SECTION 00 0103
PROJECT DIRECTORY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Identification of project team members and their contact information.

1.02 OWNER:

A. Name: USDA Forest Service

B. Primary Contact: All correspondence from the Contractor to the Owner will be through this party, unless alternate arrangements are mutually agreed upon at preconstruction meeting.
   1. Title: Project Manager.
   2. Name: Kristen Koehnemann, PLA.
   3. Email: kkoehnemann@tsw-design.com.

1.03 CONSULTANTS:

A. Landscape Architect: Design Professional of Record. All correspondence from the Contractor regarding construction documents authored by Landscape Architect's consultants will be through this party, unless alternate arrangements are mutually agreed upon at preconstruction meeting.
   1. Company Name: TSW.
      a. Address Line 1: 1447 Peachtree St NE.
      b. City: Atlanta.
      c. State: GA.
      d. Zip Code: 30309.
      e. Telephone: (404) 873-6730.
   2. Primary Contact:
      a. Title: Project Manager.
      b. Name: Kristen Koehnemann.
      c. Email: kkoehnemann@tsw-design.com.

B. Structural Engineering Consultant:
   1. Company Name: Volkert.
      a. Telephone: (407) 965-4211 .
   2. Primary Contact:
      a. Title: PE.
      b. Name: Kyle Vargha.
      c. Email: kyle.vargha@volkert.com.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 00 0103

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END OF SECTION 00 0110

SECTION 00 0154
PREBID CONFERENCE

PREBID CONFERENCE

A. A mandatory onsite bidders conference will be scheduled.

B. Summarized minutes of this meeting will be circulated to attendees. These minutes will not form part of Contract Documents.

C. Information relevant to the Bid Documents will be recorded in an Addendum, issued to Bid Document recipients.

END OF SECTION 00 0154

SECTION 01 1000
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: OCALA SPRINGS BOARDWALKS - JUNIPER

B. Owner's Name: USDA Forest Service.

C. Landscape Architect's Name: TSW.

D. The Project consists of the removal of (1) existing boardwalk system and construction of (1) new boardwalk system within the Ocala National Forest. The new boardwalk system will utilize a modular system with post-on-pin foundations. Specialty structures such as overlooks, the kayak launch, and the Pedestrian Truss Bridge are also included in the project.

1.02 OWNER OCCUPANCY

A. Owner intends to continue to occupy adjacent portions of the park during the entire construction period.

B. Owner intends to occupy the Project upon Substantial Completion.

C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

D. Schedule the Work to accommodate Owner occupancy.

1.03 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.

1. Locate and conduct construction activities in ways that will limit disturbance to site unless alternately arranged with the Owner.

B. Provide access to and from site as required by law and by Owner:

1. Do not obstruct roadways, sidewalks, or other public ways without permit.

END OF SECTION 01 1000

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 3 EXECUTION

1.01 SUBMITTAL PROCEDURES

A. General Requirements:
   1. Use a separate transmittal for each item.
   2. Use a single transmittal for related items.
   3. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
   4. Transmit using approved form.
      a. Use Form AIA G810.
      b. Use Form CSI/CSC Form 12.1A.
      c. Use Contractor's form, subject to prior approval by Landscape Architect.
      d. Use form generated by Electronic Document Submittal Service software.
   5. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
   6. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
   7. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
      a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
   8. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
      a. Deliver submittals to Landscape Architect at business address.
      b. Deliver submittals to Construction Manager at business address.
      c. Send submittals in electronic format via email to Landscape Architect.
      d. Upload submittals in electronic form to Electronic Document Submittal Service website.
   9. Schedule submittals to expedite the Project, and coordinate submission of related items.
      a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
      b. For sequential reviews involving Landscape Architect's consultants, Owner, or another affected party, allow an additional 7 days.
      c. For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Landscape Architect's approval, allow an additional 30 days.
   10. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
   11. Provide space for Contractor and Landscape Architect review stamps.
   12. When revised for resubmission, identify all changes made since previous submission.
   13. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
   14. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
   15. Submittals not requested will not be recognized or processed.
   16. Submittals not requested will be recognized, and will be returned "Not Reviewed",

1.02 SUBSTITUTIONS

A. Where items of equipment and materials are identified herein by a manufacturer’s name, model, or catalog number followed by the words “or approved equal,” Contractor must obtain Government’s approval for using a non-listed piece of equipment or material.

