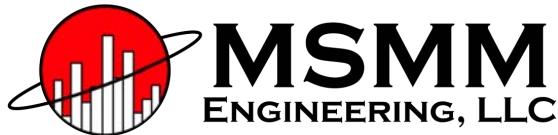


Indefinite Delivery/Indefinite Quantity (IDIQ) restricted  
A-E Contracts for General Design and Other Related Services  
within the boundaries of Mississippi Valley Division (MVD),  
United States Army Corps of Engineers (USACE)  
W912P823R0005





December 6, 2022

U. S. Army Corps of Engineers, New Orleans District  
Attn: Melissa A. Vaughn, Room 172  
7400 Leake Avenue  
New Orleans, LA 70118-1030

Subject: Indefinite Delivery/Indefinite Quantity (IDIQ) Restricted A&E Contracts for  
General Design and Other Related Within the Boundaries of Mississippi Valley  
Division (MVD), United States Army Corps of Engineers (USACE)  
Solicitation Number: W912P823R0005  
Response to Small Business Solicitation

Dear Ms. Vaughn and Selection Panel:

MSMM Engineering, LLC is one of the fastest growing small businesses in the greater New Orleans area. We have completed over 100 civil works design task orders for multiple USACE Districts during our short company history. The expertise and talent of our staff is displayed through our ability to handle high profile and time sensitive task orders, such as those completed for the HPO office immediately following Hurricane Katrina, combined with our ability to perform civil works design on several large task orders at once, as we are currently doing on our A-E Services prime contracts at multiple districts. The bottom-line, is that the breadth and depth of our experience, ability, and capability provides MVN with a capable and proven small business that stands ready to meet the mission of providing excellent design solutions for upcoming design challenges associated with funded projects through the Bipartisan Infrastructure Law, the ongoing MRL and MR&T programs, and other Civil Works programs/projects.

Additionally, we have added the best combination of mission knowledge, full-service capabilities, previous experience, proven track record, and solid working relationships through subconsultants Stantec, AECOM, Dynamic Solutions, Batture, IMC, Corr Pro, Eustis, Gulf South, and Chustz Survey. This powerhouse team has joined forces for one simple reason: to assist USACE in meeting the mission of providing robust design solutions to the nation. We know our team can achieve this goal because of the following:

- No Risk: This team knows the MVN engineering team, has extensive horizontal design experience at MVN and is trusted to provide excellent quality design services.
- Proven small business: MSMM has a proven track record of performing design for large IDIQ's. The benefit of this team is that USACE is receiving a proven small business sub with the backing of a host of large businesses that also have a proven track record working for MVN.
- Deep Resources: In addition to receiving a proven team, MVN is receiving a team with deep resources and subject matter experts in every discipline requested.
- This team has provided extensive civil works design for every type of project listed. Throughout this proposal, you will find examples of proven (and recent) design completed for hydraulic structures, navigation structures, pump stations, marine



IDIQ A-E Contract for General Design  
Mississippi Valley Division; New Orleans District, Small Business  
Solicitation Number W912P823R0005  
Response to Solicitation; December 6, 2022

structures, highways, buildings flood risk management and hurricane and storm damage risk reduction projects, and freshwater and sediment diversions.

- Local presence: This team is led by a small business that is located less than 10 minutes from MVN. Backed by a large presence of local subs, our understanding of the challenges of this region, the non-Federal sponsor opinions/interests, and the ability to provide a design that meets the expectations of the MVN engineering team is unparalleled.

The MSMM team offers an enviable combination of firm qualification, personnel capability, local knowledge, and proven experience. All team members have design experience related to USACE Civil Works and Water Resources projects. Our team's firm and personnel experience cover the gamut of expertise required under this solicitation. The strength of our team resides in flood risk management and hurricane and storm damage risk reduction design services. We have completed several design task orders that required the implementation of measures to minimize flood risk. Members of our team have used HSDRRS guidelines since their inception to provide foundation and structural designs throughout the New Orleans area after Hurricane Katrina. Due to this familiarity, MVN tasked MSMM with providing the civil and structural design for the Cow Bayou Pump Station Complex, a major flood risk management project to be constructed as part of the Sabine to Galveston Coastal Storm Risk Management, Orange sector program. MVN engineering personnel were very pleased with the professionalism of our employees, and the work products we produced, giving us an Exceptional CPARS rating on the project.

Bottom-line: The MSMM small business team has a proven track record of performing every service requested in this solicitation. The specialized design experience and technical competence this team possesses is un-paralleled when evaluating design experience within the program, within USACE, and within the contract footprint. We are strongly committed to providing the necessary resources to meet all scheduling demands, and to deliver the engineering design services to make this a successful mission. We live and work locally and take great pride and personal interest in developing engineering solutions to ensure the future of South Louisiana.

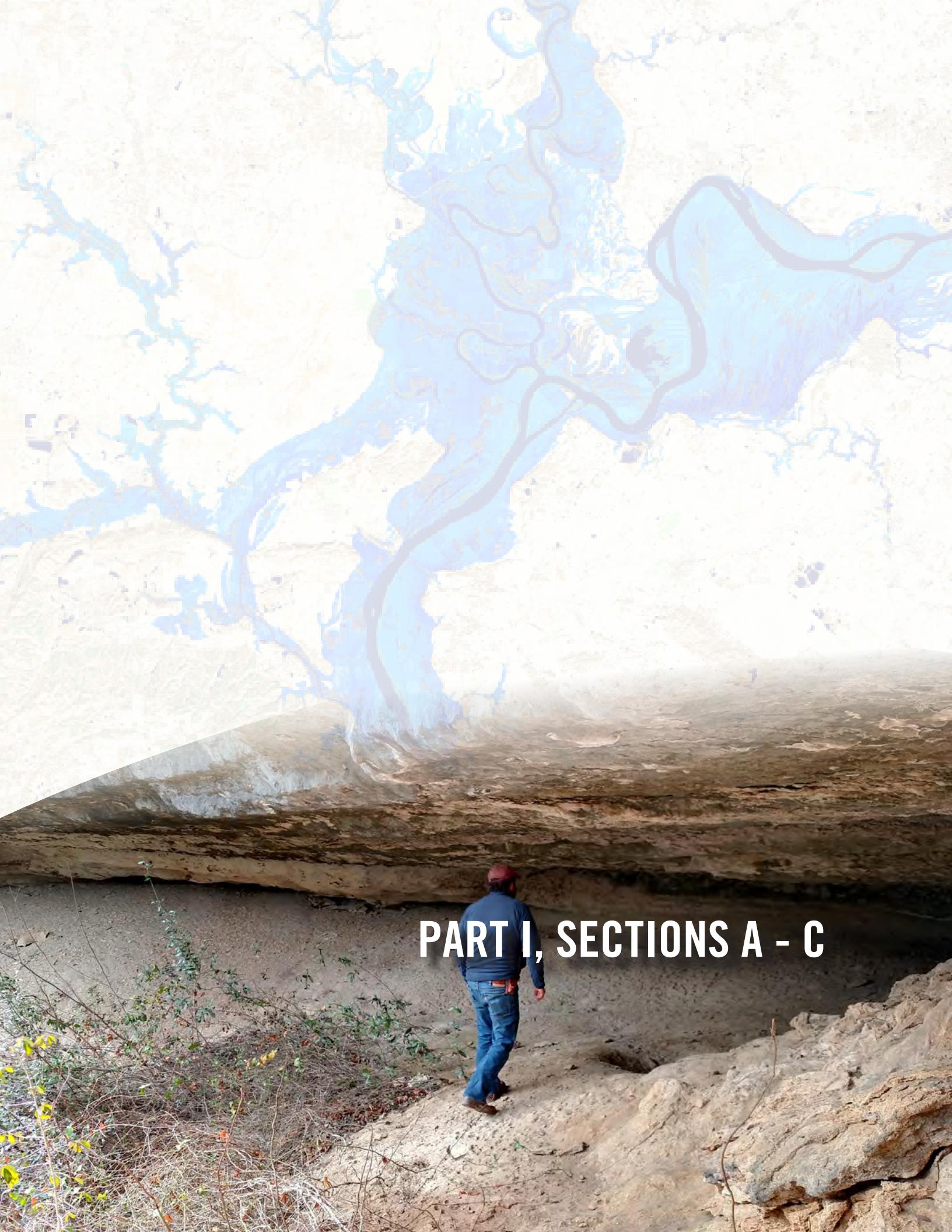
Please feel free to contact us at 504-559-1897 if you require any additional information.

Sincerely,

A blue ink signature of the name "Manish Mardia, P.E." in a cursive, handwritten style.

Manish Mardia, P.E.  
President

Enclosures



**PART I, SECTIONS A - C**

## ARCHITECT-ENGINEER QUALIFICATIONS

### PART I – CONTRACT-SPECIFIC QUALIFICATIONS

#### A. CONTRACT INFORMATION

##### 1. TITLE AND LOCATION (CITY AND STATE)

**Indefinite Delivery/Indefinite Quantity (IDIQ) Restricted A-E Contracts for General Design and Other Related Services within the boundaries of Mississippi Valley Division (MVD), United States Army Corps of Engineers (USACE)**

##### 2. PUBLIC NOTICE DATE

**November 01, 2022**

##### 3. SOLICITATION OR PROJECT NUMBER

**W912P823R0005**

#### B. ARCHITECT-ENGINEER POINT OF CONTACT

4. NAME AND TITLE **Manish Mardia, P.E., President, EIN 45-2655374**

5. NAME OF FIRM **MSMM Engineering, L.L.C., UEI: NYLUL4Q5GYF6**

6. TELEPHONE NUMBER  
**(504) 559-1897**

7. FAX NUMBER  
**(800) 335-8034**

8. E-MAIL ADDRESS  
**mmardia@msmmeng.com**

#### C. PROPOSED TEAM

(Complete this section for the prime contractor and all key subcontractors)

				(Check)	9. FIRM NAME	10. ADDRESS	11. ROLE IN THIS CONTRACT
	Prime	J-V	Sub				
a.				✓	 <input type="checkbox"/> CHECK IF BRANCH OFFICE	4640 South Carrollton Avenue, Suite 220 New Orleans, LA 70119  UEI: NYLUL4Q5GYF6	<b>Small Business</b> Full-Service Engineering, Design, Modeling, Data Collection; Civil, Structural, Electrical & Environmental Engineering, Civil Works and Water Resources Planning Studies Construction Management Cost Estimating, Engineering During Construction, Development of Design-Bid-Build Packages Request for Proposal (RFP) Packages for Design-Build Construction
b.				✓	 <input type="checkbox"/> CHECK IF BRANCH OFFICE	1340 Poydras Street Suite 1420 New Orleans, LA 70112  UEI: F3C1XYNEN1J6	Full-Service Engineering, Hydraulic Structure Design, Freshwater and Sediment Diversion Project Design, Technical Writing, Feasibility Studies, 3-D Modeling of Building, Structures, Sites and Horizontal Construction Features
c.				✓	 <input type="checkbox"/> CHECK IF BRANCH OFFICE	1555 Poydras Street, Suite 1200 New Orleans, LA 70112  UEI: EPUXNLX5EYC4	Full-Service Engineering, Civil and Structural Engineering, Hydraulic Structure Design, Marine Structure Design, Multi-Purpose Project Design, HTRW Investigations, Mechanical Engineering

C. Proposed Team (Complete this section for the prime contractor and all key subcontractors)

	(Check)			9. FIRM NAME	10. ADDRESS	11. ROLE IN THIS CONTRACT
	Prime	J-V	Sub			
d.			✓	 <b>Dynamic Solutions</b> LLC <small>[ ] CHECK IF BRANCH OFFICE</small>	6421 Deane Hill Drive Suite 1 Knoxville, TN 37919  UEI: NDXNEEFR2EZ3	<b>Woman Owned Small Business</b> Specialists in coastal system hydrology and hydraulics, multi-dimensional hydrodynamics, freshwater and sediment diversion Numerical modeling and analysis in support of flood risk analysis, and hurricane and storm damage risk reduction
e.			✓	 <b>IMC</b> CONSULTING ENGINEERS INC. <small>[ ] CHECK IF BRANCH OFFICE</small>	2714 Independence Street Metairie, LA 70006  UEI: GNTNET9H4Y85	Mechanical and Electrical Engineering Support, Instrumentation Design
f.			✓	 <b>BATTURE</b> LLC engineers + land surveyors <small>[ ] CHECK IF BRANCH OFFICE</small>	5110 Freret Street New Orleans, LA 70115  UEI: DH9MSZYJJ5T6	Landscape Architecture, Landscaping Design, GIS Support, CAD Support, Engineering Support During Construction
g.			✓	 <b>CHUSTZ</b> SURVEYING a division of GIS Engineering <small>[ ] CHECK IF BRANCH OFFICE</small>	2311 Richy St. New Roads, LA 70760  UEI: QWXJLZNY6F21	Survey and Engineering Support - Topographic Surveying, Hydrographic Surveying, GPS Surveying, Instrumentation Installation, Data Gathering
h.			✓	 <b>EUSTIS</b> ENGINEERING L.L.C. SINCE 1916 <small>[ ] CHECK IF BRANCH OFFICE</small>	3011 28th Street Metairie, LA 70002  UEI: R83MG9NLTMS4	<b>Small Business</b> Subsurface Exploration (Soil Borings, Cone Penetration Testing, Downhole Vane, Geoprobe®); Soil Mechanics Laboratory Tests; Field Instrumentation and Monitoring; Non-Destructive Testing of Piles and Shafts (Dynamic Pile Testing, Low Strain Pile Integrity Testing, Thermal Integrity Profiling); Geotechnical Engineering Design; Construction Quality Control, Materials Testing
i.			✓	 <b>GULF SOUTH</b> ENGINEERING AND TESTING, INC. Geotechnical & Materials Consultants <small>[ ] CHECK IF BRANCH OFFICE</small>	15 Veterans Memorial Blvd. Kenner LA 70062  UEI: R1XSWKQJERG7	<b>Woman Owned Small Business</b> Geotechnical Engineering Services; Perform Soil Borings, Provide Logs, Pile Capacity Curves, Bearing Capacity, Temp Ret Structure, Seepage, Stability Analyses, Settlement, Wall Analyses, Load Test, Monitoring
j.			✓	 <b>corrpro</b> an AEGION company <small>[ ] CHECK IF BRANCH OFFICE</small>	201 Pailet Drive Harvey, LA 70058  UEI: JNKVMSMG57J6	Corrosion Engineering



# PART I, SECTION D

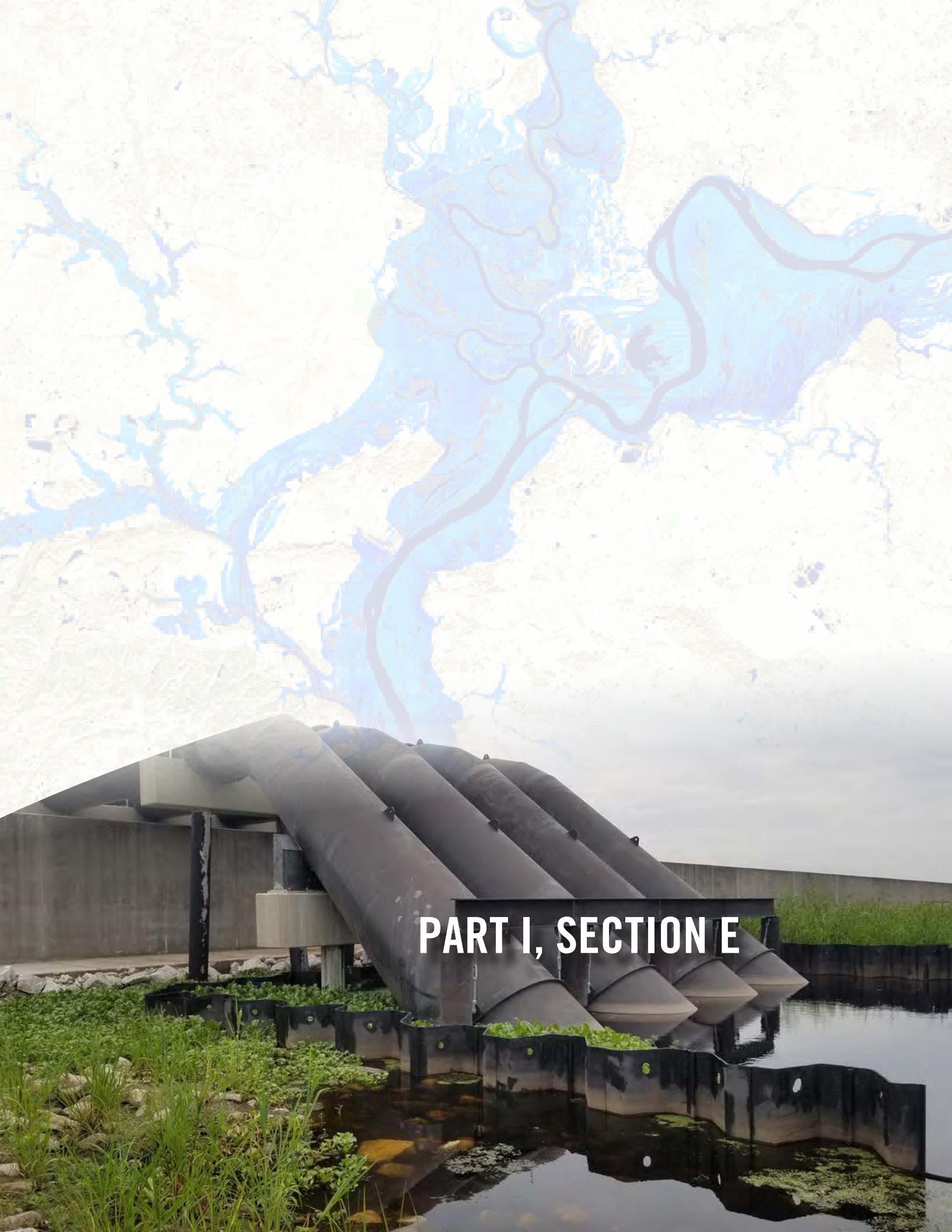


## D. ORGANIZATIONAL CHART OF PROPOSED TEAM

**PROGRAM MANAGER**\*M. Mardia, PE<sup>(MSMM)</sup>**STRUCTURAL ENGINEER**\*B. Yokum, PE<sup>(MSMM)</sup>\*B. Lelong, PE<sup>(AEC)</sup>\*R. Kalvakaalva, PE, CVS<sup>(MSMM)</sup>B. Zahawi, SE, PE<sup>(SCS)</sup>E. Coon, PE<sup>(SCS)</sup>J. Trowbridge, PE<sup>(SCS)</sup>A. Buenano, PE<sup>(AEC)</sup>L. Read, PE<sup>(AEC)</sup>M. Johnson, MS, PE<sup>(BAT)</sup>**CIVIL ENGINEER**\*J. Wilson, PE, LEED®AP<sup>(MSMM)</sup>\*S. Chehardy, PE<sup>(MSMM)</sup>\*J. Pena, PE<sup>(SCS)</sup>E. Dallimore, PE<sup>(SCS)</sup>H. Thibodeaux, PE<sup>(SCS)</sup>C. Sanchez, PE<sup>(SCS)</sup>D. Sheets, PE<sup>(SCS)</sup>P. Olivier, PE<sup>(AEC)</sup>C. Loyless, PE<sup>(AEC)</sup>H. Alb, MS, PE<sup>(BAT)</sup>**GEOTECHNICAL ENGINEER**\*J. Hance, PE<sup>(EUS)</sup>\*C Poché, PE<sup>(GSET)</sup>T. Cooling, PE, DGE<sup>(AEC)</sup>J. Volk, PE<sup>(AEC)</sup>K. Heenan, PE<sup>(AEC)</sup>T. Richards, PE<sup>(EUS)</sup>G. Sanders, PE<sup>(EUS)</sup>**HYDRAULIC ENGINEER**\*T. Willis, PE, MBA<sup>(MSMM)</sup>\*S. Sanborn, MS, PE<sup>(DS)</sup>M. Hoy, PE<sup>(SCS)</sup>F. Lin, PhD, PE<sup>(SCS)</sup>R. Waldron, PE<sup>(SCS)</sup>J. Qiu, PhD, PE, CFM<sup>(AEC)</sup>S. McEwen, PE, CFM<sup>(AEC)</sup>**COST ENGINEER**\*N. De Graaff, PE, CFM<sup>(AEC)</sup>\*D. Daigle, CVS, CPE<sup>(MSMM)</sup>S. Landry, CEP, PMP, PSP, CCM<sup>(AEC)</sup>**ELECTRICAL ENGINEER**\*H. Hawney, PE<sup>(MSMM)</sup>\*B. Buchanan, PE<sup>(SCS)</sup>M. Armenta, PE, RCDD, LEED®AP<sup>(SCS)</sup>M. Ollinger, PE<sup>(AEC)</sup>P. Vlosich, PE<sup>(IMC)</sup>R. Nichols, PE<sup>(IMC)</sup>**MECHANICAL ENGINEER**\*D. Strecker, PE<sup>(AEC)</sup>\*L. Chauhan<sup>(AEC)</sup>D. Sudibyo, PE<sup>(SCS)</sup>E. Higbee, III, PE<sup>(IMC)</sup>M. Wender, PE<sup>(IMC)</sup>**CORROSION ENGINEER**\*T. Johnston, PE<sup>(COR)</sup>R. Vail<sup>(AEC)</sup>**ENVIRONMENTAL ENGINEER**\*M. Tittlebaum, Ph.D, PE<sup>(MSMM)</sup>Z. Goodnow, PE<sup>(SCS)</sup>**ARCHITECT**\*S. Finegan, AIA<sup>(MSMM)</sup>J. Aly, RA, LEED AP B+C<sup>(AEC)</sup>**LANDSCAPE ARCHITECT**\*A. Doyle, PLA<sup>(BAT)</sup>B. Lighter, PLA<sup>(MSMM)</sup>**LAND SURVEYOR**\*J. Chustz, PLS<sup>(CHU)</sup>C. Woods, PLS<sup>(CHU)</sup>**CAD/MICROSTATION DRAFTER**\*E. Curson<sup>(MSMM)</sup>C. Mills, EI<sup>(MSMM)</sup>E. Walter<sup>(AEC)</sup>K. Hartmann<sup>(IMC)</sup>**BUILDING INFORMATION MODELING (BIM)**\*A. Ray<sup>(SCS)</sup>J. Burke<sup>(SCS)</sup>B. De Anda<sup>(AEC)</sup>P. Barras<sup>(AEC)</sup>**CIVIL INFORMATION MODELING (CIM)**\*L. Lienhop<sup>(SCS)</sup>R. Lamutt<sup>(AEC)</sup>**HYDROLOGIST**\*S. Lu, PhD, PE, D.WRE<sup>(DS)</sup>K. Neff, PE<sup>(SCS)</sup>C. Reed, PhD<sup>(AEC)</sup>M. Seering, PE, PMP, CFM<sup>(AEC)</sup>**GEOLOGIST**\*N. Quick, PG<sup>(EUS)</sup>D. Zarker, PG<sup>(AEC)</sup>**GIS ANALYST**\*J. Chustz, PLS<sup>(CHU)</sup>T. Rink, GISP<sup>(SCS)</sup>K. Teykl, GISP<sup>(AEC)</sup>**TOPOGRAPHIC PARTY CHIEF**\*B. Conner<sup>(CHU)</sup>\*L. Dupont<sup>(CHU)</sup>**HYDROGRAPHIC PARTY CHIEF**\*C. Villemarette<sup>(CHU)</sup>J. Phillips, CST<sup>(CHU)</sup>**GPS PARTY CHIEF**\*T. Odom<sup>(CHU)</sup>C. Lee<sup>(CHU)</sup>**PROJECT MANAGER**\*C. Carriere<sup>(MSMM)</sup>\*D. Alexander<sup>(MSMM)</sup>J. Carson<sup>(MSMM)</sup>C. Erwin<sup>(MSMM)</sup>D. Shulman<sup>(MSMM)</sup>H. Thibodeaux, PE<sup>(SCS)</sup>R. Koenig, PE<sup>(AEC)</sup>J. Duhe, PE<sup>(AEC)</sup>A. Naomi, PE<sup>(AEC)</sup>R. Benoit, AS<sup>(CHU)</sup>S. Walsh, PE<sup>(EUS)</sup>**RESIDENT INSPECTION**G. Grimes Jr.<sup>(MSMM)</sup>O. Brennan<sup>(MSMM)</sup>B. Peterman<sup>(MSMM)</sup>D. Spears<sup>(MSMM)</sup>MSMM Engineering, LLC.<sup>(MSMM)</sup>**SUBCONTRACTORS**Stantec Consulting Services Inc.<sup>(SCS)</sup>AECOM Technical Services, Inc.<sup>(AEC)</sup>Dynamic Solutions, LLC<sup>(DS)</sup>IMC Consulting Engineers, Inc.<sup>(IMC)</sup>Batture, LLC<sup>(BAT)</sup>Chutz Surveying, LLC<sup>(CHU)</sup>Eustis Engineering, LLC<sup>(EUS)</sup>Gulf South Engineering and Testing, Inc.<sup>(GSET)</sup>Corpro Companies, Inc.<sup>(COR)</sup>**KEY**

\* = Resume Included





**PART I, SECTION E**

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
<b>Manish Mardia, PE</b>	<b>Program Manager</b>	<b>28</b>	<b>11</b>

15. FIRM NAME AND LOCATION (City And State)

**MSMM Engineering – New Orleans, LA**

16. EDUCATION (DEGREE AND SPECIALIZATION)

BS, Civil Engineering, University of Jodhpur, 1990

MS, Civil Engineering, Louisiana State University, 1994

17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)

Professional Engineer/Environmental (1999):

LA (28482), MS (18522)

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Mr. Mardia is a professional engineer with 28 years of experience designing and managing civil works projects for USACE. Mr. Mardia has successfully executed over 60 task orders related to flood risk reduction and drainage projects. His design expertise spans earthen levee and floodwall evaluation, inspection and design, drainage pump station evaluation and design, and preparation of engineering reports related to environmental infrastructure projects, drainage evaluation projects and the evaluation of existing facilities and infrastructure. He currently manages multiple IDIQ Civil Works task orders and MATOC contracts for MSMM at several USACE Districts across the South and Southwest United States.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Cow Bayou Drainage Pump Station Complex Design, Orange, TX</b>	<b>2020</b>	<b>2024</b>
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<b>Scope:</b> Development of a 35% design package (plans, specs, and DDR) for a new 8,000 cfs drainage pump station complex consisting of multiple flood risk management reduction measures such as a pump station, safe house, floodwalls, and sector gate. Mr. Mardia's main responsibilities consisted of civil, structural, and architectural analyses. The task order was to provide a 35% level of design with anticipation of changing the project to a Design-Build RFP. Mr. Mardia oversaw the design coordination between USACE and MSMM where USACE provided Electrical and Mechanical Design and MSMM provided the civil, structural, and architectural design. This involved a tremendous amount of daily communication with the USACE design manager. <b>Cost:</b> \$325M <b>Fee:</b> \$1.3M <b>Role:</b> Program Manager		
(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
<b>Harahan Drainage Pump to the River, Jefferson Parish, LA</b>	<b>2012</b>	<b>2018</b>
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<b>Scope:</b> MSMM provided engineering design for this important flood risk management project. Project elements included a 700 ft. suction canal, a 1,200 cfs pumping station, three 9,000 ft. long 84-inch diameter discharge pipes to the Mississippi River levee, levee crossing design, reinforced concrete, and a discharge basin in the Mississippi River. Mr. Mardia served as the Program Manager for 3 design packages of the overall project. He was tasked with leading the design and implementation of the discharge piping, levee crossing, MS River shift, and the discharge basin, and coordinating these aspects of the project with the overall design. <b>Cost:</b> \$135M <b>Fee:</b> \$2.8M <b>Role:</b> Program Manager		
(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
<b>Ascension Parish Environmental Infrastructure Sewer Treatment Plant Design, Hillaryville, LA</b>	<b>2022</b>	<b>2024</b>
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<b>Scope:</b> Development of a design-bid-build package (plans and specs) for the creation of a 1.8 million gallon per day wastewater treatment plant as part of the Federal Section 219 Environmental Infrastructure program. Services consisted of detailed civil/structural/mechanical/electrical/architectural/geotechnical analyses, cost estimating, value engineering, and a full USACE review process including BCOES review. Mr. Mardia has coordinated the project between USACE and Ascension Parish, often pushing deliverables forward to keep the project on schedule. He is also responsible for the coordination of reviews at USACE MVN. <b>Cost:</b> \$21.5M <b>Fee:</b> \$1.5M <b>Role:</b> Program Manager		

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON)

12. NAME <b>Bob Yokum, PE</b>	13. ROLE IN THIS CONTRACT <b>Structural Engineer</b>	14. YEARS EXPERIENCE	
		a. TOTAL <b>42</b>	b. WITH CURRENT FIRM <b>11</b>
15. FIRM NAME AND LOCATION (City And State) <b>MSMM Engineering – New Orleans, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) MS, Civil Engineering, Tulane University, 1980 BS, Civil Engineering, University of New Orleans, 1975		17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer (1984) First Year Registered, LA, (21422)	
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) Mr. Yokum, a former USACE New Orleans District Structural Engineer, has over 40 years of experience providing structural design for Federal projects. Mr. Yokum specializes in designing flood risk reduction measures and has designed levees, flood walls, locks, gates, and drainage structures for his entire career. Mr. Yokum developed the unbalanced load criteria used by USACE for all levee design projects. These criteria set the guiding design calculations for designing heavy structural projects that have water on one side of a project feature and land on the other.			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Jefferson Parish Floodwall Design, Kenner, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2012                            2014	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Development of a design-bid-build package (plans and specs) for the West Return, South Lake Shore (Pontchartrain), and Westwego to Harvey Canal, LA Hurricane Protection Project. The professional services required include field investigations, surveys, soil borings, lab testing, quality, and compliance verification with the P&S detailing geotechnical, structural, and civil systems. Mr. Yokum provided the structural design for the project which consisted of a detailed drainage analysis, Pile Group Analysis, unbalanced load analysis, and detailed calculations for the conversion of the Federal floodwall from an I-Wall to a T-Wall. <b>Cost:</b> \$4.7M <b>Fee:</b> \$422K <b>Role:</b> Structural Engineer			
(1) TITLE AND LOCATION (City and State) <b>Cow Bayou Drainage Pump Station Complex Design – Orange, TX</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2020                            2024	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Development of a 35% design package (plans, specs, and DDR) for a new 8,000 cfs drainage pump station complex consisting of multiple flood risk management reduction measures such as pump station, safe house, floodwalls, and sector gate. Mr. Yokum's Main responsibilities consisted of civil, structural, and architectural analyses. The task order was to provide a 35% level of design with anticipation of changing the project to a Design-Build RFP. Mr. Yokum was the lead structural engineer for the project. He designed the foundation for the pump station, hydraulic gates, floodwall, pump station safe house, and fuel yard. He developed detailed calculations for these design components which were reviewed and approved by USACE. <b>Cost:</b> \$325M <b>Fee:</b> \$1.3M <b>Role:</b> Structural Engineer			
(1) TITLE AND LOCATION (City and State) <b>Texas City &amp; Vicinity Hurricane Flood Protection Project, I-Wall to T-Wall Conversion – Texas City, Texas</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2021                            2022	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Development of a design-bid-build package (plans and specs) for approximately a mile of failed Federal floodwall conversion from an I-Wall to a T-wall on an active chemical refinery. Services rendered consist of Architectural, Civil and Geotechnical Engineering, Cost Estimating, BCOES review and will consist of Construction Management, and Engineering Design Support During Construction. Mr. Yokum was the lead structural engineer for the project and was responsible for designing the floodwall conversion from an I-Wall to a T-wall. To do this, he developed a pile-founded wall with a seepage cut-off, a temporary line of protection utilizing sheetpile and Hesco Baskets, and he also designed two large swing gates utilizing USACE CADBIM policies and procedures. He utilized frame analysis, pile group analysis and the results of the Geotechnical analysis to develop his design, which was accepted by the Galveston District. <b>Cost:</b> \$15M <b>Fee:</b> \$1.8M <b>Role:</b> Structural Engineer			

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Bruce Lelong, PE	Structural Engineer	27	22

15. FIRM NAME AND LOCATION (City and State)

**AECOM Technical Services, Inc. – New Orleans, LA**

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)
BS, Civil Engineering, University of New Orleans, 1995; BA, History, Williams College, 1989	Professional Engineer: (2001): LA (Civil 29393)

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Mr. Lelong is a principal structural engineer with expertise in design and analysis for flood risk management, coastal hurricanes, storm damage reduction, coastal ecosystem restoration, and shallow and deep draft navigation projects. He has led structural engineering design for 50+ TOs with USACE flood risk reduction projects, floodwalls, levee enlargements, large pump stations, drainage structures, floodgates, and navigation locks. He has worked for USACE New Orleans District for 5 years providing flood risk reduction structural design. He has worked on more than \$7.5B of construction projects. **Training:** Concrete mix design, soil-structure interaction analysis, deep foundation design, alternative ground improvement design, & non-linear design of steel structures, and bridge inspection.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>USACE New Orleans, PCCP Stations Design-Build, New Orleans, LA</b>	2017	2018

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**a Scope:** Structural design reviews as owner's engineer of DB program including interfacing with JV DB team. Performed quality reviews for new closure canal pump stations, floodwall, levees, and generator buildings. Structural design reviews consisted of load calculations, analysis models, concrete design, structural steel design, steel pipe pile design, and Engineering (OMRR&R) manuals. **Cost:** \$615M **Fee:** \$8.5M **Role:** Structural Engineer **Size:** 24,0000 CFS

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>USACE New Orleans, Hurricane Storm Damage Risk Reduction System, Engineering &amp; Design of Levee Enlargement Reach LPV 103 through 111, New Orleans, LA</b>	2014	2014

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**b Scope:** For LPV 103, supervised the design of 83-ft-wide, mitered floodgate, LPV 105, performed quality reviews for designs of T-walls and drainage structures. LPV 109, structural reviews were performed of T-wall tie-ins to levee embankments. LPV 111, as EOR, provided oversight for designs of the largest soil mixing project in the world at the time. Design of 20cfs pumping platform and retrofit design of T-floodwalls raised to 15 feet and new 30-foot T-walls. **Cost:** \$2B **Fee:** \$20.4M **Role:** Structural Engineer **Size:** 26-miles of the levee/flood protection system

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>USACE New Orleans, St Bernard Pump Stations No. 2 and 3, St Bernard Parish, LA</b>	2017	2017

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**c Scope:** Supervised designs and preparation of P&S, DDR and cost estimates in MCACES (MII) for fronting T-walls and I-walls, bridge crossings and repairs and modifications to discharge pipes of two existing drainage pumping stations. Provided EDC services. **Cost:** \$13M **Fee:** \$327K **Role:** Structural Engineer (EOR) **Size:** 900 LF of floodwalls, two precast bridges, two Permanent Retaining Structures, petroleum pipeline crossing.

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>LA CPRA, Mid-Barataria Sediment Diversion Project 90% Design Phase, Plaquemines Parish, LA</b>	2023	2028 (est.)

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**d Scope:** In charge of the structural design of this sediment diversion project to restore and preserve critical coastal ecosystems and provide flood protection to adjacent residents. Oversight of structural design for mass concrete, water control structures, drainage pump station, pile foundations, bulkhead, flood walls, and steel radial gates, and participated in risk assessment including PFMA. Designing structures retaining 40g 40ft of fill in soft soil conditions was challenging. **Cost:** \$1.5B **Fee:** \$40M **Role:** Project Manager / Structural EOR **Size:** 75,000cfs of sediment/8-miles

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Ramesh Kalvakaalva, PE, CVS</b>	13. ROLE IN THIS CONTRACT <b>Structural Engineer</b>	14. YEARS EXPERIENCE	
		a. TOTAL <b>32</b>	b. WITH CURRENT FIRM <b>11</b>
15. FIRM NAME AND LOCATION (City And State) <b>MSMM Engineering – New Orleans, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION)		17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)	
PhD Candidate, Civil Engineering, Louisiana State University (1999) MS, Civil Engineering; Louisiana State University (1995) BS, Civil Engineering; NIT, Trichy, India (1991)		Professional Engineer/Civil (1997): LA (28219), MS (14876) FL (67030), AL 27347), GA (26993), TN (106893), NC (031348), SC (24777), AZ (43451, MI (2843452) SAVE® Certified CVS (Worldwide) (2010) CVS License (201110500)	

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Mr. Kalvakaalva is a Structural Engineer with over 25 years of providing Structural Design solutions to USACE and other Federal agencies. He was instrumental in the data evaluation, planning, analysis, and design of several HSDRRS projects following Hurricane Katrina, inclusive of flood protection measures such as pump stations, levees, floodwalls, drainage inlets, and coastal erosion features. More recently, Mr. Kalvakaalva has provided structural engineering solutions for box culverts, design-build levee raise projects, and bridges and elevated structures. Mr. Kalvakaalva is also a Save International Registered CVS and has led more than 20 USACE value engineering studies in the last five years.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)	
<b>Design-Build RFP Development: 277K Levee Raise and Delta Pump Station – Dallas, TX</b>	2021	2023
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE		
<b>Scope:</b> Raised the top of the levees (22 miles) to meet a 277k cfs water surface elevation and designed new levee access roads; Levee Side Slope Flattening: The existing East and West levees had side slopes varying from approximately 2:8H:1V to 4H:1V. The side slopes will be flattened to 4H:1V along the entire length of the levees; Delta Pump Station: New pumps (2), new electrical building, a new transformer, concrete curb and gutter, truck access, new retaining walls, new security fencing, and gates. Mr. Kalvakaalva provided the structural engineering and analysis which consisted of initial frame analysis, stability analysis, periodic inspection reports review, and detailed plans and specifications development. <b>Cost:</b> \$35M <b>Fee:</b> \$1.4M <b>Role:</b> Structural Engineer		
<input type="checkbox"/> Check if project performed with current firm		
(1) TITLE AND LOCATION (City and State)		
<b>Harahan Drainage Pump to the River, Jefferson Parish, LA</b>		
(2) YEAR COMPLETED		
PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)	
2012	2018	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE		
<b>Scope:</b> MSMM provided engineering design for this important flood risk management project. Project elements included a 700 ft. suction canal, a 1,200 cfs pumping station, three 9,000 ft. long 84-inch diameter discharge pipes to the Mississippi River levee, levee crossing design, reinforced concrete, and discharge basin in the Mississippi River. Mr. Kalvakaalva was the lead structural engineer for the project and provided the detailed structural design and DDR for the levee crossing and Mississippi River shift portions of the project. He developed detailed structural calculations, ran Pile Group Analysis, and provided Finite Element Modeling. <b>Cost:</b> \$135M <b>Fee:</b> \$2.8M <b>Role:</b> Structural Engineer		
<input type="checkbox"/> Check if project performed with current firm		
(1) TITLE AND LOCATION (City and State)		
<b>HSDRRS Algiers East and West Levee Improvement, Algiers, LA</b>		
(2) YEAR COMPLETED		
PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)	
2012	2014	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE		
<b>Scope:</b> The MSMM engineering team provided comparisons, investigations, and detailed design of the Algiers East and West Levee Improvements following Hurricane Katrina. This project involved evaluating three design alternatives and selecting the preferred alternative. MSMM moved forward with the selection of the earthen levee enlargement, reinforced with geotextile fabric and a landside shift. Mr. Kalvakaalva was the lead structural engineer for the project, he worked in unison with the MSMM geotechnical engineering team to assess the risks of the alternatives and to select the preferred alternative. Mr. Kalvakaalva provided the technical writing, data evaluation, plans and specifications and detailed DDR. He also performed engineering design support during the construction of the project. <b>Cost:</b> \$56M <b>Fee:</b> \$1.7M <b>Role:</b> Structural Engineer		
<input type="checkbox"/> Check if project performed with current firm		

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Jim Wilson, PE, LEED AP</b>	13. ROLE IN THIS CONTRACT <b>Civil Engineer</b>	14. YEARS EXPERIENCE	
		a. TOTAL <b>34</b>	b. WITH CURRENT FIRM <b>10</b>
15. FIRM NAME AND LOCATION (City And State) <b>MSMM Engineering, New Orleans, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering, Michigan Technological University, 1988	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer/Civil (1993): TX (128376), LA (35456), MI (38800), FL (85114) LEED Accredited Professional 2008		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) Mr. Wilson is a Senior civil/drainage/levee engineer with 30+ years of civil design experience. He is the designer of record for all of the recent civil works design that MSMM has completed at the Fort Worth District and has continually provided design solutions to the New Orleans District. Mr. Wilson is fully versed in the USACE civil works and water resources design process and is intimately familiar with the application of UFC 3-201-01 and following USACE CAD/BIM standards. He also provides construction phase services inclusive of engineering design support during construction.			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Texas City I-Wall to T-Wall Conversion Design, Texas City, TX</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) <b>2022</b> <b>2024</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Development of a design-bid-build package (plans and specs) for approximately a mile of failed Federal floodwall conversion from an I-Wall to a T-wall on an active chemical refinery. Services rendered consist of Architectural, Civil and Geotechnical Engineering, and MCACES cost estimating. Mr. Wilson is the lead civil engineer and designer of record for the project. He was responsible for developing the project plans using CADBIM Policies, developing the Civil Information Model, ensuring the bid documents were in compliance with UFC 3-201-01, and developing the project specifications in Specs Intact. Mr. Wilson has also provided engineering design support during advertisement and will provide the engineering design support during construction when the project is bid in Q1 2023 <b>Cost:</b> \$15M <b>Fee:</b> \$1.8M <b>Role:</b> Lead Civil Engineer			
(1) TITLE AND LOCATION (City and State) <b>New Orleans International Airport Drainage Pump Station, Kenner, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) <b>2017</b> <b>2018</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> MSMM provided full design services for a 600 cfs stormwater drainage pump station and for all landside drainage as part of constructing the new airport terminal at the New Orleans International Airport. <b>b</b> MSMM delivered a multi-disciplinary effort spanning civil, structural, electrical, mechanical, and environmental design, hydraulic modeling (HEC-HMS and HEC-RAS), architectural services, and MCACES cost estimating. Mr. Wilson was the designer of record for the project. He provided all the civil site work design and provided engineering support during advertisement, engineering support during construction and provided periodic inspection reports of the construction progress. <b>Cost:</b> \$45M <b>Fee:</b> \$3.2M <b>Role:</b> Lead Civil Engineer and Designer of Record			
(1) TITLE AND LOCATION (City and State) <b>Design-Build RFP Development: 277K Levee Raise and Delta Pump Station – Dallas, TX</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) <b>2021</b> <b>2023</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Raised the top of the levees (22 miles) to meet a 277k cfs water surface elevation and designed new levee access roads; Levee Side Slope Flattening: The existing East and West levees had side slopes varying from approximately 2:8H:1V to 4H:1V. The side slopes will be flattened to 4H:1V along the entire length of the levees; Delta Pump Station: New pumps (2), new electrical building, new transformer, concrete curb and gutter, truck access, new retaining walls, new security fencing and gates. Mr. Wilson prepared the plans and specifications for the levee raise, side slope flattening and new levee access roads. <b>Cost:</b> \$35M <b>Fee:</b> \$1.4M <b>Role:</b> Civil Engineer			

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Scott Chehardy, PE</b>	13. ROLE IN THIS CONTRACT <b>Civil Engineer</b>	14. YEARS EXPERIENCE a. TOTAL <b>26</b> b. WITH CURRENT FIRM <b>8</b>	
15. FIRM NAME AND LOCATION (City And State) <b>MSMM Engineering – New Orleans, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering, Southwestern Louisiana University, 1994	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer/Civil (1999): LA (28532), IN (11700829)		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) Mr. Chehardy will serve at the lead Project Manager for engineering tasks associated with this contract. Mr. Chehardy has a deep understanding of the USACE Civil Works design process, having managed and executed multiple task orders for multiple USACE Districts across Louisiana and Texas. Mr. Chehardy is proficient with navigating USACE reviews utilizing DrChecks, has a long history of executing projects that require ATR/DQC and BCOES reviews, and is extremely proficient in developing USACE specifications utilizing Specs Intact. Mr. Chehardy's recent experience includes finalizing the design-build RFP package for the Delta Pump Station project and leading the development of P&S for the Ascension and Baton Rouge Parish Environmental Infrastructure projects.			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Cow Bayou Drainage Pump Station Complex Design, Orange, TX</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2020                          2024	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Development of a 35% design package (plans, specs, and DDR) for a new 8,000 cfs drainage pump station complex consisting of multiple flood risk management reduction measures such as a pump station, safe house, floodwalls, and sector gate. Main responsibilities consisted of civil, structural, and architectural analyses. The task order was to provide a 35% level of design with anticipation of changing the project to a Design-Build RFP. Mr. Chehardy managed the Civil, Structural and Architectural aspects of the project, while USACE led the Electrical and Mechanical aspects. He developed the civil/site work design, developed the utility documentation, prepared the detailed plans and specifications, and coordinated development of the DDR. <b>Cost:</b> \$325M <b>Fee:</b> \$1.3M <b>Role:</b> Civil Engineer			
(1) TITLE AND LOCATION (City and State) <b>Harahan Drainage Pump to the River, Jefferson Parish, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2012                          2018	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> MSMM provided engineering design for this important flood risk management project. Project elements included a 700 ft. suction canal, a 1,200 cfs pumping station, three 9,000 ft. long 84-inch diameter discharge pipes to the Mississippi River levee, levee crossing design, reinforced concrete, and discharge basin in the Mississippi River. Mr. Chehardy was the designer of record for three design packages of the overall project. He was tasked with leading the design and implementation of the discharge piping, levee crossing, MS River shift, and the discharge basin. He also developed the design documentation report covering these project features and provided engineering support during advertisement and engineering support during construction. <b>Cost:</b> \$135M <b>Fee:</b> \$2.8M <b>Role:</b> Civil Engineer			
(1) TITLE AND LOCATION (City and State) <b>Ascension Parish Environmental Infrastructure Sewer Treatment Plant Design, Hillaryville, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2022                          2024	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Development of a design-bid-build package (plans and specs) for the creation of a 1.8 million gallon per day wastewater treatment plant as part of the Federal Section 219 Environmental Infrastructure program. Services consisted of detailed civil/structural/mechanical/electrical/architectural/geotechnical analyses, cost estimating, value engineering, and full USACE review process including BCOES review. Mr. Chehardy is the Engineer of Record for delivery of the design-bid-build package. He managed a multi-disciplinary team that will provide full plans and specifications and a detailed MII cost estimate to USACE. Fiscal Year. <b>Cost:</b> \$21.5M <b>Fee:</b> \$1.5M <b>Role:</b> Civil Engineer			

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
<b>Jeff Pena, PE</b>	<b>Civil Engineer</b>	<b>25</b>	<b>3</b>

15. FIRM NAME AND LOCATION (City And State)

**Stantec Consulting Services Inc. (Baton Rouge, LA)**

16. EDUCATION (DEGREE AND SPECIALIZATION)

**BS, Civil Engineering**

17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)

**Professional Engineer: LA (#PE.0029388), also 5 additional states**

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Experienced in engineering and project management for complex flood control and water resources projects, including levees, pump stations, floodwalls, saltwater and flood control structures, major canal improvements, coastal and erosion protection, bridge design, and construction management. Experience with large civil works projects including a variety of CADD platforms such as Bentley's OpenRoads Connect and AutoCAD 3D to efficiently lead reservoir layout adjustments, volume takeoffs, intake and discharge channels, earthen embankments and transition zones, and overall watershed management for ecosystem restoration. Design experience encompasses a broad array of projects involving multidisciplinary and multi-firm teams, preparation of engineering drawings, calculations, technical specifications, and cost estimates. Understands Federal, state, and local design criteria and preferences, having worked on more than 15 small and large projects totaling over \$2.5B in construction throughout the Gulf Coast involving civil, structural, mechanical, and electrical design.

Organizations: Louisiana Engineering Society; ASCE.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Pump Stations and Drainage Structures, West Shore Lake Pontchartrain HSDRRS, USACE New Orleans District, LA</b>	<b>ONGOING</b>	<b>2024 (EST.)</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**a** **Scope:** Design lead to provide civil work design services for four pumping stations with intake and discharge channels, drainage structures, T-walls, levees, sheet pile transitions, scour protection, concrete wing walls, bridges, draw bridge, navigation gate, retrofitting of I-55 bridge spans, levees, roads, ramps, and associated civil/site work. Providing technical design recommendations to develop the 35% deliverables that include a workshop with USACE and stakeholders to identify gaps and user preferences to guide design. Responsible for civil, pump station, and constructability reviews to deliver 35%, 65%, and 95% design submittal on a fast-track schedule. Providing design coordination with USACE and the project delivery team. Participated in VE study and in subsequent alternative pump station structure analysis. **Const.: \$380M (est.) Fee: \$14.26M Role: Civil Engineer**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Mid-Breton Sediment Diversion Project, Coastal Protection and Restoration Authority, Plaquemines Parish, LA</b>	<b>ONGOING</b>	<b>2028 (EST.)</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**b** **Scope:** Providing design management and Construction Manager at Risk (CMAR) coordination to reintroduce sediment and freshwater inputs into Breton Sound Basin. Project consists of a 50,000-cfs gate structure, associated intake and discharge channels, State Highway 39 relocation, and Mississippi River levee tie-ins. Overseeing civil and structural design, design quality assurance, and VE that resulted in approx. \$100M in construction savings. Supervises a multidisciplinary design team consisting of 75-100 internal staff and subconsultants responsible for performing design for the bulkheads, mechanical, and electrical. Provides interagency coordination for compliance with State of Louisiana CPRA and USACE MVN design guidelines and compliance with local agency design/regulatory requirements. Managing 60% design phase with CMAR contractor. **Const.: \$660M (est.) Fee: \$39M Role: Civil Engineer**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Everglades Agriculture Area (EAA: A-2) Reservoir Pumping Station (S-623), USACE Jacksonville District, Palm Beach, FL</b>	<b>2022</b>	<b>N/A</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**c** **Scope:** Providing overall project management and design for a 10,500-acre above-ground storage reservoir, a 4,600-cfs pumping station with inflow/outflow, various water control structures, and associated distribution canals. Responsible for project budget, schedule, constructability reviews, and design to deliver 35%, 65%, and 95% design submittal on a fast-track schedule. **Const.: \$235M (est.) Fee: \$5.3M Role: Civil Engineer**

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>James J. Hance, PE</b>	13. ROLE IN THIS CONTRACT <b>Geotechnical Engineer</b>	14. YEARS EXPERIENCE	
		a. TOTAL <b>23</b>	b. WITH CURRENT FIRM <b>19</b>
15. FIRM NAME AND LOCATION (City And State) <b>Eustis Engineering L.L.C. – New Orleans, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) MBA, Business Administration, Tulane University, 2011 MS, Civil Engineering, University of Texas at Austin, 2003 BS Civil Engineering, Bucknell University, 1998		17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Civil Engineer (2004): LA (31270), TX (106663), MS (20596)	

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Mr. Hance joined the staff of Eustis Engineering 19 years ago (August 2003). During his tenure at Eustis Engineering, he has been involved in a multitude of projects for various government agencies as well as private sector clients. Mr. Hance manages geotechnical services associated with commercial, industrial, environmental, and civil works projects. The primary focus of his career has been on flood protection and coastal restoration projects in Louisiana. He has worked extensively on Federal and non-Federal projects since the days following Hurricane Katrina. He has even been cited by the USACE in their Hurricane Storm Damage Risk Reduction System with regard to his early analyses on evaluating settlement induced bending moments in steel piles supporting floodwalls (T-walls).

