension and detail of changes made by Change Order or Field Order.

- E. Final Completion: Upon notification by the CONTRACTOR that all defects have been repaired or replaced following substantial completion site observation, the LANDSCAPE ARCHITECT will perform a final (1) final site observation. The request by the CONTRACTOR must be made at least three (3) working days before the anticipated final completion site observation. Any additional inspections as a result of the CONTRACTOR's failure to comply with punch list, will be done at the CONTRACTOR's expense, based on the LANDSCAPE ARCHITECT's standard hourly rates and expenses. The work will be accepted by the LANDSCAPE ARCHITECT upon satisfactory completion of all work including "punch list" items.

- F. "Record" Installation Drawings: Record drawings shall be delivered to the LANDSCAPE ARCHITECT, for approval. Upon approval the LANDSCAPE ARCHITECT will forward record drawings to the OWNER before final acceptance of work.

1.10 WARRANTY

- A. Warranty: The CONTRACTOR shall furnish three (3) written warranties, stating that all work included under this contract shall be warranted against all defect and malfunction of workmanship and materials for a period of one (1) year from the date of final Acceptance of this project.

- B. The CONTRACTOR further agrees that he will at his own expense repair and/or replace all such defective work and materials and all other work done thereby and which becomes defective during the term of the guaranty-warranty in an expedient manner.

- C. The OWNER retains the right to make emergency repairs without relieving the CONTRACTOR's guaranty obligation. In the event the CONTRACTOR does not respond to the OWNER's request for repair work under their guaranty-warranty within a period of forty-eight (48) hours, the OWNER may make such repairs as he deems necessary, at the full expense of the CONTRACTOR.

- D. Any setting of backfilled trenches which may occur during the guaranty-warranty period shall be repaired by the CONTRACTOR at no additional expense to the OWNER, including the complete restoration of all damaged planting, sod, paving or other improvement of any kind.

1.11 OPERATION AND MAINTENANCE

- A. Instructions: After completion and testing of the system, the CONTRACTOR will instruct the OWNER's personnel in the proper operation and maintenance of the system. The CONTRACTOR will submit proof to the LANDSCAPE ARCHITECT that said instructions were conducted.
- B. The CONTRACTOR shall include the name, address, telephone number, date, time, place, and content of instruction.

- B. CONTRACTOR will at the above on-site instruction with the OWNER's representative, supply complete manuals to the OWNER and/or the Tenant (three total) containing component description, operating instructions, and maintenance recommendations.

PART 2 MATERIALS

2.01 GENERAL

- A. All products shall be as specified on the plans and in these specifications. The materials chosen for the design of the irrigation system have been specifically referred to by the CONTRACTOR to enable the LANDSCAPE ARCHITECT to establish the level of quality and performance required by the system design. Equipment by other manufacturers may be used only if submittal of manufacturer's technical data and installation instructions are reviewed and approved by the ARCHITECT. Approval may be granted only if substitution is equal to the specified equipment as determined by the LANDSCAPE ARCHITECT.
- B. All materials to be incorporated in this system shall be new (latest model) and shall be of sufficient size to allow easy operation and maintenance of valve. Where possible, gate valves shall be installed with control valves and occur in the same box. Ametek Jumbo Box Model 190101 w/cover 192101 shall be used for the pair.

1. Locking lids shall be green in color, boxes and extensions shall be black or green and constructed of high strength, light weight thermoplastic.

- N. Pop-Up Spray Head to PVC Pipe Fittings: All pop-up spray sprinkler heads are to be connected to PVC pipe with barbed x threaded adapters and an 18" minimum length of thick walled polyethylene tubing. All tubing ends shall be cut square to the outside diameter of the pipe. Pop-Up Spray Heads: All pop-up spray heads are to be of the type specified on the plans and shall conform to the manufacturer's specifications. Spacing shall not exceed that which is graphically depicted on the plans or by the manufacturer's maximum recommendation.

