2.2 ASPHALT CONCRETE MIX

A. General:

a. Mix formula shall not be modified except with the written approval of CITY PROJECT MANAGER.

b. Source Changes:

i. Should material source(s) change, establish a new asphalt concrete mix formula before the new material(s) is used.

ii. Perform check tests of properties of the plant-mix bituminous materials on the first day of production and as requested by CITY PROJECT MANAGER to confirm that properties are in compliance with design criteria.

iii. Make adjustments in gradation or asphalt content as necessary to meet design criteria.

B. Asphalt Concrete: Type SP meeting the requirements of the Standard Specifications.

C. Composition: Hot-plant mix of aggregate, mineral filler, and paving grade asphalt cement. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting mixture meets the grading requirements of the mix formula.

D. Aggregate:

a. The aggregate shall meet the requirements of the Standard Specifications.

b. Mineral Filler shall meet the requirements of the Standard Specifications

E. Asphalt Cement: Paving Grade AC-30 meeting the requirements of the Standard Specifications.

PART 3 EXECUTION

3.1 GENERAL

A. Traffic Control: Minimize inconvenience to traffic, but keep vehicles off freshly treated or paved surfaces to avoid pickup and tracking of asphalt.

B. Driveways: Repave driveways from which pavement was removed. Leave driveways in as good or better condition than before start of construction.

3.2 LINE AND GRADE

A. Provide and maintain intermediate control of line and grade, independent of the underlying base to meet finish surface grades and minimum thickness.

B. Shoulders: Construct to line, grade, and cross-section shown.

3.3 PREPARATION

A. Prepare subgrade as specified in the Contract Documents.

B. Existing Roadway:

a. Modify profile by grinding, milling, or overlay methods as approved, to provide meet lines and surfaces and to produce a smooth riding connection to existing facility.

b. Resurface entire roadway following adjustment of base and asphalt grades.

c. Paint edges of meet line with tack coat prior to placing new pavement.

C. Thoroughly coat edges of contact surfaces (curbs, manhole frames) with emulsified asphalt or asphalt cement prior to laying new pavement. Prevent staining of adjacent surfaces.

3.4 PAVEMENT APPLICATION

A. General: Place asphalt concrete mixture on an approved, prepared base in conformance with this Section.

B. Cold Milling

a. Milling of existing asphalt pavement shall be at the depth and location as indicated on the Construction DRAWINGS or as directed by the OWNER.

b. The milled surface shall be reasonably smooth and free of excessive scarification marks, gouges, ridges, continuous grooves, or other damage. The milled pavement surface shall be thoroughly cleaned of all loose aggregate particles, dust, and other objectionable material by the use of power brooms, power blowers, power vacuums or other means.

c. The CONTRACTOR shall coordinate the adjustment of maintenance access structures, meter boxes, drainage inlets, and valve boxes with the milling operation.

d. All milled material shall become the property of the CONTRACTOR and shall be disposed of off-site or used in conformance with the Contract Documents, or for utilization as Reclaimed Asphalt Pavement, in conformance with the specification provided above, as approved by the OWNER.

C. Prime Coat:

a. Heat cut-back asphalt between 100 degrees F and 150 degrees F prior to application.

b. Apply uniformly to clean, dry surfaces. Avoiding overlapping of applications.

c. Do not apply when moisture content of upper 3 inches of base exceeds optimum moisture content of base, or if free moisture is present.

d. Application Rate: Minimum 0.1 gallons per square yard of surface area.

e. Remove or redistribute excess material.

f. Allow a minimum of 5 full days for curing of primed surface before placing asphalt concrete.

D. Tack Coat:

a. Apply uniformly to clean, dry surfaces. Avoiding overlapping of applications.

b. Do not apply more tack coat than necessary for the day's paving operation.

c. Touch up missed or lightly coated surfaces and remove excess material.

d. Application Rate:

i. Minimum 0.05 gallons to maximum 0.12 gallons of asphalt (residual if diluted emulsified asphalt) per square yard of surface area.

ii. Apply at rate, within range specified, sufficient to assure good bonding, but not so heavy that surplus asphalt flushes into asphalt concrete being placed.

E. Pavement Mix:

a. Prior to Paving:

i. Sweep primed surface free of dirt, dust, or other foreign matter.

ii. Patch holes in primed surface with asphalt concrete pavement mix.

iii. Blot excess prime material with sand.

b. Place asphalt concrete pavement mix in lifts as shown.

c. Compacted Lift Thickness:

i. Minimum: Twice the maximum aggregate size, but in no case less than 1 inch. Minimum thickness for Type SP-9.5 is 1.0 inches.

ii. Maximum: 4 inches.

d. Total Compacted Thickness: Per Contract Documents.

e. Apply such that meet lines are straight and edges are vertical.

f. Collect and dispose of segregated aggregate from raking process. Do not scatter material over finished surface.

g. Joints:

i. Offset edge of each layer a minimum of 6 inches so joints are not directly over those in underlying layer.

ii. Offset longitudinal joints in roadway pavements, so longitudinal joints in wearing layer coincide with pavement centerlines and lane divider lines.

iii. Form transverse joints by cutting back on previous day's run to expose full vertical depth of layer.

h. Succeeding Lifts: Apply tack coat to pavement surface between each lift.

i. After placement of pavement, seal meet line by painting a minimum of 6 inches on each side of the joint with cut-back or emulsified asphalt. Cover immediately with sand.

F. Compaction:

a. Roll until roller marks are eliminated and compacted to 100 percent of the laboratory compacted mixture.

b. Joint Compaction:

i. Place top or wearing layer as continuously as possible.
ii. Pass roller over unprotected end of freshly laid mixture only when placing of mix is discontinued long enough to permit mixture to become chilled.

iii. Cut back previously compacted mixture when Work is resumed to produce a slightly beveled edge for full thickness of layer.

iv. Cut away waste material and lay new mix against fresh cut.

G. Tolerances:

a. General: Conduct measurements for conformity with crown and grade immediately after initial compression. Correct variations immediately by removal or addition of materials and by continuous rolling.

b. Completed Surface or Wearing Layer Smoothness:

i. Uniform texture, smooth, and uniform to crown and grade.

ii. Maximum Deviation: 1/8 inch from lower edge of a 12-foot straightedge, measured continuously parallel and at right angle to centerline.

iii. If surface of completed pavement deviates by more than twice the specified tolerances, remove and replace wearing surface.

c. Transverse Slope Maximum Deviation: ¼ inch in 12 feet from the rate of slope shown.

d. Finished Grade:

i. Perform a field differential level survey on a maximum 50-foot grid and along all grade breaks.

ii. Maximum Deviation: 0.02 foot from the grade shown.

H. Seal Coat:

a. General: Apply seal coat of paving grade or emulsified asphalt to finished surface at longitudinal and transverse joints, joints at abutting pavements, areas where the asphalt concrete was placed by hand, patched surfaces, and other areas as directed by the CITY PROJECT MANAGER.

b. Preparation:

i. Maintain surfaces that are to be sealed free of holes, dry, and clean of dust and loose material.

ii. Seal in dry weather and when the temperature is above 35 degrees F.

c. Application:

i. Fill cracks over 1/16 inch in width with an asphalt-sand slurry or approved crack sealer prior to sealing.

ii. When sealing patched surfaces and joints with existing pavements, extend minimum 6 inches beyond edges of patches.

3.5 PAVEMENT OVERLAY

A. Preparation:

a. Remove fatty asphalt, grease drippings, dust, and other deleterious matter.

b. Surface Depressions: Fill with asphalt concrete mix, and thoroughly compact.

c. Damaged Areas: Remove broken or deteriorated asphalt concrete and patch as specified in Article Patching.

d. Portland Cement Concrete Joints: Remove joint filler to minimum 1/2 inch below surface.

B. Application:

a. Tack Coat: As specified in this Section.

b. Place and compact asphalt concrete as specified in Article Pavement Application.

c. Place first layer to include widening of pavement and leveling of irregularities in the surface of the existing pavement.

d. When leveling irregular surfaces and raising low areas, the actual compacted thickness of any one lift shall not exceed 2 inches.

e. The actual compacted thickness of intermittent areas of 120 square yards or less may exceed 2 inches, but not 4 inches.

f. Final wearing layer shall be of uniform thickness, and meet grade and cross-section as shown.

3.6 PATCHING HOT MIX ASPHALT

A. Preparation:

a. Remove damaged, broken, or unsound asphalt concrete adjacent to patches. Trim to straight lines exposing smooth, sound, vertical edges.

b. Prepare patch subgrade as specified in the Contract Documents.

B. Application:

a. Patch Thickness: 3 inches or thickness of adjacent asphalt concrete, whichever is greater.

b. Place asphalt concrete mix across full width of patch in layers of equal thickness.

c. Spread and grade asphalt concrete with hand tools or mechanical spreader, depending on size of area to be patched.

C. Compaction:

a. Roll patches with power rollers capable of providing compression of 200 to 300 pounds per linear inch. Use hand tampers where rolling is impractical.

b. Begin rolling top course at edges of patches, lapping adjacent asphalt surface at least 1/2 the roller width. Progress toward center of patch overlapping each preceding track by at least 1/2 the width of roller.

c. Make sufficient passes over entire area to remove roller marks and to produce desired finished surface.

D. Tolerances:

a. Finished surface shall be flush with and match grade, slope, and crown of adjacent surface.

b. Tolerance: Surface smoothness shall not deviate more than plus 1/4 inch or minus 0 when a straightedge is laid across patched area between edges of new pavement and surface of old surfacing.

3.7 FIELD QUALITY CONTROL

A. General: Provide services of an approved certified independent testing laboratory to conduct tests.

B. Field Density Tests:

a. Perform tests from cores or sawed samples.

b. Measure with properly operating and calibrated nuclear density gauge.
c. Maximum Density: In accordance with ASTM D2041, using a sample of mix taken prior to compaction from the same location as the density test sample.

C. Testing Frequency:

a. Quality Control Tests:

i. Asphalt Content, Aggregate Gradation: Once per every 500 tons of mix or once every 4 hours, whichever is greater.

ii. Mix Design Properties, Measured Maximum (Rice's) Specific Gravity: Once every 1,000 tons or once every 8 hours, whichever is greater.

b. Density Tests: Once every 500 tons of mix or once every 4 hours, whichever is greater.

END OF SECTION

SECTION 02810 - UNDERGROUND IRRIGATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.2 SUMMARY

A. This Section includes the following:

a. Pipe and fittings, valves, sprinkler heads, drip system, and accessories; and,

b. Irrigation control system.

1.3 WORK INCLUDED

A. The work is to include the furnishing of all labor, supplies, equipment and materials necessary to complete the installation of the pipe and fittings, valves, and sprinkler heads, drip system, controller, etc as shown on the Drawings as well as all other related responsibilities described in these Specifications and accompanying Plans.

B. The system is a fully automatic system comprised of zones operated by the controller. This system has been designed to provide 100% coverage. It is the responsibility of the Contractor to ensure the entire system is installed according to applicable laws, rules, regulations and conventions.

1.4 REFERENCE STANDARDS

A. American Society of Testing and Materials

a. ANSI/ASTM D2282 - Acrylonitrile-Butadiene-Styrene (ABS) Plastic pipe (SDR-PR);

b. ANSI/ASTM D2564 - Solvent Cement for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings;

c. ASTM B32 - Solder Metal;

d. ASTM B42 - Seamless Copper Pipe, Standard Sizes;

e. ASTM B88 - Seamless Copper Water Tube;

f. ASTM D1784 - Rigid and Chlorinated Polyvinyl Compounds

g. ATSM D2235 - Solvent Cement for Acrylonitrile - Butadiene - Styrene (ABS) Plastic Pipe and Fittings;

h. ASTM D2466 - Polyvinyl Plastic Pipe Fittings, Schedule 40; and,

i. ASTM D2467 - Polyvinyl Plastic Pipe Fittings, Schedule 80.

B. FS O-F-506 - Flux, Soldering; Paste and Liquid.

C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.5 QUALITY ASSURANCE

A. Responsibility for Assuring Quality Work:

a. The CONTRACTOR's Superintendent shall be well versed in standard plumbing procedures, PVC assembly procedures, blueprint reading and coordination with other contracts or services in the project area.

b. All employees shall be competent and highly skilled in their particular job in order to properly perform the work assigned to them. The CONTRACTOR shall be responsible for maintaining the quality of material on the job throughout the duration of his responsibility.

B. Requirements of Regulatory Agencies:

a. All work and materials shall be in full accordance with the latest rules and regulations of safety order of Division of Industrial Safety; the Florida Building Code, the Uniform Building Code and other applicable laws and regulations, including any regulatory authorities having jurisdiction, and Plumbing Codes; and,

b. Should the contract documents be at variance with the aforementioned rules and regulations, notify the CITY for instructions before proceeding with work affected.

C. Testing:

a. Preliminary inspection of completed installation will be made prior to backfilling of trenches and during hydrostatic testing; and,

b. Final inspection shall be made in conjunction with the final inspection of lawn, shrub and tree planting.

D. Permits and Inspections:

a. Any permits for the installation or construction of any work included under this contract, which are required by any of the legally constituted authorities

having jurisdiction, shall be obtained and paid for by the CONTRACTOR, each at the proper time; and,

b. The CONTRACTOR shall also arrange for and pay all costs in connection with any inspection and examination required by these authorities.

1.6 SUBMITTALS

A. Shop drawing or irrigation system design, including but not limited to piping, sprinkler heads, valves, wiring, and controls, if not provided in drawings.

B. CONTRACTOR shall furnish 2 manufacturer's service manuals to the CITY. Manuals may be loose-leaf and shall contain complete drawings of all equipment installed showing components and catalog numbers together with the manufacturer's name and address.

C. Loose equipment to furnish: Loose irrigation equipment, operating keys and spare parts if shown on the drawings.

a. 3 quick coupler keys and matching swivel hose cells;

b. 2 valve keys for gate valves;

c. 2 keys for each controller;

d. 2 sets of special tools required for removing, disassembling and adjusting each type of sprinkler and valve supplied on this project; and,

e. 2 cover lifting tools for valve boxes.

D. Record Drawings:

a. The CONTRACTOR shall maintain one record set of blue-line prints of the irrigation system in good condition at the site and mark on them the exact 'record'. The CONTRACTOR shall make a daily record of all work installed during each day. Drawings shall indicate the exact location of check valves, gate valves, wire locations, head layout, automatic valves, quick couplers, irrigation, drainage piping, etc. Locations should be shown by the triangular system of measurements from easily identified permanent features, such as buildings, curbs, fences, walks, and by GPS, etc. Drawings shall show approved substitutions if any, of material including manufacturer's name and catalogue number. Drawings shall be to scale and all information shall be recorded in a neat, orderly way.

i. At the time of the irrigation mainline test, the CONTRACTOR shall provide a preliminary set of 'Record' drawings to the CITY; and,

ii. On or before the date of substantial inspection, the CONTRACTOR shall deliver 2 sets of As-Built drawings to the CITY. The delivery

of the prints shall not relieve the CONTRACTOR of the responsibility of furnishing required information that may have been omitted.

iii. Immediately upon installation of any work which deviates from what is shown on the prints, the CONTRACTOR shall clearly indicate such changes in red pencil on the prints. Such changes shall include, but not be limited to, changes in (1) material, (2) sizes of material, (3) location, and (4) quantities. Dimensions shall be used where required such as, but not limited to underground utilities.

G. Substitutions:

a. The CONTRACTOR shall use materials as specified herein. Material other than that specified will be permitted only after written application by CONTRACTOR and written approval by the CITY;

b. Substitutions will only be allowed when in the best interest of the CITY; and,

c. The installation of any approved substitution is the CONTRACTOR's responsibility. Any changes required for installation of any approved substitution must be made to the satisfaction of the CITY and without additional cost to the CITY.

1.7 LOCATION

A. Bidders shall personally examine the sites and fully acquaint themselves with all of the existing conditions in order that no misunderstanding may afterwards arise as to the character or as to the extent of the work to be done; and, likewise, in order to advise and acquaint themselves with all precautions to be taken in order to avoid injury to persons or property of another. No additional compensation will be granted because of any unusual difficulties which may be encountered in the execution or maintenance of any portion of the work.

PART 2 PRODUCTS

2.1 PIPE

A. Pipe locations shown on the plan are schematic and shall be adjusted in field.

B. All PVC pipe shall be new and free from defects and shall be continuously marked indicating size, schedule, type and Department of Commerce Standard Reference. Pipe shall be furnished in standard length of 20 feet.

C. Main: Main line shall be solvent weld schedule 40 PVC pipe sized as noted on plans.

D. Laterals: All lateral pipes shall be Polyvinyl Chloride (PVC) 1120-1120, Class 200. Threaded connections shall be schedule 80 unless noted otherwise on the Plans or Specifications.

E. Galvanized Steel Pipe: All pressure mains which are exposed to possible damage, such as above ground, shall be threaded end, standard weight, Schedule 40 galvanized or coated steel.

F. Sleeves: All sleeves to be Polyvinyl Chloride (PVC) Schedule 40 and sized as twice the size of the pipe it is carrying.

G. Chaseways: All chaseways shall be PVC Schedule 40 and sized as needed for present and future use.

2.2 PIPE FITTINGS AND JOINTS

A. All PVC lateral pipe shall have PVC solvent weld Schedule 40 fittings and joints. The primer and solvent glue shall be compatible with the pipe and fittings. No male threaded PVC fittings are to be used, with the exception of street ells and riser adapters.

B. Galvanized steel pipe shall have threaded standard, 150 pound galvanized malleable fittings. All sprinkler heads shall be connected to the supply line with flexible pipe and ells, (Rainbird flex pipe and barbed ells O.A.F.) or Schedule 80 swing joints as shown on the details.

C. Main line pipe joints shall be "belled" solvent-weld type.

2.3 SPRINKLER HEADS

A. Shrub heads and bubblers shall be installed on 1/2" schedule 40 PVC risers. Paint all risers with black paint. Shrub heads shall be installed to a standard height of 6" above plants, and shall be installed within planted masses to be less visible. Bubblers shall be installed at the base of trees for low level watering.

B. All pop-up heads shall be mounted on flexible type swing joints.

C. All pop up and shrub heads shall be pressure compensating.

D. Use screens in all heads.

2.4 IRRIGATION CONTROL WIRE

A. If necessary, all irrigation control wire from the controller to the electric valve shall be UL approved PE irrigation control wire, single conductor insulated utilizing low density high molecular weight polyethylene insulation suitable for operating at 600 volts and conductor temperatures up to 60° C. The conductor shall be soft drawn bare copper meeting the requirements of ASTM Specification B-3 or B-8.

Temperature rating shall be from –55° to +60° C. Thickness of insulation for conductor size 14 AWG through 12 AWG solid shall be 3/64 inches. Wire size, number and color as follows: #12 White for Common; #14 Red for Hotwires; #14 Yellow for Spares.

2.5 WIRE CONNECTORS

A. All splices in irrigation control wire shall be accomplished by using 3M Dry Direct Bury Splice Kit or approved equal.

2.6 SLEEVING AND CONDUIT

A. Sleeving and conduit shall be PVC, Schedule 40 for pipe sizes through 3 inches, and Class 160 for sizes 4 inches diameter or greater. Size as required by code or as shown on the Plan, whichever is larger in size. Electric conduit shall be gray PVC with Underwriters' Laboratories label.

2.7 RISERS

A. Risers to be Schedule 40 NPT riser threshold, height to be determined by use.

2.8 DRIP IRRIGATION COMPONENTS

A. Remote Control Valve (RCV) Assembly for Drip Laterals: As presented in the installation details. Use wire connectors and waterproofing sealant to join control wires to solenoid valves. Install a separate valve box over a 3-inch depth of 3/4-inch gravel for each assembly.

B. Drip Emitter Assembly:
   a. Barb-mounted, pressure compensating emitter device as presented in the installation details.
   b. Install emitter types and quantities on the following schedule:
      i. Ground cover plant: 1 single outlet emitter each or 1 single outlet emitter per square foot of planting area, whichever is less.
      ii. Shrub: 2 single outlet emitters each.
   c. Use 1/4-inch diameter flexible plastic tubing to direct water from emitter outlet to emission point. Length of emitter outlet tubing shall not exceed five feet. Secure emitter outlet tubing with tubing stakes.

C. Flush Cap Assembly: as presented in the installation details. Locate at the end of each drip irrigation lateral pipe. Install a separate valve box over a 3-inch depth of 3/4-inch gravel for each assembly.

2.9 AUTOMATIC CONTROL VALVES

A. Utilize the automatic valves that are noted on the plans or if not noted use Rainbird ESP series or approved equal.

2.10 GATE VALVES & ISOLATION VALVES

A. Gate valves 3 inches and smaller shall be NIBCO T-113 (screwed end) with all bronze body, wedge disc and non-rising stem, or approved equal.

B. Isolation valves shall be iron body resilient seat gate valves with modified wedge disc NRS type, with slip on joint ends installed with thrust blocks.

2.11 VALVE BOXES

A. Valve boxes shall be made of molded plastic as manufactured by Carson Industries or approved equal. Boxes shall be 9 in. x 9 in. x 6 in. and green with a green cover marked "Irrigation" on top.

2.12 PAINT FOR RISERS

A. All risers to be painted black.

2.13 CONTROLLER

A. Controller shall be Solatrol Inc.- LEIT 8000 or approved equal with stainless steel enclosure as specified on Contract Documents.

2.14 VACUUM BREAKER

A. Vacuum breaker shall be FEBCO 765Y or approved equal.

2.15 RAIN SENSOR

A. The rain sensor shall employ an electromechanical actuating device designed to cause a circuit interrupt that temporarily disables the irrigation controller during periods of significant rainfall.
B. The rain sensor shall be connected to the system controller to properly function and achieve its intended purpose. The device shall automatically restore the controller to a normal operating condition after a period of time subsequent to the rainfall. The device shall be suitable to be wired – normally closed (N.C.) – in series with the valve common; and, shall include a short-lead to allow wiring normally open (N.O.) when necessary.
C. The device shall be of rugged construction to withstand the elements, including exposure to sunlight (U.V.)
D. The rain sensor shall incorporate a provision that allows the installer to select from several rainfall settings.
E. The device shall include a vent ring to help control drying time of the mechanical components.
F. Rain sensor shall be securely mounted to a tangible structure, out of human reach, and clear of any overhead obstructions that may negatively impact performance. When possible, location should minimize view by the general public. Contractor to coordinate location with project Landscape Architect.

PART 3 EXECUTION

3.1 GENERAL

A. The Irrigation Contractor shall carefully schedule his work with the Landscape Contractor and all other site developments.

B. Sleeves are required wherever piping or electrical wires are placed under paved surfaces. Install sleeves prior to commencement of paving.

C. No consideration will be given to any design changes. Should any changes be deemed necessary after award of contract, for proper installation and operation of the system, the CITY shall negotiate such changes.

D. Lay out work as accurately as possible to the submitted shop drawings.

E. Full and complete coverage is required. CONTRACTOR shall make any necessary minor adjustments to layout as required to achieve full coverage of irrigated areas at no additional cost to the CITY.

F. Where piping is shown on drawings to be under paved areas but running parallel and adjacent to planted areas, the intent is to install piping in planted areas. Do not install directly over another line in same trench.

G. It shall be the CONTRACTOR's responsibility to establish the location of all sprinkler heads in order to assure proper coverage of all areas. In no case shall spacing of sprinkler head exceed distances shown on the drawings and/or those specified. Pipe sizes shall conform to those shown on the drawings. No substitutions of smaller pipe sizes will be permitted, but substitutions of larger sizes may be approved. All pipe damaged or rejected because of defects shall be removed from the site at the time of said rejection, at not additional cost to the CITY.

H. Install irrigation system after completion of site grading. The irrigation system shall be installed and completely operational three days prior to the installation of any planting operations.

3.2 PREPARATION

A. Layout of Main and Laterals: The sprinkler main lines and all laterals shall be laid out by the CONTRACTOR and approved by the CITY or CITY PROJECT MANAGER, prior to excavation. The sprinkler lines, as shown on the Plans, are drawn for clarity and are schematic in nature. No sprinkler lines shall be under paved areas unless in sleeves or specifically noted on the Plans. Any adjustment or site modification shall be done prior to the excavation operation.

B. Layout of Sprinkler Heads: All sprinkler heads locations shall be staked by the CONTRACTOR and approved by the CITY or CITY PROJECT MANAGER, prior to installation to ensure uniformity and correctness to both pattern and coverage.

C. Valve Locations: The location of all valves shall be in landscape areas. The location of all valves shall be staked by the CONTRACTOR and approved by the CITY or CITY PROJECT MANAGER, prior to installation to ensure ease of access for maintenance and to ensure that they do not conflict with other elements on the project. Each valve shall be installed in a separate valve box. The valve locations shown on the plan are drawn for clarity and are schematic in nature. Sequence all valves so that the farthest valve from the P.O.C. operates first and the closest to the P.O.C. operates last.

D. Valve boxes must be placed a minimum of 12 inches and a maximum of 15 inches from the edge of pavement and the top of the box shall be 2 inches above finish grade. Valve boxes to be installed in shrub beds only. Using 3 inches high number stencils, paint the valve number in white on the lid of each valve box.

E. Irrigation Plans: The irrigation system indicated on the drawings is drawn for clarity and is essentially diagrammatic. Spacing of the heads shown on the Plans shall not be modified unless approved in writing by the CITY and CITY PROJECT MANAGER.

3.3 TRENCHING

A. Perform all excavations as required for installation of work included under this Section, including shoring of earth banks, if necessary. Restore all surfaces, existing underground installation, etc., damaged or cut as a result of the excavations, to their original condition.

B. Should utilities not shown on the drawings be found during excavations, CONTRACTOR shall promptly notify the CITY for instructions as to further action. Failure to do so will make the CONTRACTOR liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities. Indicate such utility crossings on the record drawings promptly.

C. Trenches shall be open, vertical sided construction wide enough to provide free working space around work installed and to provide ample space for backfilling and compacting.

D. When 2 pipes are to be placed in the same trench, a 6 inch space is to be maintained between pipes. The CONTRACTOR shall not install 2 pipes with one directly above the other.

E. Backfill and compaction shall be in accordance with Section 02305, Excavation and Backfilling for Utilities. Depth of trenches shall be sufficient or provide a minimum cover above the top of the pipe as follows or as showing drawing if greater:
   a. 12 inches over non-pressure lateral lines

b. 18 inches over non-pressure lateral lines under paving

c. 18 inches over control wires

d. 18 inches over sprinkler main line

e. 24 inches over sprinkler main line under paving

F. The CONTRACTOR shall cut trenches for pipe to required grade lines and compact trench bottom to prove accurate grade and uniform bearing for the full length of the line.

G. All laterals and mainline shall be sufficiently sloped to provide positive drainage through drain valves.

H. The CONTRACTOR shall be held responsible for any damages caused by these operations and shall immediately repair or replace damaged parts.

3.4 INSTALLATION

A. Ground Level Areas: The CONTRACTOR shall do all necessary excavating and backfilling required for the proper installation of the work. Minimum depth of cover over lateral lines shall be 12 inches, over main line shall be 18 inches, over sleeves it shall be 24 inches. Backfill material shall be clean fill. If existing material has rock, then clean sand must be used. In rocky areas, the trenching depth shall be two inches below normal trench depth to allow for a 2 inch bed of sand below the pipe. There shall be no rock in contact with PVC pipe. The CONTRACTOR shall use backfilling equipment that will tamp backfill to its original density. He shall barricade or light the excavation to prevent hazards to the public. Objectionable materials such as coral rock, asphalt, limerock and bricks that are encountered during working operations shall be removed from the project by the CONTRACTOR.

B. Modifications Due to Field Conditions: Conditions that occur on the site that causes the system to be modified, shall be presented as shop drawings by the CONTRACTOR and approved by the CITY PROJECT MANAGER, prior to construction.

C. The existence and location of utilities (overhead, above ground and underground) shall be thoroughly investigated and verified by the CONTRACTOR before the work begins in the area of said utilities. The CONTRACTOR shall exercise care in digging and working so as not to damage utilities or endanger the safety and lives of people. Should overhead, above ground or underground obstructions be encountered which interfere with the work, the CITY PROJECT MANAGER shall be consulted in order for a decision to be made on the relocation of the work to clear such obstruction. The CONTRACTOR shall be responsible for the immediate repair of any damage to utilities caused by his work.

D. PVC Sleeves and Electrical Conduit

a. All PVC sleeves shall be a minimum of twice (2x) the diameter of the pipe to be sleeved; and,

b. All PVC control wire conduit shall be of sufficient size to hold the required quantity of control and common wires. Electrical wires are not to be placed in the same sleeve with water pipes.

3.4 PVC PIPE ASSEMBLY

A. All PVC pipe shall be cut to the proper length prior to assembly. The cut shall be neat and square, 90 degrees to the axis of the pipe. Prior to assembly, the cut end shall be de-burred. The fitting and pipe end shall both be cleaned with a PVC High Etch Primer. This primer shall have a purple tint to aid in visual inspection.

B. A thin even flow coat of slow drying, heavy duty PVC solvent/glue shall be applied to both the inside of the fitting and the pipe mating surface.

C. The pipe shall be inserted into the fitting until it bottoms, then given a quarter turn to ensure proper sealing. The pipe and fittings shall be out of service during the curing time as recommended by the manufacturer or 24 hours, whichever is longer. The finished joint shall be water-tight and shall have a strength equal to or greater than that of the pipe being joined. The direct tapping of PVC pipe or fittings shall not be permitted.

D. Threaded Joints for PVC Pipes

a. Use Teflon tape on all threaded PVC fittings;

b. Use strap-type friction wrench only. Do not use metal-jawed wrench; and,

c. At threaded joints between PVC and metal pipes, the metal shall contain the socket end and the PVC end shall contain the spigot. A metal spigot shall not, under any circumstances, be screwed into a PVC socket.

3.5 IRRIGATION CONTROL VALVES

A. Valves shall be carefully inspected during installation; they shall be opened wide and then tightly closed and tested for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat. Valves shall be set plump at the locations indicated and in accordance with the details shown on the drawings.

B. Install control valves in valve boxes grouping together where practical. Place no closer than 12 inches to walk edges, buildings and walls.

C. Pressure regulating remote control valves shall be adjusted so that the most

remote sprinkler heads operate at the pressure specified.

D. Valves shall be installed as shown in details and in accordance with manufacturer's instructions and the specifications.

3.7 QUICK COUPLING VALVES

A. Shall be set a minimum of 12 inches from walks, curbs or paved areas where applicable or as otherwise noted. Quick coupling valves shall be housed in valve boxes.

B. Valves shall be installed on 3 elbow PVC Schedule 80 swing joint assembly.

3. 8 VALVE BOXES

A. Valve boxes shall be set flush with finish grade in lawn areas and ½ inch above finish grade in ground cover and shrub bed areas.

3.9 SPRINKLER HEADS

A. Sprinkler Heads: All sprinkler heads shall be installed as shown on the Drawings. Backfill around the sprinkler shall be free of rocks, roots, or debris. If finished grade has not been established, the line shall be temporarily capped at the head and a stake marker placed. After grading has been completed, the sprinkler head shall be set. The CONTRACTOR shall coordinate his operations with the various phases of the work. Adjust heads for proper coverage avoiding excess water on walks, walls and paving.

B. All sprinkler heads within a zone shall have matched precipitation rates.

C. All heads operating on one valve (zone) shall do so at the same pressure.

D. All heads shall be pop-up type heads. Permanent shrub risers are not permitted.

E. Do not mix different types of heads within zone.

F. Shrub beds and lawn areas are to be on separate valves (zones).

G. Place part-circle pop-up sprinkler heads 6 inches from edge of adjacent walks, curbs and mowing bands, or paved areas at time of installation.

H. All sprinkler nozzles shall be adjusted for the proper radius and direction of spray pattern. Make adjustments where possible to prevent over-spraying into walks, pavement or buildings.

I. Sprinkler heads and quick coupling valves shall be set perpendicular to finished grade unless otherwise designated on the drawings.

3.10 DRAIN VALVES

A. All laterals shall be provided with manual drain valves.

B. The mainline shall be drained with manual drain valves.

C. Drain valves are to be provided at sufficient intervals to provide complete drainage of all piping.

3.11 INSTALLATION OF DRIP IRRIGATION COMPONENTS

A. Remote Control Valve (RCV) Assembly for Drip Laterals:
   a. Flush mainline pipe before installing RCV assembly.
   b. Locate as shown on the drawings. Wire connectors and waterproof sealant shall be used to connect control wires to remote control valve wires. Connectors and sealant shall be installed as per the manufacturer's recommendations.
   c. Install only one RCV to valve box. Locate at least 12-inches from and align with nearby walls or edges of paved areas.

B. Drip Emitter Assembly:
   a. Locate as shown on the drawings and installation details.
   b. Flush lateral pipe before installing emitter assembly.
   c. Cut emitter outlet distribution tubing square.
   d. Use tools and techniques recommended by the manufacturer.

C. Flush Cap Assembly: Install at the end of each drip irrigation lateral pipe as shown on the installation details.

3.11 AUTOMATIC CONTROLLER

A. The automatic controller shall be installed at the approximate location shown on the irrigation drawings. Controller shall be wall mounted in a locking box. Suitable power supply will be supplied by the Electrical Subcontractor.

B. All regulatory authorities having jurisdiction and other applicable codes shall take precedence in connecting the 110-volt electrical service to the controller.

C. Install per regulatory authority having jurisdiction code, manufacturer's latest printed instructions, and as detailed.

D. Connect remote control valves to controller in sequence to correspond with station setting beginning with 1, 2, 3, etc.

E. Affix controller name (i.e., 'Controller A') on inside of controller cabinet door with letters minimum of 1 inch high. Affix a non-fading copy of irrigation diagram to cabinet door below controller name. Irrigation diagram is to be sealed between two sheets of 20 mil (minimum) plastic. Irrigation diagram shall be a reduced copy of the as-built drawing and shall show clearly all valves operated by the Controller, showing station number, valve size and type of planting irrigated.

3.12 CONTROL WIRING

A. Control Lines: All electric control lines shall be installed in the same trench with the pipe lines in a neat and orderly fashion. They shall be installed in the main and lateral trenching or in their own trenches, and where necessary, bundled together and taped every 5 feet.

B. Connections: any connections to existing pipe systems shall be made after consultation and approval of regulatory agencies.

C. All electrical equipment and wiring shall comply with regulatory authorities having jurisdiction and be installed by those skilled and licensed in the trade.

D. Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines wherever possible, and shall have a minimum of an 18 inch cover.

E. Control wires shall be installed to the side of the main line whenever possible. Placement over pipes is not permitted.

F. Where more than 1 wire is placed in a trench, the wiring shall be taped together at intervals of 10 feet.

G. An expansion curl shall be provided within 3 feet of each wire connection and at least every 100 feet of wire length on runs of more than 100 feet in length. Expansion curls shall be formed by wrapping at least 5 turns of wire around a 1 inch diameter pipe, then withdrawing pipe.

H. Control wire splices at remote control valves to be crimped and scaled with specified splicing materials. Line splices will be allowed only on runs of more than 500 feet and they must be located in 10 inch round splice boxes, which are green in color. The connector shall be 3MD BY splice kit by 3M Corporation, or 'Snip-Snap' connector by Imperial, or equal. Use one splice per connector sealing packs.

I. Wire: Tape and bundle control wires every 10 feet and run alongside mainline. At all turns in direction make a 2 foot coil or wire. At all valve boxes coil wire around a ¾ inch piece of PVC to make a coil using 30 inches of wire. Provide 1 spare for every 10 hot wires – a minimum of 2 extra. Number all wires, using an electrical book of numbers, according to the plans. Number wires in all valve boxes, junction boxes and at the controller.

3.13 SHUT-OFF VALVES

A. Shall be located in the following locations:

a. After backflow preventer and prior to main supply loop;

b. Between mainline and each remote control valves; and,

c. To be located within planting and lawn areas.

B. All shut-off valves shall be located in valve boxes.

3.14 CLOSING OF PIPE AND FLUSHING OF LINES

A. All testing shall be done under the supervision of the CITY or CITY PROJECT MANAGER. Submit written requests for inspections to the CITY at least 3 days prior to the anticipated inspection date.

a. Flushing: All lines shall be flushed prior to any installation of automatic sprinkler valves or sprinkler heads to remove all sand and other foreign matter with velocity of the flushing water not less than 4 feet per second. Flushing shall be terminated at the direction of the CITY PROJECT MANAGER. The CONTRACTOR shall dispose of the flushing water without causing a nuisance or property damage.

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

c. After flushing, cap or plug all openings to prevent entrance of materials that would obstruct the pipe or clog heads. Leave in place until removal is necessary for completion of installation;

d. Test as specified below;

e. Upon completion of testing, complete assembly and adjust sprinkler heads for proper distribution; and,

f. All sprinkler heads and quick coupling valves shall be set perpendicular to finished grades unless otherwise designated on the drawings, or otherwise specified. Sprinkler heads adjacent to existing walls, curbs and other paved areas, shall be set to grade. Sprinkler heads, which are to be installed in lawn areas where the turf has not yet been established, shall be set 1 inch above the proposed finish grade. Heads installed in this manner will be lowered to grade when the turf is sufficiently established to allow walking on it without appreciable destruction. Such lowering of heads shall be done by this CONTRACTOR as part of the original contract with no additional cost to the CITY.

3.15 TESTING

A. Pressure and Leakage Testing:

a. General: All pumps, gauges, and measuring devices shall be furnished,

installed and operated by the CONTRACTOR and all such equipment and devices and their installation shall be approved by the CITY PROJECT MANAGER.

b. Pressure Tests for Lines: Pressure piping installed under this contract shall be subjected to a pressure test after the pipe has been installed and partially backfilled for underground installations. Each pressure test shall be maintained for at least one hour at 150 psi during which time all joints shall be examined for leaks.

c. Before application of test pressure, all air shall be expelled from the pipe. If permanent air vents are not located at all high points, the CONTRACTOR shall install corporation cocks or fittings and valves at such points so the air can be expelled as the pipe system is slowly filled with water. After expulsion of air, the corporation cocks, or other blow-off devices shall be closed and the test pressure applied.

d. All exposed pipe, fittings, valves, and joints shall be carefully examined for leaks. All cracked, broken, or defective pipe, fittings, or valves discovered as a consequence of this pressure test shall be removed and replaced with sound material. All leaking, or defective joints shall be repaired, replaced, or corrected. After all necessary replacements and corrections, the test shall be repeated until satisfactory to the CITY PROJECT MANAGER.

e. Leakage Testing for Pressure Piping: After completion of satisfactory pressure tests of piping, the lines shall be subjected to leakage tests. The duration of each leakage test shall be at least two hours and the pressures maintained during each leakage test shall be as specified above for the pressure tests.

f. Leakage is defined as the quantity of water that must be supplied into the newly laid pipe or any valved section thereof to maintain the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. The allowable limits for leakage of underground piping shall be determined by the following formula.

g. Allowable Limits for Leakage of Pressure Piping: The hydrostatic pressure tests shall be performed as hereinabove specified and no installation, or section thereof, will be acceptable until the leakage is less than the number of gallons per hour as determined by the formula:

$$L = SD(P)^{1/2}/133{,}200$$

in which,

L = Allowable leakage, in gallons per hour
S = Length of pipe being tested in feet
D = Nominal pipe diameter; in inches
P = Average test pressure during the test, in psi gauge

h. Water shall be supplied to the line during the test period as required to maintain the test pressure as specified. The quantity used, which shall be compared to the above allowable quantity, shall be measured by pumping from the calibrated container.

i. Where leakage exceeds the allowable limit, the defective pipe or joints shall be located and repaired. If the defective portions cannot be located, the CONTRACTOR shall remove and reconstruct as much of the work as is necessary in order to conform to the specified limits. No additional payment will be made for the correction of defective work, or to damage to other parts of the work resulting from such corrective work.

B. Balancing and Adjustment: The CONTRACTOR shall balance and adjust the various components of the sprinkler system so the overall operation of the system is most efficient. This includes a synchronization of the controllers, part circle sprinkler heads, and individual station adjustments on the controllers.

3.16 INSPECTION

A. The CONTRACTOR shall maintain proper facilities and provide safe access for inspection to all parts of the work.

B. Irrigation inspection shall consist of a minimum of:

a. Mainline pressure test;

b. Coverage test; and,

c. Final irrigation inspection.

C. If the laws, ordinances or any public authority require any work to be specifically tested or approved, the CONTRACTOR shall give the CITY 3 days notice of its readiness for inspection.

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

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

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

3.17 BACKFILL AND COMPACTING

A. After system is operating and required tests and inspections have been made, backfill excavations and trenches.

B. Backfill for all trenches, regardless of the type of pipe covered, shall be compacted to the requirements of Section 02305, Excavation and Backfilling for Utilities.

C. All backfill shall be clean and free of any stones or debris larger than 1-1/2” in size.

D. Within all planting and lawn areas the existing 4 inch layer of topsoil shall be restored to its original condition and finish grade. After backfilling, the CONTRACTOR shall dispose of surplus earth offsite.

3.18 RESPONSIBILITY PRIOR TO FINAL ACCEPTANCE

A. The CONTRACTOR shall be responsible for maintenance until the inspection for completion and final acceptance. The responsibilities include the following:

B. Repair of all damage to installed material and equipment as needed.

C. Adjustment of all sprinkler heads with regard to proper height after landscape installation, arc coverage, radius and operation at least once a week.

D. The system shall be operational at least one month prior to Substantial Completion. Once a week after Substantial Completion, the CONTRACTOR shall clean, repair and adjust all valves and other controls. Also, check to ensure that they are opening and closing properly.

E. Once a week the controllers shall be checked to ensure that the clocks have the right time, the program is properly set and that it is properly operating all of the valves correctly. Following inspections, the pump enclosure is to be locked.

END OF SECTION

SECTION 02920 - SODDING

PART 1 GENERAL

1.1 DEFINITIONS

A. Maintenance Period: Begin maintenance immediately after each area is planted (sod) and continue for a period of 8 weeks after all planting under this Section is completed.

B. Satisfactory Stand:

a. Grass or Section of Grass that has:

i. No bare spots larger than 3 square feet.

ii. Not more than 10 percent of total area with bare spots larger than 1 square foot.

iii. Not more than 15 percent of total area with bare spots larger than 6 square inches.

1.2 DELIVERY, STORAGE, AND PROTECTION

A. Sod:

A. Do not harvest if sod is excessively dry or wet to the extent survival may be adversely affected.

B. Harvest and deliver sod only after laying bed is prepared for sodding.

C. Roll or stack to prevent yellowing.

D. Deliver and lay within 24 hours of harvesting.

E. Keep moist and covered to protect from drying from time of harvesting until laid.

1.3 WEATHER RESTRICTIONS

A. Perform Work under favorable weather and soil moisture conditions as determined by accepted local practice.

1.4 SEQUENCING AND SCHEDULING

A. Prepare topsoil as specified in the Contract Documents, before starting Work of this Section.

B. Complete Work under this Section within 10 days following completion of soil preparation.

C. Notify CITY PROJECT MANAGER at Least 3 Days in Advance of:

a. Each material delivery.

b. Start of planting activity.

D. Planting Season: Those times of year that are normal for such Work as determined by accepted local practice.

1.5 MAINTENANCE SERVICE

A. Contractor: Perform maintenance operations during maintenance period to include:

a. Watering: Keep surface moist.

b. Washouts: Repair by filling with topsoil, and replace sodded areas.

c. Mowing: Mow to 2 inches after grass height reaches 3 inches, and mow to maintain grass height from exceeding 3 1/2 inches.

d. Re-sod unsatisfactory areas or portions thereof immediately at the end of the maintenance period if a satisfactory stand has not been produced, at which time maintenance period shall recommence.

e. Re-sod during next planting season if scheduled end of maintenance period falls after September 15.

PART 2 MATERIALS

2.1 FERTILIZER

A. Commercial, uniform in composition, free-flowing, suitable for application with equipment designed for that purpose. Minimum percentage of plant food by weight.

B. Mix:

a. Nitrogen: Sixteen.

b. Phosphoric Acid: Four.

c. Potash: Eight.

2.2 SOD

A. Unless a particular type of sod is called for, sod may be of either St. Augustine Floritam, Bahia grass or Seashore Paspalum, at the Contractor's option.

a. Use Bahia grass where no irrigation system exists.

b. Use St. Augustine Floritam here an irrigation system is in use.

c. Seashore Paspalum sod will be used in areas prone to salt water flooding.

B. Strongly rooted pads, capable of supporting own weight and retaining size and shape when suspended vertically from a firm grasp on upper 10 percent of pad.

a. Grass Height: Normal.

b. Strip Size: Supplier's standard, commercial size rectangles.

c. Soil Thickness: Uniform; 1-inch plus or minus 1/4-inch at time of cutting.

d. Age: Not less than 10 months or more than 30 months.

e. Condition: Healthy, green, moist; free of diseases, nematodes and insects, and of undesirable grassy and broadleaf weeds. Yellow sod, or broken pads, or torn or uneven ends will not be accepted

f. Any netting contained within the sod shall be certified by the manufacturer to be bio-degradable within a period of 3 months from installation.

PART 3 EXECUTION

3.1 PREPARATION

A. Grade Areas to Smooth, Even Surface with Loose, Uniformly Fine Texture:

a. Roll and rake, remove ridges, fill depressions to meet finish grades.

b. Limit such Work to areas to be planted within immediate future.

c. Remove debris, foreign material and stones larger than 1 1/2 inches diameter, and other objects that may interfere with planting and maintenance operations.

B. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface to dry off before seeding. Do not create muddy soil.

C. Restore prepared areas to specified condition if eroded or otherwise disturbed after preparation and before planting.

D. Limit preparation to those areas that can be sodded within 72 hours after preparation.

3.2 FERTILIZER

A. Apply evenly over area in accordance with manufacturer's instructions. Mix into top 2 inches of top soil.

B. Application Rate: 20 pounds per 1,000 square feet (1,000 pounds per acre).

3.3 SODDING

A. Do not plant dormant sod, or when soil conditions are unsuitable for proper results.

B. Pre-wet the area prior to placing sod. Lay sod to form solid mass with tightly fitted joints; butt ends and sides, do not overlap:

a. Stagger strips to offset joints in adjacent courses.

b. Work from boards to avoid damage to subgrade or sod.

c. Tamp or roll lightly to ensure contact with subgrade; work sifted soil into minor cracks between pieces of sod, remove excess to avoid smothering adjacent grass.

d. Complete sod surface true to finished grade, even, and firm.

C. Fasten sod on slopes to prevent slippage with wooden pins 6 inches long driven through sod into subgrade, until flush with top of sod. Install at sufficiently close intervals to securely hold sod.

D. Water sod with fine spray immediately after planting. During first month, water daily or as required to maintain moist soil to depth of 4 inches.

3.4 FIELD QUALITY CONTROL

A. Eight weeks after sodding is complete and on written notice from Contractor, CITY PROJECT MANAGER will, within 15 days of receipt, determine if the sod has been satisfactorily established.

B. If the sod is not satisfactorily established, Contractor shall replace the sod and repeat the requirements of this Section.

END OF SECTION

SECTION 02930 - LANDSCAPE WORK

PART 1 GENERAL

1.1 DEFINITIONS

A. Measurement:

a. In size grading Balled and Burlapped (B & B), caliper takes precedence over height.

b. Take trunk caliper 6 inches above the ground level (up to and including 4-inch caliper size) and 12 inches above the ground level for larger trees.

c. Measure size of container-grown stock by height and width of plant.

d. Measure herbaceous perennials pot size, not top growth.

1.2 DELIVERY, STORAGE, AND HANDLING

A. Inspection and Transporting: Movement of nursery stock shall comply with all Federal, State, and local laws and regulations. Therefore, required inspection certificates shall accompany each shipment, and shall be filed with the CONSULTANT.

a. Cover plants during shipment with a tarpaulin or other suitable covering to minimize drying.

b. Balled and Burlapped Plants: Wrap each ball firmly with burlap and securely bind with twine, cord, or wire for shipment and handling. Drum-lace balls with a diameter of 30 inches or more. Wire wrap burlap if root ball is not sufficiently compacted. Palms will not require burlap wrapping if the following requirements are met:

i. Dug from marl or heavy soil that adheres to roots and retains shape without shattering.

ii. Moistened material used to cover ball and roots not exposed to wind and sun.

iii. Transport material on vehicles large enough to allow plants not to be crowded. Plants shall be covered to prevent wind damage during transit and shall be kept moist, fresh and protected at all times. Such protection shall encompass the entire period which the plants are in transit, being handled, or are in temporary storage.

c. All plant material shall not remain on the work site longer than two (2) days prior to being installed.

d. As specified herein for transplanting.

1.3 MAINTENANCE

A. Commence to maintain plant life immediately after planting and maintain for a minimum of one growing season, and until plants are well established and exhibit a vigorous growing condition.

B. In Accordance with Accepted Submittal on Care and Maintenance of Plants and as Follows:

a. Maintain by watering, pruning, cultivating, and weeding as required for healthy growth. Restore planting saucers.

b. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position as required.

c. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free of insects and disease.

d. Remove guys, stakes, and other supports at end of maintenance service.

e. Maintenance includes temporary protection fences, barriers, and signs as required for protection.

f. Coordinate watering to provide deep root watering to newly installed trees.

1.4 SCHEDULING AND SEQUENCING

A. Plant Deliveries: Notify CONSULTANT at least 3 days in advance of each delivery.

B. Planting Season: Conduct planting during times of year that are normal for such work as determined by accepted local practice.

C. Plant trees and shrubs after final grades are established and before planting of lawns or grasses.

PART 2 MATERIALS

2.1 PLANT MATERIALS

A. Provide quantity, size, genus, species, and variety of trees and shrubs indicated; comply with applicable requirements of ANSI Z60.1.

B. Nomenclature (Names of Plants): In accordance with “Hortus Third”.

C. Quality and Size:
a. Nursery-grown, habit of growth normal for species.

b. Sound, healthy, vigorous, and free from insects, diseases, and injuries - Florida #1 quality or better.

c. Equal to or exceeding measurements specified in plant list. Measure plants before pruning with branches in normal position.

d. Root System of Container-Grown Plants: Well developed and well distributed throughout the container, such that the roots visibly extend to the inside face of the growing container.

e. Perform necessary pruning at time of planting.

f. Sizes: Dimensional relationship requirements of ANSI Z60.1 for kind and type of plants required.

g. Balled and Burlapped Plants: Firm, intact ball of earth encompassing enough of the fibrous and feeding root system to enable full plant recovery.

h. Ball Size: ANSI Z60.1.

i. Container-Grown Plants: Self-established root systems, sufficient to hold earth together after removal from container, without being rootbound.

j. Stock: Grown in delivery containers for at least 6 months, but not over 2 years.

k. Label each tree and shrub of each variety with securely attached waterproof tag, bearing legible designation of botanical and common name.

l. All trees must have a fully developed fibrous root system, be heavily branched, or in palms, heavily leafed, free from all insects, fungus, and other diseases.

m. Palms: Wrap the roots of all plants of the palm species before transporting, except if they are container grown plants and ensure that they have an adequate root ball structure, and mass for healthy transplantation as defined in “Florida Grades and Standards for Nursery Plants.”

n. The CONSULTANT will not require burlapping, if the palm is carefully dug from marl or heavy soil that adheres to the roots and retains its shape without crumbling. During transporting and after arrival, carefully protect root balls of palms from wind and exposure to the sun. Muck grown palms are not allowed. After delivery to the job site, if not planting the palm within 24 hours, cover the root ball with a moist material. Plant all palms within 48 hours of delivery to the site.

o. Move sabal and coconut palms in accordance with the “Florida Grades and Standards for Nursery Plants.”

D. Replacement Shrubs and Trees: Same species, size, and quality as specified for plant being replaced, except existing trees larger than 4-inch caliper, may be replaced with 4-inch caliper trees to satisfy the caliper inches lost.

2.2 ANTIDESICCANT

A. Provide transpiration retarding material to be used where any plant material is moved during the growing season.

2.3 GUYING, STAKING, AND WRAPPING MATERIALS

A. Wood Stake: 2 inches by 2 inches by 8 feet.

B. Guy Wires: Galvanized, 12-gauge, ductile steel.

C. Flags:

a. Wood: 1/2-inch by 3 inches by 12 inches, with 3/8-inch hole centered 1-1/2 inches from each end, painted white.

b. Sheet Metal: 1-1/2-inch with clipped corners and both ends punched, painted white.

D. Hose: Two-ply, reinforced rubber garden hose, not less than 1/2-inch diameter, new or used.

E. Burlap: Of first quality, minimum 8 ounces in weight, not less than 6 inches nor more than 10 inches in width.

2.4 MULCH

A. Mulch shall be free from noxious weed seed and foreign material harmful to plant growth and shall be an approved non-native tree bark mulch. It must be uniformly shredded and be free from large pieces of bark, foreign matter, weed seeds and any other organic or inorganic material.

B. Barkdust: Medium grind, pine; maximum 3/4-inch particle size.

2.5 PLANTING SOIL MIX

A. Proportion by Weight: 75% approved good quality top soil mixed with 25% approved organic matter as approved by CONSULTANT. The soil must be taken from ground that has never been stripped, with a slight acid reaction (5.5 to 6.5 ph) and without an excess of calcium or carbonate. Soil shall have a loose friable condition.

B. Special Type: Planting soil for palms shall be a good grade of salt free sand, which is free of all weeds.

2.6 TOPSOIL

A. General: Uniform mixture of 75 percent good grade of clean, salt free, weed free sand and 25 percent organic material in a loose friable condition, free from objects larger than 1-1/2 inches maximum dimension, and free of subsoil, roots, grass, other foreign matter, hazardous or toxic substances, and deleterious material that may be harmful to plant growth or may hinder grading, planting, or maintenance.

B. Textural Amendments: Amend as necessary to conform to required composition.

C. Source: Import topsoil if onsite material fails to meet specified requirements or is insufficient in quantity.

D. 95% of topsoil shall pass a ¼ inch sieve.

E. Organic matter content shall be 4% to 12% of total dry weight.

2.7 SOURCE QUALITY CONTROL

A. Topsoil Analysis/Testing: Performed by county or state soil testing service or approved certified independent testing laboratory.

B. Should soil tests prove the topsoil to alkaline or above the accepted minimum for salt content, the topsoil shall be removed and replaced by acceptable material at Contractor's expense.

PART 3 EXECUTION

3.1 TRANSPLANTING

A. Remove existing plantings identified for transplant prior to beginning Work in area in accordance with standard nursery practices and as specified herein.

B. Nondormant Plants: Prior to digging, spray foliage with antidesiccant, as recommended by manufacturer.

C. Cover balls and containers of plants that cannot be planted immediately, with moist soil or mulch.

D. Water plants as often as necessary to prevent drying until planted.

E. Do not remove container-grown stock from containers before time of planting.

F. Bare-Root Plants:

G. Dig up with least possible injury to fibrous root system.

H. Immediately upon removal from ground, cover roots with thick coating of mud or

wrap in wet straw, moss, or other suitable packing material for protection from drying until planted.

I. Plant or heel-in immediately upon relocation to temporary storage. Open and separate bundles of bare-root plants, and eliminate air pockets among roots as they are covered.

J. Replant each temporarily removed tree, shrub, or other plant only after construction activities are completed and applicable grading and topsoil replacement is completed in its vicinity. Replant trees, shrubs, and other plants in their original positions unless otherwise shown or approved. Plant as specified for new plants.

K. Maintain transplanted materials in same manner as new trees and shrubs.

3.2 LOCATION OF PLANTS

A. Locate new planting or stake positions as shown unless obstructions are encountered, in which case notify CONSULTANT.

B. Locate no planting, except ground cover, closer than 18 inches to pavements, pedestrian pathways, and structures.

C. Request CONSULTANT observe locations, and adjust as necessary before planting begins.

3.3 PREPARATION

A. Subsoil Drainage: Furnish for plant pits and beds.

B. Planting Soil: Delay mixing of amendments and fertilizer if planting will not follow preparation of planting soil within 2 days. For pit and trench type backfill, mix planting soil prior to backfilling and stockpile at site.

C. Plants: Place on undisturbed existing soil or well-compacted backfill.

D. Trees and Shrubs:

a. Pits, Beds, and Trenches: Excavate with vertical and scarified sides.

b. B & B Trees and Shrubs: Make excavations at least twice as wide as root ball.

c. Container-Grown Stock: Excavate as specified for B & B stock, adjust for size of container width and depth.

d. Bare-Root Trees: Excavate pits to a width to just accommodate roots fully extended and depth to allow uppermost roots to be below original grade.

e. Fill excavations with water and allow to percolate out prior to planting.

E. Ground Cover Beds:

a. Mix amendments and fertilizer with top soil prior to placing or apply on surface of top soil and mix thoroughly before planting.

b. Scarify top soil to a depth of 4 to 6 inches.

c. Establish finish grading of soil. Rake areas to smooth and create uniform texture and fill depressions.

d. Moisten.

3.4 PLANTING

A. Plant trees before planting surrounding smaller shrubs and ground covers. Adjust plants with most desirable side facing toward the prominent view (sidewalk, building, street).

B. B & B Plants: Place in pit by lifting and carrying by its ball (do not lift by branches or trunk). Lower into pit. Set straight and in pit center with tip of rootball 1 to 2 inches above adjacent finish grade.

C. Bare-Root Plants: Spread roots and set stock on cushion of planting soil mixture. Set straight in the pit center so that roots, when fully extended, will not touch walls of the planting pit and the uppermost root is just below finish grade. Cover roots of bare-root plants to the crown.

D. Container-Grown Plants: Remove containers, slash edges of rootballs from top to bottom at least 1-inch deep. Plant as for B & B plants.

E. Ground Covers: Dig planting holes through mulch with one of the following: hand trowel, shovel, bulb planter, or hoe. Split biodegradable pots or remove nonbiodegradable pots. Root systems of all potted plants shall be split or crumbled. Plant so roots are surrounded by soil below the mulch. Set potted plants so pot top is even with existing grade.

3.5 BACKFILLING

A. Backfill with planting soil, except where existing soil is suitable according to top soil analysis.

B. B & B Plants:

a. Partially backfill pit to support plant. Remove burlap and binding from sides and tops of B & B plants, do not pull burlap from under balls.

b. When excavation is approximately 2/3 full, water thoroughly before placing remainder of backfill to eliminate air pockets even if it is raining. Finish

backfilling pit sides.

c. Never cover top of rootball with soil. Form a saucer above existing grade, completely around the outer rim of the plant pit.

C. Bare-Root Plants:

a. Plumb before backfilling and maintain plumb while working backfill around roots and placing layers above roots.

b. Set original soil line of plant 1-inch to 2 inches above adjacent finish landscape grades. Spread out roots without tangling or turning up to surface. Cut injured roots cleanly; do not break.

c. Carefully work backfill around roots by hand; puddle with water until backfill layers are completely saturated.

3.5 GUYING and STAKING

A. Support trees immediately after planting to maintain plumb position.

B. Guying: Support all trees over 4 inches in caliper with 3 guys equally.

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

3.7 SUBGRADE PREPARATION

A. The subgrade shall be 4 inches lower than finished grade with 2 inches of topsoil added to sod areas.

B. Scarify subgrade to minimum depth of 6 inches where topsoil is to be placed.

C. Remove stones over 2-1/2 inches in any dimension, sticks, roots, rubbish, and other extraneous material.

D. Limit preparation to areas which will receive topsoil within 2 days after preparation.

3.8 TOPSOIL PLACEMENT

A. Topsoil Thickness:

a. Sodded Areas: 2 inches.

b. Planting Beds: 6 inches.

c. Planting Beds in Roadways and Parking Lots: All planting areas shall be excavated to a minimum depth of 24” or greater as needed to remove all road base/rock down to native soil prior to backfilling with approved planting soil.

B. Do not place topsoil when subsoil or topsoil is excessively wet or otherwise detrimental to the Work.

C. Mix soil amendments with topsoil before placement or spread on topsoil surface and mix thoroughly into entire depth of topsoil before planting or seeding.

D. Uniformly distribute to within 1/2-inch of final grades. Fine grade topsoil eliminating rough or low areas and maintaining levels, profiles, and contours of subgrade.

E. Remove stones exceeding 1-1/2 inches, roots, sticks, debris, and foreign matter during and after topsoil placement.

F. Remove surplus subsoil and topsoil from site. Grade stockpile area as necessary and place in condition acceptable for planting or seeding.

3.9 MULCHING

A. Cover planting beds and area of saucer around each plant with 3-inch thick layer of mulch within 2 days after planting. Saturate planting area with water.

3.10 PRUNING AND REPAIR

A. Prune only after planting and in accordance with standard horticultural practice to preserve natural character of the plant. Perform in presence of CONSULTANT or OWNER’s representative. Remove all dead wood, suckers, and broken or badly bruised branches. Use only clean, sharp tools. Do not cut lead shoot.

B. For Existing Trees Impacted by Construction Activities:

a. Maintain a minimum 6-foot clearance from the trunk of all trees except palm trees. Existing trees to remain shall be protected during all construction phases. Protective barriers shall be provided at the drip line of existing trees adjacent to construction operations. Replacement of any trees that are damaged or destroyed due to the CONTRACTOR’S operations shall be the CONTRACTOR’S responsibility and shall be replaced at the CONTRACTOR’S expense

b. Where roots of trees are encountered in the excavation area, use a 24-inch deep saw cut prior to excavation. Roots shall not be torn by excavating equipment. Hand dig around roots. Cut roots do not require coating.

c. Overhead branches not trimmed prior to construction and interfering with construction activities will be pruned and cut as approved by the CITY Forester and not torn or broken off with excavating equipment.

3.11 WEED CONTROL

A. Maintain a weed-free condition within planting areas. Apply pre-emergent selective herbicide to mulched beds at manufacturer's recommended rate of application.

3.12 PROTECTION OF INSTALLED WORK

A. Protect planting areas and plants against damage for duration of maintenance period.

3.13 ROOT BARRIERS

A. Root barriers shall be installed parallel to all trees (except palms) when there is a sidewalks, roadway or utility adjacent to the planting area. Root barriers will be installed as directed by CITY PROJECT MANAGER.

END OF SECTION

SECTION 02950 – SITE FURNISHINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Site Furnishings of the following types.

1. Benches
2. Trash and Recycling Receptacle
3. Biek Racks
4. Pedestrian Lights

1.2 SUBMITTALS

A. Submit under provisions of Section 01340 – Submittal Procedures

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Detail drawings
2. Preparation instructions and recommendations
3. Storage and handling requirements and recommendations
4. Installation methods

C. Shop drawings: Indicate materials, dimensions, tolerances, welding, fasteners, hardware, mounting, finish, and accessories. Include manufacturer's installation instructions.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum five years' experience in producing site furnishings of the type specified

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Handle materials to avoid damage.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.6 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard warranty against defects in materials and workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Benches:
   1. DuMor, Inc – 426-45/S-5 (End and Center Armrest Only)
      - 4 Seat and 3 armrest, Surface Mount
      - All steel members coated w/ zinc rich epoxy then finished w/ polyester powder coating.
      - Color: Argento

B. Trash and Recycle Receptacle:
   1. DuMor, Inc – 436-40SH-0001
      - Surface Mount
      - Cover Numbers: 0-434-EC-13 (1/2 Moon Opening) and 0-434-EC-10 (4” Opening)
      - Size: 40 Gallon (20 Gal Trash and 20 Gal Recycle)
      - Color: Charcoal Body and Trash with Recycle Blue for recycling component.

C. Bike Racks:
   1. Dero – Hoop Rack
      - Surface Mount
      - Capacity: 2 Bikes
      - Material: 1.5” Schedule 40 Pip (1.9” OD)
      - Finish: Powder Coat Silver

D. Pedestrian Light System:
   1. Ameron Light Pole – VER04SPL Pole with Tension Assembly (City of Fort Lauderdale Standard)
      - Overall Pole Height: 18’-11”
      - Pole Height Above Grade: 13’-1”

- Pole Base Diameter: 13” Dia.
- Top of Pole: 5” OD (Round) Cast Aluminum Top Collar Painted Semi-Gloss Black

2. Luminis Light Fixture Pole Mount – EC813 XM5087-L2W55 (City of Fort Lauderdale Standard)
   - ECLIPSE Maxi
   - 110W LED
   - Post-Top with Four Struts
   - Clear Acrylic Diffuser
   - 30” Dia. X .090” thick aluminum shade with underside painted white enamel to optimize light reflectivity.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

A. Install site furnishings in accordance with manufacturer's installation instructions and in proper relationship with adjacent construction. Adjust until satisfactory results are achieved.

B. Install site furnishings level, plumb, square, accurately aligned, correctly located per drawings, and without warp. Use hardware and fasteners acceptable to manufacturer.

3.3 CLEANING AND PROTECTION

A. Clean in accordance with manufacturer's recommendations.

B. Protect installed products until completion of project.

C. Touch-up, repair or replace damaged products and finishes in accordance with

manufacturer's instructions before Substantial Completion.

END OF SECTION

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

3.4 REFERENCES

B. The following is a list of standards which may be referenced in this Section:

a. American Concrete Institute (ACI):

i. 117, Standard Specification for Tolerances for Concrete Construction and Materials.

ii. 211.1, Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.

iii. 301, Standard Specification for Structural Concrete.

iv. 302.1R, Guide For Concrete Floor and Slab Construction.

v. 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.

vi. 304.2R, Placing Concrete by Pumping Methods.

vii. 305R, Hot Weather Concreting.

viii. 306.1, Standard Specification for Cold Weather Concreting.

ix. 309R, Guide for Consolidation of Concrete.

x. 318/318R, Building Code Requirements for Structural Concrete.

xi. SP-15, Standard Specification for Structural Concrete.

b. ASTM International (ASTM):

i. C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.

ii. C33, Standard Specification for Concrete Aggregates.

iii. C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

iv. C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.

v. C94, Standard Specification for Ready-Mixed Concrete.

vi. C143, Standard Test Method for Slump of Hydraulic-Cement Concrete.

vii. C150, Standard Specification for Portland Cement.

viii. C157, Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete.

ix. C192, Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.

x. C231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

xi. C260, Standard Specification for Air-Entraining Admixtures for Concrete.

xii. C311, Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland-Cement Concrete.

xiii. C452, Standard Test Method for Potential Expansion of Portland-Cement Mortars Exposed to Sulfate.

xiv. C494, Standard Specification for Chemical Admixtures for Concrete.

xv. C595, Standard Specification for Blended Hydraulic Cements.

xvi. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.

xvii. C1012, Standard Test Method for Length Change of Hydraulic-Cement Mortars Exposed to a Sulfate Solution.

xviii. C1018, Standard Test Method for Flexural Toughness and First-Crack Strength of Fiber-Reinforced Concrete (Using Beam with Third-Point Loading).

xix. C1116, Standard Specification for Fiber-Reinforced Concrete and Shotcrete

xx. C1218 Standard Test Method for Water-Soluble Chloride in Mortar and Concrete

xxi. C1240, Standard Specification for Silica Fume for Use as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar, and Grout.

xxii. D2000, Standard Classification System for Rubber Products in Automotive Applications.

xxiii. D4580, Standard Practice for Measuring Delaminations in Concrete Bridge Decks by Sounding.

xxiv. E329, Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.

c. National Bureau of Standards: Handbook No. 44, Specifications, Tolerances, and Other Technical Requirements for Commercial Weighing and Measuring Devices.

3.5 DEFINITIONS

A. Defective Areas. Surface defects that include honeycomb, rock pockets, indentations greater than 3/16 inch, cracks 0.005 inch wide and larger as well as any crack that leaks for liquid containment basins and belowgrade habitable spaces; cracks 0.010 inch wide and larger in nonfluid holding structures spalls, chips, air bubbles greater than 3/4 inch in diameter, pinholes, bug holes, embedded debris, lift lines, sand lines, bleed lines, leakage from form joints, fins and other projections, form popouts, texture irregularities, and stains and other color variations that cannot be removed by cleaning.

B. Exposed Concrete. Concrete surfaces that can be seen inside or outside of structures regardless whether concrete is above water, dry at all times, or can be seen when structure is drained.

C. Hydraulic Structures. Liquid containment basins.

D. New Concrete. Less than 60 days old.

E. Slurry Concrete. Mixture of sand, 3/8-inch minus aggregate, cement, and water for wall construction joints.

3.6 SUBMITTALS

A. Action Submittals:

a. Shop Drawings:

i. Product Data. Admixtures, bonding agent, bond breaker, and patching materials.

ii. Design Data. Concrete mix designs signed by qualified mix designer.

iii. Placement Drawings:

a. Concrete, identifying location of each type of construction joint.

b. Tremie concrete.

iv. Gradation for coarse and fine aggregates, and combined together. List gradings, percent passing through each sieve size.

v. Detailed plan for hot weather placements including curing and protection for concrete placed in ambient temperatures over 80 degrees F.

vi. Concrete repair methods and materials.

B. Informational Submittals:

a. Statements of Qualification:

i. Contractor's resident superintendent for concrete installation.

ii. Mix designer.

iii. Batch plant.

b. Test Reports:

i. Admixtures, test reports showing chemical ingredients and percentage of chloride in each admixture and fly ash.

ii. Source test analysis report for fly ash, including percentage of chloride content.

iii. Statement identifying aggregates reactivity. Determine water soluble chloride in each component of aggregates in accordance with ASTM C1218.

iv. For each trial concrete mix design and signed by a qualified mix designer.

v. Cylinder compressive test results for laboratory concrete mixes.

c. Concrete Delivery Tickets:

i. For each batch of concrete before unloading at Site.

ii. Record of drum revolution counter, type, brand, test certification, Amount of fly ash if used in accordance with ASTM C94, Section 16.

3.7 QUALITY ASSURANCE

A. Qualifications:
   a. Mix Designer. Licensed professional engineer registered in the State of Florida.

   b. Batch Plant. Currently certified by the National Ready Mixed Concrete Association.

B. Preinstallation Conference:

   a. Required Meeting Attendees:

      i. Contractor, including pumping, placing and finishing, and curing subcontractors.

      ii. Ready-mix producer.

      iii. Admixture representative.

      iv. Testing and sampling personnel.

      v. Engineer.

   b. Schedule and conduct prior to incorporation of respective products into Project. Notify Engineer of location and time.

   c. Agenda shall include:

      i. Admixture types, dosage, performance, and redosing at Site.

      ii. Mix designs, test of mixes, and Submittals.

      iii. Placement methods, techniques, equipment, consolidation, and form pressures.

      iv. Slump and placement time to maintain slump.

      v. Finish, curing, and water retention.

      vi. Protection procedures for weather conditions.

      vii. Other specified requirements requiring coordination.

   d. Conference minutes as specified in Section 01200, Project Meetings.

PART 2 PRODUCTS

2.1 MATERIALS

A. Cement. Furnish from one source.

a. Portland Cement Type I or Type II:

i. Meet ASTM C150.

ii. Alkalies: Maximum 0.60 percent.

iii. Tricalcium Aluminate Content of Type I Cement: Maximum 12 percent.

iv. Nonhydraulic Abovegrade Structures: Type I or Type II cement.

v. Hydraulic and Belowgrade Structures and Sewers: Type II cement or combination of Type I mixed with fly ash.

vi. Combine fly ash with cement at batch plant or during production of cement in accordance with ASTM C595, Type IP cement.

B. Aggregates. Furnish from one source.

a. Natural Aggregates:

i. Free from deleterious coatings and substances in accordance with ASTM C33, except as modified herein.

ii. Free of materials and aggregate types causing popouts, discoloration, staining, or other defects on surface of concrete.

b. Nonpotentially Reactive. In accordance with ASTM C33, Appendix XI, Paragraph X1.1.

c. Aggregate Soundness. Test for fine and coarse aggregates in accordance with ASTM C33 and ASTM C88 using sodium sulfate solution.

d. Fine Aggregates:

i. Clean, sharp, natural sand.

ii. ASTM C33.

iii. Materials Passing 200 Sieve: 4 percent maximum.

iv. Limit deleterious substances in accordance with ASTM C33,

Table 1 with material finer than 200 sieve limited to 3 percent, coal and lignite limited to 0.5 percent.

e. Coarse Aggregate:

i. Natural gravels, combination of gravels and crushed gravels, crushed stone, or combination of these materials containing no more than 15 percent flat or elongated particles (long dimension more than five times the short dimension).

ii. Materials Passing 200 Sieve: 0.5 percent maximum.

iii. Limit deleterious substances in accordance with ASTM C33, Table 3 for exposed concrete.

C. Admixtures. Furnish from one manufacturer.

a. Characteristics. Compatible with each other and free of chlorides or other corrosive chemicals.

b. Air-Entraining Admixture:

i. ASTM C260, nontoxic after 30 days and contains no chlorides.

ii. Concrete with air-entrainment admixture added shall maintain air percentage as batched, within plus or minus 2 percent for time required for placement into structure.

c. Water-Reducing Admixture, ASTM C494, Type A or Type D.

i. Manufacturers and Products:

a. Master Builders, Inc., Cleveland, OH; Pozzolith or Polyheed.

b. W. R. Grace & Co., Cambridge, MA; WRDA with HYCOL.

c. Euclid Chemical Co., Cleveland, OH; Eucon WR-91.

d. High Range Water Reducing Admixture (Superplasticizer):

i. ASTM C494.

ii. Hold slump of 5 inches or greater for time required for placement.

iii. Furnish type as recommended by manufacturer for allowed temperature ranges.

iv. Type F or G.

v. Manufacturers and Products:

a. Master Builders, Inc., Cleveland, OH; Rheobuild or Polyheed at dosage greater than 10 ounces per 100 pounds of cement.

b. W. R. Grace & Co., Cambridge, MA; Daracem 100.

c. Euclid Chemical Co., Cleveland, OH; Eucon 537.

e. Pozzolan (Fly Ash). Class C or Class F fly ash in accordance with ASTM C618, Table 1 and 2, except as modified herein:

i. Shall not be produced from process that has utilized hazardous or potentially hazardous materials.

ii. Loss on Ignition: Maximum 3 percent.

iii. Water Requirement: Maximum 100 percent of control.

iv. $\frac{CaO(\%) - 5}{FE_2O_3(\%)} : Maximum 1.5$

v. ASTM C618, Table 3, Reactivity with Cement Alkalies, apply when aggregate or portions of aggregate is reactive as specified under Paragraph Nonpotentially Reactive.

vi. ASTM C618, Table 3, Uniformity Requirements, apply when loss on ignition of fly ash furnished exceeds 3 percent.

f. Fly Ash. Maximum 25 percent, minimum 15 percent of total weight of fly ash plus cement.

g. For fly ash not meeting requirements of chemical ratio listed above, furnish the following:

i. Test fly ash in accordance with ASTM C1012.

ii. Furnish test data confirming fly ash in combination with cement used meets strength requirements, is compatible with air-entraining agents and other additives, and provides increased sulfate resistance equivalent to or better than Type II cement.

iii. Conduct tests using proposed fly ash and cement samples together with control samples using Type II cement without fly ash.

D. Water. Clean and potable containing less than 500 ppm of chlorides.

2.2 CONCRETE MIX DESIGN

A. Design. Select and proportion ingredients using trial batches; sample, cure and test concrete mix through approved independent testing laboratory in accordance with ACI 211.1.

a. Concrete Compressive Strength, F'c:

i. 4,000 psi at 28 days, unless otherwise shown, except 3,000 psi at 28 days for secondary concrete elements such as curbs, sidewalks, and pipe/conduit encasements.

ii. Design lab-cured trial mix cylinders.

iii. Use additional cement or cement plus fly ash above minimum specified if required to meet average compressive strength, F'cr.

iv. Use F'cr as basis for selection of concrete proportions as set forth in ACI 301.

v. F'cr: Equal to F'c plus 1,200 when data are not available to establish standard deviation.

b. Concrete Fill:

i. Design for 2,500 psi at 28 days using 3/4-inch aggregate, 4-inch maximum slump and 0.46 maximum water-cement ratio.

ii. Use water-reducing admixture.

B. Proportions:

a. Design mix to meet aesthetic and structural concrete requirements.

b. In accordance with ACI 211.1, unless specified otherwise.

c. Unless specifically stated otherwise, water-cement ratio (or water-cement plus fly ash ratio) shall control amount of total water added to concrete as follows:

Water-Cement Ratio		
Coarse Aggregate Size	Maximum W/C Ratio w/ Superplasticizer	Maximum W/C Ratio w/o Superplasticizer
1-1/2"	0.40	0.44
1"	0.40	0.44
3/4"	0.40	0.44

d. Minimum Cement Content (or Combined Cement Plus Fly Ash Content

When Fly Ash is Used):

i. 517 pounds per cubic yard for concrete with 1-1/2-inch maximum size aggregate.

ii. 540 pounds per cubic yard for 1-inch maximum size aggregate.

iii. 564 pounds per cubic yard for 3/4-inch maximum size aggregate.

iv. Increase cement content or combined cement plus fly ash content, as required to meet strength requirements and water-cement ratio.

C. Admixtures:

a. Air Content. 4 to 6 percent when tested in accordance with ASTM C231; 3 percent maximum for interior slabs where heavy-duty concrete floor finish is required.

b. Fly Ash. Maximum 25 percent, minimum 15 percent of total weight of fly ash plus cement.

c. Water Reducers. Use in all concrete.

d. High Range Water Reducers (Superplastizicers). Use at Contractor's option. Control slump and workability to at least 4-1/2-inch slump at discharge into forms by adjusting high range water reducer at batch plant.

D. Slump Range at Site:

a. 4-1/2 inches minimum, 8 inches maximum for concrete with a high range water reducing admixture.

b. 3 inches minimum and 5 inches maximum for concrete without high range water reducing admixture.

E. Combined Aggregate Gradation:

a. Structures. Select one of the gradations shown in the following table.

b. Combined Gradation Limits. Limits shown are for coarse aggregates and fine aggregates mixed together (combined).

Sieve Sizes	Combined Gradation Percentage Passing		
	1-1/2" Max.	**1" Max.**	**3/4" Max.**
2"	- 100	-	-
1-1/2"	95 - 100	- 100	-

Sieve Sizes	Combined Gradation Percentage Passing		
	1-1/2" Max.	**1" Max.**	**3/4" Max.**
1"	65 - 85	90 - 100	- 100
3/4"	55 - 75	70 - 90	92 – 100
1/2"	-		68 – 86
3/8"	40 - 55	45 - 65	57 – 74
No. 4	30 - 45	31 - 47	38 – 57
No. 8	23 - 38	23 - 40	28 – 46
No. 16	16 - 30	17 - 35	20 – 36
No. 30	10 - 20	10 - 23	14 – 25
No. 50	4 - 10	2 - 10	5 – 14
No. 100	0 - 3	0 - 3	0 – 5
No. 200	0 - 2	0 - 2	0 – 2

F. Tremie Concrete:

a. Minimum cement content of 658 pounds per cubic yard.

b. Use high range water reducing admixture (superplasticizers) admixture in accordance with ASTM C494, Type F or Type G.

c. Fine Aggregate Range: 40 to 50 percent of total aggregates by weight.

d. Use natural round gravel if available in Project area.

e. Proportion mix for design strength and slump range of 6 to 9 inches with maximum water-cement ratio.

f. Use anti-washout admixture in accordance with manufacturer's recommendations.

2.3 CONCRETE MIXING

A. General. In accordance with ACI 304R.

B. Concrete Mix Temperatures. As shown below for various stages of mixing and placing:

CONCRETE TEMPERATURES				
Ambient Air Temp.	**Concrete Member Size, Minimum Dimension**			
	<12"	**12"-36"**	**36"-72"**	**>72"**
Minimum concrete temperature as mixed for indicated air temperature:				
Above 30 deg .F	60 deg. F	55 deg. F	50 deg. F	45 deg. F
0 to 30 deg. F	65 deg. F	60 deg. F	55 deg. F	50 deg. F

CONCRETE TEMPERATURES				
	Concrete Member Size, Minimum Dimension			
Ambient Air Temp.	**<12”**	**12”-36”**	**36”-72”**	**>72”**
Below 0 deg. F	70 deg. F	65 deg. F	60 deg. F	55 deg. F
Maximum allowable gradual temperature drop in first 24 hours after curing period and after end of protection:				
–	50 deg. F	40 deg. F	30 deg. F	20 deg. F

C. Truck Mixers:

a. Equip with electrically actuated counters to readily verify number of revolutions of drum or blades.

b. Counter:

i. Resettable, recording type, mounted in driver’s cab.

ii. Actuated at time of starting mixers at mixing speeds.

c. Truck mixer operation shall furnish concrete batch as discharged that is homogeneous with respect to consistency, mix, and grading.

d. If slump tests taken at approximately 1/4 and 3/4 points of load during discharge give slumps differing by more than 2 inches when specified, slump is more than 4 inches, discontinue use of truck mixer unless causing condition is corrected and satisfactory performance is verified by additional slump tests.

e. Before attempting to reuse unit, check mechanical details of mixer, such as water measuring, and discharge apparatus, condition of blades, speed of rotation, general mechanical condition of unit, admixture dispensing equipment, and clearance of drum.

f. Do not use nonagitating or combination truck and trailer equipment for transporting ready-mixed concrete.

g. Concrete Volume in Truck:

i. Limit to 63 percent of total volume capacity in accordance with ASTM C94 when truck mixed.

ii. Limit to 80 percent of total volume capacity when central mixed.

h. Mix each batch of concrete in truck mixer for minimum 70 revolutions of drum or blades at rate of rotation designated by equipment manufacturer.

i. Perform additional mixing, if required, at speed designated by equipment manufacturer as agitating speed.

j. Place materials, including mixing water, in mixer drum before actuating revolution counter for determining number of mixing revolutions.

D. Aggregates. Thoroughly and uniformly wash before use.

E. Admixtures:

a. Air-Entraining Admixture. Add at plant through manufacturer-approved dispensing equipment.

b. Water Reducers. Add prior to addition of high range water reducing admixture (superplasticizers).

c. High range water reducing admixture (superplasticizers) and Air-Entraining Admixtures:

i. Add at concrete plant only through equipment furnished or approved by admixture manufacturer.

ii. Accomplish variations in slump, working time, and air content for flowable mixes by increasing or reducing high range water reducing admixture (superplasticizers) dose or air-entraining admixture dose at ready-mix plant only.

iii. Equipment shall provide for easy and quick visual verification of admixture amount used for each dose.

iv. Add discharge amount to each load of concrete into separate dispensing container, verify amount is correct, and add to concrete.

v. Additional dosage of high range water reducing admixture (superplasticizers) may be added in field using manufacturer-approved dispensing when unexpected delays cause too great of slump loss.

2.4 SOURCE QUALITY CONTROL

A. Cement. Test for total chloride content.

B. Fly Ash. Test in accordance with ASTM C311.

C. Batch Plant Inspection. Engineer shall have access to and have right to inspect batch plants, cement mills, and supply facilities of suppliers, manufacturers, and Subcontractors, providing products included in these Specifications.

a. Weighing Scales. Tested and certified within tolerances set forth in the National Bureau of Standards Handbook No. 44.

b. Batch Plant Equipment. Either semiautomatic or fully automatic in accordance with ASTM C94.

PART 3 EXECUTION

3.1 PLACING CONCRETE

A. Preparation. Meet requirements and recommendations of ACI 304R and ACI 301, except as modified herein.

B. Inspection. Notify Engineer at least 1 full working day in advance before starting to place concrete.

C. Discharge Time:

a. As determined by set time, do not exceed 1-1/2 hours after adding cement to water unless special approved time delay admixtures are used. Coordinate time delay admixture information with manufacturer and Engineer prior to placing concrete.

b. Adjust slump or air content at Site by adding admixtures for particular load when approved by Engineer. Then, adjust plant dosage for remainder of placement. Additional dosage at Site shall be through approved dispenser supplied by admixture manufacturer.

c. Maintain required slump throughout time of concrete placement and consolidation. Discontinue use of high range water reducing admixture (superplasticizers) and provide new mix design if it fails to maintain slump between 4 to 8 inches and produce good consolidation for the length of time required. Redesign mix adjusting set control admixtures to maintain setting time in range required.

D. Placement into Formwork:

a. Before depositing concrete, remove debris from space to be occupied by concrete.

b. Prior to placement of concrete, dampen fill under slabs on ground, dampen sand where vapor retarder is specified, and dampen wood forms.

c. Reinforcement, Secure in position before placing concrete.

d. Place concrete as soon as possible after leaving mixer, without segregation or loss of ingredients, without splashing forms or steel above, and in layers not over 1.5 feet deep, except for slabs which shall be placed full depth. Place and consolidate successive layers prior to initial set of first layer to prevent cold joints.

e. Use placement devices, for example, chutes, pouring spouts, and pumps.

f. Vertical Free Fall Drop to Final Placement: 5 feet in forms 8 inches or less wide and 8 feet in forms wider than 8 inches, except as specified.

i. For placements where drops are greater than specified, use placement device such that free fall below placement device conforms to required value.

ii. Limit free fall to prevent segregation caused by aggregates hitting reinforcing steel.

g. Do not use aluminum conveying devices.

h. Provide sufficient illumination in the interior of forms so concrete deposition is visible, permitting confirmation of consolidation quality.

i. Joints in Footings and Slabs:

i. Ensure space beneath plastic water stop completely fills with concrete.

ii. During concrete placement, make visual inspection of entire water stop area.

iii. Limit concrete placement to elevation of water stop in first pass, vibrate concrete under water stop, lift water stop to confirm full consolidation without voids, place remaining concrete to full height of slab.

iv. Apply procedure to full length of water stops.

j. If reinforcement is in direct sunlight or is more than 20 degrees F higher in temperature than concrete temperature before placement, wet reinforcement with water fog spray before placing concrete to cool reinforcement.

k. Trowel and round off top exposed edges of walls with 1/4-inch radius steel edging tool.

