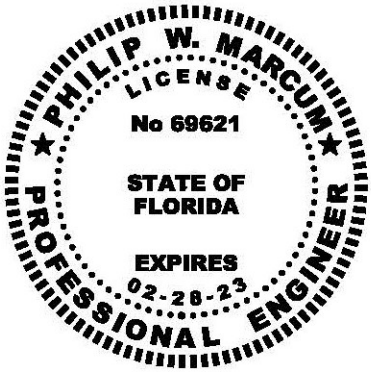
SECTION 01 11 00

SUMMARY OF WORK

APPROVAL STATUS							
PREPARED BY:	PWM	DATE	27July2021	CHECKED BY:	GA	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

Philip W Marcum

Digitally signed by Philip W Marcum
DN: c=US, o=Unaffiliated, ou=A01410D0000017497222E2400009748, cn=Philip W Marcum
Date: 2021.07.28 17:26:15 -04'00'

PHILIP W. MARCUM P.E., STATE OF FLORIDA, PROFESSIONAL ENGINEER, LICENSE NO. 69621.

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY PHILIP W. MARCUM ON 28 JULY 2021, USING A DIGITAL SIGNATURE ISSUED BY IDENTRUST.

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SUMMARY OF WORK

PART 1 GENERAL

1.1 SUBMITTALS

Owner approval is required for submittals.

SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

As provided herein the Contract Documents

1.2 WORK COVERED BY CONTRACT DOCUMENTS

1.2.1 Description of Lake Manatee Dam

The Lake Manatee Dam is located near Bradenton in Manatee County, Florida and was constructed between 1965 and 1967 as an in-stream reservoir on the Manatee River approximately 20 miles upstream of its discharge point into Tampa Bay. Its primary function is a freshwater supply for users in Manatee and Sarasota Counties. The original dam consisted of an approximately 4,700-foot-long zoned-earth embankment with a clayey core, granular upstream and downstream shells, and a crest elevation of 52 feet based upon the National Geodetic Vertical Datum, 1929 (NGVD29). The NGVD29 vertical datum is currently used at the dam and all references to elevation herein are based upon it.

After construction, an emergency spillway was built in the north abutment and excavated materials from its discharge channel were placed to the south and downstream of the dam centerline against the northernmost portion of the embankment; thus, effectively decreasing the embankment length to approximately 3,700 feet. The present elevation of the crest ranges from approximately 51 feet to 55 feet because an additional 3 feet of material was added to increase the embankment freeboard and flatten the downstream embankment slope when the emergency spillway was constructed.

The principal spillway (also called the service spillway) is located approximately 1,500 feet north of the southern abutment and just south of the original Manatee River channel. A freshwater intake for the water treatment plant is located on the south side of the service spillway in the southern wall of the approach channel. The original clay core of the embankment was keyed into a geologic unit known as the Hawthorn Group that was intended to function as a confining layer. A toe drain was installed along the entire northern and southern embankments with discharge points in the service spillway downstream of the stilling basin.

The Lake Manatee Dam was designed without a low-level outlet. Water is removed from the reservoir through the service spillway, the emergency spillway or by intake pipes to the water treatment plant. The service spillway consists of three 15-foot radius tainter gates, each one spanning a 31.5-feet-wide bay. This spillway has upstream concrete approach walls, a bare earth approach channel, and a concrete approach apron immediately upstream of the Ogee section of the spillway. It also has downstream concrete training walls and a concrete stilling basin with an end sill. The stilling basin floor

slab is ground-founded and consists of individual 3.5 ft and 5 ft thick reinforced concrete sections. The concrete approach walls and the downstream training walls each have an inverted T-shape and together with the Ogee section, monoliths are founded on driven H-piles.

The original under seepage cutoff system for the service spillway consisted of a series of driven sheet piles forming a box around the edges of the upstream approach slab and along the front edge of the Ogee spillway sections. These sheet piles pass underneath the base slabs of the two approach wall monoliths closest to the Ogee section and are connected to another sheet pile cutoff wall that extends away from the northern and southern exterior monoliths of the Ogee section for a distance of approximately 30 feet. A second set of cutoff sheet piles also extend to the north and south parallel to but downstream of the first set of sheet piles. These two parallel sheet pile cutoff walls were designed to extend into the embankment's clay core. A final sheet pile cutoff wall was placed under the end sill of the stilling basin running north to south between the two base slabs for the downstream training walls. No seepage cutoff was placed under the downstream training walls.

Subsequent to the original design and when the downstream concrete apron was placed over the original bare earth discharge channel beyond the stilling basin, additional sheet piles were also driven along the edges of this apron, forming retaining walls along its sides and confinement at its downstream edge. When voids were discovered under the upstream approach wall foundations in 2011 after an attempt to dewater the approach channel for repairs, additional sheet piling was driven in front of the footings inside the spillway channel to provide confinement to fill these voids with tremie grout.