B. Contractor shall submit a substitution identifying it as a SUBSTITUTION.

C. Note that use of an “or equal” item must not increase the cost to the Government or increase contract times.

D. If using a “substitute,” note that Contractor will be responsible for any costs resulting from a change in Contract Documents, design change, Government’s review and evaluation."

END OF SECTION 01 3000

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. Quality assurance.

C. References and standards.

D. Testing and inspection agencies and services.

E. Control of installation.

F. Mock-ups.

G. Defect Assessment.

1.02 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Design Data: Submit for Landscape Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Landscape Architect, in quantities specified for Product Data.

1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

E. Manufacturer's Field Reports: Submit reports for Landscape Architect's benefit as contract administrator or for Owner.

1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.03 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

PART 3 EXECUTION

2.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Landscape Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

2.02 MOCK-UPS

A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.

B. Accepted mock-ups establish the standard of quality the Landscape Architect will use to judge the Work.

C. Notify Landscape Architect fifteen (15) working days in advance of dates and times when mock-ups will be constructed.

D. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.

E. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

F. Obtain Landscape Architect's approval of mock-ups before starting work, fabrication, or construction.

G. Landscape Architect will use accepted mock-ups as a comparison standard for the remaining Work.

H. Where mock-up has been accepted by Landscape Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Landscape Architect.

2.03 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

B. If, in the opinion of Owner, it is not practical to remove and replace the work, Owner will direct an appropriate remedy or adjust payment.

END OF SECTION 01 4000

SECTION 01 5713
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.

1.03 REFERENCE STANDARDS

A. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; 1995.

B. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service; 2015.

1.04 PERFORMANCE REQUIREMENTS

A. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.

B. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

C. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

D. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.
   4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

E. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
   2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

F. Open Water: Prevent standing water that could become stagnant.

G. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Erosion and Sedimentation Control Plan:
   1. Include:

a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
b. Site plan showing grading; new improvements; traffic accesses, and other temporary construction; and proposed preventive measures.
c. Schedule of temporary preventive measures, in relation to ground disturbing activities.
d. Other information required by law.
e. Format required by law is acceptable, provided any additional information specified is also included.

2. Obtain the approval of the Plan by authorities having jurisdiction.
3. Obtain the approval of the Plan by Owner.

C. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 EXECUTION

2.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

B. Work is recommended to be performed in dry/low water periods.

C. If work is performed during wet/high water periods, maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Landscape Architect.

2.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

2.03 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Boardwalk Path: For Construction Sequencing
1. Fossil shell path; 6 inches thick, minimum
2. Length: Extents of proposed boardwalk
3. Width: 6 feet, minimum.

C. Construction Entrances: Traffic-bearing aggregate surface.
1. Width: As required; 20 feet, minimum.
2. Length: 50 feet, minimum.
3. Provide at each construction entrance from public right-of-way.
4.

D. All Other Disturbed Areas: Cover with pine straw: 3 to 4 inches of coverage

2.04 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

2.05 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Landscape Architect.

B. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION 01 5713

SECTION 01 7123
FIELD ENGINEERING

CONSTRUCTION SURVEYING

1.01 GENERAL

A. Perform surveying as applicable to specific items necessary for proper execution of work.

1.02 STRUCTURE

A. Stake out all post locations and check prior to and during construction.

B. Minimum accuracy for structures required work is as follows:

Horizontal Tolerance: Plus or minus 0.5 feet (location)

END OF SECTION 01 7123

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Selective relocation of installed site elements.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

C. Section 01 5713 - Temporary Erosion and Sediment Control.

D. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

E. Section 31 2323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

F. Section 32 9300 - Plants: Pruning of existing trees to remain.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

PART 2 PRODUCTS

2.01 MATERIALS

A. Fill Material: As specified in Section 31 2323 - Fill.

PART 3 EXECUTION

3.01 SCOPE

A. Remove elements as noted in the demolition plans.

B. Remove other items indicated, for relocation.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   2. Provide, erect, and maintain temporary barriers and security devices.
   3. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   4. Do not close or obstruct roadways or sidewalks without permit.
   5. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

B. Do not begin removal until receipt of notice to proceed from Owner.

C. Do not begin removal until built elements to be salvaged or relocated have been removed.

D. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.