E. Conveyor Belts and Chutes:

a. Design and arrange ends of chutes, hopper gates, and other points of concrete discharge throughout conveying, hoisting, and placing system for concrete to pass without becoming segregated.

b. Do not use chutes longer than 50 feet.

c. Minimum Slopes of Chutes, Angled to allow concrete to readily flow without

segregation.

d. Conveyor Belts:

i. Approved by Engineer.

ii. Wipe clean with device that does not allow mortar to adhere to belt.

iii. Cover conveyor belts and chutes.

F. Retempering. Not permitted for concrete where cement has partially hydrated.

G. Pumping of Concrete:

a. Provide standby pump, conveyor system, crane and concrete bucket, or other system onsite during pumping, for adequate redundancy to assure completion of concrete placement without cold joints in case of primary placing equipment breakdown.

b. Minimum Pump Hose (Conduit) Diameter. 4 inches.

c. Replace pumping equipment and hoses (conduits) that are not functioning properly.

H. Maximum Size of Concrete Placements:

a. Limit size of each placement to allow for strength gain and volume change due to shrinkage.

b. Locate expansion, control, contraction, and construction joints where shown. When expansion or control joints are not shown, provide construction joints at maximum spacing of 40 feet. When expansion or control joint spacing exceeds 60 feet, provide intermediate construction joints at maximum spacing of 40 feet. Uniformly space construction joints. Vertical construction joint shall not be greater than 20 feet from wall corners or intersections.

c. Consider beams, girders, brackets, column capitals, and haunches as part of floor or roof system and place monolithically with floor or roof system.

d. Should placement sequence result in cold joint located below finished water surface, install water stop in joint.

I. Minimum Time Between Adjacent Placements:

a. Construction Joints. 14 days (7 days wet cure and 7 days dry cure).

b. Control Joints. 6 days.

c. Expansion Joints/Contraction Joints. 1 day.

d. At least 2 hours shall elapse after depositing concrete in long columns and walls thicker than 8 inches before depositing concrete in beams, girders, or slabs supported thereon.

e. For columns and walls 10 feet in height or less, wait at least 45 minutes prior to depositing concrete in beams, girders, brackets, column capitals, or slabs supported thereon.

J. Removal of Water. Unless tremie method for placing concrete is specified, remove water from space to be occupied by concrete.

K. Consolidation and Visual Observation:

a. Consolidate concrete with internal vibrators with minimum frequency of 8,000 cycles per minute and amplitude as required to consolidate concrete in section being placed.

b. Provide at least one standby vibrator in operable condition at placement Site prior to placing concrete.

c. Consolidation Equipment and Methods: ACI 309R.

d. Provide sufficient windows in forms or limit form height to allow for concrete placement through windows and for visual observation of concrete.

e. Vibration consolidation shall not exceed distance of 3 feet from point of placement.

f. Vibrate concrete in vicinity of joints to obtain impervious concrete.

L. Hot Weather:

a. Prepare ingredients, mix, place, cure, and protect in accordance with ACI 305R.

b. Placement frequency shall be such that lift lines will not be visible in exposed concrete finishes.

c. Maintain concrete temperature below 90 degrees F at time of placement, or furnish test data or provide other proof that admixtures and mix ingredients do not produce flash set plastic shrinkage, or cracking due to heat of hydration. Cool ingredients before mixing to maintain fresh concrete temperatures as specified or less.

d. Provide for windbreaks, shading, fog spraying, sprinkling, ice, wet cover, or other means as necessary to maintain concrete at or below specified temperature.

e. Prevent differential temperature between reinforcing steel and concrete.

f. Evaporation Retardant: As specified in Section 03370, Concrete Curing.

3.2 PLACING TREMIE CONCRETE SEALS

A. Place concrete when water level inside area to be filled with concrete is equal to groundwater elevation outside.

B. Maintain relation of water levels until concrete design strength is obtained.

3.3 CONCREE BONDING

A. Horizontal Construction Joints in Reinforced Concrete Walls:

a. Thoroughly clean and saturate surface of joint with water.

b. Limit slurry concrete placement to 2-inch maximum thickness, 1-inch minimum thickness.

c. Use positive measuring device such as bucket or other device that will contain only enough slurry concrete for depositing in visually measurable area of wall to ensure that portion of form receives appropriate amount of slurry concrete to satisfy placement thickness requirements.

d. Do not deposit slurry concrete from pump hoses or large concrete buckets, unless specified placement thickness can be maintained and verified through inspection windows close to joint.

e. Limit concrete placed immediately on top of slurry concrete to 12 inches thick. Thoroughly vibrate to mix concrete and slurry concrete together.

B. To Existing Concrete:

a. Thoroughly clean and mechanically roughen existing concrete surfaces to roughness profile of 1/4 inch.

b. Saturate surface with water for 24 hours prior to placing new concrete.

3.4 CONSTRUCTION JOINTS

A. As specified in Section 03251, Concrete Joints.

3.5 REPAIRING CONCRETE

A. General:

a. Inject cracks that leak with crack repair epoxy.

b. Obtain quantities of repair material and manufacturer's detailed instructions for use to provide repair with finish to match adjacent surface or apply sufficient repair material adjacent to repair to blend finish appearance.

c. Repair of concrete shall provide structurally sound surface finish, uniform in appearance or upgrade finish by other means until acceptable to Engineer.

B. Tie Holes:

a. Fill with nonshrink grout as specified in Section 03600, Grout.

b. Match color of adjacent concrete and demonstrate on mockup panels first.

c. Compact grout using steel hammer and steel tool to drive grout to high density. Cure grout with water.

C. Alternate Form Ties; Through-Bolts:

a. Mechanically roughen entire interior surface of through hole. Epoxy coat roughened surface and drive elastic vinyl plug to half depth. Dry pack entire hole from both sides of plug with nonshrink grout, as specified in Section 03600, Grout. Use only enough water to dry pack grout. Dry pack while epoxy is still tacky. If epoxy has dried, remove epoxy by mechanical means and reapply new epoxy.

b. Compact grout using steel hammer and steel tool to drive grout to high density. Cure grout with water.

D. Exposed Metal Objects:

a. Metal objects not intended to be exposed in as-built condition of structure including wire, nails, and bolts, shall be removed by chipping back concrete to depth of 1 inch and then cutting or removing metal object.
b. Repair area of chipped-out concrete per requirements of Section 03720, Vertical And Overhead Concrete Repair Systems.

E. Blockouts at Pipes or Other Penetrations:

a. Install per details shown on Drawings or submit proposed blockouts for review.

b. Use nonshrink, nonmetallic grout.

3.6 CONCRETE WALL FINISHED

A. Type W-1 (Ordinary Wall Finish):

a. Patch tie holes.

b. Knock off projections.

c. Patch defective areas.

B. Type W-2 (Smooth Wall Finish):

a. Patch tie holes.

b. Grind off projections, fins, and rough spots.

c. Patch defective areas and repair rough spots resulting from form release agent failure or other reasons to provide smooth uniform appearance.

C. Type W-4 (Finish for Cementitious Coatings):

a. Patch tie holes.

b. Grind off projections, fins, and rough spots.

c. Patch and repair defective areas as specified for Type W-2.

D. Type W-5 (Finish for Painting):

a. Patch tie holes.

b. Grind off projections, fins, and rough spots.

c. Patch and repair defective areas as specified for Type W-2.

d. Leave surface ready for painting as specified in Section 09900, Painting and Protective Coatings.

E. Type W-7 (Smooth Rubbed Wall Finish):

a. Only water curing will be permitted on walls being rubbed.

b. Perform rubbing while green concrete can be physically worked and smoothed without adding other materials, if structurally possible, the day following placement. Finish no later than 3 days after placement has been completed.

c. Remove forms at such a rate that all finishing, form tie filling, fin removal, and patching can be completed on same day forms are removed while curing wall.

d. After pointings have set sufficiently to permit working on surface, thoroughly saturate entire surface with water for period of 3 hours and rub

until uniform surface is obtained.

e. Rub either by hand with carborundum stone of medium-coarse grade or abrasive of equal quality, or mechanically operated carborundum stone.

f. Mechanically operated carborundum stones shall be approved by Engineer before concrete finishing.

g. No cement grout, other than cement paste drawn from the concrete itself by the rubbing process shall be used.

h. Finish paste formed by rubbing by either brushing or floating as follows:

i. Brushing:

a. Carefully strike with clean brush.

b. Brush in long direction of surface being finished.

i. Floating:

a. Spread uniformly over surface and allow to reset.

b. Finish by floating with canvas, carpet face, or cork float, or rub down with dry burlap.

j. Continue water curing of wall during finishing operation in areas not being rubbed.

k. Move water curing onto rubbed areas as soon as water will not erode rubbed surface.

F. Type W-8 (Rubbed Wall Finish):

a. Meet requirements for Type W-7, except allow paste obtained from rubbing to set at least 24 hours.

b. After thoroughly saturating with water, coat surface with mixture of 85 percent cement and 15 percent lime with sufficient water to give creamy consistency. Demonstrate on sample panel prior to production finishing.

c. Rub this mixture into surface with coarse carborundum stone and brush with damp brush.

d. Brush in long direction of surface being finished.

e. Latex bonding admixture may be used. Consult with Euclid Chemical Co., Cleveland, OH or Master Builders Co., Cleveland, OH.

G. Type W-9 (Grout Cleaned Finish):

a. Meet requirements for Type W-7, except that finish must be accomplished within 7 days of placement.

b. Grout. Mixed with 1 part Portland cement and 1-1/2 parts fine sand and bonding agent to produce grout with consistency of thick paint. White Portland cement shall be substituted for part of gray Portland cement in order to produce color matching color of surrounding concrete, as determined by trial patch.

c. Wet surface of concrete sufficiently to prevent absorption of water from grout and apply grout uniformly with brushes or spray gun.

d. Immediately after applying grout, scrub surface vigorously with cork float or stone to coat surface and fill air bubbles and holes.

e. While grout is still plastic, remove excess grout by working surface with rubber float, burlap, or other means. After surface whitens from drying (about 30 minutes at 70 degrees F), rub vigorously with clean burlap. Continue to water cure wall until curing period of 7 days is complete.

f. Latex bonding admixture may be used.

H. W-10 (Fractured Fin Finish):

a. Form exterior surface of walls with approved form liner.

b. Use stainless steel form ties and place at valleys.

c. Patch form tie holes.

d. Achieve final texture by light sandblast and then breaking off tips of ridge with light bushhammering, or other approved process.

e. Same person starting bushhammering shall complete process for any given structure and match approved mockup panel.

I. Type W-11 (Abrasive Blast - Sandblast Finish):

a. Intent of this procedure is to remove surface skin to depth no more than 1/16 inch, and expose only fine aggregate and air holes near surface, thus producing uniform texture.

b. Perform sandblasting on building or on concrete surfaces in same area of view at same time and obtain uniformity of appearance.

c. Same person shall accomplish sandblasting on one structure and on

concrete in same area.

d. Perform sandblasting to match approved mockup panel.

e. Abrasive. Use clean silica sand, free of foreign materials, and supplied in sealed sacks.

f. Blast surface with 100 psi air pressure at rate of 2 to 3 square feet per minute with nozzle held approximately 2 feet from surface and perpendicular thereto.

3.7 CONCRETE SLAB FINISHED

A. General:

a. Finish slab concrete per the requirements of ACI 302.1R.

b. Use manual screeds, vibrating screeds, or roller compacting screeds to place concrete level and smooth.

c. Do not use “jitterbugs” or other special tools designed for purpose of forcing coarse aggregate away from surface and allowing layer of mortar, which will be weak and cause surface cracks or delamination, to accumulate.

d. Do not dust surfaces with dry materials.

e. Use evaporation retardant.

f. Round off edges of slabs with steel edging tool, except where cove finish is shown. Steel edging tool radius shall be 1/4 inch for slabs subject to wheeled traffic.

B. Type S-1 (Steel Troweled Finish):

a. Finish by screeding and floating with straightedges to bring surfaces to required finish elevation. Use evaporation retardant.

b. While concrete is still green, but sufficiently hardened to bear a person’s weight without deep imprint, wood float to true, even plane with no coarse aggregate visible.

c. Use sufficient pressure on wood floats to bring moisture to surface.

d. After surface moisture has disappeared, hand trowel concrete to produce smooth, impervious surface, free from trowel marks.

e. Burnish surface with an additional troweling. Final troweling shall produce

ringing sound from trowel.

f. Do not use dry cement or additional water during troweling, nor will excessive troweling be permitted.

g. Power Finishing:

i. Approved power machine may be used in lieu of hand finishing in accordance with directions of machine manufacturer.

ii. Do not use power machine when concrete has not attained necessary set to allow finishing without introducing high and low spots in slab.

iii. Do first steel troweling for slab S-1 finish by hand.

C. Type S-2 (Wood Float Finish):

a. Finish slab to receive fill and mortar setting bed by screeding with straightedges to bring surface to required finish plane.

b. Wood float finish to compact and seal surface.

c. Remove laitance and leave surface clean.

d. Coordinate with other finish procedures.

D. Type S-4 (Exposed Aggregate Finish):

a. Embed single layer of selected aggregates at surface of concrete slab immediately after it has been placed, screeded, and smoothed.

b. Embed aggregates by tamping with wood float, darby, or rolling device.

c. Accomplish exposure of selected aggregates by removing surface matrix by washing with water and brushing with stiff plastic bristled brush as soon as concrete has set sufficiently to support weight of a person.

d. Exposure. No greater than 1/3 the average diameter of aggregate, nor less than 1/4.

e. Next day acid wash until there is no noticeable cement film on aggregate exposed.

f. Apply clear sealer per manufacturer’s recommendations.

E. Type S-5 (Broomed Finish):

a. Finish as specified for Type S-1 floor finish, except omit final troweling and

finish surface by drawing fine-hair broom lightly across surface.

b. Broom in same direction and parallel to expansion joints, or, in the case of inclined slabs, perpendicular to slope, except for round roof slab, broom surface in radial direction.

F. Type S-6 (Sidewalk Finish):

a. Slope walks down 1/4 inch per foot away from structures, unless otherwise shown.

b. Strike off surface by means of strike board and float with wood or cork float to true plane, then flat steel trowel before brooming.

c. Broom surface at right angles to direction of traffic or as shown.

d. Lay out sidewalk surfaces in blocks, as shown or as directed by Engineer, with grooving tool.

G. Concrete Curbs:

a. Float top surface of curb smooth, and finish all discontinuous edges with steel edger.

b. After concrete has taken its initial set, remove front form and give exposed vertical surface an ordinary wall finish, Type W-1.

3.8 CONCRETE SLAB TOLERENCES

A. Slab Tolerances:

a. Exposed Slab Surfaces. Comprise of flat planes as required within tolerances specified.

b. Slab Finish Tolerances and Slope Tolerances. Crowns on floor surface not too high as to prevent 10-foot straightedge from resting on neither end blocks, nor low spots that allow block of twice the tolerance in thickness to pass under supported 10-foot straightedge.

c. Slab Type S-A. Steel gauge block 5/16 inch thick.

d. Slab Type S-B. Steel gauge block 1/8 inch thick.

e. Slab Type S-A and S-B: Finish Slab Elevation. Slope slabs to floor drain and gutter, and shall adequately drain regardless of tolerances.

f. Thickness. Maximum 1/4 inch minus or 1/2 inch plus from thickness shown. Where thickness tolerance will not affect slope, drainage, or slab elevation, thickness tolerance may exceed 1/2 inch plus.

B. Thickness. Maximum 1/4 inch minus or 1/2 inch plus from thickness shown. Where thickness tolerance will not affect slope, drainage, or slab elevation, thickness tolerance may exceed 1/2 inch plus.

3.9 BEAM AND COLUMN FINISHED

A. General. Inject cracks with crack repair epoxy. Patch and repair defective areas.

B. Match Wall Type:

a. Repair rock pockets.

b. Fill air voids.

3.10 BACKFILL AGAINST WALLS

A. Do not backfill against walls until concrete has obtained specified 28-day compressive strength.

B. Place backfill simultaneously on both sides of wall, where required, to prevent differential pressures.

3.11 FIELD QUALITY CONTROL

A. General:

a. Provide adequate facilities for safe storage and proper curing of concrete test cylinders onsite for first 24 hours, and for additional time as may be required before transporting to test lab.

b. Provide concrete for testing of slump, air content, and for making cylinders from the point of discharge into forms. When concrete is pumped, Samples used shall be taken from discharge end of pump hose.

c. Evaluation will be in accordance with ACI 301 and Specifications.

d. Specimens shall be made, cured, and tested in accordance with ASTM C31 and ASTM C39.

e. Frequency of testing may be changed at discretion of Engineer.

f. Pumped Concrete. Take concrete samples for slump (ASTM C143) and test cylinders (ASTM C31 and C39) and shrinkage specimens (ASTM C157) at placement (discharge) end of line.

g. Reject concrete represented by cylinders failing to meet strength and air content specified.

B. Tolerances:

a. Walls. Measure and inspect walls for compliance with tolerances specified in Section 03100, Concrete Formwork.

b. Slab Finish Tolerances and Slope Tolerances:

i. Floor flatness measurements shall be made day after floor is finished and before shoring is removed to eliminate effects of shrinkage, curing, and deflection.

ii. Support 10-foot long straightedge at each end with steel gauge blocks of thicknesses equal to specified tolerance.

iii. Compliance with designated limits in four of five consecutive measurements is satisfactory, unless defective conditions are observed.

C. Water Leakage Tests:

a. Purpose. Determine integrity and watertightness of finished exterior and interior water holding concrete surfaces.

b. Potable Water Supply Reservoirs. Clean and sterilize prior to conducting test as specified in Section 02519, Disinfection of Water Systems.

c. Water-Holding Structures:

i. Perform leakage tests after concrete structure is complete and capable of resisting hydrostatic pressure of water test. Concrete shall have achieved its full design strength.

ii. Perform leakage test before backfill, brick facing, grout topping slab, coatings, or other work that will cover concrete surfaces has begun.

iii. Install temporary bulkheads, cofferdams, and pipe blind flanges, and close valves. Inspect each to see that it provides complete seal.

iv. Fill with water to test level shown, or maximum liquid level if no test level is given. Maintain this level for 72 hours prior to start of test to allow water absorption, structural deflection, and temperature to stabilize.

v. Measure evaporation and precipitation by floating a partially filled, transparent, calibrated, open top container.

vi. Measure water surface at two points 180 degrees apart when possible where attachments, such as ladders exist, at 24-hour intervals. Using sharp pointed hook gauge and fixed metal measure capable of reading to 1/100 of an inch. Continue test for period of time sufficient to produce at least 1/2-inch drop in water surface based on assumption that leakage would occur at maximum allowable rate specified or for 72 hours, whichever is lesser time.

d. Acceptance Criteria:

i. Volume loss shall not exceed 0.075 percent of contained liquid volume in 24-hour period, correcting for evaporation, precipitation, and settlement.

ii. No damp spots or seepage visible on exposed surfaces. Damp spot is defined as sufficient moisture to be transferred to dry hand upon touching.

e. Repairs When Test Fails: Dewater structure; fill leaking cracks with crack repair epoxy as specified in Section 03740, Concrete Repair Crack Injection. Patch areas of damp spots previously recorded, and repeat water leakage test in its entirety until the structure successfully passes the test.

3.12 MANUFACTURER'S SERVICES

A. Provide the following representative at Site in accordance with Section 01640, Manufacturers' Services, for installation assistance, inspection, and certification of proper installation for concrete ingredients, mix design, mixing, and placement.

a. Batch Plant Representative:

i. Observe how concrete mixes are performing.

ii. Be present during first placement of each type of concrete mix.

iii. Assist with concrete mix design, performance, placement, weather problems, and problems as may occur with concrete mix throughout Project.

iv. Establish control limits on concrete mix designs.

b. Admixture Manufacturer's Representative:

i. Demonstrate special features, product performance, product mixing, testing, and placement or installation for each type of admixture.

ii. Observe how concrete mixes are performing.

iii. Be present during first placement of each type of concrete mix.

iv. Assist with concrete mix design, performance, placement, weather problems, and problems as may occur with concrete mix throughout Project, including instructions for redosing.

v. Provide equipment for control of concrete redosing for air entrainment or high range water reducing admixture (superplasticizers) at Site to maintain proper slump and air content if so needed.

c. Bonding Agent Manufacturer's Representative: Demonstrate product performance, product mixing, and placement.

3.13 PROTECTION OF INSTALLED WORK

A. After curing as specified in Section 03370, Concrete Curing, and after applying final floor finish, cover slabs with plywood or particle board or plastic sheeting or other material to keep floor clean and protect it from material and damage due to other construction work.

B. Repair defective areas and areas damaged by construction.

END OF SECTION

SECTION 03370 - CONCRETE CURING

PART 1 GENERAL

1.1 THE REQUIREMENT

A. Protect all freshly deposited concrete from premature drying and excessively hot or cold temperatures, and maintain with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete in accordance with requirements specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Concrete Framework

B. Joints in Concrete

C. Cast-in-Place Concrete

D. Grout

E. Concrete Finishes

1.3 SUBMITTALS

A. In accordance with the procedures and requirements set forth in the Section entitled "Submittals", the contractor shall submit the following:

a. Request for acceptance along with procedures for protection of concrete under wet weather placement conditions.

b. Request for placement along with proposed procedures for hot weather placement.

c. Request for acceptance and proposed materials and procedures for moisture preservation.

1.4 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Without limiting the generality of other requirements of these specifications all work hereunder shall conform to the applicable requirements of the referenced portions of the following documents, to the extent that the requirements therein are not in conflict with the provisions of this Section.

a. Specifications for Structural Concrete for buildings, ACI 301.

b. Guide for Measuring, Mixing, Transporting, and Placing Concrete, ACI 304.

c. Hot Weather Concreting, ACI 305.

d. Specifications for Sheet Materials for Curing Concrete, ASTM C171.

e. Specification for Liquid Membrane - Forming Compounds for Curing Concrete, ASTM C309.

f. Federal Specification TT-C-800.

3.8 QUALITY ASSURANCE

A. Curing compound shall not be used on any surface where concrete or other material will be bonded unless the manufacturer certifies that the curing compound will not prevent bond or indicates measures to be taken to completely remove the curing compound from areas to receive bonded applications.

B. Care shall be taken to ensure that curing compounds are compatible with all finish concrete castings.

PART 2 PRODUCTS

2.1 CURING COMPOUNDS

A. All materials shall meet the ASTM specifications C309, Type 1-D or Federal Specification TT-C-800 and shall have a minimum solids content of 30 percent.

PART 3 EXECUTION

3.1 PROTECTION AND CURING

A. All concrete work shall be protected from the elements, flowing water and from defacement of any nature during construction operations.

B. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Protect concrete during the curing period such that the concrete temperature does not fall below the requirements of Section 3.02 -Concrete Temperature. Cure concrete in accordance with paragraph E or paragraph F.

C. When concrete is placed in cold weather as defined in ACI 306, the concrete shall be protected in accordance with requirements of ACI 306, Cold Weather Concreting.

D. When concrete is placed in hot weather as defined in ACI 305, the concrete shall be protected in accordance with the requirements of ACI 305, Hot Weather Concreting.

E. After placing and finishing, use one or more of the following methods to preserve moisture in concrete:

a. Ponding or continuous fogging or sprinkling.

b. Application of mats or fabric kept continuously wet.

c. Continuous application of steam (under 150 degrees Fahrenheit).

d. Application of sheet materials conforming to ASTM C171.

e. Application of a curing compound conforming to ASTM C309 or Federal Specification TT-C-800. Apply the compound in accordance with the manufacturer's recommendation on after water sheen has disappeared from the concrete surface and after finishing operations. The rate of application shall not exceed 200 square feet per gallon. For rough surfaces, apply in two directions at right angles to each other.

F. Keep absorbent forms wet until they are removed. After form removal, cure concrete by one of the methods in paragraph E. Frames may be “cracked” within twenty-four hours and kept moist until they are required to be kept in place per Section 03100.

3.2 CONCRETE TEMPERATURE

A. When the average of the highest and lowest temperature during the period from midnight to midnight is expected to drop below 40 F for more than three successive days, concrete shall be delivered to meet the following minimum temperature immediately after placement:

a. 55 degrees Fahrenheit for sections less than 12 in. in the least dimension

b. 50 degrees Fahrenheit for sections 12 in. to 36 in. in the least dimension

c. 45 degrees Fahrenheit for sections 36 in. to 72 in. in the least dimension

d. 40 degrees Fahrenheit for sections greater than 72 in. in the least dimension

B. The temperature of concrete as placed shall not exceed these values by more than 20 degrees Fahrenheit.

C. These minimum requirements may be terminated when temperatures above 50 degrees Fahrenheit occur during more than half of any 24 hour duration.

D. Unless otherwise specified or permitted, the temperature of concrete as delivered shall not exceed 90 degrees Fahrenheit.

E. During and following curing, do not allow the surface of the concrete to change temperature more than the following:

a. 50 degrees Fahrenheit in any 24-hr period for sections less than 12 in. in the least dimension.

b. 40 degrees Fahrenheit for sections from 12 to 36 in. in the least dimension.

c. 30 degrees Fahrenheit for sections 36 to 72 in. in the least dimension.

d. 20 degrees Fahrenheit for sections greater than 72 in. in the least dimension.

3.3 FINAL CURING

A. Cure for at least the first seven days after placement for all concrete except high early strength concrete, for which the period shall be at least the first three days after placement.

a. Alternatively, moisture retention measures may be terminated when:

i. Tests are made on at least two additional cylinders kept adjacent to the structure and cured by the same methods as the structure and tests indicate 70 percent of the specified compressive strength, f'c, as determined in accordance with ASTM C39.

ii. The temperature of the concrete is maintained at 50 degrees fahrenheit or higher for the time required to achieve 85 percent of f'c in laboratory-cured cylinders representative of the concrete in place.

iii. The strength of concrete reaches f'c as determined by accepted nondestructive methods or laboratory-cured cylinder test results.

B. When one of the curing procedures in Paragraph 3.01-E is used initially, the curing procedure may be replaced by one of the other procedures when concrete is one day old, provided concrete is not permitted to become surface dry at any time.

END OF SECTION

SECTION 03600 - GROUT

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install grout complete as shown on the Drawings and as specified herein.

1.2 SUBMITTALS

A. Submit to the Engineer, in accordance with Section 01300, shop drawings and product data showing materials of construction and details of installation for:

a. Commercially manufactured nonshrink cementitous grout. The submittal shall include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, conformity to required ASTM standards and Material Safety Data Sheet.

b. Commercially manufactured nonshrink epoxy grout. The submittal shall include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, conformity to required ASTM standards and Material Safety Data Sheet.

c. Cement grout. The submittal shall include the type and brand of the cement, the gradation of the fine aggregate, product data on any proposed admixtures and the proposed mix of the grout.

d. Concrete grout. The submittal shall include data as required for concrete and fiber reinforcement as delineated in Section. This includes the mix design, constituent quantities per cubic yard and the water/cement ratio.

B. Samples

a. Samples of commercially manufactured grout products when requested by the Engineer.

b. Aggregates for use in concrete grout when requested by the Engineer.

C. Laboratory Test Reports

a. Submit laboratory test data as required under Section 03300 for concrete to be used as concrete grout.

D. Qualifications

a. Grout manufacturers shall submit documentation that they have at least 10 years' experience in the production and use of the proposed grouts which they will supply.

1.3 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

a. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical Resistant Mortars, Grouts and Monolithic Surfacings and Polymer Concretes.

b. ASTM C579 - Standard Test Method for Compressive Strength of Chemical Resistant Mortars, Grouts and Monolithic Surfacings and Polymer Concretes.

c. ASTM C827 - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.

d. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

e. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.

B. U.S. Army Corps of Engineers Standard (CRD)

a. CRD C-621 - Corps of Engineers Specification for Nonshrink Grout.

C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.4 QUALITY ASSURANCE

A. Qualifications

a. Grout manufacturer shall have a minimum of 10 years experience in the production and use of the type of grout proposed for the work.

B. Services of Manufacturer's Representative

a. A qualified field technician of the nonshrink grout manufacturer, specifically trained in the installation of the products, shall attend the pre-installation conference and shall be present for the initial installation of each type of nonshrink grout. Additional services shall also be provided, as required, to correct installation problems.

C. Field Testing

a. All field testing and inspection services required shall be provided by the Owner. The Contractor shall assist in the sampling of materials and shall provide any ladders, platforms, etc, for access to the work. The methods

of testing shall comply in detail with the applicable ASTM Standards.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the jobsite in original, unopened packages, clearly labeled with the manufacturer's name, product identification, batch numbers and printed instructions.

B. Store materials in full compliance with the manufacturer's recommendations. Total storage time from date of manufacture to date of installation shall be limited to 6 months or the manufacturer's recommended storage time, whichever is less.

C. Material which becomes damp or otherwise unacceptable shall be immediately removed from the site and replaced with acceptable material at no additional expense to the Owner.

D. Nonshrink cement-based grouts shall be delivered as preblended, prepackaged mixes requiring only the addition of water.

E. Nonshrink epoxy grouts shall be delivered as premeasured, prepackaged, three component systems requiring only blending as directed by the manufacturer.

1.6 DEFINITIONS

A. Nonshrink Grout: A commercially manufactured product that does not shrink in either the plastic or hardened state, is dimensionally stable in the hardened state and bonds to a clean base plate.

PART 2 PRODUCTS

2.1 GENERAL

A. The use of a manufacturer's name and product or catalog number is for the purpose of establishing the standard of quality desired.

B. Like materials shall be the products of one manufacturer or supplier in order to provide standardization of appearance.

2.2 MATERIALS

A. Nonshrink Cementitious Grout

a. Nonshrink cementitious grouts shall meet or exceed the requirements of ASTM C1107, Grades B or C and CRD C-621. Grouts shall be portland cement based, contain a pre-proportioned blend of selected aggregates and shrinkage compensating agents and shall require only the addition of water. Nonshrink cementitious grouts shall not contain expansive cement or metallic particles. The grouts shall exhibit no shrinkage when tested in conformity with ASTM C827.

i. General purpose nonshrink cementitious grout shall conform to the standards stated above and shall be SikaGrout 212 by Sika Corp.; Set Grout by Master Builders, Inc.; Gilco Construction Grout by Gifford Hill & Co.; Euco NS by The Euclid Chemical Co.; NBEC Grout by U. S. Grout Corp. or equal.

ii. Flowable (Precision) nonshrink cementitious grout shall conform to the standards stated above and shall be Masterflow 928 by Master Builders, Inc.; Hi-Flow Grout by the Euclid Chemical Co.; SikaGrout 212 by Sika Corp.; Supreme Grout by Gifford Hill & Co.; Five Star Grout by U. S. Grout Corp. or equal.

B. Nonshrink Epoxy Grout

a. Nonshrink epoxy-based grout shall be a pre-proportioned, three component, 100 percent solids system consisting of epoxy resin, hardener, and blended aggregate. It shall have a compressive strength of 14,000 psi in 7 days when tested in conformity with ASTM D695 and have a maximum thermal expansion of 30×10^{-6} when tested in conformity with ASTM C531. The grout shall be Ceilcote 648 CP by Master Builders Inc.; Five Star Epoxy Grout by U.S. Grout Corp.; Sikadur 42 Grout-Pak by Sika Corp.; High Strength Epoxy Grout by the Euclid Chemical Co. or equal.

C. Cement Grout

a. Cement grouts shall be a mixture of one part portland cement conforming to ASTM C150, Types I, II, or III and 1 to 2 parts sand conforming to ASTM C33 with sufficient water to place the grout. The water content shall be sufficient to impart workability to the grout but not to the degree that it will allow the grout to flow.

D. Concrete Grout

a. Concrete grout shall conform to the requirements of Section 03300 except as specified herein. It shall be proportioned with cement, pozzolan, coarse and fine aggregates, water, water reducer and air entraining agent to produce a mix having an average strength of 2900 psi at 28 days, or 2500 psi nominal strength. Coarse aggregate size shall be ½ in maximum. Slump should not exceed 5-in and should be as low as practical yet still retain sufficient workability.

E. Water

a. Potable water, free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances.

PART 3 EXECUTION

3.1 PREPARATION

A. Grout shall be placed over cured concrete which has attained its full design strength unless otherwise approved by the Engineer.

B. Concrete surfaces to receive grout shall be clean and sound; free of ice, frost, dirt, grease, oil, curing compounds, laitance and paints and free of all loose material or foreign matter which may effect the bond or performance of the grout.

C. Roughen concrete surfaces by chipping, sandblasting, or other mechanical means to ensure bond of the grout to the concrete. Remove loose or broken concrete. Irregular voids or projecting coarse aggregate need not be removed if they are sound, free of laitance and firmly embedded into the parent concrete.

   a. Air compressors used to clean surfaces in contact with grout shall be the oilless type or equipped with an oil trap in the air line to prevent oil from being blown onto the surface.

D. Remove all loose rust, oil or other deleterious substances from metal embedments or bottom of baseplates prior to the installation of the grout.

E. Concrete surfaces shall be washed clean and then kept moist for at least 24 hours prior to the placement of cementitious or cement grout. Saturation may be achieved by covering the concrete with saturated burlap bags, use of a soaker hose, flooding the surface, or other method acceptable to the Engineer. Upon completion of the 24 hour period, visible water shall be removed from the surface prior to grouting. The use of an adhesive bonding agent in lieu of surface saturation shall only be used when approved by the Engineer for each specific location of grout installation.

F. Epoxy-based grouts do not require the saturation of the concrete substrate. Surfaces in contact with epoxy grout shall be completely dry before grouting.

G. Construct grout forms or other leakproof containment as required. Forms shall be lined or coated with release agents recommended by the grout manufacturer. Forms shall be of adequate strength, securely anchored in place and shored to resist the forces imposed by the grout and its placement.

   a. Forms for epoxy grout shall be designed to allow the formation of a hydraulic head and shall have chamfer strips built into forms.

H. Level and align the structural or equipment bearing plates in accordance with the structural requirements and the recommendations of the equipment manufacturer.

I. Equipment shall be supported during alignment and installation of grout by shims, wedges, blocks or other approved means. The shims, wedges and blocking devices shall be prevented from bonding to the grout by appropriate bond breaking

coatings and removed after grouting unless otherwise approved by the Engineer.

3.2 INSTALLATION - GENERAL

A. Mix, apply and cure products in strict compliance with the manufacturer's recommendations and this Section.

B. Have sufficient manpower and equipment available for rapid and continuous mixing and placing. Keep all necessary tools and materials ready and close at hand.

C. Maintain temperatures of the foundation plate, supporting concrete, and grout between 40 and 90 degrees F during grouting and for at least 24 hours thereafter or as recommended by the grout manufacturer, whichever is longer. Take precautions to minimize differential heating or cooling of baseplates and grout during the curing period.

D. Take special precautions for hot weather or cold weather grouting as recommended by the manufacturer when ambient temperatures and/or the temperature of the materials in contact with the grout are outside of the 60 and 90 degrees F range.

E. Install grout in a manner which will preserve the isolation between the elements on either side of the joint where grout is placed in the vicinity of an expansion or control joint.

F. Reflect all existing underlying expansion, control and construction joints through the grout.

3.3 INSTALLATION - CEMENT GROUTS AND NONSHRINK CEMENTITIOUS GROUTS

A. Mix in accordance with manufacturer's recommendations. Do not add cement, sand, pea gravel or admixtures without prior approval by the Engineer.

B. Avoid mixing by hand. Mixing in a mortar mixer (with moving blades) is recommended. Pre-wet the mixer and empty excess water. Add premeasured amount of water for mixing, followed by the grout. Begin with the minimum amount of water recommended by the manufacturer and then add the minimum additional water required to obtain workability. Do not exceed the manufacturer's maximum recommended water content.

C. Placements greater than 3-in in depth shall include the addition of clean, washed pea gravel to the grout mix when approved by the manufacturer. Comply with the manufacturer's recommendations for the size and amount of aggregate to be added.

D. Place grout into the designated areas in a manner which will avoid segregation or entrapment of air. Do not vibrate grout to release air or to consolidate the material. Placement should proceed in a manner which will ensure the filling of all spaces

and provide full contact between the grout and adjoining surfaces. Provide grout holes as necessary.

E. Place grout rapidly and continuously to avoid cold joints. Do not place cement grouts in layers. Do not add additional water to the mix (retemper) after initial stiffening.

F. Just before the grout reaches its final set, cut back the grout to the substrate at a 45 degree angle from the lower edge of bearing plate unless otherwise approved by the Engineer. Finish this surface with a wood float (brush) finish.

G. Begin curing immediately after form removal, cutback, and finishing. Keep grout moist and within its recommended placement temperature range for at least 24 hours after placement or longer if recommended by the manufacturer. Saturate the grout surface by use of wet burlap, soaker hoses, ponding or other approved means. Provide sunshades as necessary. If drying winds inhibit the ability of a given curing method to keep grout moist, erect wind breaks until wind is no longer a problem or curing is finished.

3.4 INSTALLATION - NONSHRINK EPOXY GROUTS

A. Mix in accordance with the procedures recommended by the manufacturer. Do not vary the ratio of components or add solvent to change the consistency of the grout mix. Do not overmix. Mix full batches only to maintain proper proportions of resin, hardener and aggregate.

B. Monitor ambient weather conditions and contact the grout manufacturer for special placement procedures to be used for temperatures below 60 or above 90 degrees F.

C. Place grout into the designated areas in a manner which will avoid trapping air. Placement methods shall ensure the filling of all spaces and provide full contact between the grout and adjoining surfaces. Provide grout holes as necessary.

D. Minimize "shoulder" length (extension of grout horizontally beyond base plate). In no case shall the shoulder length of the grout be greater than the grout thickness.

E. Finish grout by puddling to cover all aggregate and provide a smooth finish. Break bubbles and smooth the top surface of the grout in conformity with the manufacturer's recommendations.

F. Epoxy grouts are self curing and do not require the application of water. Maintain the formed grout within its recommended placement temperature range for at least 24 hours after placing, or longer if recommended by the manufacturer.

3.5 INSTALLATION - CONCRETE GROUT

A. Screed underlying concrete to the grade shown on the Drawings. Provide the surface with a broomed finish, aligned to drain. Protect and keep the surface clean until placement of concrete grout.

B. Remove the debris and clean the surface by sweeping and vacuuming of all dirt and other foreign materials. Wash the tank slab using a strong jet of water. Flushing of debris into tank drain lines will not be permitted.

C. Saturate the concrete surface for at least 24 hours prior to placement of the concrete grout. Saturation may be maintained by ponding, by the use or soaker hoses, or by other methods acceptable to the Engineer. Remove excess water just prior to placement of the concrete grout. Place a cement slurry immediately ahead of the concrete grout so that the slurry is moist when the grout is placed. Work the slurry over the surface with a broom until it is coated with approximately 1/16 to 1/8-in thick cement paste. (A bonding grout composed of 1 part portland cement, 1.5 parts fine sand, an approved bonding admixture and water, mixed to achieve the consistency of thick paint, may be substituted for the cement slurry.)

D. Place concrete grout to final grade using the scraper mechanism as a guide for surface elevation and to ensure high and low spots are eliminated. Unless specifically approved by the equipment manufacturer, mechanical scraper mechanisms shall not be used as a finishing machine or screed.

E. Provide grout control joints as indicated on the Drawings.

F. Finish and cure the concrete grout as specified for cast-in-place concrete.

3.6 SCHEDULE

A. The following list indicates where the particular types of grout are to be used:

a. General purpose nonshrink cementitious grout. Use at all locations where non shrink grout is called for on the plans except for base plates greater in area than 3-ft wide by 3-ft long and except for the setting of anchor rods, anchor bolts or reinforcing steel in concrete.

b. Flowable nonshrink cementitious grout. Use under all base plates greater in area than 3-ft by 3-ft. Use at all locations indicated to receive flowable nonshrink grout by the Drawings. The Contractor, at his/her option and convenience, may also substitute flowable nonshrink grout for general purpose nonshrink cementitious grout.

c. Nonshrink epoxy grout. Use for the setting of anchor rods, anchor bolts and reinforcing steel in concrete and for all locations specifically indicated to receive epoxy grout.

d. Cement grout. Cement grout may be used for grouting of incidental base

plates for structural and miscellaneous steel such as post base plates for platforms, base plates for beams, etc. It shall not be used when nonshrink grout is specifically called for on the Drawings or for grouting of primary structural steel members such as columns and girders.

e. Concrete grout. Use for overlaying the base concrete to allow more control in placing the surface grade and elsewhere as shown on the Drawings.

END OF SECTION

SECTION 03740 - MODIFICATIONS AND REPAIR TO EXISTING CONCRETE

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and cut, chip, repair, demolish, excavate, or otherwise modify parts of existing structures or appurtenances as shown on the sketches and as specified herein.

B. Work under this Section shall include repairs to existing deteriorated concrete. Repairs are separated into three basic categories as follows:

a. Surface deterioration, greater than 1/2” and less than 2” depth, no exposed rebar.

b. Surface deterioration, greater than 2” and less than 3”, with exposed rebar, no rebar deterioration.

c. Surface deterioration, greater than 3” to maximum 16” with exposed, deteriorated and/or missing rebar.

1.2 RELATED WORK

A. Cast-In-Place Concrete is included in Section 03301.

B. Grout is included in Section 03600.

1.3 GENERAL

A. No existing structure or concrete shall be shifted, cut, removed, or otherwise altered until written authorization is given by the Engineer.

B. When removing materials or portions of existing structures and when making openings in existing structures, take all precautions and use all necessary barriers and other protective devices so as not to damage the structures beyond the limits necessary for the new work, nor to damage the structures or contents by falling or flying debris. Unless otherwise permitted, line drilling will be required in cutting existing concrete.

C. Manufacturer qualifications: The manufacturer of the specified products shall have a minimum of 10 years’ experience in the manufacture of such products and shall have an ongoing program of training, certifying and technically supporting the Contractor’s personnel.

D. Contractor qualifications: Contractors shall complete a program of instruction in the application of the approved manufacturer’s material and provide certification from the manufacturer attesting to their training and status as an approved applicator.

E. Furnish a notarized certificate stating that the materials specified meet the project requirements and submit the manufacturer's current printed literature on the specified product.

1.4 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

a. ASTM D570 - Standard Test Method for Water Absorption of Plastics.

b. ASTM D1653, Method B - Standard Test Method for Water Vaspor Permeability of Organic Coating Films.

c. ASTM D 790 - Standard Test Method for flexural properties of unreinforced and reinforced plastics and electrical insulating materials.

d. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.

e. ASTM D732 - Standard Test Method for Shear Strength of Plastics by Punch Tool

f. ASTM D695 - Standard Test Method for Compressive Properties Rigid Plastics.

g. ASTM C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear

h. ASTM D1525 - Standard Test Method for Vicat Softening Temperature of Plastics.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 PRODUCTS

2.1 MATERIALS

A. Epoxy Bonding Compound:

a. The epoxy bonding compound shall be furnished in two components for combining immediately prior to use in accordance with the manufacturer's written instructions and as specified herein.

b. The components of the epoxy resin system shall conform to the following requirements:

i. Component A - Component A shall be a modified epoxy resin of the epichlorohydrin bisphenol A condensation type, containing

suitable viscosity control agents and having an epoxide equivalent of 180 to 200.

ii. Component B - Component B shall be primarily a reaction product of an alkyl glycidyl ether and a polyfunctional aliphatic amine containing suitable viscosity agents modified with 2, 4, 6 tri (dimethylamino-methyl) phenol.

iii. The component ratio of B:A shall be 1:1 by volume.

iv. The resultant compound shall be polysulfide free.

c. Properties of Mixed Components:

i. Solids Content: 100 percent by weight

ii. Pot Life: 20 to 30 minutes at 73 Degrees F

iii. Tack-Free Time (thin film): 3 to 5 hrs at 73 Degrees F

iv. Final Cure ASTM D695: 3 days at 73 Degrees F (ASTM D695 percent ultimate strength)

v. Initial Viscosity (A+B): 2400 to 3200 cps minimum at 73 Degrees F

vi. Color mixed: Straw

d. Properties of Cured Material:

i. Neat Material

a. Tensile Strength: 5300 psi minimum at (ASTM D638) 14 days 73 Degrees F cure

b. Tensile Elongation: 4.8 percent at 14 days (ASTM D638 modified) 73 Degrees F cure

c. Compressive Strength: 7000 psi minimum at 28 days 73 Degrees F cure (ASTM D695)

d. Compressive Modulus: 250,000 psi minimum at (ASTM D695)1.0 percent maximum (ASTM D570)

e. Bond Strength: 1500 psi minimum at (Plastic to Hardened) 14 days, 73 Degrees F cure

f. Deflection Temperature: 180 Degrees F minimum (ASTM D1525)

e. Epoxy bonding compound shall be Sikadur Hi-Mod as manufactured by Sika Chemical Corp., Lyndhurst, N.J.; W.R. Grace Co., Cambridge, MA; Adhesive Engineering Co., Lawrence, MA or equal.

B. Epoxy Paste

a. General

i. Epoxy Paste shall be a two-component, solvent-free, asbestos free, moisture insensitive epoxy resin material used to bond dissimilar materials to concrete such as setting railing posts, dowels, anchor bolts and all-threads into hardened concrete and shall comply with the requirements of ASTM C881, Type I, Grade 3 and the additional requirements specified herein. It may also be used to patch existing surfaces where the glue line is 1/8-in or less.

b. Material

i. Properties of the cured material:

a. Compressive Properties (ASTM D695): 10,000 psi minimum at 28 days.

b. Tensile Strength (ASTM D638): 3,000 psi minimum at 14 days.

c. Elongation at Break: 0.3 percent minimum.

d. Flexural Strength (ASTM D790 - Modulus of Rupture): 3,700 psi minimum at 4 days.

e. Shear Strength (ASTM D732): 2,800 psi minimum at 14 days.

f. Water Absorption (ASTM D570): 1.0 percent maximum at 7 days.

g. Bond Strength (ASTM C882): 2,000 psi at 14 days moist cure.

h. Color: Concrete grey.

c. Approved manufacturer's include:

i. Overhead applications: Sika Corporation, Lyndhurst, NJ - Sikadur Hi-mod LV 31; Master Builders, Inc., Cleveland, OH - Concresive 1438 or equal.

ii. Sika Corporation, Lyndhurst, N.J. - Sikadur Hi-mod LV 32; Master Builders, Inc., Cleveland, OH - Concresive 1438 or equal.

C. Non-Shrink Precision Cement Grout, Non-Shrink Cement Grout, Non-Shrink Epoxy Grout and Polymer Modified mortar are included in Section 03600 GROUT.

D. Adhesive Capsule type anchor system shall be equal to Molly parabond two part stud and capsule system by Emhart, Temple, PA or the HVA adhesive Anchoring System by Hilti Fastening Systems, Tulsa, OK. The capsule shall consist of a sealed glass capsule containing premeasured amounts of a polyester or vinylester resin, quartz sand aggregate and a hardener contained in a separate vial within the capsulre.

E. Crack Repair Epoxy Adhesive

a. General

i. Crack Repair Epoxy Adhesive shall be a two-component, solvent-free, moisture insensitive epoxy resin material suitable for crack grouting by injection or gravity feed. It shall be formulated for the specific size of opening or crack being injected.

b. Material

i. Properties of the cured material

a. Compressive Properties (ASTM D695): 10,000 psi minimum at 28 days.

b. Tensile Strength (ASTM D638): 5,300 psi minimum at 14 days. Elongation at Break - 2 to 5 percent.

c. Flexural Strength (ASTM D790 - Modulus of Rupture): 12,000 psi minimum at 14 days (gravity); 4,600 psi minimum at 14 days (injection)

d. Shear Strength (ASTM D732): 3,700 psi minimum at 14 days.

e. Water Absorption (ASTM D570 - 2 hour boil): 1.5 percent maximum at 7 days.

f. Bond Strength (ASTM C882): 2,400 psi at 2 days dry; 2,000 psi at 14 days dry plus 12 days moist.

PART 3 EXECUTION

3.1 GENERAL

A. Cut, chip, repair, reuse, demolish, excavate or otherwise modify parts of the existing structures or appurtenances, as indicated on the sketches, specified herein, or necessary to permit completion of the Work. All work shall comply with other requirements of this of Section and as shown on the sketches.

B. All commercial products specified in this Section shall be stored, mixed and applied in strict compliance with the manufacturer's recommendations.

C. In all cases where concrete is repaired in the vicinity of an expansion joint or control joint the repairs shall be made to preserve the isolation between components on either side of the joint.

D. When drilling holes for dowels/bolts at new or existing concrete, drilling shall stop if rebar is encountered. As approved by the Engineer, the hole location shall be relocated to avoid rebar. Rebar shall not be cut without prior approval by the Engineer. Where possible, rebar locations shall be identified prior to drilling using "rebar locators" so that drilled hole locations may be adjusted to avoid rebar interference.

3.2 REPAIRING EXISTING CONCRETE

A. Remove all deteriorated materials, dirt, oil, grease, and all other bond inhibiting materials from the surface by mechanical means, i.e. - waterblasting, sandblasting, grinding, etc, as approved by the Engineer. Be sure the areas are not less than 1/2-in in depth. Irregular voids or surface stones need not be removed if they are sound, free of laitance, and firmly embedded into parent concrete, subject to the Engineer's final inspection.

B. If reinforcing steel is exposed, it must be mechanically cleaned to remove all contaminants, rust, etc, as approved by the Engineer. If half of the diameter of the reinforcing steel is exposed, chip out behind the steel. The distance chipped behind the steel shall be a minimum of 1/2-in. Reinforcing to be saved shall not be damaged during the demolition operation.

C. After cleaning the exposed reinforcement it is determined that more than ¼ of the effective cross sectional area has been lost, chip the concrete back along the bar a minimum of 18 bar diameters in each direction from the damaged section and replace the bar with new reinforcement of similar size. Lap the new bar 18 diameters to the exposed non-corroded section. Alternatively, contractor may drill and epoxy grout new rebar in to sound concrete adjacent to deteriorated bar. Embed new bar per grout manufacturer’s requirements.

D. Thoroughly wash the roughened concrete surfaces and keep the surfaces saturated for at least 6 hours before placing new concrete. All free water shall be removed prior to placing the concrete. An epoxy bonding compound as specified

may be used in lieu of saturating surface for 6 hours in accordance with repair material manufacturer's requirements.

E. Repair mortar, shall be placed/pumped to a thickness to match the existing surface.

a. Repair mortar shall be Nonshrink cementitous grout as specified in Section 03600.

F. When the finish surface is not specified to be lined the color of new concrete in the exposed surfaces shall match the color of the existing adjoining concrete as closely as possible.

3.3 CRACK REPAIR

A. Cracks on horizontal surfaces shall be repaired by gravity feeding crack sealant into cracks per manufacturer's recommendations. If cracks are less than 1/16-in in thickness they shall be pressure injected.

B. Cracks on vertical surfaces shall be repaired by pressure injecting crack sealant through valves sealed to surface with crack repair epoxy adhesive per manufacturer's recommendations.

END OF SECTION

SECTION 129300 – SITE FURNISHINGS

PART 1 GENERAL

1.0 RELATED DOCUMENTS

A. The PROCUREMENT AND CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.1 WORK INCLUDED

A. Provide all materials and equipment, and do all work necessary to furnish and install the site furnishings, as indicated on the Drawings and as specified. Site furnishings shall include:

1. Trash and Recycling Receptacles
2. Vehicular Bollards
3. Tree Grates
4. Accent Seating; Type A
5. Bike Rack

1.2 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 321313, PORTLAND CEMENT CONCRETE PAVING.
2. Section 321314, EXPOSED AGGREGATE CONCRETE PAVING.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. American Society for Testing and Materials (ASTM):

A 153 Hardware	Zinc Coating (Hot-Dip) on Iron and Steel
F 1487	Standard Consumer Safety Performance Specifications for Playground Equipment for Public Use

1.4 SUBMITTALS

A. Complete shop drawings of each item specified shall be submitted.

B. Where appropriate, and when approved by the Architect, manufacturer's catalogue cuts may be substituted for shop drawings.

C. No product substitutions will be accepted unless specifically approved by the Owner's Authorized Representative (refer to Division 01 requirements for products). All requests for product substitutions must be made within 60 days of award of contract and shall be directed to Architect and including the following information:

1. Reason for substitution request.
2. Proposed product information pertaining to proposed substitute product.
3. Strategy and time schedule for procurement of proposed product.

D. Furnish evidence indicating that source of wood used for construction is a plantation farm or other designated source practicing sustain yield concept in forestry, and regulated by governing authorities regarding the growing, harvesting, and replanting of tropical hardwood trees.

PART 2 PRODUCTS

2.1 MATERIALS

A. General: For more specific site furnishing information, including manufacturer contact information, refer to Material Schedule included on Drawing Sheet L211.

B. Materials shall be the standard products of a manufacturer regularly engaged in the manufacture of such products. The materials provided shall be of a type with proven satisfactory usage for at least 2 years.

2.2 FASTENERS AND HARDWARE

A. Provide manufacturer's standard materials and accessories as required for assembly of units and as indicated on the assembly drawings. Provide unexposed aluminum, stainless steel or steel plates, angles and supports as required for complete assembly. Separate dissimilar materials to prevent electrolytic action.

1. Fasteners and metal components shall be cadmium-plated steel or steel hot-dipped galvanized in accordance with ASTM A 153.

2.3 ACCENT SEATING

A. Type A Accent Seating: shall be “Lungo Mare”, manufactured by ESCOFET 1886, S.A. Computer Department, Ronda Universitat 20 (08007) Barcelona, Spain, distributed by Landscape Forms, Route 3, Kalamazoo, MI 49001; Phone (269) 381-0396. Fax (269) 381- 3455. Website www.landscapeforms.com. E-mail: specify@landscapeforms.com, Local Rep.: Nadene Parzych, Tel. 978-460-5306; email: nadenep@landscapeforms.com

2.4 SECURITY BOLLARDS

A. Bollards shall be CALPIPE Security Bollard, 6" Schedule 40 Stainless Steel Tube, Fixed, with Flat Steel Top, manufactured by Calpipe Security Bollards, Rancho Dominguez, CA 90220; Tel. 1-877-283-8518; Fax: 562-803-9883;Web: www.calpipebollards.com, or approved equal.

1. Height: 36 inches.
2. Top: Flat steel top
3. Finish: Manufacturer’s standard stainless steel with zinc primer and powdercoat finish.
4. Color: RAL 7035, Light Gray.

B. Contractor shall be responsible for any custom footer design or calculations due to conflicts with existing utilities to meet the minimum S20 rating. Some of these bollards may require a spread footer.

2.5 GARBAGE/RECYCLING CONTAINER

A. Garbage and Recycling Container: shall be WAUSAU TF1196, white precast concrete with aluminum powdercoat lid, manufactured by Wausau, PO Box 1520 Wausau, WI 54402- 1520; Toll Free: (800) 388-8728; Fax: (715) 355-4627, or approved equal.

2.6 BIKE RACK

A. New Bicycle Racks shall be Model 1600 Series SCBR1600, manufactured by Maglin Corporation; www.maglin.com, or approved equal.

1. Color and Finish: Custom color; Matte finish.

2.7 PRECAST CONCRETE TREE GRATE

A. Precast Concrete Tree Grate: shall be white precast concrete with aggregate finish to match surrounding concrete paving, manufactured by Wausau, PO Box 1520 Wausau, WI 54402-1520; Toll Free: (800) 388-8728; Fax: (715) 355-4627, or approved equal.

1. Size and dimensions shall be as indicated on the Drawings.

PART 3 EXECUTION

3.1 GENERAL

A. The Contractor shall verify that finished grades and other operations affecting mounting surfaces have been completed prior to the installation of site furnishings. Site furnishings shall be installed plumb and true, at locations indicated, in accordance with the approved manufacturer's instructions.

3.2 ASSEMBLY AND ERECTION OF COMPONENTS

A. Items shall be shipped knocked-down (KD) ready for site assembly. Packaged components shall be complete including all accessories and hardware. New parts shall be acquired from the manufacturer; substitute parts will not be accepted unless approved by the manufacturer. When the inspection of parts has been completed, the site furnishings shall be assembled and anchored according to manufacturer's instructions or as indicated. When site furnishings are assembled at the site, assembly shall not interfere with other operations or pedestrian and vehicular circulation.

3.3 ANCHORAGE, FASTENINGS AND CONNECTIONS

A. Furnish metal work, mounting bolts or hardware in ample time for securing into concrete or masonry as the work progresses. Provide anchorage where necessary for fastening furniture or furnishings securely in place. Provide, for anchorage not otherwise specified or indicated, slotted inserts, expansion shields, and power-driven fasteners, when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; through bolts, lag bolts, and screws for wood. Do not use wood plugs in any material. Provide non-ferrous attachments for non-ferrous metal. Make exposed fastenings of compatible materials, generally matching in color and finish the fastenings to which they are applied. Conceal fastenings where practicable.

3.4 TESTING

A. Each site furnishing shall be tested to determine a secure and correct installation. A correct installation shall be according to the manufacturer's recommendations and by the following procedure: The Contractor shall measure the physical dimensions and clearance of each installed site furnishing for compliance with manufacturer's recommendations and as indicated. Site furnishings which do not comply shall be reinstalled. Fasteners and anchors determined to be non-compliant shall be replaced. A written report describing the results of the testing shall be provided.

3.5 SITE FURNISHINGS - INSTALLATION

A. Examination

1. Examine areas to furnishing.
2. Notify Architect of conditions that would adversely affect installation or subsequent use.
3. Do not begin installation until unacceptable conditions are corrected.

B. Installation

1. Install furnishing in accordance with manufacturer's instructions at locations indicated on the Drawings.
2. Install level.
3. Anchor securely in place.

C. Adjusting

1. Finish Damage: Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
2. Component Damage: Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

D. Cleaning

1. Clean promptly after installation in accordance with manufacturer's instructions.
2. Do not use harsh cleaning materials or methods that could damage finish.

E. Protection

1. Protect installed furnishings to ensure that, except for normal weathering, furnishings will be without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION – 16010 (ES) ELECTRICAL GENERAL PROVISIONS

PART 1 GENERAL

1.01 SCOPE OF WORK:

This Section includes the electrical provisions for all of Division 16, electrical and related work.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

General Requirements Division 1

1.03 DEFINITIONS:

Provide means to furnish and install.

1.04 SUBMITTALS:

A. Submit Shop Drawings for review as indicated. Shop Drawings shall be submitted in complete groups, loose-leaf bound, and indexed, including descriptive data, catalog cuts, diagrams, connection details, wiring dimensions, material and finishes.

B. Submit manuals for review as indicated. Manuals shall include operating and maintenance instructions, parts lists, manufacturers and local suppliers addresses and pertinent descriptive data. Manuals shall be loose-leaf bound and indexed in three ring hardcover binder.

C. Submit a minimum of 6 sets of Shop Drawings and 3 sets of manuals. One full set will be kept by the Project Consultant.

1.05 DRAWINGS:

A. The drawings are schematic showing relative locations and connections and shall not be scaled for exact locations. Unless specific dimensions are shown, the structural, architectural and site conditions shall govern the exact locations. Should any difficulty occur in the running of conduits, setting of cabinets, outlets, fixtures, or any other devices or connections at the points shown, provide necessary minor deviations therefrom as approved without additional cost.

1.06 RECORD DRAWINGS AND RECORDS:

A. Maintain a complete set of electrical prints for indicating all changes including Addendas executed, R.F.I.'s, Response to R.F.I.'s, Deviations, Cross References, etc. Use colored pencil or pen to mark changes at the time of execution. Deliver the set to the Owner's Representative upon completion. The As-Builts will be checked each month for compliance prior to release of any progress payments. Elevations and dimensioned locations of underground work

shall be indicated. Dimension to permanent references.

B. Submit Xeroxed copies of all typed panel directories for approval prior to placing in panels and switchboards. Submittal shall be in loose-leaf 3-ring binder, 8-1/2" x 11".

PART 2 PRODUCTS

2.01 MATERIALS:

Materials and equipment shall be new, standard current products of manufacturers regularly engaged in the production of such equipment, and shall be the manufacturer's latest design. All materials shall bear the label of the Underwriters' Laboratory for the intended use or shall be materials approved by the code enforcing authorities and the Project Consultant.

2.02 HARDWARE:

All hardware and accessory fittings shall be of a type designed, intended or appropriate for the use, and complement the items with which they are used, and shall have corrosion protection suitable for the atmosphere in which they are installed. All such hardware shall be U.S. Standard sizes.

2.03 EQUIPMENT:

Equipment of a similar nature shall be identical.
Example: All panelboards shall be of the same manufacturer and of the same style.

2.04 MATERIAL PROTECTION:

Store and protect all materials from injury prior to installation. Materials shall not be stored directly on the ground or floor and shall be kept as clean and dry as possible and free from damage or deteriorating elements. Damaged materials shall not be installed.

2.05 SHOP DRAWINGS:

Submit coordinated shop drawings at 1/2 inch scale, not reduced, using actual sizes and weights of vendors equipment. Drawings shall consist of floor plan and elevations of each significant wall. Ducts or foreign pipes may not encroach over panels and switchboards. Show NEC required clearances. Upon completion of the project the drawings shall be updated with incidental items such as relays, time clocks, contactors, etc. The following shall be submitted:
Main Switchroom - - Electric Room.

PART 3 EXECUTION

3.01 INSTALLATION:

A. The electrical installation shall conform to the Florida Building Code, 2007, the NFPA Standards indicated, and the applicable standards, codes, regulations, and specifications listed therein and with these specifications and the standards, codes and regulations listed therein.

B. All equipment shall be set level, properly aligned and bolted together where in sections. Secure all materials and equipment firmly in place. All screws, bolts, nuts, clamps, fittings or other fastening devices shall be made up tight. All materials and equipment shall be installed complete including screws or bolts, covers, plates, fittings, etc. Follow the installation directions and recommendations of the material and equipment manufacturers.

C. Fol1ow the instal1ation directions and recommendations of the material and equipment manufacturers.

D. Materials damaged during installation shall be repaired to a new condition or shall be replaced. Finishes on equipment which have been scratched or marred shall be touched up to match the original finish or shall be completely refinished.

E. All enclosures, panels, cabinets, relays safety switches, fixtures and other exposed equipment or accessories shall be factory painted or finished except as indicated otherwise. Group mounted items shall be similar in finish and color.

3.02 IDENTIFICATION:

A. Tag all conductors and identify major conduits in or at home runs, wireways, panels, pull boxes, switchboards, motor controllers, cabinets and similar items to assist in future circuit tracing. Conductor tags shall be non-conductive. Identification shall correspond to the Contract Documents.

B. All junction boxes shall have the type of system and voltage of contained conductors stenciled on both the inside and outside of the box cover.
Examples: Power 277/480V Control 120V
Telephone
Sound & Intercom Clock 120V
Lights 120/208V

C. Identify all equipment as to its source, its use and what it serves, and characteristics. Equipment includes safety switches, starters, transformers, panels, terminal boxes, motors, special outlets, relays. Identification shall correspond to the terminology on the Contract Documents.
Examples: 1. Starter for AHU #1 - Fed from MCC-3

2. Transformer T-3 - Fed from 2HPD-3 - Serves Panel 2LDP
3. Emergency Stop Station
4. Panel 3L -120/208V-3 Phase-4 Wire - Fed from 2LDP-7

D. Use Brady markers on conductors. Use manufacturer's nameplates and directories where available. Use of Dymo Labels will not be permitted. Use of uniform painted stencils will be permitted. Submit other methods for approval. Provide plastic lamicoid engraved plates to properly cleaned surfaces for good adhesion or provide fastening screws.

E. Color Coding - Conductor colors shall be in accordance with the NEC and NFPA requirements. Refer also to applicable sections of these specifications. Three phase feeders and branch circuits shall be identified as follows:

120/208	277/480V
A - Black	A - Brown
B - Red	B - Orange
C - Blue	C - Yellow
N - White	N - Gray

F. Nameplates: The following items shall be equipped with nameplates: all motors, motor starters, motor control centers, pushbutton stations, control panels, time switches, disconnect switches, switchboards, panelboards, circuit breakers, contactors or relays in separate enclosures, receptacles, wall switches, high voltage boxes and cabinets. All light switches and outlets shall carry a phenolic plate with the supply circuit number. Special electrical systems shall be identified at junction and pullboxes, terminal cabinets and equipment racks.

Nameplates shall adequately describe the function of the particular equipment involved. Nameplates for panelboards and switchboards shall include the panel designation, voltage and phase of the supply. For example, "Panel A, 277/480V, 3 phase, 4 wire". The name of the machine on the motor nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and P.B. station nameplates for that machine.

Normal power nameplates shall be laminated phenolic plastic with lettering etched through the outer covering; white engraved letters on black background. All nameplates for emergency power equipment shall be red with white letters. Lettering shall be 3/16 inch high at pushbutton stations, thermal overload switches, receptacles, wall switches and similar devices, where the nameplate is attached .to the device plate. At all other locations, lettering shall be 1/4 inch high, unless otherwise detailed on the drawings.

Nameplates shall be securely fastened to the equipment with No. 4 Phillips, round head, cadium plated, steel self-tapping screws or nickel-plated brass bolts. Motor nameplates may be non ferrous metal not less than 0.03 inch thick, die stamped. In lieu of separate plastic nameplates, engraving directly on device plates is acceptable. Engraved lettering shall be filled with contrasting

enamel. Equipment nameplate schedule for all equipment shall be submitted with shop drawing submittal for engineer's approval .

All junction and splice boxes shall be labeled using permanent shipping tags attached to boxes; not covers. Device plates including receptacles and toggle switches may be identified with adhesive tape units as manufactured by Brothers “P-Touch”. Use suitable color, contrast, and sizes.

G. Sign - Warning signs shall comply with OSHA requirements and reasonable safety precautions.

3.03 TOOLS & SPARE PARTS:

A. Use only tools designed for the particular operation. Tools shall be kept in good condition. Worn or broken tools shall not be used. Wrench and vise teeth shall be sharp and clean to prevent damage to the materials. Screw drivers and wrenches shall be of the proper size to prevent damage to the head or nuts. Special tools and spare parts provided with any equipment shall be turned over to an authorized person from the City and the Contractor shall obtain signed and dated receipts for them.

3.04 TESTS:

A. Correct all defective materials and workmanship disclosed and as the result of the tests given herein. Show by demonstration in service that all circuits and devices are in good operating condition. Tests shall be such that each item of control equipment will function not less than five times. Test all circuits for grounds, shorts and continuity. Provide all materials and equipment necessary for testing.

3.05 DEMONSTRATION:

A. Demonstrate the essential features of the following electrical systems upon completion of satisfactory testing:
Emergency System
Lighting System
Sound System
Main Switchboard
Contactors

B. The demonstration shall be held by the Contractor in the presence of the Owner or his designated representatives and the Project Consultant to show functions, locations and relationships to the plans. Demonstrate how to "Start-Stop", reset, replace and emergency procedures. Demonstrate one system at a time.

3.06 BREAKDOWN:

A. The Contractor shall submit to the Owner's Representative within a period not to exceed 15 days after the signing of the contract a systematic breakdown of the cost of each phase of the work for complete job.

END OF SECTION

SECTION – 16011 (ES) CODES & STANDARDS

PART 1 GENERAL

1.01 This Section covers the Codes, Specifications, and Standards considered minimum requirements for materials, workmanship and safety for all Division 16 and related electrical work.

PART 2 SPECIFICATIONS, CODES AND STANDARDS

2.01 Reference within this Specification to standards, codes or reference specifications implies that any item, product or material so identified must comply with all minimum requirements as stated therein, except packaging and shipping, unless indicated otherwise. Only the latest revised editions are applicable.
Some of the references used in this Division are as follows:
NFPA National Fire Protective Association
NEC National Electric Code
NEMA National Electrical Manufacturers' Association
U.L. Underwriters' Laboratories, Inc.
ANSI American National Standards Institute
FS Federal Specification

2.02 The Specifications, codes and standards indicated below and in other Sections, including the current addenda, amendments and errata, referred to by basic designation only. form a part of this specification.

NFPA-70	2008	National Electric Code
NFPA-101	2003	Code for Safety to Life
F.B.C.	2007	Florida Building Code, 2009 Revisions
IESNA 9th Edition		Illuminating Engineering Society, North America

PART 3 NATIONAL RECOGNIZED TESTING LABORATORY - NRTL

3.01 Where materials and equipment are available under the continuing inspection and labeling service of U.L.; provide such material and equipment.

3.02 Listing by Underwriters' Laboratories shall be evidenced by the label or: U.L. - Electrical Construction Materials List (Green Book)
U.L. - Electrical Appliance and Utilization Equipment List
U.L. - Building Materials List

3.03 Listing by National Recognized Testing Laboratory (NRTL).

END OF SECTION

SECTION 16110 (ES) - RACEWAY AND BOXES

PART 1 GENERAL

1.01 SCOPE:

This Section includes basic materials and electrical methods for all of Division 16, electrical and related work.

PART 2 PRODUCTS

2.01 RACEWAYS AND FITTINGS:

A. Rigid Metal Conduit: Rigid steel conduit shall be hot dip galvanized.

B. Electrical Metallic Tubing (EMT): EMT shall be galvanized and fittings shall be concrete tight or rolled steel, not cast type. Non-ferrous cast type fittings are not acceptable.

C. Flexible Metal Conduit: Flexible steel conduit (Greenfield) shall be galvanized. Liquid tight flexible conduit shall conform to NEC Article 351 as manufactured by Appleton, Robroy, or Anaconda. Fittings shall be as manufactured by Midwest or Robroy.

D. Rigid Non-Metallic Conduit: Polyvinyl chloride (PVC) conduit, boxes and fittings shall conform to NEMA TC-2, Schedule 40.

E. Wireways and Auxiliary Gutters: Galvanized steel with removable covers unless indicated as hinged. Components shall be as manufactured by Square 'D', Hoffman, Keystone or General Electric.

2.02 BOXES & ACCESSORIES:

A. Sheet steel boxes and accessories shall be as manufactured by Appleton, Steel City or Raco.

B. Cast metal ferrous outlets shall be as manufactured by Appleton, Pyle-National or Crouse-Hinds.

C. Pull boxes and junction boxes larger than 4-11/16" shall be constructed of galvanized steel in accordance with NFPA-70, Articles #370 and #373. Boxes shall be as manufactured by Hoffman, Boss or Keystone.

D. Cast outlet boxes shall have threaded conduit entrances and gasketed covers. Aluminum type not permitted. Boxes shall have a minimum of two hubs on the bottom. Appleton or Crouse-Hinds.

2.03 IN-GROUND PULL BOXES:

A. Shall be as manufactured by Quazite or equal; UL Listed, open bottom type.

2.04 EXPANSION FITTINGS:

Expansion fitting shall be as manufactured by O-Z Electrical Mfg. Company as follows:
Rigid Metal Conduit - Type AX
Electrical Metallic Tubing - Type TX

2.05 MISCELLANEOUS:

Coatings - Koppers #50 bitumastic.

PART 3 EXECUTION

3.01 RACEWAYS:

A. Paint metal conduit in or below ground floor slab or in the ground with 2 coats of bitumastic.

B. Use flexible conduit for all connections to vibrating equipment such as motors, valves, and devices on piping and ductwork. Flexible conduit may be used for short connections to control devices, recessed fixtures, and similar items. The connection between the structure and the first point of attachment to vibrating equipment shall be flexible.

C. Use liquid-tight flexible conduit connections to all equipment in damp locations and all motors. Provide a separate bond wire for all flexible conduits.

D. Install exposed conduit parallel with or at right angles to the building lines. Conduit at suspended ceilings shall be located, when practicable, between the slab and the ceiling. Conduit larger than 1", except as indicated, in reinforced concrete slabs shall be parallel with or at right angles to the main reinforcement; when at right angles to the supports of the slab. Conduit in concrete shall be located so as not to affect the structural strength of the slabs. Conceal all conduits in walls, above ceilings, in or under slabs or in furring, except in mechanical and electrical rooms and as indicated.

F. Route feeders, home runs and conduits where indicated, except that minor deviations as approved will be permitted.

3.02 BOXES AND ACCESSORIES:

A. Minimum size outlet box shall be 4" square by 1-1/2" deep unless approved or indicated otherwise.

B. Use cast ferrous metal outlets with gasketed covers for all exterior and for all damp locations.

C. All boxes shall be set plumb, square and level. Crossbrace boxes in metal studs.

D. Use 10/32 screw to ground all boxes.

3.03 MISCELLANEOUS:

A. Provide approved fire stopping materials at all chases to prevent drafts.

B. Provide cable supports as indicated and in accordance with Article 300-10.

C. Provide expansion fittings in conduit runs crossing expansion joints in the structure.

D. Provide Jet Line #232 in all empty conduits.

END OF SECTION

SECTION – 16120 (ES) CONDUCTORS

PART 1 GENERAL

This Section includes basic materials and methods for all of Division 16, electrical and related work.

1.01 APPLICABLE REQUIREMENTS:

NEC Article 310 and 400
F.S. J-C-30
F.S. W-S-6106

PART 2 PRODUCTS

2.01 CONDUCTORS:

A. Conductors shall conform to Federal Specification J-C-30 for 600 volt. Types THWN or THHN. Sizes are AWG unless noted and all stranded copper.

B. Grounding conductors shall be insulated copper and identified green.

C. Control conductors for 100 to 600 volt shall be size #14 copper, stranded, and color coded unless indicated otherwise.

D. Control conductors for 50 volt and under shall be plastic jacketed thermostat cable, size #18 single conductor, copper, multi-conductor as required.

2.02 PORTABLE CORDS:

A. Portable cord shall be stranded copper, UL Listed, and resistant to water, acid and alkalies.

B. Each cord shall have one green covered conductor and it shall be used as a grounding conductor.

2.03 SPLICES AND TERMINATIONS:

A. Connections shall comply with Federal Specification W-S-610b. Connectors for temperatures to 105 degree C shall be Ideal Wing Nut or 3M-Scotchloc.

B. Tape shall be Scotch 33 or slip-knot gray. Voids shall be filled with rubber tape or Scotchfill.

C. Heat shrink for all splices outdoors. Insulating and sealing of all 600 volt, in-line, cable splices from #16AWG through 1000MCM shall be done in accordance with the instructions provided with the Shrink-Kon heat shrinkable insulators, catalog

series HS as manufactured by Thomas & Betts.

PART 3 EXECUTION

3.01 CONDUCTORS:

A. Conductors size #10 and smaller shall be copper and have insulation colored for phases A, B, C and N respectively as follows for 3 phase systems:
120/208 volts, black, red, blue, and white
277/480 volts, brown, orange, yellow and gray

B. Bonding conductors size #10 and smaller shall have a green covering and shall be the same size as the circuit conductors unless otherwise indicated. Provide bonding conductors in all power and lighting conduits and bond all light fixtures and receptacles.

C. Installation of conductors shall be made only in completed raceway systems and all conductors in any conduit shall be pulled in together

D. Use wire pulling compounds or lubricants as listed by Underwriters' Laboratories or talc, graphite or soapstone.

3.02 SPLICES AND TERMINATIONS:

A. Use solderless terminal lugs on all stranded conductors. Use approved solderless connectors for all splices. Keep splices to a minimum.

B. Splice all neutrals and grounds (bonds) prior to connection to wiring devices. Splices other than pre-insulated connectors shall be covered neatly with insulation type equivalent in value to the conductor insulation. Use minimum of 2 layers of tape.

C. Splices outdoors and underground shall be epoxy encapsulated or heat shrink (no wire nuts or red head type allowed).

3.03 PHASING AND IDENTIFICATION:

A. The phase designation of all secondary conductors shall be the same and shall be indicated in or on all 3 phase outlets, transformers panelboards, and disconnect switches, and they shall be connected with uniform phase sequence.

3.04 NUMBER OF CONDUCTORS:

A. For convenience and simplicity wire tics are shown only on home runs other than power circuits. The Contractor shall determine the correct combination of wires to be run in all raceways including home runs, branch circuit wiring and switch legs.

B. A green ground wire must be included in all runs including to lighting fixtures in the ceilings. Neutral wires shall be determined by the load and proper phasing on

multiwire branch circuits.

C. The following schedule shall be followed including ground wires and neutrals:

	MAX
3/4"C	5 #12
1"C	10 #12

3.05 Wire:

A. Type THWN stranded copper wire shall be used in all locations with one exception, where the conduit or wire is subjected to undue heat condition, type THHN should be used. Under no condition will wire smaller than #12 AWG be used. Wiring for fixtures where undue heat conditions prevail shall be with 150 degrees C. wire. (Stranded conductors only)

B. Minimum conductor sizes shall be Branch Circuit - #12 CU., Control Circuits - #14 CU, Thermostat - #16 CU.

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END OF SECTION

SECTION – 16140 (ES) WIRING DEVICES

PART 1 GENERAL

1.01 APPLICABLE DOCUMENTS:
NEMA WD-1 - Wiring Devices - non-locking
NEMA WD-5 - Wiring Devices - locking type

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS & MATERIALS

Provide, where indicated, specification grade wiring devices conforming to NEMA requirements.

2.02 RECEPTACLES:

All receptacles shall be specification grade of the grounding type, unless noted, and shall conform to applicable portions of NEMA Standards WD-1 and WD-5.

A. NEMA Configuration #5-30
Single, Ivory, 30 amp, 125 volt, 2-pole, 3-wire Bryant - #9530-FR Receptacle and 9530 ANP Plug General Electric - #4138-3 and 4337-9
Leviton - #5371

B. Duplex Receptacles 20 Amp
Hubbell #5362-1
Leviton #5896-1
P & S #5362-1

C. Single Receptacles 20 Amp
Hubbell #5351-1
Leviton #5891-1
P & S #5361-1

D. Ground Fault Interrupter 20 Amp
Hubbell #GF5362-1
Leviton #6398-HG1
P & S #2091-FI; SHG

E. Combined switch and receptacles shall be two separate devices utilizing a two-gang box and single cover plate.

2.03 SWITCHES:

A. Single Pole Switches 20 Amp, 120/277 Volts Hubbell #1121-1, 3 way & 4 way similar.
Leviton #53521-1

P & S #20AC1-1

B. Key Switches (lock Switched), 20 amp, 120-277 Volt P&S #521-L, 522-L, 523-L

C. ON/OFF motor switches, single phase
20 Amp, 1 HP, 120 volt - P&S #20AC2-HP
20 Amp, 2 HP, 208-240 volt - P&S #20AC2-HP
30 Amp, 2 HP, 120-240 volt - P&S #30AC2-HP

D. Spring wound interval timer switch, rotary 20A-125 volt/10A-277 Volt SPST 0-15 Minute without hold Tork 515M 0-6 Hour without hold Tork 506H

2.04 CONTACTOR CONTROL SWITCHES:

A. Provide a suitable remote switch to turn the mechanically held contactors "on" and "off" from the locations indicated. See Detail on Drawings.

B. P & S #1251-1 or Leviton #1257, 20 amp, SPDT, 3 position, center off, momentary contact switch and identified plate "open" at bottom and "close" at top.

2.05 PLATES AND COVERS:

A. General - Device plates shall be 0.040 inch minimum, with struck-up beveled edges, void of sharp corners and multigang as applicable. Finish of screws shall match plates.

B. Wall plates for recessed devices shall be of Ivory color with matching screws unless indicated otherwise, and of the configuration required for the devices installed. Units shall be smooth high impact type, Nylon, self extinguishing thermoplastic conforming to NEMA and ANSI Standards.
Pass & Seymour RP Series or Leviton 8000 Series.

C. Surface (raised) covers for 4" square boxes shall be 1/2" deep. Surface covers shall be as manufactured by Steel City, Appleton or Raco of the configuration required. Others shall be similar.

D. Cover plates indicated (WP) weatherproof shall be Intermatic Series WP1000 for the configuration required.

E. Provide permanent ID on all plates/devices.

2.06 ATTACHMENT CAPS AND CONNECTORS:

A. Caps shall be NEMA Standard mates to the receptacles and connectors used and shall be as manufactured by Hubbell.

B. Provide one cap for each receptacle other than the duplex type, NEMA 5-15, 5-20, or 5-30.

C. Electrical contractor shall connect all equipment furnished by Owner or other contractors, including caps and cords and materials required to complete the installation.

PART 3 EXECUTION

3.01 OUTLETS & SWITCHES:

A. Install plates and covers on all outlets.
Install all devices uniformly in each area.

B. Use 20 ampere switches and receptacles everywhere except as noted.

3.02 GROUNDING:

A. Grounding contacts of receptacles shall be connected to a system grounding conductor (not system neutral) by a copper wire not smaller than #12 AWG. Where symbol "G" is shown, the green grounding wire must be pulled and used throughout the branch circuit.

3.03 CAPS:

A. Install a suitable cord and cap (male plug) on all equipment including: Equipment furnished under the contract.
Equipment furnished by owner and installed by contractor.
Equipment furnished by owner without a suitable cord and cap.

3.04 MOUNTING: (See Section 16110)

A. Mounting heights (to center of box):
Generally mount outlets 18" up unless noted.
Mount switches and dimmers at 48" up.

B. Test each socket of each outlet with a device intended for the purpose. Gang switches and dimmers where feasible.

3.05 G.F.C.I. RECEPTACLES: (No downstream non-GFCI is allowed)
Provide GFCI duplex receptacles as shown and at all the following locations.

A. Outdoors
B. Toilet Rooms

END OF SECTION

SECTION – 16160 (ES) PANELBOARDS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE:

Circuit Breakers, Switches	Section 16180
Starters	Section 16920
Contactors	Section 16917

1.02 APPLICABLE DOCUMENTS:

NEMA PB-1	Panelboards
S.F. W-P-115a	Panelboards
NFPA-70, 2005	Articles 110, 240, 384

1.03 SUBMITTALS:

A. Submit Shop Drawings for review on each panelboard and terminal cabinet indicating cabinet dimensions, component arrangements, characteristics, and sizes.

PART 2 PRODUCTS

2.01 PANELBOARDS:

A. Panelboards shall conform to Federal Specification W-P-115a, complete with cabinets and locks.

B. Fronts shall be finished to resist corrosion with not less than one priming coat and one pearl gray finishing coat. Components shall be arranged approximately as indicated. Circuits shall be numbered serially from top to bottom with odd numbers on the left.

C. Adjacent poles of single pole devices shall be of opposite polarity with split-phase bussing. Provide keys, each of which will operate all the panelboard cabinet locks. Provide a typewritten directory with a transparent protective cover on the inside of the panelboard cover.

D. Panels shall be factory assembled and tested. Circuit breaker panelboards shall be Type I, Class I, bolt-on type. Fusible panelboards, where indicated shall be Type II, Class 1, and shall have fuses of the rating indicated. Panelboards shall be as manufactured by Square 'D', General Electric, Cutler-Hammer, or Siemens. Nominal width shall be 22". All bus must be copper. Provide grounding terminal bus for all panelboards

E. Contactors mounted in panelboards shall be completely factory prewired and shall have suitable access door and control wiring and diagram.

PART 3 EXECUTION

3.01 Mount all panels with tops at 6' above the floor, except as noted or approved otherwise. Mount grouped equipment on backboards. Identify all panels and all devices. Nipple all adjacent panels together with minimum 1-1/2" conduit. Clean all debris out of cabinets prior to installing covers..

3.02 Where electric panels are located in rooms other than electric rooms, the clearances required by Code shall be guaranteed by a painted rectangle the width of the panel and the depth per NFPA-7 0, Table 110-16 (a). Stencil within the rectangle, "No Storage".

END OF SECTION

SECTION – 16180 (ES) SAFETY SWITCHES, CIRCUIT BREAKERS & FUSES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE:

Panelboards	-	Section 16160
Motor Controls	-	Section 16920
Ballasts Fuses	-	Section 16500

1.02 APPPLICABLE DOCUMENTS:

NEMA AB-1	-	Molded Case Circuit Breakers
NEMA IC-1	-	Industrial Control
F.S. W-S-865c	-	Enclosed Switches
F.S. W-C-375a	-	Circuit Breakers
U.L.-198	-	Fuses
NEMA FU-1	-	Fuses

1.03 SUBMITTALS:

Submit Shop Drawings for review including catalog cuts showing sizes, types and characteristics of all products.

PART 2 PRODUCTS

2.01 SAFETY SWITCHES/CIRCUIT BREAKER DISCONNECTS:

A. Safety switches shall conform to Federal Specifications W-S-865c, heavy duty type HD, fusible or non-fusible, with the poles, ampere, voltage and horsepower ratings indicated and shall have solid neutrals and Class R clips. Lugs shall be U.L. listed for copper-aluminum.

B. Enclosures for safety switches shall be NEMA-1, general purpose, except that switches indicated (WP) weatherproof, shall be NEMA-3R unless marked NEMA-4. Provide hubs as required for NEMA-3R enclosures with suitable gaskets and bonding means.

C. Switches and disconnects shall be as manufactured by Square 'D', General Electric, Cutler-Hammer or Siemens.

D. Circuit breaker disconnects may be used in lieu of safety switches providing they comply with the safety switch requirements and are applied within their ratings and a schedule is submitted for approval.

2.02 CIRCUIT BREAKERS, MOLDED CASE:

A. Circuit breakers shall conform to Fed. Spec. W-C-375a and NEMA Standard AB-1 unless indicated otherwise. Circuit breakers shall be of the ampere rating, voltage rating, number of poles and class or interrupting capacity (I.C.) as indicated. Interrupting ratings are given in root mean square (RMS), symmetrical ampers based on NEMA test procedures. Lugs and terminals shall be U.L. listed for copper-aluminum. Accessories shall be 120 volt.

B. Each circuit breaker shall have a trip unit for each pole with elements providing inverse time delay under overload conditions and instantaneous magnetic trip for short circuit protection unless indicated as non automatic. Trip elements shall operate a common trip bar to open all elements.

2.03 Fuses:

A. Provide rejection fuses for all fusible equipment regardless of which section has furnished such equipment.

B. Fuses shall be of the ratings shown on the drawings, U.L. listed and shall be Bussman Manufacturing Co., Gould-Shawmut Company, CEFCO or approved equal.