The original under-pressure relief and backfill drain systems for the stilling basin and the downstream training walls consisted of three underdrains beneath the stilling basin slab sections and a backfill drain behind the two training walls. The first two stilling basin underdrains consist of two drainpipes running between the training walls that are directly connected by riser pipes through the training wall base slabs to the backfill drain system. The backfill drain system runs along the backside of the training walls just above the base slabs and drains upstream into the stilling basin near the Ogee section. These two systems are evacuated through riser pipes and outfalls, one on each side of the stilling basin. The third stilling basin underdrain system runs beneath the end sill and evacuates directly into the downstream channel through a series of 45-degree riser pipes running up through the floor slab and the downstream edge of the end sill.

1.2.2 Prior Damage and Emergency Repair

During the course of an in-depth dam supplemental inspection performed by Wood (formerly Amec) in 2013, several serious concerns were raised regarding the structural integrity of the dam; including both the service spillway and the adjacent earthen embankment. Evidence strongly suggested the presence of an active internal erosion and piping failure mechanism within the embankment and immediately adjacent to and underneath portions of the service spillway. Since the dam was commissioned in 1967, indications of this potential failure mechanism were manifested in visual and physical observations, including the formation of a sediment island in the downstream river channel. These observations were documented in multiple dam safety inspections, the first of which was performed by the U.S. Army Corps of Engineers in 1978. This evidence became more and more apparent in subsequent inspections by various engineering groups and in 2014 Wood (formerly Amec) concluded that a potential breach of the dam was possible.

Based on findings from Wood's report "2015.01 Lake Manatee Dam 2013 Supplemental Inspection Report" repairs were recommended to first cut off the seepage paths through the embankment and alongside and underneath the Service Spillway (Phase I Repairs) and to repair the voids under or near the Service Spillway and prevent additional damage from occurring (Phase II Repairs). A Phase I emergency repair was implemented in early 2014 to install a deep soil-cement slurry seepage cutoff wall along the entire axis of the dam. This cutoff wall was extended to depths of 95 to 105 feet below the crest using a combination of the Trench Re-mixing Deep (TRD) device (for the main dam) and Jet Grout (JG) columns (under the Service Spillway). Approximately 3,000 lineal feet of TRD wall was installed through the upstream side of the embankment's clayey core on both the north and south embankments extending away from the Service Spillway. The JG wall was tied directly into the TRD wall on both sides of the spillway. Construction of the seepage cutoff wall took place between April 24, 2014 and September 11, 2014.

1.2.3 Project Purpose and Scope

The purpose of this project is to implement the Phase II repairs by:

1) Filling the voids under the stilling basin, downstream training walls, and downstream apron with high permeability sand;

2) Hydraulically isolating the service spillway to prevent further piping and internal erosion;

3) Repair damage to the approach slab caused by the Phase I repairs; and,

4) Performing other repairs and upgrades to the spillway.

5) Perform work on the dam face to determine long-term best course of action for future erosion repairs

6) Increase the service life of the dam through concrete repairs and equipment upgrades

The proposed scope as defined in a feasibility study dated July 31, 2020 identified the following design elements to be included as part of the Phase II Dam Repairs:

1) Void Filling;

2) Structural Slab to Span Loose Soil Adjacent to Spillway;

3) Pressure Relief System;

4) Encase Spillway with Seepage Barrier;

5) Approach Channel Repairs;

6) Stoplog Guide and Tainter Gate Rehabilitation;

7) Upstream Soil Cement Refurbishment (Multiple Test Sections);

8) Mechanical/Electrical Upgrades; and,

9) Miscellaneous Improvements.

Work not identified or described shall be completed in accordance with best industry standards.

1.2.2 Location

The work is located at:
Manatee County Water Treatment Plant (Plant)
17915 Water Line Service Road
Bradenton, FL 34212

1.3 CONTRACT DRAWINGS

The following drawings accompany this specification and are a part thereof.

DRAWING INDEX

SHEET	DRAWING	TITLE
GENERAL		
1	G-001	COVER SHEET
2	G-002	GENERAL LOCATION MAP
3	G-003	CONSTRUCTION ACCESS PLAN
4	G-004	ON-SITE ACCESS PLAN
5	G-005	GENERAL NOTES
6	G-101	LAKE MANATEE DAM – SERVICE SPILLWAY COMPONENTS
CIVIL		
7	V-101	SERVICE SPILLWAY EXISTING CONDITIONS
8	D-101	DEMOLITION PLAN
9	C-000	SERVICE SPILLWAY SITE PLAN
10	C-001	SURFACE WATER PLAN
11	C-100	GROUNDWATER PRESSURE RELIEF WELL LOCATION PLAN
12	CU101	UPSTREAM SPILLWAY REPAIRS - EXISTING CONDITIONS PLAN
13	CU102	UPSTREAM SPILLWAY REPAIRS - EXISTING CONDITIONS SECTIONS 1 OF 2
14	CU103	UPSTREAM SPILLWAY REPAIRS - EXISTING CONDITIONS SECTIONS 2 OF 2
15	CU104	UPSTREAM SPILLWAY REPAIRS - COFFERDAM AND COMBI-WALL PLAN
16	CU105	STEP 1 - UPSTREAM SPILLWAY REPAIRS - INSTALL COMBI-WALL AND JET GROUT CELLS

