

SECTION 01100 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Work covered by the Contract Documents.
 - 2. Type of the Contract.
 - 3. Use of premises.
 - 4. Work restrictions.
 - 5. Miscellaneous Provisions

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Goldsboro Trail Phase II
 - 1. Project Location: Sanford, Florida
- B. Owner: City of Sanford, Florida
 - 1. Owner's Representative: Mr. Robert Beall
- C. Landscape Architect: Bellomo-Herbert & Company, Inc.
- D. The Work consists of the following:
 - 1. The Work includes, but is not necessarily limited to, paving, drainage, site furnishings, electrical conduit placement, lighting, landscaping and irrigation.

1.4 TYPE OF CONTRACT

- A. Project will be constructed under a single unit cost contract.

1.5 USE OF PREMISES

- A. General: Each Contractor shall have full use of premises for construction operations, including use of Project site, during construction period. Each Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

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1.6 WORK RESTRICTIONS

- A. On-Site Work Hours: Work shall be generally performed during normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except as may be otherwise indicated.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than five days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's written permission.

1.7 MISCELLANEOUS PROVISIONS

- A. Whenever a conflict appears between the plans and specifications, the more stringent requirement shall apply. If a conflict is of such a nature as to require a decision, then a written request for clarification must be made prior to starting that phase of construction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01115 – CONTRACTOR’S USE OF THE PREMISES

PART I GENERAL

1.1 DESCRIPTION OF WORK

- A. Work included: This Section applies to situations in which the Contractor or his representatives, including, but not necessarily limited to suppliers, subcontractors, employees and field engineers enter, have access to and conduct themselves on the Owner’s property.
- B. Related work: Work affecting this Section includes, but is not necessarily limited to General Conditions, Supplementary Conditions and all Divisions of these Specifications.

1.2 CONTRACTOR’S OFFICE

- A. The Contractor shall provide and maintain a location on the project site with telephone facilities where he or a responsible representative of his organization may be reached at any time while work is in progress.
- B. The project superintendent or his appointed representative shall be on site during all normal working hours and whenever the Contractors personnel or any Subcontractors personnel are working after normal working hours or on weekends.

1.3 USE OF PUBLIC STREETS

- A. The use of Public streets shall be such as to provide minimum of inconvenience to the public and to other traffic. Any earth or other excavated material spilled from trucks shall be removed immediately by the Contractor and the streets cleaned to the satisfaction of the Owner.

1.4 PROJECT SIGNS

- A. The Contractor is required to display, Owner provided, project information signs during the full course of the contract period, from the start of construction until the request for final payment.
- B. Sign installation:
 - 1. Sign shall be attached to a minimum of three pressure treated 4x4 below grade pressure treated wooden posts and braced as necessary for high winds.
 - 2. Posts shall be long enough to provide secure anchoring in the ground.
 - 3. Bottom of sign must be a minimum of 24” above the ground.
 - 4. Alternate mounting system or attachment to fencing or other fixed structure can be considered for approval.
- C. Sign placement:
 - 1. Signs shall be placed where indicated by the Owner prior to the commencement of the work.
 - 2. Signs are not to be placed where they may become a hazard or impediment to either pedestrian or vehicular traffic.

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- D. Sign maintenance:
 - 1. The Contractor is responsible for preparation, installation, maintenance, replacement, removal, and disposal of all project signs during the full course of the contract period. Signs are to be cleaned as necessary to maintain legibility and immediately replaced if defaced.

1.5 CARE OF TREES, SHRUBS AND GRASS

- A. The Contractor shall be fully responsible for maintaining in good condition all cultivated trees indicated on the plans to remain.

1.6 OBSTRUCTIONS

- A. All water pipes, storm drains, force mains, gas or other pipe, telephone or power cables or conduits, curbs, sidewalks and all other obstructions, whether or not shown, shall be temporarily removed from, or supported across utility line excavations. Where it is necessary to temporarily interrupt house, business services or the owners services, the Contractor shall notify the Owner, both before the interruption and again immediately before service is resumed. Before disconnecting any pipes, conduits or cables the Contractor shall obtain permission from their Owner, or make suitable arrangements for their disconnection by their owner. The Contractor shall be responsible for any damage to any such pipes, conduits, or cables and shall restore them to service promptly as soon as the work has progressed past the point involved. These conditions are supplemental the General requirements elsewhere in these specifications.

1.7 PLANNED DISRUPTIONS OR SERVICE OUTAGES

- A. Prior to the shutting off, disruption, or otherwise modifying the following existing services, the Contractor must request authorization in writing from Owner and local governing body if required.

- Electric Power (service) to a building
 - Electrical Circuits and Subfeeders
 - Gas
 - Water
 - Sewer - Sanitary
 - Fire Water
 - Reclaimed Water
 - Telephone
 - Other services not noted, etc.

- B. All contractors, subcontractors or vendors are required to get the approval of the Owner before taking any of the actions noted below, to the systems noted.

- 1. Actions:
 - a. Shutting off, turning on, tripping, (valves, circuit breakers, disconnect switches or other operation devices.).
 - b. Connecting to or disconnecting from.

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2. Systems:

- a. Electrical Power and Lighting Panels, Switchboards, Transfer Switches, Motor Starters, communication & telephone.
- b. Gas Systems
- c. Water, Sanitary Lines, and other Piping Systems.

C. Requests for service interruptions must state type of service to be interrupted, areas to be affected, duration of interruption, and the name of the person (on-site) who will supervise and is responsible for the project.

1.8 DAMAGE TO EXISTING STRUCTURES AND UTILITIES

- A. The Contractor shall be responsible for and make good all damage to the pavement beyond the limits of the contract, buildings, telephone or other cables, water pipes, sanitary pipes, or other structures which may be encountered, whether or not shown on the drawings.
- B. Information shown on the Drawings as to the location of existing utilities has been prepared from the most reliable data available to the Landscape Architect. This information is not guaranteed. It shall be this Contractors responsibility to determine the location, character and depth of any existing utilities. He shall assist the utility companies, by every means possible to determine said locations. Extreme caution shall be exercised to eliminate any possibility of any damage to utilities resulting from his activities.
- C. Driveways, sidewalks, roadways and curbs destroyed or damaged during construction shall be replaced and shall be the same type of materials as destroyed or damaged, or to existing City Standards, whichever provides the stronger repair, at no additional cost to the Owner. All street pavement destroyed or damaged shall be replaced with the same type of material, to existing City Standards, unless the existing base is unsuitable as determined by the Engineer, then the base shall be replaced with City approved material. All replaced base shall be a minimum 8" compacted thickness, or same thickness as base destroyed plus 2", if over 6", and compacted to 98% of maximum density per AASHTO T-180.

1.9 QUALITY ASSURANCE

- A. Promptly upon award of the Contract, notify all pertinent personnel regarding requirements of this Section.
- B. Require that all personnel who will enter upon the Owner's property certify their awareness of and familiarity with the requirements of this section.

1.10 RECORDS

- A. Maintain an accurate record of the names and identification of all persons entering upon the Owner's property in connection with the Work of this Contract Including times of entering and leaving.

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1.11 SAFETY

- A. Contractors shall adhere to applicable OSHA regulations (Of special concern is providing appropriate personal protective equipment, adequate fire suppression equipment, properly installed and maintained temporary wiring.
- B. Contractors shall furnish all warning signs, detours, and temporary facilities necessary for the protection and safety of all employees.
 - 1. All construction areas to which non-construction personnel have access shall be marked with readily visibly warning signs (such as “Danger - Construction Area”)
- C. Contractors are responsible for the safe handling, storage, and disposal of all waste material off-site on a timely basis. No trash or materials should be left on site.

1.12 DRESS AND CONDUCT

- A. All construction personnel shall maintain a neat general appearance at all times. Shirts, trousers and proper shoes are required apparel. Sandals or flip-flops will not be permitted.
- B. Anyone choosing to wear clothing with offensive words, pictures, etc., will be required to cover or change clothing even if to do so required loss of time from the job.
- C. Any complaint resulting from construction personnel’s action will be investigated. If complaints are verified, it can be cause for that person to be removed for the project.

END OF SECTION 01115

SECTION 01250 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
 - 1. Division 1 Section "Unit Prices" for administrative requirements for using unit prices.

