APPENDIX B
COST ENGINEERING AND RISK ANALYSIS

TABLE OF CONTENTS

LIST OF ATTACHMENTS

B COST ESTIMATES

B.1 General Information

U.S. Army Corps of Engineers (Corps) cost estimates for planning purposes are prepared in accordance with the following guidance:

- Engineer Regulation (ER) 1110-1-1300, *Cost Engineering Policy and General Requirements* (March 26, 1993);
- ER 1110-2-1302, *Civil Works Cost Engineering* (June 30, 2016);
- ER 1110-2-1150, Engineering and Design for Civil Works Projects (August 31, 1999);
- ER 1105-2-100, *Planning Guidance Notebook* (April 22, 2000, as amended);
- Engineer Manual (EM) 1110-2-1304 (Tables revised September 30, 2018), *Civil Works Construction Cost Index System* (September 30, 2018);
- CECW-CP Memorandum for Distribution, Subject: Initiatives to Improve the Accuracy of Total Project Costs in Civil Works Feasibility Studies Requiring Congressional Authorization (September 19, 2007);
- CECW-CE Memorandum for Distribution, Subject: Application of Cost Risk Analysis Methods to Develop Contingencies for Civil Works Total Project Costs (July 3, 2007); and
- Cost and Schedule Risk Analysis Process (March 2008).

The goal of the planning level cost estimate for the Lake Okeechobee Component A Storage Reservoir (LOCAR) study (Project) is to present a total project cost (i.e., construction and non-construction cost) for the selected plan, in today’s dollars, for Project justification/authorization. Additionally, the total Project cost summary sheet calculates a fully funded estimate (escalated for inflation through Project completion) for budgeting purposes. The intent of these costing efforts is to produce a final product (i.e., cost estimate) that is reliable and accurate and that supports the definition of the government’s and the non-federal sponsor’s obligations based on the current design plan. This estimate was prepared with the Project at the primary level and the Civil Works Breakdown Structure (CWBS) features code at the secondary Level and is supported by labor, equipment, and materials for most cost items. Additionally, some cost items are priced based on recent bid result data from ongoing, similar reservoir projects in the area. A risk analysis was prepared that addresses uncertainties in the Project and sets contingencies for selected plan cost items. A discussion of the risk analysis is included at the end of this appendix.

B.1.1 Plan Formation and Cost Estimates

The plan formulation is described in the main report and Appendix E. The final alternative considered includes a 200,000-acre-foot (ac-ft) reservoir, Alternative 1.

B.1.2 Project Scope for Recommended Plan

Alternative 1, the Recommended Plan, includes a 200,000 ac-ft aboveground storage reservoir north of the C-41A. The reservoir would cover an area of approximately 13,000 acres (ac) and be designed to have an average storage depth of 18 feet (ft) at its normal full-storage level. The reservoir would include two pump stations, two outflow culverts, an outflow canal, an interior divider dam with a gated control structure, and two ungated overflow spillways.

Construction. The reservoir would be constructed with a perimeter dam and an interior divider dam, with each having an average height of approximately 33 ft above the ground. The perimeter dam would be approximately 18 miles (mi) around, allowing for recreational opportunities. Material from the Project footprint and the surrounding seepage canal would be used to construct the dams. A gated outflow culvert would be constructed on the west side of the reservoir to discharge water into C-41A upstream of S-83, while another gated culvert would be constructed near the southeast side of the reservoir to discharge water into C-41A, downstream of S-83.

The reservoir would be constructed to have two storage cells (i.e., east and west) split by an interior divider dam to reduce wave runup. The interior divider dam would include a 1,500-cubic-foot-per-second (cfs), gated water-control structure to allow for controlled conveyance of water between the two cells. Each cell would include an ungated overflow spillway designed to discharge into C-41A.

A seepage canal would be constructed outside the perimeter dam of the reservoir. Seepage from the reservoir would collect in the canal and be returned to the reservoir via seepage pump stations. If the seepage pump stations were not operational, the seepage collected in the canal would eventually overflow into the C-41A via overflow weir structures.

Operations. Two pump stations would be used to fill the reservoir at 1,500 cfs. One pump station would be located downstream of S-84 and move water from C-38 into C-41A, upstream of S-84. The second pump would be located on the C-41A canal upstream of State Highway 70 to pump water from C-41A directly into the reservoir. Water would be conveyed to the reservoir in one of two ways: (1) full or partial diversion of flow in C-41A downstream of S-83, or (2) back-pumping water from Lake Okeechobee via pumping from C-41A, downstream of S-84, into C-41A between S-83 and S-84. Water would be returned to Lake Okeechobee by discharging from the reservoir to C-41A upstream and/or downstream of S-83. The location of the reservoir outflow culverts would allow for water to be conveyed south to provide opportunities for storage in surrounding canals (e.g., C-41A, C-41, C-40, and C-39A).

B.2 Estimating Methodology

The Micro-Computer Aided Cost Estimating System (MCACES)/Second Generation (MII) cost estimate for the Selected Plan is based on the pre-final Engineering Appendix and Annex C-1 (Plans) provided. The estimate is formatted following the CWBS.

B.2.1 Quantities

Detailed quantity take-offs have been prepared for each of the primary features of the project and are consistent with the current level of design. Attachment 1 includes all quantity calculations currently developed for use in the estimate, sorted by proposed construction contract. These quantities include assumptions and sources of data used for the quantity development.

B.2.2 Work Breakdown Structure

The estimate includes both construction and non-construction costs. The construction costs, developed in MCACES, fall under the following feature codes:

- 03 Reservoirs;
- 08 Roads, Railroads, and Bridges;
- 09 Channels and Canals;
- 11 Levees and Floodwalls;
- 13 Pumping Plant;
- 14 Recreation Facilities; and
- 15 Flood Control and Diversion Structures.

The non-construction costs, included in the total project cost summary, fall under the following feature codes:

- 01 Lands and Damages;
- 30 Planning, Engineering, and Design; and
- 31 Construction Management.

B.2.3 MCACES Cost Item Development

The direct cost for Project elements identified in the plans and scope of work were developed in the MCACES/MII estimate using detailed labor, equipment, and materials for most of the cost items. Some cost items are priced using recent bids and quotes received on other similar reservoir projects in the area. The database line item productivities have been used where possible, with productivity adjustments made, as necessary. Where required, new crews have been created using the appropriate number of equipment, size of equipment, and labor trades to fit the work activity, and detailed production rate calculation have been developed (see Attachment 2). A majority of the costs have been compared with contractor bid prices from other reservoir projects in the area for reasonableness of use in this estimate.

B.2.3.1 Labor Rates

Federal wage determination rates have been used in the estimate. The wage rates for various counties were compared for use in the estimate. Most of the region had similar rates, as such, Palm Beach county rates were selected for the wage and fringe rates. Additionally, a separate value of $12.50 an hour has been added to account for potential incentivization that may be required, as well as for lodging costs that the labor would need. Recommended values for these issues ranged from $5 to $15 dollars per hour beyond the current wage and fringe values.

B.2.4 Contracting Plan

Due to the size of the project, the estimate assumes this work would be broken out into eight (8) separate construction contracts. The prime contractors would be a heavy civil contractor and would self-perform embankment placement, excavation, and foundation drain installation for embankment and canal work.

Primary subcontractor work in each contract has been assumed to include dewatering, landscaping, reinforced concrete, pile driving, asphalt, and pump installation.

B.2.5 Cost Estimate Productivities and Markups

Crew productivities were adjusted as necessary to be consistent with other ongoing and completed reservoir projects in the area, as well as to account for efficiency factors/weather delays. In addition, a 7 percent material sales tax and a 17 percent overtime markup have been included in the estimate.

The following prime contractor's markups were applied to the direct and subcontractor's costs:

- Job Office Overhead – Prime contractor job office overhead (JOOH) values are based on calculated values for each of the proposed construction contracts. Subcontractor JOOH is assumed to be 7.5 percent.
- Home Office Overhead – 8 percent prime contractor and 12.5 percent subcontractor.
- Profit – Prime contractor profits have been calculated using the profit weighted guidelines for each contract. Subcontractor profit is assumed to be 10 percent.
- Performance Bond – These have been calculated using Table B for each of the proposed contracts.

B.2.6 Non-Construction Costs

Non-construction costs include real estate, planning, engineering, and design (PED), and construction management (supervision and administration [S&A]). Real estate costs were taken from the Appendix D Real Estate. The total real estate cost input in the total project cost summary spreadsheet includes all costs for land payments, administrative costs, condemnations, relocation assistance and contingencies.

PED cost was calculated based upon a percentage of 25 percent of construction costs.

Construction management cost was calculated based upon a percentage of 9.2 percent of construction costs.

B.2.7 Tentative Project Schedule

A tentative project schedule was prepared to present a reasonable schedule for the work that could be used in estimating durations for job office overhead calculations within the cost estimate. The construction duration and sequence were established based on productivities from recent and ongoing reservoir projects in the area. The construction schedule will be updated as the design of the Project proceeds into plans and specifications phase. Once the contract is award, the contractor will provide a construction schedule that may be different from this draft schedule based on historical data. The Project schedule is provided in Attachment 3.

B.2.8 MCACES Summary

A detailed printout of the MCACES cost estimate is provided in Attachment 4. This summary presents the current construction costs of the project based on the assumptions and information discussed above.

Any estimate of total project and/or construction costs prepared by Tetra Tech represents its professional judgment at the time of this submittal and is supplied for the guidance of the client. Tetra Tech has developed the current construction cost estimate per USACE cost estimating guidance, along with the best available information, and Tetra Tech's cost estimating experience. But Tetra Tech does not have control over the cost of contractor labor and material, or over competitive bidding or market conditions. As such, Tetra Tech is not able to guarantee the accuracy of such estimates as compared to contractor bids or actual costs to the client at some future date.

B.3 Risk and Uncertainty Analysis

B.3.1 Risk Analysis Methods

The risk analysis process for this study followed the Corps requirements as well as the guidance provided by the Cost Engineering Directory of Expertise for Civil Works (Cost Engineering DX). The risk analysis process reflected within this report uses probabilistic cost and schedule risk analysis methods within the framework of the Oracle Crystal Ball software application. First, members of the Project Delivery Team (PDT) met to identify risk items for both the construction cost estimate and the construction schedule. Then, the risk register was completed (see Attachment 5). After that, the risk model was customized using commercially available Oracle Crystal Ball software. The most likely "high" and "low" values were assigned to estimate items using the software's "Assumption" function and the triangular distribution. "Forecasts" were then defined and the model was run.

After the model was run, the results were extracted from the sensitivity chart, the forecast chart, and the percentiles table for major items. The percentiles were then used to determine the contingency at the 80 percent confidence level. The appropriate contingency was then input in the total project cost summary spreadsheet.

B.3.2 Risk Analysis Results

The current risk analysis calculated a 55 percent contingency for costs and a 33 percent contingency on the schedule, which is based on the 80 percent confidence level. The current sensitivity charts, which provide an assessment of the contribution to the contingency calculation, are presented below.

Figure 1 - Sensitivity Chart, Construction Contingency

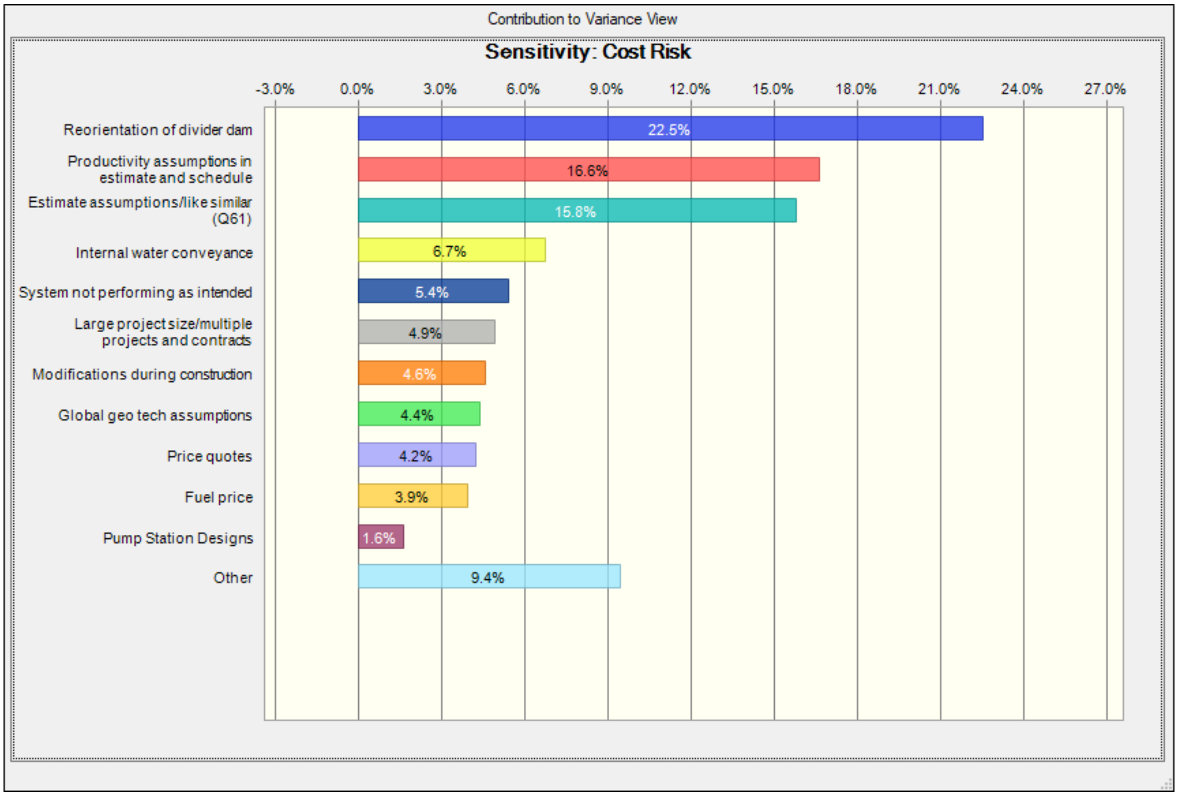
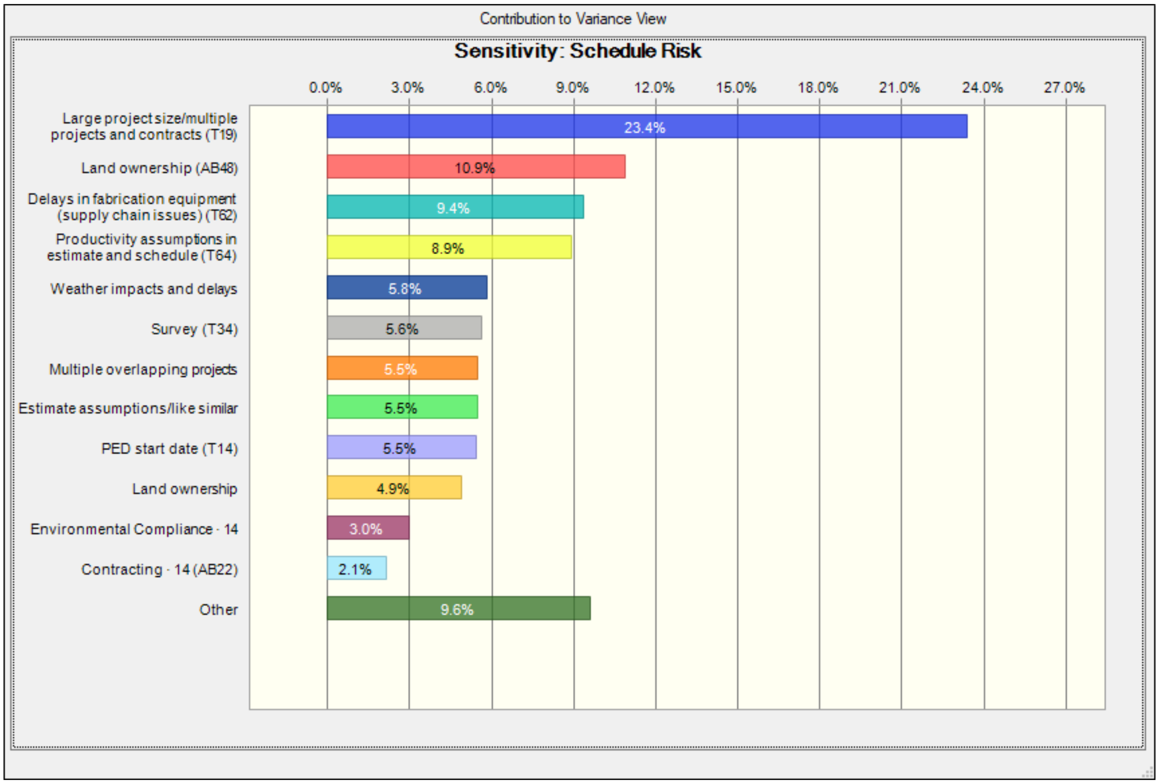


Figure 2 - Sensitivity Chart, Schedule Contingency



B.4 Total Project Cost Summary

The TPCS addresses inflation through Project completion (accomplished by escalation to midpoint of construction per ER 1110-2-1302, Appendix C). It is based on the scope of the Recommended Plan and the Project schedule. The TPCS includes federal and non-federal costs for lands and damages, all construction features, PED, and S&A, along with the appropriate contingencies and escalation associated with each of these activities as discussed above. The current TPCS is provided in Attachment 6.

B.4.1 Cost Agency Technical Review Certification

WALLA WALLA COST ENGINEERING MANDATORY CENTER OF EXPERTISE

COST AGENCY TECHNICAL REVIEW

CERTIFICATION STATEMENT

For Project No. 511864

North of Lake Okeechobee Storage Reservoir (LOCAR)
Section 203 Feasibility Study

The Lake Okeechobee (LOCAR) Section 203 Feasibility Study, as presented by the Non-Federal Interest South Florida Water Management District, has undergone a successful Cost Agency Technical Review (Cost ATR), performed by the Walla Walla District Cost Engineering Mandatory Center of Expertise (Cost MCX) team. The Cost ATR included study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies. This certification signifies the products meet the quality standards as prescribed in ER 1110-2-1150 Engineering and Design for Civil Works Projects and ER 1110-2-1302 Civil Works Cost Engineering.

As of February 8, 2024, the Cost MCX certifies the estimated total project cost:

FY24 Project First Cost: $3,544,488,000
Fully Funded Amount: $4,257,100,000

Cost Certification assumes Efficient Implementation (Funding). It remains the responsibility of the District to correctly reflect these cost values within the Final Report and to implement effective project management controls and implementation procedures including risk management through the period of Federal Participation.

for **Michael P. Jacobs, PE, CCE**
Chief, Cost Engineering MCX
Walla Walla District

**** TOTAL PROJECT COST SUMMARY ****

PROJECT: **Lake Okeechobee Component A Reservoir**
PROJECT NO: P2# 511864
LOCATION: Lake Okeechobee, FL

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

Program Year (Budget EC): 2024
Effective Price Level Date: 1 OCT 23

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**						**TOTAL PROJECT COST (FULLY FUNDED)**			
WBS NUMBER *A*	Civil Works Feature & Sub-Feature Description *B*	COST ($K) *C*	CNTG ($K) *D*	CNTG (%) *E*	TOTAL ($K) *F*	ESC (%) *G*	COST ($K) *H*	CNTG ($K) *I*	**TOTAL ($K)** *J*	Spent Thru: **1-Oct-23** ($K)	**TOTAL FIRST COST** ($K) *K*	INFLATED (%) *L*	COST ($K) *M*	CNTG ($K) *N*	FULL ($K) *O*
03	RESERVOIRS	$1,306,218	$718,420	55.0%	$2,024,638	0.0%	$1,306,218	$718,420	$2,024,638	$0	$2,024,638	24.9%	$1,631,796	$897,488	$2,529,285
09	CHANNELS & CANALS	$3,966	$2,181	55.0%	$6,148	0.0%	$3,966	$2,181	$6,148	$0	$6,148	19.3%	$4,734	$2,603	$7,337
11	LEVEES & FLOODWALLS	$5,410	$2,975	55.0%	$8,385	0.0%	$5,410	$2,975	$8,385	$0	$8,385	26.1%	$6,822	$3,752	$10,574
13	PUMPING PLANT	$171,569	$94,363	55.0%	$265,932	0.0%	$171,569	$94,363	$265,932	$0	$265,932	17.4%	$201,411	$110,776	$312,187
14	RECREATION FACILITIES	$1,426	$784	55.0%	$2,210	0.0%	$1,426	$784	$2,210	$0	$2,210	38.0%	$1,967	$1,082	$3,048
15	FLOODWAY CONTROL & DIVERSION STRU	$110,010	$60,506	55.0%	$170,516	0.0%	$110,010	$60,506	$170,516	$0	$170,516	20.3%	$132,309	$72,770	$205,078
	CONSTRUCTION ESTIMATE TOTALS:	$1,598,599	$879,229		$2,477,828	0.0%	$1,598,599	$879,229	$2,477,828	$0	$2,477,828	23.8%	$1,979,039	$1,088,471	$3,067,510
01	LANDS AND DAMAGES	$130,005	$89,238	68.6%	$219,243	0.0%	$130,005	$89,238	$219,243	$0	$219,243	6.9%	$138,987	$95,404	$234,391
30	PLANNING, ENGINEERING & DESIGN	$399,650	$219,807	55.0%	$619,457	0.0%	$399,650	$219,807	$619,457	$0	$619,457	10.1%	$440,138	$242,076	$682,214
31	CONSTRUCTION MANAGEMENT	$147,071	$80,889	55.0%	$227,960	0.0%	$147,071	$80,889	$227,960	$0	$227,960	19.8%	$176,120	$96,866	$272,986
	PROJECT COST TOTALS:	$2,275,325	$1,269,164	55.8%	$3,544,488		$2,275,325	$1,269,164	**$3,544,488**	$0	**$3,544,488**	20.1%	$2,734,284	$1,522,817	$4,257,100

ESTIMATED TOTAL PROJECT COST: $4,257,100

_________________________ **CHIEF, COST ENGINEERING, xxx**

_________________________ **PROJECT MANAGER, xxx**

_________________________ **CHIEF, REAL ESTATE, xxx**

_________________________ **CHIEF, PLANNING, xxx**

_________________________ **CHIEF, ENGINEERING, xxx**

_________________________ **CHIEF, OPERATIONS, xxx**

_________________________ **CHIEF, CONSTRUCTION, xxx**

_________________________ **CHIEF, CONTRACTING,xxx**

_________________________ **CHIEF, PM-PB, xxxx**

_________________________ **CHIEF, DPM, xxx**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 1

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Estimate Prepared: **7-Jan-24**
Effective Price Level: 1-Oct-23

Program Year (Budget EC): 2024
Effective Price Level Date: 1 OCT 23

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	RISK BASED CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 1 or CONTRACT 1													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$63,588	$34,973	55.0%	$98,561	0.0%	$63,588	$34,973	$98,561	2029Q1	13.8%	$72,366	$39,801	$112,167
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$14,471	$7,959	55.0%	$22,430	0.0%	$14,471	$7,959	$22,430	2029Q1	13.8%	$16,468	$9,058	$25,526
	CONSTRUCTION ESTIMATE TOTALS:	$78,059	$42,932	55.0%	**$120,991**		$78,059	$42,932	$120,991			$88,834	$48,859	$137,693
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2026Q2	5.0%	$1,639	$902	$2,541
2.0%	Planning & Environmental Compliance	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2026Q2	5.0%	$1,639	$902	$2,541
9.0%	Engineering & Design	$7,025	$3,864	55.0%	$10,889	0.0%	$7,025	$3,864	$10,889	2026Q2	5.0%	$7,377	$4,058	$11,435
2.0%	Reviews, ATRs, IEPRs, VE	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2026Q2	5.0%	$1,639	$902	$2,541
2.0%	Life Cycle Updates (cost, schedule, risks)	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2026Q2	5.0%	$1,639	$902	$2,541
1.0%	Contracting & Reprographics	$781	$429	55.0%	$1,210	0.0%	$781	$429	$1,210	2026Q2	5.0%	$820	$451	$1,271
4.0%	Engineering During Construction	$3,122	$1,717	55.0%	$4,840	0.0%	$3,122	$1,717	$4,840	2029Q1	11.5%	$3,481	$1,915	$5,396
2.0%	Planning During Construction	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2029Q1	11.5%	$1,741	$957	$2,698
0.5%	Adaptive Management & Monitoring	$390	$215	55.0%	$605	0.0%	$390	$215	$605	2029Q1	11.5%	$435	$239	$674
0.5%	Project Operations	$390	$215	55.0%	$605	0.0%	$390	$215	$605	2026Q2	5.0%	$410	$225	$635
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$5,620	$3,091	55.0%	$8,711	0.0%	$5,620	$3,091	$8,711	2029Q1	11.5%	$6,266	$3,446	$9,713
1.0%	Project Operation:	$781	$429	55.0%	$1,210	0.0%	$781	$429	$1,210	2029Q1	11.5%	$870	$479	$1,349
1.0%	Project Management	$781	$429	55.0%	$1,210	0.0%	$781	$429	$1,210	2029Q1	11.5%	$870	$479	$1,349
	CONTRACT COST TOTALS:	$104,755	$57,615		$162,370		$104,755	$57,615	**$162,370**			$117,663	$64,715	**$182,378**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 2

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024					
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 2 or CONTRACT 2													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$3,234	$1,779	55.0%	$5,013	0.0%	$3,234	$1,779	$5,013	2031Q1	19.8%	$3,874	$2,131	$6,005
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$95,155	$52,335	55.0%	$147,490	0.0%	$95,155	$52,335	$147,490	2031Q1	19.8%	$113,995	$62,697	$176,692
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$15,918	$8,755	55.0%	$24,672	0.0%	$15,918	$8,755	$24,672	2031Q1	19.8%	$19,069	$10,488	$29,557
	CONSTRUCTION ESTIMATE TOTALS:	$114,307	$62,869	55.0%	**$177,175**		$114,307	$62,869	$177,175			$136,939	$75,316	$212,255
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2027Q2	7.3%	$2,454	$1,349	$3,803
2.0%	Planning & Environmental Compliance	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2027Q2	7.3%	$2,454	$1,349	$3,803
9.0%	Engineering & Design	$10,288	$5,658	55.0%	$15,946	0.0%	$10,288	$5,658	$15,946	2027Q2	7.3%	$11,041	$6,073	$17,114
2.0%	Reviews, ATRs, IEPRs, VE	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2027Q2	7.3%	$2,454	$1,349	$3,803
2.0%	Life Cycle Updates (cost, schedule, risks)	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2027Q2	7.3%	$2,454	$1,349	$3,803
1.0%	Contracting & Reprographics	$1,143	$629	55.0%	$1,772	0.0%	$1,143	$629	$1,772	2027Q2	7.3%	$1,227	$675	$1,902
4.0%	Engineering During Construction	$4,572	$2,515	55.0%	$7,087	0.0%	$4,572	$2,515	$7,087	2031Q1	16.5%	$5,325	$2,929	$8,253
2.0%	Planning During Construction	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2031Q1	16.5%	$2,662	$1,464	$4,127
0.5%	Adaptive Management & Monitoring	$572	$314	55.0%	$886	0.0%	$572	$314	$886	2031Q1	16.5%	$666	$366	$1,032
0.5%	Project Operations	$572	$314	55.0%	$886	0.0%	$572	$314	$886	2027Q2	7.3%	$613	$337	$951
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$8,230	$4,527	55.0%	$12,757	0.0%	$8,230	$4,527	$12,757	2031Q1	16.5%	$9,584	$5,271	$14,856
1.0%	Project Operation:	$1,143	$629	55.0%	$1,772	0.0%	$1,143	$629	$1,772	2031Q1	16.5%	$1,331	$732	$2,063
1.0%	Project Management	$1,143	$629	55.0%	$1,772	0.0%	$1,143	$629	$1,772	2031Q1	16.5%	$1,331	$732	$2,063
	CONTRACT COST TOTALS:	$153,400	$84,370		$237,769		$153,400	$84,370	**$237,769**			$180,533	$99,293	**$279,826**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 3

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024					
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***I***	***J***	***P***	***L***	***M***	***N***	***O***
	PHASE 3 or CONTRACT 3													
03	RESERVOIRS	$170,499	$93,774	55.0%	$264,273	0.0%	$170,499	$93,774	$264,273	2030Q2	17.3%	$200,067	$110,037	$310,104
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$170,499	$93,774	55.0%	**$264,273**		$170,499	$93,774	$264,273			$200,067	$110,037	$310,104
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2027Q1	6.7%	$3,640	$2,002	$5,642
2.0%	Planning & Environmental Compliance	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2027Q1	6.7%	$3,640	$2,002	$5,642
9.0%	Engineering & Design	$15,345	$8,440	55.0%	$23,785	0.0%	$15,345	$8,440	$23,785	2027Q1	6.7%	$16,380	$9,009	$25,389
2.0%	Reviews, ATRs, IEPRs, VE	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2027Q1	6.7%	$3,640	$2,002	$5,642
2.0%	Life Cycle Updates (cost, schedule, risks)	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2027Q1	6.7%	$3,640	$2,002	$5,642
1.0%	Contracting & Reprographics	$1,705	$938	55.0%	$2,643	0.0%	$1,705	$938	$2,643	2027Q1	6.7%	$1,820	$1,001	$2,821
4.0%	Engineering During Construction	$6,820	$3,751	55.0%	$10,571	0.0%	$6,820	$3,751	$10,571	2030Q2	14.6%	$7,813	$4,297	$12,110
2.0%	Planning During Construction	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2030Q2	14.6%	$3,907	$2,149	$6,055
0.5%	Adaptive Management & Monitoring	$852	$469	55.0%	$1,321	0.0%	$852	$469	$1,321	2030Q2	14.6%	$977	$537	$1,514
0.5%	Project Operations	$852	$469	55.0%	$1,321	0.0%	$852	$469	$1,321	2027Q1	6.7%	$910	$501	$1,411
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$12,276	$6,752	55.0%	$19,028	0.0%	$12,276	$6,752	$19,028	2030Q2	14.6%	$14,064	$7,735	$21,799
1.0%	Project Operation:	$1,705	$938	55.0%	$2,643	0.0%	$1,705	$938	$2,643	2030Q2	14.6%	$1,953	$1,074	$3,028
1.0%	Project Management	$1,705	$938	55.0%	$2,643	0.0%	$1,705	$938	$2,643	2030Q2	14.6%	$1,953	$1,074	$3,028
	CONTRACT COST TOTALS:	$228,809	$125,845		**$354,655**		$228,809	$125,845	**$354,655**			$264,404	$145,422	**$409,826**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024	FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 4 or CONTRACT 4													
03	RESERVOIRS	$1,119,282	$615,605	55.0%	$1,734,887	0.0%	$1,119,282	$615,605	$1,734,887	2033Q1	26.1%	$1,411,526	$776,339	$2,187,865
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$5,410	$2,975	55.0%	$8,385	0.0%	$5,410	$2,975	$8,385	2033Q1	26.1%	$6,822	$3,752	$10,574
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$1,124,692	$618,580	55.0%	**$1,743,272**		$1,124,692	$618,580	$1,743,272			$1,418,348	$780,091	$2,198,439
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2027Q1	6.7%	$24,011	$13,206	$37,218
2.0%	Planning & Environmental Compliance	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2027Q1	6.7%	$24,011	$13,206	$37,218
9.0%	Engineering & Design	$101,222	$55,672	55.0%	$156,894	0.0%	$101,222	$55,672	$156,894	2027Q1	6.7%	$108,051	$59,428	$167,479
2.0%	Reviews, ATRs, IEPRs, VE	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2027Q1	6.7%	$24,011	$13,206	$37,218
2.0%	Life Cycle Updates (cost, schedule, risks)	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2027Q1	6.7%	$24,011	$13,206	$37,218
1.0%	Contracting & Reprographics	$11,247	$6,186	55.0%	$17,433	0.0%	$11,247	$6,186	$17,433	2027Q1	6.7%	$12,006	$6,603	$18,609
4.0%	Engineering During Construction	$44,988	$24,743	55.0%	$69,731	0.0%	$44,988	$24,743	$69,731	2033Q1	21.6%	$54,721	$30,096	$84,817
2.0%	Planning During Construction	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2033Q1	21.6%	$27,360	$15,048	$42,409
0.5%	Adaptive Management & Monitoring	$5,623	$3,093	55.0%	$8,716	0.0%	$5,623	$3,093	$8,716	2033Q1	21.6%	$6,840	$3,762	$10,602
0.5%	Project Operations	$5,623	$3,093	55.0%	$8,716	0.0%	$5,623	$3,093	$8,716	2027Q1	6.7%	$6,003	$3,302	$9,304
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$80,978	$44,538	55.0%	$125,516	0.0%	$80,978	$44,538	$125,516	2033Q1	21.6%	$98,497	$54,173	$152,671
1.0%	Project Operation:	$11,247	$6,186	55.0%	$17,433	0.0%	$11,247	$6,186	$17,433	2033Q1	21.6%	$13,680	$7,524	$21,204
1.0%	Project Management	$11,247	$6,186	55.0%	$17,433	0.0%	$11,247	$6,186	$17,433	2033Q1	21.6%	$13,680	$7,524	$21,204
	CONTRACT COST TOTALS:	$1,509,336	$830,135		**$2,339,471**		$1,509,336	$830,135	**$2,339,471**			$1,855,231	$1,020,377	**$2,875,609**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 5

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024	FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 5 or CONTRACT 5													
03	RESERVOIRS	$16,437	$9,041	55.0%	$25,478	0.0%	$16,437	$9,041	$25,478	2032Q1	22.9%	$20,204	$11,112	$31,316
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$59,958	$32,977	55.0%	$92,935	0.0%	$59,958	$32,977	$92,935	2032Q1	22.9%	$73,697	$40,533	$114,230
	CONSTRUCTION ESTIMATE TOTALS:	$76,396	$42,018	55.0%	**$118,413**		$76,396	$42,018	$118,413			$93,901	$51,646	$145,546
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2027Q2	7.3%	$1,640	$902	$2,542
2.0%	Planning & Environmental Compliance	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2027Q2	7.3%	$1,640	$902	$2,542
9.0%	Engineering & Design	$6,876	$3,782	55.0%	$10,657	0.0%	$6,876	$3,782	$10,657	2027Q2	7.3%	$7,379	$4,059	$11,438
2.0%	Reviews, ATRs, IEPRs, VE	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2027Q2	7.3%	$1,640	$902	$2,542
2.0%	Life Cycle Updates (cost, schedule, risks)	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2027Q2	7.3%	$1,640	$902	$2,542
1.0%	Contracting & Reprographics	$764	$420	55.0%	$1,184	0.0%	$764	$420	$1,184	2027Q2	7.3%	$820	$451	$1,271
4.0%	Engineering During Construction	$3,056	$1,681	55.0%	$4,737	0.0%	$3,056	$1,681	$4,737	2032Q1	19.0%	$3,637	$2,000	$5,637
2.0%	Planning During Construction	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2032Q1	19.0%	$1,818	$1,000	$2,819
0.5%	Adaptive Management & Monitoring	$382	$210	55.0%	$592	0.0%	$382	$210	$592	2032Q1	19.0%	$455	$250	$705
0.5%	Project Operations	$382	$210	55.0%	$592	0.0%	$382	$210	$592	2027Q2	7.3%	$410	$225	$635
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$5,500	$3,025	55.0%	$8,526	0.0%	$5,500	$3,025	$8,526	2032Q1	19.0%	$6,546	$3,601	$10,147
1.0%	Project Operation:	$764	$420	55.0%	$1,184	0.0%	$764	$420	$1,184	2032Q1	19.0%	$909	$500	$1,409
1.0%	Project Management	$764	$420	55.0%	$1,184	0.0%	$764	$420	$1,184	2032Q1	19.0%	$909	$500	$1,409
	CONTRACT COST TOTALS:	$102,523	$56,388		**$158,910**		$102,523	$56,388	**$158,910**			$123,344	$67,839	**$191,183**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 6

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024	FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER *A*	Civil Works Feature & Sub-Feature Description *B*	COST ($K) *C*	CNTG ($K) *D*	CNTG (%) *E*	TOTAL ($K) *F*	ESC (%) *G*	COST ($K) *H*	CNTG ($K) *I*	TOTAL ($K) *J*	Mid-Point Date *P*	INFLATED (%) *L*	COST ($K) *M*	CNTG ($K) *N*	FULL ($K) *O*
	PHASE 6 or CONTRACT 6													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$732	$403	55.0%	$1,135	0.0%	$732	$403	$1,135	2030Q2	17.3%	$859	$473	$1,332
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$12,826	$7,054	55.0%	$19,880	0.0%	$12,826	$7,054	$19,880	2030Q2	17.3%	$15,050	$8,278	$23,328
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$19,664	$10,815	55.0%	$30,479	0.0%	$19,664	$10,815	$30,479	2030Q2	17.3%	$23,074	$12,691	$35,764
	CONSTRUCTION ESTIMATE TOTALS:	$33,222	$18,272	55.0%	**$51,494**		$33,222	$18,272	$51,494			$38,983	$21,441	$60,424
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2027Q2	7.3%	$713	$392	$1,105
2.0%	Planning & Environmental Compliance	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2027Q2	7.3%	$713	$392	$1,105
9.0%	Engineering & Design	$2,990	$1,644	55.0%	$4,634	0.0%	$2,990	$1,644	$4,634	2027Q2	7.3%	$3,209	$1,765	$4,974
2.0%	Reviews, ATRs, IEPRs, VE	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2027Q2	7.3%	$713	$392	$1,105
2.0%	Life Cycle Updates (cost, schedule, risks)	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2027Q2	7.3%	$713	$392	$1,105
1.0%	Contracting & Reprographics	$332	$183	55.0%	$515	0.0%	$332	$183	$515	2027Q2	7.3%	$357	$196	$553
4.0%	Engineering During Construction	$1,329	$731	55.0%	$2,060	0.0%	$1,329	$731	$2,060	2030Q2	14.6%	$1,522	$837	$2,360
2.0%	Planning During Construction	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2030Q2	14.6%	$761	$419	$1,180
0.5%	Adaptive Management & Monitoring	$166	$91	55.0%	$257	0.0%	$166	$91	$257	2030Q2	14.6%	$190	$105	$295
0.5%	Project Operations	$166	$91	55.0%	$257	0.0%	$166	$91	$257	2027Q2	7.3%	$178	$98	$276
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$2,392	$1,316	55.0%	$3,708	0.0%	$2,392	$1,316	$3,708	2030Q2	14.6%	$2,740	$1,507	$4,248
1.0%	Project Operation:	$332	$183	55.0%	$515	0.0%	$332	$183	$515	2030Q2	14.6%	$381	$209	$590
1.0%	Project Management	$332	$183	55.0%	$515	0.0%	$332	$183	$515	2030Q2	14.6%	$381	$209	$590
	CONTRACT COST TOTALS:	$44,584	$24,521		**$69,105**		$44,584	$24,521	**$69,105**			$51,555	$28,355	**$79,910**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 7

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024					
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23	FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 7 or CONTRACT 7													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$1,426	$784	55.0%	$2,210	0.0%	$1,426	$784	$2,210	2036Q3	38.0%	$1,967	$1,082	$3,048
15	FLOODWAY CONTROL & DIVERSION STRU	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$1,426	$784	55.0%	**$2,210**		$1,426	$784	$2,210			$1,967	$1,082	$3,048
01	LANDS AND DAMAGES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2030Q4	15.8%	$33	$18	$51
2.0%	Planning & Environmental Compliance	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2030Q4	15.8%	$33	$18	$51
9.0%	Engineering & Design	$128	$71	55.0%	$199	0.0%	$128	$71	$199	2030Q4	15.8%	$149	$82	$230
2.0%	Reviews, ATRs, IEPRs, VE	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2030Q4	15.8%	$33	$18	$51
2.0%	Life Cycle Updates (cost, schedule, risks)	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2030Q4	15.8%	$33	$18	$51
1.0%	Contracting & Reprographics	$14	$8	55.0%	$22	0.0%	$14	$8	$22	2030Q4	15.8%	$17	$9	$26
4.0%	Engineering During Construction	$57	$31	55.0%	$88	0.0%	$57	$31	$88	2036Q3	31.1%	$75	$41	$116
2.0%	Planning During Construction	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2036Q3	31.1%	$37	$21	$58
0.5%	Adaptive Management & Monitoring	$7	$4	55.0%	$11	0.0%	$7	$4	$11	2036Q3	31.1%	$9	$5	$14
0.5%	Project Operations	$7	$4	55.0%	$11	0.0%	$7	$4	$11	2030Q4	15.8%	$8	$5	$13
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$103	$56	55.0%	$159	0.0%	$103	$56	$159	2036Q3	31.1%	$135	$74	$209
1.0%	Project Operation:	$14	$8	55.0%	$22	0.0%	$14	$8	$22	2036Q3	31.1%	$19	$10	$29
1.0%	Project Management	$14	$8	55.0%	$22	0.0%	$14	$8	$22	2036Q3	31.1%	$19	$10	$29
	CONTRACT COST TOTALS:	$1,913	$1,052		**$2,965**		$1,913	$1,052	**$2,965**			$2,566	$1,411	**$3,977**

**** TOTAL PROJECT COST SUMMARY ****

REAL ESTATE ONLY

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024	FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	Real Estate Only													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$0	$0	0.0%	**0**		$0	$0	$0			$0	$0	$0
01	LANDS AND DAMAGES	$130,005	$89,238	68.6%	$ 219,243	0.0%	$130,005	$89,238	$219,243	2026Q4	6.9%	$138,987	$95,404	$234,391
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Planning & Environmental Compliance	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
9.0%	Engineering & Design	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Reviews, ATRs, IEPRs, VE	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Life Cycle Updates (cost, schedule, risks)	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Contracting & Reprographics	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
4.0%	Engineering During Construction	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Planning During Construction	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
0.5%	Adaptive Management & Monitoring	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
0.5%	Project Operations	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$0	$0	55.0%	0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Project Operation:	$0	$0	55.0%	0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Project Management	$0	$0	55.0%	0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONTRACT COST TOTALS:	$130,005	$89,238		**219,243**		$130,005	$89,238	**$219,243**			$138,987	$95,404	**$234,391**

Design Maturity Determination for Cost Certification

Date: 1/23/24

P2 Designation/Project Name: Lake Okeechobee Component A Reservoir (LOCAR) Section 203 Feasibility Study

The Chief of Engineering is responsible for the technical content and engineering sufficiency for all engineering products produced by the command. As such, I have performed the Management Control Evaluation per Engineer Regulation (ER) 1110-2-1150, Engineering and Design for Civil Works Projects, Appendix H, Internal Management Control Review Checklist.

The current design DOES NOT require HQ approval (i.e., engineering waivers), requiring a deviation from mandatory requirements and mandatory standards, as defined in ERs, Engineering Manuals, Engineering Technical letters, and Engineering Circulars.

The current hydrology and hydraulics modeling is at 20 % design maturity, per reference (h) below.

The current geotechnical data and subsurface investigations are at 20 % design maturity, per reference (h) below. Subsurface investigations shall also include investigations of potential borrow and spoil areas.

The current survey data is at 20 % design maturity, per reference (h) below.

Other major technical and/or scope assumptions and risks include the following, which will be refined as the design progresses.

Many design assumptions are based on SFWMD standard design practice and past construction experience for several other recent similar projects in similar geologic/construction settings. While data collection for survey and geotechnical are considered preliminary, confidence in concept design details presented are appropriate for feasibility level cost estimating for the project. Please refer to the risk register for additional identified risk items.

Due to potential conservative assumptions in overwash rates and the elimination of the wave wall feature from the proposed design, the embankment height estimates at this stage are considered to be conservative. Stability and seepage analysis indicate the proposed dam geometry is conservative. It is expected, during PED, that refinements in embankment height are possible for potential future cost savings during design.

The aggregate for all features is 20 % design maturity. Therefore, per the CECW-EC memorandum dated 05-June-2023, I certify that the design deliverables used to generate the cost products for this project and the estimate meet the requirements for a CLASS 3 estimate, as per reference (a) below. Design risks, impacts and remaining efforts are summarized on page 2.

Considering risks and assumptions noted above, along with all other concerns documented in the Risk Register, the Cost and Schedule Risk Analysis has developed a contingency of 55 % at the 80 % confidence level for the defined project scope.

Chief of Engineering & Construction

Lucine Dadrian 1/24/24

Printed Name

Lucine Dadrian

Signature

Design Maturity Determination for Cost Certification, Remaining Work

If an engineering waiver is required, list the risks and remaining design work needed to mitigate this issue in the current design. Identify remaining effort to complete the design required for 100% design.

N/A at this time.

Identify remaining effort to complete geotechnical design effort required for 100% design. List the risks and cost and schedule impacts needed to mitigate this issue in the current design.

Additional geotechnical investigations/program, materials testing, along with pump testing to verify seepage assumptions on the 12,000-acre reservoir footprint are required to finalize the Geotechnical Design. The schedule for the additional site investigations are programmed into the cost estimate and are presented in the Feasibility Study. It has been determined that sufficient quantities of materials are available on-site for construction of the dam. Rip rap slope protection and drain materials will be imported in from off-site sources. The final geotechnical investigations are expected to confirm current assumptions.

Identify remaining effort required to complete H&H required for 100% design. List the risks and cost and schedule impacts needed to mitigate this issue in the current design.

Due to limited geotechnical data for seepage and groundwater conditions adjacent to the reservoir, additional 3D groundwater seepage modeling will be required to finalize the seepage management system design and establish operations to maintain compliance with the Savings Clause requirements. The current design incorporates sufficient operational flexibility to accommodate variations in anticipated seepage impacts around the reservoir. Final H&H conveyance analysis is also required to verify compliance with the Savings Clause. The schedule for the final H&H modeling are programmed into the cost estimate and are presented in the Feasibility Study.

Identify remaining effort needed to complete survey data required for 100% design. List the risks and cost and schedule impacts needed to mitigate this issue in the current design.

At the Feasibility stage, topography is based on Highlands County LiDAR 2018, with a level of vertical accuracy of +/- 0.12'. Upon acquisition of the property, a detailed site survey is required including boundary, utility and topographic verification. The schedule for the final survey is programmed into the cost estimate and presented in the Feasibility Study. Risks are low for a large quantity variance due to the Reservoir being built on existing ground. Minor elevation differences will only impact structures adjacent to the canal and the appropriate contingency is added to the risk register.

If the project is anticipated to be executed in parts, provide a design assessment (percent complete) of each part/phase below.

N/A

References:

a. ER 1110-2-1302 – Civil Works Cost Engineering
b. CECW-EC memorandum dated 05-June-2023MFR, Guidance on Cost Engineering Products update for Civil Works Projects in accordance with Engineer Regulation 1110-2-1302 – Civil Works Cost Engineering
c. ER 1165-2-217 – Civil Works Review Policy
d. ER 1110-2-1150 – Engineering and Design for Civil Works Projects
e. ER 1110-3-12 – Quality Management
f. ER 1110-345-700 – Design Analysis, Drawings and Specifications
g. EM 5-1-11 – Project Delivery Business Process (PDBP)
h. Engineering and Construction Bulletin (ECB) 2023-9 – Civil Works Design Milestone Checklists

Design Maturity Determination for Cost Certification – Instructions

Paragraph 1 – Design Date: Use the drop-down menu to populate the date of the design.

Paragraph 1 – Project Information: Enter the P2 Project number and Project name.

Paragraph 3 – Engineering Waivers: Use the drop-down menu to populate this field with either “Does,” or “Does not.” If an engineering waiver is needed, or anticipated to be needed, provide the specific waiver required for the Project. A waiver is any deviation from current mandatory standards, as indicated.

Paragraph 4 – Hydrology and Hydraulics: Populate this field with the % design maturity.

Paragraph 5 – Geotechnical Information: Populate this field with the % design maturity.

Paragraph 6 – Survey Data: Populate this field with the % design maturity.

Paragraph 7 – Other Technical Assumptions and/or Scope: Enter any other major technical assumptions or scope assumptions here. Only include assumptions that pertain to design. Template discussion fields are provided as a courtesy. Please include additional pages as necessary.

Paragraph 8 – Signature: Print the name and title and provide the signature for the District’s Chief of Engineering. This authority cannot be delegated; however, the Deputy Chief of Engineering and Design may sign the form in the absence of the Chief of Engineering. All fillable fields must be populated (use N/A if not applicable) in order for the document to be signed.

Page 2 – Remaining Work: Identify the current baseline design assumptions and the remaining design effort and risks to complete 100% design for the authorized project. If the project is to be broken into parts or phases, provide details on the aggregate design level of each phase and anticipated timeline for completion.

This form is required for all Civil Works projects for initial Cost Certification and Recertification, based on Policy Clarification MFR dated 05 June 2023, *Guidance on Cost Engineering Products update for Civil Works Projects in accordance with Engineer Regulation 1110-2-1302 – Civil Works Cost Engineering*.
The Point of Contact for this action is Mr. Mukesh Kumar, Cost Engineering Community of Practice Leader, CECW-EC, Mukesh.Kumar@usace.army.mil.
Version 1: 01 October 2023.

