

January 04, 2024
PREPARED BY: John Pari

TOWN OF LONGBOAT KEY

SPECIFICATIONS PACKAGE

FOR

FINANCIAL PROJECT ID(S). 446815-1
FEDERAL FUNDS

A DISTRICT ONE JOINT PARTICIPATION AGREEMENT PROJECT

TOWN OF LONGBOAT KEY, SARASOTA COUNTY

The Construction Details and Materials divisions (Division II & III) of the July 2022 edition of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction are revised as follows:

I hereby certify that this specifications package has been properly prepared by me, or under my responsible charge, in accordance with procedures adopted by the Florida Department of Transportation.

Signature

and Seal:

Date:

Engineer of Record: John Pari

Fla. License No.: 56368

Firm Name: DMK Associates, Inc.

Firm Address: 421 Commercial Court, Suite C

City, State, Zip code: Venice, FL 34292

Certificate of Authorization Number: 3943

Page(s): 1- 23

JPA DIVISION 1 SPECIFICATIONS.	3
TECHNICAL SPECIAL PROVISIONS:.....	7
The following Technical Special Provisions are individually signed and sealed but are included as part of this Specifications Package	7
LANDSCAPE.....	8
IRRIGATION.....	15
THIS COMPLETES THIS Technical Special Provisions.....	22
SPECIAL PROVISIONS.....	23

JPA DIVISION 1 SPECIFICATIONS.

(REV July 2022)

Construction Checklist Specifications
from
Department of Transportation
Standard Specifications for Road and Bridge Construction

The following excerpts from the Standard Specifications and Special Provisions are provided for use in JPA Specifications as needed in accordance with the Joint Participation Agreement Checklist for Construction Contracts (Phase 58) – Federal and State Requirements (525-011-00)

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STATE-FUNDED GRANT AGREEMENT**EXHIBIT O****TERMS AND CONDITIONS OF CONSTRUCTION IN DEPARTMENT RIGHT OF WAY****Section 10.e. of the Agreement is amended as follows for Construction on the Department's Right of Way.**

1. If the Project involves construction on, under, or over the Department's right-of-way, the design work for all portions of the Project to be constructed on, under, or over the Department's right-of-way shall be submitted to the Department for review prior to any work being commenced, and the following provisions shall apply:

- a. The Project shall be designed and constructed in accordance with the latest edition of the Department's Standard Specifications for Road and Bridge Construction and Department Design Standards and Manual of Uniform Traffic Control Devices ("MUTCD"). The following guidelines shall apply as deemed appropriate by the Department: the Department Structures Design Manual, AASHTO Guide Specifications for the Design of Pedestrian Bridges, AASHTO LRFD Bridge Design Specifications, the Florida Department of Transportation Design Manual ("FDM") and the Department Traffic Engineering Manual.

Designs that do not meet Department standards may be rejected by the Department at its sole discretion. The Department may allocate Department-managed resources to facilitate compliance with applicable design standards. If changes to the Department approved plans are required, the Recipient shall notify the Department of the changes and receive approval from the Department prior to the changes being constructed. The Recipient shall maintain the area of the Project, at all times, and coordinate any work needs of the Department during construction of the Project.

- b. The Recipient shall notify the Department a minimum of 48 hours before beginning construction within, under, or over Department right-of-way. The Recipient shall notify the Department should construction be suspended for more than 5 working days. The Department contact person for construction is .
- c. The Recipient shall be responsible for monitoring construction operations and the maintenance of traffic ("MOT") throughout the course of the Project in accordance with the latest edition of the Department Standard Specifications, section 102. The Recipient is responsible for the development of a MOT plan and making any changes to that plan as necessary. The MOT plan shall be in accordance with the latest version of the Department Design Standards, Index 600 series. Any MOT plan developed by the Recipient that deviates from the Department Design Standards must be signed and sealed by a professional engineer. MOT plans will require approval by the Department prior to implementation.
- d. The Recipient shall be responsible for locating all existing utilities, both aerial and underground, and for ensuring that all utility locations be accurately documented on the construction plans. All utility conflicts shall be fully resolved directly with the applicable utility.
- e. The Recipient will be responsible for obtaining all permits that may be required by other agencies or local governmental entities.
- f. It is hereby agreed by the Parties that this Agreement creates a permissive use only and all improvements located on, under, or over the Department's right-of-way resulting from this Agreement shall become the property of the Department. Neither the granting of the permission to use the Department right-of-way nor the placing of facilities upon the Department property shall operate to create or vest any property right to or in the Recipient, except as may otherwise be provided in separate agreements. The Recipient shall not acquire any right, title, interest or estate in Department right-of-way, of any nature or kind whatsoever, by virtue of the execution, operation, effect, or performance of this Agreement including, but not limited to, the Recipient's use, occupancy or possession of Department right-of-way. The Parties agree that this Agreement does not, and shall not be construed to, grant credit for any future transportation concurrency requirements pursuant to Chapter 163, Florida Statutes.