1.3 MINOR CHANGES IN THE WORK

- A. Landscape Architect will issue Supplemental Instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Landscape Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within two weeks after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

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- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Landscape Architect.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.5 CHANGE ORDER PROCEDURES

- A. An Owner's approval of a Proposal Request will be issued for each proposal within 2 weeks of receipt.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01250

SECTION 01270 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections include the following:
 - 1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 1 Section "Measurement & Payment" for procedures for measurement and payment for unit price item.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured by the Owner's representative.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01270

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SECTION 01275 - MEASUREMENT AND PAYMENT

PART I GENERAL

1.01 DESCRIPTION

- A. The Contractor shall receive and accept the compensation provided in the Contract as full payment for furnishing all materials, labor, tools and equipment for performing all operations necessary to complete the work under the Contract, plus any miscellaneous items and services that may not be specifically identified in the Contract Drawings and Specifications but that can be inferred from the Contract Drawings and Specifications and are necessary to produce a completed Work that is usable in a manner for which it was intended. If any items for a complete work are omitted or not shown, the Contractor shall furnish and install them without additional cost to the Owner, and also in full payment for all loss or damages arising from the nature of the Work, or from any discrepancy between the actual quantities of Work and quantities herein estimated in the Contract Documents, or from the action of the elements or from any unforeseen difficulties which may be encountered during the prosecution of the Work until the final acceptance by the Owner.
- B. The prices stated in the Bid Form include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the Work as shown on the Drawings and specified herein. The basis of payment for an item at the unit price shown in the proposal shall be in accordance with the description of that item in this Section.
- C. The Contractor's attention is again called to the fact that the quotations for the various items of Work are intended to establish a total price for completing the Work in its entirety. Should the Contractor feel that the cost for any item of Work has not been established by the Bid Form or Payment Items, he shall include the cost for that Work in some other applicable bid item, so that his proposal for the Project does reflect his total price for completing the Work in its entirety.
- D. The Contractor shall prepare and submit an Application for Payment once per month.

1.02 MEASUREMENT

- A. The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for use and accepted by the Owner, in accordance with the applicable method of measurement therefore contained herein. A representative of the Contractor shall witness all field measurements.

1.03 PAYMENT ITEMS, BASE BID

Bid Item No. 1 – Mobilization and Demobilization

- 1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 101 Mobilization.

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Bid Item No. 2 – Maintenance of Traffic

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 102 Maintenance of Traffic
2. Description: Maintenance of Traffic shall also include the cost of restoring all disrupted pavement and stabilization to pre-construction conditions. Includes the cost of temporary drainage.

Bid Item No. 3 – Synthetic Bales

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 104 Prevention, Control, and Abatement of Erosion and Water Pollution.

Bid Item No. 4 – Staked Silt Fence (Type III)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 104 Prevention, Control, and Abatement of Erosion and Water Pollution.

Bid Item No. 5 – Clearing & Grubbing

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 110 Clearing and Grubbing.
2. Description: Clearing and Grubbing shall include but is not limited to the cost of removal and disposal of trees, fencing, concrete curb, sidewalk, and asphalt pavement required to construct the project. Includes the cost of fence relocation and tree protection per Standard Index 544.

Bid Item No. 6— Regular Excavation

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 120 Excavation and Embankment.

Bid Item No. 7 – Embankment

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 120 Excavation and Embankment.

Bid Item No. 8 – Stabilized Subgrade

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 160 Stabilizing.

Bid Item No. 9 – Optional Base (Group 4)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 285 Optional Base Course.

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Bid Item No. 10 – Superpave Asphaltic Concrete (SP) (Traffic A)

1. See “FDOT Standard Specifications for Asphaltic Concrete Construction 2007” Section 334 Hot Mix Asphalt.

Bid Item No. 11 – Miscellaneous Concrete (3000 psi)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 400 Concrete Structures.
2. Description: Concrete used in the construction of the raised cross walk shall have a minimum compressive strength of 3000psi.

Bid Item No. 12 – Guiderail Steel

1. Description: This Measurement and Payment item consists of the installation of steel guide rail and all associated materials required for installation. See Design Standard Index 880 Steel Pipe Guiderail.
2. Measurement: The unit of measurement for this item will be per linear foot (LF).
3. Basis of Payment: The quantity for payment will be per linear foot (LF) of Guiderail installed.

Bid Item No. 13 - Bollards

1. Description: This Measurement and Payment item consists of the bollards and all other appurtenances required for complete installation of the proposed bollards. Bollards shall be purchased from Landscape Structures, Model No. 151764-00-00, with base plate Model No. 113983-01-00 or approved equal. Contact Jeff Caldwell 407-831-9658 or Equal.
2. Measurement: The unit of measurement for this item will be per each (EA).
3. Basis of Payment: Payment shall be made for each (EA) bollard installed.

Bid Item No. 14 – Curb & Gutter (Type F)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 520 Concrete Gutter, Curb Elements, and Traffic Separator.

Bid Item No. 15 - Curb & Gutter (Type B)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 520 Concrete Gutter, Curb Elements, and Traffic Separator.

Bid Item No. 16 – Concrete Sidewalk (4” Thick)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 522 Concrete Sidewalk.
2. Description: Includes all costs for the materials and installation of concrete sidewalks including detectable warning surfaces on all sidewalk curb ramps. Detectable warning surfaces shall be cast in place per FDOT Qualified Products List No. S527-006 Armor – Tile with brick red color. Includes the cost of the thickened edge for handrail installation.

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Bid Item No. 17 – Concrete Sidewalk (6” Thick)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 522 Concrete Sidewalk.

Bid Item No. 18 – Detectible Warning On Walking Surface (Retrofit)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 527 Detectible Warnings On Walking Surfaces.

Bid Item No. 19 – 3” Thick Brick Pavers

1. Description: The Measurement and Payment for this item consists of Brick Pavers, Sand, & Sand/Portland Mix Grout, and all other appurtenances required for complete installation of the proposed 3” thick brick pavers in the raised cross walk as shown in the plans. Bricks are to be purchased from Brick America. Contact Ted Marusiodis – regional sales consultant, Brick America 100 Adams Sr., Auburndale, FL. 33823. Mobile: 407-832-7955, Fax: 407-854-7811. TMARUAIODIS@BRICKAMERICA.COM. or approved equal.
2. Measurement: The unit of measurement for this item will be per Square Foot (SF).
3. Basis of Payment: The quantity for payment will be for each Square Foot (SF) installed.

Bid Item No. 20 – 2 3/8” Thick Brick Pavers

1. Description: The Measurement and Payment for this item consists of brick pavers, sand, polymeric sand, compacted limestone base, compacted subgrade, and all other appurtenances required for complete installation of the proposed 2 3/8” brick pavers in the raised cross walk as shown in the plans. Bricks are to be purchased from Brick America. Contact Ted Marusiodis – regional sales consultant, Brick America 100 Adams Sr., Auburndale, FL. 33823. Mobile: 407-832-7955, Fax: 407-854-7811. TMARUAIODIS@BRICKAMERICA.COM. or approved equal.
2. Measurement: The unit of measurement for this item will be per Square Foot (SF).
3. Basis of Payment: The quantity for payment will be for each Square Foot (SF) installed.

Bid Item No. 21 – Metal Crosswalk Grate (#8100 Cover)

1. Description: The Measurement and Payment for this item includes the cost of the metal grate, and angle iron, and all other appurtenances required for complete installation of the proposed metal crosswalk grate. The grate shall be purchased from East Jordan Iron Works, and shall be Model 8100 – Cover for Metal Cross Walk Grate. Contact: Jason Morgan – Sales Representative, East Jordian Iron Works, 4806 Wright Drive, PO Box 813159, Smyrna, GA. 30081-8159. Phone: 678-616-5895 or 800-626-4653., JMORGAN@EJIW.COM. or approved equal.
2. Measurement: The unit of measurement for this item will be per Each (EA).
3. Basis of Payment: The quantity for payment will be per Each (EA) metal grate.

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Bid Item No. 22 – Sign Single Post (<12SF) (F&I)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 700 Highway Signing.
2. Description: All signs shall have 3m High Intensity Prismatic Sheeting Series 3930 backing or approved equal with vinyl legend and border. Cost for the coating shall be included in the cost of the sign.

Bid Item No. 23 – Sign Single Post (<12SF) (Relocate)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 700 Highway Signing.

Bid Item No. 24 – Sign Single Post (<12SF) (Remove)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 700 Highway Signing.

Bid Item No. 25 – Collapsible Bull Nose Delineator (Yellow)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 705 Highway Delineators.
2. Description: Collapsible Bull Nose Delineator shall be purchased from Saftey ER, 923 E. State Road 434, Longwood FL. 32750. Phone: 407-339-8600.

Bid Item No. 26 – Solid Traffic Stripe (24” White) (Paint)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 710 Painted Pavement markings.

Bid Item No. 27 – Directional Arrow (Paint)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 710 Painted Pavement Markings.

Bid Item No. 28 – Solid Traffic Stripe (6” Yellow) (Paint)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 710 Painted Pavement Markings.

Bid Item No. 29 – Solis Traffic Stripe (18” Yellow) (Paint)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 710 Painted Pavement Markings.

Bid Item No. 30 – Pavement Markings Remove

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 710 Painted Pavement Markings.

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Bid Item No. 31 – Solid Traffic Stripe (12” White) (Thermoplastic)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 711 Thermoplastic Traffic Stripes and Markings.

Bid Item No. 32 – Solid Traffic Stripe (24” White) (Thermoplastic)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 711 Thermoplastic Traffic Stripes and Markings.

Bid Item No. 33 – Pavement Message (White) (Thermoplastic)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 711 Thermoplastic Traffic Stripes and Markings.