- O. Rotor Sprinkler to PVC Pipe Fittings: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and galling and at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.

- P. Rotor Sprinklers: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and galling and at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.

- Q. Rotor Sprinkler to PVC Pipe Fittings: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and galling and at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.

- R. Teflon Tape: Any threaded connection using Teflon tape as an on/off device shall avoid excessive use of Teflon tape. Apply Teflon tape only in accordance with fittings and/or component manufacturer's recommendations.

- S. Rain shut-off devices shall be of the type on the plans and shall perform to the manufacturer's specifications.

- T. Splicing Materials: Use waterproof splice kits as recommended by Weathermatic for decoder cable only.

- U. Metalized tape: CONTRACTOR shall provide metalized identification tape on all mainline piping (non-pressurized and pressurized).

- A. All PVC pipe shall be homogeneous throughout, free from visible cracks, holes and foreign materials. The pipe shall be free of scratches, splinters, dents, ripples, extrusion die and heat marks.

- B. All PVC pipe shall be continuously and permanently marked with the manufacturer's name or trademark, kind and size (IPS) of pipe, material, and manufacturer's lot number, schedule, class or type and the National Sanitation Foundation (NSF) seal of approval.

- C. Piping under constant pressure, upstream of irrigation control valves:

- a. Shall be PVC 1120/1220, Class 200, unless otherwise specified.
- b. Pipe size 3" and larger shall be Bell End Gasket Type.
- c. Pipe size 2"-1 1/2" and smaller shall be Solvent Weld Type.
- d. Materials shall be in accordance with the latest revision of the following specifications:

- American Society for Testing Materials ASTM-D 1784, ASTM-D 2241
- Department of Commerce, PS 22-70
- National Sanitation Foundation Testing Laboratories

- E. Piping on non-constant pressure side of irrigation control valves:

- a. Shall be PVC 1120/1220, Class 160, unless otherwise specified.
- b. All non-pressurized pipe to be Solvent Weld Type.
- c. Materials shall be in accordance with the latest revision of the following specifications:

- American Society for Testing Materials ASTM-D 1784, ASTM-D 2241
- Department of Commerce, PS 22-70
- National Sanitation Foundation Testing Laboratories

- F. Schedule 40, High impact type, PVC 2110 pipe:

- a. All solvent weld or bell and gasket Schedule 40 PVC pipe shall be in accordance with the latest revisions of the following specification:

- ASTM-D 1785
- Department of Commerce, PS 22-70
- National Sanitation Foundation Testing Laboratories

- b. Provide written certification from manufacturer that all PVC pipe has successfully passed all tests per ASTM D 1785.

6. Piping for Sleeveing: High impact type pipe, PVC 2110, minimum Schedule 40.

7. PVC Pipe Fittings:

- a. Moulded sweat weld socket fittings shall be PVC Schedule 40, Type I/II in accordance with ASTM-D 2466. Sockets shall be tapered conforming to the outside diameter of the pipe, as recommended by the pipe manufacturer. All fittings must conform to the twenty (20) minute acetone test in accordance with the above.

- b. Moulded threaded fittings shall be PVC Schedule 40 in accordance with ASTM-D 2464. All fittings shall withstand the twenty (20) minute acetone test and be approved.

- c. All moulded fittings shall be marked with manufacturer's name and/or trademark, extruded couplings shall be from NSF rated raw materials and meet ASTM standards. Supplier shall provide certification on extruded couplings when requested.

- d. Schedule 40 threaded male/female adapters shall be used in connecting to threaded joints.

- e. All changes in depth of mainline pipe shall be made using 45 fittings.

- f. All threaded PVC to metallic connections shall be made in accordance with the PVC fitting manufacturers recommendations. Any sealant used shall be of the non-hardening, non-petroleum base type, and shall not adversely effect PVC pipe or fittings.