- g. The Recipient shall not cause any liens or encumbrances to attach to any portion of the Department's property, including but not limited to, the Department's right-of-way.
- h. The Recipient shall perform all required testing associated with the design and construction of the Project. Testing results shall be entered into the department's Materials Testing and Certification database application and the department must provide the final Materials Certification for the Project. The Department shall have the right to perform its own independent testing during the course of the Project.
- i. The Recipient shall exercise the rights granted herein and shall otherwise perform this Agreement in a good and workmanlike manner, with reasonable care, in accordance with the terms and provisions of this Agreement and all applicable federal, state, local, administrative, regulatory, safety and environmental laws, codes, rules, regulations, policies, procedures, guidelines, standards and permits, as the same may be constituted and amended from time to time, including, but not limited to, those of the Department, applicable Water Management District, Florida Department of Environmental Protection, Environmental Protection Recipient, the Army Corps of Engineers, the United States Coast Guard and local governmental entities.
- j. If the Department determines a condition exists which threatens the public's safety, the Department may, at its discretion, cause construction operations to cease and immediately have any potential hazards removed from on, under, or over its right-of-way at the sole cost, expense, and effort of the Recipient. The Recipient shall bear all construction delay costs incurred by the Department.
- k. The Recipient shall be responsible to maintain and restore all features that might require relocation within the Department right-of-way.
- l. The Recipient will be solely responsible for clean up or restoration required to correct any environmental or health hazards that may result from construction operations.
- m. The acceptance procedure will include a final "walk-through" by Recipient and Department personnel. Upon completion of construction, the Recipient will be required to submit to the Department final as-built plans and an engineering certification that construction was completed in accordance to the plans. Submittal of the final as-built plans shall include one complete set of the signed and sealed plans on 11" X 17" plan sheets and an electronic copy prepared in Portable Document Format (PDF). Prior to the termination of this Agreement, the Recipient shall remove its presence, including, but not limited to, all of the Recipient's property, machinery, and equipment from Department right-of-way and shall restore those portions of Department right of way disturbed or otherwise altered by the Project to substantially the same condition that existed immediately prior to the commencement of the Project.
- n. If the Department determines that the Project is not completed in accordance with the provisions of this Agreement, the Department shall deliver written notification of such to the Recipient. The Recipient shall have thirty (30) days from the date of receipt of the Department's written notice, or such other time as the Recipient and the Department mutually agree to in writing, to complete the Project and provide the Department with written notice of the same (the "Notice of Completion"). If the Recipient fails to timely deliver the Notice of Completion, or if it is determined that the Project is not properly completed after receipt of the Notice of Completion, the Department, within its discretion may: 1) provide the Recipient with written authorization granting such additional time as the Department deems appropriate to correct the deficiency(ies); or 2) correct the deficiency(ies) at the Recipient's sole cost and expense, without Department liability to the Recipient for any resulting loss or damage to property, including, but not limited to, machinery and equipment. If the Department elects to correct the deficiency(ies), the Department shall provide the Recipient with an invoice for the costs incurred by the Department and the Recipient shall pay the invoice within thirty (30) days of the date of the invoice.
- o. The Recipient shall implement best management practices for erosion and pollution control to prevent violation of state water quality standards. The Recipient shall be responsible for the correction of any erosion, shoaling, or water quality problems that result from the construction of the Project.