Bid Item No. 34 – Solid traffic Stripe (6” Yellow) (Thermoplastic)

1. See “FDOT Standard Specifications for Road and Bridge Construction 2007” Section 711 Thermoplastic Traffic Stripes and Markings.

Bid Item No. 35 — Site Electrical & Site Lighting (complete)

1. Description: This bid item shall include all pedestrian/sidewalk pole lights, lighting conduit, pull boxes, wire, connections, bends, couplings, solvent, capping and sealing, conduit stub-ups, completion of panel riser, all necessary trenching, excavating, backfilling, and compaction, and all other appurtenances required for complete construction of the project electrical and site lighting as per Contract Documents.
2. Measurement: The unit of measurement for this item will be lump sum (LS).
3. Basis of Payment: The quantity for payment will be per the contract lump sum price (LS) of fencing.

Bid Item No. 36 – 4’ High Chainlink Fencing

1. Description: This bid item shall consist of the installation of 4’ high black vinyl coated galvanized chain-link fencing, including posts, hardware, and any other appurtenances, material, labor, equipment, and anything else required for a completed and accepted fence.
2. Measurement: The unit of measurement for this item will be per linear foot (LF).
3. Basis of Payment: The quantity for payment will be per linear foot (LF) of fencing.

Bid Item No. 37– Bench (72” Length)

1. Description: This measurement and payment item shall consist of installation of bench including any other materials and labor necessary for the bench installation and acceptance
2. Measurement: The unit of measurement for this item will be each bench.
3. Basis of Payment: Payment will be for each bench installed and accepted.

Bid Item No. 38 – Trash Receptacle

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1. Description: This measurement and payment item shall consist of installation of trash receptacles including any other materials and labor necessary for the trash receptacles installation and acceptance.
2. Measurement: The unit of measurement for this item will be each trash receptacle.
3. Basis of Payment: Payment will be for each trash receptacle installed and accepted.

Bid Item No. 39 – Drinking Fountain

1. Description: This measurement and payment item shall consist of the installation of the drinking fountains including any other materials and labor necessary for the drinking fountains installation and acceptance.
2. Measurement: The unit of measurement for this item will be each drinking fountain.
3. Basis of Payment: Payment will be for each drinking fountain installed and accepted.

Bid Item No's 40 through 49 – Landscape, Bahia sod, and mulch

1. Description: These measurement and payment items shall consist of furnishing and installation of all plant types and bahia sod, the furnishing and the placing of all mulch, fertilizer and planting soil, and staking of trees as specified within the Contract Documents. This item shall also include plant care, sod care and any required replacement of plantings or restoring of damaged areas.
2. Measurement: Measurement of this item includes:
 - A. Plant material - The quantity for payment will be the actual number of each type of plant material or tree planted and accepted.
 - B. Sod- The quantity for payment shall be the square foot of sod planted and accepted.
 - C. Mulch - The quantity for payment will be the actual volume quantity of cubic yards of mulch installed and accepted.
3. Basis of Payment: Payment of the work under this section will be paid for at the contract unit prices as listed in the bid form.

Bid Item No. 50 – Site Irrigation System

1. Description: This measurement and payment item shall consist of the installation of a complete irrigation system as delineated on plans, in accordance with applicable section of specifications, and including all valves, piping, wiring, drip tubing, fittings, riser steel, controls, electrical distribution, backflow prevention device and all other materials, labor, and equipment required for a fully operational and accepted irrigation system.
2. Measurement: The unit of measurement for this item will be lump sum.
3. Basis of Payment: Payment shall be made at the Contract lump sum price for a complete irrigation system.

PART II PRODUCTS
(Not Applicable)

PART III EXECUTION
(Not Applicable)

END OF SECTION 01275

SECTION 01290 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
 - 1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Division 1 Section "Unit Prices" for administrative requirements governing use of unit prices.
 - 3. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 QUALITY ASSURANCE

- A. Prior to start of construction, secure the Owner's approval of the Schedule of Values (A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment) required to be submitted under the General Conditions.
- B. Base requests for payment on the approved schedule of values.

1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified and paid for by Owner.
 - 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: Progress payments shall be submitted to the Owner by the end of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

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- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Owner will return incomplete applications without action.
1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit 4 signed and notarized original copies of each Application for Payment to Owner by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Products list.
 5. Schedule of unit prices.
 6. Submittals Schedule (preliminary if not final).
 7. List of Contractor's staff assignments.
 8. List of Contractor's principal consultants.
 9. Copies of building permits.
- H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

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1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. Evidence that claims have been settled.
 7. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 8. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

- 1. Coordination Drawings.
- 2. Administrative and supervisory personnel.
- 3. Project meetings.

- B. Related Sections include the following:

- 1. Division 1 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
- 2. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connection, and operation.

- 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
- 2. Coordinate installation of different components with subcontractors to ensure maximum accessibility for required maintenance, service, and repair.
- 3. Make adequate provisions to accommodate items scheduled for later installation.
- 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

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1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
 2. Preparation of the Schedule of Values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Project closeout activities.
 7. Startup and adjustment of systems.
 8. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.4 SUBMITTALS

- A. Key Personnel Names: Within two weeks of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Landscape Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Landscape Architect, within 3 days of the meeting.
- B. Preconstruction Conference: A preconstruction conference will be scheduled before starting construction, at a time convenient to Owner, Owner's Representative, Contractor and Landscape Architect. The conference will be scheduled within 15 days after the Owner has executed the Agreement, but prior to actual start of the Work. The conference will be held at

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the Project site or another convenient location. The meeting will review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Landscape Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for requests for interpretations (RFIs).
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Preparation of Record Documents.
 - l. Use of the premises.
 - m. Work restrictions.
 - n. Owner's occupancy requirements.
 - o. Responsibility for temporary facilities and controls.
 - p. Construction waste management and recycling.
 - q. Parking availability.
 - r. Office, work, and storage areas.
 - s. Equipment deliveries and priorities.
 - t. First aid.
 - u. Security.
 - v. Progress cleaning.
 - w. Working hours.

C. Progress Meetings: Conduct progress meetings at regular intervals as agreed upon by the Contractor, Owner and Landscape Architect. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Landscape Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule,

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in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- 1) Review schedule for next period.
- b. Review present and future needs of each entity present, including the following:
- 1) Sequence of operations.
 - 2) Status of submittals.
 - 3) Quality and work standards.
 - 4) Status of correction of deficient items.
 - 5) Field observations.
 - 6) Requests for interpretations (RFIs).
 - 7) Status of proposal requests.
 - 8) Pending changes.
 - 9) Status of Change Orders.
 - 10) Documentation of information for payment requests.
3. Minutes: Contractor will record and distribute the meeting minutes.
 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

- 1. Preliminary Construction Schedule.
- 2. Contractor's Construction Schedule.
- 3. Submittals Schedule.

- B. Related Sections include the following:

- 1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
- 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
- 3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.

1.3 SUBMITTALS

- A. Submittals Schedule: Submit 3 copies of schedule. Arrange the following information in a tabular format:

- 1. Scheduled date for first submittal.
- 2. Specification Section number and title.
- 3. Submittal category (action or informational).
- 4. Name of subcontractor.
- 5. Description of the Work covered.

- B. Preliminary Construction Schedule: Submit 3 copies.

- C. Contractor's Construction Schedule: Submit 3 copies of initial schedule, large enough to show entire schedule for entire construction period.

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1.4 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Owner's request.

1.5 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of subcontractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
 - 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
- C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

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- F. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. Material deliveries.
 - 3. Accidents.
 - 4. Meetings and significant decisions.
 - 5. Unusual events.
 - 6. Stoppages, delays, shortages, and losses.
 - 7. Meter readings and similar recordings.
 - 8. Orders and requests of authorities having jurisdiction.
 - 9. Request for Proposals received and implemented.
 - 10. Construction Change Directives received and implemented.
 - 11. Services connected and disconnected.
 - 12. Equipment or system tests and startups.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

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3. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Owner, Landscape Architect, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01320

SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
 - 3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 4. Division 1 Section "Closeout Procedures" for submitting warranties.
 - 5. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 6. Divisions 2 through 16 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Owner's responsive action.
- B. Informational Submittals: Written information that does not require Owner's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Drawings (.dwg files) will not be provided by Landscape Architect for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

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2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Owner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- D. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Owner's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.
 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Owner will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Re-submittal Review: Allow 15 days for review of each re-submittal.
- E. Identification: Place a permanent label or title block on each submittal for identification.
 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 6 x 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Owner.
 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Contractor.
 - d. Name and address of subcontractor.
 - e. Other necessary identification.
- F. Submit 6 copies of submittals to Owner. One copy for Owner, Two Copies for Landscape Architect with 3 copies being returned to the Contractor.
- G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Owner will return submittals, without review if received from sources other than Contractor.
 1. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.