ATTACHMENT 1

QUANTITY TAKE-OFFS

Appendix

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR) FEASIBILITY STUDY

Cost Estimate Scope Assumptions, Representative Drawings, and Quantity Takeoffs

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR) FEASIBILITY STUDY

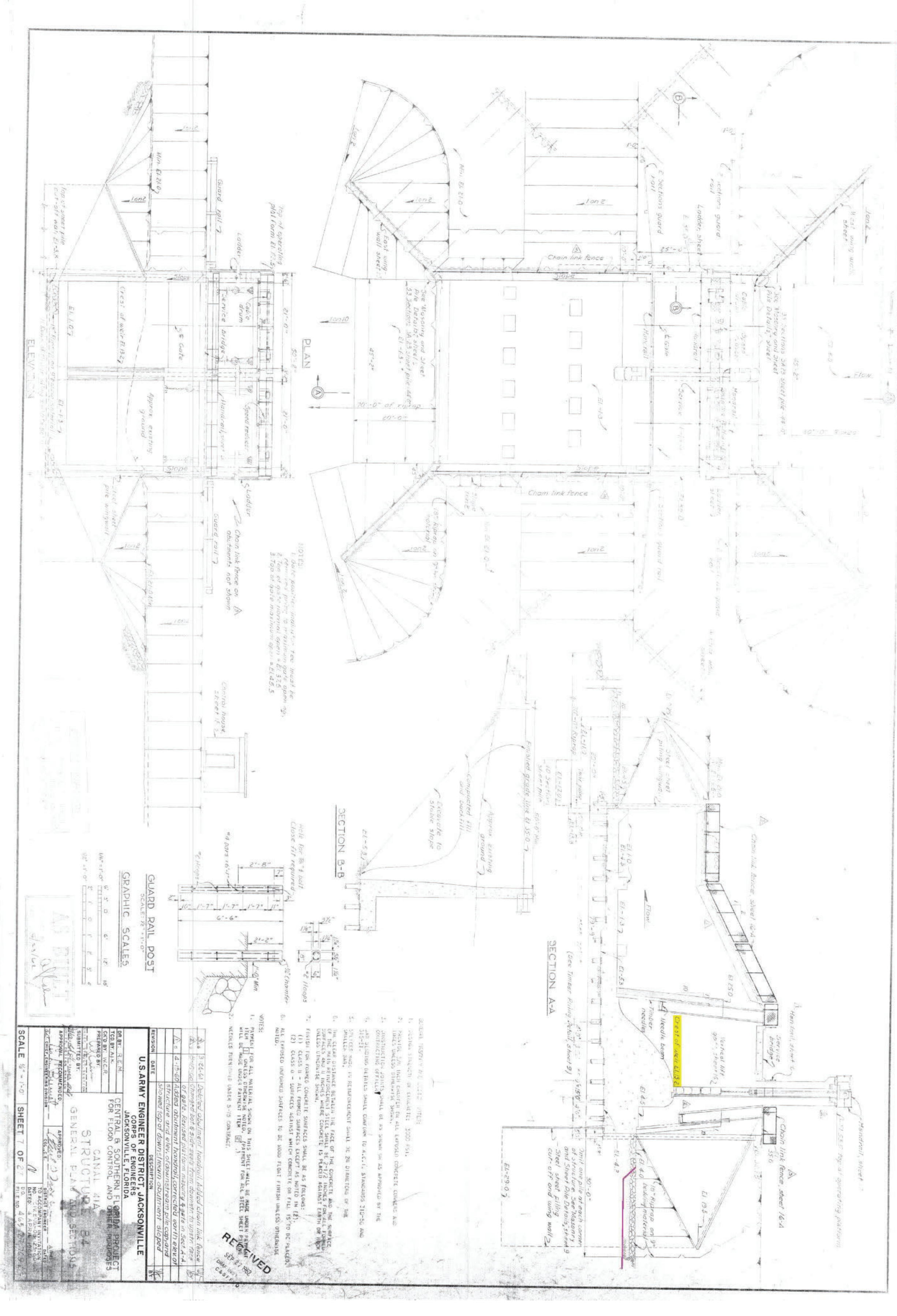
<u>CONTRACT 1 – S-84 SITE</u>

- Demo Spillway S-84 and S-84X
- Construct Spillway S-84+
- Construct Pump Station PS-1

Feature of Work:	STRUCTURE S-84+: DEMO EXISTING S-84 AND S-84A(X) SPILLWAY, CONSTRUCT NEW SPILLWAY
Scope Given:	To accommodate the peak design outflow rate from LOCAR during Probable Maximum Precipitation (PMP) Scenarios 1 and 2, and improve operational flexibility of C-41A, S-84+ will have three 22’ wide x 14’ tall roller gates, that will provide a total design discharge capacity of 9,000 cfs.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to existing S-84 and S-84A structures.
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature.
Sequence of Work:	
Key Outstanding Questions/Issues:	

Representative Drawings/Photos: S-84 and S-84A

Exempt F.S. 119.07(3)(a)(b)(1)



Feature of Work:	STRUCTURE S-84: EXISTING SPILLWAY DEMO AND RE-CONSTRUCTION

Quantity Take Off:

User Input Row Calculation Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	210.0	FT	Assume 20' from top of excavation
Length	=	200.0	FT	Assume 20' from length of excavation
Depth	=	50.0	FT	Approx. from As-Built
Total Perimeter	=	820.0	LF	Sheetpile perimeter
Area	=	42,000.0	SF	

Spillway Excavation

Assume Spillway Excavation will be partially performed during canal excavation, if no canal exists

Length	=	160.0	FT		Add'l 40' assumed for wingwall installation each way				
Total Depth	=	40.0	FT						
Thickness of Organic	=	2.0	FT						
Thickness of Cap Rock	=	8.0	FT						
Thickness of Fort Thompson	=	30.0	FT						
Canal Slope		1.5	:1		From Typical Sections				
					Canal bottom: 80' wide, Canal top: 160' wide				
Bottom Width	=	50.0	FT						
Top Width	=	170.0	FT		Assumes slope same as canal				
Cross Section	=	2,000.0	SF						
Cross Section Organic	=	0.0	SF		Removed due to Existing				
Cross Section of Cap Rock	=	0.0	SF		Removed due to Existing				
Cross Section of Fort Thompson	=	0.0	SF		Removed due to Existing				
Organic Cut Volume	=	0.0	CF	=	-	BCY	=		LCY
Cap Rock Cut Volume	=	0.0	CF	=	-	BCY	=		LCY
Fort Thompson Cut Volume	=	0.0	CF	=	-	BCY	=		LCY
EXCAVATION		TOTAL		=	-	BCY	=	-	LCY

Structure Dimensions and Volumes

Units	=	-	EA	For use only if existing canal is located where structure is to be placed, tremie pour below area of structure, approx. 20 ft past structure dimensions, 5 ft thick			
Underwater Concrete Seal Volume	=	-	CF				
(Unreinforced concrete)							
Tremie Volume	=	-	CF	=	-	CY	Tremie Concrete

Structure	1	Length	80	ft	Width	50	ft
Gate Openings	2	Height	40	ft	Width	25	ft

Number of Gates	=	2.0	EA				
Foundation							
Depth	=	4.0	FT				Assumed
Length	=	80.0	FT				
Width	=	50.0	FT				
Volume	=	16,000.0	CF	=	592.6	CY	
Superstructure/Gate Structure							
Number of Towers	=	3.0	EA				
Tower Cross-Section	=	129.5	SF				Approx. from As-Built
Tower Width	=	3.0	FT				
Volume	=	1,165.5	CF	=	43.2	CY	

Number of Piers	=	1.0	EA				
Pier Top Cross-Section	=	120.0	SF				Approx. from As-Built
Pier Height	=	35.0	FT				Approx. from As-Built
Volume	=	4,200.0	CF	=	155.6	CY	
Abutment Walls	=	2.0	EA				
Side Cross-Section of Abutment Wall	=	2,300.0	SF				Approx. from As-Built
Wall Width	=	2.5	FT				Approx. from As-Built
Volume	=	11,500.0	CF	=	425.9	CY	
Operating Platform Cross-Section	=	4.5	SF				Approx. from As-Built
Beam Length	=	45.0	FT				Width minus abutment walls
volume of elevated beam	=	202.5	CF	=	7.5	CY	
Service Bridge Cross-Section	=	21.4	SF				
Width	=	45.0	FT				
Volume	=	964.1	CF	=	35.7	CY	
OGEE volume							
Cross section	=	250.0	SF				Approx. from As-Built
Width	=	45.0	FT				
OGEE Spillway volume	=	11,250.0	CF	=	416.7	CY	
Elevated approach apron							Approx. from As-Built
Length	=	6.5	FT				
Thickness	=	4.5	FT				
Volume	=	1,316.3	CF	=	48.8	CY	
Baffles							
Units	=	10.0	EA				
Length	=	3.0	FT				
Width	=	4.0	FT				
Thickness	=	2.3	FT				
Volume	=	276.0	CF	=	10.2	CY	
CONCRETE		TOTAL		=	1,736.1	CY	Concrete
Steel Rebar							Assumed 1.2% volume of concrete
STEEL REBAR		TOTAL		=	20.8	CY	Rebar
					137.7	TONS	

Wing Walls and Cutoff

Assume same for US and DS sides

Wingwalls							
Number	=	4.0	EA				
Length	=	20.0	FT				Length to reach past riprap banks
Depth	=	45.0	FT				Past bottom of structure of slab
Area of Sheet Pile	=	3,600.0	SF				
Pile Cap							x4
Height	=	2.0	FT				
Width	=	2.0	FT				
Volume	=	320.0	CF	=	11.9	CY	Concrete
Cutoff Walls							
Number	=	2.0	EA				US & DS
Depth	=	15.0	FT				Min. 10' required
Width	=	50.0	FT				

Area of Sheet Pile = 1,500.0 SF

TOTAL SHEETPILE 5,100.0 SF Steel Sheetpile Wall

Anchor Rod Length = 60.0 FT
spacing = 4.0 FT
number of rods = 96.0 EA

RIP RAP

Lengths and depths assumed, and similar on US and DS

Number = 2.0 EA
Length = 50.0 FT Average from As-Built (70'/30')
Width = 160.0 FT Assume full Canal Width
Depth = 3.0 FT Average depth
Volume = 48,000.0 CF = 1,777.8 CY Riprap

Geotextile Filter Fabric = 9,000.0 SF Fabric

NEW GATES

Assumptions borrowed from As-Built or Similar Structure

Gate weight calculations

Height = 12.0 Assume 2' taller than opening
Width = 22.0

3/8" Plate steel = 15.3 lb/sq ft Given
1/2" Plate steel = 20.4 lb/sq ft Given
1" Plate Steel = 40.8 lb/sq ft Given

Gate Skin 3/8" Plate Steel = 264.0 sq ft Same size as gate dimensions above
3/8" Plate stiffeners and seal angles = 87.0 sq ft Assume 5 sq ft for seal angles and 82 for stiffeners
Horizontal C-Channels (1/2") = 541.7 sq ft Assume ea. channel is equivalent to 26"x25' (10 Channels).
Vertical C-Channels (1/2") = 346.7 sq ft Assume each vertical channel is 26"x16' (10 Channels).
Pull Pad eyes (1") = 4.0 sq ft Assume 4 pad eyes per gate @ 1 sq ft each

Total 3/8" Plus 10% for misc. items = 386.1 sq ft = 5,907.3 lbs
Total 1/2" plus 15% for misc items = 1,021.6 sq ft = 20,840.3 lbs
Total 1" steel = 4.0 sq ft = 163.2 lbs

lbs/sq ft for 28'x14' gate = 101.9 lb/sq ft
Area of single gate = 264.0 sq ft assumed 3 ft bigger then opening in each direction
Approximate weight of gate = 26,910.8 lb
Overweight factor for larger gates (10%) = 29,601.9 LB EA = 59,203.8 LB Total
Total Steel Gate Weight = 29.6 Tons

Gate embeds/seal lengths

Gate Dimensions
Width = 22.0 FT
Height = 12.0 FT
Gate Well Height = 40.0 FT
Gate Well Embed = 102.0 FT
Total Embed Length = 204.0 FT 2 gates

Seal Length = 46.0 FT seal length is the perimeter of bottom and both sides
Total Seal Length = 138.0 FT total of 3 gates

US and DS Bulkhead Slot = 180.0 FT 6 times vertical plus width of new gate per slot

Bulkheads = 29,601.9 LB EA Assume same size as gates

Number = 4.0 EA x2 per gate needed

Total Length of embeds = 384.0 FT

Total Weight of Stoplogs = 118,407.7 LB = 59.2 Tons

TOTAL J BULB for GATES AND STOP LOGS = 567.0 FT

Backfill

Assume structure/wingwalls are backfilled as part of levee construction

Railings and Ladders

Railing

Length = 540.0 FT Assumed 4 time the length of a wing wall and 6 times the width of the structure and twice the length

Height = 3.5 FT

Ladders

Count = 6.0 EA Assumed ladders on each side of the structure

Height = 18.5 FT average of all three types

Total Height = 111.0 FT

Boat Barrier

Number = 2.0 EA

Piles for Buoys = 3.0 EA Assume barrier has 3 points (2 at shore, 1 at canal)

Length = 180.0 FT/EA Assumed

Total Length = 360.0 FT Buoy style barrier

Total Piles = 6.0 EA

Site Fencing

Length = 1,000.0 FT Approx. chainlink fence required ~600', assume 1,000'

Gates = 4.0 EA Assumed

SWPPP

Length = 1,000.0 LF Assumed

Floating Silt Boom = 250.0 LF Assumed

Control Building

Size = 288.0 SF 12x24

Electrical = NEEDED

Communications = NEEDED

Modular Precast Concrete Structure

Exterior Walls

Height = 12.0 FT

Perimeter Length = 72.0 FT

Thickness = 4.0 IN

Volume = 288.0 = 10.7 CY

Interior Wall

Height = 12.0 FT

Length	=	12.0	FT				
Thickness	=	4.0	IN				
Volume	=	48.0		=	1.8	CY	
Floor Slab							
Thickness	=	6.0	IN				
Area	=	288.0	SF				
Volume	=	144.0	CF	=	5.3	CY	
Roof							
Thickness	=	5.0	IN				
Area	=	288.0	SF				
Volume	=	120.0	CF	=	4.4	CY	
Fuel Pad	=	96.0	CF				Assume 8'x12'x12" thick reinforced concrete slab on grade pad
	=	3.6	CY				
CONCRETE		TOTAL		=	25.8	CY	

Total Doors	=	2.0	EA	
Size	=	4'-0" x 7'-0"		
Conduit Boxes	=	1.0	EA/DOOR	
Lock Boxes	=	1.0	EA/DOOR	
Fire Extinguishers	=	2.0	EA	
26" x 26" Exhaust Hoods	=	1.0	EA	
30" x 30" Exhaust Hoods	=	1.0	EA	
30" x 30"Intake Hoods	=	2.0	EA	
18" x 18" Intake Air Hood	=	1.0	EA	
18" x 18" Exhaust Hood	=	1.0	EA	
20" Exhaust Fan	=	1.0	EA	Coolair CBA20L, 1 HP, 4702 CFM @ 3/8" SP
12" Exhaust Fan	=	1.0	EA	Coolair CDU12F17, 1/6 HP, 1210 CFM @ 1/4" SP
Generator Fuel Tank	=	1,000.0	GALLON	
Gravel Pad	=	216.0	CF	Assume 50% greater area than building, 6" thick
	=	8.0	CY	
Filter Fabric		472.0	SF	

Quantities Summary

Coffer dam:	820.0	LF	
Coffer dam:	42,000.0	SF	
Tremie Concrete:	0.0	CY	
Excavation:	-	CY	
Concrete:	1,736.1	CY	
Steel Rebar:	20.8	CY (?)	
Steel Rebar:	137.7	TONS	
Sheetpile:	5,100.0	SF	160' Wall length x 30' Long sheets
Cap:	11.9	CY	
Railing:	540.0	LF	
Ladders:	6.0	EA	
Gates:	2.0	EA	12'x22'
Total steel gate wt	29.6	Tons	
Stoplogs	4.0	EA	
Total stoplog wt	59.20	Tons	
Seals:	138.0	LF	
Backfill:	-	LCY	
Rip-rap:	1,777.8	CY	
Geofabric:	9,000.0	SF	
Boat Barrier:	360.0	LF	
Barrier Piles:	6.0	EA	
Floating Curtain:	250.0	LF	
Silt Fence:	1,000.0	LF	
Control bldg.:	25.8	CY	Concrete
Total Doors	2.0	EA	Size 4'-0" x 7'-0"
Conduit Boxes	1.0	EA/DOOR	
Lock Boxes	1.0	EA/DOOR	
Fire Extinguishers	2.0	EA	
26" x 26" Exhaust Hoods	1.0	EA	
30" x 30" Exhaust Hoods	1.0	EA	
30" x 30"Intake Hoods	2.0	EA	
18" x 18" Intake Air Hood	1.0	EA	
18" x 18" Exhaust Hood	1.0	EA	
20" Exhaust Fan	1.0	EA	
12" Exhaust Fan	1.0	EA	
CTRL BLDG Gravel Pad	8.0	CY	
CTRL BLDG Pad Fabric	472.0	SF	

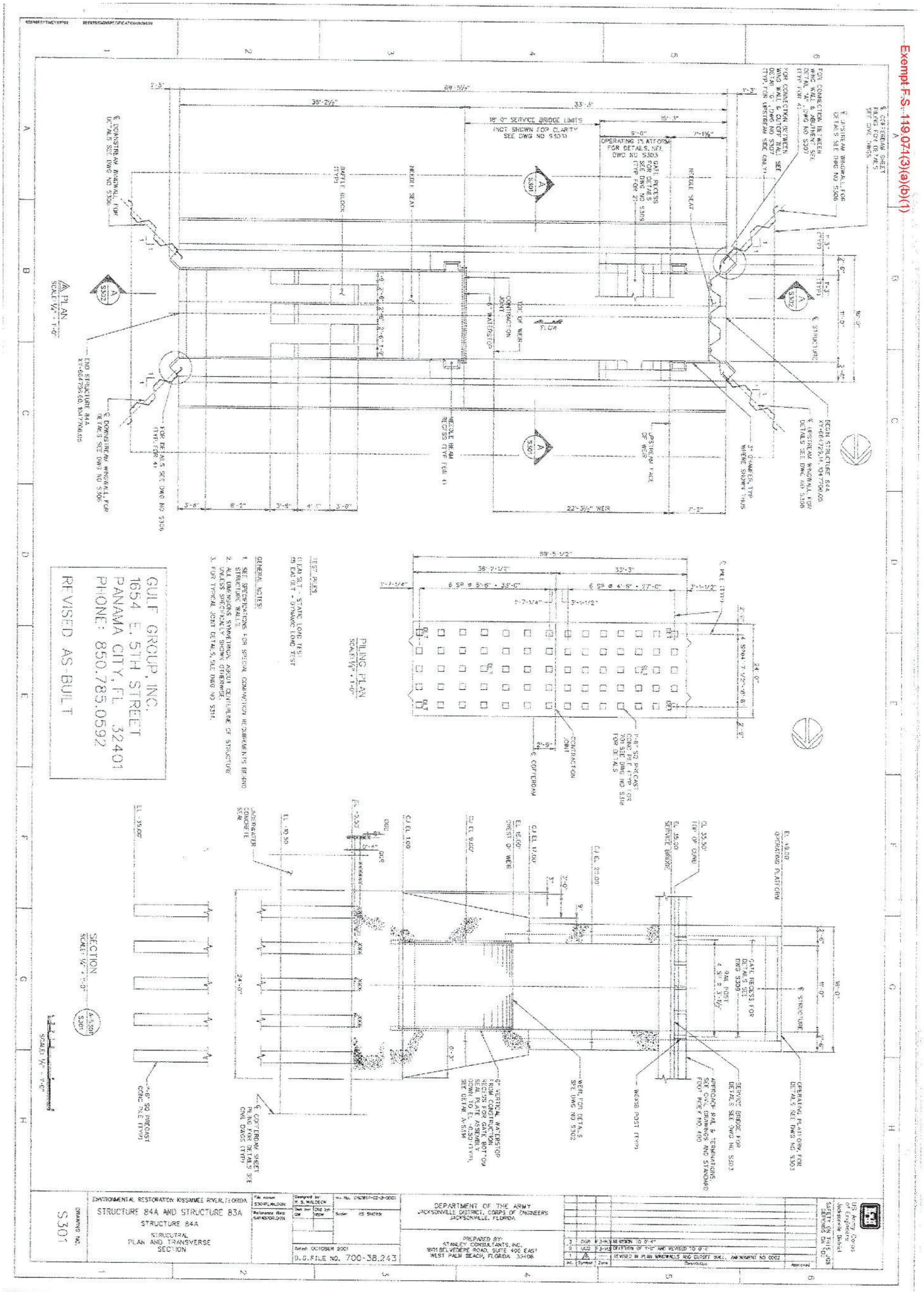
DEMO

12"x15' Timber Pile Supports	162	ea	Approx. from As-Built

NEW

1.5'x30' SQ Concrete Piles	160	ea	Approx. @ 5' Spacing

Representative Drawings/Photos: S-84 and S-84A



GULF GROUP, INC.
1654 E. 5TH STREET
PANAMA CITY, FL 32401
PHONE: 850.785.0592
REVISED AS-BUILT

Exempt F.S. 119.07(3)(a)(b)(1)

Feature of Work:	STRUCTURE S-84X: EXISTING SPILLWAY DEMO (assume similar to S-84, 1 gate)
Quantity Take Off:	

User Input	Row Calculation	Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	176.0	FT	Assume 20' from top of excavation
Length	=	192.0	FT	Assume 20' from length of excavation
Depth	=	50.0	FT	Approx. from As-Built
Total Perimeter	=	736.0	LF	Sheetpile perimeter
Area	=	33,792.0	SF	

Spillway Excavation

Assume Spillway Excavation will be partially performed during canal excavation, if no canal exists

Length	=	152.0	FT	Add'l 40' assumed for wingwall installation each way					
Total Depth	=	40.0	FT						
Thickness of Organic	=	2.0	FT						
Thickness of Cap Rock	=	8.0	FT						
Thickness of Fort Thompson	=	30.0	FT						
Canal Slope		1.5	:1	From Typical Sections					
				Canal bottom: 80' wide, Canal top: 160' wide					
Bottom Width	=	16.0	FT						
Top Width	=	136.0	FT	Assumes slope same as canal					
Cross Section	=	640.0	SF						
Cross Section Organic	=	0.0	SF	Removed due to Existing					
Cross Section of Cap Rock	=	0.0	SF	Removed due to Existing					
Cross Section of Fort Thompson	=	0.0	SF	Removed due to Existing					
Organic Cut Volume	=	0.0	CF	=	-	BCY	=		LCY
Cap Rock Cut Volume	=	0.0	CF	=	-	BCY	=		LCY
Fort Thompson Cut Volume	=	0.0	CF	=	-	BCY	=		LCY
EXCAVATION	TOTAL			=	-	BCY	=	-	LCY

Structure Dimensions and Volumes

Units	=	1.0	EA	For use only if existing canal is located where structure is to be placed, tremie pour below area of structure, approx. 20 ft past structure dimensions, 5 ft thick		
Underwater Concrete Seal Volume (Unreinforced concrete)	=	31,360.0	CF			
Tremie Volume	=	31,360.0	CF	=	1,161.5 CY	Tremie Concrete

Structure	1	Length	72	ft	Width	16	ft
Gate Openings	1	Height	40	ft	Width	25	ft

Number of Gates	=	1.0	EA			
Foundation						
Depth	=	6.0	FT	Assumed		
Length	=	72.0	FT			
Width	=	16.0	FT			
Volume	=	6,912.0	CF	=	256.0	CY
Superstructure/Gate Structure						
Number of Towers	=	2.0	EA			
Tower Cross-Section	=	129.5	SF	Approx. from As-Built		
Tower Width	=	3.0	FT			
Volume	=	777.0	CF	=	28.8	CY

Number of Piers	=	-	EA				
Pier Top Cross-Section	=	120.0	SF				Approx. from As-Built
Pier Height	=	35.0	FT				Approx. from As-Built
Volume	=	-	CF	=	-	CY	
Abutment Walls	=	2.0	EA				
Side Cross-Section of Abutment Wall	=	2,300.0	SF				Approx. from As-Built
Wall Width	=	2.5	FT				Approx. from As-Built
Volume	=	11,500.0	CF	=	425.9	CY	
Operating Platform Cross-Section	=	4.5	SF				Approx. from As-Built
Beam Length	=	11.0	FT				Width minus abutment walls
volume of elevated beam	=	49.5	CF	=	1.8	CY	
Service Bridge Cross-Section	=	21.4	SF				
Width	=	11.0	FT				
Volume	=	235.7	CF	=	8.7	CY	
OGEE volume							
Cross section	=	250.0	SF				Approx. from As-Built
Width	=	11.0	FT				
OGEE Spillway volume	=	2,750.0	CF	=	101.9	CY	
Elevated approach apron							Approx. from As-Built
Length	=	6.5	FT				
Thickness	=	4.5	FT				
Volume	=	321.8	CF	=	11.9	CY	
Baffles							
Units	=	4.0	EA				
Length	=	3.0	FT				
Width	=	4.0	FT				
Thickness	=	2.3	FT				
Volume	=	110.4	CF	=	4.1	CY	
CONCRETE		TOTAL		=	839.1	CY	Concrete
Steel Rebar							Assumed 1.2% volume of concrete
STEEL REBAR		TOTAL		=	10.1	CY	Rebar
					66.6	TONS	

Wing Walls and Cutoff

Assume same for US and DS sides

Wingwalls							
Number	=	4.0	EA				
Length	=	60.0	FT				Length to reach past riprap banks
Depth	=	47.0	FT				Past bottom of structure of slab
Area of Sheet Pile	=	11,280.0	SF				
Pile Cap					x4		
Height	=	2.0	FT				
Width	=	2.0	FT				
Volume	=	960.0	CF	=	35.6	CY	Concrete
Cutoff Walls							
Number	=	2.0	EA				US & DS
Depth	=	15.0	FT				Min. 10' required
Width	=	16.0	FT				

Area of Sheet Pile = 480.0 SF

TOTAL SHEETPILE 11,760.0 SF Steel Sheetpile Wall

Anchor Rod Length = 60.0 FT
spacing = 4.0 FT
number of rods = 96.0 EA

RIP RAP

Lengths and depths assumed, and similar on US and DS

Number = 2.0 EA
Length = 50.0 FT Average from As-Built (70'/30')
Width = 160.0 FT Assume full Canal Width
Depth = 3.0 FT Average depth
Volume = 48,000.0 CF = 1,777.8 CY Riprap

Geotextile Filter Fabric = 9,000.0 SF Fabric

GATES

Assumptions borrowed from As-Built or Similar Structure

Gate weight calculations

Height = 12.0 Assume 2' taller than opening
Width = 22.0

3/8" Plate steel = 15.3 lb/sq ft Given
1/2" Plate steel = 20.4 lb/sq ft Given
1" Plate Steel = 40.8 lb/sq ft Given

Gate Skin 3/8" Plate Steel = 264.0 sq ft Same size as gate dimensions above
3/8" Plate stiffeners and seal angles = 87.0 sq ft Assume 5 sq ft for seal angles and 82 for stiffeners
Horizontal C-Channels (1/2") = 541.7 sq ft Assume ea. channel is equivalent to 26"x25' (10 Channels).
Vertical C-Channels (1/2") = 346.7 sq ft Assume each vertical channel is 26"x16' (10 Channels).
Pull Pad eyes (1") = 4.0 sq ft Assume 4 pad eyes per gate @ 1 sq ft each

Total 3/8" Plus 10% for misc. items = 386.1 sq ft = 5,907.3 lbs
Total 1/2" plus 15% for misc items = 1,021.6 sq ft = 20,840.3 lbs
Total 1" steel = 4.0 sq ft = 163.2 lbs

lbs/sq ft for 28'x14' gate = 101.9 lb/sq ft
Area of single gate = 264.0 sq ft assumed 3 ft bigger then opening in each direction
Approximate weight of gate = 26,910.8 lb
Overweight factor for larger gates (10%) = 29,601.9 LB EA = 29,601.9 LB Total
Total Steel Gate Weight = 14.8 Tons

Gate embeds/seal lengths

Gate Dimensions
Width = 22.0 FT
Height = 12.0 FT
Gate Well Height = 40.0 FT
Gate Well Embed = 102.0 FT
Total Embed Length = 102.0 FT 2 gates

Seal Length = 46.0 FT seal length is the perimeter of bottom and both sides
Total Seal Length = 138.0 FT total of 3 gates

US and DS Bulkhead Slot = 180.0 FT 6 times vertical plus width of new gate per slot

Bulkheads = 29,601.9 LB EA Assume same size as gates

Number	=	2.0	EA	x2 per gate needed
Total Length of embeds	=	282.0	FT	
Total Weight of Stoplogs	=	59,203.8	LB	= 29.6 Tons
TOTAL J BULB for GATES AND STOP LOGS	=	567.0	FT	

Backfill

Assume structure/wingwalls are backfilled as part of levee construction

Railings and Ladders

Railing				
Length	=	480.0	FT	Assumed 4 time the length of a wing wall and 6 times the width of the structure and twice the length
Height	=	3.5	FT	
Ladders				
Count	=	6.0	EA	Assumed ladders on each side of the structure
Height	=	18.5	FT	average of all three types
Total Height	=	111.0	FT	

Boat Barrier

Number	=	2.0	EA	
Piles for Buoys	=	3.0	EA	Assume barrier has 3 points (2 at shore, 1 at canal)
Length	=	180.0	FT/EA	Assumed
Total Length	=	360.0	FT	Buoy style barrier
Total Piles	=	6.0	EA	

Site Fencing

Length	=	1,000.0	FT	Approx. chainlink fence required ~600', assume 1,000'
Gates	=	4.0	EA	Assumed

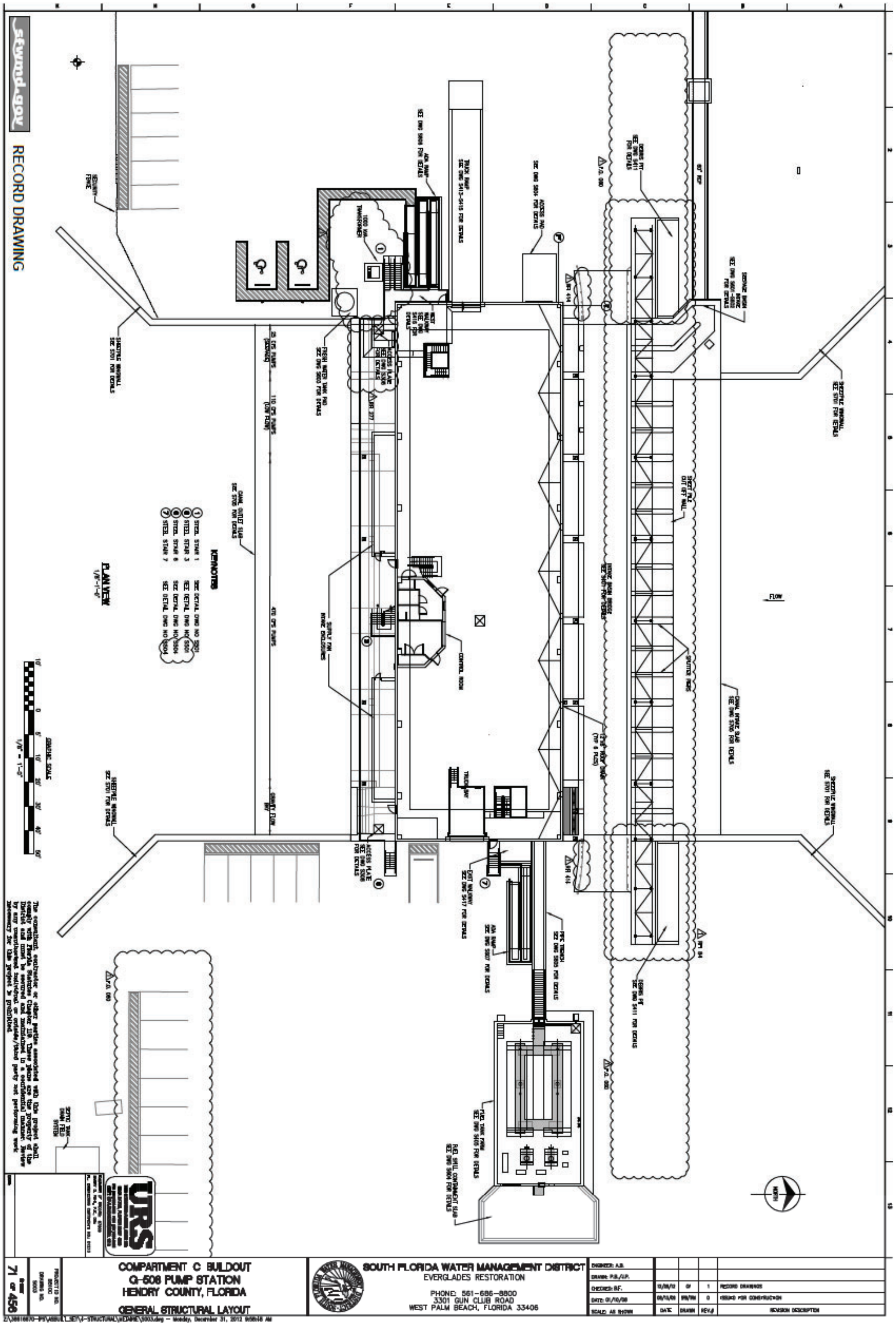
SWPPP

Length	=	1,000.0	LF	Assumed
Floating Silt Boom	=	250.0	LF	Assumed

Quantities Summary

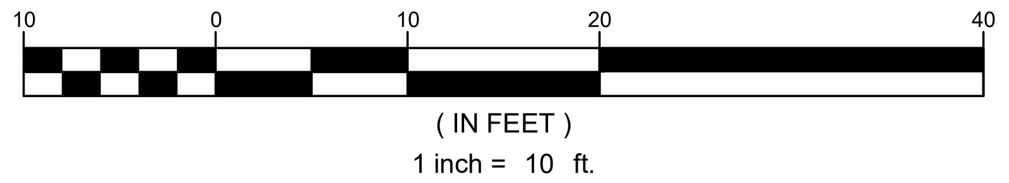
Coffer dam:	736.0	LF	
Coffer dam:	33,792.0	SF	
Tremie Concrete:	1,161.5	CY	
Excavation:	-	CY	
Concrete:	839.1	CY	
Steel Rebar:	10.1	CY (?)	
Steel Rebar:	66.6	TONS	
Sheetpile:	11,760.0	SF	160' Wall length x 30' Long sheets
Cap:	35.6	CY	
Railing:	480.0	LF	
Ladders:	6.0	EA	
Gates:	1.0	EA	12'x22'
Total steel gate wt	14.8	Tons	
Stoplogs	2.0	EA	
Total stoplog wt	29.60	Tons	
Seals:	138.0	LF	
Backfill:	-	LCY	
Rip-rap:	1,777.8	CY	
Geofabric:	9,000.0	SF	
Boat Barrier:	360.0	LF	
Barrier Piles:	6.0	EA	
Floating Curtain:	250.0	LF	
Silt Fence:	1,000.0	LF	
1.5'x30' SQ Concrete Piles	70	ea	Approx. @ 4' Spacing

Feature of Work:	STRUCTURE PS-1: 1,500 CFS DIESEL ELECTRIC PUMP STATION
Scope Given:	1,500 CFS diesel pump station (by-pass not required for construction). Pump Station PS-1 (S-84) will pump water from the C-41A Canal toward the LOCAR Site, South of .the S-83 Structure.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure Pump Station G-508 with a smaller capacity. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Assume there will be a total of four 375 cfs pumps. – Assume discharge of pumps will be piped by 6-8’ diameter pipes. – Assume the discharge structure will consist of a concrete headwall full height of the canal 30 ft wide 18 inch thick reinforced concrete, 20'x30' apron 18 inch thick reinforced concrete, wing walls extending 30ft up and downstream of the discharge point sloping from full height of the canal to bottom of canal 18 inch thick reinforced concrete and riprap lining 136 ft beyond the concrete apron. – Assume the excavation will extend 3 feet below the inflow canal bottom elevation. – Assume pump station will be constructed of reinforced concrete below grade and a combination of cast-in-place columns and reinforced CMU walls. – Assume a fuel pad will be required for storage tanks for the diesel pump and the diesel generator, assumed 2 feet thick reinforced concrete.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. *Updated with some features shown on site planning documents.
Sequence of Work:	Cap slab will be placed in bottom of excavation. Structure will be built and excavation for the inlet basin will commence. Suction apron will be placed along with excavation for discharge piping and discharge headwall/discharge apron. Excavate out discharge piping and backfill levee.
Key Challenges, Risks, and Opportunities	


sfwmd.gov
RECORD DRAWING
PLAN VIEW
1/8" = 1'-0"
KEYNOTES
① STEEL STAIR 1 SEE DETAIL DWG NO S501
③ STEEL STAIR 3 SEE DETAIL DWG NO S502
⑥ STEEL STAIR 6 SEE DETAIL DWG NO S504
⑦ STEEL STAIR 7 SEE DETAIL DWG NO S504
GRAPHIC SCALE
1/8" = 1'-0"
CONTROL ROOM
FLOW
SHEETPILE WINGWALL SEE S701 FOR DETAILS
CANAL OUTLET SLAB SEE S705 FOR DETAILS
CANAL INTAKE SLAB SEE DWG S705 FOR DETAILS
INTAKE BASIN BRIDGE SEE S401-S410 FOR DETAILS
SHUTTER PIERS
SHEETPILE CUT OFF WALL
DEBRIS PIT SEE DWG S411 FOR DETAILS
TRUCK RAMP SEE DWG S413-S415 FOR DETAILS
ADA RAMP
ACCESS PAD SEE DWG S803 FOR DETAILS
FUEL TANK FARM
NORTH
URS
COMPARTMENT C BUILDOUT
Q-506 PUMP STATION
HENDRY COUNTY, FLORIDA
GENERAL STRUCTURAL LAYOUT
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
EVERGLADES RESTORATION
PHONE: 561-686-8800
3301 GUN CLUB ROAD
WEST PALM BEACH, FLORIDA 33406
ENGINEER: A.B.
DRAWN: P.B./J.P.
CHECKED: B.F.
DATE: 01/10/08
SCALE: AS SHOWN
12/28/12
1
RECORD DRAWINGS
0
ISSUED FOR CONSTRUCTION
DATE
DRAWN
REV.#
REVISION DESCRIPTION
SHEET 71 OF 456

LOCAR RECOMMENDED PLAN

SECTION - PS-1 PUMP STATION



NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
9/24/2023

Feature of Work:	STRUCTURE PS-1: 1,500 CFS DIESEL ELECTRIC PUMP STATION

Quantity Take Off:

User Input | Row Calculation | Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	294.0	FT	Assume 20' from top of excavation
Length	=	306.0	FT	Assume 20' from length of excavation
Depth	=	46.0	FT	Assumed
Total Perimeter	=	1,200.0	LF	Sheetpile perimeter
Area	=	89,964.0	SF	

Pump Station Excavation

Length	=	266.0	FT	Compared to G-508					
Total Depth	=	26.0	FT	Assumed					
Thickness of Organic	=	2.0	FT						
Thickness of Cap Rock	=	8.0	FT						
Thickness of Fort Thompson	=	16.0	FT						
Slope1	=	2.0	:1						
Slope2	=	2.0	:1						
Bottom Width	=	150.0	FT	Compared to G-508					
Top Width	=	254.0	FT						
Cross Section	=	5,252.0	SF						
Cross Section Organic	=	500.0	SF						
Cross Section of Cap Rock	=	1,840.0	SF						
Cross Section of Fort Thompson	=	2,912.0	SF						
Organic Cut Volume	=	133,000.0	CF	=	4,925.9	BCY	=		LCY
Cap Rock Cut Volume	=	489,440.0	CF	=	18,127.4	BCY	=		LCY
Fort Thompson Cut Volume	=	774,592.0	CF	=	28,688.6	BCY	=		LCY
EXCAVATION		TOTAL		=	51,741.9	BCY		64,677.4	LCY

Structure Dimensions and Volumes

Structure	1	Length	171	ft	Width	218	ft
Intake Bays	3	Height	49	ft			

Foundation							
Depth	=	4.0	FT				Assumed
Length	=	171.0	FT				
Width	=	218.0	FT				
Volume	=	149,112.0	CF	=	5,522.7	CY	
Superstructure							
Number of Piers	=	2.0	EA				
Pier Width	=	2.0	FT				Assumed
Pier Length	=	136.8	FT				Borrowed from similar
Pier Height	=	45.0	FT				Structure Height below Control Building
Volume	=	24,624.0	CF	=	912.0	CY	
Abutment Walls	=	2.0	EA				
Abutment Width	=	2.0	FT				Borrowed from similar
Abutment Length	=	136.8	FT				Borrowed from similar
Abutment Height	=	45.0	FT				Structure Height below Control Building
Discharge Wall	=	1.0	EA				
Discharge Wall Width	=	2.0	FT				

Discharge Wall Length	=	218.0	FT				
Discharge Wall Height	=	45.0	FT				
Volume	=	44,244.0	CF	=	1,638.7	CY	
Beam Cross-Section	=	6.0	SF				Borrowed from similar
Beam Length	=	210.0	FT				
volume of elevated beam	=	1,260.0	CF	=	46.7	CY	
Cross-Section of Bridge and Ctrl Bldg Slab	=	162.0	SF				
Width	=	214.0	FT				
Volume	=	34,668.0	CF	=	1,284.0	CY	
Wing Walls							
Number	=	2.0	EA				
Depth	=	12.5	FT				Average depth
Length	=	80.0	FT				Borrowed from similar
Width	=	2.0	FT				Borrowed from similar
Volume	=	4,000.0	CF	=	148.1		
Control Building							
Building Cross-Section	=	308.5	SF				Borrowed from similar
Building Length	=	220.0	FT				Borrowed from similar
Outside Wall Width	=	76.0	FT				Borrowed from similar
Outside Wall Thickness	=	1.0	FT				Borrowed from similar
Outside Wall Height	=	40.0	FT				Borrowed from similar
Volume	=	70,910.0	CF	=	2,626.3		
CONCRETE		TOTAL		=	12,178.4	CY	Concrete
Steel Rebar							Assumed 1.2% volume of concrete
STEEL REBAR		TOTAL		=	146.1	CY	Rebar
					965.9	TONS	

Discharge Piping

6' Dia. Pipes	=	4.0	EA	
Length of Pipes	=	400.0	LF	Assume all pipes equal length to discharge
Total 6' Dia. Pipes	=	1,600.0	LF	All piping 0.75" thick steel with x4 45 degree bends per pipe run
s				
Total 8' Dia. Pipes 45 degree bends	=	16.0	EA	x4 per pipe for going over levee

Pumps

375 CFS Pumps	=	4.0	EA	Per Structure Summary

RIP RAP

Lengths and depths assumed, and similar on US and DS

Number	=	1.0	EA				
Length	=	136.0	FT				Assumed width of canal
Width	=	218.0	FT				Assumed
Depth	=	3.0	FT				Average depth
Volume	=	88,944.0	CF	=	3,294.2	CY	Riprap
Geotextile Filter Fabric	=	32,368.0	SF		Fabric		

Boat Barrier

Number	=	1.0	EA

Piles for Buoys	=	3.0	EA	Assume barrier has 3 points (2 at shore, 1 at canal)
Length	=	170.0	FT/EA	
Total Length	=	170.0	FT	Buoy style barrier
Total Piles	=	3.0	EA	

Station and Building Equipment

Trash Rack Surface Area (total)	=	9,180.0	SF	Assume Trash rake is 60 ft tall and covers the width of the operating floor (153')				
Roll Up Garage Door	=	168.0	SF	Assume Roll up garage door 12'x14'				
# of Doors	=	4.0	ea	Assume 1 set of double doors and two other doors				
# louver openings	=	8.0	ea	Assume 8 louver openings 7'-4" square				
Overhead Crane	=	2.0	ea	Assume 2 overhead cranes @ 25 tons each				
Power Line Connection	=	2,500.0	LF	Assume power available 2500 lf from site				
Septic tank system	=	1.0	ea	Assume 1 septic tank system				
Potable water	=	1.0	ea	Assume 1 potable water well will be required				
Generator Fuel Tank	=	2000 Gallon	ea	Assume five 2000 gallon fuel tanks required				
Fuel Pad dimensions	=	2,000.0	SF	Assume two 100'x20'x8" thick reinforced concrete slab on grade pad				
		1,333.3	CF		=	49.4	CY	
Floor Steel Grating	=	548.0	SF	Assume Wdith Bay (13'x5+18'x4) by 4'				
Ladders	=	342.0	VLF	Assume 38 ft per pump bay (9 bays)				
				of the operating floor				
Concrete bollard	=	4.9	CF	8" DIA. Bollard, 56" tall, x1 per bay				
Concrete barrier	=	419.6	CF	FDOT Inex 415, N.J. Shape Barrier				
	SUM	424.5	CF		=	15.7	CY	
CONCRETE		TOTAL			=	65.1	CY	Concrete
Chain link Fence	=	2,280.0	LF	Assume Similar to Merritt Pump Station				
Silt Fence	=	3,700.0	LF	Assume similar to Merritt Pump Station				
Silt Boom	=	600.0	LF	Assume similar to Merritt Pump Station				
Conduit Boxes	=	1.0	EA/DOOR					
Lock Boxes	=	1.0	EA/DOOR					
Fire Extinguishers	=	2.0	EA					
20" Exhaust Fan	=	1.0	EA	Coolair CBA20L, 1 HP, 4702 CFM @ 3/8" SP				
12" Exhaust Fan	=	1.0	EA	Coolair CDU12F17, 1/6 HP, 1210 CFM @ 1/4" SP				

Quantities Summary

Coffer dam:	1,200.0	LF	
Coffer dam:	89,964.0	SF	
Excavation:	51,741.9	CY	
Concrete:	12,178.4	CY	
Steel Rebar:	146.1	CY (?)	
Steel Rebar:	965.9	TONS	
Backfill:	64,677.4	LCY	
6' Discharge Pipe	1,600.0	LF	0.75" thick
6' Steel 45-bend	16.0	EA	0.75" thick
375 CFS Pump	4.0	EA	
Rip-rap:	3,294.2	CY	
Geofabric:	32,368.0	SF	
Boat Barrier:	170.0	LF	
Barrier Piles:	3.0	EA	
Control bld.:	65.1	CY	
Trash Rack	9,180.0	SF	
Roll Up Garage Door:	168.0	SF	Concrete
Total Doors	4.0	EA	
Conduit Boxes	1.0	EA/DOOR	12' x 14'
Lock Boxes	1.0	EA/DOOR	Size 4'-0" x 7'-0"
Louver Openings	8.0	EA	
Overhead Crane	2.0	EA	
Power Line Connection	2,500.0	LF	
Generator Fuel Tank	2,000.0	GALLONS	
Septic Tank System	1.0	EA	Assume available 2500LF
Potable Water Well	1.0	EA	
Steel Grate	548.0	SF	
Ladders	9.0	EA	
Concrete:	65.1	CY	
Chainlink Fence	2,280.0	LF	38' EA
Silt Fence	3,700.0	LF	Fuel pad, bollards, barrier
Silt Boom	600.0	LF	
Fire Extinguishers	2.0	EA	
20" Exhaust Fan	1.0	EA	
12" Exhaust Fan	1.0	EA	

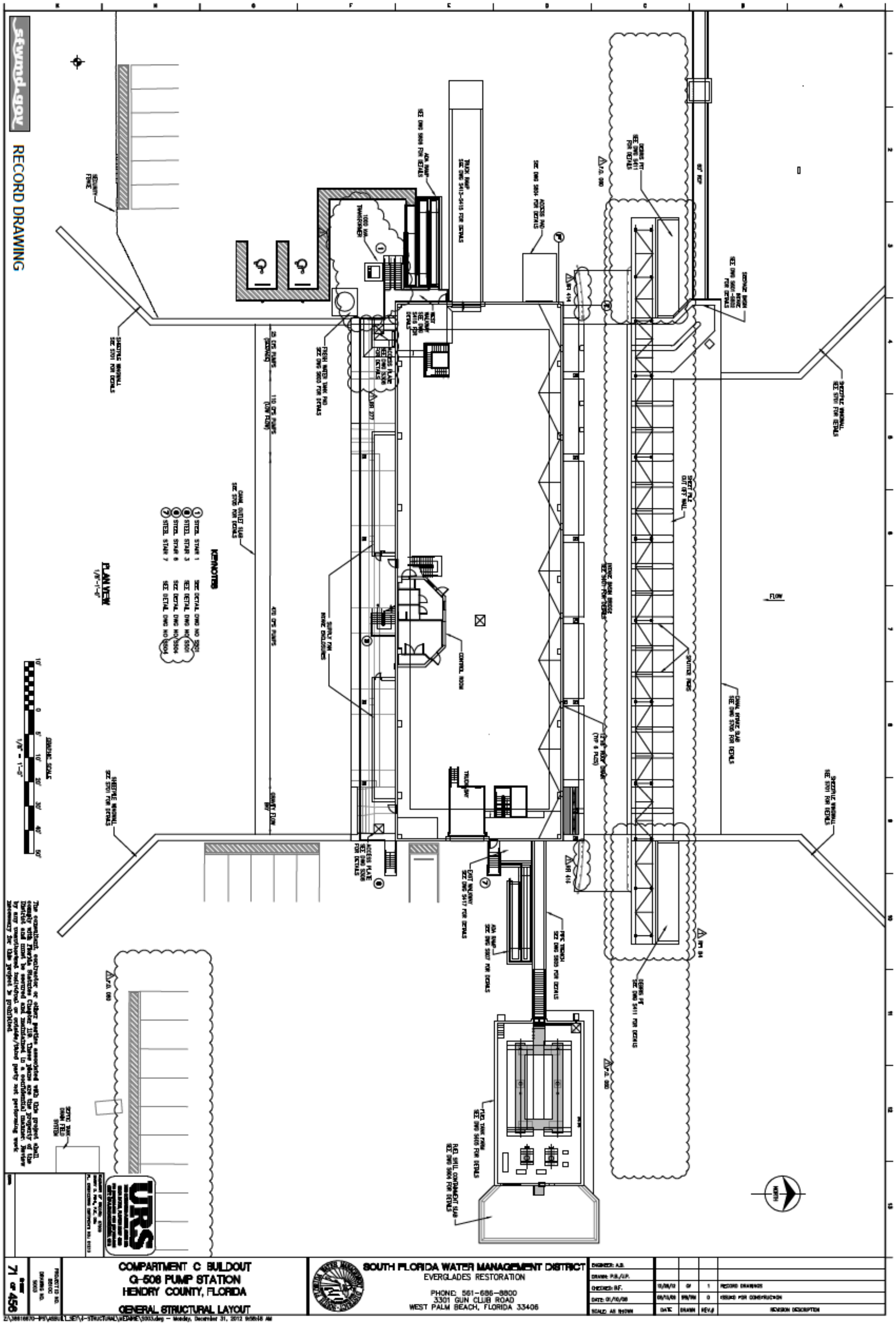
LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR) FEASIBILITY STUDY

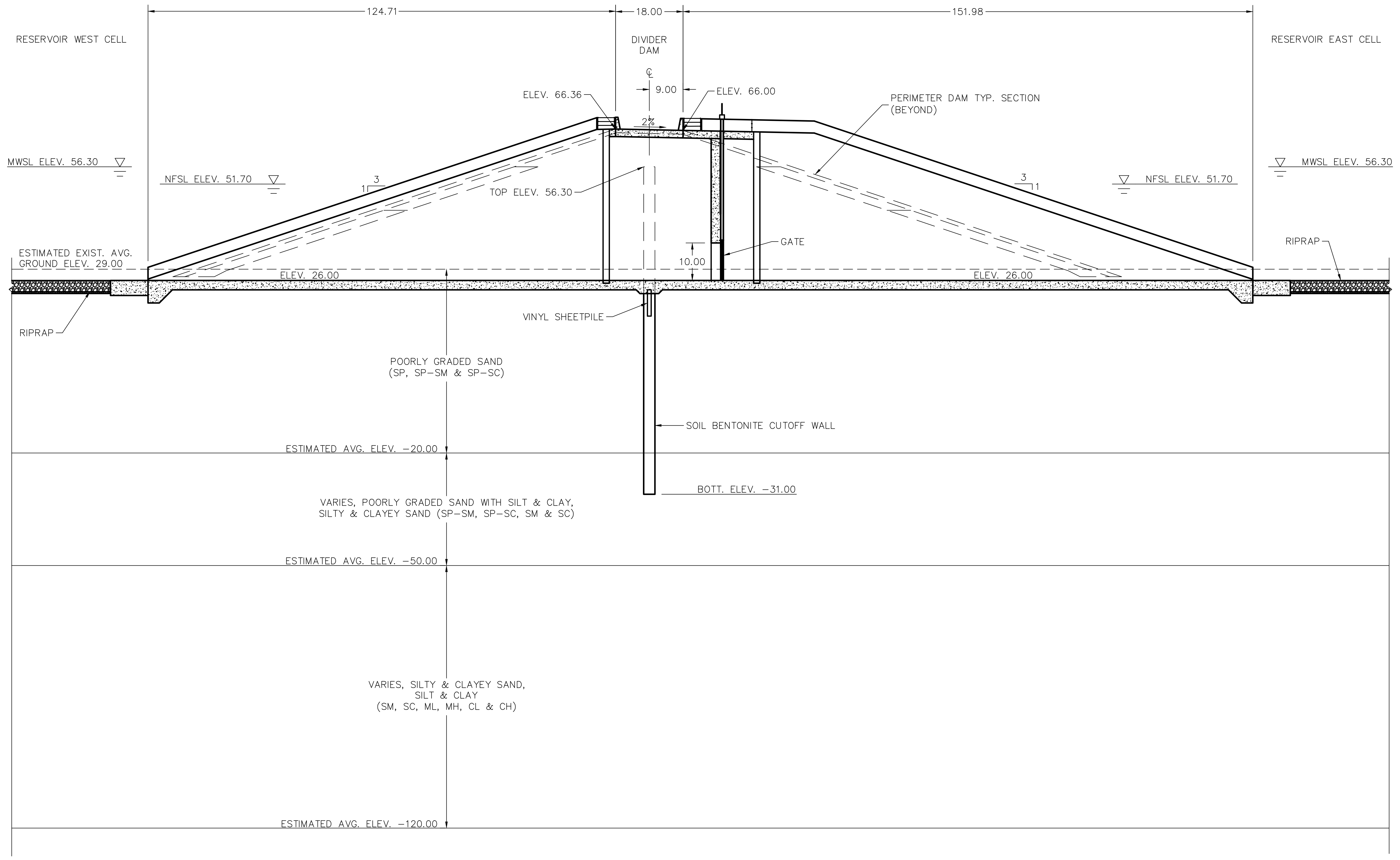
CONTRACT 2 – RESERVOIR INFLOW PUMP STATION SITE

- Construct Pump Station PS-2
- Construct Pump Station SPS-1
- Construct Res. Inflow-Outflow Canal CNL-2
- Construct Gated Outflow Culvert CU-1B
- Construct Canal Overflow Structure PCOS-1

Feature of Work:	STRUCTURE PS-2: 1,500 CFS DIESEL ELECTRIC PUMP STATION
Scope Given:	1,500 CFS diesel pump station (by-pass not required for construction). Pump Station PS-2 will be the inflow pump Station near C-41A to pump water from the Canal into the Reservoir East Cell.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure Pump Station G-508 with a smaller capacity. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Assume there will be a total of four 375 cfs pumps. – Assume discharge of pumps will be piped by 6-8' diameter pipes. – Assume the discharge structure will consist of a concrete headwall full height of the canal 30 ft wide 18 inch thick reinforced concrete, 20'x30' apron 18 inch thick reinforced concrete, wing walls extending 30ft up and downstream of the discharge point sloping from full height of the canal to bottom of canal 18 inch thick reinforced concrete and riprap lining 136 ft beyond the concrete apron. – Assume the excavation will extend 3 feet below the inflow canal bottom elevation. – Assume pump station will be constructed of reinforced concrete below grade and a combination of cast-in-place columns and reinforced CMU walls. – Assume a fuel pad will be required for storage tanks for the diesel pump and the diesel generator, assumed 2 feet thick reinforced concrete.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. *As part of an RFI, the structures heights were increased by 6-ft, also changing the estimated length. *Updated with some features shown on site planning documents.
Sequence of Work:	Cap slab will be placed in bottom of excavation. Structure will be built and excavation for the inlet basin will commence. Suction apron will be placed along with excavation for discharge piping and discharge headwall/discharge apron. Excavate out discharge piping and backfill levee.
Key Challenges, Risks, and Opportunities	

Representative Drawings/Photos: PS-2





LEGEND:

▒	SOIL REMOVAL/EXCAVATION
▒	6" THICK TOPSOIL LAYER
▒	SOIL CEMENT REVETMENT
▨	EMBANKMENT FILL
▒	CLEAN SAND
▒	FILTER SAND (FDOT 902–4)
▓	LIMEROCK BASE
▨	RIPRAP
▓	BEDDING STONE
☐	CONCRETE

LOCAR RECOMMENDED PLAN

SECTION – DDS-1 DIVIDER DAM STRUCTURE

(IN FEET)
1 inch = 20 ft.

NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J–TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
9/24/2023

Feature of Work: STRUCTURE PS-2: 1,500 CFS DIESEL ELECTRIC PUMP STATION

Quantity Take Off:

User Input | Row Calculation | Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	294.0	FT	Assume 20' from top of excavation
Length	=	306.0	FT	Assume 20' from length of excavation
Depth	=	46.0	FT	Assumed
Total Perimeter	=	1,200.0	LF	Sheetpile perimeter
Area	=	89,964.0	SF	

Pump Station Excavation

Length	=	266.0	FT		Compared to G-508				
Total Depth	=	26.0	FT		Assumed				
Thickness of Organic	=	2.0	FT						
Thickness of Cap Rock	=	8.0	FT						
Thickness of Fort Thompson	=	16.0	FT						
Slope1	=	2.0	:1						
Slope2	=	2.0	:1						
Bottom Width	=	150.0	FT		Compared to G-508				
Top Width	=	254.0	FT						
Cross Section	=	5,252.0	SF						
Cross Section Organic	=	500.0	SF						
Cross Section of Cap Rock	=	1,840.0	SF						
Cross Section of Fort Thompson	=	2,912.0	SF						
Organic Cut Volume	=	133,000.0	CF	=	4,925.9	BCY	=		LCY
Cap Rock Cut Volume	=	489,440.0	CF	=	18,127.4	BCY	=		LCY
Fort Thompson Cut Volume	=	774,592.0	CF	=	28,688.6	BCY	=		LCY
EXCAVATION		TOTAL		=	51,741.9	BCY		64,677.4	LCY

Structure Dimensions and Volumes

Structure	1	Length	171	ft	Width	218	ft
Intake Bays	3	Height	49	ft			

Foundation						
Depth	=	4.0	FT		Assumed	
Length	=	171.0	FT			
Width	=	218.0	FT			
Volume	=	149,112.0	CF	=	5,522.7	CY
Superstructure						
Number of Piers	=	2.0	EA			
Pier Width	=	2.0	FT		Assumed	
Pier Length	=	136.8	FT		Borrowed from similar	
Pier Height	=	45.0	FT		Structure Height below Control Building	
Volume	=	24,624.0	CF	=	912.0	CY
Abutment Walls	=	2.0	EA			
Abutment Width	=	2.0	FT		Borrowed from similar	
Abutment Length	=	136.8	FT		Borrowed from similar	
Abutment Height	=	45.0	FT		Structure Height below Control Building	
Discharge Wall	=	1.0	EA			
Discharge Wall Width	=	2.0	FT			

Discharge Wall Length	=	218.0	FT				
Discharge Wall Height	=	45.0	FT				
Volume	=	44,244.0	CF	=	1,638.7	CY	
Beam Cross-Section	=	6.0	SF				Borrowed from similar
Beam Length	=	210.0	FT				
volume of elevated beam	=	1,260.0	CF	=	46.7	CY	
Cross-Section of Bridge and Ctrl Bldg Slab	=	162.0	SF				
Width	=	214.0	FT				
Volume	=	34,668.0	CF	=	1,284.0	CY	
Wing Walls							
Number	=	2.0	EA				
Depth	=	12.5	FT				Average depth
Length	=	80.0	FT				Borrowed from similar
Width	=	2.0	FT				Borrowed from similar
Volume	=	4,000.0	CF	=	148.1		
Control Building							
Building Cross-Section	=	308.5	SF				Borrowed from similar
Building Length	=	220.0	FT				Borrowed from similar
Outside Wall Width	=	76.0	FT				Borrowed from similar
Outside Wall Thickness	=	1.0	FT				Borrowed from similar
Outside Wall Height	=	40.0	FT				Borrowed from similar
Volume	=	70,910.0	CF	=	2,626.3		
CONCRETE		TOTAL		=	12,178.4	CY	Concrete
Steel Rebar							Assumed 1.2% volume of concrete
STEEL REBAR		TOTAL		=	146.1	CY	Rebar
					965.9	TONS	

Discharge Piping

6' Dia. Pipes	=	4.0	EA	
Length of Pipes	=	400.0	LF	Assume all pipes equal length to discharge
Total 6' Dia. Pipes	=	1,600.0	LF	All piping 0.75" thick steel with x4 45 degree bends per pipe run
s				
Total 8' Dia. Pipes 45 degree bends	=	16.0	EA	x4 per pipe for going over levee

Pumps

375 CFS Pumps	=	4.0	EA	Per Structure Summary

RIP RAP

Lengths and depths assumed, and similar on US and DS

Number	=	1.0	EA				
Length	=	136.0	FT				Assumed width of canal
Width	=	218.0	FT				Assumed
Depth	=	3.0	FT				Average depth
Volume	=	88,944.0	CF	=	3,294.2	CY	Riprap
Geotextile Filter Fabric	=	32,368.0	SF				Fabric

Boat Barrier

Number	=	1.0	EA

Piles for Buoys	=	3.0	EA	Assume barrier has 3 points (2 at shore, 1 at canal)
Length	=	170.0	FT/EA	
Total Length	=	170.0	FT	Buoy style barrier
Total Piles	=	3.0	EA	

Station and Building Equipment

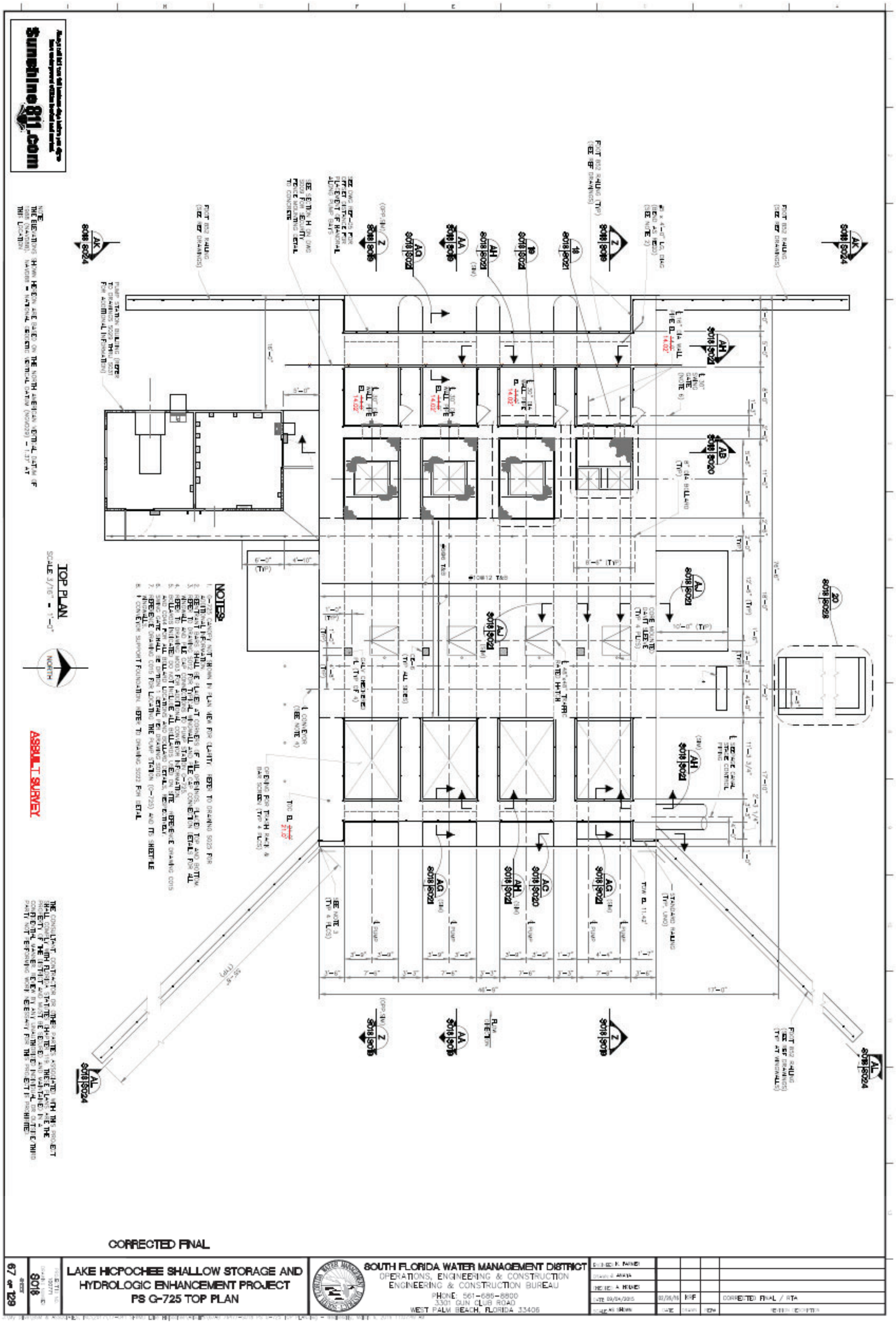
Trash Rack Surface Area (total)	=	9,180.0	SF	Assume Trash rake is 60 ft tall and covers the width of the operating floor (153')				
Roll Up Garage Door	=	168.0	SF	Assume Roll up garage door 12'x14'				
# of Doors	=	4.0	ea	Assume 1 set of double doors and two other doors				
# louver openings	=	8.0	ea	Assume 8 louver openings 7'-4" square				
Overhead Crane	=	2.0	ea	Assume 2 overhead cranes @ 25 tons each				
Power Line Connection	=	2,500.0	LF	Assume power available 2500 lf from site				
Septic tank system	=	1.0	ea	Assume 1 septic tank system				
Potable water	=	1.0	ea	Assume 1 potable water well will be required				
Generator Fuel Tank	=	2000 Gallon	ea	Assume five 2000 gallon fuel tanks required				
Fuel Pad dimensions	=	2,000.0	SF	Assume two 100'x20'x8" thick reinforced concrete slab on grade pad				
		1,333.3	CF		=	49.4	CY	
Floor Steel Grating	=	548.0	SF	Assume Wdith Bay (13'x5+18'x4) by 4'				
Ladders	=	342.0	VLF	Assume 38 ft per pump bay (9 bays)				
				of the operating floor				
Concrete bollard	=	4.9	CF	8" DIA. Bollard, 56" tall, x1 per bay				
Concrete barrier	=	419.6	CF	FDOT Inex 415, N.J. Shape Barrier				
	SUM	424.5	CF		=	15.7	CY	
CONCRETE		TOTAL			=	65.1	CY	Concrete
Chain link Fence	=	2,280.0	LF	Assume Similar to Merritt Pump Station				
Silt Fence	=	3,700.0	LF	Assume similar to Merritt Pump Station				
Silt Boom	=	600.0	LF	Assume similar to Merritt Pump Station				
Conduit Boxes	=	1.0	EA/DOOR					
Lock Boxes	=	1.0	EA/DOOR					
Fire Extinguishers	=	2.0	EA					
20" Exhaust Fan	=	1.0	EA	Coolair CBA20L, 1 HP, 4702 CFM @ 3/8" SP				
12" Exhaust Fan	=	1.0	EA	Coolair CDU12F17, 1/6 HP, 1210 CFM @ 1/4" SP				

Quantities Summary

Coffer dam:	1,200.0	LF	
Coffer dam:	89,964.0	SF	
Excavation:	51,741.9	CY	
Concrete:	12,178.4	CY	
Steel Rebar:	146.1	CY (?)	
Steel Rebar:	965.9	TONS	
Backfill:	64,677.4	LCY	
6' Discharge Pipe	1,600.0	LF	0.75" thick
6' Steel 45-bend	16.0	EA	0.75" thick
375 CFS Pump	4.0	EA	
Rip-rap:	3,294.2	CY	
Geofabric:	32,368.0	SF	
Boat Barrier:	170.0	LF	
Barrier Piles:	3.0	EA	
Control bld.:	65.1	CY	
Trash Rack	9,180.0	SF	
Roll Up Garage Door:	168.0	SF	Concrete
Total Doors	4.0	EA	
Conduit Boxes	1.0	EA/DOOR	12' x 14'
Lock Boxes	1.0	EA/DOOR	Size 4'-0" x 7'-0"
Louver Openings	8.0	EA	
Overhead Crane	2.0	EA	
Power Line Connection	2,500.0	LF	
Generator Fuel Tank	2,000.0	GALLONS	
Septic Tank System	1.0	EA	Assume available 2500LF
Potable Water Well	1.0	EA	
Steel Grate	548.0	SF	
Ladders	9.0	EA	
Concrete:	65.1	CY	
Chainlink Fence	2,280.0	LF	38' EA
Silt Fence	3,700.0	LF	Fuel pad, bollards, barrier
Silt Boom	600.0	LF	
Fire Extinguishers	2.0	EA	
20" Exhaust Fan	1.0	EA	
12" Exhaust Fan	1.0	EA	

Feature of Work:	STRUCTURE SPS-1: 100 CFS DIESEL ELECTRIC PUMP STATION
Scope Given:	100 CFS diesel pump station (by-pass not required for construction). Seepage Pump Station SPS-1 will function as seepage pump station for the East Cells.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure Pump Station G-725 with a smaller capacity. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Assume there will be a total of two 50 cfs pumps and one 50 cfs auxiliary pump. – Assume pump station will be constructed of reinforced concrete below grade and a combination of cast-in-place columns and reinforced CMU walls. – Assume a fuel pad will be required for storage tanks for the diesel pump and the diesel generator, assumed 2 feet thick reinforced concrete.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. *As part of an RFI, the structures heights were increased by 6-ft, also changing the estimated length. *Updated with some features shown on site planning documents
Sequence of Work:	Cap slab will be placed in bottom of excavation. Structure will be built and excavation for the inlet basin will commence. Suction apron will be placed along with excavation for discharge piping and discharge headwall/discharge apron. Excavate out discharge piping and backfill levee.
Key Challenges, Risks, and Opportunities	

Representative Drawings/Photos: SPS-1



LOCAR RECOMMENDED PLAN

SECTION - SPS-1 SEEPAGE PUMP STATION

20 0 20 40 80

(IN FEET)
1 inch = 20 ft.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
9/24/2023

NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

C:\Users\SCIORTRS\Documents\04 SFWMD\00 Projects\LOCAR\05 CAD\Sheets\Typical Section Sheet Layouts.dwg Mon, 14 Aug 2023 - 11:44pm

Feature of Work:	STRUCTURE SPS-1: 370 CFS DIESEL ELECTRIC PUMP STATION
Quantity Take Off:	

User Input   Row Calculation   Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	204.0	FT	Assume 20' from top of excavation
Length	=	166.0	FT	Assume 20' from length of excavation
Depth	=	46.0	FT	Assumed
Total Perimeter	=	740.0	LF	Sheetpile perimeter
Area	=	33,864.0	SF	

Pump Station Excavation

Length	=	126.0	FT		Compared to G-725					
Total Depth	=	26.0	FT		Assumed					
Thickness of Organic	=	2.0	FT							
Thickness of Cap Rock	=	8.0	FT							
Thickness of Fort Thompson	=	16.0	FT							
Slope1	=	2.0	:1							
Slope2	=	2.0	:1							
Bottom Width	=	60.0	FT		Compared to G-725					
Top Width	=	164.0	FT							
Cross Section	=	2,912.0	SF							
Cross Section Organic	=	320.0	SF							
Cross Section of Cap Rock	=	1,120.0	SF							
Cross Section of Fort Thompson	=	1,472.0	SF							
Organic Cut Volume	=	40,320.0	CF	=	1,493.3	BCY	=		LCY	
Cap Rock Cut Volume	=	141,120.0	CF	=	5,226.7	BCY	=		LCY	
Fort Thompson Cut Volume	=	185,472.0	CF	=	6,869.3	BCY	=		LCY	
EXCAVATION		TOTAL		=	13,589.3	BCY		16,986.7	LCY	

Structure Dimensions and Volumes

Structure	1	Length	84	ft	Width	75 ft
Intake Bays	2	Height	31	ft		

Foundation						
Depth	=	4.0	FT			Assumed
Length	=	84.0	FT			
Width	=	75.0	FT			
Volume	=	25,200.0	CF	=	933.3 CY	
Superstructure						
Number of Piers	=	1.0	EA			
Pier Width	=	2.0	FT			Assumed
Pier Length	=	48.0	FT			Borrowed from similar
Pier Height	=	27.0	FT			Structure Height below Control Building
Volume	=	2,592.0	CF	=	96.0 CY	
Abutment Walls	=	2.0	EA			
Abutment Width	=	2.0	FT			Borrowed from similar
Abutment Length	=	48.0	FT			Borrowed from similar
Abutment Height	=	27.0	FT			Structure Height below Control Building
Discharge Wall	=	1.0	EA			
Discharge Wall Width	=	2.0	FT			

Discharge Wall Length	=	75.0	FT					
Discharge Wall Height	=	27.0	FT					
Volume	=	9,234.0	CF	=	342.0	CY		
Beam Cross-Section	=	6.0	SF				Borrowed from similar	
Beam Length	=	69.0	FT					
volume of elevated beam	=	414.0	CF	=	15.3	CY		
Cross-Section of Bridge and Ctrl Bldg Slab	=	162.0	SF					
Width	=	71.0	FT					
Volume	=	11,502.0	CF	=	426.0	CY		
Wing Walls								
Number	=	2.0	EA					
Depth	=	12.5	FT				Average depth	
Length	=	56.0	FT				Borrowed from similar	
Width	=	2.0	FT				Borrowed from similar	
Volume	=	2,800.0	CF	=	103.7			
Control Building								
Building Cross-Section	=	150.0	SF				Borrowed from similar	
Building Length	=	25.0	FT				Borrowed from similar	
Outside Wall Width	=	14.0	FT				Borrowed from similar	
Outside Wall Thickness	=	1.0	FT				Borrowed from similar	
Outside Wall Height	=	10.0	FT				Borrowed from similar	
Volume	=	3,890.0	CF	=	144.1			
CONCRETE		TOTAL		=	2,060.4	CY		Concrete
Steel Rebar							Assumed 1.2% volume of concrete	
STEEL REBAR		TOTAL		=	24.7	CY		Rebar
					163.4	TONS		

Discharge Piping

x' Dia. Pipes	=	3.0	EA	
Length of Pipes	=	100.0	LF	Assume all pipes equal length to discharge
Total x' Dia. Pipes	=	300.0	LF	All piping 0.75" thick steel with x4 45 degree bends per pipe run
Total x' Dia. Pipes 45 degree bends	=	12.0	EA	x4 per pipe for going over levee

Pumps

185 CFS Pumps	=	2.0	EA	Per Structure Summary
125 CFS Auxilliary Pumps	=	1.0	EA	Per Structure Summary

RIP RAP

Lengths and depths assumed, and similar on US and DS

Number	=	1.0	EA					
Length	=	136.0	FT				Assumed width of canal	
Width	=	75.0	FT				Assumed	
Depth	=	3.0	FT				Average depth	
Volume	=	30,600.0	CF	=	1,133.3	CY		Riprap
Geotextile Filter Fabric	=	12,920.0	SF				Fabric	

Boat Barrier

Number	=	1.0	EA				
Piles for Buoys	=	3.0	EA	Assume barrier has 3 points (2 at shore, 1 at canal)			
Length	=	170.0	FT/EA				
Total Length	=	170.0	FT	Buoy style barrier			
Total Piles	=	3.0	EA				

Station and Building Equipment

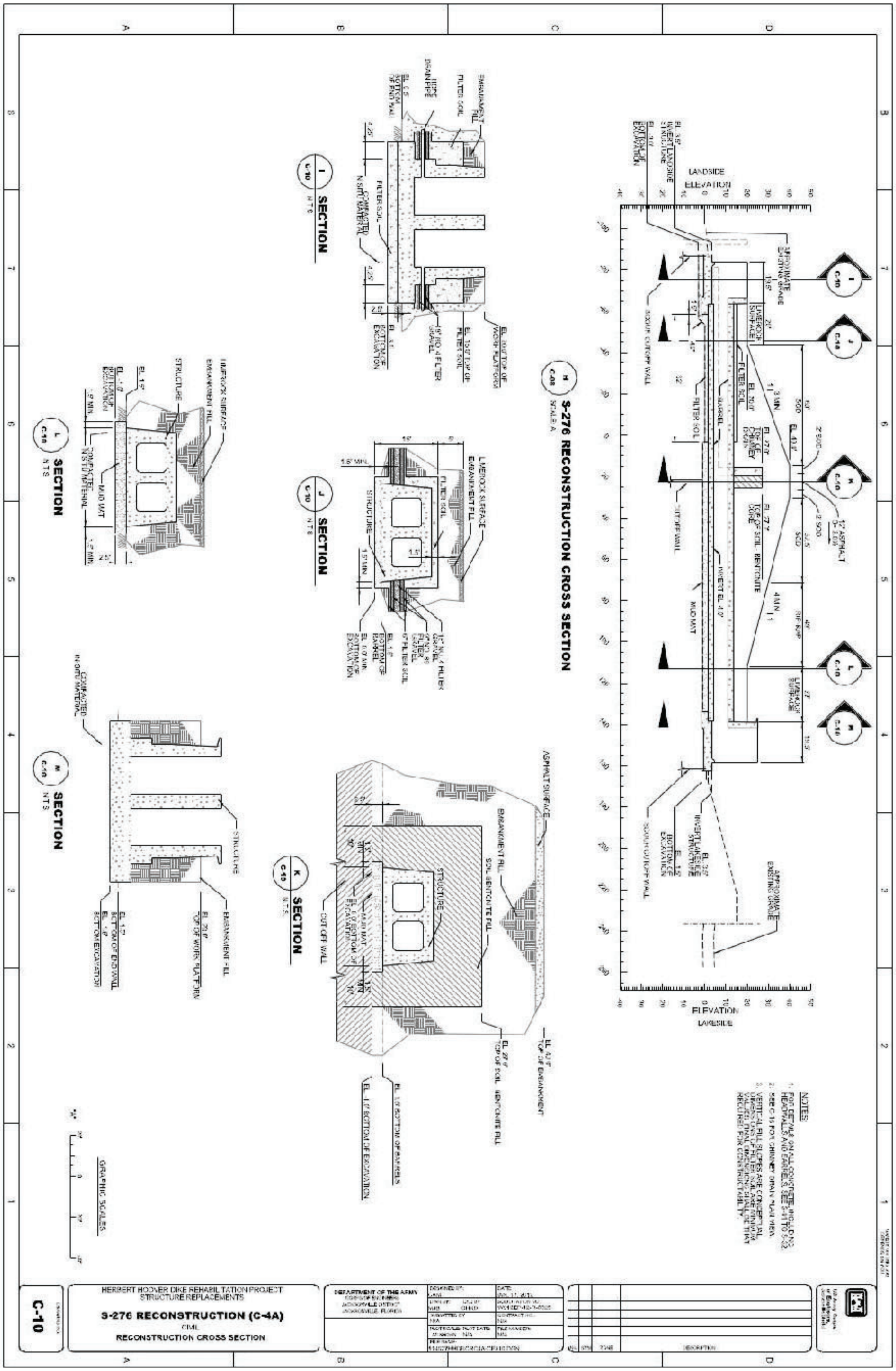
Trash Rack Surface Area (total)	=	9,180.0	SF	Assume Trash rake is 60 ft tall and covers the width of the operating floor (153')			
Roll Up Garage Door	=	168.0	SF	Assume Roll up garage door 12'x14'			
# of Doors	=	4.0	ea	Assume 1 set of double doors and two other doors			
# louver openings	=	8.0	ea	Assume 8 louver openings 7'-4" square			
Overhead Crane	=	2.0	ea	Assume 2 overhead cranes @ 25 tons each			
Power Line Connection	=	2,500.0	LF	Assume power available 2500 lf from site			
Septic tank system	=	1.0	ea	Assume 1 septic tank system			
Potable water	=	1.0	ea	Assume 1 potable water well will be required			
Generator Fuel Tank	=	2000 Gallon	ea	Assume five 2000 gallon fuel tanks required			
Fuel Pad dimensions	=	500.0	SF	Assume two 25'x20'x8" thick reinforced concrete slab on grade pad			
		1,333.3	CF	=	49.4	CY	
Floor Steel Grating	=	548.0	SF	Assume Wdith Bay (13'x5+18'x4) by 4'			
Ladders	=	342.0	VLF	Assume 38 ft per pump bay (9 bays)			
				of the operating floor			
Concrete bollard	=	3.3	CF	8" DIA. Bollard, 56" tall, x1 per bay			
Concrete barrier	=	419.6	CF	FDOT Inex 415, N.J. Shape Barrier			
	SUM	422.9	CF	=	15.7	CY	
CONCRETE		TOTAL		=	65.0	CY	Concrete
Chain link Fence	=	2,280.0	LF	Assume Similar to Merritt Pump Station			
Silt Fence	=	3,700.0	LF	Assume similar to Merritt Pump Station			
Silt Boom	=	600.0	LF	Assume similar to Merritt Pump Station			
Conduit Boxes	=	1.0	EA/DOOR				
Lock Boxes	=	1.0	EA/DOOR				
Fire Extinguishers	=	2.0	EA				
20" Exhaust Fan	=	1.0	EA	Coolair CBA20L, 1 HP, 4702 CFM @ 3/8" SP			
12" Exhaust Fan	=	1.0	EA	Coolair CDU12F17, 1/6 HP, 1210 CFM @ 1/4" SP			

Quantities Summary

Coffer dam:	740.0	LF	
Coffer dam:	33,864.0	SF	
Excavation:	13,589.3	CY	
Concrete:	2,060.4	CY	
Steel Rebar:	24.7	CY (?)	
Steel Rebar:	163.4	TONS	
Backfill:	16,986.7	LCY	
x' Discharge Pipe	300.0	LF	0.75" thick
x' Steel 45-bend	12.0	EA	0.75" thick
185 CFS Pump	2.0	EA	
125 CFS Auxilliary Pump	1.0	EA	
Rip-rap:	1,133.3	CY	
Geofabric:	12,920.0	SF	
Boat Barrier:	170.0	LF	
Barrier Piles:	3.0	EA	
Control bld.:	65.0	CY	
Trash Rack	9,180.0	SF	Concrete
Roll Up Garage Door:	168.0	SF	
Total Doors	4.0	EA	12' x 14'
Conduit Boxes	1.0	EA/DOOR	Size 4'-0" x 7'-0"
Lock Boxes	1.0	EA/DOOR	
Louver Openings	8.0	EA	
Overhead Crane	2.0	EA	
Power Line Connection	2,500.0	LF	
Generator Fuel Tank	2,000.0	GALLONS	Assume available 2500LF
Septic Tank System	1.0	EA	
Potable Water Well	1.0	EA	
Steel Grate	548.0	SF	
Ladders	9.0	EA	
Concrete:	65.0	CY	38' EA
Chainlink Fence	2,280.0	LF	Fuel pad, bollards, barrier
Silt Fence	3,700.0	LF	
Silt Boom	600.0	LF	
Fire Extinguishers	2.0	EA	
20" Exhaust Fan	1.0	EA	
12" Exhaust Fan	1.0	EA	

Feature of Work:	STRUCTURES CU-1B: 280 LF DOUBLE GATED 13’Wx12’H BOX CULVERT WITH ENDWALLS, 12’x24’ CONTROL BUILDING
Scope Given:	556 LF double gated 13’x12’ box culvert w/ endwalls w/ 12’x24’ control building and HW/TW monitoring stations w/ walkways (by-pass not required for construction). Structures CU-1B is a gated box culvert which allows for outflow from the Seepage Canal CNL-1 Reach 7, discharging to the Inflow-Outflow Canal CNL-2.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure S-276 and S-277 as a double barrel culvert. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Assume Excavation will be to the same depth below finished grade as shown in contract drawings for similar projects with a slope of 1:2 for construction. – Assume material as 2 ft of organic, 8 ft of blastable cap rock, and 10 ft of Fort Thompson layer for the remainder of the excavation – until indicated otherwise. – Assume power will be provided from power lines in the area. – Assume that a diesel generator is needed for backup power.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. *As part of an RFI, the structures heights were increased by 6-ft, also changing the estimated length.
Sequence of Work:	Excavation/blasting of limestone rock will be required to allow space for the foundation for the gated culvert structure. Culverts, foundations and structures will then be placed. Control structures for the culverts will be installed and a standalone Control station will be built in the area. An additional backup generator will be required along with local utility power. Apron, wing wall, and riprap placement will occur after Culverts have been placed. Backfill and compaction around the structure will occur, the plugs will be removed.
Key Outstanding Questions/Issues:	

Representative Drawings/Photos: CU-1B



Feature of Work:	STRUCTURE CU-1B: 556 LF DOUBLE GATED 13’Wx12’H BOX CULVERT WITH ENDWALLS, 12’x24’ CONTROL BUILDING
Quantity Take Off:	

User Input	Row Calculation	Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	255.7	FT	Assume 20' from top of excavation
Length	=	356.0	FT	Assume 20' from length of excavation
Depth	=	46.0	FT	Assumed
Total Perimeter	=	1,223.3	LF	Sheetpile perimeter
Area	=	91,017.3	SF	

Culvert excavation

Length	=	316.0	FT		Assumed from drawings				
Total Depth	=	26.0	FT		Invert Elev. Minus Foundation Depth				
Thickness of Organic	=	2.0	FT		Assume - 2ft thick				
Thickness of Cap Rock	=	8.0	FT		Assume - 4ft thick				
Thickness of Fort Thompson	=	16.0	FT		Assume - 24ft thick				
Slope1	=	2.0	:1						
Slope2	=	2.0	:1						
Bottom Width	=	111.7	FT		Assumes 40' endwalls both ways				
Top Width	=	215.7	FT						
Cross Section	=	4,255.3	SF						
Cross Section Organic	=	423.3	SF						
Cross Section of Cap Rock	=	1,533.3	SF						
Cross Section of Fort Thompson	=	2,298.7	SF						
Organic Cut Volume	=	133,773.3	CF	=	4,954.6	BCY	=		LCY
Cap Rock Cut Volume	=	484,533.3	CF	=	17,945.7	BCY	=		LCY
Fort Thompson Cut Volume	=	726,378.7	CF	=	26,902.9	BCY	=		LCY
EXCAVATION		TOTAL		=	49,803.2	BCY	=	62,254.0	LCY

Concrete Culvert Concrete

Culvert Pipes	2		Width	13		Height	18	
Length	=	316.0	FT					
Foundation Concrete Bottom Width	=	31.7	FT					
Bottom Thickness	=	3.0	FT					
Volume	=	30,020.0	CF	=	1,111.9	CY		
Vertical Concrete Height	=	18.0	FT					
Thickness of Edge Walls	=	2.0	FT					
Thickness of Interior Walls	=	1.7	FT					
Volume	=	30,336.0	CF	=	1,123.6	CY		
Elevated Concrete								
Top Width	=	31.7	FT					
Thickness	=	2.0	FT					
Volume	=	20,013.3	CF	=	741.2	CY		

Inlet and Outlet Works

Number	=	2.0	EA	Assumed intake and outlet are the same
Foundation				
Length	=	20.0	FT	
Depth	=	2.0	FT	
Width	=	31.7	FT	

Volume = 2,533.3 CF = 93.8 CY

Culvert Endwall
Height = 38.0 FT Assume x2 (Culvert Height + 1')
Thickness = 1.5 FT
Width = 31.7 FT
Openings = 468.0 SF
Volume = 2,206.0 CF = 81.7 CY

Needle Beam
Height = 2.5 FT
Width = 13.0 FT
Depth = 3.0 FT
Volume 390.0 CF = 14.4 CY

Exterior Walls
Edge Wall Height = 38.0 FT
Edge Wall Length = 20.0 FT total each side
Edge Wall Thickness = 2.0 FT
Interior Wall Height 38.0 FT
Interior Wall Length 14.0 FT
Inteiror Wall Thickness 1.7 FT
Volume = 7,853.3 CF = 290.9 CY
CONCRETE TOTAL = 3,457.5 CY

Steel Rebar Assumed 1.2% volume of concrete
STEEL REBAR TOTAL = 41.5 CY Rebar
274.2 TONS

Culvert referenced as an example used approx. 0.8% steel per volume

Sheetpile Endwalls

Number = 2.0 EA x2 Endwalls per opening (HW/TW)

Width = 80.0 FT 40 ft off each side of culvert
Length = 30.0 FT Assume PZ27 sheetpile, 30' long sheets
Sheetpile Area = 4,800.0 SF 30' Long Sheets, 160' Span PZ-27
Concrete Cap = 4.0 SF Assume 2'x2' cap with PZ27 sheets
Concrete Volume = 640.0 CF = 23.7 CY Concrete

MISC METALS

Structure Railing = 120.0 LF Per each end
Endwall Railing = 82.0 LF Per each end
TOTAL RAILING = 404.0 LF 3'6" Tall Steel Railing

Ladders = 2.0 EACH
height = 25.5 FT EA = 51.0 FT TOTAL

Grating = 78.0 SF per Gate Approx. 6' long, width of each bay
TOTAL Grating = 312.0 SF Steel Grating

NEW GATES

Number of gates = 2.0 EA x1 per Culvert Pipe
Height = 19.0 FT Assumed 1' greater than Culvert Height
Width = 12.0 FT Assumed 1' smaller than Culvert Width (frame)
Total Weight of Gates = 20,269.2 LB EA Follows similar weight calculations as S-2, but reduces number of steel channels
TOTAL STEEL GATE WEIGHT 40,538.3 LB = 20.3 TONS

Mechanical Components = 2.0 EA All gate component information including frame, stem,

motor, yoke, etc. to be provided by manufacturer

Imbeds for Gate = 124.0 LF

Gate Seal Length = 124.0 LF Gate perimeter x # of gates

Backfill

Assume Culvert is backfilled as part of levee construction

RIP RAP

Assume same on both sides

Number of placements = 2.0 EA 1 each side
Length = 136.0 FT Assume width of new canal
Width = 111.7 FT Assume same as bottom width of excavation
thickness = 3.0 FT Assumed
Volume = 45,560.0 CF/EA = 1,687.4 CY/EA
RIPRAP TOTAL = 3,374.8 CY Riprap
Geotextile Filter Fabric = 16,546.7 SF Fabric

Boat Barrier

Number = 2.0 EA
Piles for Buoys = 3.0 EA Assume barrier has 3 points (2 at shore, 1 at canal)
Length = 170.0 FT/EA

Total Length = 340.0 FT Buoy style barrier
Total Piles = 6.0 EA

SWPPP

Floating Silt Boom = 980.0 FT 🟥 Assumed
Silt Fence = 6,492.0 FT 🟥 Assumed

Control Building

Size = 288.0 SF 12x24

Electrical = NEEDED
Communications = NEEDED

Modular Precast Concrete Structure

Exterior Walls
Height = 12.0 FT
Perimeter Length = 72.0 FT
Thickness = 4.0 IN
Volume = 288.0 = 10.7 CY

Interior Wall
Height = 12.0 FT
Length = 12.0 FT
Thickness = 4.0 IN
Volume = 48.0 = 1.8 CY

Floor Slab
Thickness = 6.0 IN
Area = 288.0 SF
Volume = 144.0 CF = 5.3 CY

Roof
Thickness = 5.0 IN
Area = 288.0 SF
Volume = 120.0 CF = 4.4 CY

Fuel Pad	=	96.0	CF	Assume 8'x12'x12" thick reinforced concrete slab on grade pad
	=	3.6	CY	

CONCRETE TOTAL = 25.8 CY

Total Doors	=	2.0	EA	
Size	=	4'-0" x 7'-0"		
Conduit Boxes	=	1.0	EA/DOOR	
Lock Boxes	=	1.0	EA/DOOR	
Fire Extinguishers	=	2.0	EA	
26" x 26" Exhaust Hoods	=	1.0	EA	
30" x 30" Exhaust Hoods	=	1.0	EA	
30" x 30"Intake Hoods	=	2.0	EA	
18" x 18" Intake Air Hood	=	1.0	EA	
18" x 18" Exhaust Hood	=	1.0	EA	
20" Exhaust Fan	=	1.0	EA	Coolair CBA20L, 1 HP, 4702 CFM @ 3/8" SP
12" Exhaust Fan	=	1.0	EA	Coolair CDU12F17, 1/6 HP, 1210 CFM @ 1/4" SP
Generator Fuel Tank	=	1,000.0	GALLON	
Gravel Pad	=	216.0	CF	Assume 50% greater area than building, 6" thick
	=	8.0	CY	
Filter Fabric		472.0	SF	

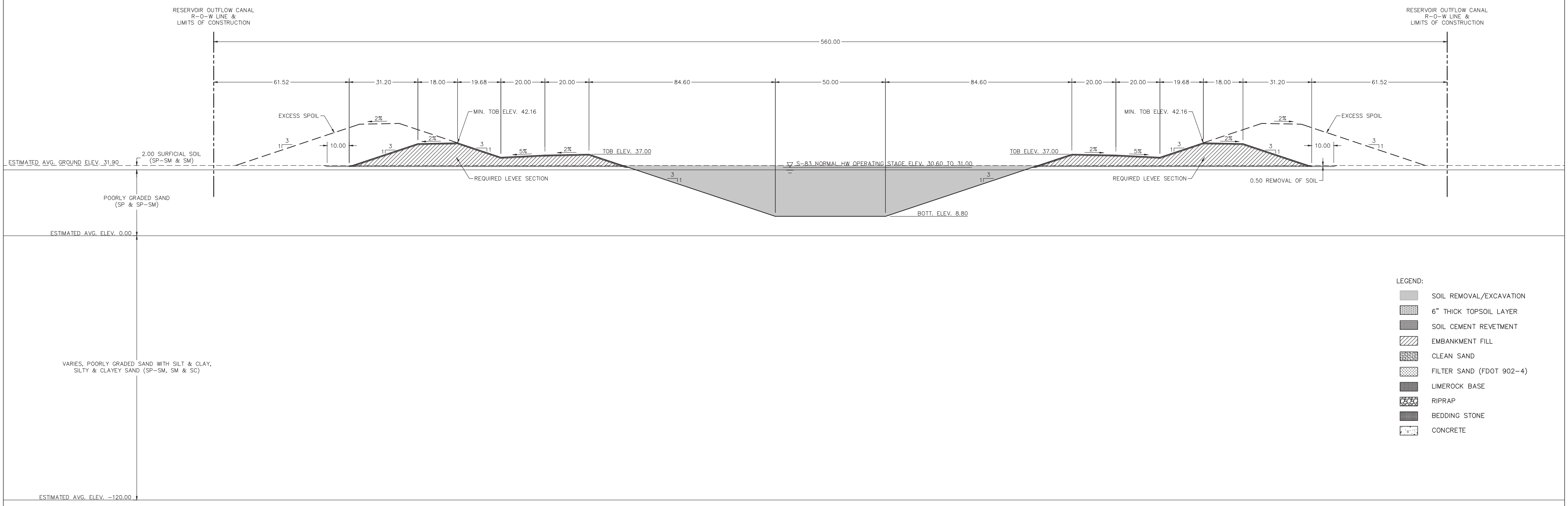
Quantities Summary

Coffer dam:	1,223.3	LF	
Coffer dam:	91,017.3	SF	
Excavation:	49,803.2	CY	
Concrete:	3,457.5	CY	
Steel Rebar:	41.5	CY (?)	
Steel Rebar:	274.2	TONS	
Sheetpile:	4,800.0	SF	PZ27x160LFx30FT
Cap:	23.7	CY	
Railing:	404.0	LF	
Grate:	312.0	SF	
Ladders:	2.0	EA	25' EA
Gates:	2.0	EA	13'x12' w/ mechanical components
Seals:	124.0	LF	
Backfill:	62,254.0	LCY	
Rip-rap:	3,374.8	CY	
Geofabric:	16,546.7	SF	
Boat Barrier:	340.0	LF	
Barrier Piles:	6.0	EA	
Floating Curtain:	980.0	LF	
Silt Fence:	6,492.0	LF	
Control bld.:	25.8	CY	Concrete
Total Doors	2.0	EA	Size 4'-0" x 7'-0"
Conduit Boxes	1.0	EA/DOOR	
Lock Boxes	1.0	EA/DOOR	
Fire Extinguishers	2.0	EA	
26" x 26" Exhaust Hoods	1.0	EA	
30" x 30" Exhaust Hoods	1.0	EA	
30" x 30"Intake Hoods	2.0	EA	
18" x 18" Intake Air Hood	1.0	EA	
18" x 18" Exhaust Hood	1.0	EA	
20" Exhaust Fan	1.0	EA	
12" Exhaust Fan	1.0	EA	
Generator Fuel Tank:	1,000.0	GALLONS	
CTRL BLDG Gravel Pad	8.0	CY	
CTRL BLDG Pad Fabric	472.0	SF	

TYPICAL SECTION - Reservoir East Inflow-Outflow Canal (CNL-2)

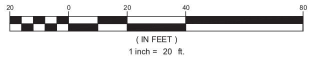
Total Length (feet) of CNL-2 along its C/L **293**

Component	Cross Sect. Area (sqft)	Cross Sect. Length (ft)	Length of Component on Site Plan	Neat Vol. (cuyd)	Neat Area (sqft)	Neat Area (sqyd)	Neat Area (acres)	Pipe Quantities (LF)	Structure Quantities (No.)
Clearing & Grubbing					130,526		3		
Excavation of Top 6" of Topsoil within CNL-2 site				2,417	130,526				
Upper Soil Excavation for CNL-2 (18" below initial 6" topsoil excavation)	351.77		293	4,226					
Remaining Soil Excavation for CNL-2	3,475.77		293	47,684					
6" Thick Topsoil Layer	87.71		329	1,067					
Levee Embankment Fill	471.00		329	5,732					
6" Bedding Stone	130.02		329	1,582					
18" Type B riprap	506.64		329	6,166					
Berm Drain: 15" HDPE Drainage Pipe								122	
Berm Drain: 15" HDPE Flared End Section									2
Berm Drain: 6' x 6' x two layers thick sand cement bag pad									2
Berm Drain: Delineateor on post (one on each side of drain)									4
Sodding		177.16	329				1		
Hydroseeding Beyond levees		40.00	329				0.3		



LOCAR ALTERNATIVE 1

SECTION F - RESERVOIR OUTFLOW CANAL

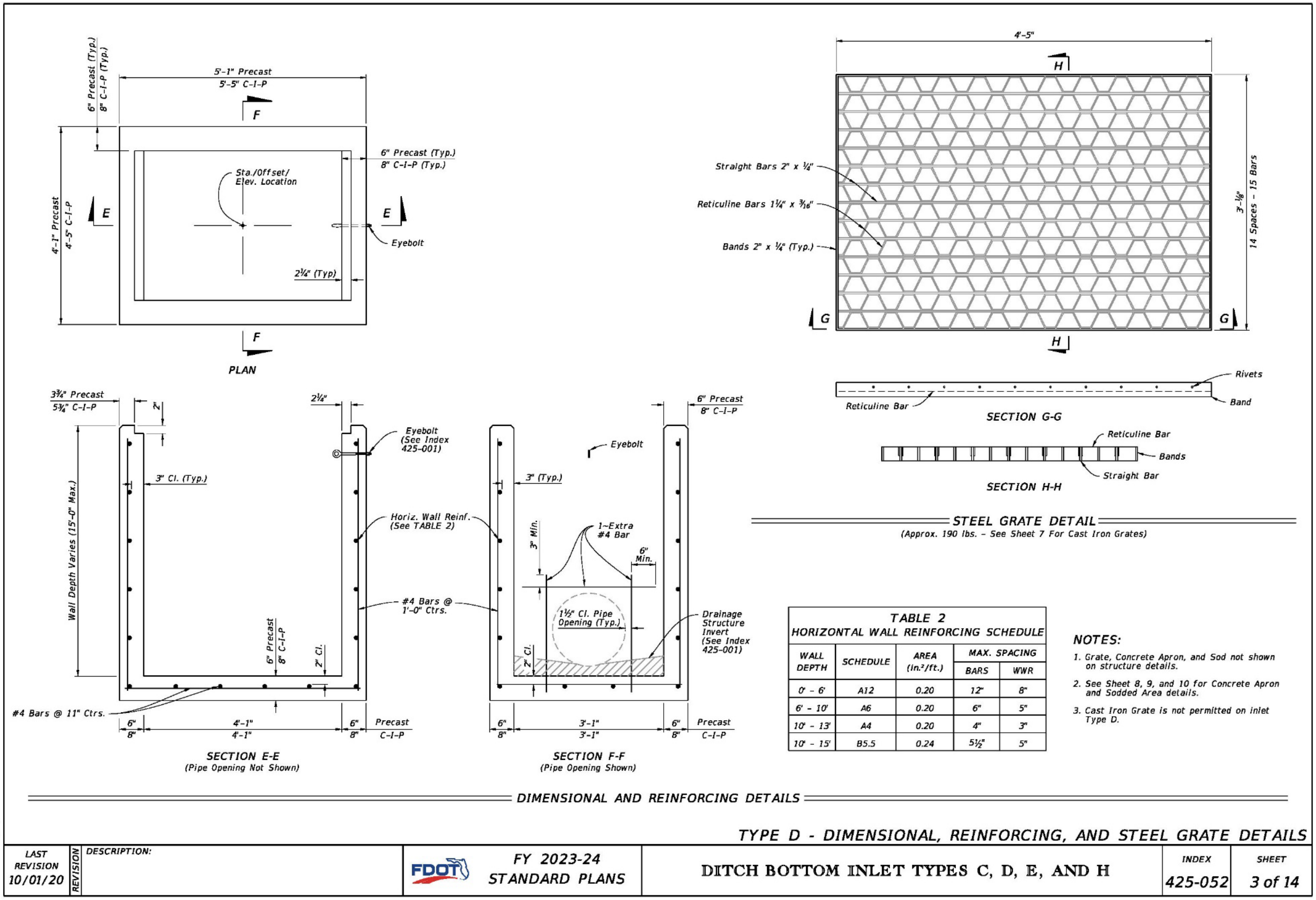


NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
6/19/2023

Feature of Work:	PERIMETER CANAL OUTFALL STRUCTURES (PCOS-1 thru PCOS-4)
Scope Given:	• PCOS-1 will be a fixed weir overflow structure for CNL-1 Reach 7 that will outflow to CNL-2, which in turn will outflow to C-41A. • PCOS-2 will be a fixed weir overflow structure for CNL-1 Reach 7 that will outflow to C-41A. PCOS-2 will replace existing flashboard riser (FBR) structure PC17N. • PCOS-3 will be a fixed weir overflow structure for CNL-1 Reach 7 that will outflow to existing FBR structure PC18N via a ditch, which in turn will outflow to C-41A. • PCOS-4 will be a fixed weir overflow structure for CNL-1 Reach 7 that will outflow to existing FBR structure PC20N via a ditch, which in turn will outflow to C-41A.
Reference for Scope Basis:	
Scope Assumptions:	– Assume Ditch Bottom Inlet structure can be utilized with 36” RCP
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized.
Sequence of Work:	
Key Outstanding Questions/Issues:	



STEEL GRATE DETAIL

(Approx. 190 lbs. - See Sheet 7 For Cast Iron Grates)

TABLE 2
HORIZONTAL WALL REINFORCING SCHEDULE

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0' - 6'	A12	0.20	12"	8"
6' - 10'	A6	0.20	6"	5"
10' - 13'	A4	0.20	4"	3"
10' - 15'	B5.5	0.24	5½"	5"

NOTES:

1. Grate, Concrete Apron, and Sod not shown on structure details.
2. See Sheet 8, 9, and 10 for Concrete Apron and Sodded Area details.
3. Cast Iron Grate is not permitted on inlet Type D.