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State) <b>Terrebonne Levee &amp; Conservation District - Falgout Canal Hurricane Protection Project, Terrebonne Parish, LA</b>	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
	2019	Ongoing

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Eustis Engineering developed geotechnical recommendations and analyses to support the design of flood protection at Falgout Canal in Terrebonne Parish, Louisiana. Flood protection consisted of a 195-ft swinging barge floodgate in Falgout Canal and braced walls extending from the floodgate and tie-in to an earthen levee alignment on the northern and southern sides of Falgout Canal. Mr. Hance directed and performed quality control design review of lateral load-deflection analyses of pipe piles planned to support the floodgate structure and adjoining walls. In addition, Mr. Hance reviewed geotechnical evaluations of structures (i.e., swing gates, barge gates, and floodwalls) and levee tie-ins for various projects. He performed a bearing capacity analysis, stability analysis using Spencer's method, and provided seepage and dewatering analysis as part of the Geotechnical appendix. **Cost (Eustis' Fee): \$727K** **Role:** Geotechnical Engineer

(1) TITLE AND LOCATION (City and State) <b>State of Louisiana - Mid-Barataria Sediment Diversion Project, Plaquemines and Jefferson Parishes, LA</b>	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
	Ongoing	N/A

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Mr. Hance is the project manager as well as the lead geotechnical engineer for the field exploration, laboratory testing, and geotechnical design for this project. Mr. Hance has worked consistently with CPRA since December 2017. Because of the scale and complexity of this landmark, a \$1.3 billion project for CPRA, Mr. Hance has been co-located with CPRA, their program manager, and many design firms to move this design project forward. He has overseen Eustis Engineering's massive field program comprising 162 borings (3 and 5-in. diameter) and 98 CPTs for the three exploration phases (15%, 30%, and 60%).

**b** Beyond the field program, the lab program had many thousands of undrained and drained shear strengths, consolidation, DSS, Atterberg limit, sieve, and moisture content tests. Mr. Hance has participated in a semi-quantitative risk assessment and many design meetings. All aspects of geotechnical engineering analyses and design have been brought to bear on this project including pile capacity curves, time settlement projections with lift schedules, soil pressures, bank stability analysis, stability analysis for channels and excavations, down drag and settlement analysis, numerical modeling and wave equation analysis. The 60% design phase was completed in the fall of 2021. The 100% design will be complete by year end 2022 with an early works construction package in mid-2023. Mr. Hance will continue in his role as project manager and lead geotechnical engineer into the construction phase. Cost: (Eustis' Fee): \$5M Role: Project Manager and Lead Geotechnical Engineer

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
<b>Chad M. Poché, PE</b>	<b>Geotechnical Engineer</b>	<b>29</b>	<b>11</b>

15. FIRM NAME AND LOCATION (City And State)

**Gulf South Engineering and Testing, Inc. – Kenner, LA**

16. EDUCATION (DEGREE AND SPECIALIZATION)

M.S., Civil Engineering (1998; UNO)  
B.S., Civil Engineering, (1993; LSU)

17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)

Louisiana, Civil Engineer (No. 27667; 1998)  
Mississippi, Civil Engineer (No. 15405; 2002)

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Chad M. Poché, P.E., is Vice President, co-founder, and a Principal at Gulf South Engineering and Testing. He has been a consulting geotechnical engineer for nearly 30 years in South Louisiana, working on traditional and unique geotechnical engineering projects (shallow and deep foundation design, slope stability, pavement design, etc.). Mr. Poché has also provided construction oversight for virtually every type of earthwork related project. He has been the geotechnical engineer of record for thousands of projects throughout his career, including several for the USACE New Orleans District

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Mississippi River Discharge Pump Station, River Ridge, Jefferson Parish, LA</b>	<b>2020</b>	<b>N/A</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Gulf South provided geotechnical engineering services for the construction of a new pump station and force main discharge pipeline between Coventry Court and Lee Court. Scope includes drilling four undisturbed soil borings (one at 100 ft., one at 80 ft., and two at 30 ft.; all bgs), laboratory testing, engineering analyses (soil bearing values, pile load capacities, settlement estimates, retaining structure recommendations, slope stability analyses) and general construction procedures and recommendations. Pump station was located on flood side of the Mississippi River levee with discharge pipes crossing the levee to the protected side. **Fee:** \$35,000 (fee) **Role:** Geotechnical Engineer

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Bayou Gauche/Sunset Levee Flood Protection, Upper Barataria Risk Reduction Program (UBRR) Segment 2, St. Charles Parish, LA</b>	<b>2020</b>	<b>N/A</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Geotechnical investigation for construction of a new roller gate and T-wall structures within the UBRR flood protection/risk reduction system in St. Charles Parish, LA. Gulf South's scope includes drilling undisturbed soil borings (2 at 200 ft.), CPT probes (2 at 200 ft.), lab testing (including consolidation tests), and engineering analyses including site/soil characterization, global/local SSA for floodwalls, levee tie-ins, and floodgates, design levee lift stability, seepage analyses for sheetpile walls, settlement/downdrag analyses, unbalanced forces for structures, pile load capacities, pile foundation load-deflection relationship, estimates of settlement, ground improvement recommendations, cantilever retaining analysis, temporary retaining structure design, and general construction procedures and recommendations. The borings and CPT were performed over water using barge-mounted equipment. **Fee:** \$110,880 (fee) **Role:** Geotechnical Engineer

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Highway 90 Tie-In Levee, Upper Barataria Risk Reduction Program (UBRR) Segment 4, St. Charles Parish, LA</b>	<b>2021</b>	<b>N/A</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Geotechnical investigation for construction of a new earthen levee within the UBRR flood protection/risk reduction system in St. Charles Parish, LA. Gulf South's scope includes drilling undisturbed soil borings (1 at 200 ft., 3 at 75 ft.), CPT probes (6 at 75 ft.), lab testing (including consolidation tests), and engineering analyses including site/soil characterization, global/local SSA for floodwalls, levee tie-ins, and floodgates, seepage analyses for sheetpile walls, settlement/downdrag analyses, unbalanced forces for structures, pile load capacities, pile foundation load-deflection relationship, settlement induced bending moments in piles, pile load test monitoring, vibration monitoring and estimates of settlement, ground improvement recommendations, and general construction procedures and recommendations. **Fee:** \$174,720 (fee) **Role:** Geotechnical Engineer

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Tom Willis, PE, MBA</b>	13. ROLE IN THIS CONTRACT <b>Hydraulic Engineer</b>	14. YEARS EXPERIENCE a. TOTAL <b>40</b> b. WITH CURRENT FIRM <b>7</b>	
15. FIRM NAME AND LOCATION (City And State) <b>MSMM Engineering - New Orleans, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) BS, Civil Engineering, Louisiana State University, 1981 MBA, Louisiana State University, 1989	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer/Civil (1991): LA (28205)		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) Mr. Tom Willis is a Senior Hydraulic Engineer at MSMM where he conducts hydrologic and hydraulic (H&H) analyses of drainage mitigation projects for local municipalities, the state of Louisiana and USACE. Mr. Willis has consistently provided hydraulic modeling, inclusive of HEC-RAS and HEC-HMS to the New Orleans International Airport as part of the recent expansion of the new terminal and the associated airfield changes. He has also recently completed several hydraulic analyses for the USACE MVN under smaller programs such as Silver Jackets, Section 219 Environmental Infrastructure, and the PAS Program.			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Southern University Drainage Outfall Ravine and Riverbank Instability Study, Baton Rouge, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) <b>2020</b> <b>2024</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> As part of the Silver Jackets program at the USACE New Orleans District, MSMM performed a feasibility study to identify the appropriate courses of action to resolve ongoing erosion and flooding problems on the Southern University campus. Mr. Willis ran a HEC-RAS model and developed project alternative designs to address erosion problems covering several areas on campus. His analysis provided solutions for the following issues: paving repairs and ravine side deterioration area, Baranco-Hill health center perimeter and outfall bank land-loss areas and the outfall ravine channel degradation area. Through his analysis our design team was able to show positive benefits of these design alternatives and provided Southern University with detailed project alternatives. <b>Cost:</b> \$4M <b>Fee:</b> \$220K <b>Role:</b> Hydraulic Engineer			
(1) TITLE AND LOCATION (City and State) <b>Louisiana Intermodal Terminal, Port of New Orleans, Chalmette, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) <b>2023</b> <b>2025</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> MSMM is currently providing hydraulic modeling and drainage design solutions to the Port of New Orleans as part of their new Intermodal Terminal in St. Bernard Parish. The existing storage has been modeled in subbasins utilizing the HEC-HMS model. Mr. Willis performed this analysis by using rainfall runoff modeling to develop flow hydrographs which were used in the unsteady HEC-RAS models. Rather than provide tables with the flow hydrograph information at various locations, the user (Port) is referred to the digital HEC-RAS model output that contain the flow hydrographs. This allowed the Port to make alternative selections. With a selected alternative, detailed modeling will commence, and Mr. Willis will lead the design of the drainage mitigation solution. <b>Cost:</b> \$135M <b>Fee:</b> \$1.8M <b>Role:</b> Hydraulic Engineer			
(1) TITLE AND LOCATION (City and State) <b>USACE Silver Jackets, Stormwater Watershed Management Study, Jefferson Parish, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) <b>2021</b> <b>N/A</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Through a Silver Jackets project sponsored by USACE MVN and Jefferson Parish, MSMM provided a Watershed Management Plan (WMP). The purpose was to provide an assessment of how flood stages will be affected by projected changes in future rain and sea-level conditions and to recommend strategies for mitigating increased flood loss damages. Mr. Willis performed the hydraulic modeling utilizing the EPA SWMM model to determine the existing and future conditions on over 50-percent of the Parish inside the levees for the 10-year, 25-year and 100-year storm events. Comparative future conditions were assessed using Technical Paper 40 versus NOAA's 2100 intermediate Sea Level Rise Project which anticipates a 5.8-feet rise in sea level. Future lands use was based on the newly updated Jefferson Parish Edge 2040 land use information. The Parish EPA SWMM numerical hydrologic-hydraulic models were used in assessing impacts. The model analysis indicated that the existing pump system has sufficient capacity despite rising sea levels, but the utilization and power usage are increased so that maintenance and power provisions should be considered <b>Cost:</b> \$21.5M <b>Fee:</b> \$1.5M <b>Role:</b> Hydraulic Engineer			

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Stephen Sanborn, MS, PE</b>	13. ROLE IN THIS CONTRACT <b>Hydraulic Engineer</b>	14. YEARS EXPERIENCE a. TOTAL <b>18</b> b. WITH CURRENT FIRM <b>14</b>	
15. FIRM NAME AND LOCATION (City And State) <b>Dynamic Solutions, LLC (Knoxville, TN)</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) MS, Civil Engineering, Colorado State Univ., 2004 BS, Civil Engineering, Colorado State Univ., 2002	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) LA (#37284), TN (#113814), OK (#25630)		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) Mr. Sanborn is a hydraulic engineer with 18 years of experience designing multi-purpose engineering projects on rivers and estuaries. He has extensive experience performing hydraulic and hydrodynamic modeling studies to formulate conceptual structure designs and evaluate project alternatives. He has a wide range of experience in the Mississippi River Basin and performing hydrodynamic and sediment transport analyses on the Mississippi River including sediment transport models on the Mississippi River for the US Army Corps of Engineers, model development for Louisiana's Cole's Bayou coastal marsh, performing expert reviews and analyses for the Davis Pond and Caernarvon freshwater diversion projects and for the Mid-Barataria Sediment Diversion.			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Mississippi River Winchester Bend Sediment Transport Modeling, USACE Memphis Dist. Northwest Tennessee Harbor, TN</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2021                          N/A	
a (3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Mr. Sanborn developed a hydrodynamic and sediment transport model of the Mississippi River from Hickman, KY to Tiptonville, TN. The hydrodynamic model developed was proven to accurately simulate currents in the dike field where shoaling problems have occurred. A sediment transport model was developed and calibrated to two years of bed elevation data, matching erosion and deposition magnitudes and patterns. The engineering analysis and model were used by USACE to design navigation structures to ameliorate navigation problems and frequent dredging in the Winchester Bend reach. <b>Cost:</b> \$335,733 <b>Fee:</b> \$335,733 <b>Role:</b> Lead Hydraulic Engineer <input checked="" type="checkbox"/> Check if project performed with current firm			
(1) TITLE AND LOCATION (City and State) <b>Simulating Compound Flooding During Hurricane Harvey with AdH, USACE ERDC-CHL, Harris County, TX</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2021                          N/A	
b (3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Mr. Sanborn directed the development of a compound flooding model to simulate water levels during Hurricane Harvey. A special version of ADH was utilized to couple storm surge, fluvial, and pluvial flooding processes in a seamless model, which stands at the cutting-edge of coastal flood risk assessment. This research was published in the ASCE Journal of Hydraulic Engineering. These methods are being used to understand the areas of the Mississippi River susceptible to compound flooding, to provide flood risk management information. <b>Cost:</b> \$168,592 <b>Fee:</b> \$168,592 <b>Role:</b> Lead Hydraulic Engineer <input checked="" type="checkbox"/> Check if project performed with current firm			
(1) TITLE AND LOCATION (City and State) <b>Mid-Barataria Sediment Diversion EIS, GEC/USACE New Orleans District, New Orleans, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2022                          N/A	
c (3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Mr. Sanborn provided technical review and engineering analyses regarding long-term changes in hydrodynamics and sediment transport of the Mississippi River because of the Mid-Barataria Sediment Diversion. He reviewed the relevant scientific literature and modeling studies of the sediment diversion and synthesized this research to draft and review the relevant portions of the EIS document. <b>Cost:</b> \$582k <b>Fee:</b> \$582k <b>Role:</b> Hydraulic Engineer <input checked="" type="checkbox"/> Check if project performed with current firm			

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Nicolas De Graaff, PE, CFM</b>	13. ROLE IN THIS CONTRACT <b>Cost Engineer</b>	14. YEARS EXPERIENCE a. TOTAL <b>15</b> b. WITH CURRENT FIRM <b>15</b>	
15. FIRM NAME AND LOCATION ( <i>City and State</i> ) <b>AECOM Technical Services, Inc. – Clifton, NJ</b>			
16. EDUCATION ( <i>Degree and Specialization</i> ) MS, Civil Engineering, New Jersey Institute of Technology, 2013; BS, Civil Engineering, New Jersey Institute of Technology, 2008	17. CURRENT PROFESSIONAL REGISTRATION ( <i>State and Discipline</i> ) Professional Engineer: (2013): NJ (#24GE05064400)		
18. OTHER PROFESSIONAL QUALIFICATIONS ( <i>Publications, Organizations, Training, Awards, Etc.</i> ) Mr. De Graaff has extensive experience in project cost estimating and regularly develops quantities, Cost and Schedule Risk Analyses, Total Project Cost Summary, and cost appendices for civil works projects. He specializes in developing MII cost estimates for large flood risk management projects including earthen levees, floodwalls, floodgates, drainage structures, pumping stations, navigable sector gates.			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION ( <i>City and State</i> ) <b>USACE New York District, Passaic Tidal General Reevaluation Report, Lower Passaic River, NJ</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2019</b> CONSTRUCTION ( <i>if applicable</i> ) <b>N/A</b>	
(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE <b>Scope:</b> Developed feasibility level quantity and MII cost estimate for design of eight (8) closure gate segments in addition to several tie-off segments in highly congested urban areas. Developed Crystal Ball Analysis for project risk and schedule analysis for recommended contingencies. Anticipated construction cost is approximately \$60M and is currently at USACEHQ for final approval, expected to proceed to Preconstruction Engineering and Design. <b>Fee:</b> \$850K <b>Role:</b> Cost Engineer <b>Size:</b> eight (8) closure gate segments			
(1) TITLE AND LOCATION ( <i>City and State</i> ) <b>USACE New York, Green Brook Flood Risk Management Project, Middlesex, Somerset, and Union Counties, NJ</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b> CONSTRUCTION ( <i>if applicable</i> ) <b>2022</b>	
(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE <b>Scope:</b> For 902 Cap Analysis, developed updated feasibility quantity estimate for remaining construction of \$1.4B Green Brook FRMP elements. Provided cost estimating oversight and recommendations for MII estimate of remaining construction, which includes 78,000 LF of floodwalls and levees, 21 bridge raisings, 8 closure structures, 166 flood-proofed buildings, 16 pump stations, and 2 flood control dams. Participated in Cost and Schedule Risk Analysis to establish recommended contingencies. For Segment C1, developed quantity estimates, layout and cost estimate quality review, and recommendations for MII Estimate. It includes a 45-ft-wide bridge/culvert to be constructed adjacent to a railroad embankment. <b>Cost:</b> \$64M (Construction) <b>Fee:</b> \$11.6M <b>Role:</b> Cost Engineer <b>Size:</b> 3300 LF of levees, 2200 LF of floodwalls, three closure structures, 100 cfs PS, Three Bridges, 44 Mi Hydraulics			
(1) TITLE AND LOCATION ( <i>City and State</i> ) <b>USACE New York, Coastal Storm Risk Management, Feasibility Study, and Design, Staten Island, NY</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2022</b> CONSTRUCTION ( <i>if applicable</i> ) <b>2025 (est.)</b>	
(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE <b>Scope:</b> Responsible for developing quantity estimates and QC of various alternatives for \$600M coastal FRMP. Project includes 23,000 LF of coastal flood risk management features including a buried seawall, levee tie-offs, floodwall, interior drainage features, and beach access. <b>Cost:</b> \$830M (Construction) <b>Fee:</b> \$22.5M <b>Role:</b> Cost Engineer <b>Size:</b> 3,400 ft of earthen levee, 1,800 ft of floodwall, and 22,700 ft of buried seawall/armored levee			
(1) TITLE AND LOCATION ( <i>City and State</i> ) <b>USACE New York, South River Hurricane Sandy Reevaluation Report, Monmouth County, NJ</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2015</b> CONSTRUCTION ( <i>if applicable</i> ) <b>N/A</b>	
(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE <b>Scope:</b> Developed project quantities and produced the Cost Estimate in MCACES (MII) for levee, floodwall, 100-ft sector gate across the South River, and a 1,600 cfs pump station. Total anticipated construction cost was approximately \$250M. Responsible for developing levee height analysis and sea level rise calculations. Updated previous designs for the levee and floodwall heights as well as interior drainage design using HEC-HMS and Unsteady HEC-RAS model. <b>Fee:</b> \$1M (Fee) <b>Role:</b> Cost Engineer <b>Size:</b> 100-ft sector gate; 1,600 cfs pump station			

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**

(COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
<b>Don Daigle, CVS, CPE</b>	<b>Cost Engineer</b>	<b>38</b>	<b>7</b>

 15. FIRM NAME AND LOCATION (*City And State*)

**MSMM Engineering – New Orleans, LA**

16. EDUCATION ( <i>Degree And Specialization</i> )	17. CURRENT PROFESSIONAL REGISTRATION ( <i>STATE AND DISCIPLINE</i> )
AAS, Mechanical Engineering, 1984 AAS, Electro-Mechanical Engineering, 1982	Certified Value Specialist (CVS): #201203044 Certified Professional Estimator (CPE) #1.4-0009821-1214

 18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, Etc.*)

Mr. Daigle has a wide range of experience providing value engineering, cost estimating and cost management, life cycle cost analysis, scheduling, quality control techniques, and design construction cost reconciliation for USACE Civil Works projects. He is a Certified Value Specialist and proficient in estimating using MCACES and PACES software. Mr. Daigle has provided MII cost estimating for multiple USACE districts including all recent Civil Works design task orders completed by MSMM. He also has experience providing detailed cost estimating for the Air Force on several projects.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION ( <i>City and State</i> )	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>Design-Build RFP Development: 277K Levee Raise and Delta Pump Station – Dallas, TX</b>	<b>2021</b>	<b>2023</b>

(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.) AND SPECIFIC ROLE</i>	<input checked="" type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>Scope:</b> Development of two design-build RFP packages for flood risk reduction measures along the Dallas Floodway, consisting of the 277K levee raise and Delta Pump Station replacement. Other services consisted of cost estimating, value engineering, design, drafting and planning for demolition of existing facilities, and Civil/Structural/Mechanical/Electrical/Architectural engineering analyses and design. Mr. Daigle led the development of two stand-alone cost estimates (design-build packages bid separately). He developed detailed MCACES cost estimates to a 35% level for both the levee raise and pump station replacement projects. <b>Cost:</b> \$320M <b>Fee:</b> \$1.2M <b>Role:</b> Cost Engineer	<b>2021</b>	<b>2023</b>

(1) TITLE AND LOCATION ( <i>City and State</i> )	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>Ascension Parish Environmental Infrastructure Sewer Treatment Plant Design, Hillaryville, LA</b>	<b>2022</b>	<b>2024</b>

(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.) AND SPECIFIC ROLE</i>	<input checked="" type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>Scope:</b> Development of a design-bid-build package (plans and specs) for the creation of a 1.8 million gallon per day wastewater treatment plant as part of the Federal Section 219 Environmental Infrastructure program. Services consisted of detailed civil/structural/mechanical/electrical/architectural/geotechnical analyses, cost estimating, value engineering, and full USACE review process including BCOES review. Mr. Daigle provided the detailed cost estimating for the project. He was tasked with producing cost estimates in MCACES (MII) for each of the design submittals. He was also tasked with responding to DrChecks comments related to the estimate and participated in design review meetings. He was also responsible for identifying features to reduce project costs and identifying bid options. <b>Cost:</b> \$21.5M <b>Fee:</b> \$1.5M <b>Role:</b> Cost Engineer	<b>2022</b>	<b>2024</b>

(1) TITLE AND LOCATION ( <i>City and State</i> )	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>Cow Bayou Drainage Pump Station Complex Design – Orange, TX</b>	<b>2020</b>	<b>2024</b>

(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.) AND SPECIFIC ROLE</i>	<input checked="" type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>Scope:</b> Development of a 35% design package (plans, specs, and DDR) for a new 8,000 cfs drainage pump station complex consisting of multiple flood risk management reduction measures such as a pump station, safe house, floodwalls, and sector gate. Main responsibilities consisted of civil, structural, and architectural analyses. The task order was to provide a 35% level of design with anticipation of changing the project to a Design-Build RFP. Mr. Daigle performed very preliminary MCACES cost estimating for the project. He worked extensively within the workbooks and through contractor contacts, to gain an understanding of regional pricing for major design features of the project and relayed quotes and information to the design team as they prepared design submittals. The design team also coordinated project features with him as they developed the design. <b>Cost:</b> \$ 325M <b>Fee:</b> \$1.3M <b>Role:</b> Cost Engineer	<b>2020</b>	<b>2024</b>

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Harry Hawney, PE</b>	13. ROLE IN THIS CONTRACT <b>Electrical Engineer</b>	14. YEARS EXPERIENCE a. TOTAL <b>44</b> b. WITH CURRENT FIRM <b>11</b>	
15. FIRM NAME AND LOCATION (City And State) <b>MSMM Engineering – New Orleans, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) B. Eng., Electronics Engineering, National University of Ireland, 1970 MBA, Trinity College, 1971		17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: (1981): LA (19229)	
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) Mr. Hawney has over 40 years of power and electrical engineering experience which includes site lighting, drainage pump stations, roadways, airports, power plants, water treatment and wastewater treatment facilities, and electrical and generator layouts for new facilities. He is proficient and experienced in designing airfield lighting as well as the relocation of high voltage powerlines, transfer poles and SCADA systems for pump stations and lift stations.			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>East Baton Rouge Parish Environmental Infrastructure North Wastewater Treatment Plant Collection System 5 MG Ground Storage Tank and Pump Station, Baton Rouge, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2022                          2024	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE a <b>Scope:</b> Development of a design-bid-build package (plans and specs) to provide wastewater storage through the Federal Section 219 EI program. Design includes two pile supported above ground 5 million gallon pre-stressed concrete storage tanks, a 14,000 gpm sewer pump station, new control building and generators for emergency power. Mr. Hawney is the lead electrical engineer for the project. He was responsible for providing the electrical schedules, site plans, aeration electrical plan, admin building power and lighting plan, operation control power plan, and MCC on 1-line diagrams. <b>Cost:</b> \$17M <b>Fee:</b> \$1.2M <b>Role:</b> Electrical Engineer			
(1) TITLE AND LOCATION (City and State) <b>Timber Creek Recreational and Site Access Design – Austin TX</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2021                          2022	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE b <b>Scope:</b> Development of a design-bid-build package (plans and specs) for the development of a public park in Austin, TX. Services consisted of geotechnical investigations, civil and structural design analyses, cost estimating, topographic survey, and coordination with the non-Federal sponsor, the Travis County Parks department. Mr. Hawney was the lead electrical engineer, he was responsible for establishing a new meter at the main roadway, running underground conduit to a new power pole and transformer (hung above the 50-year floodplain), running power to the restroom facility and grinder station and designing the new fire loop that will supply water to the entire public park. Mr. Hawney was also responsible for providing site lighting. <b>Cost:</b> \$3.7M <b>Fee:</b> \$356K <b>Role:</b> Electrical Engineer			
(1) TITLE AND LOCATION (City and State) <b>Ascension Parish Environmental Infrastructure Sewer Treatment Plant Design, Hillaryville, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2022                          2024	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE c <b>Scope:</b> Development of a design-bid-build package (plans and specs) for the creation of a 1.8 million gallon per day wastewater treatment plant as part of the Federal Section 219 Environmental Infrastructure program. Services consisted of detailed civil/structural/mechanical/electrical/architectural/geotechnical analyses, cost estimating, value engineering, and full USACE review process including BCOES review. Mr. Hawney was the lead electrical engineer for the project. He was responsible for design of the new electrical controls for the pump station, the inclusion of a new generator and generator hookups, and design of site lighting. <b>Cost:</b> \$21.5M <b>Fee:</b> \$1.5M <b>Role:</b> Electrical Engineer			

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Bradley Buchanan, PE</b>	13. ROLE IN THIS CONTRACT <b>Electrical Engineer</b>	14. YEARS EXPERIENCE a. TOTAL <b>8</b> b. WITH CURRENT FIRM <b>7</b>	
15. FIRM NAME AND LOCATION (City And State) <b>Stantec Consulting Services Inc. (Deerfield Beach, FL)</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) <b>BS, Electrical Engineering</b>	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) <b>Professional Engineer: LA (#43229), also 6 other states</b>		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) <p>Electrical engineer with experience involving electrical service, generator sizing, power distribution, instrumentation and controls (I&amp;C), electrical code compliance, and preparation of specifications, drawings, and budgets. Projects include various sizes of pumping stations for Federal clients (USACE New Orleans and Jacksonville Districts). Capabilities include electrical design, motor control, standby power system design, HVAC controls, PLC, and local HMI design.</p>			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Permanent Canal Closures and Pumps Project, USACE New Orleans District, New Orleans, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2018</b> CONSTRUCTION (if applicable) <b>2018</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><b>Scope:</b> Assisted the electrical lead in the design of electrical and I&amp;C systems for three pumping stations on drainage canals. Provided support in developing the electrical system consisting of 60,000 hp of diesel standby generators that were parallel to a 5kV switchboard that powered 35,000 hp of electrically operated pumps and auxiliary equipment. Pumps were started with 5kV 5000-hp VFD motor starters to allow starts six times an hour to keep up with changes in the canal flow in the event of a hurricane. <b>Construction Cost:</b> \$731M <b>Fee:</b> \$57.1M <b>Role:</b> Electrical Engineer</p>		<input checked="" type="checkbox"/> Check if project performed with current firm	
a			
(1) TITLE AND LOCATION (City and State) <b>Pump Stations and Drainage Structures, West Shore Lake Pontchartrain HSDRRS, USACE New Orleans District, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>ONGOING</b> CONSTRUCTION (if applicable) <b>2024 (EST.)</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><b>Scope:</b> Designing electrical systems for four pumping stations with a capacity of 5,600 cfs. Designed the controls and electrical systems for the pumps to operate with a diesel engine and right-angle gear with engine intake and exhaust, cooling systems, lubrication, and fuel systems. Additionally, pumping stations were designed to operate off the grid for up to three days during power failures with two 750KW backup emergency generators. Designing according to USACE EMs to meet design criteria requirements. <b>Construction Cost:</b> \$380M <b>Fee:</b> \$14.26M <b>Role:</b> Electrical Engineer</p>		<input checked="" type="checkbox"/> Check if project performed with current firm	
b			
(1) TITLE AND LOCATION (City and State) <b>Mississippi River Re-Introduction into Bayou Lafourche, Pumping Capacity Improvements Project, Bayou Lafourche Freshwater District, Donaldsonville, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>ONGOING</b> CONSTRUCTION (if applicable) <b>2025 (EST.)</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><b>Scope:</b> Designed the I&amp;C system for new freshwater transfer pumping station that included six 800-hp vertical turbine pumps, medium voltage power distribution, automatic standby generators, VFD motor controls, safety and security, CCTV, and SCADA telemetry. Each pump included I&amp;C for VFD control, temperature and vibration monitoring, gearbox cooling loop operation, and a discharge flowmeter. The system also included wireless remote level monitoring at the intake structure and channel downstream of the station. <b>Construction Cost:</b> \$100M (est.) <b>Fee:</b> \$7M <b>Role:</b> Electrical Engineer</p>		<input checked="" type="checkbox"/> Check if project performed with current firm	
c			
(1) TITLE AND LOCATION (City and State) <b>Everglades Agriculture Area (EAA: A-2) Reservoir Pumping Station (S-623), USACE Jacksonville District, Palm Beach, FL</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2022</b> CONSTRUCTION (if applicable) <b>N/A</b>	
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><b>Scope:</b> Responsible for electrical systems for a 4,600-cfs pumping station as part of a reservoir an ecological restoration project to manage the release of stormwater into surrounding estuaries. Designed controls and electrical systems for the nine pumps, including three 1,500-hp electrical 200-cfs pumps for maintaining seepage and six larger capacity diesel engine operated pumps of 400 cfs and 800 cfs. Electrical systems design included integration of the fuel, lubrication, cooling, and operating systems. <b>Construction Cost:</b> \$235M (est.) <b>Fee:</b> \$5.3M <b>Role:</b> Electrical Engineer</p>		<input checked="" type="checkbox"/> Check if project performed with current firm	
d			

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME  <b>Dennis Strecker, PE</b>	13. ROLE IN THIS CONTRACT  <b>Mechanical Engineer</b>	14. YEARS EXPERIENCE	
		a. TOTAL  <b>44</b>	b. WITH CURRENT FIRM  <b>4</b>

15. FIRM NAME AND LOCATION (*City And State*)

**AECOM Technical Services, Inc. – New Orleans, LA**

16. EDUCATION (*DEGREE AND SPECIALIZATION*)

MS, Mechanical Engineering, 1974  
BS, Mechanical Engineering, 1969

17. CURRENT PROFESSIONAL REGISTRATION (*STATE AND DISCIPLINE*)

Professional Engineer (1974): LA (0014402)

18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, Etc.*)

Mr. Strecker specializes in designing machinery for major hydraulic structures associated with coastal flood risk management such as navigation locks, floodgates, and gated outlet works for dams, pump stations, and other waterway facilities, including pneumatic and hydraulic systems, HVAC systems, and plumbing systems. He holds a joint patent with USACE on a unique gate hoist design and has designed the operating machinery for several navigational flood gates during his 35-year tenure working at the USACE New Orleans District. He has provided classroom and field training for state and local personnel on the operation and maintenance of floodgate structures on the East Bank of the Mississippi River in Orleans Parish. From 2009 to 2010, he provided ITR reviews, upgrades, and storm-proofing plans and specifications.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION ( <i>City and State</i> )  <b>LA CPRA, Mid-Barataria Sediment Diversion (MBSD) Project 90% Design Phase, Plaquemines Parish, LA</b>		(2) YEAR COMPLETED  PROFESSIONAL SERVICES      CONSTRUCTION ( <i>if applicable</i> )  <b>2021</b> <b>2027 (est.)</b>	
(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE  <b>Scope:</b> Provided mechanical engineering support for operating equipment and three 50-foot-wide planned Tainter gate systems and pumping station for the Mid-Barataria Sediment Diversion Project. Project		<input type="checkbox"/> Check if project performed with current firm	
a reintroduces freshwater and sediment from the Mississippi River to the basin to reestablish deltaic processes to build, sustain, and maintain land. Included breaching the river with 3 major Tainter gates, a 200-foot-wide channel, levees, bridge crossings, drainage pumping stations, and a major intake at the Mississippi River. The Mid-Barataria Sediment Diversion would be expected to build and nourish between 10,000 and 30,000 acres of critical coastal wetlands over a 50-year period. <b>Cost:</b> \$1.5B <b>Fee:</b> \$40M <b>Role:</b> Mechanical Engineer <b>Size:</b> 75,000cfs of sediment within 8-mile radius			
(1) TITLE AND LOCATION ( <i>City and State</i> )  <b>USACE Galveston, Sabine Pass to Galveston Bay Coastal Storm Risk Management Design Project, Galveston, TX</b>		(2) YEAR COMPLETED  PROFESSIONAL SERVICES      CONSTRUCTION ( <i>if applicable</i> )  <b>2024 (est.)</b> <b>2024 (est.)</b>	
(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE  <b>Scope:</b> Providing mechanical engineering support for preparation of 35% design of the 100-ft-wide vertical lift gate. TO is part of Sabine Pass to Galveston Bay, Freeport, and Vicinity Coastal Storm Risk Management Preliminary Design project. <b>Cost:</b> \$500M <b>Fee:</b> \$72M <b>Role:</b> Mechanical Engineer <b>Size:</b> 18.5-mile levee, 5.5-mile floodwall.		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION ( <i>City and State</i> )  <b>USACE New Orleans, Replacement Machinery for Inner Harbor Navigation Canal Lock, New Orleans, LA</b>		(2) YEAR COMPLETED  PROFESSIONAL SERVICES      CONSTRUCTION ( <i>if applicable</i> )  <b>2015</b> <b>N/A</b>	
(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE  <b>Scope:</b> Supported the machinery design to replace Panama Canal Linkage used on miter gate with direct acting hydraulic cylinder and hydraulic system. <b>Cost:</b> \$250M <b>Fee:</b> \$500K (machinery only) <b>Role:</b> Mechanical Engineer		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION ( <i>City and State</i> )  <b>US International Boundary and Water Commission, Penstock #4 Plugging Inspection and Analysis at Amistad Dam, Del Rio, TX</b>		(2) YEAR COMPLETED  PROFESSIONAL SERVICES      CONSTRUCTION ( <i>if applicable</i> )  <b>2018</b> <b>N/A</b>	
(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE  <b>Scope:</b> Provided services associated with inspection and analysis of existing conditions and recommendations for concrete plugging of Penstock Gate #4 at Amistad Dam. Tasks included investigations, technical writing, periodic inspection reports and feasibility analysis of the assessed conditions. <b>Cost:</b> \$9M <b>Fee:</b> \$249K <b>Role:</b> Mechanical Engineer		<input type="checkbox"/> Check if project performed with current firm	

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Lakhbir Chauhan, PE	Mechanical Engineer	43	4

15. FIRM NAME AND LOCATION (City And State)

**AECOM Technical Services, Inc. – Houston, TX**

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)
MS, Rotodynamic Machines, 1970 BS, Mechanical Engineering, 1966	Professional Engineer: LA (#16530), FL (#37639)

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Mr. Chauhan designed mechanical engineering solutions for \$600M+ in construction of Flood Risk Management, Storm Damage Reduction, and Water Resources projects. He has designed pump stations and mechanical and hydraulic systems associated with floodgates and sector gates within a levee/flood risk reduction system; pumping systems for water supply and wastewater infrastructure; and mechanical systems for office/maintenance buildings. He has worked in design, manufacturing, and sales of axial flow, mixed flow, hydraulic, and submersible-electric pumps as a chief mechanical engineer/ director of engineering. For 12 years he was a Mechanical Engineer with the Louisiana Department of Transportation and Development in major flood control, water, and wastewater infrastructure pumping projects.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>USACE Galveston, Sabine Pass to Galveston Bay Coastal Storm Risk Management Design Project, Galveston, TX</b>	2024 (est.)	2024 (est.)
a (3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>Scope:</b> Participated in value engineering (VE) study of the Brazos River Floodgates Rehabilitation east and west floodgates and guide walls at the Gulf Intercostal Waterway; evaluating 95% design prepared by the Galveston District. <b>Cost:</b> \$38M <b>Fee:</b> \$72M <b>Role:</b> Mechanical Engineer <b>Size:</b> 18.5-mile levee, 5.5-mile floodwall, 100-ft-wide vertical lift gate and a pump station	<input checked="" type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
<b>USACE New Orleans, PCCP Stations Design-Build, New Orleans, LA</b>	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2017	2018	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>Scope:</b> Performed Design and Construction Quality Review for 3 gated closure structures and 3 large permanent drainage pumping stations (12,500 cfs, 2,700 cfs, and 9,000 cfs). Worked closely with the USACE to develop mechanical portion of the D-B RFP packages. Reviewed contractor's mechanical P&S to ensure compliance and assisted with the startup, commissioning, and testing of all 3 pumping stations. <b>Cost:</b> \$615M <b>Fee:</b> \$8.5M <b>Role:</b> Mechanical Engineer <b>Size:</b> 24,0000 CFS	<input checked="" type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
<b>USACE New York, Green Brook Flood Risk Management Project, Middlesex, Somerset, and Union Counties, NJ</b>	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2019	2022	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>Scope:</b> Reviewed field pump test information to determine causes of pump performance concerns in overloads in the field and witnessed factory testing in the plant. Pump performance overloads were attributed to deficient power supply and submergence issues. Adjusted "on"/"off" pump elevations to obtain acceptable readings. <b>Cost:</b> \$64M <b>Fee:</b> \$11.6M <b>Role:</b> Mechanical Engineer <b>Size:</b> 3300 LF levees, 2200 LF floodwalls, Three Closure Structures, 100 cfs PS, Three Bridges, 44 Mi Hydraulics	<input checked="" type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
<b>City of Cincinnati, Flood Protection Project Condition Assessment, Cincinnati, OH</b>	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
2016	N/A	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>Scope:</b> Condition assessment and risk analysis to develop design improvements for 70-year old, 12,000-cfs pump station and 17 Closure/Gate Structures and sluice-gated pipe penetrations. Discovered a single municipal water coolant line was servicing the pump and any breakdown in line would flood parts of the city. Recommended standby line that would use the storm water as coolant in case of emergency to address this critical deficiency. <b>Cost:</b> \$N/A <b>Fee:</b> \$160K <b>Role:</b> Mechanical Engineer	<input checked="" type="checkbox"/> Check if project performed with current firm	

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**

(COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Trey Johnston, PE	Corrosion Engineer	15	15

15. FIRM NAME AND LOCATION (City And State)

**Corpro – Shreveport, LA**

16. EDUCATION (DEGREE AND SPECIALIZATION)

BE, Mechanical Engineering, Louisiana State University, 2006

17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)

Professional Engineer: Civil (2016), LA (41291), TX (132456), GA (43494), AL (37658)

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Mr. Johnston has 15 years of experience in the Corrosion Engineering industry. Since starting with Corpro in 2007, Mr. Johnston has participated in increasingly complex projects and realized increasing levels of responsibility. Mr. Johnston joined the Principal Engineering group in 2020 after 5 years as a Manager in New Orleans. Areas of expertise include corrosion engineering and cathodic protection design for complex facilities, marine and flood protection structures, and municipal water systems.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>USACE New Orleans, Pump Closures and Canals Project (PCCP),</b>	2022	2022

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<b>a Scope:</b> Consulted to the USACE New Orleans District Construction and Engineering branch for the development of corrosion control for driven steel sheet piles intended to protect pump stations from Lake Pontchartrain storm surge. Specific activities included research of corrosion rates for prediction of sheet pile service life, cathodic protection calculation review, detailed drawings, and engineering specification development and review. <b>Cost:</b> \$615M <b>Fee:</b> \$105K <b>Role:</b> Corrosion Engineer		

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>SLFPA-W West Closure Complex, Harvey Canal, Bayou Segnette</b>	ONGOING	2024

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<b>b Scope:</b> Mr. Johnston is currently developing construction documents to rehabilitate the corrosion protection including coatings and cathodic protection on this important flood risk management and hurricane and storm damage risk reduction project. <b>Cost:</b> \$150M <b>Fee:</b> \$105K <b>Role:</b> Corrosion Engineer		

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Valero St. Charles Refinery Dock 6 Expansion Project, St. Charles Parish, LA</b>	2011	2012

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<b>c Scope:</b> Oversight and quality assurance for design and turnkey installation of new impressed current system associated with major dock expansion project. The Cathodic Protection system included primary protection by mixed metal-oxide anode strings installed within custom perforated chutes directly connected to steel round piles beneath the waterline via custom clamping system. Anodes were energized by 3 explosion-proof rectifiers and 6 junction boxes. <b>Cost:</b> \$3M, <b>Fee:</b> \$180K <b>Role:</b> Corrosion Engineer		

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Morganza to the Gulf of Mexico Project, Morganza, LA</b>	2015	2017

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<b>d Scope:</b> Project management for EPC of sacrificial anode CP systems at 8 floodgates in Terrebonne Parish. Multiple corrosion zones and structure types utilized several anode material configurations and deployment methods on land and in water. Mr. Johnson led the field investigation and data evaluation for the anode material classifications. <b>Cost:</b> \$16M <b>Fee:</b> \$200K <b>Role:</b> Corrosion Engineer		

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Vopak Ship Dock 3 Extension Project, Baytown, TX</b>	2010	2012

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
<b>e Scope:</b> Design and commissioning of impressed current Cathodic Protection (CP) system. The reinforced concrete dock was supported by driven steel round piles. Electrical continuity was ensured by installing bond cables to the underside of the concrete cap. CP system included 4 deep anode ground beds installed on the shoreline, which were energized by 2 rectifier units. <b>Cost:</b> \$2M <b>Fee:</b> \$120K <b>Role:</b> Corrosion Engineer		

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Marty Tittlebaum, PH. D, PE</b>	13. ROLE IN THIS CONTRACT <b>Environmental Engineer</b>	14. YEARS EXPERIENCE a. TOTAL <b>44</b> b. WITH CURRENT FIRM <b>8</b>	
15. FIRM NAME AND LOCATION (City And State) <b>MSMM Engineering – New Orleans, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) BE, Civil Engineering, University of Louisville, 1971 ME, Civil Engineering, University of Louisville, 1972 Ph.D., Environmental Engineering, University of Louisville, 1979	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Professional Engineer: Civil & Environmental (1980), KY (9563) & LA (28532)		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) Dr. Marty Tittlebaum previously served as the Edward G. Schlieder Chair for Urban Waste Management and Research, as well as the lead professor of Civil and Environmental Engineering at Louisiana State University. Dr. Tittlebaum is a leading engineering expert in water and wastewater treatment and reuse, water quality analysis management planning, solid waste disposal, and hazard toxic radioactive waste (HTRW) investigations, identification, and disposal. Dr. Tittlebaum serves as our Principal Quality Control Engineer, and he reviews all design products, flood mitigation planning, TMDL development, BMP implementation and evaluation, and resiliency analysis in addition to HTRW field investigations.			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Ascension Parish Environmental Infrastructure Sewer Treatment Plant Design, Hillaryville, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2022                          2024	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>a</b> <i>Scope:</i> Development of a design-bid-build package (plans and specs) for the creation of a 1.8 million gallon per day wastewater treatment plant as part of the Federal Section 219 Environmental Infrastructure program. Services consisted of detailed civil/structural/mechanical/electrical/architectural/geotechnical analyses, cost estimating, value engineering, and full USACE review process including BCOES review. Dr. Tittlebaum oversaw the design process and developed the wastewater treatment processes, water quality analysis, and provided HTRW research for the chosen site. He also served as the quality control manager for the overall project, reviewing engineering submittal products that were provided to USACE. <b>Cost:</b> \$21.5M <b>Fee:</b> \$1.5M <b>Role:</b> Environmental Engineer Reviewer			
(1) TITLE AND LOCATION (City and State) <b>East Baton Rouge Environmental Infrastructure, Sewer Infrastructure Design, Baton Rouge, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2021                          2022	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>b</b> <i>Scope:</i> Development of a design-bid-build package (plans and specs) to project to evaluate the four on-site treatment ponds, advance a plan of action and develop plans and specifications for implementation of a new pump station and forcemain, and the closure of several existing ponds. Dr. Tittlebaum provided the water quality analysis and the quality control design for the project. He reviewed all design products before they were submitted to USACE. He reviewed the redline version of the specifications and also made edits to the specifications in Specs Intact. <b>Cost:</b> \$7.5 <b>Fee:</b> \$1.6M <b>Role:</b> Civil/Environmental Engineer Reviewer/ Quality Control Manager			
(1) TITLE AND LOCATION (City and State) <b>New Orleans International Airport Drainage Pump Station, New Orleans, LA</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2017                          2018	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>c</b> <i>Scope:</i> Our team provided multi-disciplinary design and environmental permitting for a new drainage pump station associated with the new terminal at the International Airport in New Orleans. The 600 cfs drainage design consisted of the development of a feasibility study/modeling study, detailed design and construction phase services. As the discharge tubes had to pass over a newly constructed Federal floodwall, Section 408 permitting was required. Dr. Tittlebaum provided the quality control design for the project. He reviewed all design submittals for accuracy/consistency and provided design comments to our engineering team prior to design submissions to the airport and the FAA. <b>Cost:</b> \$60M <b>Fee:</b> \$1.8M <b>Role:</b> Environmental Engineer & Quality Control			

## E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
<b>Steve Finegan, AIA</b>	<b>Architect</b>	<b>34</b>	<b>5</b>

15. FIRM NAME AND LOCATION (City And State)

**MSMM Engineering – New Orleans, LA**

16. EDUCATION (DEGREE AND SPECIALIZATION)

MS, Architecture, Tulane University, 1984  
BS, Architecture, Tulane University, 1980

17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)

Architect (1987): TX (25434), LA (3898), TN (106064), MS (2873), AL (5101)

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Mr. Finegan is a licensed architect with extensive recent Federal experience (USACE and the Air Force) providing architectural design services for new construction government office buildings, stand-alone facilities, drainage pump station safe houses and pump buildings, sewer treatment plants, and military facilities including labs, barracks, and munitions facilities. Additionally, Mr. Finegan has extensive experience providing construction phase services, including leading construction progress meetings, responding to contractor RFI's, reviewing and approving pay requests, and providing design during construction.