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- h. Specification Section number and title.
 - i. Drawing number and detail references, as appropriate.
 - j. Transmittal number, numbered consecutively.
 - k. Submittal and transmittal distribution record.
 - l. Remarks.
 - m. Signature of transmitter.
- H. Re-submittals: Make re-submittals in same form and number of copies as initial submittal.
- 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are approved"
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Use only final submittals with mark indicating approval.

1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

- A. General: Copies of Landscape Architect's CAD files will not be provided to Contractor for Contractor's use in connection with Project. Upon request files will be transmitted in PDF format.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.

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- i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified referenced standards.
 - l. Testing by recognized testing agency.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
 4. Submit Product Data before or concurrent with Samples.
 5. Number of Copies: Submit 6 copies of Product Data, unless otherwise indicated. Landscape Architect will return three copies. Mark up and retain one returned copy as a Project Record Document.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale.
 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 - m. Relationship to adjoining construction clearly indicated.
 - n. Seal and signature of professional engineer if specified.
 - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches
 3. Number of Copies: Submit six (bond) copies of each submittal. Owner will return three copies.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.

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- d. Number and title of appropriate Specification Section.
- 3. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Owner will return submittal with options selected.
- E. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation" for Construction Manager's action.
- F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."
- I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
 - 4. Number of Copies: Submit 6 copies of subcontractor list, unless otherwise indicated. Landscape Architect will return three copies.
 - a. Mark up and retain one returned copy as a Project Record Document.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Number of Copies: Submit three copies of each submittal, unless otherwise indicated. Owner will not return copies.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
- B. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

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- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- K. Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- L. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- M. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- N. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.
- O. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations.

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Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

- P. **Manufacturer's Instructions:** Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
 2. Required substrate tolerances.
 3. Sequence of installation or erection.
 4. Required installation tolerances.
 5. Required adjustments.
 6. Recommendations for cleaning and protection.
- Q. **Manufacturer's Field Reports:** Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- R. **Insurance Certificates and Bonds:** Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- S. **Material Safety Data Sheets (MSDSs):** Submit information directly to Owner; do not submit to Landscape Architect.
1. Landscape Architect will not review submittals that include MSDSs and will return the entire submittal for re-submittal.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Owner.

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- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 LANDSCAPE ARCHITECT'S ACTION

- A. General: Owner will not review submittals that do not bear Contractor's approval stamp and will return them without action.
 - 1. Action Submittals: Owner will review each submittal, make marks to indicate corrections or modifications required, and return it. Landscape Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken
- B. Informational Submittals: Owner will review each submittal and will not return it, or will return it if it does not comply with requirements. Owner will forward each submittal to appropriate party.
- C. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.
- D. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01330

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Sections include the following:
 - 1. Division 1 Section "Summary of Work" for limitations on utility interruptions and other work restrictions.
 - 2. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
 - 3. Divisions 2 through 16 Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

- A. Permanent Enclosure: As determined by Owner, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

- A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owners Landscape Architect, occupants of Project testing agencies, and authorities having jurisdiction.
- B. Sewer & Drainage: Retain necessary utilities to remove effluent lawfully
- C. Water Service: Pay water service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Pay electric power service use charges for electricity used by all entities for construction operations.

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1.5 SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.6 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

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PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line for each field office.
 - 1. At each telephone, post a list of important telephone numbers.
 - 2. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

- A. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- B. Parking: Provide temporary parking areas for construction personnel.
- C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.

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- D. Project Identification and Temporary Signs: Provide Project identification and other signs as indicated in the Contract Documents. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Division 1 Section "Summary of Work."
- B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
 - 1. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- F. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
 - 1. Prohibit smoking in construction areas.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

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3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 01500

SECTION 01610 – PRODUCT SUBSTITUTIONS

PART I – GENERAL

1.01 DESCRIPTIONS

- A. Work Included: Make substitutions under the requirements of the Contract Documents, and submit the necessary information required by the contract documents to establish compliance with those documents.
- B. Individual requirements for Substitutions also may be described in pertinent Sections of these Specifications.

1.02 RELATED REQUIREMENTS

- A. General Conditions.

1.03 QUALITY ASSURANCE

- A. Coordination of Substitutions:
 - 1. Prior to each submittal for Substitution, carefully review and coordinate all aspects of each item being submitted.
 - 2. Verify that each item and the data submitted for it conform in all respects with the specified requirements.
 - 3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

1.04 SUBMITTALS

- A. Voluntary substitutions shall be made at the time of bidding on the Substitution Request Form. Supportive submittal data; shop drawings, samples, etc., shall be made in accordance with Section 01330, Submittal Procedures.

PART 2 PRODUCT

2.01 SUBSTITUTION REQUEST FORM

- A. **Contractor's Bid shall be per Drawings and Project Manual using only manufacturers listed and/or substitutions that have been approved by the Landscape Architect prior to submitting the bid.**
 - 1. Voluntary substitutions for products may be requested during bidding period by submitting completed Substitutions Request Form with the Bid.
 - 2. Requests for substitutions shall be made not later than 10 days prior to the bid opening.
 - 3. Landscape Architect will consider requests from the Contractor, utilizing this section for the Substitutions of Products in place of those specified, only when:

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1. Substitution requested on the form provided within this specification section and within the time frame described in 2.01.A.2, above,
2. And when substantiated by the Contractor's submittal data provided with the submittal of the Substitution Request Form.
 - B. Substitution Request Form is attached to this Section.
 - C. Submit separate request for each substitution.

2.02 SUBSTITUTION SUPPORT DATA

- A. Support each request with:
 1. Complete data substantiating compliance of the proposed substitutions with requirements stated in Contract Documents.
 - a. Product identification, including manufacturers name and address
 - b. Manufacturers literature; identify
 - 1) Product description.
 - 2) Reference Standards.
 - 3) Performance and test data.
 - c. Samples, as applicable
 - d. Name and address of similar projects on which product has been used and date of each installation.
 2. Itemized comparison of the proposed substitution with project specified; list significant variations.
 3. Data relating to changes in construction schedule.
 4. Any effect of substitution on separate contracts.
 5. List of changes required in other work of products.
 6. Designation of required license fees or royalties.
 7. Designation of availability of maintenance services, sources or replacement materials.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURE

- A. Furnish and install Products specified, under options and conditions for substitutions stated in this Section.
- B. Contractor's Options:
 1. For Products specified only by reference standard, select Product meeting that standard, by any manufacturer.
 2. For Products specified by naming several Products or manufacturers, select any one of products and manufacturers named which complies with specifications.
 3. For Product specified by naming several Products or manufacturers and stating "or equivalent", "or equal", or "Landscape Architect approved equivalent", or similar

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wording, submit a request as for substitutions for any Product or manufacturer which is not specifically named for review and approval by the Landscape Architect.

- D. Substitutions will not be considered for acceptance when;
 - 1. They are indicated or implied on shop drawings or product data submittals without a formal request from the Contractor.
 - 2. Acceptance will require substantial revision of Contract Documents.
 - 3. In judgment of Landscape Architect, data submitted does not include adequate information necessary for a complete evaluation.
 - 4. Requested less than 5 days prior to bid opening.

- E. Substitute products shall not be ordered or installed without acceptance of Landscape Architect.

- F. Landscape Architect will determine acceptability of proposed substitutions.

- G. Contractor’s Representation:
 - 1. In making formal request for substitution, Contractor represents that:
 - a. He has investigated proposed product and determined that it is equivalent to or superior in all respects to that specified.
 - b. He will provide same warranties or bonds for substitutions as for product specified.
 - c. He will coordinate installation of accepted substitution into the Work, and will make such changes as may be required for the Work to be complete in all respects.
 - d. He waives claims for additional costs caused by substitutions which may be subsequently become apparent.

- H. Landscape Architect’s Duties:
 - 1. Review Contractor’s requests for substitution with reasonable promptness.
 - 2. Notify Contractor, in writing, of decision to accept or reject requested substitution.

- I. Substitutions will not be considered for acceptance when;
 - 1. Owner shall notify all bidders of accepted substitutions not later than 5 days prior to the bid opening.

SUBSTITUTION REQUEST FORM:

DATE: _____

TO: _____

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PROJECT: _____

We hereby submit for your consideration the following product instead of the specified item for the above project:

DRAWING SPEC. SPECIFIED ITEM	SECT. NO.	PARAGRAPH
---------------------------------	-----------	-----------

Proposed
Substitution: _____

Attach complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance.

Fill in the blanks below.

1. Does the substitution affect dimensions shown on the Drawings?
Yes _____ No _____ If yes, indicate changes.

2. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by requested substitution?
Yes _____ No _____ If no, fully explain.

3. What affect does substitution have on other Contracts or other trades?

4. What affect does substitution have on the Construction Schedule?

5. Manufacturer's Warranties of the proposed and specified items are:
_____ Same _____ Different (explain on attachment).

6. Reason for request:

7. Itemized comparison of specified item (s) with the proposed substitutions; list significant variations:

8. Accurate cost data comparing proposed substitution with product specified.

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9. Designation of maintenance services and sources:

(Attach additional sheets if required.)

ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE

_____ Accepted _____ Accepted as noted

Undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

Submitted by:

Signature Title

By:

Firm

Date:

Address

Telephone:

CERTIFICATE OF EQUAL PERFORMANCE: (For Use by Landscape Architect)

_____ Accepted _____ Accepted as noted _____ Received too late _____ Rejected

Remarks:

Signature shall be by person having authority to legally bind his firm to the above items. Failure to provide legally binding signature will result in retraction of approval.

END OF SECTION 01610

SECTION 01700 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

- 1. Construction layout.
- 2. Field engineering and surveying.
- 3. General installation of products.
- 4. Progress cleaning.
- 5. Starting and adjusting.
- 6. Protection of installed construction.
- 7. Correction of the Work.

- B. Related Sections include the following:

- 1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
- 2. Division 1 Section "Submittal Procedures" for submitting surveys.

1.3 SUBMITTALS

- A. Final Property Survey: Submit 6 copies showing the Work performed and record survey data.

1.4 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Owner. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Owner promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.

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5. Notify Owner when deviations from required lines and levels exceed allowable tolerances.
 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, buildings and shelters, water features, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Owner.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
1. Do not change or relocate existing benchmarks or control points without prior written approval of Owner. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Owner before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

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- F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

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- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

3.9 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

END OF SECTION 01700

SECTION 01731 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
 - 1. Division 1 Section "Summary of Work" for use of the premises and phasing requirements.
 - 2. Division 1 Section "Construction Facilities and Temporary Controls" for temporary construction and environmental-protection measures for selective demolition operations.
 - 3. Divisions 2 through 16 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 15 and 16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.
 - 4. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.

1.3 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

- A. Operational Elements: Do not cut and patch the following operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

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1. Primary operational systems and equipment.
2. Air, fire, or smoke barriers.
3. Fire-protection systems.
4. Control systems.
5. Communication systems.
6. Conveying systems.
7. Electrical wiring systems.
8. Operating systems of special construction in Division 13 Sections.

- B. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior in a manner that would, in Owner's opinion, reduce the project's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.5 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

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3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as

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possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

3.4 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION 01731

SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
 - 2. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 3. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 3. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 4. Prepare and submit Project Record Documents, operation and maintenance manuals and similar final record information.
 - 5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - 6. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 7. Complete startup testing of systems.
 - 8. Submit test/adjust/balance records.

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9. Terminate and remove temporary facilities from Project site, construction tools, and similar elements.
10. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
11. Complete final cleaning requirements, including touchup painting.
12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Owner, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Owner. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 WARRANTIES

A. Submittal Time: Submit written warranties on request of Owner for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

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- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Clean each surface or unit to new condition. Comply with manufacturer's written instructions.
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - d. Clean exposed exterior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Pressure wash concrete areas.
 - e. Remove debris and surface dust from limited access spaces, including shafts, trenches, equipment vaults, manholes, and similar spaces.
 - f. Remove labels that are not permanent.

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- g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - h. Wipe surfaces of electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - i. Replace parts subject to unusual operating conditions.
 - j. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - k. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

SECTION 01781 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Sections include the following:
 - 1. Division 1 Section "Closeout Procedures" for general closeout procedures.
 - 2. Divisions 2 through 16 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set of marked-up Record Prints.
 - 2. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Final Submittal: Submit one set of marked-up Record Prints, one set of Record Transparencies, and two copies printed from Record Transparencies. Print each Drawing, whether or not changes and additional information were recorded.
- B. Record Product Data: Submit one copy of each Product Data submittal.
 - 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

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PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Owner's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Owner's Representative. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.

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1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
2. Refer instances of uncertainty to Owner's Representative for resolution.
3. Owner will furnish Contractor one set of transparencies of the Contract Drawings for use in recording information.
4. Print the Contract Drawings and Shop Drawings for use as Record Transparencies.

2.2 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Owner's reference during normal working hours.

END OF SECTION 01781

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SECTION 02518 BRICK PAVING

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. Provide brick paving as shown and specified. The work includes:

1. Brick paving over concrete base and limestone base.
2. Base and bedding.

B. Related work:

1.02 QUALITY ASSURANCE

A. Materials and methods of construction shall comply with the following standards:

1. American Society for Testing and Materials, (ASTM).
2. American Association of State and Highway Transportation Officials, (AASHTO).

B. Installation: Performed only by skilled workmen with satisfactory record of performance on completed projects of comparable size and quality.

C. Do not change source of brick pavers during the course of the work.

1.03 SUBMITTALS

A. Submit manufacturer's product data and installation instructions for brick units.

B. Submit a minimum of 5 full size samples of each brick unit required. Include the full range of style, size, exposed finish, color, and texture proposed for the work.

C. Submit manufacturer's certification that the brick units comply with specified material and physical requirements.

D. Submit material certificates for bedding materials.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect bricks from damage, chipping, and soiling during delivery and storage. Store off the ground on pallets or wood platforms.

B. Store loose granular materials in a well drained area on a solid surface to prevent mixing with foreign materials.

1.05 PROJECT CONDITIONS

A. Review installation procedures and coordinate brick work with other work affected by the

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brick paving work.

- B. Protect partially completed paving against weather damage when work is not in progress.
- C. Provide temporary barricades and warning lights as required for protection of project work and public safety.
- D. Protect adjacent work from damage, soiling, or staining during paving operations.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Brick unit materials and fabrication shall meet or exceed the requirements of USPSI Designation CPS7180 Standard Specifications for Brick. Bricks shall be supplied by Boral Bricks Inc., or approved equal. Provide colors and sizes as indicated on the plans and in these specifications.
 - 1. Style: Santee Gray & Savannah Brown Antique Pavers
 - 2. Brick Size - 4" x 8" x 3" & 4" x 8" x 2 3/8" where specified on plans
 - 3. Freeze-thaw test: ASTM C67, no breakage and maximum 1% loss in dry weight after 50 cycles.
 - 4. Provide only sound units free of defects that would interfere with proper placing of units or impair strength or permanence of construction. Minor cracks and minor chipping incidental to methods of manufacture, handling in shipment, and delivery will be acceptable subject to Landscape Architect's review and acceptance. Excessive cracks and chipping, as determined by the Landscape Architect=s, will be rejected as not complying with specification requirements.
- B. Base material: 4" concrete slab & 4" Compacted Limestone Base where specified on plans
- C. Bedding and leveling material: ASTM C33 or AASHTO M43, #10 graded clean coarse builder's sand.
- D. Joint fill: Clean mason sand or polymeric sand where specified on plans.

PART 3 EXECUTION

3.01 INSPECTION

- A. Examine substrates and installation conditions. Do not start brick paving work until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Do not use bricks with chips, cracks, voids, discolorations, or other visible defects.

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- B. Cut brick paving units with motor-driven saw equipment designed to cut masonry with clean, sharp unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible. Avoid the use of small pieces of pavers or large joint spaces.
- C. Set brick pavers in patterns indicated with level surface and uniform joints of widths indicated.
- D. Install edging at indicated areas to provide suitable restraint for paving edges not contained by adjacent paving materials.

3.03 INSTALLATION: BASE MATERIALS

- A. Concrete base course:
 - 1. Concrete in raised crosswalk: Concrete shall be Class I that conforms to the requirements of FDOT Standards for Road and Bridge Construction, 1991, Section 345. 28 day compressive strength shall be minimum 3000 psi.
- B. Limerock base course:
 - 1. Limerock in trail separator: Compact subgrade to 98% modified proctor T-180. Compact limerock base materials with suitable compaction equipment to 98% modified proctor T-180.
- C. Bedding and leveling course:
 - 1. Obtain Landscape Architect's inspection and acceptance of finished limerock base course before placing bedding and leveling course materials.
 - 2. Spread bedding and leveling course materials evenly over the entire area to be paved, screed to a minimum level that will provide a maximum 1" thickness when the brick have been placed and vibrated.
 - 3. Protect screeded and leveled bedding and leveling course from damage until covered with brick units. Do not pre-compact bedding and leveling course.

3.04 INSTALLATION: BRICK PAVERS

- A. Lay brick in pattern indicated on the drawings. Brick layout indicated on plans has been designed to minimize cutting of individual bricks. Bricks must be installed in such a manner as to assure minimized brick cuts. Maintain desired pattern and provide uniform joints between units.
- B. Fill gaps at the edge of the paved surface with standard edge pieces or with brick units cut to fit. Provide cut units with straight even cut surfaces, free from cracks or chips.
- C. Vibrate brick units to their final level with 3 or more passes of a vibrating plate compactor.
- D. After first vibration, brush sand over the surface and vibrate into the joints with additional

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passes of the plate vibrator. Completely fill joints.

- E. After final vibrating the surface shall be true to grade and shall not vary by more than 1/4" when tested with a 10'-0" straightedge at any location on the surface.

3.05 PROTECTION

- A. Protect brick unit paving from damage until final acceptance.

