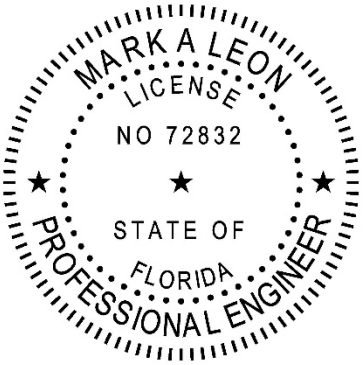
SECTION 02 41 00

DEMOLITION

APPROVAL STATUS							
PREPARED BY:	PB	DATE	27July2021	CHECKED BY:	ML	DATE	27July2021
APPROVED BY:	DB	DATE	27July2021				

REVISION STATUS						
REV	ISSUED FOR	REVISED BY	CHECKED BY	APPROVAL	APPROVAL	DATE
0	Bidding					

Engineer's Seal



Digital Signature

Mark A. Leon

Digitally signed by Mark A. Leon
DN: cn=Mark A. Leon, o=Wood Environment & Infrastructure Solutions, Inc., ou, email=mark.leon@woodplc.com, c=US
Date: 2021.07.28 16:30:45 -05'00'

MARK A LEAON P.E., STATE OF FLORIDA, PROFESSIONAL ENGINEER, LICENSE NO. 72832.

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY MARK A LEON ON 28 JULY 2021, USING AN SHA ATHENTICATION CODE.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND THE IDENTRUST DIGITAL SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 145	(1991; R 2012) Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
AASHTO T 180	(2017) Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM INTERNATIONAL (ASTM)

ASTM C136	(2019) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D1140	(2017) Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing
ASTM D1557	(2012; E 2015) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3) (2700 kN-m/m3)
ASTM D1586	(2018) Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils
ASTM 2216-19	Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D2487	(2017; E 2020) Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4318	(2017; E 2018) Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ASTM D4718	(2015) Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles
ASTM D7263	Standard Test Methods for Laboratory Determination of Density and Unit Weight of Soil Specimens

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.6	(2006) Safety & Health Program Requirements for Demolition Operations - American National Standard for Construction and Demolition Operations

1.2 PROJECT DESCRIPTION

1.2.1 Definitions

1.2.1.1 Demolition

Demolition is the process of wrecking or taking out any load-supporting structural member of a facility or earthen embankment together with any related handling and disposal operations.

1.2.1.2 Deconstruction

Deconstruction is the process of taking apart a facility with the primary goal of preserving the value of all useful building materials.

1.2.1.3 Demolition Plan

Demolition Plan is the planned steps and processes for managing demolition activities and identifying the required sequencing activities and disposal mechanisms.

1.2.1.4 Deconstruction Plan

Deconstruction Plan is the planned steps and processes for dismantling all or portions of a structure or assembly, to include managing sequencing activities, storage, re-installation activities, salvage and disposal mechanisms.

1.2.2 Demolition Plan

Prepare a Demolition Plan and Deconstruction Plan and submit proposed salvage, demolition, deconstruction, and removal procedures for approval before work is started. Include in the plan procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress, a disconnection schedule of utility services, and protection of the existing dam structure, a detailed description of methods and equipment to be used for each operation and of the sequence of operations. Identify components and materials to be salvaged for reuse or recycling to be Removed. Append tracking forms for all removed materials indicating type, quantities, condition, destination, and end use. Include statements affirming Contractor inspection of the existing dam and spillway components and their suitability to perform as a safe working platform

or if inspection reveals a safety hazard to workers, state provisions for securing the safety of the workers throughout the performance of the work. Provide procedures for safe conduct of the work. Plan shall be reviewed by the Owner's Representative prior to work beginning.

1.2.3 General Requirements

Do not begin demolition or deconstruction until authorization is received from the Owner. Remove rubbish and debris from the project site; do not allow accumulations adjacent to the work site. The work includes demolition, deconstruction, salvage of identified items and materials, and removal of resulting rubbish and debris. Remove rubbish and debris from property daily, unless otherwise directed. Store materials that cannot be removed daily in areas specified by the Owner. Dispose of all materials at a facility liscenced to accept the material.

1.3 ITEMS TO REMAIN IN PLACE

Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Owner. Repair or replace damaged items as approved by the Owner's representative. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract. Do not overload structural elements or pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition, deconstruction, or removal work. Repairs, reinforcement, or structural replacement require approval by the Owner's Representative prior to performing such work.

1.3.1 Existing Construction Limits and Protection

Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide temporary shoring and bracing for support of building components to prevent settlement or other movement. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove dust, dirt, and debris from work areas daily.

1.3.2 Weather Protection – Not Used

1.3.3 Trees

Protect trees within the project site which might be damaged during demolition, deconstruction, or construction. Replace any tree that is damaged during the work under this contract with like-kind or as approved by the Owner's Representative.

1.3.4 Utility Service

Maintain existing utilities indicated to stay in service and protect against damage during demolition, deconstruction, and construction operations. Prior to start of work, utilities serving each area of alteration or removal will be shut off by the Owner and disconnected and sealed by the Contractor. The Owner will disconnect and seal utilities serving each area of alteration or removal upon written request from the Contractor.

1.3.5 Facilities

Protect electrical and mechanical services, utilities, and instrumentation. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Flow meters installed in the two toe drains are to remain in service during all construction activities. The wiring for these devices will need to be rerouted and otherwise protected throughout construction and then replaced to their original configurations after the construction process. The Owner will identify other electrical and mechanical services, utilities, and instrumentation that will need to remain. Ensure that no structural or geotechnical elements determined to be unstable are left unsupported and place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract.

1.4 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.5 AVAILABILITY OF WORK AREAS

Areas in which the work is to be accomplished will be available in accordance with the following schedule:

Schedule	
Area	Date
_____	_____

1.6 SUBMITTALS

Owner approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Owner. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Demolition Plan; G

Deconstruction Plan; G

Existing Conditions

SD-07 Certificates

Notification; G

Notification of Demolition and Renovation Form

SD-11 Closeout Submittals

Receipts

1.7 QUALITY ASSURANCE

Prevent the spread of dust and debris to occupied portions of the Plant and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to flooding, or pollution. Vacuum and dust the work area weekly.

1.8 PROTECTION

1.8.1 Protection of Personnel

Before, during and after the [demolition][and][deconstruction] work continuously evaluate the condition of the structure being [demolished] [and] [deconstructed] and take immediate action to protect all personnel working in and around the project site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.9 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair or replace items to be relocated which are damaged by the Contractor with new undamaged items as approved by the Owner's Representative.

1.10 EXISTING CONDITIONS

Before beginning any demolition or deconstruction work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing conditions in the presence of the Owner's Representative showing the condition of structures and other facilities adjacent to areas of alteration or removal. Digital photographs will be acceptable as a record of existing conditions. Include in the record the elevation of the top of foundation walls, finish floor elevations, possible conflicting electrical conduits, plumbing lines, alarms systems, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to before starting work. It is the Contractor's responsibility to verify and document all required outages which will be required during the course of work, and to note these outages on the record document. Submit survey results.

PART 2 PRODUCTS

2.1 FILL MATERIAL

a. Comply with excavating, backfilling, and compacting procedures for soils used as backfill material to fill voids, depressions or excavations resulting from demolition or deconstruction of structures. Fill material shall be waste products from demolition or deconstruction meeting gradation requirements provided below until all waste appropriate for this purpose is consumed.

b. Select Fill material shall conform to the definition of satisfactory soil material as defined in the Unified Soil Classification System. In addition, fill material shall be free from roots and other organic matter, trash, debris, and particles larger than 3 inches in any dimension.

c. Proposed fill material must be sampled and tested by an approved soil testing laboratory, as follows:

Soil classification – (backfill) GW, GP, GM, GP-GM, GW-GM, SW, SP, SM, SW-SM, SC, SW-SC, SP-SM, SP-SC	ASTM D2487, ASTM D4318, ASTM C136, and ASTM D1140
Soil classification – (void filling and underwater backfilling) SP, SP-SM	
Moisture-density (engineered fill in-the-dry)	ASTM D1557, AASHTO T 180, ASTM D4718
Moisture-density (void filling)	ASTM D2216–19, ASTM D7263-21 (samples collected from slurry)
Moisture-density (underwater placement)	ASTM D1586

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

Inspect and evaluate existing structures onsite for reuse. Existing construction scheduled to be removed for reuse shall be disassembled. Dismantled and removed materials are to be separated, set aside, and prepared as specified, and stored or delivered to a collection point for reuse, remanufacture, recycling, or other disposal, as specified. Materials shall be designated for reuse onsite whenever possible.

3.1.1 Structures

a. Remove existing structures indicated to be removed.

b. Demolish facilities in a systematic manner.

c. Locate demolition and deconstruction equipment throughout the structure and remove materials so as to not impose excessive loads to supporting walls, floors, or framing.

3.1.2 Utilities and Related Equipment

3.1.2.1 General Requirements

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Owner's Representative. Do not interrupt existing utilities serving facilities occupied and used by the Owner except when approved in writing and then only after temporary utility services have been approved and provided. Do not begin demolition or deconstruction work until all utility disconnections have been made. Shut off and cap utilities for future use, as indicated.

3.1.2.2 Disconnecting Existing Utilities

Remove existing utilities, as indicated and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Owner's Representative. When utility lines are encountered but are not indicated on the drawings, notify the Owner's Representative prior to further work in that area. Remove meters and related equipment and deliver to a location [on the station] in accordance with instructions of the Owner's Representative.

3.1.3 Paving and Slabs

Sawcut concrete and asphaltic concrete paving and slabs as indicated on the drawings. Provide neat sawcuts at limits of pavement removal as indicated. Pavement and slabs designated to be recycled and utilized in this project shall be moved, ground and stored as directed by the Owner's Representative. Pavement and slabs not to be used in this project shall be removed from the Installation at Contractor's expense.

3.1.4 Masonry

Sawcut and remove masonry so as to prevent damage to surfaces to remain and to facilitate the installation of new work. Provide square, straight edges and corners where existing masonry adjoins new work and other locations.

3.1.5 Concrete

Saw concrete along straight lines to a depth matching the thickness of the slab. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete.

3.1.6 Structural Steel

Dismantle structural steel at field connections and in a manner that will prevent bending or damage. Salvage for reuse or recycle structural steel, steel joists, girders, angles, plates, columns and shapes. Flame-cutting torches are permitted when other methods of dismantling are not practical. Transport steel joists and girders as whole units and not dismantled. Transport structural steel shapes to a designated area as directed by the Owner's Representative, stacked according to size, type of member and length, and stored off the ground, protected from the weather.

3.1.7 Miscellaneous Metal

Salvage shop-fabricated items such as steel gratings, metal ladders, wire mesh partitions, metal railings, and similar items as whole units. Salvage light-gage and cold-formed metal framing, such as steel studs, steel trusses, metal gutters, roofing and siding, metal toilet partitions, toilet accessories and similar items. Scrap metal shall become the Contractor's property. Recycle scrap metal as part of demolition and deconstruction operations. Provide separate containers to collect scrap metal and transport to a scrap metal collection or recycling facility, in accordance with the Waste Management Plan.

3.1.8 Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces, using on-site materials when available. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish. Patching shall be as specified and indicated, and shall include:

a. Concrete and Masonry: Completely fill holes and depressions, caused by previous physical damage or left as a result of removals in existing masonry walls to remain, with an approved masonry patching material, applied in accordance with the manufacturer's printed instructions.

3.1.9 Mechanical Equipment and Fixtures

Disconnect mechanical hardware at the nearest connection to existing services to remain, unless otherwise noted. Disconnect mechanical equipment and fixtures at fittings. Remove service valves attached to the unit. Salvage each item of equipment and fixtures as a whole unit; listed, indexed, tagged, and stored. Salvage each unit with its normal operating auxiliary equipment. Transport salvaged equipment and fixtures, including motors and machines, to a designated [on station] storage area as directed by the Owner’s Representative. Do not remove equipment until approved. Do not offer low-efficiency equipment for reuse[; provide to recycling service for disassembly and recycling of parts].

3.1.9.1 Preparation for Storage

Remove water, dirt, dust, and foreign matter from units; tanks, piping and fixtures shall be drained; interiors, if previously used to store flammable, explosive, or other dangerous liquids, shall be steam cleaned. Seal openings with caps, plates, or plugs. Secure motors attached by flexible connections to the unit. Change lubricating systems with the proper oil or grease.

3.1.9.2 Piping

Disconnect piping at unions, flanges and valves, and fittings as required to reduce the pipe into straight lengths for practical storage. Store salvaged piping according to size and type. If the piping that remains can become pressurized due to upstream valve failure, end caps, blind flanges, or other types of plugs or fittings with a pressure gage and bleed valve shall be attached to the open end of the pipe to ensure positive leak control. Carefully dismantle piping that previously contained gas, gasoline, oil, or other dangerous fluids, with precautions taken to prevent injury to persons and property. Store piping outdoors until all fumes and residues are removed. Box prefabricated

supports, hangers, plates, valves, and specialty items according to size and type. Wrap sprinkler heads individually in plastic bags before boxing. Classify piping not designated for salvage, or not reusable, as scrap metal.

3.1.9.3 Fixtures, Motors and Machines

Remove and salvage fixtures, motors and machines associated with plumbing, heating, air conditioning, refrigeration, and other mechanical system installations. Salvage, box and store auxiliary units and accessories with the main motor and machines. Tag salvaged items for identification, storage, and protection from damage. Classify broken, damaged, or otherwise unserviceable units and not caused to be broken, damaged, or otherwise unserviceable as debris to be disposed of by the Contractor.

3.1.10 Electrical Equipment and Fixtures

Salvage motors, motor controllers, and operating and control equipment that are attached to the driven equipment. Salvage wiring systems and components. Box loose items and tag for identification. Disconnect primary, secondary, control, communication, and signal circuits at the point of attachment to their distribution system.

3.1.10.1 Electrical Devices

Remove and salvage switches, switchgear, transformers, conductors including wire and nonmetallic sheathed and flexible armored cable, regulators, meters, instruments, plates, circuit breakers, panelboards, outlet boxes, and similar items. Box and tag these items for identification according to type and size.

3.1.10.2 Wiring Ducts or Troughs

Remove and salvage wiring ducts or troughs. Dismantle plug-in ducts and wiring troughs into unit lengths. Remove plug-in or disconnecting devices from the busway and store separately.

3.1.10.3 Conduit and Miscellaneous Items

Salvage conduit except where embedded in concrete or masonry. Consider corroded, bent, or damaged conduit as scrap metal. Sort straight and undamaged lengths of conduit according to size and type. Classify supports, knobs, tubes, cleats, and straps as debris to be removed and disposed.

3.2 CONCURRENT EARTH-MOVING OPERATIONS

Do not begin excavation, filling, and other earth-moving operations that are sequential to demolition or deconstruction work in areas occupied by structures to be demolished or deconstructed until all demolition and deconstruction in the area has been completed and debris removed. Fill holes, open basements and other hazardous openings.

3.3 DISPOSITION OF MATERIAL

3.3.1 Title to Materials

Except for salvaged items specified in related Sections, and for materials or equipment scheduled for salvage, all materials and equipment removed and not reused or salvaged, shall become the property of the Contractor and shall be removed from Owner property. Title to materials resulting from demolition and deconstruction, and materials and equipment to be removed, is vested in the Contractor upon approval by the Owner's Representative of the Contractor's demolition, deconstruction, and removal procedures, and authorization by the Owner's Representative to begin demolition and deconstruction. The Owner will not be responsible for the condition or loss of, or damage to, such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.

3.3.2 Salvaged Materials and Equipment

Remove materials and equipment that are listed in the Demolition plan to be removed by the Contractor and that are to remain the property of the Owner and deliver to a storage site located within the plant property.

a. Salvage items and material to the maximum extent possible.

b. Store all materials salvaged for the Contractor as approved by the Owner's Representative and remove from Owner property before completion of the contract. Coordinate the salvaged materials with tracking requirements in accordance with Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL. Capture salvaged materials in the diversion calculations for the project.

c. Remove salvaged items to remain the property of the Owner in a manner to prevent damage and packed or crated to protect the items from damage while in storage or during shipment. Items damaged during removal or storage must be repaired or replaced to match existing items. Properly identify the contents of containers.

3.3.2.1 Fire Suppression Containers

Deactivate fire suppression system cylinders and canisters with electrical charges or initiators prior to shipment. Also, safety caps must be used to cover exposed actuation mechanisms and discharge ports on these special cylinders.

3.3.4 Unsalvageable and Non-Recyclable Material

Dispose of unsalvageable and non-recyclable noncombustible material at an approved landfill licensed to receive the material.

3.4 CLEANUP

Remove debris and rubbish from basement and similar excavations. Remove and transport the debris in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

3.5 DISPOSAL OF REMOVED MATERIALS

3.5.1 Regulation of Removed Materials

Dispose of debris, rubbish, scrap, and other non-salvageable materials resulting from removal operations with all applicable federal, state and local regulations as contractually.

3.5.2 Removal to Spoil Areas

Transport noncombustible materials removed from demolition and deconstruction structures to designated spoil areas on Owner property.

3.5.3 Removal from County Property

Transport waste materials removed from demolished and deconstructed structures, except waste soil, from Owner property for legal disposal. Dispose of waste soil as directed.

3.6 REUSE OF SALVAGED ITEMS

Recondition salvaged materials and equipment designated for reuse before installation. Replace items damaged during removal and salvage operations or restore them as necessary to usable condition.

-- End of Section --