17	CU106	STEP 2 - UPSTREAM SPILLWAY REPAIRS - EXCAVATE TO BOTTOM OF PILE CAP 1 OF 2
18	CU107	STEP 2 - UPSTREAM SPILLWAY REPAIRS - EXCAVATE TO BOTTOM OF PILE CAP 2 OF 2
19	CU108	STEP 3 - UPSTREAM SPILLWAY REPAIRS - INSTALL SHEET PILE STRUCTURAL BRACING
20	CU109	STEP 4 - UPSTREAM SPILLWAY REPAIRS - INSTALL DEWATER WELL AND GROUT PLUG
21	CU110	STEP 5 - UPSTREAM SPILLWAY REPAIR - PARTIAL DEWATER WITHIN CONTAINMENT
22	CU111	STEP 6 - UPSTREAM SPILLWAY REPAIRS - REPAIRS TO APPROACH SLAB
23	CU112	STEP 7 - FLOOD CONTAINMENT AND CUT-OFF SHEET PILE WALL
24	CU113	STEP 8 - UPSTREAM SPILLWAY REPAIRS INSTALL SECONDARY SEAL ON GROUT PLUG
25	CU114	STEP 8 - UPSTREAM SPILLWAY REPAIRS - CUT COMBI-WALL, INSTALL CONC. CAP, AND ARMOR GRADE
26	CU115	STEP 8 - UPSTREAM SPILLWAY REPAIRS PLUG TOP OF COMBI-WALL PIPE APPROACH
27	CU121	UPSTREAM EMBANKMENT GRADING PLAN
28	CU401	ENLARGED GRADING PLANS - UPSTREAM SOUTH EMBANKMENT
29	CU402	ENLARGED GRADING PLANS - UPSTREAM NORTH EMBANKMENTS
30	CU501	UPSTREAM EMBANKMENT DETAILS
31	CD101	VOID FILLING PLAN
32	CD111	CONSTRUCTION PHASE DOWNSTREAM GRADING PLAN
33	CD112	FINAL PHASE GRADING PLAN
34	CD201	CONSTRUCTION ACCESS ROAD PLAN AND PROFILE
35	CD202	SHEETPILE RETAINING WALL ELEVATIONS
36	CR101	TEST SECTION LOCATION MAP
37	CR401	UNIFORM SECTION MAT TEST SECTION
38	CR402	CONCRETE SLOPE PAVEMENT TEST SECTION
39	CR403	SPOT REPAIR TEST SECTION
40	CR404	FULL DEPTH SOIL CEMENT RECLAMATION TEST SECTION
41	CR405	SPOT REPAIR AT END OF FLUME
42	CR501	DETAILS