3.06 CLEANING

- A. Remove and replace brick paving units which are broken, chipped, stained or otherwise damaged.
- B. Perform cleaning during installation of work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from brick paving operations.

END OF SECTION 02518

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SECTION 02760 - SITE FURNISHINGS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all labor, materials, equipment and incidentals to supply and install site furnishings, shown on the drawings and as specified. Items of work are:
 - 1. Bench
 - 2. Trash Receptacle
 - 3. Drinking Fountains

1.02 QUALITY ASSURANCE

- A. All furnishings described herein shall be installed by qualified tradesmen.
- B. All installation work and materials to be per manufacturer's specifications.

1.03 SUBMITTALS

- A. Submit product data/specifications and shop drawings to Owner for review and approval for all items of work.
- B. All submittals to be approved by the Owner prior to Contractor delivering materials to site.

1.04 PRODUCT HANDLING

- A. Deliver products to site in manufacturers' containers or packaging.
- B. Store in a secure and weather-protected area.
- C. Return all damaged products to manufacturer.

1.05 PROJECT CONDITIONS

- A. Verify all work to field locations and dimensions and coordinate work being done by others.

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PART 2 PRODUCTS

2.01 MATERIALS

- A. **Bench:** Any of the following manufacturers (or equal) is acceptable:

Landscape Fusion 72" length, surface mount bench, model: F 1027 Ultra SM, black perforated plastisal coated metal. Manufacturer's Representative: Rep Services Inc., (407) 831-9658.

Quantity: 5

- B. **Trash Receptacle:** Any of the following manufacturers (or equal) is acceptable:

Landscape Fusion 32 gallon trash receptacle, model: #F1021D Surface Mount F1098, with dome igloo lid, black perforated plastisal coated metal. Manufacturer's Representative: Rep Services Inc., (407) 831-9658.

Quantity: 4

- H. **Drinking Fountain:** Any of the following manufacturers (or equal) are acceptable:

Most Dependable Fountains Inc. (800) 552-6331, model: #2002 SM, surface mounted; color: black powder coat finish.

Quantity: 1

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install furnishings in locations as indicated on the plans.
- B. Install and mount furnishings as per manufacturer's specifications and as per plans and details within drawings.
- C. Assure that all furnishings are installed plumb and level and in accordance with the plans and details.

3.02 ACCEPTANCE

- A. The Owner's representative will review each installation to determine compliance with plans and specifications prior to final acceptance of the work.
- B. Any work not installed in accordance with the plans and specifications and rejected by the Owner's representative shall be removed and replaced at the Contractor's expense.

3.03 GUARANTEES

- A. The contractor shall furnish warranties in writing certifying that the quality and

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workmanship of all materials and installation furnished is in accordance with these specifications and in accordance with the original manufacturers' warranties. The Contractor shall warrant the installation workmanship for a period of one year from the date of final acceptance of the job, or any accepted portion of the job.

3.04 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from installations.

END OF SECTION 02760

SECTION 02800 - LANDSCAPING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide plants and ground covers as shown and specified. The work includes:

1. Soil preparation.
2. Plants and ground covers.
3. Planting mixes.
4. Mulch and planting accessories.
5. Maintenance.

1.2 QUALITY ASSURANCE

- A. Plant names indicated comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.
- B. Plant material shall be graded Florida No. 1 or better as outlined under Grades and Standards for Nursery Plants, State Plant Board of Florida, latest edition.
- C. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.
- D. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional cost, and providing that the larger plants will not be cut back to size indicated.
- E. Plants may be inspected and approved at the place of growth, for compliance with specification requirements for quality, size, and variety.
1. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the work.

1.3 SUBMITTALS

A. Submit the following material samples:

1. Mulch.
2. Planting accessories.

B. Submit certifications for the following materials:

1. Ph value of existing on site soil.
2. Ph value of fill.
3. Plant fertilizer.
4. Topsoil

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1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in manner to prevent wetting and deterioration.
- B. Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival, the certificate shall be filed with the Owner. Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Owner. Water heeled-in plants daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.
- C. Cover plants transported on open vehicle with a protective covering to prevent wind burn.

1.5 PROJECT CONDITIONS

- A. Work notification: Notify Owner at least 7 working days prior to installation of plant material.
- B. Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.
- C. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.
- D. Install the irrigation system prior to planting: No planting shall occur before the acceptance of a functioning irrigation system. Locate, protect, and maintain the irrigation system during the planting operations. Repair irrigation system components, damaged during planting operations, at Contractor's expense.

1.6 WARRANTY

- A. Warrant plant material to remain alive and be in healthy and vigorous condition for a period of one year after completion and acceptance of entire project.
 - 1. Inspection of plants will be made by the Owner at completion of planting.
- B. Replace, in accordance with the drawings and specifications, all plants that are dead or, as determined by the Architect, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the Contractor's negligence. The cost of such replacement(s) is at Contractor's expense. Warrant all replacement plants for a period of 90 days after installation.
- C. Warranty shall not include damage or loss of trees, plants, or ground covers caused by fires, floods, freezing rains, lightning storms, or winds over 50 miles per hour, winter kill caused by extreme cold and sever winter conditions not typical of planting area, acts of

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vandalism, or negligence on the part of the Owner.

- D. Remove and immediately replace all plants, as determined by the Owner, to be unsatisfactory during the initial plant installation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Plants: Provide plants typical of their species or variety, with normal, densely-developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids and open spaces.
 - 1. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.
 - a. No plants shall be loose in the container.
 - b. Container stock shall not be pot bound.
 - 2. Plants planted in rows shall be matched in form.
 - 3. Plants larger than those specified in the plant list may be used when acceptable to the Owner.
 - a. If the use of larger plants is acceptable, increase the spread of roots or root ball in proportion to the size of the plant.
 - 4. Shrubs and small plants shall meet the requirements for spread and height indicated in the plant list.
 - a. The measurements for height shall be taken from the ground level to the average height of the top of the plant and not the longest branch.
 - b. Single stemmed or thin plants will not be accepted.
 - c. Side branches shall be generous, well-twigged, and the plant as a whole well-bushed to the ground.
 - d. Plants shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.

2.2 ACCESSORIES

- A. Fertilizer:
 - 1. Commercial type approved by the Owner, containing 12% nitrogen, 12% phosphoric acid, and 12% potash by weight. 1/4 of nitrogen in the form of nitrates, 1/4 in form of ammonia salt, and 1/2 in form of organic nitrogen.
 - 2. For palms: 7:3:7 with additional units of iron and manganese to prevent yellowing. Distribute as per manufacturer's specification by Sunniland Corp., Sanford, FL.
- B. Planting Mixture: Shall consist of peat, sand, and ground pine bark in what is commonly referred to as a 'Nursery Mix'.

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- C. Mulch: Premium grade shredded cypress mulch. Furnish in bulk or bags.
- D. Water: Free of substances harmful to plant growth. Hoses or other methods of transportation furnished by Contractor.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Planting shall be performed only by experienced workmen familiar with planting procedures under the supervision of a qualified supervisor.
- B. Locate plants as indicated or as approved in the field after staking by the Contractor. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plant locations have been selected.
- C. Excavate circular plant pits with vertical sides, except for plants specifically indicated to be planted in beds. Depth of pit shall accommodate the root system. Scarify the bottom of the pit to a depth of 4".
- D. Backfill all planting pits with a mixture of ½ excavated material and ½ topsoil mix.

3.3 INSTALLATION

- A. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Set plant material 2" above the finish grade. No filling will be permitted around trunks or stems. Backfill the pit with planting mixture.
- B. Space ground cover plants in accordance with indicated dimensions. Adjust spacing as necessary to evenly fill planting bed with indicated quantity of plants. Plant to within 12" of edge of bed.
- C. Mulching:
 - 1. Mulch tree and shrub planting pits and shrub beds with required mulching material 3"- 4" deep immediately after planting. Thoroughly water mulched areas.
 - 2. Mulch ground cover beds with mulch 3"-4" deep immediately after planting.

3.4 MAINTENANCE

- A. Maintain plantings until completion and acceptance of the entire project.
- B. Maintenance shall include pruning, cultivating, weeding, watering, mowing sod, and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.

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1. Re-set settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.
2. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.

3.5 ACCEPTANCE

- A. Inspection to determine acceptance of planted areas will be made by the Owner, upon Contractor's request. Provide notification at least 7 working days before requested inspection date.
 1. Planted areas will be accepted provided all requirements, including maintenance, have been compiled with and plant materials are alive in a healthy and vigorous condition.
- B. Upon acceptance of the entire project, the Owner will assume responsibility for plant maintenance.

3.6 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

END OF SECTION 02800

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SECTION 02810 - SODDING

PART I - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide sodded lawns as shown and specified. The work includes:
 - 1. Soil preparation.
 - 2. Sodding indicated areas.
 - 3. Maintenance.

1.02 RELATED REQUIREMENTS:

- 1. Section 02920: Irrigation System.
- 2. Section 02800: Landscaping.