- p. Portable Traffic Monitoring Site (PTMS) or a Telemetry Traffic Monitoring Site (TTMS) may exist within the vicinity of your proposed work. It is the responsibility of the Recipient to locate and avoid damage to these sites. If a PTMS or TTMS is encountered during construction, the Department must be contacted immediately.
- q. During construction, highest priority must be given to pedestrian safety. If permission is granted to temporarily close a sidewalk, it should be done with the express condition that an alternate route will be provided, and shall continuously maintain pedestrian features to meet Americans Disability Act (ADA) standards.
- r. Restricted hours of operation will be from Insert restrict hours of operation, (insert days of the week for restricted operation), unless otherwise approved by the Operations Engineer, or designee.
- s. Lane closures on the state road system must be coordinated with the Public Information Office at least two weeks prior to the closure. The contact information for the Department's Public Information Office is:

Insert District PIO contract info

Note: (Highlighted sections indicate need to confirm information with District Office or appropriate DOT person managing the Agreement)

TECHNICAL SPECIAL PROVISIONS:

**THE FOLLOWING TECHNICAL SPECIAL PROVISIONS ARE
INDIVIDUALLY SIGNED AND SEALED BUT ARE INCLUDED AS PART OF
THIS SPECIFICATIONS PACKAGE:**

LANDSCAPE

IRRIGATION

TECHNICAL SPECIAL PROVISION

FOR

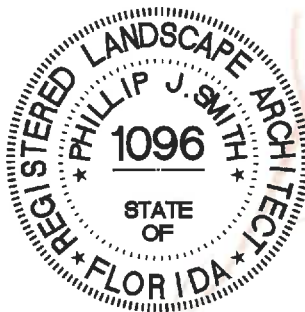
TOWN OF LONGBOAT KEY

**T580 – LANDSCAPE INSTALLATION
T590 – IRRIGATION SYSTEM**

**PROJECT NO. SR 789-446815-1
FROM CHANNEL ROAD TO LONBOAT CLUB ROAD**

The official record of this Technical Special Provision has been electronically signed and sealed using a Digital Signature as required by Rule 61G10-11.011, F.A.C. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Registered Landscape Architect	<u>Phillip J. Smith</u>
Date:	<u>6/30/23</u>
Fla License No:	<u>RLA 1096</u>
Firm Name:	<u>David W. Johnston Associates, Inc.</u>
Firm Address:	<u>630 South Orange, Suite 202</u>
City, State, Zip code:	<u>Sarasota, FL 34236</u>
Pages:	<u>1 - 14</u>



Digitally signed by Phillip J
Smith
DN: c=US, o=David W.
Johnston Associates,
dnQualifier=A01410D00000
1866ECC257F00095FE1,
cn=Phillip J Smith
Date: 2023.06.30 12:22:51
-04'00'

SECTION 580

LANDSCAPE INSTALLATION

T580-1 Description.

Plant trees and shrubs of the species, size, and quality indicated in the plans. The Engineer reserves the right to adjust the number and location of any of the designated types and species to be used at any of the locations shown, to provide for any unanticipated effects which might become apparent after the substantial completion of other phases of the project, or for other causes.

T580-2 Materials.

T580-2.1 Plants:

T580-2.1.1 Authority for Nomenclature; Species, etc.:

For the designated authority in the identification of all plant material, refer to publications of L.H. Bailey: "Hortus III" and "Manual of Cultivated Plants," and ensure that all specimens are true to type, name, etc., as described therein. For the standard nomenclature, refer to the publication of the American Joint Committee on Horticultural Nomenclature, "Standardized Plant Names."

T580-2.1.2 Grade Standards and Conformity with Type and Species:

Only use nursery grown plant material except where specified as Collected Material. Use nursery grown plant material that complies with all required inspection, grading standards, and plant regulations in accordance with the latest edition of the Florida Department of Agriculture's "Grades and Standards for Nursery Plants". Except where a lesser grade might be specifically specified in the plans, ensure that the minimum grade for all trees and shrubs is Florida No. 1.