C. All fuses shall be current limiting and have an interrupting capacity of at least 200,000 amperes RMS symmetrical.

D. The time-current characteristics and ratings shall be such that positive selective coordination is assured.

E. Fuses, 600 amperes and lower, where applied to general feeder and branch circuit protection, shall conform to U.L. Class RK-1 standards and be Bussmann Type LPN-RK-SP LPS-RK-SP, "Low Peak". Gould-Shawmut dual element "Amp-Trap."

F. Fuses, where required for circuit breaker protection shall conform to U.L. Class RK-1 standards and be Bussmann Type LPN-RK-SP or LPS-RK-SP "Low Peak", or Gould-Shawmut Class RK1 "Amp-Trap."

G. Coordination and current limitations or the protection of each part of the electrical system must be designed around the type and class and manufacturer selected for that type and class.

PART 3 EXECUTION

3.01 INSTALLATION:

A. Mount grouped switches, disconnects and controls on backboards or unistrut. Provide labels on or in all fusible equipment indicating the type and size replacement fuse required.

B. Generally, mount switches and disconnects between 4' and 5' up, readily accessible.

3.02 FUSES:

A. Install all fuses as required where indicated on the drawings and where required by the National Electrical Code, special attention shall be given to air conditioning equipment.

B. Provide 10% spares (minimum of three) of each size and type of fuses furnished. Spare fuses shall be placed in a wall mounted cabinet equal to: Bussmann SFC which shall be located in the switchgear room.

END OF SECTION

SECTION – 16190 (ES) ELECTRICAL SUPPORTING DEVICES

PART 1 GENERAL

This Section includes basic materials and methods for all of Division 16.

1.01 SELECTION OF PRODUCTS:

A. Devices, including anchors, fasteners, hangers and supports, shall be of a type designed or fabricated for the purpose, and shall adequately and safely secure the material and equipment and present a neat appearance.

B. Make job fabricated hangers or supports from standard structural shapes and hardware.

C. All bolts, screws, nuts and other threaded devices shall have U.S. Standard threads and heads as appropriate.

D. Select devices using the following criteria:

1. Amount & Type of Load:
The weight of hangers or supports and of enclosed materials is part of the load. Devices shall be suitable for shear, straight pull, vibration, impact or external load as applicable.

2. Safe Working Load:
Determinations of safe working load of devices or job fabricated support assemblies shall be obtained from the published load data of the manufacturer.

3. Atmosphere:
Use devices with corrosion resistant characteristics for the atmospheric conditions in which they are installed. Steel hangers and supports protected by zinc (galvanized) may be used to support aluminum conduit in dry locations only. In damp or wet locations, insulate the aluminum and galvanized steel from each other with aluminum pigmented asphaltum or vinyl paint or insulating tape.

PART 2 PRODUCTS

2.01 HANGERS AND SUPPORTS:

A. Use equipment as manufactured by:

Unistrut	Steel City - Kindorf
Powerstrut	Harveys - Alstrut

PART 3 EXECUTION

3.01 INSTALLATION:

A. Install equipment, including switches, controllers, fixtures and transformers such that removal or replacement may be readily accomplished without damage to equipment or fasteners.

B. Drill holes for devices in accordance with the manufacturer's recommendations, including diameter and depth.

C. All parts of hanger and support assemblies, including all accessory hardware, shall be of types designed to be used together.

D. Internal and external threads of parts that are screwed or bolted together shall be of the same material including coatings and the method of applying coatings. For example, if the threads of bolts or rods are hot dipped galvanized, the nuts must also be galvanized. If they are electro-galvanized, the nuts must also be electro-galvanized. All threads shall be fully engaged. All parts so intended shall be made up tight using tools intended for the purpose.

E. Use Galvanox on all cut, drilled or punched edges.

3.02 FASTENING:

A. Fasten all materials and equipment with approved devices. Generally, fasteners shall be as follows:
1. Wood:
Fasten to wood with screws except nail may be used on wood partitions for outlet boxes and raceways up to 1" diameter.
2. Masonry:
Fasten to masonry with threaded metal inserts, metal expansion screws, toggle bolts, powder-actuated fasteners or other approved means.
3. Use backboards for telecommunications terminal boards and for surface mounting grouped electrical equipment. Paint the wall side of the backboards with an asphaltum coating when the walls are constructed of masonry.

3.03 STRAPS & TRAPEZES:

A. Use manufactured straps or clamps for single small conduit runs. Use trapezes of unistrut and threaded rods for multiple conduit runs and single runs of 1-1/4" or larger.

B. All supports shall be independent of other trades. Galvanized tie wire may be used for tieing off individual conduits, but not as their primary means of supports.

END OF SECTION

SECTION – 16401 (ES) ELECTRICAL SERVICE SYSTEM

PART 1 GENERAL

1.01 SCOPE OF WORK:

This Section includes the work in the main transformer pad, metering, primary service duct banks.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

Basic Materials & Methods
Concrete

1.03 REQUIREMENTS:

All work directly related to the service system shall be in accordance with Florida Power & Light Co. requirements; NFPA 70, Article 450; and as indicated.

1.04 UTILITY COMPANY WORK:

The following work will be performed by Florida Power & Light Co. (FPLC):

A. Provide conduit from the points located outside building lines to FPLC facilities. Provide primary cable from FPLC facilities to the F.P.L. transformers. Provide potheads to terminate primary cables.

B. Provide ground wires and ground rods in sleeves and boxes provided by the contractor. Connect customers facilities to FPLC facilities in the vaults and pads including racking all cables in vaults.

C. Provide meter wiring between plant meter cabinets and current transformers. Plant C.T.'s will be in the main vault/pad. Provide transformers and primary switches in the vault/pad.

PART 2 EXECUTION

2.01 INSTALLATION:

A. Provide a l-1/4" rigid steel conduit between plant meter can and the vault/pad and terminate it with a threaded bushing.

B. Provide conduit sleeves in the floor of the vault/pad for ground rods to be installed by Florida Power and Light Company.

C. Ductbank - Service duct lines shall be individual conduits of rigid steel conduit or PVC, and shall be concrete encased. Slope ducts downward toward manholes

and away from the building with a pitch of not less than 3" per 100'. Terminate conduits with end bells. Use approved conduit separators. Use minimum 36" radius bends. Clean each duct line with a 12" test mandril with a diameter 1/4" less than the conduit size; after which, clean the conduit with a stiff bristled brush to clear all earth and gravel particles; and install conduit plugs immediately.

D. Provide pulling eyes opposite the duct entrances indicated with a minimum pull rating of 2500 lbs.

E. Provide meter can for the plant demand meter with 1-1/4" conduits to the current transformer locations.

F. Provide empty conduits from the vault/pad to the points indicated. The utility company will provide the ducts and encasement beyond these points to their facilities. Maintain 36" of cover except as indicated. Seal around all conduits entering the main vaults and transformer rooms. No concrete shall be poured encasing ducts to be used by the utility company until the placement of conduits has been approved by the utility company.

G. Provide 15' of cable in the main vaults/pad from all secondary entrances that are not bus stabs. Use rigid steel conduit flush with a threaded bushing or bus stabs, as indicated. Coordinate locations and work with the utility company.

END OF SECTION

SECTION – 16450 (ES) GROUNDING

PART 1 GENERAL

1.01 SCOPE:

This Section includes basic materials and methods for all of Division 16 and related electrical work.

1.02 APPLICABLE REQUIREMENTS:

NEC Article 250

1.03 RELATED WORK SPECIFIED ELSEWHERE:

Transformers - Section 16460

PART 2 PRODUCTS

2.01 GROUND RODS:

A. Ground rods shall be a minimum of 5/8" by 10', copperweld.

B. Grounding accessories shall be as manufactured by Burndy, Erico or Thompson.

PART 3 EXECUTION

3.01 INSTALLATION:

A. End-to-End fixtures shall be continuously bonded.

B. Grounding contacts of receptacles and fixture grounds shall be connected to a solidly grounded conduit system or to a system grounding conductor (not the system neutral) by a copper wire not smaller than #12 AWG or shall be grounded in some other approved manner.

C. Lighting Poles - Provide a ground rod driven through or near pole bases and Cadweld to #6TW wire to the top of the rod and extend the wire to a grounding lug in the base and bond to all metal parts. Locate ground rods in adjacent pullboxes for visual inspection. Maximum 2 feet from pole bases.

D. Bond all metal parts. Make equipment and bus connections with suitable lugs or clamps. Cadweld all wire-to-ground rod joints. Cadweld all wire-to-wire joints size #1/0 and over.

E. Bond all conduits stubbing under switchboards, transformers and similar locations

using bonding bushings. Bond each conduit separately.

F. Provide a bond wire in all flexible metal conduits and connect to the boxes at each end in an approved manner. Bond to fixtures where they occur.

G. Use PVC for sleeving grounding conductors, except that where sleeves are subject to extreme injury use rigid metal conduit bonded at both ends.

H. Ground all separately derived sources such as transformers to adjacent cold water pipe or building steel in accordance with NEC.

I. Provide a #6 TW copper ground to each telecommunications terminal cabinet or board from the cold water pipe or system ground.

J. Provide bonding conductors in all power and lighting conduits; all clock and program conduits and to all power outlets, fixtures and connections to utilization equipment having electrical connections.

K. Ground all cast iron covers on concrete pullboxes to the green ground wire with a corrosion resistant stud, lug and nut. Use minimum #8 stranded with a loop minimum 18" long.

L. Provide Ground Collection Bus (GCB) at the locations shown as a common connection. Connect all local grounds as applicable to these points.

M. All electric equipment (metallic conduit, motor frames, panelboards boxes, main switchboard shall be bonded together with a green insulated copper grounding conductor sized per NEC (size #12 AWG). This bonding conductor shall be continuous through raceway system from main switch ground bus to panelboard bus and to each branch circuit outlet or switch. Equipment grounding conductors are required throughout project, regardless of whether or not shown on drawing.

N. Equipment grounding conductors shall terminate on terminal bars, screws, lugs, etc., expressly designed for that purpose. Ground clamps shall be of same material as the metal or water pipe they connect to. Use factory made ground bars/terminations.

O. Main Grounding Electrode Conductors shall be installed in an, approved raceway and properly bonded if metallic. All driven ground rods shall be copper-clad length of 10 feet long. Provide a grid type system if resistance exceeds NEC 25 ohms maximum.

P. Provide ground rod access assemblies equal to Brooks 70 Series or equal; 7” Dia. x 9” deep at each ground rod for inspection purposes where not locked inside pullboxes or manholes.

END OF SECTION

SECTION – 16502 SITE LIGHTING

PART 1 GENERAL

1.01 This section includes all outdoor/exterior lighting. Also refer to Site Furnishings 02950.

1.02 SUBMITTALS

Submit Shop Drawings, fixture cuts, photometrics, bases, wind load calculations, compliance.

1.03 COMPLIANCE

Comply with all local codes and lightning ordinances and zoning requirements, wind load requirements, and height requirements.

A. Site lighting shall be installed as specified on the drawings. No fixture substitution will be accepted by this office. This will enable lighting certification letter to be done by our office.

B. If any site lighting substitution is made, certification letter and test for lighting shall be signed and sealed by an independent professional engineer.

C. Fixture/pole assemblies shall conform to Florida Building Code 2007 and 2009 revisions, especially Chapter 1609 HVHZ 1620 Dade County, 146 MPH with 3 second gusts, or Broward County, 140 MPH with 3 second gusts.

PART 2 PRODUCTS

2.01 See fixture schedule and details on drawings.

PART 3 EXECUTION

3.01 GROUNDING

Ground each pole to a 5/8” x 10 ft. ground rod. Ground all metal components.

3.02 FUSING

Provide fusing for each ungrounded line at the base of each pole; not in the fixture head.

3.03 SURGE PROTECTION

Provide surge protection at each pole connected to the ground rod. UL-1449-3

3.04 Set all bases and poles level.

END OF SECTION

SECTION 16917 ELECTRIC SYSTEMS & CONTROLS

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE:

Basic Materials & Methods Mechanical Controls Motor Controls

1.02 APPLICABLE REQUIREMENTS:

A. Controls provided herein and controls furnished under other sections shall conform to NEMA IC-1.

B. Controls for equipment utilizing a power source separate from the equipment shall be provided with a disconnect and identified and shall comply with NEC Article 430-113.

1.03 SUBMITTALS:

Submit shop drawings for review consisting of catalog cuts, wiring diagrams, descriptive data, and characteristics indicating the type or series of equipment.

PART 2 - PRODUCTS

2.01 RELAYS:

A. Relays shall conform to NEMA IC-1 and shall be heavy duty type, U.L. listed, rated at 25 amps, 120 volts and mounted in NEMA 1 enclosures. Grouped units may be in a common enclosure with a plywood backboard.

B. Relays shall be as manufactured by Potter & Brumfield of the type as follows:
Single pole double throw (SPDT) - #PR5AY
Double pole double throw (DPDT) - #PR11AY
Four pole double throw (4PDT) - #PM17AY

2.02 CONTACTORS:

A. Contactors shall conform to NEMA Standard IC-1. Contactor size and ratings shall be based on tables in Part II of IC-1 for enclosed units. Coils shall be rated 120 volts.

B. Contactor characteristics of size, number of poles, voltage and current shall be as required or indicated for the load served. Units shall be mounted in an individual NEMA 1 enclosure, except the units indicated shall be in the panelboards.

C. Contactors shall be electrically operated and mechanically held unless indicated otherwise. Provide a local "open-close" control next to the contactor.

D. Units shall be as manufactured by Square "D", General Electric, Cutler-Hammer or ASCO. Provide remote control switches with pilot light for each contactor.

E. Contactors mounted in panelboards shall be completely factory prewired and shall have suitable access door and control wiring and diagram.

PART 3 - EXECUTION

3.01 Use #14 stranded copper wiring for all controls unless noted otherwise.

3.02 TIME CLOCKS:

All time clocks shall have spring reserve carryover (10 hours) in event of power failure.

3.03 IRRIGATION:

Provide all conductors, regardless of voltage or insulation shall be run in an approved conduit system. This includes sprinkler control wiring and time clocks. Provide sleeves, 2" minimum, for all zone wiring under slabs, roadway crossings (low voltage zone wiring may be unexposed, attached to irrigation piping - confirm prior to bid through architect).

END OF SECTION

SECTION 311300 - SELECTIVE TREE REMOVAL AND TRIMMING

PART 1 GENERAL

1.0 RELATED DOCUMENTS

A. The PROCUREMENT AND CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.1 WORK INCLUDED

A. Provide all work necessary to perform selective clearing within the limits indicated on the Drawings and as specified herein. Selective clearing work shall include, but not be limited to, the following:

1. Tree pruning.
2. Cabling and guying of trees.
3. Flush cutting shrubs and trees, and grinding of stumps and backfilling of holes with clean fill and topdress with 6 in. loam.
4. Removal of all rubbish, debris, and other materials to be disposed of as a result of the work of this section.

1.2 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 024110, SITE PREPARATION.
2. Section 329600, TRANSPLANTING; Transplanting of existing trees.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. American National Standards Institute (ANSI):

A300	Best management practices Tree Support Systems: Cabling, Bracing, and Guying
Z133.1	Safety Requirements for Pruning, Trimming, Repairing, Maintaining and Removing Trees,

and for Cutting Brush

Z133A	Best Management Practices Tree and Shrub Fertilization

2. Tree Care Industry Association, 3537 Stratford Rd., Wantagh, NY

11793 (TCIA): Ref. 1	Pruning Standards for Shade Trees
Ref. 2	Standard for Fertilizing Shade and Ornamental Trees
Ref. 3	Bracing, Cabling and Guying Standard for Shade Trees.

1.4 SUBMITTALS

A. The Contractor shall submit to the Architect for review, proposed methods and materials for selective clearing, including a schedule indicating specific dates for implementing specific work items in each major work area.

1.5 QUALITY ASSURANCE

A. Selective clearing methods shall conform to the applicable requirements of ANSI Z133.1

B. Selective pruning methods shall conform to the applicable requirements of ANSI Z133.1.

C. Work of this section shall be completed by a professional ISA Certified Arborist with a minimum five years experience, who has successfully completed an exam and education program equal to the International Society of Arboriculture (ISA) Certification Program, sponsored by the International Society of Arboriculture 2009, P.O. Box 3129, Champaign, IL 61826 (217) 355-9411; Email: isa@isa-arbor.com.

PART 2 PRODUCTS

2.1 CABLES AND GUYING MATERIALS:

A. Materials for guying and cabling trees shall conform to NAA Ref. 2.

PART 3 EXECUTION

3.1 TREE PRUNING

A. Tree pruning shall be "Class II Medium Pruning" conforming to NAA Ref. 1.

B. Schedule of trees to be pruned and extent of pruning shall be as indicated on the Drawings. Tree pruning shall be as directed and approved by the Architect.

3.2 TREE REMOVAL

A. Trees indicated on the Drawings as "Remove" or trees tagged in the field by the Architect to be removed shall be felled. Stumps shall be routed out to a minimum depth of 12 in. below finished grade. Holes shall be backfilled with clean fill and topdressed with 6 in. loam.

B. Tags of each felled tree shall be saved and returned to the Architect.

3.3 TREE CABLING AND GUYING

A. Cabling and guying methods shall conform to ANSI A300,Best Management Practices Tree Support Systems: Cabling, Bracing, and Guying.

1. Provide cabling and guying systems to accomplish structural support of the tree as scheduled on the Drawings.

3.4 DEADWOOD AND BRUSH REMOVAL

A. Deadwood and brush within the limits of work indicated on the Drawings shall be disposed of as follows:

1. Brush, limbs, and other material less than 6 in. in diameter shall be chipped and stockpiled on-site in an area designated by the Architect.
2. All deadwood shall be chipped and stockpiled as specified above.
3. Limbs 6 in. and larger shall, at the Contractor's option, be disposed of as follows:
   a. Material shall become the property of the Contractor and be disposed of off-site, or;
   b. Material shall be cut to 4 ft. lengths and stacked in an on-site location designated by the Architect.

B. All debris material not otherwise indicated shall be legally disposed of off-site.

END OF SECTION

SECTION 312300 - SITE EXCAVATING, BACKFILLING, AND COMPACTING

PART 1 GENERAL

1.0 RELATED DOCUMENTS

A. The PROCUREMENT AND CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.1 SUMMARY

A. Provide all equipment and materials, and do all work necessary for site excavating, backfilling, and compacting, as indicated on the Drawings and as specified.

B. The work of this section shall include, but is not necessarily limited to the following:

1. Site excavation, filling, and grading.
2. Excavation and backfill for site structures and utilities.
3. Preparation of subgrade for slabs, pavements, and landscaping.
4. Sheeting, bracing, and support of excavations as necessary.
5. Drainage and dewatering as necessary to perform work in the dry.
6. Placement and compaction of fills.

1.2 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that relate directly to work of this Section include, but are not limited to the following:

1. Section 321313, PORTLAND CEMENT CONCRETE PAVING.
2. Section 32 1314, EXPOSED AGGREGATE CONCRETE PAVING
3. Section 329119, LANDSCAPE GRADING
4. Section 329300, PLANTING.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. American Society for Testing and Materials (ASTM):

D 422 Particle - Size Analysis of Soils

D 1556 Method	Density of Soil In Place by the Sand-Cone
D 1557	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb. (4.54-kg) Rammer and 18-in. (457-mm) Drop
D 2487 Purposes	Classification of Soils for Engineering
D 3017	Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D 4318	Liquid Limit, Plastic Limit, and Plasticity Index of Soils

2. Associated General Contractors of America, Inc.(AGC):

Manual	Manual of Accident Prevention in Construction

3. Florida Department of Transportation (FDOT):

Specifications	Standard Specifications for Road and Bridge Construction

1.4 EXISTING CONDITIONS

A. The Contractor shall become thoroughly familiar with the site, consult records and drawings of adjacent structures and of existing utilities and their connections, and note all conditions which may influence the work of this Section.

B. By submitting a bid, the Contractor affirms that he has carefully examined the site and all conditions affecting work under this Section including work which has been let for construction under previous bid packages. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.

C. The Contractor may, at his own expense, conduct additional subsurface testing as required for his own information.

1.5 INFORMATION NOT GUARANTEED

A. Information on the Drawings and in the Specifications relating to subsurface conditions, natural phenomena, and existing utilities and structures is from the best sources presently available. Such information is furnished only for the

information and convenience of the Contractor, and the accuracy or completeness of this information is not guaranteed.

B. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period, as no additional compensation will be made for errors and inaccuracies that may be found therein.

1.6 QUALITY CONTROL

A. The Owner reserves the right to retain a Testing Laboratory, at the Contractor's expense, to perform on-site observation and testing during the following phases of the construction operations. The services of the Testing Laboratory may include, but not be limited to the following:

1. Observation during placement and compaction of fills.
2. Laboratory testing and analysis of fill and bedding materials specified, as required.
3. Observe construction and perform water content, gradation, and compaction tests at a frequency and at locations determined by the Testing Laboratory. The results of these tests will be submitted to the Architect, copy to the Contractor, on a timely basis so that the Contractor can take such action as is required to remedy indicated deficiencies. During the course of construction, the Testing Laboratory will advise the Architect in writing with copy to Contractor if, at any time, in his opinion, the work is not in substantial conformity with the Contract Documents.
4. Observation of fills following interruptions by rains or other inclement weather.

B. Perform field density tests in accordance with ASTM D 1556 or D 3017.

1. Make at least one field density test of subgrade at footings and foundations, for every 10 linear ft. footing and foundation.
2. Make at least one field density test of the subgrade for every 2000 sq. ft. of paved area, but in no case less than three tests.
3. In each compacted fill layer, make one field density test for every 2000 sq. ft. of overlaying paved areas, but in no case less than three tests.

C. The Testing Laboratory's presence does not include supervision or direction of the actual work by the Contractor, his employees, or agents. Neither the presence of the Testing Laboratory, nor any observations and testing performed by him shall excuse the Contractor from defects discovered in his work.

D. The Owner reserves the right to modify or waive Testing Laboratory services.

E. Testing of soils shall be in accordance with the

following: Property ASTM Test

	Method
Particle-Size Analysis	D 422
Liquid Limit	D 4318
Plasticity Index	D 4318

1.7 SUBMITTALS

A. A 10 lb. sample of each off-site material proposed for use, and of any on-site material when so requested by the Architect or Testing Laboratory, shall be submitted for approval.

1. Samples shall be delivered to office of the Architect or Testing Laboratory, as directed.
2. Samples required in connection with compaction tests will be taken and transported by the Testing Laboratory.

B. Proposed methods and materials to be employed for dewatering shall be submitted for approval.

1.8 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. The work shall be executed in such manner as to prevent any damage to adjacent property and any other property and existing improvements such as, but not limited to: streets, curbs, paving, utility lines and structures, monuments, bench marks and other public and private property. Protect existing structures and foundations from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. In case of any damage or injury caused in the performance of the work, the Contractor shall, at his own expense, make good such damage or injury to the satisfaction of, and without cost to the Owner. Existing roads, sidewalks, and curbs damaged during the project work shall be repaired or replaced to their original condition at the completion of operations. The Contractor shall replace, at his own cost, existing bench marks, monuments, and other reference points which are disturbed or destroyed.

C. Buried structures, utility lines, etc., including those which project less than 18 in. above grade, which are subject to damage from construction equipment shall be clearly marked to indicate the hazard. Markers shall indicate limits of danger areas, by means which will be clearly visible to operators of trucks and other construction equipment, and shall be maintained at all times until completion of Project.

1.9 SHORING AND SHEETING

A. Provide shoring, sheeting and/or bracing at excavations, as required, to prevent collapse of earth at side of excavations.

B. Comply with federal, state, and local regulations, or in the absence of such regulations, comply with the requirements contained in the AGC Manual.

C. Remove sheeting and shoring and the like, as backfilling operations progress, taking all necessary precautions to prevent collapse of excavation sides.

1.10 ROCK

A. Removal of rock shall only be performed with Owner’s written permission. Rock shall be defined as sound and solid mass, layer, or ledge of mineral matter in place of such hardness and texture that it:

1. Mechanical Definition of Rock: Cannot be effectively loosened or broken down by ripping in a single pass with a late model tractor-mounted hydraulic ripper equipped with one digging point of standard manufacturer's design adequately sized for use with and propelled by a crawler type tractor rated between 210-and 240-net flywheel horsepower, operating in low gear, or
2. Manual Definition of Rock: In areas where the use of the ripper described above is impracticable, rock defined as sound material of such hardness and texture that it cannot be loosened or broken by a 6-lb. drifting pick. The drifting pick shall have a handle not less than 34 in. in length.

1.11 COORDINATION

A. Prior to start of earthwork the Contractor shall arrange an on-site meeting with the Architect for the purpose of establishing Contractor's schedule of operations and scheduling inspection procedures and requirements.

B. As construction proceeds, the Contractor shall be responsible for notifying the Architect prior to start of earthwork operations requiring inspection and/or testing.

C. The Contractor shall be responsible for obtaining test samples of soil materials proposed to be used and transporting them to the site sufficiently in advance of time planned for use of these materials for testing of materials to be completed. Use of these proposed materials by the Contractor prior to testing and approval or rejection, shall be at the Contractor's risk.

1.12 PROTECTION OF EXISTING LANDSCAPE

A. Contractor shall review scope of all excavation and grading operations with Architect prior to start of work.

B. The Contractor shall exercise care to preserve any existing landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the Work.

1. Except where clearing is required for permanent works, for approved construction roads, and for excavation operations, all trees, native shrubbery, and vegetation shall be preserved and shall be protected from damage which may be caused by the Contractor's construction operations and equipment.
2. Movement of crews and equipment within the right-of-way and over routes provided for access to the work shall be performed in a manner to prevent damage to property. Where unnecessary destruction, scarring, damage, or defacing may occur as a result of the Contractor's operations the same shall be repaired, replanted, reseeded, or otherwise corrected at the Contractor's expense.

C. Where indicated on the Drawings and as directed by the Architect, disturbed areas shall be repaired to original condition.

1.13 PROTECTION OF EXISTING WATER SYSTEMS

A. The Contractor shall comply with applicable local laws, orders, and regulations concerning the control and abatement of water pollution.

B. The Contractor's construction activities shall be performed by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, and other objectionable pollutants and wastes into water sources.

PART 2 PRODUCTS

2.1 SOURCE OF MATERIALS

A. Material shall be obtained from required on-site excavations, to the extent that suitable material is available, and from offsite sources, to the extent that suitable material is not available from on-site excavations.

2.2 BACKFILL MATERIALS

A. On-site material for use in compacted backfill shall be natural, inorganic, granular soil, taken from areas of excavation after stripping and removal of unsuitable material.

B. Material containing organic matter, topsoil, organic silt, peat, or soft or frost-susceptible soil is unsuitable for any of the following uses:

Backfill beneath site structures
Backfill beneath pavement and within 5 ft. of
subgrade Bearing strata material
Bedding

C. Backfill materials shall be free from rocks greater than 200 mm in diameter or length, having largest dimension greater than 3/4 lift thickness, or greater than

1/2 $m.^3$ in volume, and foreign matter, such as construction debris, trash, wood, roots, leaves, sod, organic matter, or soft clay and silt. Backfill shall be clean, non-organic material, of non-swelling character, capable of being readily compacted to form a solid, stable embankment.

D. Backfill material shall be compacted clean washed sand with less than 10% passing the No. 200 sieve. Maximum diameter shall be 1-1/2 in. Testing laboratory shall examine and approve material before backfilling.

E. Structural fill material shall be soils containing less than 5% (by weight) fibrous organic materials with Plasticity Index less than 30. Plasticity Index less than 15 is preferred. On- site materials may be used if approved by Testing Laboratory.

F. Backfill material shall be well graded within the specified limits. Gradation of materials shall be determined in accordance with ASTM C 136.

1. Granular Fill (for over-excavation) shall be sand-gravel mixture, graded within the
following limits:

Sieve Size	% Passing by Weight
38 mm	100
No. 4	20-60
No. 40	10-35
No. 200	0-8

2. Common Fill (in landscaped areas) shall be bankrun sand, gravel, or mixture thereof, graded within the following limits:

Sieve Size	% Passing by Weight
150 mm	100
No. 4	30-95
No. 200	0-15

3. Sand Fill shall be sand, graded within the following limits:

Sieve Size	% Passing by
Weight No. 4	100
No. 200	0-8

2.3 SLEEVES

A. Sleeves for installing future pipe or wiring shall be Schedule 40 PVC pipe, minimum 4 in. diameter unless otherwise noted.

1. Sleeve locations for future electrical conduit shall be coordinated with the

Owner and Architect.

2.4 GEOTEXTILE FABRIC

A. Geotextile reinforcing fabric shall be Mirafi® HP 370, high performance geotextile, manufactured by Mirafi Construction Products, 365 South Holland Drive, Pendergrass, GA, USA 30567; 1-888-795-0808; 1-706-693-2226; 1-706-693-2083, fax; www.mirafi.com; for base course reinforcement and soil stabilization/reinforcement applications, or similar approved.

PART 3 EXECUTION

3.1 SUBGRADE INSPECTION

A. Notify Architect when excavations have reached required subgrade.

B. When excavations have reached required subgrade, Contractor shall have subgrades surveyed to determine if subgrade elevations will allow for the indicated depth of proposed materials to be placed on them.

1. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material to achieve required subgrade elevation, as directed.
2. If survey indicates that subgrade elevations are too high, continue excavation and reconstruct subgrades to required elevation as directed, without additional compensation.
3. If survey indicates that subgrade elevations are too low, add compacted backfill or fill material to achieve required subgrade elevation as directed, without additional compensation.

C. Proof-roll subgrade below pavements and site structures with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction[, repeating proof-rolling in direction perpendicular to first direction]. Limit vehicle speed to 3 mph (5 km/h).
2. Proofroll areas to support foundationsstructural fill, and pavements with a 35 ton rubber tired roller in four passes in two perpendicular directions. Undercut to level of stable soils in unstable areas. Perform work in presence of in presence of Testing laboratory.
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

D. Authorized additional excavation and replacement material will be paid for

according to Contract provisions for changes in the Work.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.2 GENERAL SITE EXCAVATION

A. Sheeting, shoring, bracing, pumping, bailing, and other incidental work necessary to make and maintain excavations and keep them free from water at all times during placing of concrete, utility lines, and fill and backfill materials, shall be performed or supplied as required. Fill and backfill shall be placed in dry or dewatered areas only.

B. Sheeting shall be installed where required to maintain safe and workable conditions in excavations. Sheeting, including necessary wales and struts, shall be selected and designed by the Contractor. Use of sheeting shall equal or exceed minimum required for safety and/or conformance to law.

C. Structures, pipes, pavement, earth, and other property liable to damage from excavation operations shall be braced, underpinned, and supported as required to prevent damage and movement.

D. As excavation approaches underground utilities and structures, excavation shall be done by hand tools. Such manual excavation is incidental to normal excavation and no special payment will be made.

E. Excavation shall include satisfactory disposal of excavated material not employed as backfill or fill materials.

1. Excavation material, other than topsoil, which is not required for or is unsuitable for backfill or fill materials, shall be legally disposed of off-site.

F. Excavation for pipe and other items shall be carried far enough below underside of item to accommodate bedding material.

G. Excavations which extend below indicated or specified levels ("over-excavation"), shall be filled to those levels with compacted Granular Fill Material if within the areas of structures and Common Fill for areas beyond the structures limits.

H. If bearing surface of subgrade which is to receive fill, structure, concrete, or other construction becomes softened, disturbed, or unstable, unsuitable material shall be removed down to a firm bearing surface and replaced with suitable material. Subgrade shall then be protected from further disturbance until construction item is placed.

I. Excavations shall not be wider than required to set, brace, and remove forms for concrete, install structures, piping, or perform other necessary work. Width of trench at 300 mm above top of pipe or conduit shall not be greater than the sum of outside diameter of the pipe or the conduit plus 0.61 m (pipe O.D. +0.61 m). Sides of trench above this level shall be sloping, at an angle 30 degrees or less from vertical, from this level to grade. In materials where sloping walls are not stable, trench walls shall be sheeted.

J. Explosives: Do not use explosives.

K. Below-ground Demolition

1. Underground items, not indicated on the Drawings, which impede construction of new work indicated, shall be abandoned, demolished, and/or removed only with the approval of the Architect.

3.3 TRENCH EXCAVATION

A. Excavate as necessary for all drainage pipes, utilities, and related structures and appurtenances, and for any other trenching necessary to complete the work.

B. Definitions:

1. Trench shall be defined as an excavation of any length where the width is less than twice the depth and where the shortest distance between payment lines does not exceed ten feet (10'). All other excavations shall be defined as open excavations.
2. The words "invert" or "invert elevation" as used herein shall be defined as the elevation at the inside bottom surface of the pipe or channel.
3. The words "bottom of the pipe" as used herein shall be defined as the base of the pipe at its outer surface.

C. In general, machine excavation of trenches will be permitted with the exception of preparation of pipe beds which will be hand work. Excavate by hand or machine methods to at least six inches (6") below the bottom of pipe or as shown on the Drawings. Excavation to final grade shall be made in such a manner as to maintain the undisturbed bearing character of the soils exposed at the excavation level.

D. Utilities or piping shall not be laid directly on boulders, cobbles, or other hard material. This material shall be removed to a minimum of six inches (6") below the bottom of pipe at all points and backfilled or compacted as specified.

E. Remove unsuitable material encountered at subgrade elevations, backfill with material specified herein and as otherwise indicated on the Drawings, specified, or directed. Compact as specified with approved compactors.

F. In general, the width of trenches shall be kept to a minimum and in the case of

piping shall not exceed the sum of the pipe's outside diameter plus 2'-0" to at least twelve inches (12") above the pipe.

3.4 FILLING

A. Filling shall be done in any area only after the Testing Laboratory has reviewed subgrade.

B. Benching: Fills placed on existing slopes which exceed 6 ft. horizontal to 1 ft. vertical shall be keyed or benched into the existing slope not less than 5 ft. to prevent the formation of slippage planes.

C. Compaction at End of Day: Areas undergoing filling shall be smooth-rolled before the end of the work day to seal and protect these areas from rainfall infiltration during the night.

3.5 FILL, BACKFILL, AND COMPACTION

A. Excavation below finished grades shall be backfilled. Temporary planking, timbering, forms, debris, and refuse shall be removed before backfill is placed.

B. Backfilling shall be done in any area only after the Architect or Testing Laboratory has inspected and approved subgrade, or other work in excavations. Notice that the work is ready for inspection shall be given promptly, and sufficient time shall be allowed for making necessary examinations.

C. General Site Fill: General Site Fill for use in areas beyond the structures shall be placed in lifts not exceeding 12 in. in loose thickness and compacted to 90% of maximum density, determined by ASTM D 1557.

D In order to prevent lateral movement, care shall be exercised in placing backfill adjacent to foundation wall, footing, utility line and other structures. Backfill on opposite sides of such items shall be kept at approximately the same elevation as backfilling progresses to prevent unbalanced earth pressure. During backfilling the difference in elevation of backfill on opposite sides of the structure shall not exceed 12 in.

1. Shoring shall be employed as necessary to protect such items.
2. Footings have been designed to act with other portions of the structure to withstand the loads they will bear in completed project; they have not been designed to withstand construction loads or unbalanced earth or equipment loadings.

F. Except as otherwise noted, tolerance of top surface of completed backfill shall be $\pm$2 in. from true grade indicated, and variations from indicated tolerance shall approximately compensate within each 100 ft.^{2} area.

G. Subgrade and backfill of indicated areas or structures shall be compacted in

accordance with requirements of ASTM D 1557, and as specified in the following table:

COMPACTION TABLE

Area or Structure	Subgrade Compaction Minimum %	Max. Compacted Thickness Per Lift - in.	Compaction of Each Lift Minimum %
Above pipe cover to subgrade	85	12	90
Area or structure not otherwise noted	85	12	90
Concrete pad	90	8	95
Footing, foundation, or similar structure, and within 2 ft. horizontally	90	8	95
Pavement, including 1 ft. beyond edge	90	8	95
Pipe cover	--	6	95

H. Compaction requirements shall apply to material directly below the indicated supported item (base course, footing, or structure), and to all material above the undisturbed earth beneath fill, and enclosed by the following planes:

1. Horizontal plane at the elevation of the bottom of the supported item (base course, footing, or structure), within a perimeter line located 600 mm. beyond the exterior face or edge of item.

2. Flat planes extending from the perimeter line downward and outward at 45^{o} angle with the horizontal, to where the planes intersect undisturbed earth. Where zones of higher and lower percentages of compaction overlap, that of the higher percentage shall apply.

I. Compaction of backfill in excavation shall be to a density not less than that required of the surrounding area fill.

J. Equipment and methods employed to achieve specified compaction shall be subject to the approval of the Architect and Testing Laboratory, and equipment shall be replaced and methods revised as directed until specified compaction is obtained.

K. Compaction of each lift shall be completed before compaction of the next lift is started.

L. Backfill adjacent to wall, conduit, pipe, and similar item, and in other areas where wheeled equipment cannot safely be employed, shall be placed in 4 in. thick layers, to the specified compaction, using mechanical tampers.

3.6 MOISTURE CONTROL

A. Variation of moisture content in fill and backfill materials shall be limited to Optimum Moisture (-1% to +3%). Moisture content shall be as uniformly distributed as practicable within each lift, and shall be adjusted as necessary to obtain the specified compaction.

B. Material which does not contain sufficient moisture to be compacted to the specified densities shall be moisture conditioned by sprinkling, disking, windrowing, or other method approved by the Testing Laboratory.

1. Material conditioned by sprinkling shall have water added before compaction. Uniformly apply water to surface of subgrade or layer of soil material to obtain sufficient moisture content. The Contractor shall maintain sufficient hoses and/or water distributing equipment at the site for this purpose.

C. Material containing excess moisture shall be dried to required Optimum Moisture Content before it is placed and compacted. Excessively moist soils shall be removed and replaced or shall be scarified by use of plows, discs, or other approved methods, and air-dried to meet the above requirements.

D. Materials which are within the moisture requirements specified above, but which display pronounced elasticity or deformation under the action of earthmoving and compaction equipment, shall be reduced to Optimum Moisture Content, or below, to secure stability.

E. In the event of sudden downpours or other inclement weather, exposed subgrades and fills which, in the opinion of the Testing Laboratory, become inundated or excessively moistened shall have excess water removed and soil dried as specified above.

END OF SECTION

SECTION 321313 - PORTLAND CEMENT CONCRETE PAVING

PART 1 GENERAL

1.0 RELATED DOCUMENTS

A. The PROCUREMENT AND CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.1 WORK INCLUDED

A. Provide all equipment and materials and do all work necessary to construct the colored and scored Portland cement concrete paving work, complete, as indicated on the Drawings and as specified. Paving types include:

1. “P-02” - Gray concrete with “Las Olas Dark Gray” integral color and sandblast finish.
2. Standard gray concrete.

1.2 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING; Excavation and backfill and establishment of subgrade elevations.
2. Section 321314, EXPOSED AGGREGATE CONCRETE PAVING.
3. Section 321726, TACTILE WARNING SURFACING; ADA compliant detectable warning indicators.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
1. American Concrete Institute (ACI):

301	Specifications for Structural Concrete for Buildings
305R	Hot Weather Concreting
325.9R	Guide for Construction of Concrete

Pavements and Concrete Bases.

2. American Society for Testing and Materials (ASTM):

A 185	Welded Steel Wire Fabric for Concrete Reinforcement
A 615	Deformed and Plain Billet - Steel Bars for Concrete Reinforcement
C 33	Concrete Aggregates
C 94	Ready-Mixed Concrete
C 143	Slump of Portland Cement Concrete
C 150	Portland Cement
C 171	Sheet Materials for Curing Concrete
C 231	Air Content of Freshly Mixed Concrete by the Pressure Method
C 260	Air Entraining Admixtures for Concrete
C 309	Liquid Membrane-Forming Compounds for Curing Concrete
C 494	Chemical Admixtures for Concrete
D 226	Asphalt-Saturated Organic Roofing Felt for Use in Membrane Waterproofing and Built-Up Roofing
D 1557	Moisture - Density Relations of Soils and Soil Aggregate Mixtures Using 10 lb. (4.54-kg) Rammer and 18-in. (457 mm) Drop

3. Americans with Disabilities Act (ADA):

Appendix to Part 1191	Accessibility Guidelines for Buildings and Facilities

4. Corps of Engineers (COE):

CRD-C 621	Specification for Nonshrink Grout: Hardened State Volume Change

5. Federal Specifications (Fed Spec.):

TT-S-00227	Sealing Compound: Elastomeric Type, Multi-Component (For Calking, Sealing, and Glazing in Buildings and other Structures)

6. Florida Department of Transportation (FDOT):

Specifications	Standard Specifications for Road and Bridge Construction

1.4 SUBMITTALS

A. Description of Methods and Sequence of Placement.

B. Submit manufacturer's product data for the following:

1. Form release agent.
2. Slip resisitive aggregate.
3. Color admixture
4. Surface sealant

C. Submit samples of the following:

1. Preformed joint filler.
2. Color chart for selection of joint sealant color.

D. Verification Samples: Submit representative samples of the following materials for approval prior to construction of sample panels. Show full color ranges and finish variations expected. Provide samples having minimum size of 2 ft. X 3 ft.

E. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

F. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.
5. Bonding agent or epoxy adhesive.

G. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. ACI Publications: Unless otherwise specified, work and materials for construction of the Portland cement concrete paving shall conform to ACI 325.9R.

C. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1.

1. Before submitting design mixtures, review concrete pavement mixture design and examine procedures for ensuring quality of concrete materials and concrete pavement construction practices. Require representatives, including the following, of each entity directly concerned with concrete pavement, to attend conference:
   a. Contractor's superintendent.
   b. Independent testing agency responsible for concrete design mixtures.
   c. Ready-mix concrete producer.

E. Work, materials, and color of paving shall conform to applicable sections of Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.

F. Paving work, base course etc., shall be done only after excavation and construction work which might injure them have been completed. Damage caused during construction shall be repaired before acceptance.

G. Existing paving areas shall, if damaged or removed during course of this project, be repaired or replaced under this section of the specification. Workmanship and materials for such repair and replacement, except as otherwise noted, shall match as closely as possible those employed in existing work.

H. Pavement, base, or subbase shall not be placed on a muddy or frozen subgrade.

1.6 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

1.7 PRECONSTRUCTION MOCK-UP PANELS

A. General

1. Schedule mock-up casting for acceptance 30 days prior to casting of concrete surfaces represented by the mockups.
2. Locate mock-up panels in non-public areas accepted by the Architect.
3. Continue to cast mock-ups until acceptable mock-ups are produced. Accepted mock- ups shall be the standard for color, texture, joints, finish, surface sealer and workmanship for the work.
4. Mock-up sequence of forming, placing, form removal, curing, jointing and finishing shall be reviewed and accepted by the Architect.
5. Mock-up formwork shall be inspected and accepted by the Architect before placing of concrete.
6. Use the same concrete mixes and placement procedures, accepted in mock-ups, in the final work, unless otherwise directed by the Architect.
7. Protect accepted mock-ups from damage until project completion.
8. Accepted mock-ups shall remain on site throughout the duration of the Project. Remove mock-up panels from site at completion of project, as directed by the Architect.

B. Construct mock-up panels or areas as indicated to demonstrate the ability to cast concrete for concrete paving to achieve shape, color, jointing and textured finish required. Mock-ups shall include or meet the following requirements:

1. Provide mock-up panel 5 ft. x 5 ft. size, full depth.
2. Provide mock-ups simulating actual design and execution conditions for concrete mix materials, reinforcement, formwork, placing sequence, form removal, curing, finishing, surface sealer, and methods and materials of stain removal and correction of defective work.
3. On mock-ups where directed by the Architect, provide minimum of three variation of mix color to be used in the repair of defective work, in order to determine acceptable color and texture match.
4. Demonstrate in the construction of the mock-up formwork the sealer material, form release agent, and curing materials and methods to be used.
5. Include control joints and expansion joints as detailed.

C. Sample panel, 5 ft. x 5 ft. minimum, shall be constructed prior to start of handicap ramp paving, exhibiting detectable warning surface and required color contrast with adjacent paving in accordance with ADA Guidelines.

D. Source of Materials. Utilize the same source, stock, or brand of concrete materials for each class or mix of concrete which is to be exposed. Do not interchange materials or mixes until an additional mock-up shows that uniformity in finish texture and color, as compared to original mock-up will be maintained. If necessary, obtain and stockpile materials in sufficient quantity to ensure continuity and uniformity.

1.8 TESTING AND INSPECTION

A. Contractor shall provide a minimum of four (4) test results indicating compliance with minimum compressive strength requirements of fully cured concrete pavement

B. The Owner reserves the right to inspect and test paving and associated work.

PART 2 PRODUCTS

2.1 AGGREGATE BASE

A. Base Course: FDOT Specifications Section 911-2.23, “Limerock Composition”. or other approved material per the FDOT Standard Specifications for Road and Bridge Construction (Latest Edition); with a minimum limerock bearing ratio of 100, compacted to 98% of the maximum dry density per ASTM D1557.

2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

B. Use flexible or curved forms for curves of a radius 100 feet (30.5 m) or less.

C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Steel reinforcing bars shall conform to the following requirements:

1. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.

B. Welded wire fabric reinforcement shall conform to the following applicable requirements. Fabric reinforcement shall be furnished in flat sheets. Fabric reinforcement in rolls will not be permitted.

1. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

C. Epoxy-Coated Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60 (Grade 420), plain steel bars.

D. Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

2.4 PORTLAND CEMENT CONCRETE

A. Portland cement concrete for pavements shall be gray, air-entrained type with a maximum water-cement ratio of 0.50 conforming to ACI 325.9R. Minimum compressive strengths at 28 days shall be 4,000 psi.

1. Concrete shall be air-entrained type, conforming to ASTM C 94. Air content by volume shall be 6% + 1%, and shall be tested in accordance with ASTM C 231.
2. Concrete slump shall be no less than 2 in. nor greater than 4 in., determined in accordance with ASTM C 143.
3. Cement shall be gray Portland cement, conforming to ASTM C 150, Type I or II. Only one color of cement, all of the same manufacturer, shall be used for the work. Type III cement shall be used only with the prior approval of the Architect.
4. Fine and coarse aggregates shall conform to ASTM C 33.
5. Concrete shall contain a water reducing agent to minimize cement and water content of the concrete mix at the specified slump. Water reducing agent shall conform to ASTM C 494.
6. No calcium chloride or admixtures containing calcium chloride shall be added to the concrete. No admixtures other than those specified shall be used in the concrete without the specific written permission of the Architect in each case.

2.5 COLOR ADMIXTURE

A. Color admixture shall be suitable for concrete pavement and shall meet or exceed the requirements set by Portland Cement Association (PCA) and ASTM C 91, C 270 and C 494.

B. Color admixture shall not affect workability, setting, or strength of concrete adversely. Color pigments shall consist of chemically inert, non-fading, alkali-fast mineral oxides, finely ground and prepared for use in cement and mortar. Admixture shall not contain calcium chloride.

C. Color admixture shall be Chromix Color Admixture, manufactured by L.M. Scofield Company, 4155 Scofield Road, Douglasville, GA 30134; Tel. 800-800-9900, Dry Integral Color CP, Manufactured by Solomon Colors, Inc., 360 S. Lilac Ave, Rialto, CA 92376, or approved equal.

1. Color shall match Dark Gray used on the “Las Olas Corridor Project”.

D. Mix design shall conform to manufacturer's recommendations, and directions of the Architect to achieve proposed color. Strictly monitor additive/cement ratio throughout job to ensure uniform color.

2.6 CURING COMPOUND FOR COLOR CONDITIONED CONCRETE

A. Concrete colored with color admixture shall be cured with "LITHOCROME" Colorwax, manufactured by L.M. Scofield Company, 4155 Scofield Road, Douglasville, GA 30134; Tel. 800-800-990, in the matching color, depending on appearance, and degree of maintenance desired. Product of equal quality and performance shall be subject to approval.

2.7 CHEMICAL ADMIXTURES

A. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.

2.8 CURING MATERIALS

A. Curing shall be by moist curing or by use of curing compound.

B. Curing paper shall be a nonstaining, fiber reinforced laminated kraft bituminous product conforming to ASTM C 171. Four mil polyethylene sheeting may be substituted for curing paper.

C. Water: Potable.

D. Curing compound shall be a clear compound conforming to ASTM C 309, Type 1 or white pigmented compound conforming to ASTM C 309 Type 2, Class B.

2.9 EXPANSION JOINTS

A. Expansion joints shall be located as indicated on the Drawings.

B. Expansion joints shall be cold formed with thickened edges. Expansion joints shall be doweled where indicated on the Drawings..

C. Round Expansion Joint Dowels: ASTM A615, Grade 60, epoxy-coated, smooth, billet-steel bars, clean and free of rust and scale.

2.10 CONTROL JOINTS

A. Control joints indicated on the Drawings to be sawn, shall be made by saw cutting concrete slab after concrete is finished and when the surface is stiff enough to support the weight of workmen without damage to the slab. Saw blade shall cut into slab at least 2 in., but in no case less than 1/3 of slab depth.

B. Control joint design has been included on the Jointing Plans, however, if special joint layout is not indicated on the Jointing Plans, control joints shall be located 10 ft. o.c. maximum.

2.11 CONSTRUCTION JOINTS

A. Transverse construction joints shall be placed whenever placing of concrete is suspended for more than 30 minutes.

1. Butt joint with dowels or thickened edge joint shall be used if construction joints occurs at location of control joint.
2. Keyed joints with tiebars shall be used if the joint occurs at any other location.

2.12 GROUT

A. Grout shall be mixed in the proportions of one part Portland cement to two parts sand, by volume. Only sufficient water shall be used to enable grout to barely hold its shape when squeezed into a ball in the hand. Sand for grout shall be "Fine Aggregate", conforming to ASTM C 33.

B. Nonshrink grout shall be pre-mixed non-shrinking, high strength grout. Compressive strength in 28 days shall be 5,000 psi minimum, but in no case less than the specified strength of the adjacent concrete. Manufacturer shall provide evidence that the material meets the requirements of the COE CRD-C 621 (558). Grout permanently exposed to view shall be nonoxidizing; metallic grout may be used in other locations.

1. Nonshrink grout shall be one of the following, or approved equal:

Manufacturer	Product
Gifford-Hill Co.	Supreme
Master Builders Co.	Embeco
U.S. Grout Corporation	Five Star Grout

2.13 BOND BREAKER

A. Bond breaker shall be asphalt felt conforming to ASTM D 226, Type I or 6 mil polyethylene sheeting.

2.14 SURFACE SEALANT

A. Surface sealant shall be Amteco Silox Seal, a silane/siloxane water-based high performance penetrative masonry water repellent, manufactured by MFG Sealants Compay, 1458 Chatahoochee Ave., NW, Atlanta, GA 30318; T: 404-355-0668; 1-800-297- 7325, or approved equal.

1. Surface sealant shall be compatible with integral concrete color admixtures.

PART 3 - EXECUTION

3.1 GRADING

A. Areas to be paved will be compacted and brought approximately to subgrade elevation under Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING before work of this section is performed. Final fine grading, filling, and compaction of subgrade to receive paving, as required to form a firm, uniform, accurate, and unyielding subgrade at required elevations and to required lines, shall be done under this Section.

B. Existing subgrade material which will not readily compact as required shall be removed and replaced with satisfactory materials. Additional materials needed to bring subgrade to required line and grade and to replace unsuitable material removed shall be material conforming to Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING.

C. Subgrade of areas to be paved shall be recompacted as required to bring top 8 in. of material immediately below gravel base course to a compaction of at least 90% of maximum density, as determined by ASTM D 1557, Method D. Subgrade compaction shall extend for a distance of at least 1 ft. beyond pavement edge.

D. Excavation required in pavement subgrade shall be completed before fine grading and final compaction of subgrade are performed. Where excavation must be performed in completed subgrade or subbase subsequent backfill and compaction shall be performed as directed by the Architect as specified in Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING. Completed subgrade after filling such areas shall be uniformly and properly graded.

E. Areas being graded or compacted shall be kept shaped and drained during construction. Ruts greater than or equal to 2 in. deep in subgrade, shall be graded out, reshaped as required, and recompacted before placing pavement.

F. Materials shall not be stored or stockpiled on subgrade.

G. Disposal of debris and other material excavated and/or stripped under this section, and material unsuitable for or in excess of requirements for completing work of this Section shall conform to the following:

1. Material shall be legally disposed of off-site.

H. Prepared subgrade will be inspected by the Architect. Subgrade shall be approved by the Architect before installation of paving base course. Disturbance to subgrade caused by inspection procedures shall be repaired under this Section of the specification.

3.2 AGGREGATE BASE COURSE

A. Aggregate base course for paving and the spreading, grading, and compaction methods employed shall conform to standard requirements for usual base course of this type for first class road work, and the following:

1. Refer to FDOT Standard Specifications Section 230.

B. Portions of subgrade or of construction above which become contaminated, softened, or dislodged by passing of traffic, or otherwise damaged, shall be cleaned, replaced, and otherwise repaired to conform to the requirements of this specification before proceeding with next operation.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Before being placed in position, reinforcing for reinforced concrete shall be thoroughly cleaned of loose mill and rust scale, dirt, ice, and other foreign material which may reduce the bond between the concrete and reinforcing. Where there is delay in placing concrete after reinforcement is in place, bars shall be reinspected and cleaned when necessary.

C. Any bar showing cracks after bending shall be discarded.

D. Unless otherwise indicated on the Drawings, reinforcing shall extend within 2 in. of formwork and expansion joints. Reinforcing shall continue through control joints. Adjacent sheets of fabric reinforcing shall lap 6 in.

E. After forms have been coated with form release agent, but before concrete is placed, reinforcing steel anchors shall be securely wired in the exact position called for, and shall be maintained in that position until concrete is placed and compacted. Chair bars and supports shall be provided in a number and arrangement satisfactory to the Architect.

F. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining

widths to prevent continuous laps in either direction.

3.5 CONCRETE PAVING

A. Paving mix, equipment, methods of mixing and placing, and precautions to be observed as to weather, condition of base etc., shall meet the requirements of ACI 325.9R. Pavement shall be constructed in accordance with the Drawings.

B. The Architect shall be notified of concrete placement sufficiently in advance of start of operation to allow his representative to complete preliminary inspection of the work, including subgrade, forms, and reinforcing steel, if used.

C. Normal concrete placement procedures shall be followed. Concrete shall arrive at the jobsite so that no additional water will be required to produce the desired slump. When conditions develop that required addition of water to produce the desired slump, permission of the Architect must be obtained. The concrete shall be transported from the mixer to its place of deposit by a method that will prevent segregation or loss of material.

D. Work shall not be performed during rainy weather or when temperature is less than 40^{o} F. (4.4^{o} C).

E. Adjacent work, etc., shall be protected from stain and damage during entire operation. Damaged and stained areas shall be replaced or repaired to equal their original conditions.

F. Existing concrete, earth, and other water-permeable material against which new concrete is to be placed shall thoroughly damp when concrete is placed. There shall be no free water on surface.

G. Concrete which has set or partially set before placing shall not be employed. Retempering of concrete will not be permitted.

H. Concrete shall be thoroughly spaded and tamped to secure a solid and homogeneous mass, thoroughly worked around reinforcement and into corners of forms.

I. When joining fresh concrete to concrete which has attained full set, latter shall be cleaned of foreign matter, and mortar scum and laitance shall be removed by chipping and washing. Clean, roughened base surface shall be saturated with water, but shall have no free water on surface. A coat of 1:1 cement-sand grout, approximately 1/8 in. thick, shall be well scrubbed into thoroughly dampened concrete base. New concrete shall be placed immediately, before grout has dried or set.

3.6 FINISH

A. Concrete flatwork surfaces shall be screeded off, bullfloated, power or hand floated, troweled and finished true to line and grade, and free of hollows and bumps. Surface shall be dense, smooth, and at exact level and slope required.

1. Finished concrete surface for concrete walks and pads and concrete band shall be wood-floated and steel troweled to a smooth surface. Surface shall not deviate more than 1/8 in. in 10 ft.

B. Light Sand Blast Finish: Provide light sand blast finish, lightly exposing fine aggregate with no reveal, as on Architect's sample panel, approved sample, and mockup installation. Finish shall be free of surface defects such as migrated entrained air or entrapped air bubbles over 1/8 in. diameter, sand streaks, staining, lack of uniformity of color or finish, blotches, wash, form leakage or honeycomb, and physical damage, any of which shall be deemed cause for rejection.

B. Scoring: Score decorative jointing in concrete surfaces 1/3 depth of slab with diamond blade saw.

3.7 CURING

A. It is essential that concrete be kept continuously damp from time of placement until end of specified curing period. It is equally essential that water not be added to surface during floating and troweling operations, and not earlier than 24 hours after concrete placement. Between finishing operations surface shall be protected from rapid drying by a covering of waterproofing paper. Surface shall be damp when the covering is placed over it, and shall be kept damp by means of a fog spray of water, applied as often as necessary to prevent drying, but not sooner than 24 hours after placing concrete. None of the water so applied shall be troweled or floated into surface.

B. Concrete surfaces shall be cured by completely covering with curing paper or application of a curing compound.

1. Concrete cured using waterproof paper shall be completely covered with paper with seams lapped and sealed with tape. Concrete surface shall not be allowed to become moistened between 24 and 36 hours after placing concrete. During curing period surface shall be checked frequently, and sprayed with water as often as necessary to prevent drying, but not earlier than 24 hours after placing concrete.

2. If concrete is cured with a curing compound, compound shall be applied at a rate of 200 sq. ft. per gallon, in two applications perpendicular to each other.
3. Curing period shall be seven days minimum.

3.8 CURING COLORED CONCRETE

A. General:

1. Colored concrete shall not under any circumstances, be cured using water fog misting or ponding, burlap, plastic sheeting, or other wet covering.
2. Curing material and method shall be in strict conformance with manufacturer's guidelines and recommendations.
3. Only if additional protection is absolutely required, the surface should remain uncovered for at least 4 days, after which time new and unwrinkled non-staining reinforced waterproof kraft curing paper may be used.

B. Apply Color Wax curing compound for colored concrete according to manufacturer's instructions using manufacturer’s recommended application techniques. Apply curing compound at consistent time for each pour to maintain close color consistency.

1. Curing compound shall be same color as the colored concrete and supplied by same manufacturer of the colored admixture.
2. Precautions shall be taken in hot weather to prevent plastic cracking resulting from excessively rapid drying at surface as described in CIP 5 *Plastic Shrinkage Cracking* published by the National Ready Mixed Concrete Association.
3. Do not cover concrete with plastic sheeting.

3.9 HANDICAP RAMPS

A. Paving mix, equipment, methods of mixing and placing, and precautions to be observed as to weather, condition of base etc., shall meet the requirements of ACI 316 for any concrete paving in similar conditions. Handicap ramps shall be constructed in accordance with the Drawings, and ADA Guidelines 4.7.10, and 4.29.2.

B. The Architect shall be notified of imprinted concrete placement sufficiently in advance of start of operation to allow his representative to complete preliminary inspection of the work, including subgrade, forms, and reinforcing steel, if used.

C. Normal concrete placement procedures shall be followed. Concrete shall arrive at the jobsite so that no additional water will be required to produce the desired slump. When conditions develop that required addition of water to produce the desired slump, permission of the Architect must be obtained. The concrete shall be transported from the mixer to its place of deposit by a method that will prevent segregation or loss of material.

D. Stamping procedures, application of color hardener and color curing compound, and finishing procedures shall be in accordance with manufacturer's recommendations and ADA Guidelines for Diagonal Curb Ramps, and Detectable Warnings on Walking Surfaces..

3.10 CONSTRUCTION JOINTS

A. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
2. Provide tie bars at sides of pavement strips where indicated.
3. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3.11 EXPANSION JOINTS

A. Expansion joints (isolation joints) shall be cold formed with thickened edges as indicated on the Drawings.

B. Where indicated, expansion joints shall be doweled. Dowel shall be centered over the joint prior to concrete placement. The end of the dowel at the side of joint which will be poured second shall be greased immediately before concrete placement.

3.12 CONTROL JOINTS

A. Joints shall be sawn as soon as the concrete will withstand the energy of sawing without raveling or dislodging aggregate particles. For most concrete mixtures, this means sawing should be completed within the first 6 to 18 hours and never delay more than 24 hours. Early-entry saws may be used to allow cutting to begin within a few hours after placement.

B. Control joints indicated shall be sawn 1/8 in. wide by using a diamond blade concrete power saw. Saw shall cut into slab at least 1/3 of slab depth. Saw cut joints shall be straight and accurate to line.

1. Saw cut joints shall be sawn flush to vertical surfaces.

3.13 DECORATIVE SAW CUT JOINTS

A. Unless otherwise indicated, decorative saw cut joints shall be sawn into the concrete slab at intervals and patterns indicated on the Drawings. Joint shall be made after concrete is finished and when the surface is stiff enough to support the weight of workmen without damage to the slab, but before slab has achieved its final set. Saw cut joints shall be straight and accurate to line.

1. Saw cut joints shall be sawn flush to vertical surfaces.

B. Decorative saw cut joints shall be located each way to create scoring patterns indicated on the Drawings.

C. Depth of decorative saw cut joint shall be 1/3 of slab depth.

3.14 HANDICAP RAMPS

A. Paving mix, equipment, methods of mixing and placing, and precautions to be observed as to weather, condition of base etc., shall meet the requirements of ACI 316 for any concrete paving in similar conditions. Handicap ramps shall be constructed in accordance with the Drawings, and ADA Guidelines 4.7.10, and 4.29.2.

3.15 HOT WEATHER CONCRETING

A. Concrete just placed shall be protected from the direct rays of the sun and the forms and reinforcement just prior to placing shall be sprinkled with cold water. Every effort shall be made to minimize delays which will result in excessive mixing of the concrete after arrival on the job.

B. During periods of excessively hot weather (95^{O}F., or above), ingredients in the concrete shall be cooled insofar as possible and cold mixing water shall be used to maintain the temperature of the concrete at permissible levels all in accordance with the provisions of ACI 305. Any concrete with a temperature above 95^{O}F., when ready for placement will not be acceptable, and will be rejected.

C. Temperature records shall be maintained throughout the period of hot weather giving air temperature, general weather conditions (calm, windy, clear, cloudy, etc.) and relative humidity. Records shall include checks on temperature of concrete as delivered and after placing in forms. Data should be correlated with the progress of the work so that conditions surrounding the construction of any part of the structure can be ascertained.

3.16 PAVEMENT TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:

1. Elevation: 1/4 inch (6 mm).
2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).
3. Surface: Gap below 10-foot- (3-m-) long, unleveled straightedge not to exceed 1/4 inch (6 mm).
4. Lateral Alignment and Spacing of Dowels: 1 inch (25 mm).
5. Vertical Alignment of Dowels: 1/4 inch (6 mm).
6. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement

Edge: Length of dowel 1/4 inch per 12 inches (6 mm per 300 mm).

7. Joint Spacing: 3 inches (75 mm).
8. Sawn Joint Depth: Plus 1/4 inch (6 mm), no minus.
9. Joint Width: Plus 1/8 inch (3 mm), no minus.

3.17 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.
   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
   a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement,

name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.18 PROTECTION OF CONCRETE SURFACES

A. Concrete surfaces shall be protected from traffic or damage until surfaces have hardened sufficiently. If necessary 1/2 in. thick plywood sheets shall be used to protect the exposed surface.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

3.19 CONSTRUCTION WASTE MANAGEMENT

A. Comply with the requirements of Section 017419, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL for removal and disposal of construction debris and waste.

1. Do not allow excavated materials to accumulate on-site.

END OF SECTION

SECTION 321314 - EXPOSED AGGREGATE CONCRETE PAVING

PART 1 GENERAL

1.0 RELATED DOCUMENTS

A. The PROCUREMENT AND CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.1 WORK INCLUDED

A. The work includes furnishing all labor, materials, equipment, and supervision to construct the exposed aggregate concrete paving work, including aggregate base course, in accordance with the Drawings and Specifications. Paving types include the following:

1. “P-01” - White Portland cement with blue glass and shell aggregate.
2. “P-03” - White Portland cement with crushed shell aggregate.
3. “P-04A” – Standard Gray Portland cement with crushed shell aggregate and sand blast finish.
4. “P-04B” – Standard Gray Portland cement with crushed shell aggregate and sand blast finish and sawcut 12 in. o.c.

1.2 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 012300, ALTERNATES; Description of alternates.
2. Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING; Establishment of subgrade elevation.
3. Section 321313, PORTLAND CEMENT CONCRETE PAVING.
4. Section 321726, TACTILE WARNING SURFACING; ADA compliant detectable warning plates.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.

1. American Concrete Institute (ACI):

305R	Hot Weather Concreting
306R	Cold Weather Concreting
325.9R	Guide for Construction of Concrete Pavements and Concrete Bases.

2. American Society for Testing and Materials (ASTM):

A 185	Welded Steel Wire Fabric for Concrete Reinforcement
A 615	Deformed and Plain Billet - Steel Bars for Concrete Reinforcement
C 33	Concrete Aggregates
C 94	Ready-Mixed Concrete
C 143	Slump of Portland Cement Concrete
C 150	Portland Cement
C 171	Sheet Materials for Curing Concrete
C 231	Air Content of Freshly Mixed Concrete by the Pressure Method
C 309	Liquid Membrane-Forming Compounds for Curing Concrete
C 494	Chemical Admixtures for Concrete
D 226	Asphalt-Saturated Organic Roofing Felt for Use in Membrane Waterproofing and Built-Up Roofing
D 1557	Moisture - Density Relations of Soils and Soil Aggregate Mixtures Using 10 lb. (4.54-kg) Rammer and 18-in. (457 mm) Drop

3. Americans with Disabilities Act (ADA):

Appendix to Part 1191	Accessibility Guidelines for Buildings and Facilities

4. Florida Department of Transportation (FDOT):

Specifications	Standard Specifications for Road and Bridge Construction

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. ACI Publications: Unless otherwise specified, work and materials for construction of the Portland cement concrete paving shall conform to ACI 325.9R.

C. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1.

1. Before submitting design mixtures, review concrete pavement mixture design and examine procedures for ensuring quality of concrete materials and concrete pavement construction practices. Require representatives, including the following, of each entity directly concerned with concrete pavement, to attend conference:
   a. Contractor's superintendent.
   b. Independent testing agency responsible for concrete design mixtures.
   c. Ready-mix concrete producer.

E. Work, materials, and color of the handicap ramp paving shall conform to applicable sections of Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.

F. Paving work, base course etc., shall be done only after excavation and construction work which might injure them have been completed. Damage caused during construction shall be repaired before acceptance.

G. Existing paving areas shall, if damaged or removed during course of this project, be repaired or replaced under this section of the specification. Workmanship and materials for such repair and replacement, except as otherwise noted, shall match as closely as possible those employed in existing work.

H. Pavement, base, or subbase shall not be placed on a muddy or frozen subgrade.

1.5 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

1.6 PRECONSTRUCTION MOCK-UP PANELS

A. General

1. Schedule mock-up casting for acceptance 30 days prior to casting of concrete surfaces represented by the mockups.
2. Locate mock-up panels in non-public areas accepted by the Architect.
3. Continue to cast mock-ups until acceptable mock-ups are produced. Accepted mock- ups shall be the standard for color, texture, joints, finish and workmanship for the work.
4. Mock-up sequence of forming, placing, form removal, curing, jointing and finishing shall be reviewed and accepted by the Architect.
5. Mock-up formwork shall be inspected and accepted by the Architect before placing of concrete.
6. Use the same concrete mixes and placement procedures, accepted in mock-ups, in the final work, unless otherwise directed by the Architect.
7. Protect accepted mock-ups from damage until project completion.
8. Accepted mock-ups shall remain on site throughout the duration of the Project. Remove mock-up panels from site at completion of project, as directed by the Architect.

B. Construct mock-up panels or areas as indicated to demonstrate the ability to cast concrete for each exposed aggregate concrete paving type to achieve shape, color, jointing and exposed aggregate textured finish required. Tamping or vibrating shall be minimized to allow coarse aggregate to remain near the surface. Mock-ups shall include or meet the following requirements:

1. Provide mock-up panel 5 ft. x 5 ft. size, full depth.
2. Provide mock-ups simulating actual design and execution conditions for concrete mix materials, reinforcement, formwork, placing sequence, form removal, curing, finishing, and methods and materials of stain removal and correction of defective work.
3. On mock-ups where directed by the Architect, provide minimum of three variation of mix color to be used in the repair of defective work, in order to determine acceptable color and texture match.
4. Demonstrate in the construction of the mock-up formwork the sealer material, form release agent, and curing materials and methods to be used.
5. Include control joints and expansion joints with joint sealer.

C. Sample panel, 5 ft. x 5 ft. minimum, shall be constructed prior to start of handicap ramp paving, exhibiting detectable warning surface and required color contrast with adjacent paving in accordance with ADA Guidelines.

D. Source of Materials. Utilize the same source, stock, or brand of concrete materials for each class or mix of concrete which is to be exposed. Do not interchange materials or mixes until an additional mock-up shows that uniformity in finish texture and color, as compared to original mock-up will be maintained. If necessary, obtain and stockpile materials in sufficient quantity to ensure continuity and uniformity.

1.6 SUBMITTALS

A. Description of Methods and Sequence of Placement. For each type of specially-finished concrete provide description of methods and sequence of placement.

B. Manufacturers' product data shall be submitted for the following items:
Admixtures
Aggregate, including sieve analysis
Concrete sealer
Curing material
Form release
agent Surface
retarder

C. Submit samples of the following:

1. A 10 lb. minimum sample of blue glass aggregate proposed for use in the exposed aggregate paving mix shall be submitted for approval. Accompanying the sample shall be information from the aggregate supplier indicating source, type, color, and gradation of aggregate.

2. A 10 lb. minimum sample of shell aggregate proposed for use in the exposed aggregate paving mix shall be submitted for approval. Accompanying the sample shall be information from the aggregate supplier indicating source, type, color, and gradation of aggregate.

D. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.
5. Applied finish materials.
6. Bonding agent or epoxy adhesive.

E. Field quality-control test reports.

F. Minutes of preinstallation conference.

1.7 TESTING AND INSPECTION

A. The Owner reserves the right to inspect and test paving and associated work in accordance with Section 014000, QUALITY REQUIREMENTS.

1.8 DESIGN OF CONCRETE MIX

A. The Contractor shall be responsible for the design of the concrete mixture. Mix design shall match mix design used in approved mock-up panel and be certified by an independent testing laboratory. The statement of materials constituting the design mix shall be submitted to the Architect for approval within one week following award of Contract. The concrete mix design shall include the following information:

1. Proportions of cement, fine and coarse aggregates, and water.
2. Water-cement ratio, design strength, slump, and air content.
3. Type of cement.
4. Type of aggregates including sieve analysis.
5. Type and dosage of all admixtures.
6. Special requirements for pumping.
7. Range of ambient temperature and humidity for which the design is valid.
8. Any special characteristics of the mix which require precautions in the mixing, placing, finishing, or curing methods to achieve the finished product specified.

B. No concrete shall be delivered to the job site until the Architect has reviewed and approved the design mix.

PART 2 PRODUCTS

2.1 AGGREGATE BASE

A. Base Course: FDOT Specifications Section 911-2.23, “Limerock Composition”. or other approved material per the FDOT Standard Specifications for Road and Bridge Construction (Latest Edition); with a minimum limerock bearing ratio of 100, compacted to 98% of the maximum dry density per ASTM D1557.

2.2 STEEL REINFORCEMENT

A. Steel reinforcing bars shall conform to the following requirements:

1. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.

B. Welded wire fabric reinforcement shall conform to the following applicable requirements. Fabric reinforcement shall be furnished in flat sheets. Fabric reinforcement in rolls will not be permitted.

1. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-

drawn steel wire into flat sheets.

C. Epoxy-Coated Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60 (Grade 420), plain steel bars.

D. Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

2.3 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

2.4 CONCRETE

A. Concrete mix to receive an exposed-aggregate surface shall contain white Portland cement (as indicated for described mix), ASTM C 150, Type II Portland cement with a water- cement ratio no greater than 0.53 by weight. Minimum compressive strength shall be 4,000 psi at 28 days.

1. “P-01” - White Portland cement with blue glass and shell aggregate.
2. “P-03” - White Portland cement with crushed shell aggregate.
3. “P-04A” – Standard Gray Portland cement with crushed shell aggregate and sand blast finish.
4. “P-04B” – Standard Gray Portland cement with crushed shell aggregate and sand blast finish and sawcut 12 in. o.c.

B. Maximum slump shall not exceed 4 in. and air entrainment shall be 6 percent ± 1 percent.

C. Ready mixed concrete, if used, shall meet ASTM C 94.

D. Aggregate: Aggregate shall be size and ratio indicated on the Drawings.

2.5 CHEMICAL ADMIXTURES

A. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.

2.6 SPECIAL AGGREGATE

A. Special aggregate to be exposed shall be hard, sound, durable, and free of all deleterious materials and staining qualities.

B. Aggregate shall be glass and crushed shell aggregate material and shall match that in the approved samples and mockup panels.

1. Glass aggregate shall be tumbled glass with dulled edges. Blue color mix as indicated on the Drawings; sizes indicated on the Drawings.
2. Crushed shell shall be crushed coquina shell supplied by Yardco, 7729 Lawrence Road, Boynton, Beach, FL 33436 or other Architect approved supplier, and shall match Architect-approved sample and mockup panel. Shape of aggregate shall resemble spheres and cubes. Flat, slivery stones which may become dislodged easily shall not be used.

2.7 CONCRETE FINISH RETARDER

A. Spray applied, film forming, water based top surface retarder, calibrated for specific sized aggregate and finish requirements.

1. Acceptable Materials: “Lithotex” Top Surface Retarder manufactured by L.M. Scofield Company; Tel. 1-800-800-9900; “Top Cast” manufactured by W.R. Grace & Co. 62 Whittemore Ave., Cambridge, MA 02140. 800-354-5414 x 5439, 703-626-1577, or approved equal.

B. Spray applied film forming protective coating for surfaces adjacent to retarded finish surfaces.

1. Acceptable Materials: “Face Off” by W.R. Grace & Co. 62 Whittemore Ave., Cambridge, Ma 02140. 800-354-5414 x 5439, 703-626-1577. or approved equal.

2.8 FLATWORK SEALER

A. Sealer shall be Scofield Cureseal-W Concrete Sealer, manufactured by L.M. Scofield Company; 1-800-800-9900, or approved equal. Sealer shall be subject to the approval of the Architect.

2.9 CURING MATERIALS

A. Curing shall be by use of curing paper.

B. Moisture-Retaining Cover: Curing paper shall be nonstaining, fiber reinforced laminated kraft bituminous product conforming to ASTM C 171. Four mil polyethylene sheeting may be substituted for curing paper.

C. Water: Potable.

2.10 RELATED MATERIALS

A. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or

styrene butadiene.

B. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to requirements.

2.11 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

2.12 EXPANSION JOINTS

A. Expansion joints shall be located as indicated on the Drawings.

B. Expansion joints shall be cold formed with thickened edges. Expansion joints shall be doweled where indicated on the Drawings.

C. Round Expansion Joint Dowels: ASTM A615, Grade 60, epoxy-coated, smooth, billet-steel bars, clean and free of rust and scale.

2.13 CONTROL JOINTS

A. Control joints indicated on the Drawings to be sawn, shall be made by saw cutting concrete slab after concrete is finished and when the surface is stiff enough to support the weight of workmen without damage to the slab. Saw blade shall cut into slab at least 2 in., but in no case less than 1/3 of slab depth.

B. Unless otherwise indicated on the Drawings, control joints shall be located 10 ft. o.c. maximum.

2.14 CONSTRUCTION JOINTS

A. Transverse construction joints shall be placed whenever placing of concrete is suspended for more than 30 minutes.

1. Butt joint with dowels or thickened edge joint shall be used if construction joints occurs at location of control joint.
2. Keyed joints with tiebars shall be used if the joint occurs at any other location.

2.15 GROUT

A. Grout shall be mixed in the proportions of one part Portland cement to two parts sand, by volume. Only sufficient water shall be used to enable grout to barely hold its shape when squeezed into a ball in the hand. Sand for grout shall be "Fine Aggregate", conforming to ASTM C 33.

B. Nonshrink grout shall be pre-mixed non-shrinking, high strength grout. Compressive strength in 28 days shall be 5,000 psi minimum, but in no case less than the specified strength of the adjacent concrete. Manufacturer shall provide evidence that the material meets the requirements of the COE CRD-C 621 (558). Grout permanently exposed to view shall be nonoxidizing; metallic grout may be used in other locations.

1. Nonshrink grout shall be one of the following, or

approved equal: Manufacturer Product

Gifford-Hill Co.	Supreme
Master Builders Co.	Embeco
U.S. Grout Corporation	Five Star Grout

2.16 BOND BREAKER

A. Bond breaker shall be asphalt felt conforming to ASTM D 226, Type I or 6 mil polyethylene sheeting.

PART 3 EXECUTION

3.1 GRADING

A. Areas to be paved will be compacted and brought approximately to subgrade elevation under Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING before work of this section is performed. Final fine grading, filling, and compaction of subgrade to receive paving, as required to form a firm, uniform, accurate, and unyielding subgrade at required elevations and to required lines, shall be done under this Section.

B. Existing subgrade material which will not readily compact as required shall be removed and replaced with satisfactory materials. Additional materials needed to bring subgrade to required line and grade and to replace unsuitable material

removed shall be material conforming to Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING.

C. Subgrade of areas to be paved shall be recompacted as required to bring top 8 in. of material immediately below base course to a compaction of at least 90% of maximum density, as determined by ASTM D 1557, Method D. Subgrade compaction shall extend for a distance of at least 1 ft. beyond pavement edge.

D. Excavation required in pavement subgrade shall be completed before fine grading and final compaction of subgrade are performed. Where excavation must be performed in completed subgrade or subbase subsequent backfill and compaction shall be performed as directed by the Architect as specified in Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING. Completed subgrade after filling such areas shall be uniformly and properly graded.

E. Areas being graded or compacted shall be kept shaped and drained during construction. Ruts greater than or equal to 2 in. deep in subgrade, shall be graded out, reshaped as required, and recompacted before placing pavement.

F. Materials shall not be stored or stockpiled on subgrade.

G. Disposal of debris and other material excavated and/or stripped under this section, and material unsuitable for or in excess of requirements for completing work of this Section shall conform to the following:

1. Material shall be legally disposed of off-site.

H. Prepared subgrade will be inspected by the Architect. Subgrade shall be approved by the Architect before installation of paving base course. Disturbance to subgrade caused by inspection procedures shall be repaired under this Section of the specification.

3.2 AGGREGATE BASE COURSE

A. Aggregate base course for paving and the spreading, grading, and compaction methods employed shall conform to standard requirements for usual base course of this type for first class road work, and the following:

1. Refer to FDOT Standard Specifications Section 230.

B. Portions of subgrade or of construction above which become contaminated, softened, or dislodged by passing of traffic, or otherwise damaged, shall be cleaned, replaced, and otherwise repaired to conform to the requirements of this specification before proceeding with next operation.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Before being placed in position, reinforcing for reinforced concrete shall be thoroughly cleaned of loose mill and rust scale, dirt, ice, and other foreign material which may reduce the bond between the concrete and reinforcing. Where there is delay in placing concrete after reinforcement is in place, bars shall be reinspected and cleaned when necessary.

C. Any bar showing cracks after bending shall be discarded.

D. Unless otherwise indicated on the Drawings, reinforcing shall extend within 2 in. of formwork and expansion joints. Reinforcing shall continue through control joints. Adjacent sheets of fabric reinforcing shall lap 6 in.

E. After forms have been coated with form release agent, but before concrete is placed, reinforcing steel anchors shall be securely wired in the exact position called for, and shall be maintained in that position until concrete is placed and compacted. Chair bars and supports shall be provided in a number and arrangement satisfactory to the Architect.

F. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 CONCRETE PLACEMENT

A. Paving mix, equipment, methods of mixing and placing, and precautions to be observed as to weather, condition of base etc., shall meet the requirements of ACI 325.9R. Pavement shall be constructed in accordance with the Drawings.

B. The Architect shall be notified of concrete placement sufficiently in advance of start of operation to allow his representative to complete preliminary inspection of the work, including subgrade, forms, and reinforcing steel, if used.

C. Normal concrete placement procedures shall be followed. Concrete shall arrive

at the jobsite so that no additional water will be required to produce the desired slump. When conditions develop that require addition of water to produce the desired slump, permission of the Architect must be obtained. The concrete shall be transported from the mixer to its place of deposit by a method that will prevent segregation or loss of material. Concrete shall be placed in accordance with ACI 304.

D. Concrete shall be consolidated by suitable means to eliminate voids and pockets.

E. The strike-off and darby or bullfloat operations should be such that a level surface is obtained sufficiently below the final finish grade to allow for volume growth due to the addition of the seeding aggregate.

F. Expansion joints shall be formed in the concrete to required width with preformed joint filler in place. Depth of filler shall be as required to form a 5/8 in. deep sealant and backer rod recess below finished surface of walkway.

3.6 MONOLITHIC EXPOSED-AGGREGATE FINISH

A. Monolithic Exposed-Aggregate Finish: Expose coarse aggregate in pavement surfaces as follows:

1. Immediately after float finishing, spray-apply chemical surface retarder to pavement according to manufacturer's written instructions. (Surface retarder may be used, only after approval by the Architect and shall be of the same brand used to prepare the approved sample panel. The retarder shall be applied uniformly over the concrete surface and in accordance with the manufacturer's instructions.)
2. If recommended by surface retarder manufacturer, cover pavement surface with plastic sheeting, sealing laps with tape, and remove when ready to continue finishing operations.
3. When the concrete is hard enough to retain the aggregate and the mortar is still soft enough to be removed by brushing, the surface retarder shall be removed by brushing and flushing with water. The exposing operation of washing and brushing with a stiff- bristle broom and pressure washer shall continue until the surface matches the approved sample panel. The final washing operation shall cease when the flush water runs clear, there is no noticeable cement film on the aggregate, and cement film is removed from aggregate surfaces to depth required.

B. Light Sand Blast Finish: Provide light sand blast finish, lightly exposing fine aggregate with no reveal, as on Architect's sample panel, approved sample, and mockup installation. Finish shall be free of surface defects such as migrated entrained air or entrapped air bubbles over 1/8 in. diameter, sand streaks, staining, lack of uniformity of color or finish, blotches, wash, form leakage or honeycomb, and physical damage, any of which shall be deemed cause for

rejection.

3.7 CURING AND SEALING

A. As soon as the washing operation ceases, the curing operation shall begin. The concrete shall be kept in continuously moist condition by covering with new, unwrinkled, non- staining, high-quality curing paper for 5 days in warm weather (70 deg. F. or higher) or 7 days in cooler weather (50-70 deg. F.). The temperature of the concrete shall not be allowed to fall below 50 deg. F. during the curing period.

1. During periods of excessively hot weather (95 deg. F., or above) ingredients in the concrete shall be cooled insofar as possible and cold mixing water shall be used to maintain the temperature of the concrete at permissible levels all in accordance with the provisions of ACI 305. Any concrete with a temperature above 95 deg. F. when ready for placement will not be acceptable, and will be rejected.

B. After curing is completed, concrete surface shall be protected by applying concrete sealer in accordance with manufacturer's printed instructions.

3.8 CONSTRUCTION JOINTS

A. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
2. Provide tie bars at sides of pavement strips where indicated.
3. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3.9 EXPANSION JOINTS

A. Expansion joints (isolation joints) shall be cold formed with thickened edges as indicated on the Drawings.

B. Where indicated, expansion joints shall be doweled. Dowel shall be centered over the joint prior to concrete placement. The end of the dowel at the side of joint which will be poured second shall be greased immediately before concrete placement.

3.10 CONTROL JOINTS

A. Joints shall be sawn as soon as the concrete will withstand the energy of sawing without raveling or dislodging aggregate particles. For most concrete mixtures, this means sawing should be completed within the first 6 to 18 hours and never delay more than 24 hours. Early-entry saws may be used to allow cutting to begin within a few hours after placement.

B. Control joints indicated shall be sawn 1/8 in. wide by using a diamond blade concrete power saw. Saw shall cut into slab at least 1/3 of slab depth. Saw cut joints shall be straight and accurate to line.

1. Saw cut joints shall be sawn flush to vertical surfaces.

3.11 DECORATIVE SAW CUT JOINTS

A. Unless otherwise indicated, decorative saw cut joints shall be sawn into the concrete slab at intervals and patterns indicated on the Drawings. Joint shall be made after concrete is finished and when the surface is stiff enough to support the weight of workmen without damage to the slab, but before slab has achieved its final set. Saw cut joints shall be straight and accurate to line.

1. Saw cut joints shall be sawn flush to vertical surfaces.

B. Decorative saw cut joints shall be located each way to create scoring patterns indicated on the Drawings.

C. Depth of decorative saw cut joint shall be 1/3 of slab depth.

3.12 HANDICAP RAMPS

A. Paving mix, equipment, methods of mixing and placing, and precautions to be observed as to weather, condition of base etc., shall meet the requirements of ACI 316 for any concrete paving in similar conditions. Handicap ramps shall be constructed in accordance with the Drawings, and ADA Guidelines 4.7.10, and 4.29.2.

3.13 HOT WEATHER CONCRETING

A. Concrete just placed shall be protected from the direct rays of the sun and the forms and reinforcement just prior to placing shall be sprinkled with cold water. Every effort shall be made to minimize delays which will result in excessive mixing of the concrete after arrival on the job.

B. During periods of excessively hot weather (95^{O}F., or above), ingredients in the concrete shall be cooled insofar as possible and cold mixing water shall be used to maintain the temperature of the concrete at permissible levels all in accordance with the provisions of ACI 305. Any concrete with a temperature above 95^{O}F., when ready for placement will not be acceptable, and will be rejected.

C. Temperature records shall be maintained throughout the period of hot weather giving air temperature, general weather conditions (calm, windy, clear, cloudy, etc.) and relative humidity. Records shall include checks on temperature of concrete as delivered and after placing in forms. Data should be correlated with the progress of the work so that conditions surrounding the construction of any part of the structure can be ascertained.