- F. PVC Solvent Cement: PVC solvent cement and primer/cleaner shall be compatible with the specific size and type of PVC pipe and fittings, of proper consistency in accordance with the pipe manufacturers recommendations and will conform to ASTM D-2855, D-2564, F-656.

- G. Rubber Rings and Gasket Joint Lubricant: Rubber rings shall conform to ASTM F 477. CONTRACTOR shall only use pipe joint lubricant supplied by or recommended by the manufacturer. Lubricant shall be water soluble, non-toxic, an inhibitor to bacterial growth, and shall be non-detrimental to the elastomeric seal and pipe. Mineral oil, petroleum jelly, hydrocarbon vegetable oil (i.e. Crisco, petroleum products, cooking oil, grease, etc.) shall not be used.

- H. Automatic Field Controller: The irrigation controller shall be as specified on the plans. All field controllers shall be equipped with all available electrical surge/lightning protection devices for all circuits. Protection shall be provided and installed whenever possible. Protection devices not supplied by the Manufacturer shall be as recommended by Manufacturer to provide a maximum degree of protection.

- I. Decoder Cable: UL listed, jacketed two wire cable by Weathermatic (FSLRW).

- J. Control Valves: The remote control valves shall be as specified on the plans, and shall perform to the manufacturer's specifications.

- K. Gate Valves: Gate valves one inch (1") through four inch (4") shall be Series 208 bronze threaded end gate valves manufactured by "Red-Wing".

- L. Quick Coupling Valve: All quick coupling valves shall be solid bronze as specified on the plans, and shall perform to the manufacturer's specifications.

- M. Control Valve Boxes: All control valve, gate valve and quick coupling valve boxes shall be Ametek Box with Cover marked "Control Valve". Box shall be of sufficient size to allow easy operation and maintenance of valve. Where possible, gate valves shall be installed with control valves and occur in the same box. Ametek Jumbo Box Model 190101 w/cover 192101 shall be used for the pair.

1. Locking lids shall be green in color, boxes and extensions shall be black or green and constructed of high strength, light weight thermoplastic.

- N. Pop-Up Spray Head to PVC Pipe Fittings: All pop-up spray sprinkler heads are to be connected to PVC pipe with barbed x threaded adapters and an 18" minimum length of thick walled polyethylene tubing. All tubing ends shall be cut square to the outside diameter of the pipe. Pop-Up Spray Heads: All pop-up spray heads are to be of the type specified on the plans and shall conform to the manufacturer's specifications. Spacing shall not exceed that which is graphically depicted on the plans or by the manufacturer's maximum recommendation.

- O. Rotor Sprinkler to PVC Pipe Fittings: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and galling and at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.

- P. Rotor Sprinklers: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and galling and at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.

- Q. Rotor Sprinkler to PVC Pipe Fittings: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and galling and at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.

- R. Teflon Tape: Any threaded connection using Teflon tape as an on/off device shall avoid excessive use of Teflon tape. Apply Teflon tape only in accordance with fittings and/or component manufacturer's recommendations.

- S. Rain shut-off devices shall be of the type on the plans and shall perform to the manufacturer's specifications.

- T. Splicing Materials: Use waterproof splice kits as recommended by Weathermatic for decoder cable only.

- U. Metalized tape: CONTRACTOR shall provide metalized identification tape on all mainline piping (non-pressurized and pressurized).

- A. All PVC pipe shall be homogeneous throughout, free from visible cracks, holes and foreign materials. The pipe shall be free of scratches, splinters, dents, ripples, extrusion die and heat marks.

- B. All PVC pipe shall be continuously and permanently marked with the manufacturer's name or trademark, kind and size (IPS) of pipe, material, and manufacturer's lot number, schedule, class or type and the National Sanitation Foundation (NSF) seal of approval.