1.03 SUBMITTALS

- A. Submit sod growers certification of grass species. Identify source location.
- B. Soil Amendments and Fertilizers: Provide product certificates.
- C. Test Reports: Including but not limited to existing soil, imported soil, geotechnical as required, etc.

1.04 QUALITY ASSURANCE

- A. Sod: Comply with American Sod Producers Association (ASPA) classes of materials.
- B. Provide and pay for materials testing. Testing agency shall be acceptable to the Landscape Architect. Provide the following data:
 - 1. Topsoil:
 - a. Ph factor.
 - b. Mechanical analysis.
 - c. Percentage of organic content.
 - d. Recommendations on type and quantity of additives required to establish satisfactory Ph factor and supply of nutrients to bring nutrients to satisfactory level for planting.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Cut, deliver and install sod or sprigs within a 24-hour period.
 - 1. Do not harvest or transport sod when moisture content may adversely affect sod survival.
 - 2. Protect sod from sun, wind, and dehydration prior to installation.
 - 3. Do not tear, stretch, or drop sod during handling and installation.

1.06 PROJECT CONDITIONS

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- A. Work notification: Notify Owner at least 7 working days prior to start of sodding operations.
- B. Protect existing utilities, paving, and other facilities from damage caused by sodding operations.
- C. Perform sodding work only after irrigation and other work affecting ground surface has been completed.
- D. Irrigation system to be complete, operable, and accepted prior to starting sodding.
- E. Locate, protect, and maintain the irrigation system during sodding operations. Repair irrigation system components damaged during sodding operations at the Contractor's expense.

1.07 WARRANTY

- A. Provide a uniform stand of grass by watering, mowing and maintaining lawn areas until final acceptance. Re-sod areas which fail to provide a uniform stand of grass with specified materials, until all affected areas are accepted by the Owner.

PART II - PRODUCTS

2.01 MATERIALS

- A. Sod: Argentine Bahia.
- B. Provide healthy, well-rooted, material, free of diseases, nematodes and soil borne insects. Provide sod uniform in color, leaf texture, density, and free of weeds, undesirable grasses, stones, roots, thatch, and extraneous material; viable and capable of growth and development when planted.
 - 1. Furnish sod machine stripped and of Supplier's standard width, length, and thickness. Mow sod before stripping.
- C. Fertilizer for grassed areas:
 - 1. Granular, non-burning product meeting the requirement of Federal Specification O-F-24LS, with percentages of nitrogen, phosphoric acid, and potash as herein specified.

8N-8P-8K

Fertilizer shall be furnished in bags or other standard containers with name, weight, guaranteed analysis of contents clearly marked thereon. Combined N-P-K content shall be not less than 20% of the total and N content shall be not less than 5% of the total by weight.

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2. Composition: Amounts of Nitrogen, Phosphorus, and Potassium as recommended in soil reports from qualified soil testing agency.
- D. Water: Free of substance harmful to sod growth. Hoses or other methods of transportation furnished by Contractor.

PART III - EXECUTION

3.01 INSPECTION

- A. Examine finish surfaces, grades, topsoil quality and depth. Do not start sodding work until unsatisfactory conditions are corrected.
- B. Do not lay any sod until irrigation system is in place and functional.

3.02 PREPARATION

- A. Limit preparation to areas that will be immediately sodded.
- B. Loosen topsoil of lawn areas to minimum depth of 4". Remove stones over 1" in any dimension and sticks, roots, rubbish, and extraneous matter.
- C. Grade lawn areas to smooth, free draining and even surface with a loose, uniformly fine texture. The finish grade of the soil should be a smooth, even surface assuring positive drainage away from buildings and the subsequent turf flush to the tops of adjacent curbs and sidewalks. Roll and rake; remove ridges and fill depressions as required to drain.
- D. Dampen dry soil prior to sodding.
- E. Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to sodding and sprigging. Float the field to the desired smoothness using a drag or drag harrow and mix fertilization and lime into the upper 4" layer of soil. Leave surface soft enough that planter will penetrate soil surface.

3.03 INSTALLATION

- A. Sodding:
 1. Lay sod to form a solid mass with tightly-fitted joints. Butt ends and sides of sod strips. Do not overlay edges. Stagger strips to offset joints in adjacent courses. Remove excess sod to avoid smothering of adjacent grass. Provide sod pad top flush with adjacent curbs, sidewalks, and drains. Lay sod across any slopes exceeding 3:1.
 2. Do not lay dormant sod or install sod on saturated soil.
 3. Water sod thoroughly with a fine spray immediately after laying.
 4. Roll with light lawn roller to ensure contact with sub-grade.
- B. Sod indicated areas within contract limits and areas adjoining contract limits disturbed as a

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result of construction operations.

3.04 MAINTENANCE

- A. Maintain sodded lawn areas, including watering, spot weeding, mowing, application of herbicides, fungicides, insecticides and resodding until a full, uniform stand of grass free of weed, undesirable grass species, disease, and insects is achieved and accepted by the Owner.
 - 1. Water sod thoroughly every day, as required to establish proper rooting.
 - 2. Repair, rework, and resod all areas that have washed out or are eroded. Replace undesirable or dead areas with new sod.
 - 3. Mow lawn areas as soon as lawn top growth reaches a 1 1/2" height. Cut back to 1" –height. Not more than one third of grass leaf shall be removed at any single mowing.

3.05 ACCEPTANCE

- A. Inspection to determine acceptance of sodded lawns will be made by Owner, upon Contractor's request. Provide notification at least 7 working days before required inspection date.
 - 1. Sodded areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy, even-colored viable lawn is established, free of weeds, undesirable grass species , disease and insects.
- B. Upon acceptance, the Owner will assume responsibility for lawn maintenance.

3.06 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris and equipment. Repair damage resulting from sodding operations.
- B. Remove all erosion control measures after grass has been established and accepted and if removal is approved by the Owner.

END OF SECTION 02810

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SECTION 02821 - CHAIN-LINK FENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Chain-Link Fences: Commercial

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide chain-link fences and gates capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Minimum Post Size and Maximum Spacing for Wind Velocity Pressure: Determine based on mesh size and pattern specified, and on the following minimum design wind pressures and according to CLFMI WLG 2445:
 - a. Wind Speed: 110 mph.
 - b. Fence Height: As indicated on the drawings
 - c. Wind Exposure Category: B
- B. Lightning Protection System: Maximum grounding-resistance value of 25 ohms under normal dry conditions.

1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
 - 1. Fence and posts, rails, and fittings.
 - 2. Chain-link fabric, reinforcements, and attachments.
 - 3. Hardware.

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1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fence shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:
 - 1. Galvanized Steel Wire Fabric, with a diameter of 0.148 inch (3.76 mm).
 - a. Mesh Size: 2 inches (50 mm).
 - b. Weight of Metallic (Zinc) Coating: ASTM A 392, Type II, Class 1 with zinc coating applied before weaving.
 - c. Polymer Coating: ASTM D 668, Class 1 over metallic-coated steel wire.
 - 1) Color: Black, complying with ASTM F 934.
 - d. Coat selvage ends of fabric that is metallic coated before the weaving process with manufacturer's standard clear protective coating.

2.2 FENCE FRAMING

- A. Posts and Rails: Comply with ASTM F 1043 for framing, ASTM F 1083 for Group IC round pipe.
- B. All framing to have polymer coating as described above.

2.3 TENSION WIRE

- A. General: Provide horizontal tension wire as needed.
- B. All tension wire to have polymer coating as described above.

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2.4 FITTINGS

- A. General: Comply with ASTM F 626.
- B. Post and Line Caps: Provide for each post.
- C. Rail and Brace Ends: Attach rails securely to each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
 - 1. Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches (152 mm) long.
 - 2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate and bottom rails in the fence line-to-line posts.
- E. All fittings to be polymer coated as described above.

2.5 POLYMER FINISHES

- A. Color Coating: ASTM D 668, Class 1 over metallic-coated steel wire.
 - 1. Color: Black, complying with ASTM F 934.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance.
 - 1. Do not begin installation before final grading is completed, unless otherwise permitted by Owner.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install chain-link fencing to comply with ASTM F 567 and manufacture's instructions and approved submittals. Install materials in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- B. Cut pipe with pipe-cutters only. Cutting with hacksaws is not acceptable. Tack weld gates for strength. Use spring loaded latches, not yokes.
- C. Restore or replace damaged components. Clean and protect work from damage.

END OF SECTION 02821

SECTION 02920 - IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes piping, valves, drip tubing, specialties, controls, and wiring for an automatic-control irrigation system.

1.3 PERFORMANCE REQUIREMENTS

- A. Installer's qualifications: Have satisfactorily installed irrigation systems on at least five (5) other projects of comparable complexity.
- B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent water coverage of landscape areas indicated.