### 19. RELEVANT PROJECTS

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Replacement of Granger Lake Office Building, Granger TX</b>	<b>2019</b>	<b>2022</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Development of a design-bid-build package (plans and specs) for the creation of a new Lake office management building and demolition of the existing facilities. Design services included civil, structural, electrical, and mechanical engineering, as well as architectural and landscape architectural design. Mr. Finegan was the lead architectural designer for the project. He worked with USACE, and the Lake Management staff to develop a government office facility that met their needs and complied with the budget constraints. Mr. Finnegan developed the detailed design drawings in compliance with all UFC's and EM's and developed the project specifications in Specs Intact. He provided detailed architectural design for the facility inclusive of architectural treatments. **Cost:** \$3.2M **Fee:** \$358K **Role:** Architect of Record and Architectural Team Leader

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Cow Bayou Drainage Pump Station Complex Design – Orange County, TX</b>	<b>2020</b>	<b>2024</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Development of a 35% design package (plans, specs, and DDR) for a new 8,000 cfs drainage pump station complex consisting of multiple flood risk management reduction measures such as a pump station, safe house, floodwalls, and sector gate. Main responsibilities consisted of civil, structural, and architectural analyses. The task order was to provide a 35% level of design with anticipation of changing the project to a Design-Build RFP. Mr. Finegan provided the architectural design for the drainage pump station safe house. His design included all facilities required for the safe house, inclusive of restrooms, dormitory housing, and dining hall facilities. To develop the drawings, he followed USACE CADBIM policies and standards. **Cost:** \$325M **Fee:** \$1.3M **Role:** Lead Architect

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Ascension Parish Environmental Infrastructure Sewer Treatment Plant Design, Hillaryville, LA</b>	<b>2022</b>	<b>2024</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Development of a design-bid-build package (plans and specs) for the creation of a 1.8 million gallon per day wastewater treatment plant as part of the Federal Section 219 Environmental Infrastructure program. Services consisted of detailed civil/structural/mechanical/electrical/architectural/geotechnical analyses, cost estimating, value engineering, and full USACE review process including BCOES review. Mr. Finegan designed the 3,200 square foot stand-alone administration building (new construction) and all internal features (offices, lab, kitchen, bathrooms, warehouse, etc.) He also developed the project specifications using Specs Intact. **Cost:** \$21.5M **Fee:** \$1.5M **Role:** Lead Architect

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
<b>Andrew Doyle, PLA</b>	<b>Landscape Architect</b>	<b>9</b>	<b>1</b>

15. FIRM NAME AND LOCATION (City And State)

**Batture, LLC; New Orleans, Louisiana**

16. EDUCATION (DEGREE AND SPECIALIZATION)

**BLA/Landscape Architecture**

17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)

**CLARB/ LA/ #0739**

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Andrew Doyle, PLA is a Registered Professional Landscape Architect at Batture with a background in designing and implementing sustainable site interventions in the urban environment. He specializes in large scale ecological and transportation planning, sustainable urban design strategies, watershed management master planning, and green infrastructure-based stormwater management. He has extensive experience in designing site- and neighborhood- scale stormwater management and green infrastructure interventions for the specific conditions present in the Greater New Orleans area. Past projects focused on field data collection, regional mapping and GIS analysis, 2-D and 3-D H&H modeling, and site-specific detail design using digital modeling software. He skillfully prepares graphic-based representations using computer-based modeling and rendering software to articulate design ideas generated by multi-disciplinary project teams for the purpose of communicating innovative design strategies to the general public. Mr. Doyle's project experience includes water management design, permitting, and construction administration for both private and municipality clients.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>St. Anthony Green Streets – Programming and Design New Orleans, Louisiana</b>	<b>2020</b>	<b>2022</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Scope:</b> Landscape Design and H&H Modeling. \$13.4 Million project, overseeing all tasks including permitting, hydraulic and hydrologic modeling, and stormwater management design. St. Anthony Green Streets is part of the HUD funded Gentilly Resilience District. The project goal is to improve the resilience of the neighborhood. For the St. Anthony project, there is heavy emphasis on the reduction of subsidence and to better connect the parks to the neighborhood. Interventions will take place within the street Right of Ways and the two parks. <b>Fee:</b> \$1.6mil <b>Role:</b> Landscape Architect	<b>2020</b>	<b>2022</b>

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Blue &amp; Green Corridors New Orleans, Louisiana</b>	<b>ONGOING</b>	<b>N/A</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Scope:</b> Batture, LLC was asked by the project's managers to produce a comprehensive operations and maintenance manual. This document is intended to serve as a guideline for the City of New Orleans to maintain the project beyond its initial installation and establishment, which is the responsibility of the contractor. The nature of this project is complex, requiring coordination between numerous city departments such as Parks and Parkways, Sewerage and Water Board of New Orleans, and others, to properly maintain the diversity of green and grey infrastructure facilities and site amenities that will be installed. Mr. Doyle is acting as the project lead on behalf of Batture, LLC. <b>Fee:</b> \$374k <b>Role:</b> Landscape Architect	<b>ONGOING</b>	<b>N/A</b>

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Lakeview City Park Drainage Improvements Gretna, Louisiana</b>	<b>ONGOING</b>	<b>N/A</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE	<input checked="" type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Scope:</b> FEMA is providing the City of New Orleans and New Orleans City Park with funding to design and install a comprehensive strategy to improve the park's ability to receive, detain, and manage stormwater from the neighborhoods that surround it. This will also include improvements and expansions of the park's existing amenities such as the lagoon system. Batture, LLC is the prime consultant on this project leading a diverse, multi-disciplinary team. Mr. Doyle is providing support on several aspects of the project including site design and planning, landscape architecture, stormwater management planning and design, and civil engineering. <b>Fee:</b> \$890K <b>Role:</b> Landscape Architect	<b>ONGOING</b>	<b>N/A</b>

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>James H. Chustz, PLS</b>	13. ROLE IN THIS CONTRACT <b>Registered Land Surveyor</b>	14. YEARS EXPERIENCE a. TOTAL <b>48</b> b. WITH CURRENT FIRM <b>27</b>	
15. FIRM NAME AND LOCATION (City And State) <b>Chustz Surveying, LLC, New Roads, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) <b>LSU - Surveying</b>	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) <b>Registered Professional Land Surveyor – LA No. 4657, MS No. 2604</b>		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) <p>Mr. Chustz is a member of S.A.M.E., Hydrographic Society of America, American Association of Geodetic Surveying, ACSM, and the NSPS. He has been responsible for collecting and providing survey data to the USACE New Orleans District for over 20 years. Developing surveys for existing civil works structures, Mr. Chustz has extensive experience collecting survey cross sections and profiles, settlement mark readings, joint movement readings, joint alignment readings and piezometer readings. He has led hydrographic, overbank, horizontal distances and control data surveys that were produced and submitted in compliance with New Orleans District survey standards and USACE EMs.</p>			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Post Ida Grand Isle Surveys, Grand Isle, LA, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2021      N/A	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>a Registered Land Surveyor – Mr. Chustz was responsible for the overall management of this job. Chustz provided Static GPS, Single Beam and Multibeam Hydrographic, overbank, Aerial LiDAR, and Aerial Imagery surveys. Deliverables included LAS Files, an Orthomosaic, XYZ ASCII Files, and a Survey Report. Size: 6.6 Miles; Cost: \$199K</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Post Ida Emergency Services for Multibeam and LiDAR, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2021      N/A	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>b Registered Land Surveyor – Mr. Chustz was responsible for the overall management of this job. Chustz provided Multibeam Hydrographic, Aerial LiDAR, and Aerial Imagery surveys of the Mississippi River, locating obstructions after Hurricane Ida. Deliverables included Orthomosaics, ASCII Files, and a Survey Report. Size: 162 Miles; Cost: \$322K</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Survey and Monument the Mat Casting Field Boundary, LA MVK Contract W912EE-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2021      N/A	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>c Registered Land Surveyor – Mr. Chustz was responsible for the overall project management of this job. Chustz Surveying provided were Cadastral including ROW, Easements and Servitudes, and Boundary utilizing RTK, Ground-Based GPS, and Conventional Total Station methods. Deliverables included a survey plat signed and stamped by a licensed PLS, Property Descriptions, and Abstracts. Size: 2 Miles; Cost: \$40K</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Old River Control Structures High Water Monitoring, New Orleans District, LA, W912P8-15-D-0009</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES      CONSTRUCTION (if applicable) 2019      N/A	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>d Registered Land Surveyor – Mr. Chustz was responsible for the overall project management of this job. Chustz provided I&amp;E Monitoring Surveys at the four Old River Control Structures due to the 2019 high waters. The types of surveys conducted were Hydrographic Multibeam, DGPS, Aerial LiDAR, Overbanks, Digital Levels, RTK, C4G VRS and Topo using Total Stations and Data Collectors. Deliverables included Gridded XYZ Files. Cost: \$338K</b>		<input type="checkbox"/> Check if project performed with current firm	

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Eric Curson</b>	13. ROLE IN THIS CONTRACT <b>CAD/Microstation Drafter</b>	14. YEARS EXPERIENCE	
		a. TOTAL <b>22</b>	b. WITH CURRENT FIRM <b>9</b>

15. FIRM NAME AND LOCATION (City And State)

**MSMM Engineering - New Orleans, LA**

16. EDUCATION (DEGREE AND SPECIALIZATION) Some Classes: Purdue University Some Classes: Southeast College of Technology	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)
---	--

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

Mr. Curson is a CAD manager at MSMM where he is extremely familiar with providing project drawings in the Bentley MicroStation V8i (Version 8.11) drafting system. He has extensive Federal project experience encompassing a variety of USACE business lines inclusive of civil works projects, and he is familiar with providing all sheets in A/E/C Standard, and in compliance with USACE GIS Standards. In addition to Microstation, Mr. Curson is familiar with using ESRI ArcGIS and AutoCad Civil 3D.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State) <b>Cow Bayou Drainage Pump Station Complex Design, Orange, TX</b>	(2) YEAR COMPLETED PROFESSIONAL SERVICES 2020 CONSTRUCTION (if applicable) 2024	
--	--	--

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Development of a 35% design package (plans, specs, and DDR) for a new 8,000 cfs drainage pump station complex consisting of multiple flood risk management reduction measures such as a pump station, safe house, floodwalls, and sector gate. Main responsibilities consisted of civil, structural, and architectural analyses. The task order was to provide a 35% level of design with anticipation of changing the project to a Design-Build RFP. Mr. Curson was responsible for developing all the civil, structural, and architectural drawings for the project in Microstation V8i format. Given the New Orleans District provided the Electrical and Mechanical drawings, Mr. Curson was responsible for incorporating their drawings into the plan set and ensuring consistency in drafting. <b>Cost:</b> \$325M <b>Fee:</b> \$1.3M <b>Role:</b> CAD/Microstation Drafter	<input checked="" type="checkbox"/> Check if project performed with current firm
---	--

(1) TITLE AND LOCATION (City and State) <b>Design-Build RFP Development: 277K Levee Raise and Delta Pump Station – Dallas, TX</b>	(2) YEAR COMPLETED PROFESSIONAL SERVICES 2021 CONSTRUCTION (if applicable) 2023	
--	--	--

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Raised the top of the levees (22 miles) to meet a 277k cfs water surface elevation and designed new levee access roads; Levee Side Slope Flattening: The existing East and West levees had side slopes varying from approximately 2:8H:1V to 4H:1V. The side slopes will be flattened to 4H:1V along the entire length of the levees; Delta Pump Station: New pumps (2), new electrical building, new transformer, concrete curb and gutter, truck access, new retaining walls, new security fencing and gates. Mr. Curson provided the Microstation drafting for two separate Design-Build packages, one for the levee lift and side slope flattening and the other for the replacement of the Delta drainage pump station. <b>Cost:</b> \$35M <b>Fee:</b> \$1.4M <b>Role:</b> CAD/Microstation Drafter	<input checked="" type="checkbox"/> Check if project performed with current firm
---	--

(1) TITLE AND LOCATION (City and State) <b>Texas City I-Wall to T-Wall Conversion Design, Texas City, TX</b>	(2) YEAR COMPLETED PROFESSIONAL SERVICES 2022 CONSTRUCTION (if applicable) 2024	
---	--	--

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>Scope:</b> Development of a design-bid-build package (plans and specs) for approximately a mile of failed Federal floodwall conversion from an I-Wall to a T-wall on an active chemical refinery. Services rendered consist of Architectural, Civil and Geotechnical Engineering, and MCACES cost estimating. Mr. Curson was responsible for developing the project plans using CAD/Microstation Design Guidelines. He provided all of the drafting for the project, and provided the CAD drawings to USACE with the bid documents. <b>Cost:</b> \$15M <b>Fee:</b> \$1.8M <b>Role:</b> CAD/Microstation Drafter	<input checked="" type="checkbox"/> Check if project performed with current firm
---	--

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Adele Ray	3-D Modeling CAD BIM	20	2

15. FIRM NAME AND LOCATION (City And State)

**Stantec Consulting Services Inc. (Baton Rouge, LA)**

16. EDUCATION (DEGREE AND SPECIALIZATION)	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)
BA, Business Management	N/A

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

CAD technician/civil designer experience includes roadway, drainage, geometric, and civil/site designs, and detailing for shop drawings. Extensive background in roadway traffic control plans for the LADOTD. Utilizes Global Mapper to create surfaces for data collection in designs. Duties include preparation of conceptual plans and specifications, final plans, construction documents, and engineering 3D models. Develops rights-of-way drawings. Experienced with AutoCAD Civil 3D, Revit, MicroStation OpenRoads and OpenBuildings, and BIM360.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Pump Stations and Drainage Structures, West Shore Lake Pontchartrain HSDRRS, USACE New Orleans District, LA</b>	ONGOING	2024 (EST.)

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

- a **Scope:** Responsibilities included preparation of complete construction plans, including cover sheets, site plans, cross sections, profiles, and details. Produced 3D CAD products to communicate visually the functionality of the design with USACE. Prepared construction drawings following USACE CAD policies and procedures. Project provides full design services for two pumping stations with floodwalls, bypass gates, and levees. Utilized OpenBuildings to develop 3D models that are viewed using BIM 360. **Const.:** \$380M (est.) **Fee:** \$14.26M **Role:** 3-D Modeling CAD BIM

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Everglades Agriculture Area (EAA: A-2) Reservoir Pumping Station (S-623), USACE Jacksonville District, Palm Beach, FL</b>	2022	N/A

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

- b **Scope:** Responsible for preparation of complete construction plans, including cover sheets, site plans, cross sections, profiles, and details. Produced 3D CAD products to communicate visually functionality of design with USACE and SFWMD. Prepared construction drawings following USACE CAD policies and procedures. Project provides full design services for an above ground reservoir, pumping station, water control structures, and associated distribution canals. **Const.:** \$235M (est.) **Fee:** \$5.3M **Role:** 3-D Modeling CAD

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Pump Station and Drainage Structures, South Shore Drainage Project, City of Galveston, Galveston, TX</b>	ONGOING	2024 (EST.)

(3) DESCRIPTION (BRIEF SCOPE, SIZE, COST, ETC.) AND SPECIFIC ROLE

CHECK IF PROJECT PERFORMED WITH CURRENT FIRM

- c **Scope:** Responsible for developing design submittals for the pump station, storm sewer network, water and sewer upgrades, paving, and H&H, including cover sheets, site plans, cross sections, profiles, and details. Produced 3D CAD projects to communicate visually the functionality of the design with the City of Galveston. Utilized Revit to develop 3D models that are viewed using BIM 360. **Const.:** \$45M (est.) **Fee:** \$4M **Role:** 3-D Modeling CAD BIM

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Baton Rouge SSO Program, LADOTD, Baton Rouge, LA</b>	2014	N/A

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

Check if project performed with current firm

- d **Scope:** Composed plans and all necessary documents for traffic control permitting, utility permitting, and railroad permitting. Assigned repairs to adequately correct sewer system overflow problems in project area. Designed reroute exhibits to prevent obstruction conflicts to incorporate rehabilitation recommendations. Produced aerial images with survey data for access servitude locations. Calculated quantities and produced reference charts to be submitted with construction drawings. **Fee:** Unavailable **Role:** 3-D Modeling CAD

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**

(COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Laura Lienhop</b>	13. ROLE IN THIS CONTRACT <b>CIM Modeler</b>	14. YEARS EXPERIENCE a. TOTAL <b>40</b>	b. WITH CURRENT FIRM <b>37</b>
----------------------------------	---	---	-----------------------------------

15. FIRM NAME AND LOCATION (City And State)

**Stantec Consulting Services Inc. (New Orleans, LA)**

16. EDUCATION (DEGREE AND SPECIALIZATION) <b>AA, Drafting and Design Technology</b>	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) <b>N/A</b>
--	--

18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)

**CIM Modeling and Computer Aided Design and Drafting (CADD) services manager** responsible for CIM/CADD team management as well as maintenance of the CADD network. Proficient in using CIM, CADD, and other engineering software to produce plan packages for USACE civil works and military programs projects, landfills, ash ponds, earth and rock fill dams, embankments, structural and electrical plans, geologic mapping and monitoring well installation, and computer-generated contour plots. Software experience includes AutoDesl products AutoCAD LDD, Map 3D, Civil 3D, AutoTURN, Navisworks, Micro-Station, IPLOT, OpenRoads, OpenBuildings, Bluebeam, BIM 360, and Bentley MicroStation Versions 7, V8, V8 XM, and V8i. Experience in civil, mechanical, and structural drafting, design, and management for pumping stations, water, wastewater, pipelines, wells, and roadwork. Work includes pump station projects in Mississippi and Louisiana. Proficient in Microsoft office suite, Photoshop, I-Plot, ProjectWise, and ArcView. Certification: Autodesk Civil 3D.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Pump Stations and Drainage Structures, West Shore Lake Pontchartrain HSDRRS, USACE New Orleans District, LA</b>	<b>ONGOING</b>	<b>2024 (EST.)</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

 Check if project performed with current firm

**Scope:** Worked with USACE to setup software and standards. Project us utilizing Micro-station v8i, OpenRoads Connect, OpenBuildings Connect, OpenPlant, ProjectWise, Navisworks for collaboration, and later BIM 360I softwares. Managed modeling team, providing training pertaining to the software and USACE workspace and standards. Set up workspaces and printing using psets and ProjectWise renditions. CIM modeling included site layouts at pumping stations and gates using OpenRoads for channels, roads, surfaces, T-walls, parking lot, and drainage. Provided coordination and modeling for structures using OpenBuilding. Modeled 3D equipment to be used by the mechanical engineers. Supported borings, benchmarks, keymaps, and preloads (wick drains and horizontal drains). Closely coordinated with subconsultant of the walls tying into the levees. Participated in client and internal reviews, including utilizing DrChecks and multidiscipline coordination reviews. **Const.: \$380M Fee: \$14.26M Role: CIM Modeler**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Mid-Breton Sediment Diversion Project, Coastal Protection and Restoration Authority, Plaquemines Parish, LA</b>	<b>ONGOING</b>	<b>2028 (EST.)</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

 Check if project performed with current firm

**Scope:** Responsibilities included setting up project, project templates, project standards, and modeling. Utilized Civil 3D, AutoCAD, and Revit. Project is intended to divert sediment rich water from the Mississippi River to create new land in the Breton Sound Basin. Project features will include a gated diversion control structure in line with a realigned segment of Mississippi River Levee, diversion channel and conveyance levees, inlet and outfall channels, and new segments of state highway to connect a new bridge. **Const.: \$660M (est.) Fee: \$39M Role: CIM Modeler**

(1) TITLE AND LOCATION (City and State)	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (if applicable)
<b>Mississippi River Re-Introduction into Bayou Lafourche, Pumping Capacity Improvements Project, Bayou Lafourche Freshwater District, Donaldsonville, LA</b>	<b>ONGOING</b>	<b>2025 (EST.)</b>

(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE

 Check if project performed with current firm

**Scope:** Provided civil design and modeling utilizing AutoCAD and Civil 3D. Responsible for all civil drawings and modeling for above and below grade pipe from pumping station to Bayou Lafourche. Work included site plans, utilities, graded paving, plan, and profiles, among others. Set up project, project templates, project standards, and modeling. Provided coordination between software, subconsultants, and designers of river inlet, control structure, conveyance channel, back control structure, site drainage, and utility relocation. **Const.: \$100M (est.) Fee: \$7M Role: CIM Modeler**

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Silong Lu, PhD, PE, D.WRE</b>	13. ROLE IN THIS CONTRACT <b>Hydrologist</b>	14. YEARS EXPERIENCE a. TOTAL <b>34</b>	
15. FIRM NAME AND LOCATION (City And State) <b>Dynamic Solutions, LLC– Knoxville, TN</b>		b. WITH CURRENT FIRM <b>11</b>	
16. EDUCATION (DEGREE AND SPECIALIZATION)  PhD, Environmental Engineering & Science, Clemson University ME, Water Resources, China Institute of Water Resources Hydropower BE, Hydraulic & Hydropower Engineering, Hohai University		17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE)  Professional Engineer: FL (#69540), GA (#032171)	
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)  Dr. Lu is a registered Professional Engineer and a Diplomate of the American Academy of Water Resources Engineers (AAWRE). He has 34 years of research and consulting experience in watershed hydrology, groundwater hydrogeology, surface water and coastal hydraulics and hydrodynamics. His expertise includes large-scale, complex watershed modeling, multi-dimensional hydraulic and hydrodynamic modeling, sediment transport, water quality analysis and modeling. He led numerous watershed and water quality modeling studies in Florida, South Carolina, Georgia, Alabama, Louisiana, Texas, Oklahoma, and California. Dr. Lu has mastered numerous watershed, surface water, and groundwater models including HSPF/LSPC, HEC-HMS, HEC-RAS, MIKE-SHE, MIKE HYDRO, HEC-HMS, and SWMM.			
19. RELEVANT PROJECTS			
(1) TITLE AND LOCATION (City and State) <b>Broward County Water Preserve Areas Seepage Model Development, USACE Jacksonville District, FL</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>Scope:</b> Led development and calibration of a fully coupled MIKE-SHE /MIKE HYDRO surface water hydrologic/hydraulic and groundwater model for the BCWPA C-11 Impoundment and the surrounding area and develop a WASH3D groundwater model to optimize depth of the seepage canal, the canal's control stage, use of the pump station to quantify the seepage flow to the seepage canal and size the pump station for with-project condition scenarios. The models were used to evaluate the level of service of Flood Risk Management/Protection for the area from construction of the impoundment and to aid in canal and pump design. <b>Cost:</b> \$713,785 <b>Fee:</b> \$713,785 <b>Role:</b> Hydrologist		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>EFDC+ Hydrodynamic and Salinity Modeling for Jacksonville Harbor Navigation Channel Deepening Project, USACE Jacksonville District, FL</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2020</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>Scope:</b> Developed HSPF hydrologic models to better calibrate seven key tributaries to the observed data to provide boundary condition flows to an 3-D EFDC hydrodynamic model of the entire St Johns River, FL. Used Point Estimation Method (PEM) to conduct uncertainty analysis to quantify the upper and lower uncertainty bounds of the salinity simulations at key locations in the main stem and tributaries with consideration of the uncertainties associated with the offshore salinity boundary, fresh water inflows from watershed, and bathymetry. <b>Cost:</b> \$915,836 <b>Fee:</b> \$915,836 <b>Role:</b> Hydrologist		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Twin Marsh Wetland Reserve Easement (WRE), USACE Jacksonville District, FL</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2020</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>Scope:</b> Developed a linked hydrologic HSPF and SWMM hydraulic model and provided overall flood protection technical guidance for the Twin Marsh WRE in Indian River County, Florida. Project effort included field survey and measurement, data collection and analysis, understanding historical and current hydrological and ecological conditions of the site, hydrological and hydraulic model development, design storm and flood analysis, long term simulations with hydrological frequency analysis, alternative formulation and evaluation, ecological community analysis. <b>Cost:</b> \$411,710 <b>Fee:</b> \$411,710 <b>Role:</b> Hydrologist		<input type="checkbox"/> Check if project performed with current firm	

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Nathan A. Quick, PG</b>	13. ROLE IN THIS CONTRACT <b>Geologist</b>	14. YEARS EXPERIENCE	
		a. TOTAL <b>5</b>	b. WITH CURRENT FIRM <b>1</b>

15. FIRM NAME AND LOCATION (*City And State*)

**Eustis Engineering L.L.C. – Baton Rouge, LA**

16. EDUCATION (*Degree and Specialization*)

MS, Geology, University of Louisiana, 2018  
BS, Geology, Millsaps College, 2013

17. CURRENT PROFESSIONAL REGISTRATION (*State and Discipline*)

Professional Geoscientist: LA (1287), TX (15230)

18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, Etc.*)

Mr. Quick worked two geophysics internships in Texas and, upon graduating with his Master of Science in Geology, spent three years as a senior staff geologist for a consulting and geophysical engineering firm in Baton Rouge, Louisiana. He currently serves an important role as a Project Geologist in Eustis Engineering's Baton Rouge office. As a registered geologist and practitioner, he has developed a strong understanding of the local geology of Louisiana. **Certifications:** OSHA 40-hour HAZWOPER; OSHA 10-hour Construction Safety; TWIC Card

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION ( <i>City and State</i> ) <b>USACE - Claiborne Island Seepage Remediation, Ascension Parish, LA</b>	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
	2022	N/A

(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE <b>Scope:</b> Eustis Engineering performed electrical resistivity tomography (ERT) to address potential seepage issues within the subject levee. This subsurface investigation was performed in accordance with standard ASTM practices for geophysical work. It comprised seven roll-along surveys using a SuperSting™ R8 WiFi with Tablet Controller, including 84 electrodes with 4.92 feet (1.5 meters) of spacing. Nathan was the project geologist for this investigation. His responsibilities included designing the geophysical survey, gathering the ERT data in the field, and processing and interpreting the results of the geophysical data. <b>Cost (Eustis' Fee): \$15M Role:</b> Geologist	<input type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )

(1) TITLE AND LOCATION ( <i>City and State</i> ) <b>USACE - Catfish Point Control Structure, Water Well Replacement, Cameron Parish, LA</b>	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
	Ongoing	Ongoing

(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE <b>Scope:</b> For this project, Eustis Engineering is providing a variety of construction materials testing services including soil testing to determine soil properties, specifically water content; visual classification; grain size analysis; hydrometer; organic soils testing; Atterberg liquid and plastic limits; laboratory compaction of sand, clay, and aggregate; and density testing. We are also performing field density testing using a nuclear density gauge. Mr. Quick is tasked with coordinating with the field technicians, reviewing their reports, and analyzing the results of the testing. <b>Cost (Eustis' Fee): \$6K (to date) Role:</b> Geologist	<input type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )

(1) TITLE AND LOCATION ( <i>City and State</i> ) <b>USACE - Celotex Levee Raise and Seepage Remediation, Jefferson Parish, LA</b>	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
	2022	N/A

(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE <b>Scope:</b> The purpose of this exploration was evaluation of seepage for the USACE. Eustis Engineering performed four soil borings and four cone penetration tests (CPTs) within the existing Mississippi River levee. Preparation by Eustis Engineering for this work included the development of a Drilling Program Plan which had to be approved by the USACE's risk management center. Mr. Quick served as the registered professional geologist on site to ensure the safety and quality of penetrating the levee. <b>Cost (Eustis' Fee): \$117K (estimated) Role:</b> Geologist	<input type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )

(1) TITLE AND LOCATION ( <i>City and State</i> ) <b>USACE - East Storm Levee and Oyster Creek, Freeport, TX</b>	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
	Ongoing	N/A

(3) DESCRIPTION ( <i>Brief scope, size, cost, etc.</i> ) AND SPECIFIC ROLE <b>Scope:</b> Final anticipated drilling for this project is expected to be 43 borings totaling 4,010 feet of depth and 52 cone penetration tests (CPTs) totaling 3,690 feet. Hazardous materials are anticipated to be encountered at eight boring and eight CPT locations, and Eustis Engineering prepared a site-specific safety plan to deal with this situation. Samples from the borings will be subjected to a variety of laboratory tests including the crumb test of dispersion. Mr. Quick assisted with the laboratory soil analyses for this project. <b>Cost (Eustis' Fee): \$1.3M (estimated) Role:</b> Geologist	<input type="checkbox"/> Check if project performed with current firm	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Julian A. Chustz, PLS</b>	13. ROLE IN THIS CONTRACT <b>GIS Analyst</b>	14. YEARS EXPERIENCE <b>14</b>	
15. FIRM NAME AND LOCATION (City And State) <b>Chustz Surveying, LLC, New Roads, LA</b>		a. TOTAL <b>14</b>	b. WITH CURRENT FIRM <b>14</b>
16. EDUCATION (DEGREE AND SPECIALIZATION) <b>B.S. Geomatics – Nicholls State University</b>	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) <b>Registered Professional Land Surveyor – LA No. 5251</b>		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)  Mr. Chustz is a member of S.A.M.E. and receives annual training in Arc GIS, MicroStation, AutoCAD, GPS, Single Beam and Multibeam Processing (HYPACK), LiDAR, Management Resources, UAS Operations.			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Post Ida Grand Isle Surveys, Grand Isle, LA, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b> CONSTRUCTION (if applicable) <b>N/A</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  a <b>GIS Analyst</b> - Mr. Chustz was responsible for developing the submittals utilizing Arc GIS, data coordination and QA/QC of the survey deliverables. Chustz provided Static GPS, Single Beam and Multibeam Hydrographic, overbank, Aerial LiDAR, and Aerial Imagery surveys. Deliverables included LAS Files, an Orthomosaic, XYZ ASCII Files, and a Survey Report. Size: 6.6 Miles; Cost: \$199K			
(1) TITLE AND LOCATION (City and State) <b>Post Ida Emergency Services for Multibeam and LiDAR, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b> CONSTRUCTION (if applicable) <b>N/A</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  b <b>GIS Analyst</b> - Mr. Chustz was responsible for developing the initial imagery utilizing Arc GIS, along with the aerial data coordination/collection. Chustz provided Multibeam Hydrographic, Aerial LiDAR, and Aerial Imagery surveys of the Mississippi River, locating obstructions after Hurricane Ida. Deliverables included Orthomosaics, ASCII Files, and a Survey Report. Size: 162 Miles; Cost: \$322K			
(1) TITLE AND LOCATION (City and State) <b>Emergency Grand Isle Post Hurricane Zeta LiDAR Surveys, Grand Isle, LA, USACE, New Orleans District</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b> CONSTRUCTION (if applicable) <b>N/A</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  c <b>GIS Analyst</b> - Mr. Chustz was responsible for development of the aerial plan in Arc GIS and the final QA/QC of deliverables. Chustz Surveying provided emergency surveys consisting of Aerial LiDAR Data and Aerial Imagery along the Grand Isle Dune System utilizing GPS, and our Unmanned Aerial Systems (UAS). Deliverables included a Detailed Survey Report, LAS Files, GPS Network Reports, an Orthomosaic, and ASCII files. Size: 395 Acres; Cost: \$29K			
(1) TITLE AND LOCATION (City and State) <b>Old River Control Structures High Water Monitoring, New Orleans District, LA, W912P8-15-D-0009</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2019</b> CONSTRUCTION (if applicable) <b>N/A</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  d <b>GIS Analyst</b> - Mr. Chustz was responsible for development of the aerial plan in Arc GIS, data coordination and the final QA/QC of deliverables. Chustz provided I&E Monitoring Surveys at the four Old River Control Structures due to the 2019 high waters. The types of surveys conducted were Hydrographic Multibeam, DGPS, Aerial LiDAR, Overbanks, Digital Levels, RTK, C4G VRS and Topo using Total Stations and Data Collectors. Deliverables included Gridded XYZ Files. Cost: \$338K			
(1) TITLE AND LOCATION (City and State) <b>LPV Mitigation: Milton Island, Bayou Sauvage, and Turtle Bayou Marsh Creation Sites, USACE, New Orleans</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2018</b> CONSTRUCTION (if applicable) <b>N/A</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  e <b>GIS Analyst</b> - Mr. Chustz was responsible for data coordination and the final QA/QC of deliverables. Chustz Surveying provided High-Resolution LiDAR Data Acquisition along with RGB and NIR Aerial Imagery, and Topographic Surveys utilizing GPS, RTK, and our UAS platforms. Deliverables included a Survey Report, LAS LiDAR Files, GPS Network Reports, an Orthomosaic, and Industry Standard ASCII files. Size: 560 Acres; Cost: \$147K			

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Blake Conner</b>	13. ROLE IN THIS CONTRACT <b>Topographic Survey Party Chief</b>	14. YEARS EXPERIENCE a. TOTAL <b>8</b> b. WITH CURRENT FIRM <b>8</b>
15. FIRM NAME AND LOCATION (City And State) <b>Chustz Surveying, LLC, New Roads, LA</b>		
16. EDUCATION (DEGREE AND SPECIALIZATION) <b>High School Graduate</b>	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) <b>N/A</b>	
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) <p>Mr. Conner leads one of the 3-person topographic survey parties that Chustz employs. He is responsible for compiling the field data into appropriate digital format for us in various government software and for analyzing the field data and preparing instrumentation evaluation reports with photos and documentation of the site visit by engineers. Annual training in Navigation Software, GPS, and Quality Management; Certified in First Aid/CPR</p>		
<b>19. RELEVANT PROJECTS</b>		
(1) TITLE AND LOCATION (City and State) <b>LA 73 Bayou Manchac Bridge, Baton Rouge, LA LADOTD, H.012563.5</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2022</b> CONSTRUCTION (if applicable) <b>N/A</b>
a (3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><b>Topographic Survey Party Chief</b> – Mr. Conner was responsible for supervision of the topographic field crew and QA/QC of the gathered field data. The types of surveys that Chustz provided on the project were Topographic, Aerial LiDAR, Static GPS, and RTK. Deliverables included Microstation InRoads DGN, DTM, and ALG files, GPS Photos, and ASCII Files. Size: 23 Acres; Cost: \$101K</p>		
(1) TITLE AND LOCATION (City and State) <b>Post Ida Grand Isle Surveys, Grand Isle, LA, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b> CONSTRUCTION (if applicable) <b>N/A</b>
b (3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><b>Topographic Survey Party Chief</b> – Mr. Conner was responsible for supervision of the field crew and QA/QC of field data. Chustz provided Static GPS, Single Beam and Multibeam Hydrographic, overbank, Aerial LiDAR, and Aerial Imagery surveys. Deliverables included LAS Files, an Orthomosaic, XYZ ASCII Files, and a Survey Report. Size: 6.6 Miles; Cost: \$199K</p>		
(1) TITLE AND LOCATION (City and State) <b>Post Ida Emergency Services for Multibeam and LiDAR, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b> CONSTRUCTION (if applicable) <b>N/A</b>
c (3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><b>Topographic Survey Party Chief</b> – Mr. Conner was responsible for supervision of the field crew and QA/QC of field data. Chustz provided Multibeam Hydrographic, Aerial LiDAR, and Aerial Imagery surveys of the Mississippi River, locating obstructions after Hurricane Ida. Deliverables included Orthomosaics, ASCII Files, and a Survey Report. Size: 162 Miles; Cost: \$322K</p>		
(1) TITLE AND LOCATION (City and State) <b>Oyster Lake Marsh Creation and Nourishment, Cameron, LA, Louisiana Coastal Protection and Restoration Authority</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2020</b> CONSTRUCTION (if applicable) <b>N/A</b>
d (3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><b>Topographic Survey Party Chief</b> – Mr. Conner was responsible for supervision of the topographic field crew and QA/QC of the collected topographic field data. Chustz provided topographic, hydrographic, and geophysical surveys. High-Resolution Aerial LiDAR was acquired with our Riegl Ricopter UAS platform. Deliverables included GIS data and 3D digital maps. Size: 1.8 Sq. Miles; Cost: \$351K</p>		
(1) TITLE AND LOCATION (City and State) <b>LPV Mitigation: Milton Island, Bayou Sauvage, and Turtle Bayou Marsh Creation Sites, USACE, New Orleans District</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2018</b> CONSTRUCTION (if applicable) <b>N/A</b>
e (3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><b>Topographic Survey Party Chief</b> – Mr. Conner was responsible for supervision of the topographic field crew and management of the data quality control for the topographic Data. Chustz Surveying provided High-Resolution LiDAR Data Acquisition along with RGB and NIR Aerial Imagery, and Topographic Surveys utilizing GPS, RTK, and our UAS platforms. Deliverables included a Survey Report, LAS LiDAR Files, GPS Network Reports, an Orthomosaic, and Industry Standard ASCII files. Size: 560 Acres; Cost: \$147K</p>		

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Lonnie Dupont</b>	13. ROLE IN THIS CONTRACT <b>Topographic Survey Party Chief</b>	14. YEARS EXPERIENCE a. TOTAL <b>26</b> b. WITH CURRENT FIRM <b>22</b>
15. FIRM NAME AND LOCATION (City And State) <b>Chustz Surveying, LLC, New Roads, LA</b>		
16. EDUCATION (DEGREE AND SPECIALIZATION) <b>High School Graduate</b>	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) <b>N/A</b>	
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) <p>Mr. Dupont leads one of the 3-person topographic survey parties that Chustz employs. In addition to leading the survey crew, Mr. Dupont has extensive experience installing instrumentation devices such as piezometers, inclinometers, stream gages and corrosion meters. He is also responsible for analyzing the collected field data and preparing the instrumentation evaluation reports with photos and documentation of the site visit by engineers. Annual training in Navigation Software, GPS, and Quality Management; Certified in First Aid/CPR</p>		
<b>19. RELEVANT PROJECTS</b>		
(1) TITLE AND LOCATION (City and State) <b>LA 73 Bayou Manchac Bridge, Baton Rouge, LA LADOTD, H.012563.5</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2022</b> CONSTRUCTION (if applicable) <b>N/A</b>
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><input checked="" type="checkbox"/> Topographic Survey Party Chief – Mr. Dupont was responsible for supervision of the topographic survey field crew and QA/QC of field data. The types of surveys that Chustz provided were Topographic, Aerial LiDAR, Static GPS, and RTK. Deliverables included Microstation InRoads DGN, DTM, and ALG files, GPS Photos, and ASCII Files. Size: 23 Acres; Cost: \$101K</p>		
(1) TITLE AND LOCATION (City and State) <b>Post Ida Grand Isle Surveys, Grand Isle, LA, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b> CONSTRUCTION (if applicable) <b>N/A</b>
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><input checked="" type="checkbox"/> Topographic Survey Party Chief – Mr. Dupont was responsible for supervision of the topographic survey field crew and QA/QC of field data. Chustz provided Static GPS, Single Beam and Multibeam Hydrographic, overbank, Aerial LiDAR, and Aerial Imagery surveys. Deliverables included LAS Files, an Orthomosaic, XYZ ASCII Files, and a Survey Report. Size: 6.6 Miles; Cost: \$199K</p>		
(1) TITLE AND LOCATION (City and State) <b>Post Ida Emergency Services for Multibeam and LiDAR, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b> CONSTRUCTION (if applicable) <b>N/A</b>
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><input checked="" type="checkbox"/> Topographic Survey Party Chief – Mr. Dupont was responsible for supervision of the topographic survey field crew and QA/QC of field data. Chustz provided Multibeam Hydrographic, Aerial LiDAR, and Aerial Imagery surveys of the Mississippi River, locating obstructions after Hurricane Ida. Deliverables included Orthomosaics, ASCII Files, and a Survey Report. Size: 162 Miles; Cost: \$322K</p>		
(1) TITLE AND LOCATION (City and State) <b>Emergency Grand Isle Post Hurricane Zeta LiDAR Surveys, Grand Isle, LA, USACE, New Orleans District</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b> CONSTRUCTION (if applicable) <b>N/A</b>
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><input checked="" type="checkbox"/> Topographic Survey Party Chief – Mr. Dupont was responsible for supervision of the topographic survey field crew and QA/QC of field data. Chustz Surveying provided emergency surveys consisting of Aerial LiDAR Data and Aerial Imagery along the Grand Isle Dune System utilizing GPS, and our Unmanned Aerial Systems (UAS). Deliverables included a Detailed Survey Report, LAS Files, GPS Network Reports, an Orthomosaic, and ASCII files. Size: 395 Acres; Cost: \$29K</p>		
(1) TITLE AND LOCATION (City and State) <b>Old River Control Structures High Water Monitoring, New Orleans District, LA, W912P8-15-D-0009</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2019</b> CONSTRUCTION (if applicable) <b>N/A</b>
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <p><input checked="" type="checkbox"/> Topographic Survey Party Chief – Mr. Dupont was responsible for supervision of the topographic survey field crew and QA/QC of field data. Chustz provided I&amp;E Monitoring Surveys at the four Old River Control Structures due to the 2019 high waters. The types of surveys conducted were Hydrographic Multibeam, DGPS, Aerial LiDAR, Overbanks, Digital Levels, RTK, C4G VRS and Topo using Total Stations and Data Collectors. Deliverables included Gridded XYZ Files. Cost: \$338K</p>		

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Craig Villemarette</b>	13. ROLE IN THIS CONTRACT <b>Hydrographic Survey Party Chief</b>	14. YEARS EXPERIENCE a. TOTAL <b>26</b>	b. WITH CURRENT FIRM <b>22</b>
15. FIRM NAME AND LOCATION (City And State) <b>Chustz Surveying, LLC, New Roads, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) <b>High School Graduate</b>	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) <b>N/A</b>		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.) <p>Mr. Villemarette leads the 2-person hydrographic survey party at Chustz. He also produces CAD and excel plots and plate from the compiled data that his crew collects in the field. He also conducts annual training in Multibeam, Singlebeam, GPS, Terrestrial LiDAR and Boating Safety; Certified First Aid/CPR.</p>			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Post Ida Grand Isle Surveys, Grand Isle, LA, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>a Hydrographic Survey Party Chief – Mr. Villemarette was responsible for supervision of the field crew and QA/QC of field data. Chustz provided Static GPS, Single Beam and Multibeam Hydrographic, overbank, Aerial LiDAR, and Aerial Imagery surveys. Deliverables included LAS Files, an Orthomosaic, XYZ ASCII Files, and a Survey Report. Size: 6.6 Miles; Cost: \$199K</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Post Ida Emergency Services for Multibeam and LiDAR, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>b Hydrographic Survey Party Chief – Mr. Villemarette was responsible for supervision of the hydrographic field crew and QA/QC of hydrographic field data collected. Chustz provided Multibeam Hydrographic, Aerial LiDAR, and Aerial Imagery surveys of the Mississippi River, locating obstructions after Hurricane Ida. Deliverables included Orthomosaics, ASCII Files, and a Survey Report. Size: 162 Miles; Cost: \$322K</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Automated Revetment Surveys on the Mississippi, Atchafalaya, and Red Rivers, New Orleans District</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>c Hydrographic Survey Party Chief – Mr. Villemarette was responsible for supervision of the hydrographic field crew and quality control of the hydrographic data collected. Chustz provided Multibeam surveys for 320 miles of riverbank on the Mississippi River, and 130 miles on the Atchafalaya River and Red River. DGPS and Electronic River Gauges were used as control for this job. River gauges were downloaded and prorated to each half mile of river to produce the most accurate data. Cost: \$1.2M</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Old River Control Structures High Water Monitoring, New Orleans District, LA, W912P8-15-D-0009</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2019</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>d Hydrographic Survey Party Chief – Mr. Villemarette was responsible for supervision of the hydrographic survey field crew and QA/QC of the hydrographic field data collected. Chustz provided I&amp;E Monitoring Surveys at the four Old River Control Structures due to the 2019 high waters. The types of surveys conducted were Hydrographic Multibeam, DGPS, Aerial LiDAR, Overbanks, Digital Levels, RTK, C4G VRS and Topo using Total Stations and Data Collectors. Deliverables included Gridded XYZ Files. Cost: \$338K</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>LPV Mitigation: Milton Island, Bayou Sauvage, and Turtle Bayou Marsh Creation Sites, USACE, New Orleans District</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2018</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <b>e Hydrographic Survey Party Chief – Mr. Villemarette was responsible for supervision of the hydrographic field crew and QA/QC of hydrographic field data collected. Chustz Surveying provided High-Resolution LiDAR Data Acquisition along with RGB and NIR Aerial Imagery, and Hydrographic Surveys. Deliverables included a Survey Report, LAS LiDAR Files, GPS Network Reports, an Orthomosaic, and Industry Standard ASCII files. Size: 560 Acres; Cost: \$147K</b>		<input type="checkbox"/> Check if project performed with current firm	

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME <b>Tom Odom, AS</b>	13. ROLE IN THIS CONTRACT <b>GPS Survey Party Chief</b>	14. YEARS EXPERIENCE a. TOTAL <b>28</b>	b. WITH CURRENT FIRM <b>4</b>
15. FIRM NAME AND LOCATION (City And State) <b>Chustz Surveying, LLC, New Roads, LA</b>			
16. EDUCATION (DEGREE AND SPECIALIZATION) <b>Associate of Science, Drafting and Design</b>	17. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) <b>N/A</b>		
18. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, Etc.)  Mr. Odom leads the 2-person Global Positioning System (GPS) party capable of performing various types of GPS surveys. He has extensive experience utilizing GPS, total stations, terrestrial scanners, and digital levels. He is certified in terrestrial LiDAR and Boating Safety; Certified First Aid/CPR			
<b>19. RELEVANT PROJECTS</b>			
(1) TITLE AND LOCATION (City and State) <b>Post Ida Emergency Services for Multibeam and LiDAR, USACE, New Orleans District, MVN Contract W912P8-20-D-0001</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>GPS Survey Party Chief – Mr. Odom was responsible for supervision of the GPS field crew and QA/QC of the GPS field data collected. Chustz provided Multibeam Hydrographic, Aerial LiDAR, and Aerial Imagery surveys of the Mississippi River, locating obstructions after Hurricane Ida. Deliverables included Orthomosaics, ASCII Files, and a Survey Report. Size: 162 Miles; Cost: \$322K</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Automated Revetment Surveys on the Mississippi, Atchafalaya, and Red Rivers, New Orleans District</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>GPS Survey Party Chief – Mr. Odom was responsible for supervision of the GPS field crew and general QA/QC. Chustz provided Multibeam surveys for 320 miles of riverbank on the Mississippi River, and 130 miles on the Atchafalaya River and Red River. DGPS and Electronic River Gauges were used as control for this job. River gauges were downloaded and prorated to each half mile of river to produce the most accurate data. Cost: \$1.2M</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Mississippi River General Hydrographic Surveys, Vicksburg District, AR, MS, LA, W912EE-17-D-0008</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>GPS Survey Party Chief – Mr. Odom was responsible for the GPS field crew supervision and QA/QC of Single Beam data collected. The types of surveys that CSI provided were Automated Hydrographic utilizing Multibeam and Single Beam technology positioned by DGPS for 297 miles along the banks of the Mississippi River. Deliverables included Gridded XYZ files and Benchmark Description Forms Transmitted via the USACE File Transfer System. Cost: \$550K</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Miss. River Revetments, Bank Grading, Memphis District, TN, AR, KY, MO, MS, LA, W912EQ-16-D-0007</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2019</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>GPS Survey Party Chief – Mr. Odom was responsible for GPS field crew supervision and QA/QC of Single Beam and RTK data. CSI provided Single Beam Hydrographic Surveys of the Mississippi River using DGPS and Temporary Staff Gauges, along with RTK surveys for Volume Computations, Cross Section Plots, and Dredge Material Measurements. Cost: \$798K</b>		<input type="checkbox"/> Check if project performed with current firm	
(1) TITLE AND LOCATION (City and State) <b>Old River Control Structures High Water Monitoring, New Orleans District, LA, W912P8-15-D-0009</b>		(2) YEAR COMPLETED PROFESSIONAL SERVICES <b>2019</b>	
(3) DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE  <b>GPS Survey Party Chief – Mr. Odom was responsible for supervision of the GPS field crew and QA/QC of field data. Chustz provided I&amp;E Monitoring Surveys at the four Old River Control Structures due to the 2019 high waters. The types of surveys conducted were Hydrographic Multibeam, DGPS, Aerial LiDAR, Overbanks, Digital Levels, RTK, C4G VRS and Topo using Total Stations and Data Collectors. Deliverables included Gridded XYZ Files. Cost: \$338K</b>		<input type="checkbox"/> Check if project performed with current firm	

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
<b>Chantrell Carriere</b>	<b>Project Manager</b>	<b>16</b>	<b>5</b>

15. FIRM NAME AND LOCATION (*City And State*)

**MSMM Engineering – New Orleans, LA**

16. EDUCATION (*Degree And Specialization*)

**BS, Computer Science; University of New Orleans (2006)**

17. CURRENT PROFESSIONAL REGISTRATION (*State And Discipline*)

18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, Etc.*)

Ms. Chantrell Carriere is an experienced project manager at MSMM with extensive experience at the local, State, and Federal level managing multi-million-dollar projects and programs. Ms. Carriere currently provides project management services for the United States Army Corps of Engineers for one of their largest programs in the Comite River Diversion in Baton Rouge, LA. She is responsible for preparing project documents for upward reporting, maintaining project schedules, and tracking actual obligations for project features. She is also responsible for coordinating with non-Federal partners and stakeholders. She has previously served as the lead project manager within the Project Delivery Unit at the New Orleans Sewerage and Water Board and as a Senior Project Manager with the Coastal Restoration and Protection Authority. Ms. Carriere has managed several large-scale civil works projects inclusive of projects involving floodgates, floodwalls, levees, navigation structures, drainage canals and structures, pumping stations and marine structures such as fenders and guide walls.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION ( <i>City and State</i> )	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>Comite River Diversion Project, Baton Rouge, LA</b>	<b>ONGOING</b>	<b>ONGOING</b>

(3) DESCRIPTION (*Brief scope, size, cost, etc.) AND SPECIFIC ROLE*

Check if project performed with current firm

**Scope:** Ms. Carriere currently serves as a Project Manager for the Comite River Diversion Project, that includes the construction of a 12-mile-long diversion channel from the Comite River to the Mississippi River. She is responsible for developing briefings to USACE-MVN and MVD management. She coordinates project updates with the Project Coordination Team (PCT), which includes local and state partners, as well as the Project Delivery Team (PDT). She regularly reviews and updates P2 and P6 project schedules to assure accurate reporting and to identify schedule risks/impacts and course corrections to mitigate impacts. Ms. Carriere plays an imperative role in working with the projects Program Analyst in reviewing project commitments, obligations, and expenditures for all Bi-Partisan Budget Act of 2018 funds for the Comite project. **Cost:** \$400M **Fee:** \$1.3M **Role:** Project Manager

(1) TITLE AND LOCATION ( <i>City and State</i> )	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>HSDRRS – Permanent Canal Closure Pumps, Greater New Orleans Area, LA</b>	<b>2013</b>	<b>2017</b>

(3) DESCRIPTION (*Brief scope, size, cost, etc.) AND SPECIFIC ROLE*

Check if project performed with current firm

**Scope:** Ms. Carriere served as the Project Manager, representing the non-federal sponsor (LA - Coastal Protection & Restoration Authority) and its local agencies (Southeast Louisiana Flood Protection Agency/ East Jefferson Levee District/Orleans Levee District and the City of New Orleans Sewerage and Water Board) on the design/build Permanent Canal Closure Pumps Project (PCCP). Under the guidance of the Sr. Project Manager, Ms. Carriere was responsible for overseeing the technical design review teams concerning project conformance and future operation and maintenance impacts. She was also involved with the Testing and Commission Task Team. **Cost:** \$135M **Fee:** \$2.8M **Role:** Project Manager

(1) TITLE AND LOCATION ( <i>City and State</i> )	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>HSDRRS – Inner Harbor Navigation Canal, Greater New Orleans Area, LA</b>	<b>2012</b>	<b>2013</b>

(3) DESCRIPTION (*Brief scope, size, cost, etc.) AND SPECIFIC ROLE*

Check if project performed with current firm

**Scope:** Ms. Carriere managed numerous AE contracts to analyze, plan and design 33 miles of levee and floodwall protection to the congressional authorized Hurricane and Storm Damage Risk Reduction System design levels within the IHNC/GIWW basin. She was responsible for overseeing design and construction efforts from planning to design to construction completion. She closely worked with Real Estate Division to secure rights of entry and acquisition to federal and state easements. She assisted in the Individual Environmental Report (IER) with the Environmental Division to achieve NEPA compliance and coordinated with the Contracting Division and Office of Counsel for the execution of construction contracts to closeout. She also prepared final inspections for projects and served as the primary interface to achieve project closeout. **Cost:** \$56M **Fee:** \$1.7M **Role:** Project Manager

**E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT**  
 (COMPLETE ONE SECTION E FOR EACH KEY PERSON.)

12. NAME	13. ROLE IN THIS CONTRACT	14. YEARS EXPERIENCE	
		a. TOTAL	b. WITH CURRENT FIRM
Dani Alexander	Project Manager	24	7

15. FIRM NAME AND LOCATION (*City And State*)

**MSMM Engineering – New Orleans, LA**

16. EDUCATION (*Degree and Specialization*)

AS, Civil Engineering; Bishop State University (1998)

18. OTHER PROFESSIONAL QUALIFICATIONS (*Publications, Organizations, Training, Awards, Etc.*)

Ms. Alexander is a Project Manager at MSMM with over 15 years of experience managing USACE New Orleans District projects. Ms. Alexander has served as an in-house consultant for 10+ years where she has managed projects within the MRL and HSDRRS programs. She has developed project fact sheets, project briefings, review plans, risk management plans, project management plans, and reporting documents such as reconnaissance and damage assessment reports. Ms. Alexander is extremely proficient at technical writing, the management of Environmental documents, and the leadership of PDT teams.