3.14 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.
   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
   a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive

compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.15 PROTECTION OF CONCRETE SURFACES

A. Concrete surfaces shall be protected from traffic or damage until surfaces have hardened sufficiently. If necessary 1/2 in. thick plywood sheets shall be used to protect the exposed surface.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

3.16 CONSTRUCTION WASTE MANAGEMENT

A. Comply with the requirements of Section 017419, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL for removal and disposal of construction debris and waste.

1. Do not allow excavated materials to accumulate on-site.

END OF SECTION

SECTION 321726 - TACTILE WARNING SURFACING

PART 1 GENERAL

1.0 RELATED DOCUMENTS

A. The PROCUREMENT AND CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.1 SUMMARY

A. Provide all equipment and materials, and do all work necessary to construct the tactile warning surfacing, including individual metal truncated domes, as indicated on the Drawings and as specified herein.

1.2 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 321313, PORTLAND CEMENT CONCRETE PAVING.
2. Section 321314, EXPOSED AGGREGATE CONCRETE PAVING.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.

1. American Society for Testing and Materials (ASTM):

B 455	Copper-Zinc-Lead Alloy (Leaded-Brass) Extruded Shapes
B 584	Copper Alloy Sand Castings for General Applications
B 36	Brass Plate, Sheet, Strip, And Rolled Bar

2. Americans with Disabilities Act (ADA):

Appendix to Part 1191	Accessibility Guidelines for Buildings and Facilities

1.4 SUBMITTALS

A. Submit a minimum of three concrete pavers of each type and size required to Architect for approval. Samples shall exhibit the full color range of pavers to be provided.

B. Test Report:

1. Test report of precast concrete paver shall be submitted.
2. Testing shall be done by an independent testing laboratory. Test procedures shall conform to ASTM C 936 methods, where applicable.
3. Test report shall indicate, as a minimum, the following:
   a. Compressive strength, psi.
   b. Absorption, 5 hr. submersion in cold water.
   c. Absorption, 24 hr. submersion in cold water.
   d. Maximum saturation coefficient.
   e. Initial rate of absorption (suction).
   f. Abrasion index.
   g. Freeze-thaw.

1.5 FIELD MOCK-UP

A. Prior to start of tactile warning surfacing, the Contractor shall construct a sample panel for use as a prototype for each application. Sample panel shall be 2 ft.x 5 ft. minimum. Panel shall exhibit the specified base, thickness, colors, jointing, pattern, finish, and workmanship. The Contractor shall not proceed with the tactile warning surfacing work until the Architect has approved each sample panel. If panel is not acceptable, the Contractor shall construct additional panels as required until an acceptable panel is obtained. The accepted panel shall become the standard for the entire job and shall remain undisturbed until completion of the tactile warning surfacing.

1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting unit paver installation.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed.

1.6 QUALITY ASSURANCE

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

B. Source Limitations: Obtain tactile warning surfacing materials from one source with resources to provide materials and products of consistent quality in appearance and physical properties.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Tactile warning surfacing materials shall be carefully packed and loaded for shipment and all necessary precautions taken against damage in transit and handling.

B. Materials damaged in any manner will be rejected and replaced with new materials at no additional cost to the Owner.

PART 2 PRODUCTS

2.1 TACTILE INDICATOR WARNING STUDS

A. Tactile warning surfacing shall consist of Type 316 stainless steel raised truncated domes aligned in a square grid pattern and shall comply with the following:

1. Model LTSTL (25mm), manufactured by Latham Australia 14 Tennyson Road Gladesville 2111 NSW Australia; Tel. +61283153202; www.latham-australia.com.
2. Dome Spacing: in accordance with ADA Requirements.

B. Epoxy Adhesive: ASTM C881, Type V, epoxy-based bonding agent.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas indicated to receive tactile warning surfacing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ACCEPTABILITY OF PAVING

A. Contractor shall examine the concrete paving to determine adequacy to receive tactile warning surfacing. Evidence of inadequate paving shall be brought to the immediate attention of the Architect.

B. Start of work of this Section shall constitute acceptance of concrete paving.

3.3 PREPARATION

A. Remove substances from paving that could impair bond.

3.4 INSTALLATION, GENERAL

A. Do not use units with chips, cracks, voids, discolorations, and other defects that might be visible or cause staining in finished work.

3.5 METAL TRUNCATED DOMES

A. Provide anchorage devices and fasteners where needed to secure truncated domes to in- place concrete paving construction.

B. Perform cutting, drilling, and fitting required to install metal domes. Set products accurately in location, alignment, and elevation; measured from established lines and levels and in accordance with ADA requirements.

3.6 CLEANING OF TACTILE WARNING SURFACE

A. After completion of the tactile warning surfacing, areas shall be thoroughly swept clean and surface shall be left unsoiled. Where required, surface shall be cleaned with water or an approved cleaner.

END OF SECTION

SECTION 329119 - LANDSCAPE GRADING

PART 1 GENERAL

1.0 RELATED DOCUMENTS

A. The PROCUREMENT AND CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.1 WORK INCLUDED

A. The work includes furnishing all labor, materials, equipment, and supervision to complete the site grading work in accordance with the Drawings and Specifications.

1.2 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 014000, QUALITY REQUIREMENTS; Topsoil and other planting materials testing.
2. Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING; Excavation, backfill; establishment of subgrade elevations.
3. Section 329300, PLANTING.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. American Society for Testing and Materials (ASTM):

D 698	Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (6000kN-m/m³))
D 1556	Density of Soil in Place by the Sand-Cone Method
D 2167	Density and Unit Weight of Soil In Place by the Rubber- Balloon Method

1.4 EXISTING CONDITIONS

A. By submitting a bid, the Contractor affirms that he has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.

1.5 QUALITY CONTROL

A. The Landscape Architect reserves the right to perform on-site observation during the grading operations. The observations may include, but not be limited to the following:

1. Observation of subgrade preparation for slab-on-grade and paved areas.
2. Observation of rough and finish grading operations.

B. All grade breaks shall be staked with grade stakes at each end, any change of direction, and at 20' centers along the length for Architect's review during grading operations.

C. Stake out and indicate finish grades at all spot elevations, 25 ft. intervals along all grade break lines, and in a 25 ft. x 25 ft. grid for the quad lawn for Architect's review and approval during grading operations.

D. Perform field density tests in accordance with ASTM D 1556 or ASTM D 2167.

1. Make at least one field density test of the subgrade for every 2000 sq. ft. of paved area, but in no case less than three tests.
2. In each compacted fill layer, make one field density test for every 2000 sq. ft. of overlaying paved area, but in no case less than three tests.
3. Make at least one field density test of the planting soil for every 2000 sq. ft. of plant bed area, but in no case less than three tests.
4. Make at least one field density test of the planting soil for every 2000 sq. ft. of lawn area, but in no case less than three tests.

E. If, in the opinion of the Architect, based on reports of the testing service and inspection, the subgrade or fills which have been placed are below the specified density, additional compaction and testing will be required until satisfactory results are obtained.

1. The results of density tests of soil-in-place will be considered satisfactory if the average of any four consecutive density tests which may be selected are in each instance equal to or greater than the specified density, and if not more than one density test out of five has a value more than 2% below the required density.

1.6 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. The work shall be executed in such manner as to prevent any damage to adjacent property and any other property and existing improvements such as,

but not limited to: streets, curbs, paving, utility lines and structures, monuments, bench marks and other public and private property.

B. In case of any damage or injury caused in the performance of the grading work, the Contractor shall, at his own expense, make good such damage or injury to the satisfaction of, and without cost to the Owner. Existing roads, sidewalks, and curbs damaged during the grading work shall be repaired or replaced to their original condition at the completion of operations. The Contractor shall replace, at his own cost, existing bench marks, monuments, and other reference points which are disturbed or destroyed.

1.7 COORDINATION

A. Prior to start of grading operations, the Contractor shall arrange an on-site meeting with the Architect for the purpose of establishing Contractor's schedule of operations and scheduling inspection procedures and requirements.

B. As construction proceeds, the Contractor shall be responsible for notifying the Landscape Architect prior to start of grading operations requiring inspection and/or testing.

C. Soil materials to be graded shall be tested, furnished and placed under work of Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING for fill materials, and Section 329300, PLANTING for Planting Soil.

PART 2 - PRODUCTS

2.1 SOURCE OF MATERIALS

A. Material shall be obtained from required on-site excavation, to the extent that suitable material is available, and from off-site sources, to the extent that suitable material is not available from on-site excavation. Refer to Section 312300, SITE EXCAVATING, BACKFILLING AND COMPACTING for fill materials, and Section 329300, PLANTING for Planting Soil.

PART 3 - EXECUTION

3.1 GRADING - GENERAL

A. Refer to Section 312000, EARTH MOVING for required levels of subgrade compaction at paved areas.

1. Unless otherwise indicated, scarified subgrade in landscape areas shall be compacted to 86% - 88% compaction ASTM D698 Standard Proctor.
2. Planting Soil – Planting Pits and Beds: shall be spread in lifts not greater than twelve inches and compacted to a density between 82 and 86 percent Standard Proctor Maximum Dry Density.
3. Planting Soil - Lawn Areas: shall be spread over the area and shall be

compressed to a density of 86 to 88% Standard Proctor maximum dry density.

3.2 ROUGH GRADING

A. General: Rough grading shall include the shaping, trimming, rolling and refinishing of all surfaces of the subbase, shoulders, earth embankments and the preparation of grades as shown on the Drawings. The grade of shoulders and sloped areas may be done by machine methods.

B. Do all cutting, filling and grading to lines and grades indicated on the Drawings. Grade evenly to within the dimensions required for grades shown on the Drawings and specified herein. No stones larger than 4 in. shall be placed in uper 6 in. of fill. Fill shall be left in compacted state at the end of work day and sloped to drain.

1. Architect may make such adjustments in gardes and alignments as are found necessary to avoid special conditions encountered.
2. Provide a smooth transition between adjacent existing grades and new grades.
3. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

C. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Lawn or Unpaved Areas: Plus or minus 1 inch (25 mm).
2. Walks and Pavements: Plus or minus 1/2 inch (13 mm).
3. Up to 2 in. in 10 ft. – 0 in. tolerance shall be permitted on slopes provided the slopes are uniform in appearance and without any abrupt changes.
4. Traffic of men and equipment across soil subgrade areas shall be prohibited following excavation to the required lines and grades.

3.3 FINE GRADING

A. Fine Grading: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

B. Finish Grading:

1. Lawn or Unpaved Areas: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
2. Walks: Shape the surface of areas under walks to line, grade and cross-section, with the finish surface not more than 0.00 ft. above or 0.10 ft. below

the required subgrade elevation, compacted as specified, and graded to prevent ponding of water after rains.

3. Pavements: Shape the surface of the areas under pavement to line, grade and cross- section, with the finish surface not more than 1/2 in. above or below the required subgrade elevation, compacted as specified, and graded to prevent ponding of water after rains. Include such operations as plowing, discing, and any moisture or aerating required to provide the optimum moisture content for compaction. Fill low areas resulting from removal of unsatisfactory soil materials, obstructions, and other deleterious materials, using satisfactory soil material. Shape to line, grade, and cross- section as shown on the Drawings.

3.4 MAINTENANCE

A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades in settled, eroded, and rutted areas to the specified tolerances.

C. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, re-shape, and compact to the required density prior to further construction.

3.5 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Remove waste materials, including excavated material classified as unsatisfactory soil material, trash and debris, and dispose of it legally off the Owner's property.

END OF SECTION

SECTION 329300 - PLANTING

PART 1 GENERAL

1.0 RELATED DOCUMENTS

A. The PROCUREMENT AND CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.1 WORK INCLUDED

A. Provide all materials and equipment, and do all work required to complete the planting, including planting soil, and tree root barrier, as indicated on the Drawings and as specified.

1. Planting Soil Mix: Refer to Notes included on Drawing Sheet L400.
2. Planting: Refer to Notes included on Drawing Sheet L514.

1.2 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 129300, SITE FURNISHINGS; Precast concrete tree grates.
2. Section 329119, LANDSCAPE GRADING.
3. Section 329600, TRANSPLANTING.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. American National Standards Institute, Inc. (ANSI):

Z60.1	American Standard for Nursery Stock (Sponsor: American Association of Nurserymen, Inc.)

2. American Society for Testing and Materials (ASTM):

C 33	Concrete Aggregates
C 136	Sieve Analysis of Fine and Coarse Aggregates
D 422	Particle-Size Analysis of Soils

E 11 Wire-Cloth Sieves for Testing Purposes

F 405 Corrugated Polyethylene (Pe) Tubing and Fittings

3. "Hortus Third", A Concise Dictionary of Plants Cultivated in the United States and Canada, Cornell University, L.H. Bailey Hortorium, MacMillian Publishing Co., New York, NY.

4. “Florida Grades and Standards for Nursery Plants 2015”, Florida Department of Agriculture and Consumer Services.

1.4 DEFINITIONS

A. Finish Grade: Elevation of finished surfaces.

B. Subgrade: Surface or elevation of subgrade soil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

C. Topsoil: Soil that is present at the top layer of the existing soil profile at the Project site. This shall be considered the Topsoil component of Planting Soil mixes.

D. Imported Topsoil: Topsoil (loam) that contains a combination of particles typically almost equal in parts sand, silt and clay and including organic matter obtained from off-site sources.

E. Planting Soil: Unless otherwise indicated throughout this Section, the term “Planting Soil” shall apply to approved topsoil combined with sand and Florid peat, modified with soil amendments to meet the specific Planting Soil mix recommendations submitted by the testing laboratory.

1.5 SUBMITTALS

A. Samples: The following samples shall be

submitted: Material Sample Size or Quantity

Mulch (each type)	1 ft.^{3}
Compost	1 ft.^{3}
Topsoil	1 ft.^{3}
Tree stake	36 in. length
Coquina Shells	1 lb. bag
Sand	1 lb. bag
Coquina Shell Mulch	2 lb. bag

B. Manufacturer's Product Data: Manufacturer's product data shall be submitted for the following materials:

Tree root barrier
Antidessicant
Fertilizer
Fungicide
Herbicide
Insecticide
Compost

C. Certificates: Labels from the manufacturer's container certifying that the product meets the specified requirements shall be submitted for the following materials:

Commercial fertilizer

D. Test Reports: Test reports from an approved testing agency indicating compliance with the specifications shall be submitted for compost, planting soil mixture, and any other materials designated by the Architect.

1.6 QUALITY ASSURANCE

A. Plant quality, standards and grades: as per Florida Grades and Standards for Nursery Plants.

B. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of plants. Installer shall provide evidence of the following credentials:

1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
2. Experience: Ten years' experience in landscape installation with a minimum of three successfully completed projects of similar size and scope as this Project.
3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

1.7 OWNER'S INSPECTION AND TESTING

A. Work will be subject to inspection at all times by the Owner. The Owner reserves the right to engage an independent testing laboratory to analyze and test materials used in the construction of the work. Where directed by the Owner, the testing laboratory will make material analyses and will report to the Owner whether materials conform to the requirements of this specification.

1. Cost of tests and material analyses made by the testing laboratory will be borne by the Owner when they indicate compliance with the specification,

and by the Contractor when they indicate non-compliance.

2. Testing equipment will be provided by and tests performed by the testing laboratory.
3. Gradation of granular materials shall be determined in accordance with ASTM C 136. Sieves for determining material gradation shall be as described in ASTM E 11.

1.8 CONTRACTOR'S INSPECTION AND TESTING

A. The Contractor shall engage an independent testing agency, experienced in the testing of agricultural soils and acceptable to the Architect, to perform the topsoil/planting soil tests and analyses specified herein. All costs associated with testing shall be the Contractor's responsibility.

1. Particle size analysis shall include the following gradient of

mineral content:

USDA Designation	Size in mm
Gravel	+ 2 mm
Very coarse sand	1-2 mm
Coarse sand	0.5-1 mm
Medium sand	0.25-0.5 mm
Fine sand	0.1-0.25 mm
Very fine sand	0.05-0.1 mm
Silt	0.002-0.05 mm
Clay	< 0.002 mm

2. Chemical analysis shall include the following:
   a. pH and buffer pH
   b. percentage of organic content by oven-dried weight
   c. Nutrient levels by parts per million, including phosphorus, potassium, magnesium, manganese, iron, zinc, and calcium. Nutrient test shall include testing laboratory recommendations for supplemental additions to the soil, if necessary, based on the requirements for ornamental horticultural plants. Recommendations shall include rates at which additives are to be applied.
   d. Soluble salt by electrical conductivity of a 1:2 soil/water sample.

1.9 SOURCE QUALITY CONTROL

A. Identification of plant materials shall be as named in "Hortus Third".

B. Selection of Plant Materials: Submit to the Architect and Owner the names and locations of nurseries proposed as sources of acceptable plant material. Inspect all nursery materials to determine that the materials meet the requirements of this section. Proposed materials shall be flagged at the nurseries by the Contractor prior to viewing by the Architect.

1. Schedule with the Architect a time for viewing plant material at the nursery. Trips to nurseries shall be efficiently arranged to allow Architect to maximize

viewing time. A minimum of six weeks shall be allowed for this viewing prior to time that plants are to be dug.

2. Architect may choose to attach a seal to each plant, or representative samples.
3. If requested by the Architect, photographs of plant material or representative samples of plants shall be submitted by the Contractor.
4. If re-wholesalers or distributors are proposed as sources of plant material, the Contractor shall supply the Architect with names and locations of nurseries from which plants were obtained.
5. Viewing and/or sealing of plant materials by the Architect prior to shipping does not preclude the Architect's right to reject material for non-conformance to specifications at the site of planting.

1.10 AVAILABILITY AND COORDINATION OF PLANT MATERIAL

A. Contractor Provided Plant Material

1. In the event of a discrepancy in plant material quantities between the Drawings and the Plant List(s), notify Architect prior to ordering.
2. Before changes or substitutions can be made due to unavailability of plant material, submit satisfactory evidence that the Contractor has advertised for a one month period in a trade journal such as the "Florida Association of Native Nurseries (FANN)", with no response, or has undertaken other methods of locating plant material acceptable to the Architect.

1.11 UNAVAILABILITY OF PLANT MATERIALS

A. Before changes or substitutions can be considered due to unavailability of plant material, the contractor shall submit written evidence that he has advertised for at least a one month period in a trade journal such as the "Landscape Materials Information Service", with no response, or has undertaken other methods of locating plant material acceptable to the Architect.

1.12 DELIVERY, STORAGE, AND HANDLING

A. Digging Plant Material: Plants shall not be dug at the nursery or approved source until the Contractor is ready to transport them from their original locations to the site of the work or acceptable storage location with enough time to preclude shock. All plants shall be sun acclimated.

B. Transportation of Plant Material: Plants transported to the project in open vehicles shall be covered with tarpaulins or other suitable covers securely fastened to the body of the vehicle to prevent injury to the plants. Closed vehicles shall be adequately ventilated to prevent overheating of the plants. Plants shall not remain in darkened enclosed trailer for more than 48 hours cumulative.

1. Plants shall be kept moist, fresh, and protected at all times. Such protection shall encompass the entire period during which the plants are in transit, being

handled, or are in temporary storage.

2. Unless otherwise authorized by the Architect, notify the Architect at least three working days in advance of the anticipated delivery date of any plant material. A legible copy of the bill of lading, showing the quantities, kinds, and sizes of materials included for each shipment shall be furnished to the Architect.

C. Storage: Unless specific authorization is obtained from the Architect, plants shall not remain on the site of work longer than three days prior to being planted.

1. Plants that are not planted immediately shall be protected as follows:
   a. Earth balls shall be kept appropriately moist and their solidity carefully preserved.
   b. Plants shall not be allowed to dry out or freeze.
2. Both the duration and method of storage of plant materials shall be subject to the approval of the Architect.

D. Handling of Plant Materials: Exercise care in handling plant materials to avoid damage or stress.

1.13 REJECTION OF MATERIALS

A. Evidence of inadequate protection following digging, carelessness while in transit, or improper handling or storage, shall be cause for rejection.

B. Upon arrival at the temporary storage location or the site of the work, plants shall be inspected for proper shipping procedures. Should the roots be dried out, large branches be broken, balls of earth broken or loosened, or areas of bark be torn, the Architect will reject the injured plant.

C. When a plant has been rejected, remove it from the area of the work within 3 days and replace it with one of the required size and quality.

1.14 PRELIMINARY LAYOUT

A. Preliminary layout is required to confirm planting layout and alignment. Contractor shall provide Architect two days minimum notice prior to proposed layout review on site. Contractor shall mark up layout of proposed plantings using stakes, paint, tape or other temporary measures sufficient for Architect and Owner to review and approve layout and alignment prior to construction. While this is not feasible for the entire site at one time the Contractor shall make every effort to layout large areas such that the overall design intent and any site conditions can be reviewed, resolved and approved.

B. Schedule conference with Architect prior to start of layout work to confirm the layout, survey and engineering procedures to be used for laying out all planting work in the field for review and approval by Architect and Owner.

1.15 PLANTING SEASON

A. Planting shall only be performed when weather and soil conditions are suitable for planting the material specified, in accordance with locally accepted practice, approval of the Architect, and to maintain the Contractor's guarantee.

B. Contractor shall provide schedule for conducting planting operations for review and approval by Owner.

1.16 ACCEPTANCE

A. The Architect will inspect all work for Substantial Completion upon written notice of completion. The request shall be received at least ten calendar days before the anticipated date of inspection.

B. Acceptance of plant material by the Architect or designated City of Fort Lauderdale staff will be for general conformance to specified size, character, and quality in accordance with Florida Grades and Standards for Nursery Plants and shall not diminish responsibility for full conformance to the Contract Documents.

C. Upon completion and reinspection of all repairs or renewals necessary in the judgement of the Architect, the Architect will recommend to the Owner that acceptance of the work of this Section be given.

D. Acceptance in Part

1. The work may be accepted in parts when it is deemed to be in the Owner's best interest to do so, and when permission is given to the Contractor in writing to complete the work in parts.
2. Acceptance and use of such areas by the Owner shall not waive any other provisions of this Contract.

1.17 MAINTENANCE

A. Contractor shall maintain plant material until the completion of guarantee period and Final Acceptance of work, as described in Paragraph 3.13 of this Section.

1.18 GUARANTEE

A. Plants shall be guaranteed for a period of one year after the date of Acceptance by the Owner.

1. When the work is accepted in parts, the guarantee periods shall extend from each of the partial acceptances to the terminal date of the last guarantee period. Thus, all guarantee periods terminate at one time.

B. Plants shall be healthy, free of pests and disease, and in flourishing condition at the end of the guarantee period. Plants shall be free of dead and dying branches

and branch tips, and shall bear foliage of normal density, size, and color.

C. Replace dead plants and all plants not in a vigorous, thriving condition, as determined by the Architect during and at the end of the guarantee period, without cost to the Owner, as soon as weather conditions permit and within the specified planting period.

1. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this Specification.
2. Make all necessary repairs due to plant replacements. Such repairs shall be done at no extra cost to the Owner.
3. The guarantee of all replacement plants shall extend for an additional one year period from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended guarantee period, the Owner may elect one more replacement or credit for each item.

D. At the end of the guarantee period, and no less than five days prior to final inspection, staking and guying materials, and tree wrap and ties shall be removed from the site.

1.19 FINAL INSPECTION AND FINAL ACCEPTANCE

A. At the end of the guarantee period, the Architect and Owner will, upon written notice of end of guarantee period inspect the work for Final Acceptance. Request shall be received at least ten calendar days before the anticipated date for Final Inspection.

B. Upon completion and reinspection of full repairs or replacements necessary in the judgment of the Architect at that time, the Architect will recommend to the Owner that Final Acceptance of the Work of this Section be given.

PART 2 PRODUCTS

2.1 PLANTS

A. Except as otherwise specified, size and grade of plant materials shall conform to ANSI Z60.1. and “Florida Grades and Standards for Nursery Plants”.

1. Trees shall be graded Florida Fancy or Florida No.1, as determined by the Owner based on location. In no case shall ball size be less than 11 in. in diameter for each inch of caliper.
2. Palms shall conform to “Florida Grades and Standards for Palms”.

B. Plants shall have outstanding form; symmetrical, heavily branched with an even branch distribution, densely foliated and/or budded, and a strong, straight, distinct leader where this is characteristic of species. Plants shall possess a normal balance between height and spread. The Architect will be the final arbiter

of acceptability of plant form.

1. Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for type of trees required.
2. Small Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1.
3. Multistem Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1.
4. “Character Palms”: shall have leaning or other interesting trunk formations, 18 to 30 ft. ht.
5. Deciduous Shrubs: Form and Size: Deciduous shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 for type, shape, and height of shrub.

C. Plants shall be healthy and vigorous, free of disease, insect pests and their eggs, and larvae.

D. Plants shall have a well-developed fibrous root system. Root bound plants will not be accepted.

E. Plants shall be free of physical damage such as scrapes, broken or split branches, scars, bark abrasions, sunscalds, fresh limb cuts, disfiguring knots, or other defects. These defects shall not interrupt the circumference of the plant cambium.

F. Plants shall meet the sizes indicated on the Plant List. Plants larger or smaller than specified may be used only if accepted by the Architect or Owner.

G. Where a size or caliper range is stated, at least 50% of the material shall be closer in size to the top of the range stated.

H. Plants shall not be pruned before delivery.

I. All trees and shrubs shall be labeled. Labels shall be durable and legible, stating the correct plant name and size in weather-resistant ink or embossed process. Labels shall be securely attached to all plants prior to delivery to the site, being careful not to restrict growth.

J. Plants indicated as "B&B" shall be balled and burlapped.

1. Unless otherwise permitted by the Architect, plants shall be nursery grown.
2 Plants shall be grown for at least two years under climatic conditions similar to those in the locality of the Project.
3. Nursery grown plants shall be dug in the current planting season. No heeled in plants or plants from cold storage that were dug in the previous season

shall be accepted.

K. Container grown plants shall be well rooted and established in the container in which they were grown. They shall have grown in the container for a sufficient length of time for the root system to hold the planting medium when taken from the container, but not long enough to become root bound. Container grown plants exceeding the sizes indicated in ANSI Z60.1 shall have containers which are not less than 75% of the ball sizes for comparable B&B plant material. Each container plant shall be inspected and circling roots loosened or pruned as needed.

2.2 GROUND COVER AND PERENNIALS

A. Ground Cover and Perennials: Provide ground cover and perennials of species indicated, established and well rooted in pots or similar containers, and complying with ANSI Z60.1 .

2.3 SAND

A. Sand: E.R. Jahna sand or other approved equal beach compatible sand.

1. Sand for Planting Soil Mixes shall be uniformly graded medium to coarse sand consisting of clean, inert, rounded to sub-angular grains of quartz or other durable rock free from loam or clay, surface coatings and deleterious materials with the following gradation.

	Percent Passing	
U.S. Sieve Size Number	Minimum	Maximum
10	100	--
18	65	85
35	35	50
60	15	28
140	4	10
270	0	5
0.002mm	0	0.5

2. Maximum size shall be one inch largest dimension. The maximum retained on the #10 sieve shall be 15% by weight of the total sample. The ratio of the particle size for 70% passing (D70) to the particle size for 20% passing (D20) shall be 3.0 or less. (D70/D20
<3.0) Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.
3. pH: Shall be less than 7.2.

2.4 COMPOST

A. Composted pine bark shall be supplied by Atlas Peat & Soil, Inc., 9621 State Road 7, Boynton Beach, FL 33472; Tel. 561 734 7300, or approved equal.

Composted Pine Bark shall be used for amending on-site soil.

2.5 PEAT

A. Peat shall be Florida Peat, supplied by Atlas Peat & Soil, Inc., 9621 State Road 7, Boynton Beach, FL 33472; Tel. 561 734 7300, or approved equal. Florida Peat shall be used for amending on-site soil.

2.6 TOPSOIL (Loam)

A. Existing Topsoil

1. Existing topsoil from on-site source(s) may be used for planting soil, to the extent available, if it meets the requirements of this Section for planting soil, or if approved by the Architect.

B. Imported Topsoil

1. Imported topsoil shall be a natural, fertile, friable soil typical of cultivated topsoils of the locality, suitable for the germination of seeds and support of vegetative growth, with additives, if required, to achieve particle distribution and organic content specifications . Topsoil shall be taken from a well-drained, arable site, free of subsoil, large stones, earth clods, sticks, stumps, clay lumps, roots, other objectionable, extraneous matter or debris nor contain toxic substances.

2. Mechanical analysis (see paragraph 1.7 for particle sizes):

U.S. Sieve Size Number	Percent Passing By Dry Weight
¼ in.	90 - 92
10	50 - 55
40	20 - 25
100	4 - 6
200	0 - 1

C. Planting Soil Mixes:

1. Planting Soil for Palms:
   90% sand
   10% topsoil/Florida Peat mixture
2. Planting Soil for Trees, Shrubs and Ground Covers:
   70% sand
   30% topsoil/Florida Peat mixture
3. Planting soill shall have a pH value between 5.5 and 6.5 and organic matter content of 5 to 10% of total dry weight.
4. Minimum planting soil nutrient levels shall be: Nitrogen @ 5% average of

organic matter, Phosphorus @ .02 to .05% average of total soil content, Potassium @ 1.2% average of total soil content.

5. The Contractor shall provide the Architect with planting soil test results, as specified in Paragraph 1.7, before the start of planting operations. If planting soil does not fall within the required particle distribution, organic content, or pH range, it shall be adjusted to meet the specifications through the addition of testing laboratory recommended soil amendments to bring it within the specified limits

2.7 WATER

A. Water shall be suitable for irrigation and shall be free from ingredients harmful to plant life.

2.8 FERTILIZER

A. Fertilizer shall be Nursery Polyon Fertilizer, 10-0-12, manufactured by Harrell's LLC, 720 Kraft Road, Lakeland, FL 33815' tel. 863-687-2774.

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency. Manufacturer's literature shall be submitted for approval.

B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water- insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

C. Palm Tree Fertilizer (pre-plant 9-3-9):

1. Organic-based, long-lasting, controlled-release, uniform in composition, free flowing, granular- type fertilizer with micronutrients, suitable for application with approved equipment.

2. Palm Fertilizer shall contain the following minimum available percentages by weight of plant food (pending results of soil analysis):

Element/Material	Targeted Property Range
Nitrogen (N) - Slow Release	9.0% minimum
Phosphoric acid (as P2O5)	3.0% minimum
Potash (as K2O)	9.0% minimum
Calcium (Ca)	3.0% minimum
Magnesium (Mg)	4.0% minimum
Sulfur (S)	6.0% minimum
Iron (Fe)	2.0% minimum
Manganese (Mg)	0.05% minimum
Zinc (Z)	0.05% minimum
Humus	25.0% minimum
Humic Acids w/ micronutrients	5.0% minimum

3. Commercial-Grade Products & Manufacturers: Subject to compliance with requirements, provide products by one (1) of the following:
   a. Gro-Power 9-3-9 Palm & Tropical with Micronutrients, Gro-Power, Chino, CA. 909- 393-3744, or equal, as approved by the Architect.
   b. Application Rate: Per Manufacturer's current printed recommendation.

2.9 MULCH

A. Mulch shall be weed free, sterilized melaleuca mulch, of uniform size and free from rot, leaves, twigs, debris, stones, or any material harmful to plant growth.

B. Coquina Shell Mulch: shall be a mix of finely crushed coquina shells and sand (specified in Paragraph 2.3) to match Architect-approved sample. Coquina Shells shall be supplied by Yardco, 7729 Lawrence Road, Boynton, Beach, FL 33436; Pebble Junction, Inc. 702 South French Ave., Highway 17-92 - Sanford, FL 32771; Phone: 407-323-3838; Toll Free: 800-541-8996; Fax: 407-323-5413; sales@pebblejunction.com, or other approved supplier and shall match Architect-approved sample.

2.10 ANTIDESICCANT

A. To Be Used At Owner's Direction Only: Antidessicant shall be an emulsion specifically manufactured for plant protection which provides a protective film over plant surfaces which is permeable enough to permit transpiration. Antidessicant shall be delivered in manufacturer's sealed containers and shall contain manufacturer's printed instructions for use.

2.11 GUYING, STAKING AND BRACING MATERIALS

A. Wood Stakes: Straight, sound, rough sawn lumber 2 in. x 4 in. x 8 ft. long

1. Stakes shall be painted brown.
2. Wire for staking shall be 10 gauge steel.

B. Wood Braces: Straight, sound, rough sawn lumber 4 in. x 4 in. x 8 ft. long

1. Braces shall be painted brown.
2. Stakes shall be 4 in x 4 in. x 30 in. long.

C. Strapping: Arbortie, manufactured by DeepRoot Green Infrastructure, LLC, 530 Washington Street, San Francisco, CA 94111Tel: 800 458 7668 or 415 781 9700; Fax: 800 277 7668 or 415 781 0191, or approved equal.

D. Battons:

1. Battens or Blocks and Struts: Rough-sawn, sound, new hardwood or softwood, free of knots, holes, cross grain, and other defects, 2-by-4-inch nominal (38-by-89-mm actual) by lengths indicated.
2. Straps: Adjustable steel or plastic package banding straps.
3. Padding: Burlap.
4. Straps: Adjustable steel or plastic package banding straps.
5. Padding: Burlap.

2.12 ROOT BALL ANCHORING MATERIALS

A. Root ball anchoring system for securing trees planted over structure shall be “Rootball Fixing Kit”, manufactured by PLATIPUS ANCHORS LIMITED, Kingsfield Business Centre, Philanthropic Road, REDHILL, Surrey, RH1 4DP, England. Fax: +44 (0) 1737 773395Web: www.platipus-anchors.com; E-Mail: info@platipus-anchors.com; Tel: +44 (0) 1737 762300, Platipus Anchors Limited, USA Office, 1902 Garner Station Boulevard, Raleigh NC 27603 USA; T: (866) 752-8478; F: (919) 662-0998; E: usa@platipus-anchors.us; or approved equal.

2.13 ROOT BARRIER

A. Root barrier shall be linear type root barrier or root box, capable of blocking tree roots from interfering with adjacent pavement without sacrificing secondary lateral root growth for stability, similar to "Deep Root" tree barrier, manufactured by Deeproot Partners, L.P., Burlingame, CA 94010; "Shawtown Root Barrier Panels” manufactured by NDA Inc., Lindsey, CA 93247; or approved equal.

1. Sizes: UB 18 through UB 48 as indicated on the Drawings.

2.14 HERBICIDES

A. General: Herbicides shall be registered and approved by City of Fort Lauderdale, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions

and application..

B. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated. Use only as approved by the Owner.

C. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer. Use only as approved by the Owner.

1. Provide pre-emergent similar to Surflan, manufactured by UPI, 630 Freedom Business Center, Suite 402, King of Prussia, PA 19406; Toll Free: 1-800-438-6071, or other herbicide approved by the City.

PART 3 EXECUTION

3.1 WEED ERADICATION

A. Apply herbicide according to manufacturer's rate and specification within limits of all areas to be planted. Protect existing plants to remain from over spray or spray within root zone. Contractor shall ensure total weed eradication. Contractor shall provide manufacturer's specifications for approval.

1. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Pre-Emergent Herbicides (Selective and Non-Selective): Apply to tree, shrub, and ground- cover areas in accordance with manufacturer's written recommendations. Do not apply to proposed lawn areas.

C. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.2 PREPARATION OF SUBGRADE

A. Before replacing planting soil, rake subsoil surface clear of stones 1" diameter and larger, debris, rubbish, and remaining roots from removed plant material.

B. After subgrade levels have been reached and immediately prior to placing planting soils, the entire subgrade area shall be loosened to a minimum depth of 3 inches utilizing the bucket of a backhoe or equivalent equipment.

C. Contractor shall apply approved pre-emergent herbicide in accordance with manufacturer's rate and specifications. Contractor shall provide manufacturer's specifications for approval.

B. Any subgrade areas which have become heavily compacted (defined as

exceedig 86% - 88% compaction ASTM C698 Standard Proctor) including, but not limited to, temporary parking areas, material stockpile areas, temporary roadways, construction areas, areas shown on the plans, or areas identified by Architect shall be deep-scarified. Immediately prior to placing soils, heavily compacted areas shall be loosened to a minimum depth of 12 inches using the teeth of a backhoe or other suitable equipment. Frequency of compaction tests shall be one per 200 square feet.

1. Compact the scarified subgrade to 86% - 88% compaction ASTM D698 Standard Proctor. Contractor shall provide shovel dug test pits to the full depth of the mitigation, where located per the direction of the Architect, in order for the Architect to review whether the work has been done as required. Backfill the pits after the review(s).

C. Confirm that the subgrade is at the proper elevation and that no further earthwork is required to bring the subgrade to proper elevations. Provide a written report to Architect indicating that subgrade has been placed to the required elevations, has been decompacted according to the Contract Documents and is ready for inspection at least 3 days prior to placing planting soil. Perform no work of placing and spreading planting mixes until elevations have been confirmed and written report has been accepted by the Owner's Representative.

D. After the soils have been loosened and inspected, planting soil may be spread with a small bulldozer or may be dumped and spread with bucket of a backhoe from the edge of the loosened area. No rubber-tired equipment or heavy equipmenmt except for small bulldozer shall pass over the subsoils (subgrade) after they have been loosened. If Contractor plans to utlilize such areas for any use of heavy equipment, this should be carried out prior to beginning the process of loosening soils or filling in that area, or it shall be rescarified to meet this specification requirement.

3.3 EXAMINATION OF SUBGRADE

A. Examine subgrade and rough grading before planting. Alert Architect to unacceptable rough grading or subgrade.

3.4 DRAINAGE OF SOILS

A. Test drainage of five plant beds and pits chosen by the Architect shall be done by filling with water twice in succession. The time at which water is put into the pit or bed for a second filling shall be noted. Architect shall then be notified of the time it takes for pit or bed to drain completely. Planting operations shall not proceed until Architect has reviewed test drainage results.

B. Notify the Architect in writing of all soil or drainage conditions that he considers detrimental to growth of plant material. Submit proposal and cost estimate for correction of the conditions for Architect's approval before starting work.

3.5 LAYOUT OF PLANTING AREAS

A. Refer to Paragraph 1.13. Individual trees shall be located in the field as indicated on the Drawings for Architect's and Owner's approval prior to planting. Contractor shall provide one foreman, one loader with operator and two laborers to work with Architect in the field to determine the final location and orientation of each tree prior to planting. It is anticipated that this process may take several days to complete. Contractor shall plan to have this layout crew available to work with Architect at a slow and deliberate pace in order to achieve the desired results.

B. Individual shrub locations and outlines of shrub and ground cover areas to be planted shall be staked by the Contractor in ample time to allow inspection by the Architect and Owner.

C. Individual vines and groundcovers to be planted shall be laid out in plant beds by the Contractor in ample time to allow inspection by the Architect and Owner.

D. Digging shall not begin until locations are approved by the Architect and Owner.

E. Location of trees shall be staked using color coded stakes. A different stake color shall be used for each tree species.

3.6 ROOT BARRIER

A. Root barrier shall be installed at locations indicated on the Drawings and in accordance with manufacturer's printed instructions.

3.7 SPREADING OF PLANTING SOIL

A. Planting soil shall be spread in lifts not greater than 12 inches and compacted to a density between 82% and 86% Standard Proctor Maximum Dry Density in accordance with ASTM D698. The surface area of each lift, including the subgrade after it has been compressed by a backhoe, shall be scarified by raking prior to placing the next lift.

B. Place and spread planting medium to a depth greater than required such that after settlement, finished grade shall conform to the lines, grades and elevations shown on the Drawings. Ensure proper drainage in an uninterrupted pattern free of hollows and pockets.

C. Remove stiff clods, lumps, brush, roots, stumps, litter and other foreign material and stones over 1 inch diameter and legally dispose of off-site.

D. Surfaces shall be graded and smoothed, eliminating all sharp breaks by rounding, scraping off bumps and ridges, and filling in holes and cuts.

3.8 PLANT PIT EXCAVATION

A. Planting pits for trees and shrubs shall be excavated to the depth and dimension indicated on the Drawings.

B. Excavation shall not begin until locations are approved by the Architect.

3.9 PLANTING

A. Walls of plant pits shall be dug so that they are sloped and scarified.

B. Plants shall be set as indicated on Drawings. Plants shall have same relationship to finished grade as in the nursery.

C. Plants shall be turned to the desired orientation when required by Architect or Owner.

D. Containerized plants shall be removed from container taking care not to damage roots. The side of the root ball shall be scarified to prevent root-bound condition and plant positioned in planting pit.

E. Planting shall be positioned in center of planting pit, set plumb, and rigidly braced in position until all planting soil has been tamped solidly around the ball.

F. Pits shall be backfilled with planting soil. Soil shall be worked carefully into voids and pockets, tamping lightly every 6 in.

1. When pit is two-thirds full, plants shall be watered thoroughly, and water left to soak in before proceeding.
2. At this time, ropes or strings on top of ball shall be cut and shall be pulled back. Burlap or cloth wrapping shall be left intact around ball except that portions of wrap that are exposed at top of ball shall be turned under and buried. Non-biodegradable ball wrapping and support wire shall be totally removed from ball and planting pit.
3. Wire baskets shall be completely cut away from sides of root ball, and removed from pit. Bottom of basket may remain.
4. Remove nursery plant identification tags.

G. Backfilling and tamping shall then be finished and a saucer formed around plant pits as indicated on the Drawings.

H. Saucer shall be filled with water and water left to soak in. Saucer shall then be filled with water again.

3.10 STAKING AND BRACING

A. Each tree shall be staked or braced immediately following planting. Unless plant character dictates otherwise, plants shall stand vertical and plumb after staking.

Set vertical stakes and space to avoid penetrating root balls or root masses. Allow enough slack to avoid rigid restraint of tree. Stakes shall be installed as indicated on the Drawings.

B. Bracing: The extent of bracing shall be reviewed with the Owner prior to installation. Install bracing system at three or more places equally spaced around perimeter of trunk to secure each palm until established unless otherwise indicated.

1. Site-Fabricated Bracing Method:
   a. Place battens over padding and secure battens in place around trunk perimeter with at least two straps, tightened to prevent displacement. Ensure that straps do not contact trunk.
   b. Place diagonal braces and cut to length. Secure upper ends of diagonal braces with galvanized nails into battens or into nail-attached blocks on battens. Do not drive nails, screws, or other securing devices into palm trunk; do not penetrate palm trunk in any fashion. Secure lower ends of diagonal braces with stakes driven into ground to prevent outward slippage of braces.

3.11 ROOT BALL HARNESS SYSTEM

A. Root ball of each tree shall be anchored immediately following planting. Plants shall stand verticle and plumb after installing root ball fixing kit. Harness system shall be installed in strict accordance with manufacturer’s printed instructions and as indicated on the Drawings.

3.12 GROUND COVER

A. Set out and space plants as indicated on the Drawings .

B. Check root ball after removing plant from its container. Encircling roots need to be gently loosened from the tight mat of root-bound plants. If roots are very dense at bottom of pot, slice off the bottom 1". Plant at the same soil level as the plant was in its container.

C. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

E. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.13 APPLICATION OF FERTILIZER

A. Fertilizer shall be applied when planting pits are backfilled two-thirds full. Fertilizer application shall be of the type, rate, and timing recommended by fertilizer manufacturer.

3.14 MULCHING

A. Unless otherwise indicated on the Drawings, planting shall be mulched with coquina shell mulch placed over a 12 in. mix of 90% clean sand and 10% approved topsoil/Florida Peat.

3.15 PRUNING

A. Each tree and shrub shall be pruned to preserve the natural character of the plant. Pruning shall be done after delivery of plants and after plants have been inspected and approved by the Architect. Pruning procedures shall be reviewed with Architect before proceeding.

B. Date Palms: Do not prune live fronds. Remove only dead fronds.

3.16 MAINTENANCE OF PLANTING

A. Maintenance shall begin immediately after each plant is planted and shall continue through guarantee period until Final Acceptance.

B. Maintenance shall consist of watering, pruning, cultivating, weeding, mulching, removal of dead material, resetting plants to proper grades and upright position, and furnishing and applying such sprays as are necessary to keep plantings free of insects and disease, and in a healthy growing condition.

1. Contractor shall maintain plants in plumb, vertical position and straighten any plants within 24 hours of notification by the Owner throughout entire guarantee period.
2. Date Palms: Monthly treatments with imidacloprid soil drenches and surface spray on the cut ends of the boots are needed between March and November to keep an adequate level of imidacloprid in the upper trunk.

C. Planting areas shall be kept free of weeds, grass, and other undesired vegetative growth.

END OF SECTION

SECTION 329600 - TRANSPLANTING

PART 1 GENERAL

1.0 RELATED DOCUMENTS

A. The PROCUREMENT AND CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.1 WORK INCLUDED

A. Provide all equipment and materials, and do all work necessary to transplant existing trees, as indicated on the Drawings, as specified herein, and as designated in the field by the Architect.

B. Refer to “Tree Protection and Relocation Notes” included on Drawing Sheet L000.

1.2 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
1. Section 015639, TEMPORARY TREE AND PLANT PROTECTION.
2. Section 024110, SITE PREPARATION.
3. Section 329300, PLANTING; New planting.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.

1. American National Standards Institute (ANSI):

Z60.1 American Standard for Nursery Stock (Sponsor: American Association of Nurserymen, Inc.)

2. “Florida Grades and Standards for Nursery Plants 2015”, Florida Department of Agriculture and Consumer Services.

3. National Arborist Association, 3537 Stratford Rd., Wantagh, NY 11793 (NAA):

Ref. 1 Transplanting of Trees and Shrubs in

the Northeastern and North Central United States

4. International Society of Arboriculture (ISA):

Tree and Shrub Transplanting Manual

1.4 SUBMITTALS

A. A transplanting plan shall be submitted showing existing and proposed locations of transplanted material. The plan shall also delineate methods and times for root pruning, digging, balling, removing, storing, transporting, planting, watering, and maintenance to ensure survivability. The plan shall also include equipment, anti-desiccant and pesticides to be used. A listing of the plant material to be transplanted shall be provided by common name and botanical name as listed under "Nomenclature" in ANSI Z60.1; classification; caliper; and height.

1.5 QUALITY ASSURANCE

A. State Landscape Contractor's License & Tree Relocation

1. References: Contractor shall be a professional tree moving company holding a landscape contractor's license in the state where the work is to be performed and have a minimum of 10 years tree relocation experience. Submit a copy of license and 3 references of tree relocation work in the past 5 years.

B. Unless otherwise specified herein, tree transplanting shall conform to NAA Ref. 1

C. Contractor shall obtain and pay for permits and fees for the alteration of overhead lines or any other related moving permit or fee that requires compliance with Federal, State and local regulatory requirements.

D. The Contractor shall provide a clear 4 inch by 6 inch minimum size color photograph of the plant material to be relocated. Trees shall be documented by an individual photograph of each. Photographs shall indicate the date and species of each plant on the back or front of each photo.

E. Commercial test from an independent testing laboratory including basic soil groups (sand, silt, clay, pH (ASTM D 4972), soluable salts), secondary nutrient groups (calcium, magnesium, sodium, Sodium Absorption Ratio (SAR)), micronutrients (zinc, manganese, iron, copper). Soil required for each test shall include a maximum depth of 18 inches of approximately 1 quart volume for each test. Areas sampled shall be from newly proposed tree relocation site and should should contain at least 6-8 cores for each sample area and be thoroughly mixed. Problem areas should be sampled separately and compared with samples taken from adjacent non-problem areas. The location of the sample areas should be

noted and marked on a parcel or planting map for future reference.

F. Immediately following rough grading operation, identify a typical location for one of the largest trees and excavate a pit per the project details. Fill the pit with water to a depth of 12 inches. The length of time required for the water to percolate into the soil, leaving the pit empty, shall be measured by the project Architect. Within six hours of the time the water has drained from the pit, the Contractor, with project Architect present, shall again fill the pit with water to a depth of 12 inches. If the water does not completely percolate into the soil within 9 hours, a determination shall be made and submitted by the Contractor and verified and approved by the Architect, whether a drainage system or a soil penetrant will be required for each tree and or shrub being transplanted.

1.6 SEASON FOR TRANSPLANTING

A. Factors determining planting season include soil moisture and temperature, exposure, growth stage of plant, plant hardiness, inherent nature of the species, and use of antitranspirants.

1. Transplanting periods shall be in accordqnce with “Florida Grades and Standards for Nursery Plants 2015”, and approved by the Owner and Architect.

1.7 TIME LIMITATION

A. The time limitation from digging, removing, transporting, to installing transplanted plant material shall be the same day. The time limitation between installing the plant material and placing the mulch shall be a maximum 48 hours. If project conditions prevent the Contractor from transplanting and installing plant material on the same day, plant materials shall be boxed or heeled in as required. Plant material shall be maintained and protected by the Contractor.

1.8 GUARANTEE

A. Transplanted plant material shall have a guarantee period of 365 days. All plants that die or have 20 percent or more of their branches that die during the construction operations or the guarantee period, shall be replaced in kind in relation to size and species during the planting season.

1.9 SITE CONDITIONS

A. Transplanting Conditions: All transplanting operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, frozen ground or other unsatisfactory conditions prevail, the work shall be stopped when directed. When special conditions warrant a variance to all transplanting operations, proposed transplanting times shall be submitted for approval. The installing site for the plant material shall be prepared

and excavated in accordance with Section 312000, EARTH MOVING and Section 329300, PLANTING, prior to removing the plant material. If project conditions prevent the Contractor from transplanting and installing plant material on the same day, plant material shall be boxed or heeled in as required. Plant material shall be maintained by the Contractor until a suitable planting time.

B. Underground Utilities: The location of underground utilities and facilities at both the removal and installing sites shall be verified and marked. Damage to underground utilities and facilities shall be repaired at the Contractor's expense.

C. Protecting Existing Vegetation: When there are established lawns at either the removal or installing sites, the turf shall be protected during the operation. Existing trees, shrubs, and plant beds at the removal and/or installing sites that are to be preserved shall be barricaded and protected from damage by a tree barricade or other measure. Damage to existing plant material shall be mitigated by the Contractor at no additional cost to the Owner. Damage shall be accessed by a state certified arborist or other approved professional using the National Arborist Association's tree valuation guideline

D. Protection of Plant Material to be Transplanted: Contractor shall protect plant material slated for transplanting that is not transplanted at the beginning of construction operations. Prior to construction operations, Contractor shall tag plants to be transplanted with plastic or vinyl tape tied to the plant caliper. Plants to be transplanted shall be protected from root compaction and any other damage as specified in Section 015639, TEMPORARY TREE AND PLANT PROTECTION, prior to the start of any construction operations. Where tree drip lines are greater than 10 feet from the tree's trunk, locate barrier fencing at the drip line of the tree. Plastic tape and barrier fencing shall not be removed until transplanting operations are ready to begin and or instructed by the Architect. Contractor shall water and prune plant material as necessary to keep healthy and vigorous, particularly when water is shut off. Contractor shall be responsible for watering existing plant material to be transplanted from the start of construction operations until the maintenance period is over or until regular irrigation service is in working order. Outside storage locations shall be continually shaded and protected from the wind. Plants stored on the project shall be protected from any drying at all times covering the balls or roots with moist sawdust, wood chips, shredded bark, peat moss, or other similar mulching material.

E. Protection of Plant Material During Transplanting: Plant material shall be protected during transplanting to prevent desiccation and damage to the branches, trunk, and root system. Branches shall be protected by tying-in. Exposed branches shall be covered during transport. The root area shall be treated with mycorrhizal fungi inoculum. Plant material shall be undamaged, vigorous and healthy with a well-branched root system, free from disease,

harmful insects and insect eggs, sun-scald injury, disfigurement or abrasion after transplanting. Plant material showing desiccation, abrasion, sun scald injury or structural branching damage shall be replaced at no cost to the Owner.

PART 2 PRODUCTS

2.1 STORAGE AREA SECURITY FENCING

A. Fencing shall be the following:

1. Polyethylene mesh fencing, or other Owner approved material; height indicated on the Drawings.
2. Fabric shall be flourescent orange, high density polyethylene 1-1/2 in. square mesh.
3. Stakes shall be pressure treated pine.

B. Stakes for fencing shall be driven into the ground, except above utility locations where surface anchors shall be used. Posts shall be spaced 16 ft. o.c. maximum.

2.2 SOIL AMENDMENTS

A. Bone meal shall be readily available steamed bone meal, useable as a natural organic nitrogen fertilizer.

B. High phosphorous fertilizer (0-20-0); (4-12-4); (5-10-5) at rate of 10 lbs. per cubic yard of backfill, or (0-46-0) at rate of 5 lbs. per cubic yard of backfill.

C. Compost, topsoil, and planting soil shall be as specified in Section 329300, PLANTING.

D. Wetting Agents: Harrell HydroMAX Wetting Agents, Manufactured by Harrell's 5105 New Tampa Highway, Lakeland, FL 33815, or approved equal ;
Phone: (800) 282-8007
(863) 687-2774
Fax: (863) 688-8836

PART 3 EXECUTION

3.1 INSTALLATION OF STORAGE AREA FENCING

A. Prior to start of transplanting work, security fencing for storage area shall be installed in accordance with the following:

1. Fencing shall be installed at the storage areas indicated on the Drawings, or as directed by the Owner or Architect.

2. Fencing shall include a locking gate.

3.2 PLANT MATERIAL

A. Preparation: Plant material designated for transplanting shall be watered thoroughly several days before root pruning, digging or moving. Broken or interfering growth shall be pruned. Large canopy and specimen plant material shall be wire balled and burlapped. Mark north side of plants prior to excavation. Relocate in new location with north facing same direction

3.3 FINISH GRADE AND TOPSOIL

A. The Contractor shall verify that finish grades are as indicated on drawings, and that the placing of topsoil, the smooth grading, and the compaction requirements have been completed in accordance with Section 329119, LANDSCAPE GRADING, prior to the commencement of the transplanting operation.

3.4 TRANSPLANTING - GENERAL

A. Condition: Deciduous trees 4 in. caliper and larger shall be moved by boxing or wired balled and burlapped. Deciduous trees smaller than 4 in. caliper, shall be moved balled and burlapped, or with a tree spade during dormant periods. Evergreens, deciduous shrubs, and small trees in leaf shall be moved balled and burlapped.

B. Prior to digging, tie in all lower branches to prevent damage during handling and transplanting operations.

C. Digging, Wrapping, and Handling: Plants shall be dug and prepared for moving in a manner consistent with ISA Transplanting Manual. Digging, wrapping, and handling operations shall not cause damage to branches, shape, root system, and development during storage.

1. Deciduous small trees in full leaf when dug in late spring or early summer shall be hardened-off before replanting. Plants shall be placed in cool, moist, protected area as soon as possible after digging. Place plants close together, and provide means for keeping root balls continually moist. Cover balls with bark mulch, straw, canvas or other acceptable material. Maintain plants in this condition for 24 to 48 hours before replanting.
2. Proper equipment shall be available for loading, unloading, and/or transporting plants weighing more than 500 lbs.

D. Balled and Burlapped Plants: Balls shall be firmly wrapped with burlap or approved cloth substitute. No balled plant will be acceptable if the ball is cracked or broken, or if the stem is loose in the ball, either before or during transplanting. Balled plants shall be lifted and handled from the bottom of the ball. Protect ball and deliver to the relocation site, plant immediately, and water thoroughly. Ball

sizes shall be as recommended in ANSI Z60.1.

3.5 TEMPORARY STORAGE

A. Shrubs unable to be planted immediately shall be heeled in and protected from drying by the sun and wind. Heeling-in shall include setting plants in area with good surface drainage, and covering balls with fresh wood chips, bark mulch, sawdust, or peat. Create walled bins around plants with concrete masonry block, wire fencing, or timbers to maintain complete coverage of rootballs. Watering shall be maintained to keep balls moist, and reduce heat produced by piled mulch during hot weather. Maintain depth of mulch during entire storage period.

1. Shrubs stored for several months shall receive a dilute solution of a soluble fertilizer applied to tops of root balls two or three times during the growing season.

3.6 B&B PLANT MATERIALS

A. Immediately before digging and following consultation with the Architect, spray all evergreen or deciduous trees in full leaf with Transplant Biostimulant, applying an adequate film over trunks, branches, twigs and foliage and apply Transplant Biostimulant to the root ball area

B. Dig, and ball and burlap (B&B) plants with firm, natural balls of earth, of depth and diameter not less than that recommended by the American Standard for Nursery stock. Plants moved with a ball will not be accepted if the ball is cracked or broken before or during planting operation. Remove all grass, weeds and accumulated soil resulting from nursery cultivation from the top of the root ball prior to digging so that the original trunk flare shows on top of the root ball.

C. Use only natural burlap and jute twine. Do not use synthetic fibers or wire to ball and burlap root balls. Wire baskets will be acceptable if removed in accordance with these specifications.

D. All plant material in transit or temporary stored shall be covered with burlap or similar covering to keep plants from drying out.

3.7 TRANSPLANTING WITH MECHANICAL TREE SPADE

A. Blades of tree spade shall be sharp, and kept sharp during digging operations to prevent tearing and shredding of roots. Size of machine shall be adequate in relation to size of tree to be moved. Equipment determined by Architect to be too small will not be permitted for transplanting work.

1. Size requirements of soil ball for various size trees shall be in strict conformance with ANSI Z60.1.

B. Specific care in digging, handling and transporting palms shall be given in accordance with Florida Grades and Standards for Nursery Plants.

C. Before digging, mark north side of trunk. Whenever possible, replant tree with same orientation as it originally grew to reduce possible sunscald damage to trunk.

D. Dig hole for tree with same sized equipment as will dig the plant material and then dig plant and transport it to required location.

1. During digging of new hole and digging tree itself, operator shall use leveling bubble to level machine and insure tree will be vertical when planted. Special care shall be taken during insertion of tree spade blades to produce a balanced root ball which can be planted vertically in the new hole.
2. New tree pit shall be minimum of 2 ft. larger than diameter of root ball.
3. When sides of new planting pit appear glazed, or consist of heavy clay, use hand spade to break up surface before planting. In case of heavy clay soils, enlarge plant pit size created by machine.

E. After digging plant material, and prior to transporting, tie tree limbs in and protect tree from drying out during transport. Trees shall be protected by anti-desiccant spray and/or a plastic or fabric cover.

F. Plants shall be turned to the desired orientation when required by Architect or Owner.

G. Planting shall be positioned in center of planting pit, set plumb, and rigidly braced in position until all planting soil has been tamped solidly around the ball.

H. Immediately after removal of tree spade, the tree shall be watered completely, all air gaps in soil mixture shall be filled by working a spade handle or other tool around the entire perimeter of the ball.

1. If considerable backfill is necessary, tree shall be temporarily staked or guyed to prevent movement during backfilling operations. Once tree is backfilled to degree that disturbing alignment is no longer a concern, properly reguy and/or stake tree in conformance with Section 329300, PLANTING.

I. Pits shall be backfilled with planting soil. Soil shall be worked carefully into voids and pockets, tamping lightly every 6 in.

1. When pit is two-thirds full, plants shall be watered thoroughly, and water left to soak in before proceeding.

J. Backfilling and tamping shall then be finished and a saucer formed around plant pits as indicated on the Drawings.

K. Saucer shall be filled with water and water left to soak in. Saucer shall then be filled with water again.

L. Tree shall be watered via injection into root ball until entire ball is saturated.

M. Water root balls with Ortho "Up-Start" or approved equivalent, once every two weeks for first 8 weeks after transplanting.

N Mycorrhizal fungi inoculum shall be added as recommended by the manufacturer for the plant material specified.

O. Completion of planting shall conform to Section 329300, PLANTING.

END OF SECTION

CONTRACT PLANS COMPONENTS

LIGHTING PLANS

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

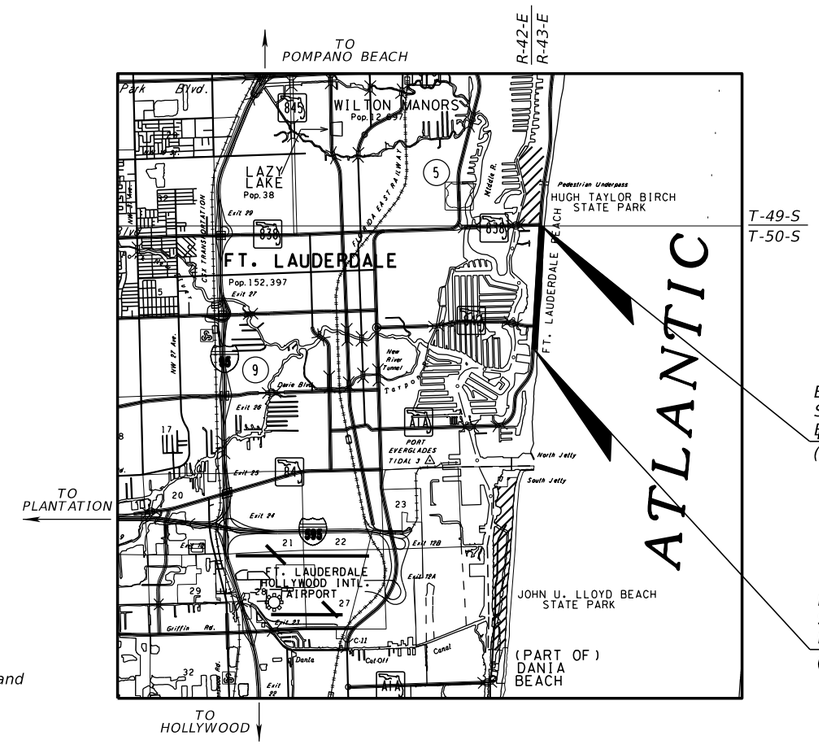
CONTRACT PLANS

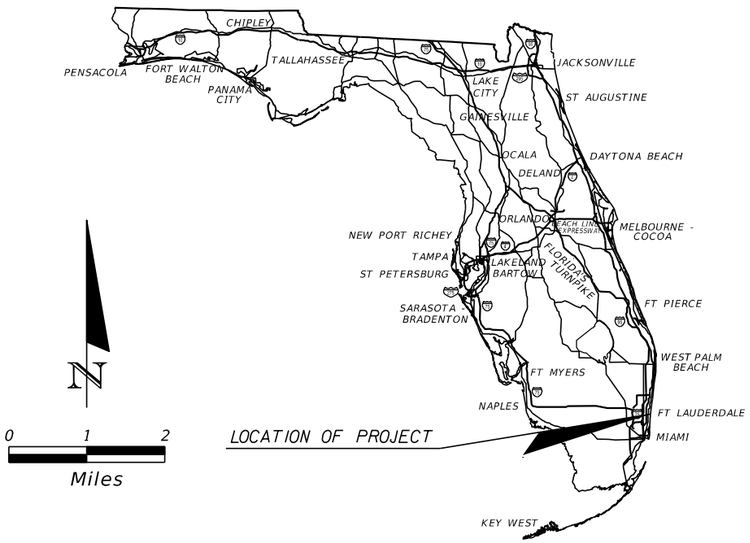
FINANCIAL PROJECT ID 424027-2-58-01

BROWARD COUNTY (86050/86180)

STATE ROAD NO. A1A

N. END OF THE S. BEACH PARKING LOT TO SUNRISE BOULEVARD





INDEX OF LIGHTING PLANS

SHEET NO.	SHEET DESCRIPTION
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L-2	SIGNATURE SHEET
L-3 THRU L-5	TABULATION OF QUANTITIES
L-6	SUMMARY OF QUANTITIES
L-7	GENERAL NOTES
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L-9 THRU L-10	POLE DATA
L-11 THRU L-27	LIGHTING PLAN
L-28 THRU L-30	LIGHTING DETAILS
L-31 THRU L-34	WEST SIDE LOAD CENTER DETAILS
L-35 THRU L-37	TEMPORARY TRAFFIC CONTROL PLAN
CTL-1 THRU CTL-6*	PROJECT CONTROL
UTV-1 THRU UTV-3*	VERIFIED UTILITY LOCATE

* These sheets are included in the index of lighting plans only to indicate that it is part of the lighting plans. These sheets are contained in a separate digitally signed and sealed document.

GOVERNING STANDARD PLANS:

Florida Department of Transportation, FY 2020-2021 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: http://www.fdot.gov/design/standardplans

Standard Plans for Bridge Construction are included in the Structures Plans Component

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, Jan. 2020 Standard Specifications for Road and Bridge Construction at the following website: http://www.fdot.gov/programmanagement/Implemented/SpecBooks

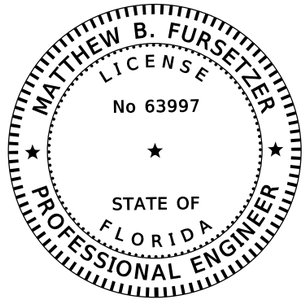
LIGHTING PLANS
ENGINEER OF RECORD:

MATTHEW FURSETZER, P.E. 63997
KIMLEY-HORN AND ASSOCIATES, INC.
SUITE 200
1920 WEKIVA WAY
WEST PALM BEACH, FLORIDA 33411
(561) 840-0814
REGISTRY NO. 35106

FDOT PROJECT MANAGER:

ANNA PLEGACHOVA, P.E.

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
N/A	20	L-1



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ON THE DATE ADJACENT TO THE SEAL

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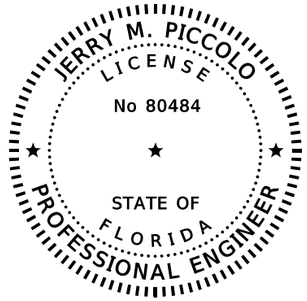
MATTHEW B. FURSETZER, P.E.
P.E. LICENSE NUMBER 63997
KIMLEY-HORN AND ASSOCIATES
1920 WEKIVA WAY, SUITE 200
WEST PALM BEACH, FL 33411
REGISTRY NO. 35106

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004. F.A.C.

INDEX OF LIGHTING PLANS



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JERRY MARCUS PICCOLO, P.E.
P.E. LICENSE NUMBER 80484
KIMLEY-HORN AND ASSOCIATES
1920 WEKIVA WAY, SUITE 200
WEST PALM BEACH, FL 33411
REGISTRY NO. 35106

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INDEX OF LIGHTING PLANS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

SIGNATURE SHEET

SHEET NO. L-2

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TABULATION OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS												TOTAL THIS SHEET		GRAND TOTAL	
			L-11		L-12		L-13		L-14		L-15		L-16					
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL
630-2-12	CONDUIT, FURNISH & INTALL, DIRECTIONAL BORE	LF	121.00		536.00		501.00		266.00		502.00		552.00		2478.00			
635-2-11	PULL & SPLICE BOX, F&I, 24" X 36" COVER SIZE	EA	3.00		9.00		10.00		4.00		11.00		13.00		50.00			
715-1-12	LIGHTING CONDUCTORS, F&I, INSULATED, NO. 8-6	LF	1930.00		7440.00		7330.00		3460.00		7500.00		8320.00		35980.00			
715-1-13	LIGHTING CONDUCTORS, F&I, INSULATED, NO 4 TO NO 2	LF																
715-518-315	LIGHT POLE COMPLETE-SPECIAL DESIGN, FURNISH & INSTALL DOUBLE	EA	3.00		8.00		9.00		2.00		9.00		9.00		40.00			
	ARM POLE TOP MOUNT, CONCRETE, 15'																	
715-7-21	LOAD CENTER, REWORK, SECONDARY VOLTAGE	EA			2.00				1.00				1.00		4.00			
715-500-1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH & INSTALL, CONVENTIONAL	EA	3.00		8.00		9.00		2.00		9.00		9.00		40.00			

PAY ITEM NOTES:

ITEM 715-518-315: INCLUDES THE COST OF LIGHTING NETWORK CONTROLS SYSTEM. SEE LIGHTING DETAILS.
INCLUDES COST OF SPREAD FOOTER. SEE POLE DATA SHEET FOR LOCATIONS.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

TABULATION OF QUANTITIES

SHEET NO. L-3

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TABULATION OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS														TOTAL THIS SHEET		GRAND TOTAL	
			L-17		L-18		L-19		L-20		L-21		L-22		L-23					
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL
630-2-12	CONDUIT, FURNISH & INTALL, DIRECTIONAL BORE	LF	500.00		432.00		433.00		410.00		562.00		390.00		542.00		3269.00			
635-2-11	PULL & SPLICE BOX, F&I, 24" X 36" COVER SIZE	EA	11.00		11.00		9.00		10.00		12.00		9.00		11.00		73.00			
715-1-12	LIGHTING CONDUCTORS, F&I, INSULATED, NO. 8-6	LF	7480.00		6720.00		6330.00		6180.00		6578.00		7080.00		4644.00		45012.00			
715-1-13	LIGHTING CONDUCTORS, F&I, INSULATED, NO 4 TO NO 2	LF									2540.00		4720.00		3096.00		10356.00			
715-518-315	LIGHT POLE COMPLETE-SPECIAL DESIGN, FURNISH & INSTALL DOUBLE ARM	EA	9.00		8.00		7.00		6.00		8.00		7.00		7.00		52.00			
	POLE TOP MOUNT CONCRETE, 15'																			
715-7-21	LOAD CENTER, REWORK, SECONDARY VOLTAGE	EA			1.00		2.00				1.00						4.00			
715-500-1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH & INSTALL, CONVENTIONAL	EA	9.00		8.00		7.00		6.00		8.00		7.00		7.00		52.00			

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

TABULATION OF QUANTITIES

SHEET NO. L-4

Adan.Garcia 4/27/2020 6:06:38 PM K:\WPB_Design\040005603_SRA1A_N_FTL\42402725201\lighting\TABQLT01.DGN

TABULATION OF QUANTITIES

PAY ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS												TOTAL THIS SHEET		GRAND TOTAL	
			L-24		L-25		L-26		L-27									
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL					PLAN	FINAL	PLAN	FINAL
630-2-12	CONDUIT, FURNISH & INTALL, DIRECTIONAL BORE	LF	561.00		480.00		542.00		54.00						1637.00		7384.00	
635-2-11	PULL & SPLICE BOX, F&I, 24" X 36" COVER SIZE	EA	10.00		9.00		11.00		1.00						31.00		154.00	
715-1-12	LIGHTING CONDUCTORS, F&I, INSULATED, NO. 8-6	LF	4710.00		1128.00										5838.00		86830.00	
715-1-13	LIGHTING CONDUCTORS, F&I, INSULATED, NO 4 TO NO 2	LF	3140.00		8136.00		10166.00		910.00						22352.00		32708.00	
715-518-315	LIGHT POLE COMPLETE-SPECIAL DESIGN, FURNISH & INSTALL DOUBLE	EA	8.00		9.00		8.00								25.00		117.00	
	ARM TOP POLE MOUNT, CONCRETE, 15'																	
715-7-21	LOAD CENTER, REWORK, SECONDARY VOLTAGE	EA	1.00		1.00				1.00						3.00		11.00	
715-500-1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH & INSTALL, CONVENTIONAL	EA	8.00		9.00		8.00								25.00		117.00	

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

TABULATION OF QUANTITIES

SHEET NO. L-5

SUMMARY OF LUMP SUM ITEMS

PAY ITEM NO.	PAY ITEM DESCRIPTION	QUANTITY P	QUANTITY F	DESIGN NOTES	CONSTRUCTION REMARKS
0101-1	MOBILIZATION	1			

SUMMARY OF TEMPORARY TRAFFIC CONTROL PLAN ITEMS

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	PHASE I DURATION DAYS	PHASE I QUANTITY P	PHASE I TOTAL P	PHASE II DURATION DAYS	PHASE II QUANTITY P	PHASE II TOTAL P	TOTAL P	TOTAL F	DESIGN NOTES	CONSTRUCTION REMARKS
0102-1	MAINTENANCE OF TRAFFIC	LS							1			

SUMMARY OF SIDEWALK & DETECTABLE WARNINGS

LOCATION STA. TO STA.	SIDE	AREA ID	PAVERS, ARCH. SIDEWALK 0526 1 2 SY P	PAVERS, ARCH. SIDEWALK 0526 1 2 SY F	DESIGN NOTES	CONSTRUCTION REMARKS
167+80 to 173+40	LT		2.8			
173+40 to 178+80	LT		11.1			
178+80 to 184+40	LT		13.9			
189+80 to 195+40	LT		19.5			
195+40 to 200+80	LT		11.1			
200+80 to 206+40	LT		5.5			
228+20 to 233+60	LT		5.5			
		SUB-TOTAL:	69.4			
		TOTAL:	69.4			

SUMMARY OF CLEARING AND GRUBBING & REMOVAL ITEMS

PAY ITEM NO.	PAY ITEM DESCRIPTION	LOCATION STA. TO STA.	SIDE	AREA ID	LENGTH	WIDTH	UNITS	SECONDARY UNITS (IF LUMP SUM) AREA (AC)	QUANTITY P	QUANTITY F	TOTAL P	TOTAL F	DESIGN NOTES	CONSTRUCTION REMARKS
													AT SPREAD FOOTER FOUNDATIONS	
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	151+40 to 156+80	LT		6	6	SY		16		16			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	156+80 to 162+40	LT		6	6	SY		36		36			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	162+40 to 167+80	LT		6	6	SY		8		8			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	167+80 to 173+40	LT		6	6	SY		36		36			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	173+40 to 178+80	LT		6	6	SY		28		28			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	178+80 to 184+40	LT		6	6	SY		32		32			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	184+40 to 189+80	LT		6	6	SY		12		12			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	189+80 to 195+40	LT		6	6	SY		4		4			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	195+40 to 200+80	LT		6	6	SY		24		24			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	200+80 to 206+40	LT		6	6	SY		32		32			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	206+40 to 211+80	LT		6	6	SY		28		28			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	211+80 to 217+20	LT		6	6	SY		28		28			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	217+20 to 222+80	LT		6	6	SY		32		32			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	222+80 to 228+20	LT		6	6	SY		36		36			
110-4-10	REMOVAL OF EXISTING CONCRETE PAVEMENT	228+20 to 233+60	LT		6	6	SY		32		32			

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

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Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

SUMMARY OF QUANTITIES

SHEET NO.

L-6

GENERAL NOTES

1. MAINTAINING AGENCY IS THE CITY OF FORT LAUDERDALE – DON MORRIS (954) 828-4526.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES PRIOR TO ANY UNDERGROUND WORK. THE UTILITY COMPANY WILL LOCATE AND IDENTIFY THEIR FACILITIES.

   UTILITY OWNERS:

COMPANY	CONTACT PERSON	TELEPHONE NUMBER
CITY OF FT LAUDERDALE	JON STAHL	(954) 828-7830
AT&T DISTRIBUTION	OTIS KEEVE	(954) 723-2540
COMCAST	JOHN MATONTI	(954) 447-8486
FP&L – DISTRIBUTION	BYRON SAMPLE	(954) 321-2056
TECO PEOPLE'S GAS – SOUTH FLORIDA	DAVID RIVERA	(954) 453-0794
BROWARD COUNTY TRAFFIC OPS	ROBERT BLOUNT	(954) 847-2745
HOTWIRE	WALTER SANCHO-DAVILA	(954) 847-2745

3. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL VERIFY THE SIZE, LOCATION, ELEVATION AND MATERIAL OF ALL EXISTING UTILITIES WITHIN THE AREA OF CONSTRUCTION BY PREDRILLING TO IDENTIFY ANY POTENTIAL CONFLICTS WITH THE PROPOSED CONSTRUCTION PRIOR TO FABRICATION AND ORDERING OF MATERIALS. IN CASE OF CONFLICTS AND IN ADDITION TO COORDINATION WITH UTILITY OWNERS, CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE TO ALLOW SUFFICIENT TIME FOR REDESIGN IF REQUIRED.

4. ALL CONNECTIONS SHALL BE MADE IN THE PULL BOX NEXT TO THE BASE OF THE LIGHT POLES UTILIZING THE WATERPROOF POLE CABLE DISTRIBUTION SYSTEM. CONNECTION TO THE GROUND ROD INSIDE THE PULL BOX SHALL BE CAP WELDED, ALL OTHER CONNECTIONS SHALL USE APPROVED CABLE CONNECTORS. PCDS SHALL BE IP-68 RATED.

5. THE LOCATIONS OF THE NEW LIGHT POLES MAY BE SHIFTED BY THE ENGINEER TO ACCOMMODATE LOCAL CONDITIONS AND/OR EXISTING UTILITIES. THE PROPOSED DIRECTIONAL BORING PLAN INSTALLATIONS ARE DIAGRAMMATIC. THE INTENT IS TO ACCOMMODATE THE DESIGN AND TO AVOID EXISTING UTILITIES AND OBSTRUCTIONS.

6. THE CONTRACTOR SHALL NOTIFY FLORIDA POWER AND LIGHT CO. (FP&L) AT LEAST 48 HOURS (2 WORKING DAYS) PRIOR TO ANY INSTALLATION THAT IS WITHIN 10 FEET OF ENERGIZED ELECTRICAL CONDUCTORS. FLORIDA POWER AND LIGHT CO. (AT IT'S OPTION), MAY ASSIST THE CONTRACTOR, COVER UP ENERGIZED CONDUCTORS AT INSTALLATION SITE, OR TAKE OTHER SAFETY PRECAUTIONS AS NECESSARY. EXTREME CAUTION SHALL BE EXERCISED AT ALL TIMES IN PERFORMANCE OF WORK AROUND THE PRIMARY HIGH VOLTAGE COMPONENTS.

7. ALL MATERIALS SHALL BE NEW AND "UL" LISTED AS APPLICABLE.

8. THE CONTRACTOR SHALL MAINTAIN THE EXISTING LEVEL OF ILLUMINATION ON THE TRAVELED ROADWAY THROUGHOUT CONSTRUCTION AND SHALL INSTALL NEW POLES PRIOR TO REMOVAL OF EXISTING POLES.

9. FURNISH AND INSTALL AN ALUMNUM IDENTIFICATION TAG ON EACH NEW ROADWAY LIGHTING POLE. THESE TAGS SHALL BE COORDINATED WITH THE MAINTAINING AGENCY PRIOR TO ORDERING. IF NO PREFERENCE IS INDICATED BY THE MAINTAINING AGENCY, THE CONTRACTOR MAY PROVIDE A TAG AS FOLLOWS: 1"X6" IN SIZE WITH BLACK LETTERS/NUMBERS ON YELLOW BACKGROUND AND ATTACHED RIVETS (NO SCREWS) & BE MOUNTED VERTICALLY 1' FROM BASE. IDENTIFICATION SHALL INCLUDE THE CIRCUIT AND POLE NUMBERS SHOWN ON THE POLE DATA SHEET. COST OF TAGS SHALL BE INCLUDED IN THE BID ITEMS FOR POLE COMPLETE.

10. PRIOR TO ANY EQUIPMENT ORDER, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL EQUIPMENT SPECIFICATION OR DESIGN DATA FOR ALL MATERIAL PROPOSED FOR THE PROJECT. THESE MUST SPECIFICALLY INCLUDE:

    A) LUMINAIRE PHOTOMETRICS
    B) POLE STRENGTH CALCULATIONS
    C) LOAD CENTER ELECTRICAL EQUIPMENT

    SUBMITTAL DATA SHALL INCLUDE COMPUTER PRINTOUT SHOWING HORIZONTAL FOOT CANDLES TO BE OBTAINED USING THE SUBMITTED LUMINAIRES ON THIS PROJECT. AT FINAL INSPECTION THE CONTRACTOR SHALL VERIFY THE HORIZONTAL FOOT CANDLES LEVELS ON THE ROADWAY WITH AN APPROVED, CURRENT-CALIBRATED LIGHT METER.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POWER TO THE LOAD CENTERS AND ALL EXISTING TEMPORARY AND PROPOSED LIGHTING FIXTURES DURING ALL PHASES OF CONSTRUCTION UNTIL FINAL ACCEPTANCE BY THE CITY OF FORT LAUDERDALE.

12. ALL CURRENT CARRYING COMPONENTS SHALL BE OF COPPER CONSTRUCTION AND PROVIDE FULL RATED NEUTRAL BUS AND GROUND BUS.

13. ALL ENCLOSURE(S) SHALL BE SIZED TO ACCOMMODATE ALL SPECIFIED EQUIPMENT MAINTAINING NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70 MINIMUM CLEARANCES.

14. ALL PULL BOX COVERS SHALL BE BOLTED TO PULL BOX.

15. BEFORE FINAL ACCEPTANCE, THE CONTRACTOR SHALL PROVIDE 4 SETS OF AS BUILT PLANS TO THE MAINTAINING AGENCY AND TO FDOT'S BROWARD OPERATIONS SIGNALIZATION AND LIGHTING COORDINATOR AT ANDREW.POERIO@DOT.STATE.FL.US TO HELP PERFORM "SERVICE TAP INSPECTIONS" AS PART OF THE FINAL ELECTRICAL INSPECTION.

16. PULLING INSTRUCTIONS: CONNECT PULLING DEVICES TO COPPER WIRE AND NOT TO JACKET AND MEET MANUFACTURER'S REQUIREMENTS. USE PULLING COMPOUND PER MANUFACTURER'S REQUIREMENTS. ALL BENDS SHALL NOT BE LESS THAN RECOMMENDED BY NEC OR NESC FOR CABLE.

17. ALL OPEN EXCAVATIONS SHALL BE COMPLETED TO PROVIDE A SAFE CROSSING BY THE END OF EACH WORK DAY OR WHENEVER THE WORK ZONE BECOMES INACTIVE. THE CONTRACTOR SHALL NOT OPEN ANY AREA THAT CANNOT BE BACKFILLED IN THE SAME DAY'S OPERATION.

18. WHEN ENCOUNTERING OR EXPOSING ANY ABNORMAL CONDITION INDICATING THE PRESENCE OF A HAZARDOUS OR TOXIC WASTE, OR CONTAMINANTS, CEASE OPERATIONS IMMEDIATELY IN THE VICINITY AND NOTIFY THE CITY ENGINEER (CHIJIOKE EZEKWE 954-828-4522).THE PRESENCE OF TANKS OR BARRELS; DISCOLORED EARTH, METAL, WOOD, GROUND WATER, ETC.; VISIBLE FUMES; ABNORMAL ODORS; EXCESSIVELY HOT EARTH; SMOKE; OR OTHER CONDITIONS THAT APPEAR ABNORMAL MAY INDICATE HAZARDOUS OR TOXIC WASTES OR CONTAMINANTS AND MUST BE TREATED WITH EXTREME CAUTION.

19. MAKE EVERY EFFORT TO MINIMIZE THE SPREAD OF CONTAMINATION INTO UNCONTAMINATED AREAS. IMMEDIATELY PROVIDE FOR THE HEALTH AND SAFETY OF ALL WORKERS AT THE JOB SITE AND MAKE PROVISIONS NECESSARY FOR THE HEALTH AND SAFETY OF THE PUBLIC THAT MAY BE EXPOSED TO ANY POTENTIALLY HAZARDOUS CONDITIONS. PROVISIONS SHALL MEET ALL APPLICABLE LOCAL, STATE, AND FEDERAL LAWS, RULES, REGULATIONS OR CODES COVERING HAZARDOUS CONDITIONS AND WILL BE IN A MANNER COMMENSURATE WITH THE GRAVITY OF THE CONDITIONS.

20. THE CITY ENGINEER AND/OR CONTRACTOR WILL COORDINATE AND MOBILIZE A QUALIFIED CONTAMINATION ASSESSMENT/REMEDIATION (CAR) CONTRACTOR. QUALIFICATIONS OF SUCH CAR CONTRACTOR SHALL INCLUDE, BUT NOT BE LIMITED TO: EXPERIENCE AND PERSONNEL TO PREPARE CONTAMINATION ASSESSMENT PLANS, CONDUCT CONTAMINATION ASSESSMENTS, PREPARE SITE ASSESSMENT REPORTS, REMEDIATION PLANS, IMPLEMENT REMEDIAL ACTION PLANS, RISK BASED CORRECTIVE ACTIONS, STORAGE TANKS SYSTEM REMOVAL, HIGHWAY SPILL RESPONSE AS WELL AS EXPERIENCE WITH INFRASTRUCTURE/CONSTRUCTION ACTIVITIES WITHIN (POTENTIALLY) CONTAMINATED AREAS SPECIFIC TO TRANSPORTATION SYSTEMS.

21. ALL THE WORK PERFORMED BY THE CAR CONTRACTOR SHALL BE PERFORMED IN COMPLIANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS GOVERNING WORKER SAFETY AND ENVIRONMENTAL REGULATIONS. THIS IS TO INCLUDE OCCUPATIONAL EXPOSURE TO CONTAMINATED SOILS, GROUNDWATER, WASTES AND ATMOSPHERE DURING THE CONSTRUCTION OF ALL FEATURES INCLUDED IN THE CONSTRUCTION PLANS. IN ADDITION, THE CAR CONTRACTOR MUST BE STAFFED WITH FLORIDA LICENSED TECHNICAL PROFESSIONALS (GEOLOGISTS AND ENGINEERS) WHO WILL BE INVOLVED WITH THE PROJECT AND KNOWLEDGEABLE OF THE WORK ACTIVITIES CONDUCTED WITH THE IDENTIFIED CONTAMINATED AREAS AND WHO WOULD SIGN AND SEAL PROJECT REPORTS AS REQUIRED FOR SUBMITTAL TO THE APPROPRIATE ENVIRONMENTAL REGULATORY AGENCIES.

22. THE CITY ENGINEER WILL IMMEDIATELY NOTIFY THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) DISTRICT IV CONTAMINATION IMPACT COORDINATOR (DCIC) AT (954) 777-4286 AFTER ENCOUNTERING THE UNIDENTIFIED AREAS OF CONTAMINATION. PRELIMINARY INVESTIGATION BY THE CAR CONTRACTOR WILL DETERMINE THE COURSE OF ACTION NECESSARY FOR SITE SECURITY AND THE STEPS UNDER APPLICABLE LAWS, RULES, AND REGULATIONS FOR ADDITIONAL ASSESSMENT AND/OR REMEDIATION WORK TO RESOLVE THE CONTAMINATION ISSUE.