1.4 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions for each of the system components for the following. Product Data: Include pressure ratings, rated capacities, and settings of selected models for the following:
 - 1. Backflow Preventer.
 - 2. Electric Valves.
 - 3. Gate Valves
 - 4. Rain Sensor
 - 5. Controller
 - 6. Mainline
 - 7. Lateral Lines
 - 8. Wiring/Control Cables.
 - 9. Control Valve Box
 - 10. Drip Tubing.
 - 11. Any other components for a complete system.
- B. Record Drawings: Show piping and major system components. Legibly mark drawings to record actual construction. Indicate horizontal and vertical locations reference to permanent surface improvements. Identify field changes of dimension and detail and changes made in the field.

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- C. Operation and Maintenance Data: For irrigation systems, to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Closeout Procedures" include data for the following:
 - 1. Automatic-control valves.
 - 2. Controllers.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver irrigation system components in manufacturer's original undamaged and unopened containers with labels intact and legible.
- B. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.7 PROJECT CONDITIONS

- A. Protect existing trees, plants lawns and other features designed to remain as part of the final landscape work.
- B. Promptly notify the Owner of unexpected subsurface conditions.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide only new materials without flaws or defects and of the highest quality of their specified class and kind.
- B. Comply with pipe sizes indicated. No substitution of smaller pipes will be permitted. Larger sizes may be subject to acceptance of the Owner. Remove damaged and defective pipe.
- C. Provide pipe continuously and permanently marked with manufacturer's name or trademark, size schedule and type of pipe, working pressure at 73 degrees F.

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2.2 PIPES, TUBES, AND FITTINGS

- A. Polyvinyl chloride pipe: ASTM D2241, rigid, unplasticized PVC, extruded from virgin parent material. Provide pipe homogeneous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles and dents.
 - 1. Lateral Lines: Class 160
 - 2. Mainline and Sleeve: Schedule 40
- B. PVC pipe fittings: ASTM D2241 schedule 40 PVC molded fittings suitable for solvent weld, slip joint ring tite seal, or screwed connections. Fittings made of other materials are not permitted.
- C. All pipe under paved areas will be sleeved with Schedule 40 P.V.C. The Contractor will provide a minimum of 2" Schedule 40 P.V.C. under all paved areas to produce access for electrical control wire.

2.3 VALVE BOXES

- A. Plastic Valve Boxes: Box and cover, with open bottom and openings for piping; designed for installing flush with grade. Include size as required for valves and service.
 - 1. Box: Tapered enclosure of rigid plastic material comprised of fibrous components chemically inert and unaffected by moisture corrosion and temperature changes.
 - 2. Cover Material: Provide lid of same material, green in color.

2.4 AUTOMATIC-CONTROL SYSTEM

- A. Refer to drawing's materials list.
 - 1. Controller: Irrigation contractor shall furnish electric controller as indicated on the drawing. Controller shall be installed in the area shown on the drawing. Power from the electrical panel to the irrigation controller shall be furnished by others. All wiring from the irrigation controller to the remote control valves shall be furnished and installed by the irrigation contractor in the same trench as the main line.
- B. Wiring: UL 493, Type UF-B multi-conductor, with solid-copper conductors and insulated cable; suitable for direct burial.
 - 1. Wire color code: Provide control or "hot" wires red in color. Provide common or "ground" wires white in color.
 - 2. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial.

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PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine final grades and installation conditions. Do not start irrigation system work until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Layout and stake the locations of each pipe run and all sprinkler heads and sprinkler valves. Obtain Owners Representative acceptance of layout prior to excavating.
- B. Schedule 40 sleeves to be used under paved vehicular use areas shall be placed prior to compaction of paved areas. Coordinate all sleeve placement with general contractor.
- C. Place sleeves as indicated for installation of piping and control wire.

3.3 INSTALLATION

A. Excavating and backfilling:

1. All excavation shall be considered and unclassified excavation and include all materials encountered.
2. Excavate trenches of sufficient depth and width to permit proper handling of installation of pipe and fittings.
3. Excavate to depths required to provide 2" depth of earth fill or sand bedding for piping when rock or other unsuitable bearing materials in encountered.
4. Fill to match adjacent grade elevations with approved earth fill material. Place and compact fill in layers not greater than 8" depth.
 - a. Provide approved earth fill or sand to a point 4" above the top of the pipe.
 - b. Fill to within 6" of final grade with approved excavated fill materials free of lumps or rocks larger than 3" in any dimension.
 - c. Provide clean topsoil fill free of rocks and debris for top 6" of fill.
5. Except as indicated, install irrigation mains with a minimum cover of 18" based on finished grades. Install irrigation laterals with a minimum cover of 12" based on finished grades.
6. Excavate trenches and install piping and fill during the same working day. Do not leave open trenches or partially filled trenches open overnight.
7. Replace stripped sod in sufficient time to allow for satisfactory sod recovery and growth. Water stripped and reinstalled sod until irrigation system is placed in operation.

B. Plastic pipe:

1. Install plastic pipe in accordance with manufacturer's installation instructions. Provide for thermal expansion and contraction.

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2. Saw cut plastic pipe. Use a square-in-sawing vice to ensure a square cut. Remove burrs and shavings at cut ends prior to installation.
3. Make plastic to plastic joints with solvent weld joints or slip seal joints. Use only solvent recommended by the pipe manufacturer. Install plastic pipe fittings in accordance with pipe manufacturer's instructions. Contractor shall make arrangements with pipe manufacturer for all necessary field assistance.
4. Make plastic to metal joints with plastic male adapters.
5. Make solvent weld joints in accordance with manufacturer's recommendations.
6. Allow joints to set at last 24 hours before pressure is applied to the system.

C. Fittings, valves and accessories:

1. Install fittings, valves, drip tubing, risers and accessories in accordance with manufacturer's instructions, except as otherwise indicated.
 - a. Provide concrete thrust blocks where required at fittings and valves.
2. Obtain Owner's review and acceptance of height for proposed sprinkler heads and valves prior to installation.
3. Install controller as detailed.
4. Install in-ground control valves in a valve access box as indicated.
5. Install valve access boxes on a suitable base of gravel to provide a level foundation at proper grade and to provide drainage of the access box.
6. Seal threaded connections on pressure side of control valves with teflon tape or approved plastic joint type compound.

D. Control wiring.

1. Install electric control cable in the piping trenches wherever possible. Place wire in trench adjacent to pipe. install wire with slack to allow for thermal expansion and contraction. Expansion joints in wire may be provided at 200-foot intervals by making 5-6 turns of the wire around a piece of 1/2" pipe instead of slack. Where necessary to run wire in a separate trench, provide a minimum cover of 12".
2. Provide sufficient slack at site connections at remote control valves in control boxes and at all wire splices to allow raising the valve bonnet or splice to the surface without disconnecting the wires when repair is required.
3. Connect each remote control valve to one station of a controller except as otherwise indicated.
4. Connect remote valves to common ground wire system.
5. Make wire connections to remote control electric valves and splices of wire in the field, using wire connectors and sealing cement in accordance with manufacturer's recommendations.
6. Provide tight joints to prevent leakage of water and corrosion build-up of the joint.

E. Sleeves:

1. Provide new sleeves for all locations where existing sleeves are not indicated. Install new sleeves prior to paving installation wherever possible. Coordinate with general contractor.

F. Flushing, testing and adjustment:

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1. After sprinkler piping and risers are installed and before sprinkler heads are installed, open control valves and flush out the system with full head of water.
2. Perform system testing upon completion of each section. Make necessary repairs and retest repaired sections as required.
3. Adjust sprinklers after installation for proper and adequate distribution of the water over the coverage patten. Adjust for the proper arc of coverage.
4. Tighten nozzles on spray type sprinklers after installation. Adjust sprinkler adjusting screw on lateral line or circuit as required for proper radius. Interchange nozzles' patterns as directed by the Owner to give best arc of coverage.
5. Adjust all electric remote control valve flow control stems for system balance.
6. Test and demonstrate the controller by operating appropriate day, hour, and station selection features as required to automatically start and shut down irrigation cycles to accommodate plant requirements.

3.04 DISPOSAL OF WASTE MATERIALS

- A. Stockpile, haul from site, and legally dispose of waste materials, including unsuitable excavated materials, rock, trash, and debris.

3.05 ACCEPTANCE

- A. Test and demonstrate to the Owner the satisfactory operation of the system free of leaks. All main lines shall be hydrostatically tested at a pressure of 100 psi for a period of time not less than 3 hours. Should any leaks be found, it shall be repaired. The line shall then be retested until satisfactory.
- B. Instruct the Owner's designated personnel in the operation of the system, including adjustment of sprinklers, controller(s) and valves.
- C. Upon acceptance, the Owner will assume operation of the system.

3.06 GUARANTEES

- A. The irrigation contractor shall furnish warranties in writing certifying that the quality and workmanship of all materials and installation furnished is in accordance with these specifications and in accordance with the original manufacturers' warranties. Irrigation contractor shall further see to the fulfillment of all manufacturers' warranties. Irrigation contractor shall warrant the installation workmanship for a period of one (1) year from date of completion of acceptance of the job or any accepted portion of the job.

3.07 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from irrigation system installation.

END OF SECTION 02810