3. Stop work immediately if adjacent structures appear to be in danger.

E. Protect existing trees and other elements that are not to be removed.

F. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

G. Work is recommended to be performed in dry/low water periods.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site. Disposal of Debris and Waste to follow the State of Florida regulations concerning Waste Disposal with proof of disposal.

B. Remove from site all materials not to be reused on site; do not burn or bury.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 4100

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete formwork.

B. Concrete reinforcement.

C. Concrete footings.

1.02 REFERENCE STANDARDS

A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).

B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).

C. ACI 301 - Specifications for Structural Concrete; 2016.

D. ACI 302.1R - Guide to Concrete Floor and Slab Construction; 2015.

E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

F. ACI 305R - Guide to Hot Weather Concreting; 2010.

G. ACI 306R - Guide to Cold Weather Concreting; 2016.

H. ACI 308R - Guide to External Curing of Concrete; 2016.

I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2018).

J. ACI 347R - Guide to Formwork for Concrete; 2014.

K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018.

L. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.

M. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.

N. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.

O. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.

P. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.

1.03 SUBMITTALS

A. Mix Design: Submit proposed concrete mix design.
   1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
   2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.

B. Test Reports: Submit report for each test or series of tests specified.

C. Sustainable Design Submittal: If any fly ash, ground granulated blast furnace slag, silica fume, rice hull ash, or other waste material is used in mix designs to replace Portland cement, submit the total volume of concrete cast in place, mix design(s) used showing the quantity of portland cement replaced, reports showing successful cylinder testing, and temperature on day of pour if cold weather mix is used.

1.04 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.

B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
   1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
   2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
   3. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type II - Moderate Portland type.

B. Fine and Coarse Aggregates: ASTM C33/C33M.
   1. Acquire aggregates for entire project from same source.

C. Fly Ash: ASTM C618, Class C or F.

D. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.

2.04 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
   1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, as is consistent with ACI recommendations.
   2. Prepare design mixtures with a solar reflectance of at least 0.28 using ASTM E1980 and an emittance of 0.90.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Verify that forms are clean and free of rust before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

D. Work is recommended to be performed in dry/low water periods.

E. If work is performed during wet/high water periods, maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Landscape Architect.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

3.05 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.06 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.

F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

H. Fly Ash/ Slag composition

I. Solar Reflectance, ASTM C1549, “Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer,

3.07 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Landscape Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Landscape Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

3.08 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION 03 3000

SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel items, including:
   1. Guardrails
   2. Handrails,
   3. Boardwalk support assemblies

1.02 REFERENCE STANDARDS

A. ASTM A847 – Standard Specification for Weather Steel

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

C. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2016).

D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.

E. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.

F. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

G. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).

1.03 SUBMITTALS

A. Boardwalk Mockup: Exhibit correct profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories per drawings.
   1. Include one mockup of each the following:
      a. Boardwalk Modular Unit
      b. Boardwalk Modular Unit With Railing

1.04 QUALITY ASSURANCE

A.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Stainless Steel, General: ASTM A666, Type 316.

B. Weathering Steel, General: ASTM A588

C. Structural Tubing: ASTM A847 Weathering Steel

D. Visible Hardware Finish: All visible hardware, including but not limited to, nuts, bolts, screws, and fasteners to be Blackened Stainless Steel with a substantly uniform black oxide coating over the surface thereof, the article being formed from a steel alloy in martensitic structure which is treated in a boiling aqueous alkaline-chromate-oxidizing solution containing sodium hydroxide, sodium nitrate and sodium dichromate at a temperature in the range from about 230° F. to about 260° F. for 30 to 60 minutes. Process to take place off site.

E. Non-Visible Metal Component Finish: All non-visible components to be weathering steel.

F. Welding Materials: AWS D1.1/D1.1M; Structural Welding Code, using E70XX weld material, unless otherwise shown in the Plans.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

E. All modular segments are to be fabricated prior to installation.

2.03 FABRICATED ITEMS

A. FOOTING POST: HSS 4x4x1/4"

B. FOOTING POST CAP: PL 1/4"x5 1/2"x5 7/8"

C. FASCIA BEAM: L6x4x7/16

D. FLOORBEAM: MC6X12

E. STRINGER: L5x5x3/8

F. RAILING POSTS: PL 3/4"x3

G. RAIL SUPPORT: L3x2x3/16

H. KICKPLATE: L3x2x3/16

I. SPINDLE SUPPORT: L1x1x1/8

J. SPINDLE: 1/2" DIA x 24" ROD

K. HANDRAIL BRACKET: L3x3x5/8

L. PEDESTRIAN TRUSS – See Plans

2.04 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Obtain approval prior to site cutting or making adjustments not scheduled.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 5000

SECTION 06 1500
WOOD DECKING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardwood lumber wood decking.

1.02 SUBMITTALS

A. Product Data: Provide technical data on wood preservative materials.

B. Product Data: Provide technical data on cumaru lumber

C. Samples of Wood Deck Exposed To View: Submit two samples, 6 by 18 inch in size illustrating wood grain, stain, and finish.

1.03 QUALITY ASSURANCE

A. General: Comply with The National Hardwood Lumber Association (NHLA) grading rules.

B. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum three years of experience.

C. Installer Qualifications: Company specializing in performing work of the type specified in this section, with at least three years of documented experience.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-fabricated units to project site in original packages, containers or bundles bearing brand name and identification.

B. Store decking under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.

C. Protect from moisture damage.

D. Handle materials and products to prevent damage to edges, ends, or surfaces.

PART 2 PRODUCTS

2.01 WOOD MATERIALS

A. Lumber Decking:
   1. Species: Cumaru
   2. Size: 1 by 6 inches, nominal.
   3. Grade: Select and Better
   4. Moisture Content: 15 percent, maximum.

B. Contractor to account for 100 square feet of extra decking to be ordered and stored on site for future use.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that support framing is ready to receive decking.

3.02 INSTALLATION - BOARD DECKING

A. Install decking perpendicular to framing members, as shown in plans.

B. Maintain decking joint space of 1/4 inch.

END OF SECTION 06 1500

SECTION 06 2000
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items:
   1. Top handrail.

1.02 SUBMITTALS

A. Product Data: Cumaru lumber.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

C. Samples of Wood Deck Exposed To View: Submit two samples, 6 by 18 inch in size illustrating wood grain, stain, and finish.

1.03 QUALITY ASSURANCE

A. General: Comply with The National Hardwood Lumber Association (NHLA) grading rules.

B. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum three years of experience.

C. Installer Qualifications: Company specializing in performing work of the type specified in this section, with at least three years of documented experience.

1.04 MOCK-UPS

A. Provide (1) one full length Boardwalk Modular - Railing (6' length) mock-up, full size, illustrating finish, construction, and welded joints.

B. Mock-up may remain as part of the work if approved by the landscape architect.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-fabricated units to project site in original packages, containers or bundles bearing brand name and identification.

B. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.

C. Protect from moisture damage.

D. Handle materials and products to prevent damage to edges, ends, or surfaces.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Top Handrail
   1. Species: Cumaru
   2. Size: 2 by 6 inches, nominal
   3. Grading: Select and Better
   4. Moisture Content: 15 percent, maximum.

2.02 FASTENINGS

A. Fasteners for Exterior Applications: All visible hardware, including but not limited to, nuts, bolts, screws, and fasterners to be Blackened Stainless Steel with a substantly uniform black oxide coating over the surface thereof, the article being formed from a steel alloy in martensitic structure which is treated in a boiling aqueous alkaline-chromate-oxidizing solution containing sodium hydroxide, sodium nitrate and sodium dichromate at a temperature in the range from about 230° F. to about 260° F. for 30 to 60 minutes..

B. Concealed Joint Fasteners: Threaded steel.

C. All countersunk fasteners to have wood plug covers.

2.03 FABRICATION

A. Shop assemble work for delivery to site, or conduct work at a client indicated on-site location.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

3.02 INSTALLATION

A. Set and secure materials and components in place, plumb and level.

B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.03 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood plug covers for countersunk fasteners. Sand work smooth.

END OF SECTION 06 2000

SECTION 07 1900
WATER REPELLENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water repellents applied to exterior, metal stringer surfaces.

PART 2 PRODUCTS

2.01 MATERIALS

A. Water Repellent: Butyl tape. Non-glossy, non-conspicuous color approved by landscape architect.
   1. Applications: Continous top surface of metal stringer. Intent for tape to provide barrier between metal string and wood decking. No tape to be visible from sides or top.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of water repellent.

3.02 APPLICATION

A. Apply water repellent in accordance with manufacturer's instructions, using procedures and application methods recommended as producing the best results.

B. Remove water repellent from unintended surfaces.

END OF SECTION 07 1900

SECTION 10 7100
PIN FOUNDATIONS

PART 1 GENERAL

1.01 SCOPE/DESCRIPTION

A. The general conditions, alternates and addenda, applicable drawings, and technical specifications shall apply to all work under this section.

B. The contractor shall furnish all materials, labor, equipment, and incidentals as shown, specified, and required to install pin foundations.

C. Work includes preparing site and soil; furnishing and preparing foundation components; aligning, leveling, plumbing, and installing foundation components; setting and driving foundation pins; and capping pins.

1.02 RELATED WORK

A. Superstructure construction

B. Wood treating/field treating

C. References/Standards

D. ASTM A 53 – Standard Specification for Pipe

E. ASTM A153 – Standard Specification for Zinc Coating on Hardware

F. ASTM, ACI, and CRSI standards for precast concrete products

G. ASTM C1116/C1116M-10a – Standard Specification for Synthetic Fiber Re-inforcing – Type III, when applicable

1.03 DELIVERY/STORAGE AND HANDLING

A. Contractor shall verify upon delivery that all the proper materials have been received.

B. Contractor shall protect the materials from damage. See “Temporary Product Storage” in the Commercial Installation Instructions.

C. Contractor shall review MSDS documents and, when required, maintain a copy on site at all times.

1.04 SUBMITTALS

A. Latest edition of Commercial Installation Instructions for public or commercial projects.

B. Manufacturer’s or Engineer’s evaluation of foundation system load capacities for this project.

1.05 QUALITY ASSURANCE/TESTING

A. Stamped certified soil testing and outside inspection or vendor supervision will be paid for by the Contractor.

PART 2 PRODUCTS

2.01 SYSTEM TYPE

A. Diamond pier foundation – DP-100E 4B Twist Top – precast heads to be minimum 5000 psi concrete, minimum 3/8” aggregate, with 5-7% total air entrainment in frost zone applications. Reinforcing to be minimum 2” synthetic macro-fibers. Or equal approved by Landscape Architect.

1. Model subject to change based on geotechnical analysis. Contractor to confirm final model selection with manufacturer.

2.02 PINS/CAPACITY

A. Four pins per pier. Capacity relative to length, diameter, and driving angle in site-specific soils. Stamped capacities shall rely on stamped local geotechnical evaluations and complete project loading and site information. All pins to be minimum schedule 40 galvanized steel pipe (UNO) with butt cut driving ends (UNO).

1. Contractor to confirm final model selection and number of pins with manufacturer.

PART 3 EXECUTION

3.01 INSPECTION

A. Contractor shall verify superstructure layout, spans, and resulting loads for consistency with the manufacturer's or engineer's evaluated capacities and report any inconsistencies to the owner's agent prior to installation.

3.02 SITE PREP

A. Use of heavy equipment and/or alteration of site soils or vegetation to be kept to a minimum to avoid compaction, erosion, and the need for site repair or replanting.

3.03 EQUIPMENT/INSTALLATION

A. Foundations to be set plumb. Foundations to match elevation of adjacent foundations with maximum tolerance of one inch.

B. Pins to be full length as specified before driving. No coupled or welded pins are to be used.

C. Follow commercial installation instructions for pier placement and pin driving.

D. Pins to be full length as specified before driving. No coupled or welded pins are to be used.

END OF SECTION 10 7100 10 7100

SECTION 31 1000
SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Clearing and protection of vegetation.

B. Removal of existing debris.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 02 4100 - Demolition: Removal of built elements and utilities.

C. Section 31 2323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

D. Section 32 9300 - Plants: Relocation of existing trees, shrubs, and other plants.

E. Section 32 9300 - Plants: Pruning of existing trees to remain.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SITE CLEARING

A. The contractor shall minimize disturbance to soil beyond 4 inches in depth within the historic park area. If foreign objects or artifacts are discovered during excavation, the contractor shall stop work immediately and contact the Owner's representative.

B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 EXISTING UTILITIES AND BUILT ELEMENTS

A. Protect existing utilities to remain from damage.

B. Do not disrupt public utilities without permit from authority having jurisdiction.

C. Protect existing structures, landscape and other elements that are not to be removed.

3.03 VEGETATION

A. This project included selective removal of vegetation within the project limits. All existing trees within the project limits shall be preserved. Understory vegetation shall be removed as indicated on the plans. Contractor to perform this work and may require access to the site during construction.

B. Do not remove or damage vegetation beyond the limits indicated on drawings.

C. In areas where vegetation must be removed but no construction will occur other than pervious paving or landscaping, remove vegetation with minimum disturbance of the subsoil.

D. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.

E. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.04 DEBRIS

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 31 1000

SECTION 31 2323
FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

A. Section 01 5713 - Temporary Erosion and Sediment Control: Slope protection and erosion control.

1.03 DEFINITIONS

A. Finish Grade Elevations: Indicated on drawings.

B. Subgrade Elevations: 4 inches below finish grade elevations indicated on drawings, unless otherwise indicated.

1.04 SUBMITTALS

A. Product Data for Manufactured Fill.

1.05 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where indicated.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

1.06 WARRANTY

A.

B. Correct defective Work within a One year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. Refer to landscape drawings for fill types, compositions, and use.

2.02 SOURCE QUALITY CONTROL

A.

B.

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

3.02 FILLING

A. Fill to contours and elevations indicated using unfrozen materials.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Granular Fill: Place and compact materials as indicated in equal continuous layers not exceeding 6 inches compacted depth.

F. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.

G. Compaction Density Unless Otherwise Specified or Indicated:

1. Under paving, slabs-on-grade, and similar construction: 97 percent of maximum dry density.

H. Work is recommended to be performed in dry/low water periods.

I. If work is performed during wet/high water periods, maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Landscape Architect.

3.03 FILL AT SPECIFIC LOCATIONS

3.04 TOLERANCES

A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.

B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.

C. Top Surface of Existing Pier Hole Filling: plus or minus 1 inch from immediate surrounding grade.

3.05 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION 31 2323

SECTION 32 9300
PLANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tree Pruning.

1.02 REFERENCE STANDARDS

A. ANSI A300 Part 1 - American National Standard for Tree Care Operations -- Tree, Shrub and Other Woody Plant Maintenance -- Standard Practices; 2017.

1.03 QUALITY ASSURANCE

A. Tree Pruner Qualifications: Company specializing in pruning trees with proof of Arborist Certification.

B. Tree Pruning: Comply with ANSI A300 Part 1.

PART 2 MATERIALS -- NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify trees to be pruned match locations per plans.

3.02 TREE PRUNING

A. Prune trees as recommended in ANSI A300 Part 1.

B. Prune existing trees as required to ensure 7'-0" clear hieght from proposed walking surfaces.

C.

END OF SECTION 32 9300 32 9300