- C. Piping under constant pressure, upstream of irrigation control valves:

- a. Shall be PVC 1120/1220, Class 200, unless otherwise specified.
- b. Pipe size 3" and larger shall be Bell End Gasket Type.
- c. Pipe size 2"-1 1/2" and smaller shall be Solvent Weld Type.
- d. Materials shall be in accordance with the latest revision of the following specifications:

- American Society for Testing Materials ASTM-D 1784, ASTM-D 2241
- Department of Commerce, PS 22-70
- National Sanitation Foundation Testing Laboratories

- E. Piping on non-constant pressure side of irrigation control valves:

- a. Shall be PVC 1120/1220, Class 160, unless otherwise specified.
- b. All non-pressurized pipe to be Solvent Weld Type.
- c. Materials shall be in accordance with the latest revision of the following specifications:

- American Society for Testing Materials ASTM-D 1784, ASTM-D 2241
- Department of Commerce, PS 22-70
- National Sanitation Foundation Testing Laboratories

- F. Schedule 40, High impact type, PVC 2110 pipe:

- a. All solvent weld or bell and gasket Schedule 40 PVC pipe shall be in accordance with the latest revisions of the following specification:

- ASTM-D 1785
- Department of Commerce, PS 22-70
- National Sanitation Foundation Testing Laboratories

- b. Provide written certification from manufacturer that all PVC pipe has successfully passed all tests per ASTM D 1785.

PART 3 EXECUTION

3.01 GENERAL

- A. The CONTRACTOR shall carefully schedule his work with the General Contractor and all other trades on site.
- B. Sleeves are required wherever piping or electrical wires are placed under paved surfaces. CONTRACTOR will install sleeves prior to commencement of paving and will be responsible for the repair of any other trades. No additional compensation shall be made for the CONTRACTOR's failure to coordinate with other trades.

- C. CONTRACTOR will install the irrigation system as shown on the Contract Documents. Should any changes be deemed necessary after award of contract for proper installation and operation of the system, such changes must be approved by the LANDSCAPE ARCHITECT. In the event that notification of the OWNER or LANDSCAPE ARCHITECT is not given, the CONTRACTOR shall assume full responsibility of all revisions.

- D. The plans and drawings are diagrammatic of the work to be performed. All piping, wires, field controllers, etc. shall be installed within the project boundaries. The CONTRACTOR shall not willfully install the irrigation system as shown on the plans when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been shown in the design of the system.

- E. Layout: The CONTRACTOR shall carefully review all relative drawings for this project and will be responsible for coordinating the irrigation system installation with all known obstructions and existing conditions. Any time the system conflicts with other improvements (i.e., structures, landscape, etc.), the CONTRACTOR will be responsible for relocating irrigation components at his time and expense.

- F. Design Pressures: Main line pressure at the source location shall be as required to operate the irrigation heads at the design pressures as specified on the plans. Pressure shall not be reduced below the design pressure specifications. Pressure at the last irrigation head on the line shall not be less than 35 P.S.I., unless otherwise noted on plans.

- G. Minimum Water Coverage: In turf planting areas, 100% coverage shall be provided. Layout may be modified if necessary and approved by the LANDSCAPE ARCHITECT, to obtain coverage. No connections to the top of the line shall be allowed.

- H. Final location of piping and wiring shall be done following CONTRACTOR's installation of the irrigation system. All piping shall be installed in a manner to avoid conflicts with utilities and other construction elements and shall be installed in a manner to avoid conflicts with utilities and other construction elements and shall be installed in a manner to avoid conflicts with utilities and other construction elements.

- I. CONTRACTOR shall coordinate with other trades executing work on the project to avoid conflicts with other trades of plant material, utilities and other site improvements.

- J. Sprinkler spacings are maximums. Do not exceed spacings shown or noted on the plans. Sprinkler spacings may be adjusted to avoid conflicts with other trades proposed planting locations, and existing site conditions, only if approved prior to installation by the LANDSCAPE ARCHITECT.

- K. Pipe sizes shall conform to those shown on the drawings. No substitutions of smaller pipe sizes will be permitted. However, substitutions of larger sizes may be approved.

- L. Quick Coupling Valve: All quick coupling valves shall be solid bronze as specified on the plans, and shall perform to the manufacturer's specifications.

- M. Control Valve Boxes: All control valve, gate valve and quick coupling valve boxes shall be Ametek Box with Cover marked "Control Valve". Box shall be of sufficient size to allow easy operation and maintenance of valve. Where possible, gate valves shall be installed with control valves and occur in the same box. Ametek Jumbo Box Model 190101 w/cover 192101 shall be used for the pair.

1. Locking lids shall be green in color, boxes and extensions shall be black or green and constructed of high strength, light weight thermoplastic.

- N. Pop-Up Spray Head to PVC Pipe Fittings: All pop-up spray sprinkler heads are to be connected to PVC pipe with barbed x threaded adapters and an 18" minimum length of thick walled polyethylene tubing. All tubing ends shall be cut square to the outside diameter of the pipe. Pop-Up Spray Heads: All pop-up spray heads are to be of the type specified on the plans and shall conform to the manufacturer's specifications. Spacing shall not exceed that which is graphically depicted on the plans or by the manufacturer's maximum recommendation.

- O. Rotor Sprinkler to PVC Pipe Fittings: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and galling and at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.

- P. Rotor Sprinklers: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and galling and at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.

- Q. Rotor Sprinkler to PVC Pipe Fittings: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and galling and at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.

- R. Teflon Tape: Any threaded connection using Teflon tape as an on/off device shall avoid excessive use of Teflon tape. Apply Teflon tape only in accordance with fittings and/or component manufacturer's recommendations.
- </

IRRIGATION SYSTEM SPECIFICATIONS (Sheet 2 of 2):

CONTINUED FROM PREVIOUS SHEET SECTION 02810 - IRRIGATION SYSTEM

G. Install all Weathermatic Decoder Cable to one side of mainline trench. Placement over pipes is not permitted. Installation depth shall conform to the depth of the mainline as indicated elsewhere in these specifications. Install all decoder cable in mainline trench except for distance between controller and mainline pipe location.

H. All field repair splices shall be made using Weathermatic approved splice kits.

I. All in the field low voltage wire splices shall be made in a valve box as described within these specifications or in the pedestal of the field controller. Direct bury splices shall be prohibited.

J. -

K. -

L. Provide an expansion coil of 8' to 10' of wire or cable at each change in direction along the wire routing, where wire is direct buried in a trench. Provide an expansion coil of 4' to 6' of wire every 1000' of straight wire run. Coil diameter to be 24" to 30". Do not tape restrain the wire coil. Lay the wire coil flat in the trench.

M. Provide an expansion coil of 8' to 10' of wire or cable at each side of a road crossing. Coil diameters to be 24" to 30". Do not tape restrain the wire coil. Lay the wire coil flat in the trench.

N. Provide "earth grounds" and surge arrestors on decoder cable as per manufacturer's instructions.

3.14 CLOSING OF PIPE AND FLUSHING OF LINES

A. Cap or plug all openings as soon as lines have been installed to prevent the entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.

1. Thoroughly flush out all water lines under a full head of water before installing heads, valves, quick coupler assemblies, etc. Maintain flushing for a minimum of three (3) minutes at the valve located furthest from water supply.

2. Test as specified below.

3. Upon completion of testing, complete assembly and adjust sprinkler heads for proper grade and distribution.

3.15 TESTING

A. Request the presence of the LANDSCAPE ARCHITECT or ENGINEER in writing or by phone at least 48 hours in advance of testing. Final testing is to be accomplished in the presence of the LANDSCAPE ARCHITECT or ENGINEER. Any additional tests required due to the failure of the initial test shall be accomplished at the expense of the CONTRACTOR.

B. Hydrostatic Testing: Center load piping with small amount of backfill to prevent arching or slipping under pressure. A continuous and static water pressure of 120 psi will be applied for a period of not less than two (2) hours. Repair all leaks resulting from pressure test. Expel air from system after testing, flush all lines.

C. Tests shall be made between valves and as far as practicable in section of approximately one thousand (1,000) feet long or as approved by the LANDSCAPE ARCHITECT or ENGINEER. Potable water from an existing water distribution system shall be used if available. The test pressure for the water lines shall be 120 psi and this pressure shall be maintained for a period of not less than two (2) hours for uncovered pipes. Pressure shall not vary more than two pounds from the above during the two-hour test period. Allowable leakage shall be computed on the basis of Table 3, Section 13.7, AWWA Standard C600-64, or the applicable formula for other than 18 foot lengths.

All leaks evident at the surface shall be uncovered and repaired regardless of the total leakage as indicated by the test, and all pipes, valves and fittings and other materials found defective under the test shall be removed and replaced at the CONTRACTOR's expense. Tests shall be repeated until leakage has been reduced below the allowable amount.

D. Operational Testing: Perform operational testing after hydrostatic testing is completed, backfill is in place, and sprinkler heads adjusted to final position.

E. Demonstration: The CONTRACTOR shall demonstrate to the LANDSCAPE ARCHITECT that the system meets coverage requirements and that automatic controls function properly. Coverage requirements are based on operation of one circuit at a time.

F. Clearly list dates of all pressure tests on the Record Drawings.

3.16 INSPECTION

A. The CONTRACTOR shall maintain proper facilities and

provide safe access for inspection to all parts of the work.

B. Irrigation inspection shall consist of a minimum of:

1. Mainline pressure test.
2. Trench excavation and pipe coverage.
3. Coverage/hydrological test.
4. Final irrigation inspection.

C. If the specifications, the LANDSCAPE ARCHITECT's instructions, laws, ordinances or any public authority require any work to be specifically tested or approved, the CONTRACTOR shall give three (3) days notice of its readiness for inspection.

D. The CONTRACTOR shall be solely responsible for notifying the LANDSCAPE ARCHITECT where and when such work is in readiness for testing.

E. If any work should be covered up without approval, it must be uncovered, if required, for examination at CONTRACTOR's expense.

F. No inspection shall commence without "Record" drawings and without completing previously noted corrections, or without preparing the system for inspection.

3.17 BACKFILL AND COMPACTING

A. CONTRACTOR shall not backfill over fittings, valves, couplings, etc., until pressure tests have been executed and approved.

B. After testing of system has occurred and inspections have been made, backfill excavations and trenches with clean soil, free of stones, sticks, construction debris and rubbish. Unsuitable material, including clods and rocks over two inches (2") in size shall be removed from

C. Metallic identification tape shall be buried approximately three inches (3") above PVC pipe. Metallic tape shall be buried approximately three inches (3") above ductile iron pipe. Tape width shall be three inch (3") minimum tape colors and imprints shall be as follows:

Imprint Color
Caution - Non-Potable Irrigation Purple
Water Line Buried

D. Water Packing: When water packing is used, the pipeline must first be filled with water, oil or removed, and the pipe kept full during the backfill operation. The backfill, before wetting, shall be 12 to 18 inches deep over the top of the pipe. Water packing is accomplished by adding water in such quantity as to thoroughly saturate the initial backfill. While saturated, rods, shovels, concrete vibrators or other means may be used to help consolidate the backfill around the pipe, taking care not to float or damage the pipe. After saturation, the pipeline shall remain full until after final backfill is made. Allow the wetted fill to dry until firm enough to walk on before final backfill is begun.

E. Hand or Mechanical Backfilling: Tamp the backfill in layers not to exceed six (6") inches lift and compact firmly around the pipe and up to a least six (6") inches above the top of the pipe. The backfill must be sufficiently damp to permit thorough compaction under and on each side of the pipe to provide support free from voids. Take care to avoid deforming, displacing, or damaging the pipe.

F. Backfill for all trenches, regardless of the type of pipe covered, shall be compacted to minimum 95% density under pavement, 85% under planted areas. Compact trenches in areas to be planted by thoroughly flooding the backfill. Jetting process shall be used when necessary in those areas.

G. A fine granular material shall be placed initially on all lines with a minimum of three inches (3") cover. No foreign matter larger than one-half inch (1/2") in size shall be permitted in the initial backfill.

Trenches located under paving shall be backfilled with sand (a layer six inches (6") below the pipe and three inches (3") above the pipe) and compacted in layers of 95% compaction.

H. Dress off all areas to finish grades and restore to condition previous to irrigation installation.

I. Clean-Up: Remove from the site all debris and surplus earth resulting from work of this section. Clean-up shall be conducted continuously throughout the installation process to keep extraneous materials off the work site.

3.18 MEASUREMENT AND PAYMENT










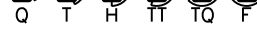
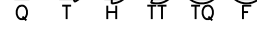







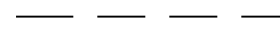

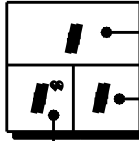
A. CONTRACTOR will submit a lump sum bid and shall receive full compensation for conforming to the provisions of this Section and related drawings. Lump sum paid for the complete installation as shown and specified will be categorized as follows:

1. Sleeving (Mains and Laterals)
2. Primary Components (Mains/Controllers/Solenoid Valves)
3. Secondary Components (Heads/Valves/Laterals/Wiring/Couplers)

B. No additional compensation will be allowed excluding relative change orders. The CONTRACTOR shall provide a complete unit cost breakdown for all irrigation components shown on the drawings or noted in the legend and shall be included as part of the CONTRACTOR's bid. Said breakdown may be submitted after award of contract and prior to the execution of work. However, the OWNER reserves the right to reject any bid that does not include said unit cost breakdown.

END OF SECTION 02810 IRRIGATION SYSTEM

IRRIGATION_SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	GPM
	Hunter PRO5-06 Strip Series Turl Spray, 6in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-06 8 Series Turl Spray, 6in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-06 10 Series Turl Spray, 6in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-06 12 Series Turl Spray, 6in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-06 15 Series Turl Spray, 6in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-06 Adj Series Turl Spray, 6in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-12 Strip Series Shrub Spray, 12in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-12 8 Series Shrub Spray, 12in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-12 10 Series Shrub Spray, 12in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-12 12 Series Shrub Spray, 12in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
	Hunter PRO5-12 15 Series Shrub Spray, 12in. Pop-Up. Co-molded wiper seal with UV Resistant Material.	
SYMBOL	MANUFACTURER/MODEL	GPM
	Hunter PCP-ADJ 07	2.6
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	
	Hunter ICV-G 1in., 1-1/2in., 2in., and 3in. Plastic Electric Remote Control Valves, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use.	
	Fabco 765 1-1/4" Pressure Vacuum Breaker, brass with ball valve SOV. Install 12in. above highest downstream outlet and the highest point in the downstream piping.	
	Hunter PC-400 with (03) PCM-300 Light Commercial & Residential Controller, 13-station expanded module controller, 120 VAC, Outdoor model.	
	Hunter MINI-CLK Rain Sensor, mount as noted	
	Water Meter 1"	
	Irrigation Lateral Line: PVC Schedule 40	
	Irrigation Mainline: PVC Schedule 40	
	Pipe Sleeve: PVC Schedule 40	
	Valve Callout Valve Number Valve Flow Valve Size	



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CAPE CORAL, FLORIDA

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Sheet Title: IRRIGATION SYSTEM IRRIGATION SPECIFICATIONS (Sheet 2 of 2)

Land Architects, Inc.

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Plot CTB File:	LAI-CTB_2024b		
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Attachments:	24033-XTB-01		

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IR-5.02
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