23. FOLLOWING COMPLETION OF THE PROJECT, THE CAR CONTRACTOR SHALL BE REQUIRED TO PROVIDE COPIES OF ALL REPORTS SUBMITTED TO REGULATORY AGENCIES, WASTE MATERIAL PROFILES, MANIFESTS AND/OR DISPOSAL RECEIPTS FOR THE HANDLING OF ALL CONTAMINATED MEDIA INCLUDING BUT NOT LIMITED TO GROUND WATER, WASTE WATER, SOILS, SOLID WASTES, SLUDGE, HAZARDOUS WASTES, AIR MONITORING RECORDS AND SAMPLE RESULTS FOR ALL MATERIALS TESTED AND ANALYZED TO THE CITY ENGINEER AND THE FDOT DCIC.

24. THE CONTRACTOR IS ADVISED THAT CAVING SOILS WILL BE ENCOUNTERED DURING EXCAVATION OF THE POLE FOUNDATIONS. DRILLING MUD, TEMPORARY CASINGS OR OTHER ACCEPTABLE MEASURES WILL BE REQUIRED TO STABILIZE THE EXCAVATION. SUPERMUD OR POLYMER SLURRY IS NOT ALLOWED FOR POLE FOUNDATIONS. AN ADDITIONAL NOTE TO INDICATE IF CASING IS REQUIRED TO STABILIZE THE EXCAVATION THE CONTRACTOR SHALL FURNISH CASING AND THE PROPER EQUIPMENT TO INSTALL AND REMOVE IT AT NO EXTRA TO THE DEPARTMENT. CORRUGATED CASING IS NOT ALLOWED FOR THE POLE FOUNDATIONS.

25. CONTRACTOR SHALL DETERMINE THE ACTUAL GROUNDWATER LEVELS AT THE TIME OF CONSTRUCTION TO DETERMINE GROUNDWATER IMPACT ON CONSTRUCTION PROCEDURE.

26. UPON RECEIPT OF NOTICE OF AWARD, THE CONTRACTOR SHALL ARRANGE A PRECONSTRUCTION CONFERENCE TO INCLUDE ALL INVOLVED GOVERNMENTAL AGENCIES, ALL AFFECTED UTILITY OWNERS, THE OWNER, THE ENGINEER AND ITSELF.

27. THE CONTRACTOR SHALL CONTACT "SUNSHINE STATE ONE CALL OF FLORIDA, INC. (811)" AT LEAST 2 WORKING DAYS PRIOR TO BEGINNING ANY EXCAVATION.

28. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE SIZE, LOCATION, ELEVATION AND MATERIAL OF ALL UTILITIES WITHIN THE AREA OF CONSTRUCTION.

29. EXISTING UTILITY LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF EXISTING UTILITIES SHOWN OR ANY EXISTING UTILITIES NOT SHOWN.

30. IF UPON EXCAVATION, AN EXISTING UTILITY IS FOUND TO BE IN CONFLICT WITH THE PROPOSED CONSTRUCTION OR TO BE OF A SIZE OR MATERIAL DIFFERENT FROM THAT SHOWN ON THE PLANS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

31. CONTRACTOR SHALL COORDINATE ALL WORK PERTAINING TO THIS PROJECT WITH CITY OF FORT LAUDERDALE PROJECT #11681 "SR A1A STREETSCAPE IMPROVEMENTS"

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

GENERAL NOTES

SHEET NO. L-7

LEGEND

SYMBOLS	DESCRIPTION
	2-72 WATT AMBER/WHITE LED FIXTURES DESIGNED FOR TYPE IV DISTRIBUTION. USE VERTEX ILLUMINATIONS CITTA FIXTURE WITH 270 ° X 4" SHIELD. GROUND MOUNT POLE WITH PULL BOX.
	EXISTING PULL BOX (TO REMAIN)
	PULL BOX TO BE REMOVED
	PROPOSED PULL BOX
	2-2" SCHEDULE 40 CONDUITS, DIRECTIONAL BORED UNDER PAVEMENT WITH LIGHTING CONDUCTORS INSIDE (SEE PLAN FOR SIZE AND NUMBER OF CONDUCTORS).
	EXISTING LOAD CENTER (TO REMAIN)
	EXISTING LUMINAIRE (TO REMAIN)
	EXISTING LUMINAIRE (TO REMAIN)

POLE DATA (NEW POLES)

POLE NO.	SHEET NO.	CIRCUIT	LOCATION	LUMINAIRE WATTAGE	MOUNTING HEIGHT	ARM LENGTH	COLOR	FOUNDATION	PAY ITEM
01	L-13	A-1	150+13.00, 25.45' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
02	L-13	A-1	150+75.00, 28.19 ' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
03	L-13	A-1	151+26.00, 29.20' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
05	L-14	A-1	152+69.00, 20.37' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
06	L-14	A-1	153+11.00, 18.18' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
07	L-14	A-1	153+64.00, 17.50' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
08	L-14	A-1	154+23.00, 21.60' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
09	L-14	A-1	154+83.00, 27.37'LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
10	L-14	A-1	155+34.00, 28.46' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
11	L-14	A-2	155+98.00, 28.62' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
12	L-14	A-2	156+44.00, 29.11' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
14	L-15	A-2	157+57.00, 17.69' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
15	L-15	A-2	158+17.00, 17.52' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
16	L-15	A-2	158+77.00, 17.34' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
17	L-15	A-2	159+37.00, 17.16' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
18	L-15	A-2	159+97.00, 17.01' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
19	L-15	A-2	160+57.00, 16.89' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
20	L-15	A-2	161+17.00, 16.76' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
21	L-15	B-1	161+77.00, 16.78' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
22	L-15	B-1	162+37.00, 16.83' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
23			DID NOT USE						
24			DID NOT USE						
25			DID NOT USE						
26			DID NOT USE						
27			DID NOT USE						
28			DID NOT USE						
31	L-16	B-2	167+18.00, 9.92' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315

REVISIONS			
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

POLE DATA AND LEGEND

SHEET NO. L-8

9/20/2022 1:07 PM

Adan.Garcia 4/27/2020 6:06:40 PM K:\WPB_Design\040005603_SRA1A_N_FTL\42402725201\lighting\PLDTLT01.DGN

POLE DATA (NEW POLES)

POLE NO.	SHEET NO.	CIRCUIT	LOCATION	LUMINAIRE WATTAGE	MOUNTING HEIGHT	ARM LENGTH	COLOR	FOUNDATION	PAY ITEM
32	L-16	B-2	167+55.00, 7.34' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
33	L-17	B-2	168+05.00, 4.65' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
34	L-17	B-2	168+71.00, 3.95' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
35	L-17	B-2	169+25.00, 4.57' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
36	L-17	B-2	169+85.00, 5.76' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
37	L-17	B-2	170+45.00, 6.33' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
38	L-17	B-2	171+05.00, 6.39' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
39	L-17	C-1	171+65.00, 6.15' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
40	L-17	C-1	172+25.00, 6.42' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
42	L-17	C-1	173+18.00, 6.26' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
43	L-18	C-1	173+61.00, 8.77' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
44	L-18	C-1	174+00.00, 13.94' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
45	L-18	C-1	174+61.00,18.11' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
46	L-18	C-1	175+20.00, 20.03' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
48	L-18	C-1	176+13.00, 6.41' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
49	L-18	C-2	176+52.00, 8.52' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
50	L-18	C-2	177+02.00, 4.83' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
51	L-18	C-2	177+62.00, 4.06' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
52	L-18	C-2	178+32.00, 6.65' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
53	L-19	C-2	178+93.00, 2.66' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
54	L-19	C-2	179+53.00, 3.95' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
55	L-19	C-2	180+13.00, 5.00' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
56	L-19	D-1	180+73.00, 5.46' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
57	L-19	D-1	181+33.00, 5.72' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
59	L-19	D-1	182+18.00, 5.44' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
60	L-19	D-1	182+70.00, 5.61' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
61	L-19	D-1	183+46.00, 5.05' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315

POLE DATA (NEW POLES)

POLE NO.	SHEET NO.	CIRCUIT	LOCATION	LUMINAIRE WATTAGE	MOUNTING HEIGHT	ARM LENGTH	COLOR	FOUNDATION	PAY ITEM
62	L-19	D-1	184+00.00, 10.25' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
63	L-20	D-2	184+58.00, 15.38' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
64	L-20	D-2	185+14.00, 16.20' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
65	L-20	D-2	185+69.00, 15.57' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
66	L-20	D-2	186+32.00, 4.50' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
67	L-20	D-2	186+81.00, 1.29' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
68	L-20	D-2	187+41.00, 2.65' RT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
69	L-20	D-2	188+01.00, 7.67' RT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
70	L-20	D-2	188+70.00,13.66' RT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
71	L-21	C-1	191+10.00, 24.04' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
72	L-21	C-1	191+70.00, 24.52' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
73	L-21	C-1	192+30.00, 24.97' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
74	L-21	C-1	192+75.00, 22.73' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
75	L-21	C-2	193+70.00, 22.56' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
76	L-21	C-2	194+30.00, 18.33' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
77	L-21	C-2	195+00.00, 17.27' LT	(2) 72 W	13'-6"	2'-3"	BLACK		715-518-315
79	L-22	C-2	196+13.00, 19.70' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
80	L-22	C-2	197+14.00, 19.23' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
81	L-22	C-2	197+90.00, 19.54' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
82	L-22	D-1	199+20.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
83	L-22	D-1	199+80.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
84	L-22	D-1	200+40.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
85	L-23	D-1	201+00.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
86	L-23	D-1	201+60.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
87	L-23	D-2	202+90.00, 19.93' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
88	L-23	D-2	203+50.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
89	L-23	D-2	204+10.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

POLE DATA

SHEET NO.

POLE DATA (NEW POLES)

POLE NO.	SHEET NO.	CIRCUIT	LOCATION	LUMINAIRE WATTAGE	MOUNTING HEIGHT	ARM LENGTH	COLOR	FOUNDATION	PAY ITEM
90	L-23	D-2	204+60.00, 25.95' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
91	L-23	D-2	205+60.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
92	L-23	D-2	206+20.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
93	L-24	D-2	206+80.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
94	L-24	D-2	208+04.00, 20.13' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
95	L-24	D-2	208+70.00, 19.81' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
96	L-24	D-2	209+30.00, 19.36' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
97	L-24	E-1	210+80.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
98	L-24	E-1	211+40.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
99	L-24	E-1	211+78.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
100	L-25	E-1	213+00.00, 22.54' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
101	L-25	E-1	213+55.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
102	L-25	E-1	214+03.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
103	L-25	E-1	214+63.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
104	L-25	E-1	215+80.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
105	L-25	E-1	216+40.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
106	L-25	E-1	217+00.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
107	L-26	E-2	218+40.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
108	L-26	E-2	218+80.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
109	L-26	E-2	219+40.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
110	L-26	E-2	220+00.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
111	L-26	E-2	220+60.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
112	L-26	E-2	221+20.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
113	L-26	E-2	221+80.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
114	L-26	E-2	222+40.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
115	L-27	E-2	223+00.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
116	L-27	E-2	223+60.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315

POLE DATA (NEW POLES)

POLE NO.	SHEET NO.	CIRCUIT	LOCATION	LUMINAIRE WATTAGE	MOUNTING HEIGHT	ARM LENGTH	COLOR	FOUNDATION	PAY ITEM
117	L-27	F-1	224+20.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
118	L-27	F-1	224+80.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
119	L-27	F-1	225+40.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
120	L-27	F-1	226+00.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
121	L-27	F-1	226+60.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
122	L-27	F-1	227+20.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
123	L-27	F-1	227+80.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
124	L-28	F-1	228+40.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
125	L-28	F-1	229+00.00, 19.87' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
126	L-28	F-1	229+60.00, 20.23' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
127	L-28	F-1	230+20.00, 20.47' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
128	L-28	F-1	231+20.00, 22.02' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
129	L-28	F-1	231+60.00, 23.40' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
130	L-28	F-1	232+40.00, 25.25' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315
131	L-28	F-1	233+53.00, 27.50' LT	(2) 72 W	13'-6"	2'-3"	BLACK	SPREAD FOOTER	715-518-315

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

POLE DATA

SHEET NO.

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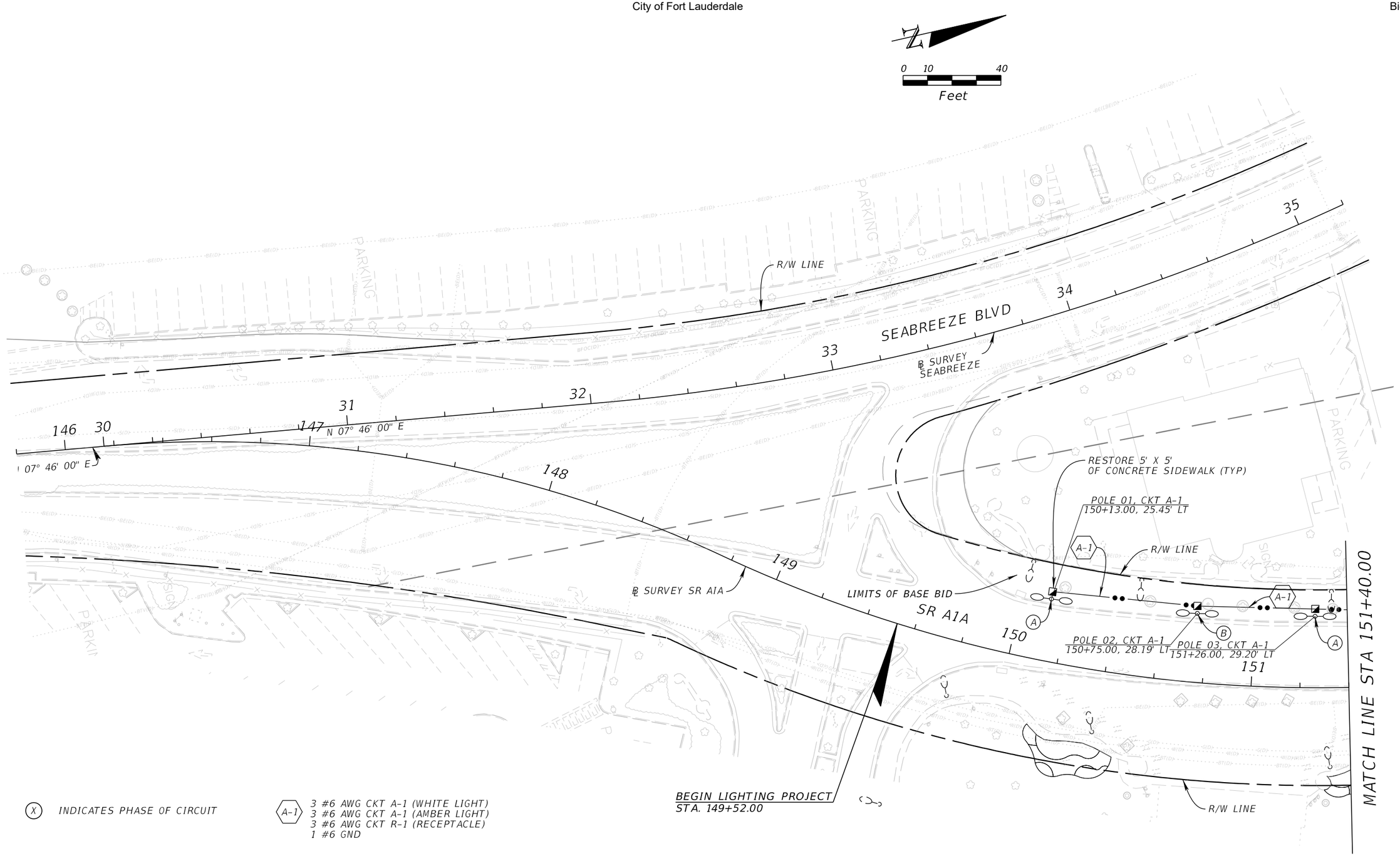

(X) INDICATES PHASE OF CIRCUIT

A-1 — 3 #6 AWG CKT A-1 (WHITE LIGHT)
3 #6 AWG CKT A-1 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

REVISIONS			
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO. L-11

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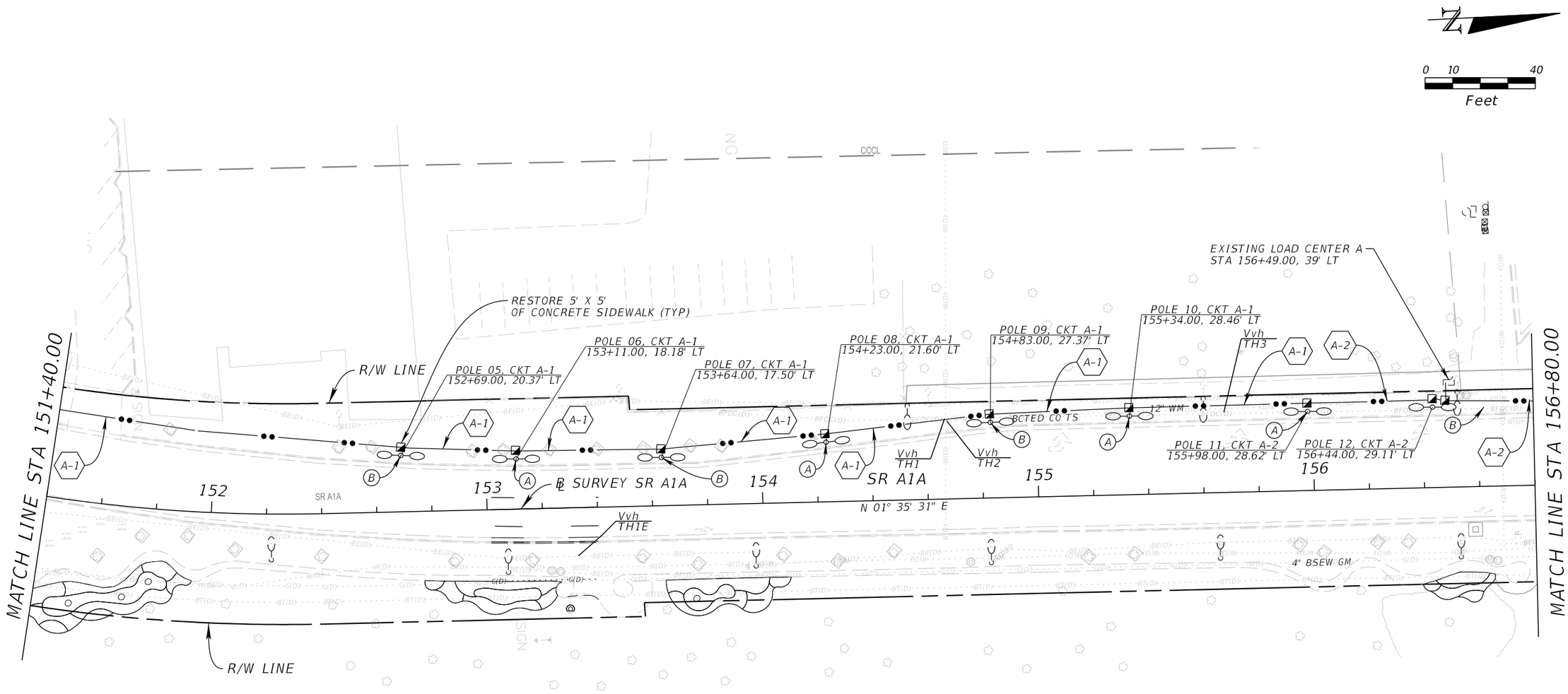

(X) INDICATES PHASE OF CIRCUIT

A-1 — 3 #6 AWG CKT A-1 (WHITE LIGHT)
3 #6 AWG CKT A-1 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

A-2 — 3 #6 AWG CKT A-2 (WHITE LIGHT)
3 #6 AWG CKT A-2 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

REVISIONS			
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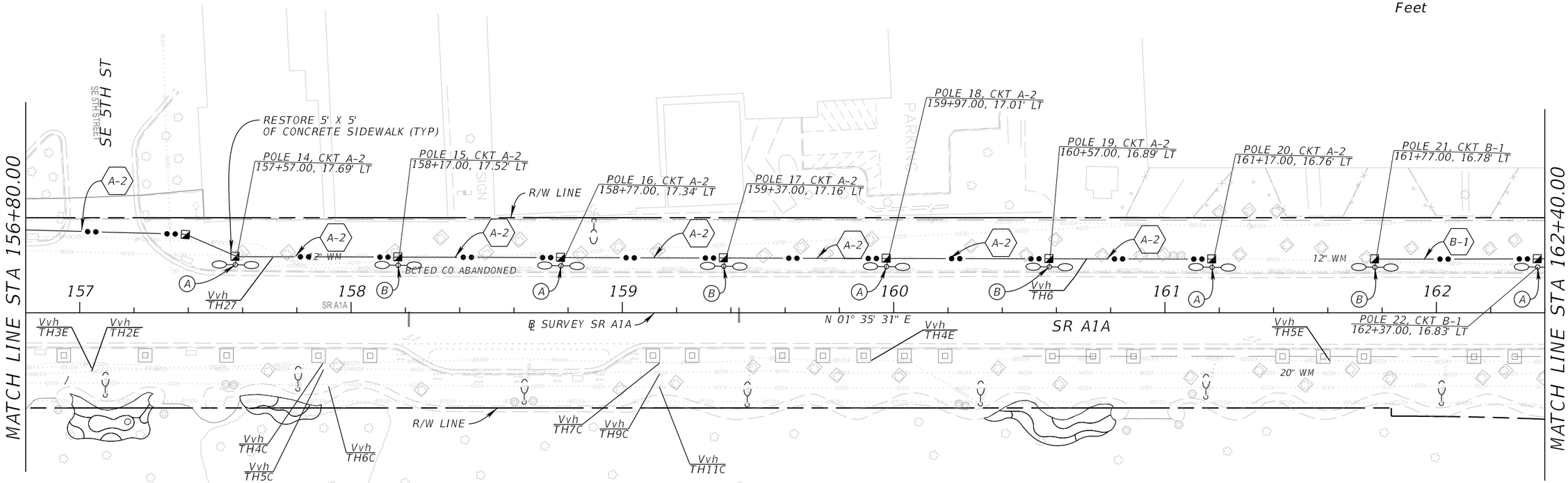
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO. 4-12

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



(X) INDICATES PHASE OF CIRCUIT

A-2
3 #6 AWG CKT A-2 (WHITE LIGHT)
3 #6 AWG CKT A-2 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

B-1
3 #6 AWG CKT B-1 (WHITE LIGHT)
3 #6 AWG CKT B-1 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

REVISIONS			
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO. 4-13

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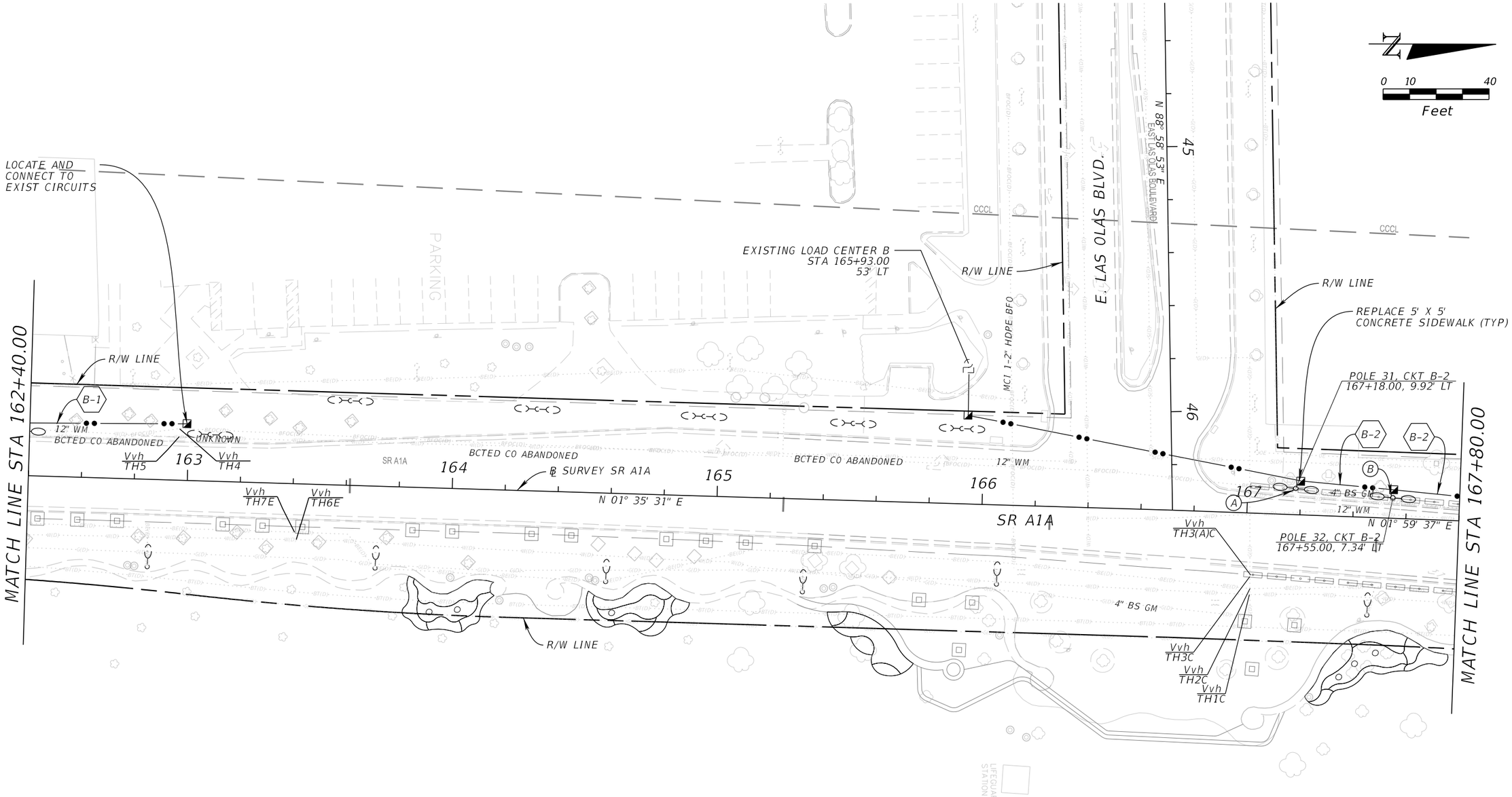
Adan.Garcia 4/27/2020 6:06:47 PM K:\WPB_Design\040005603_SRA1A_N_FTL\42402725201\lighting\New folder\plan\planlt_03



(X) INDICATES PHASE OF CIRCUIT

B-1
3 #6 AWG CKT B-1 (WHITE LIGHT)
3 #6 AWG CKT B-1 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

B-2
3 #6 AWG CKT B-2 (WHITE LIGHT)
3 #6 AWG CKT B-2 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

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REVISIONS			
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West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

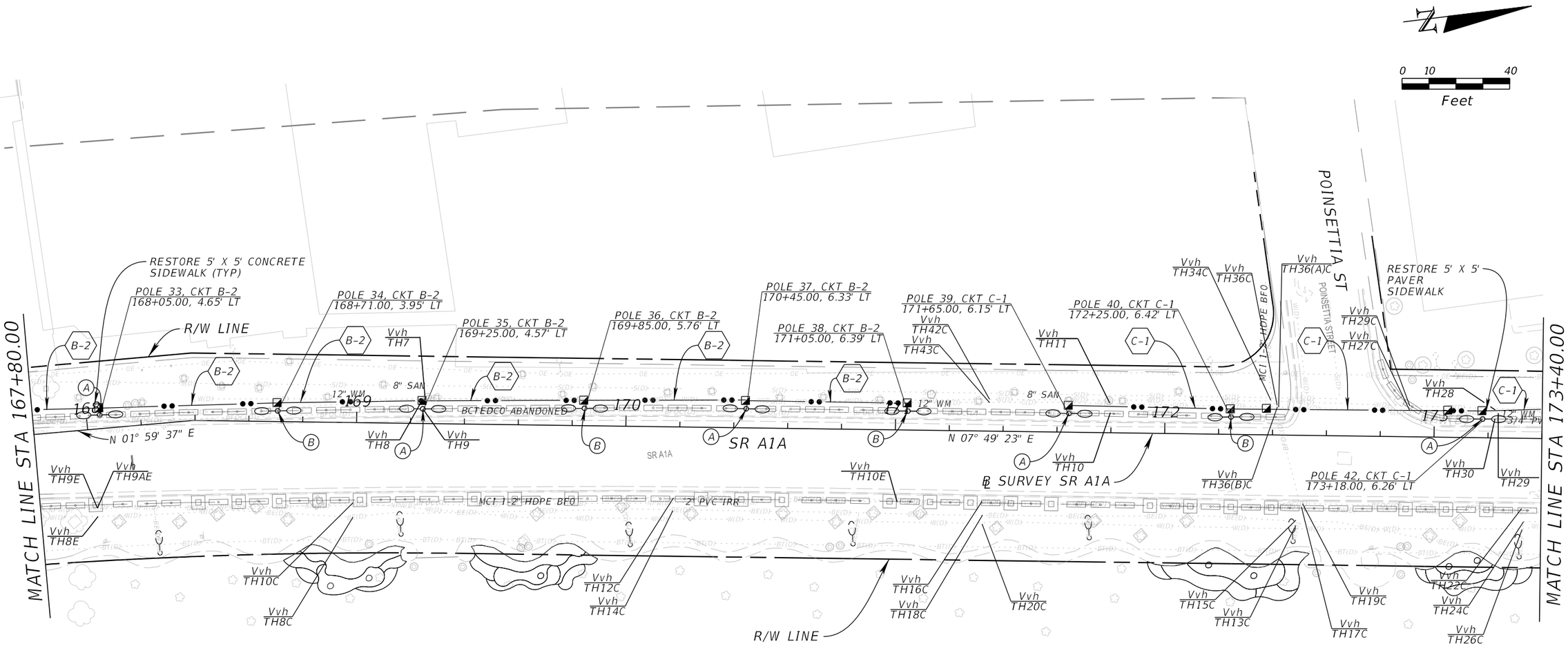
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO.

L-14

Adan.Garcia 4/27/2020 6:06:47 PM K:\WPB_Design\040005603_SRA1A_N_FTL\42402725201\lighting\New folder\plan\planlt_04



(X) INDICATES PHASE OF CIRCUIT

B-2: 3 #6 AWG CKT B-2 (WHITE LIGHT)
3 #6 AWG CKT B-2 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

C-1: 3 #6 AWG CKT C-1 (WHITE LIGHT)
3 #6 AWG CKT C-1 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

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1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

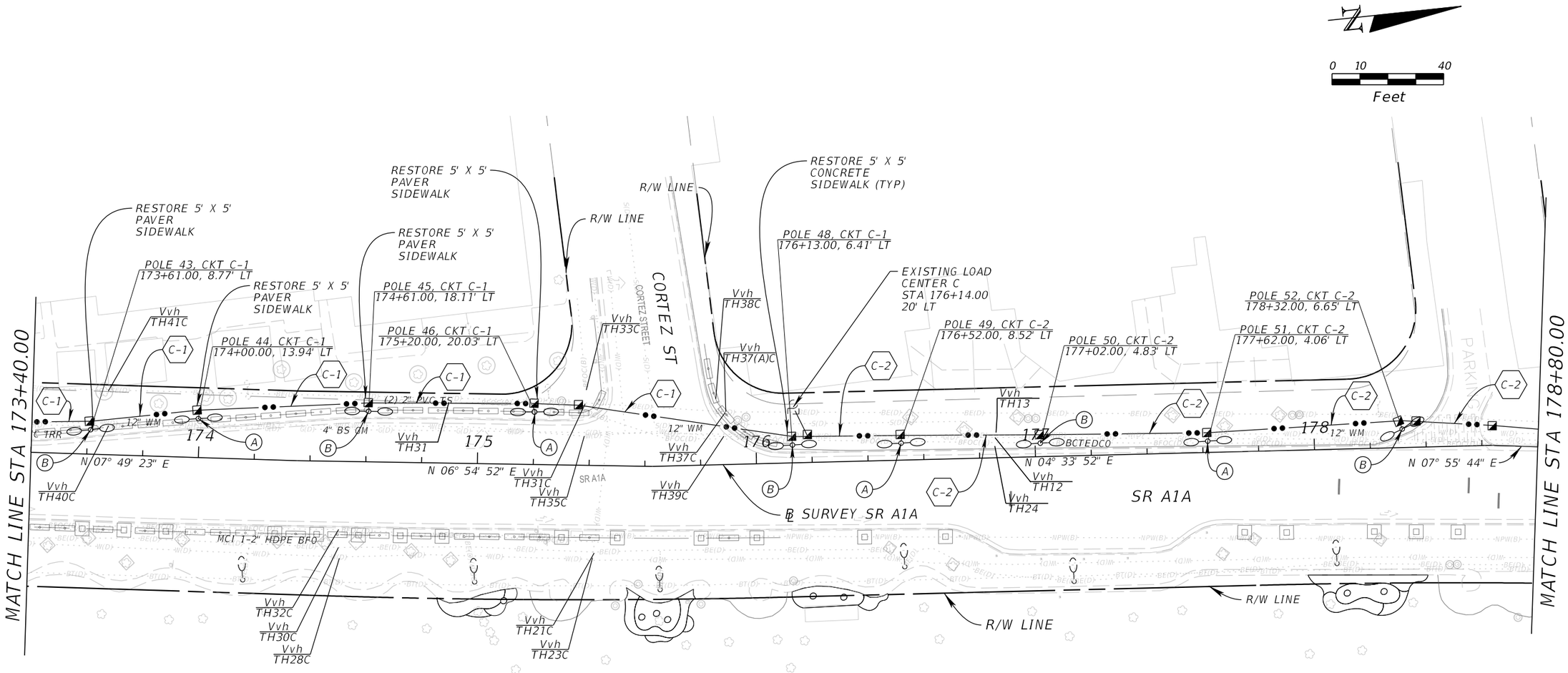
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO.

Adan.Garcia 4/27/2020 6:06:48 PM K:\WPB_Design\040005603_SRA1A_N_FTL\42402725201\lighting\New folder\plan\planlt_05



(X) INDICATES PHASE OF CIRCUIT

C-1
3 #6 AWG CKT C-1 (WHITE LIGHT)
3 #6 AWG CKT C-1 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

C-2
3 #6 AWG CKT C-2 (WHITE LIGHT)
3 #6 AWG CKT C-2 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

REVISIONS			
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO. 14-16

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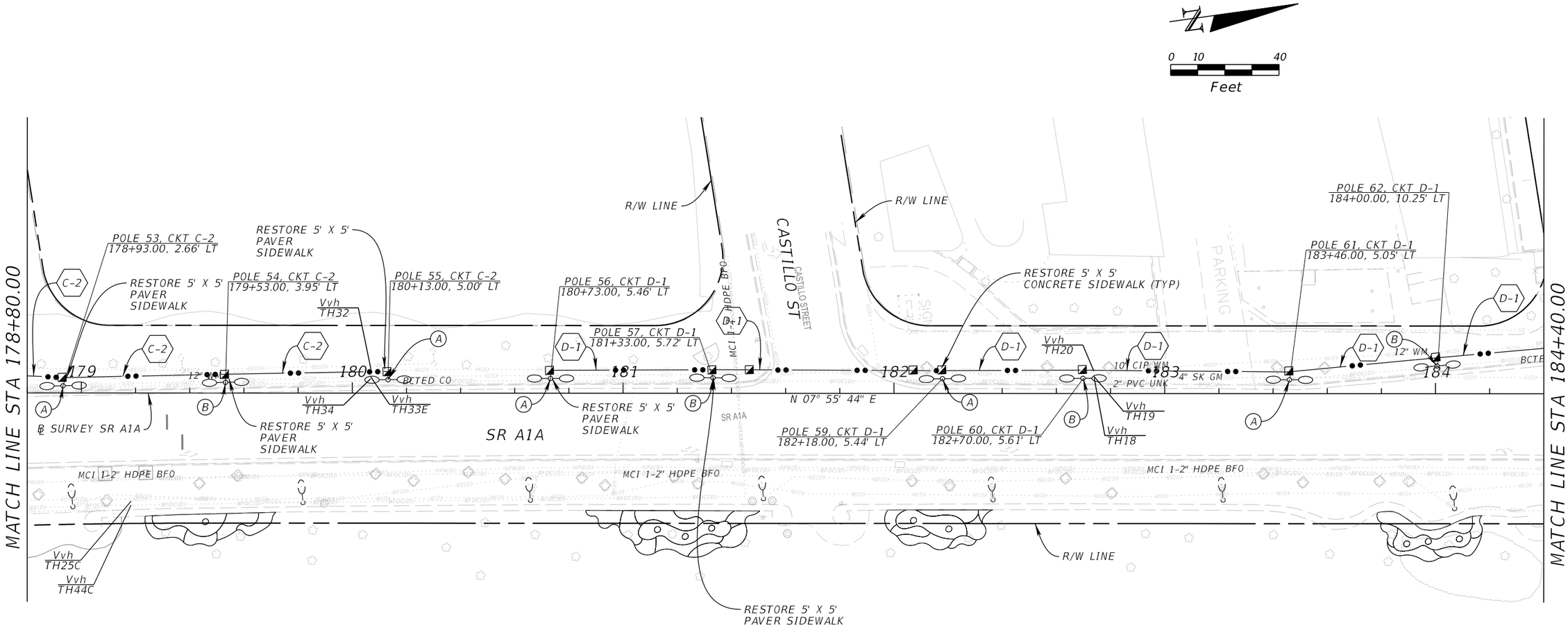

(X) INDICATES PHASE OF CIRCUIT

C-2 — 3 #6 AWG CKT C-2 (WHITE LIGHT)
3 #6 AWG CKT C-2 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

D-1 — 3 #6 AWG CKT D-1 (WHITE LIGHT)
3 #6 AWG CKT D-1 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

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A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO. 4-17

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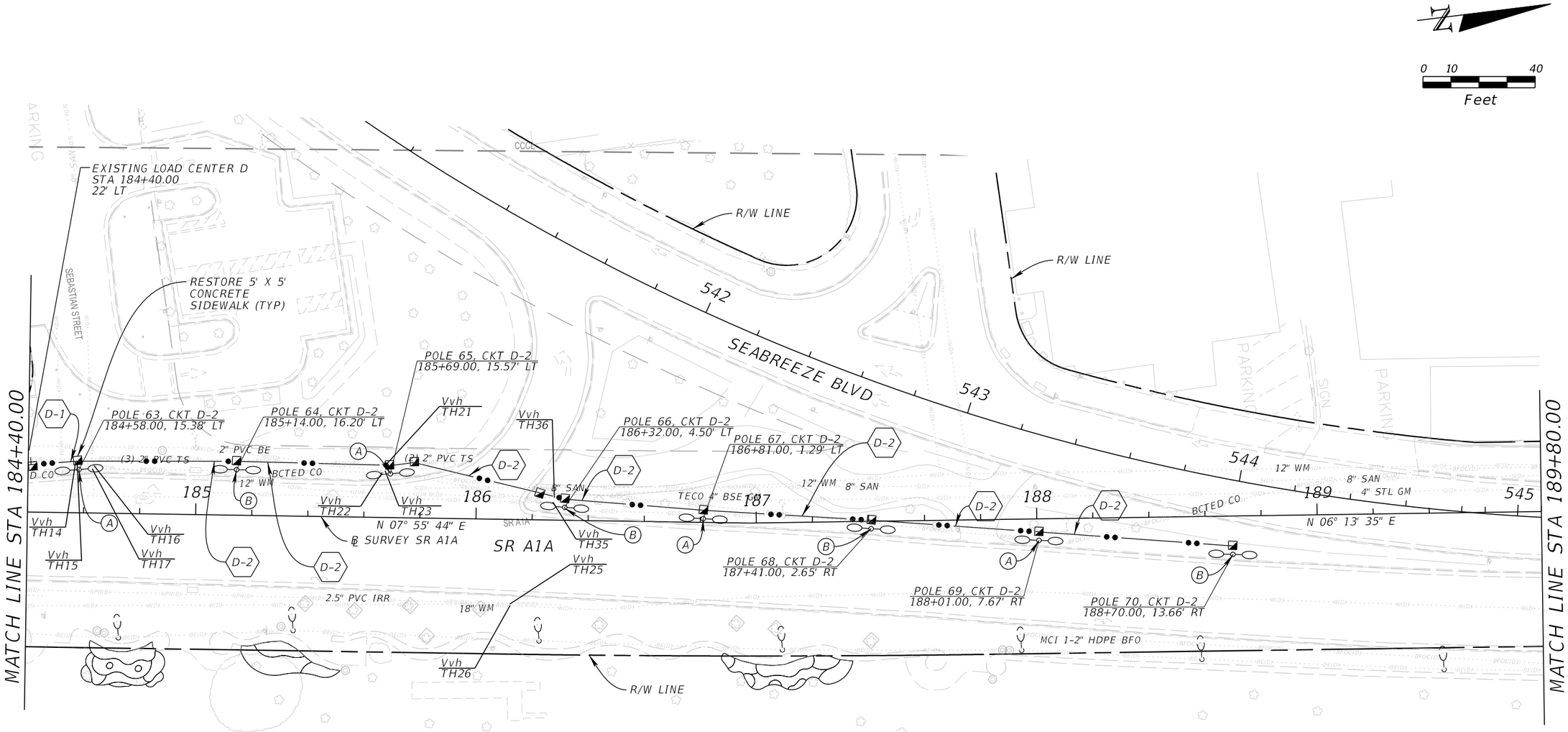

(X) INDICATES PHASE OF CIRCUIT

D-2 — 3 #6 AWG CKT D-2 (WHITE LIGHT)
3 #6 AWG CKT D-2 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

D-1 — 3 #6 AWG CKT D-1 (WHITE LIGHT)
3 #6 AWG CKT D-1 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

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A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO. 4-18

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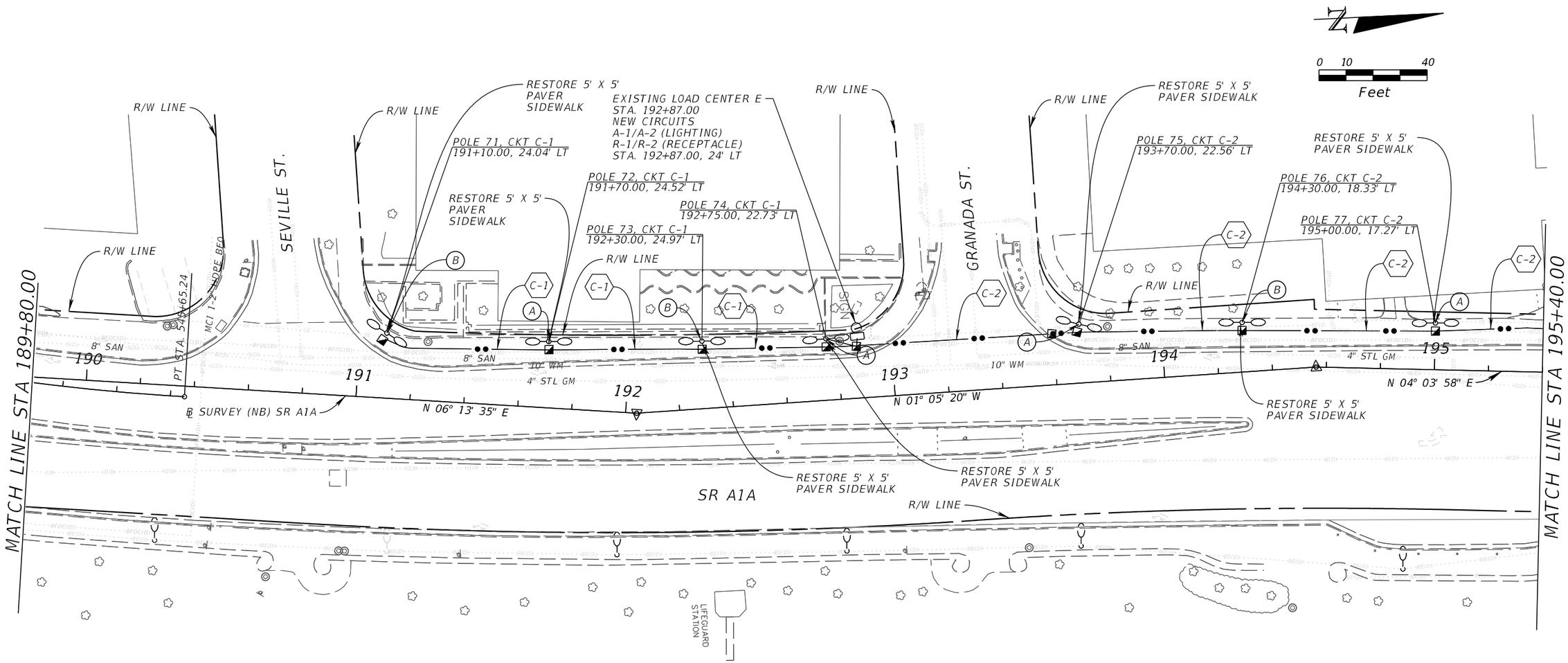

(X) INDICATES PHASE OF CIRCUIT

C-1
3 #6 AWG CKT C-1 (WHITE LIGHT)
3 #6 AWG CKT C-1 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

C-2
3 #6 AWG CKT C-2 (WHITE LIGHT)
3 #6 AWG CKT C-2 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

REVISIONS			
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LIGHTING PLAN

SHEET NO.
L-19

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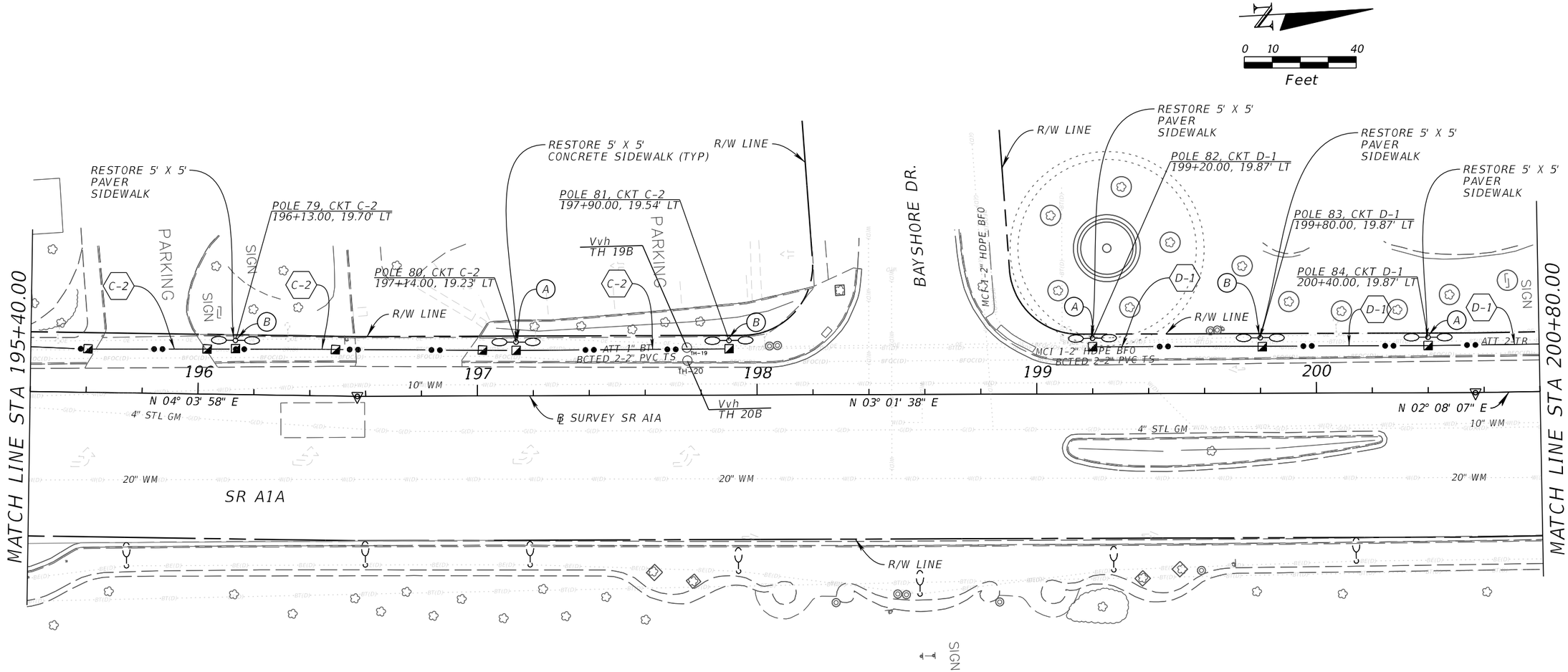

(X) INDICATES PHASE OF CIRCUIT

C-2
3 #6 AWG CKT C-2 (WHITE LIGHT)
3 #6 AWG CKT C-2 (AMBER LIGHT)
3 #6 AWG CKT R-2 (RECEPTACLE)
1 #6 GND

D-1
3 #6 AWG CKT D-1 (WHITE LIGHT)
3 #6 AWG CKT D-1 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

REVISIONS			
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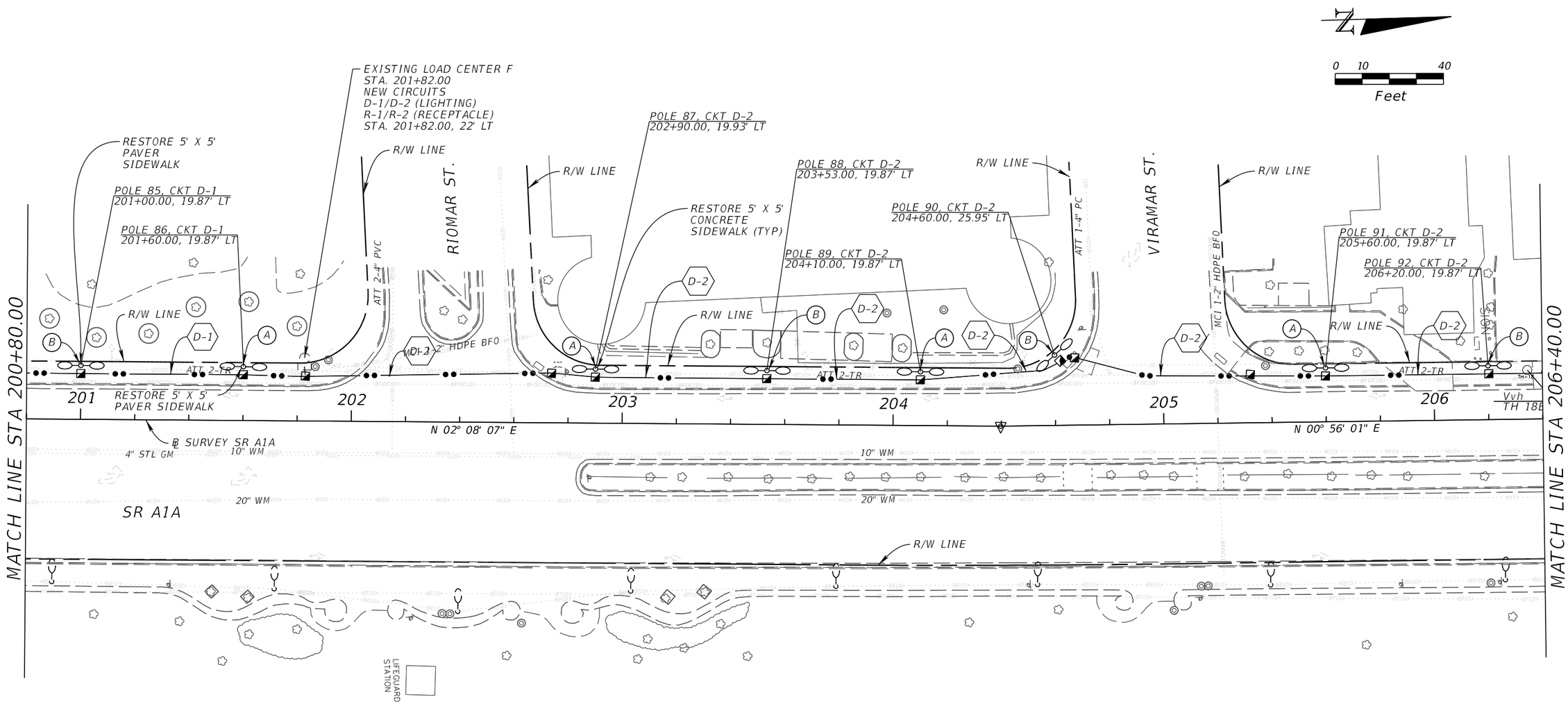
A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO. L-20

Adan.Garcia 4/27/2020 6:06:57 PM K:\WPB_Design\040005603_SRA1A_N_FTL\42402725201\lighting\PLANLT02.DGN



(X) INDICATES PHASE OF CIRCUIT

D-1
3 #6 AWG CKT D-1 (WHITE LIGHT)
3 #6 AWG CKT D-1 (AMBER LIGHT)
3 #6 AWG CKT R-1 (RECEPTACLE)
1 #6 GND

D-2
3 #6 AWG CKT D-2 (WHITE LIGHT)
3 #6 AWG CKT D-2 (AMBER LIGHT)
3 #2 AWG CKT R-2 (RECEPTACLE)
1 #2 GND

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LIGHTING PLAN

SHEET NO.

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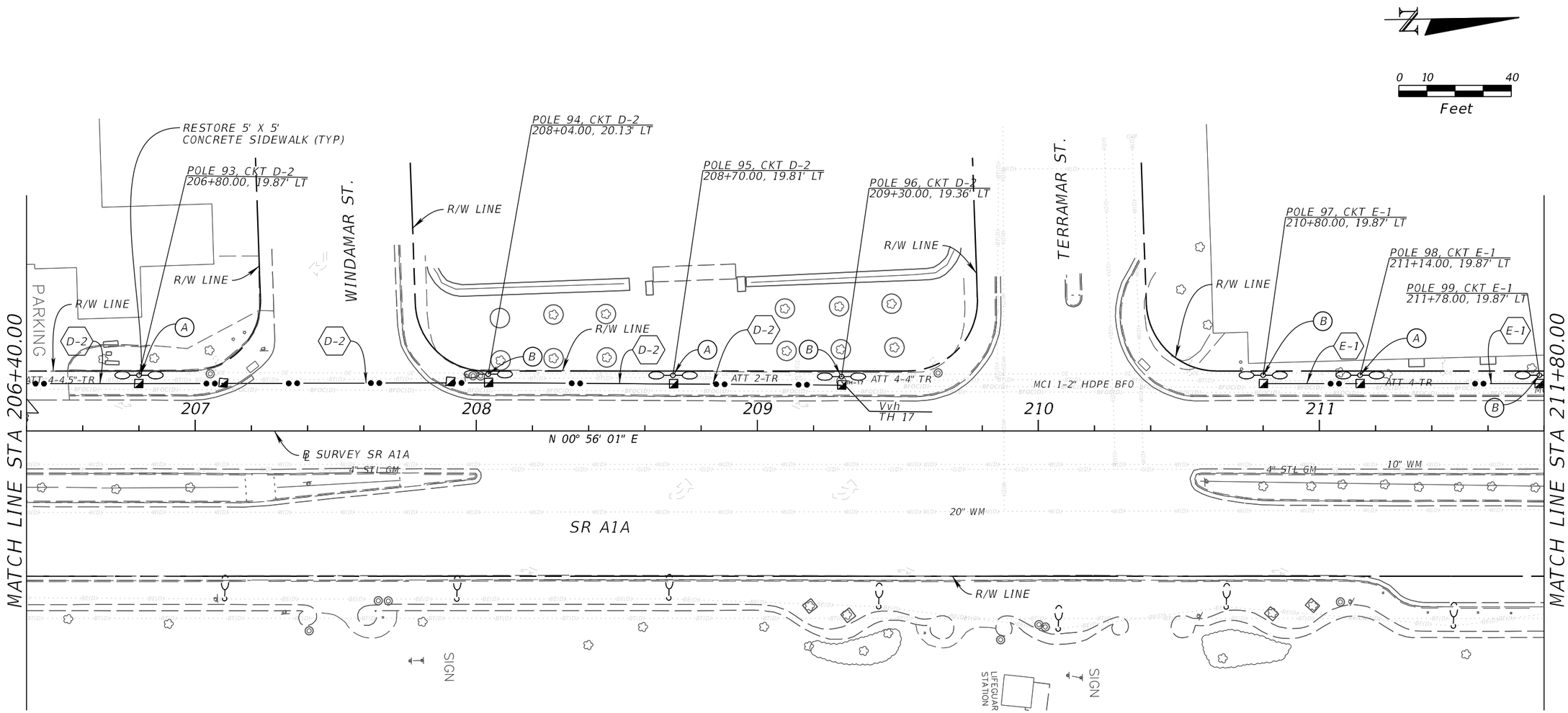

(X) INDICATES PHASE OF CIRCUIT

D-2 3 #6 AWG CRT D-2 (WHITE LIGHT)
3 #6 AWG CRT D-2 (AMBER LIGHT)
3 #2 AWG CRT R-2 (RECEPTACLE)
1 #2 GND

E-1 3 #6 AWG CKT E-1 (WHITE LIGHT)
3 #6 AWG CKT E-1 (AMBER LIGHT)
3 #2 AWG CKT R-1 (RECEPTACLE)
1 #2 GND

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LIGHTING PLAN

SHEET NO. 4-22

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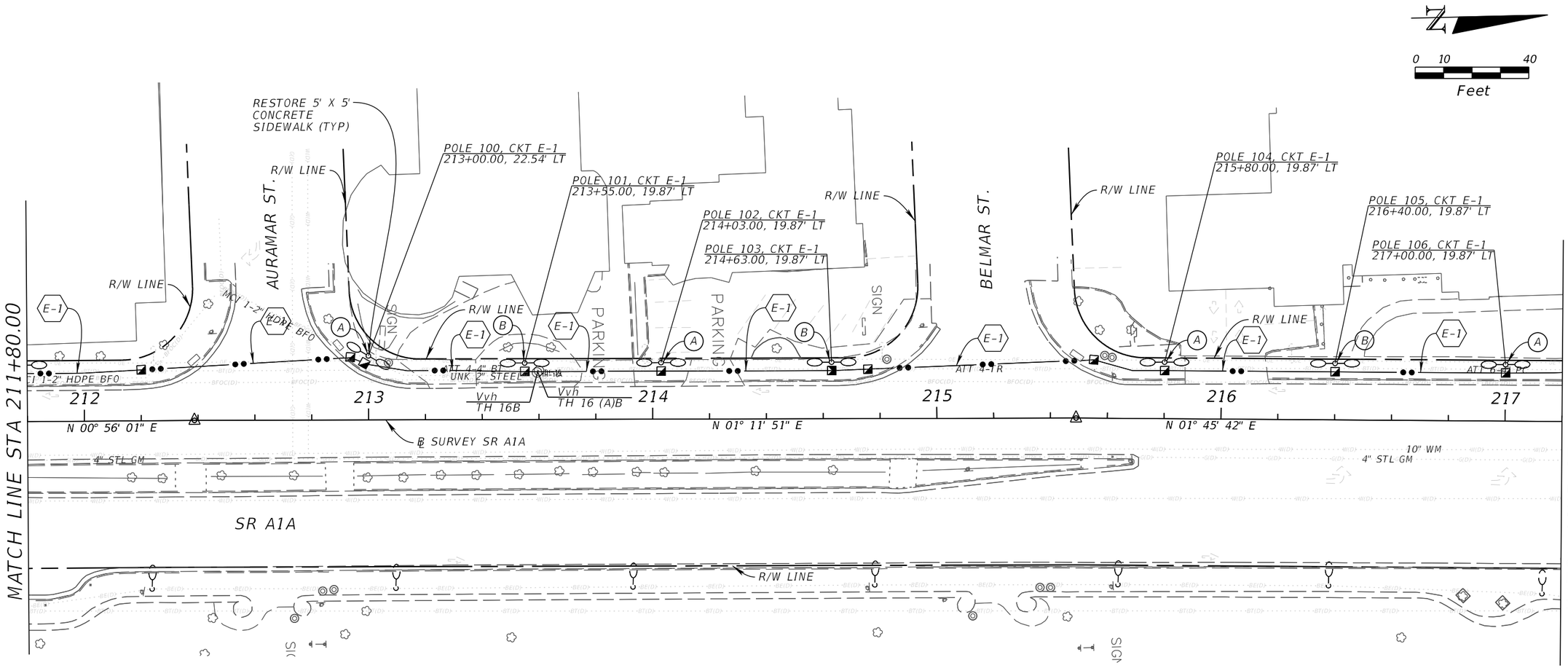

(X) INDICATES PHASE OF CIRCUIT

E-1 3 #6 AWG CKT E-1 (WHITELIGHT)
3 #6 AWG CKT E-1 (AMBER LIGHT)
3 #2 AWG CKT R-1 (RECEPTACLE)
1 #2 GND

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A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO.

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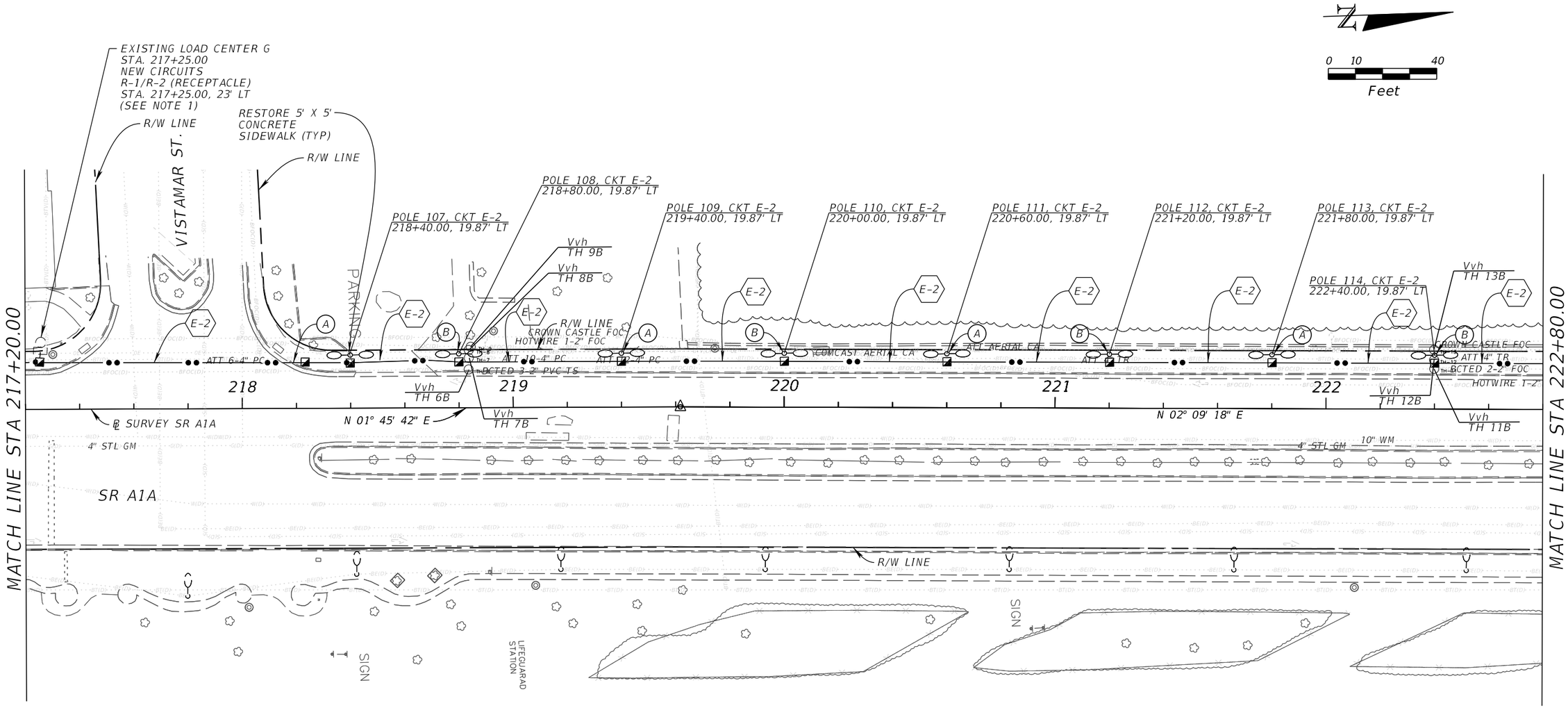

(X) INDICATES PHASE OF CIRCUIT

E-2 — 3 #6 AWG CKT E-2 (WHITE LIGHT)
3 #6 AWG CKT E-2 (AMBER LIGHT)
3 #2 AWG CKT R-2 (RECEPTACLE)
1 #2 GND

NOTE 1:

CONTRACTOR SHALL PROVIDE NETWORK GATEWAY FOR SMART LIGHTING CONTROL SYSTEM. SEE SHEET 31 FOR REQUIREMENTS. CONTRACTOR SHALL COORDINATE WITH CONTROLS VENDOR AND ENGINEER FOR FINAL LOCATION OF THE GATEWAY EQUIPMENT.

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO. 24

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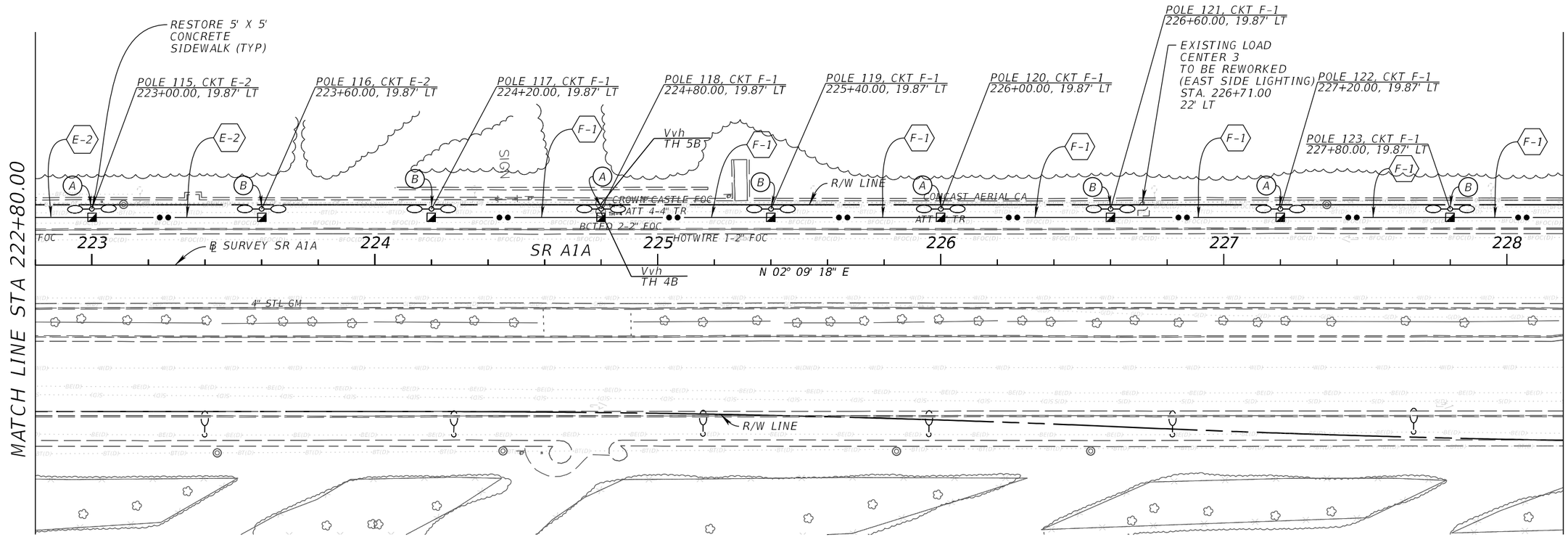

(X) INDICATES PHASE OF CIRCUIT

E-2
3 #6 AWG CKT E-2 (WHITE LIGHT)
3 #6 AWG CKT E-2 (AMBER LIGHT)
3 #2 AWG CKT R-2 (RECEPTACLE)
1 #2 GND

F-1
3 #4 AWG CKT F-1 (WHITE LIGHT)
3 #4 AWG CKT F-1 (AMBER LIGHT)
3 #2 AWG CKT R-1 (RECEPTACLE)
3 #2 AWG CKT R-2 (RECEPTACLE)
1 #2 GND

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A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO.
4-25

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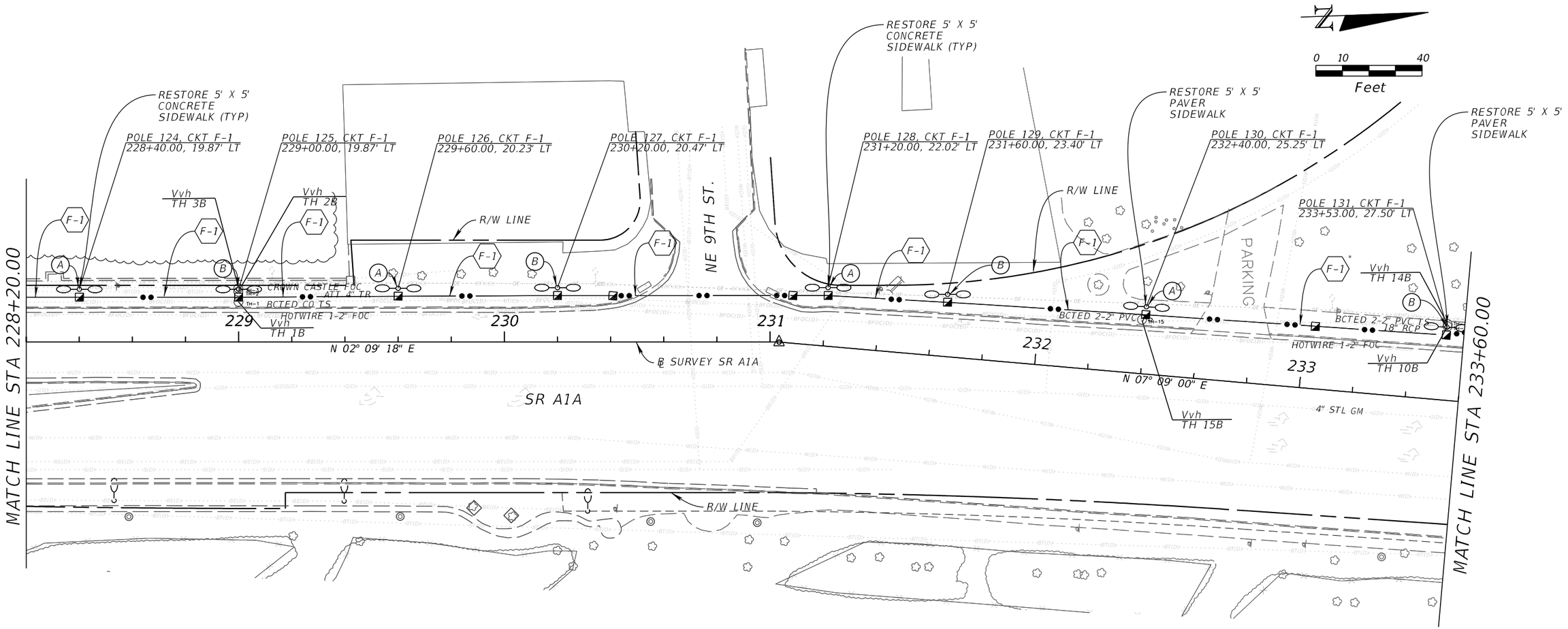

(X) INDICATES PHASE OF CIRCUIT

F-1

3 #4 AWG CKT F-1 (WHITE LIGHT)
3 #4 AWG CKT F-1 (AMBER LIGHT)
3 #2 AWG CKT R-1 (RECEPTACLE)
3 #2 AWG CKT R-2 (RECEPTACLE)
1 #2 GND

REVISIONS			
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LIGHTING PLAN

SHEET NO.

11-26

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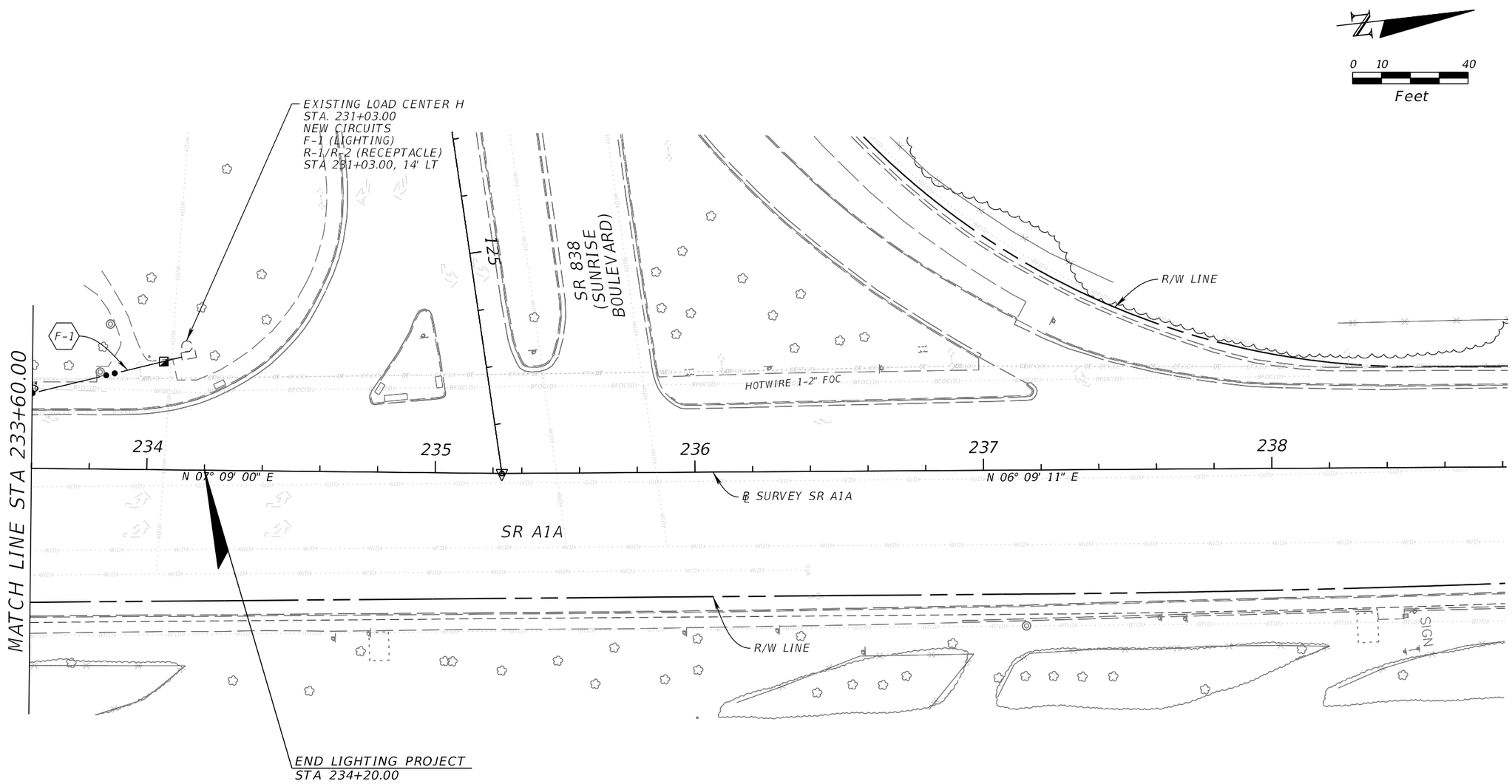

(X) INDICATES PHASE OF CIRCUIT

F-1 — 3 #4 AWG CKT F-1 (WHITE LIGHT)
3 #4 AWG CKT F-1 (AMBER LIGHT)
3 #2 AWG CKT R-1 (RECEPTACLE)
3 #2 AWG CKT R-2 (RECEPTACLE)
1 #2 GND

REVISIONS			
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A1A	BROWARD	424027-2-58-01

LIGHTING PLAN

SHEET NO. 4-27

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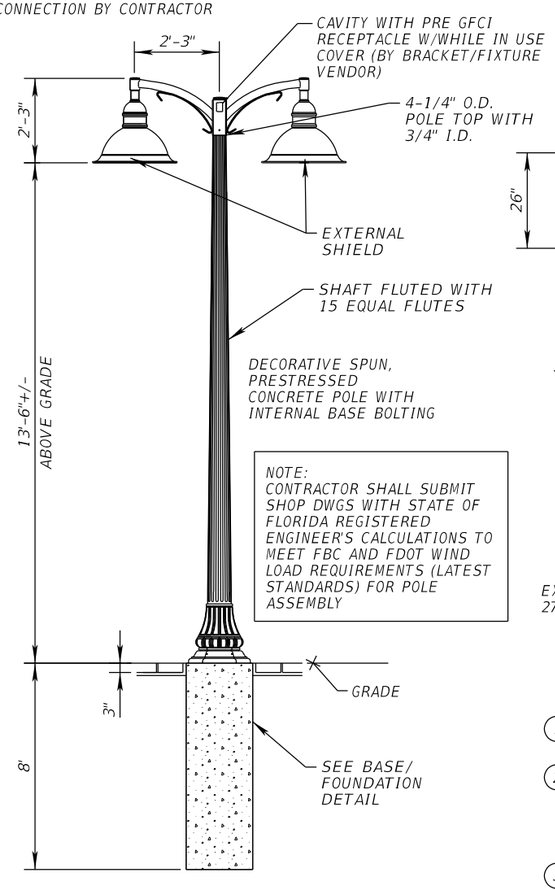
NOTE:
FIXTURE AND ARM SHALL BE PRE-ASSEMBLED AND PRE-WIRED BY MANUFACTURE FOR SINGLE POINT CONNECTION BY CONTRACTOR



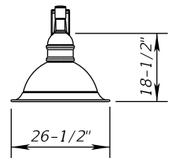
SPUNCAST PRESTRESSED WASHINGTON STYLE INTERNAL BASE PLATE CONCRETE POLE BY AMERON POLE PRODUCTS

POLES SHALL BE FORMED AS SINGLE PIECE POLE CONSISTING OF A TAPERED 4-1/4" TO 7" FIFTEEN FLUTE SHAFT AND A 21" DIAMETER BY 24" HIGH DECORATIVE BASE TO AN OVERALL LENGTH OF 14'-6". THE POLE SHALL BE MOUNTED TO A CONCRETE FOUNDATION WITH (4) STAINLESS STEEL BOLTS ON A 9" BOLT PATTERN TO A STAINLESS STEEL INTERNAL POLE ADJUSTER PLATE. THE POLE BASE ACCESSIBLE BY A CONCRETE HAND HOLE COVER. THE POLE SHALL BE FORMED WITH BLACK EXPOSED AGGREGATES WITH AMERSHIELD ANTI-GRAFFITI COATING APPLIED.

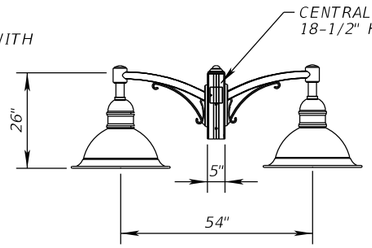
POLE DESIGNATION: 26ST14(123I)SPECIAL (WITH TENON)
POLE WEIGHT: 480 LBS

LIGHT POLE DETAIL

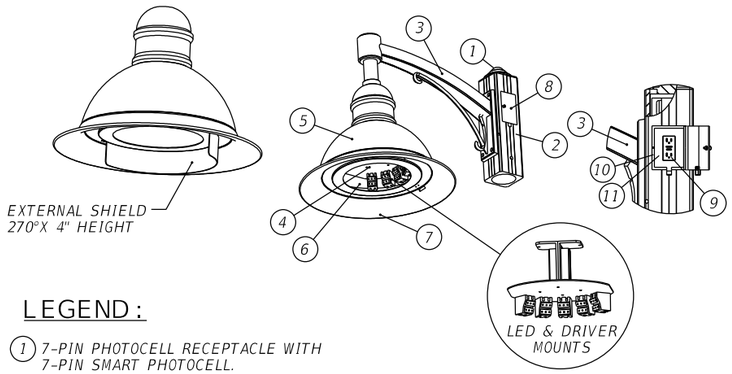
N.T.S.



FRONT VIEW



TWIN FIXTURE/BRACKET



LEGEND:

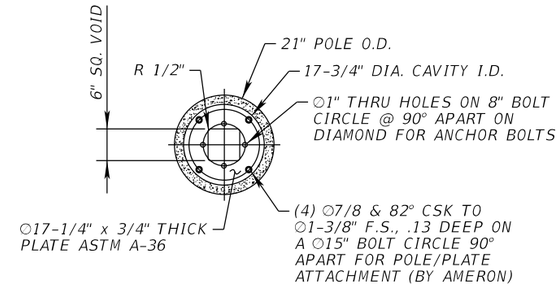
1. 7-PIN PHOTOCELL RECEPTACLE WITH 7-PIN SMART PHOTOCELL.
2. CAST ALUMINUM SQUARE CENTRAL TUBING TO FIT POLE TOP TENON 4" DIA. X 8", (4) 3/8-16 SS SET SCREWS &(1) 1/2"-13 X 5" SS MACHINE SCREW THREADED TO CENTRAL TUBING FOR TORSION ROTATION- CONTRACTOR SHALL DRILL TENON PER TEMPLATE PROVIDED BY VERTEX ILLUMINATION OF AMERICA
3. CAST ALUMINUM ARM WITH DECORATIVE SCROLL BOLTED TO CAST CENTRAL TUBING & 1-1/4" SS NIPPLE THREADED INTO ARM AND SECURED WITH LOCKNUT INSIDE FIXTURE HOUSING
4. LED DRIVERS MOUNT INSIDE ELECTRICAL COMPARTMENT INDEPENDENT FROM LED LIGHT ENGINE CAN BE REPLACED OR UPGRADED; VOLTAGE 120-277 V
5. FORMED ALUMINUM HOUSING-HOUSES TWO TIER LED ARRAYS, VERTICAL AND HORIZONTAL AIMING ANGLES,ASSYMMETRICAL DISTRIBUTION WITH NO LIGHT DIRECTED TOWARDS THE HOUSE SIDE - LED ARRAY CREE XP-E-AMBER COLOR
6. TEMPERED FLAT FROSTED GLASS LENS
7. CAST ALUMINUM LOWER FRAME
8. CAST ALUMINUM IN-USE DOOR FOR GFCI WITH FULL NYLON HINGE AND HEX HEAD NYLON SCREW AND RUBBER GASKET
9. DUPLEX GFCI RECEPTACLE-125VA-15A
10. JUNCTION BOX FOR GFCI
11. PROVIDE AND INSTALL A 3A IN-LINE FUSE AND FUSE HOLDER WITHIN THE JUNCTION BOX FOR THE GFCI RECEPTACLE.