DIMENSIONAL AND REINFORCING DETAILS

TYPE D - DIMENSIONAL, REINFORCING, AND STEEL GRATE DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FY 2023-24 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E, AND H	INDEX	SHEET
10/01/20					425-052	3 of 14

10/20/2022 8:14:25 AM

Feature of Work:	PERIMETER CANAL OUTFALL STRUCTURES (PCOS-1 thru PCOS-4)
Quantity Take Off:	

PCOS

Quantity	=	4.0	ea	

FDOT Type D Ditch Bottom Inlet with Bleed Orifice

Quantity	=	1.0	ea	
Depth	=	10.0	FT	Assume 10' deep

36" RCP pipe to CNL-1

Length	=	40.0	LF	Assumed
Diameter	=	3.0	FT	Assumed 36"
Excavation				
Depth	=	12.0	FT	Assume Depth +2
Bottom Width	=	11.0	FT	Dia. + 4' each way
Top Width	=	59.0	FT	2:1 @ Depth
Volume	=	16,800.0	CF	
Volume per PCOS	=	622.2	CY	

Assume part of new construction not requiring additional dewatering

Total all PCOS-1 thru PCOS-4

4.0	ea	Type D Inlet
160.0	LF	36" RCP Pipe
2,488.9	CY	Excavation

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR) FEASIBILITY STUDY

CONTRACT 3 – RESERVOIR DAM FOUNDATION

- Construct Perimeter and Divider Dam Soil Bentonite Wall Below Existing Ground
- Construct Soil Stabilization/Foundation Prep for Perimeter and Divider Dam

SECTION A - West & East Cells

Total Length (feet) of Perimeter Dam C/L Along West & East Cells **96,799**

Component	Cross Sect. Area (sqft)	Cross Sect. Length (ft)	Length of Component on Site Plan (ft)	Neat Vol. (cuyd)	Neat Area (sqft)	Neat Area (sqyd)	Neat Area (acres)	Pipe Quantities (LF)	Structure Quantities (No.)
Temp. Silt Fencing (installed along entire perimeter except along C-41A levee)			13,287						
Clearing & Grubbing		614.42	97,509				1,375		
Excavation of Top 6" of Topsoil	298.41		97,509	1,077,695					
Additional 18" Soil Excavation Below Dam & 50' Beyond Each Toe	530.66		96,764	1,901,820					
Slurry Cutoff Wall	180.00	60.00	96,733	644,884	5,803,959				

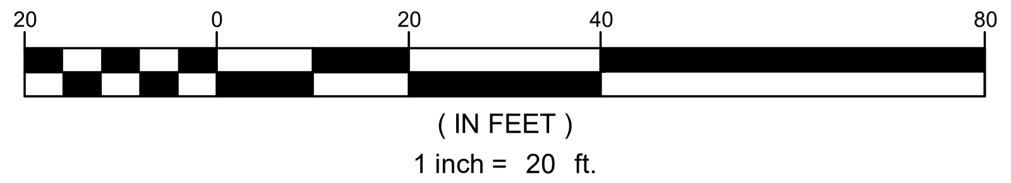
SECTION D - Divider Dam Between West & East Cells

Total Length (feet) of Divider Dam C/L Between West & East Cells **14,392**

Component	Cross Sect. Area (sqft)	Cross Sect. Length (ft)	Length of Component on Site Plan (ft)	Neat Vol. (cuyd)	Neat Area (sqft)	Neat Area (sqyd)	Neat Area (acres)	Pipe Quantities (LF)	Structure Quantities (No.)
Clearing & Grubbing		347.88	14,392				115		
24" Soil Excavation Below Dam & 50' Beyond Each Toe	661.76		14,392	352,747					
Slurry Cutoff Wall	150.00	50.00	14,392	79,957	719,609				

LOCAR RECOMMENDED PLAN

SECTION A - RESERVOIR PERIMETER DAM



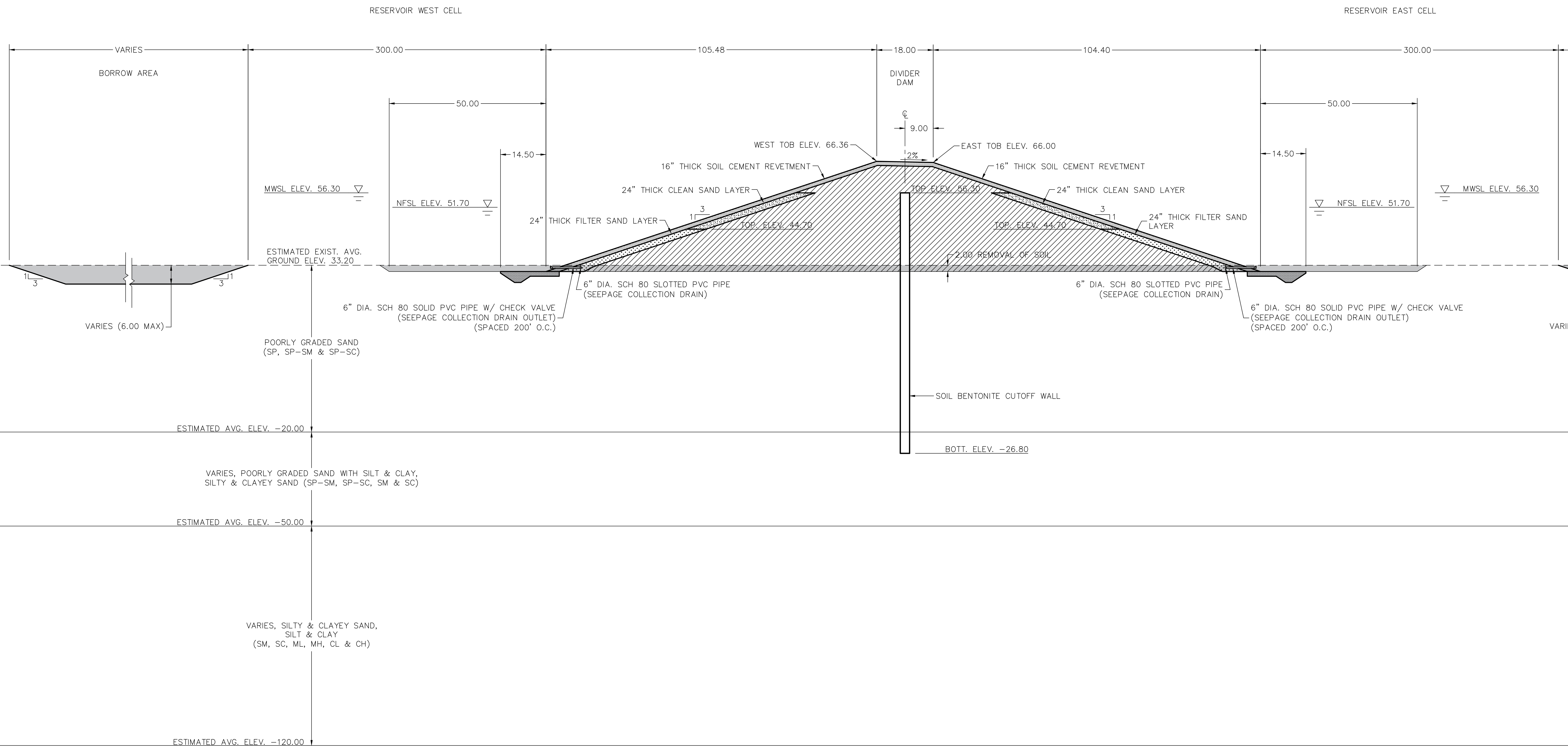
(IN FEET)
1 inch = 20 ft.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
11/3/2023

NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

C:\Users\SCORTRS\Documents\24 SFWMD\20 Projects\LOCAR\20 CAD\Sheets\Typical Section Sheet Layouts.dwg Fri, 03 Nov 2023 - 3:17pm

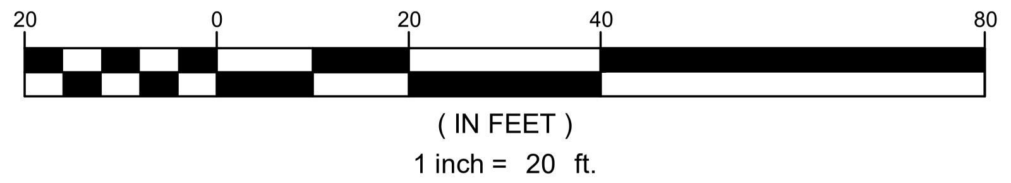


LEGEND:

- ▨ SOIL REMOVAL/EXCAVATION
- ▨ 6" THICK TOPSOIL LAYER
- ▨ SOIL CEMENT REVETMENT
- ▨ EMBANKMENT FILL
- ▨ CLEAN SAND
- ▨ FILTER SAND (FDOT 902-4)
- ▨ LIMEROCK BASE
- ▨ RIPRAP
- ▨ BEDDING STONE
- ▨ CONCRETE

LOCAR RECOMMENDED PLAN

TYPICAL SECTION - RESERVOIR DIVIDER DAM



NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
11/1/2023

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR) FEASIBILITY STUDY

CONTRACT 4 – RESERVOIR EARTHWORK

- Construct Perimeter and Divider Dams
- Construct Toe Ditch and Toe Road
- Construct Perimeter Canal CNL-1 and Perimeter Maintenance Road
- Construct Reservoir Outflow Canal CNL-3
- Construct Lykes AGI Earthwork Features (Levee and Borrow Ditch)

SECTION A - West & East Cells

Total Length (feet) of Perimeter Dam C/L Along West & East Cells 96,799

Component	Cross Sect. Area (sqft)	Cross Sect. Length (ft)	Length of Component on Site Plan (ft)	Neat Vol. (cuyd)	Neat Area (sqft)	Neat Area (sqyd)	Neat Area (acres)	Pipe Quantities (LF)	Structure Quantities (No.)
Barbed Wire Perimeter Fence (installed along entire perimeter except along C-41A)			73,763						
Abandonment of FAS Irrigation Wells									22
Abandonment of Monitoring Wells									2
Soil Inversion Within Former Citrus Groves									
Clearing of Citrus Trees									
Clearing & Grubbing									
Leveling of Planting Beds & Backfilling of Ditches									
Soil Inversion									
Additional Soil Excavation for Soil Cement Toe	37.32		95,942	132,629					
Additional Soil Excavation for Perimeter Canal	1,597.40		98,211	5,811,708					
Excavation for Offsite Drainge Collection Ditch (ODCD) & Access Rd	1,721.08		11,354	723,734					
6" Thick Topsoil Layer - Part 1	73.47		97,309	264,790					
6" Thick Topsoil Layer - Part 2	25.08		98,006	91,043					
6" Thick Topsoil Layer - Part 3	18.98		99,009	69,594					
6" Thick Topsoil Layer - Part 4	9.30		99,338	34,215					
6" Thick Topsoil Layer - Shoulders of Access Rd Along Southwest Side of ODCD	28.28		12,004	12,573					
6" Thick Limerock Base - Toe Road	8.00		97,801	28,984					
6" Thick Limerock Base - Perim. Maint. Road Parallel to Perim. Dam Alignment	12.00		99,203	44,099					
6" Thick Limerock Base - Access Road Along Southwest Side of ODCD	12.00		12,004	5,336					
Additional Embankment Fill for higher toe ditch & roads along Reach 7 of P. Canal	205.44		35,380	269,204					
Toe Road Embankment Fill (no reduction for MESs & culverts)	436.80		97,817	1,582,459					
Perim. Maint. Road Embankment Fill	105.23		99,203	386,639					
ODCD Access Road Embankment Fill	194.30		12,004	86,386					
Dam Embankment Fill	5,023.11		96,799	18,008,538					
Slurry Cutoff Wall	70.50	23.40	96,733	252,580	2,263,544				
24" Thick Clean Sand Layer Beneath Soil Cement	73.36		96,370	261,858					
24" Thick Filter Sand Layer Beneath Soil Cement	88.54		96,131	315,235					
30" Wide Filter Sand Chimney Drain	39.50		96,987	141,889					
18" Thick Filter Sand Blanket Drain	125.57		97,237	452,237					
24" Thick Clean Sand Layer Beneath Blanket Drain	152.10		97,210	547,618					
16" Soil Cement Revetment	194.79	148.95	95,974	692,407		1,588,351			
Soil Cement Toe	37.32		95,942	132,629					
6" Bedding Stone	42.23		980	1,533					
18" Type B riprap	121.13		980	4,397					
24" Drainage Pipe								7,840	
24" Mitered End Section									98
6" Slotted PVC Collector Pipe for Inside Toe Drain								96,044	
6" Solid PVC Discharge Pipe for Inside Toe Drain								3,848	
6" Backflow Preventer for each Inside Toe Drain									481
12" Slotted PVC Collector Pipe for Outside Toe Drain								97,463	
12" Solid PVC Discharge Pipe for Outside Toe Drain								2,196	
12" FDOT U-Type Conc. Endwall for each Outside Toe Drain									488
Sodding - Part 1		146.94	97,309				328		
Sodding - Part 2		50.99	98,006				115		
Sodding - Part 3		38.79	99,009				88		
Sodding - Part 4		18.98	99,338				43		
Sodding - Access Road Along Southwest Side of ODCD		88.76	12,004				24		
Hydroseeding Beyond Perimeter Maintenance Rd.		10.00	99,368				23		

SECTION D - Divider Dam Between West & East Cells

Total Length (feet) of Divider Dam C/L Between West & East Cells 14,392

Component	Cross Sect. Area (sqft)	Cross Sect. Length (ft)	Length of Component on Site Plan (ft)	Neat Vol. (cuyd)	Neat Area (sqft)	Neat Area (sqyd)	Neat Area (acres)	Pipe Quantities (LF)	Structure Quantities (No.)
Additional Soil Excavation for Soil Cement Toe	71.49		14,392	38,106					
Dam Embankment Fill	3,667.45		14,392	1,954,913					
Slurry Cutoff Wall	99.60	33.20	14,392	53,091	477,821				
24" Thick Clean Sand Layer Beneath Soil Cement	147.99		14,392	78,888					
24" Thick Filter Sand Layer Beneath Soil Cement	173.28		14,392	92,368					
16" Soil Cement Revetment	313.07	239.24	14,392	166,881		382,571			
Soil Cement Toe	71.49		14,392	38,106					
6" Slotted PVC Collector Pipe for Toe Drains								28,784	
6" Solid PVC Discharge Pipe for Toe Drains								1,152	
6" Backflow Preventer for each Toe Drain									144
				2,126,169					

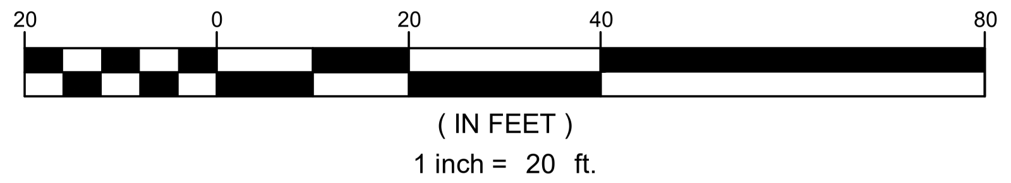
SECTION AGI - Levee for New/Expanded Farm AGI(s)*

Total Length (feet) of C/L of New AGI Levee 14,262

Component	Cross Sect. Area (sqft)	Cross Sect. Length (ft)	Length of Component on Site Plan** (ft)	Neat Vol. (cuyd)		Neat Area (sqyd)	Neat Area (acres)	Pipe Quantities (LF)	Structure Quantities (No.)
Clearing & Grubbing		171.80	14,262				56		
6" Soil Excavation Below Levee & Beyond Levee Toe	75.09		14,262	39,663					
Additional Soil Excavation for Borrow Ditch	315.88		14,262	166,851					
Levee Embankment Fill	359.92		14,262	190,114					
Sodding		146.95	14,262				48		

LOCAR RECOMMENDED PLAN

SECTION A - RESERVOIR PERIMETER DAM



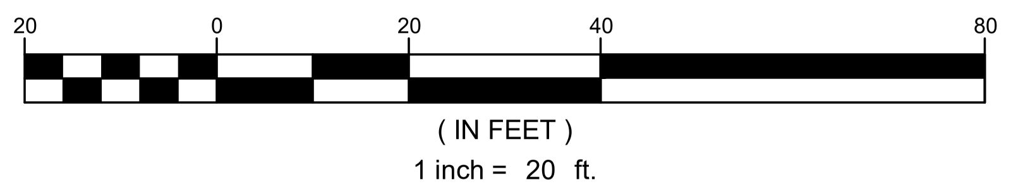
NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
11/3/2023

LOCAR RECOMMENDED PLAN

TYPICAL SECTION - RESERVOIR DIVIDER DAM



NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

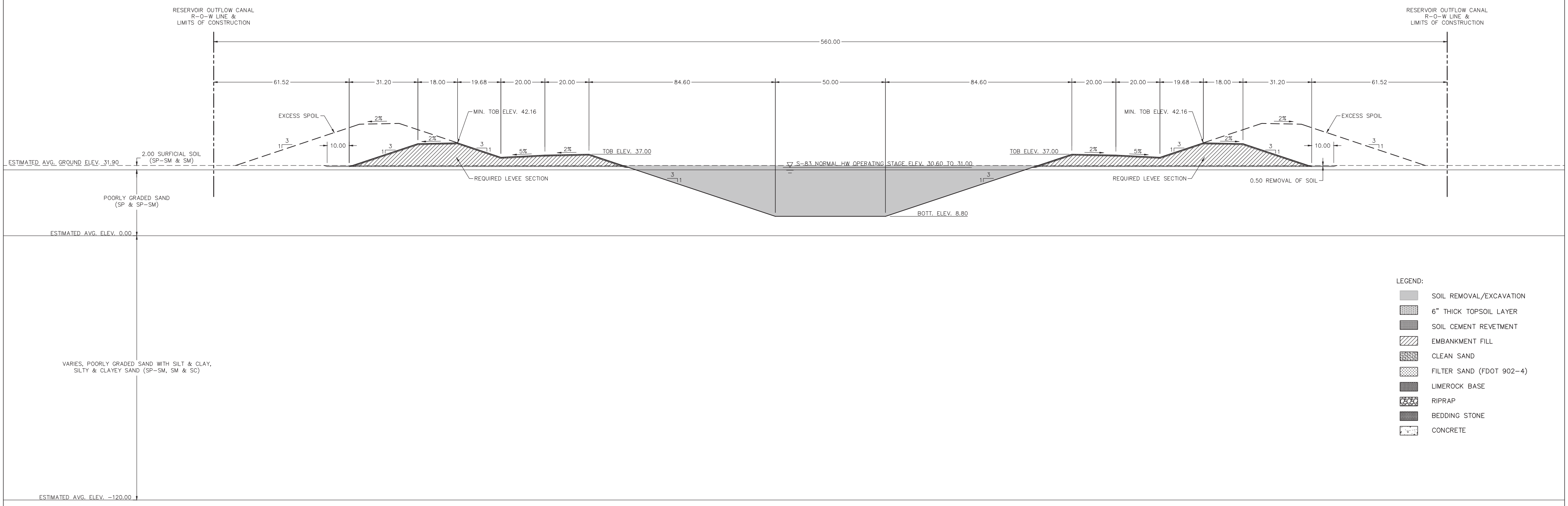
LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
11/1/2023

TYPICAL SECTION - Reservoir West Inflow-Outflow Canal (CNL-3) and ODCD-2

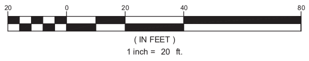
Total Length (feet) of CNL-3 along its C/L **4,411**

Component	Cross Sect. Area (sqft)	Cross Sect. Length (ft)	Length of Component on Site Plan	Neat Vol. (cuyd)	Neat Area (sqft)	Neat Area (sqyd)	Neat Area (acres)	Pipe Quantities (LF)	Structure Quantities (No.)
Clearing & Grubbing along CNL-3		510.00	4,411				52		
Clearing & Grubbing along ODCD-2		80.00	3,016				6		
Excavation of Top 6" of Topsoil for CNL-3	231.72		4,411	37,859					
Upper Soil Excavation for CNL-3 (18" below initial 6" topsoil excavation)	272.91		4,411	44,591					
Remaining Soil Excavation for CNL-3	2,390.63		4,411	396,261					
Excavation of Top 6" of Topsoil for ODCD-2	19.25		3,016	2,150					
Remaining Soil Excavation for ODCD-2	105.75		3,016	11,811					
6" Thick Topsoil Layer	142.98		4,411	23,361					
Levee Embankment Fill	1,501.39		4,411	245,308					
6" Bedding Stone	114.24		1,592	6,737					
18" Type B riprap	335.05		1,592	19,758					
Berm Drain: 15" HDPE Drainage Pipe								1,062	
Berm Drain: 15" HDPE Flared End Section									18
Berm Drain: 6' x 6' x two layers thick sand cement bag pad									18
Berm Drain: Delineateor on post (one on each side of drain)									36
Sodding		270.88	4,411				27		
Hydroseeding Beyond levees along CNL-3		40.00	4,411				4.1		
Hydroseeding Beyond levees along ODCD-2		80.00	3,016				5.5		



LOCAR ALTERNATIVE 1

SECTION F - RESERVOIR OUTFLOW CANAL

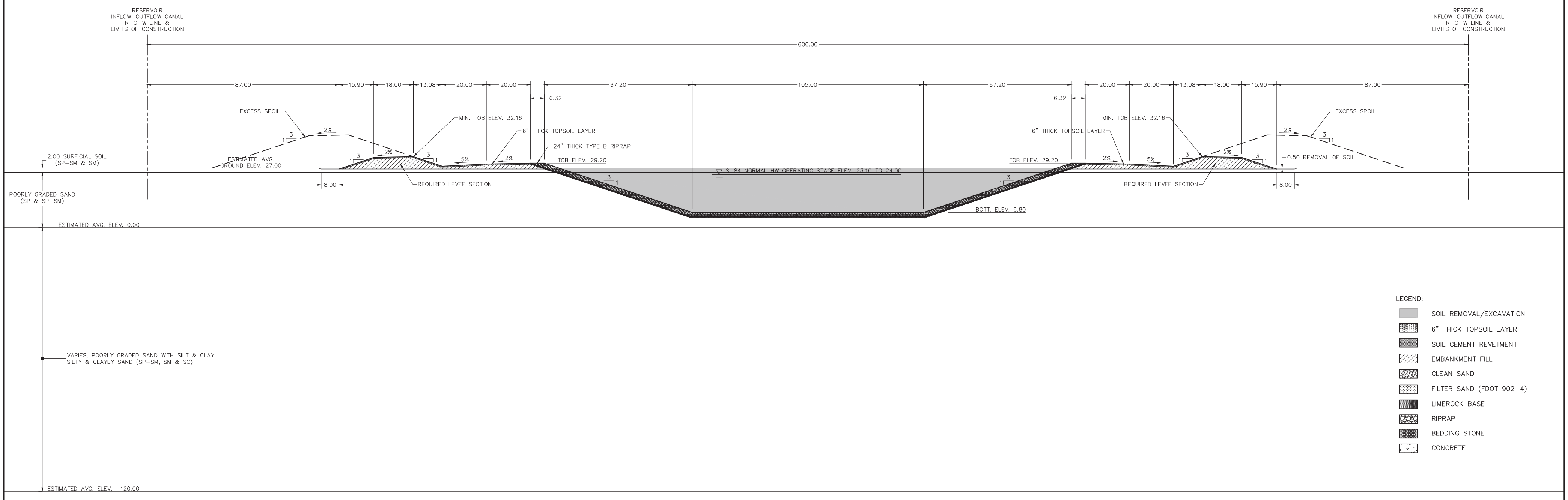


NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
6/19/2023

C:\Users\SCIORTRS\Documents\04 SFWMD\00 Projects\LOCAR\05 CAD\Sheets\Typical Section Sheet Layouts.dwg Thu, 27 Jul 2023 - 11:49pm



LOCAR ALTERNATIVE 1

SECTION G - RESERVOIR INFLOW-OUTFLOW CANAL

(IN FEET)
1 inch = 20 ft.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
7/25/2023

NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR) FEASIBILITY STUDY

CONTRACT 5 – RESERVOIR DAM STRUCTURES

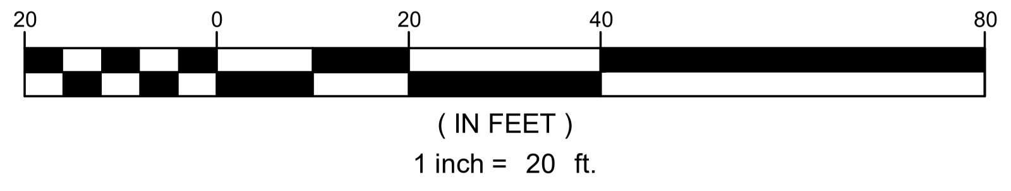
- Construct Overflow Spillways OS-1 and OS-2
- Construct Gated Outflow Culvert CU-1A
- Construct Gated Outflow Culvert CU-2
- Construct Divider Dam Structure DDS-1

Feature of Work:	STRUCTURES OS-1: EMERGENCY OVERFLOW UN-GATED WEIR/SPILLWAY
Scope Given:	Emergency overflow weir/spillway (by-pass not required for construction). Structure OS-1 is an overflow spillway for the East Cell, once it reaches the maximum crest EL = 50.6-ft NAVD being utilized as the reservoir storage limit.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure plans and cross-sections provided as part of site planning documents. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Reservoir is not operational prior to overflow weir being constructed. – Assumed that levee is constructed to design grade of overflow weir. Minimal excavation is needed prior to placement of concrete. – Assumed that the weir will start at the toe of the levee then rise at a constant slope up to top of canal, be 14 ft wide, then back down to the opposite toe of the levee.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. *As part of an RFI, the structures heights were increased by 6-ft, also changing the estimated length.
Sequence of Work:	– Site survey and stake entire area of Emergency Overflow Weir. – Silt Fence the entire site. Silt fence maintenance will be ongoing during construction of the overflow weir. – Excavate site for keyed ends near the toe of the levee and the intersection of the levee crown and the weir. – Place filter fabric below future holes, set and tie reinforcing. Form, place, finish, and cure concrete. Saw cut joints. Strip forms backfill and compact at edges of concrete.
Key Outstanding Questions/Issues:	

LOCAR RECOMMENDED PLAN

SECTION - OS-1 UNGATED OVERFLOW SPILLWAY

SECTION - OS-2 UNGATED OVERFLOW SPILLWAY



NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
9/24/2023

Feature of Work:	STRUCTURE OS-1: EMERGENCY OVERFLOW UN-GATED WEIR/SPILLWAY

Quantity Take Off:

User Input	Row Calculation	Sum of Values above

Concrete

Spillway Length	=	309.9	FT				Across canal - measured from Typical
Spillway Foundation Width	=	33.1	FT				Across Levee - measured from Plan
Foundation Cross-Section Area	=	953.2	SF				Measured from Typical
Foundation Volume	=	31,550.3	CF	=	1,168.5	CY	
Sidewall Width	=	2.0	FT				Measured from Plan
Sidewall Cross-Section Area	=	7,595.7	SF				Measured from Typical - minus foundation
4" Thick Concrete Volume	=	30,382.9	CF	=	1,125.3	CY	
Structure Corssings	=	2.0	EA				
Crossings Length		53.1	FT				Measured from Plan
Crossings Cross-Section Area	=	45.2	SF				Measured from Typical
Structure Crossings Volume	=	4,804.5	CF	=	177.9	CY	
TOTAL CONCRETE	=	74,435.7	CF	=	2,471.8	CY	
Steel Rebar							Assumed 1.2% volume of concrete
STEEL REBAR		TOTAL		=	29.7	CY	Rebar
					196.0	TONS	

Site Prep

Perimeter	=	686.0	LF			
Area of work	=	10,257.7	SF	=	0.2	Acres

Silt Fence

Silt Fence	=	857.5	LF	Assumed 125% longer than the perimeter of the work area

Quantities Summary

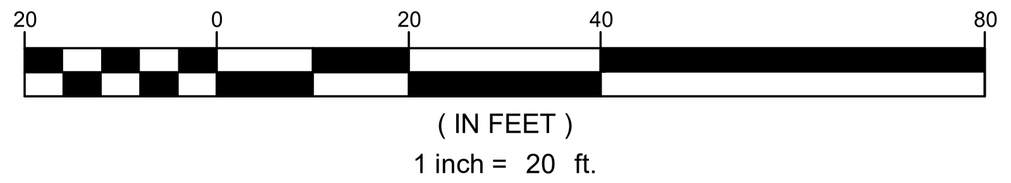
Concrete:	2,471.8	CY
Steel Rebar:	29.7	CY (?)
Steel Rebar:	196.0	TONS
Silt Fence:	857.5	LF

Feature of Work:	STRUCTURES OS-2: EMERGENCY OVERFLOW UN-GATED WEIR/SPILLWAY
Scope Given:	Emergency overflow weir/spillway (by-pass not required for construction). Structure OS-2 is an overflow spillway for the West Cell, once it reaches the maximum crest EL = 50.6-ft NAVD being utilized as the reservoir storage limit.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure plans and cross-sections provided as part of site planning documents. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Reservoir is not operational prior to overflow weir being constructed. – Assumed that levee is constructed to design grade of overflow weir. Minimal excavation is needed prior to placement of concrete. – Assumed that the weir will start at the toe of the levee then rise at a constant slope up to top of canal, be 14 ft wide, then back down to the opposite toe of the levee.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. *As part of an RFI, the structures heights were increased by 6-ft, also changing the estimated length.
Sequence of Work:	– Site survey and stake entire area of Emergency Overflow Weir. – Silt Fence the entire site. Silt fence maintenance will be ongoing during construction of the overflow weir. – Excavate site for keyed ends near the toe of the levee and the intersection of the levee crown and the weir. – Place filter fabric below future holes, set and tie reinforcing. Form, place, finish, and cure concrete. Saw cut joints. Strip forms backfill and compact at edges of concrete.
Key Outstanding Questions/Issues:	

LOCAR RECOMMENDED PLAN

SECTION - OS-1 UNGATED OVERFLOW SPILLWAY

SECTION - OS-2 UNGATED OVERFLOW SPILLWAY



NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
9/24/2023

Feature of Work:	STRUCTURE OS-2: WIDE EMERGENCY OVERFLOW UN-GATED WEIR/SPILLWAY
Quantity Take Off:	

User Input   Row Calculation   Sum of Values above

Concrete

Spillway Length	=	309.9	FT				Across canal - measured from Typical
Spillway Foundation Width	=	33.1	FT				Across Levee - measured from Plan
Foundation Cross-Section Area	=	953.2	SF				Measured from Typical
Foundation Volume	=	31,550.3	CF	=	1,168.5	CY	
Sidewall Width	=	2.0	FT				Measured from Plan
Sidewall Cross-Section Area	=	7,595.7	SF				Measured from Typical - minus foundation
4" Thick Concrete Volume	=	30,382.9	CF	=	1,125.3	CY	
Structure Corssings	=	2.0	EA				
Crossings Length		53.1	FT				Measured from Plan
Crossings Cross-Section Area	=	45.2	SF				Measured from Typical
Structure Crossings Volume	=	4,804.5	CF	=	177.9	CY	
TOTAL CONCRETE	=	74,435.7	CF	=	2,471.8	CY	
Steel Rebar							Assumed 1.2% volume of concrete
STEEL REBAR		TOTAL		=	29.7	CY	Rebar
					196.0	TONS	

Site Prep

Perimeter	=	686.0	LF			
Area of work	=	10,257.7	SF	=	0.2	Acres

Silt Fence

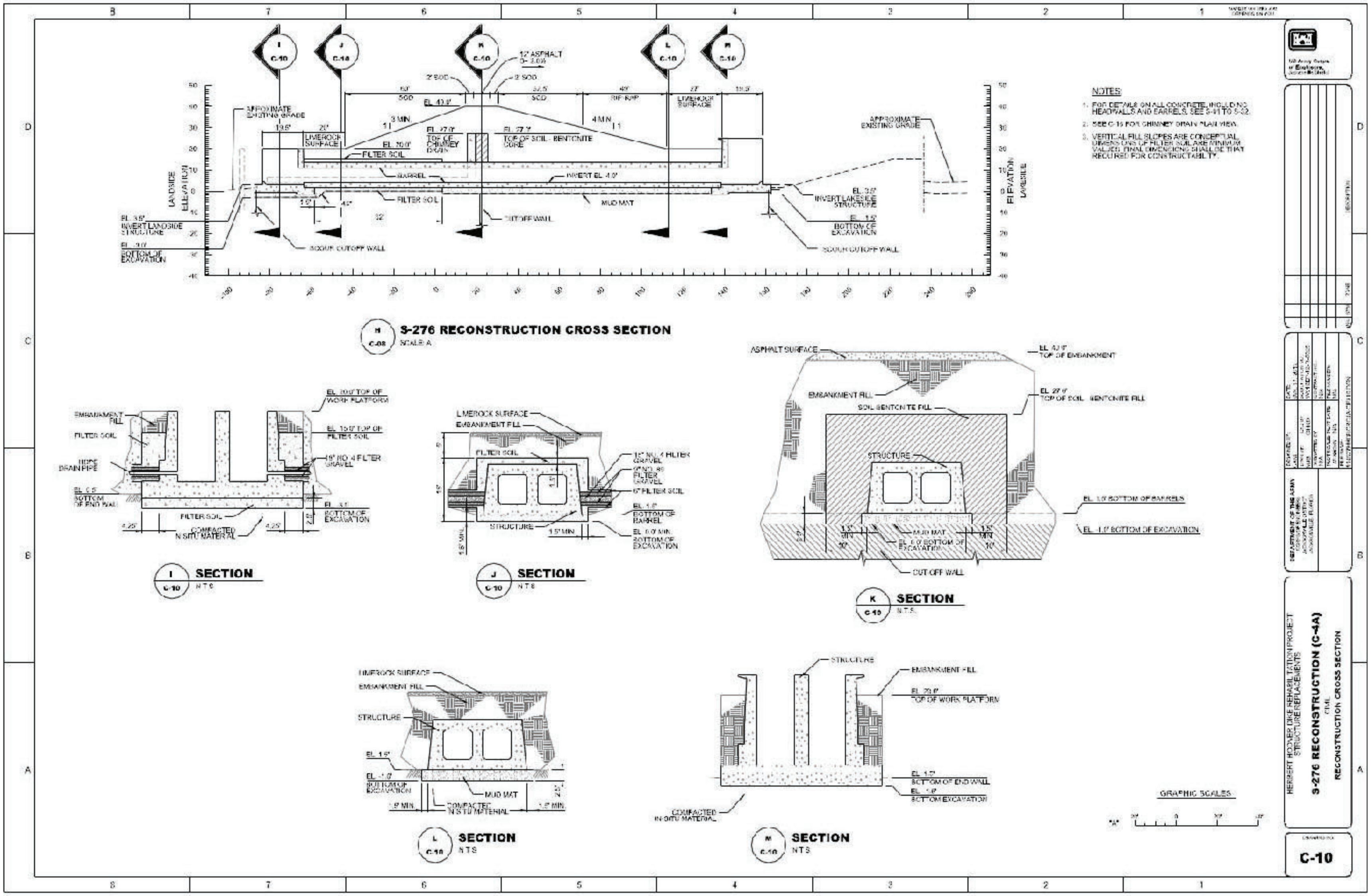
Silt Fence	=	857.5	LF	Assumed 125% longer than the perimeter of the work area

Quantities Summary

Concrete:	2,471.8	CY
Steel Rebar:	29.7	CY (?)
Steel Rebar:	196.0	TONS
Silt Fence:	857.5	LF

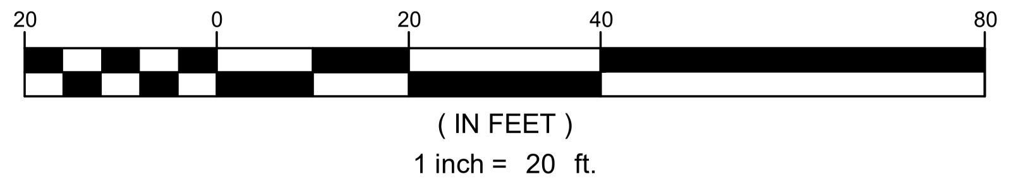
Feature of Work:	STRUCTURES CU-1A: 556 LF DOUBLE GATED 13’Wx12’H BOX CULVERT WITH ENDWALLS, 12’x24’ CONTROL BUILDING
Scope Given:	556 LF double gated 13’x12’ box culvert w/ endwalls w/ 12’x24’ control building and HW/TW monitoring stations w/ walkways (by-pass not required for construction). Structure CU-1A is a gated box culvert which allows for outflow from the East Cell, discharging to the Seepage Canal CNL-1 Reach 7.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure S-276 and S-277 as a double barrel culvert. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Assume Excavation will be to the same depth below finished grade as shown in contract drawings for similar projects with a slope of 1:2 for construction. – Assume material as 2 ft of organic, 8 ft of blastable cap rock, and 10 ft of Fort Thompson layer for the remainder of the excavation – until indicated otherwise. – Assume power will be provided from power lines in the area. – Assume that a diesel generator is needed for backup power.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. *As part of an RFI, the structures heights were increased by 6-ft, also changing the estimated length.
Sequence of Work:	Excavation/blasting of limestone rock will be required to allow space for the foundation for the gated culvert structure. Culverts, foundations and structures will then be placed. Control structures for the culverts will be installed and a standalone Control station will be built in the area. An additional backup generator will be required along with local utility power. Apron, wing wall, and riprap placement will occur after Culverts have been placed. Backfill and compaction around the structure will occur, the plugs will be removed.
Key Outstanding Questions/Issues:	

Representative Drawings/Photos: CU-1A



LOCAR RECOMMENDED PLAN

SECTION - CU-1A GATED OUTFLOW CULVERT



NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
9/24/2023

Feature of Work:	STRUCTURE CU-1A: 556 LF DOUBLE GATED 13’Wx12’H BOX CULVERT WITH ENDWALLS, 12’x24’ CONTROL BUILDING

Quantity Take Off:

User Input | Row Calculation | Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	255.7	FT	Assume 20' from top of excavation
Length	=	632.0	FT	Assume 20' from length of excavation
Depth	=	46.0	FT	Assumed
Total Perimeter	=	1,775.3	LF	Sheetpile perimeter
Area	=	161,581.3	SF	

Culvert excavation

Length	=	592.0	FT	Assumed from drawings					
Total Depth	=	26.0	FT	Invert Elev. Minus Foundation Depth					
Thickness of Organic	=	2.0	FT	Assume - 2ft thick					
Thickness of Cap Rock	=	8.0	FT	Assume - 4ft thick					
Thickness of Fort Thompson	=	16.0	FT	Assume - 24ft thick					
Slope1	=	2.0	:1						
Slope2	=	2.0	:1						
Bottom Width	=	111.7	FT	Assumes 40' endwalls both ways					
Top Width	=	215.7	FT						
Cross Section	=	4,255.3	SF						
Cross Section Organic	=	423.3	SF						
Cross Section of Cap Rock	=	1,533.3	SF						
Cross Section of Fort Thompson	=	2,298.7	SF						
Organic Cut Volume	=	250,613.3	CF	=	9,282.0	BCY	=		LCY
Cap Rock Cut Volume	=	907,733.3	CF	=	33,619.8	BCY	=		LCY
Fort Thompson Cut Volume	=	1,360,810.7	CF	=	50,400.4	BCY	=		LCY
EXCAVATION		TOTAL		=	93,302.1	BCY	=	116,628	LCY

Concrete Culvert Concrete

Culvert Pipes	2		Width	13		Height	18
Length	=	592.0	FT				
Foundation Concrete Bottom Width	=	31.7	FT				
Bottom Thickness	=	3.0	FT				
Volume	=	56,240.0	CF	=	2,083.0	CY	
Vertical Concrete Height	=	18.0	FT				
Thickness of Edge Walls	=	2.0	FT				
Thickness of Interior Walls	=	1.7	FT				
Volume	=	56,832.0	CF	=	2,104.9	CY	
Elevated Concrete							
Top Width	=	31.7	FT				
Thickness	=	2.0	FT				
Volume	=	37,493.3	CF	=	1,388.6	CY	

Inlet and Outlet Works

Number	=	2.0	EA	Assumed intake and outlet are the same
Foundation				
Length	=	20.0	FT	
Depth	=	2.0	FT	
Width	=	31.7	FT	

Volume	=	2,533.3	CF	=	93.8	CY		
Culvert Endwall								
Height	=	38.0	FT				Assume x2 (Culvert Height + 1')	
Thickness	=	1.5	FT					
Width	=	31.7	FT					
Openings	=	468.0	SF					
Volume	=	2,206.0	CF	=	81.7	CY		
Needle Beam								
Height	=	2.5	FT					
Width	=	13.0	FT					
Depth	=	3.0	FT					
Volume		390.0	CF	=	14.4	CY		
Exterior Walls								
Edge Wall Height	=	38.0	FT					
Edge Wall Length	=	20.0	FT				total each side	
Edge Wall Thickness	=	2.0	FT					
Interior Wall Height		38.0	FT					
Interior Wall Length		14.0	FT					
Inteiror Wall Thickness		1.7	FT					
Volume	=	7,853.3	CF	=	290.9	CY		
CONCRETE		TOTAL		=	6,057.3	CY		
Steel Rebar							Assumed 1.2% volume of concrete	Culvert referenced
STEEL REBAR		TOTAL		=	72.7	CY	Rebar	as an example used
					480.4	TONS		approx. 0.8% steel
								per volume

Sheetpile Endwalls

Number	=	2.0	EA				x2 Endwalls per opening (HW/TW)	
Width	=	80.0	FT				40 ft off each side of culvert	
Length	=	30.0	FT				Assume PZ27 sheetpile, 30' long sheets	
Sheetpile Area	=	4,800.0	SF				30' Long Sheets, 160' Span	PZ-27
Concrete Cap	=	4.0	SF				Assume 2'x2' cap with PZ27 sheets	
Concrete Volume	=	640.0	CF	=	23.7	CY		Concrete

MISC METALS

Structure Railing	=	120.0	LF				Per each end
Endwall Railing	=	82.0	LF				Per each end
TOTAL RAILING	=	404.0	LF				3'6" Tall Steel Railing
Ladders	=	2.0	EACH				
height	=	25.5	FT EA	=	51.0	FT TOTAL	
Grating	=	78.0	SF per Gate				Approx. 6' long, width of each bay
TOTAL Grating	=	312.0	SF				Steel Grating

NEW GATES

Number of gates	=	2.0	EA				x1 per Culvert Pipe
Height	=	19.0	FT				Assumed 1' greater than Culvert Height
Width	=	12.0	FT				Assumed 1' smaller than Culvert Width (frame)
Total Weight of Gates	=	20,269.2	LB EA				Follows similar weight calculations as S-2, but reduces number of steel channels
TOTAL STEEL GATE WEIGHT		40,538.3	LB	=	20.3	TONS	
Mechanical Components	=	2.0	EA				All gate component information including frame, stem,

motor, yoke, etc. to be provided by manufacturer

Imbeds for Gate = 124.0 LF

Gate Seal Length = 124.0 LF Gate perimeter x # of gates

Backfill

Assume Culvert is backfilled as part of levee construction

RIP RAP

Assume same on both sides

Number of placements = 2.0 EA 1 each side

Length = 136.0 FT Assume width of new canal

Width = 111.7 FT Assume same as bottom width of excavation

thickness = 3.0 FT Assumed

Volume = 45,560.0 CF/EA = 1,687.4 CY/EA

RIPRAP TOTAL = 3,374.8 CY Riprap

Geotextile Filter Fabric = 16,546.7 SF Fabric

Boat Barrier

Number = 2.0 EA

Piles for Buoys = 3.0 EA Assume barrier has 3 points (2 at shore, 1 at canal)

Length = 170.0 FT/EA

Total Length = 340.0 FT Buoy style barrier

Total Piles = 6.0 EA

SWPPP

Floating Silt Boom = 980.0 FT Assumed

Silt Fence = 6,492.0 FT Assumed

Control Building

Size = 288.0 SF 12x24

Electrical = NEEDED

Communications = NEEDED

Modular Precast Concrete Structure

Exterior Walls

Height = 12.0 FT

Perimeter Length = 72.0 FT

Thickness = 4.0 IN

Volume = 288.0 = 10.7 CY

Interior Wall

Height = 12.0 FT

Length = 12.0 FT

Thickness = 4.0 IN

Volume = 48.0 = 1.8 CY

Floor Slab

Thickness = 6.0 IN

Area = 288.0 SF

Volume = 144.0 CF = 5.3 CY

Roof

Thickness = 5.0 IN

Area = 288.0 SF

Volume = 120.0 CF = 4.4 CY

Fuel Pad	=	96.0	CF	Assume 8'x12'x12" thick reinforced concrete slab on grade pad
	=	3.6	CY	

CONCRETE TOTAL = 25.8 CY

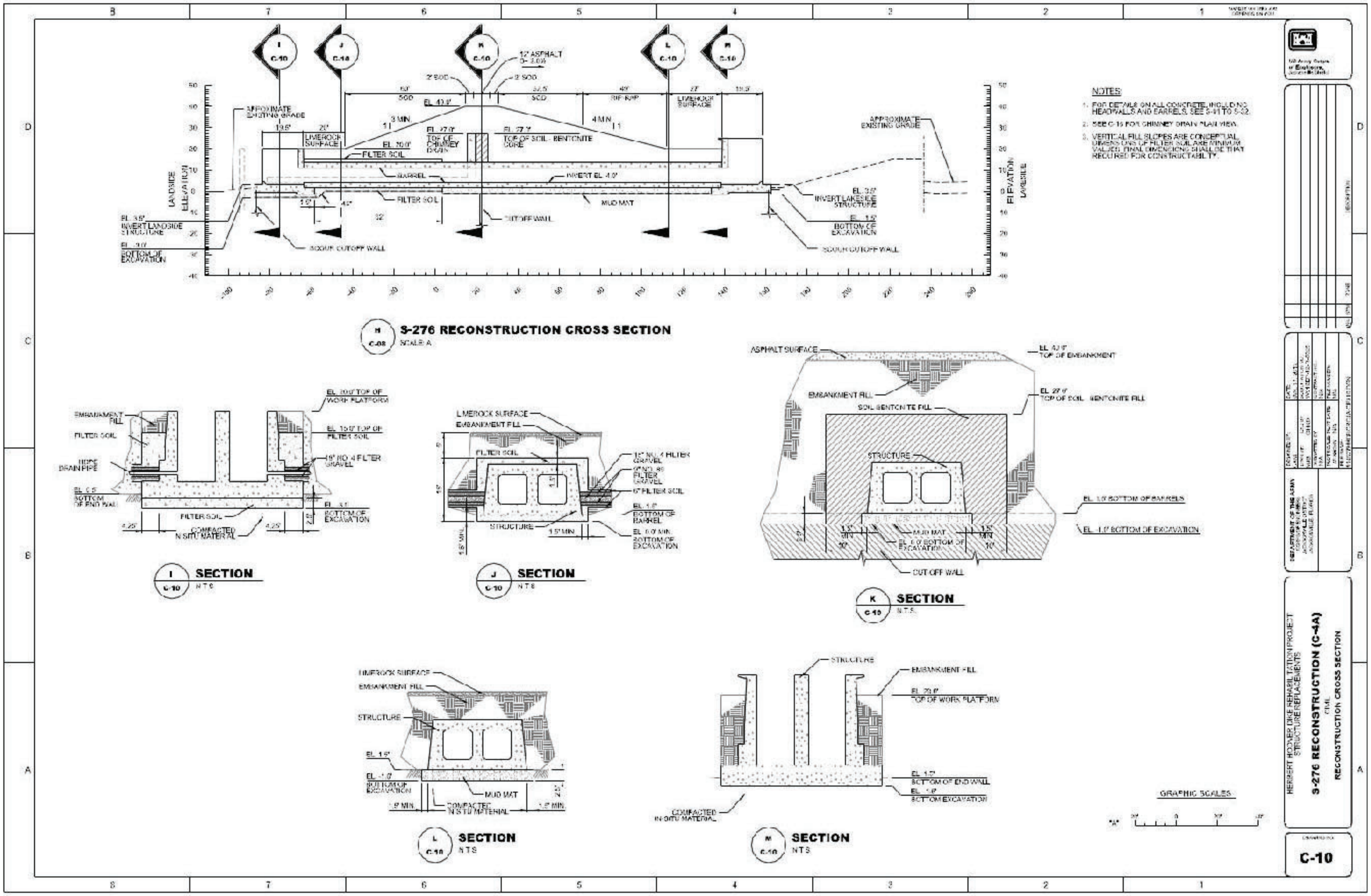
Total Doors	=	2.0	EA	
Size	=	4'-0" x 7'-0"		
Conduit Boxes	=	1.0	EA/DOOR	
Lock Boxes	=	1.0	EA/DOOR	
Fire Extinguishers	=	2.0	EA	
26" x 26" Exhaust Hoods	=	1.0	EA	
30" x 30" Exhaust Hoods	=	1.0	EA	
30" x 30"Intake Hoods	=	2.0	EA	
18" x 18" Intake Air Hood	=	1.0	EA	
18" x 18" Exhaust Hood	=	1.0	EA	
20" Exhaust Fan	=	1.0	EA	Coolair CBA20L, 1 HP, 4702 CFM @ 3/8" SP
12" Exhaust Fan	=	1.0	EA	Coolair CDU12F17, 1/6 HP, 1210 CFM @ 1/4" SP
Generator Fuel Tank	=	1,000.0	GALLON	
Gravel Pad	=	216.0	CF	Assume 50% greater area than building, 6" thick
	=	8.0	CY	
Filter Fabric		472.0	SF	

Quantities Summary

Coffer dam:	1,775.3	LF	
Coffer dam:	161,581.3	SF	
Excavation:	93,302.1	CY	
Concrete:	6,057.3	CY	
Steel Rebar:	72.7	CY (?)	
Steel Rebar:	480.4	TONS	
Sheetpile:	4,800.0	SF	PZ27x160LFx30FT
Cap:	23.7	CY	
Railing:	404.0	LF	
Grate:	312.0	SF	
Ladders:	2.0	EA	25' EA
Gates:	2.0	EA	13'x12' w/ mechanical components
Seals:	124.0	LF	
Backfill:	116,627.7	LCY	
Rip-rap:	3,374.8	CY	
Geofabric:	16,546.7	SF	
Boat Barrier:	340.0	LF	
Barrier Piles:	6.0	EA	
Floating Curtain:	980.0	LF	
Silt Fence:	6,492.0	LF	
Control bld.:	25.8	CY	Concrete
Total Doors	2.0	EA	Size 4'-0" x 7'-0"
Conduit Boxes	1.0	EA/DOOR	
Lock Boxes	1.0	EA/DOOR	
Fire Extinguishers	2.0	EA	
26" x 26" Exhaust Hoods	1.0	EA	
30" x 30" Exhaust Hoods	1.0	EA	
30" x 30"Intake Hoods	2.0	EA	
18" x 18" Intake Air Hood	1.0	EA	
18" x 18" Exhaust Hood	1.0	EA	
20" Exhaust Fan	1.0	EA	
12" Exhaust Fan	1.0	EA	
Generator Fuel Tank:	1,000.0	GALLONS	
CTRL BLDG Gravel Pad	8.0	CY	
CTRL BLDG Pad Fabric	472.0	SF	

Feature of Work:	STRUCTURES CU-2: 556 LF DOUBLE GATED 13’Wx12’H BOX CULVERT WITH ENDWALLS, 12’x24’ CONTROL BUILDING
Scope Given:	556 LF double gated 13’x12’ box culvert w/ endwalls w/ 12’x24’ control building and HW/TW monitoring stations w/ walkways (by-pass not required for construction). Structure CU-2 is a gated box culvert which allows for outflow from the West Cell, discharging to the Seepage Canal CNL-3.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure S-276 and S-277 as a double barrel culvert. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Assume Excavation will be to the same depth below finished grade as shown in contract drawings for similar projects with a slope of 1:2 for construction. – Assume material as 2 ft of organic, 8 ft of blastable cap rock, and 10 ft of Fort Thompson layer for the remainder of the excavation – until indicated otherwise. – Assume power will be provided from power lines in the area. – Assume that a diesel generator is needed for backup power.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. *As part of an RFI, the structures heights were increased by 6-ft, also changing the estimated length.
Sequence of Work:	Excavation/blasting of limestone rock will be required to allow space for the foundation for the gated culvert structure. Culverts, foundations and structures will then be placed. Control structures for the culverts will be installed and a standalone Control station will be built in the area. An additional backup generator will be required along with local utility power. Apron, wing wall, and riprap placement will occur after Culverts have been placed. Backfill and compaction around the structure will occur, the plugs will be removed.
Key Outstanding Questions/Issues:	

Representative Drawings/Photos: CU-2



LOCAR RECOMMENDED PLAN

SECTION - CU-2 GATED OUTFLOW CULVERT

NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
9/24/2023

Feature of Work:	STRUCTURE CU-2A: 556 LF DOUBLE GATED 13’Wx12’H BOX CULVERT WITH ENDWALLS, 12’x24’ CONTROL BUILDING

Quantity Take Off:

User Input | Row Calculation | Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	255.7	FT	Assume 20' from top of excavation
Length	=	632.0	FT	Assume 20' from length of excavation
Depth	=	46.0	FT	Assumed
Total Perimeter	=	1,775.3	LF	Sheetpile perimeter
Area	=	161,581.3	SF	

Culvert excavation

Length	=	592.0	FT							Assumed from drawings
Total Depth	=	26.0	FT							Invert Elev. Minus Foundation Depth
Thickness of Organic	=	2.0	FT							Assume - 2ft thick
Thickness of Cap Rock	=	8.0	FT							Assume - 4ft thick
Thickness of Fort Thompson	=	16.0	FT							Assume - 24ft thick
Slope1	=	2.0	:1							
Slope2	=	2.0	:1							
Bottom Width	=	111.7	FT							Assumes 40' endwalls both ways
Top Width	=	215.7	FT							
Cross Section	=	4,255.3	SF							
Cross Section Organic	=	423.3	SF							
Cross Section of Cap Rock	=	1,533.3	SF							
Cross Section of Fort Thompson	=	2,298.7	SF							
Organic Cut Volume	=	250,613.3	CF	=	9,282.0	BCY	=		LCY	
Cap Rock Cut Volume	=	907,733.3	CF	=	33,619.8	BCY	=		LCY	
Fort Thompson Cut Volume	=	1,360,810.7	CF	=	50,400.4	BCY	=		LCY	
EXCAVATION		TOTAL		=	93,302.1	BCY	=	116,628	LCY	

Concrete Culvert Concrete

Culvert Pipes	2		Width	13	Height	18
Length	=	592.0	FT			
Foundation Concrete Bottom Width	=	31.7	FT			
Bottom Thickness	=	3.0	FT			
Volume	=	56,240.0	CF	=	2,083.0	CY
Vertical Concrete Height	=	18.0	FT			
Thickness of Edge Walls	=	2.0	FT			
Thickness of Interior Walls	=	1.7	FT			
Volume	=	56,832.0	CF	=	2,104.9	CY
Elevated Concrete						
Top Width	=	31.7	FT			
Thickness	=	2.0	FT			
Volume	=	37,493.3	CF	=	1,388.6	CY

Inlet and Outlet Works

Number	=	2.0	EA	Assumed intake and outlet are the same
Foundation				
Length	=	20.0	FT	
Depth	=	2.0	FT	
Width	=	31.7	FT	

Volume	=	2,533.3	CF	=	93.8	CY		
Culvert Endwall								
Height	=	38.0	FT				Assume x2 (Culvert Height + 1')	
Thickness	=	1.5	FT					
Width	=	31.7	FT					
Openings	=	468.0	SF					
Volume	=	2,206.0	CF	=	81.7	CY		
Needle Beam								
Height	=	2.5	FT					
Width	=	13.0	FT					
Depth	=	3.0	FT					
Volume		390.0	CF	=	14.4	CY		
Exterior Walls								
Edge Wall Height	=	38.0	FT					
Edge Wall Length	=	20.0	FT				total each side	
Edge Wall Thickness	=	2.0	FT					
Interior Wall Height		38.0	FT					
Interior Wall Length		14.0	FT					
Inteiror Wall Thickness		1.7	FT					
Volume	=	7,853.3	CF	=	290.9	CY		
CONCRETE		TOTAL		=	6,057.3	CY		
Steel Rebar							Assumed 1.2% volume of concrete	Culvert referenced
STEEL REBAR		TOTAL		=	72.7	CY	Rebar	as an example used
					480.4	TONS		approx. 0.8% steel
								per volume

Sheetpile Endwalls

Number	=	2.0	EA				x2 Endwalls per opening (HW/TW)	
Width	=	80.0	FT				40 ft off each side of culvert	
Length	=	30.0	FT				Assume PZ27 sheetpile, 30' long sheets	
Sheetpile Area	=	4,800.0	SF				30' Long Sheets, 160' Span	PZ-27
Concrete Cap	=	4.0	SF				Assume 2'x2' cap with PZ27 sheets	
Concrete Volume	=	640.0	CF	=	23.7	CY	Concrete	

MISC METALS

Structure Railing	=	120.0	LF				Per each end
Endwall Railing	=	82.0	LF				Per each end
TOTAL RAILING	=	404.0	LF				3'6" Tall Steel Railing
Ladders	=	2.0	EACH				
height	=	25.5	FT EA	=	51.0	FT TOTAL	
Grating	=	78.0	SF per Gate				Approx. 6' long, width of each bay
TOTAL Grating	=	312.0	SF				Steel Grating

NEW GATES

Number of gates	=	2.0	EA				x1 per Culvert Pipe
Height	=	19.0	FT				Assumed 1' greater than Culvert Height
Width	=	12.0	FT				Assumed 1' smaller than Culvert Width (frame)
Total Weight of Gates	=	20,269.2	LB EA				Follows similar weight calculations as S-2, but reduces number of steel channels
TOTAL STEEL GATE WEIGHT		40,538.3	LB	=	20.3	TONS	
Mechanical Components	=	2.0	EA				All gate component information including frame, stem,

motor, yoke, etc. to be provided by manufacturer

Imbeds for Gate = 124.0 LF

Gate Seal Length = 124.0 LF Gate perimeter x # of gates

Backfill

Assume Culvert is backfilled as part of levee construction

RIP RAP

Assume same on both sides

Number of placements = 2.0 EA 1 each side

Length = 136.0 FT Assume width of new canal

Width = 111.7 FT Assume same as bottom width of excavation

thickness = 3.0 FT Assumed

Volume = 45,560.0 CF/EA = 1,687.4 CY/EA

RIPRAP TOTAL = 3,374.8 CY Riprap

Geotextile Filter Fabric = 16,546.7 SF Fabric

Boat Barrier

Number = 2.0 EA

Piles for Buoys = 3.0 EA Assume barrier has 3 points (2 at shore, 1 at canal)

Length = 170.0 FT/EA

Total Length = 340.0 FT Buoy style barrier

Total Piles = 6.0 EA

SWPPP

Floating Silt Boom = 980.0 FT 🟥 Assumed

Silt Fence = 6,492.0 FT 🟥 Assumed

Control Building

Size = 288.0 SF 12x24

Electrical = NEEDED

Communications = NEEDED

Modular Precast Concrete Structure

Exterior Walls

Height = 12.0 FT

Perimeter Length = 72.0 FT

Thickness = 4.0 IN

Volume = 288.0 = 10.7 CY

Interior Wall

Height = 12.0 FT

Length = 12.0 FT

Thickness = 4.0 IN

Volume = 48.0 = 1.8 CY

Floor Slab

Thickness = 6.0 IN

Area = 288.0 SF

Volume = 144.0 CF = 5.3 CY

Roof

Thickness = 5.0 IN

Area = 288.0 SF

Volume = 120.0 CF = 4.4 CY

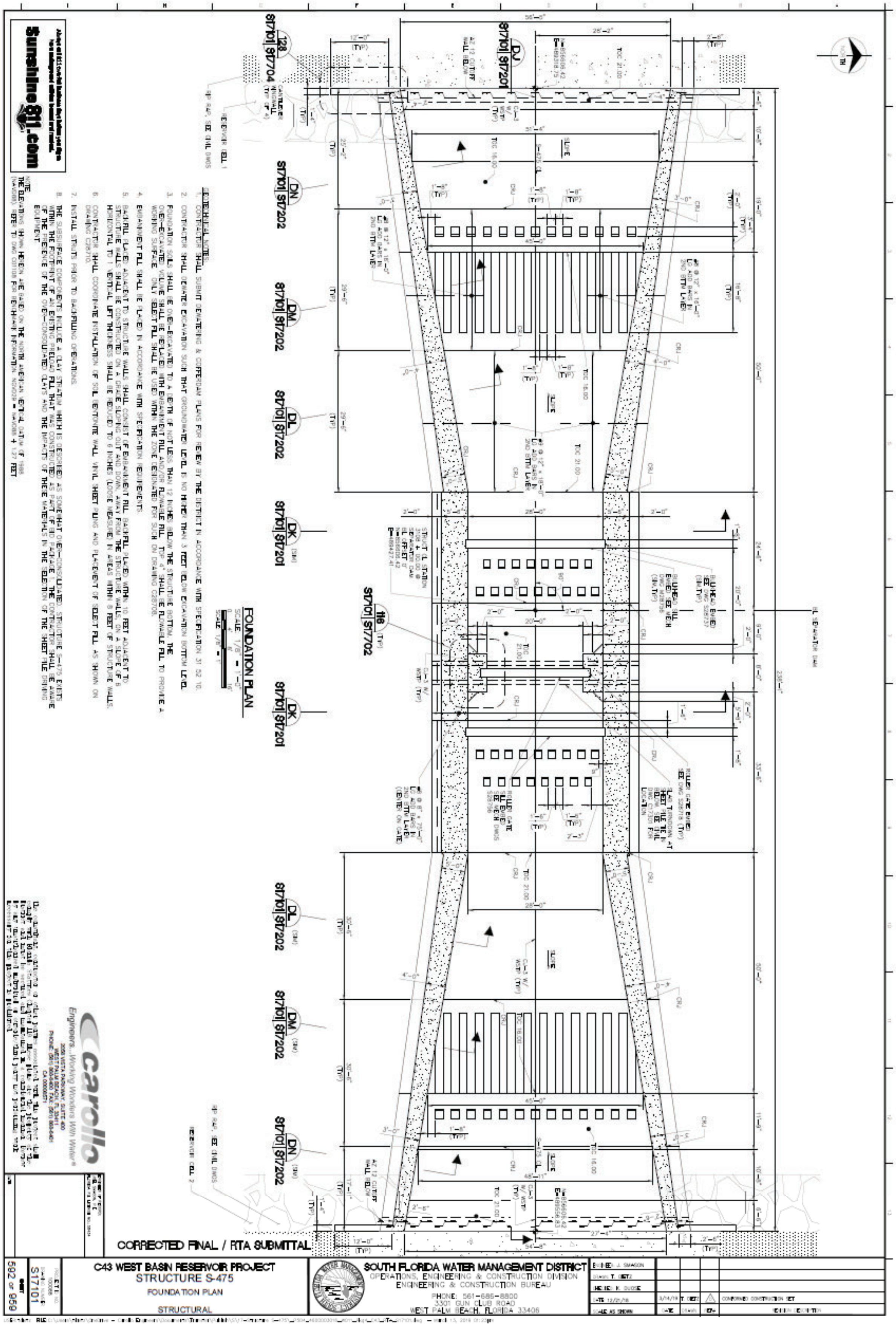
Fuel Pad	=	96.0	CF	Assume 8'x12'x12" thick reinforced concrete slab on grade pad
	=	3.6	CY	
CONCRETE		TOTAL		= 25.8 CY
Total Doors	=	2.0	EA	
Size	=	4'-0" x 7'-0"		
Conduit Boxes	=	1.0	EA/DOOR	
Lock Boxes	=	1.0	EA/DOOR	
Fire Extinguishers	=	2.0	EA	
26" x 26" Exhaust Hoods	=	1.0	EA	
30" x 30" Exhaust Hoods	=	1.0	EA	
30" x 30"Intake Hoods	=	2.0	EA	
18" x 18" Intake Air Hood	=	1.0	EA	
18" x 18" Exhaust Hood	=	1.0	EA	
20" Exhaust Fan	=	1.0	EA	Coolair CBA20L, 1 HP, 4702 CFM @ 3/8" SP
12" Exhaust Fan	=	1.0	EA	Coolair CDU12F17, 1/6 HP, 1210 CFM @ 1/4" SP
Generator Fuel Tank	=	1,000.0	GALLON	
Gravel Pad	=	216.0	CF	Assume 50% greater area than building, 6" thick
	=	8.0	CY	
Filter Fabric		472.0	SF	

Quantities Summary

Coffer dam:	1,775.3	LF	
Coffer dam:	161,581.3	SF	
Excavation:	93,302.1	CY	
Concrete:	6,057.3	CY	
Steel Rebar:	72.7	CY (?)	
Steel Rebar:	480.4	TONS	
Sheetpile:	4,800.0	SF	PZ27x160LFx30FT
Cap:	23.7	CY	
Railing:	404.0	LF	
Grate:	312.0	SF	
Ladders:	2.0	EA	25' EA
Gates:	2.0	EA	13'x12' w/ mechanical components
Seals:	124.0	LF	
Backfill:	116,627.7	LCY	
Rip-rap:	3,374.8	CY	
Geofabric:	16,546.7	SF	
Boat Barrier:	340.0	LF	
Barrier Piles:	6.0	EA	
Floating Curtain:	980.0	LF	
Silt Fence:	6,492.0	LF	
Control bld.:	25.8	CY	Concrete
Total Doors	2.0	EA	Size 4'-0" x 7'-0"
Conduit Boxes	1.0	EA/DOOR	
Lock Boxes	1.0	EA/DOOR	
Fire Extinguishers	2.0	EA	
26" x 26" Exhaust Hoods	1.0	EA	
30" x 30" Exhaust Hoods	1.0	EA	
30" x 30"Intake Hoods	2.0	EA	
18" x 18" Intake Air Hood	1.0	EA	
18" x 18" Exhaust Hood	1.0	EA	
20" Exhaust Fan	1.0	EA	
12" Exhaust Fan	1.0	EA	
Generator Fuel Tank:	1,000.0	GALLONS	
CTRL BLDG Gravel Pad	8.0	CY	
CTRL BLDG Pad Fabric	472.0	SF	

Feature of Work:	STRUCTURE DDS-1: DIVIDER DAM TWO-WAY FLOW GATED SPILLWAY 1,500 CFS
Scope Given:	Gated spillway w/ (2) 10’Wx10’H Gates w/ 12’x24’ Control Bldg. & HW/TW Monitoring Stations w/ Walkways (by-pass not required for construction). Allows for flow between the East and West Cells through the Divider Dam.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure S-475. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Assume aprons are in addition to the concrete structure shown in the provided drawings. – Assume power for the structure will be provided from local power lines. – Assume that a diesel generator is needed for backup power. – Assume 50 KW Diesel Generator with 1000 gallon above ground tank.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. *As part of an RFI, the structures heights were increased by 6-ft, also changing the estimated length.
Sequence of Work:	Excavation of materials to allow for construction of the foundation of the cross canal gate structure and the canal apron/wingwall. Concrete work for structure followed by apron and wingwalls. Backfill suitable material around the structure and import riprap. Construct control station, diesel generator, and fuel storage. Place gates and other associated closure devices for the gate structure.
Key Outstanding Questions/Issues:	

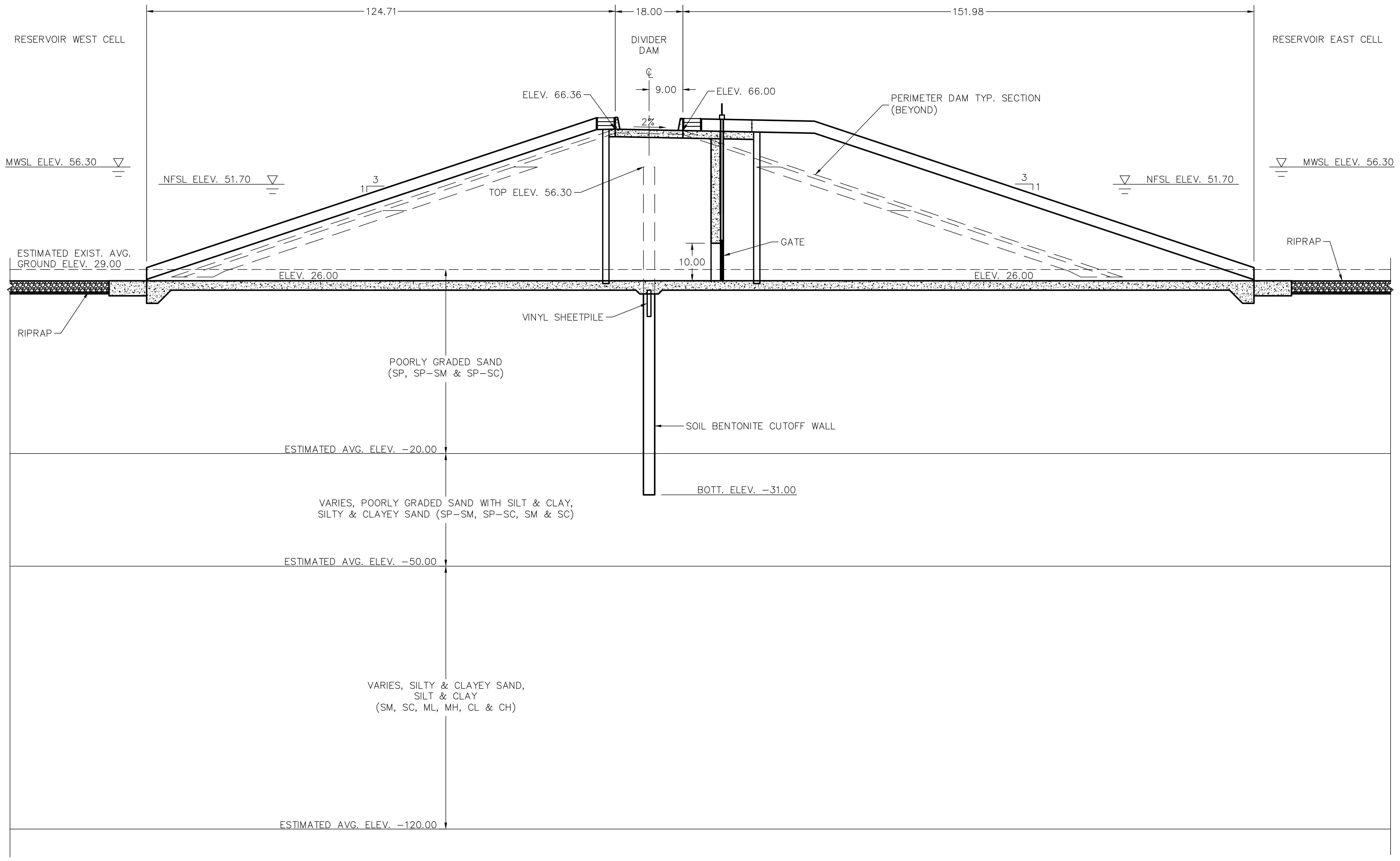
Representative Drawings/Photos: DDS-1



GEOTECHNICAL NOTES:

1. CONTRACTOR SHALL SUBMIT DEWATERING & COFFERDAM PLANS FOR REVIEW BY THE DISTRICT IN ACCORDANCE WITH SPECIFICATION 31 52 10.
2. CONTRACTOR SHALL DEWATER EXCAVATION SUCH THAT GROUNDWATER LEVEL IS NO HIGHER THAN 3 FEET BELOW EXCAVATION BOTTOM LEVEL.
3. FOUNDATION SOILS SHALL BE OVER-EXCAVATED TO A DEPTH OF NOT LESS THAN 12 INCHES BELOW THE STRUCTURE BOTTOM. THE OVER-EXCAVATED VOLUME SHALL BE REPLACED WITH EMBANKMENT FILL AND/OR FLOWABLE FILL. TOP 4" SHALL BE FLOWABLE FILL TO PROVIDE A WORKING SURFACE. ONLY SELECT FILL SHALL BE USED WITHIN THE ZONE DESIGNATED FOR SUCH ON DRAWING C28708.
4. EMBANKMENT FILL SHALL BE PLACED IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS.
5. BACKFILL PLACED ADJACENT TO STRUCTURE WALLS SHALL CONSIST OF EMBANKMENT FILL. BACKFILL PLACED WITHIN 10 FEET ADJACENT TO STRUCTURE WALLS SHALL BE CONSTRUCTED ON A GRADE SLOPING OUT AND DOWN, AWAY FROM THE STRUCTURE WALLS, ON A SLOPE OF 8 HORIZONTAL TO 1 VERTICAL. LIFT THICKNESS SHALL BE REDUCED TO 6 INCHES (LOOSE MEASURE) IN AREAS WITHIN 8 FEET OF STRUCTURE WALLS.
6. CONTRACTOR SHALL COORDINATE INSTALLATION OF SOIL BENTONITE WALL, VINYL SHEET PILING AND PLACEMENT OF SELECT FILL AS SHOWN ON DRAWING C28710.
7. INSTALL STRUTS PRIOR TO BACKFILLING OPERATIONS.
8. THE SUBSURFACE COMPONENTS INCLUDE A CLAY STRATUM WHICH IS DESCRIBED AS SOMEWHAT OVER-CONSOLIDATED. STRUCTURE S-475 EXISTS WITHIN THE FOOTPRINT OF AN EXISTING PRELOAD FILL THAT WAS CONSTRUCTED AS PART OF BID PACKAGE 1. THE CONTRACTOR SHALL BE AWARE OF THE PRESENCE OF THE OVER-CONSOLIDATED CLAYS AND THE IMPACTS OF THESE MATERIALS IN THE SELECTION OF THE SHEET PILE DRIVING EQUIPMENT.

NOTE:
THE ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). REFER TO DWG C01108 FOR BENCHMARK INFORMATION. NGVD29 = NAVD88 + 1.27 FEET

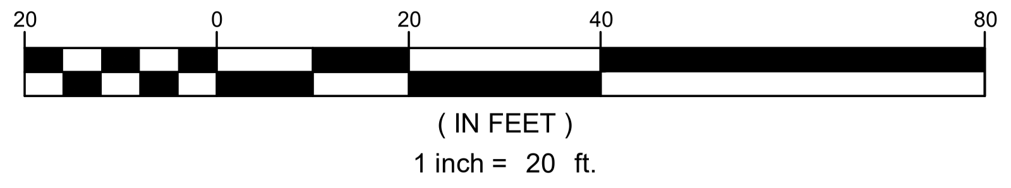


LEGEND:

- ▨ SOIL REMOVAL/EXCAVATION
- ▨ 6" THICK TOPSOIL LAYER
- ▨ SOIL CEMENT REVETMENT
- ▨ EMBANKMENT FILL
- ▨ CLEAN SAND
- ▨ FILTER SAND (FDOT 902-4)
- ▨ LIMEROCK BASE
- ▨ RIPRAP
- ▨ BEDDING STONE
- ▨ CONCRETE

LOCAR RECOMMENDED PLAN

SECTION - DDS-1 DIVIDER DAM STRUCTURE



LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

DRAWING PREPARED BY J-TECH
TYPICAL SECTION SHEET LAYOUTS.DWG
9/24/2023

NOTE:
1. ELEVATIONS SHOWN HEREON ARE EXPRESSED IN FEET AND ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.2 FEET FOR THE LOCAR PROJECT LIMITS OF CONSTRUCTION.

C:\Users\SCIORTRS\Documents\04 SFWMD\00 Projects\LOCAR\05 CAD\Sheets\Typical Section Sheet Layouts.dwg Mon, 14 Aug 2023 - 10:45pm

Feature of Work:	STRUCTURE DDS-1: DIVIDER DAM TWO-WAY FLOW GATED SPILLWAY 1,500 CFS

Quantity Take Off:

User Input | Row Calculation | Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	152.5	FT	Assume 20' from top of excavation
Length	=	394.0	FT	Assume 20' from length of excavation
Depth	=	46.0	FT	Assumed
Total Perimeter	=	1,093.0	LF	Sheetpile perimeter
Area	=	60,085.0	SF	

Spillway Excavation

Assume Spillway Excavation will be partially performed during canal excavation, if no canal exists

Length	=	354.0	FT	Add'l 40' assumed for wingwall installation each way
Total Depth	=	26.0	FT	15' below crest elevation for crest, footer, and tremie
Thickness of Organic	=	2.0	FT	
Thickness of Cap Rock	=	8.0	FT	
Thickness of Fort Thompson	=	16.0	FT	
Canal Slope		2.5	:1	From Typical Sections
				Canal bottom: 55' wide, Canal top: 127.5' wide
Bottom Width	=	112.5	FT	Assumes 20' past canal excavation (minus canal width)
Top Width	=	112.5	FT	Assumes slope same as canal

Cross Section	=	2,925.0	SF						
Cross Section Organic	=	225.0	SF						
Cross Section of Cap Rock	=	900.0	SF						
Cross Section of Fort Thompson	=	1,800.0	SF						
Organic Cut Volume	=	79,650.0	CF	=	2,950.0	BCY	=		LCY
Cap Rock Cut Volume	=	318,600.0	CF	=	11,800.0	BCY	=		LCY
Fort Thompson Cut Volume	=	637,200.0	CF	=	23,600.0	BCY	=		LCY
EXCAVATION		TOTAL		=	38,350.0	BCY	=	47,937.5	LCY

Structure Dimensions and Volumes

Units	=	1.0	EA	For use only if existing canal is located where structure is to be placed, tremie pour below area of structure, approx. 20 ft past structure dimensions, 5 ft thick			
Underwater Concrete Seal Volume (Unreinforced concrete)	=	157,000.0	CF				
Tremie Volume	=	157,000.0	CF	=	5,814.8	CY	Tremie Concrete

Structure	1	Length	274	ft	Width	60	ft
Gate Openings	1	Height	10	ft	Width	20	ft

Number of Gates	=	1.0	EA	

Superstructure/Gate Structure

Number of Towers	=	2.0	EA				
Tower Cross-Section	=	160.0	SF	Assume from similar			
Tower Width	=	3.0	FT				
Volume	=	960.0	CF	=	35.6	CY	
Number of Piers	=	-	EA				
Pier Cross-Section	=	126.0	SF	Assume from similar			
Pier Height	=	32.0	FT	Assume from similar			
Volume	=	-	CF	=	-	CY	
Abutment Walls	=	2.0	EA				

Cross-Section of Abutment Wall	=	150.0	SF				Assume from similar
Wall Height	=	32.0	FT				Assume from similar
Volume	=	9,600.0	CF	=	355.6	CY	
Beam Cross-Section	=	15.0	SF				
Beam Length	=	55.0	FT				Assume from similar
volume of elevated beam	=	825.0	CF	=	30.6	CY	
Cross-Section of Platform, Bridge, Brestwall	=	46.5	SF				
Width	=	55.0	FT				
Volume	=	2,557.5	CF	=	94.7	CY	
OGEE volume							
Cross section	=	143.9	SF				Assume from similar
Width	=	55.0	FT				Assume from similar
OGEE Spillway volume	=	7,914.5	CF	=	293.1	CY	
Approach apron							Assume 12' long, 60' wide. 5' thick per S-65EX design
Length	=	80.0	FT				
Thickness	=	5.0	FT				
Volume	=	24,000.0	CF	=	888.9	CY	
Stilling Basin							Assume 22' long, 60' wide. 5' thick per S-65EX design
Length	=	80.0	FT				
Thickness	=	5.0	FT				
Volume	=	24,000.0	CF	=	888.9	CY	
CONCRETE		TOTAL		=	2,587.3	CY	Concrete
Steel Rebar							Assumed 1.2% volume of concrete
STEEL REBAR		TOTAL		=	31.0	CY	Rebar
					205.2	TONS	

Wing Walls and Cutoff

Assume same for US and DS sides

Wingwalls							
Number	=	4.0	EA				
Length	=	50.0	FT				Length to reach past riprap banks
Depth	=	43.0	FT				Past bottom of structure of slab
Area of Sheet Pile	=	8,600.0	SF				
Pile Cap							x4
Height	=	2.0	FT				
Width	=	2.0	FT				
Volume	=	800.0	CF	=	29.6	CY	Concrete
Cutoff Walls							
Number	=	2.0	EA				US & DS
Depth	=	15.0	FT				Min. 10' required
Width	=	60.0	FT				
Area of Sheet Pile	=	1,800.0	SF				
TOTAL SHEETPILE		10,400.0	SF				Steel Sheetpile Wall
Anchor Rod Length	=	60.0	FT				
spacing	=	4.0	FT				
number of rods	=	96.0	EA				

RIP RAP

Lengths and depths assumed, and similar on US and DS

Number	=	2.0	EA				
Length	=	30.0	FT				Assume riprap will extend 30' from structure
Width	=	167.5	FT				Assume canal width plus excavation width
Depth	=	3.0	FT				Average depth
Volume	=	30,150.0	CF	=	1,116.7	CY	Riprap
Geotextile Filter Fabric	=	5,625.0	SF				Fabric

NEW GATES

Assumptions borrowed from a similar design

Gate weight calculations

Height	=	12.0					Assume 2' taller than opening
Width	=	20.0					
3/8" Plate steel	=	15.3	lb/sq ft				Given
1/2" Plate steel	=	20.4	lb/sq ft				Given
1" Plate Steel	=	40.8	lb/sq ft				Given
Gate Skin 3/8" Plate Steel	=	240.0	sq ft				Same size as gate dimensions above
3/8" Plate stiffeners and seal angles	=	87.0	sq ft				Assume 5 sq ft for seal angles and 82 for stiffeners
Horizontal C-Channels (1/2")	=	541.7	sq ft				Assume ea. channel is equivalent to 26"x25' (10 Channels).
Vertical C-Channels (1/2")	=	346.7	sq ft				Assume each vertical channel is 26"x16' (10 Channels).
Pull Pad eyes (1")	=	4.0	sq ft				Assume 4 pad eyes per gate @ 1 sq ft each
Total 3/8" Plus 10% for misc. items	=	359.7	sq ft	=	5,503.4	lbs	
Total 1/2" plus 15% for misc items	=	1,021.6	sq ft	=	20,840.3	lbs	
Total 1" steel	=	4.0	sq ft	=	163.2	lbs	
lbs/sq ft for 28'x14' gate	=	110.4	lb/sq ft				
Area of single gate	=	240.0	sq ft				assumed 3 ft bigger then opening in each direction
Approximate weight of gate	=	26,506.9	lb				
Overweight factor for larger gates (10%)	=	29,157.6	LB EA	=	29,157.6	LB Total	
Total Steel Gate Weight				=	14.6	Tons	

Gate embeds/seal lengths

Gate Dimensions							
Width	=	20.0	FT				
Height	=	12.0	FT				
Gate Well Height	=	42.0	FT				
Gate Well Embed	=	119.0	FT				
Total Embed Length	=	119.0	FT				1 gate
Seal Length	=	44.0	FT				seal length is the perimeter of bottom and both sides
Total Seal Length	=	44.0	FT				total of 1 gates
US and DS Bulkhead Slot	=	312.0	FT				6 times vertical plus width of new gate per slot
Bulkheads	=	29,157.6	LB EA				Assume same size as gates
Number	=	2.0	EA				x2 per gate needed
Total Length of imbeds	=	431.0	FT				
Total Weight of Stoplogs	=	58,315.2	LB	=	29.2	Tons	
TOTAL J BULB for GATES AND STOP LOGS	=	567.0	FT				

Backfill

Assume structure/wingwalls are backfilled as part of levee constructi

Railings and Ladders

Railing

Length = 1,108.0 FT — Assumed 4 time the length of a wing wall and 6 times the width of the structure and twice the length

Height = 3.5 FT

Ladders

Count = 6.0 EA — Assumed ladders on each side of the structure

Height = 17.5 FT — average of all three types

Total Height = 105.0 FT

Boat Barrier

Number = 2.0 EA

Piles for Buoys = 3.0 EA — Assume barrier has 3 points (2 at shore, 1 at canal)

Length = 170.0 FT/EA — Assumed

Total Length = 340.0 FT — Buoy style barrier

Total Piles = 6.0 EA

Site Fencing

Length = 1,000.0 FT — Approx. chainlink fence required ~600', assume 1,000'

Gates = 4.0 EA — Assumed

SWPPP

Length = 1,000.0 LF — Assumed

Floating Silt Boom = 250.0 LF — Assumed

Control Building

Size = 288.0 SF — 12x24

Electrical = NEEDED

Communications = NEEDED

Modular Precast Concrete Structure

Exterior Walls

Height = 12.0 FT

Perimeter Length = 72.0 FT

Thickness = 4.0 IN

Volume = 288.0 = 10.7 CY

Interior Wall

Height = 12.0 FT

Length = 12.0 FT

Thickness = 4.0 IN

Volume = 48.0 = 1.8 CY

Floor Slab

Thickness = 6.0 IN

Area = 288.0 SF

Volume = 144.0 CF = 5.3 CY

Roof

Thickness = 5.0 IN

Area = 288.0 SF

Volume = 120.0 CF = 4.4 CY

Fuel Pad = 96.0 CF — Assume 8'x12'x12" thick reinforced concrete slab on grade

	=	3.6	CY	pad
CONCRETE		TOTAL		= 25.8 CY
Total Doors	=	2.0	EA	
Size	=	4'-0" x 7'-0"		
Conduit Boxes	=	1.0	EA/DOOR	
Lock Boxes	=	1.0	EA/DOOR	
Fire Extinguishers	=	2.0	EA	
26" x 26" Exhaust Hoods	=	1.0	EA	
30" x 30" Exhaust Hoods	=	1.0	EA	
30" x 30"Intake Hoods	=	2.0	EA	
18" x 18" Intake Air Hood	=	1.0	EA	
18" x 18" Exhaust Hood	=	1.0	EA	
20" Exhaust Fan	=	1.0	EA	Coolair CBA20L, 1 HP, 4702 CFM @ 3/8" SP
12" Exhaust Fan	=	1.0	EA	Coolair CDU12F17, 1/6 HP, 1210 CFM @ 1/4" SP
Generator Fuel Tank	=	1,000.0	GALLON	
Gravel Pad	=	216.0	CF	Assume 50% greater area than building, 6" thick
	=	8.0	CY	
Filter Fabric		472.0	SF	

Quantities Summary

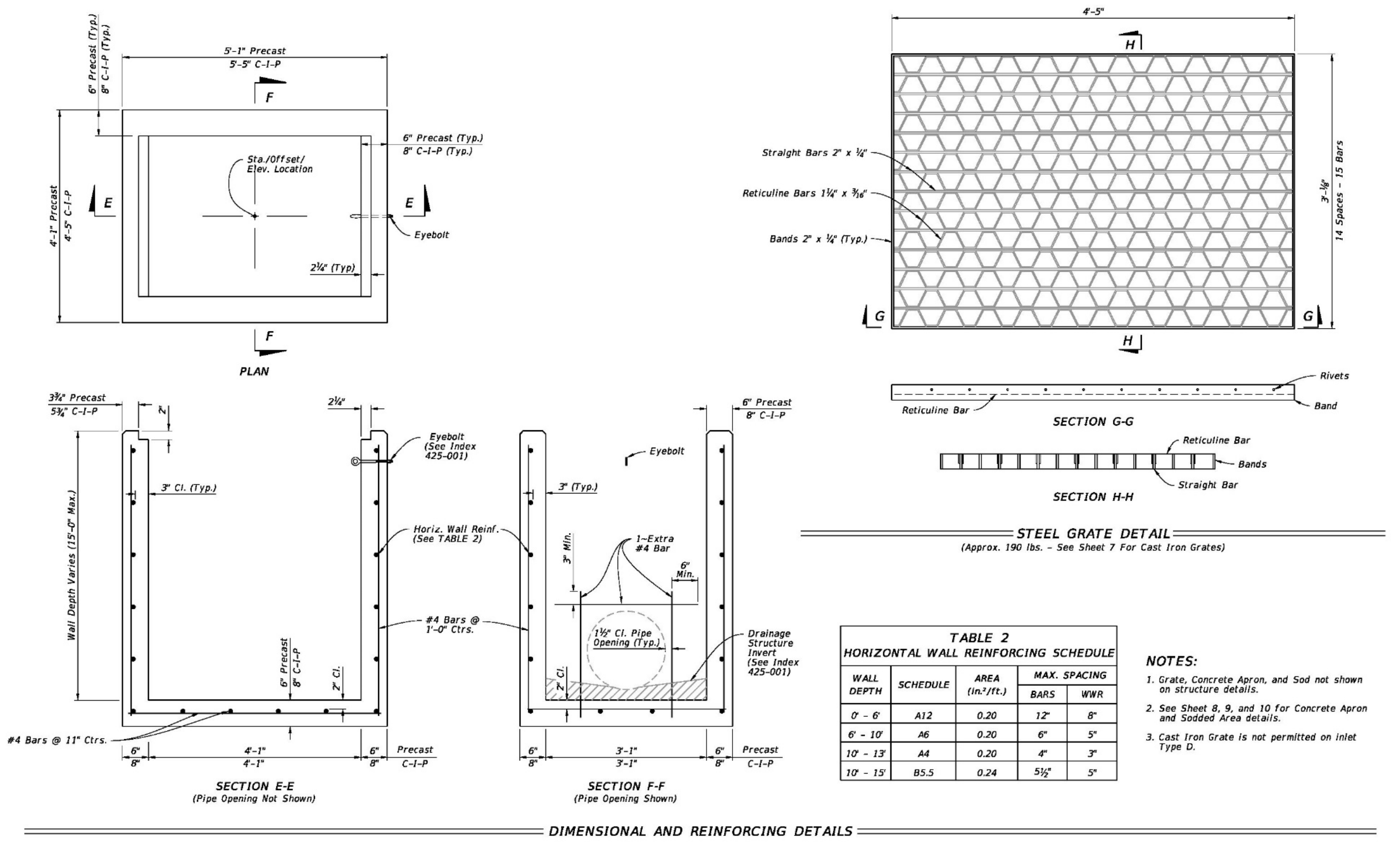
Coffer dam:	1,093.0	LF	
Coffer dam:	60,085.0	SF	
Tremie Concrete:	5,814.8	CY	
Excavation:	38,350.0	CY	
Concrete:	2,587.3	CY	
Steel Rebar:	31.0	CY (?)	
Steel Rebar:	205.2	TONS	
Sheetpile:	10,400.0	SF	160' Wall length x 30' Long sheets
Cap:	29.6	CY	
Railing:	1,108.0	LF	
Ladders:	6.0	EA	
Gates:	1.0	EA	18'x25'
Total steel gate wt	14.6	Tons	
Stoplogs	2.0	EA	
Total stoplog wt	29.16	Tons	
Seals:	44.0	LF	
Backfill:	-	LCY	
Rip-rap:	1,116.7	CY	
Geofabric:	5,625.0	SF	
Boat Barrier:	340.0	LF	
Barrier Piles:	6.0	EA	
Floating Curtain:	250.0	LF	
Silt Fence:	1,000.0	LF	
Control bldg.:	25.8	CY	Concrete
Total Doors	2.0	EA	Size 4'-0" x 7'-0"
Conduit Boxes	1.0	EA/DOOR	
Lock Boxes	1.0	EA/DOOR	
Fire Extinguishers	2.0	EA	
26" x 26" Exhaust Hoods	1.0	EA	
30" x 30" Exhaust Hoods	1.0	EA	
30" x 30"Intake Hoods	2.0	EA	
18" x 18" Intake Air Hood	1.0	EA	
18" x 18" Exhaust Hood	1.0	EA	
20" Exhaust Fan	1.0	EA	
12" Exhaust Fan	1.0	EA	
CTRL BLDG Gravel Pad	8.0	CY	
CTRL BLDG Pad Fabric	472.0	SF	

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR) FEASIBILITY STUDY

CONTRACT 6 – RESERVOIR PERIMETER CANAL & OUTFALL CANAL STRUCTURES

- Construct Perimeter Canal Overflow Structures PCOS-2 thru PCOS-4
- Construct Perimeter Canal Ungated Culvert PCCU-1 thru PCCU-4
- Construct Perimeter Canal (Manually) Adjustable Weir PCW-1 thru PCW-7
- Construct Ungated Outflow Culvert CU-3
- Construct Offsite Outfall Structures OOS-1 thru OOS-8
- Construct Lykes AGI Structures AGI-OS-1 and AGI-PS-1
- Demo 2 Lykes AGI R12 Pump Station
- Construct ODCD-OS-1

Feature of Work:	PERIMETER CANAL OUTFALL STRUCTURES (PCOS-1 thru PCOS-4)
Scope Given:	• PCOS-1 will be a fixed weir overflow structure for CNL-1 Reach 7 that will outflow to CNL-2, which in turn will outflow to C-41A. • PCOS-2 will be a fixed weir overflow structure for CNL-1 Reach 7 that will outflow to C-41A. PCOS-2 will replace existing flashboard riser (FBR) structure PC17N. • PCOS-3 will be a fixed weir overflow structure for CNL-1 Reach 7 that will outflow to existing FBR structure PC18N via a ditch, which in turn will outflow to C-41A. • PCOS-4 will be a fixed weir overflow structure for CNL-1 Reach 7 that will outflow to existing FBR structure PC20N via a ditch, which in turn will outflow to C-41A.
Reference for Scope Basis:	
Scope Assumptions:	– Assume Ditch Bottom Inlet structure can be utilized with 36” RCP
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized.
Sequence of Work:	
Key Outstanding Questions/Issues:	



STEEL GRATE DETAIL

(Approx. 190 lbs. - See Sheet 7 For Cast Iron Grates)

TABLE 2
HORIZONTAL WALL REINFORCING SCHEDULE

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0' - 6'	A12	0.20	12"	8"
6' - 10'	A6	0.20	6"	5"
10' - 13'	A4	0.20	4"	3"
10' - 15'	B5.5	0.24	5½"	5"

NOTES:

1. Grate, Concrete Apron, and Sod not shown on structure details.
2. See Sheet 8, 9, and 10 for Concrete Apron and Sodded Area details.
3. Cast Iron Grate is not permitted on inlet Type D.

DIMENSIONAL AND REINFORCING DETAILS

TYPE D - DIMENSIONAL, REINFORCING, AND STEEL GRATE DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FY 2023-24 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E, AND H	INDEX	SHEET
10/01/20					425-052	3 of 14

10/20/2022 8:14:25 AM

Feature of Work: PERIMETER CANAL OUTFALL STRUCTURES (PCOS-1 thru PCOS-4)

Quantity Take Off:

PCOS	Quantity	=	4.0	ea		**Total all PCOS-1 thru PCOS-4**		
	FDOT Type D Ditch Bottom Inlet with Bleed Orifice							
	Quantity	=	1.0	ea		4.0	ea	Type D Inlet
	Depth	=	10.0	FT	Assume 10' deep			
	36" RCP pipe to CNL-1							
	Length	=	40.0	LF	Assumed	160.0	LF	36" RCP Pipe
	Diameter	=	3.0	FT	Assumed 36"			
	Excavation							
	Depth	=	12.0	FT	Assume Depth +2			
	Bottom Width	=	11.0	FT	Dia. + 4' each way			
	Top Width	=	59.0	FT	2:1 @ Depth			
	Volume	=	16,800.0	CF				
	Volume per PCOS	=	622.2	CY		2,488.9	CY	Excavation

Assume part of new construction not requiring additional dewatering

Feature of Work:	PERIMETER CANAL CULVERT UNGATED (PCCU-1 thru PCCU-4)
Scope Given:	• PCCU-1 supports the unpaved roadway crossing of CNL-1 Reach 2, to be located near the Divider Dam crest road north access ramp. • PCCU-2 will be located under the reservoir perimeter maintenance road and will connect CNL-1 Reach 7 to the east end of the ODCD. • PCCU-3 supports the unpaved roadway crossing of CNL-1 Reach 7, to be located near the Divider Dam crest road south access ramp. • PCCU-4 will be located under the reservoir perimeter maintenance road and will connect CNL-1 Reach 7 to the west end of the ODCD.
Reference for Scope Basis:	
Scope Assumptions:	– Assume 48” RCP under site roads
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized.
Sequence of Work:	
Key Outstanding Questions/Issues:	

Feature of Work:	PERIMETER CANAL CULVERT UNGATED (PCCU-1 thru PCCU-4)

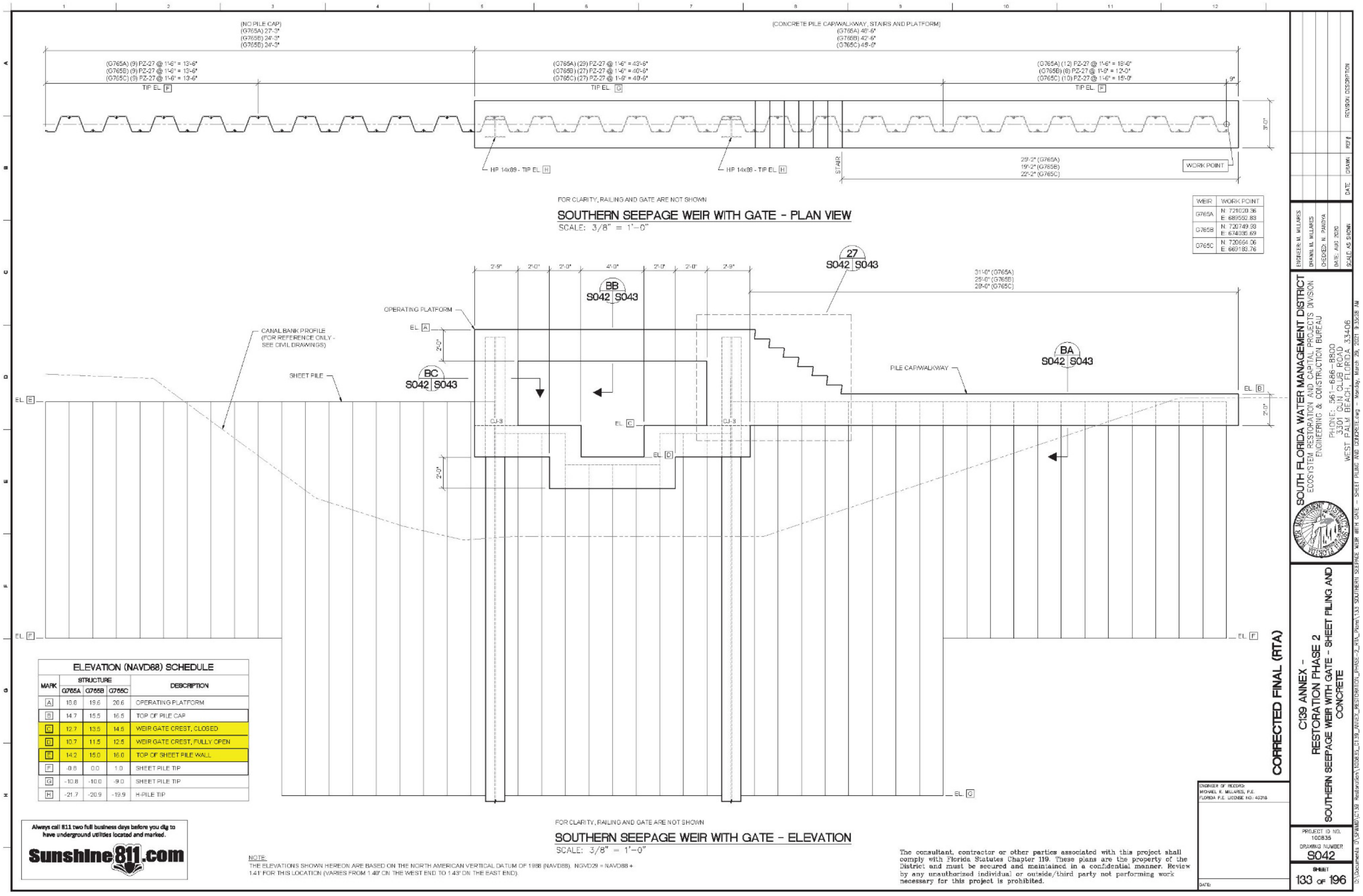
Quantity Take Off:

PCCU	Quantity	=	4.0	ea		**Total all PCCU-1 thru PCCU-4**		
PCCU (each)	48" RCP pipe to CNL-1							
	Length	=	40.0	LF	Assumed for road	160.0	LF	48"RCP Pipe
	Diameter	=	4.0	FT	Assumed 48"			
	Excavation							
	Depth	=	8.0	FT	Assume Depth			
	Bottom Width	=	12.0	FT	Dia. + 4' each way			
	Top Width	=	44.0	FT	2:1 @ Depth			
	Volume	=	8,960.0	CF				
	Volume per OOS	=	331.9	CY		1,327.4	CY	Excavation

Assume part of new construction not requiring additional dewatering

Feature of Work:	PERIMETER CANAL WEIR (PCW-1 thru PCW-10) - MANUALLY ADJUSTABLE WEIR
Scope Given:	• Manually adjustable weirs located at various points along perimeter canal. • Allowable range for adjustment of weir crest to be determined during the PED phase.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to manually adjustable weir structure proposed at C139 Annex, Structure G765A-C
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized.
Sequence of Work:	
Key Outstanding Questions/Issues:	

Representative Drawings/Photos: PCW-1 thru PCW-10



FOR CLARITY, RAILING AND GATE ARE NOT SHOWN

SOUTHERN SEEPAGE WEIR WITH GATE - PLAN VIEW

SCALE: 3/8" = 1'-0"

WEIR	WORK POINT
G765A	N: 721020.36 E: 689552.83
G765B	N: 720749.93 E: 674035.69
G765C	N: 720664.06 E: 669183.76

ELEVATION (NAVD88) SCHEDULE

MARK	STRUCTURE			DESCRIPTION
	G765A	G765B	G765C	
A	18.8	19.6	20.6	OPERATING PLATFORM
B	14.7	15.5	16.5	TOP OF PILE CAP
C	12.7	13.5	14.5	WEIR GATE CREST, CLOSED
D	10.7	11.5	12.5	WEIR GATE CREST, FULLY OPEN
E	14.2	15.0	16.0	TOP OF SHEET PILE WALL
F	-0.8	0.0	1.0	SHEET PILE TIP
G	-10.8	-10.0	-9.0	SHEET PILE TIP
H	-21.7	-20.9	-19.9	H-PILE TIP

Always call 811 two full business days before you dig to have underground utilities located and marked.

Sunshine811.com

FOR CLARITY, RAILING AND GATE ARE NOT SHOWN

SOUTHERN SEEPAGE WEIR WITH GATE - ELEVATION

SCALE: 3/8" = 1'-0"

NOTE:
THE ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NGVD29 = NAVD88 + 1.41' FOR THIS LOCATION (VARIES FROM 1.40' ON THE WEST END TO 1.43' ON THE EAST END).

The consultant, contractor or other parties associated with this project shall comply with Florida Statutes Chapter 119. These plans are the property of the District and must be secured and maintained in a confidential manner. Review by any unauthorized individual or outside/third party not performing work necessary for this project is prohibited.

ENGINEER OF RECORD:
MICHAEL R. MILLARES, P.E.
FLORIDA P.E. LICENSE NO.: 45718

DATE:

CORRECTED FINAL (RTA)

C139 ANNEX -
RESTORATION PHASE 2
SOUTHERN SEEPAGE WEIR WITH GATE - SHEET PILING AND CONCRETE

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ECOSYSTEM RESTORATION AND CAPITAL PROJECTS DIVISION
ENGINEERING & CONSTRUCTION BUREAU
PHONE: 561-686-8800
3301 GUN CLUB ROAD
WEST PALM BEACH, FLORIDA 33406

ENGINEER: M. MILLARES
DRAWN: M. MILLARES
CHECKED: N. PANDYA
DATE: AUG 2020
SCALE: AS SHOWN

DATE	DRAWN	REF #	REVISION DESCRIPTION

PROJECT ID NO.
100835
DRAWING NUMBER
S042
SHEET
133 OF 196

D:\Documents D\SFWMD\C139 Restoration\100835_C139_ANNEX_RESTORATION_PHASE-2_RTA_Plans\133 SOUTHERN SEEPAGE WEIR WITH GATE - SHEET PILING AND CONCRETE.dwg - Monday, March 29, 2021 9:35:28 AM

Feature of Work:	PERIMETER CANAL WEIR (PCW-1 thru PCW-10) - MANUALLY ADJUSTABLE WEIR

Quantity Take Off:

PCW Total

Quantity	=	10.0	ea	

PCW (Each)

Weir Slide Gate	=	1.0	ea	Assume 4'x4' Gate with Frame/Embeds/Seals

Sheetpile across Canal

Perimeter Canal Width	=	150.0	FT	Approx. from Sections Perimeter Canal
Sheetpile Width	=	160.0	FT	Assume 5-ft past bank
Sheetpile Length	=	20.0	FT	Assume from similar - average
Sheeptile Area	=	3,200.0	SF	Assume PZ-27

Pile Cap Walkway

Pile Cap Width	=	3.0	FT	
Pile Cap Depth	=	2.0	FT	
Walkway Length	=	75.0	FT	Assume 1/2 width of canal
Concrete Volume	=	16.7	CY	
Steel Rebar	=	0.2	CY	Assumed 1.2% volume of concrete
Steel Rebar	=	1.3	TONS	

Gate Opening Concrete Frame (borrowed from similar concept)

Pile Cap Width	=	3.0	FT	
2.75'x4' Risers x2	=	22.0	SF	Borrowed from similar concept
12'x2' Top Slab	=	24.0	SF	Borrowed from similar concept
Stairs 4'x4'	=	8.0	SF	Borrowed from similar concept
Concrete Volume	=	6.0	CY	
Steel Rebar	=	0.1	CY	Assumed 1.2% volume of concrete
Steel Rebar	=	0.5	TONS	

Handrail

Length	=	150.0	FT	Assume x2 Length of Walkway

Riprap

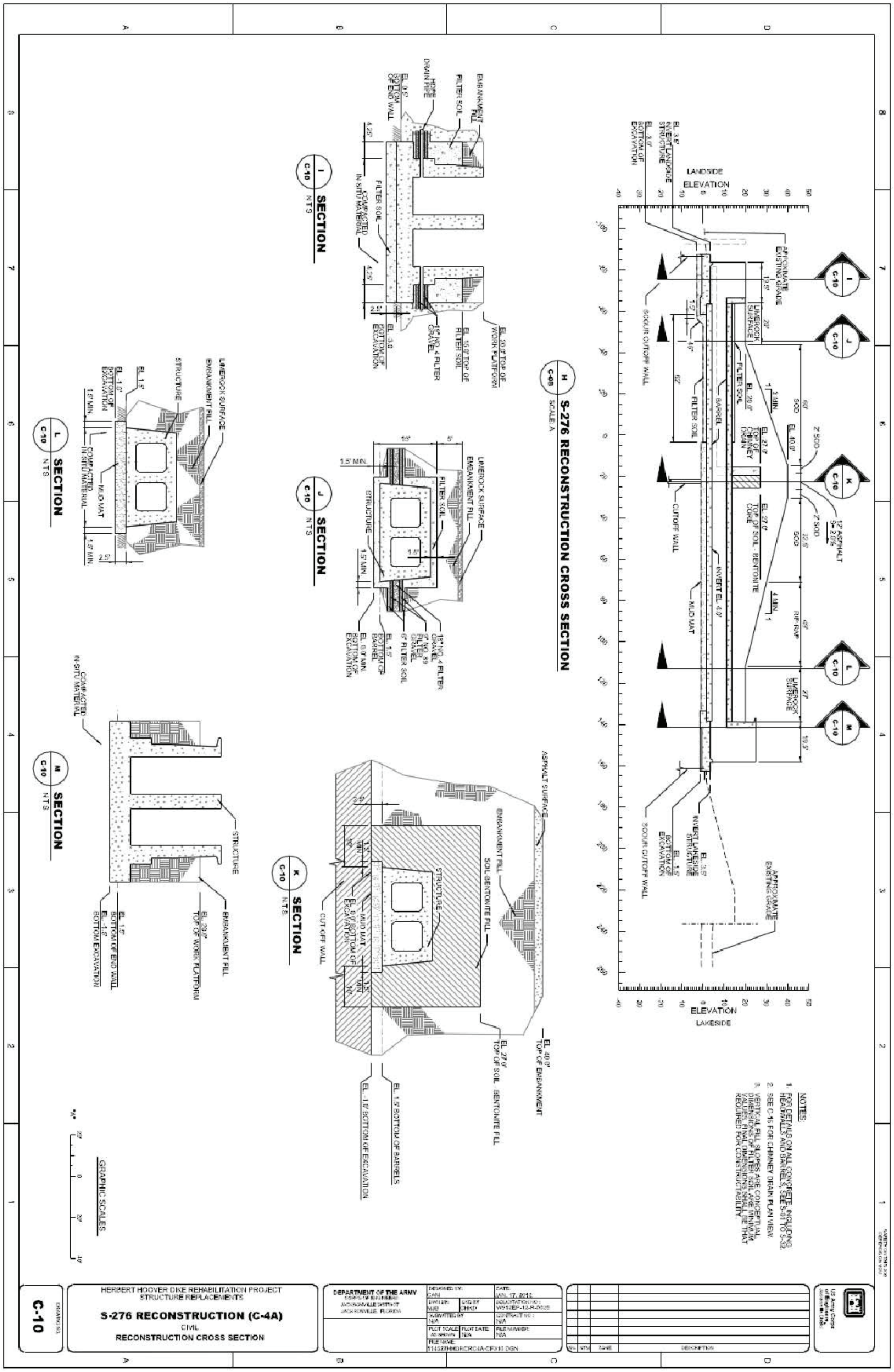
Length	=	75.0	FT		Assume 1/2 width of canal			
Width	=	6.0	FT		Assumed			
Depth	=	2.5	FT		2-ft Type B and 0.5-ft bedding			
Volume	=	1,125.0	CF	=	41.7	CY	Riprap	
Geotextile Filter Fabric	=	1,950.0	SF		Fabric			

Total all PCW-1 thru PCW-7

Sheetpile Area	=	32,000.0	SF	Assume PZ-27
Concrete Volume	=	226.7	CY	
Steel Rebar	=	18.0	TONS	
Weir Slide Gates	=	10.0	ea	Assume 4'x4' Gate with Frame/Embeds/Seals
Riprap	=	416.7	CY	Type B
Geotextile Fabric	=	19,500.0	SF	

Feature of Work:	STRUCTURES CU-3: 280 LF DOUBLE 16’Wx14’H BOX CULVERT WITH ENDWALLS (UNGATED), 12’x24’ CNTRL BUILDING
Scope Given:	280 LF double 13’x12’ box culvert w/ endwalls w/ 12’x24’ control building and HW/TW monitoring stations w/ walkways (by-pass not required for construction). Structure CU-3 is an ungated box culvert which allows for discharge from the Seepage Canal, previously from West Cell, discharging into the C-41A Canal Upstream of the existing S-83 structure via an Outflow Canal and Diversion Canal, respectively.
Reference for Scope Basis:	
Scope Assumptions:	– Assume similar to structure S-276 and S-277 as a double barrel culvert. – Assume given dimensions in the engineering appendix govern over provided design documents for similar structure if no dimensions are given in the engineering appendix all dimensions will come from the similar structure. – Assume Excavation will be to the same depth below finished grade as shown in contract drawings for similar projects with a slope of 1:2 for construction. – Assume material as 2 ft of organic, 8 ft of blastable cap rock, and 10 ft of Fort Thompson layer for the remainder of the excavation – until indicated otherwise. – Assume power will be provided from power lines in the area. – Assume that a diesel generator is needed for backup power.
Supporting Documentation: (by Cost Team)	Quantity Takeoff, Material Quotes
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature. The scope and assumptions were documented and sent to the design team for review. After reaching consensus on the scope and major assumptions, the labor, equipment, materials, and production rates were developed for the estimate. *As part of an RFI, the structures heights were increased by 6-ft, also changing the estimated length.
Sequence of Work:	Construction will be performed after the canal plugs are installed up and downstream of the proposed culvert location. Dewatering will be needed. Dewatering pumps used as needed throughout construction. Excavation/blasting of limestone rock will be required to allow space for the foundation for the gated culvert structure. Culverts, foundations and structures will then be placed. Control structures for the culverts will be installed and a standalone Control station will be built in the area. An additional backup generator will be required along with local utility power. Apron, wing wall, and riprap placement will occur after Culverts have been placed. Backfill and compaction around the structure will occur, the plugs will be removed.
Key Outstanding Questions/Issues:	

Representative Drawings/Photos: CU-3



Feature of Work:	STRUCTURE CU-3: 280 LF DOUBLE 16’Wx14’H BOX CULVERT WITH ENDWALLS (UNGATED), 12’x24’ CONTROL BUILDING

Quantity Take Off:

User Input | Row Calculation | Sum of Values above

Sheetpile Dewatering

Dewatering Pumps	=	TBD	EA	Size to be determined
Width	=	237.7	FT	Assume 20' from top of excavation
Length	=	320.0	FT	Assume 20' from length of excavation
Depth	=	40.0	FT	Assumed
Total Perimeter	=	1,115.3	LF	Sheetpile perimeter
Area	=	76,053.3	SF	

Culvert excavation

Length	=	280.0	FT		Assumed from drawings				
Total Depth	=	20.0	FT		Invert Elev. Minus Foundation Depth				
Thickness of Organic	=	2.0	FT		Assume - 2ft thick				
Thickness of Cap Rock	=	8.0	FT		Assume - 8ft thick				
Thickness of Fort Thompson	=	10.0	FT		Assume - 24ft thick				
Slope1	=	2.0	:1						
Slope2	=	2.0	:1						
Bottom Width	=	117.7	FT		Assumes 40' endwalls both ways				
Top Width	=	197.7	FT						
Cross Section	=	3,153.3	SF						
Cross Section Organic	=	387.3	SF						
Cross Section of Cap Rock	=	1,389.3	SF						
Cross Section of Fort Thompson	=	1,376.7	SF						
Organic Cut Volume	=	108,453.3	CF	=	4,016.8	BCY	=		LCY
Cap Rock Cut Volume	=	389,013.3	CF	=	14,407.9	BCY	=		LCY
Fort Thompson Cut Volume	=	385,466.7	CF	=	14,276.5	BCY	=		LCY
EXCAVATION		TOTAL		=	32,701.2	BCY	=	40,876.5	LCY

Concrete Culvert Concrete

Culvert Pipes	2	Width	16	Height	14

Length	=	280.0	FT			
Foundation Concrete Bottom Width	=	37.7	FT			
Bottom Thickness	=	3.0	FT			
Volume	=	31,640.0	CF	=	1,171.9	CY
Vertical Concrete Height	=	14.0	FT			
Thickness of Edge Walls	=	2.0	FT			
Thickness of Interior Walls	=	1.7	FT			
Volume	=	20,906.7	CF	=	774.3	CY
Elevated Concrete						
Top Width	=	37.7	FT			
Thickness	=	2.0	FT			
Volume	=	21,093.3	CF	=	781.2	CY

Inlet and Outlet Works

Number	=	2.0	EA	Assumed intake and outlet are the same
Foundation				
Length	=	20.0	FT	
Depth	=	2.0	FT	
Width	=	37.7	FT	

Volume	=	3,013.3	CF	=	111.6	CY		
Culvert Endwall								
Height	=	30.0	FT				Assume x2 (Culvert Height + 1')	
Thickness	=	1.5	FT					
Width	=	37.7	FT					
Openings	=	448.0	SF					
Volume	=	2,046.0	CF	=	75.8	CY		
Needle Beam								
Height	=	2.5	FT					
Width	=	16.0	FT					
Depth	=	3.0	FT					
Volume		480.0	CF	=	17.8	CY		
Exterior Walls								
Edge Wall Height	=	30.0	FT					
Edge Wall Length	=	20.0	FT				total each side	
Edge Wall Thickness	=	2.0	FT					
Interior Wall Height		30.0	FT					
Interior Wall Length		14.0	FT					
Inteiror Wall Thickness		1.7	FT					
Volume	=	6,200.0	CF	=	229.6	CY		
CONCRETE		TOTAL		=	3,162.2	CY		
Steel Rebar							Assumed 1.2% volume of concrete	Culvert referenced as an example used approx. 0.8% steel per volume
STEEL REBAR		TOTAL		=	37.9	CY	Rebar	
					250.8	TONS		

Sheetpile Endwalls

Number	=	2.0	EA				x2 Endwalls per opening (HW/TW)	
Width	=	80.0	FT				40 ft off each side of culvert	
Height	=	30.0	FT				Assume PZ27 sheetpile, 30' long sheets	
Sheetpile Area	=	4,800.0	SF				30' Long Sheets, 160' Span	PZ-27
Concrete Cap	=	4.0	SF				Assume 2'x2' cap with PZ27 sheets	
Concrete Volume	=	640.0	CF	=	23.7	CY	Concrete	

MISC METALS

Structure Railing	=	120.0	LF				Per each end
Endwall Railing	=	82.0	LF				Per each end
TOTAL RAILING	=	404.0	LF				3'6" Tall Steel Railing
Ladders	=	2.0	EACH				
height	=	25.5	FT EA	=	51.0	FT TOTAL	
Grating	=	96.0	SF per Gate				Approx. 6' long, width of each bay
TOTAL Grating	=	384.0	SF				Steel Grating

NEW GATES

No gates at this structure

Backfill

Assume Culvert is backfilled as part of levee construction

RIP RAP

common both sides				
number of placements	=	2.0	EA	1 each side

Length = 136.0 FT Assume width of new canal
Width = 2.0 FT Assume same as bottom width of excavation
thickness = 3.0 FT Assumed
Volume = 816.0 CF/EA = 30.2 CY/EA
RIPRAP TOTAL = 60.4 CY Riprap
Geotextile Filter Fabric = 1,632.0 SF Fabric

Boat Barrier

Number = 2.0 EA
Piles for Buoys = 3.0 EA Assume barrier has 3 points (2 at shore, 1 at canal)
Length = 170.0 FT/EA

Total Length = 340.0 FT Buoy style barrier
Total Piles = 6.0 EA

SWPPP

Floating Silt Boom = 980.0 FT Assumed
Silt Fence = 6,492.0 FT Assumed

Control Building

Size = 288.0 SF 12x24

Electrical = NEEDED
Communications = NEEDED

Modular Precast Concrete Structure
Exterior Walls
Height = 12.0 FT
Perimeter Length = 72.0 FT
Thickness = 4.0 IN
Volume = 288.0 = 10.7 CY

Interior Wall
Height = 12.0 FT
Length = 12.0 FT
Thickness = 4.0 IN
Volume = 48.0 = 1.8 CY

Floor Slab
Thickness = 6.0 IN
Area = 288.0 SF
Volume = 144.0 CF = 5.3 CY

Roof
Thickness = 5.0 IN
Area = 288.0 SF
Volume = 120.0 CF = 4.4 CY

Fuel Pad = 96.0 CF Assume 8'x12'x12" thick reinforced concrete slab on grade pad
= 3.6 CY

CONCRETE TOTAL = 25.8 CY

Total Doors = 2.0 EA
Size = 4'-0" x 7'-0"
Conduit Boxes = 1.0 EA/DOOR
Lock Boxes = 1.0 EA/DOOR

Fire Extinguishers	=	2.0	EA	
26" x 26" Exhaust Hoods	=	1.0	EA	
30" x 30" Exhaust Hoods	=	1.0	EA	
30" x 30"Intake Hoods	=	2.0	EA	
18" x 18" Intake Air Hood	=	1.0	EA	
18" x 18" Exhaust Hood	=	1.0	EA	
20" Exhaust Fan	=	1.0	EA	Coolair CBA20L, 1 HP, 4702 CFM @ 3/8" SP
12" Exhaust Fan	=	1.0	EA	Coolair CDU12F17, 1/6 HP, 1210 CFM @ 1/4" SP
Generator Fuel Tank	=	1,000.0	GALLON	
Gravel Pad	=	216.0	CF	Assume 50% greater area than building, 6" thick
	=	8.0	CY	
Filter Fabric		472.0	SF	

Quantities Summary

Coffer dam:	1,115.3	LF	
Coffer dam:	76,053.3	SF	
Excavation:	32,701.2	CY	
Concrete:	3,162.2	CY	
Steel Rebar:	37.9	CY (?)	
Steel Rebar:	250.8	TONS	
Sheetpile:	4,800.0	SF	PZ27x160LFx30FT
Cap:	23.7	CY	
Railing:	404.0	LF	
Grate:	384.0	SF	
Ladders:	2.0	EA	25' EA
Gates:	0	EA	
Seals:	0.0	LF	
Backfill:	40,876.5	LCY	
Rip-rap:	60.4	CY	
Geofabric:	1,632.0	SF	
Boat Barrier:	340.0	LF	
Barrier Piles:	6.0	EA	
Floating Curtain:	980.0	LF	
Silt Fence:	6,492.0	LF	
Control bld.:	25.8	CY	Concrete
Total Doors	2.0	EA	Size 4'-0" x 7'-0"
Conduit Boxes	1.0	EA/DOOR	
Lock Boxes	1.0	EA/DOOR	
Fire Extinguishers	2.0	EA	
26" x 26" Exhaust Hoods	1.0	EA	
30" x 30" Exhaust Hoods	1.0	EA	
30" x 30"Intake Hoods	2.0	EA	
18" x 18" Intake Air Hood	1.0	EA	
18" x 18" Exhaust Hood	1.0	EA	
20" Exhaust Fan	1.0	EA	
12" Exhaust Fan	1.0	EA	
Generator Fuel Tank:	1,000.0	GALLONS	
CTRL BLDG Gravel Pad	8.0	CY	
CTRL BLDG Pad Fabric	472.0	SF	

Feature of Work:	OFFSITE OUTFALL STRUCTURES (OOS-1 thru OOS-8)
Scope Given:	• OOS-1 thru OOS-8 will be a fixed weir outfall control structure with a bleeder. Invert elevation of bleeder will be equal to the estimated SHWT elevation of the existing wetland that will drain to OOS-1 thru OOS-8.
Reference for Scope Basis:	
Scope Assumptions:	– Assume Ditch Bottom Inlet structure can be utilized with 36” RCP across a property line
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized.
Sequence of Work:	
Key Outstanding Questions/Issues:	

Representative Drawings/Photos: OOS-1 thru OOS-5

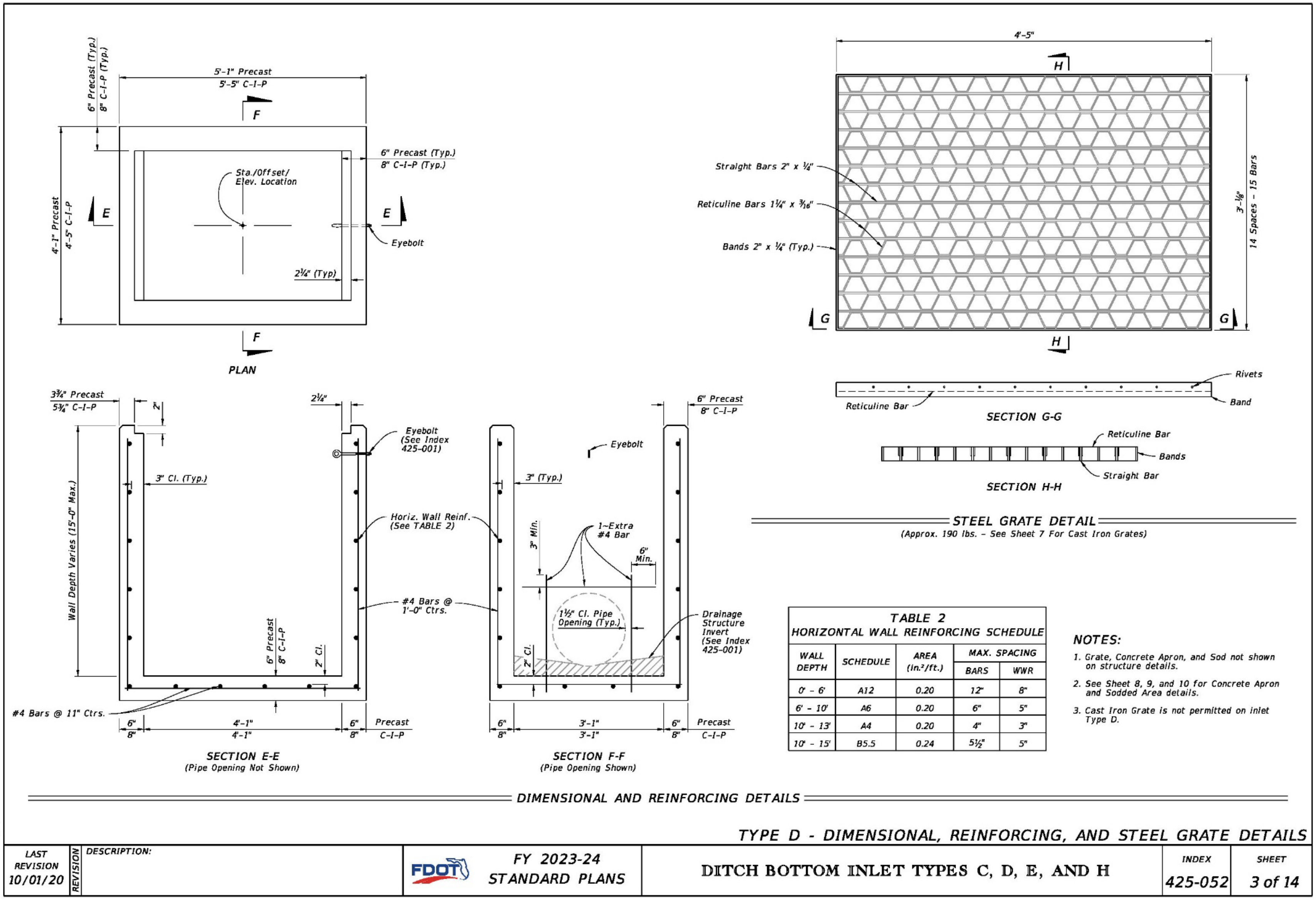


TABLE 2
HORIZONTAL WALL REINFORCING SCHEDULE

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0' - 6'	A12	0.20	12"	8"
6' - 10'	A6	0.20	6"	5"
10' - 13'	A4	0.20	4"	3"
10' - 15'	B5.5	0.24	5½"	5"

NOTES:

1. Grate, Concrete Apron, and Sod not shown on structure details.
2. See Sheet 8, 9, and 10 for Concrete Apron and Sodded Area details.
3. Cast Iron Grate is not permitted on inlet Type D.

Feature of Work:	OFFSITE OUTFALL STRUCTURES (OOS-1 thru OOS-8)

Quantity Take Off:

OOS	Quantity	=	8.0	ea		**Total all OOS-1 thru OOS-5**		
	FDOT Type D Ditch Bottom Inlet with Bleed Orifice							
	Quantity	=	1.0	ea		8.0	ea	Type D Inlet
	Depth	=	10.0	FT	Assume 10' deep			
	36" RCP pipe to CNL-1							
	Length	=	100.0	LF	Assumed	800.0	LF	36" RCP Pipe
	Diameter	=	3.0	FT	Assumed 36"			
	Excavation							
	Depth	=	12.0	FT	Assume Depth +2			
	Bottom Width	=	11.0	FT	Dia. + 4' each way			
	Top Width	=	59.0	FT	2:1 @ Depth			
	Volume	=	42,000.0	CF				
	Volume per OOS	=	1,555.6	CY		12,444.4	CY	Excavation
	Dewatering							
	Area	=	9,480.0	SF		75,840.0	SF	Dewatering
			Assume Top Width x Length and 10' each way					

Feature of Work:	STRUCTURE AGI-PS-1: RELOCATED AGI INFLOW PUMP STATIONS (REPLACES DEMO’D PUMP STATION AT AGI R12)
Scope Given:	Demo’d Pump Station AGI-PS-1 needs to be replaced at AGI R12.
Reference for Scope Basis:	
Scope Assumptions:	– Assume farm/agricultural pump station requiring installing existing pumps at new platform.
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized. Plans and specifications for recent similar work were utilized to capture the necessary scope and assumptions to construct the feature.
Sequence of Work:	
Key Outstanding Questions/Issues:	

Feature of Work: STRUCTURES AGI PS-1: AGRICTULTURAL PUMP STATION (DEMOLITION AND RE-CONSTRUCTION)

Quantity Take Off:

Assume similar to Pump Station 356

Seepage Pump Station Excavation

Length = 105.0 FT
Total Depth = 21.5 FT
Thickness of Organic = 7.0 FT
Thickness of Rippable Rock = 14.5 FT
Slope1 = 1.0 :1
Slope2 = 1.0 :1
Bottom Width = 15.0 FT
Top Width = 58.0 FT

Cross Section = 784.8 SF
Cross Section Organic = 357.0 SF
Cross Section of Cap Rock = 427.8 SF
Organic Volume = 37,485.0 CF = 1,388.3 BCY = 1,735.4 LCY
Cap Rock Volume = 44,913.8 CF = 1,663.5 BCY = 2,495.2 LCY

Backfill = 8,239.9 CF = 305.2 BCY = 423.1 LCY
Assume Backfill is 10% of excavated quantity.
Assume Clear and Grub similar to work area for the Merritt Pumping Station = 18.0 ACRE = 87,120.0 SY

Inflow and Outflow Canal Excavation

Length = 700.0 FT
Total Depth = 17.0 FT
Thickness of Organic = 7.0 FT
Thickness of Common = - FT
Thickness of Cap Rock = 10.0 FT
Slope1 = 2.0 :1
Slope2 = 2.0 :1
Bottom Width = 40.0 FT
Top Width = 108.0 FT

Surface Area of Canal = 75,600.0 SF = 1.7 ACRE = 8,400.0 SY
Organic Volume = 460,600.0 CF = 17,059.3 BCY = 21,324.1 LCY
Cap Rock Volume = 420,000.0 CF = 15,555.6 BCY = 23,333.3 LCY

Levee Degrade

Length 730.0 FT
Height 10.4 FT
Slope1 2.0 :1
Slope2 2.0 :1
Top width 10.0 FT
Bottom width 51.6 FT

Assume Degrade of levee required due to location of new pump station

Cross Section = 320.3 SF
Surface Area of Levee = 39,946.6 SF = 0.9 ACRE
Volume = 233,833.6 CF = 8,660.5 BCY = 9,786.4 LCY
base area of levee = 37,668.0 SF = 4,185.3 SY = 0.9 Acre
side slopes of levee = 32,646.6 SF = 3,627.4 SY = 0.7 Acre
roadway area = 7,300.0 SF = 811.1 SY = 0.2 Acre

Removal of existing S-356 Temporary Pump Station and backfill of Temporary Pump Station Intake

Excavation volume for removal of Piping = 67,240.0 CF Assume excavation area is 6,724 SF and excavation is 10 ft deep.
= 2,490.4 BCY = 3,113.0 LCY

Intake Backfill
Length = 142.5 FT Assume averaged length is 142.5 ft
Height = 10.0 FT Assume average depth is 10 ft
Slope1 = 2.0 :1 assume side slope of 2:1
Slope2 = 2.0 :1
Bottom Width = 30.0 FT Assume Bottom width of 30 ft with top width at 70 ft.
Top Width = 70.0 FT

Cross Section = 500.0 SF
Backfill Volume = 71,250.0 CF = 2,638.9 ECY = 2,981.9 LCY
new surface area of backfill = 9,975.0 SF = 1,108.3 SY = 0.2 Acre

Total Backfill removed temp. pump station = 5,642.2 ECY = 6,375.7 LCY

Care and Diversion of Water

Construction Sequence:

1 Construct perimeter concrete ring beam and rock anchors.
2 Place Sheet piling and connect piling to concrete ring beam. Excavate. Assume sheet pile length of 36 ft
3 3Install rock anchors for concrete seal slab. Anchor length 17'-6" slab rock anchor.
4 Place Concrete Seal slab. 6'-0" thick and dimensions of sheet pile
5 Dewater cofferdam and prepare top of concrete base mat slab
6 Place concrete walls to elevation 9'-0" at pump structure monolith prior to abandoning or removing in place cofferdam sheet piles. Remove ring beams in inlet and outlet.
7 install lateral bracing for walls.
8 Construct service bridge slab. Remainder of walls and operating floor slab.
9 Install sheet pile wing walls.

# of pump station Bays = 4.0
Cofferdam width per pump station bay = 15.0 ft Assume Per S-101
Total width length = 60.0 ft
Length (Up and downstream) of Cofferdam = 90.0 ft Assume per S-101
Area of Cofferdam sheet pile to remain in place = 10,800.0 SF
Area of cofferdam to be removed = 7,200.0 SF

Total Perimeter Length
(length of sheet pile/ring beam) = 300.0 ft
Length of Sheet pile to Be utilized as wing wall = 186.0 ft
Volume of ring beam (Reinforced Concrete = 70.4 CY Per detail S-103
# of 54' ring beam anchors @ 10' OC = 30.0 ea Per detail S-101
# of 17'-6" uplift slab rock anchors = 54.0 ea
Volume of Concrete seal/uplift slab = 1,200.0 CY Assume 6' thick

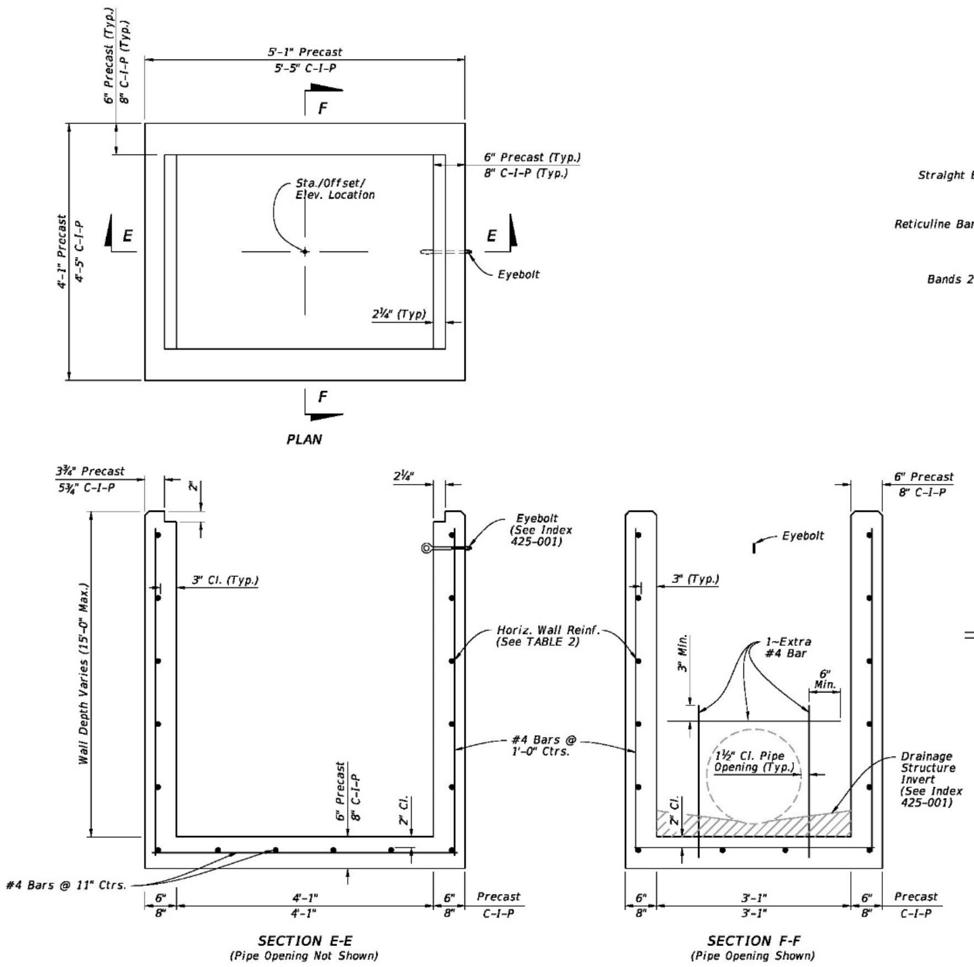
Width of each Bay = 15.0 ft Assumed per similar PS-357
Length of Operating Floor = 45.0 ft
Width of Operating Floor = 60.0 ft

Horizontal concrete volume = 800.0 CY
Vertical Concrete = 1,500.0 CY
Service Bridge Elevated Flatwork = 190.1 CY Total Elevated Flatwork = 446.4 CY
Operating Floor (Elevated Flatwork = 225.0 CY
Elevated Vertical Work
(Operating floor to service bridge) = 31.3 CY
Roof slab / Metal Deck = 220.0 CY
Loading Truck Ramp (horizontal Concrete) = 4,903.0 SF = 272.4 CY Assumed From Merritt Pump Station

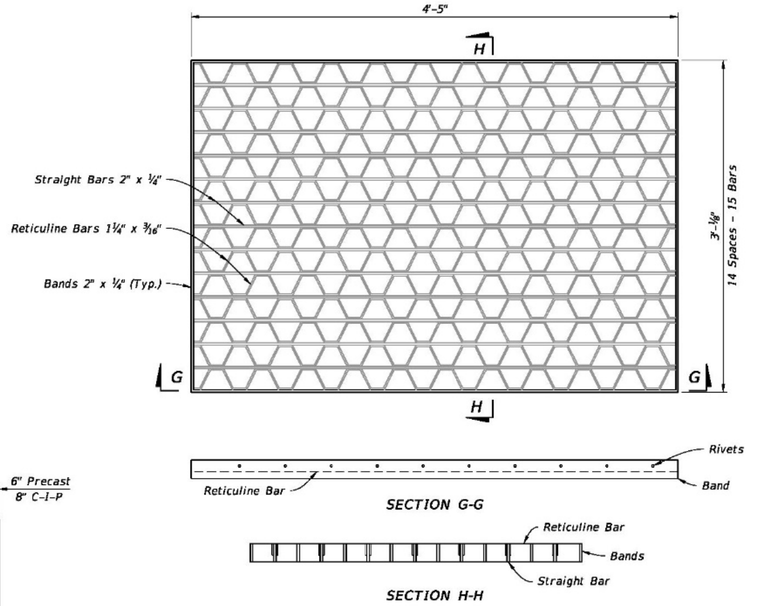
SF of Generator, Electric and Office/Control = 900.0 SF Assume Gen/Elec/Office room is 20ftx45ft

Volume of Concrete for Gen, Elec and Office	=	1,500.0	CF	= 55.6 CY Assume 1.67 ft thick
Assume 10 18"x18"x26" Tall Columns	=	43.3	CY	
Tilt Up 7-1/2" Thick Precast Panels	=	5,250.0	SF	Assume similar to Merritt Pump Station
CMU Wall Dimension (Exterior Surface Area)	=	8,500.0	SF	
Roof 32" Double tee units 56 ft long required	=	8.0	each	
Intake Basin Concrete	=	89.0	CY	
Discharge Basin Concrete Apron	=	133.3	CY	Assume 36" thick concrete
Stone Protection Riprap discharge	=	1,688.9	CY	Assume 5 ft thick layer of riprap lining the C-625W canal upstream 60 ft and downstream 60 ft
Stone Protection inlet	=	750.0	CY	Assume 36" thick layer of riprap lining the sides and bottom for 150' upstream
Trash Rack Surface Area (total)	=	1,680.0	SF	Assume Trash rake is 28 ft tall and covers the width of the operating floor each individual covers the width of the bays (14 ft)
Roll Up Garage Door	=	168.0	SF	Assume Roll up garage door 12'x14'
# of Doors	=	4.0	ea	Assume 1 set of double doors and two other doors
# louver openings	=	8.0	ea	Assume 8 louver openings 7'-4" square
Overhead Crane	=	2.0	ea	Assume 2 overhead cranes @ 25 tons each
Power Line Connection	=	2,500.0	LF	Assume power available 2500 lf from site
Septic tank system	=	1.0	ea	Assume 1 septic tank system
Potable water	=	1.0	ea	Assume 1 potable water well will be required
Generator Fuel Tank	=	2000 Gallon	ea	Assume five 2000 gallon fuel tanks required
Fuel Pad dimensions	=	2,000.0	SF	Assume two 100'x20'x8" thick reinforced concrete slab on grade pad
		49.4	CY	
Discharge Piping				
48" discharge pipe		15.0	LF/ea	Assume Pumps will have a 48" Discharge Pipe
Concrete Encasement		146.6	CY	Assume 2 ft of concrete to encase piping
Floor Grating	=	240.0	SF	Assume 14' x4 ft wide for each pump bay.
Ladders	=	120.0	VLF	Assume 30 ft per pump bay
Railings	=	180.0	LF	Assume a handrail on the up and downstream side and one a width of the operating floor
Haul road length	=	21,120.0	FT	
Haul road width	=	14.0	FT	
Haul road thickness	=	1.0	FT	
Area	=	295,680.0	SF	= 32,853.3 SY
Chain link Fence	=	2,280.0	LF	Assume Similar to Merritt Pump Station
Silt Fence	=	3,700.0	LF	Assume similar to Merritt Pump Station
Silt Boom	=	600.0	LF	Assume similar to Merritt Pump Station

Feature of Work:	OFFSITE DRAINAGE COLLECTION DITCH OUTFALL STRUCTURE (ODCD-OS-1)
Scope Given:	ODCD-OS-1 will be a fixed weir overflow structure for the ODCD and CNL-1 Reach 7 that will outflow to existing FBR structure PC15N via a ditch, which in turn will outflow to C-41A.
Reference for Scope Basis:	
Scope Assumptions:	– Assume Ditch Bottom Inlet structure can be utilized with 36” RCP
Class of Estimate	Class 3 -Baseline (Feasibility/DPR/LRR)
Estimate Methodology:	When possible a corollary approach to the estimate development was utilized.
Sequence of Work:	
Key Outstanding Questions/Issues:	



DIMENSIONAL AND REINFORCING DETAILS



STEEL GRATE DETAIL

(Approx. 190 lbs. - See Sheet 7 For Cast Iron Grates)

TABLE 2
HORIZONTAL WALL REINFORCING SCHEDULE

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWR
0' - 6'	A12	0.20	12"	8"
6' - 10'	A6	0.20	6"	5"
10' - 13'	A4	0.20	4"	3"
10' - 15'	B5.5	0.24	5½"	5"

NOTES:

1. Grate, Concrete Apron, and Sod not shown on structure details.
2. See Sheet 8, 9, and 10 for Concrete Apron and Sodded Area details.
3. Cast Iron Grate is not permitted on inlet Type D.

TYPE D - DIMENSIONAL, REINFORCING, AND STEEL GRATE DETAILS

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2023-24 STANDARD PLANS	DITCH BOTTOM INLET TYPES C, D, E, AND H	INDEX	SHEET
10/01/20						425-052	3 of 14

10/20/2022 8:14:25 AM

Feature of Work:	OFFSITE DRAINAGE COLLECTION DITCH OUTFALL STRUCTURE (ODCD-OS-1)

Quantity Take Off:

ODCD-OS

FDOT Type D Ditch Bottom Inlet with Bleed Orifice							
Quantity	=	1.0	ea		1.0	ea	Type D Inlet
Depth	=	10.0	FT	Assume 10' deep			
36" RCP pipe to CNL-1							
Length	=	100.0	LF	Assumed	100.0	LF	36" RCP Pipe
Diameter	=	3.0	FT	Assumed 36"			
Excavation							
Depth	=	12.0	FT	Assume Depth +2			
Bottom Width	=	11.0	FT	Dia. + 4' each way			
Top Width	=	59.0	FT	2:1 @ Depth			
Volume	=	42000.0	CF				
Volume per OS	=	1,555.6	CY		1,555.6	CY	Excavation
Dewatering							
Area	=	9,480.0	SF		9,480.0	SF	Dewatering
		Assume Top Width x Length and 10' each way					

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR) FEASIBILITY STUDY

CONTRACT 7 – RESERVOIR RECREATION AMENITIES

- Construct Recreation Amenities

ATTACHMENT 2

PRODUCTION RATE CALCULATIONS

TITLE: Lake Okeechobee Component A Reservoir (LOCAR)
SUBJECT: User Defined Production Rate Calculations
MADE BY: SKV
JOB NO.:
CHECKED BY: SM
DATE: 10/5/2023

CSI TASK:

EXCAVATE, PUSH MUCK TO STOCKPILE
[Dozer]

Excavate Muck Crew

PRODUCTION

3	cy bucket
0.85	% fill
55	min/hr
0.68	cycle/min

96 cy/crew hr →

CSI TASK:

EXCAVATE BLASTED ROCK TO STOCKPILE, LEVEES
[3.5-cy Hydraul. Excav.]

Excavate Blasted Rock Large Levee Crew

PRODUCTION

3.5	cy bucket
0.90	% fill
55	min/hr
0.80	cycle/min
5	no. of excavators

695 cy/crew hr →

CSI TASK:

LOAD AND HAUL ROCK, TO/FROM PROCESS PLANT
[on site, 10-mile]

Load and Haul Blasted Rock On-Site Cew

PRODUCTION

31.5	cy truck
0.95	% fill
7.2	min. for loading
5	mi. to disposal location
18	mph haul speed
3.6	min. dump time
55	min/hr
4	no. of trucks

QUANTITY PER TRUCK 29.9 cy/truck

DURATION OF HAULING 0.80 hr

149 cy/hr →

TITLE: Lake Okeechobee Component A Reservoir (LOCAR)
SUBJECT: User Defined Production Rate Calculations
MADE BY: SKV
JOB NO.:
CHECKED BY: SM
DATE: 10/5/2023

CSI TASK:

PUSH MUCK TO PLACE, FROM STOCKPILE
[Dozer]

Excavate Muck Crew

PRODUCTION

3	cy bucket
0.85	% fill
55	min/hr
0.70	cycle/min

99 cy/crew hr

CSI TASK:

CANAL/CULVERT EXCAVATION TO STOCKPILE
[3.5-cy Hydraul. Excav.]

Excavate Canals Crew

PRODUCTION

3.5	cy bucket
0.85	% fill
55	min/hr
0.75	cycle/min
3	no. of excavators

369 cy/crew hr

CSI TASK:

FILL AND COMPACT RANDOM FILL, CANALS
[Dozer, Compactors]

Fill and Compact Crew [Canals]

PRODUCTION

4	cy bucket
0.85	% fill
55	min/hr
0.63	cycle/min

116 cy/crew hr

CSI TASK:

FILL AND COMPACT ROAD STONE

Fill and Compact Road Base Crew

PRODUCTION

3	cy bucket
0.85	% fill
55	min/hr
1.25	cycle/min

175 cy/crew hr

TITLE: Lake Okeechobee Component A Reservoir (LOCAR)
SUBJECT: User Defined Production Rate Calculations
MADE BY: SKV JOB NO.:
CHECKED BY: SM DATE: 10/5/2023

CSI TASK:

MATERIAL HANDLING BETWEEN LOCAL STOCKPILE, LEVEES
[Dozer]

Material Handling/Push Large Crew

PRODUCTION

5	cy per cycle
0.85	% fill
55	min/hr
0.43	cycle/min
3	no. of dozers

300 cy/crew hr

CSI TASK:

CANAL CLEANING CREW
[Dozers]

Canal Cleaning Crew

PRODUCTION

0.3	min/lf to clean out

200.00 lf/hr

CSI TASK:

PLACE BLANKET DRAIN, SAND
[Front End Loader, Compactor]

Sand Blanket Crew

PRODUCTION

3	cy per cycle
0.85	% fill
55	min/hr
0.85	cycle/min
1	no. of loaders

120 cy/crew hr

CSI TASK:

EXCAVATE AND LOAD BORROW MATERIAL
[3.5-cy hydraul. Excavators]

Excavate Canal Crew

PRODUCTION

3.5	cy per cycle
0.90	% fill
55	min/hr
1.7	cycle/min
1	no. of loaders

300 cy/crew hr

TITLE: Lake Okeechobee Component A Reservoir (LOCAR)
SUBJECT: User Defined Production Rate Calculations
MADE BY: SKV JOB NO.:
CHECKED BY: SM DATE: 10/5/2023

CSI TASK:

HAUL BORROW, TO/FROM STOCKPILE
[on-site]

On-Site Haul Crew

PRODUCTION

31.5	cy truck
0.95	% fill
8.0	min. for loading
1	mi. to disposal location
8.5	mph haul speed
4.0	min. dump time
55	min/hr
4	no. of trucks

QUANTITY PER TRUCK 29.9 cy/truck

DURATION OF HAULING 0.47 hr

250 cy/hr →

CSI TASK:

FILL AND COMPACT BORROW FILL, DAM EMBANKMENT
[Front End Loader, Compactor]

Fill and Compact Random Fill Crew

PRODUCTION

3	cy bucket
0.85	% fill
55	min/hr
0.93	cycle/min
2	no. of loaders

260 cy/crew hr →

CSI TASK:

PLACE TOP SOIL
[Front End Loader, Compactor]

Sand Blanket Crew

PRODUCTION

3	cy bucket
0.85	% fill
55	min/hr
1.00	cycle/min
2	no. of loaders

280 cy/crew hr →

TITLE: Lake Okeechobee Component A Reservoir (LOCAR)
SUBJECT: User Defined Production Rate Calculations
MADE BY: SKV JOB NO.:
CHECKED BY: SM DATE: 10/5/2023

CSI TASK:

MATERIAL SPREADING
[Dozer]

Material Handling/Push Crew

PRODUCTION

4	cy per trip
0.85	% fill
55	min/hr
0.43	cycle/min
2	no. of loaders

160 cy/crew hr →

CSI TASK:

EXCAVATE RIPRAP

Riprap Crew

PRODUCTION

4	cy bucket
0.70	% fill
50	min/hr
0.30	cycle/min
1	no. of loaders

40 cy/crew hr →

CSI TASK:

OUTFALL EXCAVATION
[3.5-cy hydraul. Excavators]

Excavate Canal Crew

PRODUCTION

3.5	cy per cycle
0.85	% fill
55	min/hr
0.5	cycle/min
1	no. of excavators

85 cy/crew hr →

CSI TASK:

SOIL EXCAVATION
[3.5-cy hydraul. Excavators]

Hydraulic Excavation Crew

PRODUCTION

3.5	cy per cycle
0.90	% fill
55	min/hr
0.7	cycle/min
1	no. of excavators

120 cy/crew hr →

TITLE: Lake Okeechobee Component A Reservoir (LOCAR)
SUBJECT: User Defined Production Rate Calculations
MADE BY: SKV JOB NO.:
CHECKED BY: SM DATE: 10/5/2023

CSI TASK:

PIPE EXCAVATION
[3.5-cy hydraul. Excavators]

Excavate Canals Crew

PRODUCTION

3.5	cy per cycle
0.80	% fill
50	min/hr
0.6	cycle/min
1	no. of excavators

82 cy/crew hr

CSI TASK:

PUMP STATION EXCAVATION
[4-cy hydraul. Excavators]

Pump Station Excavation Crew

PRODUCTION

4.0	cy per cycle
0.90	% fill
55	min/hr
0.6	cycle/min
1	no. of excavators

119 cy/crew hr

CSI TASK:

FILL AND COMPACT, COFFERDAM
[Front End Loader, Compactor]

Earthen Fill Crew

PRODUCTION

5.0	cy per cycle
0.95	% fill
55	min/hr
1.1	cycle/min
1	no. of excavators

292 cy/crew hr

CSI TASK:

COFFERDAM EXCAVATION
[Hydraul. Excavator]

Excavate Canals Crew

PRODUCTION

3.5	cy per cycle
0.90	% fill
55	min/hr
1.1	cycle/min
1	no. of excavators

187 cy/crew hr

TITLE: Lake Okeechobee Component A Reservoir (LOCAR)
SUBJECT: User Defined Production Rate Calculations
MADE BY: SKV JOB NO.:
CHECKED BY: SM DATE: 10/5/2023

CSI TASK:

HAUL COFFERDAM MATERIAL TO NEXT SITE
[2-mile approx.]

Off Highway Haul Crew

PRODUCTION

41	cy truck
0.95	% fill
8.5	min. for loading
2	mi. to disposal location
15	mph haul speed
4.3	min. dump time
55	min/hr
1	no. of trucks

QUANTITY PER TRUCK	39.0 cy/truck
DURATION OF HAULING	0.52 hr

75 cy/hr

CSI TASK:

HAUL EXCESS MATERIAL TO RESERVOIR STOCKPILE
[5-mile approx.]

Off Highway Haul Crew

PRODUCTION

41	cy truck
0.95	% fill
8.5	min. for loading
5	mi. to disposal location
20	mph haul speed
4.3	min. dump time
55	min/hr
1	no. of trucks

QUANTITY PER TRUCK	39.0 cy/truck
DURATION OF HAULING	0.78 hr

50 cy/hr

CSI TASK:

MATERIAL SHORT HAUL
[1-mile approx.]

Off Highway Haul Crew

PRODUCTION

41	cy truck
0.95	% fill
8.5	min. for loading
1	mi. to disposal location
10	mph haul speed
4.3	min. dump time
55	min/hr
1	no. of trucks

QUANTITY PER TRUCK	39.0 cy/truck
DURATION OF HAULING	0.45 hr

87 cy/hr

TITLE: Lake Okeechobee Component A Reservoir (LOCAR)
SUBJECT: User Defined Production Rate Calculations
MADE BY: SKV JOB NO.:
CHECKED BY: SM DATE: 10/5/2023

CSI TASK:

CLEARING AND GRUBBING

Clear and Grub Crew

PRODUCTION

480.0	min/acre

0.125 acre/hr →

CSI TASK:

FILL AND COMPACT, SAND
[Front End Loader, Compactor]

Sand Fill Crew

PRODUCTION

3.0	cy per cycle
0.95	% fill
55	min/hr
1.6	cycle/min
1	no. of excavators

250 cy/crew hr →

CSI TASK:

RIPRAP MATERIAL HAULING FROM OFFSITE
[16-cy truck, 70-mile haul, 35-mph avg.]

16-cy Truck Crew

PRODUCTION

16	cy truck
0.90	% fill
5.0	min. for loading
70	mi. to disposal location
35	mph haul speed
2.5	min. dump time
55	min/hr
1	no. of trucks

QUANTITY PER TRUCK 14.4 cy/truck

DURATION OF HAULING 4.50 hr

3.2 cy/hr →

CSI TASK:

RIPRAP PLACEMENT

Riprap Crew

PRODUCTION

3.0	cy per cycle
0.90	% fill
55	min/hr
0.3	cycle/min
1	no. of excavators

37.1 cy/crew hr →

TITLE: Lake Okeechobee Component A Reservoir (LOCAR)
SUBJECT: User Defined Production Rate Calculations
MADE BY: SKV
JOB NO.:
CHECKED BY: SM
DATE: 10/5/2023

CSI TASK:

SOIL BENTONITE WALL, SPOILS SPREADING
[1-mile haul, on-site]

Spoils Disposal Crew

PRODUCTION

31.5	cy truck
0.90	% fill
11.0	min. for loading
1	mi. to disposal location
5	mph haul speed
5.5	min. dump time
45	min/hr
4	no. of trucks

QUANTITY PER TRUCK 28.4 cy/truck

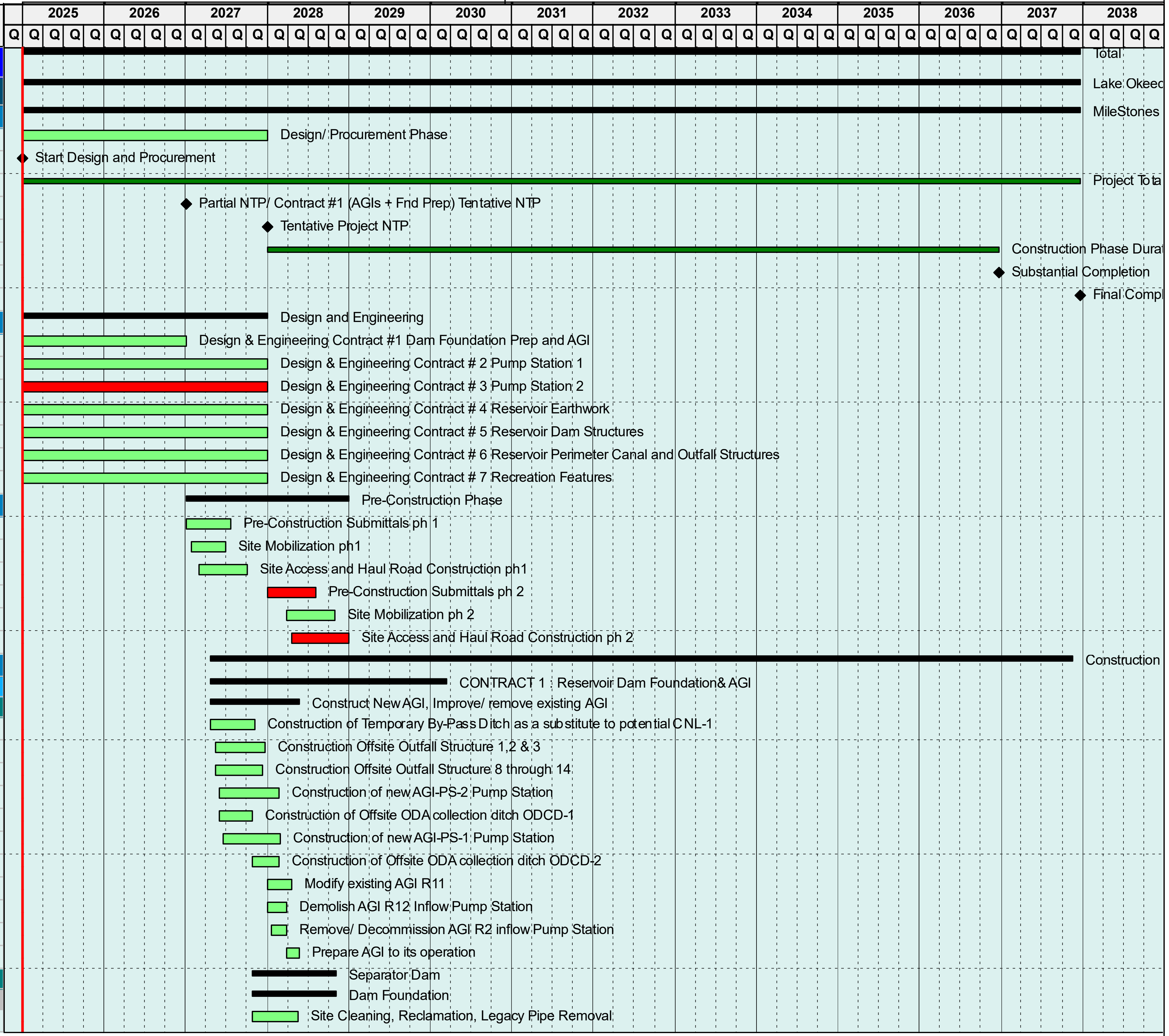
DURATION OF HAULING 0.90 hr

125 cy/hr →

ATTACHMENT 3

TENTATIVE PROJECT SCHEDULE

Activity ID	Activity Name	OD	Start	Finish
Total		4738	01-Jan-25	21-Dec-37
Lake Okeechobee Component A Storage Reservoir (LOCAR)		4738	01-Jan-25	21-Dec-37
MileStones		4738	01-Jan-25	21-Dec-37
Mile-2	Design/ Procurement Phase	1095	01-Jan-25	31-Dec-27
Mile-1	Start Design and Procurement	0	01-Jan-25*	
Mile-3	Project Total Duration	4738	01-Jan-25	21-Dec-37
Mile-14	Partial NTP/ Contract #1 (AGIs + Fnd Prep) Tentative NTP	0	03-Jan-27	
Mile-4	Tentative Project NTP	0	03-Jan-28*	
Mile-5	Construction Phase Duration - Contracts# 2 through 7	3276	03-Jan-28	22-Dec-36
Mile-6	Substantial Completion	0		22-Dec-36
Mile-7	Final Completion	0		21-Dec-37
Design and Engineering		1098	01-Jan-25	03-Jan-28
DE-1	Design & Engineering Contract #1 Dam Foundation Prep and AGI	732	01-Jan-25	02-Jan-27
DE-2	Design & Engineering Contract # 2 Pump Station 1	1098	01-Jan-25	03-Jan-28
DE-3	Design & Engineering Contract # 3 Pump Station 2	1098	01-Jan-25	03-Jan-28
DE-4	Design & Engineering Contract # 4 Reservoir Earthwork	1098	01-Jan-25	03-Jan-28
DE-5	Design & Engineering Contract # 5 Reservoir Dam Structures	1098	01-Jan-25	03-Jan-28
DE-6	Design & Engineering Contract # 6 Reservoir Perimeter Canal and (	1098	01-Jan-25	03-Jan-28
DE-7	Design & Engineering Contract # 7 Recreation Features	1098	01-Jan-25	03-Jan-28
Pre-Construction Phase		503	04-Jan-27	03-Jan-29
PreC-C1-1	Pre-Construction Submittals ph 1	140	04-Jan-27	22-Jul-27
PreC-C1-2	Site Mobilization ph1	110	26-Jan-27	30-Jun-27
PreC-C1-3	Site Access and Haul Road Construction ph1	150	03-Mar-27	01-Oct-27
PreC-1	Pre-Construction Submittals ph 2	150	03-Jan-28	04-Aug-28
PreC-2	Site Mobilization ph 2	150	29-Mar-28	30-Oct-28
PreC-3	Site Access and Haul Road Construction ph 2	175	21-Apr-28	03-Jan-29
Construction		3864	21-Apr-27	17-Nov-37
CONTRACT 1 : Reservoir Dam Foundation& AGI		1060	21-Apr-27	15-Mar-30
Construct New AGI, Improve/ remove existing AGI		400	21-Apr-27	24-May-28
AGI-1	Construction of Temporary By-Pass Ditch as a substitute to potential	200	21-Apr-27	06-Nov-27
AGI-2	Construction Offsite Outfall Structure 1,2 & 3	220	16-May-27	21-Dec-27
AGI-3	Construction Offsite Outfall Structure 8 through 14	210	16-May-27	11-Dec-27
AGI-5	Construction of new AGI-PS-2 Pump Station	270	31-May-27	24-Feb-28
AGI-6	Construction of Offsite ODA collection ditch ODCD-1	150	31-May-27	27-Oct-27
AGI-4	Construction of new AGI-PS-1 Pump Station	260	15-Jun-27	29-Feb-28
AGI-7	Construction of Offsite ODA collection ditch ODCD-2	120	28-Oct-27	24-Feb-28
AGI-8	Modify existing AGI R11	110	01-Jan-28	19-Apr-28
AGI-9	Demolish AGI R12 Inflow Pump Station	85	01-Jan-28	25-Mar-28
AGI-10	Remove/ Decommission AGI R2 inflow Pump Station	65	21-Jan-28	25-Mar-28
AGI-11	Prepare AGI to its operation	60	26-Mar-28	24-May-28
Separator Dam		260	25-Oct-27	03-Nov-28
Dam Foundation		260	25-Oct-27	03-Nov-28
Sep-Dam-16	Site Cleaning, Reclamation, Legacy Pipe Removal	140	25-Oct-27	16-May-28

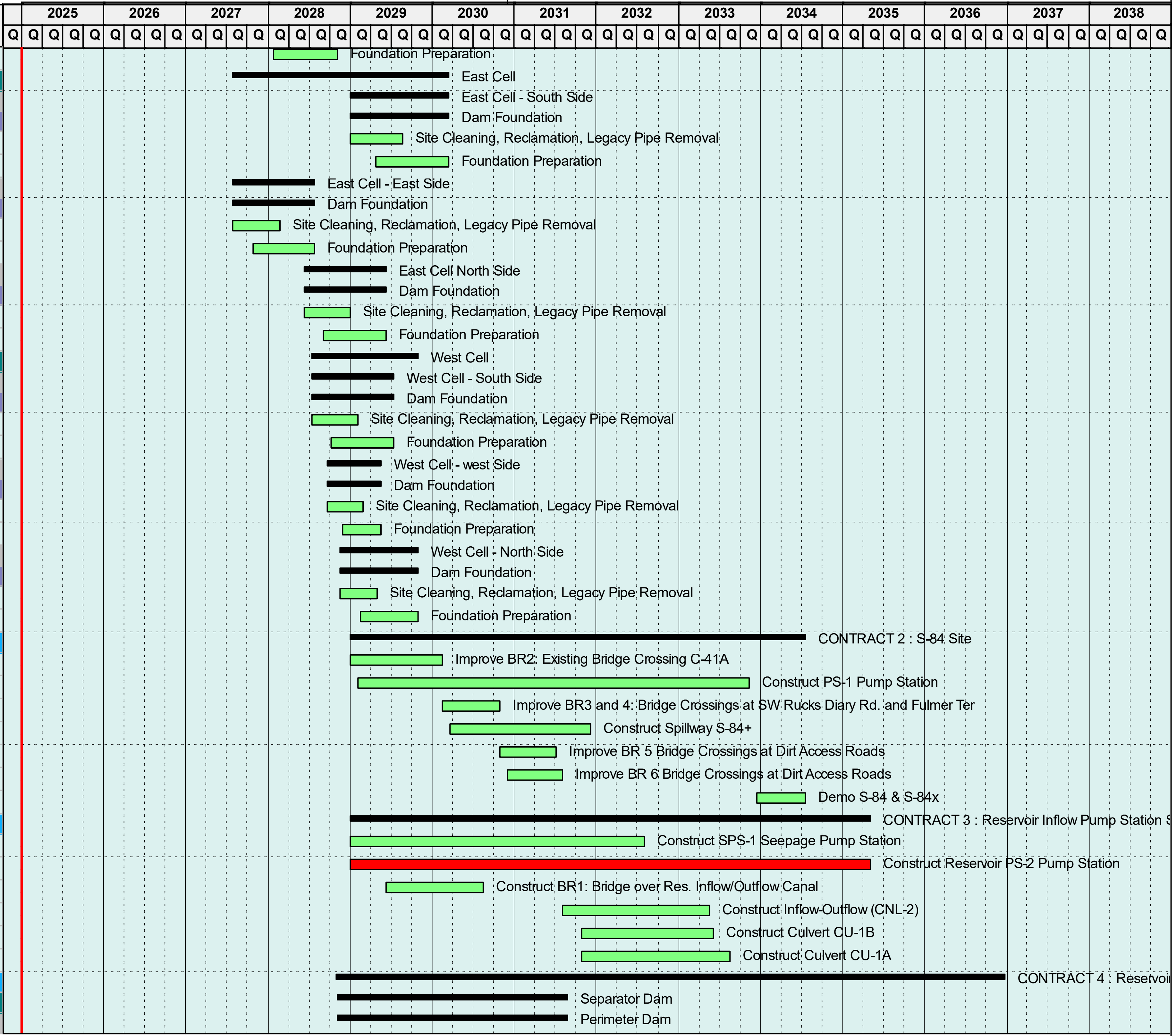


🟩 Remaining Level of Effort
▭ Second Baseline
🟦 Actual Work
🟩 Remaining Work
🟥 Critical Remaining Work
◆ Milestone
▬ Summary

JTech An alliance of Jacobs and Tetra Tech

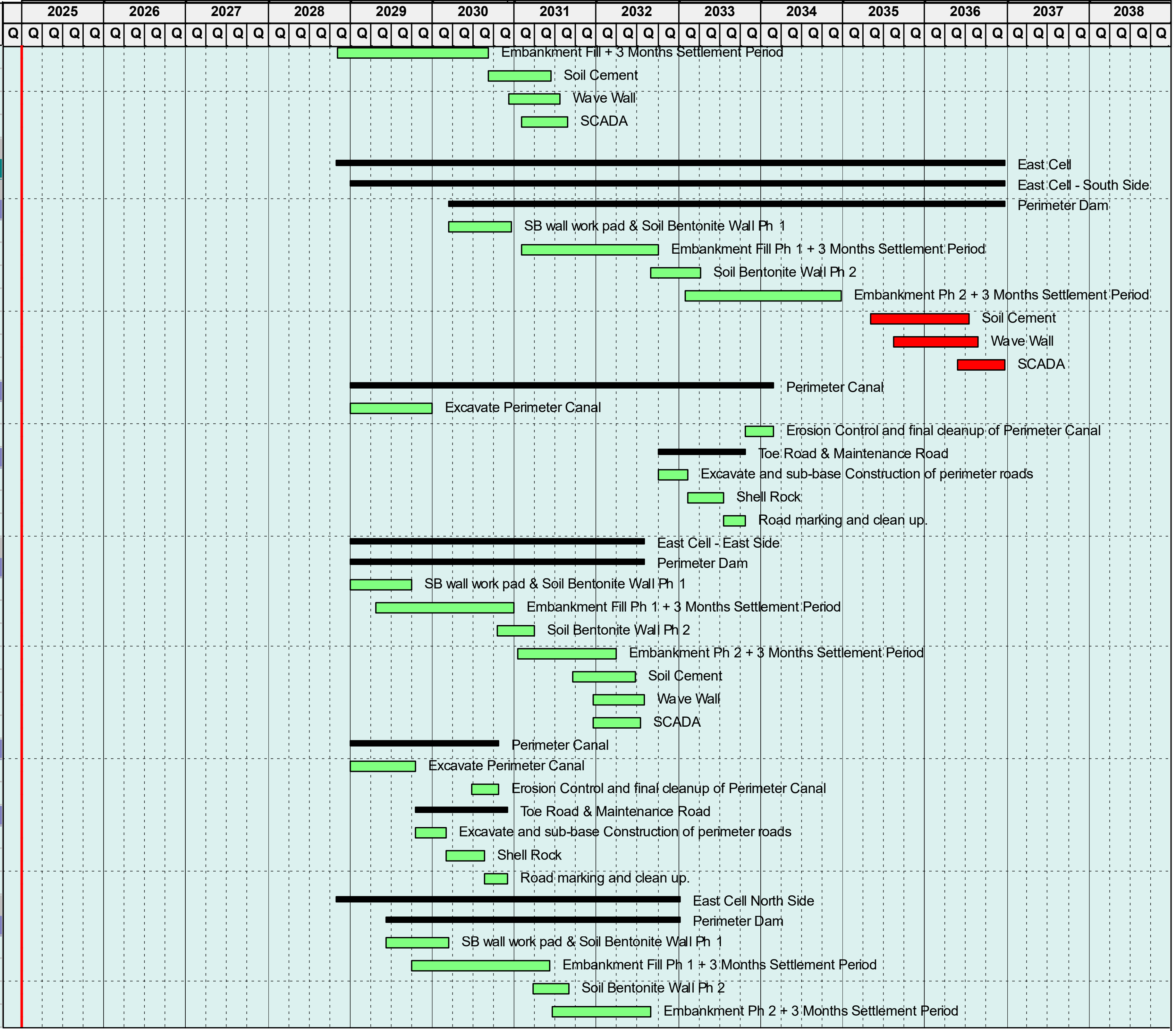
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Activity ID	Activity Name	OD	Start	Finish
Sep-Dam-26	Foundation Preparation	200	25-Jan-28	03-Nov-28
East Cell		658	30-Jul-27	15-Mar-30
East Cell - South Side		300	03-Jan-29	15-Mar-30
Dam Foundation		300	03-Jan-29	15-Mar-30
EC-South-48	Site Cleaning, Reclamation, Legacy Pipe Removal	160	03-Jan-29	21-Aug-29
EC-South-58	Foundation Preparation	220	27-Apr-29	15-Mar-30
East Cell - East Side		250	30-Jul-27	27-Jul-28
Dam Foundation		250	30-Jul-27	27-Jul-28
EC-East-35	Site Cleaning, Reclamation, Legacy Pipe Removal	140	30-Jul-27	22-Feb-28
EC-East-45	Foundation Preparation	190	25-Oct-27	27-Jul-28
East Cell North Side		250	08-Jun-28	07-Jun-29
Dam Foundation		250	08-Jun-28	07-Jun-29
EC-North-24	Site Cleaning, Reclamation, Legacy Pipe Removal	140	08-Jun-28	29-Dec-28
EC-North-34	Foundation Preparation	190	01-Sep-28	07-Jun-29
West Cell		325	14-Jul-28	29-Oct-29
West Cell - South Side		250	14-Jul-28	13-Jul-29
Dam Foundation		250	14-Jul-28	13-Jul-29
WC-South-2	Site Cleaning, Reclamation, Legacy Pipe Removal	140	14-Jul-28	06-Feb-29
WC-South-3	Foundation Preparation	190	09-Oct-28	13-Jul-29
West Cell - west Side		165	18-Sep-28	16-May-29
Dam Foundation		165	18-Sep-28	16-May-29
WC-West-26	Site Cleaning, Reclamation, Legacy Pipe Removal	110	18-Sep-28	28-Feb-29
WC-West-36	Foundation Preparation	115	30-Nov-28	16-May-29
West Cell - North Side		240	14-Nov-28	29-Oct-29
Dam Foundation		240	14-Nov-28	29-Oct-29
WC-North-23	Site Cleaning, Reclamation, Legacy Pipe Removal	115	14-Nov-28	02-May-29
WC-North-33	Foundation Preparation	180	13-Feb-29	29-Oct-29
CONTRACT 2 : S-84 Site		1390	03-Jan-29	18-Jul-34
C2-S84-1	Improve BR2: Existing Bridge Crossing C-41A	280	03-Jan-29	14-Feb-30
C2-S84-2	Construct PS-1 Pump Station	1200	01-Feb-29	09-Nov-33
C2-S84-3	Improve BR3 and 4: Bridge Crossings at SW Rucks Diary Rd. and F	180	14-Feb-30	30-Oct-30
C2-S84-4	Construct Spillway S-84+	430	22-Mar-30	08-Dec-31
C2-S84-5	Improve BR 5 Bridge Crossings at Dirt Access Roads	170	30-Oct-30	08-Jul-31
C2-S84-6	Improve BR 6 Bridge Crossings at Dirt Access Roads	170	02-Dec-30	05-Aug-31
C2-S84-7	Demo S-84 & S-84x	150	12-Dec-33	18-Jul-34
CONTRACT 3 : Reservoir Inflow Pump Station Site		1592	29-Dec-28	04-May-35
C3-RIPS-1	Construct SPS-1 Seepage Pump Station	900	29-Dec-28	30-Jul-32
C3-RIPS-2	Construct Reservoir PS-2 Pump Station	1590	03-Jan-29	04-May-35
C3-RIPS-3	Construct BR1: Bridge over Res. Inflow/Outflow Canal	300	07-Jun-29	16-Aug-30
C3-RIPS-4	Construct Inflow-Outflow (CNL-2)	450	05-Aug-31	20-May-33
C3-RIPS-5	Construct Culvert CU-1B	400	29-Oct-31	06-Jun-33
C3-RIPS-6	Construct Culvert CU-1A	450	29-Oct-31	16-Aug-33
CONTRACT 4 : Reservoir Earthwork		2975	30-Oct-28	22-Dec-36
Separator Dam		1026	06-Nov-28	28-Aug-31
Perimeter Dam		705	06-Nov-28	28-Aug-31



🟩	Remaining Level of Effort
═	Second Baseline
🟦	Actual Work
🟩	Remaining Work
🟥	Critical Remaining Work
◆ ◆	Milestone
▬	Summary

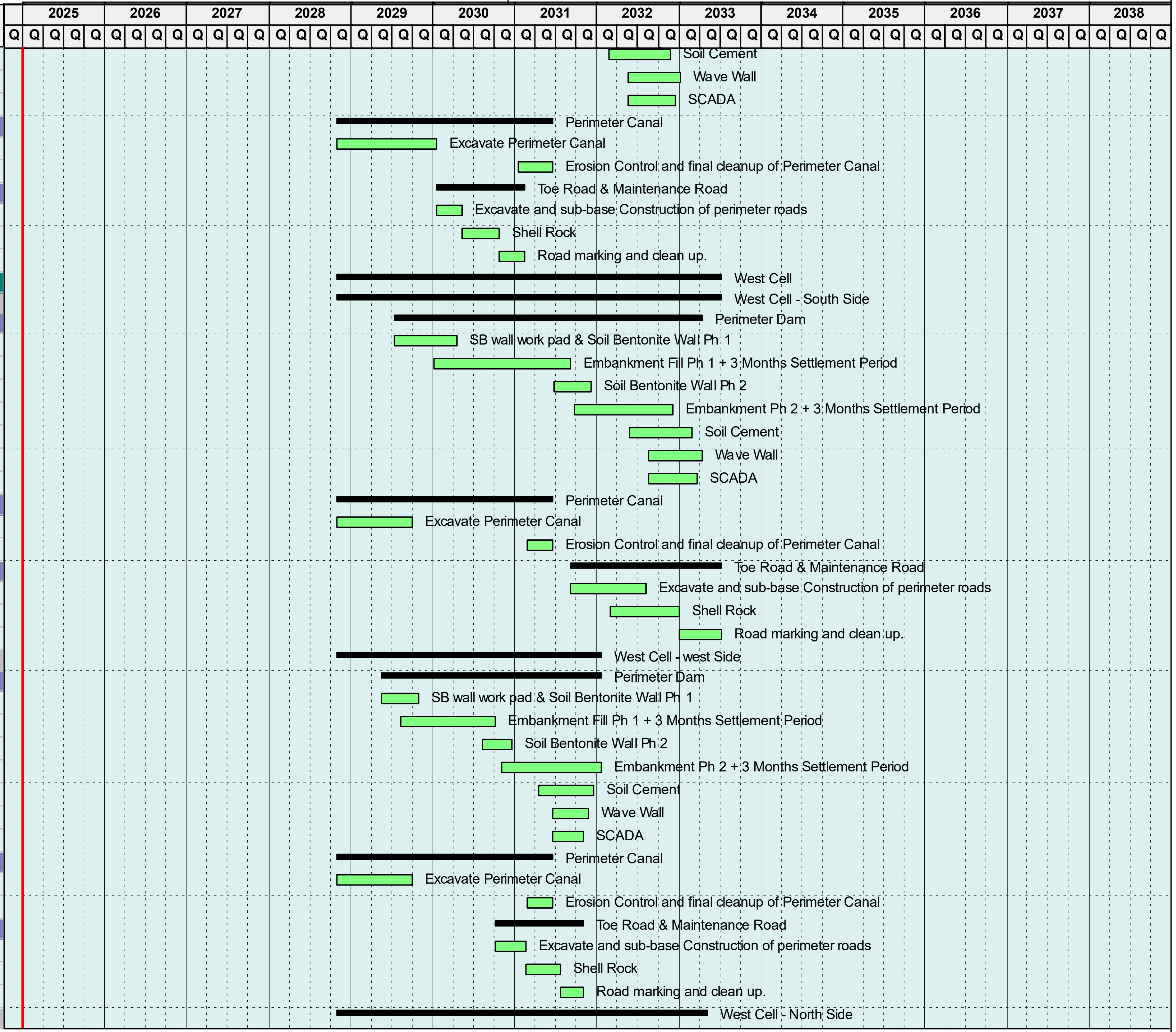
Activity ID	Activity Name	OD	Start	Finish
Sep-Dam-3	Embankment Fill + 3 Months Settlement Period	460	06-Nov-28	06-Sep-30
Sep-Dam-4	Soil Cement	190	09-Sep-30	11-Jun-31
Sep-Dam-5	Wave Wall	160	05-Dec-30	24-Jul-31
Sep-Dam-6	SCADA	145	04-Feb-31	28-Aug-31
Structures		0		
East Cell		2042	30-Oct-28	22-Dec-36
East Cell - South Side		2000	03-Jan-29	22-Dec-36
Perimeter Dam		1700	15-Mar-30	22-Dec-36
EC-South-4	SB wall work pad & Soil Bentonite Wall Ph 1	190	15-Mar-30	16-Dec-30
EC-South-5	Embankment Fill Ph 1 + 3 Months Settlement Period	420	31-Jan-31	30-Sep-32
EC-South-9	Soil Bentonite Wall Ph 2	150	01-Sep-32	11-Apr-33
EC-South-10	Embankment Ph 2 + 3 Months Settlement Period	480	28-Jan-33	27-Dec-34
EC-South-13	Soil Cement	300	04-May-35	15-Jul-36
EC-South-16	Wave Wall	260	14-Aug-35	26-Aug-36
EC-South-17	SCADA	145	23-May-36	22-Dec-36
Perimeter Canal		1291	03-Jan-29	27-Feb-34
EC-South-6	Excavate Perimeter Canal	250	03-Jan-29	02-Jan-30
EC-South-15	Erosion Control and final cleanup of Perimeter Canal	80	27-Oct-33	27-Feb-34
Toe Road & Maintenance Road		270	30-Sep-32	27-Oct-33
EC-South-11	Excavate and sub-base Construction of perimeter roads	90	30-Sep-32	11-Feb-33
EC-South-12	Shell Rock	110	11-Feb-33	20-Jul-33
EC-South-14	Road marking and clean up.	70	20-Jul-33	27-Oct-33
East Cell - East Side		900	03-Jan-29	03-Aug-32
Perimeter Dam		900	03-Jan-29	03-Aug-32
EC-East-7	SB wall work pad & Soil Bentonite Wall Ph 1	190	03-Jan-29	03-Oct-29
EC-East-8	Embankment Fill Ph 1 + 3 Months Settlement Period	420	27-Apr-29	31-Dec-30
EC-East-11	Soil Bentonite Wall Ph 2	110	16-Oct-30	28-Mar-31
EC-East-13	Embankment Ph 2 + 3 Months Settlement Period	300	15-Jan-31	26-Mar-32
EC-East-15	Soil Cement	190	17-Sep-31	21-Jun-32
EC-East-16	Wave Wall	160	15-Dec-31	03-Aug-32
EC-East-17	SCADA	145	15-Dec-31	13-Jul-32
Perimeter Canal		456	03-Jan-29	24-Oct-30
EC-East-2	Excavate Perimeter Canal	200	03-Jan-29	17-Oct-29
EC-East-10	Erosion Control and final cleanup of Perimeter Canal	86	24-Jun-30	24-Oct-30
Toe Road & Maintenance Road		280	17-Oct-29	02-Dec-30
EC-East-9	Excavate and sub-base Construction of perimeter roads	90	17-Oct-29	01-Mar-30
EC-East-12	Shell Rock	120	01-Mar-30	20-Aug-30
EC-East-14	Road marking and clean up.	70	20-Aug-30	02-Dec-30
East Cell North Side		1050	30-Oct-28	10-Jan-33
Perimeter Dam		900	07-Jun-29	10-Jan-33
EC-North-2	SB wall work pad & Soil Bentonite Wall Ph 1	190	07-Jun-29	13-Mar-30
EC-North-3	Embankment Fill Ph 1 + 3 Months Settlement Period	420	01-Oct-29	05-Jun-31
EC-North-6	Soil Bentonite Wall Ph 2	110	26-Mar-31	29-Aug-31
EC-North-7	Embankment Ph 2 + 3 Months Settlement Period	300	19-Jun-31	27-Aug-32



🟩 Remaining Level of Effort ◆ ◆ Milestone
▬ Second Baseline ▬ Summary
🟦 Actual Work
🟩 Remaining Work
🟥 Critical Remaining Work

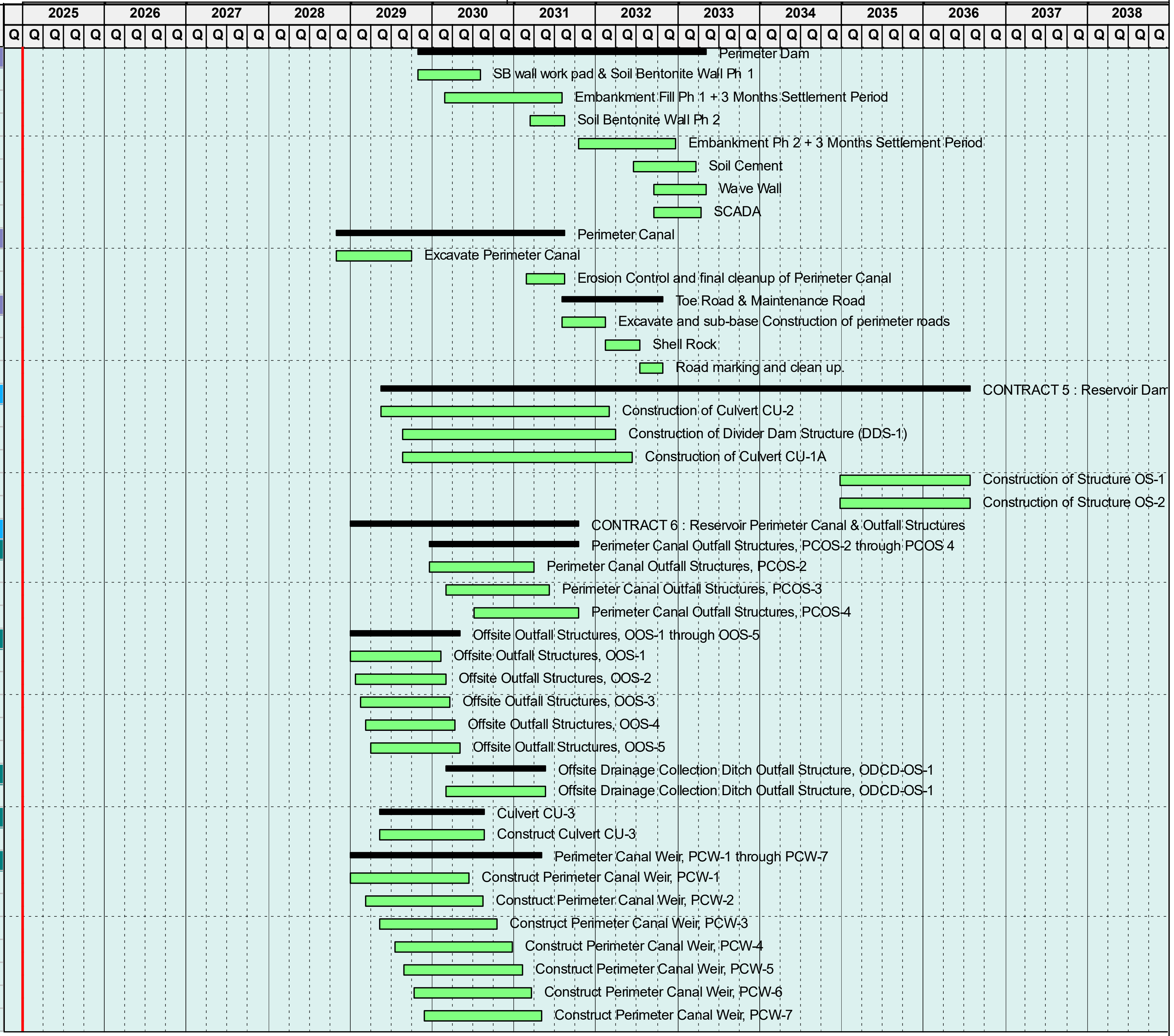
JTech An alliance of Jacobs and Tetra Tech

Activity ID	Activity Name	OD	Start	Finish
EC-North-10	Soil Cement	190	25-Feb-32	23-Nov-32
EC-North-13	Wave Wall	160	19-May-32	10-Jan-33
EC-North-14	SCADA	145	19-May-32	16-Dec-32
Perimeter Canal		660	30-Oct-28	19-Jun-31
EC-North-4	Excavate Perimeter Canal	300	30-Oct-28	14-Jan-30
EC-North-12	Erosion Control and final cleanup of Perimeter Canal	110	13-Jan-31	19-Jun-31
Toe Road & Maintenance Road		270	14-Jan-30	11-Feb-31
EC-North-8	Excavate and sub-base Construction of perimeter roads	80	14-Jan-30	08-May-30
EC-North-9	Shell Rock	115	08-May-30	21-Oct-30
EC-North-11	Road marking and clean up.	75	21-Oct-30	11-Feb-31
West Cell		1175	30-Oct-28	08-Jul-33
West Cell - South Side		1175	30-Oct-28	08-Jul-33
Perimeter Dam		940	13-Jul-29	13-Apr-33
WC-South-2	SB wall work pad & Soil Bentonite Wall Ph 1	190	13-Jul-29	17-Apr-30
WC-South-3	Embankment Fill Ph 1 + 3 Months Settlement Period	420	07-Jan-30	08-Sep-31
WC-South-5	Soil Bentonite Wall Ph 2	110	26-Jun-31	04-Dec-31
WC-South-6	Embankment Ph 2 + 3 Months Settlement Period	300	22-Sep-31	02-Dec-32
WC-South-9	Soil Cement	190	26-May-32	02-Mar-33
WC-South-1	Wave Wall	160	20-Aug-32	13-Apr-33
WC-South-1	SCADA	145	20-Aug-32	23-Mar-33
Perimeter Canal		660	30-Oct-28	19-Jun-31
WC-South-4	Excavate Perimeter Canal	230	30-Oct-28	01-Oct-29
WC-South-1	Erosion Control and final cleanup of Perimeter Canal	80	26-Feb-31	19-Jun-31
Toe Road & Maintenance Road		460	08-Sep-31	08-Jul-33
WC-South-8	Excavate and sub-base Construction of perimeter roads	230	08-Sep-31	06-Aug-32
WC-South-1	Shell Rock	210	03-Mar-32	03-Jan-33
WC-South-1	Road marking and clean up.	130	03-Jan-33	08-Jul-33
West Cell - west Side		805	30-Oct-28	20-Jan-32
Perimeter Dam		670	16-May-29	20-Jan-32
WC-West-5	SB wall work pad & Soil Bentonite Wall Ph 1	115	16-May-29	29-Oct-29
WC-West-6	Embankment Fill Ph 1 + 3 Months Settlement Period	290	10-Aug-29	07-Oct-30
WC-West-8	Soil Bentonite Wall Ph 2	90	09-Aug-30	19-Dec-30
WC-West-9	Embankment Ph 2 + 3 Months Settlement Period	300	04-Nov-30	20-Jan-32
WC-West-10	Soil Cement	170	16-Apr-31	18-Dec-31
WC-West-12	Wave Wall	110	19-Jun-31	25-Nov-31
WC-West-13	SCADA	95	19-Jun-31	03-Nov-31
Perimeter Canal		660	30-Oct-28	19-Jun-31
WC-West-7	Excavate Perimeter Canal	230	30-Oct-28	01-Oct-29
WC-West-16	Erosion Control and final cleanup of Perimeter Canal	80	26-Feb-31	19-Jun-31
Toe Road & Maintenance Road		270	07-Oct-30	03-Nov-31
WC-West-11	Excavate and sub-base Construction of perimeter roads	90	07-Oct-30	19-Feb-31
WC-West-14	Shell Rock	110	19-Feb-31	25-Jul-31
WC-West-15	Road marking and clean up.	70	25-Jul-31	03-Nov-31
West Cell - North Side		1130	30-Oct-28	04-May-33



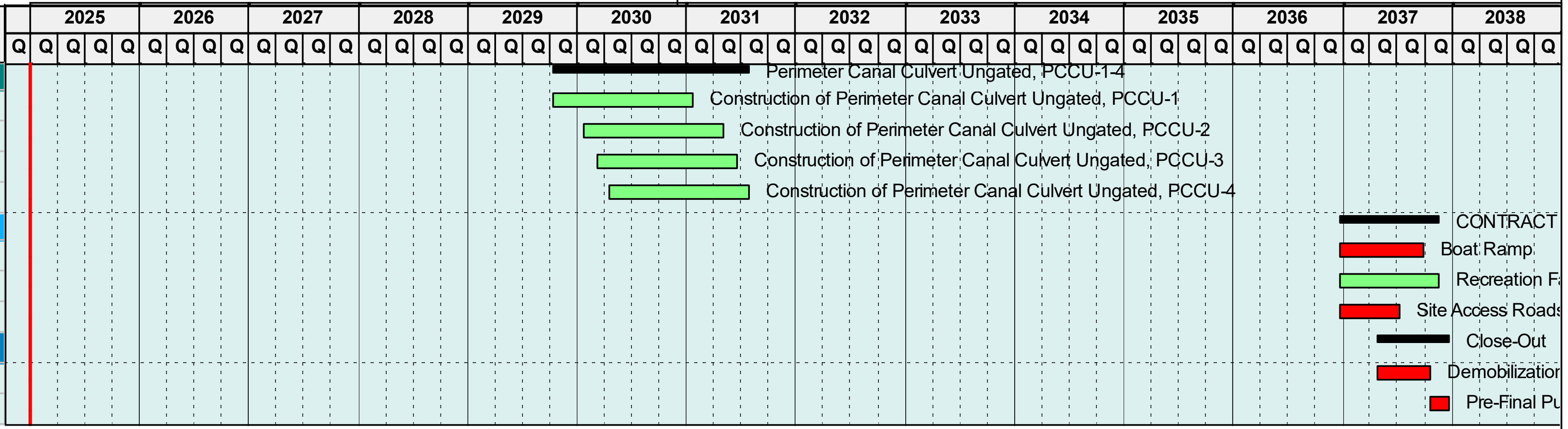
🟩	Remaining Level of Effort	◆	Milestone
▭	Second Baseline	▬	Summary
🟦	Actual Work		
🟩	Remaining Work		
🟥	Critical Remaining Work		

Activity ID	Activity Name	OD	Start	Finish
Perimeter Dam		880	29-Oct-29	04-May-33
WC-North-2	SB wall work pad & Soil Bentonite Wall Ph 1	190	29-Oct-29	02-Aug-30
WC-North-3	Embankment Fill Ph 1 + 3 Months Settlement Period	360	27-Feb-30	01-Aug-31
WC-North-5	Soil Bentonite Wall Ph 2	110	12-Mar-31	15-Aug-31
WC-North-6	Embankment Ph 2 + 3 Months Settlement Period	300	13-Oct-31	23-Dec-32
WC-North-8	Soil Cement	190	17-Jun-32	23-Mar-33
WC-North-9	Wave Wall	160	13-Sep-32	04-May-33
WC-North-10	SCADA	145	13-Sep-32	13-Apr-33
Perimeter Canal		700	30-Oct-28	15-Aug-31
WC-North-4	Excavate Perimeter Canal	230	30-Oct-28	01-Oct-29
WC-North-12	Erosion Control and final cleanup of Perimeter Canal	120	26-Feb-31	15-Aug-31
Toe Road & Maintenance Road		310	01-Aug-31	25-Oct-32
WC-North-7	Excavate and sub-base Construction of perimeter roads	130	01-Aug-31	10-Feb-32
WC-North-11	Shell Rock	110	10-Feb-32	16-Jul-32
WC-North-13	Road marking and clean up.	70	16-Jul-32	25-Oct-32
CONTRACT 5 : Reservoir Dam Structures		1808	16-May-29	30-Jul-36
C5-RDS-1	Construction of Culvert CU-2	700	16-May-29	03-Mar-32
C5-RDS-2	Construction of Divider Dam Structure (DDS-1)	650	21-Aug-29	26-Mar-32
C5-RDS-3	Construction of Culvert CU-1A	700	24-Aug-29	10-Jun-32
C5-RDS-4	Construction of Structure OS-1	400	27-Dec-34	30-Jul-36
C5-RDS-5	Construction of Structure OS-2	400	27-Dec-34	30-Jul-36
CONTRACT 6 : Reservoir Perimeter Canal & Outfall Structures		700	03-Jan-29	15-Oct-31
Perimeter Canal Outfall Structures, PCOS-2 through PCOS 4		460	17-Dec-29	15-Oct-31
C6-RPCOS-15	Perimeter Canal Outfall Structures, PCOS-2	320	17-Dec-29	28-Mar-31
C6-RPCOS-17	Perimeter Canal Outfall Structures, PCOS-3	320	01-Mar-30	09-Jun-31
C6-RPCOS-21	Perimeter Canal Outfall Structures, PCOS-4	320	09-Jul-30	15-Oct-31
Offsite Outfall Structures, OOS-1 through OOS-5		335	03-Jan-29	03-May-30
C6-RPCOS-2	Offsite Outfall Structures, OOS-1	275	03-Jan-29	07-Feb-30
C6-RPCOS-3	Offsite Outfall Structures, OOS-2	275	25-Jan-29	01-Mar-30
C6-RPCOS-4	Offsite Outfall Structures, OOS-3	275	15-Feb-29	22-Mar-30
C6-RPCOS-6	Offsite Outfall Structures, OOS-4	275	09-Mar-29	12-Apr-30
C6-RPCOS-7	Offsite Outfall Structures, OOS-5	275	30-Mar-29	03-May-30
Offsite Drainage Collection Ditch Outfall Structure, ODCD-OS-1		310	01-Mar-30	23-May-31
C6-RPCOS-18	Offsite Drainage Collection Ditch Outfall Structure, ODCD-OS-1	310	01-Mar-30	23-May-31
Culvert CU-3		320	11-May-29	20-Aug-30
C6-RPCOS-9	Construct Culvert CU-3	320	11-May-29	20-Aug-30
Perimeter Canal Weir, PCW-1 through PCW-7		585	03-Jan-29	02-May-31
C6-RPCOS-1	Construct Perimeter Canal Weir, PCW-1	364	03-Jan-29	14-Jun-30
C6-RPCOS-5	Construct Perimeter Canal Weir, PCW-2	360	09-Mar-29	13-Aug-30
C6-RPCOS-8	Construct Perimeter Canal Weir, PCW-3	360	11-May-29	16-Oct-30
C6-RPCOS-10	Construct Perimeter Canal Weir, PCW-4	360	17-Jul-29	23-Dec-30
C6-RPCOS-11	Construct Perimeter Canal Weir, PCW-5	360	28-Aug-29	06-Feb-31
C6-RPCOS-12	Construct Perimeter Canal Weir, PCW-6	360	10-Oct-29	21-Mar-31
C6-RPCOS-14	Construct Perimeter Canal Weir, PCW-7	360	26-Nov-29	02-May-31



🟩 Remaining Level of Effort
◆ Milestone
Second Baseline
▬ Summary
🟦 Actual Work
🟩 Remaining Work
🟥 Critical Remaining Work

Activity ID	Activity Name	OD	Start	Finish
Perimeter Canal Culvert Ungated, PCCU-1-4		450	10-Oct-29	29-Jul-31
C6-RPCOS-13	Construction of Perimeter Canal Culvert Ungated, PCCU-1	320	10-Oct-29	23-Jan-31
C6-RPCOS-16	Construction of Perimeter Canal Culvert Ungated, PCCU-2	320	24-Jan-30	02-May-31
C6-RPCOS-19	Construction of Perimeter Canal Culvert Ungated, PCCU-3	320	08-Mar-30	16-Jun-31
C6-RPCOS-20	Construction of Perimeter Canal Culvert Ungated, PCCU-4	320	19-Apr-30	29-Jul-31
CONTRACT 7 : Recreation Features		330	23-Dec-36	17-Nov-37
CloseOut-1	Boat Ramp	280	23-Dec-36	28-Sep-37
CloseOut-11	Recreation Facilities	330	23-Dec-36	17-Nov-37
CloseOut-2	Site Access Roads	200	25-Dec-36	12-Jul-37
Close-Out		242	24-Apr-37	21-Dec-37
CloseOut-3	Demobilization	180	24-Apr-37	20-Oct-37
CloseOut-4	Pre-Final Punch List	41	20-Oct-37	21-Dec-37



🟩	Remaining Level of Effort
◆	Milestone
▬	Second Baseline
▬	Summary
🟦	Actual Work
🟩	Remaining Work
🟥	Critical Remaining Work

ATTACHMENT 4

MCACES SUMMARY PRINTOUT

LAKE OKEECHOBEE COMPONENT A RESERVOIR (LOCAR)

Estimated by	Tetra Tech, Inc.
Designed by	Tetra Tech, Inc.
Prepared by	Tetra Tech, Inc
Preparation Date	1/30/2024
Effective Date of Pricing	1/30/2024
Estimated Construction Time	3,864 Days

Description	Quantity	UOM	ContractCost	ProjectCost	CostOverride
Bid Item Summary Report			**1,598,598,800**	**1,598,598,800**	
Lake Okeechobee Component A Reservoir	**1.00**	**LS**	**1,598,598,800**	**1,598,598,800**	
CONTRACT 1 - S-84 Site	**1.00**	**EA**	*78,058,658.44* **78,058,658**	*78,058,658.44* **78,058,658**	
01 13 13 - Pumping Plants	**1.00**	**EA**	*63,587,852.95* **63,587,853**	*63,587,852.95* **63,587,853**	
01 15 15 - Floodway Control/Diversion Structure	**1.00**	**LS**	**14,470,805**	**14,470,805**	
CONTRACT 2 - Reservoir Inflow Pump Station Site	**1.00**	**EA**	*114,306,636.18* **114,306,636**	*114,306,636.18* **114,306,636**	
02 09 09 - Channels and Canals	**1.00**	**LS**	**3,234,108**	**3,234,108**	
02 13 13 - Pumping Plants	**1.00**	**EA**	*95,154,896.75* **95,154,897**	*95,154,896.75* **95,154,897**	
02 15 15 - Floodway Control/Diversion Structures	**1.00**	**EA**	*15,917,631.61* **15,917,632**	*15,917,631.61* **15,917,632**	
CONTRACT 3 - Reservoir Dam Foundation	**1.00**	**EA**	*170,498,798.47* **170,498,798**	*170,498,798.47* **170,498,798**	
03 03 03 - Reservoirs	**1.00**	**EA**	*170,498,798.47* **170,498,798**	*170,498,798.47* **170,498,798**	
CONTRACT 4 - Reservoir Earthwork	**1.00**	**EA**	*1,124,691,638.26* **1,124,691,638**	*1,124,691,638.26* **1,124,691,638**	
04 03 03 - Reservoirs	**1.00**	**EA**	*1,119,281,879.29* **1,119,281,879**	*1,119,281,879.29* **1,119,281,879**	
04 11 11 - Levees & Floodwalls	**1.00**	**EA**	*5,409,758.97* **5,409,759**	*5,409,758.97* **5,409,759**	
CONTRACT 5 - Reservoir Dam Structures	**1.00**	**EA**	*76,395,521.08* **76,395,521**	*76,395,521.08* **76,395,521**	
05 03 03 - Reservoirs	**1.00**	**EA**	*16,437,413.65* **16,437,414**	*16,437,413.65* **16,437,414**	
05 15 15 - Floodway Control/Diversion Structures	**1.00**	**EA**	*59,958,107.43* **59,958,107**	*59,958,107.43* **59,958,107**	

Description	Quantity	UOM	ContractCost	ProjectCost	CostOverride
CONTRACT 6 - Reservoir Perimeter Canal & Outfall Canal Structures	**1.00**	**EA**	*33,221,920.34* **33,221,920**	*33,221,920.34* **33,221,920**	
06 09 09 - Channels and Canals	**1.00**	**LS**	**732,209**	**732,209**	
06 13 13 - Pumping Plants	**1.00**	**EA**	*12,825,976.83* **12,825,977**	*12,825,976.83* **12,825,977**	
06 15 15 - Floodway Control/Diversion Structures	**1.00**	**EA**	*19,663,734.20* **19,663,734**	*19,663,734.20* **19,663,734**	
CONTRACT 7 - Recreation Features	**1.00**	**EA**	*1,425,627.19* **1,425,627**	*1,425,627.19* **1,425,627**	
07 14 14 - Recreational Facilities	**1.00**	**EA**	*1,425,627.19* **1,425,627**	*1,425,627.19* **1,425,627**	

ATTACHMENT 5

COST AND SCHEDULE RISK ANALYSIS RISK REGISTER

Lake Okeechobee Component A Reservoir - Risk Register

				Project Cost			Project Schedule		
CREF	Risk/Opportunity Event	Risk Event Description	PDT Discussions on Impact and Likelihood	Likelihood (cost)	Impact (cost)	Risk Level (cost)	Likelihood (sched)	Impact (sched)	Risk Level (sched)
Project & Program Management (PM)									
PM1	Planning process review revisions	This project will require significant review and approvals from USACE and other entities.	The concern is during development of the required documents delays could be encountered post-submission to various parties. Hard dates are set, and current studies are on track to meet dates.	Very Likely	Negligible	**Low**	Unlikely	Moderate	**Low**
PM2	Multiple overlapping projects	There are multiple overlapping projects in the region, and accounting for costs and benefits may be overlapping. Overall system needs to work together to provide benefits.	There are numerous projects within the area that may have different purposes and overlapping features. This may cause accounting and authorization issues due to cost share and project purposes. Current schedule is over 13-years to fully complete, and any issues could be somewhat absorbed within current schedule timeline.	Unlikely	Moderate	**Low**	Likely	Moderate	**Medium**
PM3	PED start date	PED phase start date is undetermined, and could push out current schedules.	Currently estimated to start in beginning of FY25, likely calendar year 2025 start. But start date for design is key to begin construction on current timeline. Provided schedule has already been moved out, and local sponsors are relatively confident of current dates.	Likely	Moderate	**Medium**	Likely	Moderate	**Medium**
PM4	Funding Profile	Project implementation is dependent on both the federal and local sponsor being able to meet financial obligation to meet the project.	Equal contributions or cost share from the sponsor and from USACE will be needed for future work. Progress could vary based on actual financial contributions in funding the project. There have been no funding issues on any previous projects in the area. PDT does not think there will be any significant funding concerns as this project is needed for the area north of Lake Okeechobee.	Unlikely	Moderate	**Low**	Unlikely	Moderate	**Low**
PM5	Escalation/Inflation rates	When dealing with large multiple year projects there are concerns for localized inflation above CWCCIS.	The concern was that due to funding restrictions and multiple contracts that inflation in CWCCIS will be outpaced in future years. However, inflation in this region is not anticipated to rise beyond regular inflation levels used in CWCCIS. Potential shocks to the economy could cause different inflation rates. Per recommendation of USACE, inflation is not to be included in this current risk analysis.	Unlikely	Moderate	**Low**	Unlikely	Moderate	**Low**
PM6	Late, and/or during construction scope changes/requests from owners	Concern of late, or after award of contract, changes to scope or requests for betterments.	This has occurred on other projects in region, whether from regulation changes, or sponsor requests. But risk is not assumed to be significant impact overall to costs or schedule.	Likely	Moderate	**Medium**	Likely	Marginal	**Medium**
Contract Acquisition (CA)									
CA1	Large project size/multiple projects and contracts	Most likely due to the large size of the project the project will be broken up into separate contracts. Labor availability is a high risk due to size of project.	Coordination and sequencing may change significantly due to acquisition approach. Some thought has been put into contract acquisition into base case estimate. However schedule and cost could change based on actual implementation. Also, large number of crews likely required could max out space available. Availability of contractors to oversee work could be limited as well. Overlapping contracts are currently assumed in cost and schedule.	Likely	Significant	**High**	Likely	Significant	**High**
CA2	Borrow/placement conflicts with multiple contracts	Concern for scoping of projects to ensure that the backfill and excavation and structure modifications are in the same contract.	Certain features and structures likely require specific coordination for completion. Current estimate and schedule need more work to balance this risk. Borrow sites are currently assumed to run parallel to the placement locations. If contractors have to go further than currently assumed, haul distances could increase which could increase costs to place embankment materials.	Possible	Moderate	**Medium**	Unlikely	Marginal	**Low**