**19. RELEVANT PROJECTS**

(1) TITLE AND LOCATION ( <i>City and State</i> )	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>Mississippi River Levees Construction (MRL-C), Bi-Partisan Budget Act of 2018 (BBA18) and Civil Works, New Orleans, LA</b>	ONGOING	ONGOING

(3) DESCRIPTION (*Brief scope, size, cost, etc.*) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Ms. Alexander is involved with the MRL-C project, including providing oversight for this award-winning interdisciplinary project delivery team (PDT). The MRL PDT is responsible for the design and construction of flood risk management projects including seepage remediation, levee enlargements, and floodwalls. Ms. Alexander works closely with team members from the PDT to establish schedules, scopes, and resourcing needs for each work item. She has also established and maintains positive relationships with our non-Federal Sponsors (NFS) and stakeholders, with whom she coordinates rights-of-way, relocations, and borrow requirements. She is responsible for the development of documentation for any scope or cost changes via the change management process. Ms. Alexander leads the PDT in the formulation, evaluation, and comparison of corrective measures and alternative plans to address these high-profile flood risk management projects. She is responsible for creating information fact sheets, and briefing materials for upward reporting. **Cost:** \$1B+ **Fee:** \$600K **Role:** Project Manager

(1) TITLE AND LOCATION ( <i>City and State</i> )	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>Mississippi River Mainline Levee (MRL) Supplemental Environmental Impact Statement (SEIS II), New Orleans, LA</b>	2020	N/A

(3) DESCRIPTION (*Brief scope, size, cost, etc.*) AND SPECIFIC ROLE

Check if project performed with current firm

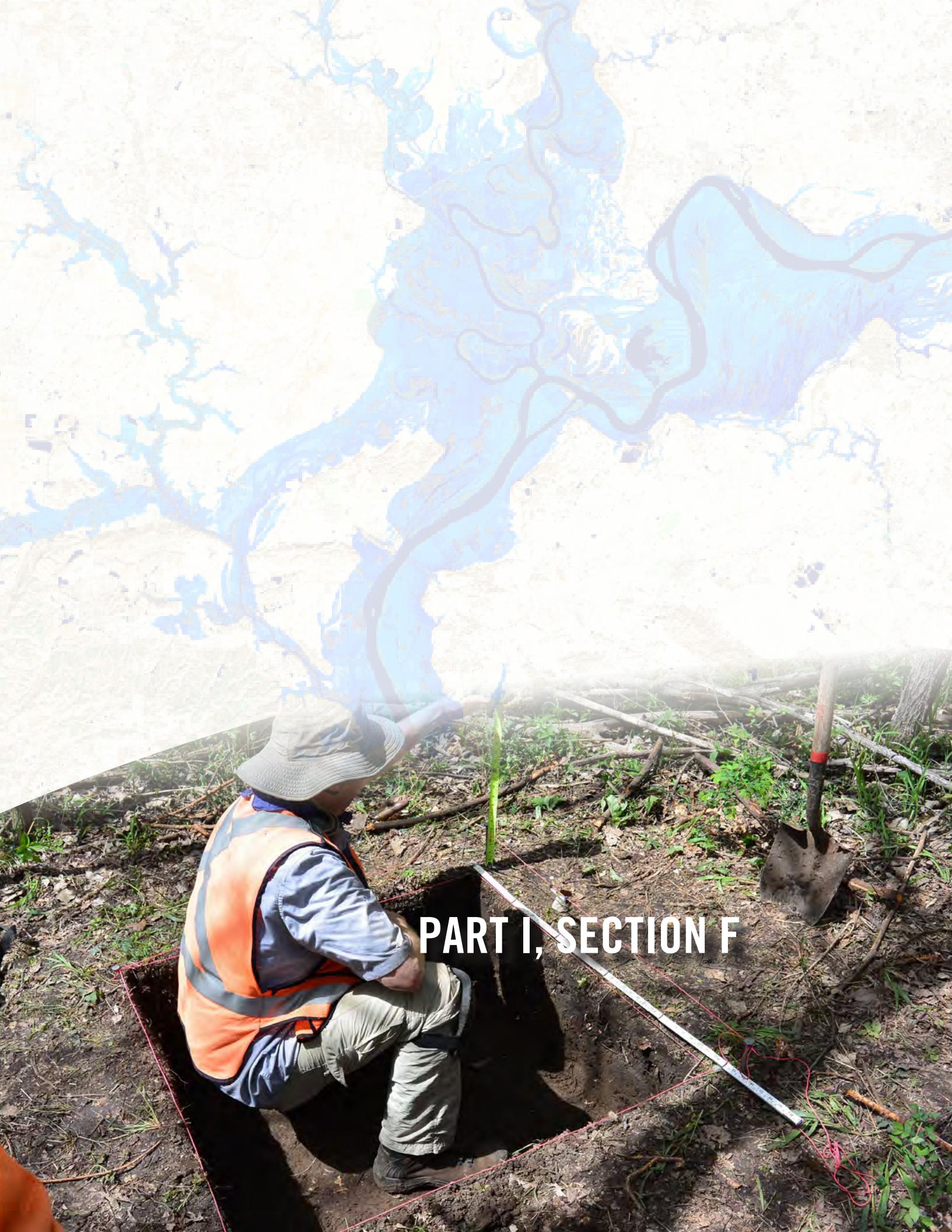
**Scope:** Ms. Alexander was an integral part of the MRL SEIS II effort. Ms. Alexander led the New Orleans team that was responsible for conducting an inventory, initial design, planning, environmental impacts, and cultural resources of the remaining authorized MRL work items within the Districts area of responsibility. She was responsible for preparing documents and presentations, briefings, and upward reporting to include In-Process Reviews (IPRs) to the Commander. Ms. Alexander led the coordination for public scoping meetings and the virtual public meetings for the draft final SEIS II. She was part of the Project Management team that ensured timely completion, which led to the MVD Commander's signature of the Record of Decision (ROD). **Cost:** \$3M **Fee:** \$600K **Role:** Project Manager

(1) TITLE AND LOCATION ( <i>City and State</i> )	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION ( <i>if applicable</i> )
<b>HSDRRS – Independent External Peer Review (IEPR), Greater New Orleans Area, LA</b>	2015	N/A

(3) DESCRIPTION (*Brief scope, size, cost, etc.*) AND SPECIFIC ROLE

Check if project performed with current firm

**Scope:** Ms. Alexander was the PM of the HSDRRS IEPR program, including interpretation of WRDA 2007 language and development of draft interim implementation guidance; peer review plan development execution. Ms. Alexander was responsible for the development of information sheets, briefings, and upward reporting. During the review plan phase, Ms. Alexander was responsible for technical writing and editing of the main document and appendices in accordance with the Federal GPO style manual guidelines and guidance, researching current regulations and policies to ensure compliance and coordination with NFS and stakeholders. She led the interdisciplinary PDT and was responsible for tracking estimates, schedules, and monitoring activities for multiple IEPR's. **Cost:** \$56M **Fee:** \$1.7M **Role:** Project Manager



A photograph of a person wearing an orange safety vest and a tan bucket hat, crouching in a forest clearing. They are working with a long, thin green object, possibly a surveying rod or a marker, in the ground. A shovel is leaning against a tree trunk nearby. A red string and a white tape measure are also visible on the ground. In the background, there are fallen logs and some green vegetation. The entire scene is overlaid with a semi-transparent map showing a network of blue lines (likely stream or watercourse networks) and brown shaded areas (possibly land use or elevation zones) on a light beige background.

# PART I, SECTION F

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT <i>(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)</i>		20. EXAMPLE PROJECT KEY NUMBER <b>1</b>
21. TITLE AND LOCATION (City and State) <b>Cow Bayou Drainage Pump Station Complex</b> Orange, TX	22. YEAR COMPLETED PROFESSIONAL SERVICES 2020	CONSTRUCTION (If applicable) 2024

### 23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER <b>USACE New Orleans District</b>	b. POINT OF CONTACT NAME <b>Charlie Brandstetter, Design Manager</b>	c. POINT OF CONTACT TELEPHONE NUMBER <b>504-862-2501</b>
---	---	---

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

**Design Fee:** \$1.3M, **Construction Cost:** \$325M

Our team completed 35% design of the 8,190 CFS pump station as part of the Sabine to Galveston Cow Bayou Complex project. The Cow Bayou Complex includes levee tie-ins, floodwalls, sluice gate structures and a sector gate for navigational traffic. The pump station consists of five 1,365 CFS horizontal, vacuum primed pumps requiring 126-inch suction side and 115-inch discharge side with formed concrete intakes; and three 455 CFS vertical self-priming pumps with 84-inch discharge piping.

The preliminary design phase was a joint engineering effort between USACE New Orleans District, Galveston District and our team in which we operate as a one integrated design team. Our design responsibility included structural design, architectural design, civil site work, geotechnical evaluation and design, MII cost estimating, CAD drafting and project management. A unique feature of this project design is that we are an integrated design team with the New Orleans District who is providing the mechanical and electrical design while we are responsible for coordinating the mechanical and electrical design with the civil, structural and geotechnical engineering design. Other project features being designed by our team include dolphin structures which protect the facility above the water level from possible boat impact, a pump station safe house, and a fuel farm and access roads. We designed the project in Microstation 3D and Civil 3D, also utilizing Revit BIM 3D modeling and CIM modeling for the facilities. Preliminary investigations consisted of extensive geotechnical testing to determine soil suitability, preliminary estimates of dredging based on navigational traffic loads in the Cow Bayou area, and structural calculations to determine the required height of the T-walls, and navigational structures. Preliminary architectural work was also completed to design the safe house that is attached to the main pump station building. The safe house includes all facilities and workspaces for the pump station operators.

The pump station reinforced concrete structure is 250 FT wide by 128 FT long with 8 pump bays and supported by 100 FT long steel H-pile. The vertical pumps, engines, generators, gear boxes, vacuum pumps and electrical equipment are all housed within the pump station building. The structural steel building located above the concrete pump station structure is 43 FT tall and utilizes 8 IN thick precast concrete tilt up wall panels on all four sides of the building. The roof consists of 6 IN concrete slab on metal roof deck attached to the supporting members maintaining a 1:12 slope.

Our structural engineers, following USACE engineering manuals, designed all permanent project structures associated with the pump station including the horizontal and vertical pump intake and discharge structures, engine and pump support slabs, pump station building, pump station safe house, fuel tank foundation and containment area, water tank foundation, west access bridge, exterior semi-gantry and overhead bridge crane supports, as well as the protective dolphins on the intake and discharge side of the pump station. The pump station and safe house were designed utilizing STAAD software (a 3D structural analysis and design software).

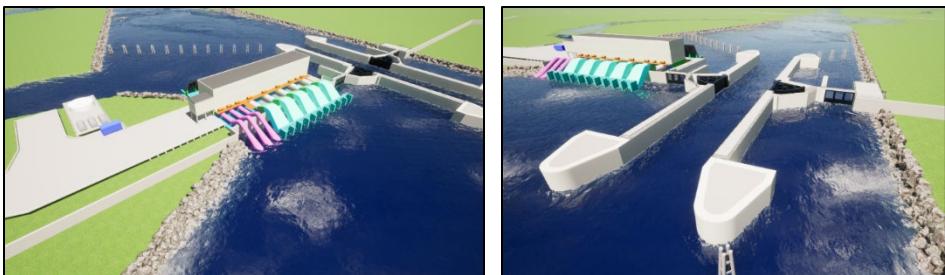
#### Project Relevancies:

- ✓ USACE Civil Works Task Order
- ✓ Floodgates, Floodwalls, Levees, Navigation Structures, Pumping Stations, Marine Structures
- ✓ Flood Risk Management and Hurricane and Storm Damage Risk Reduction Project
- ✓ Use of CIM and BIM Modeling
- ✓ Use of USACE CADBIM Policies
- ✓ Use of Specs Intact
- ✓ Construction Cost Estimating Using MCACES (MII)
- ✓ Perform Soil Borings
- ✓ 3D Modeling of Buildings, Structures, Sites

#### Exemplifies Experiences in:

- ✓ Hydrology
- ✓ Hydraulics
- ✓ Geotechnical Design, Investigation and Analysis
- ✓ Civil Design Plans and Specifications
- ✓ GIS/Survey/Mapping

The pump station safe house is a two-story structure 36 FT long by 22 FT wide. The building is supported by cast-in place concrete beams and cast-in place concrete columns. The safe house is a separate structure but abuts the pump station building. The safe house



provides housing for four to six emergency personnel that shall be required to man the facility during a hurricane, and it is designed for tornado force winds. The safe house required a 1,000 gallon per day onsite wastewater treatment facility due to the lack of facilities in the project area. Our civil engineering team provided the wastewater treatment facility design, layout of the entry roadways and parking lots, and provided the site grading and utility layout in compliance with UFC-201-01.

The geotechnical services included engineering analyses on the soil borings data in which the New Orleans District provided our geotechnical engineers. The team provided recommendations regarding site preparation and drainage, estimates of allowable pile load capacity for support of pump station components and the fuel platform, and estimates of settlement. The geotechnical analysis included performing deep seated stability analyses of the pump station, determining the unbalanced force on the pump station, designing seepage cutoff beneath the pump station, performing analyses to evaluate potential uplift of the pump station during and after construction, determining lateral earth pressures for the wall design, and providing a preliminary design for temporary retaining structures (TRS) to construct the pump station. Analyses were also performed for the design of the dolphins to protect the pump station and gates.

As part of our project management activities and coordination between our design team and the USACE mechanical/electrical design team, we prepared a detailed communication plan which outlined procedures for coordination of design activities and the transfer of information between all parties. The plan addressed scheduling, communication distribution structure, information collection and filing procedures, and a flow chart of personnel and project progression. Our team was responsible for combining the design data for each submittal in which we incorporated the USACE-prepared plans, specs, and DDR write-ups into our deliverable set. We also prepared the MII cost estimate for the 35% design package.

Following receipt of the 35% design package, SWD engaged CERL/ERDC to complete additional hydrologic and hydraulic modeling and changing the acquisition strategy to Design-Build. Currently, our team is awaiting ERDC to complete updated modeling to finalize the design package into a Design-Build RFP package which will occur under a future task order.

This project received an Excellent CPARS rating from the New Orleans District and the lead POC (Charlie Brandstetter) offered the following statement in the CPARS evaluation: "The Contractor provided excellent management of the task order contract. There was very little turnover during this effort, which allowed the team to work seamlessly from the beginning to the end of this contract. The Contractor did an excellent job managing his staff and coordinating the work between the Government and the contractor. The contractor's work was highly dependent on government input. On multiple occasions the contractor was forced to make up schedule based on slips resulting from government delays. The contractor was able to manage his assets and successfully recover the schedule. Due to the complexity of the project, the contractor had to work with multiple government offices with multiple disciplines all over the country, the contractor was able to manage his assets to produce highly accurate plans and designs despite the geographical challenges."

#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
<sup>a</sup>	<b>MSMM Engineering, LLC</b>	New Orleans, LA	Prime: Civil & Structural Design, Architectural Design, DDR, P&S, Cost Engineering, Site Layout
<sup>b</sup>	<b>Eustis Engineering</b>	New Orleans, LA, Houston, TX	Sub: Perform Soil Borings, Soil Testing to Determine Soil Properties and Provide Boring Logs in Accordance with USACE MVN Geotechnical Guide

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT <i>(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)</i>		20. EXAMPLE PROJECT KEY NUMBER <b>2</b>
21. TITLE AND LOCATION (City and State) <b>Texas City and Vicinity Hurricane Flood Protection Project, I-Wall to T-Wall Conversion Texas City, TX</b>	22. YEAR COMPLETED PROFESSIONAL SERVICES <b>2021</b>	CONSTRUCTION (If applicable) <b>2022</b>

### 23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER <b>USACE Galveston District</b>	b. POINT OF CONTACT NAME <b>Kalli Egan-Clark, Technical Manager</b>	c. POINT OF CONTACT TELEPHONE NUMBER <b>469-367-6036</b>
---	--	---

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

#### **Design Fee: \$1.8M, Construction Cost: \$15M**

Our team was tasked by the USACE Galveston District to complete engineering design services for the replacement of a portion of an I-wall to a T-wall within a chemical refinery in Texas City, Texas. The Texas City Hurricane Flood Protection is located in Galveston County, Texas about 30 miles southeast of Houston. The existing Hurricane Flood Protection System protects roughly 36 square miles of the great Texas City-La Marque – Hitchcock area from a 15-ft hurricane storm surge with accompanying waves. Design of this project was authorized by The Flood Control Act of July 3, 1958. The original project was construction in April of 1987. Based on our inspection of the site, design of this project is required because a portion of the I-wall has shown recent indications of failure including joint separation, spalled concrete at the joints, portions of the wall leaning, leaning infrastructure along the I-wall, cracking in the ground surface behind the I-wall, and recent history of settlement of the soils between the I-wall and a bulkhead that is located in front of the wall. The design consists of removal of the existing, approximately 600-foot damaged I-Wall and construction a new T-Wall section that meets current USACE and HSDRRS standards, including a base slab, earthen scour protection, and two vehicular access gates. Design features also require that the contractor maintain an interim line of protection throughout the duration of construction. Design challenges also included incorporating the contractor working on an active refinery with an active ship schedule, and the relocation of several utilities.

Following our teams extensive field investigation activities, we completed an engineering evaluation report detailing and assessing the existing infrastructure and documenting the known performance issues, while developing optimized project features. The forensics evaluation and geotechnical investigations were completed, which determined the root cause for the failure of the levee section. Our team then worked with USACE, the non-Federal sponsor and the chemical refinery leadership to develop an acceptable framework for the front-end and technical specifications, both of which were developed in Specs Intact. Following the investigations, we developed detailed engineering and design, prepared a Design Documentation Report (DDR), and provided civil design plans and specifications, prepared Engineering Considerations and Instructions to Field Personnel (ECIFP), and performed an independent value engineering (VE) study and preparation of a VE report. Our design activities also included incorporating the various design data, investigations, detailed structural and geotechnical analysis and design for the T-wall and foundational components, preparing preliminary and detailed quantity estimates, preparing MII cost estimates, and provided the final construction bid documents. CIM modeling was utilized to show the Refinery Owner how the layout would have little to no impact on their operations, and our engineering team also worked with the refinery owner to ingress/egress operations the contractor must follow. Additionally, a design charrette was held at the beginning of the design phase and include the non-Federal sponsor and refinery owner. At this

#### Project Relevancies:

- ✓ USACE Civil Works Task Order
- ✓ Fee over \$1M
- ✓ Floodwall Design
- ✓ Utilized Civil Information Modeling
- ✓ Used USACE CADBIM Policies
- ✓ Completed Construction Cost Estimating using MCACES (MII)
- ✓ Utilized Specs Intact
- ✓ Conducted a Value Engineering Study
- ✓ Stability Analysis of Flood Walls
- ✓ Seepage and Dewatering Analysis

#### Exemplifies Experiences in:

- ✓ Hydraulics
- ✓ Geotechnical Design, Investigation and Analysis
- ✓ Civil Design Plans and Specifications
- ✓ Structural Engineering
- ✓ Fire Protection Engineering
- ✓ Electrical Engineering
- ✓ Environmental Analyses
- ✓ GIS/Survey/Mapping
- ✓ Construction Cost Estimating
- ✓ Planning & Project Management

Design Charette, discussions were held about the shipping schedule the refinery follows and how the floodwall operations would be impacted by those operations. These constraints were built into the MCASES cost estimate as lost workdays. Other discussions at the design charrette centered on construction laydown areas, certification of crew members and the number of utility relocations that our team could envision.



Due to the proximity of the project site to the Galveston Bay bulkhead, the design included development of the interim flood protection measures the contractor must construct prior to dismantling the wall to maintain the existing flood protection levels during construction. The major structural design features designed by our team included the concrete floodwall and foundation, and the structural steel swing gate. The floodwall design included pile foundation design due to lateral loading and the soil conditions at the project site. Steel H-piles were selected as the best support piles due to lower costs and less vibration during installation. The monoliths for each group were analyzed by computing the loads acting on a 1-ft width of the wall and multiplying by the monolith length. Our team utilized CPGA, the USACE program utilized for design of pile foundations, to develop the pile layout for the floodwall. GROUP 2019 (a software tool for analyzing the behavior of pile groups subjected to both axial and lateral loadings) was used to analyze the floodwall designs to verify the pile forces obtained by CPGA.

Civil design included site work, roadway access, construction laydown and site trailer identification and placement, construction sequencing plan and the relocation of multiple utilities. Site design was prepared utilizing the topographic and utility location survey provided by the team's survey subconsultant. Utility relocations were identified and included on the project plans. These utilities included overhead electrical lines, fire suppression towers and firewater lines, storm drain and manholes, security lighting and electrical conduit (on wall), miscellaneous electrical control boxes (on wall), miscellaneous tank foundations (landside), underground electrical conduit, and on-grade steel piping.

Detailed geotechnical investigation, analysis and design was completed and a report documenting the subsurface conditions plaguing the site was developed. Geotechnical investigations included subsurface soil conditions, groundwater conditions, site and subgrade preparation, deep foundation design and construction, axial capacity for piles, lateral pile analysis, seepage analysis, global stability analysis and seismic site classifications per IBC.



Geotechnical field services consisted of three test borings on land, drilled with a truck-mounted drill rig to a depth of 100 feet and two test borings on water to a depth of 75 feet. Extensive laboratory testing was also conducted. Seepage Analyses were performed utilizing the commercial seepage analysis software program, SEEP/W. This software uses a finite element modeling to estimate the flow of seepage through the soil layers below the flood wall with sheet pile wall. Based on the soil conditions encountered in the borings, silty sand layers encountered between depths of 0 (El.+9 feet) and 6 feet (El.+3 feet) below existing grade and between depths of 18 feet (El.-9 feet) and 28 feet (El.-19 feet) below existing grade. These layers of granular soils are considered permeable compared to the clayey soils encountered at the site. Since, the sheetpile will be driven to a depth of 40 feet (El.-30.75 feet) below the existing grade, it will penetrate through the above silty sand layers and will prevent any seepage flow through these layers. The design depth determined that steady seepage conditions would likely not exist during any major hurricane event. Instead of steady seepage analyses, our team performed a transient seepage analysis for this project.

Our team has completed all design deliverables and closed out all DrChecks comments. The project is awaiting construction progress from an adjacent non-Federal project before going to bid. Our task order includes all construction phase services, inclusive of engineering support during advertisement and engineering support during construction, review and approval of shop drawings, response to RFI's and bi-weekly progress meetings. The project is expected to be bid in the 2<sup>nd</sup> quarter of 2023 pending the construction progress of the adjacent job stays on schedule.

#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
<sup>a</sup> <b>MSMM Engineering, LLC</b>	New Orleans, LA, Houston, TX	Prime: Civil & Structural Design, DDR, P&S, Cost Engineering, Project Management

**F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

21. TITLE AND LOCATION (City and State)

**Pump Stations and Drainage Structures**

**West Shore Lake Pontchartrain**

St. Charles, St. John the Baptist, portions of St. James Parish, Louisiana

20. EXAMPLE PROJECT KEY NUMBER

**3**

22. YEAR COMPLETED

PROFESSIONAL SERVICES

CONSTRUCTION (If applicable)

Ongoing

2024 (est.)

**23. PROJECT OWNER'S INFORMATION**

a. PROJECT OWNER

USACE New Orleans District

b. POINT OF CONTACT NAME

Chris Dunn, PhD, PE

c. POINT OF CONTACT TELEPHONE NUMBER

504-862-1799

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

**Design Fee:** \$14.26M, **Construction Cost:** \$380M (est)

Full design services include civil, structural, geotechnical, mechanical, hydrology and hydraulic modeling, physical modeling, electrical, corrosion, instrumentation and controls, and cost engineering for two pumping stations with a capacity of 4,600 cfs with floodwalls, bypass gates, and levees. Architectural designs were also prepared for safe egress, code compliance, building access, and life safety throughout each site.

The pump stations are designed to reduce flood risk to a residential area that includes the city of Laplace during tropical storms and hurricanes, when the level in Lake Pontchartrain rises. Gate structures allow gravity drainage through the drainage canals for non-surge events. The stations and gate structures are located at outfalls of the areas' drainage canals. Each pump station includes drainage sluice gates, normally in the open position to drain the area by gravity but closed for storm events. Along with the remainder of the levee and floodwall system, the pump stations provide a 100-year level of storm surge risk reduction from now to 2070, including predicted sea level rise. Specific services include:

- A BIM/CIM 3D model was developed to visualize the facility. The models were evaluated for multiple design changes to assist USACE in selecting an alternative. Models automatically updated plan sheets with each change, which allowed the project to stay on schedule while producing a quality design.
- Hydraulic and physical modeling included performing Computational Fluid Dynamics (CFD) models and physical models of the inflow basin, intake, pumps, and the discharge basin for each of the pump stations and gate structures was performed to analyze flow conditions and design scour protection. The CFD model results were incorporated in the scour protection for the intake, outfall structure, and channels, including flow training guide walls. All hydraulic conditions met criteria as defined in Hydraulic Institute Standards (ANSI/HI) Intake Design Standards (ANSI/HI 9.8-2018) and USACE EMs. Physical models were completed with a subconsultant for the pumps, intake screens, and approach channel to verify proper hydraulic conditions approaching the pump. The model helped optimize the pumping stations' flow pattern and operating efficiency. The pump discharge piping physical model included the pumps, discharge siphon, and outlet channel to evaluate flow distribution and determine hydraulic losses in the custom discharge piping. The discharge piping physical model is used to evaluate pressures for design of discharge pipe and to assess if the siphon can be broken.

**Project Relevancies:**

- ✓ Design of flood control system, including pump stations (total capacity of 5,600 cfs), floodwalls, levees, and floodgate structures
- ✓ Corrosion design
- ✓ Develop calculations and analysis
- ✓ Retrofitting of I-55 Highway bridge spans, levees, roads, ramps, and associated site work
- ✓ Preparation of construction plans and specifications (SpecIntact), including producing 500 plan sheets for each facility
- ✓ Prepared CADD drawings using USACE CADBIM policies and procedures
- ✓ Facilitated a VE workshop following the SAVE methodology, resulting in integrating money-saving options into the design
- ✓ Developed design-bid-build packages
- ✓ Prepared cost estimates using MCACES (MII)
- ✓ All models were developed in accordance with USACE standards and procedures

**Exemplifies Experiences in:**

- ✓ Civil Engineering
- ✓ Structural Engineering
- ✓ Mechanical Engineering
- ✓ Electrical Engineering
- ✓ Hydrology
- ✓ Hydraulics
- ✓ Environmental
- ✓ Technical Analysis

- Structural engineering services included construction design calculations and drawings, as well as specifications for the pump station cofferdams compliant with EM 1110-2-2503. Structures were modeled using SAP 2000 and STAAD. The deep structures were pile supported with a combination of plumb and batter piles. PileGroup was used to analyze the pile foundations in 3D and determine soil interactions. For temporary restraining structure, a braced cofferdam with sheet piles was designed for dewatered uplift case which governed the permanent pile design. Various pile types and sizes were evaluated to achieve a cost-effective solution, such as spiral welded piles or H-piles depending on the loading condition. Existing drainage canals required maintaining bypass canals, including the deep I-55 channel.
- A geotechnical cost-effective solution included designing a braced floodwall to span the I-55 corridor channel, which eliminated the need for deep cofferdams and dewatering to construct T-walls in the channel.
- Mechanical services included DDR, plans, and specifications for bulkheads, lifting beams, vertical lift gates for drainage structures and pump stations, a navigation (miter) gate at Reserve, radiators, hydraulic power units, and cranes for the pump stations. The stations are equipped with large diesel fuel tanks that can operate the station continuously for 3 days. Fuel system design included day tanks, fuel maintenance system, fuel and lube pumps, and fuel piping and controls.
- Electrical system design consisted of 60,000 hp of diesel standby generators that were parallel to a 5kV switchboard that powered 35,000 hp of electrically operated pumps and auxiliary equipment. Designs met USACE design criteria EM 1110-2-3102 General Principles of Pumping Station Design and Layout and EM 1110-2-3105 Mechanical and Electrical Design of Pumping Stations. Instrumentation and controls allowed for centralized operations through a SCADA system.
- Geotechnical analysis was conducted in accordance with the New Orleans District HSDRRS Design Guidelines and associated EMs, ERs, ETLs, and Design Memos specifically developed for the project and included deep foundations, floodwall and T-walls, settlement for levees and structures, seepage, stability, ground improvement, and temporary retaining structures. A geotechnical data gap analysis and subsequent field and laboratory data collection program were conducted to supplement existing USACE data and included four undisturbed type soil borings using fixed piston sampling and six Cone Penetrometer Tests (CPTs) to depths of up to 150 ft. The project presented several geotechnical challenges as the project sites are in virgin marsh deposits consisting of soft, compressible clays and organics. Deep foundations limited settlement to 2 inches over 100 years.
- Stability analyses of the levees and channels were performed using the Spencer's and Janbu's Methods using circular and block search routines. Seepage analyses using finite element method and Lane's weight creep ratio were performed for the levees, T-walls, and pump/drainage structures. The structures were also analyzed for down drag, unbalanced loads, and settlement induced bending moments using HSDRRS approaches. Ground improvements to reduce levee settlements and increase shear strength were designed using wick drains, preload/surcharge, staged construction, and geotextile reinforcement. Lift schedules were developed using time-rate settlement analyses to gain sufficient strength to support the additional lifts. The ground improvement program achieved design elevations sooner, a smaller levee footprint, and reduced right of way requirements for USACE. Iterative levee, strength gain, and lift analyses were performed to estimate the size of the 2070 levee.
- Construction cost estimates using MCASES (MII) were developed at each submittal phase allowing USACE and the NFS to evaluate the budget and adjust the scope of work to meet the funding limitations.

**Value to Government.** The design phase was expedited in 1 year and 6 months, including geotechnical investigations and design submittals to meet USACE schedule and funding obligations. Planning and scheduling allowed the team to prioritize decisions, such as pump and engine sizing and CFD modeling to establish the geometry in the design. At 90% design, a design Summit was conducted to re-evaluate the project requirements to bring the project back within authorized funding limitations. Stantec provided USACE with a menu of cost saving options and value engineered concepts with detailed costs savings. These efforts resulted in cost savings of over \$120 million in savings that were implemented on the project.

#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a <b>Stantec Consulting Services Inc.</b>	New Orleans, LA; Baton Rouge, LA	Prime A-E: Project Management, Civil, Geotechnical, Hydraulic, Structural, Mechanical, and Electrical Engineering; Cost Estimating; I&C
a (1) FIRM NAME <b>MSMM Engineering, LLC</b>	(2) FIRM LOCATION (City and State) New Orleans, LA	(3) ROLE Structural, Cost Estimating

<b>F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT</b> <i>(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)</i>		<b>20. EXAMPLE PROJECT KEY NUMBER</b> <b>4</b>
<b>21. TITLE AND LOCATION (City and State)</b> <b>Permanent Canal Closures and Pumping Stations (PCCP) Design-Build</b> <b>New Orleans, LA   W912P809D0014; TO0017</b>	<b>22. YEAR COMPLETED</b> <b>PROFESSIONAL SERVICES</b> <b>2017</b>	<b>CONSTRUCTION (If applicable)</b> <b>2018</b>

### 23. PROJECT OWNER'S INFORMATION

<b>a. PROJECT OWNER</b> <b>USACE New Orleans District</b>	<b>b. POINT OF CONTACT NAME</b> <b>Dr. Chris Dunn</b>	<b>c. POINT OF CONTACT TELEPHONE NUMBER</b> <b>504-862-1799</b>
--	--	--

**24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT** *(Include scope, size, and cost)*

#### **Design Fee: \$8.5M, Construction Cost: \$615M**

This project demonstrates AECOM's expertise in Design Analysis, Reports, EDA, EDC while working on highly complex projects such as Design Build Projects/ Programs. It also shows our knowledge of drainage pump station design, and work on large multifaceted complex projects and hydraulic structures tied to flood protection systems (levees, floodwalls, and gates).

Serving in an Owner's Engineer capacity, AECOM assisted the USACE in the Design-Build (D-B) procurement and delivery of three major gated closure structures and pump stations, and associated floodwalls and levee improvements in New Orleans, including the 12,500 cfs 17th St., the 2,700 cfs Orleans Ave., and the 9,000 cfs London Ave. stations. Construction was successfully completed on all three projects in 2018. AECOM augmented the USACE Staff while performing numerous Parallel Engineering Designs, Design Reviews and Analysis, Civil, Mechanical, Electrical, Geotechnical, Structural and Architectural. Parallel Designs, Studies, Reports, H and H Models and Analysis were required to verify concepts of new structures proposed by the Design Build Contractor (e.g., floodwalls, floodgates, cofferdams, mechanical systems, electrical systems, buildings, levees, and pump station facilities). AECOM assisted the USACE from DB RFP to final testing and acceptance.

**Procurement:** Worked with USACE to develop the D-B request for proposal (RFP) package. Under a prior contract, AECOM also prepared D-B RFP packages for the successful expansion of the temporary pumping stations at these locations. AECOM worked closely with the New Orleans District to develop the design-build RFP for PCCP, and after award, co-located with the contractor and USACE to remain engaged with the design and to perform design reviews and at times develop parallel designs, hydraulic and other models, on the design-build contractor's designs for conformance and verification.

AECOM performed reviews of more than 300 submittal packages from the design-build contractor to facilitate compliance with the contract documents, USACE requirements, and industry standards. This includes analyzing earthwork, site, roadway, hydraulics, civil, structural, and geotechnical engineering designs for flood protection work.

**Civil/Site:** AECOM performed comprehensive reviews of all aspects of the Civil/Site designs, including earthwork and grading; roadways and gas, water, sewer, electrical, and telecommunications utilities; and erosion control structures.

**Earthen Levees:** AECOM reviewed all levee design efforts, including modification of existing levees, construction of new levees, and levee tie-ins, ensuring that all were in accordance with the RFP and USACE requirements.

#### Project Relevancies:

- ✓ Task Order Services Completed for USACE
- ✓ Design-Build RFP Development
- ✓ Pumping Station Design
- ✓ Floodgate Design
- ✓ Levee Design
- ✓ New Structure Design
- ✓ Cost Estimating Using MCACES (MII)
- ✓ Building Design
- ✓ Data Evaluations/Analysis
- ✓ Utilized Specs Intact
- ✓ Drainage Canals and Structures Design

#### Exemplifies Experiences in:

- ✓ Hydrology
- ✓ Hydraulics
- ✓ Civil Engineering
- ✓ Structural Engineering
- ✓ Mechanical Engineering
- ✓ Electrical Engineering
- ✓ GIS/Survey/Mapping
- ✓ Technical Reviews



**Structural:** AECOM conducted thorough review of structural analyses and design of pump stations, gates, and other structures. This included analyses of existing and new structures, including floodgates and flood walls.

**Hydraulics:** Relevant features included major channel / canal work, gates, and trash / debris screens. AECOM performed reviews on the D-B contractor's design work, including hydraulic models.

**Geotechnical:** AECOM conducted rigorous review of all geotechnical analyses and design, including settlement and stability calculations, foundation analyses, and pile capacities.

**Mechanical, Electrical, and Instrumentation & Controls:** AECOM reviewers remained on the project through its completion to confirm the necessary startup, commissioning, and testing of all three pumping stations.

**Construction Services:** AECOM performed reviews of requests for information (RFIs) from the design-build contractor. If there was a change in the design due to an RFI, it was reviewed and, in some cases, a parallel design and/or hydraulic model was required to make sure the change did not affect the conformance check. Quality assurance checks for conformance were also performed on construction submittals.

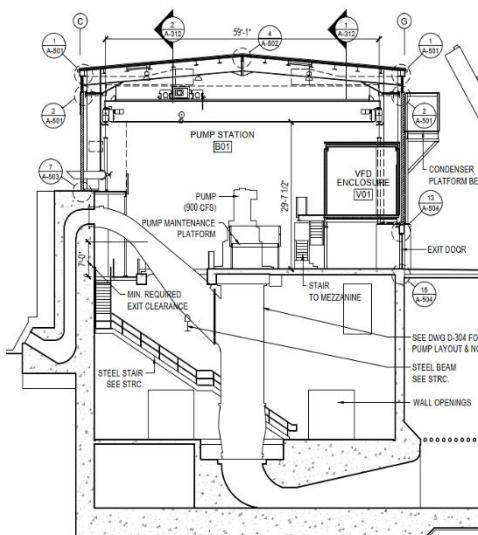
**Design Reviews / Coordination:** The AECOM Team was co-located with the D-B contractor and USACE to perform design and conformance reviews, prepare technical analyses, and serve as an extension of USACE staff. AECOM reviewed and processed over 300 design submittals in an expedited manner using the DrChecks system. We also processed dozens of requests for information and participated in multiple design task forces, providing senior civil, hydraulic, geotechnical, structural, mechanical, and electrical experts to resolve design issues efficiently. This included, but was not limited to, evaluation of cofferdams, drainage structures, gates, trash/debris screens, floodwalls, vertical mixed flow pumps, erosion control features, backup power systems, and complete instrumentation and controls. Also reviewed Value Engineering proposals submitted by the DB contractor. We coordinated closely with local sponsors to address their comments and concerns and maintain project schedule.

**Startup and Commissioning:** AECOM provided startup, commissioning, and testing services for all three pump stations. Electrical, instrumentation, and controls reviewers remained on the project through closeout of the construction contract to ensure the necessary commissioning and testing activities were performed in accordance with contract requirements.

**Design Documentation Report Preparation:** After construction completion, AECOM also provided USACE assistance in preparing the final Design Documentation Report. This work included cataloging all final design submittals along with construction submittals and RFI's, as well as final report preparation and review.

AECOM's thorough approach led to a CPARS rating of "Very Good" for quality and "Exceptional" for both schedule and cost control. Even with several major changes, and an unanticipated large number of comments from the sponsor, AECOM remained within budget and on schedule due to proactive and efficient management.

*\*\*The work was performed by a joint venture led by URS Group, Inc., a legal affiliated entity within the AECOM family of companies.*



Section of 17th Street Canal Pump Station

#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a <b>URS-JEG JV ** (UEI: D4UQF2HBDPC8)</b>	New Orleans, LA; Atlanta, GA; Houston, TX	Lead JV Partner

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT <i>(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)</i>		20. EXAMPLE PROJECT KEY NUMBER <b>5</b>
21. TITLE AND LOCATION (City and State) <b>Design of Jefferson Parish Floodwalls, West Return Floodwall</b> Jefferson Parish, LA	22. YEAR COMPLETED PROFESSIONAL SERVICES 2012	CONSTRUCTION (If applicable) 2014

### 23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER USACE New Orleans District	b. POINT OF CONTACT NAME Craig Waugaman	c. POINT OF CONTACT TELEPHONE NUMBER 504-862-2673
--	--	--

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

**Design Fee:** \$750K, **Construction Cost:** \$135M

MSMM Engineering staff furnished all services for the preparation of Design Documentation Reports (DDR), plans and specifications (P&S), engineering and design (E&D), engineering support during advertisement, participation, and presentation at Public meetings, and coordinating with all local, state, and Federal authorities for the hurricane protection projects in Jefferson Parish following Hurricane Katrina. Engineering support during construction was also part of the MSMM's scope.

The following project components were designed and constructed as part of this task order:

#### Specific Project Components:

Kenner West Return Floodwall (18,300 ft): Various T-wall and I-wall monoliths with a levee tie-in sheet pile to the south and a Re-curve Floodwall tie-in to the north.

West Esplanade Ave.: New pedestrian access gate within the T-wall monolith at the end of West Esplanade.

Re-curve Floodwall in Northwest Kenner (850 ft): I-wall monoliths, wave buffers and a vehicular gate.

Floodwall & Gate at Williams Blvd Boat Launch: I-wall, T-wall, and vehicular roller gate monoliths.



The overall project design involved Risk Informed Decision Based Computational Analyses and Services to meet the Standard Project Hurricane (SPH) protection based on the Hurricane Storm Risk Reduction Analyses in order to bring the protection to a 100-year level. The professional services our team completed consisted of investigations, data evaluation, analysis, technical writing, and design of the features identified above. The project also required field investigations, which consisted of topographic and hydrographic surveys, the collection of soil borings, soil testing to determine soil properties, and providing boring logs in accordance with USACE New Orleans District geotechnical criteria. Full quality control and compliance verification was completed with the final plans and specifications detailing geotechnical, structural and civil design, and ensuring coordination with the appropriate engineering manuals and USACE New Orleans District design requirements. The design of the project's components involved Geotechnical Analysis (Seepage and Dewatering Analysis, Stability Analysis for levees using Method of Planes and Spencer's Method, Settlement Analysis, numerical analysis and settlement induced bending moments in piles), Structural Analysis (T-wall to I-wall conversion, Cut-off Wall design, pile group analysis and frame analysis), Civil Design Analysis including

#### Project Relevancies:

- ✓ USACE Civil Works Task Order
- ✓ Floodwall Design
- ✓ Levee Design
- ✓ Floodgate Design
- ✓ Utilized Civil Information Modeling
- ✓ Used USACE CADBIM Policies
- ✓ Completed Construction Cost Estimating using MCACES (MII)
- ✓ Seepage and Dewatering Analysis
- ✓ Stability Analysis of Flood Walls
- ✓ Cantilever Retaining or Floodwall Analysis
- ✓ Uplift Analysis
- ✓ Heave Analysis
- ✓ Topographic Maps
- ✓ Contour Maps
- ✓ Profiles and Sections

#### Exemplifies Experiences in:

- ✓ Hydraulics
- ✓ Geotechnical Design, Investigation and Analysis
- ✓ Civil Design Plans and Specifications
- ✓ Structural Engineering
- ✓ Electrical Engineering
- ✓ GIS/Survey/Mapping
- ✓ Construction Cost Estimating
- ✓ Planning & Project Management
- ✓ Engineering Support During Advertisement
- ✓ Engineering Support During Construction

civil/sitework design and drainage analysis, and Hydraulic Analysis (Mongoose Modeling for Wave Overtopping of I-10 flood wall, Rainfall Run-off, Drainage calculations and Wave Loading).

Our team also provided engineering support during advertisement and engineering support during construction for the project. These responsibilities included attending the pre-construction conference, responding to the contractor's requests for information and clarifications, reviewing submittals from the construction contractor; and our engineering team conducted bi-weekly site visits.



---

#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

---

(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
<sup>a</sup> <b>MSMM Engineering, LLC</b>	New Orleans, LA	Sub: Civil & Structural Design, DDR Development, P&S Development, Cost Engineering Using MCACES, Engineering Support During Advertisement, Engineering Support During Construction

**F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

6

21. TITLE AND LOCATION (City and State)

**Southeast Louisiana Drainage Program – Harahan Drainage Pump to the River - Jefferson Parish, LA**

22. YEAR COMPLETED

PROFESSIONAL SERVICES

2012

CONSTRUCTION (If applicable)

2018

**23. PROJECT OWNER'S INFORMATION**

a. PROJECT OWNER

USACE New Orleans District

b. POINT OF CONTACT NAME

Soheila Holley, Project Manager

c. POINT OF CONTACT TELEPHONE NUMBER

(504) 736-6780

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

**Design Fee: \$1.8M, Construction Cost: \$80M**

In March 2004 USACE completed a 533(d) report and environmental assessment for the Harahan Drainage Pump to the River project, thus paving the way for USACE and Jefferson Parish (non-Federal cost share sponsor) to move forward with implementation of an important federally funded SELA project. The Harahan Pump to the River project was a first of its kind in the area since it would pump stormwater from the surrounding area into the nearby Mississippi River in lieu of taking the 7-mile path north through various drainage canals to the two Jefferson Parish pumping stations on Lake Pontchartrain.



The project was split into six design packages and two DDR's. CDM Smith completed the design packages for the intake canal, pump station and 1<sup>st</sup> segment of the discharge piping, along with one of the DDR's. Our engineers completed the other DDR and the full design package for the three sections of discharge piping, the levee crossing, a Mississippi River shift, and the discharge basin.

The first step was preparation of the Detailed Design Report (DDR) which addressed the 700-foot-long suction canal, 9,000-feet of three side by side 84-inch discharge pipes, Mississippi River levee pipe crossing, pile supported concrete discharge basin, and a 60-foot flood side shift of the Mississippi river levee.



Several of MSMM's current employees were the primary team members (including the designer of record) for completion of the non-pump station DDR as well as complete design for two of the piping phases and the final phase at the river. In all, the three phases designed by MSMM employees included the following constructed features:

approximately 21,000-feet of buried 84" steel discharge piping; a 60-foot flood side shift of the Mississippi River levee; an above ground levee crossing for the three parallel 84" steel pipes supported on concrete bents with spread footings; and a 62-foot wide by 53-foot-long pile supported discharge basin located at the water's edge of the Mississippi River. Additional design features included a combination of relocated and new subsurface drainage and ditches; approximately 4,500-feet of relocated waterline; two submersible pump stations strategically placed at low points to allow all of the 84" piping to be drained when not in use; removal and replacement of multiple concrete and asphalt roadways; development of a three phase traffic control plan

**Project Relevancies:**

- ✓ USACE Civil Works Task Order
- ✓ Pumping Station Design
- ✓ Marine Structure Design
- ✓ Flood Risk Management and Hurricane and Storm Damage Risk Reduction Project
- ✓ Highway/Roadway Design
- ✓ Completed Construction Cost Estimating using MCACES (MII)
- ✓ Seepage and Dewatering Analysis
- ✓ Stability Analysis of Flood Walls
- ✓ Uplift Analysis
- ✓ Heave Analysis
- ✓ Topographic Maps
- ✓ Contour Maps
- ✓ Profiles and Sections

**Exemplifies Experiences in:**

- ✓ Hydraulics
- ✓ Geotechnical Design, Investigation and Analysis
- ✓ Civil Design Plans and Specifications
- ✓ Structural Engineering
- ✓ Electrical Engineering
- ✓ GIS/Survey/Mapping
- ✓ Construction Cost Estimating
- ✓ Planning & Project Management
- ✓ Engineering Support During Advertisement
- ✓ Engineering Support During Construction

for the open cut pipe crossing of the 4-lane Jefferson Highway (LA Highway 48); and cathodic protection design for the buried steel pipes.

In addition to the services described above, our engineering team developed the real estate right-of-way drawings, ran pile group analysis, produced specifications, produced cost estimates in MCACES (MII), and provided engineering support during advertisement and engineering support during construction for the project. These responsibilities included attending the pre-construction conference, responding to the contractor's requests for information and clarifications, reviewing submittals from the construction contractor; and our engineering team conducted bi-weekly site visits.

The coordination effort was immense on this project and covered numerous agencies, organizations, and property owners. LDOTD: Much of the piping was to be in the median and beneath the future Dickory Avenue Extension. Additionally, an open cut installation of LA Highway 48 for installation of the discharge pipes required a complex 3-phase traffic control plan to be coordinated and implemented during construction. Entergy: Most of the pipes' planned route was obstructed by multiple Entergy electrical distribution lines as well as a major transmission line that connected the east and west bank. The relocation of the towers and transmission line was a multiyear effort. Coordination was also required with USACE, Jefferson Parish, City of Harahan, local property owners, LA Department of Health, and the US Coast Guard.



#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION ( <i>City and State</i> )	(3) ROLE
<sup>a</sup> <b>MSMM Engineering, LLC</b>	New Orleans, LA	Sub: Civil & Structural Design, DDR Development, P&S Development, Cost Engineering Using MCACES, Engineering Support During Advertisement, Engineering Support During Construction

**F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

7

21. TITLE AND LOCATION (City and State)

**Dallas Floodway Design Build RFPs: 277K Levee Raise and Delta Pump Station, Dallas, TX**

22. YEAR COMPLETED

PROFESSIONAL SERVICES  
2021

CONSTRUCTION (If applicable)  
2023

**23. PROJECT OWNER'S INFORMATION**

a. PROJECT OWNER

USACE Fort Worth District

b. POINT OF CONTACT NAME

Sandra Allen, Design Manager

c. POINT OF CONTACT TELEPHONE NUMBER

817-886-1669

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

**Design Fee: \$1.2M, Construction Cost: \$41M**

Our team developed two stand-alone Design-Build (DB) RFPs for USACE Fort Worth District as part of the Dallas Floodway System. The two DB RFP packages included 35% Plans, Technical Specs, and a DDR explaining the requirements of the Design-Build firm, a Summary of Work further explaining the project requirements, and a MII construction cost estimate. The \$35M Levee Raise project was advertised in March 2021 and the \$6M Pump Station project will advertise in first quarter FY22. Services provided included HTRW survey (environmental analyses) of the Delta Pump Station, and a value engineering study that produced two stand-alone Value Engineering Reports.

The 277K Levee Raise project scope consisted of civil design of the existing East and West Dallas floodway levees to raise them to meet a 277K CFS water surface elevation and new levee crest access roads. The levee raises occurred at 25 locations on over 41K feet of levee where the height is less than the required water surface elevation. Our team utilized the Trinity River HEC-RAS models to establish the water surface elevations at each levee station. The project also includes multiple bridge and levee interfaces that include structural bridge sealing plans along the East and West Levees. Additionally, the project included flattening of the levee side slopes to reduce erosion and provide ease of maintenance. The existing East and West levees have side slopes which were as steep as 2:8H:1V. The project will provide all side slopes flattened to 4H:1V along the entire length of the river side.

Numerous sluice gate structures and other protective measures were designed to withstand the additional soil loads. The existing access and levee roads will be demolished as part of the raising/flattening of the levees and will be rebuilt in the same location at a higher elevation.

Technical specifications utilizing Specs Intact were developed for temporary flood protection requirements, stormwater pollution prevention plan and biological and archaeological monitoring requirements. A conceptual level MII construction cost estimate was also provided, reviewed by USACE during the DQC/ATR reviews and updated for the final submission. The team responded to RFI's submitted during the bidding phase and provided all electronic and physical copies of the final edited submission to USACE.