Ensure that all plants are the proper size and grade at the time of delivery to the site, throughout the project construction period and during the plant establishment period. Ensure that plant materials are true to type and species and that any plant materials not specifically covered in Florida Department of Agriculture's "Grades and Standards for Nursery Plants" conform in type and species with the standards and designations in general acceptance by Florida nurseries. Ensure that plant materials are shipped with tags stating the botanical and common name of the plant.

T580-2.1.3 Inspection and Transporting:

Move nursery stock in accordance with all Federal and State regulations there for and accompany each shipment with the required inspection certificates for filing with the Engineer.

T580-2.2 Water:

Water as necessary for plant establishment. Include all costs of watering in the bid price for planting.

T580-3 Specific Requirements for the Various Plant Designations.

T580-3.1 Balled-and-Burlapped Plants (B&B), and Wired Balled-and-Burlapped (WB & B):

T580-3.1.1 General:

Properly protect the root ball of these plants until planting them. The Engineer may reject any plant which shows evidence of having been mishandled. Set the B&B and WB&B plants then remove the top 1/8 of all wire, rope, and binding surrounding the plant. Remove the burlap from the top 2 inches of the root ball. Do not disturb the root ball in any way. Bare root material is not allowed for substitution. At least 90 days before digging out B & B and WB & B plants, root-prune those 1½ inches or greater in diameter and certify such fact on accompanying invoices.

T580-3.1.2 Provisions for Wiring:

For plants grown in soil of a loose texture, which does not readily adhere to the root system (and especially in the case of large plants or trees), the Engineer may require WB & B plants. For WB & B plants, before removing the plant from the excavated hole, place sound hog wire around the Burlapped ball, and loop and tension it until the tightened wire netting substantially packages the Burlapped ball such as to prevent disturbing of the loose soil around the roots during handling.

T580-3.2 Container-Grown Plants (CG):

The Engineer will not accept any CG plants with roots which have become pot-bound or for which the top system is too large for the size of the container. Fully cut and open all containers in a manner that will not damage the root system. Do not remove CG plants from the container until immediately before planting to prevent damage to the root system.

T580-3.3 Collected Plants (Trees and Shrubs) (C):

Use C plants which have a root ball according to "Florida Grades and Standards for Nursery Plants". Do not plant any C plant before the Engineer's inspection and acceptance at the planting site.

T580-3.4 Collected Plants (Herbaceous) (HC):

The root mass and vegetative portions of collected herbaceous plants shall be as large as the specified container-grown equivalent. Do not plant any collected plant before inspection and acceptance by the Engineer.

T580-3.5 Specimen Plants (Special Grade):

When Specimen (or Special Grade) plants are required, label them as such on the plant list, and tag the plant to be furnished.

T580-3.6 Palms:

Wrap the roots of all plants of the palm species with shrink wrap before transporting, except if they are CG plants and ensure that they have an adequate root ball structure and mass for healthy transplantation as defined in "Florida Grades and Standards for Nursery Plants". The Engineer will not require burlapping if the palm is carefully dug from marl or heavy soil that adheres to the roots and retains its shape without crumbling. During transporting and after arrival, carefully protect root balls of palms from wind and exposure to the sun. Muck grown palms are not allowed. After delivery to the job site, if not planting the palm within 24 hours, cover the root ball with a moist material. Plant all palms within 48 hours of delivery to the site. Move sabal and coconut palms in accordance with the "Florida Grades and Standards for Nursery Plants."

T580-3.7 Substitution of Container-Grown (CG) Plants:

With the Engineer's approval, the Contractor may substitute CG plants for any other root classification types, if he has met all other requirements of the Contract Documents.

T580-4 Planting Requirements.**T580-4.1 Layout:**

Prior to any excavation or planting, mark all planting beds and individual locations of palms, trees, large shrubs and proposed art and architectural structures, as shown in the plans, on the ground with a common bright orange colored spray paint, or with other approved methods, within the project limits. Obtain the Engineer's approval and make necessary utility clearance requests.

