

2019

Lake Pontchartrain and Vicinity GRR Cost Engineering – Appendix I



U.S. Army Corps of Engineers,
New Orleans District

Non-Federal Sponsor: Coastal
Protection and Restoration
Authority Board

11/22/2019

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1. GENERAL

1.1. COST ESTIMATE DEVELOPMENT

Alternative cost estimates were developed at a Class 4 Level of effort utilizing Parametric/Historical costs or the latest TRACES MII cost estimating software. The cost estimates used the standard approaches for a feasibility estimate structure regarding labor, equipment, materials, crews, unit prices, quotes, sub- and prime contractor markups. This philosophy was taken wherever practical within the time constraints. It was supplemented with estimating information from other sources where necessary such as quotes, bid data, and historical data. The intent was to provide or convey a “fair and reasonable” estimate that depicts the local market conditions. The estimates assume a typical application of tiering subcontractors. All of the construction work (e.g., Embankment, Borrow Development, Excavation, Floodwalls, Pilings, Rock, Armoring etc.) is common to the gulf coast region. The construction sites are accessible from land. Access is easily provided from various local highways.

1.2. ESTIMATE STRUCTURE

The estimates are structured to reflect the projects performed. The estimates have been subdivided by alternative and USACE feature codes.

1.3. BID COMPETITION

It is assumed that there will not be an economically saturated market and that bidding competition will be present.

1.4. CONTRACT ACQUISITION STRATEGY

There is no declared contract acquisition plan/types at this time. Although it has not been declared, it is anticipated to be Hubzone or 8a small business.

1.5. LABOR SHORTAGES

It is assumed there will be a normal labor market.

1.6. LABOR RATES

Local labor market wages are above the local Davis-Bacon Wage Determination and actual rates have been used.

1.7. MATERIALS

Cost quotes are used on major construction items when available. Material prices quotes were taken from previous job or historical data. The estimate does anticipate government furnished materials.

1.8. QUANTITIES

Quantities for Levees were provided by MVN Civil Branch and quantities for Floodwalls was provided from MVN Structures Branch.

1.9. EQUIPMENT

Rates used are based from the latest USACE EP-1110-1-8, Region VI. Adjustments are made for fuel and facility capital cost of money. FCCM Full FCCM/Cost of Money rate is latest available; Mii program takes EP recommended discount, no other adjustments have been made to the FCCM. Equipment was chosen based on historical knowledge of similar projects.

1.10. SEVERE RATES

No Severe Rates were used.

1.11. FUELS

Fuels (gasoline and on and off-road diesel) were based on local market averages for on-road and off-road for the Gulf Coast area. The latest fuel price attained is used.

1.12. CREWS

Major crew and productivity rates were developed and studied by senior USACE estimators familiar with the type of work. All of the work is typical to the gulf coast area and New Orleans District cost engineers. The crews and productivities were checked by local MVN estimators, discussed with contractors, compared with historical cost data, and adjusted as necessary. Major crews include haul, earthwork, piling, armoring, floodwalls, and concrete slope pavement. Most crew work hours are assumed to be 10 hours 6 days/week, which is typical to the area.

1.13. UNIT PRICES/BID PRICES

The unit prices/bid prices found within the various project estimates will fluctuate within a range between similar construction units such as floodwall concrete, armoring, concrete slope pavement, transitions, and piling. Variances are a result of differing haul distances (trucked), small or large business markups, subcontracted items, designs, and estimates by others.

1.14. RELOCATION COSTS

No relocations.

1.15. MOBILIZATION

Contractor mobilization and demobilization are based on the assumption that most of the contractors will be coming from within the gulf coast/southern region. Mob/demob costs are based on historical studies of detailed government estimated mob/demob which are in the range of approximately 3-5% of the construction costs. With undefined acquisition strategies and assumed individual project limits, the estimate utilizes a 5% value for levees and 3% for floodwalls at each contract.

1.16. FIELD OFFICE OVERHEAD

The estimate used a field office overhead rate based on the average of relevant armoring jobs and MRL. This was done because similar work is being done in the same areas. The job office overhead should also be similar.

1.17. OVERHEAD ASSUMPTIONS

Overhead assumptions may include superintendent, office manager, pickups, periodic travel, costs, communications, temporary offices (contractor and government), office furniture, office supplies, computers and software, as-built drawings and minor designs, tool trailers, staging setup, camp/facility/kitchen maintenance and utilities, utility service, toilets, safety equipment, security and fencing, small hand and power tools, project signs, traffic control, surveys, temporary fuel tank stations, generators, compressors, lighting, and minor miscellaneous items.

1.18. HOME OFFICE OVERHEAD

Estimate percentages range based upon consideration of 8(a), small business and unrestricted prime contractors. The rates are based upon estimating and negotiating experience, and consultation with local construction representatives. Different percentages are used when considering the contract acquisition strategy regarding small business 8(a), competitive small business, and large business, high to low respectively. This project will assume an acquisition strategy of small business and assume a Home Office Overhead of 8%.

1.19. TAXES

Local taxes will be applied based on the parishes that contain the work. Reference the tax rate website for Louisiana: <http://www.salestaxstates.com>. The contracts are in many different parishes. Usually the tax rate ranges from 8 to 10%. For this project it was decided to use 9%.

1.20. BOND

Bond is assumed 1.5% applied against the prime contractor, assuming large contracts. No differentiation was made between large and small businesses.

1.21. PLANNING, ENGINEERING & DESIGN (PED)

The PED cost includes such costs as project management, engineering, planning, designs, investigations, studies, reviews, value engineering, and engineering during construction (EDC). Historically a rate of approximately 12% for PED plus small percentages for other support features is applied against the estimated construction costs. Other USACE civil works districts such as St. Paul, Memphis, and St. Louis have reported values ranging from 10-15% for PED. Additional support features might include project management, engineering, planning, designs, investigations, studies, reviews, and value engineering. This project used 12% which was provided by the PM.

1.22. SUPERVISION & ADMINISTRATION (S&A)

Historically a range from 5% to 15% depending on project size and type applied against the estimated construction costs. Other USACE civil works districts such as St. Paul, Memphis, and St. Louis report values ranging from 7.5-10%. Consideration includes that a portion of the S&A

effort could be performed by contractors. S&A costs are percentage based. This project used 8% which was provided by the PM.

1.23. CONTINGENCIES

Contingencies were developed using the USACE Abbreviated Cost Risk Analysis (ARA) program based on cost risks determined by the PDT. A separate ARA was prepared for each alternative to help differentiate between the alternatives. The contingency for 1% and 0.5% alternatives are both 25%.

1.24. ESCALATION

Escalation used is based upon the latest version of the US Army Corps of Engineers Engineering Manual (EM) 1110-2-1304 Civil Works Construction Cost Index System.

1.25. HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

The estimate does not include costs for any potential Hazardous, Toxic, and Radioactive Waste due to lack of any concerns.

1.26. SCHEDULE

The project schedule for each alternative has not been developed. The construction duration will be accounted for after a plan has been selective within the Cost Schedule Risk Analysis.

2. ALTERNATIVE COST ESTIMATE

Table 1 and 2 show the baseline project cost for each alternative. This information is taken from the Total Project Cost Sheet.

Table 1: LPV GRR 1% Alternative

Feature	Cost	Contingency	Total
01 Lands & Damages	\$7,346.40	25%	\$9,183
06 Fish & Wildlife Facilities	\$2,970.00	25%	\$3,700
11 Floodwall and Levee	\$1,729,587	25%	\$2,154,549
30 PED	\$207,909	25%	\$258,993
31 Construction Management	\$138,604	25%	\$172,659
TOTAL	\$2,086,416		\$2,599,083

Table 2: LPV GRR 0.5% Alternative

Feature	Cost	Contingency	Total
01 Lands & Damages	\$7,754	25%	\$9,693
06 Fish & Wildlife Facilities	\$3,300	25%	\$4,110
11 Floodwall and Levee	\$1,896,794	25%	\$2,362,088
30 PED	\$228,011	25%	\$283,943
31 Construction Management	\$152,007	25%	\$189,295
TOTAL	\$2,287,867		\$2,849,129

3. LEVEL III COST ESTIMATE

A level III cost estimate will be completed on the further refined feasibility level of design after all review comments are received and the agency has endorsed the tentatively selected plan. After the higher level estimate has been completed, it will be entered in a Cost Schedule Risk Analysis (CSRA). A CSRA is a report that uses probabilistic cost and schedule risk analysis methods within the framework of the Crystal Ball software. The risk analysis results are intended to serve several functions, one being the establishment of reasonable contingencies reflective of an 80 percent confidence level to successfully accomplish the project work within that established contingency amount. Furthermore, the scope of the report includes the identification and communication of important steps, logic, key assumptions, limitations, and decisions to help ensure that risk analysis results can be appropriately interpreted.

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

PROJECT: LPV GRR INTERM
PROJECT NO: 0
LOCATION: Lake Pontchartrain Vicinity

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

PREPARED: 10/17/2019

This Estimate reflects the scope and schedule in report; 0

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	Program Year (Budget EC): Effective Price Level Date:				Spent Thru: 1-Oct-18 (\$K)	TOTAL FIRST COST (\$K)
						2019 1 OCT 18	ESC (%)	COST (\$K)	CNTG (\$K)		
A	B	C	D	E	F	G	H	I	J	K	L
02	RELOCATIONS	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0
06	FISH & WILDLIFE FACILITIES	\$2,970	\$730	25%	\$3,700	0.0%	\$2,970	\$730	\$3,700	\$0	\$3,700
11	LEVEES & FLOODWALLS	\$1,729,587	\$424,962	25%	\$2,154,549	0.0%	\$1,729,587	\$424,962	\$2,154,549	\$0	\$2,154,549
06	FISH & WILDLIFE FACILITIES	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0
07	POWER PLANT	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0
08	ROADS, RAILROADS & BRIDGES	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0
09	CHANNELS & CANALS	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0
10	BREAKWATER & SEAWALLS	\$0	\$0 -		\$0	-	\$0	\$0	\$0	\$0	\$0
CONSTRUCTION ESTIMATE TOTALS:		\$1,732,557	\$425,692		\$2,158,249	0.0%	\$1,732,557	\$425,692	\$2,158,249	\$0	\$2,158,249
01	LANDS AND DAMAGES	\$7,346	\$1,837	25.0%	\$9,183	0.0%	\$7,346	\$1,837	\$9,183	\$0	\$9,183
30	PLANNING, ENGINEERING & DESIGN	\$207,909	\$51,084	25%	\$258,993	0.0%	\$207,909	\$51,084	\$258,993	\$0	\$258,993
31	CONSTRUCTION MANAGEMENT	\$138,604	\$34,055	25%	\$172,659	0.0%	\$138,604	\$34,055	\$172,659	\$0	\$172,659
PROJECT COST TOTALS:		\$2,086,416	\$512,667	24.6%	\$2,599,083		\$2,086,416	\$512,667	\$2,599,083	\$0	\$2,599,083

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, xxx

CHIEF, DPM, xxx

ESTIMATED TOTAL P