The Delta Pump Station replacement project consists of a storm water pump station replacement of the high flow pumps and pump house, as well as reuse of the structural chamber. Two pumps and associated bearing lubrication equipment, valves, trash rack, and gates will be housed in the new building. A new electrical room has been incorporated into the building design to house the upgraded equipment, SCADA system and controls. The new Delta Pump House roof is

**Project Relevancies:**

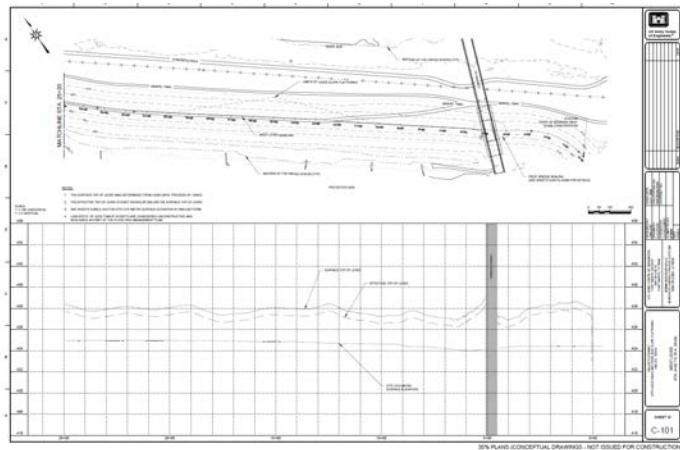
- ✓ Design-Build RFP Development
- ✓ Levee Design
- ✓ Pumping Station Design
- ✓ HTRW Investigations
- ✓ Structural Design of Existing Structures
- ✓ Prestressed and Post Tensioned Concrete Structures
- ✓ Construction Cost Estimating Using MCACES (MII)
- ✓ Utilized Specs Intact
- ✓ Completed Value Engineering Studies (2)

**Exemplifies Experiences in:**

- ✓ Hydrology & Hydraulics
- ✓ Civil Design
- ✓ Structural Design
- ✓ Mechanical Design
- ✓ Electrical Design
- ✓ Architectural Design
- ✓ HTRW Design



designed to provide access panels for pump maintenance egress and ingress. The civil design accommodates a new debris collection area for small loaders and dump trucks. The trash rack on the high flow culvert will be replaced with a trash rack to dump on the new collection area. The low flow pump stairs will be removed and replaced. Site circulation was designed for access to the low flow stairs from the new collection area. Our team worked with the City of Dallas and Oncor to identify electrical equipment added on site to upgrade the electrical service. The site security fencing and gates will be replaced to secure the site as well as lighting and security cameras. All existing facilities and structures will be demolished. Communication and electrical conduits, transformers, and conductors will be installed or reconnected for service, and coordinated with the City of Dallas. The access road from the pump house to the Canada Drive intersection will be replaced with a 25-foot concrete curb and gutter road. The concrete road is designed to drain to the swale south of the new road through curb openings connected to flume/outfall structures and slope protection. Erosion protection measures have been added at the outfall of the pump station. This is comprised of concrete apron and rock riprap.



United Facility Code criteria were followed for the development of the documentation, including UFC 3-201-1 for the Civil Engineering design, 1-200-01 for design of the pump station building, and UFC 3-250-1 for the roadway and parking lot design. Other criteria utilized consisted of UFC 3-201-01, 3-410-01, and

Our team provided an independent value engineering study via a Virtual Platform. The workshop resulted in development of Design Alternatives (some mutually inclusive) that were selected for incorporation into the design. There were also Design Suggestions that offered measures to simplify construction, provide various means for reducing costs (in these cases these savings are hard to quantify), improve the operational requirements for the facility, and reduce the construction duration. In total, 80 alternatives were developed for the two projects, identifying roughly \$11M in cost savings. Following review of the alternatives, \$200K in cost avoidance was realized, including changing the Delta Pump Station project from a rehabilitation project to a replacement project.

TABULAR FUNCTION ANALYSIS 277K LEVEE PROJECT			
Project Element	Function Verb - Noun	Function Type	Project Risk
<b>277K LEVEE</b>			
Need	Improve Maintainability	Higher Order	Medium
Purpose	Improve Safety	Basic	Medium
Slope - 4:1	Reduce Liability	Required Secondary	Medium
277K Raise	Meet Capacity	Required Secondary	Low
Levee	Contain Water	Required Secondary	Medium
River	Transmit Water	Required Secondary	Low
River	Move Water	Required Secondary	Low
Levee Dikes	Confine Water	Required Secondary	Low
Levee Elevation	Prevent Overflow	Required Secondary	Low
Overall Project	Prevent Damage	Required Secondary	Low
Higher Level Goal	Support Local-Economy	Project Goal	Low
Grass Surface	Prevent Erosion	Required Secondary	Medium
Levee Durability	Prevent Blow-Out	Required Secondary	Medium
Overall Environmental Issues	Limit Impacts	Required Secondary	Low
Overall Project	Meet Expectations	Required Secondary	Low
Overall Project	Satisfy Stakeholders	Project Goal	Low

TABULAR FUNCTION ANALYSIS DELTA PUMP STATION			
Project Element	Function Verb - Noun	Function Type	Project Risk
<b>DELTA PUMP STATION</b>			
Need	Extend Life	Higher Order	Low
Purpose	Renew Asset	Higher Order	Low
New Pumps	Lift Water	Basic	Low
Pump Size	Increase Capacity	Required Secondary	Low
Adaptive Purpose	Adapt Building	Required Secondary	Low
Expand Building	Accommodate Growth	Required Secondary	Low
Retrofit	Modernize Facility	Required Secondary	Low
	Improve Access	Required Secondary	Low
	Optimize Functionality	Required Secondary	Low
Hydraulic Efficiency	Improving Efficiency	Required Secondary	Low
	Increase Power-Factor	Required Secondary	Low
	Control Temperature	Required Secondary	Low
Exhaust Fans	Ventilate Space	Required Secondary	Low
Higher Level Goal	Support Local-Economy	Project Goal	Low
Overall Project	Satisfy Stakeholders	Project Goal	Low
Overall Project	Meet Schedule	Project Goal	Low
Overall Project	Meet Budget	Project Goal	Low

#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
<sup>a</sup> <b>MSMM Engineering, LLC</b>	New Orleans, LA; Houston, TX	Prime – Design-Build Package RFP Development, MCACES Cost Estimating (MII), Program and Project Management

**F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S  
QUALIFICATIONS FOR THIS CONTRACT**

(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

8

21. TITLE AND LOCATION (City and State)

**Houma Navigation Canal Lock and Floodgate**  
Terrebonne Parish, LA | DACW3801D0005, TO 0015

22. YEAR COMPLETED

PROFESSIONAL SERVICES

2014

CONSTRUCTION (If applicable)

N/A

**23. PROJECT OWNER'S INFORMATION**

a. PROJECT OWNER

USACE Vicksburg District

b. POINT OF CONTACT NAME

Mr. James Hines

c. POINT OF CONTACT TELEPHONE NUMBER

601-631-5476

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

**Design Fee:** \$3.4M **Construction Cost:** \$360M

This project demonstrates AECOM's ability to handle complex mega projects that include a large majority of the types of projects and types of investigations, reports, studies and designs that will be required for this solicitation. This project included a lock with sector gates and an adjacent 250-foot sector gate. This project also included eco-restoration components, detailed geotechnical analysis, hydraulic modeling and flood protection walls and levees as well as marine structures including guide walls, bulkheads and protection dolphins. A control building and site reservation was also designed and included.

AECOM provided 50% design of the Houma Lock and Floodgate Complex, an integral part of the Morganza-to-the-Gulf Hurricane Protection project. The complex consists of a 110-ft wide by 800-ft long lock and an adjacent 250-ft wide floodgate. The primary purpose of the complex is hurricane flood protection; its secondary purpose is salinity control. The Lock and Floodgate Complex will be located in the Houma Navigation Canal (HNC) providing direct access to the Gulf of Mexico from the Gulf Intracoastal Waterway at Houma, LA.

AECOM's engineering and design contract for the Lock and Floodgate Project was performed from 2001-2014. The first half of the final engineering (Phase I) was completed prior to Hurricane Katrina but was re-engineered because of changes to post-Katrina design requirements. AECOM recommended that the lock and floodgate be constructed conventionally in the proposed bypass channel and that sector gates be installed for both the lock gates and the floodgates. AECOM also recommended that the closure dam be an earthen dam with floodwall on top and that the Lock and Floodgate Complex be constructed within a dewatered, open-cut excavation. The USACE accepted AECOM's recommendations and the project proceeded to Phase I Final Engineering and Design.

**Gates.** Each gate leaf will weigh approximately 750 tons and will be supported by 5-ft, 2-inch diameter solid cast steel wheels. The wheels will be housed in custom-designed frames that allow the wheels to be removed and replaced on a guide rail system by crane without the need for divers to move the wheels underwater. The New Orleans District's Operation Division requested that AECOM study improving the gate's pintle design to simplify installation. AECOM has developed a unique pintle concept that allows the pintle to be unbolted from the gate frame, which should mean easier installation and alignment.

**Concrete Monoliths.** The lock gate and floodgate monoliths will be pile-supported, cast-in-place concrete monoliths supported by 150-foot-long steel pipe piles. AECOM performed a NISA study of the floodgate monolith in Phase II Design. The lock chamber will be a pile-supported, reinforced concrete U-frame. The north and south ends of the chamber will be supported on piles tipped at the same elevation as the gate monoliths' piles in order to limit differential settlement between the chamber and the gate monoliths. The foundation of the chamber will also support the control house, which will be constructed above two levels of concrete platforms that will provide parking and a visitor's center.

**Project Relevancies:**

- ✓ Task Order Services Completed for USACE
- ✓ Hydraulic Structure: Lock Design
- ✓ Floodgate Design
- ✓ Floodwall and Levee Design
- ✓ Flood Risk Management and Hurricane and Storm Damage Risk Reduction Project
- ✓ Office Design
- ✓ Marine Structures
- ✓ Cost Estimating Using MCACES (MII)
- ✓ Design Utilizing CADBIM Policies
- ✓ Utilized Specs Intact

**Exemplifies Experiences in:**

- ✓ Hydraulic Modeling
- ✓ Hydraulics
- ✓ Civil Engineering
- ✓ Structural Engineering
- ✓ Geotechnical Design
- ✓ GIS/Survey/Mapping
- ✓ Technical Reviews

**Reservation Area.** The Reservation Area will include an office building, a maintenance building, and an emergency generator building. The generator building will be raised above the top of the flood protection to protect the emergency generator against overtopping of the flood protection in a severe storm surge. The buildings would be constructed of reinforced concrete.

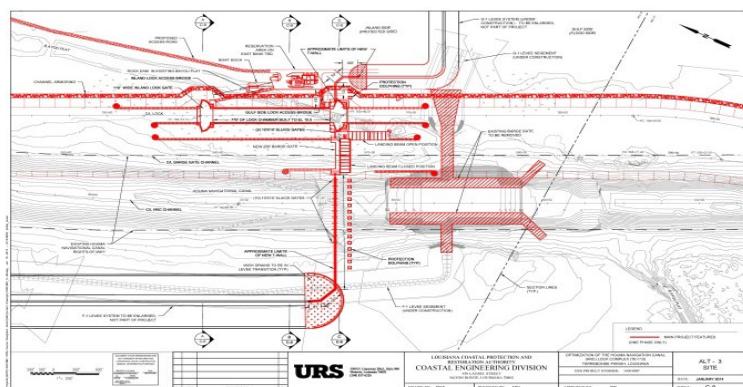
**Dewatering System.** Maintenance dewatering systems are provided to act as temporary dams for dewatering the lock chamber, lock gate bays, and the floodgate monolith for maintenance of gates and underwater features.

In 2014, AECOM was tasked by the CPRA to perform a feasibility-level investigation of alternative layouts to USACE's project, considering both the technical feasibility of construction and life cycle cost comparisons, taking into account operations and maintenance issues. AECOM drew on the company's nine-year involvement in the study and final engineering and design of the HNC Lock & Floodgate for the USACE (2001-2009) to assess technical feasibility and extrapolate cost estimates. The study evaluated the feasibility of retrofitting the Bubba Dove Complex, single versus multiple phase construction, advantages and disadvantages of different component types (e.g., barge versus sector gate), and feasibility of maintaining navigation and the current level of flood protection throughout construction. The study considered two different level storms, a 1%- Annual Exceedance Probably (AEP) and a 2%-AEP, and two different base year conditions to account for projected global sea level rise. With these issues in mind, AECOM consulted with TLCD, the CPRA, and the USACE to develop three alternate layouts to the USACE-sponsored HNC Lock Project, which was the fourth alternative evaluated. Each new alternative had the lock located on the east side of the canal, while the USACE project had it on the west side. Alternative 1 investigated the feasibility of retrofitting the Bubba Dove Complex to the HSDRRS criteria and projected water surfaces. Alternative 2, in contrast, had a new permanent barge floodgate and replacement tie-in floodwall being constructed and the Bubba Dove structures being demolished, but was laid out so that the lock and floodgate could be constructed as two distinct phases, potentially completed many years apart.

Alternative 3 was conceived as a single-phase project, with the permanent complex being constructed in the HNC behind the Bubba Dove Complex. AECOM's technical evaluation concluded that both the barge gate and its receiving structure and the floodwall could be retrofitted to the 1%-AEP elevations for both base year conditions considered, but it appeared impractical to strengthen and modify the structures to meet the USACE HSDRRS Design Guidelines. For the AEP scenarios investigated, AECOM recommended Alternative 3 if funding was available to construct the entire project in a single phase and the goal is to construct to the HSDRRS Design Guidelines.

## Project Performance

We received Exceptional ratings from the client for our work and the client commented that we did an outstanding job in the limited timeframe to complete the work. *The work under this TO was performed by URS Group, Inc., a legal affiliated entity within the AECOM family of companies. The personnel we propose for this contract all reside within AECOM Technical Services, Inc.*



#### **25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT**

25. FIRMS FROM SECTION 3 INVOLVED WITH THIS PROJECT			
	(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a	<b>URS Group, Inc.</b>	New Orleans, LA, Baton Rouge, LA, St. Louis, MO	Prime: Management, Studies, Reports, Engineering Design
	<b>Eustis Engineering, LLC</b>	Baton Rouge, LA	Subconsultant: Geotechnical Design

**F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

21. TITLE AND LOCATION (City and State)

**Mid-Breton Sediment Diversion Project (MBrSD)**

*Plaquemines Parish, Louisiana*

20. EXAMPLE PROJECT KEY NUMBER

**9**

22. YEAR COMPLETED

PROFESSIONAL SERVICES

CONSTRUCTION (If applicable)

Ongoing

2028 (est.)

**23. PROJECT OWNER'S INFORMATION**

a. PROJECT OWNER

Coastal Protection and Restoration Authority

b. POINT OF CONTACT NAME

Brad Barth

c. POINT OF CONTACT TELEPHONE NUMBER

225-342-9417

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

**Design Fee:** \$39M, **Construction Cost:** \$660M (est)

The project is a critical restoration initiative that is expected to restore natural deltaic processes, re-establish coastal habitat, and improve risk reduction by maintaining the marsh buffer that protects New Orleans and St. Bernard Parishes from hurricane surge events. Louisiana's Coastal Protection and Restoration Authority (CPRA) selected Stantec as the lead designer for the MBrSD project, which includes levee design, flood control and diversion lift gates, T-walls, diversion channel, highway roadway realignment, bridge crossings, administration building design, and ecosystem restoration.

Stantec is providing full design services including civil, structural, coastal, geotechnical, mechanical, and electrical engineering, as well as environmental permitting, hydraulic and hydrologic analysis, and design optimization through value engineering (VE) to reduce cost and improve project performance. Architectural design services were also required for the new administration building adjacent to the diversion.

- A CAD/BIM Execution Plan was prepared using USACE process and procedures that provided a framework for the software with learned workflows to produce an accurate and cost-effective project. The plan detailed criteria in developing the model, including software, version, datums, level of detail, use of the models, and quality control measures.
- A 3D BIM was developed to model the integrated gated diversion and LA 39-highway bridge. The model included bulkhead gates, flow training walls, structural walls, T-walls, piers, and foundation piles. Components were integrated into one model and reviewed for real time coordination and conflict resolution between disciplines, particularly when analyzing the spatial locations of vertical and battered piles between T-walls and the adjacent highway bridge. The model was also used at the co-location space for coordination with the Construction Manager at Risk (CMAR) contractor and subconsultants to review conflicts with the temporary retaining structure (TRS) and to determine quantity takeoffs for shop drawings and for construction sequencing.
- Site investigation and existing conditions assessment were performed by field data, including topographic, planimetric, and bathymetric survey; geotechnical exploration; and hydrotechnical data collection. River sampling involved collecting 500 water samples to determine suspended sediment concentrations to support conceptual and preliminary level designs. Work also involved multibeam surveys of the riverbed and the receiving basin, acoustic doppler current profiler (ADCP) transects and bottom-mounts to monitor river flow velocities, bed sediment sampling, and a UAV to track sediment plumes.

**Project Relevancies:**

- ✓ Performed numerical modeling, including the 3D version of the Delft3D model of hydrodynamics, sediment transport (fines and sand), morphodynamics, and vegetation change
- ✓ Developed H&H and water quality analysis using HEC-RAS, Delft3D, AdH, and Flow3D
- ✓ Prepared plans and specifications for the 30% conceptual design using SpecsIntact
- ✓ Reviewed associated permit requirements, including Section 408, Section 404, and Section 10 permitting
- ✓ Developed an opinion of probable cost using MCACES (MII)
- ✓ Participated in a VE workshop resulting in potential savings of \$100M
- ✓ Construction drawings were prepared with USACE CADBIM policies and procedures
- ✓ Prepared Section 404/10 permit applications

**Exemplifies Experiences in:**

- ✓ Civil Engineering
- ✓ Coastal Engineering
- ✓ Structural Engineering
- ✓ Mechanical Engineering
- ✓ Electrical Engineering
- ✓ Hydrology
- ✓ Hydraulics
- ✓ Environmental
- ✓ Technical Analysis

- Geotechnical analyses were completed in accordance USACE's HSDRRS Design Guidelines for flood risk reduction elements, EMs, and Louisiana Department of Transportation and Development (LADOTD) design criteria for the highway and bridge structures. Analyses performed included slope stability of levees and channels, floodwall/gate analysis, axial and lateral pile analyses, retaining structures/walls, structure and embankment settlement, and seepage and dewatering. A pile load test will also be performed as part of design.
- The project site presents an array of challenging geotechnical conditions as the diversion alignment transitions from firmer, but permeable, point bar sands to very soft, compressible marsh clays. A geotechnical field and laboratory data collection program was conducted to characterize the project site, classify soils, estimate strength, measure compressibility characteristics, and develop design parameter profile reaches in support of the engineering analyses and design. The soil parameter profile reaches and selection of the strength lines were developed using the one-third to one-half procedure. The exploration program included 89 undisturbed type soil borings using fixed piston sampling, 65 cone penetration tests, Vibracore samples, probe rod soundings, and 15 cores for erodibility tests along the river and in Breton Sound. Fifteen piezometers were installed to monitor the Mississippi River's influence on piezometric pressures in the point bar sands underlying portions of the site.
- The T-wall transitions to levees will be preloaded and surcharged using wick drains to remove settlement prior to construction and reduce potential of settlement induced bending moments in battered piles. To achieve the necessary surcharge elevation while maintaining adequate factors of safety for stability, ground modification using settlement induced strength gain analyses (SHANSEP) was performed. Time-settlement projections were performed and staged construction with lift schedules were developed to safely raise the surcharge elevation.
- The gate structure and T-walls underwent settlement analyses using the equivalent pier approach and are evaluated for down drag due to external loads utilizing the force equilibrium approach (Fellenius Method). Stability analyses are also performed on the structures to determine if unbalanced loads are present. Structures with battered piles are analyzed for potential settlement induced bending moments using the HSDRRS's L-Pile Method.
- Global stability analyses of the new MRL segments were performed using the Spencer's and Janbu's Methods with circular and block search routines, including optimization and tension crack assessment.
- Following the initial design phase, a conceptual level design was prepared that included additional preliminary field investigations, modeling, and engineering analyses to prepare a 15% level conceptual design culminating in a Basis of Design Report. The design team participated in design charrette workshops during the 15% design phase to identify component alternatives while considering "fatal flaws" and evaluation criteria related to project goals, risk, constructability, cost, and OMRR&R.
- Civil site design services included the roadway design/re-alignment of state highway LA-39 involving a new bridge over the conveyance channel integrated with the gate structure. Other design features included utility relocations, proposed site drainage, and a new administration building and associated facilities adjacent to the diversion.
- Completed technical studies and analyses for the diversion channel and channel armoring, gated diversion structure roadway embankment and bridge, utility relocations, interior drainage system design, and marsh nourishment. Specific modeling included MIKE21, HEC-RAS1D/2D, and FLOW-3D numerical modeling, and CFD, physical modeling, and storage surge analyses. Numerical modeling and river morphology analyses were used for conveyance calculations and sediment delivery estimations.

**Value to Government.** Following the basis of design phase, a VE workshop was conducted with the design team, CMAR, and CPRA to develop and review 67 potential measures to optimize project performance that either reduced project cost or increased project benefit. Three significant options were identified and incorporated into the design, including decreasing the conveyance channel base width (from 260- to 160-ft), changing the gate type (from radial gates to vertical lift gates), and reducing the outfall channel length. Total construction cost savings were approximately \$100M.

#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
<sup>a</sup> <b>Stantec Consulting Services Inc.</b>	New Orleans, LA; Baton Rouge, LA	Prime A-E: Project Management, Civil, Geotechnical, Hydraulic, Structural, Mechanical, and Electrical Engineering; Cost Estimating; I&C

**F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

21. TITLE AND LOCATION (City and State)

**Louisiana Avenue Flood Control Improvements**

New Orleans, LA | W912P809D0014, TO 31; W912P810D0058, TO 0012

20. EXAMPLE PROJECT KEY NUMBER

**10**

21. TITLE AND LOCATION (City and State)	22. YEAR COMPLETED	
<b>Louisiana Avenue Flood Control Improvements</b> New Orleans, LA   W912P809D0014, TO 31; W912P810D0058, TO 0012	PROFESSIONAL SERVICES	CONSTRUCTION (If applicable)
	2014	2018

**23. PROJECT OWNER'S INFORMATION**

a. PROJECT OWNER

**USACE New Orleans District**

b. POINT OF CONTACT NAME

**Larry Mickal**

c. POINT OF CONTACT TELEPHONE NUMBER

**504-862-2711**

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

**Design Fee:** \$4.9M, Design 90% self-performed **Construction Cost:** \$94M

This project demonstrates AECOM's experience working on a complex urban flood control project/multipurpose project from design through construction. Our design, along with innovative construction techniques, minimized disruption to a busy urban corridor for an On-Schedule, On-Budget Project.

As part of the Southeast Louisiana Urban Flood Control Project, AECOM engineered and designed a new box culvert along Louisiana Avenue and provided EDA/EDC services. The new box culvert extends approximately 1.5 miles between Constance Street and Claiborne Avenue and connects to an existing box culvert at Claiborne Avenue. AECOM performed all structural design of the box culvert, geotechnical engineering for foundation support and construction, and civil and roadway design including utility relocations and traffic maintenance throughout the construction phase.

This project consists of installing over 7,000 ft of new cast-in-place concrete box culverts of varying sizes that will be supported on jet grouted foundation. The box culverts replaced existing drainage pipes to improve drainage in the area. The project had to be constructed under Louisiana Avenue (a busy 4-lane residential and commercial roadway) in a part of New Orleans that has many older and historical buildings. In addition, the culverts required removal and relocation of Streetcar tracks. AECOM was responsible for geotechnical and structural analysis and design, civil site development, hydraulic design of new drainage tie ins, traffic control and the development of Final Plans and Specifications. EDA/EDC Services AECOM performed included site visits, periodic inspection reports responding to Contractor RFIs, and contractor submittal reviews.

**Project Relevancies:**

- ✓ Multipurpose Project Design
- ✓ Roadway/Highway Design
- ✓ Drainage Canal Design
- ✓ Flood Risk Management and Hurricane and Storm Damage Risk Reduction Project
- ✓ Prestressed and Post Tensioned Concrete Structure
- ✓ OMRR&R Manuals
- ✓ Cost Estimating Using MCASES
- ✓ Geo-Referenced CAD Drawings in the Micro-Station Format According to USACE CAD Standards
- ✓ Engineering Support During Advertisement
- ✓ Engineering Support During Construction
- ✓ Civil/Site Work Design
- ✓ Finite Element Modeling
- ✓ Pile Group Analysis
- ✓ Down Drag and Settlement Analysis
- ✓ Numerical Modeling

**Exemplifies Experiences in:**

- ✓ Structural Design
- ✓ Geotechnical Design
- ✓ Civil Engineering
- ✓ GIS/Survey/Mapping
- ✓ Technical Reviews
- ✓ Geotechnical Drilling
- ✓ Hydraulic Modeling



## Project Performance

**Challenges/Solutions.** Louisiana Avenue is lined with large live oak trees with historical properties. Our Experts designed a sheet pile system that included installation of sheet piles using the press-in method to mitigate and reduce both noise and vibration concerns in the historic neighborhood. We also proposed and designed an alternative foundation support method. The original design called for supporting the culverts on a pile foundation but due to concerns about how dewatering might cause settlement of structures, a decision was made to switch to making soil improvements by jet grouting beneath the culvert, which would also serve as a seepage barrier in the bottom of the excavation and saved cost.

*This work was performed by URS Group, Inc., and a URS led JV, both legally affiliated entities within the AECOM family of companies.*

---

### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

---

(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
a <b>URS Group, Inc.</b> (M4EAMFLEBDG7) <b>Eustis Engineering, LLC</b> (R83MG9NLTMS4)	New Orleans, LA Baton Rouge, LA	Prime – Management, Studies, Reports, Design  Subconsultant: Geotechnical

---

**F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT**

(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)

21. TITLE AND LOCATION (City and State)

**Sabine Pass to Galveston Bay (S2G) CSRM and ER, Preliminary Design, Orange County, Texas**

20. EXAMPLE PROJECT KEY NUMBER

**11**

22. YEAR COMPLETED

PROFESSIONAL SERVICES

CONSTRUCTION (If applicable)

Ongoing

2028 (est.)

**23. PROJECT OWNER'S INFORMATION**

a. PROJECT OWNER

USACE Galveston District

b. POINT OF CONTACT NAME

Antoinette "Toni" Fonseca, EIT S2G  
Orange COR / E&C Division

c. POINT OF CONTACT TELEPHONE NUMBER

409-766-3899

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (Include scope, size, and cost)

**Design Fee:** \$22M (to date), **Construction Cost:** \$1.9B (est)

The Sabine Pass to Galveston Bay CSRM Project (S2G) is in Galveston, Harris, Brazoria, Jefferson, Chambers, and Orange Counties, and extends over 120 miles along the eastern Texas Gulf Coast. Stantec, as part of the Galveston Coastal Services, a JV (GCS-JV), is providing design services for this new 26.7-mile levee/floodwall system. The project currently includes 20 pump stations, drainage gates, sector gates, flood gates, interior drainage canals, and ecosystem restoration in Orange County.

Stantec is providing full design services include project management, comprehensive planning, Lidar, hydro-dynamic and field topographic surveying, geotechnical investigation, structural, mechanical, electrical, civil engineering, and H&H modeling. Services include the development of programming, preliminary studies, engineering design through detailed plans, specifications; design analysis and technical documentation report preparation; interior drainage modeling, VE; and MCACES (MII) cost estimates. Additionally, a summary of work was developed for the conceptual level design of new facilities (i.e., pump stations, safe houses) to support early design decisions.

- Civil Information Modeling (CIM) applying Bentley OpenRoads was used to design the levees and other civil site plans. CIM allowed revisions of multiple sheets and sections to be completed quickly. This gave the team a conceptual and detailed design to evaluate the effectiveness of various VE options and automatically calculates quantities for cost estimates. CIM also creates a visualization of the proposed facilities in a 3D model for resolving any conflicts in real time.
- Civil design included pumping station site design, levee design, interior drainage canal design, drainage culverts, flood gates, access roads, and site design. Cut and fill, including evaluation of borrow material, was needed due to the large amounts of fill required for levee construction.
- Preliminary pump station and sector gate 10% design packages; and levee, floodwall, and closure structure 35% design packages were prepared to advance design for possible ECI contracts and for budgetary funding checks.
- As part of the geotechnical study, historical geotechnical data was identified and categorized from previous USACE investigations and projects in the area. Initial geotechnical investigation included 48 soil borings and 14 in-situ CPT, totaling 4,423 across 26.7 miles to support preliminary design efforts.
- A borrow source study was performed to evaluate the amount of fill that would be needed. The study identified possible local borrow sources of fill to meet USACE criteria for levee materials, an important step to the project budget because fill is a cost driver due to the large

**Project Relevancies:**

- ✓ Planning and design of T-wall floodwalls, levees, and pumping stations
- ✓ Implemented USACE design standards for geotechnical design investigation, and analysis compliant with USACE EMs
- ✓ Technical analysis, engineering plans, SpecsIntact specifications, design analysis and calculations; MicroStation CAD using A/E/C standards; and DDR preparation
- ✓ Developed H&H models using HEC software packages and 2D Rain On Grid approach to model interior drainage system
- ✓ Design of pump stations according to EMs and HI Standards
- ✓ VE workshops in accordance with ER 11-1-321 and SAVE International Methodology standard
- ✓ Engineering design for erosion control and flood protections

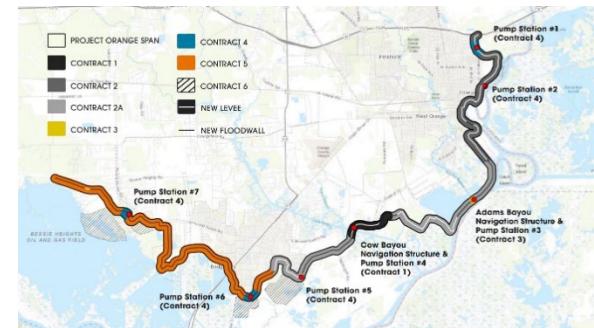
**Exemplifies Experiences in:**

- ✓ Civil Engineering
- ✓ Coastal Engineering
- ✓ Structural Engineering
- ✓ Mechanical Engineering
- ✓ Electrical Engineering
- ✓ Surveying
- ✓ Hydrology
- ✓ Hydraulics
- ✓ Environmental
- ✓ Technical Analysis

amounts required to build 26 miles of levees in marsh conditions. Other options for borrow source like dredged materials and creating detention areas and canals for interior drainage were also considered.

- Laboratory testing included shear strength and soil properties tests such as Atterberg Limits, particle size distribution, water content, density, specific gravity, organic content, unconfined compression, unconsolidated undrained triaxial, consolidated undrained triaxial, direct shear, consolidations, permeability, and soil corrosivity tests.
- Structural engineering uses the latest industry standards, including IBC, ACI standards, ASCE 7-10, as well as USACE EM 1110-2-2104, EM 1110-2-2502, and HSDRSS design guidelines. Construction design calculations, drawings, and specifications were developed and incorporated into the preliminary design package, including pump stations, drainage structures, floodwalls, and cofferdams.
- Mechanical engineering involved developing 10% conceptual design packages for storm surge gates and seven pump stations ranging in size from 100 cfs to 8,900 cfs. The large surge gates included sluice gates (up to 12 ft by 12 ft) for smaller canals or bayous and swing gates (16 ft by 30 ft) for navigable bayous. Designed for initial sizing and layout of mechanical equipment that included bulkheads, hydraulic power systems, HVAC, fuel systems, water, sewer, and plumbing systems compliant with USACE, ASHRAE, AIC, ASME, ANSI, DIN, and SAE industry standards.
- Electrical engineering design for pump stations included diesel engines, power distribution systems and motor control systems, as well as a standby generator for each pump station. An I&C system was designed to provide operational control of the facilities.
- HEC-HMS and HEC-RAS modeling of the interior drainage was performed for the existing and proposed conditions. Developed H&H models using HEC-HMS to support interior drainage analyses to evaluate pre- and post-rainfall flooding impacts of the proposed CRS system. Modeling was performed for base year (2027) and future year (2077), to scope preliminary designs for mitigating increased interior surface water elevations due to the CRS system. Model geometry accounted for pump stations, culverts, waterways, channels, canals, and sub-surface drainage infrastructure features. Various alternatives were modeled to compare design options to determine that best O&M solutions to meet project requirements within authorized budgets. A Risk Informed Decision approach was used by the design team with collaboration from the non-Federal sponsor to establish a solution that produces "no rise" on the interior in a pre/post analysis for the 100-year storm gates open and 25-year gates closed event.
- MCACES (MII) cost estimates were prepared based on conceptual designs including determination of adequate contingencies for level of design, current unknowns, and inflation.
- Two VE studies were conducted applying the SAVE methodology, focusing on analyzing current project scope and design criteria to systematically develop and evaluate alternatives to optimize project performance that either reduced cost or increased project benefits.

**Value to Government.** The team was tasked with finding innovative cost saving solutions to bring project within the authorized costs. The team evaluated project design criteria and possible design alternatives. The proposed alignment was shifted where possible to allow more earthen levee to reduce costly concrete floodwalls. The pump stations and design criteria were challenged with value alternatives that achieve the project goals. Combined recommended VE study alternatives resulted in \$650M in implementable savings for the program. Preliminary design was completed in 5 months. The team executed and progressed design using over 10 separate full design teams, 7 geotechnical drilling teams, and 9 modeling teams to keep up with the aggressive schedule.



*Design of a new 26.7-mile CRS system that includes levees, floodwalls, pump stations, gates, interior drainage canals, and ecosystem restoration.*

#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME	(2) FIRM LOCATION (City and State)	(3) ROLE
<sup>a</sup> <b>Stantec Consulting Services Inc.</b>	New Orleans, LA; Baton Rouge, LA	Prime A-E: Project Management, Civil, Geotechnical, Hydraulic, Structural, Mechanical, and Electrical Engineering; Cost Estimating; I&C

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT <i>(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete one Section F for each project.)</i>		20. EXAMPLE PROJECT KEY NUMBER <b>12</b>
21. TITLE AND LOCATION (City and State) <b>New Orleans International Drainage Pump Station Design</b> Kenner, LA	22. YEAR COMPLETED PROFESSIONAL SERVICES 2017	CONSTRUCTION (If applicable) 2018

### 23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER <b>New Orleans Aviation Board</b>	b. POINT OF CONTACT NAME <b>Chris Spann, Program Manager</b>	c. POINT OF CONTACT TELEPHONE NUMBER <b>913-940-1301</b>
---	---	---

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

**Design Fee:** \$1.3M, **Construction Cost:** \$45M

MSMM completed full investigation, analysis, and design for a new 600 cfs stormwater drainage pump station (four 150 cfs pumps, each 44" w/ 800 HP Driver) and for all landside drainage as part of constructing a new terminal at the New Orleans International Airport. MSMM is the sole entity to envision, assess and design this important addition to the region's flood protection abilities. The \$45 million of drainage mitigation designed by MSMM included civil, structural, electrical, mechanical, and environmental design, hydraulic modeling (HEC-HMS and HEC-RAS), architectural design, cost estimating, environmental permitting, CAD drafting, and extensive FAA coordination.

The project involved discharging stormwater over a hurricane protection flood wall, through the construction of 4,000 ft. of 60" steel discharge pipes; requiring detailed structural design of sheet pile cutoff walls, steel sheet pile temporary retaining structure (TRS), buttress, pipe bents, cofferdam and walers, intake channel and reinforced concrete box culvert, pipe supports, pipe sleeves in floodwall, and a discharge basin.

The MSMM design required excavation of a new airport canal and connecting the canal to the existing Butler Canal. The new canal serves as the pumping basin and required extensive stability analyses and erosion control measures (rock) and extensive coordination with the FAA due to the proximity of the open canal to an active runway.

MSMM performed 100% of the design services for the project. MSMM performed all of the civil/structural site work design inclusive of earthwork and site layout. MSMM engineers also developed the Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) Manuals for the pump station operation. Additionally, our engineering staff performed detailed technical writing, development of detailed plans and specifications, structural calculations, and design inclusive of finite element modeling, frame analysis and pile group analysis. We also provided landscape design, and environmental permitting.

We also performed engineering design support during advertisement and engineering design support during construction, inclusive of coordination with the construction contractor, participating in bi-weekly site visits, and daily inspection reporting.

The project was successfully constructed in 2018. MSMM performed 100% of the design services for this project.

#### Project Relevancies:

- ✓ Pumping Station Design
- ✓ Marine Structure Design
- ✓ Flood Risk Management and Hurricane and Storm Damage Risk Reduction Project
- ✓ Use of CIM and BIM Modeling
- ✓ Drainage Canal Design
- ✓ Use of Specs Intact
- ✓ Construction Cost Estimating Using MCACES (MII)
- ✓ Perform Soil Borings
- ✓ 3D Modeling of Buildings, Structures, Sites
- ✓ Finite Element Modeling
- ✓ Pile Group Analysis
- ✓ OMRR&R Manual Development
- ✓ Hydraulic Investigations
- ✓ Technical Writing
- ✓ Landscaping Design
- ✓ Static Pile Load Testing
- ✓ Development of Plans and Specifications

#### Exemplifies Experiences in:

- ✓ Civil Design
- ✓ Structural Design
- ✓ Electrical Design
- ✓ Mechanical Design
- ✓ Environmental Design
- ✓ Hydraulic Modeling
- ✓ Architectural Design
- ✓ Geotechnical Design
- ✓ Landscape Architecture



---

#### 25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

---

(1) FIRM NAME	(2) FIRM LOCATION ( <i>City and State</i> )	(3) ROLE
<sup>a</sup> <b>MSMM Engineering, LLC</b>	New Orleans, LA	Prime: Multi-Disciplinary Design for the Full Development of Plans and Specifications, Engineering Design Support During Advertisement and Construction



# PART I, SECTION G

G. KEY PERSONNEL PARTICIPATION IN EXAMPLE PROJECTS														
26. NAMES OF KEY PERSONNEL (From Section E, Block 12)		27. ROLE IN THIS CONTRACT (From Section E, Block 13)		28. EXAMPLE PROJECTS LISTED IN SECTION F (Fill in "Example Projects Key" section below before completing table. Place "X" under project key number for participation in same or similar role.)										
				1	2	3	4	5	6	7	8	9	10	11
Manish Mardia, PE	Program Manager	X	X	X			X	X	X		X			X
Bob Yokum, PE	Structural Engineer	X	X	X			X	X						
Bruce Lelong, PE	Structural Engineer				X					X		X		X
Ramesh Kalvakaalva, PE, CVS	Structural Engineer	X	X					X	X					X
Jim Wilson, PE, LEED AP	Civil Engineer	X	X						X					X
Scott Chehardy, PE	Civil Engineer	X		X			X	X	X		X			X
Jeff Pena, PE	Civil Engineer			X						X	X			X
James J. Hance, PE	Geotechnical Engineer	X												
Chad M. Poché, PE	Geotechnical Engineer							X						X
Tom Willis, PE, MBA	Hydraulic Engineer	X												X
Stephen Sanborn, MS, PE	Hydraulic Engineer													
Nicolas De Graaff, PE, CFM	Cost Engineer													
Don Daigle, CVS, CPE	Cost Engineer	X	X	X					X		X			X
Harry Hawney, PE	Electrical Engineer		X						X					X
Bradley Buchanan, PE	Electrical Engineer			X	X									
Dennis Strecker, PE	Mechanical Engineer					X								X
Lakhbir Chauhan, PE	Mechanical Engineer					X								
Trey Johnston, PE	Corrosion Engineer													
Marty Tittlebaum, PhD, PE	Environmental Engineer	X	X	X			X	X	X		X			X
Steve Finegan, AIA	Architect	X						X						X
Andrew Doyle, PLA	Landscape Architect													
James H. Chustz, PLS	Registered Land Surveyor													
Eric Curson	CAD/Microstation Drafter	X	X	X			X	X	X		X			X
Adele Ray	3-D Modeling CAD BIM				X									X
Laura Lienhop	CIM Modeler										X			
Silong Lu, PhD, PE, D.WRE	Hydrologist													
Nathan A. Quick, PG	Geologist			X										
Julian A. Chustz, PLS	GIS Analyst													
Blake Conner	Topographic Survey Chief													
Lonnie Dupont	Topographic Survey Chief													
Craig Villemarette	Hydrographic Survey Chief													
Tom Odom, AS	GPS Survey Party Chief													
Chantrell Carriere	Project Manager			X						X				
Dani Alexander	Project Manager	X												X
29. EXAMPLE PROJECTS KEY														
NO	TITLE OF EXAMPLE PROJECT (FROM SECTION F)			NO	TITLE OF EXAMPLE PROJECT (FROM SECTION F)									
1.	Cow Bayou Drainage Pump Station Complex			2.	Texas City and Vicinity Hurricane Flood Protection Project, I-Wall to T-Wall Conversion									
3.	Pump Stations and Drainage Structures West Shore Lake Pontchartrain			4.	Permanent Canal Closures and Pumping Stations (PCCP) Design-Build									
5.	Design of Jefferson Parish Floodwalls, West Return Floodwall			6.	Southeast Louisiana Drainage Program – Harahan Drainage Pump to the River									
7.	Dallas Floodway Design Build RFPs: 277K Levee Raise and Delta Pump Station			8.	Houma Navigation Canal Lock and Floodgate									
9.	Mid-Breton Sediment Diversion Project			10.	Louisiana Avenue Flood Control Improvements									
11.	Sabine Pass to Galveston Bay (S2G) CSRM and ER, Preliminary Design			12.	New Orleans International Drainage Pump Station Design									



**PART I, SECTION H & I**

## H. Additional Information

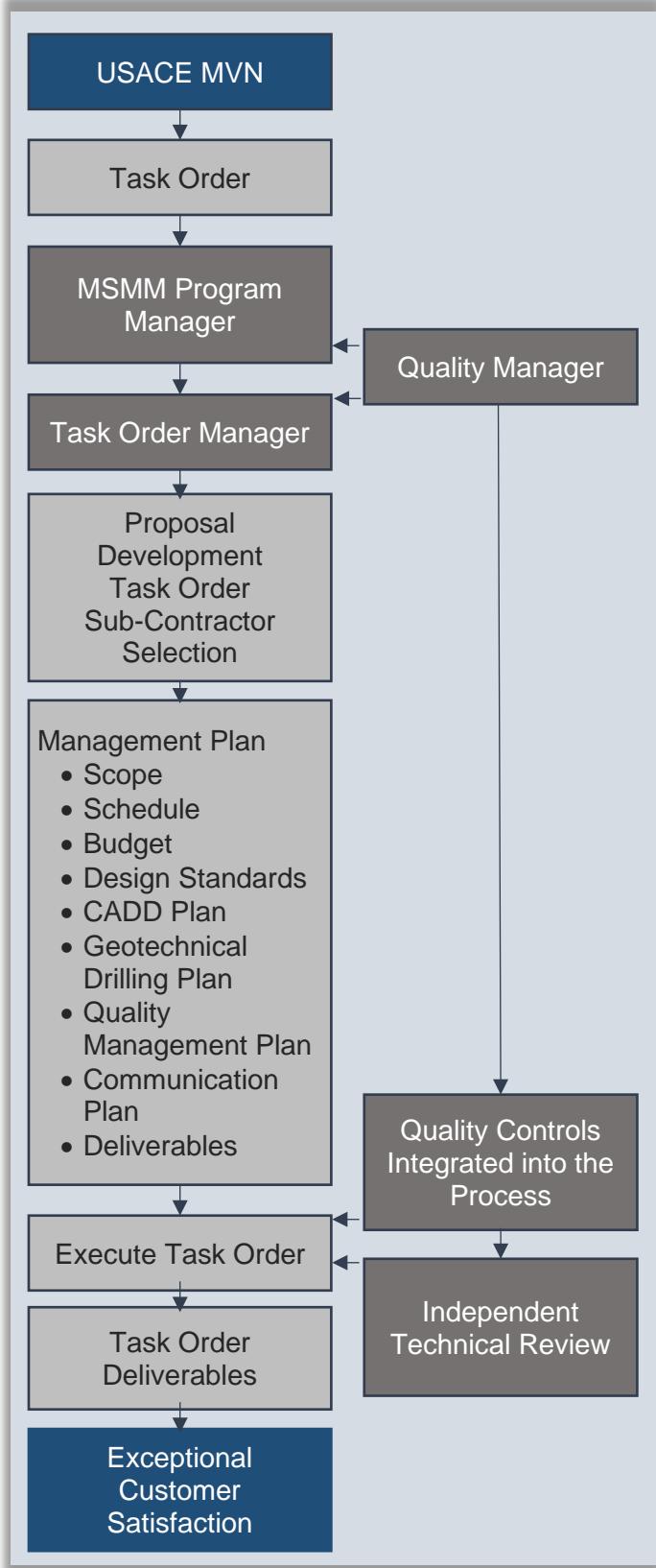
30. PROVIDE ANY ADDITIONAL INFORMATION REQUESTED BY THE AGENCY. ATTACH ADDITIONAL SHEETS AS NEEDED

### INTRODUCTION:

As mentioned in our Cover Letter, MSMM Engineering, LLC (MSMM) is one of the fastest-growing small businesses in the greater New Orleans area. We have been identified by the United States Army Corps of Engineers (USACE) as one of the most trusted small business Architect-Engineering (A-E) firms providing Civil Works investigations, analysis, and design. Our recent USACE MVN experience includes investigations, planning, hydraulic modeling, design, project management services, and providing construction oversight of USACE MVN projects. MSMM has maintained multiple civil works design contracts at the USACE Fort Worth and Tulsa Districts, where we average over \$5M in design work annually. USACE MVN recently utilized our Fort Worth contract by issuing a task order for us to provide our proven ability to design large-scale coastal storm risk management projects, through the design development of the over 8,000 CFS Cow Bayou Drainage Pump Station Complex in Orange, TX.

Among the advantages, that we offer you on this assignment is the responsiveness of a local small business with a proven track record, which is backed by a host of large firms with nationwide resources. Our combined resources offer MVN a full-service infrastructure design and construction management team that specializes in civil works projects on a national basis with a deep understanding of the New Orleans District's Design and Construction Mission, as well as your standards, processes, and proven ability to meet your design criteria. Our team has completed full engineering design services for projects diverse as the large flood risk reduction West Shore Lake Pontchartrain Pump Stations and Drainage Structure design project, to the most recent drainage pump station constructed in the greater New Orleans area, the New Orleans International Airport Drainage Pump Station. We have been involved in every aspect of Post Katrina recovery in the area, and our structural engineering team was instrumental in developing the unbalanced load design criteria that have been incorporated into the HSDRRS standards.

In addition to the depth of resources and diversity of geographic coverage, another of the benefits we offer you is a sophisticated understanding of the management of major, multi-year IDIQ-type contracts. Our approach



to contracting is informed by decades—and literally thousands of individual task orders under dozens of master agreements such as yours—of experience with assignments that can result in multiple, simultaneous projects of varying size and technical needs. Indeed, as a team that has been organized to execute Federal agency work, most of the contracts we have performed in the last ten years have been exactly like this one. The flow chart on the previous page shows the internal process we follow on every task order to ensure our design deliverables are provided with high quality.

The services requested in this solicitation require a unique skill set that requires unique knowledge of the USACE civil works design process, as well as a locality knowledge that only firms with prior experience providing civil works design for the USACE districts within the lower Mississippi Valley Division can provide. With multiple offices in the greater New Orleans area, MSMM has a proven track record working within the requested geographic footprint. This statement is validated by the projects we have highlighted in our Resume's and Projects, and the recent contracts we have been awarded. For this solicitation, we carefully hand-selected firms with excellent flood risk management and hurricane and storm damage risk reduction project qualifications, and each of these firms has provided design services for USACE MVN. The biggest asset this team provides is the knowledge of the Civil Works design process, the technology required to provide said design, and the knowledge of the locality to implement these design processes to help reduce the risk of flood damages for communities in Louisiana. MSMM is proud of the recent design work we have completed for USACE and the ongoing Civil Works design work we are currently performing at the New Orleans, Ft. Worth, and Galveston Districts. We feel very confident in our ability to help the New Orleans District plan, investigate, analyze, evaluate, design, and oversee construction for future civil works projects. We feel that our team provides the New Orleans District with a collective group of familiar, proven, and trusted engineers.



### MSMM's Advantages

- **Small Business Experience** - MSMM has complete knowledge of the USACE Civil Works process and has worked on projects requiring expertise at each level of the review process. MSMM personnel have experience planning, managing, designing, bidding, performing construction management, providing engineering support during construction, and interacting with non-Federal sponsors and the vertical team for multiple USACE civil works projects.
- **Flood Damage Reduction Engineering** – MSMM received its start as a firm, working as part of a JV partnership following Hurricane Katrina. MSMM has performed design services on over 80 task orders that had strong schedule commitments made to the public for civil works flood risk management projects. MSMM has designed hydraulic structures, marine structures, pumping stations, levees, drainage canals, highway work, pump houses, and multi-purpose projects.
- **Understands the Region** – Our staff understands the unique nature of the local geology, the unique terrain, and infrastructure and the limitations posed by high groundwater table, poor soil quality, and surface water elevations of surrounding water bodies.
- **Committed Team** – The **MSMM** team is supported by several large businesses who have highly qualified support staff with extensive experience at the New Orleans District. MSMM has previously worked with all the firms that are listed as sub-consultants in Section C. While MSMM will be the prime for this project, we acknowledge that as a Small Business, we don't have the staff volume or expertise to perform all the functions required and will rely on these firms to provide the same level of engineering expertise that MSMM provides with our own staff. For this contract, we will self-perform roughly 75 to 80% of the request services, which far exceeds the 50% threshold requirement.

**Primary Selection Criteria:**

**Criterion (A) – Specialized Experience and Technical Competence:**

In Section F we have included the 12 project examples to show the depth of project experience our engineers have. The table below is a summary showing compliance of the twelve featured projects in Section F and how they fit the theme of paragraph 2(a) in the solicitation. Additional projects have been added to the table that can be found within Section H. In addition, the table also shows the projects with reference to the requirements for greater consideration per the solicitation. Additionally, we have included additional abbreviated project descriptions and expertise related to this solicitation in the following pages of this section to further highlight our capabilities. As you can see, we bring a team that has significant breadth and depth of experience designing many robust civil works projects for USACE.