Lake Okeechobee Component A Reservoir - Risk Register

				Project Cost			Project Schedule		
CREF	**Risk/Opportunity Event**	**Risk Event Description**	**PDT Discussions on Impact and Likelihood**	**Likelihood (cost)**	**Impact (cost)**	**Risk Level (cost)**	**Likelihood (sched)**	**Impact (sched)**	**Risk Level (sched)**
CA3	Underbid project	Risk of contractor underbidding their work and requiring new contractors to take over..	This risk has already happened on other reservoir projects in area. Team needs to ensure contractor(s) is properly prepared, with detailed documents (plans, specs) to accurately bid project. Hard to build this risk into estimate/schedules at this time, but is an overall risk to budgeting and scheduling during construction. If project is underbid though, current cost estimate should still be sufficient to cover cost impacts. Likely a schedule risk only. Risk is also mitigated because project scope is broken up between multiple contracts, such that a single contract underbid should not delay the entire project significantly.	Likely	Negligible	**Low**	Likely	Marginal	**Medium**
CA4	Modifications during construction	On-going projects in area have incurred significant modifications to their contracts.	Design changes slow construction and add delay/changes to complete mods, or work through claims. Properly detailed design documents and reports can help mitigate, but this is simply a moderate risk to most construction projects. Most mods seen on other similar projects in region have been due to different site conditions and caused remodeling and redesign efforts.	Likely	Moderate	**Medium**	Likely	Moderate	**Medium**
CA5	Bid Protest	Protest and contract does not go to low bidder and leads to legal issues	Protests could lead to legal issues that take significant time to resolve. This litigation could delay selection of contractor and notice to proceed on construction contracts. Risk is off-set some by breaking project into separate construction contracts (currently have seven contracts). Schedule impacts are further mitigated using current project float. Cost is not anticipated to be impacted by this risk, beyond potential schedule delays.	Possible	Marginal	**Low**	Likely	Moderate	**Medium**
CA6	Unplanned contractor activities	With multiple contracts underway at same time, working in close proximity, one contractor's unplanned deviation from schedule could have consequences.	Contractors will be coordinating often to coordinate near term work plans to try and plan around this issue. Deviations could have consequences. Risk is relatively small at beginning of project, however conflicts will have higher impacts as project compresses. Overall, this is considered a low risk due to overall scale of costs and current duration in schedule.	Possible	Marginal	**Low**	Possible	Marginal	**Low**
Technical Design (TD) / Project Scope Growth									
TD1	Internal water conveyance	Water comes from long distances (Kissimmee) to reach reservoirs.	There is the possibility of different conveyance needs being required as more design work is performed. Project could require additional piping through the proposed location of the perimeter levees, among other activities not currently included in estimate. Design has accounted for many of the anticipated conveyance needs. Also, the C-41 canal is part of a major regional stormwater management system, and so operation of reservoir cannot affect operation of this system. Further review or analysis could change current design assumptions and features used for conveyance.	Possible	Significant	**Medium**	Possible	Marginal	**Low**
TD2	Seepage	Seepage from deeper storage can be significant and is based on limited geotechnical data at this time.	Relatively unknown geotechnical data. There is concern that there could be a need for additional work to mitigate seepage impacts based on current cutoff wall designs. Current design and estimate includes an assumed depth of cutoff wall that typically regulates seepage to manageable levels given typical contractor equipment means and methods. Seepage pumps may need to be resized to accommodate variability in flows.	Likely	Moderate	**Medium**	Likely	Negligible	**Low**
TD3	Flood control operations	Isolated area, dam failure is risk for flood control, and Seminole tribe is in the area.	The stormwater management systems of nearby lands are operational and independent of the reservoir once the project is completed. Project is located in FEMA 100-yr floodplain, and current design takes into consideration compensated storage issues that would otherwise adversely impact surrounding land owners. As such, risk to project cost and schedule is considered low at this time.	Unlikely	Marginal	**Low**	Unlikely	Marginal	**Low**

Lake Okeechobee Component A Reservoir - Risk Register

				Project Cost			Project Schedule		
CREF	**Risk/Opportunity Event**	**Risk Event Description**	**PDT Discussions on Impact and Likelihood**	**Likelihood (cost)**	**Impact (cost)**	**Risk Level (cost)**	**Likelihood (sched)**	**Impact (sched)**	**Risk Level (sched)**
TD4	Pump Station Designs	Current pump station designs are based on previous work, and further design changes could occur.	The Engineering appendix does not provided sufficient information to determine detailed design info for some of the proposed pump stations. It is likely that the pump station design will need additional work to ensure that the pumps are capable of handling the required rates. As long as pump station redesign does impact procurement of long lead items (ex. pumps, motors, etc.), impact to schedule should be minimal. Current construction of similar sized pump stations should be constructable well within current schedule. Current quantities and costs for the pump station facilities are based on current design standards and pump sizing requirements. There is not a significant risk of the pump station or pump station or pump sizing increasing, but if further analysis requires increases, costs could be significantly impacted.	Possible	Significant	**Medium**	Possible	Marginal	**Low**
TD5	Global geo tech assumptions	The team used global assumptions for the material strata for entire project although past experience shows that these can vary throughout the region.	Clay layer is relatively thin, so risk of geotech issues is at bottom of cutoff walls, which is a seepage issue. Could significant cost impact if further geotech analysis shows changes to cutoff wall design is required. Additional geotech information will be developed in PED phase, which could lead to changes in dam cross section.	Likely	Significant	**High**	Likely	Negligible	**Low**
TD6	Disposal of excess on site material	Currently there is no design for location or technique of onsite disposal of excess material.	Estimate is based on reasonable assumptions for handling of excess material. Currently assumes wasting any excess on-site in borrow pits, or spread across reservoir. Changes in assumptions are not likely to significantly impact current cost or schedule.	Unlikely	Marginal	**Low**	Possible	Negligible	**Low**
TD7	System not performing as intended	There is a technical risk that the system may not perform as expected and that some additional work may be required.	Some reformulation, rework or changes may be required due to unforeseen issues. This will need to be monitored to ensure the system performs as intended and changes are efficiently incorporated into the project	Likely	Significant	**High**	Unlikely	Negligible	**Low**
TD8	Wave Wall designs	Wave walls have subsequently been removed from the project and replaced with increased embankment heights.	No risk of this, as it has already occurred and has been incorporated into design and cost products.	Unlikely	Negligible	**Low**	Unlikely	Negligible	**Low**
TD9	Survey	Detailed topographic survey has not been completed.	Additional survey will be collected in PED phase which may cause changes to dam footprint and/or cross section. This could have significant impacts to cost and schedule.	Possible	Significant	**Medium**	Possible	Significant	**Medium**
TD10	Reorientation of divider dam	Potential to change divider dam from north/south to east/west	Would create longer divider dam and could affect dam cross sections. Changes in fetch length could also impact design of dam cross sections. This is an item that has been discussed, but is considered unlikely to occur, but could see significant impacts to costs and schedule.	Unlikely	Significant	**Medium**	Unlikely	Significant	**Medium**
TD11	S83 Relocated	S-83 would be relocated if real estate could not be purchased	If this risk occurs, the S-83 would be in a different location. Cost and schedule already account for the construction of this facility, and no significant new features or issues would be anticipated. As such this is an overall low impact to cost and schedule.	Unlikely	Negligible	**Low**	Unlikely	Negligible	**Low**
TD12	DCM Changes	DCM, district design standards, other standard changes.	DCM are not likely to change significantly year to year during the PED phase. Other design standards are considered unlikely to change as well. As such, this is a low risk to both cost and schedule.	Unlikely	Negligible	**Low**	Unlikely	Negligible	**Low**
TD13	Internal drainage system	Potential for clogged drainage systems, may need redesign	There is an issue with iron ochre on site. Iron ochre can clog drainage systems. There is potential to change perforated drainage pipes currently in design. This is likely more of a maintenance issue long term.	Unlikely	Negligible	**Low**	Unlikely	Negligible	**Low**
TD14	Added project features	Other added features to improve operation of project and improve recreation.	Possible changes will occur near the end of the project. But these changes will be smaller changes, and major dam components will be unaffected. As such, this is considered a low risk to cost and schedule.	Unlikely	Negligible	**Low**	Unlikely	Negligible	**Low**

Lake Okeechobee Component A Reservoir - Risk Register

				Project Cost			Project Schedule		
CREF	**Risk/Opportunity Event**	**Risk Event Description**	**PDT Discussions on Impact and Likelihood**	**Likelihood (cost)**	**Impact (cost)**	**Risk Level (cost)**	**Likelihood (sched)**	**Impact (sched)**	**Risk Level (sched)**
TD15	Modifications to stormwater management system including Lykes Bros. site	Adverse conditions could impact surrounding agricultural operations if appropriate stormwater mitigation is not implemented.	Current estimate includes efforts like above ground impoundments and agricultural pump stations for this issue. Other features and systems need to be designed and incorporated. These would include temporary drainage ditches and other features to be used until the permanent components are constructed. Overall costs for these temporary facilities are accounted for in current estimate and changes would be relatively minor compared to overall project cost.	Possible	Moderate	**Medium**	Possible	Negligible	**Low**
TD16	Potential switch from electric to diesel power pump stations	Current design assumes pump stations are electric, but change to diesel would increase overall construction and operation costs.	Project is not designed as a stormwater control facility, as such the need for diesel is not typically required. This reduces the risk of costs associated with having to construct and use diesel pumps. If diesel is required, then additional facility features (storage, containment, generators, etc.) would be required. Historically, electric has been used in similar situations, and it is unlikely the diesel will be required.	Unlikely	Moderate	**Low**	Unlikely	Marginal	**Low**
TD17	Integrating tower and spillway	Combining overflow spillways with discharge structures.	Current design does not have discharge structures. Design only has spillways which have a higher failure risk. Therefore there is discussion for including additional discharge structures. Even with complete redesign to incorporate discharge structures, cost and schedule impacts are minor.	Very Likely	Marginal	**Medium**	Very Likely	Negligible	**Low**
TD18	Use of 1D hydraulic analysis	Potential of future 2D hydraulic model could change design features	There is small risk of 2D model showing the need for perimeter canal and/or conveyance structure modifications. Design engineers do not think this will add significant costs to the project even if necessary changes are implemented.	Unlikely	Marginal	**Low**	Unlikely	Marginal	**Low**
TD19	Depth of cut-off wall	Potential increase in depth of cut-off wall.	This risk is accounted for in TD-2 and TD-5. As such this risk is not modeled.	Unlikely	Negligible	**Low**	Unlikely	Negligible	**Low**
TD20	Riprap material type (limestone vs. granite)	Changes in riprap material type assumptions would impact cost.	Current estimate assumes using 90% limestone and 10% granite for unit price development. Further analysis could increase the use of granite, which would increase material and hauling costs. It is unlikely that this change would occur, but overall impacts to the total project cost and schedule would be marginal relative to the total costs/schedule.	Possible	Moderate	**Medium**	Unlikely	Marginal	**Low**
Lands and Damages (LD)									
LD1	Project Area HTRW	There is the possibility that the Farm Land may have HTRW in the area.	There is a small chance that areas will encounter HTRWs and need additional work to ensure that the area is free of hazardous material prior to starting the construction of the reservoir.	Unlikely	Marginal	**Low**	Very Likely	Negligible	**Low**
LD2	Land ownership	All of the land is privately owned and negotiations for sale are on-going. Risk of land owner not agreeing to sale.	Some land owners may be holding out for "right price" for their land. Also, other areas may only require 12,500-acres but owner may choose all or nothing approach for selling their property. These risks are critical, but would likely stop the project, as opposed to increase costs or schedule (so risk is not included in model at this time)	Likely	Marginal	**Medium**	Likely	Critical	**High**
Regulatory & Environmental (RE)									
RE1	Endangered species on levees and construction sites	Endangered species known to be in area- Snakes, Birds, etc.	Normal endangered species clauses should be included in construction contract to include nesting seasons, work windows, and monitoring plans. There is likely room in our current schedule to account for some species impacts, but overall it could be likely with moderate changes to cost/schedule.	Likely	Moderate	**Medium**	Likely	Moderate	**Medium**
RE2	Water quality legal issues project wide	Water quality in system has been challenged before.	It is assumed that this will be resolved and water quality will be acceptable prior to the construction. Legal action or delays could significantly delay the project if this is not resolved the project will not move forward, this issue must be resolved prior to authorization of the project.	Unlikely	Negligible	**Low**	Unlikely	Critical	**Medium**

Lake Okeechobee Component A Reservoir - Risk Register

				Project Cost			Project Schedule		
CREF	**Risk/Opportunity Event**	**Risk Event Description**	**PDT Discussions on Impact and Likelihood**	**Likelihood (cost)**	**Impact (cost)**	**Risk Level (cost)**	**Likelihood (sched)**	**Impact (sched)**	**Risk Level (sched)**
RE3	Cultural resources	Due to the nature of the area historical artifacts may be found during excavation.	During excavation there is the possibility of encountering cultural resources. Due to the small qty of top soil and the current usage of the land as agricultural may decrease the likelihood in this area. Although culturally sensitive material has been found in the area previously.	Very Likely	Negligible	**Low**	Very Likely	Negligible	**Low**
RE4	Costs for cultural resources	Cultural Resource preservation.	Ensure adequate costs for cultural resource preservation are added to estimate. This is usually accounted for in PED and CM costs already, and as such is a low risk.	Unlikely	Negligible	**Low**	Unlikely	Negligible	**Low**
Construction (CO)									
CO1	Fuel price	Due to the large quantity of hauling that will take place on the job there is a chance that fuel prices increasing could impact the job.	It is unknown at this time what the future of fuel prices will do. This will be studied and determined what different increases in how fuel prices will effect the job.	Very Likely	Moderate	**High**	Likely	Negligible	**Low**
CO2	Cut/fill quantities based on implementation	Cut/Fill quantities could vary from what is currently in estimate.	The concern is that you will need off site borrow or to create an excavation pit to ensure that all features have sufficient material. Additional processing of onsite materials could be needed. This could also change based once contractor is in field. However, previous projects have not seen significant variance in cut/fill, but impacts of different hauling assumptions could have significant impact on cost.	Possible	Significant	**Medium**	Possible	Negligible	**Low**
CO3	Storm water management during construction	The concern is that there will be water influx to the area during a storm.	There is the possibility that the water will need to be pumped or allowed to dry. There is concern that during the process of scheduling the work there will be delays that adversely impact the operations of the features. Lessons learned from previous work also showed that rising groundwater and surface water due to storms is a high risk. Significant dewatering costs are included in estimate, but still a high risk due to variability of contractor pricing and current unknowns at site. Contractor should have built into contract sufficient features to build and maintain water management controls.	Likely	Moderate	**Medium**	Likely	Moderate	**Medium**
CO4	Weather impacts and delays	Extended wet weather and/or large storm events could impact the project.	Wet weather, large storms (hurricanes), flooding, and other weather risks are likely to occur during the construction. Contractor will likely prepare for typical weather impacts, but large events could cause significant delays and rework. Features need to be protected from storms, but contractors should have experience to account for reasonable delays in their overall project schedule	Likely	Moderate	**Medium**	Likely	Moderate	**Medium**
Cost and Schedule (ES)									
ES1	Labor Rates	Local wage rate assumptions could vary from assumed and impact the estimate	Generally wage rates are low in the area however skilled workers generally can command higher wages similar to those in other areas. Wage rates in estimate are based on local market research with additional "incentive/subsistence" hourly add-ons.	Likely	Marginal	**Medium**	Likely	Negligible	**Low**
ES2	Estimate assumptions/like similar	Features were estimated using plans from similar structures with minimal design for the LOWRP. The assumption that local like similar features would be adequate to capture the necessary scope to construct the feature.	This concern has been somewhat addressed for this project. A detailed MCACES and BODR level design have been prepared. However, a significant uncertainty exists for procurement, permit and production rates utilized for project planning stage.	Likely	Moderate	**Medium**	Likely	Marginal	**Medium**
ES3	Delays in fabrication equipment (supply chain issues)	Due to the number of specialty fabricated gates, pumps and motors, etc., there could be an impact to the project.	When dealing with specialty materials (gates, pumps etc.) there is always concern that the raw materials may not be available. The risk is either that a premium will have to be paid for the material or equipment or a delay to the delivery schedule of the material or equipment will cause a delay to the project. Primarily, pump fabrication has seen exceedingly long lead times. The current schedule has sufficient time to request, fabricate and install the pumps. But delays along this timeline could push out schedule and increase costs.	Likely	Significant	**High**	Likely	Significant	**High**

Lake Okeechobee Component A Reservoir - Risk Register

				Project Cost			Project Schedule		
CREF	**Risk/Opportunity Event**	**Risk Event Description**	**PDT Discussions on Impact and Likelihood**	**Likelihood (cost)**	**Impact (cost)**	**Risk Level (cost)**	**Likelihood (sched)**	**Impact (sched)**	**Risk Level (sched)**
ES4	Price quotes	Number of quotes received/used and accuracy of quotes used in current estimate.	The current MCACES uses many pricing sources, including recent bids on other reservoir projects in area. Risk that these bids and costs are simply low bids, or underbid, and thus current costs could be low. However, additional markups have been added to many quotes/bids to increase unit prices and ensure reasonable costs have been developed, and some quotes have been replaced with detailed labor, equipment and material developed cost items. Pump costs have been seeing significant price increases over recent years. Current pump pricing is based on vendor quote provided experienced fabricator. But still a high risk to cost and schedule from potential increases to the pumps. Due to the overall cost of primarily the pumps themselves, cost increases to key materials could be significant to the overall project cost.	Possible	Significant	**Medium**	Unlikely	Negligible	**Low**
ES5	Productivity assumptions in estimate and schedule	Differing productivities between estimate and contractors in field.	Schedule has been formatted to account for reasonable productivities observed in similar projects in region. Estimate has been updated with same productivities. Project has been prolonged to account for some conservative productivities. As such there is a likelihood of productivities differing but the impact would be moderate.	Possible	Moderate	**Medium**	Possible	Moderate	**Medium**
ES6	Concrete material and source	Availability and pricing of concrete materials could differ from those currently assumed.	The current estimate uses concrete pricing from on-going bid prices in the region, which does not necessarily define the source of the concrete (ex. ready-mix plant, batch plant, etc.). Further refinements to the estimating assumptions though could change the source of the concrete, which could have impacts on the cost and schedule. Due to the overall project cost, this is likely to have a marginal impact, and the schedule has sufficient time to account for potential hauling increases from changes to concrete source locations.	Possible	Marginal	**Low**	Possible	Marginal	**Low**
External									
EX1	Close out of other projects	Project dependencies may require successful and timely completion of predecessor projects.	Prioritization and closeout of other projects could effect the start and funding for this project. These effects could substantially change the project formulation and execution schedule. This risk will be noted but not modeled.	Likely	Marginal	**Medium**	Likely	Moderate	**Medium**
EX2	Political or public opposition to project	There are many different agencies, organizations, and stakeholders in the project vicinity that could oppose portions of the project or its impacts real or perceived.	One public meeting held thus far, which received positive attendance and feedback. At this time, this risk is considered low, but should be continually monitored to gauge potential opposition issues. Local interested parties continue to be engaged during the feasibility process, and will continue to be engaged during PED process.	Unlikely	Moderate	**Low**	Unlikely	Moderate	**Low**
END									

ATTACHMENT 6

TOTAL PROJECT COST SUMMARY

**** TOTAL PROJECT COST SUMMARY ****

PROJECT: **Lake Okeechobee Component A Reservoir**
PROJECT NO: P2 xxxxxx
LOCATION: Lake Okeechobee, FL

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
									Program Year (Budget EC): Effective Price Level Date:	2024 1 OCT 23					
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST ($K) C	CNTG ($K) D	CNTG (%) E	TOTAL ($K) F	ESC (%) G	COST ($K) H	CNTG ($K) I	TOTAL ($K) J	Spent Thru: 1-Oct-23 ($K)	TOTAL FIRST COST ($K) K	INFLATED (%) L	COST ($K) M	CNTG ($K) N	FULL ($K) O
03	RESERVOIRS	$1,306,218	$718,420	55.0%	$2,024,638	0.0%	$1,306,218	$718,420	$2,024,638	$0	$2,024,638	24.9%	$1,631,796	$897,488	$2,529,285
09	CHANNELS & CANALS	$3,966	$2,181	55.0%	$6,148	0.0%	$3,966	$2,181	$6,148	$0	$6,148	19.3%	$4,734	$2,603	$7,337
11	LEVEES & FLOODWALLS	$5,410	$2,975	55.0%	$8,385	0.0%	$5,410	$2,975	$8,385	$0	$8,385	26.1%	$6,822	$3,752	$10,574
13	PUMPING PLANT	$171,569	$94,363	55.0%	$265,932	0.0%	$171,569	$94,363	$265,932	$0	$265,932	17.4%	$201,411	$110,776	$312,187
14	RECREATION FACILITIES	$1,426	$784	55.0%	$2,210	0.0%	$1,426	$784	$2,210	$0	$2,210	38.0%	$1,967	$1,082	$3,048
15	FLOODWAY CONTROL & DIVERSION STRU	$110,010	$60,506	55.0%	$170,516	0.0%	$110,010	$60,506	$170,516	$0	$170,516	20.3%	$132,309	$72,770	$205,078
	CONSTRUCTION ESTIMATE TOTALS:	$1,598,599	$879,229		$2,477,828	0.0%	$1,598,599	$879,229	$2,477,828	$0	$2,477,828	23.8%	$1,979,039	$1,088,471	$3,067,510
01	LANDS AND DAMAGES	$130,005	$89,238	68.6%	$219,243	0.0%	$130,005	$89,238	$219,243	$0	$219,243	6.9%	$138,987	$95,404	$234,391
30	PLANNING, ENGINEERING & DESIGN	$399,650	$219,807	55.0%	$619,457	0.0%	$399,650	$219,807	$619,457	$0	$619,457	10.1%	$440,138	$242,076	$682,214
31	CONSTRUCTION MANAGEMENT	$147,071	$80,889	55.0%	$227,960	0.0%	$147,071	$80,889	$227,960	$0	$227,960	19.8%	$176,120	$96,866	$272,986
	PROJECT COST TOTALS:	$2,275,325	$1,269,164	55.8%	$3,544,488		$2,275,325	$1,269,164	**$3,544,488**	$0	**$3,544,488**	20.1%	$2,734,284	$1,522,817	$4,257,100

ESTIMATED TOTAL PROJECT COST: $4,257,100

_______________ **CHIEF, COST ENGINEERING, xxx**

_______________ **PROJECT MANAGER, xxx**

_______________ **CHIEF, REAL ESTATE, xxx**

_______________ **CHIEF, PLANNING, xxx**

_______________ **CHIEF, ENGINEERING, xxx**

_______________ **CHIEF, OPERATIONS, xxx**

_______________ **CHIEF, CONSTRUCTION, xxx**

_______________ **CHIEF, CONTRACTING,xxx**

_______________ **CHIEF, PM-PB, xxxx**

_______________ **CHIEF, DPM, xxx**

Filename: LOCAR_TPCS_WORKING.xlsx
TPCS

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 1

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Estimate Prepared: **7-Jan-24**
Effective Price Level: 1-Oct-23

Program Year (Budget EC): 2024
Effective Price Level Date: 1 OCT 23

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	RISK BASED CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 1 or CONTRACT 1													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$63,588	$34,973	55.0%	$98,561	0.0%	$63,588	$34,973	$98,561	2029Q1	13.8%	$72,366	$39,801	$112,167
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$14,471	$7,959	55.0%	$22,430	0.0%	$14,471	$7,959	$22,430	2029Q1	13.8%	$16,468	$9,058	$25,526
	CONSTRUCTION ESTIMATE TOTALS:	$78,059	$42,932	55.0%	**$120,991**		$78,059	$42,932	$120,991			$88,834	$48,859	$137,693
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2026Q2	5.0%	$1,639	$902	$2,541
2.0%	Planning & Environmental Compliance	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2026Q2	5.0%	$1,639	$902	$2,541
9.0%	Engineering & Design	$7,025	$3,864	55.0%	$10,889	0.0%	$7,025	$3,864	$10,889	2026Q2	5.0%	$7,377	$4,058	$11,435
2.0%	Reviews, ATRs, IEPRs, VE	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2026Q2	5.0%	$1,639	$902	$2,541
2.0%	Life Cycle Updates (cost, schedule, risks)	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2026Q2	5.0%	$1,639	$902	$2,541
1.0%	Contracting & Reprographics	$781	$429	55.0%	$1,210	0.0%	$781	$429	$1,210	2026Q2	5.0%	$820	$451	$1,271
4.0%	Engineering During Construction	$3,122	$1,717	55.0%	$4,840	0.0%	$3,122	$1,717	$4,840	2029Q1	11.5%	$3,481	$1,915	$5,396
2.0%	Planning During Construction	$1,561	$859	55.0%	$2,420	0.0%	$1,561	$859	$2,420	2029Q1	11.5%	$1,741	$957	$2,698
0.5%	Adaptive Management & Monitoring	$390	$215	55.0%	$605	0.0%	$390	$215	$605	2029Q1	11.5%	$435	$239	$674
0.5%	Project Operations	$390	$215	55.0%	$605	0.0%	$390	$215	$605	2026Q2	5.0%	$410	$225	$635
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$5,620	$3,091	55.0%	$8,711	0.0%	$5,620	$3,091	$8,711	2029Q1	11.5%	$6,266	$3,446	$9,713
1.0%	Project Operation:	$781	$429	55.0%	$1,210	0.0%	$781	$429	$1,210	2029Q1	11.5%	$870	$479	$1,349
1.0%	Project Management	$781	$429	55.0%	$1,210	0.0%	$781	$429	$1,210	2029Q1	11.5%	$870	$479	$1,349
	CONTRACT COST TOTALS:	$104,755	$57,615		$162,370		$104,755	$57,615	**$162,370**			$117,663	$64,715	**$182,378**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 2

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared:			7-Jan-24	Program Year (Budget EC):			2024					
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 2 or CONTRACT 2													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$3,234	$1,779	55.0%	$5,013	0.0%	$3,234	$1,779	$5,013	2031Q1	19.8%	$3,874	$2,131	$6,005
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$95,155	$52,335	55.0%	$147,490	0.0%	$95,155	$52,335	$147,490	2031Q1	19.8%	$113,995	$62,697	$176,692
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$15,918	$8,755	55.0%	$24,672	0.0%	$15,918	$8,755	$24,672	2031Q1	19.8%	$19,069	$10,488	$29,557
	CONSTRUCTION ESTIMATE TOTALS:	$114,307	$62,869	55.0%	**$177,175**		$114,307	$62,869	$177,175			$136,939	$75,316	$212,255
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2027Q2	7.3%	$2,454	$1,349	$3,803
2.0%	Planning & Environmental Compliance	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2027Q2	7.3%	$2,454	$1,349	$3,803
9.0%	Engineering & Design	$10,288	$5,658	55.0%	$15,946	0.0%	$10,288	$5,658	$15,946	2027Q2	7.3%	$11,041	$6,073	$17,114
2.0%	Reviews, ATRs, IEPRs, VE	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2027Q2	7.3%	$2,454	$1,349	$3,803
2.0%	Life Cycle Updates (cost, schedule, risks)	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2027Q2	7.3%	$2,454	$1,349	$3,803
1.0%	Contracting & Reprographics	$1,143	$629	55.0%	$1,772	0.0%	$1,143	$629	$1,772	2027Q2	7.3%	$1,227	$675	$1,902
4.0%	Engineering During Construction	$4,572	$2,515	55.0%	$7,087	0.0%	$4,572	$2,515	$7,087	2031Q1	16.5%	$5,325	$2,929	$8,253
2.0%	Planning During Construction	$2,286	$1,257	55.0%	$3,544	0.0%	$2,286	$1,257	$3,544	2031Q1	16.5%	$2,662	$1,464	$4,127
0.5%	Adaptive Management & Monitoring	$572	$314	55.0%	$886	0.0%	$572	$314	$886	2031Q1	16.5%	$666	$366	$1,032
0.5%	Project Operations	$572	$314	55.0%	$886	0.0%	$572	$314	$886	2027Q2	7.3%	$613	$337	$951
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$8,230	$4,527	55.0%	$12,757	0.0%	$8,230	$4,527	$12,757	2031Q1	16.5%	$9,584	$5,271	$14,856
1.0%	Project Operation:	$1,143	$629	55.0%	$1,772	0.0%	$1,143	$629	$1,772	2031Q1	16.5%	$1,331	$732	$2,063
1.0%	Project Management	$1,143	$629	55.0%	$1,772	0.0%	$1,143	$629	$1,772	2031Q1	16.5%	$1,331	$732	$2,063
	CONTRACT COST TOTALS:	$153,400	$84,370		$237,769		$153,400	$84,370	**$237,769**			$180,533	$99,293	**$279,826**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 3

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx
PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024					
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 3 or CONTRACT 3													
03	RESERVOIRS	$170,499	$93,774	55.0%	$264,273	0.0%	$170,499	$93,774	$264,273	2030Q2	17.3%	$200,067	$110,037	$310,104
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$170,499	$93,774	55.0%	**$264,273**		$170,499	$93,774	$264,273			$200,067	$110,037	$310,104
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2027Q1	6.7%	$3,640	$2,002	$5,642
2.0%	Planning & Environmental Compliance	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2027Q1	6.7%	$3,640	$2,002	$5,642
9.0%	Engineering & Design	$15,345	$8,440	55.0%	$23,785	0.0%	$15,345	$8,440	$23,785	2027Q1	6.7%	$16,380	$9,009	$25,389
2.0%	Reviews, ATRs, IEPRs, VE	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2027Q1	6.7%	$3,640	$2,002	$5,642
2.0%	Life Cycle Updates (cost, schedule, risks)	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2027Q1	6.7%	$3,640	$2,002	$5,642
1.0%	Contracting & Reprographics	$1,705	$938	55.0%	$2,643	0.0%	$1,705	$938	$2,643	2027Q1	6.7%	$1,820	$1,001	$2,821
4.0%	Engineering During Construction	$6,820	$3,751	55.0%	$10,571	0.0%	$6,820	$3,751	$10,571	2030Q2	14.6%	$7,813	$4,297	$12,110
2.0%	Planning During Construction	$3,410	$1,875	55.0%	$5,285	0.0%	$3,410	$1,875	$5,285	2030Q2	14.6%	$3,907	$2,149	$6,055
0.5%	Adaptive Management & Monitoring	$852	$469	55.0%	$1,321	0.0%	$852	$469	$1,321	2030Q2	14.6%	$977	$537	$1,514
0.5%	Project Operations	$852	$469	55.0%	$1,321	0.0%	$852	$469	$1,321	2027Q1	6.7%	$910	$501	$1,411
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$12,276	$6,752	55.0%	$19,028	0.0%	$12,276	$6,752	$19,028	2030Q2	14.6%	$14,064	$7,735	$21,799
1.0%	Project Operation:	$1,705	$938	55.0%	$2,643	0.0%	$1,705	$938	$2,643	2030Q2	14.6%	$1,953	$1,074	$3,028
1.0%	Project Management	$1,705	$938	55.0%	$2,643	0.0%	$1,705	$938	$2,643	2030Q2	14.6%	$1,953	$1,074	$3,028
	CONTRACT COST TOTALS:	$228,809	$125,845		**$354,655**		$228,809	$125,845	**$354,655**			$264,404	$145,422	**$409,826**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 4

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared:			7-Jan-24	Program Year (Budget EC):			2024	FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 4 or CONTRACT 4													
03	RESERVOIRS	$1,119,282	$615,605	55.0%	$1,734,887	0.0%	$1,119,282	$615,605	$1,734,887	2033Q1	26.1%	$1,411,526	$776,339	$2,187,865
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$5,410	$2,975	55.0%	$8,385	0.0%	$5,410	$2,975	$8,385	2033Q1	26.1%	$6,822	$3,752	$10,574
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$1,124,692	$618,580	55.0%	**$1,743,272**		$1,124,692	$618,580	$1,743,272			$1,418,348	$780,091	$2,198,439
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2027Q1	6.7%	$24,011	$13,206	$37,218
2.0%	Planning & Environmental Compliance	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2027Q1	6.7%	$24,011	$13,206	$37,218
9.0%	Engineering & Design	$101,222	$55,672	55.0%	$156,894	0.0%	$101,222	$55,672	$156,894	2027Q1	6.7%	$108,051	$59,428	$167,479
2.0%	Reviews, ATRs, IEPRs, VE	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2027Q1	6.7%	$24,011	$13,206	$37,218
2.0%	Life Cycle Updates (cost, schedule, risks)	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2027Q1	6.7%	$24,011	$13,206	$37,218
1.0%	Contracting & Reprographics	$11,247	$6,186	55.0%	$17,433	0.0%	$11,247	$6,186	$17,433	2027Q1	6.7%	$12,006	$6,603	$18,609
4.0%	Engineering During Construction	$44,988	$24,743	55.0%	$69,731	0.0%	$44,988	$24,743	$69,731	2033Q1	21.6%	$54,721	$30,096	$84,817
2.0%	Planning During Construction	$22,494	$12,372	55.0%	$34,865	0.0%	$22,494	$12,372	$34,865	2033Q1	21.6%	$27,360	$15,048	$42,409
0.5%	Adaptive Management & Monitoring	$5,623	$3,093	55.0%	$8,716	0.0%	$5,623	$3,093	$8,716	2033Q1	21.6%	$6,840	$3,762	$10,602
0.5%	Project Operations	$5,623	$3,093	55.0%	$8,716	0.0%	$5,623	$3,093	$8,716	2027Q1	6.7%	$6,003	$3,302	$9,304
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$80,978	$44,538	55.0%	$125,516	0.0%	$80,978	$44,538	$125,516	2033Q1	21.6%	$98,497	$54,173	$152,671
1.0%	Project Operation:	$11,247	$6,186	55.0%	$17,433	0.0%	$11,247	$6,186	$17,433	2033Q1	21.6%	$13,680	$7,524	$21,204
1.0%	Project Management	$11,247	$6,186	55.0%	$17,433	0.0%	$11,247	$6,186	$17,433	2033Q1	21.6%	$13,680	$7,524	$21,204
	CONTRACT COST TOTALS:	$1,509,336	$830,135		**$2,339,471**		$1,509,336	$830,135	**$2,339,471**			$1,855,231	$1,020,377	**$2,875,609**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 5

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024	FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 5 or CONTRACT 5													
03	RESERVOIRS	$16,437	$9,041	55.0%	$25,478	0.0%	$16,437	$9,041	$25,478	2032Q1	22.9%	$20,204	$11,112	$31,316
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$59,958	$32,977	55.0%	$92,935	0.0%	$59,958	$32,977	$92,935	2032Q1	22.9%	$73,697	$40,533	$114,230
	CONSTRUCTION ESTIMATE TOTALS:	$76,396	$42,018	55.0%	**$118,413**		$76,396	$42,018	$118,413			$93,901	$51,646	$145,546
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2027Q2	7.3%	$1,640	$902	$2,542
2.0%	Planning & Environmental Compliance	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2027Q2	7.3%	$1,640	$902	$2,542
9.0%	Engineering & Design	$6,876	$3,782	55.0%	$10,657	0.0%	$6,876	$3,782	$10,657	2027Q2	7.3%	$7,379	$4,059	$11,438
2.0%	Reviews, ATRs, IEPRs, VE	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2027Q2	7.3%	$1,640	$902	$2,542
2.0%	Life Cycle Updates (cost, schedule, risks)	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2027Q2	7.3%	$1,640	$902	$2,542
1.0%	Contracting & Reprographics	$764	$420	55.0%	$1,184	0.0%	$764	$420	$1,184	2027Q2	7.3%	$820	$451	$1,271
4.0%	Engineering During Construction	$3,056	$1,681	55.0%	$4,737	0.0%	$3,056	$1,681	$4,737	2032Q1	19.0%	$3,637	$2,000	$5,637
2.0%	Planning During Construction	$1,528	$840	55.0%	$2,368	0.0%	$1,528	$840	$2,368	2032Q1	19.0%	$1,818	$1,000	$2,819
0.5%	Adaptive Management & Monitoring	$382	$210	55.0%	$592	0.0%	$382	$210	$592	2032Q1	19.0%	$455	$250	$705
0.5%	Project Operations	$382	$210	55.0%	$592	0.0%	$382	$210	$592	2027Q2	7.3%	$410	$225	$635
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$5,500	$3,025	55.0%	$8,526	0.0%	$5,500	$3,025	$8,526	2032Q1	19.0%	$6,546	$3,601	$10,147
1.0%	Project Operation:	$764	$420	55.0%	$1,184	0.0%	$764	$420	$1,184	2032Q1	19.0%	$909	$500	$1,409
1.0%	Project Management	$764	$420	55.0%	$1,184	0.0%	$764	$420	$1,184	2032Q1	19.0%	$909	$500	$1,409
	CONTRACT COST TOTALS:	$102,523	$56,388		**$158,910**		$102,523	$56,388	**$158,910**			$123,344	$67,839	**$191,183**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 6

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared:			7-Jan-24	Program Year (Budget EC):			2024					
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23	FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	INFLATED (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 6 or CONTRACT 6													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$732	$403	55.0%	$1,135	0.0%	$732	$403	$1,135	2030Q2	17.3%	$859	$473	$1,332
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$12,826	$7,054	55.0%	$19,880	0.0%	$12,826	$7,054	$19,880	2030Q2	17.3%	$15,050	$8,278	$23,328
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$19,664	$10,815	55.0%	$30,479	0.0%	$19,664	$10,815	$30,479	2030Q2	17.3%	$23,074	$12,691	$35,764
	CONSTRUCTION ESTIMATE TOTALS:	$33,222	$18,272	55.0%	**$51,494**		$33,222	$18,272	$51,494			$38,983	$21,441	$60,424
01	LANDS AND DAMAGES	$0	$0	0.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2027Q2	7.3%	$713	$392	$1,105
2.0%	Planning & Environmental Compliance	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2027Q2	7.3%	$713	$392	$1,105
9.0%	Engineering & Design	$2,990	$1,644	55.0%	$4,634	0.0%	$2,990	$1,644	$4,634	2027Q2	7.3%	$3,209	$1,765	$4,974
2.0%	Reviews, ATRs, IEPRs, VE	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2027Q2	7.3%	$713	$392	$1,105
2.0%	Life Cycle Updates (cost, schedule, risks)	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2027Q2	7.3%	$713	$392	$1,105
1.0%	Contracting & Reprographics	$332	$183	55.0%	$515	0.0%	$332	$183	$515	2027Q2	7.3%	$357	$196	$553
4.0%	Engineering During Construction	$1,329	$731	55.0%	$2,060	0.0%	$1,329	$731	$2,060	2030Q2	14.6%	$1,522	$837	$2,360
2.0%	Planning During Construction	$664	$365	55.0%	$1,030	0.0%	$664	$365	$1,030	2030Q2	14.6%	$761	$419	$1,180
0.5%	Adaptive Management & Monitoring	$166	$91	55.0%	$257	0.0%	$166	$91	$257	2030Q2	14.6%	$190	$105	$295
0.5%	Project Operations	$166	$91	55.0%	$257	0.0%	$166	$91	$257	2027Q2	7.3%	$178	$98	$276
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$2,392	$1,316	55.0%	$3,708	0.0%	$2,392	$1,316	$3,708	2030Q2	14.6%	$2,740	$1,507	$4,248
1.0%	Project Operation:	$332	$183	55.0%	$515	0.0%	$332	$183	$515	2030Q2	14.6%	$381	$209	$590
1.0%	Project Management	$332	$183	55.0%	$515	0.0%	$332	$183	$515	2030Q2	14.6%	$381	$209	$590
	CONTRACT COST TOTALS:	$44,584	$24,521		**$69,105**		$44,584	$24,521	**$69,105**			$51,555	$28,355	**$79,910**

**** TOTAL PROJECT COST SUMMARY ****

CONTRACT 7

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024	FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER *A*	Civil Works Feature & Sub-Feature Description *B*	COST ($K) *C*	CNTG ($K) *D*	CNTG (%) *E*	TOTAL ($K) *F*	ESC (%) *G*	COST ($K) *H*	CNTG ($K) *I*	TOTAL ($K) *J*	Mid-Point Date *P*	INFLATED (%) *L*	COST ($K) *M*	CNTG ($K) *N*	FULL ($K) *O*
	PHASE 7 or CONTRACT 7													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$1,426	$784	55.0%	$2,210	0.0%	$1,426	$784	$2,210	2036Q3	38.0%	$1,967	$1,082	$3,048
15	FLOODWAY CONTROL & DIVERSION STRU	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$1,426	$784	55.0%	**$2,210**		$1,426	$784	$2,210			$1,967	$1,082	$3,048
01	LANDS AND DAMAGES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2030Q4	15.8%	$33	$18	$51
2.0%	Planning & Environmental Compliance	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2030Q4	15.8%	$33	$18	$51
9.0%	Engineering & Design	$128	$71	55.0%	$199	0.0%	$128	$71	$199	2030Q4	15.8%	$149	$82	$230
2.0%	Reviews, ATRs, IEPRs, VE	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2030Q4	15.8%	$33	$18	$51
2.0%	Life Cycle Updates (cost, schedule, risks)	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2030Q4	15.8%	$33	$18	$51
1.0%	Contracting & Reprographics	$14	$8	55.0%	$22	0.0%	$14	$8	$22	2030Q4	15.8%	$17	$9	$26
4.0%	Engineering During Construction	$57	$31	55.0%	$88	0.0%	$57	$31	$88	2036Q3	31.1%	$75	$41	$116
2.0%	Planning During Construction	$29	$16	55.0%	$44	0.0%	$29	$16	$44	2036Q3	31.1%	$37	$21	$58
0.5%	Adaptive Management & Monitoring	$7	$4	55.0%	$11	0.0%	$7	$4	$11	2036Q3	31.1%	$9	$5	$14
0.5%	Project Operations	$7	$4	55.0%	$11	0.0%	$7	$4	$11	2030Q4	15.8%	$8	$5	$13
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$103	$56	55.0%	$159	0.0%	$103	$56	$159	2036Q3	31.1%	$135	$74	$209
1.0%	Project Operation:	$14	$8	55.0%	$22	0.0%	$14	$8	$22	2036Q3	31.1%	$19	$10	$29
1.0%	Project Management	$14	$8	55.0%	$22	0.0%	$14	$8	$22	2036Q3	31.1%	$19	$10	$29
	CONTRACT COST TOTALS:	$1,913	$1,052		**$2,965**		$1,913	$1,052	**$2,965**			$2,566	$1,411	**$3,977**

**** TOTAL PROJECT COST SUMMARY ****

REAL ESTATE ONLY

**** CONTRACT COST SUMMARY ****

PROJECT: Lake Okeechobee Component A Reservoir
LOCATION: Lake Okeechobee, FL
This Estimate reflects the scope and schedule in report; LOCAR Feasibility Report

DISTRICT: Jacksonville District
POC: CHIEF, COST ENGINEERING, xxx

PREPARED: 1/8/2024

Civil Works Work Breakdown Structure		**ESTIMATED COST**				**PROJECT FIRST COST (Constant Dollar Basis)**				**TOTAL PROJECT COST (FULLY FUNDED)**				
		Estimate Prepared:			**7-Jan-24**	Program Year (Budget EC):			2024	FULLY FUNDED PROJECT ESTIMATE				
		Effective Price Level:			1-Oct-23	Effective Price Level Date:			1 OCT 23					
WBS NUMBER *A*	Civil Works Feature & Sub-Feature Description *B*	COST ($K) *C*	CNTG ($K) *D*	CNTG (%) *E*	TOTAL ($K) *F*	ESC (%) *G*	COST ($K) *H*	CNTG ($K) *I*	TOTAL ($K) *J*	Mid-Point Date *P*	INFLATED (%) *L*	COST ($K) *M*	CNTG ($K) *N*	FULL ($K) *O*
	Real Estate Only													
03	RESERVOIRS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
09	CHANNELS & CANALS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
11	LEVEES & FLOODWALLS	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
13	PUMPING PLANT	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
14	RECREATION FACILITIES	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$0	$0	0.0%	**0**		$0	$0	$0			$0	$0	$0
01	LANDS AND DAMAGES	$130,005	$89,238	68.6%	$ 219,243	0.0%	$130,005	$89,238	$219,243	2026Q4	6.9%	$138,987	$95,404	$234,391
30	PLANNING, ENGINEERING & DESIGN													
2.0%	Project Management	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Planning & Environmental Compliance	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
9.0%	Engineering & Design	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Reviews, ATRs, IEPRs, VE	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Life Cycle Updates (cost, schedule, risks)	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Contracting & Reprographics	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
4.0%	Engineering During Construction	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
2.0%	Planning During Construction	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
0.5%	Adaptive Management & Monitoring	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
0.5%	Project Operations	$0	$0	55.0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
31	CONSTRUCTION MANAGEMENT													
7.2%	Construction Management	$0	$0	55.0%	0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Project Operation:	$0	$0	55.0%	0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
1.0%	Project Management	$0	$0	55.0%	0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONTRACT COST TOTALS:	$130,005	$89,238		**219,243**		$130,005	$89,238	**$219,243**			$138,987	$95,404	**$234,391**

ATTACHMENT 7

DESIGN MATURITY DETERMINATION FOR COST CERTIFICATION

Design Maturity Determination for Cost Certification

Date: 1/23/24

P2 Designation/Project Name: Lake Okeechobee Component A Reservoir (LOCAR) Section 203 Feasibility Study

The Chief of Engineering is responsible for the technical content and engineering sufficiency for all engineering products produced by the command. As such, I have performed the Management Control Evaluation per Engineer Regulation (ER) 1110-2-1150, Engineering and Design for Civil Works Projects, Appendix H, Internal Management Control Review Checklist.

The current design DOES NOT require HQ approval (i.e., engineering waivers), requiring a deviation from mandatory requirements and mandatory standards, as defined in ERs, Engineering Manuals, Engineering Technical letters, and Engineering Circulars.

The current hydrology and hydraulics modeling is at 20 % design maturity, per reference (h) below.

The current geotechnical data and subsurface investigations are at 20 % design maturity, per reference (h) below. Subsurface investigations shall also include investigations of potential borrow and spoil areas.

The current survey data is at 20 % design maturity, per reference (h) below.

Other major technical and/or scope assumptions and risks include the following, which will be refined as the design progresses.

Many design assumptions are based on SFWMD standard design practice and past construction experience for several other recent similar projects in similar geologic/construction settings. While data collection for survey and geotechnical are considered preliminary, confidence in concept design details presented are appropriate for feasibility level cost estimating for the project. Please refer to the risk register for additional identified risk items.

Due to potential conservative assumptions in overwash rates and the elimination of the wave wall feature from the proposed design, the embankment height estimates at this stage are considered to be conservative. Stability and seepage analysis indicate the proposed dam geometry is conservative. It is expected, during PED, that refinements in embankment height are possible for potential future cost savings during design.

The aggregate for all features is 20 % design maturity. Therefore, per the CECW-EC memorandum dated 05-June-2023, I certify that the design deliverables used to generate the cost products for this project and the estimate meet the requirements for a CLASS 3 estimate, as per reference (a) below. Design risks, impacts and remaining efforts are summarized on page 2.

Considering risks and assumptions noted above, along with all other concerns documented in the Risk Register, the Cost and Schedule Risk Analysis has developed a contingency of 55 % at the 80 % confidence level for the defined project scope.

Chief of Engineering & Construction

Lucine Dadrian 1/24/24

Printed Name

Lucine Dadrian

Signature

Design Maturity Determination for Cost Certification, Remaining Work

If an engineering waiver is required, list the risks and remaining design work needed to mitigate this issue in the current design. Identify remaining effort to complete the design required for 100% design.

N/A at this time.

Identify remaining effort to complete geotechnical design effort required for 100% design. List the risks and cost and schedule impacts needed to mitigate this issue in the current design.

Additional geotechnical investigations/program, materials testing, along with pump testing to verify seepage assumptions on the 12,000-acre reservoir footprint are required to finalize the Geotechnical Design. The schedule for the additional site investigations are programmed into the cost estimate and are presented in the Feasibility Study. It has been determined that sufficient quantities of materials are available on-site for construction of the dam. Rip rap slope protection and drain materials will be imported in from off-site sources. The final geotechnical investigations are expected to confirm current assumptions.

Identify remaining effort required to complete H&H required for 100% design. List the risks and cost and schedule impacts needed to mitigate this issue in the current design.

Due to limited geotechnical data for seepage and groundwater conditions adjacent to the reservoir, additional 3D groundwater seepage modeling will be required to finalize the seepage management system design and establish operations to maintain compliance with the Savings Clause requirements. The current design incorporates sufficient operational flexibility to accommodate variations in anticipated seepage impacts around the reservoir. Final H&H conveyance analysis is also required to verify compliance with the Savings Clause. The schedule for the final H&H modeling are programmed into the cost estimate and are presented in the Feasibility Study.

Identify remaining effort needed to complete survey data required for 100% design. List the risks and cost and schedule impacts needed to mitigate this issue in the current design.

At the Feasibility stage, topography is based on Highlands County LiDAR 2018, with a level of vertical accuracy of +/- 0.12'. Upon acquisition of the property, a detailed site survey is required including boundary, utility and topographic verification. The schedule for the final survey is programmed into the cost estimate and presented in the Feasibility Study. Risks are low for a large quantity variance due to the Reservoir being built on existing ground. Minor elevation differences will only impact structures adjacent to the canal and the appropriate contingency is added to the risk register.

If the project is anticipated to be executed in parts, provide a design assessment (percent complete) of each part/phase below.

N/A

References:

a. ER 1110-2-1302 – Civil Works Cost Engineering
b. CECW-EC memorandum dated 05-June-2023MFR, Guidance on Cost Engineering Products update for Civil Works Projects in accordance with Engineer Regulation 1110-2-1302 – Civil Works Cost Engineering
c. ER 1165-2-217 – Civil Works Review Policy
d. ER 1110-2-1150 – Engineering and Design for Civil Works Projects
e. ER 1110-3-12 – Quality Management
f. ER 1110-345-700 – Design Analysis, Drawings and Specifications
g. EM 5-1-11 – Project Delivery Business Process (PDBP)
h. Engineering and Construction Bulletin (ECB) 2023-9 – Civil Works Design Milestone Checklists

Design Maturity Determination for Cost Certification – Instructions

Paragraph 1 – Design Date: Use the drop-down menu to populate the date of the design.

Paragraph 1 – Project Information: Enter the P2 Project number and Project name.

Paragraph 3 – Engineering Waivers: Use the drop-down menu to populate this field with either "Does," or "Does not." If an engineering waiver is needed, or anticipated to be needed, provide the specific waiver required for the Project. A waiver is any deviation from current mandatory standards, as indicated.

Paragraph 4 – Hydrology and Hydraulics: Populate this field with the % design maturity.

Paragraph 5 – Geotechnical Information: Populate this field with the % design maturity.

Paragraph 6 – Survey Data: Populate this field with the % design maturity.

Paragraph 7 – Other Technical Assumptions and/or Scope: Enter any other major technical assumptions or scope assumptions here. Only include assumptions that pertain to design. Template discussion fields are provided as a courtesy. Please include additional pages as necessary.

Paragraph 8 – Signature: Print the name and title and provide the signature for the District's Chief of Engineering. This authority cannot be delegated; however, the Deputy Chief of Engineering and Design may sign the form in the absence of the Chief of Engineering. All fillable fields must be populated (use N/A if not applicable) in order for the document to be signed.

Page 2 – Remaining Work: Identify the current baseline design assumptions and the remaining design effort and risks to complete 100% design for the authorized project. If the project is to be broken into parts or phases, provide details on the aggregate design level of each phase and anticipated timeline for completion.

This form is required for all Civil Works projects for initial Cost Certification and Recertification, based on Policy Clarification MFR dated 05 June 2023, *Guidance on Cost Engineering Products update for Civil Works Projects in accordance with Engineer Regulation 1110-2-1302 – Civil Works Cost Engineering*.
The Point of Contact for this action is Mr. Mukesh Kumar, Cost Engineering Community of Practice Leader, CECW-EC, Mukesh.Kumar@usace.army.mil.
Version 1: 01 October 2023.