T580-4.2 Excavation of Plant Holes:

Excavate plant holes after an area around the plant three times the size of the root ball has been tilled to a depth of the rootball. Ensure that the plant hole is made in the center of the tilled area only to the depth of the plant root ball. Where excess material has been excavated from the plant hole, use the excavated material to backfill to proper level.

T580-4.3 Setting of Plants:

Center plants in the hole. Lower the plant into the hole so that it rests on a prepared hole bottom such that the roots are level with, or slightly above, the level of their previous growth and so oriented such as to present the best appearance. Backfill with native soil, unless otherwise specified on the plans. Firmly rod and water-in the backfill so that no air pockets remain. Apply enough water immediately upon planting to thoroughly moisten all the backfilled earth. Keep plants in a moistened condition for the duration of the planting period. When so directed, form a water ring 6 inches in width to make a water collecting basin with an inside diameter equal to the diameter of the excavated hole. Maintain the water ring in an acceptable condition.

T580-4.4 Special Bed Preparation:

Where multiple or mass plantings are to be made in extended bedding areas,

and the plans specify Special Bed Preparation, prepare the planting beds as follows: Remove all vegetation from within the area of the planting bed and excavate the surface soil to a depth of 6 inches. Backfill the excavated area with peat, sand, finish soil layer material or other material to the elevation of the original surface. Till the entire area to provide a loose, friable mixture to a depth of at least 8 inches. Level the bed only slightly above the adjacent ground level. Then mulch the entire bedding area, in accordance with 580-8.

T580-5 Staking and Guying.

T580-5.1 General:

When specified in the plans, or as directed by the Engineer, stake plants in accordance with the following. Use wide plastic, rubber, or other flexible strapping materials to support the tree to stakes or ground anchors that will give as the tree moves in any direction up to 30 degrees. Do not use rope or wire through a hose. Use guy chords, hose or any other thin bracing or anchorage material which has a minimum 12 inches length of high visibility flagging tape secured to guys, midway between the tree and stakes for safety. Stake trees larger than 1 inch diameter and smaller than 2 inches diameter with a 2 by 2-inch stake, set at least 2 feet in the ground and extending to the crown of the plant. Firmly fasten the plant to the stake with flexible strapping materials as noted above.

T580-5.2 Trees of 2 to 3 1/2 inches Caliper:

Stake all trees, other than palm trees, larger than 2 inches caliper and smaller than 3 -1/2 inches caliper with two 2 by 4-inch stakes, 8 feet long set 2 feet in the ground. Place the tree midway between the stakes and hold it firmly in place by flexible strapping materials as noted above.

T580-5.3 Large Trees:

Guy all trees, other than palm trees, larger than 3 1/2 inches caliper, from at least three points, with flexible strapping materials as noted above. Anchor flexible strapping to 2 by 4 by 24-inch stakes, driven into the ground such that the top of the stake is at least 3 inches below the finished ground.

T580-5.4 Special Requirements for Palm Trees:

Brace palms which are to be staked with three 2 by 4-inch wood braces, toenailed to cleats which are securely banded at two points to the palm, at a point one third the height of the trunk. Pad the trunk with five layers of burlap under the cleats. Place braces approximately 120 degrees apart and secure them underground by 2 by 4 by 12-inch stake pads.

T580-6 Tree Protection and Root Barriers.

Install tree barricades when called for in the Contract Documents or by the Engineer to protect existing trees from damage during project construction. Place barricades at the drip line of the tree foliage or as far from the base of the tree trunk as possible. Barricades shall be able to withstand bumps by heavy equipment and trucks. Maintain barricades in good condition. When

called for in the Contract Documents, install root barriers or fabrics in accordance with the details shown.

T580-7 Pruning.

Prune all broken or damaged roots and limbs in accordance with established arboriculture practices. When pruning is completed ensure that all remaining wood is alive. Do not reduce the size or quality of the plant below the minimum specified.

T580-8 Mulching.

Uniformly apply mulch material, consisting of wood chips (no Cypress Mulch is allowed), pine straw, compost, or other suitable material approved by the Engineer, to a minimum loose thickness of 3 inches over the entire area of the backfilled hole or bed within two days after the planting. Maintain the mulch continuously in place until the time of final inspection.

T580-9 Disposal of Surplus Materials and Debris.

Dispose of surplus excavated material from plant holes by scattering or otherwise as might be directed so that it is not readily visible or conspicuous to the passing motorist or pedestrian. Remove all debris and other objectionable material from the site and clean up the entire area and leave it in neat condition.

T580-10 Contractor's Responsibility for Condition of the Plantings.

Ensure that the plants are kept watered, that the staking and guying is kept adjusted as necessary, that all planting areas and beds are kept free of weeds and undesirable plant growth and that the plants are maintained so that they are healthy, vigorous, and undamaged at the time of acceptance.

T580-11 Plant Establishment Period and Contractor's Warranty.

Assume responsibility for the proper maintenance, survival, and condition of all landscape items until the final acceptance of all work under the Contract. Take responsibility to apply water as necessary during this period and include the cost in the various landscape items. No separate measurement or payment will be made for water during the plant establishment period. Replace all landscape items found not to meet minimum specifications as shown in 580-2.1.2 after each inspection. At the end of the one-year warranty period, the Engineer will release the Contractor from further warranty work and responsibility, provided all landscape items are established and all previous warranty and remedial work, if any, has been completed.

T580-12 Method of Measurement.

The quantities to be paid for will be the items shown in the plans, completed, and accepted.

T580-13 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including furnishing, and planting the designated plant types, the furnishing and placing of the plant backfill, fertilizer, staking, watering in and mulch, (except where such are shown to be paid for under a separate item), the application of water, the maintenance, care, etc., and all costs of any required replacing of plantings or restoring of damaged areas for one (1) year after final acceptance.

T590 IRRIGATION INSTALLATION AND EQUIPMENT

T-590-1 DESCRIPTION.

The work specified in this Technical Special Provision consists of the furnishing and installation of an Automatic Irrigation System and related equipment with accessories necessary to function safely, properly and in accordance with the design set of plans. All costs associated with this Technical Special Provision shall be included in the lump sum price.

T590-2 SYSTEM DESCRIPTION.

Design Requirements:

T590-2.1 Layout of Irrigation fixtures:

Location of fixtures shown on drawings is approximate. Actual placement may vary as required to achieve full, even coverage without discharging onto roadways.

During layout, consult with the Engineer to verify proper placement and make revisions when required.

T590-3.0 System Requirements:

Locations of remote-control valves are schematic. Remote Control valves shall be grouped wherever possible and placed in areas affording protection from maintenance operations and vehicular activity.

T590-4 Submittals.

Product Information:

Submit product literature and data for irrigation equipment including:

1. Mainline Piping and Fittings
2. Lateral Piping and Fittings
3. Controllers and Battery Timer
4. Rain Sensors
5. Meter/backflow Preventor
6. Control Valves
7. Valve Boxes
8. Pressure Compensating Flood Bubblers
9. Sleeves
10. Dripline Pressure Compensating tubing
11. Dripline tubing insert fittings

Provide five copies of product literature and well construction permit for the Engineer's review and approval. All product literature shall be submitted at one time.

T590-5 Product Storage:

During construction and storage, protect materials from damage and prolonged exposure to sunlight.

T590-6.0 Materials.

T590-6.1 Mainline Pipe and Fittings, and Connections:

1. The material used in the manufacture of the pipe shall be domestically produced rigid polyvinyl chloride (PVC) compound, Type 1 Grade 1, with cell classification of 12454 as defined in ASTM 1784. Pipe shall be purple for reclaim application.
2. Mainline Under Pressure: PVC shall conform to the requirements of ASTM Designation D 2241, Class 1120 or 1220, Class 200 solvent weld.

T590-6.2 PVC Lateral Pipe and Fittings:

1. The material used in the manufacture of the pipe shall be domestically produced rigid polyvinyl chloride (PVC) compound, Type 1 Grade 1, with cell classification of 12454 as defined in ASTM 1784. Pipe shall be purple for reclaim application.
2. Laterals: PVC shall conform to the requirements of ASTM Designation D 2241, Class 1120 or 1220. Class 200 solvent weld.
3. Use Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM Standards D2466 and D1785 for PVC pipe.

T590-6.3 Controllers:

1. Description: The controller shall be a hybrid type that is microelectronic circuitry capable of fully automatic or manual operation.
2. Minimum Capabilities of Controller(s):

Shall be compatible with a rain sensor for system shutdown during a rain event.

Shall be housed in a valve box, weather resistant plastic cabinet with a key locking cabinet door/lid suitable for outdoor installation.

Shall have the following program features: Start times in 1-minute increments, 7-day calendar or interval watering, rain delay from 1 to 7 days, and 3 start times per day.

T590-6.4 Rain Sensor:

1. Shall be capable of monitoring rain and have the ability to shut the irrigation system off as weather conditions require.
2. Shall have a minimum rainfall adjustment from 1/8" to 1".
3. Shall be mounted on a galvanized black 2" fence post.

T590-6.5 Control Wires:

Wiring used for connecting the electric control valves to the controllers shall be Type UF, 600-volt, single strand, solid copper with PVC insulation 4/64" thick. Size shall be 12- AND 14-gauge wire.

T590-6.6 Valves:

Remote Control Valve Assembly:

1. As shown on the Irrigation Legend and Details sheet with decoders for control.
2. Remote Control Valve: The valve pressure rating shall not be less than 150 psi. The valve body and bonnet shall be constructed of heavy-duty glass-filled UV resistant nylon and have stainless steel studs and flange nuts; diaphragm shall be of nylon reinforced nitrile rubber. The valve shall have an external manual open/close control (external bleed) to manually open and close the valve without electrically energizing the solenoid. The valve shall house a fully encapsulated, one-piece 24V -DC solenoid. The solenoid shall have a captured plunger with a removable retainer for easy servicing and a leverage handle for easy turning. The valve shall have a flow control stem for accurate manual regulation and/or shutoff of outlet flow. Provide for all internal parts to be removable from the top of the valve without disturbing the valve installation.

3. Valve Box: Use plastic (ABS) Jumbo rectangular valve box with green lid.
4. Filter Fabric: Use a spun bond polyester 3.5 oz. per square yard landscape fabric.
5. Install assembly over gravel sump as presented in the installation details.
6. Wire connectors: Use waterproof direct burial wire connectors DBC-Y or equal for connection of solenoid wires to the control wires.

T590-6.7 Flood Bubblers:

1. As shown on the Irrigation Legend & Details sheet.
2. Pressure Compensating bubbler shall have a ½" (FIPT) inlet to accept male adapter and ½' flex pipe.
3. Bubblers shall be pressure compensating with 1.0 GPM flow rate.
4. One 1.0 GPM PC flood bubblers as noted on plans are required for all trees and palms.
5. Flood bubbler shall be clipped at the base of tree or palm with a wire clip.

T590-6.8 Dripline Tubing:

1. As shown on the Irrigation Details sheet.
2. Dripline Tubing shall have operating pressure range of 7 to 70 psi.
3. Dripline Tubing shall have 0.53GPH inline pressure regulating emitters at 18" spacing.

T590-6.9 Dripline Tubing Insert Fittings:

1. Shall be made of UV-resistant ABS material.
2. Operating pressure range of 0-70 psi.
3. Where pressure exceeds 40 psi, insert fittings and dripline tube connections shall be secured with a stainless-steel band or hose clamp.

T590-6.10 Execution

Installation:

Trenching and Backfilling:

1. Over-excavate trenches two inches and bring back to indicated depth by filling with fine rock-free, soil or sand.
2. Cover pipe both top and sides with two inches of material specified in paragraph above. In no case shall there be less than two inches of rock-free soil or sand surrounding buried pipe.
3. Do not cover pressure main, sprinkler pipe, or fittings until the Department has inspected and approved system.
4. During construction and the establishment period, fill and repair depressions and replace plantings and/or grassing due to settlement of irrigation trenches.

T590-7.1 Installation of Plastic Pipe:

1. Install plastic pipe in a manner to provide for expansion and contraction as recommended by Manufacturer.
2. Unless otherwise indicated on plans, mainlines and laterals may be installed below ground minimum of 18" below finished grade.
3. Polyethylene hose may be installed above ground. Above ground polyethylene hose shall be staked with sod staples spaced a maximum of four feet apart.
4. Drawings show arrangement of piping. Should local conditions necessitate rearrangement, obtain approval of the Department before proceeding with work.
5. Cut plastic pipe square. Remove burrs at cut ends prior to installation so unobstructed flow will result.
6. Make solvent weld joints in the following manner - Clean mating pipe and fitting with clean, dry cloth and apply one coat of P-70 primer to each. Apply uniform coat of 711 solvent to outside of pipe. Apply solvent to fitting in similar manner. Re-apply a light coat of solvent to pipe and quickly insert into fitting. Give pipe or fitting a quarter turn to insure even distribution of solvent and make sure pipe is inserted to full depth of fitting socket. Hold in position for

15 seconds minimum or long enough to secure joint. Wipe off solvent appearing on outer shoulder of fitting. Do not use an excessive amount of solvent thereby causing an obstruction to form on inside of pipe. Allow joints to set at least 24 hours before applying pressure to PVC pipe. Tape threaded connections with Teflon tape.

T590-7.2 Thrust Blocks:

1. All mainline pipes over 100 PSI shall have thrust blocks installed at tees, bends, or end of pipelines. Care should be taken to keep all concrete off of the fittings and from joints of pipe. Control, power and live wires must be kept free of concrete and placed outside of thrust.

T590-7.3 Control Valves and Controller(s):

1. Install controller and valves in accordance with Manufacturer's recommendations.
2. Install valves in plastic boxes with reinforced heavy duty plastic covers. Locate valve box tops at finish grade. Valve boxes shall have snap top lids.
3. Install remote control valves in valve boxes positioned so all parts of the valve can be reached for service. Set cover of valve box at finish grade.

T590-7.4 Dripline tubing and Flood Bubblers:

1. Prior to installation of dripline and bubblers, open control valves and use full head of water to flush out system lateral piping.

T590-7.5 System Operation:

1. Maintain the irrigation system in safe and operational condition during construction.
2. Monitor and adjust system to supply proper coverage to areas intended to receive water.

T590-7.6 Record Plans:

1. Provide Record plans of all equipment installed with 2 swing tie measurements (from a fixed point in the field) to all sleeves and valves.

T590-8 Field Quality Control:

Flushing and Testing:

Pressure Test:

1. All pressure lines shall be tested prior to backfilling joint areas. Test pressure lines at a minimum sustained pressure of 65 psi for 4 hours. Maximum loss shall be 0.8 gallons/inch pipe diameter/1000 feet. Testing shall be witnessed by the Engineer. Notify the Engineer a minimum of 48 hours prior to test. Do not backfill lines until approved by the Engineer.

T590-8.1 Operational Test:

1. Upon completion of the entire system, test each zone to visually check for uniform distribution. Distribution shall be checked within any one area and over the entire zone. Test the entire system to demonstrate the complete and successful operation of all equipment. Testing shall be witnessed by the Engineer. Notify the Engineer a minimum of 48 hours prior to test.

T590.9 Adjustment and Cleaning:

Adjust watering time of valves to provide proper amounts of water to all plants.

T590.10 Method of Measurement:

The quantities to be paid for the work will be the items shown in the plans, completed, and accepted.

T590.11 Basis of Payment:

Prices and payments will be full compensation for all work specified in this section, including furnishing all parts and equipment, installing, testing, completion of record plans, incidental work and detailing system for turnover.

**THIS COMPLETES
THIS TECHNICAL
SPECIAL
PROVISION**

Special Provisions

1. Permit void unless Manatee Ops Permits Office is Notified 2 (two) business days in advance of starting work. Phone: 941-708-4433.
2. If a lane closure is within project limits, the Permittee must notify the Department two weeks prior to starting a lane closure to inform the motoring public. Failure to comply may result in delay to start work.
3. Sod all portions of disturbed R/W.