FIXTURE NOTES:

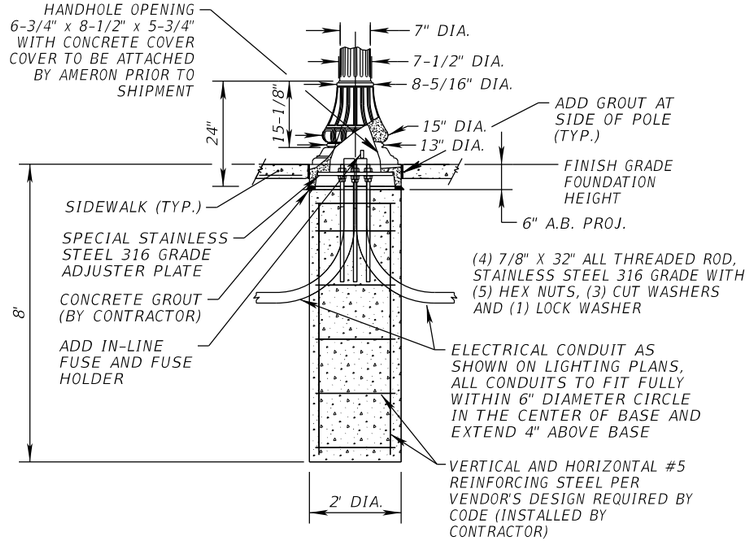
FIXTURES/BRACKETS BY VERTEX ILLUMINATIONS OF AMERICA (VIA) UTILIZING GLOSS BLACK FINISH, DARK SKY/TURTLE FRIENDLY FULL CUTOFF OPTICS

THE ENTIRE BRACKET/FIXTURE ASSEMBLY IS PRE-WIRED FOR EASY ONE POINT CONNECTION AT BOTTOM OF CENTRAL TUBING

WEST SIDE
TWIN FIXTURE AND TWIN BRACKET ASSEMBLY:
FIXTURE: CITTA-FLL-72W LED AMBER-TRLE-240V-GLOSS-BLACK
BRACKET: FCL-FLL-BR2-27-BKTX
EXTERNAL 270 DEGREE SHIELD: CAT. #CITTA 270S-4-GLOSS-BLACK
EPA ASSEMBLY: 5.25 SQ FT; WEIGHT ASSEMBLY: 164 LBS



BOTTOM VIEW WITH SPECIAL ADJUSTER PLATE



BASE / FOUNDATION DETAIL

N.T.S.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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LIGHTING DETAILS

SHEET NO. 4-28

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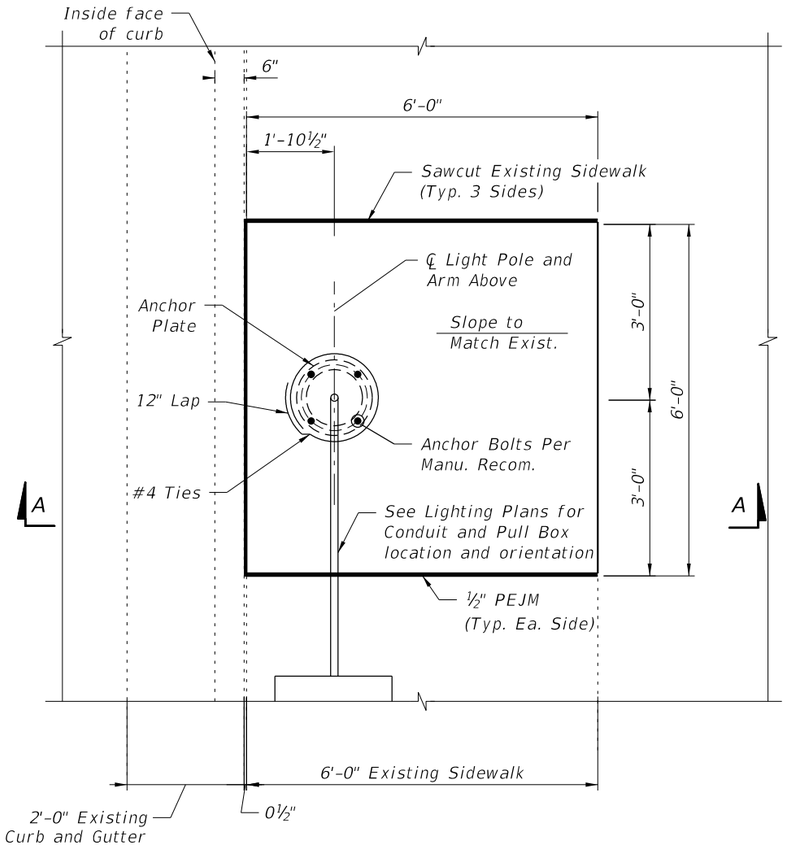
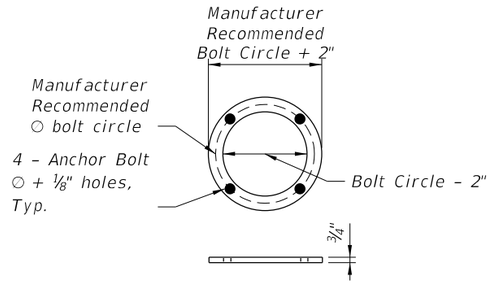
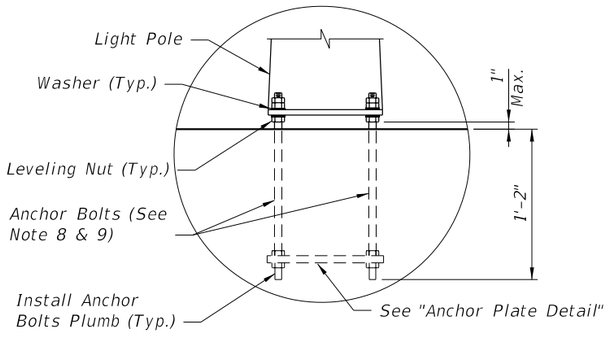


PLAN VIEW- OPTION 1

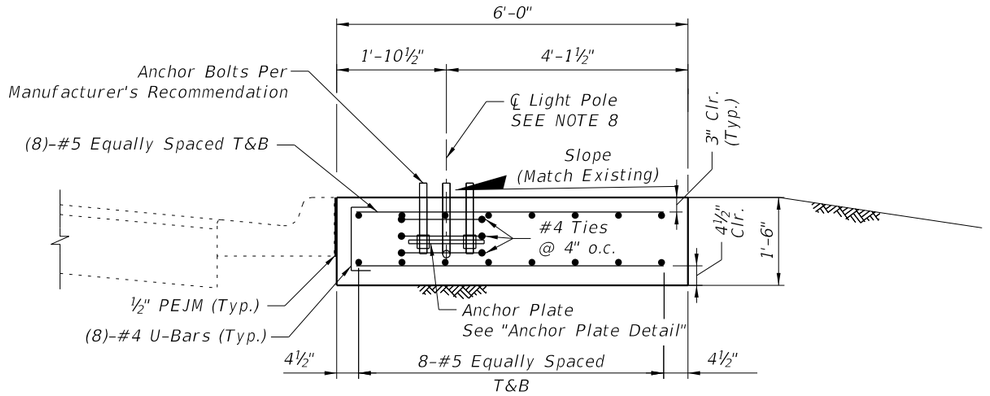
*Option 2 – Similar to opposite hand of Option 1; See SECTION A-A (OPTION 2) on this sheet for dimensional difference.



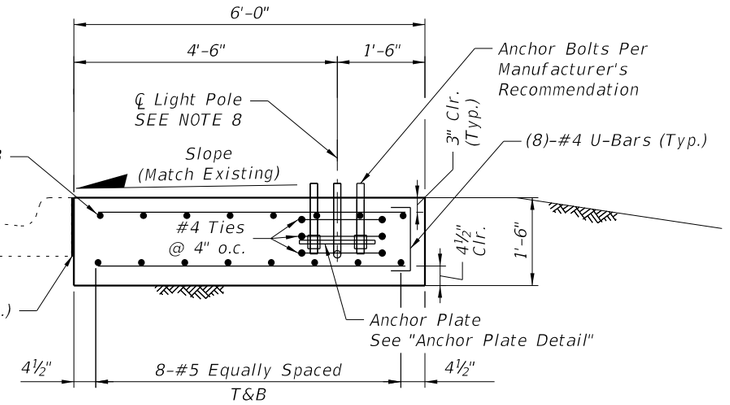
ANCHOR PLATE DETAIL



DETAIL "A"



SECTION A-A (OPTION 1)



SECTION A-A (OPTION 2)

General Notes:

1) Specifications shall be in accordance with FDOT Standard Specification for Road and Bridge Construction Jan. 2020.
2) Design is in accordance with LTS LRFD First Edition and AASHTO LRFD Bridge Design Specifications Seventh Edition.
3) Concrete shall be Class II in accordance with FDOT Standard Specification 346. (Minimum 28-day Compressive Strength of 3,400 psi)
4) Reinforcement shall be in accordance with FDOT Standard Specification 415.
5) The footing is designed to the following loads:
   - Axial Dead load = 1.0 kip
   - Wind Load Moment about Transverse Axis = 11.85 kip-ft
   - Wind Load Moment about Longitudinal Axis = 11.85 kip-ft
   - Dead Load Moment about Longitudinal Axis = 0 kip-ft
   - Shear in Longitudinal Axis = 1.0 kip
   - Shear in Transverse Axis = 1.0 kip
   - Torsion about Pole Axis = 1.78 kip-ft
6) Anchor bolts to be installed per manufacturer's instructions and recommendations.
7) The soil below the footing shall be compacted to a Minimum Bearing Capacity of 2.0 ksf.
8) In areas where pavers are to sit atop light pole footing, set footing so that pavers are flush with surrounding area and increase length of anchor bolt projections by the thickness of the pavers.
9) Payment: The cost of Wire Screen, Anchor Bolts, Nuts, Washers, and Anchor Plates shall be included in the Bird Price for Light Poles. The cost of all labor, concrete and reinforcing steel required for the construction of the spread footing and miscellaneous hardware required for the completion of the electrical system shall be included in the Bid Price for the Light Pole.
10) Light Pole Anchorage:
    - Anchor Plate: ASTM A709 (Grade 36) or ASTM A36
    - Coating: Galvanize plates in accordance with ASTM A123.
11) Shift footing reinforcement as required to clear anchor bolts.

Abbreviations:
PEJM – Premolded Expansion-Joint Material

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
Jerry Marcus Piccolo, P.E.
P.E. License No. 80484
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

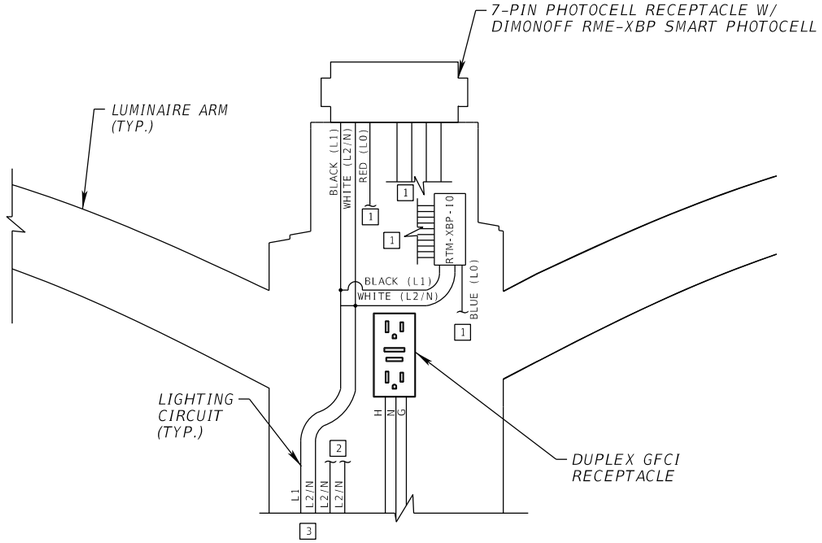
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

LIGHTING DETAILS

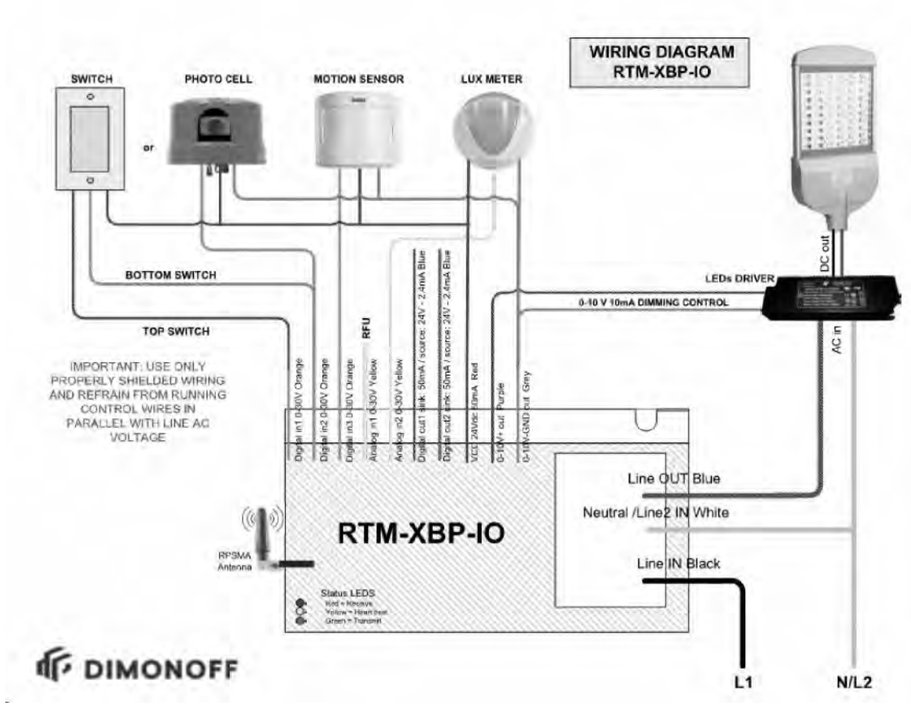
SHEET NO. 1-29

$USER$ $DATE$ $TIME$ $FILE$

1. SEE DIMONOFF WIRING DIAGRAM FOR CONTROL WIRING CONNECTIONS AND FINAL CONNECTION TO FIXTURES/DRIVERS.
2. SECONDARY AMBER CIRCUIT TO CONNECT TO AMBER DRIVER. FOR MECHANICAL FAIL OVER OPTION.
3. CONTROLLED WHITE/AMBER LIGHT CIRCUIT.



LIGHT POLE WIRING DIAGRAM (TYP.)



DIMONOFF WIRING DIAGRAM

NETWORK GATEWAY FOR SMART LIGHTING CONTROL SYSTEM REQUIREMENTS

CONTRACTOR SHALL FURNISH AND INSTALL A LIGHTING NETWORK CONTROLS SYSTEM THAT MEETS THE FOLLOWING MINIMUM REQUIREMENTS.

1. CONTRACTOR SHALL COORDINATE WITH THE SELECTED LIGHTING CONTROLS VENDOR FOR FINAL QUANTITY AND PLACEMENT OF GATEWAYS AND NETWORK EQUIPMENT.
2. LIGHTING NETWORK SHALL BE ABLE TO BE ACCESSED, MONITORED, AND CONTROLLED VIA SMARTPHONE APPLICATION AND WEB APPLIANCE.
3. NETWORK CONTROLS SHALL FACILITATE DIMMING FUNCTIONALITY AS WELL AS THE SWITCHING BETWEEN AMBER AND WHITE LED BOARDS.
4. NETWORK GATEWAY SHALL BE CONNECTED TO SMART 7PIN RECEPTACLE INSTALLED ON THE STREET LIGHTS.

REVISIONS			
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Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

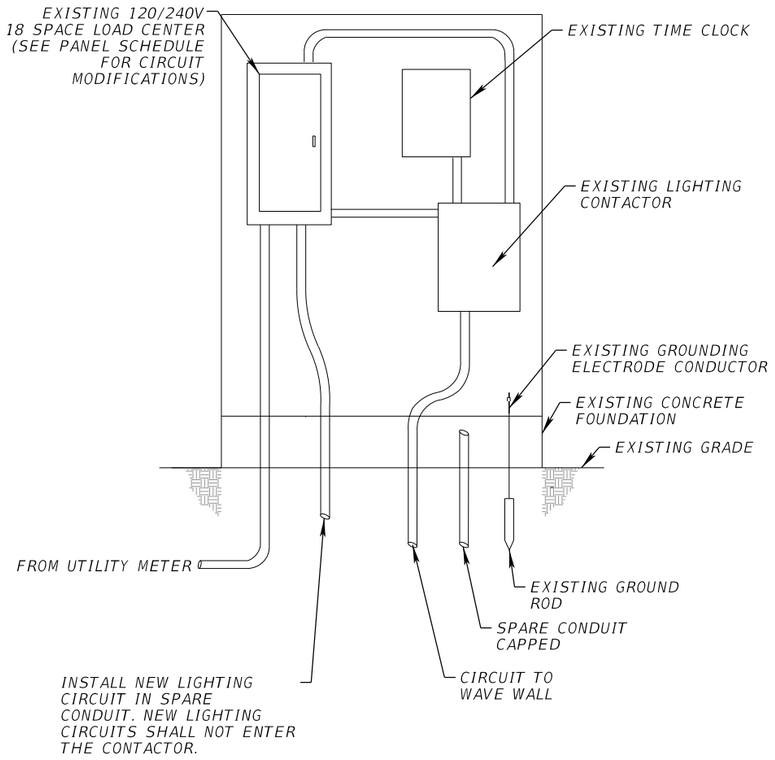
LIGHTING DETAILS

SHEET NO. L-30

Adan.Garcia 4/27/2020 6:07:07 PM K:\WPB_Design\040005603_SRAIA_N_FTL\42402725201\lighting\LUDTLT01.DGN

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

PHOTO OF TYPICAL LOAD CENTER FEEDING WEST SIDE LIGHTS



CABINET MODIFICATION DETAIL (TYP.)

FEEDS LIGHTS ON WEST SIDE OF A1A

Load Center A Panel Schedule

Existing Panel Location: SE 5th, STA 156+49.00 Equipment Cabinet Volts: 120/240 Phase 1 Wire: 3 Hertz: 60

MCB: (See Note 2) Main AIC: (See Note 1) Branch AIC: (See Note 1) ENCL. (NEMA): 1 MTG: Surface

100 Amp, 18 Space , Ground Bar, Locking Cover, Panel Card.

Description of Load Served	Wire Size	Breaker Pole	Breaker Amp	A/Phase A	A/Phase B	CKT No.	CKT No.	A/Phase A	A/Phase B	Breaker Amp	Breaker Pole	Wire Size	Description of Load Served
Exist. Receptacle	Exist.	1	20	Ex		1	2	Ex		20	1	Exist.	Exist Time Clock
Exist. F/O	Exist.	2	20		Ex	3	4		Ex	20	1	Exist.	Exist Lights
				Ex		5	6	Ex		20	2	Exist.	Exist F/O
Spare	-	1	20		-	7	8		Ex				
Lighting (Poles 1-10), CKT A-1, White	6	2	20	6.0		9	10	15.0		20	2	2	Receptacles (Poles 1-10)
					6.0	11	12		15.0				
Lighting (Poles 1-10), CKT A-1, Amber	6	2	20	*									
					*								
Lighting (Poles 11-20), CKT A-2, White	6	2	20	6.0		13	14	15.0		20	2	4	Receptacles (Poles 11-20)
					4.8	15	16		12.0				
Lighting (Poles 11-20), CKT A-2, Amber	6	2	20	*									
					*								
Space	-	-	-	-		17	18	-		-	-	-	Space
		Total A/Phase (New)		12.0	10.8			30.0	27.0	Total A/Phase (New)			

Notes:
1. Contractor shall match AIC rating of existing panel and breakers.
2. Contractor shall replace existing 50A main breaker with a proposed 70A main breaker.

Load Center B Panel Schedule

Existing Panel Location: East Las Olas Blvd Sta 165+93.00 Equipment Cabinet Volts: 120/240 Phase 1 Wire: 3 Hertz: 60

MCB: (See Note 2) Main AIC: (See Note 1) Branch AIC: (See Note 1) ENCL. (NEMA): 1 MTG: Surface

100 Amp, 18 Space , Ground Bar, Locking Cover, Panel Card.

Description of Load Served	Wire Size	Breaker Pole	Breaker Amp	A/Phase A	A/Phase B	CKT No.	CKT No.	A/Phase A	A/Phase B	Breaker Amp	Breaker Pole	Wire Size	Description of Load Served
Exist. Receptacle	Exist.	1	20	Ex		1	2	Ex		20	1	Exist.	Exist Time Clock
Exist. F/O	Exist.	2	20		Ex	3	4		Ex	20	1	Exist.	Exist Lights
				Ex		5	6	Ex		20	2	Exist.	Exist F/O
Spare	-	1	20		-	7	8		Ex				
Lighting (Poles 21-22), CKT B-1, White	6	2	20	4.8		9	10	12.0		20	2	4	Receptacles (Poles 21-22)
					4.8	11	12		12.0				
Lighting (Poles 21-22), CKT B-1, Amber	6	2	20	*									
					*								
Lighting (Poles 31-38), CKT B-2, White	6	2	20	4.8		13	14	12.0		20	2	4	Receptacles (Poles 31-38)
					4.8	15	16		12.0				
Lighting (Poles 31-38), CKT B-2, Amber	6	2	20	*									
					*								
Space	-	-	-	-		17	18	-		-	-	-	Space
		Total A/Phase (New)		9.6	9.6			24.0	24.0	Total A/Phase (New)			

Notes:
1. Contractor shall match AIC rating of existing panel and breakers.
2. Contractor shall replace existing 50A main breaker with a proposed 70A main breaker.

*WHITE AND AMBER LIGHTS DO NOT OPERATE SIMULTANEOUSLY. DUPLICATE LOADS NOT SHOWN. WHITE AND AMBER CIRCUITS SHALL HAVE A MECHANICAL INTERLOCK TO FACILITATE NON-SIMULTANEOUS OPERATION.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

WEST SIDE
LOAD CENTER DETAILS

SHEET NO. 11-31

Adan.Garcia 4/27/2020 6:07:08 PM K:\WPB_Design\040005603_SRA1A_N_FTL\42402725201\lighting\SPDTLT01.DGN

Load Center C Panel Schedule													
Existing Panel Location: Cortez St. Sta 176+14.00 Equipment Cabinet Volts: 120/240 Phase 1 Wire: 3 Hertz: 60													
MCB: (See Note 2) Main AIC: (See Note 1) Branch AIC: (See Note 1) ENCL. (NEMA): 1 MTG: Surface													
100 Amp, 18 Space , Ground Bar, Locking Cover, Panel Card.													
Description of Load Served	Wire Size	Breaker		A/Phase		CKT No.	CKT No.	A/Phase		Breaker		Wire Size	Description of Load Served
		Pole	Amp	A	B			A	B	Amp	Pole		
Exist. Receptacle	Exist.	1	20	Ex		1	2	Ex		20	1	Exist.	Exist Time Clock
Exist. F/O	Exist.	2	20		Ex	3	4		Ex	20	1	Exist.	Exist Lights
				Ex		5	6	Ex		20	2	Exist.	Exist F/O
Spare	-	1	20		-	7	8		Ex				
Lighting (Poles 39-40,42-46 ,48), CKT C-1,White	6	2	20	6.0		9	10	15.0		20	2	4	Receptacles (Poles 39-40 ,42-46,48)
					4.8	11	12		12.0				
Lighting (Poles 39-40,42-46 ,48),CKT C-1, Amber	6	2	20	*									
					*								
Lighting (Poles 49-55) ,CKT-C-2, White	6	2	20	4.8		13	14	12.0		20	2	6	Receptacles (Poles 49-55)
					3.6	15	16		9.0				
Lighting (Poles 49-55),CKT C-2, Amber	6	2	20	*									
					*								
Space	-	-	-	-		17	18	-		-	-	-	Space
		Total A/Phase (New)		10.8	8.4			27.0	21.0	Total A/Phase (New)			

Notes:
1. Contractor shall match AIC rating of existing panel and breakers.
2. Contractor shall replace existing 50A main breaker with a proposed 70A main breaker.

Load Center D Panel Schedule													
Existing Panel Location: A1A Sebastian Street Sta 184+40.00 Equipment Cabinet Volts: 120/240 Phase 1 Wire: 3 Hertz: 60													
MCB: (See Note 2) Main AIC: (See Note 1) Branch AIC: (See Note 1) ENCL. (NEMA): 1 MTG: Surface													
100 Amp, 18 Space , Ground Bar, Locking Cover, Panel Card.													
Description of Load Served	Wire Size	Breaker		A/Phase		CKT No.	CKT No.	A/Phase		Breaker		Wire Size	Description of Load Served
		Pole	Amp	A	B			A	B	Amp	Pole		
Exist. Receptacle	Exist.	1	20	Ex		1	2	Ex		20	1	Exist.	Exist Time Clock
Exist. F/O	Exist.	2	20		Ex	3	4		Ex	20	1	Exist.	Exist Lights
				Ex		5	6	Ex		20	2	Exist.	Exist F/O
Spare	-	1	20		-	7	8		Ex				
Lighting (Poles 56-57,59-62), CKT D-1, White	6	2	20	3.6		9	10	9.0		20	2	6	Receptacles (Poles 56-57 ,59-62)
					3.6	11	12		9.0				
Lighting (Poles 56-57,59-62), CKT D-1, Amber	6	2	20	*									
					*								
Lighting (Poles 63-70), CKT D-2,White	6	2	20	4.8		13	14	12.0		20	2	4	Receptacles (Poles 63-70)
					4.8	15	16		12.0				
Lighting (Poles 63-70), CKT D-2, Amber	6	2	20	*									
					*								
Space	-	-	-	-		17	18	-		-	-	-	Space
		Total A/Phase (New)		8.4	8.4			21.0	21.0	Total A/Phase (New)			

Notes:
1. Contractor shall match AIC rating of existing panel and breakers.
2. Contractor shall replace existing 50A main breaker with a proposed 70A main breaker.

*WHITE AND AMBER LIGHTS DO NOT OPERATE SIMULTANEOUSLY. DUPLICATE LOADS NOT SHOWN.
WHITE AND AMBER CIRCUITS SHALL HAVE A MECHANICAL INTERLOCK TO FACILITATE
NON-SIMULTANEOUS OPERATION.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

WEST SIDE
LOAD CENTER DETAILS

SHEET NO. 4-32

Adan.Garcia 4/27/2020 6:07:09 PM K:\WPB_Design\040005603_SRA1A_N_FTL\42402725201\lighting\SPDTLT01.DGN

Load Center E Panel Schedule													
Existing Panel Location: Granada St. Sta. 192+87.00 Volts: 120/240 Phase 1 Wire: 3 Hertz: 60													
MCB: (See Note 2) Main AIC: (See Note 1) Branch AIC: (See Note 1) ENCL. (NEMA): 1 MTG: Surface													
100 Amp, 18 Space , Ground Bar, Locking Cover, Panel Card.													
Description of Load Served	Wire Size	Breaker		A/Phase		CKT No.	CKT No.	A/Phase		Breaker		Wire Size	Description of Load Served
		Pole	Amp	A	B			A	B	Amp	Pole		
Exist. Receptacle	Exist.	1	20	Ex		1	2	Ex		20	1	Exist.	Exist Time Clock
Exist. F/O	Exist.	2	20		Ex	3	4		Ex	20	1	Exist.	Exist Lights
				Ex		5	6	Ex		20	2	Exist.	Exist F/O
Spare	-	1	20		-	7	8		Ex				
Lighting (Poles 71-74) CKT C-1, White	6	2	20	2.4		9	10	6.0		20	2	6	Receptacles (Poles 71-74)
					2.4	11	12		6.0				
Lighting (Poles 71-74) CKT C-1, Amber	6	2	20	*									
					*								
Lighting (Poles 75-81) CKT C-2, White	6	2	20	4.8		13	14	12.0		20	2	6	Receptacles (Poles 75-81)
					3.6	15	16		9.0				
Lighting (Poles 75-81) CKT C-2, Amber	6	2	20	*									
					*								
Space				-		17	18	-					Space
		Total A/Phase (New)		7.2	6.0			18.0	15.0	Total A/Phase (New)			
Notes: 1. Contractor shall match AIC rating of existing panel and breakers. 2. Contractor shall replace existing 50A main breaker with a proposed 70A main breaker.													

Load Center F Panel Schedule													
Existing Panel Location: Riomar St. Sta 201+82.00 Volts: 120/240 Phase 1 Wire: 3 Hertz: 60													
MCB: (See Note 2) Main AIC: (See Note 1) Branch AIC: (See Note 1) ENCL. (NEMA): 1 MTG: Surface													
100 Amp, 18 Space , Ground Bar, Locking Cover, Panel Card.													
Description of Load Served	Wire Size	Breaker		A/Phase		CKT No.	CKT No.	A/Phase		Breaker		Wire Size	Description of Load Served
		Pole	Amp	A	B			A	B	Amp	Pole		
Exist. Receptacle	Exist.	1	20	Ex		1	2	Ex		20	1	Exist.	Exist Time Clock
Exist. F/O	Exist.	2	20		Ex	3	4		Ex	20	1	Exist.	Exist Lights
				Ex		5	6	Ex		20	2	Exist.	Exist F/O
Spare	-	1	20		-	7	8		Ex				
Lighting (Poles 82-86) CKT D-1, White	6	2	20	3.6		9	10	9.0		20	2	6	Receptacles (Poles 82-86)
					2.4	11	12		6.0				
Lighting (Poles 82-86) CKT D-1, Amber	6	2	20	*									
					*								
Lighting (Poles 87-96) CKT D-2, White	6	2	20	6.0		13	14	15.0		20	2	2	Receptacles (Poles 87-96)
					6.0	15	16		15.0				
Lighting (Poles 87-96) CKT D-2, Amber	6	2	20	*									
					*								
Space				-		17	18	-					Space
		Total A/Phase (New)		9.6	8.4			24.0	21.0	Total A/Phase (New)			
Notes: 1. Contractor shall match AIC rating of existing panel and breakers. 2. Contractor shall replace existing 50A main breaker with a proposed 70A main breaker.													

*WHITE AND AMBER LIGHTS DO NOT OPERATE SIMULTANEOUSLY. DUPLICATE LOADS NOT SHOWN.
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Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

WEST SIDE LOAD CENTER DETAILS

SHEET NO. E-33

Load Center G Panel Schedule													
Existing Panel Location: Vistamar St. Sta. 217+25.00 Volts: 120/240 Phase 1 Wire: 3 Hertz: 60													
MCB: (See Note 2) Main AIC: (See Note 1) Branch AIC: (See Note 1) ENCL. (NEMA): 1 MTG: Surface													
100 Amp, 18 Space , Ground Bar, Locking Cover, Panel Card.													
Description of Load Served	Wire Size	Breaker		A/Phase		CKT No.	CKT No.	A/Phase		Breaker		Wire Size	Description of Load Served
		Pole	Amp	A	B			A	B	Amp	Pole		
Exist. Receptacle	Exist.	1	20	Ex		1	2	Ex		20	1	Exist.	Exist Time Clock
Exist. F/O	Exist.	2	20		Ex	3	4		Ex	20	1	Exist.	Exist Lights
				Ex		5	6	Ex		20	2	Exist.	Exist F/O
Spare	-	1	20		-	7	8		Ex				
Lighting (Poles 97-106) CKT E-1, White	6	2	20	6.0		9	10	15.0		20	2	2	Receptacles (Poles 97-106)
					6.0	11	12		15.0				
Lighting (Poles 97-106) CKT E-1, Amber	6	2	20	*									
					*								
Lighting (Poles 107-116) CKT E-2, White	6	2	20	6.0		13	14	15.0		20	2	2	Receptacles (Poles 107-116)
					6.0	15	16		15.0				
Lighting (Poles 107-116) CKT E-2, Amber	6	2	20	*									
					*								
Space				-		17	18	-					Space
		Total A/Phase (New)		12.0	12.0			30.0	30.0	Total A/Phase (New)			
Notes: 1. Contractor shall match AIC rating of existing panel and breakers. 2. Contractor shall replace existing 50A main breaker with a proposed 70A main breaker.													

Load Center H Panel Schedule													
Existing Panel Location: Sunrise Blvd. Sta. 231+03.00 Volts: 120/240 Phase 1 Wire: 3 Hertz: 60													
MCB: (See Note 2) Main AIC: (See Note 1) Branch AIC: (See Note 1) ENCL. (NEMA): 1 MTG: Surface													
100 Amp, 18 Space , Ground Bar, Locking Cover, Panel Card.													
Description of Load Served	Wire Size	Breaker		A/Phase		CKT No.	CKT No.	A/Phase		Breaker		Wire Size	Description of Load Served
		Pole	Amp	A	B			A	B	Amp	Pole		
Exist. Receptacle	Exist.	1	20	Ex		1	2	Ex		20	1	Exist.	Exist Time Clock
Exist. F/O	Exist.	2	20		Ex	3	4		Ex	20	1	Exist.	Exist Lights
				Ex		5	6	Ex		20	2	Exist.	Exist F/O
Spare	-	1	20		-	7	8		Ex				
Lighting (Poles 117-132) CKT F-1, White	6	2	20	9.6		9	10	9.0		20	2	2	Receptacles (Poles 117-132)
					9.6	11	12		9.0				
Lighting (Poles 117-132) CKT F-1, Amber	6	2	20	*									
					*								
Space				-		13	14						Space
Space					-	15	16						
Space				-		17	18	-					Space
		Total A/Phase (New)		9.6	9.6			9.0	9.0	Total A/Phase (New)			
Notes: 1. Contractor shall match AIC rating of existing panel and breakers. 2. Contractor shall replace existing 50A main breaker with a proposed 70A main breaker.													

*WHITE AND AMBER LIGHTS DO NOT OPERATE SIMULTANEOUSLY. DUPLICATE LOADS NOT SHOWN.
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NON-SIMULTANEOUS OPERATION.

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DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
Matthew B. Fursetzer, P.E.
P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

WEST SIDE
LOAD CENTER DETAILS

SHEET NO. 4-34

Adan.Garcia 4/27/2020 6:07:09 PM K:\WPB_Design\040005603_SRA1A_N_FTL\42402725201\lighting\SPDTLT01.DGN

TRAFFIC CONTROL GENERAL NOTES

GENERAL:

1. THE TRAFFIC CONTROLS SHALL BE IN ACCORDANCE WITH THE FDOT PLANS, THE LATEST FDOT STANDARD PLANS FOR ROADWAY AND BRIDGE CONSTRUCTION (102 SERIES), THE LATEST STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AS MINIMUM CRITERIA. PROJECT AREAS THAT ARE NOT ACTIVE CONSTRUCTION AREAS ARE TO BE KEPT FREE OF CONSTRUCTION DEBRIS AND ANY UNNECESSARY TRAFFIC CONTROL DEVICES AT THE DIRECTION OF THE PROJECT ENGINEER.

2. THE CONTRACTOR SHALL MAINTAIN AS A MINIMUM OF 1 LANE IN EACH DIRECTION ALONG EXISTING SR A1A AND 2 LANES IN EACH DIRECTION DURING NON-WORK PERIODS.

3. THE PROJECT ENGINEER MAY ADJUST LANE CLOSURE TIMES IF CONDITIONS WARRANT.

4. AT THE DISCRETION OF THE ENGINEER, IF A LANE CLOSURE CAUSES EXTENDED CONGESTION OR DELAY, THE CONTRACTOR SHALL BE DIRECTED TO REOPEN THE CLOSED LANE(S) UNTIL SUCH TIME AS TRAFFIC FLOW HAS RETURNED TO AN ACCEPTABLE LEVEL.

5. THE PROVISIONS FOR TRAFFIC DISRUPTIONS WHICH ARE NOT SHOWN BY THE TRAFFIC CONTROL PLAN, BUT WHICH ARE NECESSARY TO CONSTRUCT THE PROJECT SHALL BE SUBMITTED IN WRITING TO THE ENGINEER AND APPROVAL SHALL BE OBTAINED 21 DAYS PRIOR TO COMMENCEMENT OF WORK. SUBMITTAL MATERIAL SHALL INCLUDE SKETCHES, CALCULATIONS AND OTHER DATA REQUIRED BY THE ENGINEER.

6. THE TRAFFIC AND TRAVEL WAYS SHALL NOT BE ALTERED BY THE CONTRACTOR TO CREATE A WORK ZONE UNTIL ALL LABOR AND MATERIAL ARE AVAILABLE FOR THE CONSTRUCTION IN THAT AREA.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE EXISTING SIGNS WITHIN THE CONSTRUCTION LIMITS. A LIST OF THE EXISTING SIGNS SHALL BE SUBMITTED TO THE PROJECT ENGINEER PRIOR TO THE BEGINNING OF CONSTRUCTION. ANY SIGNS WHICH ARE TO BE REMOVED SHALL BE DISPOSED OF BY THE CONTRACTOR. SIGNS SHOULD BE COVERED OR RELOCATED AS NECESSARY TO AVOID CONFLICT WITH THE TRAFFIC CONTROL PLAN. ANY DAMAGED OR LOST SIGNS SHALL BE REPLACED AT NO ADDITIONAL COST. COST OF THE MAINTENANCE OF EXISTING SIGNS COVERING AND RELOCATION OF SIGNS FOR PHASE CONSTRUCTION IS INCLUDED IN COST OF MAINTENANCE OF TRAFFIC.

8. THE CONTRACTOR'S FULL TIME CERTIFIED MAINTENANCE OF TRAFFIC SUPERVISOR SHALL BE ON SITE WHEN CONTRACTOR IS WORKING AND SHALL BE ON CALL FOR EMERGENCIES WHEN CONTRACTOR IS NOT WORKING.

9. REGULATORY SPEED ESTABLISHED WITHIN WORK ZONE TRAVEL WAYS SHALL BE 25 MPH. REGULATORY SPEED SIGNS SHALL BE INSTALLED ON SEPARATE POSTS.

10. THE REMOVAL AND REPLACEMENT OF ANY SECTIONS OF EXISTING CONCRETE/BRICK PAVER SIDEWALK AND CURB AND GUTTER SHALL BE COMPLETED WITHIN 48 HOURS.

11. THE CONTRACTOR SHALL COORDINATE WITH FDOT ASSET MANAGEMENT COMPANY (FERROVIAL SERVICES INRASTRUCTURE), FDOT CONTRACT MANAGER JOHN DEEMER AT 954-777-4450.

12. ALL WORK SHALL BE SUSPENDED AND THE CONTRACTOR SHALL BACKFILL ANY EXCAVATIONS, CLEAN UP THE PROJECT AND MAKE THE PROJECT SAFE FOR VEHICLE AND PEDESTRIAN MOVEMENT DURING SPECIAL EVENT DATES FROM MAY 4TH TO MAY 5TH FOR THE AIR AND SEA SHOW, ON MAY 16TH FROM 7:00 AM ANNUAL COVENANT HOUSE FLORIDA 5K RUN, FOR GREAT AMERICAN BEACH PARTY, MAY 25TH FROM 10:00 AM TO 8:30 PM, FOR 4TH OF JULY, 12:30 AM TO 9:30 PM, FOR MAY 27TH MEMORIAL DAY, AND SEPTEMBER 7TH FOR LABOR DAY WEEKEND. FOR A LIST OF SPECIAL EVENTS AND DATES THAT MAY AFFECT CONSTRUCTION ACTIVITIES CONTRACTOR SHALL CONTACT BARBARA SMITH AT (954) 828-6075 OR BASMITH@FORTLAUDERDALE.GOV. DATES SHOWN ARE PRELIMINARY AND ARE SUBJECT TO BE CHANGED. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER FOR SPECIAL EVENT DATES IN 2019 AND 2020.

LANE CLOSURES:

14. THE CONTRACTOR SHALL BE PERMITTED TO CLOSE ONE LANE OF TRAFFIC IN EACH DIRECTION BETWEEN THE HOURS OF 11:30 PM AND 7:00 AM FOR SIGNALIZED LANES, AND 8:30 PM TO 8:00 AM FOR OPEN ROAD LANES. ADDITIONAL LANE CLOSURE TIMES SHALL BE APPROVED BY THE ENGINEER.

15. NIGHT TIME LANE CLOSURES WILL NOT BE ALLOWED ON SR A1A UNLESS APPROVED BY THE ENGINEER.

16. LANE CLOSURES SHALL NOT EXCEED 1/4 MILE IN TOTAL LENGTH TAPER, BUFFER SPACE AND WORK SPACE.

DROP OFFS:

17. AT THE END OF EACH WORK PERIOD, ANY DROP OFF IN THE AREA ADJACENT TO THE TRAVEL WAY SHALL BE PROTECTED WITH TEMPORARY BARRIER WALL AS REQUIRED BY FY 2020-21 FDOT STANDARD PLANS 102 SERIES.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING A WORK SCHEDULE SO THAT ANY LOCATION UNDER CONSTRUCTION WILL NOT BE LEFT IN A HAZARDOUS CONDITION AT THE COMPLETION OF ANY WORK PERIOD.

ADVANCED CONSTRUCTION NOTICE:

19. THE CONTRACTOR SHALL FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) ALONG SR-A1A (BOTH DIRECTIONS). MESSAGES FOR THE PCMS SHALL BE AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THE PCMS SHALL BE IN PLACE ONE WEEK PRIOR TO THE START OF ANY WORK ITEMS AFFECTING EXISTING VEHICULAR AND PEDESTRIAN TRAFFIC. PCMS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER. THE BID SHALL INCLUDE 2 SIGNS BEING IN OPERATION FOR THE LENGTH OF CONSTRUCTION, INCLUDING RELOCATION AND REMOVAL WHEN NOT IN USE. PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE POSTED A WEEK AHEAD OF LANE CLOSURES AND 800 FEET AHEAD OF A CONSTRUCTION SITE.

20. THE FOLLOWING MESSAGES SHALL BE DISPLAYED FOR PORTABLE CHANGEABLE MESSAGE SIGNS:

ROAD WORK AHEAD	BEGINS (MONTH DATE)

LIGHTING:

21. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN EXISTING ROADWAY LIGHTING DURING CONSTRUCTION AT ALL TIMES. THE COST OF MAINTAINING LIGHTING SYSTEM(S) SHALL BE INCLUDED IN BID FOR MAINTENANCE OF TRAFFIC. THE CONTRACTOR SHALL INSTALL THE PROPOSED LIGHTING SYSTEM INCLUDING CONDUIT, PULL BOXES AND SERVICE CONNECTIONS AND HAVE THE SYSTEM IN OPERATION BEFORE TAKING THE TEMPORARY LIGHTING SYSTEM OUT OF SERVICE.

22. CONTRACTOR SHALL COORDINATE WITH FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION. ACCEPTABLE AMBER LED BULB WAVELENGTHS BEFORE ORDERING AND/OR INSTALLING ANY PROPOSED OR TEMPORARY LIGHTING SYSTEMS.

23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POWER TO THE EXISTING LIGHTING SYSTEM, AND THE NEW LIGHTING SYSTEM UNTIL FINAL ACCEPTANCE.

SEA TURTLE NESTING:

24. SEA TURTLE NESTING SEASON RUNS FROM MARCH 1 TO OCTOBER 31. THE CONTRACTOR SHALL CALL BROWARD COUNTY NATURAL RESOURCES AT (954) 519-1255 FOR ANY SEA TURTLE SIGHTINGS WITHIN THE CONSTRUCTION LIMITS.

25. NO BEACH ILLUMINATION WILL BE PERMITTED DURING SEA TURTLE NESTING SEASON (MARCH 1 THROUGH OCTOBER 31). SHOULD NIGHT TIME CONSTRUCTION BE NECESSARY DURING THAT PERIOD, THE CONTRACTOR SHALL SUBMIT TEMPORARY LIGHTING PLANS TO THE DISTRICT CONSTRUCTION ENVIRONMENTAL COORDINATOR AT (954) 777-4465 FOR REVIEW AND APPROVAL PRIOR TO COMMENCEMENT.

REVISIONS			
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Kimley-Horn and Associates, Inc.
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West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

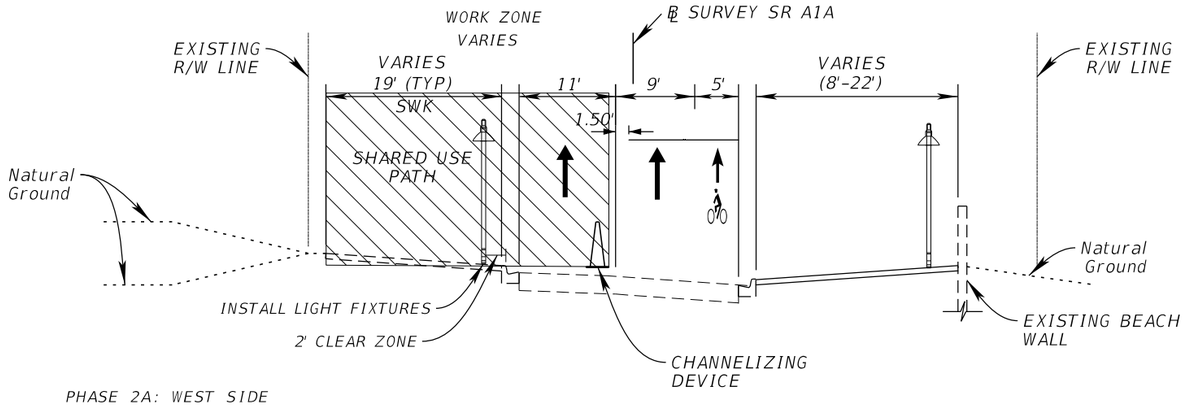
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

TEMPORARY TRAFFIC CONTROL PLAN

SHEET NO. 1-35

TRAFFIC CONTROL PHASING NOTES:

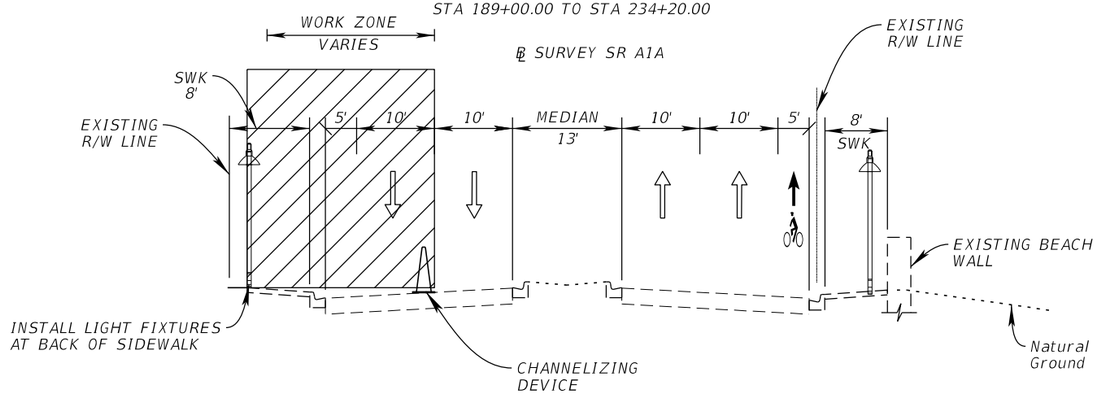
PHASE 2A WEST
SR A1A
STA 149+52.00 TO STA 189+00.00



PHASE 2A: WEST SIDE

1. INSTALL PCMS SIGNS PER ADVANCE CONSTRUCTION NOTICE NOTES.
2. INSTALL ADVANCE WARNING SIGNS, WORK ZONE SIGNS, OR TRAFFIC CONTROL DEVICES AS PER FY 2020-21 FDOT STANDARD PLANS 102 SERIES.
3. THE CONTRACTOR SHALL PERFORM ALL WORK ON ONE SIDE OF THE ROADWAY AT A TIME.
4. THE CONTRACTOR SHALL MAINTAIN THE SIDEWALK OPEN AT ALL TIMES BY PROVIDING A MINIMUM 5 FT. CLEAR SIDEWALK PASSAGE ADJACENT TO THE WORK ZONE.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL PROPOSED LIGHTING, LANDSCAPING AND HARDSCAPE ALONG THE WEST SIDE OF THE CORRIDOR WITHIN LIMITS OF DESIGNATED WORK ZONE.

PHASE 2B WEST
SR A1A
STA 189+00.00 TO STA 234+20.00



PHASE 2B: WEST SIDE

1. INSTALL PCMS SIGNS PER ADVANCE CONSTRUCTION NOTICE NOTES.
2. INSTALL ADVANCE WARNING SIGNS, WORK ZONE SIGNS, OR TRAFFIC CONTROL DEVICES AS PER FY 2020-21 FDOT STANDARD PLANS 102 SERIES.
3. THE CONTRACTOR SHALL PERFORM ALL WORK ON ONE SIDE OF THE ROADWAY AT A TIME.
4. THE CONTRACTOR SHALL MAINTAIN THE SIDEWALK OPEN AT ALL TIMES BY PROVIDING A MINIMUM 5 FT. CLEAR SIDEWALK PASSAGE ADJACENT TO THE WORK ZONE.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL PROPOSED LIGHTING, LANDSCAPING AND HARDSCAPE ALONG THE WEST SIDE OF THE CORRIDOR WITHIN LIMITS OF DESIGNATED WORK ZONE.

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
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P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

TEMPORARY TRAFFIC CONTROL PLAN

SHEET NO. 11-36

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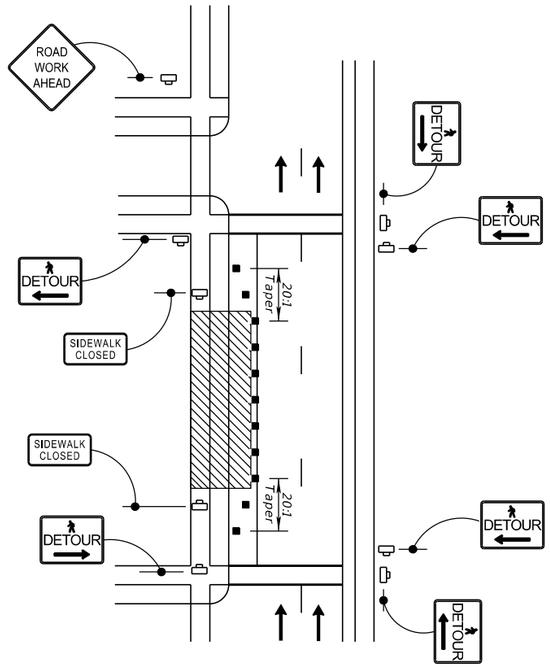
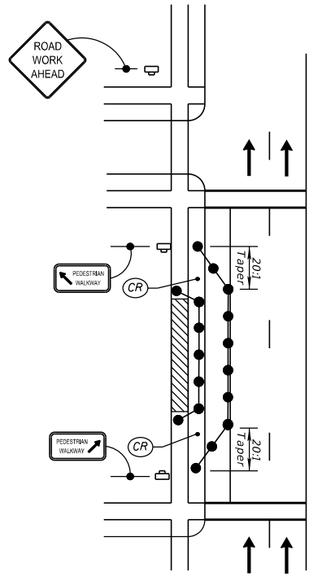
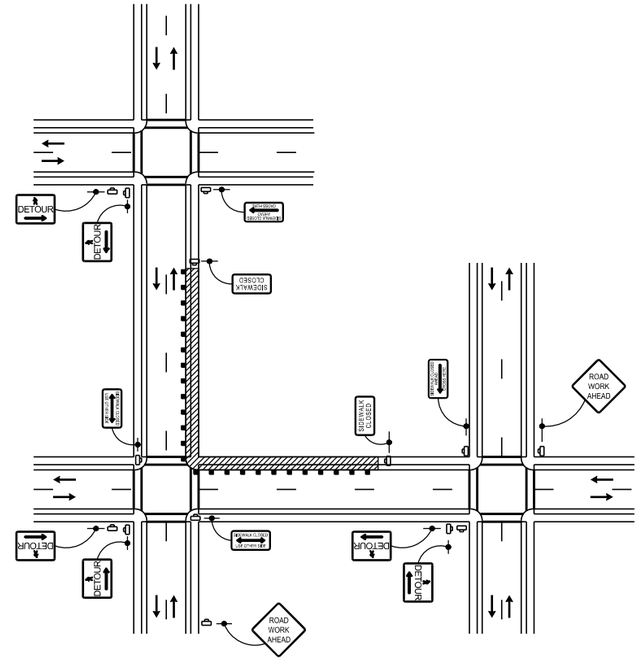


SIDEWALK DETOUR



SIDEWALK DIVERSION



CROSSWALK CLOSURE AND PEDESTRIAN DETOUR

TRAFFIC CONTROL NOTES:

1. THE CONTRACTOR SHALL ENSURE THAT SIDEWALK DIVERSIONS DO NOT BLOCK MORE THAN ONE (1) CONSECUTIVE PEDESTRIAN BEACH ENTRANCE.

2. WHEN AN EXISTING PEDESTRIAN WAY OR BICYCLE WAY IS LOCATED WITHIN A TRAFFIC CONTROL WORK ZONE, ACCOMODATION MUST BE MAINTAINED AND PROVISION FOR THE DISABLED MUST BE PROVIDED.

3. ONLY APPROVED PEDESTRIAN LONGITUDINAL CHANNELIZING DEVICES MAY BE USED TO DELINEATE A TEMPORARY TRAFFIC CONTROL ZONE PEDESTRIAN WALKWAY.

4. ADVANCED NOTIFICATION OF SIDEWALK CLOSURES AND MARKED DETOURS SHALL BE PROVIDED BY APPROPRIATE SIGNS.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Registry No. 35106
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P.E. License No. 63997
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	424027-2-58-01

TEMPORARY TRAFFIC CONTROL PLAN

SHEET NO.

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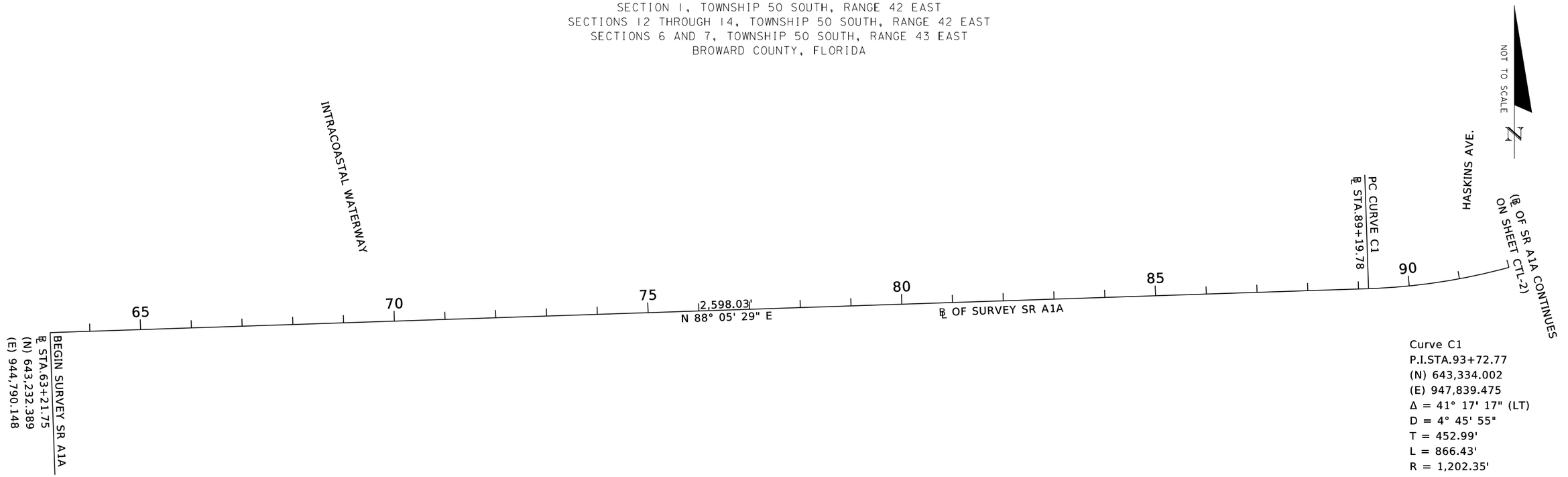
SPECIFIC PURPOSE SURVEY

SECTION 1, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 12 THROUGH 14, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 6 AND 7, TOWNSHIP 50 SOUTH, RANGE 43 EAST
BROWARD COUNTY, FLORIDA



Curve C1
P.I.STA.93+72.77
(N) 643,334.002
(E) 947,839.475
Δ = 41° 17' 17" (LT)
D = 4° 45' 55"
T = 452.99'
L = 866.43'
R = 1,202.35'
P.C.STA.89+19.78
(N) 643,318.915
(E) 947,386.737
P.T.STA.97+86.21
(N) 643,644.075
(E) 948,169.708

NOTES:

1. BEARINGS AND COORDINATES ARE RELATIVE TO THE STATE PLANE COORDINATES, FLORIDA EAST ZONE, NORTH AMERICAN DATUM (NAD) OF 1983/1990 ADJUSTMENT. A BEARING OF NORTH 16° 13' 32" EAST HAS BEEN ESTABLISHED BETWEEN MONUMENTS DBLC1 AND DBLC2, STAMPED "AIA-86-12-C1" AND "AIA-86-12-C2" RESPECTIVELY.

2. COORDINATES AND ELEVATIONS SHOWN HEREON WERE PROVIDED BY FDOT DISTRICT 4 SURVEY DEPARTMENT FOR THE PURPOSE OF THIS SURVEY.

3. VERTICAL INFORMATION IS RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

4. BASELINE OF SURVEY NOT STAKED IN THE FIELD.

5. PROJECT UNITS: U.S. SURVEY FEET

6. CAICE ELECTRONIC DATABASE: 430601I.ZIP
GEOPAK ELECTRONIC DATABASE: J0BAIA.GPK

7. DATA SOURCES:
FDOT R/W MAP SECTION NO. 86050-2112
FDOT R/W MAP SECTION NO. 86050-2175
FDOT R/W MAP SECTION NO. 86180-2177
FDOT R/W MAP SECTION NO. 86180-2902
FDOT FIELD BOOK # 1012939
CITY OF FT. LAUDERDALE R/W MAP NO. 86550-F5110
CITY OF FT. LAUDERDALE R/W MAP NO. 86550-F5112
CITY OF FT. LAUDERDALE R/W MAP NO. 86550-F5115

LEGEND

ASSOC	ASSOCIATES
℄	BASELINE
Δ	DEFLECTION ANGLE (DELTA)
D	DEGREE OF CURVE
(E)	EASTING
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
FPID	FINANCIAL PROJECT IDENTIFICATION
INC.	INCORPORATED
L	ARC LENGTH
LB	LICENSED BUSINESS
(LT)	LEFT
(N)	NORTHING
NO.	NUMBER
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PSM	PROFESSIONAL SURVEYOR & MAPPER
PT	POINT ON TANGENT
(RT)	RIGHT
R	RADIUS
SR	STATE ROAD
STA.	STATION
T	TANGENT LENGTH

▫ FOUND FDOT BRASS DISK IN CONCRETE

LIMITS: SR AIA FROM S.E. 17th STREET TO E. SUNRISE BLVD.

SURVEYOR'S CERTIFICATION
I HEREBY CERTIFY THIS SPECIFIC PURPOSE SURVEY WAS MADE FOR THE PURPOSE OF SURVEYING, REFERENCING, DESCRIBING AND MAPPING THE PRIMARY NETWORK CONTROL OR BASELINE FOR THE TRANSPORTATION FACILITY DEPICTED HEREON AND THAT SAID SURVEY WAS DONE UNDER MY RESPONSIBLE CHARGE AND MEETS THE MINIMUM TECHNICAL STANDARDS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS IN CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE PURSUANT TO SECTION 472.027 FLORIDA STATUTES. THIS MAP CONSISTING OF SHEETS CTL-1 THROUGH CTL-6 IS A TRUE, ACCURATE AND COMPLETE DEPICTION OF THE RESULTS OF A FIELD SURVEY PERFORMED UNDER MY DIRECTION AND COMPLETED ON DECEMBER 16, 2013.

SURVEYOR: LEE POWERS PSM NUMBER: 6805

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

LEE POWERS, PSM
SURVEYOR LICENSE NUMBER 6805
KEITH AND ASSOCIATES, INC.
3011 E. ATLANTIC BOULEVARD
POMPANO BEACH, FLORIDA, 33060
CERTIFICATE OF AUTHORIZATION NO. 6860

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
AIA	BROWARD	430601-1-52-01

PROJECT SURVEY CONTROL

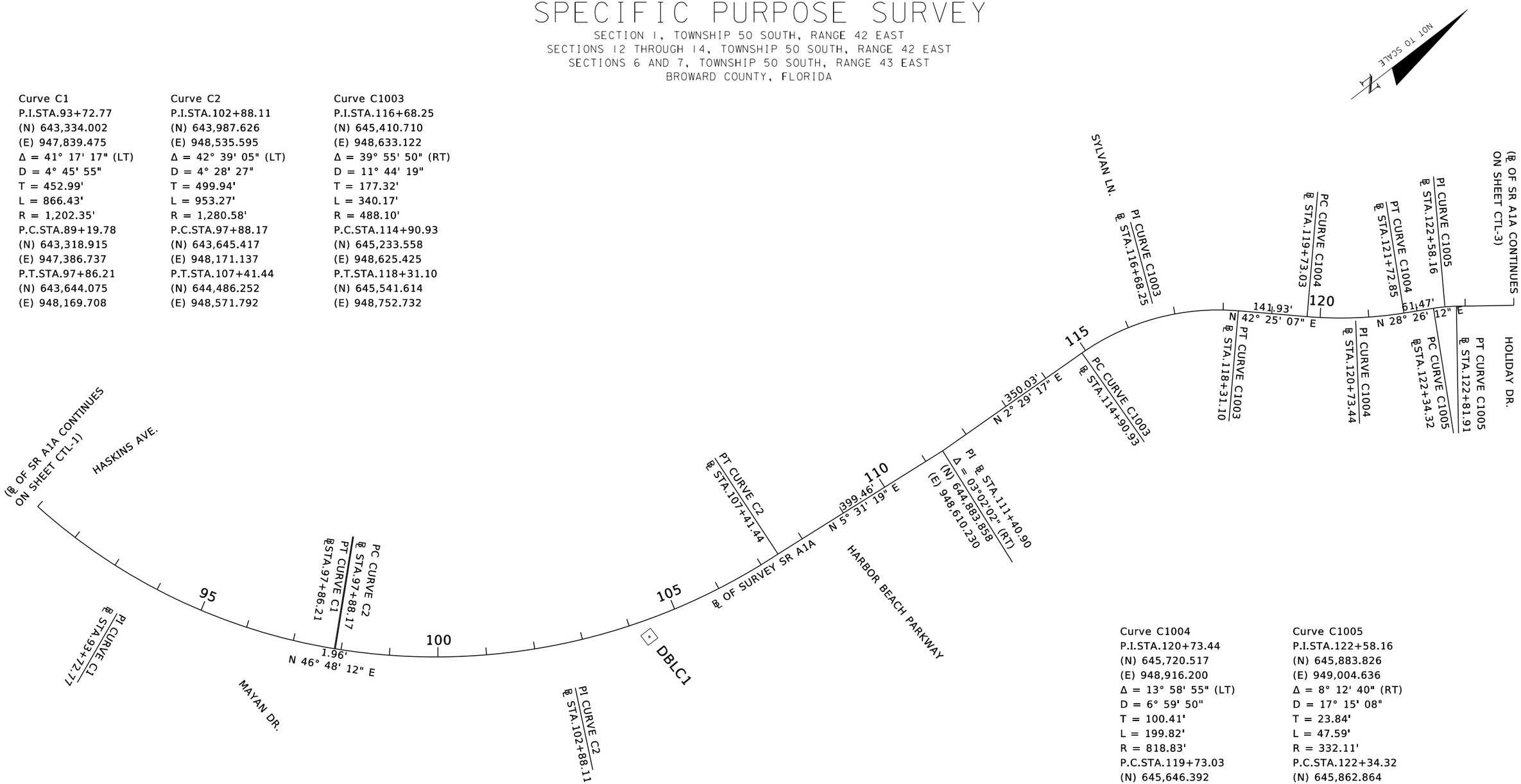
SHEET NO. CTL-1

$USER$ $DATE$

SPECIFIC PURPOSE SURVEY

SECTION 1, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 12 THROUGH 14, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 6 AND 7, TOWNSHIP 50 SOUTH, RANGE 43 EAST
BROWARD COUNTY, FLORIDA

Curve C1	Curve C2	Curve C1003
P.I.STA.93+72.77	P.I.STA.102+88.11	P.I.STA.116+68.25
(N) 643,334.002	(N) 643,987.626	(N) 645,410.710
(E) 947,839.475	(E) 948,535.595	(E) 948,633.122
Δ = 41° 17' 17" (LT)	Δ = 42° 39' 05" (LT)	Δ = 39° 55' 50" (RT)
D = 4° 45' 55"	D = 4° 28' 27"	D = 11° 44' 19"
T = 452.99'	T = 499.94'	T = 177.32'
L = 866.43'	L = 953.27'	L = 340.17'
R = 1,202.35'	R = 1,280.58'	R = 488.10'
P.C.STA.89+19.78	P.C.STA.97+88.17	P.C.STA.114+90.93
(N) 643,318.915	(N) 643,645.417	(N) 645,233.558
(E) 947,386.737	(E) 948,171.137	(E) 948,625.425
P.T.STA.97+86.21	P.T.STA.107+41.44	P.T.STA.118+31.10
(N) 643,644.075	(N) 644,486.252	(N) 645,541.614
(E) 948,169.708	(E) 948,571.792	(E) 948,752.732



Curve C1004	Curve C1005
P.I.STA.120+73.44	P.I.STA.122+58.16
(N) 645,720.517	(N) 645,883.826
(E) 948,916.200	(E) 949,004.636
Δ = 13° 58' 55" (LT)	Δ = 8° 12' 40" (RT)
D = 6° 59' 50"	D = 17° 15' 08"
T = 100.41'	T = 23.84'
L = 199.82'	L = 47.59'
R = 818.83'	R = 332.11'
P.C.STA.119+73.03	P.C.STA.122+34.32
(N) 645,646.392	(N) 645,862.864
(E) 948,848.470	(E) 948,993.284
P.T.STA.121+72.85	P.T.STA.122+81.91
(N) 645,808.811	(N) 645,902.952
(E) 948,964.013	(E) 949,018.865

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 5J-17.062, F.A.C.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

LEE POWERS, PSM
SURVEYOR LICENSE NUMBER 6805
KEITH AND ASSOCIATES, INC.
3011 E. ATLANTIC BOULEVARD
POMPANO BEACH, FLORIDA, 33060
CERTIFICATE OF AUTHORIZATION NO. 6860

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
AIA	BROWARD	430601-1-52-01

PROJECT SURVEY CONTROL

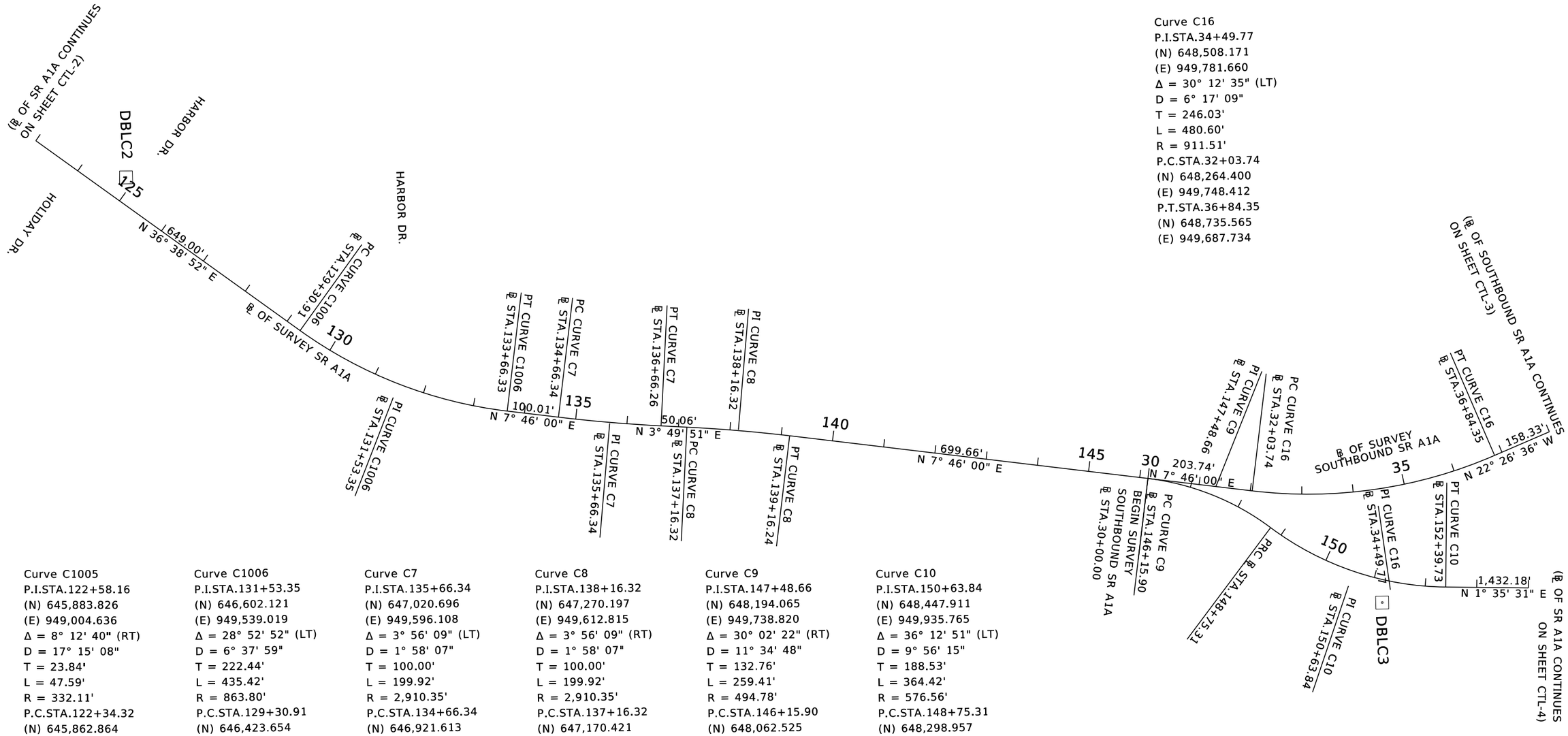
SHEET NO.

$USER$ $DATE$

SPECIFIC PURPOSE SURVEY

SECTION 1, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 12 THROUGH 14, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 6 AND 7, TOWNSHIP 50 SOUTH, RANGE 43 EAST
BROWARD COUNTY, FLORIDA

NOT TO SCALE



Curve C1005
P.I.STA.122+58.16
(N) 645,883.826
(E) 949,004.636
Δ = 8° 12' 40" (RT)
D = 17° 15' 08"
T = 23.84'
L = 47.59'
R = 332.11'
P.C.STA.122+34.32
(N) 645,862.864
(E) 948,993.284
P.T.STA.122+81.91
(N) 645,902.952
(E) 949,018.865

Curve C1006
P.I.STA.131+53.35
(N) 646,602.121
(E) 949,539.019
Δ = 28° 52' 52" (LT)
D = 6° 37' 59"
T = 222.44'
L = 435.42'
R = 863.80'
P.C.STA.129+30.91
(N) 646,423.654
(E) 949,406.246
P.T.STA.133+66.33
(N) 646,822.520
(E) 949,569.079

Curve C7
P.I.STA.135+66.34
(N) 647,020.696
(E) 949,596.108
Δ = 3° 56' 09" (LT)
D = 1° 58' 07"
T = 100.00'
L = 199.92'
R = 2,910.35'
P.C.STA.134+66.34
(N) 646,921.613
(E) 949,582.594
P.T.STA.136+66.26
(N) 647,120.473
(E) 949,602.789

Curve C8
P.I.STA.138+16.32
(N) 647,270.197
(E) 949,612.815
Δ = 3° 56' 09" (RT)
D = 1° 58' 07"
T = 100.00'
L = 199.92'
R = 2,910.35'
P.C.STA.137+16.32
(N) 647,170.421
(E) 949,606.134
P.T.STA.139+16.24
(N) 647,369.280
(E) 949,626.328

Curve C9
P.I.STA.147+48.66
(N) 648,194.065
(E) 949,738.820
Δ = 30° 02' 22" (RT)
D = 11° 34' 48"
T = 132.76'
L = 259.41'
R = 494.78'
P.C.STA.146+15.90
(N) 648,062.525
(E) 949,720.879
P.T.STA.148+75.31
(N) 648,298.957
(E) 949,820.199

Curve C10
P.I.STA.150+63.84
(N) 648,447.911
(E) 949,935.765
Δ = 36° 12' 51" (LT)
D = 9° 56' 15"
T = 188.53'
L = 364.42'
R = 576.56'
P.C.STA.148+75.31
(N) 648,298.957
(E) 949,820.199
P.T.STA.152+39.73
(N) 648,636.366
(E) 949,941.002

Curve C16
P.I.STA.34+49.77
(N) 648,508.171
(E) 949,781.660
Δ = 30° 12' 35" (LT)
D = 6° 17' 09"
T = 246.03'
L = 480.60'
R = 911.51'
P.C.STA.32+03.74
(N) 648,264.400
(E) 949,748.412
P.T.STA.36+84.35
(N) 648,735.565
(E) 949,687.734

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

LEE POWERS, PSM
SURVEYOR LICENSE NUMBER 6805
KEITH AND ASSOCIATES, INC.
3011 E. ATLANTIC BOULEVARD
POMPANO BEACH, FLORIDA, 33060
CERTIFICATE OF AUTHORIZATION NO. 6860

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
AIA	BROWARD	430601-1-52-01

$USER$ $DATE$

PROJECT SURVEY CONTROL

SHEET NO.

CTL-3

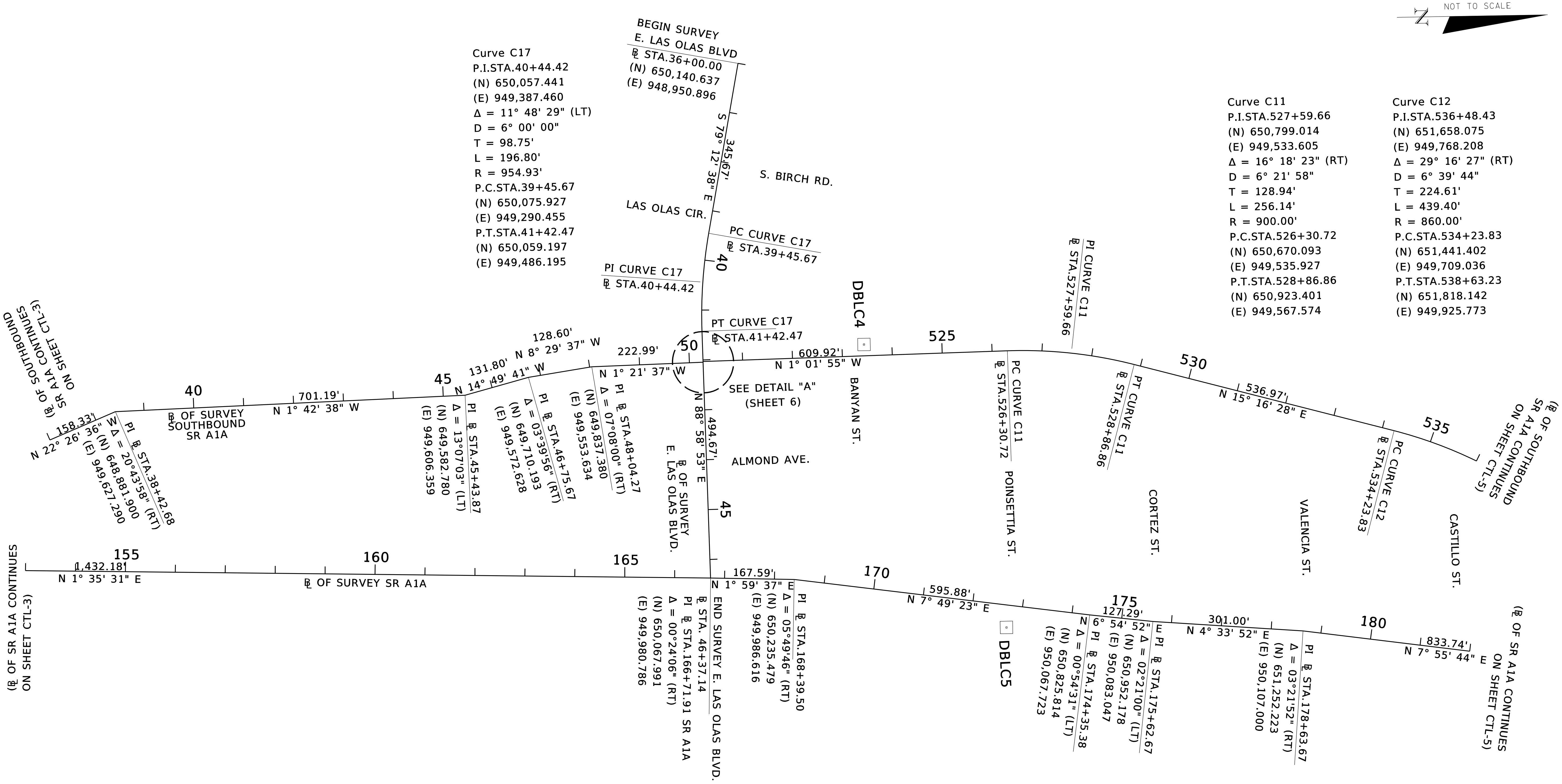
NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 5J-17.062, F.A.C.

City of Fort Lauderdale

Bid 12662-223

SPECIFIC PURPOSE SURVEY

SECTION 1, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 12 THROUGH 14, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 6 AND 7, TOWNSHIP 50 SOUTH, RANGE 43 EAST
BROWARD COUNTY, FLORIDA



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

LEE POWERS, PSM
SURVEYOR LICENSE NUMBER 6805
KEITH AND ASSOCIATES, INC.
301 E. ATLANTIC BOULEVARD
POMPANO BEACH, FLORIDA, 33060
CERTIFICATE OF AUTHORIZATION NO. 6860

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	BROWARD	430601-1-52-01

PROJECT SURVEY CONTROL

SHEET NO. CTL-4

$USER$ $DATE$

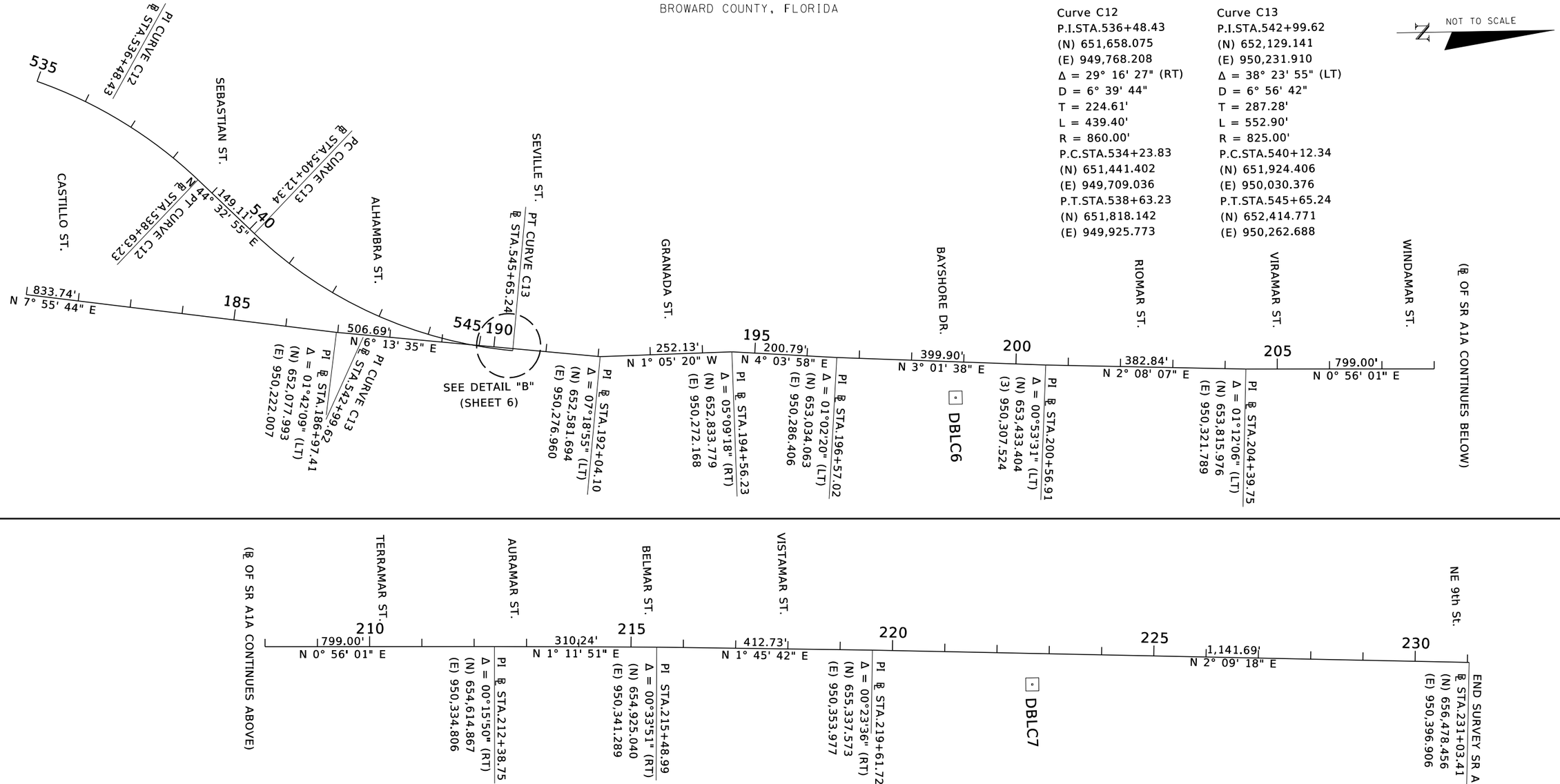
SPECIFIC PURPOSE SURVEY

SECTION 1, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 12 THROUGH 14, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 6 AND 7, TOWNSHIP 50 SOUTH, RANGE 43 EAST
BROWARD COUNTY, FLORIDA

Curve C12
P.I.STA.536+48.43
(N) 651,658.075
(E) 949,768.208
Δ = 29° 16' 27" (RT)
D = 6° 39' 44"
T = 224.61'
L = 439.40'
R = 860.00'
P.C.STA.534+23.83
(N) 651,441.402
(E) 949,709.036
P.T.STA.538+63.23
(N) 651,818.142
(E) 949,925.773

Curve C13
P.I.STA.542+99.62
(N) 652,129.141
(E) 950,231.910
Δ = 38° 23' 55" (LT)
D = 6° 56' 42"
T = 287.28'
L = 552.90'
R = 825.00'
P.C.STA.540+12.34
(N) 651,924.406
(E) 950,030.376
P.T.STA.545+65.24
(N) 652,414.771
(E) 950,262.688

NOT TO SCALE



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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

LEE POWERS, PSM
SURVEYOR LICENSE NUMBER 6805
KEITH AND ASSOCIATES, INC.
3011 E. ATLANTIC BOULEVARD
POMPANO BEACH, FLORIDA, 33060
CERTIFICATE OF AUTHORIZATION NO. 6860

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
AIA	BROWARD	430601-1-52-01

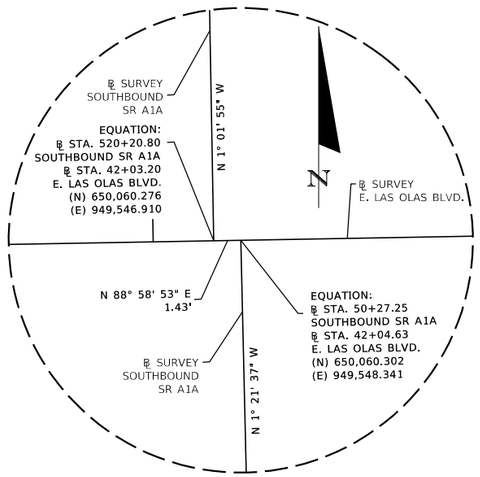
$USER$ $DATE$

PROJECT SURVEY CONTROL

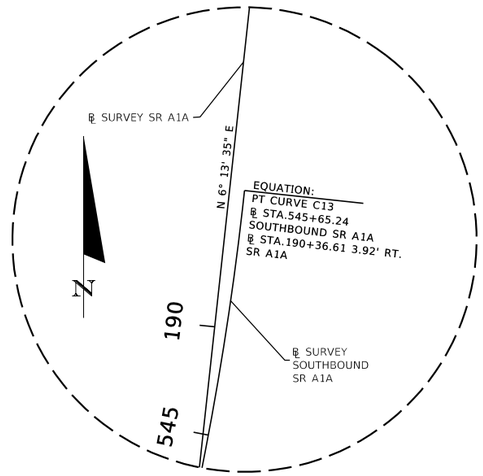
SHEET NO.

SPECIFIC PURPOSE SURVEY

SECTION 1, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 12 THROUGH 14, TOWNSHIP 50 SOUTH, RANGE 42 EAST
SECTIONS 6 AND 7, TOWNSHIP 50 SOUTH, RANGE 43 EAST
BROWARD COUNTY, FLORIDA



DETAIL 'A'
NOT TO SCALE



DETAIL 'B'
NOT TO SCALE

POINTS SHOWN HEREON ARE REFERENCED FROM THE BASELINE OF SR AIA									
POINT NAME	(X) EASTING	(Y) NORTHING	SCALE FACTOR	LATITUDE	LONGITUDE	BASELINE STATION	OFFSET	(Z) ELEVATION	DESCRIPTION
DBLC1	948545.3185	644172.2033	1.00003920	26°06'11.24804"	80°06'32.63889"	104+31.59	34.65(RT)	5.915	FOUND BRASS DISK IN CONCRETE "AIA-86-12-C1"
DBLC2	949103.7255	646091.0424	1.00003957	26°06'30.21352"	80°06'26.36952"	124+83.47	44.18(LT)	4.367	FOUND BRASS DISK IN CONCRETE "AIA-86-12-C2"
DBLC3	949969.0021	648512.5683	1.00004015	26°06'54.13640"	80°06'16.69532"	151+24.67	43.74(RT)	10.489	FOUND BRASS DISK IN CONCRETE "AIA-86-12-C3"
DBLC4	949518.2793	650382.9317	1.00003985	26°07'12.69032"	80°06'21.49877"	169+21.83	484.05(LT)	5.533	FOUND BRASS DISK IN CONCRETE "AIA-86-12-C4"
DBLC5	950089.8869	650658.5741	1.00004024	26°07'15.38123"	80°06'15.20719"	172+72.71	44.72(RT)	9.605	FOUND BRASS DISK IN CONCRETE "AIA-86-12-C5"
DBLC6	950366.8194	653260.0085	1.00004042	26°07'41.12574"	80°06'11.97243"	198+86.89	68.37(RT)	7.387	FOUND BRASS DISK IN CONCRETE "AIA-86-12-C6"
DBLC7	950424.6933	655641.9369	1.00004046	26°08'04.71128"	80°06'11.15730"	222+68.53	59.22(RT)	7.046	FOUND BRASS DISK IN CONCRETE "AIA-86-12-C7"

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

LEE POWERS, PSM
SURVEYOR LICENSE NUMBER 6805
KEITH AND ASSOCIATES, INC.
3011 E. ATLANTIC BOULEVARD
POMPANO BEACH, FLORIDA, 33060
CERTIFICATE OF AUTHORIZATION NO. 6860

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
AIA	BROWARD	430601-1-52-01

$USER$ $DATE$

PROJECT SURVEY CONTROL

SHEET NO.

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 5J-17.062, F.A.C.

INDEX OF SURVEY PLANS	
UTV-1 AND UTV-2	VERIFIED UTILITY LOCATE SHEET

SPECIFIC PURPOSE SURVEY
VERIFIED UTILITY LOCATE SHEET

Vvh #	UTILITY DESCRIPTION (Owner, type)	SIZE	MATERIALS	℄ and/or ℄			EXISTING GROUND ELEVATION	TOP ELEVATION	COMMENTS
				STATION	OFFSET	LT/RT			
TH1	WATER	± 20"	DIP	N/A	N/A	N/A	10.27	4.65	
TH2	TS	2 X 2"	PVC	N/A	N/A	N/A	10.04	8.02	
TH3	TS	2 X 2"	PVC	N/A	N/A	N/A	10.08	7.78	
TH4	WATER	12"	DIP	N/A	N/A	N/A	9.27	5.20	
TH5	UNK	UNK	UNK	N/A	N/A	N/A	9.30	0.98	
TH6	WATER	12"	DIP	N/A	N/A	N/A	9.16	4.61	
TH7	WATER	±12"	DIP	N/A	N/A	N/A	9.11	5.19	
TH8	GAS	4"	STL	N/A	N/A	N/A	9.25	7.20	
TH9	UNK	UNK	UNK	N/A	N/A	N/A	9.23	1.39	
TH10	UNK	1"	PVC	N/A	N/A	N/A	9.32	8.14	
TH11	GAS	4"	STL	N/A	N/A	N/A	10.18	7.48	
TH12	GAS	4"	STL	N/A	N/A	N/A	10.27	7.87	
TH13	WATER	±12"	CAST IRON PIPE	N/A	N/A	N/A	10.04	5.64	
TH14	TS	3 X 2"	PVC	N/A	N/A	N/A	10.08	7.90	
TH15	WATER	12"	DIP	N/A	N/A	N/A	9.27	5.91	
TH16	UNK	2"	PVC	N/A	N/A	N/A	9.30	8.06	
TH17	WATER	±18"	CAST IRON PIPE	N/A	N/A	N/A	9.16	4.66	
TH18	UNK	2"	PVC	N/A	N/A	N/A	9.11	8.07	
TH19	GAS	4"	STL	N/A	N/A	N/A	9.25	7.23	
TH20	WATER	10"	CAST IRON PIPE	N/A	N/A	N/A	9.23	5.68	
TH21	TS	2 X 2"	PVC	N/A	N/A	N/A	9.94	7.93	
TH22	UNK	2"	PVC	N/A	N/A	N/A	9.76	8.65	
TH23	BE	2"	PVC	N/A	N/A	N/A	9.78	8.28	
TH24	UNK	UNK	UNK	N/A	N/A	N/A	9.95	0.58	
TH25	UNK	2.5"	PVC	N/A	N/A	N/A	9.23	7.52	
TH26	WATER	±18"	DIP	N/A	N/A	N/A	9.24	5.05	
TH27	WATER	±12"	CAST IRON PIPE	N/A	N/A	N/A	9.84	6.22	
TH28	WATER	12"	CAST IRON PIPE	N/A	N/A	N/A	10.05	5.53	
TH29	GAS	4"	STL	N/A	N/A	N/A	10.02	7.50	
TH30	IRR	3/4"	PVC	N/A	N/A	N/A	10.02	9.07	

LIMITS: A1A STREETSCAPE IMPROVEMENTS

S.U.E. NOTES:

1. OWNERSHIP IS BASED UPON OBSERVING VISIBLE ABOVE GROUND UTILITY FEATURES AND PROFESSIONAL JUDGEMENT. NO RECORDS RESEARCH WAS PERFORMED BY KEITH AND ASSOCIATES.

SURVEYOR'S NOTES:

1. VERTICAL INFORMATION IS RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
2. HORIZONTAL INFORMATION IS RELATIVE TO THE STATE PLANE COORDINATES, FLORIDA EAST ZONE, NORTH AMERICA DATUM OF 1983/2011 ADJUSTMENT
3. PROJECT UNITS: U.S. SURVEY FEET
4. THIS SPECIFIC PURPOSE SURVEY IS TO DETERMINE THE HORIZONTAL AND VERTICAL LOCATION OF THE VACUUM TEST HOLES AS MARKED ON THE SURFACE BY THE SUBSURFACE UTILITY ENGINEERING DEPARTMENT OF KEITH AND ASSOCIATES, INC. LOCATED AT 301 EAST ATLANTIC BOULEVARD, POMPANO BEACH, FLORIDA. THE SIGNING SURVEYOR IS CERTIFYING ONLY TO THE LOCATION OF THE TEST HOLES AS MARKED ON THE SURFACE.

LEGEND:

℄	BASELINE
BE	BURIED ELECTRIC
℄	CENTERLINE
DIP	DUCTILE IRON PIPE
F.A.C.	FLORIDA ADMINISTRATIVE CODE
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
IRR	IRRIGATION
LT	LEFT
N/A	NON APPLICABLE
PSM	PROFESSIONAL SURVEYOR AND MAPPER
PVC	POLYVINYL CHLORIDE
RT	RIGHT
STL	STEEL
TS	TRAFFIC SIGNAL
UNK	UNKNOWN
VvH	VERIFIED VERTICALLY HORIZONTALLY

SURVEYOR'S CERTIFICATION

I HEREBY CERTIFY THIS SPECIFIC PURPOSE SURVEY WAS MADE FOR THE PURPOSE OF SURVEYING, REFERENCING, DESCRIBING AND MAPPING THE UTILITY VACUUM EXCAVATIONS, AS MARKED ON THE SURFACE, FOR THE TRANSPORTATION FACILITY DEPICTED HEREON AND THAT SAID SURVEY WAS DONE UNDER MY RESPONSIBLE CHARGE AND MEETS THE STANDARDS OF PRACTICE SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS IN CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE PURSUANT TO SECTION 472.027 FLORIDA STATUTES. THIS MAP CONSISTING OF SHEETS UTV-1 AND UTV-2 IS A TRUE, ACCURATE AND COMPLETE DEPICTION OF THE RESULTS OF A FIELD SURVEY PERFORMED UNDER MY DIRECTION AND COMPLETED ON JULY 8, 2016.

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

LEE POWERS
No.6805
STATE OF FLORIDA
Professional Surveyor & Mapper

ON THE DATE ADJACENT TO THE SEAL

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

KEITH AND ASSOCIATES, INC.
301 EAST ATLANTIC BOULEVARD
POMPANO BEACH, FL 33060
LICENSED BUSINESS: No. 6860
LEE POWERS, PSM 6805

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 5J-17.062, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

LEE POWERS, PSM
FLORIDA REGISTRATION NO. 6805
KEITH AND ASSOCIATES, INC
301 E. ATLANTIC BOULEVARD
POMPANO BEACH, FLORIDA 33060
LICENSED BURISNESS 6860

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR A1A	BROWARD	424027-2-52-01

VERIFIED UTILITY LOCATE SHEET

SHEET NO. UTV-1

RGreen 10/22/2018 2:21:10 PM N:\08\08492.00 Ft.Laud Beach Streetscape Improvement -KH\SUE\MicroStation\From Client\SBVHRD01.dgn

INDEX OF SURVEY PLANS	
UTV-1 AND UTV-2	VERIFIED UTILITY LOCATE SHEET

SPECIFIC PURPOSE SURVEY
VERIFIED UTILITY LOCATE SHEET

Vvh #	UTILITY DESCRIPTION (Owner, type)	SIZE	MATERIALS	℄ and/or ℄			EXISTING GROUND ELEVATION	TOP ELEVATION	COMMENTS
				STATION	OFFSET	LT/RT			
TH31	TS	2 X 2"	PVC	N/A	N/A	N/A	10.03	8.23	
TH32	WATER	12"	CAST IRON PIPE	N/A	N/A	N/A	9.81	5.37	
TH33	GAS	4"	STL	N/A	N/A	N/A	9.81	7.37	
TH34	UNK	2"	PVC	N/A	N/A	N/A	9.79	8.61	
TH35	GAS	4"	STL	N/A	N/A	N/A	10.20	7.40	
TH36	WATER	12"	CAST IRON PIPE	N/A	N/A	N/A	10.14	6.54	
TH1E	BE	2"	PVC	N/A	N/A	N/A	10.15	8.75	
TH2E	WATER MAIN	16"	DIP	N/A	N/A	N/A	9.08	4.52	
TH3E	BE	3 X 2"	PVC	N/A	N/A	N/A	9.01	6.71	
TH4E	BE	2"	PVC	N/A	N/A	N/A	9.37	6.57	
TH5E	BE	2"	PVC	N/A	N/A	N/A	9.72	6.72	
TH6E	WATER MAIN	N/A	DIP	N/A	N/A	N/A	9.50	5.54	
TH7E	BE	2"	PVC	N/A	N/A	N/A	9.42	6.76	
TH8E	WATER MAIN	16"	DIP	N/A	N/A	N/A	8.85	5.55	
TH9E	BE	2"	PVC	N/A	N/A	N/A	8.77	6.37	
TH9AE	IRR	2"	PVC	N/A	N/A	N/A	8.76	8.16	
TH10E	IRR	2"	PVC	N/A	N/A	N/A	9.30	8.00	

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ERIC E. WILHJELM, PSM
FLORIDA REGISTRATION NO. 5872
KEITH AND ASSOCIATES, INC
301 E. ATLANTIC BOULEVARD
POMPANO BEACH, FLORIDA 33060
LICENSED BURISNESS 6860

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR A1A	BROWARD	424027-2-52-01

VERIFIED UTILITY LOCATE SHEET

SHEET NO. UTV-2

TRENCH SAFETY

Bidder acknowledges that included in the appropriate bid items of his bid and in the Total Bid Price are costs for complying with the Florida Trench Safety Act, Florida Statutes 553.60 – 553.64. The bidder further identifies the costs of such compliance to be summarized below:

Trench Safety Measure (Description)	Units of Measure (LF/SF)	Unit (Quantity)	Unit Cost	Extended Cost
A.			$	$
B.			$	$
C.			$	$
D.			$	$
			Total: $	

The bidder certifies that all trench excavation done within his control in excess of five feet (5') in depth shall be in accordance with the Occupational Safety and Health Administration's excavation safety standards, C.F.R. s. 1926.650 Subpart P., and the Florida Trench Safety Act, Florida Statutes 553.60-553.64.

Failure to complete the above may result in the bid being declared non-responsive.

DATE: (SIGNATURE)

STATE OF: COUNTY OF:

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

(Name of Individual Signing)

who, after first being duly sworn by me, affixed his/her signature in the space provided above on this day of , 20 .

NOTARY PUBLIC

My Commission Expires:

E-VERIFY AFFIRMATION STATEMENT

RFP/Bid /Contract No:

Project Description:

Contractor/Proposer/Bidder acknowledges and agrees to utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of,

(a) all persons employed by Contractor/Proposer/Bidder to perform employment duties within Florida during the term of the Contract, and,

(b) all persons (including subcontractors/vendors) assigned by Contractor/Proposer/Bidder to perform work pursuant to the Contract.

The Contractor/Proposer/Bidder acknowledges and agrees that use of the U.S. Department of Homeland Security's E-Verify System during the term of the Contract is a condition of the Contract.

Contractor/Proposer/ Bidder Company Name:

Authorized Company Person's Signature:

Authorized Company Person's Title:

Date:

9/15/2020

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and *free* from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

> 3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g. ownership of five (5) percent or more).
>
> 3.4. Immediate family members (spouse, parents and children) are also prohibited from contracting with the City subject to the same general rules.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

NAME	RELATIONSHIPS

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

Authorized Signature

Title

Name (Printed)

Date

QUESTIONNAIRE SHEET

PLEASE PRINT OR TYPE:

Firm Name:

President

Business Address:

Telephone: Fax:

E-Mail Address:

What was the last project of this nature which you completed? Include the year, description, and contract value.

The following are named as three corporations and representatives of those corporations for which you have performed work similar to that required by this contract, and which the City may contact as your references (include addresses, telephone numbers and e-mail addresses). Include the project name, year, description, and contract value.

How many years has your organization been in business?

Have you ever failed to complete work awarded to you; if so, where and why?

The name of the qualifying agent for the firm and his position is:

Certificate of Competency Number of Qualifying Agent:

Effective Date: Expiration Date:

Licensed in: Engineering Contractor's License #

(County/State)

Expiration Date:

NOTE: To be considered for award of this contract, the bidder must submit a financial statement upon request.

NOTE: Contractor must have proper licensing and shall provide copy of same with his proposal.

QUESTIONNAIRE SHEET

1. Have you personally inspected the proposed work and have you a complete plan for its performance?

2. Will you sublet any part of this work? If so, list the portions or specialties of the work that you will.

a)

b)

c)

d)

e)

f)

g)

3. What equipment do you own that is available for the work?

4. What equipment will you purchase for the proposed work?

5. What equipment will you rent for the proposed work?

CONSTRUCTION BID CERTIFICATION

Please Note: It is the sole responsibility of the bidder to ensure that his bid is submitted electronically through www.BidSync.com prior to the bid opening date and time listed. Paper bid submittals will not be accepted. All fields below must be completed. If the field does not apply to you, please note N/A in that field.

If you are a foreign corporation, you may be required to obtain a certificate of authority from the Department of State, in accordance with Florida Statute §607.1501 (visit http://www.dos.state.fl.us/).

Company: (Legal Registration)

Address:

City: State: Zip:

Telephone No.: FAX No.: Email:

Check box if your firm qualifies for MBE / SBE / WBE:

If a corporation, state the name of the President, Secretary and Resident Agent. If a partnership, state the names of all partners. If a trade name, state the names of the individuals who do business under the trade name.

Name	**Title**	**Name**	**Title**
Name	**Title**	**Name**	**Title**

ADDENDUM ACKNOWLEDGEMENT - Bidder acknowledges that the following addenda have been received and are included in the proposal:

Addendum No.	Date Issued	Addendum No.	Date Issued	Addendum No.	Date Issued

VARIANCES: If you take exception or have variances to any term, condition, specification, or requirement in this bid you must specify such variance in the space provided below or reference in the space provided below all variances contained on other pages within your bid. Additional pages may be attached if necessary. No variances will be deemed to be part of the bid submitted unless such is listed and contained in the space provided below. The City does not, by virtue of submitting a variance, necessarily accept any variances. If no statement is contained in the below space, it is hereby implied that your response is in full compliance with this competitive solicitation. If you do not have variances, simply mark N/A. **You must also click the "Take Exception" button.**

The below signatory affirms that he has or will obtain all required permits and licenses from the appropriate agencies, and that his firm is authorized to do business in the State of Florida. The below signatory agrees to furnish all labor, tools, material, equipment and supplies, and to sustain all the expense incurred in doing the work set forth in strict accordance with the bid plans and contract documents at the unit prices indicated if awarded a contract. The below signatory has not divulged to, discussed, or compared this bid with other bidders, and has not colluded with any other bidder or parties to this bid whatsoever. Furthermore, the undersigned guarantees the truth and accuracy of all statements and answers contained in this bid. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a bid, that in no event shall the City's liability for bidder's direct, indirect, incidental, consequential, special or exemplary damages, expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of Five Hundred Dollars ($500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City's protest ordinance contained in this competitive solicitation.

Submitted by:

Name (printed) Signature

Date Title

Revised 4/28/2020

DRAWING INDEX

MARWAN MUFLEH LICENSE No 45329 STATE OF FLORIDA PROFESSIONAL ENGINEER

CITY OF FORT LAUDERDALE

PROJECT#11681
SR A1A STREETSCAPE
FORT LAUDERDALE BEACH
STREETSCAPE IMPROVEMENTS

N. END OF THE S. BEACH PARKING LOT TO ALHAMBRA ST.
FORT LAUDERDALE, FLORIDA

FDOT STATE ROAD A1A
DESIGN SPEED LIMIT 35 MPH

Always call 811 two full business days before you dig to have underground utilities located and marked.
Sunshine811.com

Kimley»Horn · EDSA · ACAI 2937 W. Cypress Creek Rd., Suite 200 Fort Lauderdale, Florida 33309 Tel 954.484.4000 • Fax 954.484.5588 www.acaiworld.com · DCS Inc. Helping Sustain Communities · CMS Construction Management Services, Inc. · KEITH & ASSOCIATES, INC. consulting engineers · S&F Engineers, Inc. 2925 W. Cypress Creek Rd., ste. 200 Fort Lauderdale, Florida 33309 p:954.938.0020 f:954.938.0468 www.sfengineers.com · tierra SOUTH FLORIDA · JALAW HVAC - Electrical - Plumbing - Fire Protection Sustainable Development - Commissioning

LOCATION SKETCH

PROJECT #11681
SR A1A STREETSCAPE
BEACH STREETSCAPE IMPROVEMENTS
SR A1A

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

FORT LAUDERDALE CITY COMMISSION

DEAN J. TRANTALIS	MAYOR
HEATHER MORAITIS	COMMISSIONER - DISTRICT I
STEVEN GLASSMAN	COMMISSIONER - DISTRICT II
ROBERT L. McKINZIE	COMMISSIONER - DISTRICT III
BEN SORENSEN	COMMISSIONER - DISTRICT IV

PROJECT MANAGER	JOB TITLE	PHONE NO.

DATE: 03/13/2020
CAD FILE: 11681-000-000COVR
DRAWING FILE No.: 4-XXX-XX

BID SET SUBMITTAL

\\BCDFP01\DATA\PROJECT\BCD_ROADWAY\043184032_FTL A1A\KHA_FILES\CADD\PLANSHEETS\A1A\11681-000-000COVR.DWG

GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR AND SUBCONTRACTORS SHALL OBTAIN A COPY OF THE FLORIDA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION), AND BECOME FAMILIAR WITH THE CONTENTS PRIOR TO COMMENCING WORK.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE APPROVING AUTHORITIES, SPECIFICATIONS AND REQUIREMENTS. CONTRACTOR SHALL CLEAR AND GRUB ALL AREAS UNLESS OTHERWISE INDICATED, REMOVING TREES, STUMPS, ROOTS, MUCK, EXISTING PAVEMENT AND ALL OTHER DELETERIOUS MATERIAL.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE COMMENCING WORK. THE CONTRACTOR SHALL PROVIDE 2 WORKING DAYS MINIMUM NOTICE TO ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR MUST CALL THE UTILITY COMPANIES BEFORE COMMENCING WORK.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED CONSTRUCTION PERMITS AND BONDS IF REQUIRED PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES ONE COPY OF THE CONSTRUCTION DOCUMENTS INCLUDING PLANS, SPECIFICATIONS, AND SPECIAL CONDITIONS AND COPIES OF ANY REQUIRED CONSTRUCTION PERMITS.
6. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE OWNER AND THE ENGINEER.
7. ALL COPIES OF COMPACTION, CONCRETE AND OTHER REQUIRED TEST RESULTS ARE TO BE SENT TO THE OWNER AND ENGINEER DIRECTLY FROM THE TESTING AGENCY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING TO THE ENGINEER A CERTIFIED RECORD SURVEY SIGNED AND SEALED BY A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF FLORIDA DEPICTING THE ACTUAL FIELD LOCATION OF ALL CONSTRUCTED IMPROVEMENTS THAT ARE REQUIRED BY THE JURISDICTIONAL AGENCIES FOR THE CERTIFICATION PROCESS. ALL SURVEY COSTS WILL BE THE CONTRACTOR'S RESPONSIBILITY.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DOCUMENTING AND MAINTAINING AS-BUILT INFORMATION WHICH SHALL BE RECORDED AS CONSTRUCTION PROGRESSES OR AT THE COMPLETION OF APPROPRIATE CONSTRUCTION INTERVALS AND SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT DRAWINGS TO THE OWNER FOR THE PURPOSE OF CERTIFICATION TO JURISDICTIONAL AGENCIES AS REQUIRED. ALL AS-BUILT DATA SHALL BE COLLECTED BY A STATE OF FLORIDA PROFESSIONAL LAND SURVEYOR WHOSE SERVICES ARE ENGAGED BY THE CONTRACTOR.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK THAT WOULD BE AFFECTED. FAILURE TO NOTIFY OWNER OF AN IDENTIFIABLE CONFLICT PRIOR TO PROCEEDING WITH INSTALLATION RELIEVES OWNER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
11. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR VERIFYING ALL QUANTITIES, TAKE-OFF MEASUREMENTS, MATERIALS, ETC. DURING THE BID PROCESS, WHEN DISCREPANCIES OCCUR, THE PHYSICAL PLAN TAKES PRECEDENCE. THE ENGINEER, LANDSCAPE ARCHITECT, COUNTY, CITY OR PROJECT MANAGERS ARE NOT TO BE HELD RESPONSIBLE FOR DISCREPANCIES FROM THE SPECIFICATIONS OR PLANS.
12. THE CONTRACTOR SHALL LIMIT CONSTRUCTION OPERATIONS TO WITHIN THE LIMITS OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY DAMAGES OUTSIDE THE LIMITS OF CONSTRUCTION.
13. CONTRACTOR IS ADVISED THAT THE U.S. ENVIRONMENTAL PROTECTION AGENCY REQUIRES THAT ALL OPERATORS FILE A NOTICE OF INTENT (NOI) FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NPDES GENERAL PERMIT PRIOR TO BEGINNING WORK. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO OBTAIN THE SAME. A COPY SHALL BE SENT TO THE ENGINEER OF RECORD, ARCHITECT OF RECORD AND THE OWNER.
14. FLORIDA LAW (F.S. 553.851) PROTECTION OF UNDERGROUND PIPELINES MANDATES THAT "NO EXCAVATOR SHALL COMMENCE OR PERFORM ANY EXCAVATION WITHOUT FIRST OBTAINING INFORMATION CONCERNING THE POSSIBLE LOCATION OF GAS PIPELINES IN THE AREA OF PROPOSED EXCAVATION." THE EXCAVATOR MUST NOTIFY THE GAS UTILITY A MINIMUM OF 2 WORKING DAYS AND A MAXIMUM OF 5 WORKING DAYS PRIOR TO EXCAVATION.
15. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE LOCAL ELECTRICAL PROVIDER ON ANY WORK IN THE VICINITY OF OVERHEAD OR UNDERGROUND POWER LINES.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING ALL PLANS RELATED TO SITE WORK INCLUDING (BUT NOT LIMITED TO) LANDSCAPE, IRRIGATION, SITE LIGHTING, AND OTHER APPLICABLE PLANS FOR CONFLICTING INFORMATION AND ALERT OWNER'S REPRESENTATIVE OF ANY CONFLICT FOR RESOLUTION.
17. CONTRACTOR SHALL VERIFY LOCATION OF ALL IRRIGATION, STREET LIGHTING, AND ELECTRICAL CONDUIT THAT WILL BE IN CONFLICT WITH ANY PROPOSED CONSTRUCTION AND SHALL RESOLVE CONFLICT ACCORDINGLY. COST OF CONFLICT RESOLUTION SHALL BE INCLUDED IN THE BID.
18. ANY DEBRIS RESULTING FROM DEMOLITION OPERATIONS SHALL BE REMOVED FROM THE SITE AT FREQUENT INTERVALS TO PREVENT THIS MATERIAL FROM ACCUMULATING ON SITE.
19. UPON REMOVAL OF TREES, SHRUBS OR ANY STUMP GRINDING, NO ROOT GREATER THAN THREE INCHES IN DIAMETER SHALL REMAIN WITHIN FIVE FEET OF AN UNDERGROUND STRUCTURE OR UTILITY LINE OR UNDER PAVED FOOTINGS OR PAVED AREAS.
20. THE CONTRACTOR SHALL RESTORE ALL DISTURBED VEGETATION IN KIND, UNLESS SHOWN OTHERWISE.

PRECONSTRUCTION RESPONSIBILITIES

1. UPON RECEIPT OF NOTICE OF AWARD, THE CONTRACTOR SHALL ARRANGE A PRECONSTRUCTION CONFERENCE TO INCLUDE ALL INVOLVED GOVERNMENTAL AGENCIES, ALL AFFECTED UTILITY OWNERS, THE OWNER, THE ENGINEER AND ITSELF.
2. THE CONTRACTOR SHALL CONTACT "SUNSHINE STATE ONE CALL OF FLORIDA, INC. (811)" AT LEAST 2 WORKING DAYS PRIOR TO BEGINNING ANY EXCAVATION.
3. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE SIZE, LOCATION, ELEVATION, AND MATERIAL OF ALL EXISTING UTILITIES WITHIN THE AREA OF CONSTRUCTION.
4. EXISTING UTILITY LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF EXISTING UTILITIES SHOWN OR FOR ANY EXISTING UTILITIES NOT SHOWN.
5. IF UPON EXCAVATION, AN EXISTING UTILITY IS FOUND TO BE IN CONFLICT WITH THE PROPOSED CONSTRUCTION OR TO BE OF A SIZE OR MATERIAL DIFFERENT FROM THAT SHOWN ON THE PLANS; THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
6. CONTRACTOR SHALL COORDINATE ALL WORK PERTAINING TO THIS PROJECT WITH CITY OF FORT LAUDERDALE PROJECT #11681 "SR A1A STREETSCAPE IMPROVEMENTS" (AND FDOT PROJECT FPID #424027-2-58-01 TITLE: SR A1A FROM N END OF SOUTH BEACH PARKING LOT TO SUNRISE BOULEVARD.

CONSTRUCTION SAFETY

1. ALL CONSTRUCTION SHALL BE DONE IN A SAFE MANNER, SPECIFICALLY, THE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SHALL BE STRICTLY OBSERVED.

GRADING AND DRAINAGE NOTES

1. ALL CONSTRUCTION, MATERIALS, AND WORKMANSHIP WITHIN PUBLIC RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH LOCAL COUNTY OR STATE SPECIFICATIONS AND STANDARDS (LATEST EDITION) OR FDOT SPECIFICATIONS AND STANDARDS (LATEST EDITION) IF NOT COVERED BY LOCAL OR COUNTY REGULATIONS, WHICHEVER IS MOST RESTRICTIVE.
2. ALL UNPAVED AREAS DISTURBED BY CONSTRUCTION SHALL BE REGRADED AND SODDED, UNLESS OTHERWISE NOTED.
3. TRAFFIC CONTROL ON ALL FDOT, LOCAL AND COUNTY RIGHTS-OF-WAY SHALL MEET THE REQUIREMENTS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (U.S. DOT/FHA) AND THE REQUIREMENTS OF THE STATE AND ANY LOCAL AGENCY HAVING JURISDICTION. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND THE JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
4. THE CONTRACTOR SHALL GRADE THE SITE TO THE ELEVATIONS INDICATED AND SHALL REGRADE WASHOUTS WHERE THEY OCCUR AFTER EVERY RAINFALL UNTIL A GRASS STAND IS WELL ESTABLISHED OR ADEQUATE STABILIZATION OCCURS.
5. THE CONTRACTOR SHALL INSTALL FILTER FABRIC OVER ALL DRAINAGE STRUCTURES FOR THE DURATION OF CONSTRUCTION AND UNTIL ACCEPTANCE OF THE PROJECT BY THE OWNER. ALL DRAINAGE STRUCTURES AND PIPES WITHIN THE LIMITS OF CONSTRUCTION SHALL BE CLEANED OF DEBRIS AS REQUIRED DURING AND AT THE END OF CONSTRUCTION TO PROVIDE POSITIVE DRAINAGE FLOWS.
6. IF DEWATERING IS REQUIRED, THE CONTRACTOR SHALL OBTAIN ANY APPLICABLE REQUIRED PERMITS. THE CONTRACTOR IS TO COORDINATE WITH THE OWNER AND THE ENGINEER PRIOR TO ANY EXCAVATION.
7. FIELD DENSITY TESTS SHALL BE TAKEN AT INTERVALS IN ACCORDANCE WITH THE LOCAL JURISDICTIONAL AGENCY OR TO FDOT STANDARDS. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND THE JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
8. ANY AREAS DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE JOB SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
9. THE CONTRACTOR SHALL ENSURE THAT ISLAND PLANTING AREAS AND OTHER PLANTING AREAS ARE NOT COMPACTED AND DO NOT CONTAIN ROAD BASE MATERIALS. THE CONTRACTOR SHALL ALSO EXCAVATE AND REMOVE ALL UNDESIRABLE MATERIAL FROM ALL AREAS ON THE SITE TO BE PLANTED AND PROPERLY DISPOSED OF IN A LEGAL MANNER.

MAINTENANCE

1. ALL MEASURES STATED ON THE EROSION AND SEDIMENT CONTROL PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A 0.5" RAINFALL EVENT, AND CLEANED AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:
   - A. SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT FENCE.
   - B. THE CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION ENTRANCES AS CONDITIONS DEMAND.
   - C. ALL MAINTENANCE OPERATIONS SHALL BE DONE IN A TIMELY MANNER BUT IN NO CASE LATER THAN 2 CALENDAR DAYS FOLLOWING THE INSPECTION.

DEMOLITION NOTES

1. ALL MATERIAL REMOVED FROM THIS SITE BY THE CONTRACTOR SHALL BE DISPOSED OF BY THE CONTRACTOR IN A LEGAL MANNER.
2. REFER TO THE TOPOGRAPHIC SURVEY FOR ADDITIONAL DETAILS OF EXISTING STRUCTURES, ETC., LOCATED WITHIN THE PROJECT SITE. UNLESS OTHERWISE NOTED, ALL EXISTING BUILDINGS, STRUCTURES, SLABS, CONCRETE, ASPHALT, DEBRIS PILES, SIGNS, AND ALL APPURTENANCES ARE TO REMAIN. ALL ITEMS NOTED TO BE REMOVED SHALL BE PROPERLY DISPOSED OF IN A LEGAL MANNER AS PART OF THIS CONTRACT. SOME ITEMS TO BE REMOVED MAY NOT BE DEPICTED ON THE TOPOGRAPHIC SURVEY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE SITE AND DETERMINE THE FULL EXTENT OF ITEMS TO BE REMOVED. IF ANY ITEMS ARE IN QUESTION, THE CONTRACTOR SHALL CONTACT THE OWNER PRIOR TO REMOVAL OF SAID ITEMS.
3. THE CONTRACTOR SHALL REFER TO THE DEMOLITION PLAN AND LANDSCAPE PLAN FOR DEMOLITION/PRESERVATION OF EXISTING TREES. ALL TREES NOT SPECIFICALLY SHOWN TO BE REMOVED OR RELOCATED SHALL BE PRESERVED AS A PART OF THIS CONTRACT. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO ANY DEMOLITION. CONTRACTOR TO SEE LANDSCAPE PLAN FOR TREE PROTECTION REQUIREMENTS. ALL TREES TO REMAIN UNLESS OTHERWISE NOTED. CONTRACTOR TO NOTE EXISTING TREES TO REMAIN. SHOULD ANY TREE TO BE REMAIN BE DAMAGED BY THE CONTRACTOR, IT WILL REQUIRE REPLACEMENT IN KIND.

SURVEY DATA

1. ALL ELEVATIONS ON THE PLANS OR REFERENCED IN THE SPECIFICATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)
2. THE CONTRACTOR SHALL PROTECT ALL PERMANENT REFERENCE MONUMENTS AND TAKE ALL PRECAUTIONS NECESSARY TO AVOID DAMAGE TO SURVEY MAKERS DURING CONSTRUCTION. ANY SURVEY MARKERS DAMAGED DURING CONSTRUCTION WILL BE REPLACED AT THE EXPENSE OF THE CONTRACTOR.
3. BENCHMARK LOCATION AND ELEVATION ARE AS REPRESENTED BY SURVEYOR AT THE TIME OF SURVEY. CONTRACTOR SHALL VERIFY ITS CORRECTNESS AT TIME OF CONSTRUCTION.

EROSION CONTROL NOTES

1. THE STORM WATER POLLUTION PREVENTION PLAN ("SWPPP") IS COMPRISED OF THIS EROSION AND SEDIMENTATION CONTROL PLAN, THE STANDARD DETAILS, AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS PROVIDED BY THE CONTRACTOR.
2. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN AND THE STATE OF FLORIDA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT (NPDES PERMIT) AND BECOME FAMILIAR WITH THEIR CONTENTS.
3. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED BY THE SWPPP. ADDITIONAL BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST TO THE OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION.
4. BEST MANAGEMENT PRACTICES (BMP'S) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY THE PERMITTING AGENCY OR OWNER.
5. EROSION AND SEDIMENTATION CONTROL PLAN MUST CLEARLY DELINEATE ALL STATE WATERS. PERMITS FOR ANY CONSTRUCTION ACTIVITY IMPACTING STATE WATERS OR REGULATED WETLANDS MUST BE MAINTAINED ON SITE AT ALL TIMES.
6. THE CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT.
7. CONTRACTOR SHALL DENOTE ON PLAN THE TEMPORARY PARKING AND STORAGE AREA WHICH SHALL ALSO BE USED AS THE EQUIPMENT MAINTENANCE AND CLEANING AREA, EMPLOYEE PARKING AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES.
8. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DETAINED AND PROPERLY TREATED OR DISPOSED.
9. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
10. RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORM WATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
11. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THE PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.
12. STABILIZATION PRACTICES SHOULD BE INITIATED AS SOON AS PRACTICAL, BUT IN NO CASE MORE THAN 7 DAYS WHERE CONSTRUCTION HAS TEMPORARILY OR PERMANENTLY CEASED.
13. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY STABILIZED. THESE AREAS SHALL BE STABILIZED NO LATER THAN 7 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRED.
14. IF THE ACTION OF VEHICLES TRAVELING OVER THE GRAVEL CONSTRUCTION ENTRANCES IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF DIRT OR MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE.
15. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED AS SOON AS POSSIBLE.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS IN CONJUNCTION WITH THE STABILIZATION OF THE SITE.
17. ON-SITE & OFF-SITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE EROSION AND SEDIMENTATION CONTROL PLAN AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
18. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES AS NECESSARY AS CONSTRUCTION PROGRESSES (SILT FENCES, ETC.) TO PREVENT EROSION.
20. ALL CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY, THIS INCLUDES BACK FILLING OF TRENCHES FOR UTILITY CONSTRUCTION.
21. EROSION AND SEDIMENTATION CONTROL PLANS PROVIDED HEREIN ARE A GUIDELINE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR PREPARING THE FINAL STORM WATER POLLUTION PREVENTION PLAN. THE PLAN SHALL BE SUBMITTED TO THE OWNER AND ENGINEER WHICH DEMONSTRATES THE MECHANISMS AND PRACTICES THAT WILL BE EMPLOYED TO PROTECT THE CONSTRUCTION SITE AND SURROUNDING AREA DURING CONSTRUCTION. THE PLAN SHALL BE CONSISTENT WITH FEDERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES PERMIT REQUIREMENTS PERTAINING TO POLLUTION PREVENTION PLANS. THE PLAN SHALL INCLUDE, BUT NOT BE LIMITED TO, THE LOCATIONS OF SILT BARRIERS, TURBIDITY SCREENS OR TEMPORARY SHEETING, EMERGENCY RESPONSE PRACTICES, AND OTHER METHODS TO PREVENT POLLUTION. REFUELING OR STORAGE OF VEHICLES OR EQUIPMENT THAT UTILIZE PETROLEUM BASED PRODUCTS SHALL BE PROHIBITED ANYWHERE WITHIN 50 FEET OF A WATER'S EDGE. THE PLAN SHALL BE SUBMITTED TO THE OWNER AFTER NOTICE OF AWARD AND PRIOR TO NOTICE TO PROCEED. AFTER REVIEW BY OWNER THE PLAN SHALL BE FILED WITH ALL APPLICABLE REGULATORY AGENCIES BY THE CONTRACTOR. REFER TO FURTHER NOTES AND DETAILS WITHIN THESE DOCUMENTS.
22. SILT FENCE IS REQUIRED AS SHOWN ON THE PLANS AND ANYWHERE ADDITIONAL AS REQUIRED BY CONSTRUCTION. SILT FENCE IS NOT APPLICABLE IN PAVEMENT AREAS. LIMITS OF CONSTRUCTION SHOWN ARE DIAGRAMATIC. CONTRACTOR TO PROVIDE PLAN FOR SHOP DRAWING REVIEW.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF DUST AND DIRT RISING AND SCATTERING IN THE AIR DURING CONSTRUCTION AND SHALL PROVIDE WATER SPRINKLING OR OTHER SUITABLE METHODS OF CONTROL. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED. THE CONTRACTOR SHALL COMPLY WITH ALL GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.

INTERRUPTION OF EXISTING UTILITIES

1. ANY CONSTRUCTION WORK THAT REQUIRES INTERRUPTION OF SERVICE TO ANY CUSTOMER SHALL BE DONE SO WITH A MINIMUM OF SEVENTY-TWO (72) HOUR NOTICE TO, AND WRITTEN APPROVAL BY THE APPROPRIATE UTILITY COMPANY. THE CONTRACTOR SHALL ARRANGE A MEETING WITH THE LOCAL JURISDICTIONAL AGENCIES AND OTHER GOVERNING AGENCIES, AND OTHER AFFECTED UTILITIES PRIOR TO SCHEDULING THE SHUTDOWN TO ASSESS THE SCOPE OF WORK. ALL SYSTEM SHUT DOWNS SHALL BE SCHEDULED BY THE CONTRACTOR AT SUCH TIME THAT SYSTEM DEMAND IS LOW. THIS GENERALLY REQUIRES NIGHT TIME WORK BY THE CONTRACTOR AND REQUIRES FULL TIME INSPECTION BY A REPRESENTATIVE OF THE UTILITY. ALL COST FOR OVERTIME WORK BY THE REPRESENTATIVE OF THE UTILITY SHALL BE BORNE BY THE CONTRACTOR. EACH CUSTOMER AFFECTED BY THE SHUT DOWN SHALL BE PROVIDED, MINIMUM, FORTY-EIGHT (48) HOURS WRITTEN NOTIFICATION BY THE CONTRACTOR.

WATER AND SEWER UTILITY NOTES

1. ALL CONSTRUCTION SHALL MEET OR EXCEED THE LOCAL WATER AND SEWER REQUIREMENTS AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS UNLESS OTHERWISE NOTED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE SPECIFICATIONS AND DETAILS FROM THE LOCAL AGENCY.
2. EXISTING UTILITIES SHOWN ARE LOCATED ACCORDING TO THE INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF THE TOPOGRAPHIC SURVEY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR THE ENGINEER. GUARANTEE IS NOT MADE THAT ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN OR THAT THE LOCATION OF THOSE SHOWN ARE ENTIRELY ACCURATE. FINDING THE ACTUAL LOCATION OF ANY EXISTING UTILITIES IS THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE DONE BEFORE HE COMMENCES ANY WORK IN THE VICINITY. FURTHERMORE, THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES DUE TO THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE OWNER OR ENGINEER WILL ASSUME NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE OPERATIONS IN THE VICINITY OF EXISTING UTILITIES OR STRUCTURES, NOR FOR TEMPORARY BRACING AND SHORING OF SAME. IF IT IS NECESSARY TO SHORE, BRACE, SWING OR RELOCATE A UTILITY, THE UTILITY COMPANY OR DEPARTMENT AFFECTED SHALL BE CONTACTED AND THEIR PERMISSION OBTAINED REGARDING THE METHOD TO USE FOR SUCH WORK.
3. DEFLECTION OF PIPE JOINTS AND CURVATURE OF PIPE SHALL NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS. SECURELY CLOSE ALL OPEN ENDS OF PIPE AND FITTINGS WITH A WATERTIGHT PLUG WHEN WORK IS NOT IN PROGRESS. THE INTERIOR OF ALL PIPES SHALL BE CLEAN AND JOINT SURFACES WIPED CLEAN AND DRY AFTER THE PIPE HAS BEEN LOWERED INTO THE TRENCH. VALVES SHALL BE PLUMB AND LOCATED ACCORDING TO THE PLANS.
4. ALL PHASES OF INSTALLATION, INCLUDING UNLOADING, TRENCHING, LAYING AND BACK FILLING, SHALL BE DONE IN A FIRST CLASS WORKMANLIKE MANNER. ALL PIPE AND FITTINGS SHALL BE CAREFULLY STORED FOLLOWING MANUFACTURER'S RECOMMENDATIONS. CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE COATING OR LINING OF ANY D.I. PIPE FITTINGS. ANY PIPE OR FITTING WHICH IS DAMAGED OR WHICH HAS FLAWS OR IMPERFECTIONS WHICH, IN THE OPINION OF THE ENGINEER OR OWNER, RENDERS IT UNFIT FOR USE, SHALL NOT BE USED. ANY PIPE NOT SATISFACTORY FOR USE SHALL BE CLEARLY MARKED AND IMMEDIATELY REMOVED FROM THE JOB SITE, AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. WATER FOR FIRE FIGHTING SHALL BE AVAILABLE FOR USE PRIOR TO COMBUSTIBLES BEING BROUGHT ON SITE.
6. ALL UTILITY TRENCHES LOCATED UNDER AREAS TO RECEIVE PAVING SHALL BE COMPLETELY BACK FILLED IN ACCORDANCE WITH THE GOVERNING JURISDICTIONAL AGENCY'S SPECIFICATIONS. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND THE JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
7. UNDERGROUND LINES SHALL BE AS-BUILT BY A STATE OF FLORIDA PROFESSIONAL LAND SURVEYOR BEFORE BACK FILLING.
8. CONTRACTOR SHALL PERFORM, AT HIS OWN EXPENSE, ANY AND ALL TESTS REQUIRED BY THE SPECIFICATIONS AND/OR ANY AGENCY HAVING JURISDICTION. THESE TESTS MAY INCLUDE, BUT MAY NOT BE LIMITED TO, INFILTRATION AND EXFILTRATION, TELEVISION INSPECTION AND A MANDREL TEST ON GRAVITY SEWER. A COPY OF THE TEST RESULTS SHALL BE PROVIDED TO THE UTILITY PROVIDER, OWNER AND JURISDICTIONAL AGENCY AS REQUIRED.
9. ALL WATER DISTRIBUTION SYSTEM MATERIALS (INCLUDING SERVICES) AND INSTALLATION SHALL CONFORM TO THE SPECIFICATIONS OF THE LOCAL WATER PROVIDER AS PROVIDED IN THEIR STANDARD SPECIFICATIONS MANUAL AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN SPECIFICATION MANUALS PRIOR TO BIDDING THE PROJECT.

UTILITY CONTACT INFORMATION

1.	OTIS KEEVE	AT&T	954-524-3330
2.	BYRON SAMPLE	FLORIDA POWER &LIGHT	954-321-2056
3.	DAVID RIVERA	TECO PEOPLES GAS	954-453-0794
4.	JOHN MATONTI	COMCAST CABLE	954-447-8486
5.	JON STAHL	CITY OF FORT LAUDERDALE	954-828-7830

MARWAN MUFLEH ★ LICENSE No 45329 ★ STATE OF FLORIDA ★ PROFESSIONAL ENGINEER

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100, DELRAY BEACH, FL 33445
PHONE: 561-330-2345 FAX: 561-330-2245
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJ #: 043184032

DRAWN BY: JJ | DATE: 04/07/2016 | DESIGNED BY: JJ | SCALE: AS SHOWN | CHECKED BY: MHM | FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

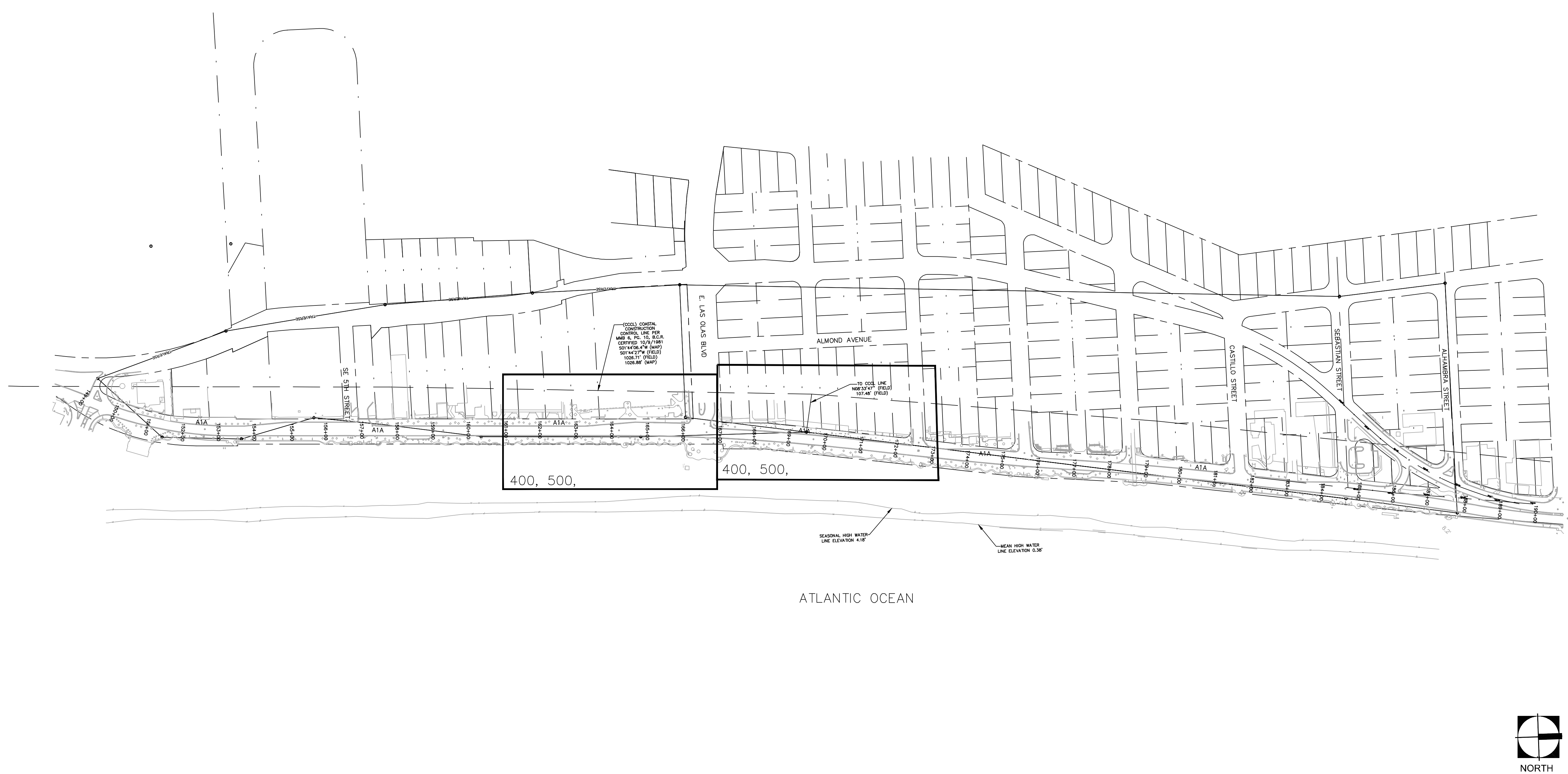
PROJECT # P11681
A1A STREETSCAPE
FORT LAUDERDALE, FL

GENERAL NOTES

BID SET

SHEET NO. C100 OF

DRAWING FILE



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DELRAY BEACH, FL 33445
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PROJECT # P11681
A1A STREETSCAPE
FORT LAUDERDALE, FL

KEY SHEET

SHEET NO. C200 OF

TRAFFIC CONTROL GENERAL NOTES

GENERAL:

1. THE TRAFFIC CONTROLS SHALL BE IN ACCORDANCE WITH THE PROJECT PLANS, THE STANDARD PLANS FOR ROADWAY AND BRIDGE CONSTRUCTION (102 SERIES), THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AS MINIMUM CRITERIA. PROJECT AREAS THAT ARE NOT ACTIVE CONSTRUCTION AREAS ARE TO BE KEPT FREE OF CONSTRUCTION DEBRIS AND ANY UNNECESSARY TRAFFIC CONTROL DEVICES AT THE DIRECTION OF THE PROJECT ENGINEER.
2. THE CONTRACTOR SHALL MAINTAIN AS A MINIMUM OF 1 LANE IN EACH DIRECTION ALONG EXISTING SR A1A.
3. THE PROJECT ENGINEER MAY ADJUST LANE CLOSURE TIMES IF CONDITIONS WARRANT.
4. AT THE DISCRETION OF THE ENGINEER, IF A LANE CLOSURE CAUSES EXTENDED CONGESTION OR DELAY, THE CONTRACTOR SHALL BE DIRECTED TO REOPEN THE CLOSED LANE(S) UNTIL SUCH TIME AS TRAFFIC FLOW HAS RETURNED TO AN ACCEPTABLE LEVEL.
5. THE PROVISIONS FOR TRAFFIC DISRUPTIONS WHICH ARE NOT SHOWN BY THE TRAFFIC CONTROL PLAN, BUT WHICH ARE NECESSARY TO CONSTRUCT THE PROJECT SHALL BE SUBMITTED IN WRITING TO THE ENGINEER AND APPROVAL SHALL BE OBTAINED 21 DAYS PRIOR TO COMMENCEMENT OF WORK. SUBMITTAL MATERIAL SHALL INCLUDE SKETCHES, CALCULATIONS AND OTHER DATA REQUIRED BY THE ENGINEER.
6. THE TRAFFIC AND TRAVEL WAYS SHALL NOT BE ALTERED BY THE CONTRACTOR TO CREATE A WORK ZONE UNTIL ALL LABOR AND MATERIAL ARE AVAILABLE FOR THE CONSTRUCTION IN THAT AREA.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE EXISTING SIGNS WITHIN THE CONSTRUCTION LIMITS. A LIST OF THE EXISTING SIGNS SHALL BE SUBMITTED TO THE PROJECT ENGINEER PRIOR TO THE BEGINNING OF CONSTRUCTION. ANY SIGNS WHICH ARE TO BE REMOVED SHALL BE DISPOSED OF BY THE CONTRACTOR. SIGNS SHOULD BE COVERED OR RELOCATED AS NECESSARY TO AVOID CONFLICT WITH THE TRAFFIC CONTROL PLAN. ANY DAMAGED OR LOST SIGNS SHALL BE REPLACED AT NO ADDITIONAL COST. COST OF THE MAINTENANCE OF EXISTING SIGNS COVERING AND RELOCATION OF SIGNS FOR PHASE CONSTRUCTION IS INCLUDED IN COST OF MAINTENANCE OF TRAFFIC.
8. THE CONTRACTOR'S FULL TIME CERTIFIED MAINTENANCE OF TRAFFIC SUPERVISOR SHALL BE ON SITE WHEN CONTRACTOR IS WORKING AND SHALL BE ON CALL FOR EMERGENCIES WHEN CONTRACTOR IS NOT WORKING.
9. REGULATORY SPEED ESTABLISHED WITHIN WORK ZONE TRAVEL WAYS SHALL BE 25 MPH. REGULATORY SPEED SIGNS SHALL BE INSTALLED ON SEPARATE POSTS.
10. THE REMOVAL AND REPLACEMENT OF ANY SECTIONS OF EXISTING CONCRETE/BRICK PAVER SIDEWALK AND CURB AND GUTTER SHALL BE COMPLETED WITHIN 48 HOURS.
11. THE CONTRACTOR SHALL COORDINATE WITH FDOT ASSET MANAGEMENT COMPANY (FERROVIAL SERVICES INFRASTRUCTURE), FDOT CONTRACT MANAGER JOHN DEEMER AT (954) 777-4450.

LANE CLOSURES:

12. THE CONTRACTOR SHALL BE PERMITTED TO CLOSE ONE LANE OF TRAFFIC IN EACH DIRECTION BETWEEN THE HOURS OF 11:30 PM AND 7:00 AM FOR SIGNALIZED LANES, AND 8:30 PM TO 8:00 A.M FOR OPEN ROAD LANES. ADDITIONAL LANE CLOSURE TIMES SHALL BE APPROVED BY THE ENGINEER.
13. NIGHT TIME LANE CLOSURES WILL NOT BE ALLOWED ON SR A1A UNLESS APPROVED BY THE ENGINEER.
14. LANE CLOSURES SHALL NOT EXCEED ½ MILE IN TOTAL LENGTH TAPER, BUFFER SPACE AND WORK SPACE.

DROP OFFS:

15. AT THE END OF EACH WORK PERIOD, ANY DROP OFF IN THE AREA ADJACENT TO THE TRAVEL WAY SHALL BE PROTECTED WITH TEMPORARY BARRIER WALL AS REQUIRED BY FY 2020-21 FDOT STANDARD PLANS 102 SERIES.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING A WORK SCHEDULE SO THAT ANY LOCATION UNDER CONSTRUCTION WILL NOT BE LEFT IN A HAZARDOUS CONDITION AT THE COMPLETION OF ANY WORK PERIOD.

ADVANCED CONSTRUCTION NOTICE:

17. THE CONTRACTOR SHALL FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) ALONG SR-A1A (BOTH DIRECTIONS). MESSAGES FOR THE PCMS SHALL BE AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THE PCMS SHALL BE IN PLACE ONE WEEK PRIOR TO THE START OF ANY WORK ITEMS AFFECTING EXISTING VEHICULAR AND PEDESTRIAN TRAFFIC. PCMS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER. THE BID SHALL INCLUDE 2 SIGNS BEING IN OPERATION FOR THE LENGTH OF CONSTRUCTION, INCLUDING RELOCATION AND REMOVAL WHEN NOT IN USE. PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE POSTED A WEEK AHEAD OF LANE CLOSURES AND 800 FEET AHEAD OF A CONSTRUCTION SITE.
18. THE FOLLOWING MESSAGES SHALL BE DISPLAYED FOR PORTABLE CHANGEABLE MESSAGE SIGNS:

ROAD WORK AHEAD	BEGINS (MONTH DATE)
MESSAGE 1	MESSAGE 2

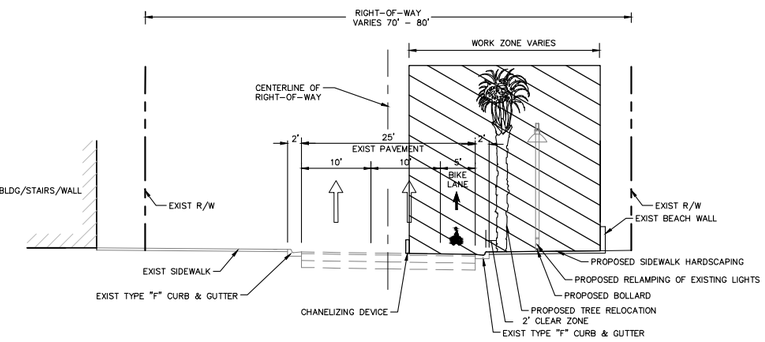
LIGHTING:

19. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN EXISTING ROADWAY LIGHTING DURING CONSTRUCTION AT ALL TIMES. THE COST OF MAINTAINING LIGHTING SYSTEM(S) SHALL BE INCLUDED IN BID FOR MAINTENANCE OF TRAFFIC. THE CONTRACTOR SHALL INSTALL THE PROPOSED LIGHTING SYSTEM INCLUDING CONDUIT, PULL BOXES AND SERVICE CONNECTIONS AND HAVE THE SYSTEM IN OPERATION BEFORE TAKING THE TEMPORARY LIGHTING SYSTEM OUT OF SERVICE.
20. CONTRACTOR SHALL COORDINATE WITH FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, ACCEPTABLE AMBER LED BULB WAVELENGTHS BEFORE ORDERING AND/OR INSTALLING ANY PROPOSED OR TEMPORARY LIGHTING SYSTEMS.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POWER TO THE EXISTING LIGHTING SYSTEM AND THE NEW LIGHTING SYSTEM UNTIL FINAL ACCEPTANCE.

SEA TURTLE NESTING:

22. SEA TURTLE NESTING SEASON RUNS FROM MARCH 1 TO OCTOBER 31. THE CONTRACTOR SHALL CALL BROWARD COUNTY NATURAL RESOURCES AT (954) 519-1255 FOR ANY SEA TURTLE SIGHTINGS WITHIN THE CONSTRUCTION LIMITS.
23. NO BEACH ILLUMINATION WILL BE PERMITTED DURING SEA TURTLE NESTING SEASON (MARCH 1 THROUGH OCTOBER 31). SHOULD NIGHT TIME CONSTRUCTION BE NECESSARY DURING THAT PERIOD, THE CONTRACTOR SHALL SUBMIT TEMPORARY LIGHTING PLANS TO THE DISTRICT CONSTRUCTION ENVIRONMENTAL COORDINATOR AT (954) 777-4465 FOR REVIEW AND APPROVAL PRIOR TO COMMENCEMENT.

PHASE 1- EAST



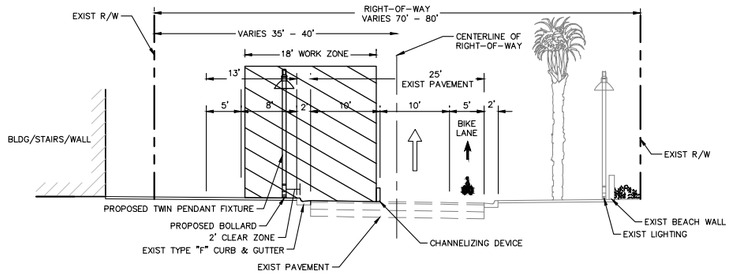
SR-A1A
STA 149+52.00- 231+00.00

TRAFFIC CONTROL PHASING NOTES

PHASE I: EAST SIDE

1. INSTALL PCMS SIGNS PER ADVANCE CONSTRUCTION NOTICE NOTES.
2. INSTALL ADVANCE WARNING SIGNS, WORK ZONE SIGNS, AND TRAFFIC CONTROL DEVICES AS PER FY 2020-2021 FDOT STANDARD PLANS 102 SERIES.
3. THE CONTRACTOR SHALL PERFORM ALL WORK ON ONE SIDE OF THE ROADWAY AT A TIME.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL PROPOSED LED FIXTURES NEEDED TO RELAMP EXISTING LIGHT POLES.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL PROPOSED LANDSCAPE AND HARDSCAPE ALONG THE EAST SIDE.
6. THE CONTRACTOR SHALL PROVIDE BEACH PEDESTRIAN ACCESS.

PHASE 2- WEST



SR-A1A
STA 149+52.00 - 188+70.00

TRAFFIC CONTROL PHASING NOTES

PHASE IA: WEST SIDE

1. INSTALL PCMS SIGNS PER ADVANCE CONSTRUCTION NOTICE NOTES.
2. INSTALL ADVANCE WARNING SIGNS, WORK ZONE SIGNS, OR TRAFFIC CONTROL DEVICES AS PER FY 2020-21 FDOT STANDARD PLANS 102 SERIES.
3. THE CONTRACTOR SHALL PERFORM ALL WORK ON ONE SIDE OF THE ROADWAY AT A TIME.
4. THE CONTRACTOR SHALL MAINTAIN THE SIDEWALK OPEN AT ALL TIMES BY PROVIDING A MINIMUM 5 FT. CLEAR SIDEWALK PASSAGE ADJACENT TO THE WORK ZONE.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL PROPOSED LIGHTING, LANDSCAPING AND HARDSCAPE ALONG THE WEST SIDE OF THE CORRIDOR WITHIN LIMITS OF DESIGNATED WORK ZONE.

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100,
DELRAY BEACH, FL 33445
PHONE: 561-330-2340 FAX: 561-330-2245
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJ #: 043184032

DRAWN BY:	DATE:
JJ	04/07/2016
DESIGNED BY:	SCALE:
JJ	AS SHOWN
CHECKED BY:	
MHM	
FIELD BOOK:	

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

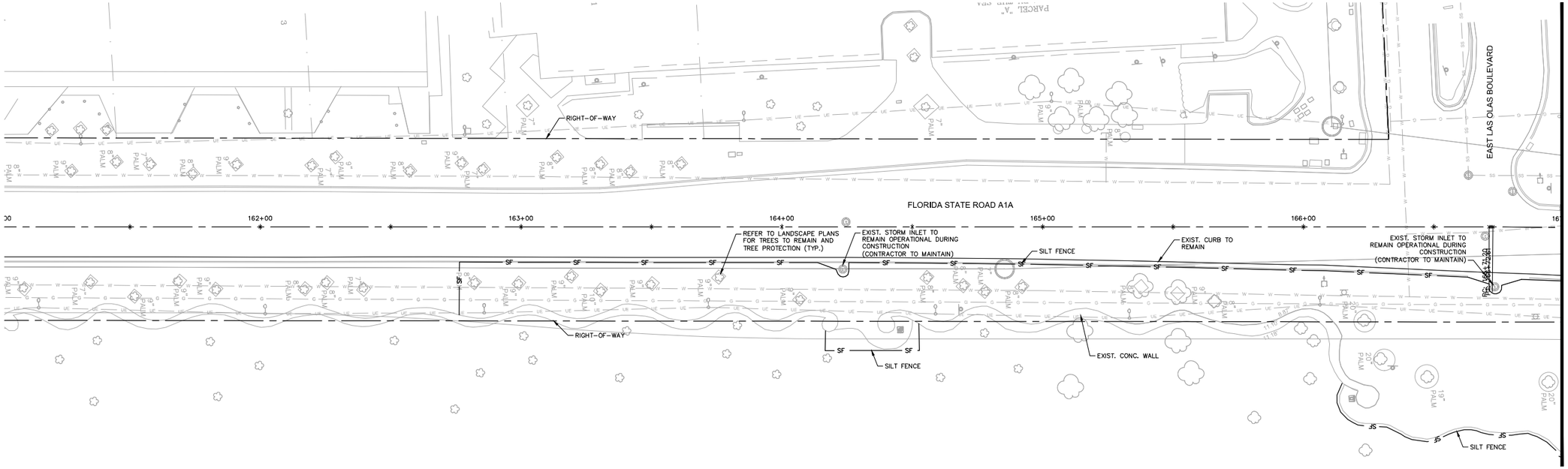
PROJECT # P11681
A1A STREETSCAPE
FORT LAUDERDALE, FL

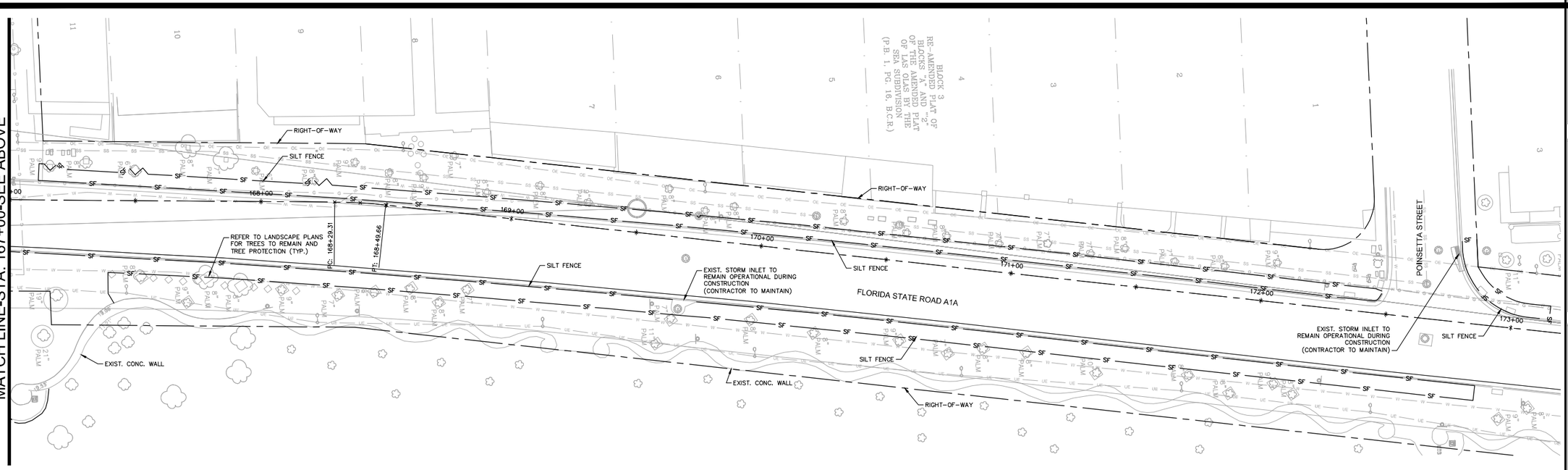
TRAFFIC CONTROL PLAN

SHEET NO.	OF
C300	

CAD DRAWING FILE

BID SET





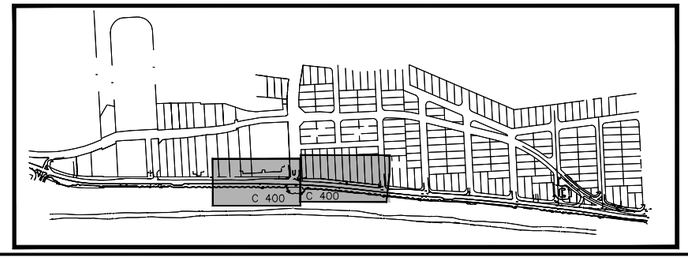
NOTES:

1. CONTRACTOR TO CONSIDER POTENTIAL DEWATERING ACTIVITIES WHEN PREPARING BID DOCUMENTS FOR THIS PROJECT.
2. CONTRACTOR SHALL OBTAIN ANY NECESSARY DEWATERING PERMITS AS SITE CONDITIONS AND CONSTRUCTION ACTIVITIES REQUIRE.
3. CONTRACTOR TO USE BEST MANAGEMENT PRACTICES TO ENSURE COMPLIANCE WITH NPDES AND WATER MANAGEMENT DISTRICT REGULATIONS FOR STORMWATER DISCHARGE FROM CONSTRUCTION ACTIVITIES AND DEWATERING OPERATIONS.
4. CONTRACTOR TO SUBMIT CONSTRUCTION ENTRY / EXIT LOCATIONS AND CONSTRUCTION VEHICLE WASHDOWN AREAS FOR THIS PROJECT.

LEGEND

SF ——— SILT FENCE

——— RIGHT-OF-WAY



Always call 811 two full business days before you dig to have underground utilities located and marked.

Sunshine811.com

SCALE: 1"=20'-0"

NORTH 0 10' 20' 40' 60'

BID SET

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100,
DELRAY BEACH, FL 33445
PHONE: 561-330-2345 FAX: 561-330-2245
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJ #: 043184032

DRAWN BY: JJ | DATE: 04/07/2016 | DESIGNED BY: JJ | SCALE: AS SHOWN | CHECKED BY: MHM | FIELD BOOK:

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REVISIONS			
NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # P11681
A1A STREETSCAPE
FORT LAUDERDALE, FL

EROSION CONTROL PLAN

SHEET NO. C400 OF

DRAWING FILE

BEST MANAGEMENT PRACTICES (BMPS):

THIS PLAN HAS BEEN PREPARED TO ENSURE COMPLIANCE WITH APPROPRIATE CONDITIONS OF THE BROWARD COUNTY LAND DEVELOPMENT REGULATIONS, THE RULES OF THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP), CHAPTER 17-25, F.A.C., THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD), CHAPTER 40D-4, F.A.C. AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) DOCUMENT NO. EPA 832/R-92-005 (SEPTEMBER 1992). THE PLAN ADDRESSES THE FOLLOWING:

A. PREVENT LOSS OF SOIL DURING CONSTRUCTION BY STORMWATER RUNOFF AND/OR WIND EROSION, INCLUDING PROTECTING TOPSOIL BY STOCKPILING FOR REUSE.

B. SEDIMENTION PROTECTION OF STORM SEWER OR RECEIVING STREAM.

C. PREVENT POLLUTING THE AIR WITH DUST AND PARTICULATE MATTER. THE VARIOUS TECHNIQUES OR ACTIONS IDENTIFIED UNDER EACH SECTION INDICATE THE APPROPRIATE SITUATION WHEN THE TECHNIQUES SHOULD BE EMPLOYED. ALSO IDENTIFIED IS A CROSS-REFERENCE TO A DIAGRAM OR FIGURE REPRESENTING THE TECHNIQUE. IT SHOULD BE NOTED THAT THE MEASURES IDENTIFIED ON THIS PLAN ARE ONLY SUGGESTED BMP(S). THE CONTRACTOR SHALL PROVIDE POLLUTION PREVENTION AND EROSION CONTROL MEASURES AS SPECIFIED IN ACCORDANCE WITH THE CURRENT FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS. CONTRACTOR SHALL PREPARE REQUIRED NPDES DOCUMENTATION AND OBTAIN PERMIT PRIOR TO COMMENCEMENT OF CONSTRUCTION. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PREPARE THE REQUIRED NPDES DOCUMENT AND OBTAIN THE NPDES PERMIT. ALL COST ASSOCIATED WITH SUCH WORK SHALL BE DEEMED INCIDENTAL TO THE PROJECT LUMP SUM COST.

GENERAL EROSION CONTROL NOTES:

A. THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS COMPRISED OF THESE EROSION CONTROL DRAWINGS, THE STANDARD DETAILS, THE NPDES PERMIT (TO BE OBTAINED BY CONTRACTOR) AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS.

B. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THIS DRAWING AND THE STATE OF FLORIDA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT (NPDES PERMIT) AND BECOME FAMILIAR WITH THEIR CONTENTS.

C. CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES (BMP) IN ALL CONSTRUCTION ACTIVITIES INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. FUEL SPILLS AND LEAKS PREVENTION
2. PREVENT/REDUCE VEHICLE AND EQUIPTMENT WASHING AND STEAM CLEANING
3. VEHICLE AND EQUIPTMENT MAINTENANCE AND REPAIR
4. PROPER OUTDOOR LOADING/UNLOADING OF MATERIALS
5. PREVENT/REDUCE OUTDOOR STORAGE OF RAW MATERIALS, PRODUCTS, AND BY-PRODUCTS
6. SOLID WASTE MANAGEMENT
7. HAZARDOUS WASTE MANAGEMENT
8. CONCRETE WASTE MANAGEMENT
9. SANDBLASTING WASTE MANAGEMENT
10. STRUCTURE CONSTRUCTION AND PAINTING
11. SPILL PREVENTION AND CONTROL
12. CONTAMINATED SOIL MANAGEMENT
13. SANITARY/SEPTIC WASTE MANAGEMENT
14. SOIL EROSION CONTROL
15. STORM WATER TURBIDITY MANAGEMENT

ADDITIONAL BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST TO THE OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION.

D. BEST MANAGEMENT PRACTICES (BMPS) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE. CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.

E. SITE MAP MUST CLEARLY DELINEATE ALL STATE WATERS. CONTRACTOR MUST MAINTAIN ALL PERMITS FOR ANY CONSTRUCTION ACTIVITY IMPACTING STATE WATERS OR REGULATED WETLANDS ON SITE AT ALL TIMES.

F. CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT.

G. CONTRACTOR SHALL BEGIN CLEARING AND GRUBBING THOSE PORTIONS OF THE SITE NECESSARY TO IMPLEMENT PERIMETER CONTROL MEASURES. CLEARING AND GRUBBING FOR THE REMAINING PORTIONS OF THE PROPOSED SITE SHALL COMMENCE ONCE PERIMETER CONTROLS ARE IN PLACE. PERIMETER CONTROLS SHALL BE ACTIVELY MAINTAINED UNTIL SAID AREAS HAVE BEEN STABILIZED AND SHALL BE REMOVED ONCE FINAL STABILIZATION IS COMPLETE.

H. GENERAL EROSION CONTROL BMPS SHALL BE EMPLOYED TO MINIMIZE SOIL EROSION AND POTENTIAL LAKE SLOPE CAVE-INS. WHILE THE VARIOUS TECHNIQUES REQUIRED WILL BE SITE AND PLAN SPECIFIC, THEY SHOULD BE EMPLOYED AS SOON AS POSSIBLE DURING CONSTRUCTION.

I. ON-SITE & OFF-SITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.

J. SURFACE WATER QUALITY SHALL BE MAINTAINED BY EMPLOYING THE FOLLOWING BMP'S IN THE CONSTRUCTION PLANNING AND CONSTRUCTION OF ALL IMPROVEMENTS.

STORM WATER EROSION CONTROL PRACTICES:

A. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT FROM DETENTION PONDS AND ANY SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS IN CONJUNCTION WITH THE STABILIZATION OF THE SITE.

B. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.

C. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (COMPOST SOCK DEVICES, ETC.) TO PREVENT EROSION.

D. WHERE PRACTICAL, STORMWATER SHALL BE CONVEYED BY SWALES.

E. EROSION CONTROL MEASURES SHALL BE EMPLOYED TO MINIMIZE TURBIDITY OF SURFACE WATERS LOCATED DOWNSTREAM OF ANY CONSTRUCTION ACTIVITY. WHILE THE VARIOUS MEASURES REQUIRED WILL BE SITE SPECIFIC, THEY SHALL BE EMPLOYED AS NEEDED IN ACCORDANCE WITH THE FOLLOWING:

1. IN GENERAL, EROSION SHALL BE CONTROLLED AT THE FURTHEST PRACTICAL UPSTREAM LOCATION.

2. STORMWATER INLETS SHALL BE PROTECTED DURING CONSTRUCTION. PROTECTION MEASURES SHALL BE EMPLOYED AS SOON AS PRACTICAL DURING THE VARIOUS STAGES OF INLET CONSTRUCTION. SILT BARRIERS SHALL REMAIN IN PLACE UNTIL SODDING AROUND INLETS IS COMPLETE.

3. WHEN NEEDED A TEMPORARY SEDIMENT TRAP SHOLD BE CONSTRUCTED TO DETAIN SEDIMENT-LADEN RUNOFF FROM DISTURBED AREAS.

F. SILT BARRIERS, ANY SILT WHICH ACCUMULATES BEHIND THE BARRIERS, AND ANY FILL USED TO ANCHOR THE BARRIERS SHALL BE REMOVED PROMPTLY AFTER THE END OF THE MAINTENANCE PERIOD SPECIFIED FOR THE BARRIERS.

G. SLOPES OF BANKS OF RETENTION/DETENTION PONDS SHALL BE CONSTRUCTED NOT STEEPER THAN 3H:1V FROM TOP OF BANK TO TWO FEET BELOW NORMAL WATER LEVEL, AS APPLICABLE.

H. SOD SHALL BE PLACED FOR A 2-FOOT WIDE STRIP ADJOINING ALL CURBING AND AROUND ALL INLETS. SOD SHALL BE PLACED BEFORE SILT BARRIERS ARE REMOVED.

I. WHERE REQUIRED TO PREVENT EROSION FROM SHEET FLOW ACROSS BARE GROUND FROM ENTERING A LAKE OR SWALE, A TEMPORARY SEDIMENT SUMP SHALL BE CONSTRUCTED.

J. FILTER FABRIC SHOULD BE USED FOR STORM DRAIN INLET PROTECTION BEFORE FINAL STABILIZATION.

WIND EROSION CONTROL PRACTICES:

A. WIND EROSION SHALL BE CONTROLLED BY EMPLOYING THE FOLLOWING METHODS AS NECESSARY AND APPROPRIATE:

1. BARE EARTH AREAS SHALL BE WATERED DURING CONSTRUCTION AS NECESSARY TO MINIMIZE THE TRANSPORT OF FUGITIVE DUST. IT MAY BE NECESSARY TO LIMIT CONSTRUCTION VEHICLE SPEED IF BARE EARTH HAS NOT BEEN EFFECTIVELY WATERED. IN NO CASE SHALL FUGITIVE DUST BE ALLOWED TO LEAVE THE SITE UNDER CONSTRUCTION.

2. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY SEEDED (SEE PERMANENT STABALIZATION PRACTICES FOR DETAILS). THESE AREAS SHALL BE SEEDED NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS. REFER TO THE GRADING PLAN AND/OR LANDSCAPE PLAN. CLEARED SITE DEVELOPMENT AREAS NOT CONTINUALLY SCHEDULED FOR CONSTRUCTION ACTIVITIES SHALL BE COVERED WITH HAY OR OVERSEEDED AND PERIODICALLY WATERED SUFFICIENTLY TO STABILIZE THE TEMPORARY GROUNDCOVER (SEE TEMPORARY STABALIZATION PRACTICES FOR DETAILS).

3. AT ANY TIME BOTH DURING AND AFTER SITE CONSTRUCTION THAT WATERING AND/OR VEGETATION ARE NOT EFFECTIVE IN CONTROLLING WIND EROSION AND/OR TRANSPORT OF FUGITIVE DUST, OTHER METHODS AS ARE NECESSARY FOR SUCH CONTROL SHALL BE EMPLOYED. THESE METHODS SHOULD INCLUDE ERECTION OF DUST CONTROL FENCES. A 6-FT GEOTEXTILE FILTER FIBER SHOULD BE HANGING AGAINST THE EXISTING CHAIN LINK FENCE AND GATE.

B. ALL DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.

STABILIZATION PRACTICES:

SHALL BE IN ACCORDANCE WITH DEP DOCUMENT NO 62-621.300(4)(a)

STRUCTURAL PRACTICES:

SHALL BE IN ACCORDANCE WITH DEP DOCUMENT NO 62-621.300(4)(a)

WASTE DISPOSAL:

A. WASTE MATERIALS - ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN A METAL DUMPSTER WITH A SECURE LID IN ACCORDANCE WITH ALL LOCAL AND STATE LAWS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN THE DUMPSTER. THE SUPERINTENDENT SHALL COORDINATE WITH THE LOCAL UTILITIES TO HAVE THE DUMPSTER EMPTIED AT LEAST TWICE A WEEK AND THE WASTE TAKEN TO AN APPROPRIATE LANDFILL. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE. THE SUPERINTENDENT SHALL ORGANIZE TRAINING FOR THE EMPLOYEES IN THE PROPER PRACTICES WHEN DEALING WITH WASTE MATERIALS. THE SUPERINTENDENT SHALL BE RESPONSIBLE FOR POSTING AND ENFORCING WASTE MATERIAL PROCEDURES.

B. HAZARDOUS WASTE - HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL AND STATE LAWS OR AS DIRECTED BY THE MANUFACTURER. THE SUPERINTENDENT SHALL ORGANIZE THE PROPER TRAINING FOR EMPLOYEES IN THE PROPER PRACTICES WHEN DEALING WITH HAZARDOUS WASTE MATERIALS. THESE PROCEDURES SHALL BE POSTED ON THE SITE. THE PERSON WHO MANAGES THE SITE SHALL BE RESPONSIBLE FOR ENFORCING THE PROCEDURES.

C. SANITARY WASTE - SANITARY WASTE SHALL BE COLLECTED AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL AND STATE LAWS. THE SUPERINTENDENT SHALL COORDINATE WITH THE LOCAL UTILITY FOR COLLECTION OF THE SANITARY WASTE AT LEAST THREE TIMES A WEEK TO PREVENT SPILLAGE ONTO THE SITE.

D. RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORM WATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.

OFFSITE TRACKING:

A. STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED TO REDUCE SEDIMENT TRACKING OFFSITE. THE MAJOR ROAD CONNECTED TO THE PROJECT SHALL BE CLEANED ONCE A DAY TO REMOVE ANY EXCESS MUD, DIRT OR ROCK RESULTING FROM CONSTRUCTION TRAFFIC. ALL TRUCKS HAULING MATERIALS OFFSITE SHALL BE COVERED WITH A TARPAULIN.

B. GENERAL CONTRACTOR SHALL DENOTE ON PLAN THE TEMPORARY PARKING AND STORAGE AREA WHICH SHALL ALSO BE USED AS THE EQUIPMENT MAINTENANCE AND CLEANING AREA, EMPLOYEE PARKING AREA, AND AREA FOR LOCATION PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES. HEAVY CONSTRUCTION EQUIPMENT PARKING AND MAINTENANCE AREAS SHALL BE DESIGNED TO PREVENT OIL, GREASE, AND LUBRICANTS FROM ENTERING SITE DRAINAGE FEATURES INCLUDING STORMWATER COLLECTION AND TREATMENT SYSTEMS. CONTRACTORS SHALL PROVIDE BROAD DIKES, HAY BALES OR SILT SCREENS AROUND, AND SEDIMENT SUMPS WITHIN, SUCH AREAS AS REQUIRED TO CONTAIN SPILLS OF OIL, GREASE OR LUBRICANTS. CONTRACTORS SHALL HAVE AVAILABLE, AND SHALL USE, ABSORBENT FILTER PADS TO CLEAN UP SPILLS AS SOON AS POSSIBLE AFTER OCCURRENCE.

C. ALL WASH WATER FROM CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC. SHALL BE DETAINED ON SITE AND SHALL BE PROPERLY TREATED OR DISPOSED.

D. IF THE ACTION OF VEHICLES TRAVELING OVER THE GRAVEL CONSTRUCTION ENTRANCES IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF DIRT OR MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE.

E. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.

MAINTENANCE:

ALL MEASURES STATED ON THIS EROSION AND SEDIMENT CONTROL PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A 0.5" RAINFALL EVENT, AND CLEANED AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

A. INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING, OR DETERIORATION.

B. B.ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED.

C. THE COMPOST ROCK FILTRATION DEVICE SHALL BE INSPECTED PERIODICALLY FOR HEIGHT OF SEDIMENT AND CONDITION OF DEVICE. COMPOST SOCK SHALL BE REPAIRED TO ITS ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE COMPOST SOCK WHEN IT REACHES ONE-THIRD THE HEIGHT OF THE COMPOST SOCK.

D. THE CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION ENTRANCES AS CONDITIONS DEMAND.

E. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AS CONDITIONS DEMAND.

F. OUTLET STRUCTURES IN THE SEDIMENTATION BASINS SHALL BE MAINTAINED IN OPERATIONAL CONDITIONS AT ALL TIMES. THE SEDIMENT BASINS/DITCHES SHALL BE CHECKED MONTHLY FOR DEPTH OF SEDIMENT. SEDIMENT SHALL BE REMOVED FROM SEDIMENT BASINS OR TRAPS WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY 10% AND AFTER CONSTRUCTION IS COMPLETE.

G. ALL MAINTENANCE OPERATIONS SHALL BE DONE IN A TIMELY MANNER BUT IN NO CASE LATER THAN SEVEN CALENDAR DAYS FOLLOWING THE INSPECTION.DIVERSION DIKES SHALL BE INSPECTED MONTHLY. ANY BREACHES SHALL BE PROMPTLY REPAIRED.

H. A MAINTENANCE REPORT SHALL BE COMPLETED DAILY AFTER EACH INSPECTION OF THE SEDIMENT AND EROSION CONTROL METHODS. THE REPORTS SHALL BE FILED IN AN ORGANIZED MANNER AND RETAINED ON-SITE DURING CONSTRUCTION. AFTER CONSTRUCTION IS COMPLETED, THE REPORTS SHALL BE SAVED FOR AT LEAST THREE YEARS. THE REPORTS SHALL BE AVAILABLE FOR ANY AGENCY THAT HAS JURISDICTION OVER EROSION CONTROL.

I. ALL REPAIRS MUST BE MADE WITHIN 24 HOURS OF REPORT.

J. THE SUPERINTENDENT SHALL ORGANIZE THE TRAINING FOR INSPECTION PROCEDURES AND PROPER EROSION CONTROL METHODS FOR EMPLOYEES THAT COMPLETE INSPECTIONS AND REPORTS.

K. SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT FENCE.

SPILL PREVENTION AND CONTROL:

THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF.

A. GOOD HOUSEKEEPING

1. SUPERINTENDENT SHALL INSPECT PROJECT AREA DAILY FOR PROPER STORAGE, USE, AND DISPOSAL OF CONSTRUCTION MATERIALS.

2. STORE ONLY ENOUGH MATERIAL ON SITE FOR PROJECT COMPLETION.

3. ALL SUBSTANCES SHOULD BE USED BEFORE DISPOSAL OF CONTAINER.

4. ALL CONSTRUCTION MATERIALS STORED SHALL BE ORGANIZED AND IN THE PROPER CONTAINER AND IF POSSIBLE, STORED UNDER A ROOF OR PROTECTIVE COVER.

5. PRODUCTS SHALL NOT BE MIXED UNLESS DIRECTED BY THE MANUFACTURER.

6. ALL PRODUCTS SHALL BE USED AND DISPOSED OF ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

B. HAZARDOUS PRODUCTS

1. MATERIALS SHOULD BE KEPT IN ORIGINAL CONTAINER WITH LABELS UNLESS THE ORIGINAL CONTAINERS CANNOT BE RESEALED. IF ORIGINAL CONTAINERS CANNOT BE USED, LABELS AND PRODUCT INFORMATION SHALL BE SAVED.

2. PROPER DISPOSAL PRACTICES SHALL ALWAYS BE FOLLOWED IN ACCORDANCE WITH MANUFACTURER AND LOCAL/STATE REGULATIONS.

C. PRODUCT SPECIFIC PRACTICES

1. PETROLEUM PRODUCTS MUST BE STORED IN PROPER CONTAINERS AND CLEARLY LABELED. VEHICLES CONTAINING PETROLEUM PRODUCTS SHALL BE PERIODICALLY INSPECTED FOR LEAKS. PRECAUTIONS SHALL BE TAKEN TO AVOID LEAKAGE OF PETROLEUM PRODUCTS ON SITE.

2. THE MINIMUM AMOUNT OF FERTILIZER SHALL BE USED AND MIXED INTO THE SOIL IN ORDER TO LIMIT EXPOSURE TO STORM WATER. FERTILIZERS SHALL BE STORED IN A COVERED SHED. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

3. PAINT CONTAINERS SHALL BE SEALED AND STORED WHEN NOT IN USE. EXCESS PAINT MUST BE DISPOSED OF IN AN APPROVED MANNER.

4. CONCRETE TRUCKS SHALL NOT BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON THE SITE.

SPILL CLEAN UP:

IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED ABOVE, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:

A. SPILL CLEANUP INFORMATION SHALL BE POSTED ON SITE TO INFORM EMPLOYEES ABOUT CLEANUP PROCEDURES AND RESOURCES.

B. THE FOLLOWING CLEAN-UP EQUIPMENT MUST BE KEPT ON-SITE NEAR THE MATERIAL STORAGE AREA: GLOVES, MOPS, RAGS, BROOMS, DUST PANS, SAND, SAWDUST, LIQUID ABSORBER, GOGGLES, AND TRASH CONTAINERS.

C. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ONSITE AND READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.

D. ALL SPILLS SHALL BE CLEANED UP AS SOON AS POSSIBLE.

E. WHEN CLEANING A SPILL, THE AREA SHOULD BE WELL VENTILATED AND THE EMPLOYEE SHALL WEAR PROPER PROTECTIVE COVERING TO PREVENT INJURY.

F. TOXIC SPILLS MUST BE REPORTED TO THE PROPER AUTHORITY REGARDLESS OF THE SIZE OF THE SPILL.

G. AFTER A SPILL, THE PREVENTION PLAN SHALL BE REVIEWED AND CHANGED TO PREVENT FURTHER SIMILAR SPILLS FROM OCCURRING. THE CAUSE OF THE SPILL, MEASURES TO PREVENT IT, AND HOW TO CLEAN THE SPILL UP SHALL BE RECORDED.

H. THE SUPERINTENDENT SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR AND IS RESPONSIBLE FOR THE DAY TO DAY SITE OPERATIONS. THE SUPERINTENDENT ALSO OVERSEES THE SPILL PREVENTION PLAN AND SHALL BE RESPONSIBLE FOR EDUCATING THE EMPLOYEES ABOUT SPILL PREVENTION AND CLEANUP PROCEDURES.

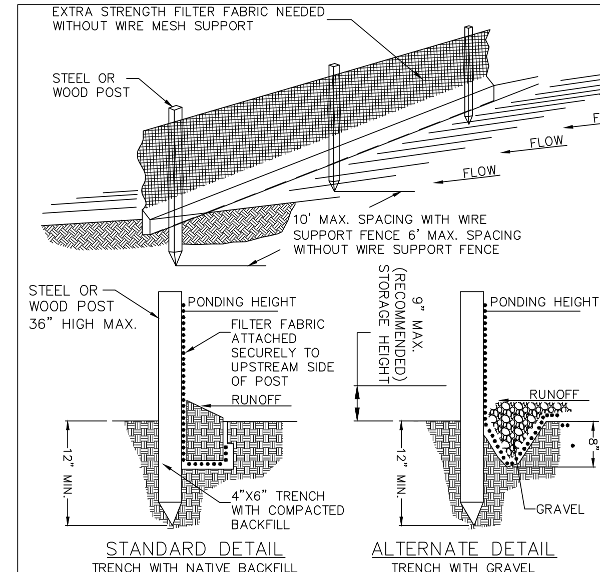
SEQUENCE OF CONSTRUCTION

UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS: TRAILER, PARKING, LAY DOWN, PORTA-POTTY, WHEEL WASH, CONCRETE WASHOUT, FUEL AND MATERIAL STORAGE CONTAINERS, SOLID WASTE CONTAINERS, ETC., IMMEDIATELY DENOTE THEM ON THE SITE MAPS AND NOTE ANY CHANGES IN LOCATION AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS.

1. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE AND INSTALL SILT FENCE
2. DEMOLISH EXISTING STRUCTURES, (IF APPLICABLE)
3. CONSTRUCT AND STABILIZE SEDIMENT BASIN AND DRAINAGE SWALES WITH APPROPRIATE OUTFALL STRUCTURES (CLEAR ONLY THOSE AREAS NECESSARY TO INSTALL CONTROL DEVICES LISTED ABOVE)
4. INSTALL AND STABILIZE ANY NECESSARY HYDRAULIC CONTROL STRUCTURES (DIKES, CHECK DAMS, OUTLET TRAPS, ETC.)
5. PREPARE CLEARING AND GRUBBING OF THE SITE, (IF APPLICABLE)
6. START CONSTRUCTION OF THE BUILDING PAD AND STRUCTURES
7. PERFORM MASS GRADING, ROUGH GRADE TO ESTABLISH PROPOSED DRAINAGE PATTERNS
8. TEMPORARILY SEED, THROUGHOUT CONSTRUCTION, DISTURBED AREAS THAT WILL BE INACTIVE FOR 7 DAYS OR MORE AS REQUIRED BY GENERIC PERMIT
9. OFFSITE HEADWALL CONNECTION TO OPWCD SHALL BE MADE AFTER THE ENTIRE ONSITE DRAINAGE SYSTEM HAS BEEN INSTALLED.

HALT ALL ACTIVITIES AND CONTACT THE CIVIL ENGINEER CONSULTANT TO PERFORM INSPECTION AND CERTIFICATION OF BMPS. GENERAL CONTRACTOR SHALL SCHEDULE AND CONDUCT STORM WATER PRE-CONSTRUCTION MEETING WITH ENGINEER AND ALL GROUND DISTURBING CONTRACTORS BEFORE PROCEEDING WITH CONSTRUCTION.

CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING ALL DEWATERING PERMITS NECESSARY FOR CONSTRUCTION



NOTE:

1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.

2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

SILT FENCE DETAIL

NORTH
SCALE: 1"=20'-0"
0 10' 20' 40' 60'

BID SET

MARWAN MUFLEH LICENSE No 45329 STATE OF FLORIDA PROFESSIONAL ENGINEER

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100, DELRAY BEACH, FL 33445
PHONE: 561-330-2345 FAX: 561-330-2245
WWW.KIMLEY-HORN.COM CA 00000696
KHA PROJ #: 043184032

DRAWN BY: JJ	DATE: 04/07/2016
DESIGNED BY: JJ	SCALE: AS SHOWN
CHECKED BY: MHM	FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

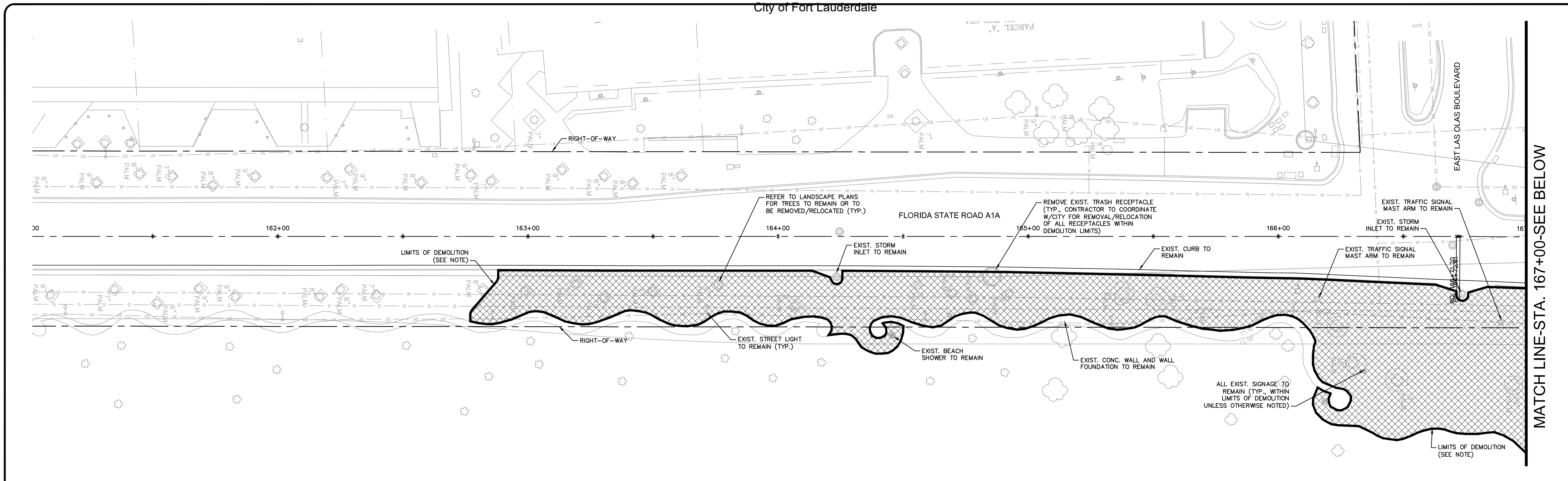
REVISIONS

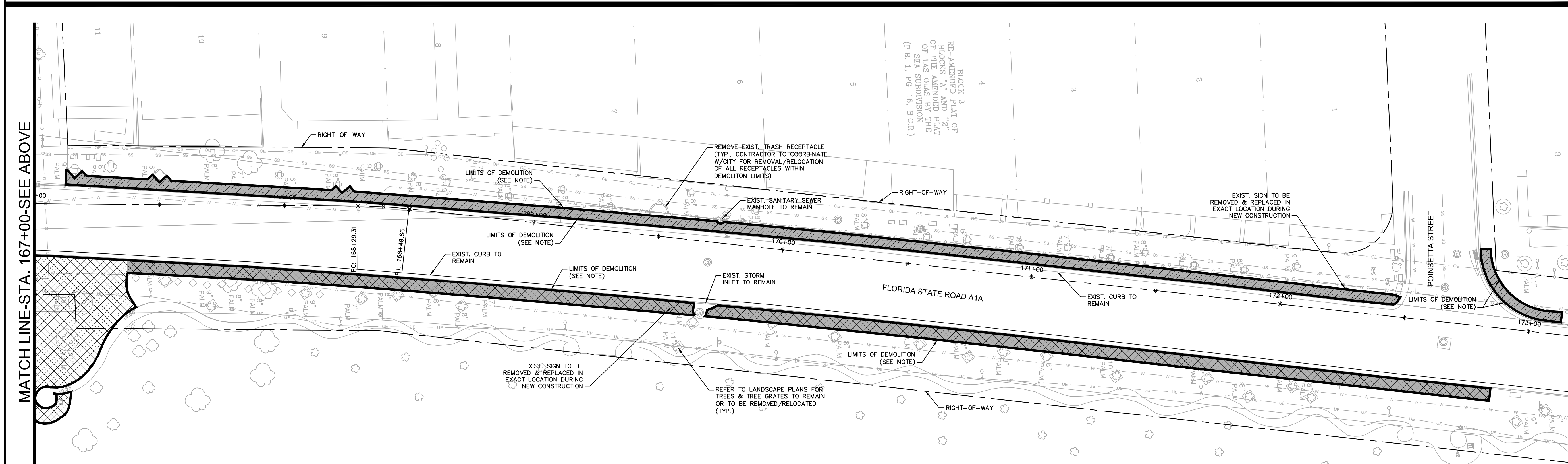
NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # P11681
A1A STREETSCAPE
FORT LAUDERDALE, FL

EROSION CONTROL NOTES AND DETAILS

SHEET NO. C450 OF
DRAWING FILE



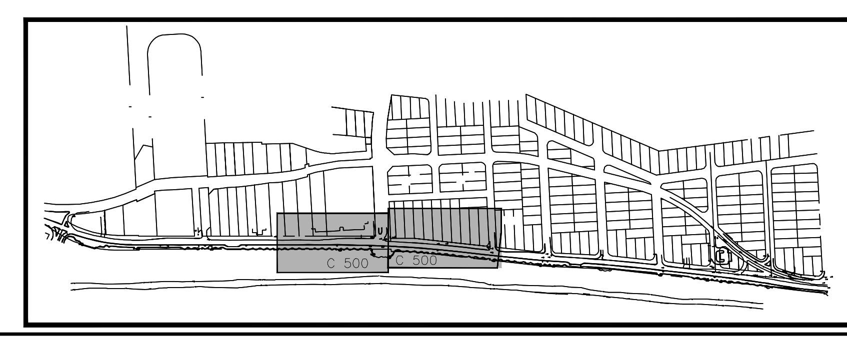


NOTES:

1. THE INTENT OF THE DEMOLITION PLAN IS TO DEPICT EXISTING FEATURES THAT ENCUMBER THE PROPOSED CONSTRUCTION AREA AND ARE SCHEDULED FOR REMOVAL. SOME INCIDENTAL ITEMS MAY HAVE BEEN INADVERTENTLY OMITTED FROM THE PLAN. THE CONTRACTOR IS ENCOURAGED TO THOROUGHLY INSPECT THE SITE AS WELL AS REVIEW THE PLANS AND SPECIFICATIONS PRIOR TO SUBMITTING PRICING. CONTRACTOR WILL NOT RECEIVE ADDITIONAL COMPENSATION FOR INCIDENTAL ITEMS NOT SHOWN ON THIS DEMOLITION PLAN.
2. PRIOR TO BEGINNING SITE CLEARING AND DEMOLITION, CONTRACTOR TO IMPLEMENT TRAFFIC CONTROL PLAN AND EROSION CONTROL MEASURES (SEE EROSION CONTROL DETAILS).
3. SEE LANDSCAPE PLANS FOR TREES TO REMAIN, REMOVE/RELOCATE AND PROTECT.
4. CONTRACTOR TO SAWCUT AND MATCH EXISTING WHEN CONNECTING TO ADJACENT PAVEMENT. CONTRACTOR IS RESPONSIBLE FOR REPAIRS TO EXISTING CONCRETE OR ASPHALT TO REMAIN IF DAMAGED DURING CONSTRUCTION.
5. CONTRACTOR TO CONTACT AND COORDINATE WITH ALL AFFECTED UTILITY OWNERS/PROVIDERS AND ADHERE TO ALL THEIR INSTRUCTIONS AND PROCEDURES WITH RESPECT TO THE CUTTING, CAPPING, RELOCATION, REMOVAL (TEMPORARY OR PERMANENT) DEACTIVATION AND ABANDONMENT OF ANY EXISTING UTILITIES SPECIFIED FOR REMOVAL.
6. PROPOSED LIMITS OF DEMOLITION SHALL INCLUDE REMOVAL OF ALL SOD, LANDSCAPING, PAVEMENT (FULL DEPTH OF BASE), LIGHTING, IRRIGATION, SIGNS, WALLS, FENCES, ETC. UNLESS OTHERWISE NOTED ON THIS PLAN. ALL EXISTING UNDERGROUND UTILITIES ARE TO REMAIN UNLESS OTHERWISE NOTED.

LEGEND

- REMOVE ALL EXISTING PAVERS, SOLDIER COURSE, SAND BED, CONCRETE BANDS, DETECTABLE WARNINGS, AND ANY OTHER HARDSCAPE ITEMS UNLESS OTHERWISE NOTED
- REMOVE EXISTING CONC. SIDEWALK, DETECTABLE WARININGS AND ANY OTHER HARDSCAPE ITEMS UNLESS OTHERWISE NOTED
- INDICATES AREA TO BE EXCAVATED A MINIMUM OF 30" DEEP
- RIGHT-OF-WAY



Always call 811 two full business days before you dig to have underground utilities located and marked.

Sunshine811.com

NORTH

SCALE: 1"=20'-0"

0 10' 20' 40' 60'

BID SET

Kimley»Horn

KHA PROJ #: 043184032

DATE: 04/07/2016
SCALE: AS SHOWN

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # P11681
A1A STREETSCAPE
FORT LAUDERDALE, FL

DEMOLITION PLAN

SHEET NO. C500

GENERAL FDOT NOTES

1. CONTRACTOR SHALL ENSURE COMPLIANCE WITH THE CURRENT VERSION OF FDOT STANDARD SPECIFICATIONS AND STANDARD PLANS. GOVERNING STANDARDS AND SPECIFICATIONS: 2019-20 FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION AND 2019 FDOT DESIGN MANUAL.
2. CONTRACTOR SHALL REPAIR ANY AND ALL DAMAGE DONE TO FDOT PROPERTY DURING DEMOLITION, RELOCATION AND/OR INSTALLATION ACTIVITIES AT THEIR SOLE EXPENSE.
3. PATTERNED PAVEMENT INSTALLATION SHALL COMPLY WITH CURRENT FDOT STANDARD SPECIFICATION 523.
4. OWNERSHIP OF ALL SUITABLE EXCAVATED MATERIALS, AS DETERMINED BY THE DEPARTMENT, SHALL REMAIN IN THE DEPARTMENT UNTIL A FINAL ACCEPTANCE OF THE PERMITTED PROJECT IS FULFILLED. EXCAVATED MATERIALS SHALL BE HAULED BY THE PERMITTEE, AT THEIR COST & EXPENSE FROM THE SITE TO THE BROWARD OPERATIONS CENTER OR STOCKPILED IN THOSE AREAS AS DIRECTED BY THE DEPARTMENT, INCLUDING ASPHALT MILLINGS.
5. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE BROWARD OPERATIONS PERMITS DEPARTMENT. COORDINATION WILL INCLUDE A PRE-CONSTRUCTION MEETING.
6. ALL MAINTENANCE OF TRAFFIC M.O.T. FOR THIS PROJECT WILL BE IN COMPLIANCE WITH THE DEPARTMENTS CURRENT EDITION OF THE STANDARD PLANS, (102 SERIES) AND THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). THE OPERATIONS ENGINEER OR THEIR DESIGN EE RESERVES THE RIGHT TO DIRECT THE REMOVAL/RELOCATION/MODIFICATION OF ANY TRAFFIC DEVICES AT THE PERMITTEE'S SOLE EXPENSE.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN FINAL ACCEPTANCE OF PERMITTED WORK (COMPLETED) AND THE RESTORATION OF THE RIGHT-OF-WAY FROM THE FDOT PRIOR TO USAGE.
8. CONTRACTOR SHALL RESTORE THE RIGHT OF WAY AS A MINIMUM, TO ITS ORIGINAL CONDITION OR BETTER IN ACCORDANCE WITH FDOT'S LATEST STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION OR AS DIRECTED BY THE RESIDENT OPERATIONS ENGINEER. (THIS SET OF NOTES ONLY APPLIES TO THOSE PLANTS, PAVERS, AND IRRIGATION INSTALLED WITHIN THE FDOT R/W)
9. REMOVAL/INSTALLATION OF SIDEWALK WILL BE IN ACCORDANCE WITH FDOT STANDARD PLAN 522.
10. RESTRICTED HOURS OF OPERATION FOR LANE CLOSURES WILL BE FROM 9:00AM TO 3:30 PM, (MONDAY-FRIDAY), UNLESS OTHERWISE APPROVED BY THE OPERATIONS ENGINEER, OR DESIGNEE.
11. PERMIT IS VALID FOR ONE YEAR FROM DATE OF ISSUE
12. PERMITTEE WILL PROVIDE THE FDOT WITH CERTIFIED 'AS-BUILT' PLANS PRIOR TO FINAL ACCEPTANCE OF THE PERMITTED WORK.

TREE PROTECTION AND RELOCATION NOTES:

1.1 WORK TO BE PERFORMED AND WORK INCLUDED

A. PROVIDE THE FOLLOWING:
FOR ANY PLANT MATERIAL STORED ON SITE PRIOR TO RELOCATION, CONTRACTOR TO INCLUDE ALL ASPECTS OF PREPARATION, ACCLIMATIZATION, HOLDING, RELOCATION, PROTECTION, AND MAINTENANCE, PROTECTION AND CARE OF EXISTING TREES AND PALMS TO REMAIN WITHIN THE PROJECT BOUNDARIES.

1. INSTALLATION AND OPERATION OF TEMPORARY IRRIGATION SYSTEM AND HAND WATERING AS REQUIRED BY THESE SPECIFICATIONS.
2. ESTABLISHMENT OF HOLDING AREAS AS NECESSARY TO SUPPORT THE PHASING OF THE PROJECT.
3. FOLLOW-UP MAINTENANCE AS REQUIRED BY THESE SPECIFICATIONS.
4. LABOR, MATERIALS, EQUIPMENT AND SERVICES TO COMPLETE ALL PREPARATION, RELOCATIONS AND PROTECTION WORK AS INDICATED ON THE DRAWINGS, AS SPECIFIED HEREIN, OR BOTH.

2.1 PREPARATION FOR RELOCATION OF TREES AND PALMS

A. CROWN PRUNING
1. ALL PRUNING ON SITE SHALL CONFORM TO ANSI STANDARD A-300, 2001.

B. FERTILIZATION AND WATERING
1. PREPARATION
A. ALL PALMS TO BE RELOCATED SHALL BE TREATED WITH WETTING AGENTS, FERTILIZERS, ROOT STIMULANTS, AND SOIL CONDITIONERS AT THE TIME OF RELOCATION. SEE SPECIFICATIONS.
B. FORM AND MAINTAIN AN EARTH BERM 6" HIGH OUTSIDE THE PROPOSED ROOT BALL PRIOR TO WATERING AND APPLY 3" APPROVED MULCH WITHIN SAUCER. WATER APPLICATION SHALL SATURATE THE ROOT BALL TO ITS ENTIRE DEPTH.

C. ROOT PRUNING

1. WATERING
ALL PALMS TO BE RELOCATED ARE TO BE PROVIDED WITH AN AUTOMATIC IRRIGATION SYSTEM WHICH PROVIDES 2 BUBBLER HEADS TO EACH PALM, PRIOR TO ROOT PRUNING.

PROVIDE IRRIGATION TIMER, OR BATTERY POWERED VALVE TO WATER PALMS TO BE RELOCATED. HAND WATERING IN LIEU OF AUTOMATIC SYSTEM SHALL NOT BE ALLOWED, HOWEVER HAND WATERING SHALL BE PERFORMED TO AVOID LAPSES SHOULD THE AUTOMATIC SYSTEM BE INOPERABLE FOR MORE THAN 24 HOURS AND DURING THE INITIAL PLANTING PERIOD AS SPECIFIED.

2. BARRICADES

BARRICADE ALL EXISTING TREES AND PALMS WITH SIX FOOT (6') CHAIN LINK FENCE OR OTHER BARRICADE APPROVED BY OWNER.

ROOT PRUNING TECHNIQUE - ALL PALMS SHALL BE EXCAVATED BY DIGGING A TRENCH 36" DEEP, EITHER BY HAND OR WITH A TRENCHING MACHINE DESIGNED FOR THIS PURPOSE. HAND CUT BROADLEAF TREE ROOTS AFTER TRENCHING TO PRODUCE CLEAN CUTS WITH NO SPLITS OR TEARS. PALMS TO BE ROOT PRUNED SHALL HAVE A MINIMUM ROOT BALL SIZE OF 42" FOR COCONUT PALMS AND 42" FOR DATE PALMS. SABAL PALMS SHALL NOT REQUIRE ROOT PRUNING.

TIMING - ALL PALMS EXCEPT SABAL PALMS, SHALL BE MAINTAINED A MINIMUM OF FOUR (4) WEEKS PRIOR TO RELOCATION.

2.2 RELOCATION OF PALMS

A. PREPARATION - PALMS SHALL BE THOROUGHLY SOAKED TO THE FULL DEPTH OF THE ROOT BALL DAILY FOR SEVEN CONSECUTIVE DAYS PRIOR TO RELOCATION. ACCURATELY LOCATE POSITION AND ELEVATION WHERE ALL PALMS ARE INTENDED TO BE PLANTED, FOR VERIFICATION BY LANDSCAPE ARCHITECT. VERIFY THAT NO OVERHEAD OR UNDERGROUND UTILITIES, EXISTING OR PROPOSED, CONFLICT WITH PROPOSED LOCATIONS.

B. DIGGING AND HANDLING

DETERMINE LINE OF PREVIOUS ROOT PRUNING AND EXCAVATE AROUND ROOT MASS TO LEAVE AREA OUTSIDE LINE OF ROOT PRUNING UNDISTURBED. DIGGING SHALL BE ACCOMPLISHED SO AS TO PRODUCE CLEAN CUTS ON ALL ROOTS WITHOUT TEARING OR SPLITTING. TRENCHING SHALL BE A MINIMUM OF 48" DEEP.

PALMS SHALL BE HANDLED IN SUCH A WAY AS TO AVOID DAMAGE TO BARK AND LIMBS SUBJECT TO SUPPORT CABLES OR CHAINS. ATTACH PADDED SUPPORT CABLES OR CHAINS AT MULTIPLE POINTS WHERE POSSIBLE.

ROOT BALLS SHALL BE UNDERCUT PRIOR TO LIFTING. DO NOT FORCE PALM FROM GROUND PRIOR TO UNDERCUTTING. BALL DEPTH TO BE DETERMINED UPON ASSESSING CONDITIONS AT TIME OF TRENCHING, TO KEEP INTACT THE ENTIRE ROOT BALL.

PALMS SHALL BE PROPERLY WRAPPED DURING MOVING SO TRUNKS WILL NOT BE SCARRED AND DAMAGED. SCARRED TRUNKS SHALL CAUSE PALM TO BE UNACCEPTABLE AND REJECTED AT THE OWNER'S OPTION. ROOT BALLS AND FOLIAGE SHALL BE KEPT MOIST DURING ALL PHASES OF RELOCATION.

PARTIALLY BACKFILL TREE PITS WITH 12" OF APPROVED PLANTING SOIL PRIOR TO SETTING TREE. THIS LAYER OF SOIL TO BE THOROUGHLY DRENCHED PRIOR TO RELOCATION TO ACHIEVE A STABLE PLATFORM AT THE CORRECT ELEVATION SO THAT THE TOP OF ROOT BALL IS 1" ABOVE PROPOSED GRADE.

BACKFILLING - FLOOD BOTTOM FOIL LAYER TO SETTLE TREE INTO BEST POSITION AND TO REMOVE AIR POCKETS. CONTINUE TO FLOOD ROOT BALL AS PLANTING SOIL IS DEPOSITED TO INSURE REMOVAL OF ALL AIR POCKETS. PRODUCE SAUCER TO RETAIN WATER PER DRAWINGS.

BRACING - SUPPORT PALM WITH MACHINERY UNTIL BRACING IS COMPLETE. BUTTRESSES MAY SUPPORT SEPARATE TRUNKS ON MULTIPLE TRUNK TREES. MAINTAIN BRACES UNTIL COMPLETION OF PROJECT.

IRRIGATION - INSTALL BUBBLER HEADS ON ALL PALMS. CONNECT EACH PALM'S SYSTEM IMMEDIATELY TO WATER SOURCE. ADDITIONALLY, ALL TRANSPLANTED PALMS SHALL BE HAND WATERED DAILY FOR A PERIOD OF SIX (6) WEEKS AFTER TRANSPLANTING. THE IRRIGATION SYSTEM IS DESIGNED FOR MAINTAINING PLANT MATERIAL ONLY, AND DOES NOT PROVIDE THE VOLUME OF WATER REQUIRED IMMEDIATELY AFTER TRANSPLANTING. SET TIME TO RUN DAILY, TO PROVIDE AN EQUIVALENT OF 6" OF RAIN PER WEEK FOR 30 DAYS, THEN REDUCE TO EQUIVALENT OF 3" PER WEEK. CONTRACTOR TO COORDINATE LOCATIONS OF RELOCATED PLANT MATERIAL WITH THE CITY (PARKS & RECREATION AND CITY FORESTER.)

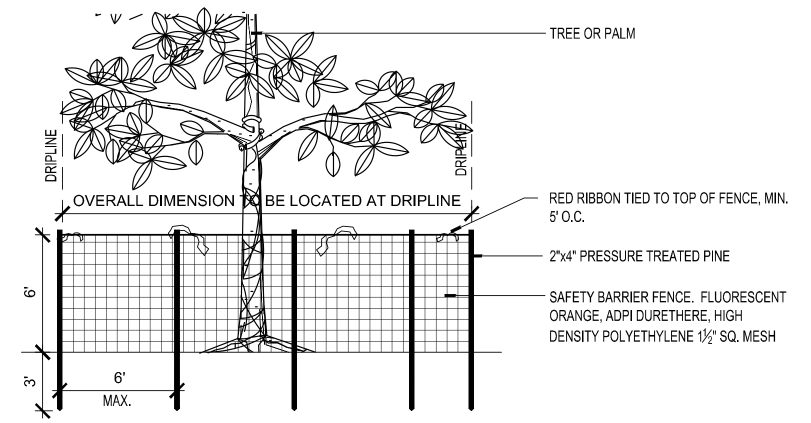
2.3 PROTECTION AND CARE OF EXISTING PALMS TO REMAIN

WATERING - EXISTING IRRIGATION SHALL REMAIN OPERABLE TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. ALL ON SITE PALMS TO REMAIN SHALL BE SUPPLIED WITH TEMPORARY IRRIGATION TO REMAIN OPERABLE UNTIL PERMANENT IRRIGATION IS OPERABLE. EXISTING IRRIGATION SYSTEM TO BE DEMOLISHED MAY BE UTILIZED AS THE TEMPORARY IRRIGATION SYSTEM.

BARRICADING - BARRICADE ALL EXISTING PALMS WITH SIX FOOT (6') CHAIN LINK FENCE OR OTHER BARRICADE APPROVED BY OWNER. BARRICADES SHALL BE INSTALLED AT AN OFFSET DISTANCE TWO FEET (2') OUTSIDE THE TREE DRIP LINE/EDGE OF TREE CANOPY TO THE EXTENT PRACTICAL, PRIOR TO ANY CONSTRUCTION ACTIVITY.

GENERAL NOTES:

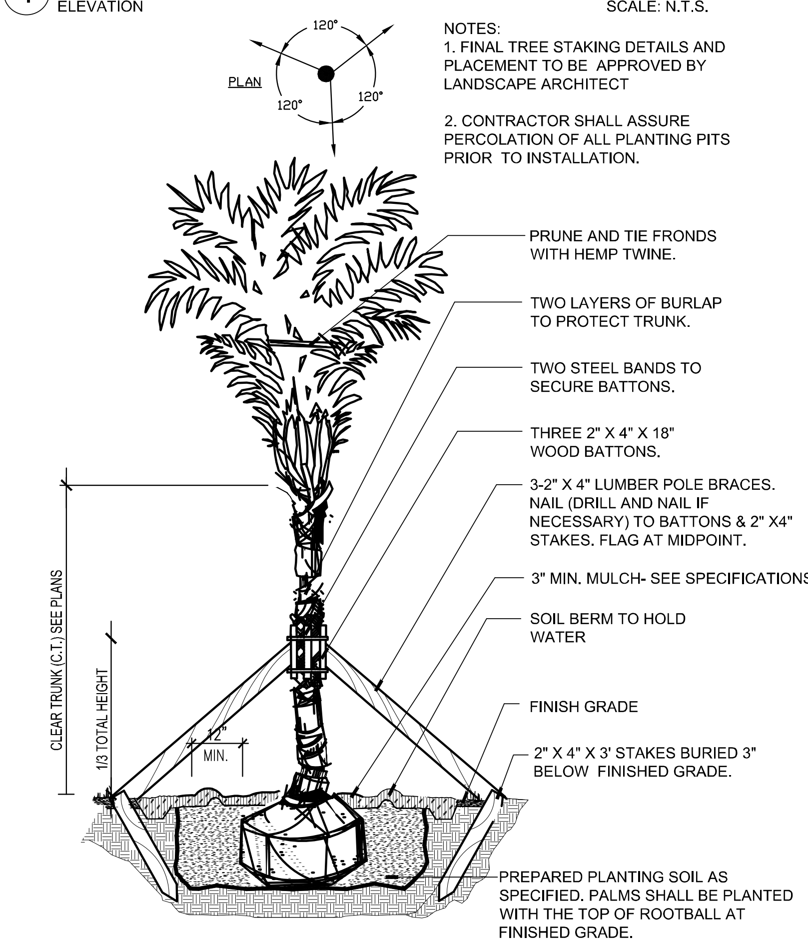
1. ALL PALMS WILL BE EVALUATED FOR PROTECTION AND RELOCATION. RELOCATED TREES WILL BE HANDLED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS. TREES TO BE REMOVED WILL BE MITIGATED AS REQUIRED BY THE CITY OF FORT LAUDERDALE.



NOTE:
1. BARRIER TO BE CONTINUOUS AROUND THE TREE OR GROUP OF TREES. SEE LANDSCAPE PLAN FOR LOCATION OF TREES TO REMAIN.
2. FOR THE TREE PROTECTION BARRICADE THAT WILL BE INSTALLED WITHIN FDOT RIGHT OF WAY REFER TO STANDARD PLANS INDEX 110-100 TREE PROTECTION AND PRESERVATION.

1 TREE / PALM PROTECTION DETAIL TYP.
ELEVATION — SCALE: N.T.S.

NOTES:
1. FINAL TREE STAKING DETAILS AND PLACEMENT TO BE APPROVED BY LANDSCAPE ARCHITECT
2. CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.



2 PALM RELOCATED
SECTION — SCALE: N.T.S

100% CONSTRUCTION DRAWINGS

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100, DELRAY BEACH, FL 33445
PHONE: 561-330-2345 FAX: 561-330-2245
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd, Suite 110
Fort Lauderdale, FL 33301
954.524.3330

SEAL:

DATE: 09.27.2019 | SCALE: AS SHOWN
DRAWN BY: EDSA | DESIGNED BY: EDSA | CHECKED BY: EDSA | FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL

TREE DISPOSITION NOTES

SHEET NO. L000 — 1 OF 00

FDOT PERMIT NUMBER: 2019-L-491-00006

City of Fort Lauderdale

NOTE: BEGIN PROJECT AT MILE POST 2.637

SR-A1A

R.O.W.

CCCL

MATCHLINE - STA. 155+00 - SEE SHEET L101

PI STA 34+49.77

PT STA 152+39.73

PI STA 150+63.84

N 01° 35' 31" E

#100 #101 #102 #103 #104 #105 #106 #107 #108 #109 #110 #111 #112 #113 #114 #115 #116 #117 #118 #119 #120 #121 #122 #123 #124 #125 #126 #127 #128 #129 #130 #131 #132 #133 #134 #135 #136 #137 #138 #139 #140 #141 #142 #143 #144 #145 #146 #147 #148 #149 #150 #151 #152 #153 #154 #155 #156 #557 #558 #559 #560 #561 #555 #554 #553 #552 #551 #550 #549 #548 #547 #546

LEGEND

FENCE: DETAIL 1 / L000 (DEDUCT ALTERNATE)

	RELOCATE	REMAIN	REMOVE
TREES	#111	#111	#111
PALMS	#111	#111	#111

L100 L101 L102 L103 L104 L105 L106

NORTH

SCALE: 1"=20'-0"

0 10' 20' 40' 60'

100% CONSTRUCTION DRAWINGS

CAM #22-1091
Exhibit 1 p. 634
Page 278 of 289

9/20/2022 1:07 PM

FDOT PERMIT NUMBER: 2019-L-491-00006

DRAWING FILE: 168-H-L000-L106-DISP.dwg

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100, DELRAY BEACH, FL 33445
PHONE: 561-330-2340 FAX: 561-330-2345
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd. Suite 110
Fort Lauderdale, FL 33301
954.624.3333

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EDSA	EDSA	EDSA	

DATE: 09.27.2019
SCALE: AS SHOWN

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REVISIONS				

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PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019-L-491-00003
TREE DISPOSITION PLAN

SHEET NO. L100
1 OF 00

City of Fort Lauderdale

MATCHLINE - STA. 155+00 - SEE SHEET L100

MATCHLINE - STA. 161+00 - SEE SHEET L102

CCCL

R.O.W.

SE 5TH ST.

SR-A1A

N 01° 35' 31" E

#155 #156 #157 #158 #159 #160 #161 #162 #163 #164 #165 #166 #167 #168 #169 #170 #171 #172 #173 #174 #175 #176 #177 #178 #179 #180 #181 #182 #183 #184 #185 #186 #187 #188 #189 #190 #191 #192 #193 #194 #195 #196 #197 #198 #199 #200 #201 #202 #203 #204 #205 #206 #207

#527 #528 #529 #530 #531 #532 #533 #534 #535 #536 #537 #538 #539 #540 #541 #542 #543 #544 #545

LEGEND

FENCE: DETAIL 1 / L000 (DEDUCT ALTERNATE)

	RELOCATE	REMAIN	REMOVE
TREES	#111	#111	#111
PALMS	#111	#111	#111

L100 L101 L102 L103 L104 L105 L106

NORTH

SCALE: 1"=20'-0"

0 10' 20' 40' 60'

100% CONSTRUCTION DRAWINGS

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100,
DELRAY BEACH, FL 33445
PHONE: 561-330-2340 FAX: 561-330-2345
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd. Suite 110
Fort Lauderdale, FL 33301
954.524.3333

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REVISIONS				

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019.L-491-00003
TREE DISPOSITION PLAN

SHEET NO. L101 | 1 OF 00

DRAWING FILE NAME: L101-L106-DISP.dwg

FDOT PERMIT NUMBER: 2019-L-491-00006

CAM # 22-1094
Exhibit 1 p. 635

City of Fort Lauderdale

MATCHLINE - STA. 161+00 - SEE SHEET L101

MATCHLINE - STA. 167+00 - SEE SHEET L103

CCCL

R.O.W.

SR-A1A

LAS OLAS BLVD.

N 01° 35' 31" E

S88° 58' 53" E

CONTRACTOR TO COORDINATE LOCATIONS OF ALL TRANSPLANTED DATE PALMS WITH PARKS AND RECREATION. CONTRACTOR RESPONSIBLE FOR TRANSPORTING, REPLANTING, AND IRRIGATION OF PALMS.

LEGEND

FENCE: DETAIL 1 / L000 (DEDUCT ALTERNATE)

	RELOCATE	REMAIN	REMOVE
TREES	#111	#111	#111
PALMS	#111	#111	#111

L100 L101 L102 L103 L104 L105 L106

SCALE: 1"=20'-0"

NORTH 0 10' 20' 40' 60'

100% CONSTRUCTION DRAWINGS

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100,
DELRAY BEACH, FL 33445
PHONE: 561-330-2340 FAX: 561-330-2345
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd. Suite 110
Fort Lauderdale, FL 33301
954.524.3333

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NO.	DATE	BY	CHK'D	DESCRIPTION

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019-L-491-00003
TREE DISPOSITION PLAN

SHEET NO. L102 | 1 OF 00

FDOT PERMIT NUMBER: 2019-L-491-00006

CAM 22-1094
Exhibit 1
Page 280 of 289

City of Fort Lauderdale

MATCHLINE - STA. 167+00 - SEE SHEET L102

CCCL

R.O.W.

SR-A1A

POINSETTIA ST.

MATCHLINE - STA. 173+00 - SEE SHEET L104

N 01° 59' 37" E

N 07° 49' 23" E

CONTRACTOR TO COORDINATE LOCATIONS OF ALL TRANSPLANTED DATE PALMS WITH PARKS AND RECREATION. CONTRACTOR RESPONSIBLE FOR TRANSPORTING, REPLANTING, AND IRRIGATION OF PALMS.

LEGEND

FENCE: DETAIL 1 / L000 (DEDUCT ALTERNATE)

	RELOCATE	REMAIN	REMOVE
TREES	#111	#111	#111
PALMS	#111	#111	#111

L100 L101 L102 L103 L104 L105 L106

NORTH

SCALE: 1"=20'-0"

0 10' 20' 40' 60'

100% CONSTRUCTION DRAWINGS

FDOT PERMIT NUMBER: 2019-L-491-00006

CAM #22-1094

Exhibit 1 p. 637

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100,
DELRAY BEACH, FL 33445
PHONE: 561-330-2340 FAX: 561-330-2345
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd. Suite 110
Fort Lauderdale, FL 33301
954.524.3333

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FIELD BOOK:	

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019.L-491-00003
TREE DISPOSITION PLAN

SHEET NO. L103 | 1 OF 00

DRAWING FILE
1186-L000-L106-DISP.dwg

MATCHLINE - STA. 173+00 - SEE SHEET L103

MATCHLINE - STA. 179+00 - SEE SHEET L105

CCCL

CORTEZ ST.

VALENCIA ST.

R.O.W.

SR-A1A

N 07° 49' 23" E

N 06° 54' 52" E

N 04° 33' 52" E

N 07° 55' 44" E

LEGEND

FENCE: DETAIL 1 / L000 (DEDUCT ALTERNATE)

	RELOCATE	REMAIN	REMOVE
TREES	#111	#111	#111
PALMS	#111	#111	#111

NORTH

SCALE: 1"=20'-0"

0 10' 20' 40' 60'

100% CONSTRUCTION DRAWINGS

FDOT PERMIT NUMBER: 2019-L-491-00006

CAM #23-1084

Exhibit 1 p. 638

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100,
DELRAY BEACH, FL 33445
PHONE: 561-330-2340 FAX: 561-330-2345
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd. Suite 110
Fort Lauderdale, FL 33301
954.524.3333

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ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019-L-491-00003
TREE DISPOSITION PLAN

SHEET NO. L104
1 OF 00

DRAWING FILE: 1168-L000-L106-DISP.dwg

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City of Fort Lauderdale

CCCL

MATCHLINE - STA. 179+00 - SEE SHEET L104

MATCHLINE - STA. 185+00 - SEE SHEET L106

CASTILLO ST.

CASTILLO STREET

SEBASTIAN STREET

R.O.W.

N 07° 55' 44" E

SR-A1A

ATLANTIC BLVD. (SR A-1-A)

ATLANTIC OCEAN

BLOCK 3 LAUDER DEL MAR (P.B. 7, PG. 30, B.C.R.)

BLOCK 4 LAUDER DEL MAR (P.B. 7, PG. 30, B.C.R.)

#377 #378 #379 #380 #381 #382 #383 #384 #385 #386 #387 #388 #389 #390 #391 #392 #393 #394 #395 #396 #397 #398 #399 #400 #401 #402 #403 #404 #405 #406 #407 #408 #409 #410 #411 #412 #413 #414 #415 #416 #417 #418 #419 #420 #421 #422 #423 #424 #450 #451 #452 #453 #454 #455 #456 #457 #458 #459 #460 #461 #462 #464 #466 #467 #468 #469 #470 #563 #564 #565 #566

179 180 181 182 184 185

LEGEND

FENCE: DETAIL 1 / L000 (DEDUCT ALTERNATE)

	RELOCATE	REMAIN	REMOVE
TREES	#111	#111	#111
PALMS	#111	#111	#111

NORTH

SCALE: 1"=20'-0"

0 10' 20' 40' 60'

100% CONSTRUCTION DRAWINGS

FDOT PERMIT NUMBER: 2019-L-491-00006

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100,
DELRAY BEACH, FL 33445
PHONE: 561-330-2340 FAX: 561-330-2345
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd. Suite 110
Fort Lauderdale, FL 33301
954.524.3333

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PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019-L-491-00003
TREE DISPOSITION PLAN

SHEET NO. L105 | 1 OF 00

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Kimley»Horn
1690 S CONGRESS AVE, SUITE 100, DELRAY BEACH, FL 33445

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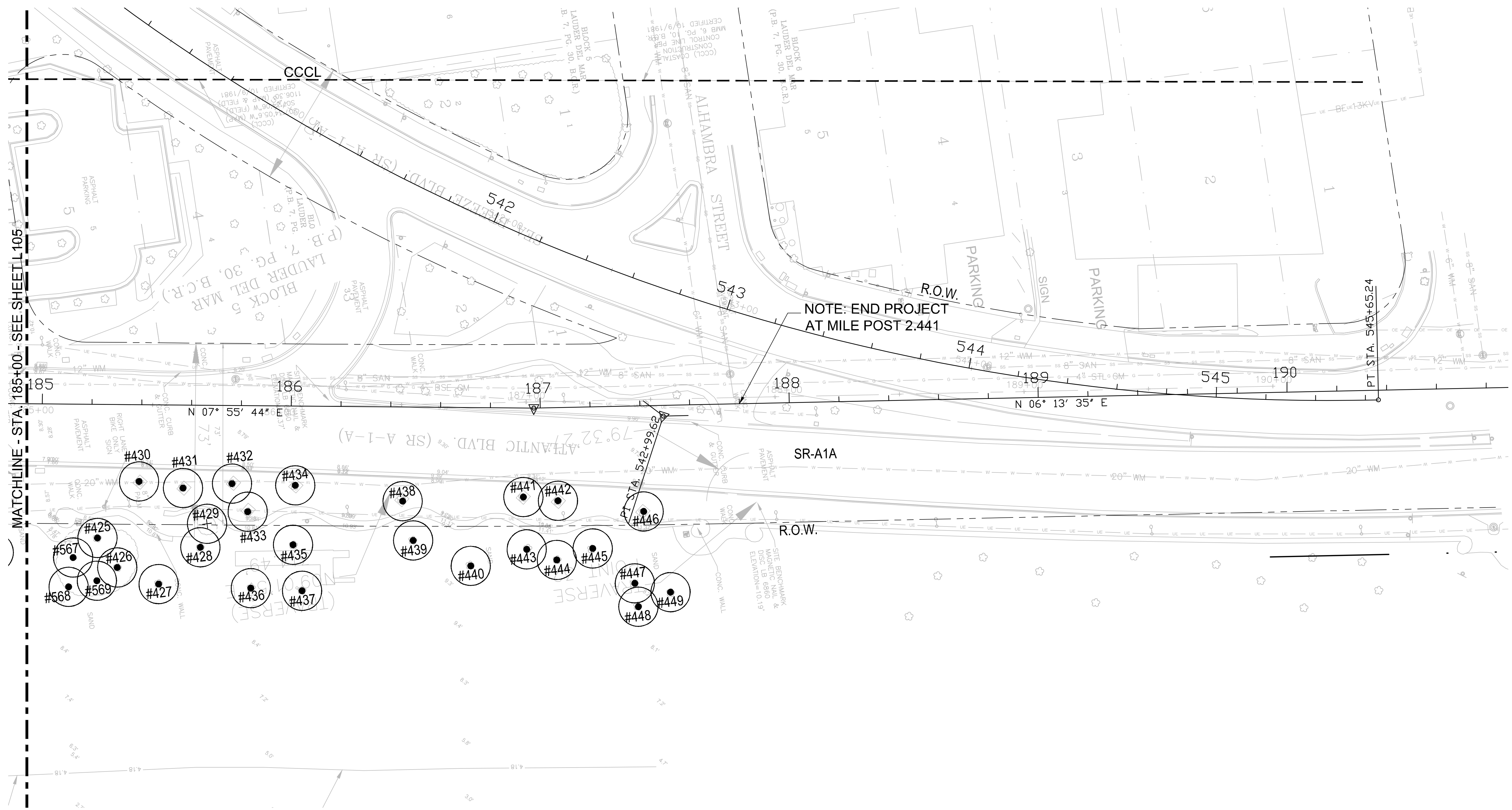
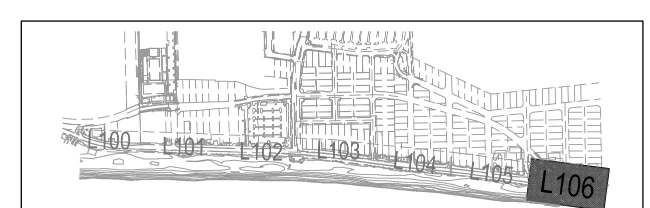
1512 E. Broward Blvd, Suite 110
Fort Lauderdale, FL 33301
954.524.3330



LEGEND

FENCE: DETAIL 1 / L000 (DEDUCT ALTERNATE)

	RELOCATE	REMAIN	REMOVE
TREES	#111	#111	#111
PALMS	#111	#111	#111



NORTH

SCALE: 1"=20'-0"
0 10' 20' 40' 60'

SEAL:

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PUBLIC WORKS DEPARTMENT
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REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019-L-491-00003
TREE DISPOSITION PLAN

100% CONSTRUCTION DRAWINGS

SHEET NO. L106 1 OF 00

DRAWING FILE 11681-L106-DISP.dwg

City of Fort Lauderdale

TREE NUMBER	TREE SPECIES (SCIENTIFIC)	TREE SPECIES (COMMON)	TRUNK DIAMETER	BASE OF CANOPY ELEVATION	CANOPY SPREAD	CONDITION (POOR, FAIR GOOD)	DISPOSITION (REMAIN, RELOCATE, REMOVE)
100	*COCOS NUCIFERA*	COCONUT PALM					Remain
101	*COCOS NUCIFERA*	COCONUT PALM					Remain
102	*COCOS NUCIFERA*	COCONUT PALM					Remain
103	*COCOS NUCIFERA*	COCONUT PALM					Remain
104	*COCOS NUCIFERA*	COCONUT PALM					Remain
105	*COCOS NUCIFERA*	COCONUT PALM					Remain
106	*COCOS NUCIFERA*	COCONUT PALM					Remain
107	*COCOS NUCIFERA*	COCONUT PALM					Remain
108	*COCOS NUCIFERA*	COCONUT PALM					Remain
109	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
110	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
111	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
112	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
113	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
114	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
115	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
116	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
117	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
118	*COCOS NUCIFERA*	COCONUT PALM	8'			Poor Condition	Remain
119	*COCOS NUCIFERA*	COCONUT PALM					Remain
120	*COCOS NUCIFERA*	COCONUT PALM					Remain
121	*COCOS NUCIFERA*	COCONUT PALM					Remain
122	*COCOS NUCIFERA*	COCONUT PALM					Remain
123	*COCOS NUCIFERA*	COCONUT PALM					Remain
124	*COCOS NUCIFERA*	COCONUT PALM					Remain
125	*COCOS NUCIFERA*	COCONUT PALM					Remain
126	*COCOS NUCIFERA*	COCONUT PALM					Remain
127	*COCOS NUCIFERA*	COCONUT PALM					Remain
128	*COCOS NUCIFERA*	COCONUT PALM					Remain
129	*COCOS NUCIFERA*	COCONUT PALM					Remain
130	*COCOS NUCIFERA*	COCONUT PALM					Remain
131	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
132	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
133	*COCOS NUCIFERA*	COCONUT PALM	6"			Poor Condition	Remain
134	*COCOS NUCIFERA*	COCONUT PALM	8"				Remain
135	*COCOS NUCIFERA*	COCONUT PALM	9"				Remain
136	*COCOS NUCIFERA*	COCONUT PALM					Remain
137	*COCOS NUCIFERA*	COCONUT PALM					Remain
138	*COCOS NUCIFERA*	COCONUT PALM					Remain
139	*COCOS NUCIFERA*	COCONUT PALM					Remain
140	*COCOS NUCIFERA*	COCONUT PALM					Remain
141	*COCOS NUCIFERA*	COCONUT PALM					Remain
142	*COCOS NUCIFERA*	COCONUT PALM					Remain
143	*COCOS NUCIFERA*	COCONUT PALM					Remain
144	*COCOS NUCIFERA*	COCONUT PALM					Remain
145	*COCOS NUCIFERA*	COCONUT PALM					Remain
146	*COCOS NUCIFERA*	COCONUT PALM					Remain
147	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
148	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
149	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
150	*COCOS NUCIFERA*	COCONUT PALM					Remain
151	*COCOS NUCIFERA*	COCONUT PALM					Remain
152	*COCOS NUCIFERA*	COCONUT PALM					Remain
153	*COCOS NUCIFERA*	COCONUT PALM					Remain
154	*COCOS NUCIFERA*	COCONUT PALM					Remain
155	*COCOS NUCIFERA*	COCONUT PALM					Remain
156	*COCOS NUCIFERA*	COCONUT PALM					Remain
157	*COCOS NUCIFERA*	COCONUT PALM					Remain
158	*COCOS NUCIFERA*	COCONUT PALM					Remain
159	*COCOS NUCIFERA*	COCONUT PALM					Remain
160	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
161	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
162	*COCOS NUCIFERA*	COCONUT PALM					Remain
163	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
164	*COCOS NUCIFERA*	COCONUT PALM	11"			Poor Condition	Remain
165	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
166	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
167	*SABAL PALMETTO*	CABBAGE PALM					Remain
168	*COCOS NUCIFERA*	COCONUT PALM					Remain
169	*SABAL PALMETTO*	CABBAGE PALM					Remain
170	*SABAL PALMETTO*	CABBAGE PALM					Remain
171	*COCOS NUCIFERA*	COCONUT PALM					Remain
172	*COCOS NUCIFERA*	COCONUT PALM					Remain
173	*COCOS NUCIFERA*	COCONUT PALM					Remain
174	*COCOS NUCIFERA*	COCONUT PALM					Remain
175	*COCOS NUCIFERA*	COCONUT PALM					Remain
176	*SABAL PALMETTO*	CABBAGE PALM					Remain
177	*SABAL PALMETTO*	CABBAGE PALM					Remain
178	*SABAL PALMETTO*	CABBAGE PALM					Remain
179	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
180	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
181	*COCOS NUCIFERA*	COCONUT PALM					Remain
182	*COCOS NUCIFERA*	COCONUT PALM					Remain
183	*COCOS NUCIFERA*	COCONUT PALM					Remain
184	*COCOS NUCIFERA*	COCONUT PALM					Remain
185	*COCOS NUCIFERA*	COCONUT PALM					Remain
186	*COCOS NUCIFERA*	COCONUT PALM					Remain
187	*COCOS NUCIFERA*	COCONUT PALM	8"				Remain
188	*COCOS NUCIFERA*	COCONUT PALM					Remain
189	*COCOS NUCIFERA*	COCONUT PALM					Remain
190	*COCOS NUCIFERA*	COCONUT PALM					Remain
191	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
192	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
193	*COCOS NUCIFERA*	COCONUT PALM					Remain
194	*COCOS NUCIFERA*	COCONUT PALM					Remain
195	*COCOS NUCIFERA*	COCONUT PALM					Remain
196	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
197	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
198	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
199	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
200	*COCOS NUCIFERA*	COCONUT PALM					Remain
201	*COCOS NUCIFERA*	COCONUT PALM					Remain
202	*COCOS NUCIFERA*	COCONUT PALM					Remain
203	*COCOS NUCIFERA*	COCONUT PALM					Remain
204	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
205	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
206	*COCOS NUCIFERA*	COCONUT PALM					Remain
207	*COCOS NUCIFERA*	COCONUT PALM					Remain
208	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
209	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
210	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
211	*COCOS NUCIFERA*	COCONUT PALM					Remain
212	*COCOS NUCIFERA*	COCONUT PALM					Remain
213	*COCOS NUCIFERA*	COCONUT PALM					Remain
214	*COCOS NUCIFERA*	COCONUT PALM					Remain
215	*COCOS NUCIFERA*	COCONUT PALM					Remain
216	*COCOS NUCIFERA*	COCONUT PALM					Remain
217	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
218	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
219	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
220	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
221	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
222	*COCOS NUCIFERA*	COCONUT PALM					Remain
223	*COCOS NUCIFERA*	COCONUT PALM					Remain
224	*COCOS NUCIFERA*	COCONUT PALM					Remain
225	*COCOS NUCIFERA*	COCONUT PALM					Remain
226	*COCOS NUCIFERA*	COCONUT PALM					Remain
227	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
228	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
229	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
230	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remove
231	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
232	*COCOS NUCIFERA*	COCONUT PALM					Remain
233	*COCOS NUCIFERA*	COCONUT PALM					Remain
234	*COCOS NUCIFERA*	COCONUT PALM					Remain
235	*COCOS NUCIFERA*	COCONUT PALM					Remain
236	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
237	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
238	*COCOS NUCIFERA*	COCONUT PALM					Remain
239	*COCOS NUCIFERA*	COCONUT PALM					Remain
240	*COCOS NUCIFERA*	COCONUT PALM					Remain
241	*COCOS NUCIFERA*	COCONUT PALM					Remain
242	*COCOS NUCIFERA*	COCONUT PALM					Remain
243	*COCOS NUCIFERA*	COCONUT PALM					Remain
244	*COCOS NUCIFERA*	COCONUT PALM					Remain
245	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
246	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
247	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remove
248	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
249	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
250	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
251	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
252	*COCOS NUCIFERA*	COCONUT PALM					Remove
253	*COCOS NUCIFERA*	COCONUT PALM					Remove
254	*COCOS NUCIFERA*	COCONUT PALM					Remove
255	*COCOS NUCIFERA*	COCONUT PALM					Remove
256	*SABAL PALMETTO*	CABBAGE PALM					Remove
257	*SABAL PALMETTO*	CABBAGE PALM					Remove
258	*SABAL PALMETTO*	CABBAGE PALM					Remove
259	*PHOENIX DACTYLIFERA*	DATE PALM	20"				Relocate
260	*PHOENIX DACTYLIFERA*	DATE PALM	20"				Relocate
261	*PHOENIX DACTYLIFERA*	DATE PALM	19"				Relocate
262	*PHOENIX DACTYLIFERA*	DATE PALM	20"				Relocate
263	*PHOENIX DACTYLIFERA*	DATE PALM	21"				Relocate
264	*PHOENIX DACTYLIFERA*	DATE PALM	19"				Relocate
265	*COCOS NUCIFERA*	COCONUT PALM					Remain
266	*COCOS NUCIFERA*	COCONUT PALM					Remain
267	*SABAL PALMETTO*	CABBAGE PALM					Remain
268	*COCOS NUCIFERA*	COCONUT PALM					Remain
269	*COCOS NUCIFERA*	COCONUT PALM					Remain
270	*SABAL PALMETTO*	CABBAGE PALM					Remain
271	*SABAL PALMETTO*	CABBAGE PALM					Remain
272	*COCOS NUCIFERA*	COCONUT PALM					Remain
273	*COCOS NUCIFERA*	COCONUT PALM					Remain
274	*COCOS NUCIFERA*	COCONUT PALM					Remain
275	*COCOS NUCIFERA*	COCONUT PALM					Does not exist
276	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
277	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
278	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
279	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
280	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
281	*COCOS NUCIFERA*	COCONUT PALM					Remain
282	*COCOS NUCIFERA*	COCONUT PALM					Remain
283	*COCOS NUCIFERA*	COCONUT PALM					Remain
284	*COCOS NUCIFERA*	COCONUT PALM					Remain
285	*COCOS NUCIFERA*	COCONUT PALM					Remain
286	*COCOS NUCIFERA*	COCONUT PALM					Remain
287	*COCOS NUCIFERA*	COCONUT PALM					Remain
288	*COCOS NUCIFERA*	COCONUT PALM					Remain
289	*COCOS NUCIFERA*	COCONUT PALM					Remain
290	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remove
291	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
292	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
293	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
294	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remove
295	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remove
296	*COCOS NUCIFERA*	COCONUT PALM	11"			Poor Condition	Remove
297	*COCOS NUCIFERA*	COCONUT PALM					Remain
298	*COCOS NUCIFERA*	COCONUT PALM					Remain
299	*COCOS NUCIFERA*	COCONUT PALM					Remain
300	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
301	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
302	*COCOS NUCIFERA*	COCONUT PALM					Remain
303	*COCOS NUCIFERA*	COCONUT PALM					Remain
304	*COCOS NUCIFERA*	COCONUT PALM					Remain
305	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
306	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remove
307	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
308	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
309	*COCOS NUCIFERA*	COCONUT PALM					Remain
310	*COCOS NUCIFERA*	COCONUT PALM					Remain
311	*COCOS NUCIFERA*	COCONUT PALM					Remain
312	*COCOS NUCIFERA*	COCONUT PALM					Remain
313	*COCOS NUCIFERA*	COCONUT PALM					Remain
314	*COCOS NUCIFERA*	COCONUT PALM					Remain
315	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remove
316	*COCOS NUCIFERA*	COCONUT PALM					Remain
317	*COCOS NUCIFERA*	COCONUT PALM					Remain
318	*COCOS NUCIFERA*	COCONUT PALM					Remain
319	*COCOS NUCIFERA*	COCONUT PALM					Remain
320	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
321	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
322	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remove
323	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remove
324	*COCOS NUCIFERA*	COCONUT PALM					Remain
325	*COCOS NUCIFERA*	COCONUT PALM					Remain
326	*COCOS NUCIFERA*	COCONUT PALM					Remain
327	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
328	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
329	*COCOS NUCIFERA*	COCONUT PALM					Remain
330	*COCOS NUCIFERA*	COCONUT PALM					Remain
331	*COCOS NUCIFERA*	COCONUT PALM					Remain
332	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
333	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
334	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
335	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
336	*COCOS NUCIFERA*	COCONUT PALM					Remain
337	*COCOS NUCIFERA*	COCONUT PALM					Remain
338	*COCOS NUCIFERA*	COCONUT PALM					Remain
339	*COCOS NUCIFERA*	COCONUT PALM					Remain
340	*COCOS NUCIFERA*	COCONUT PALM					Remain
341	*COCOS NUCIFERA*	COCONUT PALM	11"			Poor Condition	Remain
342	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
343	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
344	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
345	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
346	*COCOS NUCIFERA*	COCONUT PALM					Remain
347	*SABAL PALMETTO*	CABBAGE PALM					Remain
351	*COCOS NUCIFERA*	COCONUT PALM					Remain
352	*SABAL PALMETTO*	CABBAGE PALM					Remain
353	*COCOS NUCIFERA*	COCONUT PALM					Remain
354	*COCOS NUCIFERA*	COCONUT PALM					Remain
355	*COCOS NUCIFERA*	COCONUT PALM					Remain
356	*SABAL PALMETTO*	CABBAGE PALM					Remain
357	?	?					Remain
360	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
361	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
362	*COCOS NUCIFERA*	COCONUT PALM					Remain
363	*COCOS NUCIFERA*	COCONUT PALM					Remain
364	*COCOS NUCIFERA*	COCONUT PALM					Remain
365	*COCOS NUCIFERA*	COCONUT PALM					Remain
366	*COCOS NUCIFERA*	COCONUT PALM					Remain
367	*COCOS NUCIFERA*	COCONUT PALM					Remain
368	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
369	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100,
DELRAY BEACH, FL 33445
PHONE: 561-330-2345 FAX: 561-330-2245
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd, Suite 110
Fort Lauderdale, FL 33301
954.524.3330

SEAL:

DATE: 09.27.2019
SCALE: AS SHOWN
DRAWN BY: EDSA
DESIGNED BY: EDSA
CHECKED BY: EDSA
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

100% CONSTRUCTION DRAWINGS

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL

TREE DISPOSITION SCHEDULE

SHEET NO. L107
1 OF 00
DRAWING FILE
11681-L107-DISP-SCHE.dwg

FDOT PERMIT NUMBER: 2019-L-491-00006

TREE NUMBER	TREE SPECIES (SCIENTIFIC)	TREE SPECIES (COMMON)	TRUNK DIAMETER	BASE OF CANOPY ELEVATION	CANOPY SPREAD	CONDITION (POOR, FAIR GOOD)	DISPOSITION (REMAIN, RELOCATE, REMOVE)
370	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
371	*COCCOLOBA UVIFERA*	SEAGRAPE TREE					Remain
372	*COCOS NUCIFERA*	COCONUT PALM					Remain
373	*COCOS NUCIFERA*	COCONUT PALM					Remain
374	*COCOS NUCIFERA*	COCONUT PALM					Remain
375	*COCOS NUCIFERA*	COCONUT PALM					Remain
376	*COCOS NUCIFERA*	COCONUT PALM	10"				Remain
377	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
378	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
379	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
380	*COCOS NUCIFERA*	COCONUT PALM					Remain
381	*COCOS NUCIFERA*	COCONUT PALM					Remain
382	*COCOS NUCIFERA*	COCONUT PALM					Remain
383	*COCOS NUCIFERA*	COCONUT PALM					Remain
384	*COCOS NUCIFERA*	COCONUT PALM					Remain
385	*COCOS NUCIFERA*	COCONUT PALM					Remain
386	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
387	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
388	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
389	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
390	*COCOS NUCIFERA*	COCONUT PALM					Remain
391	*COCOS NUCIFERA*	COCONUT PALM					Remain
392	*COCOS NUCIFERA*	COCONUT PALM					Remain
393	*COCOS NUCIFERA*	COCONUT PALM					Remain
394	*COCOS NUCIFERA*	COCONUT PALM					Remain
395	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
396	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
397	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
398	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
399	*COCOS NUCIFERA*	COCONUT PALM					Remain
400	*COCOS NUCIFERA*	COCONUT PALM					Remain
401	*COCOS NUCIFERA*	COCONUT PALM					Remain
402	*COCOS NUCIFERA*	COCONUT PALM					Remain
403	*COCOS NUCIFERA*	COCONUT PALM					Remain
404	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
405	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
406	*COCOS NUCIFERA*	COCONUT PALM					Remain
407	*COCOS NUCIFERA*	COCONUT PALM					Remain
408	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
409	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
410	*COCOS NUCIFERA*	COCONUT PALM					Remain
411	*COCOS NUCIFERA*	COCONUT PALM					Remain
412	*COCOS NUCIFERA*	COCONUT PALM					Remain
413	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
414	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
415	*COCOS NUCIFERA*	COCONUT PALM	6"			Poor Condition	Remain
416	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
417	*COCOS NUCIFERA*	COCONUT PALM	~				Remain
418	*COCOS NUCIFERA*	COCONUT PALM					Remain
419	*COCOS NUCIFERA*	COCONUT PALM					Remain
420	*COCOS NUCIFERA*	COCONUT PALM					Remain
421	*SABAL PALMETTO*	CABBAGE PALM					Remain
422	*SABAL PALMETTO*	CABBAGE PALM					Remain
423	*COCOS NUCIFERA*	COCONUT PALM					Remain
424	*COCOS NUCIFERA*	COCONUT PALM					Remain
425	*SABAL PALMETTO*	CABBAGE PALM					Remain
426	*SABAL PALMETTO*	CABBAGE PALM					Remain
427	*COCOS NUCIFERA*	COCONUT PALM					Remain
428	*COCOS NUCIFERA*	COCONUT PALM					Remain
429	*COCCOLOBA UVIFERA*	SEAGRAPE TREE					Remain
430	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
431	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
432	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
433	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
434	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
435	*COCOS NUCIFERA*	COCONUT PALM					Remain
436	*COCOS NUCIFERA*	COCONUT PALM					Remain
437	*COCOS NUCIFERA*	COCONUT PALM					Remain
438	*COCOS NUCIFERA*	COCONUT PALM					Remain
439	*COCOS NUCIFERA*	COCONUT PALM					Remain
440	*COCOS NUCIFERA*	COCONUT PALM					Remain
441	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
442	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
443	*COCOS NUCIFERA*	COCONUT PALM					Remain
444	*COCOS NUCIFERA*	COCONUT PALM					Remain
445	*COCOS NUCIFERA*	COCONUT PALM					Remain

TREE				BASE OF CANOPY		CONDITION (POOR, FAIR	DISPOSITION (REMAIN, RELOCATE,
446	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
447	*COCOS NUCIFERA*	COCONUT PALM					Remain
448	*COCOS NUCIFERA*	COCONUT PALM					Remain
449	*COCOS NUCIFERA*	COCONUT PALM					Remain
450	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
451	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
452	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
453	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
454	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
455	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
456	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
457	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
458	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
459	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
460	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
461	*PHOENIX DACTYLIFERA*	DATE PALM	15"				Remain
462	*PHOENIX DACTYLIFERA*	DATE PALM	15"				Remain
464	*PHOENIX DACTYLIFERA*	DATE PALM	10"				Remain
466	*PHOENIX DACTYLIFERA*	DATE PALM	15"				Remain
467	*PHOENIX DACTYLIFERA*	DATE PALM	16"				Remain
468	*PHOENIX DACTYLIFERA*	DATE PALM	15"				Remain
469	*PHOENIX DACTYLIFERA*	DATE PALM	15"				Remain
470	*PHOENIX DACTYLIFERA*	DATE PALM					Remain
471	*PHOENIX DACTYLIFERA*	DATE PALM	16"				Remain
472	*PHOENIX DACTYLIFERA*	DATE PALM	16"				Remain
473	*PHOENIX DACTYLIFERA*	DATE PALM	15"				Remain
474	*PHOENIX DACTYLIFERA*	DATE PALM	18"				Remain
475	*PHOENIX DACTYLIFERA*	DATE PALM	19"				Remain
476	*PHOENIX DACTYLIFERA*	DATE PALM	16"				Remain
477	*PHOENIX DACTYLIFERA*	DATE PALM	19"				Remain
478	*COCOS NUCIFERA*	COCONUT PALM	11"				Remain
479	*COCOS NUCIFERA*	COCONUT PALM	12"				Remain
480	*COCOS NUCIFERA*	COCONUT PALM	11"				Remain
481	*COCOS NUCIFERA*	COCONUT PALM	11"				Remain
482	*PHOENIX DACTYLIFERA*	DATE PALM	18"				Remain
483	*PHOENIX DACTYLIFERA*	DATE PALM	18"				Remain
484	*PHOENIX DACTYLIFERA*	DATE PALM	17"				Remain
485	*PHOENIX DACTYLIFERA*	DATE PALM	17"				Remain
486	*COCOS NUCIFERA*	COCONUT PALM	9"				Remain
487	*COCOS NUCIFERA*	COCONUT PALM	11"				Remain
488	*COCOS NUCIFERA*	COCONUT PALM	11"				Remain
489	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
490	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
491	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
492	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
493	*COCOS NUCIFERA*	COCONUT PALM	7"				Remain
494	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
495	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
496	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
497	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
498	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
499	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
500	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
501	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
502	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
503	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
504	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
505	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
506	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
507	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
508	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
509	*COCOS NUCIFERA*	COCONUT PALM	6"			Poor Condition	Remain
510	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
511	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
512	*COCOS NUCIFERA*	COCONUT PALM	6"			Poor Condition	Remain
513	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
514	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
515	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
516	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
517	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
518	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
519	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
520	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
521	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
522	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
523	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
527	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
528	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
529	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
530	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
531	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
532	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
533	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
534	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
535	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
536	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain

TREE NUMBER	TREE SPECIES (SCIENTIFIC)	TREE SPECIES (COMMON)	TRUNK DIAMETER	BASE OF CANOPY ELEVATION	CANOPY SPREAD	CONDITION (POOR, FAIR GOOD)	DISPOSITION (REMAIN, RELOCATE, REMOVE)
537	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
538	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
539	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
540	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
541	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
542	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
543	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
544	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
545	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
546	*COCOS NUCIFERA*	COCONUT PALM	6"			Poor Condition	Remain
547	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
548	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
549	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
550	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
551	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
552	*COCOS NUCIFERA*	COCONUT PALM	10"			Poor Condition	Remain
553	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
554	*COCOS NUCIFERA*	COCONUT PALM	9"			Poor Condition	Remain
555	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
556	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
557	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
558	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
559	*COCOS NUCIFERA*	COCONUT PALM	~			Poor Condition	Remain
560	*COCOS NUCIFERA*	COCONUT PALM	8"			Poor Condition	Remain
561	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
562	*COCOS NUCIFERA*	COCONUT PALM	7"			Poor Condition	Remain
563	*COCOS NUCIFERA*	COCONUT PALM				Poor Condition	Remain
564	*SABAL PALMETTO*	CABBAGE PALM				Poor Condition	Remain
565	*SABAL PALMETTO*	CABBAGE PALM				Poor Condition	Remain
566	*SABAL PALMETTO*	CABBAGE PALM				Poor Condition	Remain
567	*SABAL PALMETTO*	CABBAGE PALM				Poor Condition	Remain
568	*SABAL PALMETTO*	CABBAGE PALM				Poor Condition	Remain
569	*SABAL PALMETTO*	CABBAGE PALM				Poor Condition	Remain

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100,
DELRAY BEACH, FL 33445
PHONE: 561-330-2340 FAX: 561-330-2245
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd. Suite 110
Fort Lauderdale, FL 33301
954.624.3333

SEAL:

DRAWN BY: EDSA
DESIGNED BY: EDSA
CHECKED BY: EDSA
DATE: 09.27.2019
SCALE: AS SHOWN
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	CHK'D	DESCRIPTION

REVISIONS

100% CONSTRUCTION DRAWINGS

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL

TREE DISPOSITION SCHEDULE

SHEET NO. L108
1 OF 00

DRAWING FILE NAME: L108-DISP-SCHE.dwg

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EDSA, Inc.
1512 E. Broward Blvd, Suite 110
Fort Lauderdale, FL 33301
954.524.3330

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CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

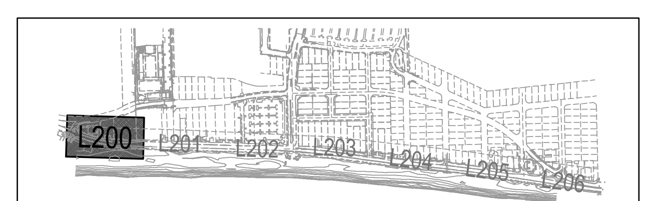
NOTES:

1. CONTRACTOR TO REPLACE ANY CONCRETE REQUIRED TO BE REMOVED FOR INSTALLATION OF LIGHT POLES. REPLACED CONCRETE TO MATCH SURROUNDING HARDSCAPE.
2. EXISTING PAVERS THAT ARE REMOVED FOR NEW CIP HARDSCAPE FLATWORK, TREE PITS AND BOLLARDS TO BE STOCKPILED AND PROTECTED. THESE PAVERS ARE TO BE RE-USED NORTH OF LAS OLAS BOULEVARD TO FILL VOIDS IN THE PAVER FIELDS FROM RELOCATED PALMS AND NEW BOLLARDS.
3. RE-USED PAVERS INSTALLED NORTH OF LAS OLAS BOULEVARD TO MATCH EXISTING PATTERN IN COLOR AND LAYOUT.
4. SIGNED AND SEALED SHOP DRAWINGS FROM LICENSED STRUCTURAL ENGINEER TO BE SUBMITTED TO THE LANDSCAPE ARCHITECT FOR REVIEW / APPROVAL FOR ANY DESIGN MODIFICATIONS REQUIRED TO BOLLARD FOOTERS DUE TO UTILITY CONFLICTS IN ORDER TO ACHIEVE AN S20 RATING.
5. BOLLARDS TO BE EQUALLY SPACED AT 9' O.C., CENTERED BE BETWEEN TREES OR LIGHT POLES. NO GAP TO EXCEED 9' BETWEEN VERTICAL ELEMENTS.
6. P-04B HARDSCAPE TO BE SAWCUT TO MATCH AND BE A CONTINUATION OF THE ADJACENT EXISTING CONCRETE PATTERN.

LEGEND

CONCRETE PAVING	
P-01	WHITE PORTLAND CEMENT WITH BLUE GLASS AND SHELL AGGREGATE
P-02	LAS OLAS INTEGRAL GRAY COLORED CONCRETE
P-03	WHITE PORTLAND CEMENT WITH SHELL AGGREGATE
P-04A	STANDARD GRAY CONCRETE WITH SHELL AGGREGATE
P-04B	STANDARD GRAY CONCRETE
P-05	RE-USED CONCRETE PAVERS *SEE NOTES*

SITE FURNISHINGS	
BIKE RACK	SF-08
GARBAGE/ RECYCLING CONTAINER	SF-11
CONCRETE TREE GRATE	SF-01A
VEHICULAR BOLLARD	SF-13
ACCENT SEATING TYPE 1	SF-04



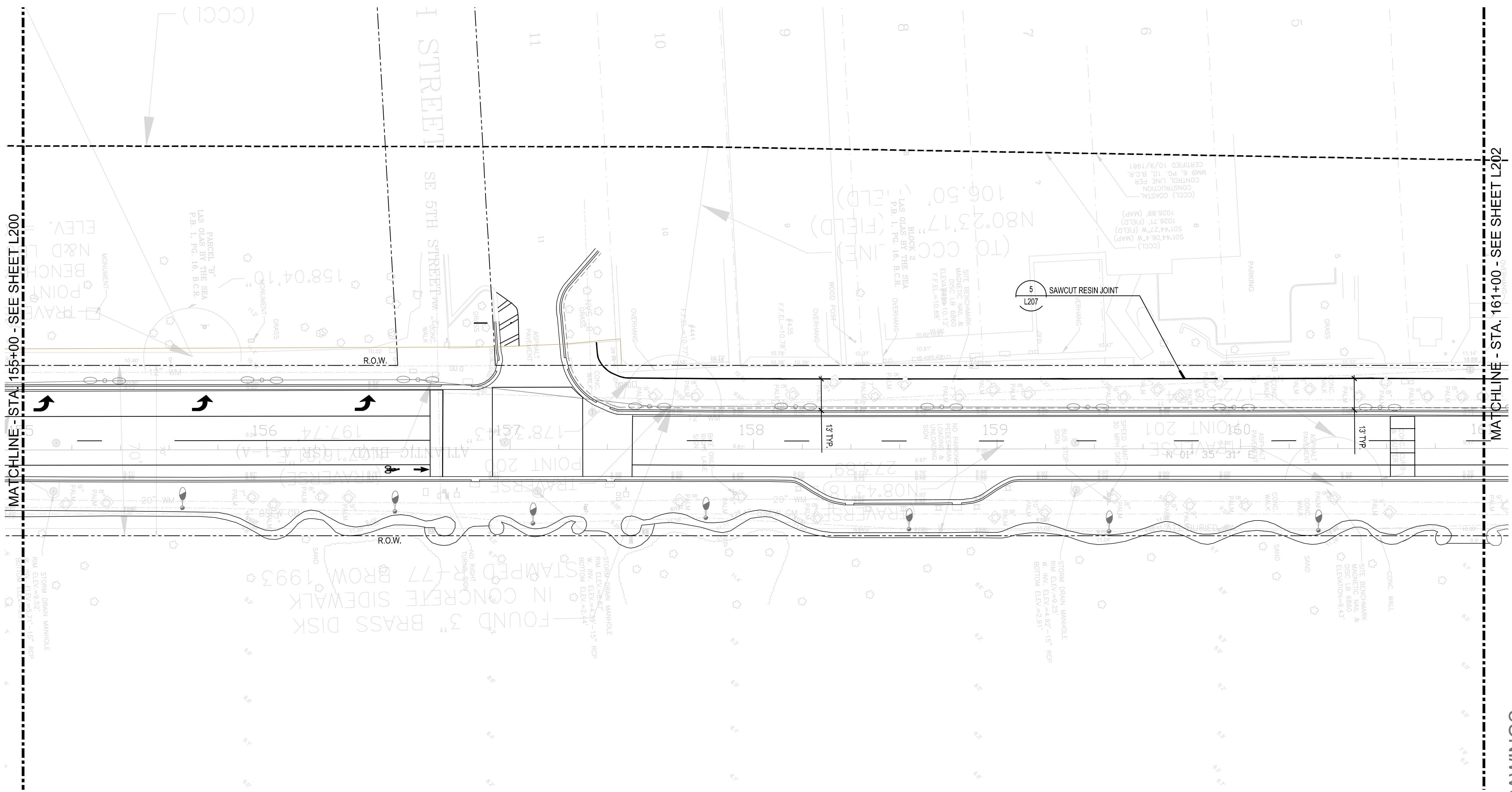
NORTH
SCALE: 1"=20'-0"
0 10' 20' 40' 60'

100% CONSTRUCTION DRAWINGS

PROJECT # P11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019.L-491-00003
HARDSCAPE PLAN

REVISIONS: NO. | DATE | BY | CHK'D | DESCRIPTION

SHEET NO. L200 — 1 OF 00
DRAWING FILE: 11681-L200~L206-HSCP.dwg



NOTES:

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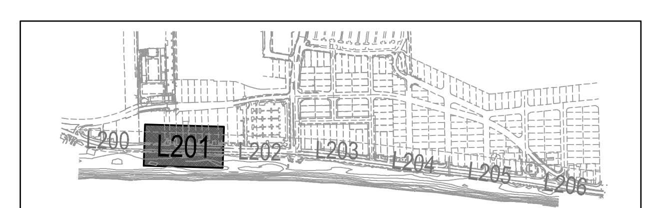
5. BOLLARDS TO BE EQUALLY SPACED AT 9' O.C., CENTERED BE BETWEEN TREES OR LIGHT POLES. NO GAP TO EXCEED 9' BETWEEN VERTICAL ELEMENTS.
6. P-04B HARDSCAPE TO BE SAWCUT TO MATCH AND BE A CONTINUATION OF THE ADJACENT EXISTING CONCRETE PATTERN.

LEGEND

Category	Code	Description
CONCRETE PAVING	P-01	WHITE PORTLAND CEMENT WITH BLUE GLASS AND SHELL AGGREGATE
	P-02	LAS OLAS INTEGRAL GRAY COLORED CONCRETE
	P-03	WHITE PORTLAND CEMENT WITH SHELL AGGREGATE
	P-04A	STANDARD GRAY CONCRETE WITH SHELL AGGREGATE
	P-04B	STANDARD GRAY CONCRETE
	P-05	RE-USED CONCRETE PAVERS *SEE NOTES*
SITE FURNISHINGS	SF-08	BIKE RACK
	SF-11	GARBAGE/ RECYCLING CONTAINER
	SF-01A	CONCRETE TREE GRATE
	SF-13	VEHICULAR BOLLARD
	SF-04	ACCENT SEATING TYPE 1



NORTH

SCALE: 1"=20'-0"

0 10' 20' 40' 60'

100% CONSTRUCTION DRAWINGS

Kimley»Horn
1690 S CONGRESS AVE, SUITE 100, DELRAY BEACH, FL 33445
PHONE: 561-330-2345 FAX: 561-330-2245
WWW.KIMLEY-HORN.COM CA 00000696

EDSA, Inc.
1512 E. Broward Blvd, Suite 110
Fort Lauderdale, FL 33301
954.524.3330

SEAL:

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DESIGNED BY: EDSA	SCALE: AS SHOWN
CHECKED BY: EDSA	FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

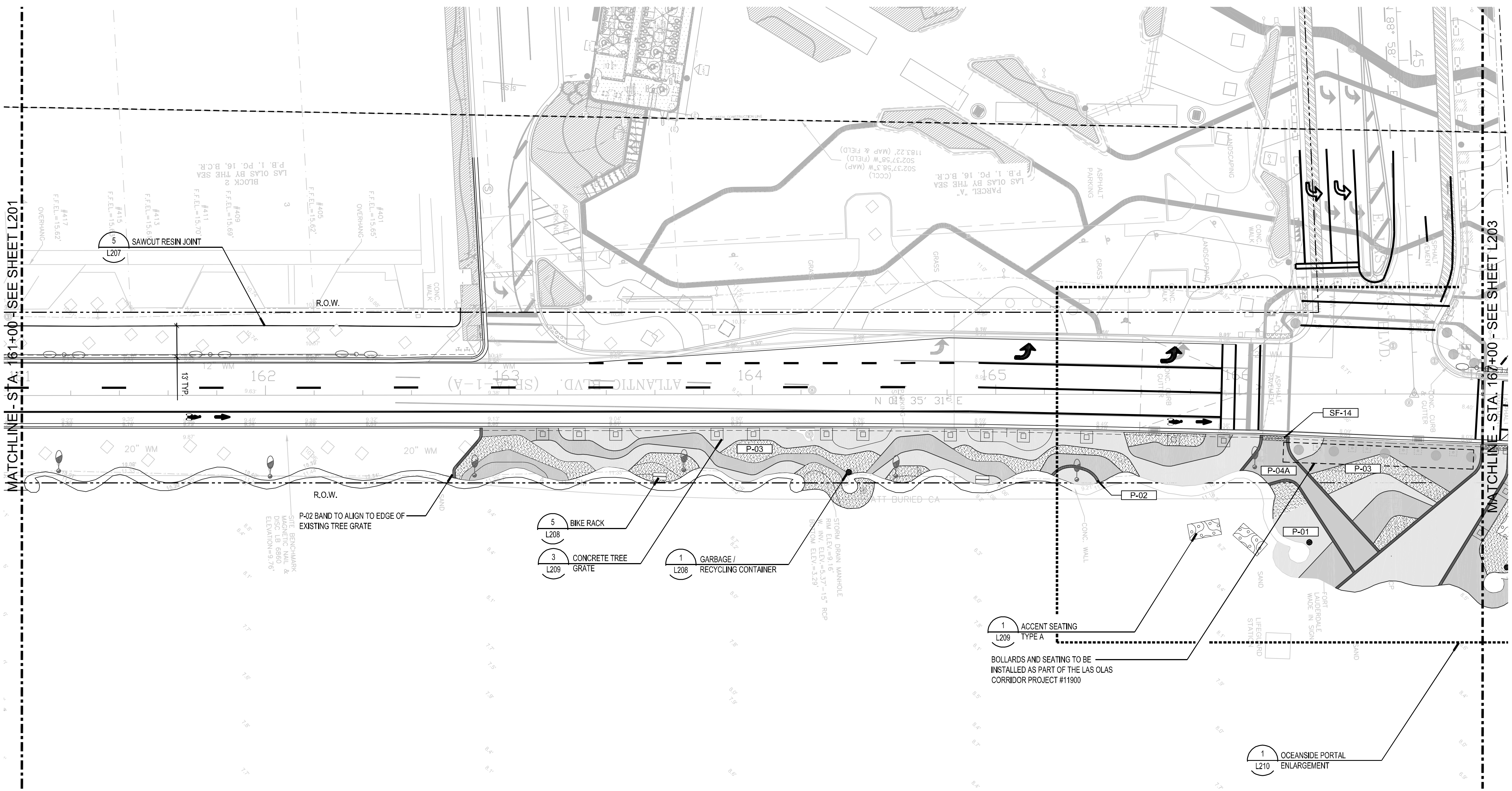
REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019.L-491-00003
HARDSCAPE PLAN

SHEET NO. L201 — 1 OF 00

FDOT PERMIT NUMBER: 2019-L-491-00006



NOTES:

1. CONTRACTOR TO REPLACE ANY CONCRETE REQUIRED TO BE REMOVED FOR INSTALLATION OF LIGHT POLES. REPLACED CONCRETE TO MATCH SURROUNDING HARDSCAPE.
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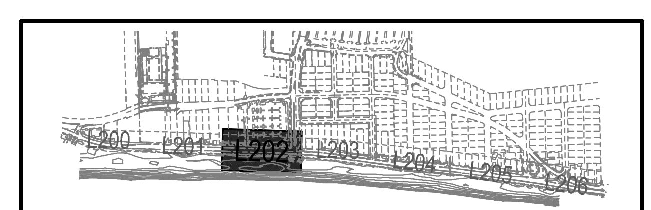
LEGEND

CONCRETE PAVING		
	P-01	WHITE PORTLAND CEMENT WITH BLUE GLASS AND SHELL AGGREGATE
	P-02	LAS OLAS INTEGRAL GRAY COLORED CONCRETE
	P-03	WHITE PORTLAND CEMENT WITH SHELL AGGREGATE
	P-04A	STANDARD GRAY CONCRETE WITH SHELL AGGREGATE
	P-04B	STANDARD GRAY CONCRETE
	P-05	RE-USED CONCRETE PAVERS *SEE NOTES*

SITE FURNISHINGS	
BIKE RACK	SF-08
GARBAGE/ RECYCLING CONTAINER	SF-11
CONCRETE TREE GRATE	SF-01A
VEHICULAR BOLLARD	SF-13
ACCENT SEATING TYPE 1	SF-04
DETECTABLE WARNINGS	SF-14



NORTH

SCALE: 1"=20'-0"
0 10' 20' 40' 60'

BID SET

Kimley»Horn

EDSA, Inc.
1512 E. Broward Blvd, Suite 110
Fort Lauderdale, FL 33301
954.524.3330

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DESIGNED BY: EDSA
CHECKED BY: EDSA
DATE: 09.27.2019
SCALE: AS SHOWN
FIELD BOOK:

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PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # 11681
A1A STREETSCAPE IMPROVEMENTS
FORT LAUDERDALE, FL
FDOT LANDSCAPE PERMIT # 2019.L-491-00003
HARDSCAPE PLAN

SHEET NO. L202 1 OF 00

FDOT PERMIT NUMBER: 2019-L-491-00006