Project		Hydraulic Structures:	Navigation Structures:	Pumping Stations:	Marine Structures:	Highway Work:	Buildings:	Flood Risk Management	Freshwater or Sediment Diversion:
Projects in F	Cow Bayou Drainage Pump Station Complex	✓	✓	✓	✓		✓	✓	
	Texas City I-Wall to T-Wall Conversion	✓	✓					✓	
	West Shore Lake Pontchartrain Pump Stations & Drainage Structures	✓	✓	✓	✓	✓	✓	✓	
	Permanent Canal Closures and Pumping Stations Design-Build	✓	✓	✓	✓		✓	✓	
	Design of Jefferson Parish Floodwalls	✓	✓		✓	✓		✓	
	Harahan Pump to the River	✓	✓	✓	✓	✓	✓	✓	
	277K Levee Raise and Side Slope Flattening and Delta Pump Station Replacement, Design-Build	✓		✓			✓	✓	
	Houma Navigation Canal Lock and Floodgate	✓	✓	✓	✓		✓	✓	
	Mid-Breton Sediment Diversion Project	✓	✓	✓	✓	✓	✓		✓
	Louisiana Avenue Flood Control Improvements	✓				✓		✓	
	Sabine Pass to Galveston Bay (S2G) CSRM and ER, Preliminary Design	✓	✓	✓	✓			✓	
	New Orleans International Airport Drainage Pump Station	✓		✓	✓		✓	✓	
Projects in H	Montgomery Point Lock and Dam Project	✓			✓				
	Algiers East & West Levees	✓	✓						
	Fender Design at the Oak Street Ms. River Intake				✓				
	Granger Lake Management Office Replacement						✓		
	Mississippi River Diversion into Maurepas Swamp								✓

## Hydraulic Structures:

Our Team's hydraulic engineers and structural engineers have experience ranging from drainage pumping stations inlet and outlet control sizing and screen design geometry, filling and routing of flows in locks, flood gates, and sector gates to determine geometry of the structures, as well as routing of storms through and around canals to determine invert and slope materials and still water and wave impacts, as well as converting wave loads to structural forces and setting the geometry for bulkheads, guide walls and to determine the loadings on and to berth at marine structures. The proposed design team has decades of experience in the design of floodwalls and appurtenant structures. Our Team includes engineers who are very familiar with USACE engineering regulations and design specifications—including many former USACE designers. We have provided hydrologic and hydraulic studies on thousands of projects, including CFD, inflow design flood modeling, sediment and freshwater transport modeling, scour evaluations and modeling, and cavitation assessments and modeling.

## Locks:

This team is composed of trusted firms that have provided the design and inspection of locks for federal clients for decades. In addition to the lock project, we have highlighted in Section F, our structural (MSMM) engineering team has designed literally billions of dollars of infrastructure associated with locks. Our design experience for locks consists of the structural design for gatebay monoliths, chamber monoliths, tainter gate monoliths, tie-in floodwalls, pile foundation, lock culvert operating roller gates, dewatering bulkheads and culvert intake screens. The MSMM structural engineering team was instrumental in providing miter gate and lock monolith designs for the Red River Lock and Dam No.1 near Marksville, LA. This group was responsible for developing design documents for this \$170M project. Additionally, several of our subs have experience designing locks, as can be seen in the closer look box.

## Floodgates:

Floodgates are a design specialty of the MSMM structural and civil engineering team. Our engineers have extensive experience designing floodgates for various projects. For the Company Canal Sector Gate, our engineering team provided designs for an Alternatives Study. Preliminary designs included foundation and structural design of 56-foot Sector and Miter Gated structures. Preliminary designs resulted in further study of the sector gate option. The structure consists of a 56-foot navigable sector gate.

MSMM provided the final foundation design, consisting of 110 ft. steel H-piles, along with the final concrete structure and steel gate designs. MSMM also provided a revised foundation design and base slab analysis for a "sister" structure that was constructed as part of the Westbank Hurricane Protection system.

Other floodgates designed by the MSMM design team consist of the following:

- Harvey Canal Sector Gate
- Seabrook Gate Complex vertical lift gates and sector gate
- Permanent Canal Closures and Pumps (PCCP)
- St. Bernard Floodgates

## A Closer Look: Montgomery Point Lock and Dam Project, White River, AR

The project featured a 300-ft-wide gated navigable pass, a 200-ft -wide ungated overflow spillway, and a 220-ft-wide by 600-ft-long navigation lock. Design services included: studies, review of Project Design Memorandum (PDM), preparation of Feature Design Memorandum (FDM) for the dam and associated equipment, preparation of plans and specifications for the dam and associated equipment and all lock and control tower mechanical equipment. Engineering During Construction services included periodic site visits, responses to RFIs and shop drawing review.

- Client USACE Little Rock District



- LVP-149, Caernarvon Sector Gate
  - Bayou Dupre Sector Gate
  - LPV 147 and 149 highway and railroad gates
  - LPV 145, 146, 147, and 148 vehicle gates
- St. Charles LPV Floodwall Structures
  - Four Bayou, LPV-07c - St. Rose Canal, LPV-07d - Walker Canal and Almedia Canal)
  - Four utility crossing and fronting protection structures (LPV-04a – Gulf South pipeline, LPV-06a - Bayou Trepagnier pumping station, LPV-06b – Shell pipeline, and LPV-06c - Goodhope pipeline)
  - A vehicle gate (LPV-06e - beneath Interstate Highway 310)
  - A railroad gate (LPV-06f - Illinois Central Railroad Gate)
  - Company Canal Interim Risk Reduction Measure (IRRM) barge gate
- Bayou Segnette IRRM lift gate
- WVB-09, Hero to Oakville
  - Oakville Pump Station Sluice Gate
  - Hwy 23 roadway and New Orleans and Gulf Coast Railroad Co. (NOGC) swing gates, preliminary engineering
  - Hero Canal closure, preliminary engineering



### **Floodwalls:**

As described in the 2<sup>nd</sup> project in Section F, MSMM recently finished design of an I-Wall to T-wall conversion for the USACE Galveston District in Texas City, TX. We were identified by USACE SWG to perform this work based on the post Katrina floodwall design we performed in Jefferson Parish. The Jefferson parish floodwall work has been described under Project #5 in Section F. Our engineering team understands and helped develop the HSDRRS design guidelines that are now being applied USACE-wide for floodwalls and levees. Our civil, structural and cost estimating personnel have finalized the design which consists of design plans in Microstation, marked-up version of the Specifications in SpecsIntact, a DDR containing design calculations, a MCACES cost estimate, Phase 1 HTRW evaluation and a Geotechnical Report.

Our team's Floodwall design experience includes both I-wall and T-wall types, as well as highway, road, and pedestrian closure structures. We have designed floodwalls for the New Orleans District in accordance with the HSDRRS Design Guidelines and the regionally specific design practices and analyses it prescribes. Our design team has also worked with USACE Districts across the United States for common T- and I-wall cantilever floodwalls in accordance EM 1110-2-2502 and EC 1110-2-6066, respectively, to prevent flooding (inundation) of land. Cantilever T-type floodwalls are pile supported in the MVN district, but in other regions may include a vertical base key depending on the foundation and resistance to horizontal movement. The I-type floodwalls consist of driven sheet piles capped by a concrete wall and are commonly used for short sections of tie-in with earthen levee and T-type floodwall junctions. Other types of floodwall experience, includes braced sheet piles, cellular sheet pile, gravity, and buttress. As with any water-retaining structure, seepage analysis is a critical design component that can affect the stability from uplift or support loss due to erosion.

### **Levees:**

The MSMM engineering team is intimately knowledgeable in the levee design process at USACE MVN. We have been involved cradle to grave in the development of design plans for earthen levees. Our team is made up of experts that have identified, permitted and tested borrow pits for levees, developed HTRW testing plans and survey for earthen levees, and provided full engineering design services for the development of plans and specifications for earthen levees.

Following Hurricane Katrina, MSMM staff prepared engineering design for improvements to the Algiers levee system on the West bank of the City of New Orleans. These improvements were mandated as part of the USACE MVN Phase 2 hurricane protection enhancements program following Hurricane Katrina. MSMM staff were tasked with taking 3 alignment alternatives identified by USACE and providing further investigation, field work and engineering design to choose the preferred alternative that would provide the mandated 100 year level of protection. MSMM staff provided this and the project was successfully bid and constructed in 2012. Below is a synopsis of our services.

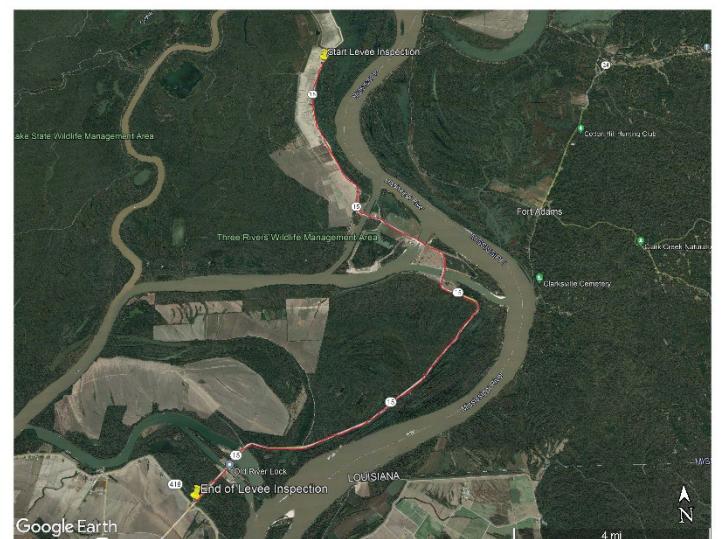
#### Alternatives considered were:

- All earthen levee enlargement, un-reinforced, with a landside shift
- All earthen levee enlargement, reinforced with geotextile, with a landside shift
- Reinforced T-Wall along landside levee toe with existing levee as barge barrier



Based on preliminary field conditions identified by the survey and geotechnical investigations, the identification of conflicts with utilities and relocations, and following the production of preliminary cost estimates, MSMM staff made the recommendation to the engineering branch at MVN to proceed forward with an all-earthen levee enlargement with reinforced geotextile, with a landside shift. The district personnel accepted this recommendation and MSMM staff were tasked with finalizing the design. The design tasks started with the preparation of an Engineers Alternative Report (EAR), which was used in replace of a DDR for this project. MSMM civil, structural, environmental, geotechnical and cost engineers were used for this project. Some of the scope items completed consisted of the following: Structural Analysis for T-wall option: inclusive of pile capacity curves, settlement of piles, bearing capacity, seepage analysis per alternative considered, review, sort, log, evaluate and analyze geotechnical data, assign permeability values, draw finite element mesh, assign phreatic, summarize results (seepage flux, exit gradient, FS, station, etc.), development of EAR, development of ROW drawings, detailed design in MicroStation, and participation in ITR reviews. The project was successfully bid and constructed within budget.

Additionally, our team has extensive experience performing periodic inspections on levees. Between MSMM and Stantec, we have performed a total of over 1,500 miles of **levee periodic inspections** for 12 USACE Districts nationwide. Services included preparation of a project plan, system documentation collection, design criteria review, preparation of a pre-inspection packet for the USACE, field inspection, draft periodic inspection reports, Independent Technical Review, and briefing for the USACE Levee Safety Officer. In fact, earlier this year (2022), MSMM provided inspection USACE walking formal inspection, formerly called a periodic inspection, of the Above Old River Levee segment which is operated and maintained by the 5<sup>th</sup> Levee District. The area of inspection covered approximately 17-miles along LA Highway 15 beginning just south of its LA Highway 910 intersection and extending southerly to the LA Highway 418 intersection (located approximately 1-mile southwest of the Old River Lock). Within this segment there are five structures: Hydroelectric Station, Overbank Structure, Low Sill Control Structure, Low Sill Control Auxiliary Structure, and the



Old River Lock. Detailed inspection of the structures themselves was not included, however inspection of the tie-in between levee sections and structures was addressed.

#### **Navigation Structures:**

Our design team offers an in-depth understanding of all the multidisciplinary requirements needed for planning and design of navigation projects to support USACE's mission to plan, design, evaluate, construct, operate, maintain, and control navigation.

Navigation locks and dams, and channel and harbor project experience, includes rehabilitation of existing facilities as well as design of new facilities. This experience consists of inspection, assessment, analysis (using industry standards in finite element software, including SAP200, STAAD, and ANSYS), detailed and conceptual design, major rehabilitation studies, development of plans, specifications using SpecsIntact, detailed MCACES MII cost estimates, design documentation reports, and EDC services.



Working with USACE to improve shallow draft navigation on the nation's inland and coastal waterways is one of subconsultant Stantec's key services areas, resulting in increased performance, reliability, and safety to navigation dams. Stantec has provided analysis and design services on civil works projects for USACE Districts within CONUS and Alaska and worked on major lock and navigation dams on major river systems across the U.S. and internationally, including the Ohio and Mississippi Valleys, the Gulf Coast, and the Great Lakes. Stantec was the lead designer to deliver the Third Set of Locks project, a key component of the \$5.25B expansion of the Panama Canal, which is one of busiest navigation shipping channels in the world. Stantec delivered the structural, civil, geotechnical, hydraulic and hydrologic, mechanical systems, electrical systems, and controls designs of the new navigation structures. Designs were prepared in accordance with U.S. DOD criteria, including various USACE engineering memorandums.

#### **Drainage Canals and Structures:**

MSMM engineering staff completed design for seven phases of the Soniat Canal Improvements (Southeast Louisiana Urban Flood Control Project), West Metairie Avenue to Canal Number 3 Drainage Capital Improvements. This Federal project was managed by USACE, and co-funded by Jefferson Parish. The project goal was to improve drainage along a major north-south running drainage canal. This project increased the capacity of Soniat Canal from Canal No. 3 to West Metairie Avenue from 3,000 cfs to 5,200 cfs. This project included seven different design phases that consisted of U-shaped concrete flume sections, three box culverts, utility relocations, and sheet piling transitions.

The seven phases were as follows:

- Canal No. 3 to Veterans Memorial Boulevard – 750 ft., concrete U-flume. \$24M.
  - Veterans Memorial Blvd. vehicular bridge replacement – 300 ft., with three box culverts (each 18'H x 36'W)
  - Veterans Memorial to West Napoleon Blvd. – 3,500 ft., concrete flume. \$22.1M.
  - West Napoleon Ave. vehicular bridge replacement – 400 ft., 2 RC box culverts; \$5.8M.
  - W. Napoleon to Lynnette Dr. – 1,100 ft., modified trapezoidal concrete channel, \$8M.
  - Lynnette Dr. to Lester St. – 2,900 ft., modified trapezoidal concrete channel, \$29.7M
- Lester St. to W. Metairie Ave. – 450 ft., modified trapezoidal concrete channel, replace westbound W. Metairie Ave. Bridge, \$8M construction.



## Prestressed and Post Tensioned Concrete Structures:

Our team offers extensive experience and innovative design of prestressed and post-tensioned concrete structures for bridges and civil works structures. Existing bridge design for both the Comite River Diversion project in Louisiana, and the design of new bridges for the Dallas Floodway project in Dallas, TX are utilizing prestressed and post tensioned concrete structures. The engineers on our team were one of the first to develop computerized capabilities for the design of pretensioned beams, we have seen and experienced the exponential changes in the design of concrete sections over the past five decades and have modified our software capabilities to stay current. Additionally, we maintain a suite of third-party bridge design programs such as LEAP Software's Conspan. Our current experience includes the design of both pre-tensioned and post-tensioned bridges in accordance with both AASHTO's Standard Specifications and their LRFD Bridge Design Specifications. We are performing active EDC of Conspan bridges in St. Bernard Parish and part of the FEMA/GOHSEP post disaster grant program.



## Pumping Stations:



MSMM is one of the leading designers of pumping stations in the greater New Orleans area. In fact we have designed the two most recent stations constructed in Jefferson Parish, and have initiated design on a third. In Section F, we have described our design experience for multiple pump station projects, including Project #1 the Cow Bayou Drainage Pump Station Complex, and Project #6, The Harahan Pump to the River Project, #7 Delta Pump Station Replacement and #12 the new drainage pump station at the New Orleans International Airport. In addition, we have included pumping station experience from several teaming partners in Section F, highlighted by Project #3 West Shore Lake Pontchartrain, Project #4 Permanent Canal Closures and Pumping Stations (PCCP).

As can be seen throughout the detailed project write-ups in Section F covering pumping stations, MSMM and our teaming partner have designed some of the largest, most complex pump stations with pumps from 100 cfs to 24,300 cfs, this team can successfully provide the New Orleans District with innovative engineering solution services resulting in effective and resilient storm damage reduction. Our design team is experienced implementing the HSDRRS Guidelines, as well as other critical EMs, ETLs, and guidelines, to deliver USACE civil works designs.

## **Marine Structures:**

MSMM has a recent track record of performing design on Marine Structures for a variety of projects. We have recently designed a small drainage pump station, sewer lift stations and a sludgeline that required design for crossing the Mississippi River levee, and for dolphin structures to protect the discharge piping. For the design of the New Orleans International Airport drainage pump station, the intake basin canal that was dug required guide walls on each side of the structure and a bulkhead was designed on the discharge side of the structure. Additionally, MSMM is currently designing a large concrete box culvert in Jefferson Parish that will require a guide wall in the residential end of the structure. In the closer look box, we describe ongoing services we are providing to the New Orleans Sewerage and Water Board for replacement of their fender systems protecting the water intake structures.

### **A Closer Look: Fender Design at the Oak Street Mississippi River Intake**

On February 2, 2016, the crude oil tanker Nordbay traveling on the Mississippi River struck the New River Intake and then struck the Old River Intake before continuing down river. The two Sewerage and Water Board (S&WB) drinking water intakes remained functional but the protective dolphin structures were damaged at both river intakes. As the location of the river intakes is in a bend, and is exposed to similar impact events, the S&WB asked MSMM Engineering to develop design alternatives that would provide a similar or slightly better form of fender protection to the intake pipes at the Oak Street Water Intake.

MSMM has recently completed the alternative development phase, which consists of preliminary design, cost estimating, public meetings, meetings with the river pilots association and tug boat operators for three alternatives. The three alternatives are as follows:

- Alternative 1 consists of a series of 5-8 ft. diameter, filled steel pipe piles driven in front of the existing structure to form a protective line in front of the water intake.
- Alternative 2 consists of a series of 5 clusters of 5 ft. diameter, steel pipe piles driven in a 10 to 12 ft. diameter circle and tied together with steel members. These will also be placed in front of the existing structure.
- Alternative 3 consists of 5-5 ft. diameter vertical steel pipe piled, each with a 24" diameter battered pipe pile to laterally support the vertical pile. These A-frames must be located so that the battered piles can be driven through the three existing jacketed structures without pile interference.

Once S&WB picks an alternatives, MSMM will provide full engineering design on the selected alternative and go through a full 404 permitting action with USACE.

- Client: Sewerage and Water Board of New Orleans



## **Highway Work:**

When it comes to highways, roads, ramps, culverts and bridges, no other team can claim the depth and breadth of experience that our team offers. MSMM was named the top small business for roadway design by the City of New Orleans in 2016. That was rewarded through the design of over \$20M in City of New Orleans streets over the past five years, through the FEMA Recovery Roads program. Furthermore, MSMM is currently designing roads, bridges, elevated boardwalks and culvert crossings for multiple USACE projects for the Ft. Worth District. MSMM recently completed final design for over 2 miles of concrete trails, roadways, surface parking lots and the design of 2 large bridges as part of the Dallas Floodway Extension project. The large bridge crossing of the Trinity River is over 150 feet in length and has been modeled utilizing CIM.



Subconsultant AECOM is a worldwide leader in the planning and design of roads; they provide a full suite of services including planning and feasibility, traffic impact, and route studies, highway design, bridge design and box culverts, retaining and MSE walls, utility relocations, bridge load and scour analysis, bridge inspections including welding inspections, structural assessments, and much more. The AECOM Team supports city, county/parish and state Departments of Transportation in virtually all US states and have also performed roadway designs for civil works and DoD projects across the country and internationally. Roadway design and analysis is exemplified by the levee design they completed for LPV 109 which included building Interstate 10 over the levee system, this required phased traffic detours with a temporary bridge and then full restoration of the Interstate and its bridges while maintaining traffic 24-7 throughout the year. Due to the height difference between the new and existing Interstate lanes, MSE walls were designed and constructed to minimize detour shift widths while still complying with LaDOTD design standards. This project also included roadway work and flood gates at Chef Mentuer Highway and adjacent parallel roads. Lastly this project required a bridge across the local canal going to pumping station number 3.

### **Buildings:**

MSMM employs a full architectural team for the design and implementation of Federal buildings, and pump/safe houses associated with the drainage pump stations we design. The MSMM architectural team has designed pump houses for the drainage pump station at the airport, and the safe house for the Cow Bayou Drainage Pump Station Complex. They also completed full architectural design for a new 6,000 square foot lake management office building for the USACE Ft. Worth District in Granger Lake, Texas. This facility was successfully bid, and the construction award was issued on the last day of the fiscal year two years ago. Through the periodic inspections we provide, we have determined that the project is roughly 75% complete.



The design package referenced above is for the replacement of the Granger Lake office management facility that houses the Lake Ranger and administrative staff. This 6,000 square foot building features Texas limestone and has been designed for an inside/outside type feel. Given the location and the occupation of the professionals working at the facility, they wanted an appearance and feel of a lodge. The lobby will feature multiple displays for arrowheads, deer mounts and other displays that have been collected within the Granger Lake grounds. The center piece of the lobby will display a mammoth pelvis that was found on the grounds. Design considerations have been devoted to displaying these items. Furthermore, a large conference room has been added and positioned to provide grandiose views of the lake. This conference room will hold up to 60 people and will be the featured attraction for the building.

The MSMM design consisted of: site development, new construction inclusive of all required services (i.e. electrical/mechanical/ fire protection/life safety/civil/structural/architecture). The new facility also includes the design of landscaping, new paving, paving repairs, and force protection. Site lighting design was also provided with parking for visitors and staff, as well as the fencing required for the government vehicle and equipment compound behind the new office. A septic field was designed and incorporated into the compound. Considerable design considerations were given to domestic water and water supply as the area is very remote and the active utilities would not support the size of the facility given the number of plumbing fixtures. After considerable effort working with the local water purveyor, MSMM civil engineering staff decided to design a storage tank within the government compound for domestic water and fire suppression. A BIM model was completed for the facility and

incorporated the mechanical platform that was added above the ceiling. The building also features a safe room for extreme weather events. MSMM architectural staff completed engineering support during advertisement (EDA) services and engineering support during construction inclusive of site visits, reviewing submittals and RFI's, and providing periodic inspections. Below is the architectural rendering of the front entrance of the facility.



#### **Flood Risk Management and Hurricane and Storm Damage Risk Reduction Projects:**

Throughout Sections E, F, and above in H, we have documented the number of Flood Risk Management and Hurricane and Storm Damage Risk Reduction projects that MSMM completed as part of a JV after Hurricane Katrina and is still performing as part of our prime contract at the Ft. Worth District that New Orleans District is utilizing for the Cow Bayou project. Additionally, below is a synopsis of other projects completed by MSMM personnel that have not been previously described:

##### **Flood Risk Management and Hurricane & Storm Damage Risk Reduction Experience:**

- MSMM has completed over 80 small business task orders for the USACE MVN related to Flood Damage Reduction: including Risk Management task orders for Hydraulic Structures.
- MSMM has completed assessment and design (for USACE) of levees, floodwalls, monoliths, T-walls, slope pavement, levee lifts, pump stations, intake channels and box culverts, discharge basins, and control structures.
- Specific items completed by MSMM for these task orders consisted of : DQCP, DDR, MII cost estimates, Primavera P2/P6 schedules, Plans and Specifications, Technical Reports, CAD and Microstation Design Civil, Structural and Environmental Engineering Design, Feasibility Studies, Technical Writing, Report Writing.
- Specific to Structural Engineering. Assessment and design of levees, floodwalls, T-walls, penetration of floodwalls, outfall pump stations, frontal protection, coastal restoration, breakwaters, weirs, culverts, structural foundations, new monoliths, and demolition and reconstruction of existing floodwall monoliths.
- Specific to H&H: Hydraulic studies and modeling (HydrWIN, HYDR6020, HEC-HMS, HEC-RAS, SWMM, TR55, SewerCAD, InfoWorks), GIS.
- Construction Phase Services: Daily monitoring of USACE construction projects, use of USACE's RMS program, monitoring steel pipe piles, driving steel sheet piles, driving steel H-piles, driving concrete piles, concrete base slabs, concrete monoliths for T-walls, building of concrete access bridges, excavation of material for T-walls, embankments, etc., Shop Drawing Review and Resident Inspection.

MSMM's Principal, Mr. Manish Mardia, created HPA (a JV entity) and MSMM staff successfully executed 84 USACE New Orleans District task orders related to flood risk reduction infrastructure design, water resources design, engineering analyses and design, levee design, levee inspection, T-wall design, pump station investigation, preparation of EARs, multiple geotechnical investigations and studies, and supported 28 IERs related to USACE Hurricane Storm Damage Risk Reduction System (HSDRRS). He was principal in charge of 14 SELA (Southeast Louisiana Urban Flood Control) projects in Orleans and Jefferson Parishes, LA.

MSMM flood risk management experience within the SELA program spans design, engineering feasibility, economic viability tested by undertaking a Cost-Benefit analysis and Benefit-to-Cost Ratio (BC Ratio) calculation, Section 533d study or a Feasibility Study, Hydrology and Hydraulic Modeling (HEC-HMS, HEC-RAS), construction documents (Plans and Specifications), cost estimates, engineering during construction, and public outreach for large drainage pump stations, drainage channels/box culverts, and levee improvements including T-walls, levee lifts and armoring earthen levees.

Our hydraulic structure design experience includes dams, levees, floodwalls, bridges, spillway structures, cofferdams, hydraulic barrier parapets, hydraulic channel guide walls, lock walls, and outlet works structures. We have designed a variety of gates that are either integral with or penetrate through these hydraulic structures. These structures are subject to some of the most stringent design criteria, are designed with specialized analytical methods, and contain highly specialized features due to the risks associated with system failure. The long length of many hydraulic structures amplifies risks because a failure at any location results in complete system failure. Key design considerations include:

- Loading conditions (water, soil, wave, seismic, seepage uplift and erosive seepage force loads and overtopping scour)
- Stability (overturning, sliding, and global)
- Foundation support systems, settlement control, and structure deflection control
- Soil (structure interactions and resistance mobilization)
- Structure through-seepage control measures
- Under-seepage control measures
- Overtopping prevention and/or damage control measures
- Specialized treatment of joints and penetrations

In addition, below is a list of projects completed by the structural engineering team at MSMM. The MSMM structural engineering team is led by Mr. Bob Yokum. Mr. Yokum has over has over 40 years of experience in the design and construction of both large and small civil works projects for the U.S. Army Corps of Engineers in the Mississippi and Ohio River valleys. Mr. Yokum was employed by the USACE New Orleans District for over 12 years. His structural design and review experience includes Red River Waterway Lock and Dam No. 1, John H. Overton Lock and Dam, Olmsted Dam, Amstar Floodwall, Old River Auxiliary Control Structure, repairs to the Morganza Spillway and numerous design memoranda, studies and structural inspections. Mr. Yokum has provided detailed foundation and structural design, construction plans and inspections for all types of gated and non-gated dam and auxiliary monoliths including spillways, outlet structures, concrete retaining walls, stilling basins, training works and various structures associated with spillways and outlet works.

### **New Orleans Outfall Canal Permanent Pump Stations – New Orleans District**

Provided structural design and consulting services during the design of the permanent pump stations at the 17th Street, Orleans Ave. and London Ave. drainage outfall canals. Designs include deep pile foundations for the major floodwalls and levee tie-ins, foundation analyses for large bypass and pump station structures and cantilever retaining wall designs. Consulting services consist of evaluation of design alternatives, solving construction issues, coordination of design with USACE and providing overall design support for \$625M design build project.

### **Clearview Pump Station – Jefferson Parish**

Provided design for a 750 cfs pump station and discharge piping. Designs included foundation and structural design of pump station structure, equipment foundation pads and piping support bents.

### **Company Canal Sector Gate – New Orleans District**

Provided designs for Alternative Study. Preliminary designs included foundation and structural design of 56-foot Sector and Miter Gated structures. Preliminary designs resulted in further study of the sector gate option which will be incorporated into the hurricane protection. Structure consists of a 56-foot navigable sector gated structure.

Total gate height is 26 feet. Overall structure dimensions are approximately 78 by 160 feet. MSMM provided the final foundation design, consisting of 110 ft. steel H-piles, along with the final concrete structure and steel gate designs. MSMM also provided a revised foundation design and base slab analysis for a "sister" structure that was constructed as part of the Westbank Hurricane Protection system.

### **Foundation Analyses – Cataouatche Fronting Protection**

Provided GROUP 7 foundation analyses with and without unbalanced loads for numerous T-wall monoliths associated with the fronting protection structures at the Lake Cataouatche Pumping Station in Jefferson Parish. Analyses were performed in accordance to the latest HSDRS criteria and the T-wall procedures developed by the New Orleans District.

### **Mississippi River Levees – Gretna to Point Celeste Levee Enlargement and Concrete Slope Paving Repairs, Mississippi River West Bank – West Jefferson to Belle Chasse:**

This work is an implementation of the work recommended as part of the Flood Control Mississippi River and Tributaries Project and is part of the effort to restore current authorized flood protection levels for the Mississippi River Levee Project. The project plan included a levee enlargement of approximately 43,000 linear feet of earthen levees in West Plaquemines L.D. intermittent from Sta. 143+00 to Sta. 740+00 with earthen materials to the Pre-Katrina riverine construction grades. Only areas of levee that were 12 inches or more below design grade were brought to grade. Both a landside enlargement and floodside enlargement with slope paving replacement were completed. In addition the damaged concrete slope paving at approximately 40 sites, in West Jefferson L.D., Orleans West L.D. and Plaquemines Parish West Bank L.D were repaired including removing the temporary stone blankets with geotextile separator fabric, repairing the erosion to the levee embankment and placing new concrete slope paving.



### **Freshwater and Sediment Diversion Projects:**

Our Team is uniquely qualified to perform the work in this IDIQ Contract, having worked on three (3) diversions in Louisiana, all involving LA CPRA and the District. We have also participated in other freshwater diversions, including for the Minneapolis District on the Fargo-Moorhead Diversion and for the US Section of the International Boundary and Water Commission on the American River Diversion.

The New Orleans area is unique, built around the freshwater and sediment-laden Mississippi River (MR); connected via rivers, bayous, and lakes to the saltwater of the Gulf of Mexico; and protected by an irreplaceable delta of wetlands that is rapidly disappearing. Restoring upriver wetlands perishing due to being cut-off from the MR and assaulted by saltwater intrusion requires continual replenishment of freshwater, while the deltaic wetlands urgently need the sediment that the MR historically provided which created the accretion of land that originally formed the delta.

Our design team includes a core staff of qualified and technical competent engineers, scientists, and hydraulic modelers who offer dynamic solutions to preserve, protect, and enhance ecosystems. Freshwater and sediment diversion structures include gates, levees, channels and receiving basins. Modifications to existing levees, canals and rivers requires understanding of USACE criteria for the existing systems and the geomorphology of the river systems. Diversion design is based on detailed hydraulic modeling of the existing and proposed conditions, including 3D CFD like Ansys and Flow3D and HEC-RAS and physical modeling. When altering flow of flood control systems and rivers, special attention must be placed on risks, possible future conditions and soil conditions to design and build a resilient and reliable diversion that is easy to operate and maintain.

As detailed in Section F, Stantec is currently providing detailed design services for the Mid-Breton Sediment Diversion (with MSMM providing Cost Engineering support) The project includes design of the diversion structure, as well as in-river hydrodynamic and sediment transport related data collection and modeling, geotechnical exploration, and USCE Section 408 permitting. Hydrodynamic and sediment transport modeling are being performed using software packages such as HEC-RAS, Flow-3D and Delft3D. The models were calibrated to short- and long-term sediment transport in the adjacent reach of the Mississippi River. The anticipated sediment diversion rate is more than 15,000 tons per day. In addition to numerical modeling, a scaled physical model of the diversion was utilized to evaluate hydrodynamics and sediment transport through the diversion.

#### **Multi-Purpose Projects:**

MSMM has been involved as a designer of Section 219 Environmental Infrastructure projects for the New Orleans District over the past several years. Under this program, we have designed sewer forcemains and liftstations (as described in our Resumes), as well as sludge ponds, and a large sewer treatment plant. The following is the project description for the treatment plant project:

Through a federal program to fund Environmental Infrastructure, Section 219, WRDA 92, within local municipalities, our team representing the USACE New Orleans District, worked with the Ascension Parish Government, the non-federal sponsor, to design a regional wastewater treatment plant (WWTP) adjacent to a recently designed sewer pump station (designed by our team under a separate task order). Ascension Parish utilizes a fragmented system of treatment options with subpar results that vary by the various developer of each housing subdivision. The current system includes septic tanks, package treatment plants, and an oxidation pond, all of which discharge into local ditches and streams. USACE received approved funding for this area, as high growth and expansion of existing subdivisions will continue to contribute to a poor environmental situation. The WWTP is one step of a regionalization plan, which our team developed, to bring all wastewater in the area to a single advanced treatment facility and discharge the treated effluent into the Mississippi River in lieu of local ditches.

We provided 100% civil design plans and specifications (utilizing Specs Intact) complying with the USACE submittal requirements for a new 1.8 MGD (million gallon per day) WWTP to increase treatment capacity and facilitate regionalization of the Parish. Design included site layout, utility relocation and replacement, detailed cost

#### **A Closer Look: Mississippi River Diversion into Maurepas Swamp**

AECOM is currently working on the MR Diversion into Maurepas Swamp in St. John Parish, LA. This was initially a USACE project, then a LDNR project and is now a LA CPRA project. The Maurepas Diversion will convey 2,000 cfs of MR water into the wetlands south of Lake Maurepas. AECOM prepared a hydraulic feasibility study in the early 2000's including 1D, 2D, and 3D hydraulic modeling to establish the diversion capacity, evaluate water dispersion in the swamp, and assess backwater impacts to local drainage. Current efforts include developing final contract plans and specifications for a river intake; pile-supported, sluice-gated headworks structure; multi-barreled box culverts under River Road; a stilling basin; a 5.5-mile-long conveyance channel with guide levees; two Class-One Railroad crossings, one over the tracks via a RR bridge, the other under via a multi-barreled box culvert; and a multi-barreled box culvert crossing of Airline Highway. The project also includes widening the existing Hope Canal from Airline Highway to Interstate 10, increasing carrying capacity from 100 - 300 cfs up to the required 2,000 cfs. Underwater weirs were also designed to prevent short-circuiting through two channels within the Maurepas Swamp, along with excavation cuts in an old railroad embankment to enhance water dispersion throughout the swamp.

- Client: CPRA

estimating and construction phase services. We included sustainability features in the project specifications which included the use of several Energy Star appliances and distribution of HVAC systems within the facility.

The treatment plant design includes a new facility on an eight (8) acre parcel of land owned by Ascension Parish. Our team was responsible for all pump station hydraulic calculations and piping sizing. The design consisted of a dual set of treatment processes for redundancy and included an influent pump station, headworks with screens and grit removal, anoxic tank, oxidation ditch, clarifier, chlorine contact chamber, sludge age controllers, aerobic digesters, belt filter press with new building, maintenance shed, generator, administration building as well as site fencing, drainage and internal



asphalt/gravel roadways. The administration building features two offices, laboratory, break room, control and server rooms, rest rooms, storage and a maintenance shop in the 3,200 SFT facility.

Based on the regionalized master plan that our team completed under a previous task order, the facility was designed so that a future aeration basin and clarifier can be constructed to easily upgrade the treatment plant to 2.7 MGD as additional capacity is needed. As part of the design, our team developed treatment plant hydraulic profiles and process flow diagrams for average daily and peak hourly flows for the 1.8 MGD and 2.7 MGD facility, reviewed scenarios where one unit out was temporarily of service and prepared all process unit calculations for the entire treatment plant. The civil engineering design included sizing of the influent and effluent pump station, headworks design, and site layout including site drainage, access roads and process piping.

The structural engineering design included the reinforced concrete structures for all process units, pump stations and slabs on grade. Structural design also consisted of the CMU electrical/control buildings, as well as pile design for all structures and buildings.

The geotechnical investigation included the drilling of three deep undisturbed sample type soil test borings, ten shallow auger borings to determine subsoil conditions and stratification, and eleven CPTs to augment the soil test borings. Soil mechanics laboratory tests performed on samples obtained were used to evaluate the physical properties of the various substrata. Engineering analyses, based on the available soil boring and laboratory tests were made to determine recommendations regarding site preparation, excavations and dewatering, lateral earth pressures, estimates of allowable soil bearing values, estimates of settlement and general foundation construction procedures, and recommendations for flexible and rigid pavements.

Discharge of the WWTP effluent is routed to the Mississippi River through an effluent pump station and force main. In addition to the design-bid-build civil design plans and specifications, our team was also responsible for project permitting through LADEQ, LADHH, LADOTD and CPRA of Louisiana. Additionally, our team was responsible for detailed MII cost estimating, presentations at public meetings, ROW determination, utilities design and coordination, topographic and utility surveying, and detailed geotechnical investigations.

## **Criterion (B) – Professional Qualifications**

As can be seen in our response to Criterion 1 requirements in the foregoing materials, project experience is one of the strengths of our team. However, just as important to the success of the program is the quality of our people, and we believe that we offer the advantage of consistent quality of proposed personnel across the board.

The first key to success related to personnel qualifications is the background and experience of the management team, in this case comprising the Program Manager, Manish Mardia, and the Project Managers Chantrell Carriere and Dani Alexander.

**PROGRAM MANAGER:** Manish Mardia will serve as the **single point of contact** between the team and the client and be responsible for meeting all contractual obligations of the prime and all sub-consultants. Mr. Mardia will also have responsibility for task order oversight, resource allocation between tasks and participating firms, and development of the quality control program.

In a similar role for the last ten years as a Program Manager on major IDIQs, Manish Mardia will have primary responsibility for administrative and contractual duties, task order oversight, and resource allocation; and will be the primary point-of-contact for this contract. He will ensure that the most highly qualified Project Managers and Project Delivery Teams are placed on each task order by balancing these factors as guides for selection:

- Technical qualifications, expertise, and past performance doing the requested type of work
- Specialized planning, design, or engineering services that may be required
- Specific customer knowledge and relationships regarding the site and the work
- Same teams on same types of projects
- Familiarity with the project location
- Geographic proximity to the project site
- Capacity and availability to perform the work based on the required schedule

Mr. Mardia's recent past is of particular interest in evaluating his professional qualifications for his role as Program Manager and his extensive experience in major infrastructure programs. Following the massive damage Hurricane Katrina, Mr. Mardia put together a joint venture entirely composed of small business entities to respond to the New Orleans District's need for a design consultant to assist with its hurricane recovery program and critical infrastructure assessment and design. Under the resulting IDIQ awarded to this team, led by Manish as Program Manager, over 80 task orders were executed in three years. Services included planning and design for repair and replacement of multiple miles of existing horizontal infrastructure, floodwall and levee systems.

**PROJECT MANAGERS:** Ms. Chantrell Carriere and Ms. Dani Alexander have been assigned as the Project Managers for this solicitation. They will not only lead individual task orders personally but will also be responsible to the Program Manager for oversight of the contract and interaction with MVN design managers. This role will require that they conduct regular progress review meetings to evaluate conformance to plan (schedule, cost, labor hour budgets, % complete, etc.) in connection with the various ongoing task orders. Both of our identified project managers are well suited for this role, as they have worked in the New Orleans District for the past several years, understand the expectations, know the people, and are diligent works who pay extremely close attention to detail when delivering projects.

Personnel/Role	Education	Registration	Total Experience			Experience Related to Scope of Work		
			Employed by Prime	Yrs. With Firm	Total Years	DoD Exp.	Sec. F. Exp.	Exp. In Proposed Role
Manish Mardia / Program Manager	M.S., B.S.	PE	✓	11	28	✓	✓	✓
Robert Yokum / Structural Engineer	M.S., B.S.	PE	✓	11	42	✓	✓	✓
Bruce Lelong/ Structural Engineer	B.A., B.S.	PE		22	27	✓	✓	✓
Ramesh Kalvakaalva/ Structural Engineer	M.S., B.S.	PE, CVS	✓	11	32	✓	✓	✓
Jim Wilson / Civil Engineer	B.S.	PE, LEED AP	✓	10	34	✓	✓	✓
Scott Chehardy/ Civil Engineer	B.S.	PE	✓	8	26	✓	✓	✓
Jeff Pena / Civil Engineer	BS	PE		3	25	✓	✓	✓
James Hance / Geotechnical Engineer	MBA, M.S., B.S.	PE		19	23	✓	✓	✓
Chad Poche / Geotechnical Engineer	M.S., B.S.	PE		11	29	✓	✓	✓
Tom Willis / Hydraulic Engineer	MBA, B.S.	PE	✓	7	40	✓	✓	✓
Stephen Sanborn / Hydraulic Engineer	M.S., B.S.	PE		14	18	✓		✓
Nicolas De Graaff / Cost Engineer	A.A.S., A.A.S	PE, CFM		15	15	✓		✓
Don Daigle/Cost Estimator	A.A.S., A.A.S	CVS, CPE	✓	7	38	✓	✓	✓
Harry Hawney / Electrical Engineer	MBA, B.Eng	PE	✓	11	44	✓	✓	✓
Bradley Buchanan / Electrical Engineer	B.S.	PE		7	8	✓	✓	✓
Dennis Strecker / Mechanical Engineer	M.S., B.S.	PE		4	44	✓	✓	✓
Lakhibir Chauhan / Mechanical Engineer	M.S., B.S.	PE		4	43	✓		✓
Trey Johnston/Corrosion Engineer	BE	PE		15	15	✓		✓
Marty Tittlebaum / Environmental Engineer	Ph.D., B.E., M.E.	PE	✓	8	44	✓	✓	✓
Steve Finegan / Architect	M.S., B.S.	AIA	✓	5	34	✓	✓	✓
Andrew Doyle / Landscape Architect	BLA	PLA		1	9	✓		✓
James Chustz / Registered Land Surveyor	B.S.	PLS		27	48	✓	✓	✓
Adele Ray / 3-4 Modeling CAD/BIM	BA			2	20	✓	✓	✓
Laura Lienhop / CIM Modeler	AA			37	40	✓	✓	✓
Silong Lu / Hydrologist	Ph.D., M.E., B.E.	PE		11	34	✓		✓

Nathan Quick / Geologist	M.S., B.S.	P.G.		1	5	✓		✓
Julian Chustz / GIS Analyst	B.S.	PLS		14	14	✓	✓	✓
Blake Conner / Topographic Survey Party Chief				8	8	✓		✓
Lonnie Dupont / Topographic Survey Party Chief				22	26	✓		✓
Craig Villemarette / Hydrographic Survey Party Chief				22	26	✓		✓
Tom Odom / GPS Survey Party Chief	AS			4	28	✓		✓
Chantrell Carriere / Project Manager	BS		✓	5	16	✓	✓	✓
Dani Alexander / Project Manager	AS		✓	7	24	✓	✓	✓

Our Team includes registered/licensed engineers, geologists, architects, and surveyors with the professional qualifications and specialized experience to perform and/or oversee our work – confirming it is accomplished as required by law and professional engineering, architectural, and surveying practices. Each proposed Team member was selected because of proven technical competence on projects of similar size and scope, as well as relevant experience working on previous contracts for the USACE and other Federal agencies. As highlighted in Section D and the exhibits below, we have an extensive team of qualified technical staff who are supported by subcontractors and personnel throughout the footprint of the MVD, New Orleans District, and nationwide.

#### **Criterion (C) – Capacity to Accomplish the Work**

MSMM is a proven small business with the ability to execute multiple task orders at one time. MSMM currently executes approximately \$4-5M per year in task orders for USACE, and over 80% of those task orders are completed with in-house personnel. MSMM does not perform any fieldwork outside of site visits, so fieldwork will be subbed to the many specialty firms on the team. For this solicitation, MSMM will also sub out any hydrologic modeling to the expert modeling firm (Dynamic Solutions) that has been added to the team for that specific purpose. For design services, MSMM plans to handle most of the design in-house and rely on our two large subs in Stantec and AECOM where design support is needed. For the past five years we have been able to execute this model to the satisfaction of multiple USACE districts, and we don't see a need to change for this pursuit. Performing at least 50% of the work will not be an issue with this contract.

MSMM currently has three (3) active task orders between the Tulsa, Ft. Worth and New Orleans Districts. Every task order is over \$250,000.00 in value, and the government is receiving exceptional service from the MSMM engineering team. We invite you to reach out to Ms. Kalli Clark-Egan or Ms. Sandra Allen, the design managers at the Ft. Worth District to inquire about our current production given the volume of work we are providing. Ms. Allen can be reached at: (817) 886-1669 and Ms. Clark-Egan at (409) 766-3846. For recent design services completed in the New Orleans District, we invite you to reach out to Mr. Charlie Brandstetter, at (504) 862-2501.

#### **Computer Aided Drafting – Microstation**

MSMM employs multiple personnel with extensive Microstation drafting backgrounds. We have the proven ability to provide project plans in A/E/C standard using Microstation Version V8i. We also have the capability to import and export \*.dxf and \*.dwg formatted files and convert from \*.dwg to \*.dgn and vice versa. MSMM Cad personnel are currently providing drafting for multiple USACE Civil Works projects in the required software and format.

MSMM has designed over 25 projects that have been constructed for various USACE Districts and is currently in the process of designing 6 projects for the Ft. Worth and New Orleans Districts. Many of these projects are detailed throughout our Resume's and Project sheets. MSMM has extensive knowledge of the USACE design process and currently uses Microstation Version V8i for all of our drafting services. All USACE design standards are submitted in A/E/C standard. Our CADD system complies with the Spatial Data Standard for Geographical

Information Science (GIS) and the Architectural Engineering CADD (AEC) Standard. All our CADD stations are capable of importing and exporting \*.dxf and \*.dwg formatted files and converting from \*.dwg to \*.dgn and vice versa. We also have ArcGIS Desktop 10.0 for GIS purposes. We can provide electronic CADD files via numerous forms of media available today, including CD-ROM, DVD, flash drives, through our FTP site, or directly over the Internet via electronic mail.

Our experience also includes preparation of 3-D digital terrain models (DTMs) for civil layout designs such as channel and dike cut-and-fill designs and quantity computations. We have successfully implemented the Building Information Modeling (BIM) design philosophy using Autodesk Revit and Civil 3D on several projects, such as for architectural type projects like we are currently designing for a new Lake management office building in Granger Lake, Texas. Using these programs within the BIM framework allows for building intelligent databases of key project components and systems, overlay of electrical, mechanical, architectural, and civil/structural elements to identify and eliminate conflicts (clash detection), and production of civil/structural backgrounds for use for electrical and mechanical system layout. Virtual clash detection eliminates field construction changes that can be costly and challenging to project schedules. Two-dimensional construction drawings are extracted from the BIM model, which is developed with all of these factors in mind, for use by the contractor.

MSMM is also intimately familiar with the USACE review processes and uses DrChecks for all reviews. MSMM design staff have gone through reviews at the 30/60/90 review stages, as well as ITR's, ATR's, BCOE reviews and in some instances IEPR reviews. Our engineers are familiar with putting together construction schedules, DDR's, DQCP's and in when required for architecture projects, we have completed BIM models, BIM project execution reports and design charrette reports. MSMM has completed these engineering phase services for several inland USACE projects under the Section 219 program – sewer lift stations, sewer treatment plant, closure of sludge ponds and sewer forcemains, for recreational projects like trail layouts and bridge design, and for more traditional civil works projects such as levees, gates, pump stations and drainage projects. The basis for our CADD and Graphics system is Microstation running on a PC network with comprehensive backup protection.

### Cost Estimating

- MCACES experts who perform 60/90/100 MCACES level experts for all Civil Works projects.  
Our projects that require Cost Engineering as a component take into consideration:
  - **Cost Estimating** - the creation of cost estimates for new construction, renovation, and environmental remediation projects
  - **Scheduling** -the set-up, monitoring and analysis of project schedules for various endeavors using critical path or network analysis systems or other methods; and in addition
  - **Project Controls, Project Planning, Economic Analysis, Cost Risk Analysis, Performance and Productivity Management and Contracts Management**

Our personnel's construction engineering staff have extensive experience in the preparation of quantity take-offs, cost estimates, and schedules through experience in the construction of locks and dams, flood control, water resources, and ecosystem restoration projects throughout various USACE districts. Our Cost Estimators are very familiar with the use of estimating software such as USACE's MCASES II. MSMM employs a MCACES expert who was formerly a cost engineer for the USACE Jacksonville District. In some instances his MCACES estimates have been reviewed by the Cost Expertise at the Walla Walla District. To date, for the construction jobs MSMM has designed and bid through USACE, all have been bid within the IGE established as part of the MCACES estimate. Our cost estimating team members have served on the MII beta testing team during implementation of the new MCACES software. MSMM offers the capability of applying second generation of Micro-Computer Aided Cost Estimating System (MCACES) – MII, to any project requiring Cost Engineering or Cost Estimating. Our Cost Engineers constantly keep updated with changes in the software versions and associated Cost Libraries since this is a requirement for most of our current projects with USACE districts. Our Team is well versed in the use of this Cost Estimating Software in conjunction with Construction Scheduling utilizing MS Project or Primavera P2 of P6.

Most importantly, our estimators and designers are fully involved in developing line-item contingencies, documentation, and appropriate back-up for various levels of cost estimates from feasibility through plans and specifications. Our experience with the MCACES system includes applications for planning, design, and construction. Our personnel have provided cost estimating for projects such as:

- USACE Hillaryville Section 219 Environmental Infrastructure
- USACE East Baton Rouge Section 219 Environmental Infrastructure
- USACE Dallas Floodway Extension Recreational Design
- Timber Creek Recreational Design
- USACE Herbert Hoover Dike
- USACE Algiers Canal Levee Improvements
- USACE Jefferson Lakefront and West Return Canal Floodwall and Structures Improvements
- USACE Segnette State Park Floodwall

### **Geotechnical Criteria**

For this contract MSMM will use 2 geotechnical sub-contractors that will perform soil borings and soil testing and analysis in accordance with the New Orleans District geotechnical criteria:

Eustis Engineering is the oldest geotechnical firm in the South. Their working relationship with USACE began in 1960, when they performed soil testing for the Bayou Plaquemine Pumping Station in Plaquemine, LA. Since then, they have completed nearly 1,200 projects for the USACE. This work history gives their engineering staff extensive investigation and analysis experience and working knowledge of Design Standards, as well as unparalleled familiarity with the foundation conditions in the Gulf Coast. Most of the Eustis work has been completed for the New Orleans District. They have completed over 1,000 levee projects, 300 floodwalls projects, and 50 diversion projects. Field explorations and testing completed by Eustis include: drilling 3 and 5-in. diameter soil borings on land, over water, and in marsh environments; setting permanent benchmarks; installing piezometers, slope inclinometers, wells, settlement monuments, and settlement plates; conducting dynamic pile testing (DPT) and pile integrity testing (PIT); performing cone penetration tests (CPTs); performing parallel seismic testing of pile foundations; and performing in-situ vane shear tests. Eustis laboratory testing services meet the QA/QC requirements outlined within ER 1110-1-261, Quality Assurance of Laboratory Testing Procedures. These services also meet the quality system requirements of ASTM D 366, ASTM D 3740, and AASHTO R 18. We hold accreditations with the USACE, ASTM, AASHTO, LaDOTD, and LELAP to perform geotechnical (and construction materials testing) services. Eustis staff routinely use geotechnical software programs for evaluation of coastal structures. Their engineering analyses include stability analyses for levees, reinforced embankments, dikes, and other earthen structures; stability analyses of slopes for revetments, channels, and excavations; pile capacities; wave equation analyses; settlement analyses; cantilevered, anchored, and multi-braced retaining wall analyses; bearing capacity analysis; retaining and floodwall stability analyses; seepage analyses; finite element analyses for complex soil/structure interaction modeling and stress-deformation analyses; and dewatering designs. They also perform settlement studies including estimates of settlement and time-rate of settlement with and without wick drains to enhance consolidation. Eustis settlement studies include estimates and recommendations for lift construction affecting gains-in-strength of foundation soils associated with subsoil consolidation.



Similarly, Gulf South Engineering and Testing and MSMM maintain an ongoing working relationship, including through the design work MSMM is providing MVN on the Section 219 Environmental Infrastructure program. Gulf South has ample crew capacity and can drill under tight timelines, with the ability to provide drilling on land and water. Adding Gulf South to the team provides additional capacity that will make meeting project schedules

## Land Based and Hydrographic Survey

For this contract, MSMM will employ Chustz Surveying to provide all of the surveying services. MSMM and Chustz are common teaming partners and have worked together to design multiple projects for USACE and LA CPRA. Chustz Surveying, LLC (CSI) is a Woman Owned Small Business. CSI has acquired an equipment pool that extends from high tech Multibeam, 3D Terrestrial Scanning, 3D Aerial Scanning, and GPS systems right down to common hand tools. The types of surveys that Chustz performs for the New Orleans District are: Hydrographic Multibeam and Single Beam, Pre-Construction, Aerial Photography, Aerial LiDAR, Terrestrial LiDAR, Control Structures (Settlement Mark, Joint Movement, Joint Alignment, and Piezometer Readings), Topographic, Cross Sections, Profiles, Overbanks, GPS Horizontal and Vertical, Bench Marks, establishment of Staff Gages and control surveys just to name a few. These surveys were performed in rivers, bays, lakes, the Gulf of Mexico, navigation channels, along levees and all other areas within the New Orleans District.

Chustz Surveying has over twenty-four years of firm experience in all disciplines of surveying and mapping, including infrastructure, construction layout, topographic, hydrographic, right-of-way, boundary and cadastral, aerial, photogrammetry, LiDAR, Mobile Laser Scanning, Geodetic, Engineering, Monitoring, GPS and transportation throughout the New Orleans District. They are a forward-thinking firm which is on the forefront of all the latest surveying technologies including unmanned aerial surveying with survey grade LiDAR and photogrammetry and Unmanned Hydrographic Vessels, developed, and engineered by CSI. Modern Technology: Chustz uses the Tapper 2 Multibeam System for 2019 High Water Monitoring project for the New Orleans District and has used the same system on every high-water monitoring job at the Old River Low Sill Structure since 2011. The Tapper 2 has recently been updated with an R2Sonic 2020 multibeam system to collect high definition multibeam data. Each year, Chustz performs Topographic, GPS Geodetic and Elevation Control and monitoring surveys daily at the Old River Low Sill Structure, Old River Auxiliary & Overbank Structures for an extended period of time, checking structure alignment through First Order Leveling and utilizing CSI's Tapper 2 Multibeam system at the Old River Low Sill Structure, Inflow Channel, for Hydrographic surveys locating any scouring near the structure. Due to the danger of a hydrographic survey near the inflow of the Low Sill Structure during high water, in 2011 Chustz Surveying, LLC developed this new system to acquire the necessary data. With the multibeam system attached, CSI is able to collect the necessary data in half the time and full bottom coverage in lieu of single beam lines. The data is then processed and submitted to the Corps that same day in their required format and a 1'x 1' multibeam data set including a color elevation map.



## **Criterion (D) – Past Performance**

Since inception, MSMM has believed in providing quality professional services with utmost responsiveness. This has garnered many accolades and repeat calls for service from clients. We have an enviable performance history, especially with regards to our civil and structural design and with the flood risk management solutions we provide. Our outstanding record is a result of our demonstrated ability to control project costs, provide high quality technical products, and meet project schedules for many concurrent government contracts. This is apparent in Federal client Letters of Recommendation we have received, and in custom feedback provided in CPRAS ratings.

**"MSMM Engineering continuously and repeatedly meets and beat schedule repeatedly, even with the delay in schedule due to weather (act of God). The firm adjust and continue to adjust to circumstances out of their control." – Kolawole Anifowoshe – Design Manager USACE Ft. Worth District. – Dallas Floodway Extension Project**

"The Contractor provided excellent management of the task order contract. There was very little turnover during this effort, which allowed the team to work seamlessly from the beginning to the end of this contract. The Contractor did an excellent job managing his staff and coordinating the work between the Government and the contractor. The contractor's work was highly dependent on government input. On multiple occasions the contractor was forced to make up schedule based on slips resulting from government delays. The contractor

was able to manage his assets and successfully recover the schedule. Due to the complexity of the project, the contractor had to work with multiple government offices with multiple disciplines all over the country, the contractor was able to manage his assets to produce highly accurate plans and designs despite the geographical challenges. – **Charlie Brandstetter – Engineering Design Manager USACE New Orleans District – Cow Bayou**

**CPARS RATINGS TABLE - Detailing Projects in Section F:**

<b>Contract/TO:</b>	<b>Project Title:</b>	<b>Description:</b>	<b>CPARS Rating:</b>
W9126G16D0017 W912P819F0215 <b>Section F – Project 1</b>	Cow Bayou Drainage Pump Station Complex Design	35% Design Package for a Large Drainage PS and Flood Risk Infrastructure	Exceptional
W9126G16D0017 W912HY19F0031 <b>Section F – Project 2</b>	Development of P&S for the Texas City and Vicinity Hurricane Flood Protection Project I-Wall	Ready for bid construction documents to replace a failing I-wall with a new T-Wall	Exceptional
W912P820D0004 W912P820F0090 <b>Section F – Project 3</b>	Pump Station and Drainage Structures West Shore Lake Pontchartrain	Ready for bid construction documents for the pump stations and drainage structures associated with the West Shore project.	Exceptional
W912P809D0014 TO 0017 <b>Section F – Project 4</b>	Permanent Canal Closures and Pumping Stations (PCCP) Design-Build	Design-Build RFP for the development of the PCCP project.	Exceptional
W912P8-08-D-0002 Task Order 006 <b>Section F – Project 5</b>	Jefferson Lakefront Floodwalls & Structures, Phase II, Jefferson & St. Charles Parishes	P&S, E&D During Advertisement for West Return Floodwall, Recurve Wall & Williams Blvd. Gate	Exceptional
W912P8-09-0011 Task Order 0006 <b>Section F – Project 6</b>	Harahan Pump to the River – Drainage Pump Station	Design of 3 construction ready packages and the completion of a DDR	Prime Received Rating: Very Good
W9126G16D0017 W9126G18F0159 <b>Section F – Project 7</b>	DB RFP's Development for Dallas Floodway 277K Levee Raise and Delta Pump Station Renovation	Development of two stand-alone DB packages for flood risk reduction projects, and Value Engineering Study and Reports	Satisfactory
DACW3801D0005 TO 0015 <b>Section F – Project 8</b>	Houma Lock and Floodgate Complex	50% Design of the Houma Lock and Floodgate Complex, part of the Morganza to the Gulf Hurricane Protection Project	Exceptional

TO 4400014500 <b>Section F – Project 9</b>	Mid Breton Sediment Diversion Development	Ready for Construction documents for the Mid-Breton Sediment Diversion Project	PPQ Included
W912P810D0058 TO 12 <b>Section F – Project 10</b>	Louisiana Avenue Flood Control Improvements	Ready for construction documents for installing over 7,000 ft. of new cast-in-place concrete box culverts	Exceptional
W912HY20D0001 W912HY20F0023 <b>Section F – Project 11</b>	Sabine Pass to Galveston Bay CSRM and Ecosystem Restoration	Development of a Work Plan to Execute the Design and Construction of the Sabine Pass to Galveston Bay Program	Satisfactory
W912HY19F0031 <b>Section F – Project 12</b>	New Orleans International Airport Drainage Pump Station	Design of a 600 CFS drainage pump station for the New Orleans Aviation Board	PPQ Included

MSMM team was carefully created to encompass the breadth and depth of expertise included in the solicitation. This is evident from the vast amounts of USACE and non-USACE projects completed by team members located within the footprint of the solicitation. The capacity to accomplish the requested work as requested in this solicitation is further enhanced when considering the number of offices the MSMM team offers throughout the project footprint. The landscapes covered by the boundaries of the proposed Districts offer a unique set of physical and environmental conditions that must be considered when undertaking project planning and design. The MSMM team has nearly 350 professionals located in the AOR of the New Orleans District area that have lived and worked in this geographic setting for many years on both public and private client projects, are comfortable and confident designing projects in these areas. The MSMM team proposed for this contract has demonstrated design experience in working on an extensive list of flood damage reduction projects as presented in the project descriptions and this Section H write-up.

#### **Secondary Criteria: Small Business and Small Disadvantaged Business**

As a Small-Business Prime, MSMM will self-perform 75-80% of the work generated on this contract. Given we have also added small business field investigations firms for survey and geotechnical work, we envision that only about 10% of the work performed on this contract will go to other than small firms.

#### **Secondary Criteria: Knowledge of the Locality**

All MSMM team members have had long standing business operations in New Orleans and/or south Louisiana and surrounding states. Most of the staff members of MSMM team have received their academic degrees and professional experience working in the unique terrain of the Gulf coast. Therefore, we have an intimate knowledge of the above ground terrain, subsurface conditions, coastal and water resource characteristics, and disaster mitigation and recovery of this region. Also, many of the staff of MSMM's team have a personal stake in the wellbeing of the region.

We are well versed in providing quality design given the unique geographical nature of the local area, and given the high groundwater table and poor soil quality, we know that geotechnical engineering and materials testing is of the upmost importance when designing projects that involve life safety. Given the importance we have added two of the Gulf Coast's most trusted Geotechnical firms to the team.

Additionally, our lead surveying firm: Chustz Surveying has over twenty-four (24) years of experience working in the New Orleans District. All of the CSI supervisors and Party Chiefs are natives of Louisiana and Mississippi. They have a thorough knowledge of where all access points and control points are located. This familiarity of the survey areas enables their crews to quickly locate survey controls, and more likely to get accurate data. Trusting the initial project survey leads to the start of a successful project.

This team was carefully created to encompass the breadth and depth of expertise requested by the solicitation. This is evident from the vast array of USACE projects completed by team members located within the New Orleans District footprint. The capacity to accomplish the requested work as requested in this solicitation is further enhanced when considering the number of offices our team offers within the project footprint. The landscapes covered by the boundaries of the New Orleans District offers a unique set of physical and environmental conditions that must be considered when undertaking project planning and design. This team has over 1,000 professionals located in the AOR of the MVN, that have lived and worked in this geographic setting for many years on both public and private client projects, and are comfortable and confident designing projects in this area. The MSMM team proposed for this contract has demonstrated design experience in working on an extensive list of hurricane and storm damage risk reduction projects as presented in the project descriptions and the Section H write-up.

#### I. AUTHORIZED REPRESENTATIVE

*The foregoing is a statement of facts*

31. SIGNATURE



32. DATE SIGNED

December 6, 2022

33. NAME AND TITLE

**Manish Mardia, P.E., President**

FOR OFFICIAL USE ONLY  
SOURCE SELECTION INFORMATION

**NAVFAC/USACE PAST PERFORMANCE QUESTIONNAIRE (Form PPQ-0)**

**CONTRACT INFORMATION (Contractor to complete Blocks 1-4)**

**1. Contractor Information**

Firm Name: Stantec Consulting Services Inc.  
Address: 3052 Beaumont Centre Circle Lexington, KY 40513  
Phone Number: (859) 422-3000  
Email Address: john.montgomery@stantec.com  
Point of Contact: John Montgomery, PE, Senior Vice President Contact Phone Number: (859) 422-3000

CAGE Code: 0CGN8  
DUNS Number: 80-986-3694

**2. Work Performed as:**  Prime Contractor  Sub Contractor  Joint Venture  Other (Explain)

Percent of project work performed: 20%

If subcontractor, who was the prime (Name/Phone #):

**3. Contract Information**

Contract Number: LAGov. No. 4400014500

Delivery/Task Order Number (if applicable): N/A

Contract Type:  Firm Fixed Price  Cost Reimbursement  Other (Please specify): Time & Materials

Contract Title: Engineering and Design Services for the Mid-Breton Sediment Diversion Project

Contract Location: Plaquemines Parish, LA

Award Date: (05/30/18)

Contract Completion Date (mm/dd/yy): Ongoing, Estimated: May 13, 2021

Actual Completion Date (mm/dd/yy): N/A

Explain Differences: N/A

Original Contract Price (Award Amount): \$38,802,000

Final Contract Price (to include all modifications, if applicable): N/A

Explain Differences: N/A

**4. Project Description:**

Complexity of Work  High  Med  Routine

How is this project relevant to project of submission? (Please provide details such as similar equipment, requirements, conditions, etc.)

Stantec is the lead designer for the Mid-Breton Sediment Diversion (MBrSD) Project. The MBrSD Project will divert sediment-laden Mississippi River water into the Breton Sound Basin by re-establishing a connection between the Mississippi River and the Basin to build, sustain, and maintain land for protection of coastal communities and restoration of the surrounding coastal ecosystem. Project considerations include 75,000 cfs discharge diversion when the Mississippi River is at 1,000,000 cfs for sizing the intake, diversion structure and conveyance channel, outfall management, geotechnical conditions, USACE permitting, reliability and redundancy, temporary work within the Mississippi River, design life, and O&MRR&R. Sediment transport modeling is being performed using several software packages, including Delft3D..

**CLIENT INFORMATION (Client to complete Blocks 5-8)**

**5. Client Information**

Name: Dain Gillen

Title: Task Manager

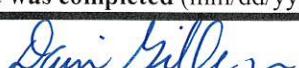
Phone Number: 225.342.4557

Email Address: dain.gillen@la.gov

**6. Describe the client's role in the project:** CPRA is the lead agency for design and implementation of the project

**7. Date Questionnaire was completed (mm/dd/yy):** 10/25/2019

**8. Client's Signature:**



CLIENTS ARE HIGHLY ENCOURAGED TO SUBMIT QUESTIONNAIRES DIRECTLY TO THE OFFEROR. HOWEVER,  
QUESTIONNAIRES MAY BE SUBMITTED DIRECTLY TO USACE. PLEASE CONTACT THE OFFEROR FOR USACE POC  
INFORMATION. THE GOVERNMENT RESERVES THE RIGHT TO VERIFY ANY AND ALL INFORMATION ON THIS FORM.

**ADJECTIVE RATINGS AND DEFINITIONS TO BE USED TO BEST REFLECT YOUR  
EVALUATION OF THE CONTRACTOR'S PERFORMANCE**

RATING	DEFINITION	NOTE
(E) Exceptional	Performance meets contractual requirements and exceeds many to the Government/Owner's benefit. The contractual performance of the element or sub-element being assessed was accomplished with few minor problems for which corrective actions taken by the contractor was highly effective.	An Exceptional rating is appropriate when the Contractor successfully performed multiple significant events that were of benefit to the Government/Owner. A singular benefit, however, could be of such magnitude that it alone constitutes an Exceptional rating. Also, there should have been NO significant weaknesses identified.
(VG) Very Good	Performance meets contractual requirements and exceeds some to the Government's/Owner's benefit. The contractual performance of the element or sub-element being assessed was accomplished with some minor problems for which corrective actions taken by the contractor were effective.	A Very Good rating is appropriate when the Contractor successfully performed a significant event that was a benefit to the Government/Owner. There should have been no significant weaknesses identified.
(S) Satisfactory	Performance meets minimum contractual requirements. The contractual performance of the element or sub-element contains some minor problems for which corrective actions taken by the contractor appear or were satisfactory.	A Satisfactory rating is appropriate when there were only minor problems, or major problems that the contractor recovered from without impact to the contract. There should have been NO significant weaknesses identified. Per DOD policy, a fundamental principle of assigning ratings is that contractors will not be assessed a rating lower than Satisfactory solely for not performing beyond the requirements of the contract.
(M) Marginal	Performance does not meet some contractual requirements. The contractual performance of the element or sub-element being assessed reflects a serious problem for which the contractor has not yet identified corrective actions. The contractor's proposed actions appear only marginally effective or were not fully implemented.	A Marginal is appropriate when a significant event occurred that the contractor had trouble overcoming which impacted the Government/Owner.
(U) Unsatisfactory	Performance does not meet most contractual requirements and recovery is not likely in a timely manner. The contractual performance of the element or sub-element contains serious problem(s) for which the contractor's corrective actions appear or were ineffective.	An Unsatisfactory rating is appropriate when multiple significant events occurred that the contractor had trouble overcoming and which impacted the Government/Owner. A singular problem, however, could be of such serious magnitude that it alone constitutes an unsatisfactory rating.
(N) Not Applicable	No information or did not apply to your contract	Rating will be neither positive nor negative.

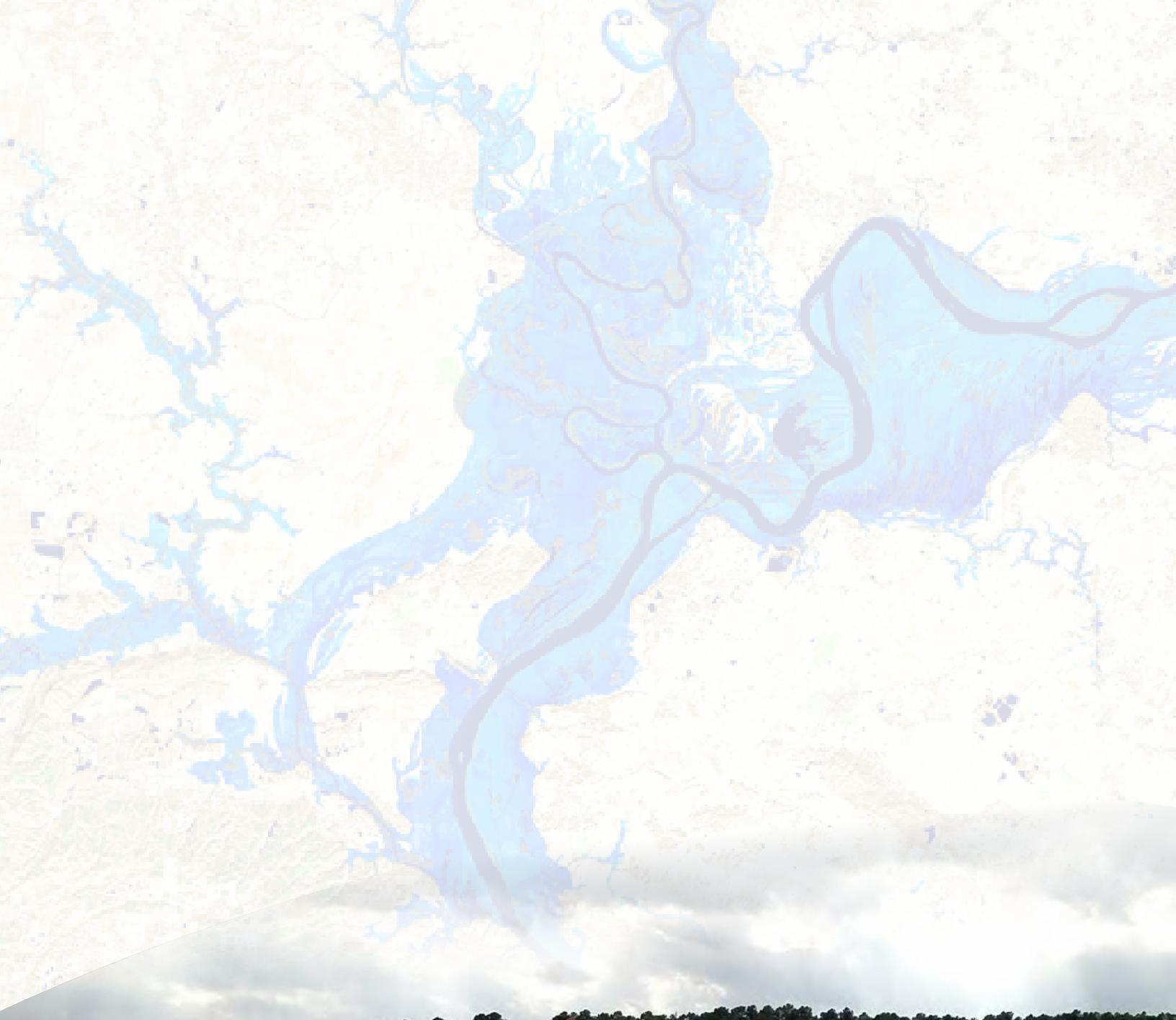
## TO BE COMPLETED BY CLIENT

<b>PLEASE CIRCLE THE ADJECTIVE RATING WHICH BEST REFLECTS YOUR EVALUATION OF THE CONTRACTOR'S PERFORMANCE.</b>						
<b>1. QUALITY:</b>						
a) Quality of technical data/report preparation efforts	<input type="radio"/> E	<input type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
b) Ability to meet quality standards specified for technical performance	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
c) Timeliness/effectiveness of contract problem resolution without extensive customer guidance	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
d) Adequacy/effectiveness of quality control program and adherence to contract quality assurance requirements (without adverse effect on performance)	<input type="radio"/> E	<input type="radio"/> VG	<input checked="" type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
<b>2. SCHEDULE/TIMELINESS OF PERFORMANCE:</b>						
a) Compliance with contract delivery/completion schedules including any significant intermediate milestones. ( <i>If liquidated damages were assessed or the schedule was not met, please address below</i> )	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
b) Rate the contractor's use of available resources to accomplish tasks identified in the contract	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
<b>3. CUSTOMER SATISFACTION:</b>						
a) To what extent were the end users satisfied with the project?	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
b) Contractor was reasonable and cooperative in dealing with your staff (including the ability to successfully resolve disagreements/disputes; responsiveness to administrative reports, businesslike and communication)	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
c) To what extent was the contractor cooperative, businesslike, and concerned with the interests of the customer?	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
d) Overall customer satisfaction	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
<b>4. MANAGEMENT/ PERSONNEL/LABOR</b>						
a) Effectiveness of on-site management, including management of subcontractors, suppliers, materials, and/or labor force?	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
b) Ability to hire, apply, and retain a qualified workforce to this effort	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
c) Government Property Control	<input type="radio"/> E	<input type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input checked="" type="radio"/> N
d) Knowledge/expertise demonstrated by contractor personnel	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
e) Utilization of Small Business concerns	<input type="radio"/> E	<input type="radio"/> VG	<input checked="" type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
f) Ability to simultaneously manage multiple projects with multiple disciplines	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
g) Ability to assimilate and incorporate changes in requirements and/or priority, including planning, execution and response to Government changes	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
h) Effectiveness of overall management (including ability to effectively lead, manage and control the program)	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N
<b>5. COST/FINANCIAL MANAGEMENT</b>						
a) Ability to meet the terms and conditions within the contractually agreed price(s)?	<input type="radio"/> E	<input checked="" type="radio"/> VG	<input type="radio"/> S	<input type="radio"/> M	<input type="radio"/> U	<input type="radio"/> N

FOR OFFICIAL USE ONLY  
SOURCE SELECTION INFORMATION

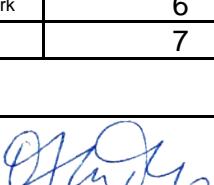
b) Contractor proposed innovative alternative methods/processes that reduced cost, improved maintainability or other factors that benefited the client	E	VG	S	M	U	N
c) If this is/was a Government cost type contract, please rate the Contractor's timeliness and accuracy in submitting monthly invoices with appropriate back-up documentation, monthly status reports/budget variance reports, compliance with established budgets and avoidance of significant and/or unexplained variances (under runs or overruns)	E	VG	<input checked="" type="radio"/> S	M	U	N
d) Is the Contractor's accounting system adequate for management and tracking of costs? <i>If no, please explain in Remarks section.</i>	<input checked="" type="radio"/> Yes No					
e) If this is/was a Government contract, has/was this contract been partially or completely terminated for default or convenience or are there any pending terminations? <i>Indicate if show cause or cure notices were issued, or any default action in comment section below.</i>	Yes <input checked="" type="radio"/> No					
f) Have there been any indications that the contractor has had any financial problems? <i>If yes, please explain below.</i>	Yes <input checked="" type="radio"/> No					
<b>6. SAFETY/SECURITY</b>						
a) To what extent was the contractor able to maintain an environment of safety, adhere to its approved safety plan, and respond to safety issues? (Includes: following the users rules, regulations, and requirements regarding housekeeping, safety, correction of noted deficiencies, etc.)	E	<input checked="" type="radio"/> VG	S	M	U	N
b) Contractor complied with all security requirements for the project and personnel security requirements.	E	<input checked="" type="radio"/> VG	S	M	U	N
<b>7. GENERAL</b>						
a) Ability to successfully respond to emergency and/or surge situations (including notifying COR, PM or Contracting Officer in a timely manner regarding urgent contractual issues).	E	<input checked="" type="radio"/> VG	S	M	U	
b) Compliance with contractual terms/provisions ( <i>explain if specific issues</i> )	E	<input checked="" type="radio"/> VG	S	M	U	
c) Would you hire or work with this firm again? ( <i>If no, please explain below</i> )	<input checked="" type="radio"/> Yes No					
d) In summary, provide an overall rating for the work performed by this contractor.	E	<input checked="" type="radio"/> VG	S	M	U	

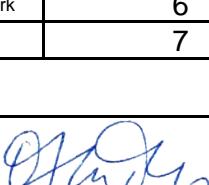
Please provide responses to the questions above (*if applicable*) and/or additional remarks. Furthermore, please provide a brief narrative addressing specific strengths, weaknesses, deficiencies, or other comments which may assist our office in evaluating performance risk (*please attach additional pages if necessary*):



# PART II



ARCHITECT-ENGINEER QUALIFICATIONS				1. SOLICITATION NUMBER (If any) W912P823R0005		
PART II – GENERAL QUALIFICATIONS <i>(If a firm has branch offices, complete for each specific branch office seeking work)</i>						
2a. FIRM (Or Branch Office) NAME MSMM Engineering, LLC				3. YEAR ESTABLISHED 2011	4. UNIQUE ENTITY IDENTIFIER NYLUL4Q5GYF6	
2b. STREET 4640 South Carrollton Avenue, Suite 220				5. OWNERSHIP		
2c. CITY New Orleans		2d. STATE LA	2e. ZIP CODE 70119	a. TYPE Limited Liability Corporation		
6a. POINT OF CONTACT NAME AND TITLE Manish Mardia, P.E., President/Owner				b. SMALL BUSINESS STATUS Small Business		
6b. TELEPHONE NUMBER 504-559-1897		6c. EMAIL ADDRESS mmardia@msmmeng.com		7. NAME OF FIRM (If block 2a is a branch office)		
8. FORMER NAME(S) (If any)				8b. YEAR ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER	
9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	4	3	C07	Coastal Engineering	2
06	Architect	1	1	C13	Computer Facilities; Computer Service	2
08	CADD Technician	3	2	C15	Construction Management	4
12	Civil Engineer	3	2	D01	Dams (Concrete; Arch)	1
15	Inspector	5	5	D02	Dams; Dikes; Levees	5
18	Cost Engineer /Estimator	1	1	E03	Electrical Studies and Design	1
21	Electrical Engineer	1	1	L06	Lighting (Exteriors; Streets; Memorials Athletic Fields)	1
23	Environmental Engineer	2	2	P06	Planning (Site, Installation, and Project)	6
32	Hydraulic Engineer	1	1	R11	Rivers; Canals; Waterways; Flood Control	5
39	Landscape Architect	1	1	S09	Structural Design; Special Structures	5
48	Project Manager	6	5	S13	Storm Water Handling & Facilities	5
57	Structural Engineer	2	2	W02	Water Resources; Hydrology Ground Water	3
61	Value Engineer	1	1	W03	Water Supply; Treatment and Distribution	3
<b>Total</b>		31	27			
11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS <i>(Insert revenue index number shown at right)</i>				PROFESSIONAL SERVICES REVENUE INDEX NUMBER		
a. Federal Work	6			1. Less than \$100,000	6. \$2 million to less than \$5 million	
b. Non-Federal Work	6			2. \$100,000 to less than \$250,000	7. \$5 million to less than \$10 million	
c. Total Work	7			3. \$250,000 to less than \$500,000	8. \$10 million to less than \$25 million	
				4. \$500,000 to less than \$1 million	9. \$25 million to less than \$50 million	
				5. \$1 million to less than \$2 million	10. \$50 million or greater	
12. AUTHORIZED REPRESENTATIVE <i>The foregoing is a statement of facts.</i>						
a. SIGNATURE				b. DATE	December 5, 2022	
c. NAME AND TITLE Manish Mardia, P.E., President/Owner						

ARCHITECT-ENGINEER QUALIFICATIONS				1. SOLICITATION NUMBER (If any) W912P823R0005		
PART II – GENERAL QUALIFICATIONS (If a firm has branch offices, complete for each specific branch office seeking work)						
2a. FIRM (Or Branch Office) NAME MSMM Engineering, LLC				3. YEAR ESTABLISHED 2011	4. UNIQUE ENTITY IDENTIFIER JVL4KTEBNRX9	
2b. STREET 13850 Gulf Freeway, Suite 202A				5. OWNERSHIP		
2c. CITY Houston		2d. STATE TX	2e. ZIP CODE 77034	a. TYPE Limited Liability Corporation		
6a. POINT OF CONTACT NAME AND TITLE Manish Mardia, P.E., President/Owner				b. SMALL BUSINESS STATUS Small Business		
6b. TELEPHONE NUMBER 504-559-1897		6c. EMAIL ADDRESS mmardia@msmmeng.com		7. NAME OF FIRM (If block 2a is a branch office) MSMM Engineering, LLC		
8. FORMER NAME(S) (If any)				8b. YEAR ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER	
9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	4	1	C07	Coastal Engineering	2
06	Architect	1		C13	Computer Facilities; Computer Service	2
08	CADD Technician	3	1	C15	Construction Management	4
12	Civil Engineer	3	1	D01	Dams (Concrete; Arch)	1
15	Inspector	5		D02	Dams; Dikes; Levees	5
18	Cost Engineer /Estimator	1		E03	Electrical Studies and Design	1
21	Electrical Engineer	1		L06	Lighting (Exteriors; Streets; Memorials Athletic Fields)	1
23	Environmental Engineer	2		P06	Planning (Site, Installation, and Project)	6
32	Hydraulic Engineer	1		R11	Rivers; Canals; Waterways; Flood Control	5
39	Landscape Architect	1		S09	Structural Design; Special Structures	5
48	Project Manager	6	1	S13	Storm Water Handling & Facilities	5
57	Structural Engineer	2		W02	Water Resources; Hydrology Ground Water	3
61	Value Engineer	1		W03	Water Supply; Treatment and Distribution	3
<b>Total</b>		<b>31</b>	<b>4</b>			
11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS (Insert revenue index number shown at right)				PROFESSIONAL SERVICES REVENUE INDEX NUMBER		
a. Federal Work	6			1. Less than \$100,000	6. \$2 million to less than \$5 million	
b. Non-Federal Work	6			2. \$100,000 to less than \$250,000	7. \$5 million to less than \$10 million	
c. Total Work	7			3. \$250,000 to less than \$500,000	8. \$10 million to less than \$25 million	
				4. \$500,000 to less than \$1 million	9. \$25 million to less than \$50 million	
				5. \$1 million to less than \$2 million	10. \$50 million or greater	
12. AUTHORIZED REPRESENTATIVE The foregoing is a statement of facts.						
a. SIGNATURE				b. DATE	December 5, 2022	
c. NAME AND TITLE Manish Mardia, P.E., President/Owner						

**ARCHITECT - ENGINEER QUALIFICATIONS**

 1. SOLICITATION NUMBER (If any)  
**W912P823R0005**
**PART II – GENERAL QUALIFICATIONS**
*(If a firm has branch offices, complete for each specific branch office seeking work.)*

2a. FIRM (OR BRANCH OFFICE) NAME <b>Stantec Consulting Services Inc.</b>			3. YEAR ESTABLISHED 2017	4. UNIQUE ENTITY IDENTIFIER F3C1XYNEN1J6
2b. STREET 1340 Poydras Street Suite 1420			<b>5. OWNERSHIP</b>	
2c. CITY New Orleans		2d. STATE LA	2e. ZIP CODE 70112-1274	a. TYPE <b>Corporation</b>
6a. POINT OF CONTACT NAME AND TITLE Daniel J. Grandal - Vice President			b. SMALL BUSINESS STATUS <b>N/A</b>	
6b. TELEPHONE NUMBER (504) 654-1756		6c. EMAIL ADDRESS dan.grandal@stantec.com		7. NAME OF FIRM (If block 2a is a branch office) <b>Stantec Inc.</b>
8a. FORMER FIRM NAME(S) (If any) Stantec Consulting Services Inc. (1615 Poydras, New Orleans, LA)			8b. YEAR ESTABLISHED 2012	8c. UNIQUE ENTITY IDENTIFIER 07-860-7932

**9. EMPLOYEES BY DISCIPLINE**
**10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS**

a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (See Below)
		(1) Firm	(2) Branch			
02	Administrative	3573	8	B02	Bridges	10
05	Archaeologist	491	0	C10	Commercial Building (low rise); Shopping Centers	10
06	Architect	962	1	C13	Computer Facilities; Computer Service	6
07	Biologist	382	0	C15	Construction Management	9
08	CAD Technician	633	1	D01	Dams (Concrete; Arch)	9
12	Civil Engineer	2496	14	E02	Educational Facilities; Classrooms	10
14	Computer Programmer	611	0	E07	Energy Conservation; New Energy Sources	6
15	Construction Inspector	269	0	E09	EIS, Assessments of Statements	10
16	Construction Manager	176	4	E12	Environmental Remediation	10
21	Electrical Engineer	780	0	E13	Environmental Testing and Analysis	8
23	Environmental Engineer	356	0	H07	Highways; Streets; Airfield Paving; Parking Lots	10
24	Environmental Scientist	1521	1	H12	Hydraulics & Pneumatics	5
29	GIS Specialist	211	1	I01	Industrial Building; Manufacturing Plants	10
30	Geologist	262	0	P05	Planning (Comm., Regional, Areawide, and State)	9
38	Land Surveyor	305	0	P06	Planning (Site, Installation, and Project)	10
42	Mechanical Engineer	665	0	P12	Power Generation, Transmission, Distribution	10
47	Planner, Urban/Regional	341	0	R10	Risk Analysis	5
48	Project Manager	865	2	S04	Sewage Collection, Treatment, and Disposal	10
57	Structural Engineer	742	0	S07	Solid Wastes; Incineration; Landfill	7
58	Technician/Analyst	1501	0	S13	Storm Water Handling & Facilities	8
	Other Employees	1755	0	W02	Water Resources; Hydrology; Ground Water	10
<b>Total</b>		<b>18897</b>	<b>32</b>	<b>W03</b>	Water Supply; Treatment, and Distribution	10

**11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS**  
*(insert revenue index number shown at right)*
**PROFESSIONAL SERVICES REVENUE INDEX NUMBER**

- |   |   |
|---|---|
| 1. Less than \$100,000                  | 6. \$2 million to less than \$5 million   |
| 2. \$100,000 to less than \$250,000     | 7. \$5 million to less than \$10 million  |
| 3. \$250,000 to less than \$500,000     | 8. \$10 million to less than \$25 million |
| 4. \$500,000 to less than \$1 million   | 9. \$25 million to less than \$50 million |
| 5. \$1 million to less than \$2 million | 10. \$50 million or greater               |

**12. AUTHORIZED REPRESENTATIVE**

The foregoing is a statement of facts.

a. SIGNATURE

b. DATE

**November 18, 2022**

c. NAME AND TITLE

**Amy Campbell - Senior Principal, Regional Leader US South**

**ARCHITECT - ENGINEER QUALIFICATIONS**

1. SOLICITATION NUMBER (If any)

**W912P823R0005**
**PART II – GENERAL QUALIFICATIONS**

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME <b>Stantec Consulting Services Inc.</b>			3. YEAR ESTABLISHED 2012	4. UNIQUE ENTITY IDENTIFIER JK98RMLS5HJ8
2b. STREET 1200 Brickyard Lane Suite 400			5. OWNERSHIP	
2c. CITY Baton Rouge		2d. STATE LA	2e. ZIP CODE 70802	a. TYPE <b>Corporation</b>
6a. POINT OF CONTACT NAME AND TITLE Gary Heitman - Senior Principal, Operations Leader			b. SMALL BUSINESS STATUS <b>N/A</b>	
6b. TELEPHONE NUMBER (225) 215-5105		6c. EMAIL ADDRESS gary.heitman@stantec.com		7. NAME OF FIRM (If block 2a is a branch office) <b>Stantec Inc.</b>
8a. FORMER FIRM NAME(S) (If any)			8b. YEAR ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

**9. EMPLOYEES BY DISCIPLINE**
**10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS**

a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (See Below)
		(1) Firm	(2) Branch			
02	Administrative	3573	12	B02	Bridges	10
05	Archaeologist	491	1	C07	Coastal Engineering	6
06	Architect	962	0	C10	Commercial Building (low rise); Shopping Centers	10
07	Biologist	382	0	D02	Dams (Earth; Rock); Dikes; Levees	8
08	CAD Technician	633	10	E02	Educational Facilities; Classrooms	10
12	Civil Engineer	2496	19	H07	Highways; Streets; Airfield Paving; Parking Lots	10
14	Computer Programmer	611	2	H09	Hospital & Medical Facilities	10
15	Construction Inspector	269	1	I01	Industrial Building; Manufacturing Plants	10
16	Construction Manager	176	1	L02	Land Surveying	8
21	Electrical Engineer	780	3	R03	Railroad; Rapid Transit	10
23	Environmental Engineer	356	0	R04	Recreation Facilities (Parks, Marinas, Etc.)	8
24	Environmental Scientist	1521	2	R11	Rivers; Canals; Waterways; Flood Control	8
27	Foundation/Geotechnical Engineer	233	0	S04	Sewage Collection, Treatment, and Disposal	10
30	Geologist	262	1	S09	Structural Design; Special Structures	7
38	Land Surveyor	305	0	T03	Traffic & Transportation Engineering	10
42	Mechanical Engineer	665	1	W02	Water Resources; Hydrology; Ground Water	10
47	Planner, Urban/Regional	341	1	W03	Water Supply; Treatment , and Distribution	10
48	Project Manager	865	4			
57	Structural Engineer	742	11			
58	Technician/Analyst	1501	1			
	Other Employees	1733	0			
<b>Total</b>		<b>18897</b>	<b>70</b>			

**11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS  
(insert revenue index number shown at right)**
**PROFESSIONAL SERVICES REVENUE INDEX NUMBER**

- |   |   |
|---|---|
| 1. Less than \$100,000                  | 6. \$2 million to less than \$5 million   |
| 2. \$100,000 to less than \$250,000     | 7. \$5 million to less than \$10 million  |
| 3. \$250,000 to less than \$500,000     | 8. \$10 million to less than \$25 million |
| 4. \$500,000 to less than \$1 million   | 9. \$25 million to less than \$50 million |
| 5. \$1 million to less than \$2 million | 10. \$50 million or greater               |

**12. AUTHORIZED REPRESENTATIVE**

The foregoing is a statement of facts.

a. SIGNATURE

b. DATE

**November 18, 2022**

c. NAME AND TITLE

**Amy Campbell - Senior Principal, Regional Leader US South**

**ARCHITECT - ENGINEER QUALIFICATIONS**

 1. SOLICITATION NUMBER (If any)  
**W912P823R0005**
**PART II – GENERAL QUALIFICATIONS**
*(If a firm has branch offices, complete for each specific branch office seeking work.)*

2a. FIRM (OR BRANCH OFFICE) NAME <b>Stantec Consulting Services Inc.</b>			3. YEAR ESTABLISHED 2012	4. UNIQUE ENTITY IDENTIFIER GEBPDQBFV5M5
2b. STREET 800 Fairway Drive Suite 195			<b>5. OWNERSHIP</b>	
2c. CITY Deerfield Beach		2d. STATE FL	2e. ZIP CODE 33441-1828	a. TYPE <b>Corporation</b>
6a. POINT OF CONTACT NAME AND TITLE Terrance N. Glunt, PE, SI, LEED AP - Principal			b. SMALL BUSINESS STATUS <b>N/A</b>	
6b. TELEPHONE NUMBER (954) 481-2812 x 231		6c. EMAIL ADDRESS terry.glunt@stantec.com		7. NAME OF FIRM (If block 2a is a branch office) <b>Stantec Inc.</b>
8a. FORMER FIRM NAME(S) (If any) Stantec Consulting Services Inc. (Merit Dr., Dallas, TX); Stantec Consulting Services Inc. (10000 N Central Expressway, Dallas, TX); Stantec Consulting Services Inc. ( 2435 N Central Expressway, Dallas, TX); Stantec Consulting Services Inc. (Harvest Hill Rd., Dallas, TX)			8b. YEAR ESTABLISHED 2015; 2015; 2015; 2016	8c. UNIQUE ENTITY IDENTIFIER 07-997-6449; 00-738-6621; 07-997-6449; 08-019-6222

**9. EMPLOYEES BY DISCIPLINE**
**10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS**

a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (See Below)
		(1) Firm	(2) Branch			
02	Administrative	3573	6	A06	Airports; Terminals and Hangars; Freight Handling	9
05	Archaeologist	491	0	B02	Bridges	10
06	Architect	962	0	C10	Commercial Building (low rise); Shopping Centers	10
07	Biologist	382	0	C16	Construction Surveying	7
08	CAD Technician	633	4	E02	Educational Facilities; Classrooms	10
12	Civil Engineer	2496	12	E03	Electrical Studies and Design	8
14	Computer Programmer	611	0	E09	EIS, Assessments of Statements	10
15	Construction Inspector	269	0	E11	Environmental Planning	10
21	Electrical Engineer	780	3	E12	Environmental Remediation	10
23	Environmental Engineer	356	0	H07	Highways; Streets; Airfield Paving; Parking Lots	10
24	Environmental Scientist	1521	0	I06	Irrigation; Drainage	7
27	Foundation/Geotechnical Engineer	233	0	L03	Landscape Architecture	8
30	Geologist	262	0	R03	Railroad; Rapid Transit	10
37	Interior Designer	232	0	R11	Rivers; Canals; Waterways; Flood Control	8
38	Land Surveyor	305	0	S04	Sewage Collection, Treatment, and Disposal	10
42	Mechanical Engineer	665	2	S10	Surveying; Platting; Mapping; Flood Plain Studies	8
47	Planner, Urban/Regional	341	0	S13	Storm Water Handling & Facilities	8
48	Project Manager	865	1	T03	Traffic & Transportation Engineering	10
57	Structural Engineer	742	0	T04	Topographic Surveying and Mapping	5
58	Technician/Analyst	1501	0	W02	Water Resources; Hydrology; Ground Water	10
	Other Employees	1677	0	W03	Water Supply; Treatment , and Distribution	10
<b>Total</b>		<b>18897</b>	<b>28</b>			

**11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS**  
*(insert revenue index number shown at right)*

		<b>PROFESSIONAL SERVICES REVENUE INDEX NUMBER</b>							
1.	Less than \$100,000	6.	\$2 million to less than \$5 million						
2.	\$100,000 to less than \$250,000	7.	\$5 million to less than \$10 million						
3.	\$250,000 to less than \$500,000	8.	\$10 million to less than \$25 million						
4.	\$500,000 to less than \$1 million	9.	\$25 million to less than \$50 million						
5.	\$1 million to less than \$2 million	10.	\$50 million or greater						

**12. AUTHORIZED REPRESENTATIVE**

The foregoing is a statement of facts.

a. SIGNATURE

b. DATE

**November 18, 2022**

c. NAME AND TITLE

**Amy Campbell - Senior Principal, Regional Leader US South**

**ARCHITECT - ENGINEER QUALIFICATIONS**

1. SOLICITATION NUMBER (If any)

**W912P823R0005**
**PART II – GENERAL QUALIFICATIONS**

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME <b>Stantec Consulting Services Inc.</b>			3. YEAR ESTABLISHED 2009	4. UNIQUE ENTITY IDENTIFIER TEBQCWMFRZF1
2b. STREET 3133 West Frye Road Suite 300			5. OWNERSHIP	
2c. CITY Chandler		2d. STATE AZ	2e. ZIP CODE 85226-5110	a. TYPE <b>Corporation</b>
6a. POINT OF CONTACT NAME AND TITLE Chris Eggers - BC Practice Leader			b. SMALL BUSINESS STATUS <b>N/A</b>	
6b. TELEPHONE NUMBER (480) 687-6063		6c. EMAIL ADDRESS chris.eggers@stantec.com		7. NAME OF FIRM (If block 2a is a branch office) <b>Stantec Inc.</b>
8a. FORMER FIRM NAME(S) (If any) Stantec Consulting Services Inc. (W Broadway, Tempe, AZ); Stantec Consulting Services Inc. (W Elna Rae, Tempe, AZ); Stantec Consulting Services Inc. (W Fountainhead, Tempe, AZ)			8b. YEAR ESTABLISHED 2009; 2014; 2017	8c. UNIQUE ENTITY IDENTIFIER 02-686-0272; 96-339-9279; 17-617-2214

**9. EMPLOYEES BY DISCIPLINE**
**10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS**

a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (See Below)
		(1) Firm	(2) Branch			
02	Administrative	3573	92	A06	Airports; Terminals and Hangars; Freight Handling	9
05	Archaeologist	491	1	C08	Codes; Standards; Ordinances	6
06	Architect	962	19	C10	Commercial Building (low rise); Shopping Centers	10
08	CAD Technician	633	24	C15	Construction Management	9
10	Chemical Engineer	163	7	C16	Construction Surveying	7
12	Civil Engineer	2496	39	D02	Dams (Earth; Rock); Dikes; Levees	8
14	Computer Programmer	611	7	E03	Electrical Studies and Design	8
15	Construction Inspector	269	3	E09	EIS, Assessments of Statements	10
16	Construction Manager	176	2	E11	Environmental Planning	10
21	Electrical Engineer	780	13	E12	Environmental Remediation	10
23	Environmental Engineer	356	3	H07	Highways; Streets; Airfield Paving; Parking Lots	10
24	Environmental Scientist	1521	4	I06	Irrigation; Drainage	7
27	Foundation/Geotechnical Engineer	233	3	L03	Landscape Architecture	8
30	Geologist	262	4	R03	Railroad; Rapid Transit	10
38	Land Surveyor	305	2	R11	Rivers; Canals; Waterways; Flood Control	8
42	Mechanical Engineer	665	12	S04	Sewage Collection, Treatment, and Disposal	10
47	Planner, Urban/Regional	341	1	S10	Surveying; Platting; Mapping; Flood Plain Studies	8
48	Project Manager	865	27	S13	Storm Water Handling & Facilities	8
57	Structural Engineer	742	7	T03	Traffic & Transportation Engineering	10
58	Technician/Analyst	1501	14	T04	Topographic Surveying and Mapping	5
	Other Employees	1952	28	W02	Water Resources; Hydrology; Ground Water	10
<b>Total</b>		<b>18897</b>	<b>312</b>	<b>W03</b>	Water Supply; Treatment , and Distribution	<b>10</b>

**11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS  
(insert revenue index number shown at right)**
**PROFESSIONAL SERVICES REVENUE INDEX NUMBER**

- |   |   |
|---|---|
| 1. Less than \$100,000                  | 6. \$2 million to less than \$5 million   |
| 2. \$100,000 to less than \$250,000     | 7. \$5 million to less than \$10 million  |
| 3. \$250,000 to less than \$500,000     | 8. \$10 million to less than \$25 million |
| 4. \$500,000 to less than \$1 million   | 9. \$25 million to less than \$50 million |
| 5. \$1 million to less than \$2 million | 10. \$50 million or greater               |

**12. AUTHORIZED REPRESENTATIVE**

The foregoing is a statement of facts.

a. SIGNATURE

b. DATE

**November 18, 2022**

c. NAME AND TITLE

**Sheina Hughes - Vice President, US Mountain Regional Leader**

# ARCHITECT - ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If any)

**W912P823R0005**

## PART II – GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME <b>Stantec Consulting Services Inc.</b>			3. YEAR ESTABLISHED 2017	4. UNIQUE ENTITY IDENTIFIER YKQBNN21M3M5
2b. STREET 1560 Broadway Suite 1800			<b>5. OWNERSHIP</b>	
2c. CITY Denver		2d. STATE CO	2e. ZIP CODE 80202-6000	a. TYPE <b>Corporation</b>
6a. POINT OF CONTACT NAME AND TITLE Robert G. Armstrong - Project Development Leader			b. SMALL BUSINESS STATUS <b>N/A</b>	7. NAME OF FIRM (If block 2a is a branch office)
6b. TELEPHONE NUMBER (303) 291-2224		6c. EMAIL ADDRESS bob.armstrong@stantec.com		<b>Stantec Inc.</b>
8a. FORMER FIRM NAME(S) (If any)			8b. YEAR ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

### 9. EMPLOYEES BY DISCIPLINE

### 10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS

a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (See Below)
		(1) Firm	(2) Branch			
02	Administrative	3573	41	C13	Computer Facilities; Computer Service	6
06	Architect	962	0	C15	Construction Management	9
08	CAD Technician	633	8	D01	Dams (Concrete; Arch)	9
10	Chemical Engineer	163	10	E07	Energy Conservation; New Energy Sources	6
12	Civil Engineer	2496	46	E09	EIS, Assessments of Statements	10
14	Computer Programmer	611	0	E12	Environmental Remediation	10
15	Construction Inspector	269	1	E13	Environmental Testing and Analysis	8
16	Construction Manager	176	2	H07	Highways; Streets; Airfield Paving; Parking Lots	10
21	Electrical Engineer	780	2	H12	Hydraulics & Pneumatics	5
23	Environmental Engineer	356	3	I01	Industrial Building; Manufacturing Plants	10
24	Environmental Scientist	1521	0	P05	Planning (Comm., Regional, Areawide, and State)	9
27	Foundation/Geotechnical Engineer	233	16	P06	Planning (Site, Installation, and Project)	10
29	GIS Specialist	211	1	P12	Power Generation, Transmission, Distribution	10
30	Geologist	262	3	R10	Risk Analysis	5
34	Hydrologist	123	1	S04	Sewage Collection, Treatment, and Disposal	10
42	Mechanical Engineer	665	7	S07	Solid Wastes; Incineration; Landfill	7
43	Mining Engineer	159	6	S13	Storm Water Handling & Facilities	8
48	Project Manager	865	11	W02	Water Resources; Hydrology; Ground Water	10
57	Structural Engineer	742	7	W03	Water Supply; Treatment, and Distribution	10
58	Technician/Analyst	1501	0			
	Other Employees	2596	0			
<b>Total</b>		<b>18897</b>	<b>165</b>			

### 11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS (insert revenue index number shown at right)

#### PROFESSIONAL SERVICES REVENUE INDEX NUMBER

- |   |   |
|---|---|
| 1. Less than \$100,000                  | 6. \$2 million to less than \$5 million   |
| 2. \$100,000 to less than \$250,000     | 7. \$5 million to less than \$10 million  |
| 3. \$250,000 to less than \$500,000     | 8. \$10 million to less than \$25 million |
| 4. \$500,000 to less than \$1 million   | 9. \$25 million to less than \$50 million |
| 5. \$1 million to less than \$2 million | 10. \$50 million or greater               |

### 12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE

b. DATE

**November 18, 2022**

c. NAME AND TITLE

**Sheina Hughes - Vice President, US Mountain Regional Leader**

## ARCHITECT – ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If any)  
W912P823R0005

## PART II - GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME AECOM Technical Services, Inc.		3. YR ESTABLISHED 1970	4. UNIQUE ENTITY IDENTIFIER 003184462 (ATS HQ DUNS) EPUXNLX5EYC4 (Unique Entity Number)
2b. STREET 1555 Poydras Street, Suite 1200		5. OWNERSHIP	
2c. CITY New Orleans	2d. STATE LA	2e. ZIP CODE 70112	a. TYPE Corporation
6a. POINT OF CONTACT NAME AND TITLE Michael Patorno, PE, Vice President Business Line Leadership		b. SMALL BUSINESS STATUS Large	
6b. TELEPHONE NUMBER 504.586.8111	6c. E-MAIL ADDRESS mike.paterno@aecom.com		7. NAME OF FIRM (If block 2a is a branch office) AECOM Technical Services, Inc.
8a. FORMER FIRM NAME(S) (If any) No firm name change during the last six years		8b YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE			10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS			
a. Function Code	b. Discipline	c. No. of Employees (1) FIRM GLOBAL #s    (2) BRANCH OFFICE #s	a. Profile Code	b. Experience		c. Revenue Index Number (see below)
02	Administrative	1,317	4	A05/A06	Airports; Terminals and Hangars; Lighting; Fueling	10
06	Architect	1,289	1	C15	Construction Management	10
08	CADD Technician	2,143	17	C18	Cost Estimating; Cost Eng. & Analysis	7
10	Chemical Engineer	202	3	D01/D02	Dams (Earth; Rock); Dikes; Levees	10
12	Civil Engineer	6,755	13	D04	Design-Build – Preparation of RFPs	8
15	Construction Inspector	1,087	1	E02	Educational Facilities; Classrooms	10
16	Construction Manager	919	1	E07	Energy Conservation; New Energy Sources	9
20	Economist	194	1	E09	Env. Impact Studies, Assessments or Statements	10
21	Electrical Engineer	1,420	8	E12	Environmental Remediation	10
39	Landscape Architect	499	2	G01	Garages; Vehicle Maint. Facilities; Parking Decks	7
42	Mechanical Engineer	1,394	13	G04	GIS: Development, Analysis, & Data Conversion	8
47	Planner: Urban/Regional	528	1	H01	Harbors; Jetties; Piers; Ship Terminal Facilities	7
48	Project Manager [subset of other disciplines]	[7,601]	[10]	H07	Highways; Streets; Airfield Paving; Parking Lots	10
53	Scheduler	173	1	H09	Hospital; Medical Facilities	9
57	Structural Engineer	1,742	17	M05	Military Design Standards	7
58	Technician/Analyst	2,669	5	O01	Office Buildings; Industrial Parks	9
60	Transportation Engineer	1,405	2	P05/P06	Planning (Community, etc.; Site, Installation & Project)	9
				P12	Power Generator; Transmission	10
				R06	Rehabilitation (Buildings; Structures; Facilities)	8
				S04	Sewage Collection, Treatment and Disposal	10
				S05	Soils & Geologic Studies; Foundations	7
	Other technical staff	25,238	13	S09	Structural Design; Special Structures	8
				S10	Surveying; Platting; Mapping; Flood Plain Studies	7
				S13	Storm Water Handling & Facilities	8
				T03	Traffic & Transportation Engineering	10
				W02/W03	Water Resources; Water Supply Treatment/Distribution	10

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS (Insert revenue index number shown at right)		PROFESSIONAL SERVICES REVENUE INDEX NUMBER	
a. Federal Work	10	1. Less than \$100,000	6. \$2 million to less than \$5 million
b. Non-Federal Work	10	2. \$100,000 to less than \$250,000	7. \$5 million to less than \$10 million
c. Total Work	10	3. \$250,000 to less than \$500,000	8. \$10 million to less than \$25 million
		4. \$500,000 to less than \$1 million	9. \$25 million to less than \$50 million
		5. \$1 million to less than \$2 million	10. \$50 million or greater

## 12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE

c. NAME AND TITLE

Mark Handley, PE, Senior Vice President, National Governments

b. DATE

01 January 2022

## ARCHITECT – ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If any)

W912P823R0005

## PART II - GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME AECOM Technical Services, Inc.		3. YR ESTABLISHED 1970	4. UNIQUE ENTITY IDENTIFIER 003184462 (ATS HQ DUNS) EPUXNLX5EYC4 (Unique Entity Number)
2b. STREET 8555 United Plaza Boulevard, Suite 300		5. OWNERSHIP	
2c. CITY Baton Rouge	2d. STATE LA	2e. ZIP CODE 70809	a. TYPE Corporation
6a. POINT OF CONTACT NAME AND TITLE Dennis Reece, CEP, Vice President Environmental Science			
6b. TELEPHONE NUMBER 225.922.5700	6c. E-MAIL ADDRESS dennis.reece@aecom.com		
8a. FORMER FIRM NAME(S) (If any) No firm name change during the last six years		8b YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

7. NAME OF FIRM (If block 2a is a branch office)

AECOM Technical Services, Inc.

9. EMPLOYEES BY DISCIPLINE			10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS			
a. Function Code	b. Discipline	c. No. of Employees (1) FIRM GLOBAL #s (2) BRANCH OFFICE #s	a. Profile Code	b. Experience		c. Revenue Index Number (see below)
02	Administrative	1,317	2	A05/A06	Airports; Terminals and Hangars; Lighting; Fueling	10
07	Biologist	226	1	C15	Construction Management	10
08	CADD Technician	2,143	7	C18	Cost Estimating; Cost Eng. & Analysis	7
10	Chemical Engineer	202	1	D01/D02	Dams (Earth; Rock); Dikes; Levees	10
11	Chemist	103	2	D04	Design-Build – Preparation of RFPs	8
12	Civil Engineer	6,755	3	E02	Educational Facilities; Classrooms	10
14	Computer Programmer	50	1	E07	Energy Conservation; New Energy Sources	9
15	Construction Inspector	1,087	1	E09	Env. Impact Studies, Assessments or Statements	10
16	Construction Manager	919	1	E12	Environmental Remediation	10
20	Economist	194	1	G01	Garages; Vehicle Maint. Facilities; Parking Decks	7
23	Environmental Engineer	1,138	4	G04	GIS: Development, Analysis, & Data Conversion	8
24	Environmental Scientist	1,842	4	H01	Harbors; Jetties; Piers; Ship Terminal Facilities	7
30	Geologist	828	8	H07	Highways; Streets; Airfield Paving; Parking Lots	10
42	Mechanical Engineer	1,394	1	H09	Hospital; Medical Facilities	9
48	Project Manager [subset of other disciplines]	[7,601]	[16]	M05	Military Design Standards	7
57	Structural Engineer	1,742	4	O01	Office Buildings; Industrial Parks	9
58	Technician/Analyst	2,669	14	P05/P06	Planning (Community, etc.; Site, Installation & Project)	9
60	Transportation Engineer	1,405	2	P12	Power Generator; Transmission	10
				R06	Rehabilitation (Buildings; Structures; Facilities)	8
				S04	Sewage Collection, Treatment and Disposal	10
				S05	Soils & Geologic Studies; Foundations	7
	Other technical staff	24,960	21	S09	Structural Design; Special Structures	8
				S10	Surveying; Platting; Mapping; Flood Plain Studies	7
				S13	Storm Water Handling & Facilities	8
			78	T03	Traffic & Transportation Engineering	10
				W02/W03	Water Resources; Water Supply Treatment/Distribution	10

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS  
(Insert revenue index number shown at right)

a. Federal Work	10
b. Non-Federal Work	10
c. Total Work	10

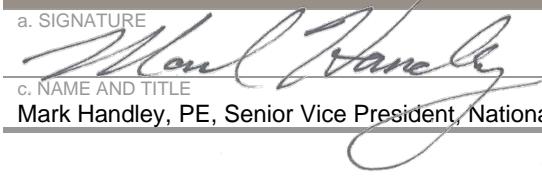
## PROFESSIONAL SERVICES REVENUE INDEX NUMBER

1. Less than \$100,000
2. \$100,000 to less than \$250,000
3. \$250,000 to less than \$500,000
4. \$500,000 to less than \$1 million
5. \$1 million to less than \$2 million
6. \$2 million to less than \$5 million
7. \$5 million to less than \$10 million
8. \$10 million to less than \$25 million
9. \$25 million to less than \$50 million
10. \$50 million or greater

## 12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE



c. NAME AND TITLE

Mark Handley, PE, Senior Vice President, National Governments

b. DATE

01 January 2022

**ARCHITECT – ENGINEER QUALIFICATIONS**

1. SOLICITATION NUMBER (If any)

W912P823R0005

**PART II - GENERAL QUALIFICATIONS**

(If a firm has branch offices, complete for each specific branch office seeking work.)

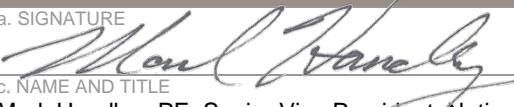
2a. FIRM (OR BRANCH OFFICE) NAME AECOM Technical Services, Inc.		3. YR ESTABLISHED 1970	4. UNIQUE ENTITY IDENTIFIER 003184462 (ATS HQ DUNS) EPUXNLX5EYC4 (Unique Entity Number)
2b. STREET 19219 Katy Freeway, Suite 100		5. OWNERSHIP a. TYPE Corporation	
2c. CITY Houston	2d. STATE TX	2e. ZIP CODE 77094	b. SMALL BUSINESS STATUS Large
6a. POINT OF CONTACT NAME AND TITLE M. R. (Rod) McCrary, PE, DBIA, Vice President			
6b. TELEPHONE NUMBER 713.780.4100	6c. E-MAIL ADDRESS rod.mccrary@ae.com		
8a. FORMER FIRM NAME(S) (If any) No firm name change during the last six years		8b YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE			10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS			
a. Function Code	b. Discipline	c. No. of Employees (1) FIRM GLOBAL #s (2) BRANCH OFFICE #s	a. Profile Code	b. Experience		c. Revenue Index Number (see below)
06	Architect	1,289	7	A05/A06	Airports; Terminals and Hangars; Lighting; Fueling	10
08	CADD Technician	2,143	15	C15	Construction Management	10
10	Chemical Engineer	202	5	C18	Cost Estimating; Cost Eng. & Analysis	7
11	Chemist	103	3	D01/D02	Dams (Earth; Rock); Dikes; Levees	10
12	Civil Engineer	6,755	56	D04	Design-Build – Preparation of RFPs	8
14	Computer Programmer	50	1	E02	Educational Facilities; Classrooms	10
15	Construction Inspector	1,087	21	E07	Energy Conservation; New Energy Sources	9
16	Construction Manager	919	6	E09	Env. Impact Studies, Assessments or Statements	10
21	Electrical Engineer	1,420	10	E12	Environmental Remediation	10
23	Environmental Engineer	1,138	19	G01	Garages; Vehicle Maint. Facilities; Parking Decks	7
24	Environmental Scientist	1,842	21	G04	GIS: Development, Analysis, & Data Conversion	8
29	GIS Specialist	413	9	H01	Harbors; Jetties; Piers; Ship Terminal Facilities	7
30	Geologist	828	14	H07	Highways; Streets; Airfield Paving; Parking Lots	10
42	Mechanical Engineer	1,394	12	H09	Hospital; Medical Facilities	9
48	Project Manager [subset of other disciplines]	[7,601]	[62]	M05	Military Design Standards	7
57	Structural Engineer	1,742	2	O01	Office Buildings; Industrial Parks	9
58	Technician/Analyst	2,669	20	P05/P06	Planning (Community, etc.; Site, Installation & Project)	9
59	Toxicologist	16	2	P12	Power Generator; Transmission	10
60	Transportation Engineer	1,405	10	R06	Rehabilitation (Buildings; Structures; Facilities)	8
62	Water Resources Engineer	445	4	S04	Sewage Collection, Treatment and Disposal	10
	Other technical staff	23,114	93	S05	Soils & Geologic Studies; Foundations	7
				S09	Structural Design; Special Structures	8
				S10	Surveying; Platting; Mapping; Flood Plain Studies	7
			330	S13	Storm Water Handling & Facilities	8
				T03	Traffic & Transportation Engineering	10
				W02/W03	Water Resources; Water Supply Treatment/Distribution	10

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS (Insert revenue index number shown at right)		PROFESSIONAL SERVICES REVENUE INDEX NUMBER			
a. Federal Work	10	1.	Less than \$100,000	6.	\$2 million to less than \$5 million
b. Non-Federal Work	10	2.	\$100,000 to less than \$250,000	7.	\$5 million to less than \$10 million
c. Total Work	10	3.	\$250,000 to less than \$500,000	8.	\$10 million to less than \$25 million
		4.	\$500,000 to less than \$1 million	9.	\$25 million to less than \$50 million
		5.	\$1 million to less than \$2 million	10.	\$50 million or greater

**12. AUTHORIZED REPRESENTATIVE**

The foregoing is a statement of facts.

a. SIGNATURE 	b. DATE 01 January 2022
c. NAME AND TITLE Mark Handley, PE, Senior Vice President, National Governments	

**ARCHITECT – ENGINEER QUALIFICATIONS**

1. SOLICITATION NUMBER (If any)

W912P823R0005

**PART II - GENERAL QUALIFICATIONS**

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME AECOM Technical Services, Inc.		3. YR ESTABLISHED 1970	4. UNIQUE ENTITY IDENTIFIER 003184462 (ATS HQ DUNS) EPUXNLX5EYC4 (Unique Entity Number)
2b. STREET 5444 Westheimer Road, Suite 400		5. OWNERSHIP Corporation	
2c. CITY Houston	2d. STATE TX	2e. ZIP CODE 77056	b. SMALL BUSINESS STATUS Large
6a. POINT OF CONTACT NAME AND TITLE M. R. (Rod) McCrary, PE, DBIA, Vice President			
6b. TELEPHONE NUMBER 713.780.4100	6c. E-MAIL ADDRESS rod.mccrary@ae.com		
8a. FORMER FIRM NAME(S) (If any) No firm name change during the last six years		8b YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

**9. EMPLOYEES BY DISCIPLINE****10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS**

a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM GLOBAL #s	(2) BRANCH OFFICE #s			
02	Administrative	1,317	1	A05/A06	Airports; Terminals and Hangars; Lighting; Fueling	10
11	Chemist	103	1	C15	Construction Management	10
12	Civil Engineer	6,755	6	C18	Cost Estimating; Cost Eng. & Analysis	7
23	Environmental Engineer	1,138	1	D01/D02	Dams (Earth; Rock); Dikes; Levees	10
42	Mechanical Engineer	1,394	1	D04	Design-Build – Preparation of RFPs	8
47	Planner: Urban/Regional	528	1	E02	Educational Facilities; Classrooms	10
48	Project Manager [subset of other disciplines]	[7,601]	[6]	E07	Energy Conservation; New Energy Sources	9
58	Technician/Analyst	2,669	1	E09	Env. Impact Studies, Assessments or Statements	10
60	Transportation Engineer	1,405	1	E12	Environmental Remediation	10
				G01	Garages; Vehicle Maint. Facilities; Parking Decks	7
				G04	GIS: Development, Analysis, & Data Conversion	8
				H01	Harbors; Jetties; Piers; Ship Terminal Facilities	7
				H07	Highways; Streets; Airfield Paving; Parking Lots	10
				H09	Hospital; Medical Facilities	9
				M05	Military Design Standards	7
				O01	Office Buildings; Industrial Parks	9
				P05/P06	Planning (Community, etc.; Site, Installation & Project)	9
				P12	Power Generator; Transmission	10
				R06	Rehabilitation (Buildings; Structures; Facilities)	8
				S04	Sewage Collection, Treatment and Disposal	10
				S05	Soils & Geologic Studies; Foundations	7
				S09	Structural Design; Special Structures	8
				S10	Surveying; Platting; Mapping; Flood Plain Studies	7
				S13	Storm Water Handling & Facilities	8
				T03	Traffic & Transportation Engineering	10
				W02/W03	Water Resources; Water Supply Treatment/Distribution	10
Other technical staff		33,665	4			
Total		48,974	17			

**11. ANNUAL AVERAGE PROFESSIONAL SERVICES****REVENUES OF FIRM FOR LAST 3 YEARS**

(Insert revenue index number shown at right)

a. Federal Work	10
b. Non-Federal Work	10
c. Total Work	10

**PROFESSIONAL SERVICES REVENUE INDEX NUMBER**

1. Less than \$100,000
2. \$100,000 to less than \$250,000
3. \$250,000 to less than \$500,000
4. \$500,000 to less than \$1 million
5. \$1 million to less than \$2 million
6. \$2 million to less than \$5 million
7. \$5 million to less than \$10 million
8. \$10 million to less than \$25 million
9. \$25 million to less than \$50 million
10. \$50 million or greater

**12. AUTHORIZED REPRESENTATIVE**

The foregoing is a statement of facts.

a. SIGNATURE

c. NAME AND TITLE

Mark Handley, PE, Senior Vice President, National Governments

b. DATE

01 January 2022

**ARCHITECT – ENGINEER QUALIFICATIONS**

1. SOLICITATION NUMBER (If any)

W912P823R0005

**PART II - GENERAL QUALIFICATIONS**

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME AECOM Technical Services, Inc.		3. YR ESTABLISHED 1970	4. UNIQUE ENTITY IDENTIFIER 003184462 (ATS HQ DUNS) EPUXNLX5EYC4 (Unique Entity Number)
2b. STREET One Midtown Plaza, 1360 Peachtree Street, NE		5. OWNERSHIP a. TYPE Corporation	
2c. CITY Atlanta	2d. STATE GA	2e. ZIP CODE 30309	b. SMALL BUSINESS STATUS Large
6a. POINT OF CONTACT NAME AND TITLE Garrison Edwards, PE, LEED AP, Vice President Operations Leadership			
6b. TELEPHONE NUMBER 404.965.9600	6c. E-MAIL ADDRESS garrison.edwards@aecom.com		
8a. FORMER FIRM NAME(S) (If any) No firm name change during the last six years		8b YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

**9. EMPLOYEES BY DISCIPLINE****10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS**

a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM GLOBAL #s	(2) BRANCH OFFICE #s			
06	Architect	1,289	2	A05/A06	Airports; Terminals and Hangars; Lighting; Fueling	10
08	CADD Technician	2,143	2	C15	Construction Management	10
10	Chemical Engineer	202	1	C18	Cost Estimating; Cost Eng. & Analysis	7
12	Civil Engineer	6,755	59	D01/D02	Dams (Earth; Rock); Dikes; Levees	10
15	Construction Inspector	1,087	4	D04	Design-Build – Preparation of RFPs	8
16	Construction Manager	919	6	E02	Educational Facilities; Classrooms	10
21	Electrical Engineer	1,420	11	E07	Energy Conservation; New Energy Sources	9
23	Environmental Engineer	1,138	13	E09	Env. Impact Studies, Assessments or Statements	10
24	Environmental Scientist	1,842	12	E12	Environmental Remediation	10
27	Foundation/Geotechnical Engineer	724	3	G01	Garages; Vehicle Maint. Facilities; Parking Decks	7
29	GIS Specialist	413	14	G04	GIS: Development, Analysis, & Data Conversion	8
30	Geologist	828	7	H01	Harbors; Jetties; Piers; Ship Terminal Facilities	7
39	Landscape Architect	499	5	H07	Highways; Streets; Airfield Paving; Parking Lots	10
42	Mechanical Engineer	1,394	13	H09	Hospital; Medical Facilities	9
47	Planner: Urban/Regional	528	6	M05	Military Design Standards	7
48	Project Manager [subset of other disciplines]	[7,601]	[66]	O01	Office Buildings; Industrial Parks	9
57	Structural Engineer	1,742	7	P05/P06	Planning (Community, etc.; Site, Installation & Project)	9
58	Technician/Analyst	2,669	32	P12	Power Generator; Transmission	10
60	Transportation Engineer	1,405	45	R06	Rehabilitation (Buildings; Structures; Facilities)	8
62	Water Resources Engineer	445	8	S04	Sewage Collection, Treatment and Disposal	10
	Other technical staff	21,532		S05	Soils & Geologic Studies; Foundations	7
			188	S09	Structural Design; Special Structures	8
				S10	Surveying; Platting; Mapping; Flood Plain Studies	7
				S13	Storm Water Handling & Facilities	8
			438	T03	Traffic & Transportation Engineering	10
				W02/W03	Water Resources; Water Supply Treatment/Distribution	10

**11. ANNUAL AVERAGE PROFESSIONAL SERVICES****REVENUES OF FIRM FOR LAST 3 YEARS**

(Insert revenue index number shown at right)

a. Federal Work	10
b. Non-Federal Work	10
c. Total Work	10

**PROFESSIONAL SERVICES REVENUE INDEX NUMBER**

1. Less than \$100,000
2. \$100,000 to less than \$250,000
3. \$250,000 to less than \$500,000
4. \$500,000 to less than \$1 million
5. \$1 million to less than \$2 million
6. \$2 million to less than \$5 million
7. \$5 million to less than \$10 million
8. \$10 million to less than \$25 million
9. \$25 million to less than \$50 million
10. \$50 million or greater

**12. AUTHORIZED REPRESENTATIVE**

The foregoing is a statement of facts.

a. SIGNATURE

c. NAME AND TITLE

Mark Handley, PE, Senior Vice President, National Governments

b. DATE

01 January 2022

## ARCHITECT – ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If any)  
W912P823R0005

## PART II - GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME AECOM Technical Services, Inc.		3. YR ESTABLISHED 1970	4. UNIQUE ENTITY IDENTIFIER 003184462 (ATS HQ DUNS) EPUXNLX5EYC4 (Unique Entity Number)
2b. STREET 1625 Summit Lake Drive, Suite 300		5. OWNERSHIP	
2c. CITY Tallahassee	2d. STATE FL	2e. ZIP CODE 32317	a. TYPE Corporation
6a. POINT OF CONTACT NAME AND TITLE Jim Mayo, Vice President Business Line Leadership		b. SMALL BUSINESS STATUS Large	
6b. TELEPHONE NUMBER 850.574.3197	6c. E-MAIL ADDRESS jim.mayo@ae.com		7. NAME OF FIRM (If block 2a is a branch office) AECOM Technical Services, Inc.
8a. FORMER FIRM NAME(S) (If any) No firm name change during the last six years		8b YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE			10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees (1) FIRM GLOBAL #s    (2) BRANCH OFFICE #s	a. Profile Code	b. Experience	c. Revenue Index Number (see below)
02	Administrative	1,317	1	A05/A06 Airports; Terminals and Hangars; Lighting; Fueling	10
05	Archaeologist	189	2	C15 Construction Management	10
07	Biologist	226	1	C18 Cost Estimating; Cost Eng. & Analysis	7
10	Chemical Engineer	202	1	D01/D02 Dams (Earth; Rock); Dikes; Levees	10
12	Civil Engineer	6,755	8	D04 Design-Build – Preparation of RFPs	8
14	Computer Programmer	50	2	E02 Educational Facilities; Classrooms	10
15	Construction Inspector	1,087	3	E07 Energy Conservation; New Energy Sources	9
16	Construction Manager	919	1	E09 Env. Impact Studies, Assessments or Statements	10
21	Electrical Engineer	1,420	2	E12 Environmental Remediation	10
23	Environmental Engineer	1,138	2	G01 Garages; Vehicle Maint. Facilities; Parking Decks	7
24	Environmental Scientist	1,842	2	G04 GIS: Development, Analysis, & Data Conversion	8
29	GIS Specialist	413	3	H01 Harbors; Jetties; Piers; Ship Terminal Facilities	7
30	Geologist	828	1	H07 Highways; Streets; Airfield Paving; Parking Lots	10
34	Hydrologist	48	1	H09 Hospital; Medical Facilities	9
48	Project Manager [subset of other disciplines]	[7,601]	[15]	M05 Military Design Standards	7
58	Technician/Analyst	2,669	6	O01 Office Buildings; Industrial Parks	9
60	Transportation Engineer	1,405	3	P05/P06 Planning (Community, etc.; Site, Installation & Project)	9
				P12 Power Generator; Transmission	10
				R06 Rehabilitation (Buildings; Structures; Facilities)	8
				S04 Sewage Collection, Treatment and Disposal	10
				S05 Soils & Geologic Studies; Foundations	7
	Other technical staff	28,466	11	S09 Structural Design; Special Structures	8
				S10 Surveying; Platting; Mapping; Flood Plain Studies	7
				S13 Storm Water Handling & Facilities	8
			50	T03 Traffic & Transportation Engineering	10
				W02/W03 Water Resources; Water Supply Treatment/Distribution	10

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS  
(Insert revenue index number shown at right)

a. Federal Work	10
b. Non-Federal Work	10
c. Total Work	10

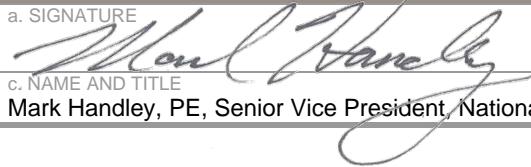
## PROFESSIONAL SERVICES REVENUE INDEX NUMBER

- |   |   |
|---|---|
| 1. Less than \$100,000                  | 6. \$2 million to less than \$5 million   |
| 2. \$100,000 to less than \$250,000     | 7. \$5 million to less than \$10 million  |
| 3. \$250,000 to less than \$500,000     | 8. \$10 million to less than \$25 million |
| 4. \$500,000 to less than \$1 million   | 9. \$25 million to less than \$50 million |
| 5. \$1 million to less than \$2 million | 10. \$50 million or greater               |

## 12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE



c. NAME AND TITLE

Mark Handley, PE, Senior Vice President, National Governments

b. DATE

01 January 2022

**ARCHITECT – ENGINEER QUALIFICATIONS**

1. SOLICITATION NUMBER (If any)

W912P823R0005

**PART II - GENERAL QUALIFICATIONS**

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME AECOM Technical Services, Inc.		3. YR ESTABLISHED 1970	4. UNIQUE ENTITY IDENTIFIER 003184462 (ATS HQ DUNS) EPUXNLX5EYC4 (Unique Entity Number)
2b. STREET 8050 N. Palm Avenue		5. OWNERSHIP	
2c. CITY Fresno	2d. STATE CA	2e. ZIP CODE 93711	a. TYPE Corporation
6a. POINT OF CONTACT NAME AND TITLE Travis Boone, PE, Executive Vice President Operations Leadership (Regional Lead)			
6b. TELEPHONE NUMBER 303.694.2770	6c. E-MAIL ADDRESS travis.boone@aecom.com		
8a. FORMER FIRM NAME(S) (If any) No firm name change during the last six years		8b YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

**9. EMPLOYEES BY DISCIPLINE****10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS**

a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM GLOBAL #s	(2) BRANCH OFFICE #s			
02	Administrative	1,317	1	A05/A06	Airports; Terminals and Hangars; Lighting; Fueling	10
12	Civil Engineer	6,755	5	C15	Construction Management	10
30	Geologist	828	2	C18	Cost Estimating; Cost Eng. & Analysis	7
48	Project Manager [subset of other disciplines]	[7,601]	[4]	D01/D02	Dams (Earth; Rock); Dikes; Levees	10
58	Technician/Analyst	2,669	1	D04	Design-Build – Preparation of RFPs	8
				E02	Educational Facilities; Classrooms	10
				E07	Energy Conservation; New Energy Sources	9
				E09	Env. Impact Studies, Assessments or Statements	10
				E12	Environmental Remediation	10
				G01	Garages; Vehicle Maint. Facilities; Parking Decks	7
				G04	GIS: Development, Analysis, & Data Conversion	8
				H01	Harbors; Jetties; Piers; Ship Terminal Facilities	7
				H07	Highways; Streets; Airfield Paving; Parking Lots	10
				H09	Hospital; Medical Facilities	9
				M05	Military Design Standards	7
				O01	Office Buildings; Industrial Parks	9
				P05/P06	Planning (Community, etc.; Site, Installation & Project)	9
				P12	Power Generator; Transmission	10
				R06	Rehabilitation (Buildings; Structures; Facilities)	8
				S04	Sewage Collection, Treatment and Disposal	10
				S05	Soils & Geologic Studies; Foundations	7
				S09	Structural Design; Special Structures	8
				S10	Surveying; Platting; Mapping; Flood Plain Studies	7
				S13	Storm Water Handling & Facilities	8
				T03	Traffic & Transportation Engineering	10
				W02/W03	Water Resources; Water Supply Treatment/Distribution	10
Other technical staff		37,405	2			
Total		48,974	11			

**11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS**  
(Insert revenue index number shown at right)

a. Federal Work	10
b. Non-Federal Work	10
c. Total Work	10

**PROFESSIONAL SERVICES REVENUE INDEX NUMBER**

1. Less than \$100,000
2. \$100,000 to less than \$250,000
3. \$250,000 to less than \$500,000
4. \$500,000 to less than \$1 million
5. \$1 million to less than \$2 million
6. \$2 million to less than \$5 million
7. \$5 million to less than \$10 million
8. \$10 million to less than \$25 million
9. \$25 million to less than \$50 million
10. \$50 million or greater

**12. AUTHORIZED REPRESENTATIVE**

The foregoing is a statement of facts.

a. SIGNATURE

c. NAME AND TITLE

Mark Handley, PE, Senior Vice President, National Governments

b. DATE

01 January 2022

## ARCHITECT – ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If any)  
W912P823R0005

## PART II - GENERAL QUALIFICATIONS

(If a firm has branch offices, complete for each specific branch office seeking work.)

2a. FIRM (OR BRANCH OFFICE) NAME AECOM Technical Services, Inc.		3. YR ESTABLISHED 1970	4. UNIQUE ENTITY IDENTIFIER 003184462 (ATS HQ DUNS) EPUXNLX5EYC4 (Unique Entity Number)
2b. STREET 100 North Broadway, 20th Floor		5. OWNERSHIP	
2c. CITY St. Louis	2d. STATE MO	2e. ZIP CODE 63102	a. TYPE Corporation
6a. POINT OF CONTACT NAME AND TITLE James Hummert, PE, Vice President Systems Lead		b. SMALL BUSINESS STATUS Large	
6b. TELEPHONE NUMBER 314.429.0100	6c. E-MAIL ADDRESS jim.hummert@aecom.com		7. NAME OF FIRM (If block 2a is a branch office) AECOM Technical Services, Inc.
8a. FORMER FIRM NAME(S) (If any) No firm name change during the last six years		8b YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE			10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees (1) FIRM GLOBAL #s    (2) BRANCH OFFICE #s	a. Profile Code	b. Experience	c. Revenue Index Number (see below)
08	CADD Technician	2,143	2	A05/A06 Airports; Terminals and Hangars; Lighting; Fueling	10
11	Chemist	103	1	C15 Construction Management	10
12	Civil Engineer	6,755	9	C18 Cost Estimating; Cost Eng. & Analysis	7
23	Environmental Engineer	1,138	8	D01/D02 Dams (Earth; Rock); Dikes; Levees	10
24	Environmental Scientist	1,842	7	D04 Design-Build – Preparation of RFPs	8
27	Foundation/Geotechnical Engineer	724	4	E02 Educational Facilities; Classrooms	10
30	Geologist	828	16	E07 Energy Conservation; New Energy Sources	9
39	Landscape Architect	499	1	E09 Env. Impact Studies, Assessments or Statements	10
48	Project Manager [subset of other disciplines]	[7,601]	[22]	E12 Environmental Remediation	10
58	Technician/Analyst	2,669	9	G01 Garages; Vehicle Maint. Facilities; Parking Decks	7
60	Transportation Engineer	1,405	2	G04 GIS: Development, Analysis, & Data Conversion	8
				H01 Harbors; Jetties; Piers; Ship Terminal Facilities	7
				H07 Highways; Streets; Airfield Paving; Parking Lots	10
				H09 Hospital; Medical Facilities	9
				M05 Military Design Standards	7
				O01 Office Buildings; Industrial Parks	9
				P05/P06 Planning (Community, etc.; Site, Installation & Project)	9
				P12 Power Generator; Transmission	10
				R06 Rehabilitation (Buildings; Structures; Facilities)	8
				S04 Sewage Collection, Treatment and Disposal	10
				S05 Soils & Geologic Studies; Foundations	7
	Other technical staff	30,868	32	S09 Structural Design; Special Structures	8
				S10 Surveying; Platting; Mapping; Flood Plain Studies	7
				S13 Storm Water Handling & Facilities	8
	Total	48,974	91	T03 Traffic & Transportation Engineering	10
				W02/W03 Water Resources; Water Supply Treatment/Distribution	10

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS  
(Insert revenue index number shown at right)

a. Federal Work	10
b. Non-Federal Work	10
c. Total Work	10

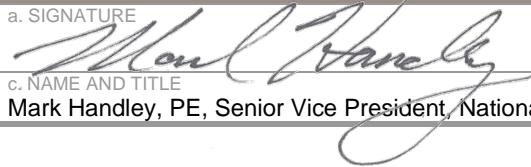
## PROFESSIONAL SERVICES REVENUE INDEX NUMBER

- |   |   |
|---|---|
| 1. Less than \$100,000                  | 6. \$2 million to less than \$5 million   |
| 2. \$100,000 to less than \$250,000     | 7. \$5 million to less than \$10 million  |
| 3. \$250,000 to less than \$500,000     | 8. \$10 million to less than \$25 million |
| 4. \$500,000 to less than \$1 million   | 9. \$25 million to less than \$50 million |
| 5. \$1 million to less than \$2 million | 10. \$50 million or greater               |

## 12. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts.

a. SIGNATURE



c. NAME AND TITLE

Mark Handley, PE, Senior Vice President, National Governments

b. DATE

01 January 2022

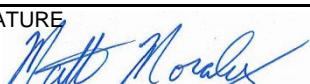
<b>ARCHITECT-ENGINEER QUALIFICATIONS</b>				1. SOLICITATION NUMBER ( <i>If any</i> ) W912P823R0005		
<b>PART II – GENERAL QUALIFICATIONS</b> <i>(If a firm has branch offices, complete for each specific branch office seeking work)</i>						
2a. FIRM (Or Branch Office) NAME Dynamic Solutions, LLC				3. YEAR ESTABLISHED 1996	4. UNIQUE ENTITY IDENTIFIER NDXNEEFR2EZ3	
2b. STREET 6421 Deane Hill Drive, Suite 1				5. OWNERSHIP		
2c. CITY Knoxville		2d. STATE TN	2e. ZIP CODE 37919	a. Limited Liability Company b. SMALL BUSINESS STATUS Woman-Owned Small Business		
6a. POINT OF CONTACT NAME AND TITLE Christopher Wallen, Vice President				7. NAME OF FIRM ( <i>If block 2a is a branch office</i> ) NA		
6b. TELEPHONE NUMBER (865) 212-3331		6c. EMAIL ADDRESS cmwallen@dsllc.com		8. FORMER NAME(S) ( <i>If any</i> ) ZZ Consulting, LLC		
8b. YEAR ESTABLISHED 1996			8c. UNIQUE ENTITY IDENTIFIER NDXNEEFR2EZ3			
9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	2		D07	Coastal Engineering	
12	Civil Engineer	4		D05	Digital Elevation and Terrain Model Development	1
19	Ecologist	2	1	E11	Environmental Planning	3
30	Geologist	1		R11	Rivers; Canals; Waterways; Flood Control	5
32	Hydraulic Engineer	4		W02	Water Resources; Hydrology; Ground Water	4
34	Hydrologist	1			Ecological Modeling	2
62	Water Resources Engineer	5	1		Coastal Storm Modeling	2
48/42	Project Manager / Mechanical Engineer	1				
<b>Total</b>		20	2			
11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS <i>(Insert revenue index number shown at right)</i>		PROFESSIONAL SERVICES REVENUE INDEX NUMBER				
a. Federal Work	5	1. Less than \$100,000      6. \$2 million to less than \$5 million				
b. Non-Federal Work	5	2. \$100,000 to less than \$250,000      7. \$5 million to less than \$10 million				
c. Total Work	6	3. \$250,000 to less than \$500,000      8. \$10 million to less than \$25 million				
		4. \$500,000 to less than \$1 million      9. \$25 million to less than \$50 million				
		5. \$1 million to less than \$2 million      10. \$50 million or greater				
<b>12. AUTHORIZED REPRESENTATIVE</b> <i>The foregoing is a statement of facts.</i>						
a. SIGNATURE <i>Christopher M. Wallen</i>					b. DATE November 21, 2022	
c. NAME AND TITLE Christopher M. Wallen, Vice President						







ARCHITECT-ENGINEER QUALIFICATIONS				1. SOLICITATION NUMBER (If any) W912P823R0005		
<b>PART II – GENERAL QUALIFICATIONS</b> <i>(If a firm has branch offices, complete for each specific branch office seeking work)</i>						
2a. FIRM (Or Branch Office) NAME Eustis Engineering L.L.C.				3. YEAR ESTABLISHED 2006	4. UNIQUE ENTITY IDENTIFIER R83MG9NLTMS4	
2b. STREET 3011 28 <sup>th</sup> Street				5. OWNERSHIP		
2c. CITY Metairie		2d. STATE LA	2e. ZIP CODE 70002	a. TYPE Corporation		
6a. POINT OF CONTACT NAME AND TITLE Gwendolyn P. Sanders, P.E. / President				b. SMALL BUSINESS STATUS Small Business		
6b. TELEPHONE NUMBER 504-834-0157		6c. EMAIL ADDRESS gsanders@eustiseng.com		7. NAME OF FIRM (If block 2a is a branch office)		
8. FORMER NAME(S) (If any)				8b. YEAR ESTABLISHED 1946	8c. UNIQUE ENTITY IDENTIFIER 03-439-1870	
Eustis Engineering Company, Inc. Eustis Engineering Services, L.L.C.				2006	78-481-0959	
9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
27	Geotechnical Engineer (P.E.)	14			Soils & Geologic Studies: Foundations	7
	Assistant Engineer (E.I.)	2			Testing & Inspection Services	7
	Engineering Intern/Technician	3				
30	Geologist (P.G.)	1				
30	Geoscientist-in-Training (G.I.T.)	1				
30	Field Geologist	1				
	AutoCAD Technician	1				
02	Administrative	21				
	Drilling Personnel	13				
	Laboratory Personnel	9				
	CMT Personnel	13				
	Safety Manager	1				
	Quality Control Manager	1				
	Operations Manager	1				
<b>Total</b>		82				
11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS <i>(Insert revenue index number shown at right)</i>		PROFESSIONAL SERVICES REVENUE INDEX NUMBER				
a. Federal Work	7	1. Less than \$100,000                            6. \$2 million to less than \$5 million				
b. Non-Federal Work	7	2. \$100,000 to less than \$250,000              7. \$5 million to less than \$10 million				
c. Total Work	8	3. \$250,000 to less than \$500,000              8. \$10 million to less than \$25 million				
		4. \$500,000 to less than \$1 million              9. \$25 million to less than \$50 million				
		5. \$1 million to less than \$2 million              10. \$50 million or greater				
<b>12. AUTHORIZED REPRESENTATIVE</b> <i>The foregoing is a statement of facts.</i>						
a. SIGNATURE 					b. DATE 11/12/2022	
c. NAME AND TITLE Gwendolyn P. Sanders, P.E. / President						

<b>ARCHITECT-ENGINEER QUALIFICATIONS</b>				1. SOLICITATION NUMBER ( <i>If any</i> ) W912P823R0005		
<b>PART II – GENERAL QUALIFICATIONS</b> <i>(If a firm has branch offices, complete for each specific branch office seeking work)</i>						
2a. FIRM (Or Branch Office) NAME Eustis Engineering L.L.C.				3. YEAR ESTABLISHED 2006	4. UNIQUE ENTITY IDENTIFIER R83MG9NLTMS4	
2b. STREET 13434 Jefferson Highway				5. OWNERSHIP		
2c. CITY Baton Rouge		2d. STATE LA	2e. ZIP CODE 70817	a. TYPE Corporation		
6a. POINT OF CONTACT NAME AND TITLE Mathew K. Morales, P.E. / Project Manager, Branch Manager				b. SMALL BUSINESS STATUS Small Business		
6b. TELEPHONE NUMBER 504-706-5564		6c. EMAIL ADDRESS mmorales@eustiseng.com		7. NAME OF FIRM ( <i>If block 2a is a branch office</i> ) Eustis Engineering L.L.C.		
8. FORMER NAME(S) ( <i>If any</i> ) Eustis Engineering Company, Inc. Eustis Engineering Services, L.L.C.				8b. YEAR ESTABLISHED 1946 2006	8c. UNIQUE ENTITY IDENTIFIER 03-439-1870 78-481-0959	
9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
27	Geotechnical Engineer (P.E.)	14	1		Soils & Geologic Studies: Foundations	7
	Assistant Engineer (E.I.)	2			Testing & Inspection Services	7
	Engineering Intern/Technician	3				
30	Geologist (P.G.)	1	1			
30	Geoscientist-in-Training (G.I.T.)	1				
30	Field Geologist	1				
	AutoCAD Technician	1				
02	Administrative	21	1			
	Drilling Personnel	13				
	Laboratory Personnel	9				
	CMT Personnel	13	1			
	Safety Manager	1				
	Quality Control Manager	1				
	Operations Manager	1				
<b>Total</b>		82	4			
11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS <i>(Insert revenue index number shown at right)</i>		PROFESSIONAL SERVICES REVENUE INDEX NUMBER				
a. Federal Work	7	1. Less than \$100,000                            6. \$2 million to less than \$5 million				
b. Non-Federal Work	7	2. \$100,000 to less than \$250,000              7. \$5 million to less than \$10 million				
c. Total Work	8	3. \$250,000 to less than \$500,000              8. \$10 million to less than \$25 million				
		4. \$500,000 to less than \$1 million              9. \$25 million to less than \$50 million				
		5. \$1 million to less than \$2 million              10. \$50 million or greater				
<b>12. AUTHORIZED REPRESENTATIVE</b> <i>The foregoing is a statement of facts.</i>						
a. SIGNATURE					b. DATE 11/12/2022	
c. NAME AND TITLE	Mathew K. Morales, P.E. / Project Manager, Baton Rouge Branch Manager					

ARCHITECT-ENGINEER QUALIFICATIONS				1. SOLICITATION NUMBER ( <i>If any</i> ) W912P823R0005		
<b>PART II – GENERAL QUALIFICATIONS</b> <i>(If a firm has branch offices, complete for each specific branch office seeking work)</i>						
2a. FIRM (Or Branch Office) NAME GULF SOUTH ENGINEERING AND TESTING, INC.				3. YEAR ESTABLISHED 2011	4. UNIQUE ENTITY IDENTIFIER R1XSWKQJERG7	
2b. STREET 15 Veterans Memorial Boulevard				5. OWNERSHIP		
2c. CITY Kenner		2d. STATE LA	2e. ZIP CODE 70062	a. TYPE Corporation (Incorporated) b. SMALL BUSINESS STATUS Woman-Owned Small Business		
6a. POINT OF CONTACT NAME AND TITLE Chad M. Poché, P.E., Vice President				7. NAME OF FIRM ( <i>If block 2a is a branch office</i> )		
6b. TELEPHONE NUMBER 504-305-4401		6c. EMAIL ADDRESS cpoche@gulfsooutheng.com		8. FORMER NAME(S) ( <i>If any</i> )		
			8b. YEAR ESTABLISHED		8c. UNIQUE ENTITY IDENTIFIER	
9. EMPLOYEES BY DISCIPLINE				10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS		
a. Function Code	b. Discipline	c. No. of Employees		a. Profile Code	b. Experience	c. Revenue Index Number (see below)
		(1) FIRM	(2) BRANCH			
02	Administrative	7		B02	Bridges	1
NA	Construction Services Mgr	1		C10	Comm Bldg (low rise); Shop Ctrs	1
NA	CMT Supervisors	1		C12	Comm Systems; TV; Microwave	1
15	Construction Inspectors	11		H07	Highways; Streets; Airfield; Pkg Lots	2
27	Geotechnical Engineers	2		H11	Housing (Res, Multi Apt; Condo)	2
NA	Graduate Engineers	2		O01	Office Buildings; Industrial Parks	1
NA	Laboratory Managers	2		S05	Soils & Geologic Studies; Found.	5
NA	Laboratory Technicians	4		T02	Testing & Inspection Services	5
38	Professional Land Surveyor	1		W03	Water Supply; Treatment & Distr.	2
NA	Soil Boring Driller	1				
NA	Soil Boring Driller Apprentice	1				
<b>Total</b>		33				
11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS <i>(Insert revenue index number shown at right)</i>		PROFESSIONAL SERVICES REVENUE INDEX NUMBER				
a. Federal Work	1	1. Less than \$100,000				
b. Non-Federal Work	6	2. \$100,000 to less than \$250,000				
c. Total Work	6	3. \$250,000 to less than \$500,000				
		4. \$500,000 to less than \$1 million				
		5. \$1 million to less than \$2 million				
		6. \$2 million to less than \$5 million				
		7. \$5 million to less than \$10 million				
		8. \$10 million to less than \$25 million				
		9. \$25 million to less than \$50 million				
		10. \$50 million or greater				
<b>12. AUTHORIZED REPRESENTATIVE</b> <i>The foregoing is a statement of facts.</i>						
a. SIGNATURE					b. DATE November 16, 2022	
c. NAME AND TITLE Chad M. Poché, P.E., Vice President						

# ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (*If any*)

W912P823R0005

## PART II - GENERAL QUALIFICATIONS

*(If a firm has branch offices, complete for each specific branch office seeking work.)*

2a. FIRM (or Branch Office) NAME Corpro Companies, Inc			3. YEAR ESTABLISHED 1984	4. UNIQUE ENTITY IDENTIFIER JNKVMSMG57J6
2b. STREET 201 Pailet Drive			5. OWNERSHIP a. TYPE Corporation  b. SMALL BUSINESS STATUS NA	
2c. CITY Harvey	2d. STATE LA	2e. ZIP CODE 70058		
6a. POINT OF CONTACT NAME AND TITLE Jason Gerin, Business Development Manager			7. NAME OF FIRM ( <i>If Block 2a is a Branch Office</i> ) Corpro Companies Inc.	
6b. TELEPHONE NUMBER 619-318-0965	6c. EMAIL ADDRESS jgerin@aegion.com		8a. FORMER FIRM NAME(S) ( <i>If any</i> )	8b. YEAR ESTABLISHED
			8c. UNIQUE ENTITY IDENTIFIER	

### 9. EMPLOYEES BY DISCIPLINE

### 10. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST 5 YEARS

a. Function Code	b. Discipline	c. Number of Employees (1) FIRM	c. Number of Employees (2) BRANCH	a. Profile Code	b. Experience	c. Revenue Index Number (see below)
02	Administration	153		A05	Airports	4
08	CADD Technician	4		B02	Bridges	7
15	Construction Inspector	131		C04	Chemical Processing & Storage	5
16	Construction Manager	9		C17	Corrosion Control	10
17	Corrosion Engineer	83		D02	DAMS	4
51	Safety	4		E04	Electronics	2
58	Technicians	106	2	G02	Gas Systems	5
				H01	HARBORS	5
				L06	Lighting	1
				M08	Modular Systems	1
				N01	Naval Architecture	8
				P01	Petroleum Exploration	7
				P02	Petroleum & Fuel Storage	10
				P04	Pipelines	10
				P12	Power Generation	7
				R03	Railroad/Rapid Transit	6
				R04	Recreation Facilities	5
				R05	Refrigeration Plants/Systems	1
				R06	Rehabilitation	7
				T06	Tunnels & Subways	4
	Other Employees			W03	Water Supply	9
	<b>Total</b>	350	17			

### 11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS

*(Insert revenue index number shown at right)*

a. Federal Work	7
b. Non-Federal Work	10
c. Total Work	10

### PROFESSIONAL SERVICES REVENUE INDEX NUMBER

1. Less than \$100,000
2. \$100,000 to less than \$250,000
3. \$250,000 to less than \$500,000
4. \$500,000 to less than \$1 million
5. \$1 million to less than \$2 million
6. \$2 million to less than \$5 million
7. \$5 million to less than \$10 million
8. \$10 million to less than \$25 million
9. \$25 million to less than \$50 million
10. \$50 million or greater

### 12. AUTHORIZED REPRESENTATIVE

*The foregoing is a statement of facts.*

a. SIGNATURE

b. DATE

16 NOVEMBER 2022

c. NAME AND TITLE

Jason Gerin, Business Development Manager