STRUCTURAL

43	S-001	STRUCTURAL NOTES 1 OF 3
44	S-002	STRUCTURAL NOTES 2 OF 3
45	S-003	STRUCTURAL NOTES 3 OF 3

	46	S-101	PROPOSED SPILLWAY SEEPAGE CUTOFF WALL SYSTEM
	47	SD111	OUTFALL APRON TRENCHING AND DEMOLITION PLAN
	48	SD112	OUTFALL APRON OVERLAY PLAN
	49	SD301	PROPOSED CUTOFF WALL CONFIGURATIONS
	50	SD302	JET GROUT AND DEEP SOIL MIX CUTOFF WALL ELEVATION
	51	SD501	OUTFALL APRON SECTIONS AND DETAILS
	52	SD502	PRESSURE RELIEF SYSTEM UPGRADES
	53	SS211	COARSE SCREEN CHAMBER REPAIR OPTIONS
	54	SS212	SERVICE SPILLWAY REPAIRS AND UPGRADES
	55	SS301	SECTION THROUGH OGEE
	56	SS302	SOUTH APPROACH AND TRAINING WALL ELEVATIONS
	57	SS303	NORTH APPROACH AND TRAINING WALL ELEVATIONS
	58	SC101	COFFERDAM OVERALL PLAN
	59	SC201	COFFERDAM ELEVATIONS
	60	SC301	COFFERDAM SECTIONS
	61	SC401	ENLARGED PLAN AT NORTH APPROACH WALL
	62	SC402	ENLARGED PLAN AT SOUTH APPROACH WALL
	63	SC403	ENLARGED PLANS
	64	SC501	COFFERDAM DETAILS - 1 OF 2
	65	SC502	COFFERDAM DETAILS - 2 OF 2
MECHANICAL (PENN PRO ENGINEERING)			
	66	ILD-001	GATE INSTRUMENTATION LOOP AND WIRING DIAGRAM
	67	ES-001	GATE HOIST NO. 1 ELECTRICAL LADDER DIAGRAM
	68	ES-002	GATE HOIST NO. 2 ELECTRICAL LADDER DIAGRAM
	69	ES-003	GATE HOIST NO. 3 ELECTRICAL LADDER DIAGRAM
	70	ES-004	GATE HORN ELECTRICAL LADDER DIAGRAM
	71	IE-001	DAM INSTRUMENTATION NOTES AND ELEVATION
	72	IED-002	DAM INSTRUMENTATION NOTES AND ELEVATION
	73	IED-003	INCLINOMITER WIRING DIAGRAM
	74	M-101	MECHANICAL PLAN AND SECTION
EROSION AND SEDIMENT CONTROL			
	75	CE-100	OVERALL EROSION AND SEDIMENT CONTROL PLAN
	76	CE-101	CONSTRUCTION PHASE EROSION AND SEDIMENT CONTROL PLAN
	77	CE-102	FINAL PHASE EROSION AND SEDIMENT CONTROL PLAN
	78	CE-501	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

Reference publications will not be furnished. Immediately check furnished drawings and notify the Owner of any discrepancies.

1.4 WORK RESCHEDULING

Allow for a maximum of 5 calendar days in the construction schedule where construction activity is prohibited due to Plant operations. Owner will provide at least 24-hour notification each time the restrictions are invoked. Contractor will align work with Manatee County statutory holidays.

Normal duty hours for work are from 7 a.m. to 7 p.m., Monday through Friday. Requests for additional work hours requires written approval from the Owner's Representative 7 days in advance of the proposed work period.

1.5 OCCUPANCY OF PREMISES AND CONCURRENT CONSTRUCTION PROJECTS

Normal operations at the Water Plant will continue throughout construction and it is the duty of the Contractor to perform this scope of work without interfering with these operations.

Owner's Representative: Kate Quilty, Superintendent, (941) 746-3020 ext. 5005

The following construction projects will be concurrent with this project:

(1) 6050470 Lake Manatee Ultra Filtration Membrane Process Upgrade – Construction of the water treatment plant, retrofitting the present system with an ultra-filtration membrane process. Project is scheduled to be complete Summer 2022.

(2) 6042370 Lake Manatee WTP SCADA Replacement - Replace existing Supervisory Control and Data Acquisition (SCADA) equipment at the Water Treatment Plant, to include hardware and software upgrades. Project is scheduled to be complete Late Spring, 2022.

1.6 ON-SITE PERMITS

1.6.1 Utility Outage Requests and Utility Connection Requests

Contractor is responsible for water and power utility connections.

Schedule work to minimize outages. For utility outages and connections required during the execution of work that affect existing systems, schedule outside the regular working hours or on weekends, as approved by the Owner's Representative. Schedule utility outages and connections to minimize disruptions to the Owner. No additional payment will be provided for utility outages and connections required to be performed outside the regular work hours.

Submit requests for utility outages and connections in writing to the Owner's Representative for approval at least 14 calendar days in advance of the time required. In each request, state the system involved, area involved, approximate duration of outage, and the nature of work involved.

Burning of trash or rubbish is not permitted

1.7 LOCATION OF UNDERGROUND UTILITIES

Coordinate with Plant Operator prior to start of excavation and comply with installation requirements for locating and marking underground utilities. Contact Plant to locate utilities a minimum of 48 hours prior to excavating, to mark utilities, and within sufficient time required if work occurs on a Monday or after a Holiday. Verify existing utility locations indicated on contract drawings, within area of work.

Identify and mark all other utilities not managed and located by the Plant. Scan the construction site with Ground Penetrating Radar (GPR), electromagnetic, or sonic equipment, and mark the surface of the ground, pier deck or paved surface where existing underground utilities are discovered. Verify the elevations of existing piping, utilities, and any type of underground or encased obstruction not indicated, or specified to be removed, that is indicated or discovered during scanning, in locations to be traversed by piping, ducts, and other work to be conducted or installed. Verify elevations before installing new work closer than nearest manhole or other structure at which an adjustment in grade can be made.

1.7.1 Notification Prior to Excavation

Notify the Owner's Representative at least 48 hours prior to starting excavation work.

1.7.1 Delivery Schedule

Notify the Owner's Representative in writing at least 7 calendar days in advance of the date on which the materials and equipment will be delivered.

1.7.2 Delivery Location

The materials and equipment will be delivered to pre-approved locations indicated in the construction drawings.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --